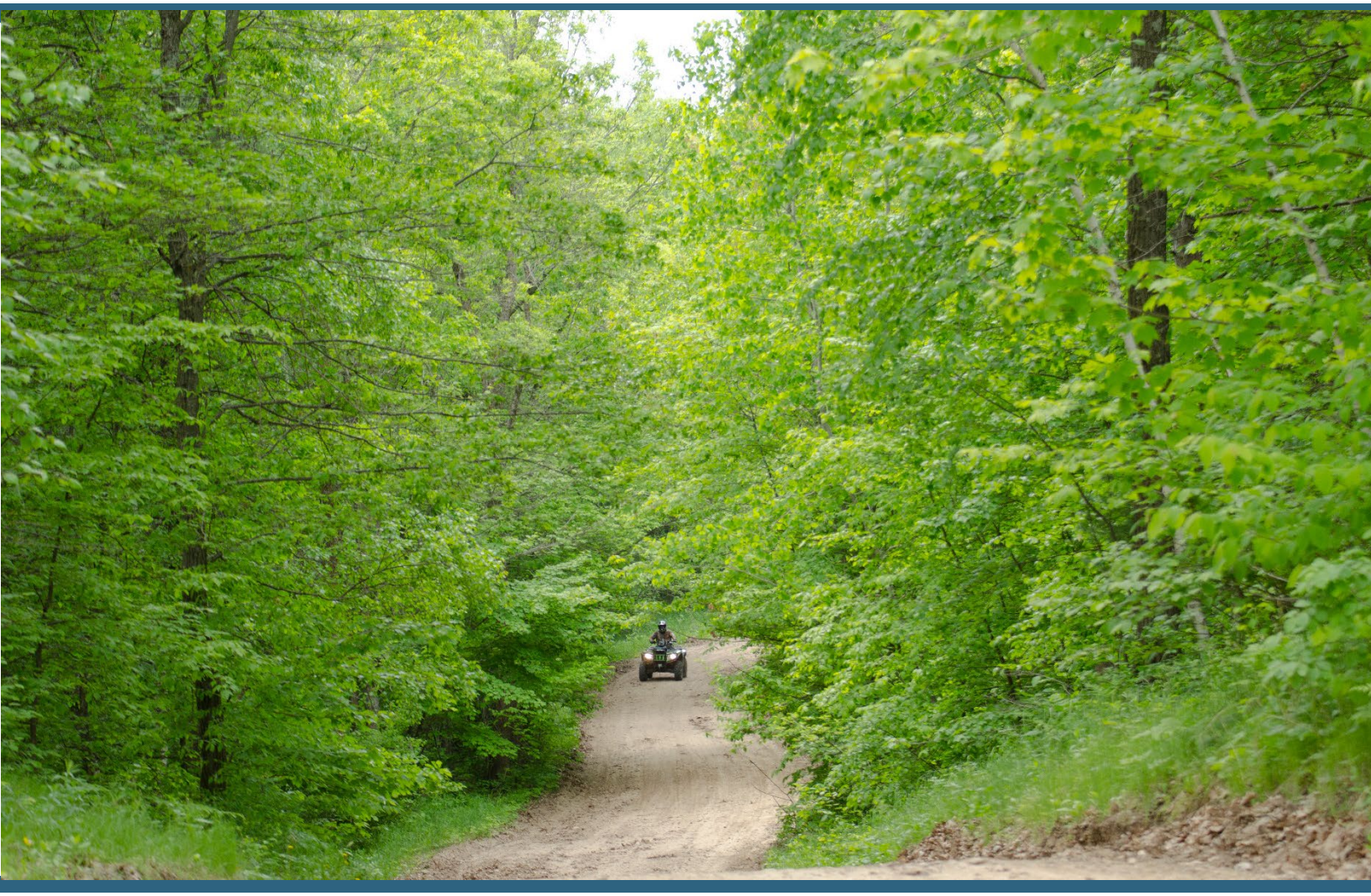


MINNESOTA ALL-TERRAIN VEHICLE STRATEGIC MASTER PLAN

December 2025

DEPARTMENT OF NATURAL RESOURCES

MN Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155-4040
888-646-6367 or 651-296-6157
mndnr.gov

Prepared By:

DEPARTMENT OF NATURAL RESOURCES

SE GROUP

CONTENTS

List of Figures

List of Tables

List of Abbreviated Terms and Acronyms

ATV	All-terrain Vehicle
CNF	Chippewa National Forest
DNR	Department of Natural Resources
GIA	Grant-in-Aid
IROHVSRA	Iron Range Off-Highway Vehicle State Recreation Area
LGU	Local Government Unit
MEPA	Minnesota Environmental Policy Act
MNDOT	Minnesota Department of Transportation
MRS	Minimum Road System
MVUM	Motor Vehicle Use Map
NEPA	National Environmental Policy Act
NFS	National Forest System
NOHVCC	National Off-Highway Vehicle Conservation Council
OHM	Off-highway Motorcycle
OHV	Off-highway Vehicle
ORV	Off-road Vehicle
RMV	Recreational Motor Vehicle
SNF	Superior National Forest
TAP	Travel Analysis Plan
TAR	Travel Analysis Report
USFS	United States Forest Service

ALL-TERRAIN VEHICLE EXECUTIVE SUMMARY

The mission of the Minnesota Department of Natural Resources (DNR) is: "to work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life."

A core tenet of the DNR's mission is to work with Minnesotans to provide diverse outdoor recreation opportunities that uphold the interdependent values of a healthy environment, sustainable economy and quality of life. Toward that end, the DNR helps plan, fund, build and maintain a network of motorized and non-motorized trails that support outdoor recreation experiences, economic diversification, and healthy and active lifestyles.

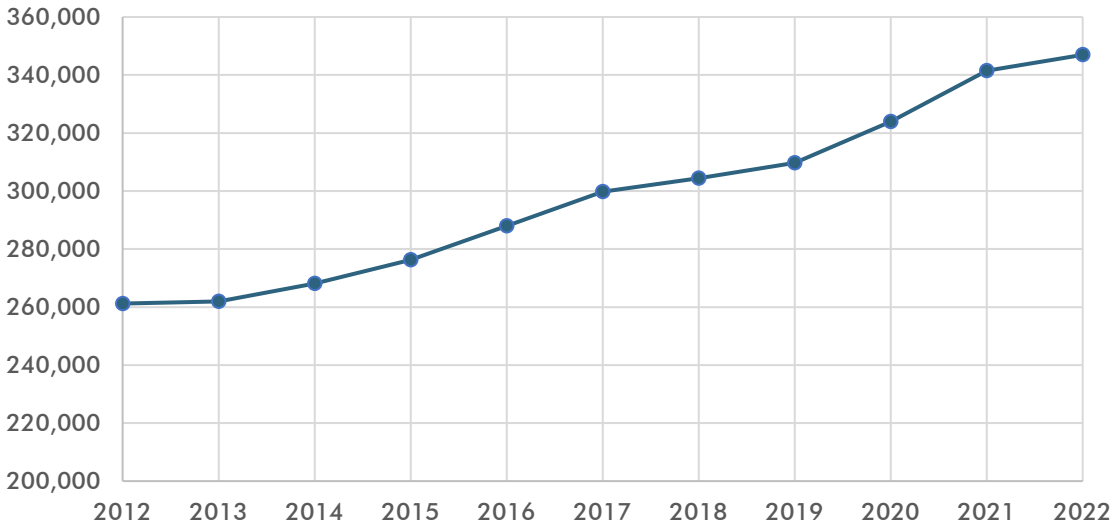
The following Minnesota All-Terrain Vehicle Strategic Master Plan is the result of a planning process that evaluated the existing all-terrain vehicle (ATV) trail system and its opportunities, constraints and economic impact. This ATV strategic master plan is intended to be used in concert with the other off-highway vehicle strategic master plans and the accompanying Minnesota Off-highway Vehicle Strategic Master Plans Overview document to help guide motorized recreation management efforts into the future. The planning process included multiple public engagement opportunities, a robust spatial analysis and an in-depth partner and stakeholder engagement process. The plan concludes with a series of strategies concerning future trail maintenance, development, policy and regulation, education and stewardship, marketing and promotion, and coordination and collaboration. Importantly, this plan does not provide future trail alignments but instead provides information about the needs and opportunities in each region of Minnesota.

Each chapter of the plan is briefly summarized on the following pages.

Existing All-Terrain Vehicle Trail System

This chapter includes information about the existing ATV trail system, including its origins, current management practices, types of trails, user preferences and guiding policies. Also included in this chapter is a quantitative and qualitative analysis of trail mileage and trail type. Registration data is used in this analysis to illustrate the growth in recreational ATV riding and the counties that have high or low ATV use relative to registration origin. The chart below illustrates the growth in ATV registrations between 2012 and 2022.

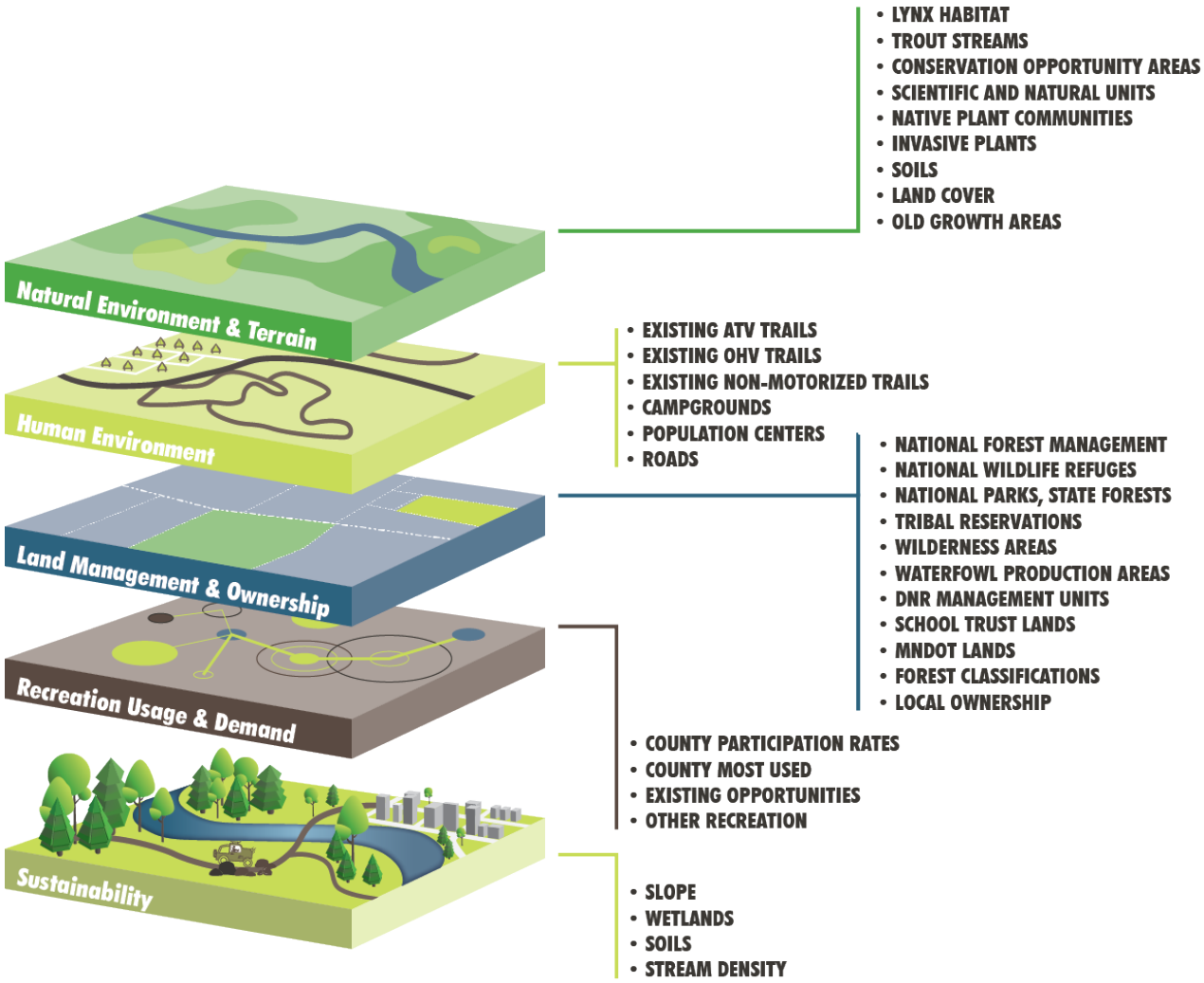
FIGURE ES.1 RECREATIONAL ATV REGISTRATIONS (2012-2022)



Opportunities and Constraints Analysis

This chapter contains the methodology and results of a statewide spatial analysis that used multiple data sources to determine potential ATV opportunity areas as well as areas not suited to new ATV trails based on five major considerations: natural environment and terrain sensitivity, human environment suitability (factors such as proximity to population centers, existing trail systems and campgrounds), land management and ownership, recreation usage and demand factors, and sustainability. The figure below illustrates the data used in this analysis.

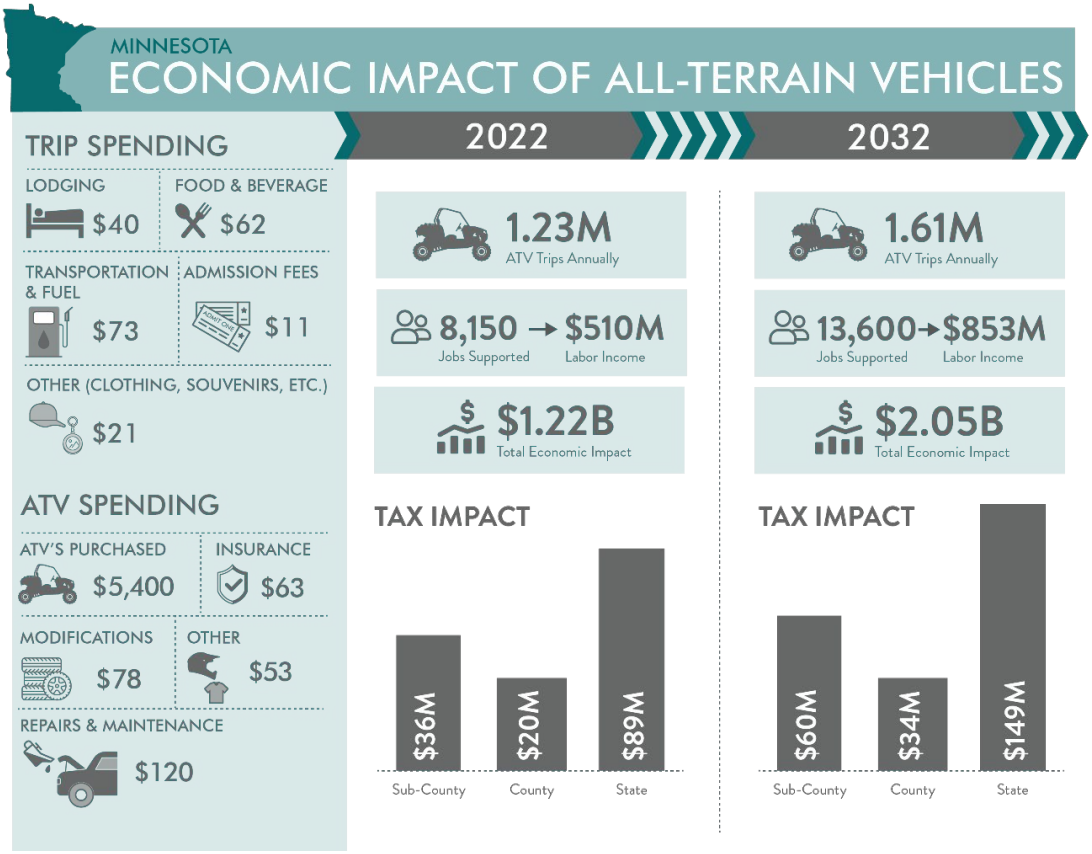
FIGURE ES.2 SPATIAL ANALYSIS DATA LAYERS



Economics of ATV Use in Minnesota

This chapter includes an analysis of the economic impact that ATV activity generates within Minnesota. Four main data points were used in this modeling exercise: the average number of ATV trips per person, the number of registered ATV users, an ATV trip spending profile and the average annual cost to purchase and maintain an ATV. The graphic below illustrates the data inputs as well as the results of this economic impact analysis.

FIGURE ES.3 ATV ECONOMIC IMPACT SUMMARY



Project Development Information and Guidance

This chapter provides information about the development processes for both forms of ATV trail projects the DNR oversees; grant-in-aid trails and state-designated trails. This chapter also provides information and guidance concerning ongoing trail maintenance and sustainable trail design.

Future Strategies

This chapter describes strategies for future ATV trail maintenance and development with an understanding that there is not capacity for unlimited growth in the trail system. This chapter also provides recommendations for various facets of ATV trail management and development including connectivity, coordination and collaboration, and education and stewardship.

Summary

The aim is for this plan to be used by those who have critical roles in ATV trail management including DNR staff and, more broadly, those with an overall interest in OHV activity. Such partners and stakeholders include, but are not limited to, local units of government, ATV clubs, ATV riders, non-profit environmental and outdoor recreation advocacy groups, local industry and other recreational users and user groups. This plan will be used to provide direction and guidance for ATV trail system management as well as a resource for stakeholders and partners when planning ATV trail maintenance and development.

1 INTRODUCTION

1.1 Purpose of the Plan

The purpose of the Minnesota All-terrain Vehicle (ATV) Strategic Master Plan is to provide direction and guidance to the Minnesota Department of Natural Resources (DNR) and partners in their efforts to plan, fund, develop and maintain a sustainable network of ATV trails that support outdoor recreation experiences, environmental stewardship, economic diversification, and healthy and active lifestyles. The strategic master plan examines existing and projected ATV usership trends alongside natural and human environment considerations to identify opportunities for recreational ATV use while minimizing the potential for user conflicts and negative impacts from trail development. The strategic master plan is also intended to provide important information to government units, ATV clubs, public land stakeholders and interested parties on statewide ATV trail management and strategic planning.

1.2 Sustainability

This plan aims to keep sustainability at the forefront of all planning efforts. A sustainable ATV trail should allow users to enjoy riding in a safe way that also minimizes adverse impacts to the plants, animals and ecosystems they are traveling among. A sustainable ATV trail network is a system that is in balance with other recreational uses of public lands, avoids and mitigates any natural resource impacts and reflects the popularity of motorized recreation while also understanding there is a limited scope and scale of maintainability in regard to all trail systems, including ATV trails.

1.3 Scope of the Plan and Analysis

All public land within the state of Minnesota was considered in the planning process. This includes ATV trails and opportunities on private land, land managed by local governments, state-managed land and in national forests. While use of ATVs on private land was considered as part of the context for the project, specific recommendations apply primarily to the components of the ATV trail system that the DNR manages and funds.

The ATV strategic master plan includes a description and analysis of the existing ATV trail system in Minnesota, a discussion of the public engagement for this project and a summary of a visioning questionnaire aimed at better understanding existing ATV use, desired experiences of riders and non-riders, spending patterns and other management considerations. The strategic master plan also presents a comprehensive opportunities and constraints analysis and a series of strategies that include overall connectivity and trail development, grant-in-aid improvement, education and stewardship, promotion and marketing, and coordination and collaboration.

The ATV strategic master plan was developed from the beginning of 2022 through 2025. This plan was informed by interdisciplinary reviewers within the DNR, extensive public engagement, existing conditions research and spatial analysis that considered multiple factors.

1.4 ATV Definitions

As of 2025, Minnesota Statutes (M.S.) 84.92, subdivision 8 defines ATVs as having at least three, but no more than six, low-pressure or non-pneumatic tires (not filled with or containing compressed air) with a total dry weight (the weight of the vehicle without fluids) less than 2,000 pounds and a total width from outside of tire rim to outside of tire rim that is 65 inches or less. Vehicles not considered ATVs include golf carts, mini-trucks, dune buggies, go carts or vehicles designed and used specifically for lawn maintenance, agriculture, logging or mining purposes.

1.4.1 Class 1 vs. Class 2 ATVs

Class 1 ATVs have a total width of 50 inches or less from outside of tire rim to outside of tire rim. Class 2 ATVs have a total width greater than 50 inches but not more than 65 inches from outside of tire rim to outside of tire rim.

1.5 DNR Planning Process

1.5.1 DNR Mission and OHV Program Objectives

The DNR's mission is to "work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life." The OHV program is one of many programs within the DNR that is tasked with fulfilling the overall DNR mission of land management, recreation and conservation. The OHV program provides motorized recreational opportunities for all Minnesotans and provides funding for trail maintenance and development. The OHV program is predicated on the concept of "managed use on managed trails" which means the program aims to provide enjoyable opportunities for a broad spectrum of trail users in a manner that reduces trail user conflicts and increases compliance.[1]

The 2023-2027 DNR Strategic Plan outlines four broad goals that are structured around helping "sustain and build nature-based recreational opportunities, increase the health and vitality of ecological systems, strengthen communities, and support a wide range of natural resource-dependent economic activities."[2] Goal 2 of the plan envisions an outdoor recreation system that meets the needs of new and existing participants so all benefit from nature.

This vision was used as a guide to ensure potential strategies identified during the ATV planning process support the DNR's ongoing work within the OHV program. Key trends within the visioning questionnaire, public outreach and analysis were used alongside the DNR Strategic Plan to shape potential strategies for ATV use.

1.5.2 Minnesota DNR Planning

The DNR's recreation planning processes take a number of forms, varying in their scope and application. Strategic plans like the Minnesota State Parks and Trails System Plan and this ATV plan are developed to provide general direction and high-level strategies. These plans focus on the development of clear goals and priorities for allocation of limited resources across recreation types and facilities in an ever-changing recreational landscape. Master plans for specific facilities, such as the Taconite State Trail, seek to accomplish similar goals but with narrower scope and deeper analysis of the factors that drive

[1] OHV Program, 2022a
[2] MN DNR, 2023

management of those facilities and the modes of recreation they support. The common goal shared by all DNR plans is to provide a framework for consistent, transparent decision-making over the life of a plan, which supports implementation of the goals and priorities identified in each plan as well as the DNR's mission.

The DNR planning process emphasizes stakeholder and partner engagement and makes every effort to incorporate the most reliable, up-to-date information on developments in recreation and resource management. Stakeholder and partner engagement is critical to integrating the knowledge and values of those with an interest in each plan into the final product. Stakeholders and partners who provide input on DNR recreation plans include, but are not limited to:

- Community leaders
- Park and trail users and organized groups
- DNR staff within and outside of the Parks and Trails division
- Resource managers and subject matter experts
- Conservation and environmental groups
- Community parks and economic development committees
- Tribal government officials
- Local, state and federal elected officials
- State and federal agencies (including national forests)
- Members of the public

As important as the final plan is, the stakeholder engagement process is itself an opportunity to build collaborative relationships that can provide lasting benefits well beyond implementation of the plan.

1.5.3 OHV Planning

OHV planning applies the broader DNR planning framework to support riding opportunities and guide sustainable management of existing trails and facilities as well as the development of new OHV trails. A new OHV trail is generally defined as one not currently enrolled in a state-managed or state-funded program, such as the Grant-in-Aid (GIA) system. The process seeks to provide an OHV trail system that not only meets the needs of users but also minimizes impacts on natural and cultural resources and ensures OHV use exists sustainably with other land uses and recreation types.

In order to realize these goals, DNR planners take a multidisciplinary approach to identifying opportunities for strategic improvement and development of the OHV trail system. Factors that are considered are summarized in the paragraphs below.

Natural and Cultural Resources

Resource considerations play a critical role in OHV trail development and management. The planning process provides the opportunity to inventory natural and cultural resources and encourage avoidance and minimization of impacts to those resources. Natural resource considerations may include, but are not limited to, habitat, endangered and rare species, water quality, aesthetics/sound, and climate change. Cultural resources considerations may include, but

are not limited to, cultural sites, earthworks and areas of traditional cultural significance. Not all public lands are suited to OHV trails when the sustainability of natural and cultural resources are considered.

Trail User Preferences

OHV trail user preferences evolve as vehicle technology, user demographics and trends within the sport change over time. The needs of non-OHV trail users also change over time and OHV planning considers these changes in concert with OHV trail user preferences. Public participation in OHV planning provides an opportunity for DNR to gather insights from all trail users about the kinds of opportunities they prefer and perceived gaps in Minnesota's trail system.

Terrain

Depending on the circumstances, areas with elevation change can provide high-quality, sustainable OHV riding opportunities, or they may impact natural resources in an unsustainable manner and prove too difficult to develop and maintain. Planning provides an opportunity to identify areas with terrain that is suitable for OHV trails while highlighting the need for careful trail layout and design.

Human Environment

OHV trails exist among a mosaic of population centers, roads, public and private lands with a variety of management goals, and a whole host of other elements of the human environment, including other recreational trail users. The DNR has a responsibility to provide recreation opportunities for all trail users—the OHV planning process provides opportunities to assess how OHV use interacts with, and could be enhanced by, various human elements.

Land Ownership

Most OHV trails traverse public lands with trails across private land or local roads acting as connecting routes. The availability of public land suitable for OHV use is an important consideration of trail development opportunities and is considered alongside DNR's responsibility to provide diverse recreation opportunities.

Trail planning, design, construction, maintenance and management are all important, interconnected processes that contribute to a high-quality OHV trail system. Planning provides critical baseline information and insights that guide the other processes.

1.5.4 DNR State Forest Trail Planning

State forests are some of the most popular OHV recreation destinations in Minnesota. OHV riding opportunities range from single track OHM trails to forest roads that support a wide range of motorized recreation. In the mid-2000s, DNR embarked on a planning process, referred to as Phase I State Forest Trail Planning, through which all state forests were designated as closed, limited or managed for OHV recreation. These designations were defined as follows:

- Closed Forests: OHV use was not allowed.
- Limited Forests: OHV use was allowed only on designated routes.
- Managed Forests: OHV use was allowed on all routes unless signed as closed.

Phase I also included designation of some of the existing routes in limited and managed forests as open or closed for ORV, ATV or OHM use or a combination thereof. Non-motorized trails, such as equestrian routes and hunter walking trails, were also designated through this process.

Phase II of this process, which is ongoing, is an opportunity to take a closer look at each state forest, or specific units within each state forest, to designate new trails or uses, close unsustainable trails and reroute trails that would benefit from alignment changes.

The objectives of forest trail planning are:

- Close unsustainable trails where impacts cannot be avoided or mitigated.
- Connect trails to other destinations, local communities and existing trails.
- Provide a variety of experience levels.
- Avoid ecologically sensitive areas.
- Address major safety concerns and user conflicts.
- Identify and evaluate potential new trail opportunities.

More information on forest trail planning can be found on the DNR's State Forest Trail Planning webpage.

1.6 Strategic Master Planning Process Participants

A number of individuals and groups were involved in the creation of the ATV strategic master plan, both within and external to the DNR. Examples of their involvement include developing and reviewing the plan, participating in stakeholder and partner engagement sessions, and participating in an electronic questionnaire.

1.6.1 DNR Divisions and Minnesota IT Services

This strategic master planning project was led by OHV program staff in the DNR's Division of Parks and Trails. There was additional participation from Parks and Trails regional acquisition and development specialists as well as ecologists, forest health specialists, environmental review specialists, land managers, and other subject matter experts from the following divisions and departments during various stages of the plan development and review processes:

- Ecological and Water Resources
- Enforcement
- Fish and Wildlife
- Forestry
- Lands and Minerals
- Operations Services
- Minnesota IT Services (MN.IT)

1.6.2 Consultant Team

The DNR retained the services of SE Group, a consulting firm that specializes in community engagement and recreation planning, to complete the ATV strategic master plan. In addition, SE Group worked with Terradynamics to help deliver the project to DNR. Terradynamics provides geospatial support through data collection and analysis, cartography and modeling.

1.6.3 External Partners

The All-terrain Vehicle Association of Minnesota (ATV MN) contributed extensive time and knowledge throughout the process. ATV MN supplied trail alignment data, important analysis considerations and insight into current ATV trends and opportunities for investment.

An extensive number of stakeholders and organizations from across the state participated in small group stakeholder sessions and provided their input and feedback on emerging themes as the process progressed. These sessions were in addition to extensive online public engagement. Many individual participants also engaged and contributed to planning processes. A list of stakeholders and interested parties invited to participate, including local and federal governments, is included in Appendix A.

1.7 ATV Strategic Master Plan Public Engagement

1.7.1 Public Engagement Opportunities

Project Website

A project website was launched on the DNR's digital public engagement platform. The website included information about the project, public engagement summaries, opportunities for engagement and all public materials for review.

Visioning Questionnaire

The Minnesota ATV Public Visioning Questionnaire was used to identify ATV use patterns and trends, trip characteristics and spending, needs and opportunities for improvement, and management and planning input from local clubs and trail administrators. This questionnaire was available for both ATV users and non-users to provide feedback about their vision for the future of the ATV trail system. Over 1,800 Minnesotans responded to the questionnaire. The questionnaire was open for 4 months between May 31 and September 30, 2022.

ATV Club Engagement

ATV MN and local clubs were important project partners throughout the planning process. Consultant staff attended the annual ATV MN Vision Conference in 2022 in Detroit Lakes to learn about the organization's priorities for the coming year and to get feedback from ATV MN representatives. Club representatives contributed information and data and helped identify ATV trail system needs.

Focus Groups

Four virtual public focus group sessions hosted in April of 2022 explored ATV use within Minnesota. The focus groups were open to the public and provided a platform for identifying preliminary needs, concerns and resources to inform the process. The two topics discussed were:

1. Evolution of the Minnesota ATV program: reflecting on past experiences and planning for future trends and needs
2. ATV trail system and community impacts: exploring how ATV use and program development impacts communities, ecosystems and other public land users.

The focus groups provided a collaborative space to identify key concepts for further exploration and consideration throughout the planning process. The focus group opportunity was announced via a DNR statewide news release. Several organizations also posted about the focus groups on their social media channels and encouraged members to attend. The focus groups contained a mix of motorized and non-motorized recreational users as well as individuals and groups focused more specifically on natural resource conservation.

Stakeholder and Agency Discussions

A series of stakeholder discussions were conducted with tourism organizations, conservation and environmental advocacy groups, local government representatives and land managers around the state. These meetings included an overview of the questionnaire results and analysis methodology and an outcome-oriented guided conversation about key issues and considerations each group had about ATV activity and trail development. The following is a summary of the participating organizations — see Appendix A for a comprehensive list.

- County, city and township government
- Enforcement representatives
- Destination marketing and economic development representatives
- ATV dealerships and businesses
- Conservation and environmental advocacy groups
- Motorized vehicle associations
- Public land organizations
- Trail administrators
- ATV MN

While specific questions varied by group, key topics included existing ATV opportunities, economic and environmental impact from ATVs and other challenges.

Online Forum

An online forum was created on the project website to share key concepts identified throughout public engagement sessions and to provide an additional location for public input and comment. The forum highlighted 11 topics relevant to the ongoing management of the DNR's OHV Program. Participants were asked to share their insight into key concepts including complete trail systems, working with the DNR, appropriate areas for ATV use and ATVs on roadways.

1.7.2 ATV Visioning Questionnaire Highlights

The Minnesota ATV Public Visioning Questionnaire received 1,868 responses, of which 1,302 (69 percent) were complete and 566 (31 percent) were partial or incomplete. The questionnaire was open from May 31

to September 30, 2022, and was taken primarily by Minnesota residents, although it was answered by some non-residents who were interested in providing feedback on their experience with ATVs in Minnesota. An invitation to respond to the questionnaire was communicated by the DNR through a statewide press release. Additional questionnaire distribution occurred through club and community organization networks. Full results of the questionnaire can be found in Appendix B.

Use Patterns and Trends

Approximately 77 percent of ATV questionnaire respondents indicated that they ride an ATV at least 10 days a month. Of the questionnaire participants, only 3 percent responded that they do not participate during winter months, indicating a high degree of year-round ridership. 46 percent of participants shared that they would be more likely to ride more during winter months if plowed access to trails and trailheads was provided and if trails were groomed and compacted.

Over a quarter of questionnaire respondents who identified as ATV users stated that they ride approximately 30–50 miles per day while on ATV rides, while another 35 percent indicated that they typically ride 50–90 miles per day. Most participants indicated they ride on state forest ATV trails or state and county forest roads. Respondents identified scenic quality, trail experience and proximity to home as important criteria when selecting a location to ride.

The three most popular ATV trail-riding locations identified by the questionnaire respondents were Nemadji State Forest OHV Trails, the Emily-Outing Trail and the Spider Lake Trails. Respondents stated that these were their favorite riding destinations due to proximity to their home or cabin and because of scenic qualities surrounding the trail systems.

Non-OHV Users

When identifying opportunities for future ATV management and investment on DNR-managed public lands, it is important to consider the needs of all public land users and advocates. The ATV visioning questionnaire was completed primarily by people who use an ATV; however, around 11 percent of respondents stated they do not currently use an ATV for work or recreation. Respondents who stated they do not currently and have never used an ATV for recreation cited reasons such as a lack of interest in motorized recreation (63 percent), safety concerns (37 percent) and environmental impact concerns (54 percent).

Important planning considerations for respondents who do not use ATVs included identifying ways that existing and future ATV trails could minimize any impacts to wildlife, soil and water. Other planning considerations included decreased social impacts such as sound and traffic, sustainable trail design, increased enforcement of regulations and appropriate environmental review of ATV trails. Many write-in comments echoed these priorities and demonstrated concern for environmental degradation, sound and wildlife impacts.

Trip Characteristics and Spending

About 45 percent of respondents who ride ATVs said they take overnight trips at least once or twice a year where the main purpose is ATV riding. When staying overnight, 41 percent of respondents stated they typically RV or trailer camp at a public or private campground and 22 percent stated they stay at an inn, vacation rental or hotel.

ATV users reported taking an average of 3.6 trips per year where the primary purpose is riding. When traveling for ATV recreation, ATV users reported spending an average of $207.00 per person per day.

Management Priorities

Questionnaire respondents who ride ATVs reported strong support for management investments such as trailhead map improvements, on-trail signage improvements and trails built with consideration for the environment and long-term sustainability. Non-riders cited safety as a key concern and would like to see improvements to enforcement.

Planning Considerations

Questionnaire respondents who ride ATVs indicated that future opportunities should prioritize close-to-home riding opportunities and establish a more consistently collaborative ATV planning process with communities and counties. Respondents also indicated that a diversity of trail experiences and winter riding opportunities would also improve the overall riding experience within the state. Non-riders indicated sound and environmental impacts are concerns they would like to see addressed through planning processes.

1.8 How to Use This Plan

1.8.1 All Readers

The ATV strategic master plan is intended to serve as a foundational document for ATV trail management and funding priorities in the state of Minnesota. It represents the best available data on the existing ATV trail system including current use patterns, ATV riding opportunities, the economic impacts resulting from ATV use, and the existing management policies and procedures that apply to ATV recreation. It is intended to create shared language and understanding of ATV trail management that can serve DNR staff, local units of government, local recreation providers, ATV clubs, public land users and those who work with ATV groups and riders within the state.

1.8.2 MN DNR and OHV Program Staff

The ATV strategic master plan is intended to support and inform the ongoing work of the DNR and its OHV program staff regarding ATV trail management. While much of the background information included in this document is fundamental to the day-to-day operations of the DNR and OHV program staff, the strategies in the Future Strategies chapter can help inform future management and decision-making.

1.8.3 Stakeholders and Partners

The ATV strategic master plan is intended to report existing ATV conditions in Minnesota effectively and accurately and to identify opportunities to enhance the functionality of the existing ATV trail system with attention to the needs of both ATV users and other public land users. The plan is intended to focus interest/considerations regarding new trail development in areas with the most benefit to recreational ATV riders and least potential for conflicts with other user groups or impacts to natural resources. This information can provide additional program and process clarity within the DNR and can support ATV users and clubs in their day-to-day operations and planning by improving transparency regarding ATV trail management and maintenance in the state. This document may also help ATV clubs and local ATV users initiate GIA projects and learn about trail design and maintenance guidelines. Clubs may also use a combination of economic impact information and potential strategies for future development to appropriately plan for new investment or development of the existing system.

The ATV strategic master plan is intended to create value for anyone either directly or indirectly involved in ATV facility maintenance and development, or any individual or group interested or involved in ATV recreation. The plan outlines standardized processes for management and development, creating a common language for future analysis, enforcement and engagement. For example, the project development flowcharts in Chapter 5 are aimed at clarifying the ATV project review and development process to make it easier for all parties to track ATV projects through each stage of review and development, signaling when and how various partners can engage in the process (local/county government, community organizations, tribal partners, user groups, tourism, etc.). In particular, the plan offers practical tools to help clubs and local governments align with DNR expectations for planning, applying for GIA funding and partnering effectively with DNR staff throughout each phase of trail development and maintenance. A key aim of the ATV strategic master plan is to provide clarity and transparency to all stakeholders so they all can have constructive and ongoing dialogue around improving processes and collaboration throughout the state.

2 EXISTING ATV TRAIL SYSTEM IN MINNESOTA

2.1 History of ATV Use

The term "ATV" was first used in the early 1960's in reference to 6-wheeled amphibious vehicles such as the Amphicat and the Jiger.[3] The ATVs we see today — four-wheeled straddle or side-by-side vehicles — are credited to John Plessinger, a student of Cranbrook Academy of Arts and Sciences. Plessinger was working on an assignment to design a motorized tricycle that could handle difficult terrain with ease. Although his model only had three wheels, it inspired a whole new class of vehicle.[4] In 1982, Suzuki was the first manufacturer to add the fourth wheel. The Suzuki Quad Runner LT125 offered four wheels, an odometer, a reverse speed, five forward speeds and a 41-inch wheelbase.[5]

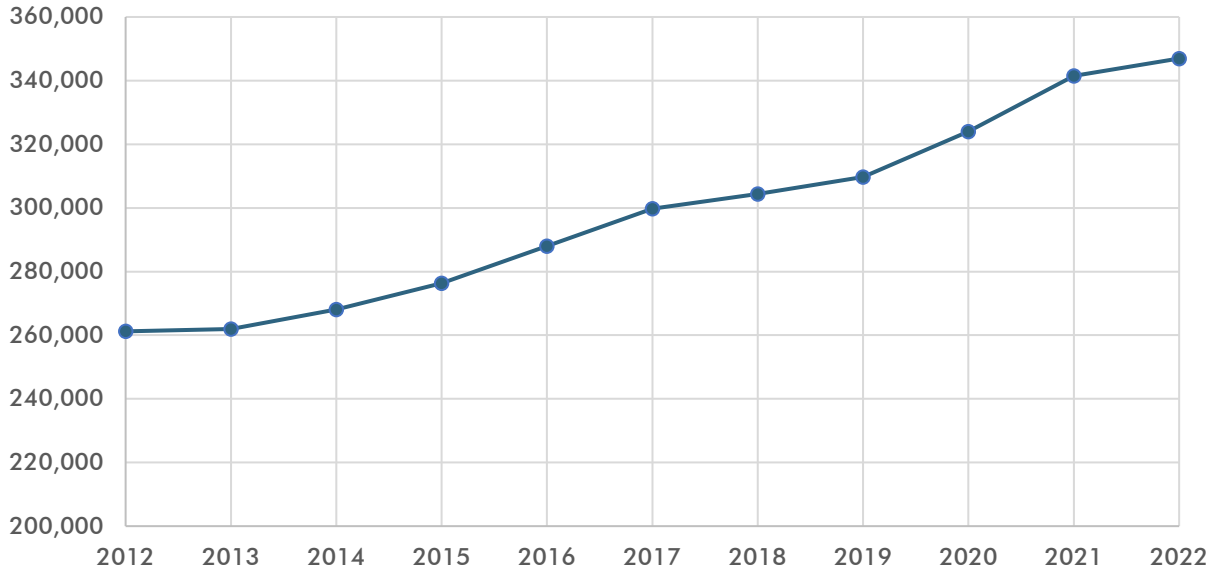
While ATVs were historically marketed as a sport and adventure vehicle, the energy crisis of the 1970's led people to use ATVs for farm and agricultural activities as they were far less expensive than a tractor and had much higher fuel economy.[6] Today, ATVs are used for many recreational and agricultural purposes, and the industry continues to diversify to meet market demand. Manufacturers, including Minnesota's own Polaris and Arctic Cat, are adding high-tech features such as auto-adjust suspensions, convertible trailer beds and adaptive four-wheel drive technology.[7] These features increase comfort, enhance traction and improve versatility — ensuring that all riders can find a vehicle that fits their needs.

2.1.1 ATV Registration Growth

The Minnesota DNR first started managing public lands for OHV use in 1986. That year, approximately 12,000 ATVs were registered for recreational use. By 2022, that number had risen to 346,957. As seen in Figure 2.1, over the last 10 years ATV registrations have grown at an average rate of 3 percent annually, with about 5 percent annual growth in 2020 and 2021, before tempering in 2022.

[3] Lakes Area Powersports, 2021
[4] ATV Scene, 2009
[5] Midwest Traction, 2018
[6] Midwest Traction, 2018
[7] Cooney, 2020

FIGURE 2.1 ANNUAL RECREATIONAL ATV REGISTRATIONS (2012-2022)



In 2021, there were 341,530 ATVs registered for public use in the state of Minnesota, with approximately 2 percent of registrations from visitors outside the state. The number of ATV registrations is significantly higher than that of ORVs and OHMs, which are 7,944 and 16,703, respectively. However, OHM and ORV registrations have been increasing at a higher rate, with OHM registrations increasing at an average rate of 4 percent annually and ORV registrations at 10.4 percent annually over the same period (2012-2022).

Environmental advocates have expressed concern regarding the impacts of OHVs/ATVs on soils and vegetation, user conflicts and sound impacts[8] on other recreationalists and wildlife, pollution from vehicle exhaust and the role of ATVs in erosion and the spread of invasive plant species. Illegal uses have had negative impacts on environmental resources. In response, agencies such as the DNR have made concerted efforts to avoid trail construction in environmentally sensitive areas, to provide guidance on sustainable trail construction in order to minimize impacts and promote environmental stewardship through partnership with organizations such as PlayCleanGo and Tread Lightly!.

2.1.2 ATV Organizations

The maintenance of ATV trail systems in Minnesota is not executed solely through the DNR. There are many organizations that collaborate with the department to provide safe and sustainable ATV trails in the state. ATV MN is a statewide association that represents ATV clubs and riders across Minnesota. Founded in 1983, ATV MN serves the interests of ATV owners by "advocating for ATV recreation, advancing the safe use of ATVs, providing information, and participating in legislative and regulatory activities related to the use of ATVs."[9] ATV MN has collaborated with the DNR on several foundational programs, including ATV funding (such as the GIA Program), the youth safety training program, and the Trail Ambassador Program. Member clubs also play an important role in trail maintenance, safety training and education, and trail development.

[8] Conservation officers are charged with enforcing the noise-emission standards for vehicles found in Minnesota Rules, part 6102.0040, subp. 4.
[9] ATV Minnesota, 2018

In 2022, ATV MN created a Safety Committee and a Winter Riding Committee to coordinate with the DNR on safety initiatives and winter riding opportunities, respectively. On a national level, the National Off-Highway Vehicle Conservation Council (NOHVCC) partners with organizations and agencies around the country to promote resources for trail development and responsible OHV use.

2.2 Current ATV Trail System Management

2.2.1 DNR's OHV Program

At the statewide level, ATV use in Minnesota is managed by the DNR Division of Parks and Trails along with the Enforcement Division and involves collaboration with all divisions in the DNR. The OHV Program within Parks and Trails was developed to provide motorized recreational opportunities for all Minnesotans in a sustainable manner. The program provides trail maintenance and development through grants to local governments such as counties, cities and townships. The program also oversees DNR-managed trails in state forests. The OHV Program is predicated on the concept of "managed use on managed trails," which means that by providing enjoyable opportunities for multiple types of trail users, there will be fewer trail user conflicts and increased compliance with laws and regulations.[10]

The OHV Program has dedicated staff positions including an OHV Consultant, an OHV Planner and regional OHV Acquisition and Development Specialists. The OHV Program is also supported by day-to-day operations of DNR staff working in other programs and divisions across the agency such as the OHV Enforcement Recreational Vehicle Coordinator in the Enforcement Division. Many conservation officers, communication specialists and staff in other divisions are also highly involved in delivery and management of the ATV program as well as collaborating with partners outside of the DNR.

In addition to internal staffing and external partnerships, the OHV Program collaborates closely with other DNR divisions and units, including the Environmental Review Unit, which administers the DNR's obligations under the environmental review requirements of Minnesota Statutes Chapter 116D (Minnesota Environmental Policy Act, MEPA) and Minnesota Rules Chapter 4410. This collaboration helps ensure that OHV trail development and management align with state and federal environmental review requirements.

The Environmental Review Unit plays a key role in evaluating proposed projects under MEPA. Its role includes determining what level of environmental review is required and coordinating the review process with relevant programs to identify potential impacts and measures to mitigate them through project design, permitting or other means. Through this and related interdivisional partnerships — including coordination with programs that administer the Wetlands Conservation Act (WCA), the Minnesota Endangered Species Act, and the Public Waters Work Permit Program — the DNR works to ensure that OHV projects meet environmental standards, protect natural resources and support sustainable recreation across Minnesota's public lands.

2.2.2 Trail Ambassador Program

The Trail Ambassador (TA) Program is an important component of the DNR's OHV Program, supporting safe and responsible riding across Minnesota's designated trail systems. Established through legislation in 2007 (MS 84.9011) and managed by the DNR Division of Enforcement in collaboration with Parks and Trails and Forestry, the program trains volunteers to educate trail users, monitor trail conditions and promote environmental stewardship. Trail Ambassadors receive formal training in OHV laws, program

[10] OHV Program 2022a

policies, volunteer expectations, risk management, trail monitoring, invasive species identification, GPS use and effective public engagement. This volunteer-based program plays an important role in fostering positive trail experiences and helping protect Minnesota's natural resources.

2.2.3 ATV Registrations and Management Considerations

All ATVs must be registered to operate in the state of Minnesota, including those operated exclusively on private property. There are two registration types in Minnesota:

- Public Use: This includes vehicles that are intended to be used on public trails and land.
- Private/Agricultural Use: This includes vehicles that are intended to be used exclusively for private or agricultural purposes.

This plan only considers vehicles registered for public use. Registration totals may include people who live in neighboring states but may not include in-state users who are exclusively riding on private lands.

Figure 2.2 shows where registrations are located by zip code. Notably, registrations in the state are concentrated in the Twin Cities metro area and DNR Central Region (click here for a map of DNR's administrative regions). Nearly 48 percent of Minnesota resident registrations are from Central Region residents. However, this region has relatively low rates of registration per capita (see Figure 2.3). The Northeast region (Region 2) has the highest per capita ATV registration in the state.

When ATV owners register their vehicles, they are asked to name the county where they most frequently use their ATV. Figure 2.4 shows the ratio of registration origin to county most used. For example, while 7,853 Ramsey County residents have registered ATVs, only 2,398 stated that they most frequently use their ATV in Ramsey County. Counties with a ratio above 100 percent — such as Cook County and Lake of the Woods County — are destinations for ATV riders, while counties with lower ratios — including Winona County and Anoka County — have residents that often travel out of the county for ATV recreation.

FIGURE 2.2 MINNESOTA ATV REGISTRATION LOCATIONS (ZIP CODE, 2021)

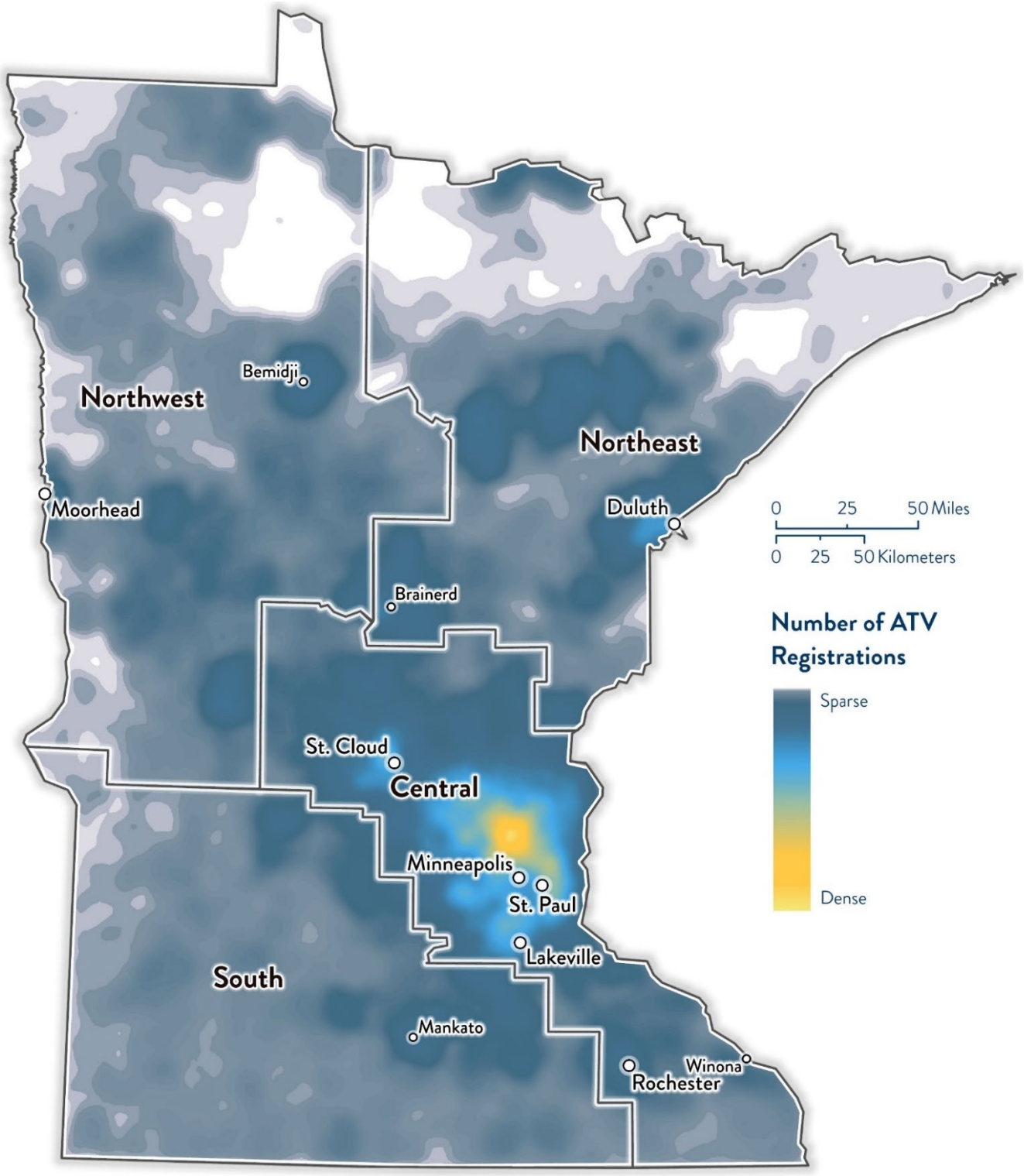


FIGURE 2.3 MINNESOTA ATV REGISTRATION PER 10,000 COUNTY RESIDENTS (2021)

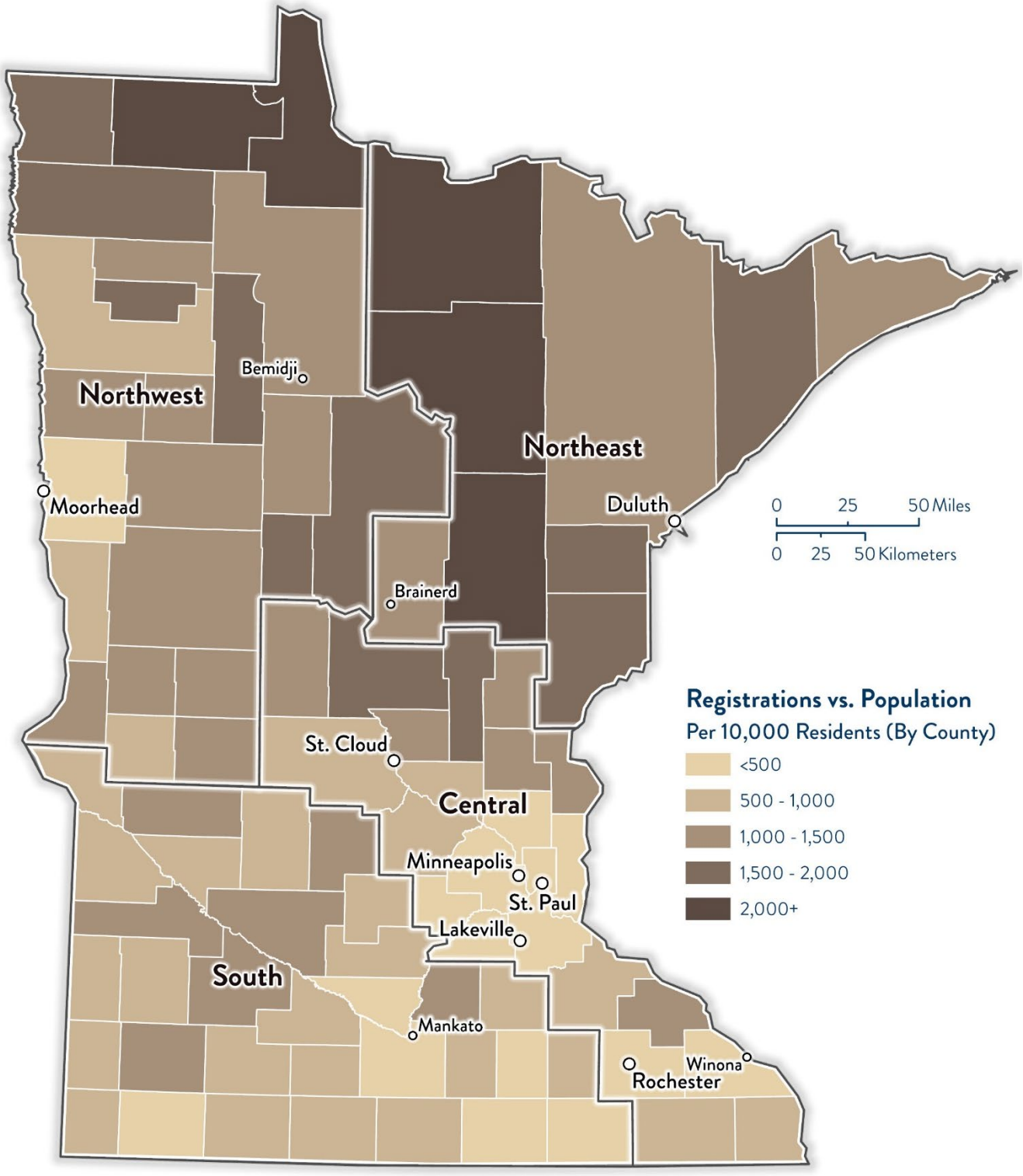
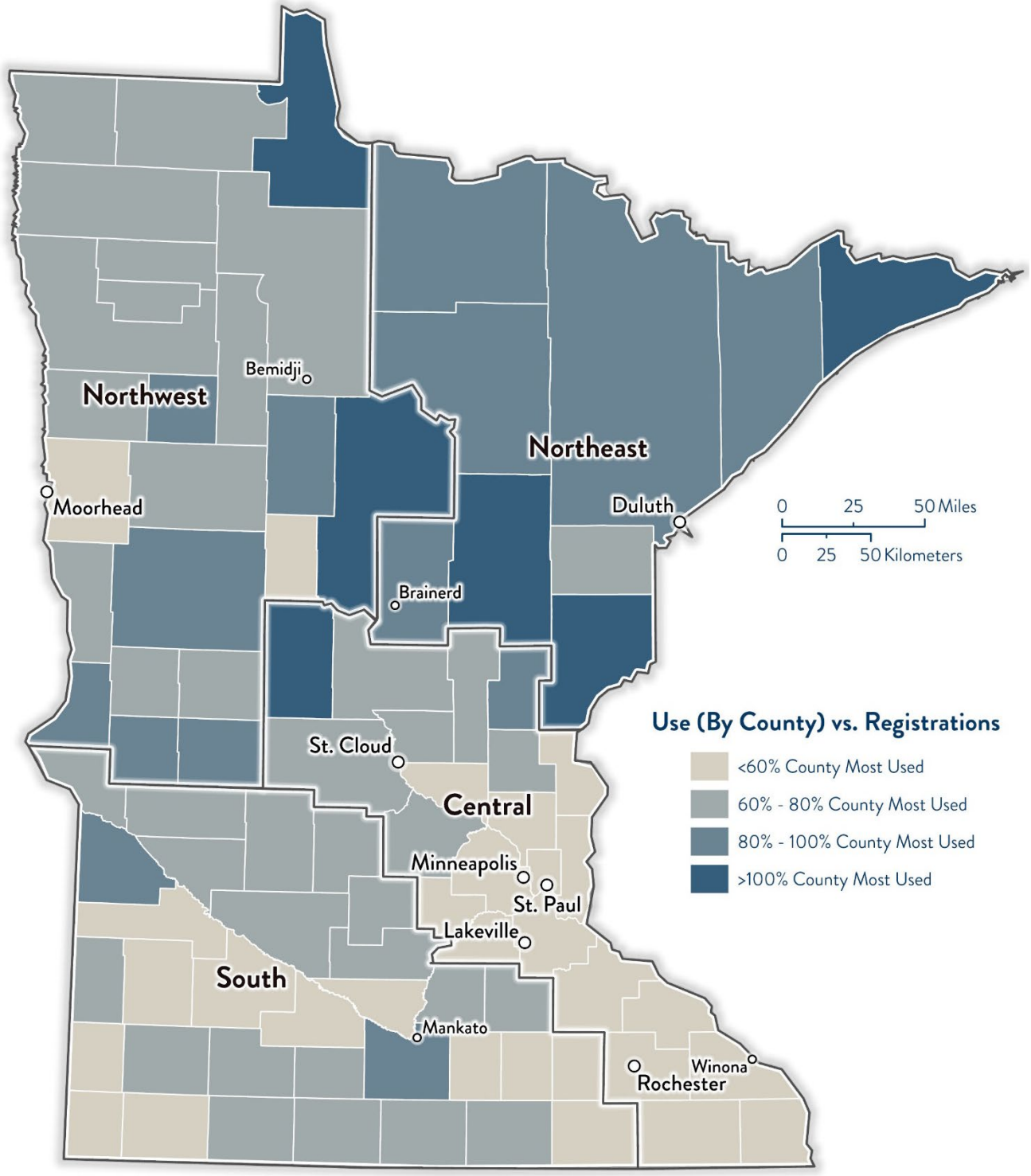


FIGURE 2.4 MINNESOTA ATV COUNTY OF USE RELATIVE TO REGISTRATIONS (2021)



2.2.4 Minnesota - Wisconsin Comparison

A closer look at Minnesota and Wisconsin ATV trends reveals that Minnesota's annual rate of registration is comparable to surrounding states. Wisconsin provides an interesting comparison to ATV usership levels and trends in Minnesota. Both states have a per capita ATV registration rate of .06 vehicles per resident.[11] Wisconsin's ATV registration growth rate from 2017-2021 is nearly double that of Minnesota at 6 percent annually relative to Minnesota's growth of 3 percent.

Table 2.1 Wisconsin and Minnesota Registration Comparison

Category	Wisconsin	Minnesota
Total Population	5,880,101	5,742,036
Total Registrations (2021)	331,869	341,530
5-Year Growth	6 percent	3 percent
Per Capita ATV Registration	0.06	0.06

2.2.5 ATV Program Funding and Policy

Program Funding

To ensure the long-term sustainability and efficacy of the DNR's OHV Program, it is important to understand how ATV program funding levels compare with existing and projected ATV usership in the state as well as funding levels for similarly positioned statewide OHV programs. Given the similarity in population size, ATV registration volumes and natural environment, Wisconsin provides a good case study for benchmarking ATV funding in Minnesota.

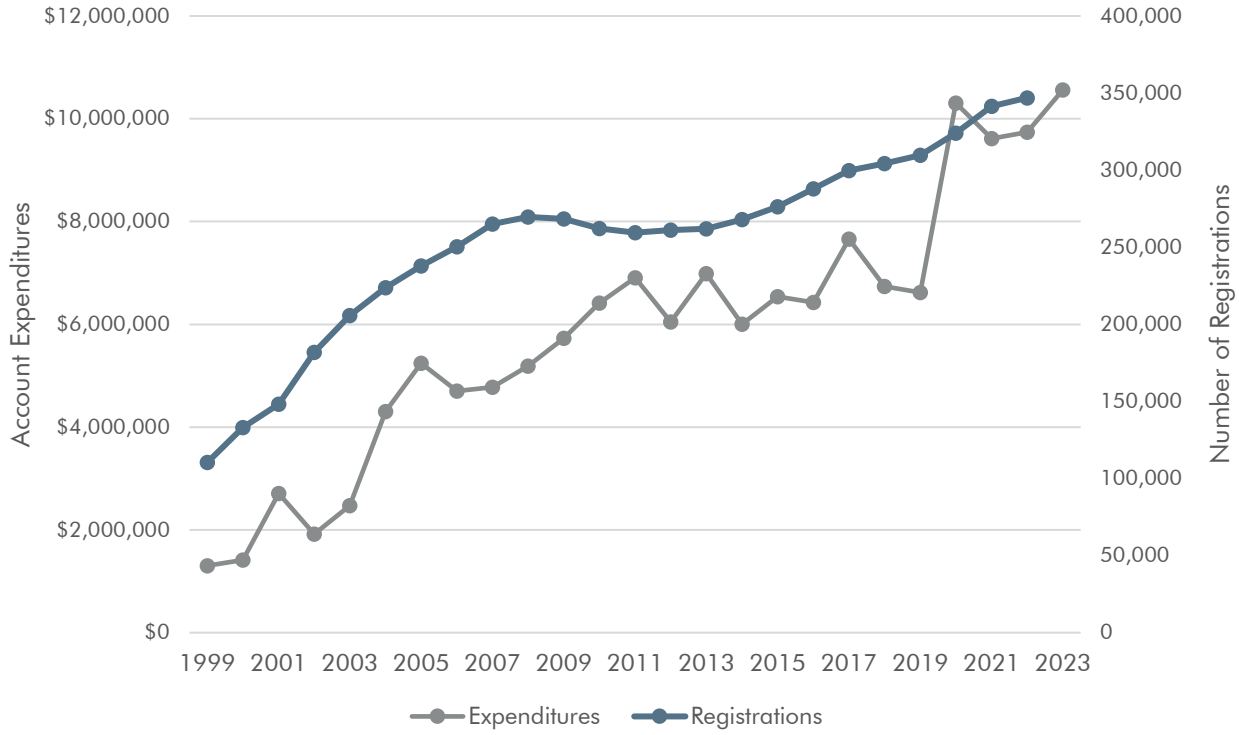
ATV program funding in Minnesota is provided through the All-terrain Vehicle Account of the Consolidated Natural Resources Fund (M.S. 16A.531, Subd. 2).[12] The ATV account funds ATV program management, trail maintenance and development (for GIA trails as well as trails maintained by the DNR), and enforcement which includes the trail ambassador program, conservation officers and sheriff patrols. Expenditures in this account have increased significantly from $1,303,000 in 1999 to $10,561,000 in 2023. This growth in ATV program expenditure is generally in line with the growth experienced in registrations and usership over this same period (see Figure 2.5). Of note: the large jump in expenditures between 2019 and 2020 in Figure 2.5 is due to large direct appropriations from the Minnesota Legislature to Crow Wing, Lake and St. Louis Counties for various ATV trail projects that came out of the ATV account between 2019 and 2020.[13] Direct appropriations have continued to increase ATV account expenditures since 2020.

The baseline expenditure from Minnesota's ATV account is approximately $10 million annually. ATV account expenditures have fluctuated slightly above or below that level since 2020. Wisconsin's state ATV

[11] Wisconsin Department of Tourism Research, 2004
[12] Minnesota Statute 296A, 2022
[13] Crow County for Sand Creek Bridge ($150,000), Lake County for Prospectors ATV Trail ($1.3 million), St. Louis County for Quad Cities ATV trail ($1.9 million)

program is funded through several ATV funds with total expenditures of approximately 9.5 million in 2022.[14] Similar to the trends in Minnesota, ATV registration growth in Wisconsin has resulted in increased revenue and a corresponding demand for quality riding opportunities. The state responded with new funding categories established in 2019 Wisconsin Act 183 and in the 2021-23 budgets.[15]

FIGURE 2.5 CONSOLIDATED NATURAL RESOURCES FUND ATV ACCOUNT EXPENDITURES AND RECREATIONAL ATV REGISTRATIONS (1999-2023)



The MN DNR was appropriated $2,977,000 in 2022 for DNR-administered (non-GIA) trail maintenance, management and operations. This figure does not include other ATV account expenditures across the DNR such as safety training, enforcement and education programs, grants to local sheriff's departments, the Trail Ambassador Program, grants to local sponsors for trail maintenance and development, pass-through grants to local communities as well as administrative costs. In 2022, Wisconsin expended approximately $2,940,000 to support ATV trail projects and facilities throughout the state.[16] For the purpose of this study, out-of-state residents who chose to register their ATV within the state of Minnesota — less than 2 percent of recreational ATVs — were included in the total vehicle registration count, but not in trip spending or economic impact calculations as it is difficult to determine where out-of-state user money is spent. For example, out-of-state visitors to Minnesota ATV trails could be spending money in their home state before their trip to fill up with gas or buy supplies which would not impact local Minnesota economies.

[14] Wisconsin DNR, 2022
[15] Wisconsin DNR, 2020
[16] Wisconsin DNR, 2022

Table 2.2 Wisconsin and Minnesota Program Funding Comparison

Category	Wisconsin	Minnesota
Estimated Annual Economic Input*	$1.1 Billion	$1.14 Billion
Approximate 2022 ATV Program Budget	$2,838,100	$2,912,000
Spending per Registered Vehicle	$8.55	$8.52

*Estimates are from the 2022 Outdoor Recreation Roundtable

Gas Tax Summary

In Minnesota, the price for each gallon of gasoline sold includes the state gasoline tax. In 2022, Minnesota's gas tax rate was 28.5 cents per gallon. Gas tax revenue from highway fuel consumption is deposited into the Highway User Tax Distribution Fund for construction and maintenance of transportation infrastructure including roads, bridges, highways and railways. Gas tax revenue attributed to unrefunded non-highway fuel consumption[17] is then distributed to specific accounts within the Natural Resource Fund. The percentage that the ATV account is allocated is outlined in state statute and was determined using a formula that considers factors such as the number of registered OHVs and the number of miles traveled in a typical outing.[18] The ATV Account is allocated approximately 0.27 percent of revenue from the Highway User Tax Distribution Fund.

Off-Highway Vehicle Grant-in-Aid Program

Minnesota's OHV Grant-in-Aid (GIA) Program is a cost-share program that facilitates the development and maintenance of OHV trails.[19] The program is funded by vehicle registration fees, trail pass fees and gas tax appropriations. GIA proposals are required to have a local government sponsor support and participate in project development. Proposals can include trail development and maintenance projects as well as site planning, trail improvement projects and land acquisition. Proposals for new trails are accepted by the DNR year-round and considered on a rolling basis. Maintenance proposals for existing trail systems are due annually by November 30. More information about the proposal process is available in the Off-Highway Vehicle Grant-in-Aid Manual found on the DNR website. The manual outlines the application process for existing trails — as well as new trails — riding areas or reroutes greater than one mile. The manual also provides information on fiscal management and allowable expenses.

In 2021, the DNR started an improvement process to review the GIA program and make sure it was working well for all involved. The improvement review included engagement with OHV organizations, club members, local governments and other stakeholders and partners (e.g., non-motorized trail user groups, conservation groups) to identify what could be improved. Outcomes of this process included updated reimbursement amounts that better reflect existing construction and maintenance costs as well as the addition of an application for winter trail grooming, plowing and maintenance costs.

[17] Unrefunded non-highway fuel use is a portion of the gas tax that is attributed to non-highway purposes, such as agricultural and recreational vehicles, which is determined by M.S. 296A.18.
[18] Apportionment Of Tax; Deposit of Proceeds, 2021
[19] OHV Program, 2022b

Off-Highway Vehicle Regulations (2024)

The 2024 Minnesota OHV regulations document summarizes state laws and rules related to OHV operation and management in Minnesota and aligns with the objectives and priorities of the DNR OHV program. These include preventing the spread of invasive species, safety considerations and education, protection of wetlands and other sensitive areas, minimizing user conflicts and promoting sustainable, sanctioned uses of OHVs. The regulations document also summarizes relevant OHV regulations and general operation restrictions. In addition, the document outlines limits on OHV use for certain geographic areas, including the seven-county metro area, state forests and the Chippewa and Superior National Forests. These laws and restrictions provide an important regulatory framework that informed the development of this strategic master plan.

Relevant State Statutes

Minnesota Statues (M.S.) Section 84.777 Off-Highway Vehicle Use of State Lands Restricted

This statute prohibits the unrestricted use of off-highway vehicles on state land administered by the commissioner of natural resources, as well as state forest land administered by a county. On certain state lands, OHVs are to travel only on trails designated, posted and mapped for OHV use.

In recommending opportunities for ATV trails, this strategic master plan considered this restriction and provision regarding mapped trails.

M.S. Section 84.780 Off-Highway Vehicle Damage Account

This statute created an account in the Natural Resources Fund dedicated to the repair or restoration of property "damaged by the illegal operation of off-highway vehicles or the operation of off-highway vehicles in an unpermitted area."

M.S. Section 84.9011 Off-Highway Vehicle Safety and Conservation Program

This statute authorizes "a program to promote the safe and responsible operation of off-highway vehicles in a manner that does not harm the environment" to be administered by the Commissioner of Natural Resources.

This strategic master plan aims to reflect the values of safety and conservation expressed in this statute.

M.S. Section 84.922 Registration

This statute outlines the registration requirements for ATVs. Unless exempted, a person may not operate, and an owner may not give permission for another to operate an ATV within the state unless the vehicle has been registered with the commissioner of natural resources or is exempt from registration. ATVs must either be registered as a private vehicle or for use on public land.

M.S. Section 84.925 Education and Training Program

The DNR is responsible for establishing a comprehensive ATV safety and education certification program to the public. All individuals born on or after July 1, 1987, must complete an independent study course before operating an ATV on public lands, public right of ways and public trails.

M.S. Section 84.9256 Youthful Operators

This statute provides that a driver's license is required to operate an ATV along or on a public roadway and places special operational limitations on drivers under 12 years of age in the case of public roadway crossings and vehicle size. Riders under 15 are also prohibited from operating a Class 2 ATV.

M.S. Section 84.927 All-Terrain Vehicle Accounts

Fees from the registration of ATVs and the unrefunded gasoline tax attributable to ATV use are to be deposited in the state treasury and credited to the ATV account within the Natural Resources Fund. Funds may be spent on education and training programs, administration and enforcement, acquisition and development, and maintenance of GIA programs, trails, use areas and minimum-maintenance forest roads.

M.S. Section 84.9275 Non-Resident Use

This statute states that nonresidents may not operate an ATV on a state or grant-in-aid ATV trail unless the operator carries a valid nonresident ATV state trail pass or the ATV is registered in the state.

M.S. Section 84.928 Operation Requirements

This statute limits the operation of an ATV along or on the roadway, shoulder or inside slope of a public road right-of-way of a trunk, county state-aid or county highway unless otherwise allowed in sections 84.92 to 84.928. However, direct crossings along these rights-of-way are permitted.

2.2.6 National Forest Motorized Vehicle Use Guidance

Many OHV trails in Minnesota are either adjacent to, cross or are proposed to utilize federal lands. The sections below provide overviews of key United States Forest Service (USFS) policies and planning efforts that affect OHV trails on federal lands in Minnesota. These trends and objectives are particularly relevant to this strategic master plan, which seeks to identify areas of opportunity and suitability for ATV trail development.

Chippewa and Superior National Forest Plans (2004); 2017 Chippewa National Forest Monitoring and Evaluation Report; 2017 Superior National Forest Monitoring and Evaluation Report

The state of Minnesota contains two national forests, the Chippewa National Forest (CNF) and Superior National Forest (SNF). Both national forests contain land important for habitat connectivity and scenic resources important for recreation. The Chippewa National Forest Plan and Superior National Forest Plan, both adopted in 2004, provide an overview of existing natural resources and describe desired future conditions, objectives, standards and guidelines for the national forests' natural and cultural resources. The forest plans analyze the current management for each forest and outline management directions for specific management areas "to ensure that ecosystems are capable of providing a sustainable flow of beneficial goods and services to the public."[20] The plans list desired conditions, objectives and standards for various motorized and non-motorized uses of the forest, including Recreational Motor Vehicles (RMVs). RMVs include ATVs, OHMs and ORVs.[21] The plans allow for a maximum of 90 additional OHV trail miles

[20] Forest Service, 2004

[21] The U.S. Forest Service defines an off-highway vehicle (OHV) as "any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain" (36 CFR § 212.1). An all-terrain vehicle (ATV) is defined as "a type of off-highway vehicle that travels on three or more low-pressure

to the designated national forest trail system.[22] These management recommendations were informed by multiple management tools.

In the management of both the Chippewa and Superior National Forests, there is a long-standing effort to reduce the overall road network through the decommissioning of roadways within the forests. For example, in the CNF, there is an objective to decommission and close roads "not necessary for long-term resource management." In the CNF, 200 miles of road were decommissioned between 2007-2017, fulfilling Objective-TS-8 in the 2004 Chippewa National Forest Plan. About half of the miles decommissioned within the CNF occurred between 2014 and 2017. In the SNF, 105.6 miles of road were decommissioned between 2009 and 2017. Importantly, only some of these roads are open to public use as many are service roads. However, this trend toward decommissioning reflects an overall desire to maintain a "minimum road system" within the forests, particularly in the CNF.[23] USFS surveys also show a significant decrease in recreation use of the CNF between 2007-2017.

Travel Management Planning on National Forests

In 2005 the U.S. Forest Service established a roads management strategy when the Travel Management Rule was enacted. The goal of the road management strategy is to identify a transportation system that is both environmentally and financially sustainable in relation to each forest's function and operation. Under these rules, each National Forest System (NFS) unit must identify a minimum road system (MRS) necessary to support safe and efficient travel, administrative functions, and the utilization and protection of NFS lands within the forest.

Through the identification of an MRS, a Travel Analysis Process (TAP) is needed. The TAP identifies various opportunities in which each specific national forest can meet current and future management objectives through providing information that incorporates ecological, social and economic concerns into existing and future road-related decisions. In doing this TAP, each forest is required to complete a Travel Analysis Report (TAR). This TAR helps the forest service determine subsequent National Environmental Policy Act (NEPA) decisions, site-specific road-related projects, and cumulative impacts related to the entire transportation system. The TARs are suitable for 20-year planning before re-assessment and analysis needs to take place.[24]

The public facing documents of the TAP and TARs are Motor Vehicle Use Maps (MVUM). These maps identify roads, trails and areas open to motor vehicle use by vehicle class and time of year. They are accessible through the specific forest's website.

Chippewa National Forest, Forest-wide Travel Analysis Report (2015)

The process to create a Forest-wide TAR is extensive. For the CNF, it involved a 13-year long process. The process included a Forest-wide Roads Analysis in 2002, a Forest Plan Revision in 2004, an Off-Highway Vehicle Road Travel Access Project in 2006–2007, publication of Motorized Vehicle Use Maps in 2008, a Watershed Condition Framework in 2011, a pilot study of 20 randomly selected roads using a TAP spatial

tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator" (Forest Service Manual 7705).

[22] O-RMV-1 of the Plan (O-RMV-1, page 2-43) for Superior National Forest and O-RMV-2 of the Plan (O-RMV-2, page 2-42) for the Chippewa National Forest

[23] Forest Service, 2004

[24] Forest Service, 2005

tool in 2012, and final production of the TAR in 2015. All of the studies that were completed prior to the 2015 publication helped inform and determine opportunities and needs as identified in the TAR.

The TAP to produce the TAR for the CNF consisted of six specific steps: setting up the analysis; describing the situation; identifying issues; assessing benefits, problems and risks; describing opportunities and priorities; and reporting findings. The framework the TAR utilizes to differentiate roads within CNF system is a 'road maintenance level.' The road maintenance level is separated into five different categories, with five being roads that are maintained to the highest degree of user comfort and one being basic custodial care (mostly closed roads). The category that ATVs fall into would be road maintenance level two — high clearance vehicles. There is a total of 1,692 miles of these routes within the CNF system; however, the Soo Line Trail is the only designated motorized trail for OHV use within the CNF system. This trail connects Cass Lake to Remer and then extends from the forest to Moose Lake, MN.[25]

Superior National Forest Forest-wide Roads Study Report (Travel Analysis Report) (2015)

Similar to the CNF, an extensive process took place to complete the TAR for the SNF, starting with a Forest-wide Roads Analysis completed in 2002. The TAP process to produce the TAR for the SNF consists of the same six steps that the CNF TAP does. The outcome of the TAP serves as a list of potential opportunities for how certain aspects of the forest transportation system are managed to address both administrative and public issues and interests. Additionally, similar to the CNF, the SNF categorizes roads based off of a road maintenance level on a scale of one to five. These trails are identified on the eight different MVUMs for the forest. There are a total of 984 miles of road maintenance level two roads, designed for high-clearance vehicles, that may be appropriate for ATV use. There are also no designated motorized areas in the forest. The USFS noted in a 2015 report that funding levels made it hard to implement management objectives and improvement projects related to road and travel needs.[26]

Chippewa and Superior National Forest Plans Motorized Vehicle Use Maps (MVUMs)

The USFS updates MVUMs for the Chippewa and Superior National Forests on an annual basis. These maps, which are segmented into regions, are available online or in print for OHV users to consult when planning a trip to one of Minnesota's national forests.

This strategic master plan reviewed these maps as part of an analysis of existing ATV trail riding opportunities in Minnesota.

2.3 Types of ATV Routes, Trails and Desired User Experiences

As part of an existing conditions assessment, this strategic master plan identified types of ATV routes, trails and desired rider experiences in Minnesota. This analysis focused on the location and character of trails, supporting an assessment of the needs of the current ATV trail system, trail type and location.

2.3.1 Types of ATV Routes and Trails

The state of Minnesota has a wide variety of ATV route types including longer touring routes, winding trail networks and technical riding areas. Some trails are multi-use, while some have specified designated uses. Some trails may be administered by the DNR, by local sponsors such as counties, cities or townships through the GIA Program, by local governments outside the program, or by private entities.

[25] Forest Service, 2015a
[26] Forest Service, 2015b

Longer touring routes include extensive road networks in remote and scenic areas (e.g., Superior National Forest, Fourtown-Grygla network), point-to-point or loop trails (e.g., Soo Line, Crow Wing Southern Loop), or a mix of on-road and trail routes (e.g., Forest Riders Trail). These touring routes are generally easier and accessible to newer participants in the activity. Many routes are located on former railbeds that provide gentle grades.

Winding trail networks typically consist of 10–30 miles of trails that follow the topography through wooded landscapes and are purpose-built for recreation. These networks may include a single looping trail (e.g., Chatfield Trail) or a collection of interconnected trails (e.g., Nemadji State Forest). Smaller networks are often located adjacent to touring routes, such as the Foxy Loops and Soo Pits trails near the Soo Line Trail. While these networks may include some on-road segments, they are primarily composed of ATV-width trails (5–10 feet). Trail difficulty varies, but most such systems in Minnesota include both easiest and more difficult trail designations.

Technical riding areas are small networks with obstacles and features designed to challenge riders and support skill progression. These areas typically have manmade features (i.e., rock climbs, mud pits) that are geared toward the different rider skill levels. Popular examples in Minnesota include the Appleton Area Recreational Park and Iron Range OHV State Recreation Area (IROHVSRA).

There are a few private areas open to ATV use in Minnesota as well. These options are primarily motocross tracks geared toward OHM, although there are a few smaller trail networks as well.

The route/trail mileage of the ATV trail system in Minnesota is a fraction of the total mileage available to ATVs in the state, as many ATVs are allowed to travel on certain county and township roads depending on local regulations. Roadway use can be important to connect designated ATV route segments, and can often support general transportation, recreation and agricultural purposes. While some counties and townships have specifically adopted policies to expand ATV access on roadways, others have adopted policies to restrict use (see section 2.4.2). In the state's agricultural zone (south of Highways 10, 23 and 95), ATV use is not allowed in the right-of-way from April 1 to August 1.

2.3.2 Types of Desired ATV User Experiences

As with any recreational sport, there is a spectrum of users in terms of experience level and interests. Some users enjoy challenging terrain with obstacles, while others prefer milder terrain, and still others enjoy a mix of riding experiences. The DNR welcomes new and existing users to the outdoors, including ATV riders, and manages trail systems accordingly.

2.4 Existing ATV Trail System Review

This review examines the proposed and existing ATV trail opportunities in the state of Minnesota. Proposed trails included in the existing system review for this plan are any trails that were presented to the DNR for inclusion in the GIA trail system, were presented to the DNR for applicable environmental review, or were proposed as part of larger trail planning efforts but were not yet built as of 2022. The review also includes existing trails listed on the DNR website in 2024, which includes 93 opportunities. This existing trail list is comprised of state and grant-in-aid trails and state forest trails. Of these opportunities, all but four include trail miles open to Class 1 and Class 2 ATVs. Of note, these miles include both natural surface trails and designated on-road routes. In addition, there are opportunities available in the Chippewa and Superior National Forests and private land that are considered in this review.

Inventory work completed as part of this plan identified the approximate mileage by trail/route types, which is found in Table 2.3. Region 1 refers to the northwest portion of the state, Region 2 to the northeast portion of the state, Region 3 to the central, metro, and southeast portion of the state, and Region 4 to the southern and southwest portion of the state (see Figure 2.6).

Table 2.3 ATV Trail System Inventory and Mileage

	ATV Only Trail	ATV/OHM Trails	ATV/OHM /ORV Trails	Designated On-Road Routes	State Forest Road Routes*	US Forest Service Trails	US Forest Service Roads
Statewide Total	428	1,059 (116 Class 1 only)	206	1,273	1,594	427	3,841
Region 1	218	117	126	613	672	-	1,085
Region 2	145	885 (112 class 1 only)	76	650	896	427	2,756
Region 3	58	46 (3 class 1 only)	-	11	75	-	-
Region 4	7.4	11 (1 class 1 only)	4	-	-	-	-

**This table does not include the designated on-road routes located in state forests, nor does it include state forest roads not intended for ATV recreational use (e.g., individual campsite roads, service roads). Also of note, classifications are not mutually exclusive and there can be overlap.*

Of trail miles open to ATVs, only 7 percent prohibit Class 2 ATVs. These routes are narrower trails, and the vast majority are located in Region 2.

Designated on-road routes are an essential component for the connectivity and experience of much of Minnesota's ATV trail system. These routes make up about 43 percent of the overall designated trail system in the state.

2.4.1 Trails

There are a variety of multi-use trail types in Minnesota that allow ATV use. In this review, they have been classified as long-distance routes, recreation areas and classic network trails. With both long-distance routes and classic network trails, roads are frequently a part of the designated network. In national forests, there are some trails (typically classic network style), but the US Forest Service has also designated many spur routes as ATV trails (not open to highway-licensed vehicles). These have limited recreational appeal but are considered as part of the larger road/trail network of the national forests. A majority of ATV trails in Minnesota are found in the northeast area of the state (Region 2).

Figure 2.6 and Table 2.4 highlight identified riding areas in Minnesota, based on information from the A–Z list on the DNR website, input from DNR staff, and the Polaris Ride Command platform (a no-cost GPS navigation and wayfinding application offered by Polaris Inc.).

FIGURE 2.6 EXISTING ATV RIDING AREAS

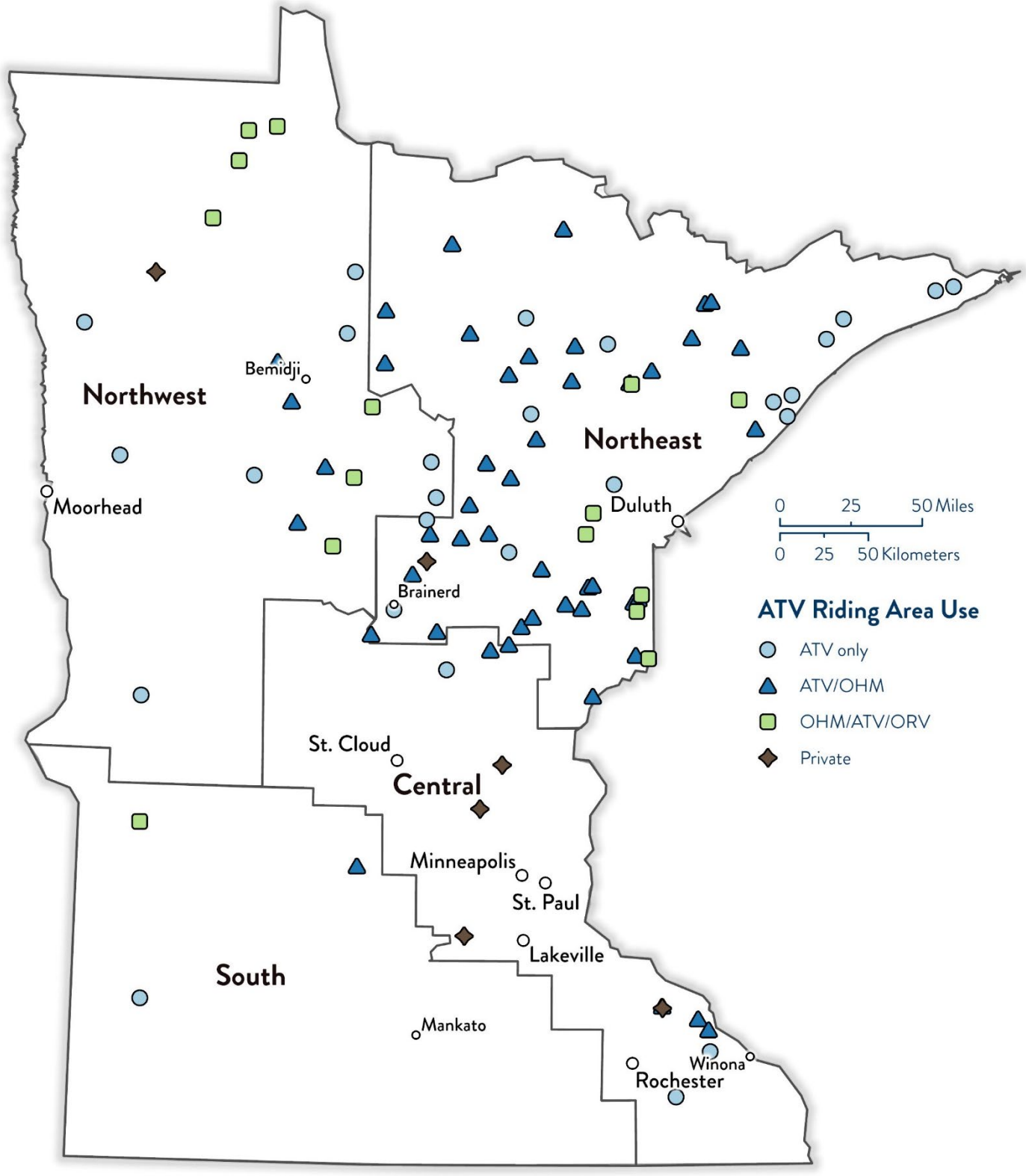


Table 2.4 Identified Riding Areas

Name	Management	Type*	DNR Region	DNR Listed Mileage	Allowable motorized uses	Difficulty Provided*
Spider Lake Trails	DNR	Medium, Primarily Trail Network	1	29	OHM/ATV/ORV	all
Huntersville Trail	Township	Medium, Primarily Road Network	1	4	ATV/OHM	easiest
Agassiz Recreational Trail	County	Long Point-to-Point	1	52	ATV only	easiest
Round River Drive Trail	County	Large, Primarily Trail Network	1	113	ATV/OHM	easiest, more difficult
Tanglewood Road	Forest Service	Medium, Primarily Road Network	1	0	OHM/ATV/ORV	easiest
Forest Riders Trail	Township	Large, Primarily Road Network	1	122	ATV only	easiest, more difficult
Schoolcraft Trail	County	Medium, Primarily Road Network	1	29	ATV/OHM	easiest, more difficult
Wilton Trails Northwest	County	Medium, Primarily Trail Network	1	37	ATV/OHM	easiest
Seven Clans Casino MX Track	Private	Private Track	1	0	ATV/OHM	n/a
Fourtown-Grygla	County	Large, Primarily Road Network	1	264	OHM/ATV/ORV	Easiest, more difficult
Bemis Hill Trails	County	Large, Primarily Road Network	1	96	OHM/ATV/ORV	easiest
Warroad Roseau	County	Large, Primarily Road Network	1	89	OHM/ATV/ORV	easiest
Soo Line North Cass	County	Long Point-to-Point	1	52	ATV only	easiest
Moose River Trail	County	Medium, Primarily Road Network	1	36	ATV only	easiest, more difficult
Grant County Youth ATV	County	Technical Riding Area	1	3	ATV only	all
Timber Trails	County	Large, Primarily Road Network	1	114	ATV only	easiest
Chippewa National Forest	Forest Service	Large, Primarily Road Network	1	0	OHM/ATV/ORV	easiest

Name	Management	Type*	DNR Region	DNR Listed Mileage	Allowable motorized uses	Difficulty Provided*
Kelliher	County	Large, Primarily Road Network	1	99	ATV only	easiest
Chengwatana State Forest	County	Small, Primarily Trail Network	2	15	ATV/OHM	easiest, more difficult
Gandy Dancer Trail	DNR	Medium Point-to-Point	2	30	OHM/ATV/ORV	easiest
St. Croix State Forest	County/DNR	Medium, Primarily Trail Network	2	26	ATV/OHM	easiest
Washington/Ramsey Trail	County	Long Point-to-Point	2	71	OHM/ATV/ORV	easiest, more difficult
Straight Arrows Trail	County	Small, Primarily Trail Network	2	18	ATV/OHM	easiest, more difficult
Matthew Lourey State Trail	DNR	Long Point-to-Point	2	53	ATV/OHM	easiest
Nemadji State Forest	County	Medium, Primarily Trail Network	2	30	OHM/ATV/ORV	all
Red Top Trail	County	Medium, Primarily Trail Network	2	22	ATV/OHM	more difficult
Soo Line South Aitkin	County	Medium Point-to-Point	2	23	ATV/OHM	easiest
Solana Loop	County	Small, Primarily Trail Network	2	15	ATV/OHM	easiest, more difficult
Soo Line South Pine	County	Short Point-to-Point	2	14	ATV/OHM	easiest
General Andrews Trails	DNR	Medium, Primarily Trail Network	2	24	ATV/OHM	easiest
Soo Line North/South Carlton	County	Medium Point-to-Point	2	44	ATV/OHM	easiest
Lawler Loops	County	Small, Primarily Trail Network	2	18	ATV/OHM	easiest
Pine Center Trails	County	Small, Primarily Trail Network	2	23	ATV/OHM	all
Fort Ripley Trail	County	Medium, Primarily Trail Network	2	31	ATV/OHM	easiest
Crow Wing Southern Loop	County	Long Loop	2	60	ATV only	easiest

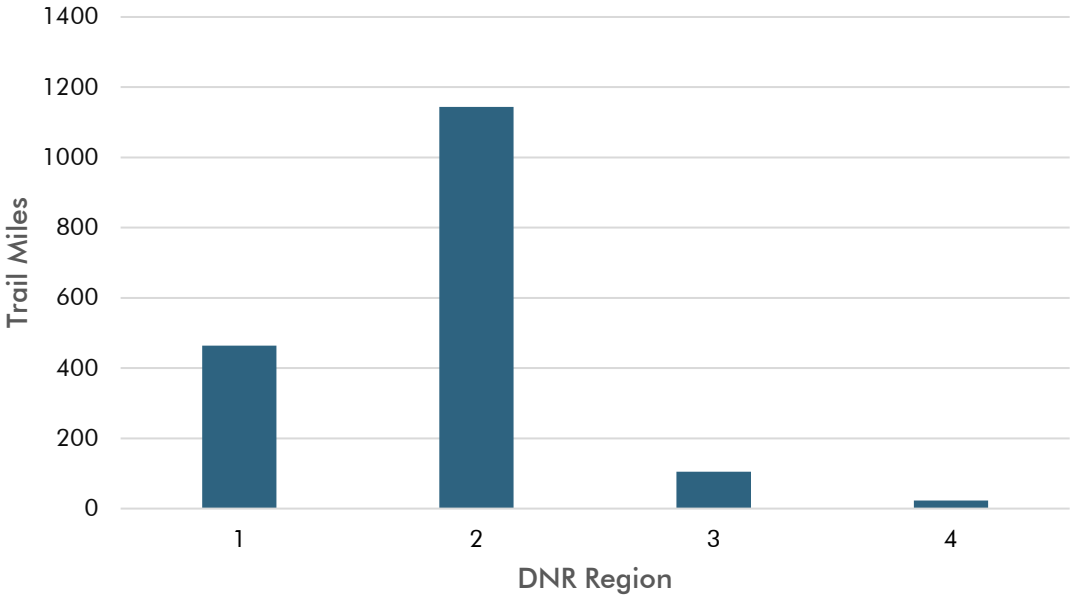
Name	Management	Type*	DNR Region	DNR Listed Mileage	Allowable motorized uses	Difficulty Provided*
Miller Black Bear Trail	County	Small, Primarily Trail Network	2	19	ATV/OHM	easiest, more difficult
Trax North MX	Private	Technical Riding Area	2	5	OHM/ATV/ORV	more difficult
Blind Lake	County	Medium Point-to-Point	2	33	ATV/OHM	easiest
Soo Line North Aitkin	County	Medium Point-to-Point	2	48	ATV/OHM	easiest
Fond Du Lac	DNR	Medium, Primarily Trail Network	2	37	OHM/ATV/ORV	easiest, more difficult
Blue Ox Trail	County	Long Point-to-Point	2	74	ATV/OHM	easiest
Thistledew Trails	DNR	Medium, Primarily Trail Network	2	25	ATV only	more difficult
Bigfork Balsam	Grant-in-Aid	Medium Point-to-Point	2	32	ATV/OHM	easiest, more difficult
Little Moose Trail	County	Short Point-to-Point	2	18	ATV/OHM	more difficult
Alborn Pengilly Trail	County	Medium Point-to-Point	2	39	ATV only	easiest
Goodland Trail	County	Short Point-to-Point	2	19	ATV/OHM	easiest
Chisholm Trail	City	Medium Point-to-Point	2	38	ATV/OHM	easiest
Iron Range OHV State Recreation Area	DNR	Small, Primarily Trail Network	2	18	OHM/ATV/ORV	all
Stony Spur II	County	Medium Point-to-Point	2	30	ATV/OHM	easiest
Jackpot Loop	City	Medium Loop	2	30	ATV/OHM	easiest, more difficult
Red Dot Trail	County	Medium, Primarily Trail Network	2	30	ATV only	easiest, more difficult
Moose Walk Trail	County	Medium Loop	2	22	ATV only	easiest, more difficult
Moose Run Trail	County	Short Point-to-Point	2	12	ATV only	easiest
Rabey Line Trail	County	Short Point-to-Point	2	19	ATV/OHM	easiest

Name	Management	Type*	DNR Region	DNR Listed Mileage	Allowable motorized uses	Difficulty Provided*
UPM Blandin	County	Medium Point-to-Point	2	21	ATV/OHM	Easiest, more difficult
Hill City Trail	County	Short Point-to-Point	2	16	ATV/OHM	more difficult
Emily Outing Trail	County	Medium Point-to-Point	2	20	ATV only	easiest, more difficult
Hovland Woods Trail	County	Short Loop	2	16	ATV only	all
Old Greenwood	County	Medium Loop	2	30	ATV only	easiest, most difficult
Genoa Trail	Club	Short Point-to-Point	2	4	ATV/OHM	easiest
Emily Blind	County	Short Point-to-Point	2	16	ATV/OHM	easiest
East Range Multi-Use Trail	County	Medium Point-to-Point	2	29	ATV/OHM	easiest, more difficult
David Dill - Taconite	DNR	Short Point-to-Point	2	11	ATV/OHM	easiest
Prospectors	Club	Long Point-to-Point	2	167	ATV/OHM	easiest, more difficult
Axtell Technical Riding Area	County	Technical Riding Area	2	2	ATV only	all
Alvwood-Squaw Lake	County/ Forest Service	Large, Primarily Road Network	2	159	ATV/OHM	easiest
Balsam Trail	County	Short Point-to-Point	2	5	ATV/OHM	most difficult
Wild Country ATV Trail	County	Medium Point-to-Point	2	30	ATV/OHM	easiest
Voyageur Country ATV	County	Medium, Primarily Road Network	2	36	ATV/OHM	easiest
Soo Pits	County	Technical Riding Area	2	5	ATV/OHM	more difficult
Turkey Time Trail	County	Short Loop	2	16	OHM/ATV/ORV	more difficult
Timber Frear Loop	County	Medium Loop	2	20	ATV only	easiest, more difficult
Rice Lake Panacore	County	Short Loop	2	13	ATV only	easiest, more difficult
Taconite-Big Aspen	DNR	Short Point-to-Point	2	18	ATV/OHM	easiest
Big Aspen	Forest Service	Small, Primarily Trail Network	2	21	ATV only	all

Name	Management	Type*	DNR Region	DNR Listed Mileage	Allowable motorized uses	Difficulty Provided*
Superior National Forest	Forest Service	Large, Primarily Road Network	2	0	OHM/ATV/ORV	easiest
Chatfield	City (Private Land)	Small, Primarily Trail Network	3	19	ATV only	easiest, more difficult
SE Minnesota Trail	County	Short Point-to-Point	3	13	ATV only	more difficult
Snake Creek Trail	DNR	Small, Primarily Trail Network	3	13	ATV/OHM	easiest, more difficult
Meadow Valley MX	Private	Small, Primarily Trail Network	3	20	ATV/OHM	n/a
Spring Creek MX Park	Private	Private Track	3	0	ATV/OHM	n/a
Jordan MX Park	Private	Private Track	3	0	ATV/OHM	n/a
Elk River Extreme Motor Park	Private	Private Track	3	0	OHM/ATV/ORV	n/a
Cambridge MX	Private	Private Track	3	0	ATV/OHM	n/a
Soo Line South Morrison	County	Medium Point-to-Point	3	27	ATV only	easiest
Soo Line South Mille Lacs	County	Medium Point-to-Point	3	22	ATV/OHM	easiest
Trout Valley	DNR	Short Loop	3	9	ATV/OHM	easiest, more difficult
Meeker County OHV Park	County	Small, Primarily Trail Network	4	4	ATV/OHM	easiest
Appleton Area Recreational Park	County	Technical Riding Area	4	12	OHM/ATV/ORV	all
Shady Oaks Native Prairie Adventure	County	Small, Primarily Trail Network	4	5	ATV only	easiest, more difficult

*Trails classified as small typically have less than 20 listed miles, trails classified as medium typically have more than 20 listed miles, and large systems are in national forests. Difficulty levels are derived from Minnesota's OHV Trail Atlas. The mileage included in the table includes both on-road routes and trails. County management frequently involves a local club that maintains the trail (grant-in-aid system). The types of uses allowed reflect the entire system, while individual trails may only be open to a certain subset of users.

FIGURE 2.7 RELATIVE ATV TRAIL MILEAGE BY DNR REGION



2.4.2 Roads

Roads are an important part of Minnesota's ATV opportunities. Examples of ATV road use include state and national forest roads that offer natural and scenic experiences, designated on-road routes, and county and township roads — including adjacent ditches — where entire road systems are open to ATV use and serve to access or connect trail systems.

The Minnesota DNR classifies its state forests (or portions of them) with three categories related to OHV use (closed, limited or managed), each with a different set of limitations on use (see 1.5.4). There are exceptions related to hunting activities as well. ATVs are not allowed on any existing state park roads or trails, except for the secondary unit at Lake Vermilion State Park and the Palisades Unit of Tettegouche State Park.

On national forest land, motor vehicle access is permitted on roads and trails designated as open to OHVs and highway-licensed vehicles on the corresponding MVUM, which is updated annually. To note, many roads and key thoroughfares through the national forests are state highways or county roads, where the state policy or policy of that county would apply.

Minnesota State Statute 84.928 states that Class 1 ATVs may drive on the outside bank of a ditch, with Class 2 ATVs allowed on the extreme right side of a trunk, county state-aid or county highway unless otherwise restricted by county ordinance. Of Minnesota's 87 counties, 41 counties have passed ordinances ranging from prohibiting ATVs in the road right-of-way to allowing both classes of ATVs to drive in the roadway on a portion of or all county-maintained roadways. As of 2022, 41 of Minnesota's 87 counties have adopted ordinances governing ATV use on county roads, ranging from prohibitions on riding in road rights-of-way to allowing both classes of ATVs to operate in the roadway on some or all county-maintained roads. In several counties, given drainage problems, Class 1 ATVs are restricted from the ditch (Class 2 ATVs are always restricted from the ditch). In the state's agricultural zone (south of US Highway 10 and State highways 23 and 95), Class 1 ATVs are prohibited from the ditch from April 1 to August 1, and many

counties within this zone have passed ordinances that offer Class 1 ATVs an alternate route during these months. Appendix D contains a table of ATV policies by county.

Several clubs also show additional road routes as part of the local riding opportunities. For example, the Voyageur Country ATV map shows several miles of roads (county, forest service or state forest) in the region that are opportune for riding as they may create a loop ride or connect official trail segments. In this inventory, approximately 215 such miles were identified.

2.4.3 Proposed Trails

As of 2023, there are several proposed trail routes included in this inventory. Current proposed routes include additions to the Voyageur Country ATV trail system, the Prospectors Trail, and the David Dill-Taconite and David-Dill Arrowhead state trails. Mapped proposed mileage included in this inventory totals 121.6 miles, all located in DNR Region 2.

2.4.4 Trail Type and Difficulty

Table 2.5 shows the different types of trails in each DNR region. The first three rows listed here are typically considered longer distance routes. Notably, the longer distance routes are largely concentrated in the northern portion of the state, with longer trails available in Region 2. Region 1 does have a variety of trails, although the majority of its options are primarily road networks. Region 2 offers the greatest number of riding opportunities in the state and includes the widest range of trail types.

Table 2.5 ATV Riding Areas Trail Types

Type	DNR Region 1	DNR Region 2	DNR Region 3	DNR Region 4	Grand Total
Loop	0	8	1	0	9
Point-to-Point	2	28	3	0	33
Primarily Road Network	11	3	0	0	14
Primarily Trail Network	3	16	3	2	24
Private Track	1	0	4	0	5
Technical Riding Area	1	3	0	1	5
Grand Total	18	58	11	3	90

Trail types and difficulty are relatively intertwined, with loops, point-to-point routes and primarily road networks typically offering easier opportunities. More challenging riding is associated with primary trail networks, and technical riding areas may offer short challenging trail options with features and obstacles. Table 2.6 shows the number of public systems with “more difficult” and “most difficult” offerings. Most of these trail systems also offer easier trails and options. Difficulty is unknown for private trail systems/tracks. While Region 3 and Region 4 have significantly fewer trail systems, many of their trail systems offer more challenging opportunities.

Table 2.6 ATV Riding Areas Trail Difficulty

	Region 1	Region 2	Region 3	Region 4	Total
Public systems count	17	57	6	3	83
Public trail systems with more and most difficult offerings	6	13	4	2	25
Percent of system with more and most difficult offerings	35 percent	23 percent	67 percent	67 percent	30 percent

2.4.5 Community Connectivity

There are several communities where ATV trails pass immediately through the town. Local clubs are typically responsible for these trails or designated on-road routes. Examples include Chisholm, Ely and Gilbert. County roads can provide important connections that allow riders to leave trails and access services/lodging in communities, although the allowances for Class 1 and Class 2 vary by county and season. Such trail connections can lead to economic benefits for local communities through trail tourism.

3 OPPORTUNITIES AND CONSTRAINTS ANALYSIS

3.1 Analysis Methodology

As part of the ATV strategic master plan development, SE Group conducted a spatial analysis to inform future exploration of ATV trail opportunities in Minnesota. Public input and feedback guided the weighted factors in the following sections. The following six factors were analyzed: natural environment sensitivity, terrain potential, human environment suitability, land management and ownership, potential construction challenge, and recreation usage and demand (see Appendix C). Potential opportunities were reviewed on a state and regional scale, but no specific trail alignments were determined. In general, this analysis highlights areas within the state where natural resources, existing development, terrain, land management, and recreation usage and demand factors suggest potential future opportunities for ATV use, as well as areas that may be less favorable. Considerable additional analysis, including applicable environmental review, is necessary before a new trail can be built or designated at an area of opportunity.

The spatial analysis involved layering of spatial data in ArcGIS to consider the suitability of specific areas for possible ATV trails based on the six identified factors. For example, a wetland layer was included in the analysis since the presence of wetlands in an area presents a constraint to or incompatibility with new ATV trails due to both the sensitivity of these natural features and the increased trail construction costs that would be necessary to provide a safe route while avoiding impacts to the resource. Another included data layer was land management policies, which may or may not allow off-highway vehicle use. All of the data used in this process was from state and federal geographic information system repositories or from inventories developed as part of this strategic master plan. Staff within the DNR and the Minnesota Geospatial Information Office played an active role in the selection of appropriate data layers.

The analysis itself was conducted using geographic rasters, which are a matrix of cells organized into rows and columns (or a grid) where each cell contains a value representing the information inside the cell, such as the number of ATV registrations. Throughout this analysis, cell values were classified, weighted and summed together in order to arrive at an overall score. This level of analysis is appropriate for identifying areas of opportunity, rather than specific trail alignments.

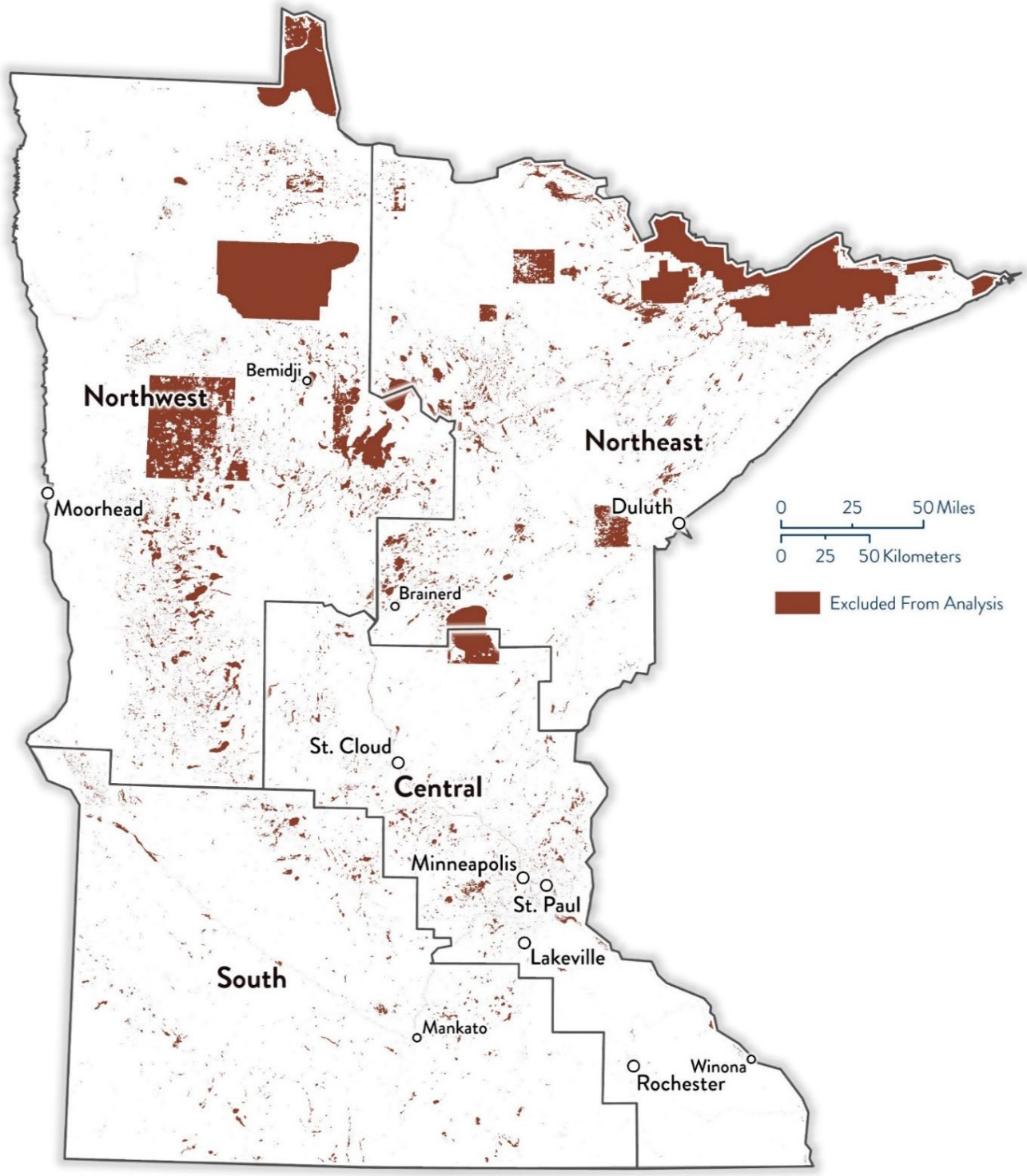
The analysis is intended to be used by the DNR and interested partners to identify areas to focus attention and consideration of new trail opportunities as well as areas to avoid. The DNR will also consider the following analysis when identifying or evaluating proposals for new trails but notes that specific on-the-ground analysis will continue to be useful in identifying proper conditions for trail opportunities and will vary from high-level analysis.

3.1.1 Geographic Scope

The geographic scope of this analysis was all lands in the state of Minnesota except the Boundary Waters Canoe Area Wilderness, lands in tribal ownership, open water and areas of high-intensity development

where larger population centers lead to fewer available lands for OHV trails (e.g., seven-county metro area, Rochester, St. Cloud, Duluth). In later stages of the analysis, other factors that would preclude new ATV trail development (e.g., state parks, wetlands) were accounted for as well. The geographic scope map is included as Figure 3.1.

FIGURE 3.1 SPATIAL ANALYSIS GEOGRAPHIC SCOPE



3.2 Natural Resource Analysis

The consideration of the suitability of an area for ATV trails must depend on ensuring the trail use remains balanced with important statewide environmental protection and stewardship policies and best practices. This analysis identified areas where the presence of high-priority wildlife habitat, wetlands, sensitive native plant communities and other natural environment factors (see Table 3.1 for full list) limit suitability for new ATV trail development. Each factor was weighted relative to how influential it is on the suitability of an area for new ATV trail development. A high relative weight indicates an area that is very ill-suited for new ATV trail development, while a low weight indicates areas that are better suited for new ATV trail development. The factors included in this analysis, the criteria used and how they were weighted are included in Table 3.1.

The Wildlife Habitat, Biodiversity and Conservation Opportunity Areas are DNR-developed layers that combine habitat data for several species, vegetation data and other natural resource data to summarize conditions/sensitivity in a statewide context.

Table 3.1 Natural Resource Analysis Factors

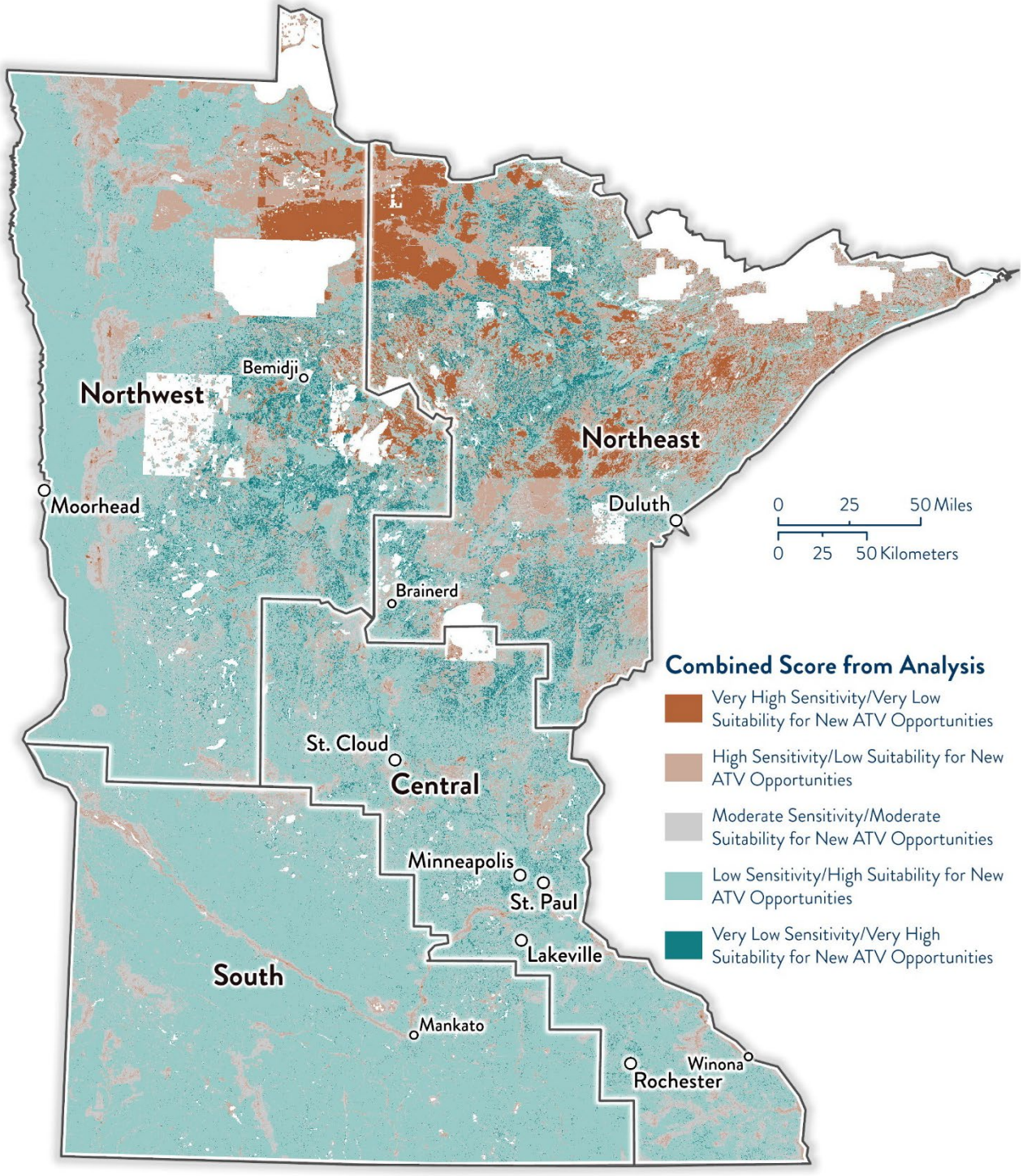
Factor	Criteria	Relative Weight
Wetlands	Presence	High
Native Plant Communities	Conservation status	Medium-High
Old-Growth Areas	Within areas	Medium-High
Land Cover	*	Medium
Soil Erosion	Potential for erosion	Medium
Trout Streams	Presence within 0.5-mile buffer	Medium
Wildlife Habitat	Habitat quality	Medium
Invasive Plants	Presence	Medium
Biodiversity	*	Medium
Lynx Critical Habitat	Within range	Medium-Low
Conservation Opportunity Areas	Within areas	Medium-Low
Moose Range	Within range	Low

*Forested land cover types were scored high, while wetland or developed land cover types were scored low. Biodiversity criteria is unique to each project and can include multiple factors.

Figure 3.2 shows the suitability of areas across the state for new ATV opportunities, based on natural resource sensitivity. Brown-toned areas are more sensitive, while green-toned areas are less sensitive. Less-sensitive areas are presumed to be better-suited for new ATV trail opportunities, although site resource conditions need to be examined prior to and during any trail proposal process. Areas with relatively low natural resource sensitivity include portions of the Paul Bunyan State Forest area, the Bemidji area, the area south of Voyageurs National Park and the Iron Range. Areas with relatively high natural resource sensitivity

include areas north of Red Lake, the Swan River Valley and the Hoyt Lakes area. Areas in the southern part of the state generally are less sensitive.

FIGURE 3.2 NATURAL RESOURCE ANALYSIS



3.3 Terrain

The shape of the landscape plays an important role in determining the potential for new ATV trail development. If the terrain is excessively steep, trail development may be limited by erosion concerns and construction feasibility. Conversely, very flat terrain can present drainage challenges, contribute to water pooling and encourage higher speeds. In many cases, moderate elevation change — especially where soils, slope and surface conditions support natural drainage — can improve both trail sustainability and rider experience by allowing for more engaging, curvilinear design.

A terrain analysis was conducted to evaluate the topography for sustainable, interesting ATV trail opportunities. Terrain was also considered in the construction and maintenance cost models. This analysis considered both the change in elevation and the range of slopes that would support ATV trails for a variety of ability levels. Both elevation range and slope were evaluated relative to a broader land area rather than for the 30-meter cell used elsewhere in this analysis. For elevation, the metric was the range of elevation within a 1-mile radius of a given cell. The greater the range in elevation, the more positively the cell was scored, but stopping short of recommending exploration where slopes would be too steep.

Slope was considered in three ways. Singular areas with very steep slopes (greater than 33 percent) were scored negatively given the challenge of building sustainable trails on such slopes. The average slope with a 0.5-mile radius circle of a given cell was considered against general grade standards for the construction of ATV trails. The standard deviation of slopes within this 0.5-mile radius area was used to measure the variety in the terrain, with more varied and undulating terrain considered more favorably for the ATV user experience.

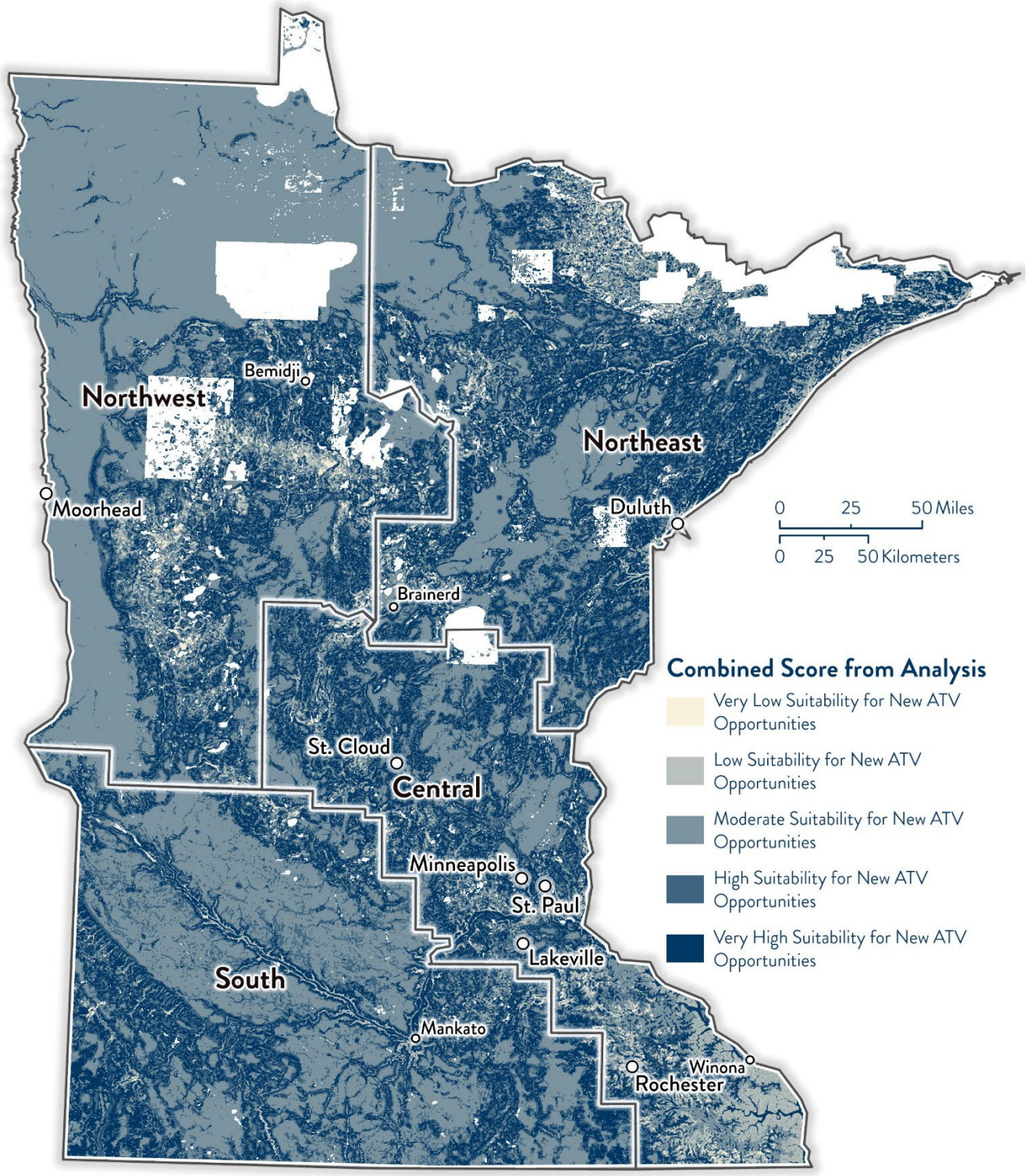
Table 3.2 lists the factors considered in the terrain analysis, criteria, and relative weight.

Table 3.2 Terrain Analysis Factors

Factor	Criteria	Relative Weight
Elevation Range (1-mile radius)	Greater range in elevation	Medium-Low
Slope (30-meter cell)	Potential for erosion/challenging build (>40 percent slope)	Medium-Low
Average slope (0.5-mile radius)	Grades suitable for ATV trail construction, slightly oriented toward more challenging opportunities	Medium-High
Slope Standard Deviation (0.5-mile radius)	Higher deviation indicating interesting, undulating terrain	Medium

Figure 3.3 shows the suitability of the topography across Minnesota to new ATV trail opportunities. Darker areas have slopes and elevation ranges that would align with interesting, sustainable ATV trail opportunities and include the Frontenac area, the Nemadji State Forest area, the Spider Lakes trails area, Mesabi Range, Lake Superior coastline and a few smaller areas close to the Twin Cities. Prior to development, any future project must go through applicable site-specific environmental review. On-the-ground conditions will likely differ from the conditions identified in this high-level analysis.

FIGURE 3.3 TERRAIN SUITABILITY ANALYSIS



3.4 Human Environment Analysis

The human environment analysis considered how factors such as population, residential proximity, existing OHV and non-motorized recreation opportunities, and other development influence the suitability of new ATV trail opportunities. This analysis is oriented toward providing opportunities that are accessible, proximate to population centers and expand ATV opportunities to new areas of the state. Other considerations included proximity to campgrounds and ensuring sufficient distance from non-motorized recreation opportunities and the existing road network to enhance safety and avoid user conflicts.

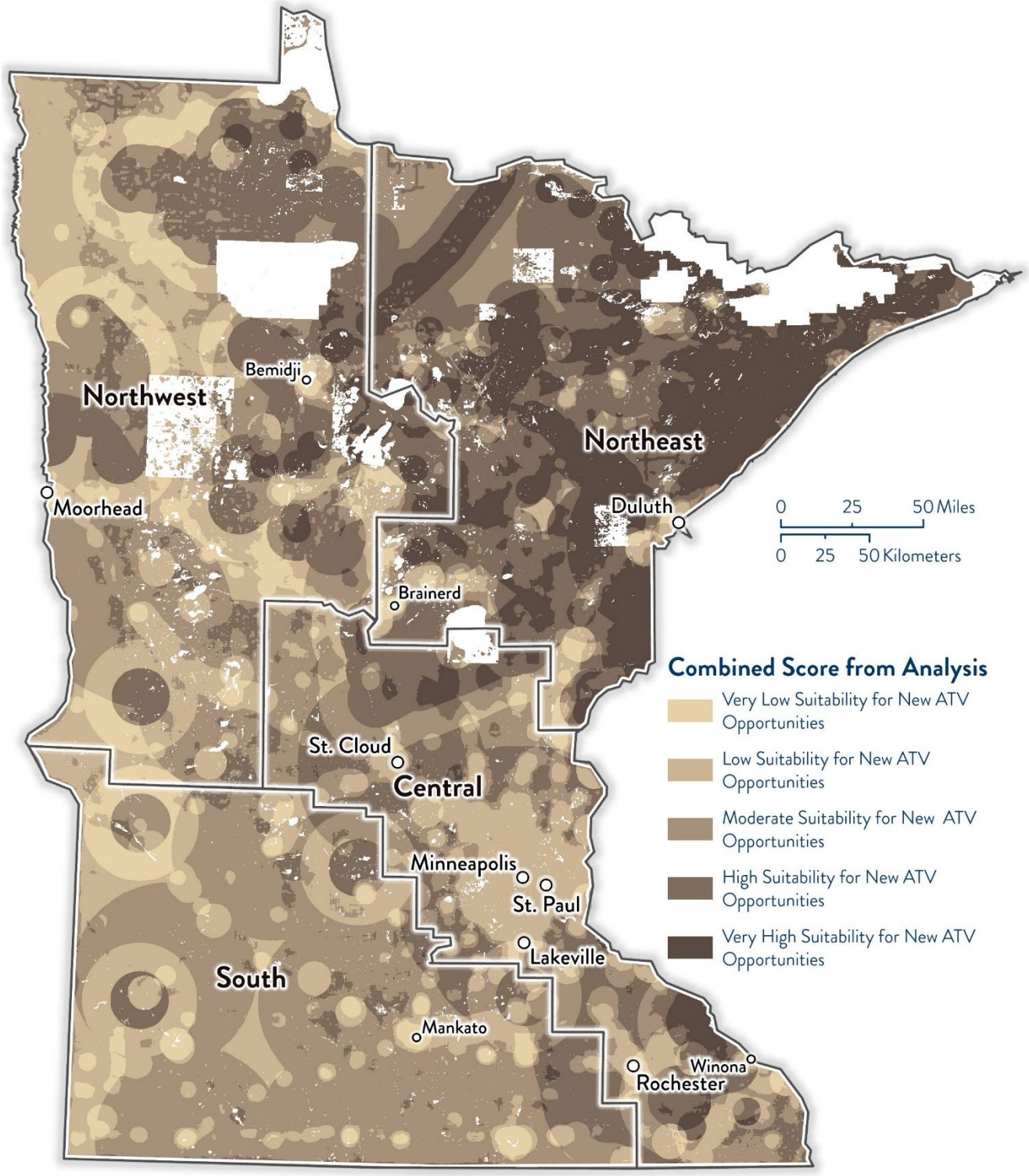
Table 3.3 lists factors considered in human environment analysis, criteria and relative weight.

Table 3.3 Human Environment Analysis Factors

Factor	Criteria	Relative Weight
Campgrounds (state and national Forest)	Proximity to existing forest campgrounds (those with ingress/egress)	Medium
Motorized Opportunities (state tails, national forest routes, DNR or grant-in-aid trails)	Distance from existing opportunities — better distributing opportunities across the state or very close to existing trails to allow existing systems to expand	Medium
Non-Motorized Opportunities (state trails, national forest trails, Minnesota trails)	Distance from existing opportunities — maintaining distance between motorized and non-motorized opportunities	Medium
Population	Proximity to large population centers (>50,000 people) and medium population centers (>10,000 people)	Medium-High
Road Density	Lower density road network that provides space to develop new opportunities	Medium
Road Access	Proximity to existing roads	Low

Figure 3.4 shows where human environment elements better support new ATV trail opportunities. Darker areas have proximate campgrounds, road access, and population and would distribute ATV opportunities across the state while limiting conflict with non-motorized recreation opportunities. Identified areas include the areas around the Nemadji State Forest, west and north of Duluth, along the Blue Ox Trail and the Winona/Rochester area.

FIGURE 3.4 HUMAN ENVIRONMENT ANALYSIS



3.5 Land Ownership and Management Analysis

The land ownership and management analysis examined how all land within the state is owned and managed in the context of motorized recreation opportunity development and permitting. This analysis considered management direction for both state and federal lands. Several areas where future opportunities are highly unlikely were scored negatively and weighted to effectively preclude them from consideration. This includes state forests designated as closed, state parks and management areas of national forests that do not support new ATV trail opportunities.

Management directions used in this analysis were derived from forest plans of the Chippewa and Superior National Forests, DNR guidance, state statues and state or county policy regarding restrictions on ATV use or new trails (e.g., state parks), and state recreation area management plans.

Table 3.4 lists the factors considered in the land ownership and management analysis and the management criteria. These factors were not weighted as there was no overlap among the land management factors considered here.

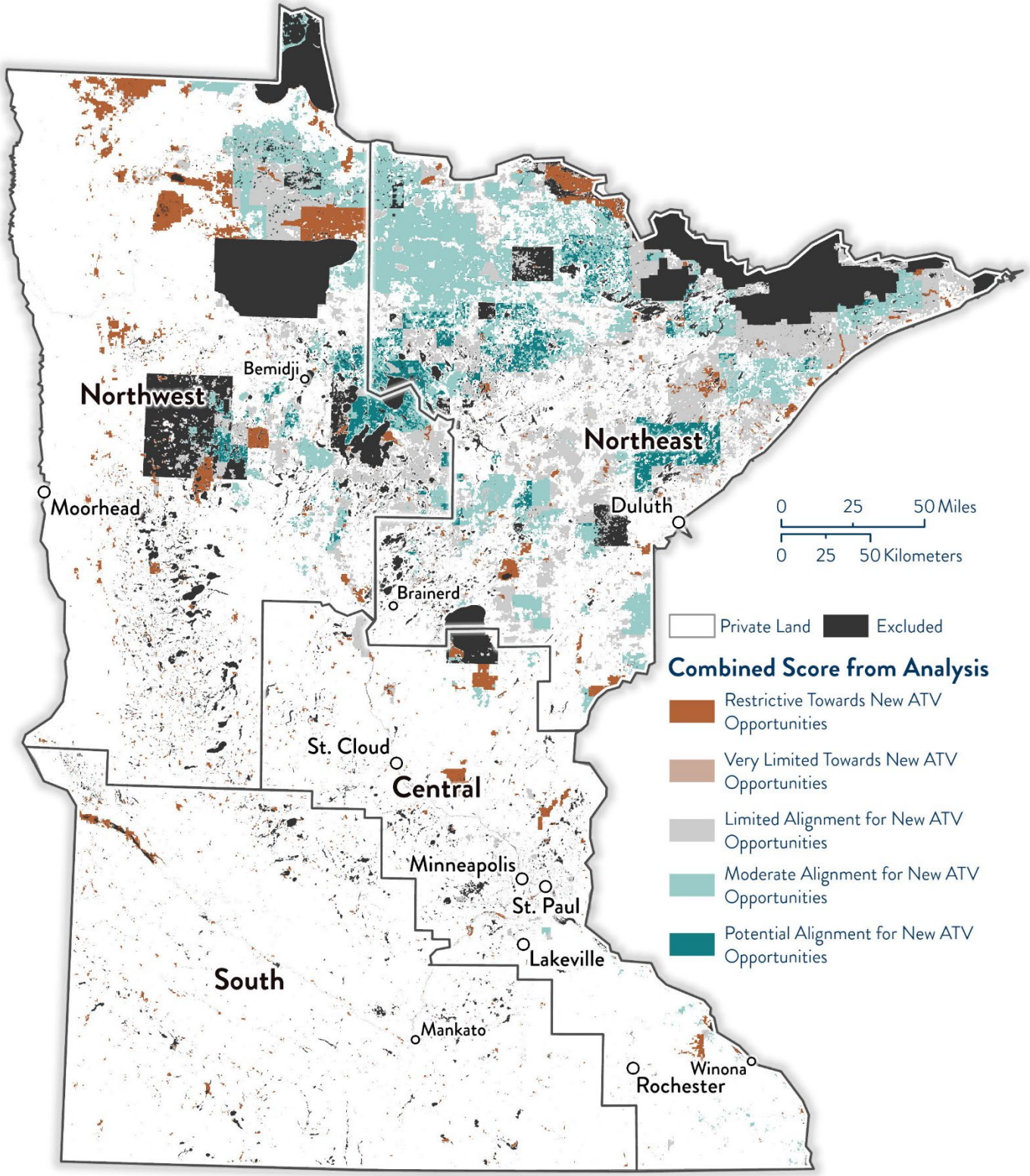
Table 3.4 Land Management Analysis Factors

Factor	Management
Superior National Forest	Dependent on Management Plan
Chippewa National Forest	Dependent on Management Plan
Voyageurs National Park	ATV opportunities restricted
National Wildlife Refuges, Waterfowl Production Areas and Wildlife Management Areas	ATV opportunities restricted
MNDOT Land (7-county Metro Area)	Open to new ATV opportunities
State Parks and Waysides	ATV opportunities restricted
State Recreation Areas	Dependent on the Management Plan
Scientific and Natural Area Units	ATV opportunities restricted
Aquatic Management Areas	ATV opportunities restricted
DNR-managed Ecological and Water Resources	ATV opportunities restricted
Wildlife Management Areas	ATV opportunities restricted; potential exceptions within Consolidated Conservation Lands
Other DNR-managed lands	Dependent on Management Plan
State Forests	Open to new ATV opportunities (Limited/Managed forests); Not open to new ATV opportunities (Closed forests)
School Trust Lands	Open to new ATV opportunities
County-owned Land	Varies by county

Factor	Management
Private Conservancy Land	ATV opportunities restricted
Other Private lands	Generally restrictive

Figure 3.5 shows where land ownership and management are better aligned for new ATV trail opportunities. Green-toned areas are likely more open to new ATV opportunities than brown-toned areas. While private land could be secured to develop new ATV opportunities, it would likely require a lengthy process. Prior to development, any future project must go through applicable site-specific environmental review. On-the ground conditions will differ from high-level analysis conditions.

FIGURE 3.5 LAND OWNERSHIP AND MANAGEMENT ANALYSIS



3.6 Recreation Usage and Demand Analysis

The recreation usage and demand analysis combined demographics, registrations and other factors to understand where Minnesotans may be interested in new ATV trail opportunities.

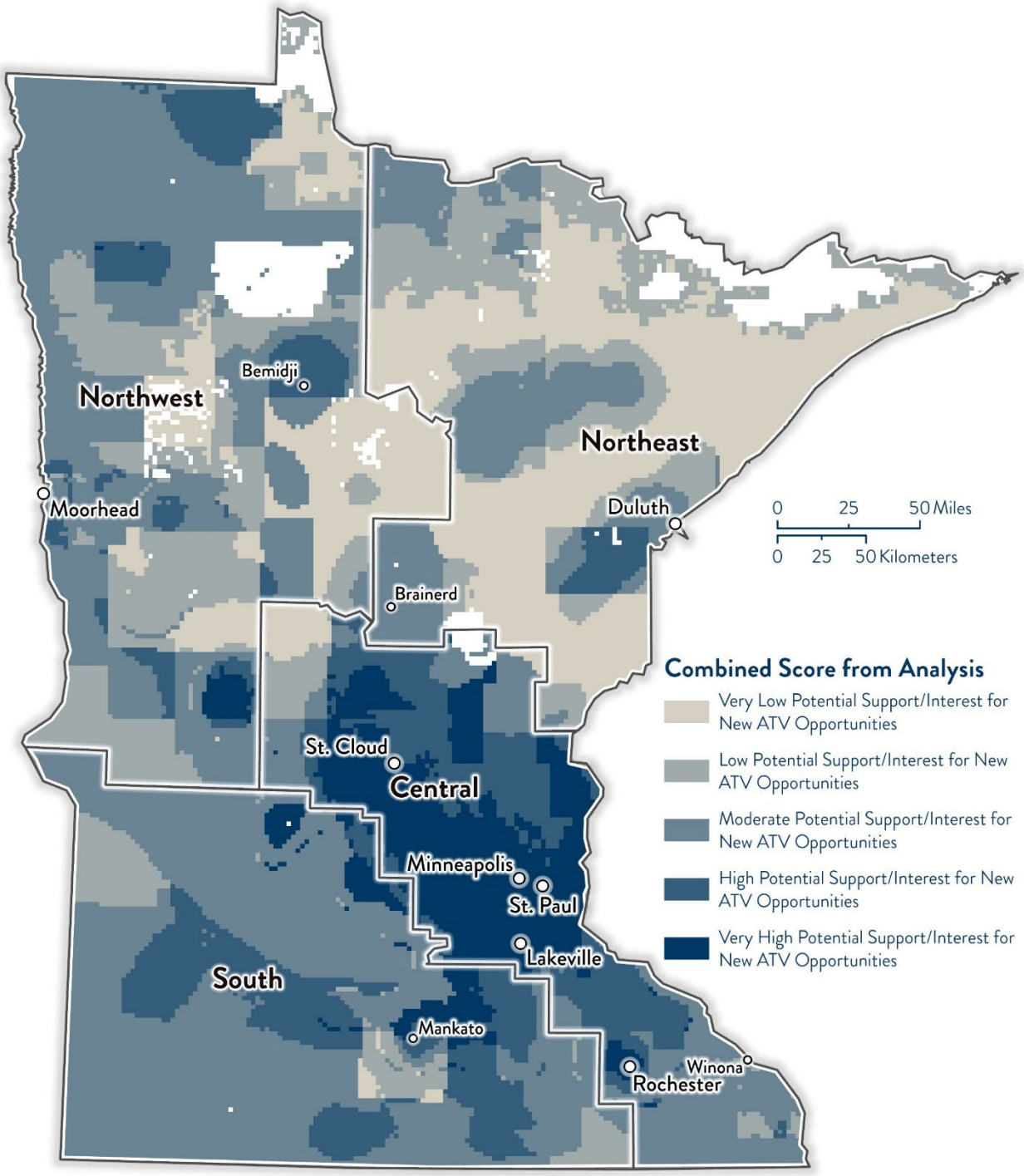
ATV registration data by zip code was examined by the following criteria: total registrations, registrations per 10,000 county residents and county most used compared to registrations in that county. In addition, the population's proximity to the major ATV areas was considered. Areas of the state where registrations are high per 10,000 residents, but opportunities are low were indicated as highly opportune areas. Areas of the state where existing registrations are low per 10,000 residents and proximity to opportunities are low were indicated as opportune areas.

Table 3.5 Recreation Usage and Demand Analysis Factors

Factor	Criteria	Relative Weight
Registrations	Greater density of registrations by land area	Medium
Registrations per 10,000 residents	Higher registrations per 10,000 residents in a county	Low
County most used compared to registrations	Few people list their resident county as the county most used for ATV recreation	Medium
Registrations relative to existing opportunities	Areas with low existing registrations and low opportunities; Areas with high existing registration and low opportunities	High

Figure 3.6 shows where usage and demand factors suggest greater potential interest in new ATV trail opportunities. Darker areas are more likely to have greater interest or support for new opportunities. Areas identified for further evaluation include the Twin Cities suburbs, St. Cloud, the Roseau area, Mankato and Rochester. While immediately around Duluth scores high for potential interest/demand for new trail opportunities, other portions of St. Louis County and other northern portions of the state do not score high, likely related to the level of existing opportunities and population. From this analysis, we know there is interest in "nearer-to-home" riding opportunities, and this analysis helps point to where "home" is for many riders. Prior to development, any future project must go through applicable site-specific environmental review and on-the ground conditions will differ from high-level analysis conditions.

FIGURE 3.6 RECREATION USAGE AND DEMAND ANALYSIS



3.7 Construction and Maintenance Challenge Analysis

A variety of factors can affect how challenging it may be to construct and maintain ATV trails; these factors must be considered when evaluating the suitability of an area for new trail opportunities. This analysis identifies areas where steeper slopes, bedrock, wetlands, certain soil types and stream crossings are located that would affect ATV trail construction and maintenance either positively or negatively. For example, areas with numerous streams may necessitate frequent stream crossings, which would require the construction (and eventually the maintenance of) many bridges or boardwalks to create a new trail. This would increase both the potential for temporary stream impacts during construction, and the cost of construction and ongoing maintenance.

Each factor in this analysis was weighted relative to the extent to which the presence of the factor would increase the challenge of constructing or maintaining an ATV trail. The factors included in this analysis, the criteria used and how they were weighted are included in the following table. The models for maintaining versus constructing trails are relatively similar, however, there were some slight discrepancies such as soil erodibility included in the analysis of maintenance challenge. Maintenance challenge analysis relied on the same factors — criteria and relative weight with the addition of soil erodibility — so a table is not included here.

Table 3.6 Construction Challenge Analysis

Factor	Criteria	Relative Weight
Slope	High slopes considered more challenging	Medium
Wetlands	Presence of wetlands considered very challenging	High
Soils (Bedrock)	Presence of bedrock considered challenging	Medium
Soils (Drainage)	Soils with poor drainage considered challenging	Medium
Stream Density	High number of stream crossings considered challenging	Medium

Figure 3.7 shows where environmental and topographical factors suggest areas that would present a greater challenge to constructing new ATV trails. The analysis identified areas that would present a relatively lower challenge; these are generally found in the southern part of the state, the Mille Lacs area and the Nemadji State Forest area. Prior to development, any future project must go through applicable site-specific environmental review; on-the ground conditions will differ from this high-level analysis.

FIGURE 3.7 CONSTRUCTION CHALLENGE

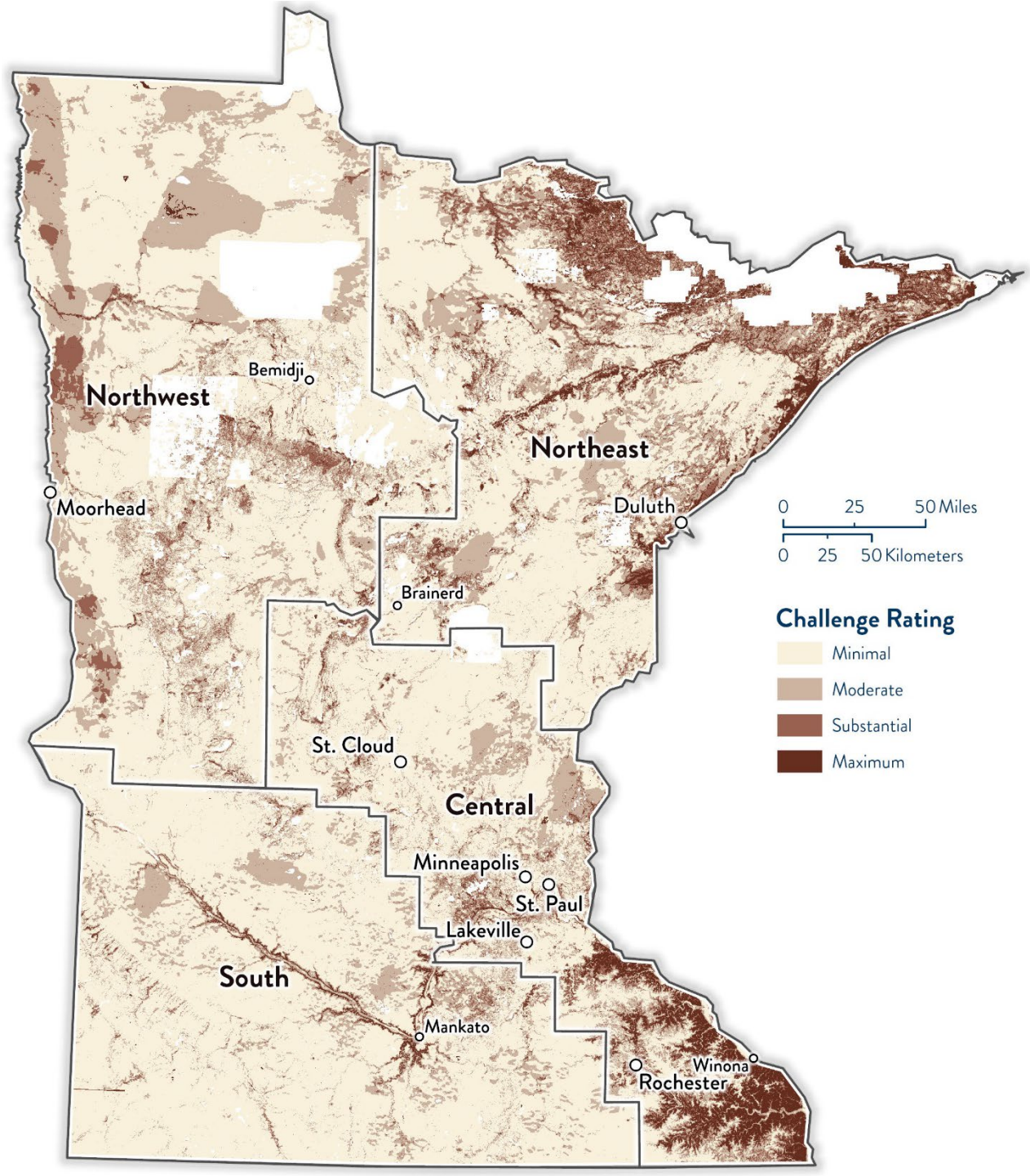
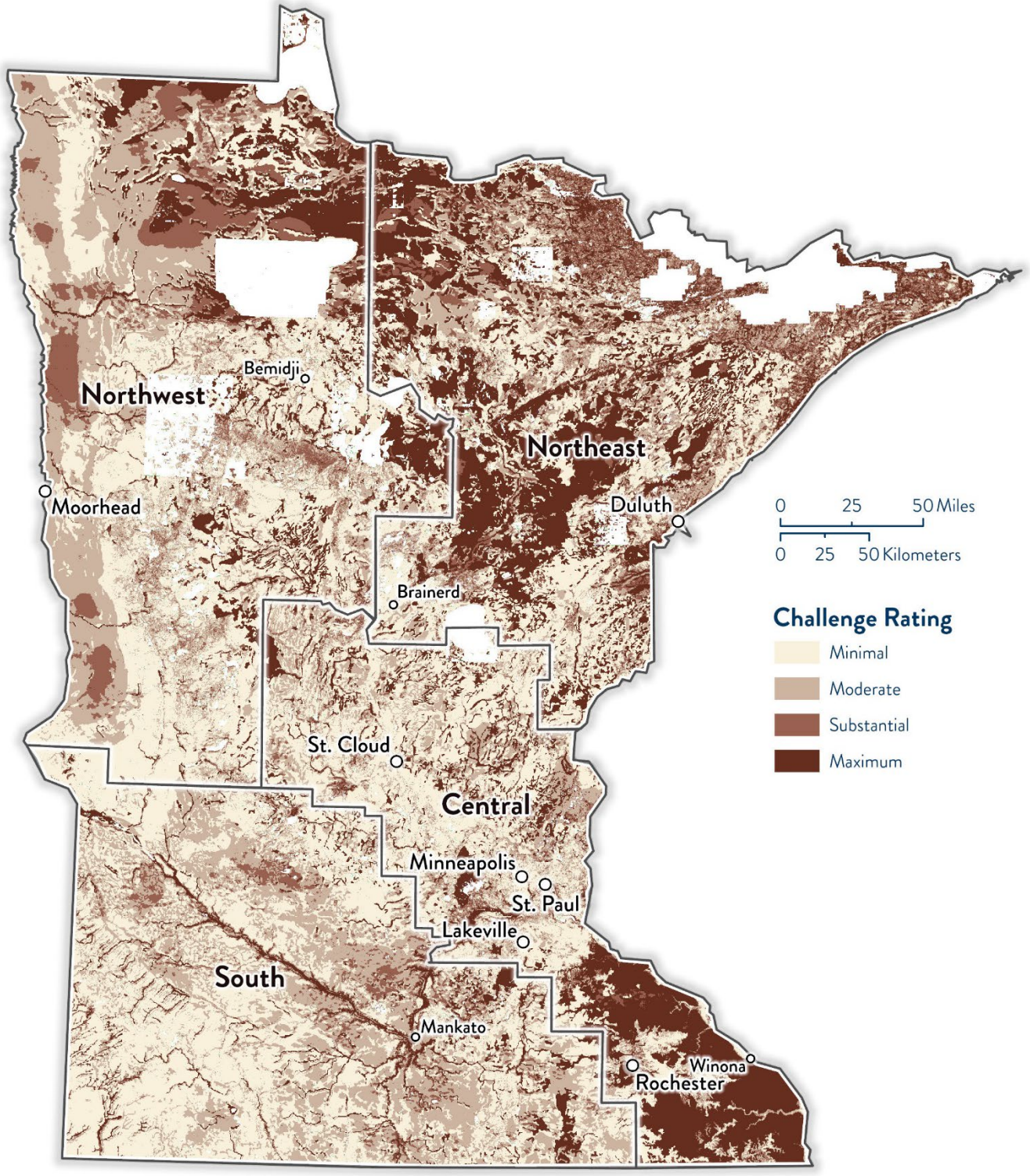


Figure 3.8 shows where environmental and topographical factors suggest areas that would present a greater challenge to maintaining ATV trails. This analysis indicates that it would be easier to maintain trails in the Nemadji State Forest Area, in the area around Bemidji and around Appleton.

FIGURE 3.8 MAINTENANCE CHALLENGE MODEL



While these high-level analyses will assist in considerations for new trail opportunities, they will not take the place of site-specific review and considerations. There are areas where multiple factors suggest the area is more suited to new trails, and conversely, there are areas that are less suited to potential new trails.

4 THE ECONOMICS OF RECREATIONAL ATV USE IN MINNESOTA

4.1 Current Economic Impact of ATV Recreation

Recreational ATV use has a significant economic footprint within the state of Minnesota. This section will quantify the existing economic impact of ATV-based recreation and provide estimates for future impact from predicted growth of ATV registration across the state. This section will also provide information that communities may use when considering whether, or the extent to which, ATV-based recreation fits into their economic development efforts. It should be noted that a direct comparison between economic impacts of ATVs and economic impacts of other recreational activities was not in the scope of this plan. There are some areas of potential conflict or incompatibility of ATV trails/recreational use with other recreational uses (such as state parks or horse trails) that also provide economic benefits, and it is important to keep these tradeoffs and limitations in mind when considering the economic impact of recreational ATV use.

4.1.1 Economic Impact Inputs

Spending associated with travel for the purposes of ATV recreation generates economic activity in the state. Money spent on lodging, dining, gas and groceries supports local economies, helps create jobs and generates tax revenue. Economic impacts of existing and future ATV activity were projected using a computer-based spending throughput model called IMPLAN. IMPLAN modeling requires the estimation of trip frequency and trip spending in order to simulate the effect of recreational ATV activity on the economy in terms of sales, employment, labor income and tax revenues. Four main data points were used to estimate economic impact: the average number of ATV trips per person, the number of registered ATVs, an estimated trip spending profile (Table 4.1) and the average annual cost to purchase and maintain an ATV (Table 4.2). It should be noted that two of these data points, the number of registered ATVs and the annual cost to purchase and maintain an ATV, account for people who may have purchased ATVs for purposes other than public trail recreation such as utility, farm or private land use.

The public visioning questionnaire (Appendix B) asked ATV users about trip characteristics including duration, frequency and spending estimates on expenditures such as lodging, dining and fuel. Using this information, it is estimated that ATV users take an average of 3.6 trips per year where ATV recreation is the primary purpose of trips. It should be noted that the public visioning questionnaire was not a random survey of ATV users so actual averages could be bigger or smaller. In 2021, there were 341,549 registered recreational ATVs in Minnesota, which amounts to approximately 1,230,564 trips per year.

Table 4.1 Average Trip-Related Spending Per Person Per ATV Recreation Trip (2022 Dollars)

Trip Spending Category	Average Spending (Per Trip)
Lodging/Camping Fees	$40
Food and Beverage	$62
Transportation (fuel and parking fees)	$73
Admission/Fees	$11
Other (clothing, souvenirs, etc.)	$21
Total	**$207**

Table 4.2 Average ATV Spending Per Person Per Year (2022 Dollars)

ATV Spending Category	Average Spend (Per Year)
ATVs Purchased	$5,363
Repairs	$63
Modifications/Upgrades	$78
Routine Maintenance	$57
Insurance	$63
Other (apparel, fees, rentals)	$53
Total	**$5,677**

4.1.2 Economic Impact Results

The estimated annual economic impact of ATV-related spending in Minnesota under existing conditions is detailed in Table 4.3. To best discuss ATV recreation-related spending impact, it is important to define common economic impact terms first. Direct output refers to economic activity stemming from the first round of spending/dollars generated within a specific space due to the presence of an activity or changes in expenditures made by consumers as a result of an activity. An example of this would be an ATV purchased from a dealership. Indirect output refers to business-to-business purchases taking place in an area stemming from the initial purchase and additional economic demand that is placed upon supplying industries as well as inter-industry transactions. For example, an ATV dealership purchasing parts from an aftermarket parts supplier in order to service customer vehicles is an indirect impact. Secondary impacts refer to both indirect outputs as well as induced effects (which are activities that stem from household spending from the people involved in direct and indirect impacts). An example of this would be ATV dealership employees spending their salary at local businesses like restaurants or grocery stores. Value added refers to a business' or industry's total output minus intermediate expenses, and output refers to the total value of a business' production including intermediate expenses.

Recreational trip and ATV spending generates an estimated $640 million in direct output in the state of Minnesota, $230 million in indirect output and $350 million in secondary impact, for a total economic impact of approximately $1.22 billion. Approximately $225 million in federal, state, county and sub-county tax revenue is generated each year by ATV spending (Table 4.4). ATV recreation also supports approximately 8,147 full-time-equivalent (FTE) jobs each year. The economic impact figures below are based on public engagement responses and include trips from ATVs registered within the state of Minnesota for recreational purposes.

Table 4.3 Total Estimated Annual Economic Impact (2022 Dollars)

	Employment (FTEs)	Labor Income	Value Added	Output
Direct	5,167	$311,012,000	$427,314,000	$643,102,000
Indirect	1,071	$80,409,000	$120,734,000	$229,640,000
Secondary	1,908	$118,951,000	$205,469,000	$350,835,000
Total	**8,147**	**$510,371,000**	**$753,517,000**	**$1,223,577,000**

Table 4.4 Total Estimated Annual Tax Impact (2022 Dollars)

	Sub-county	County	State	Federal	Total
Direct	$28,502,000	$16,180,000	$65,875,000	$41,466,000	$152,023,000
Indirect	$1,954,000	$1,111,000	$7,284,000	$15,805,600	$26,154,600
Secondary	$5,420,000	$3,079,000	$15,915,000	$22,386,000	$46,800,000
Total	**$35,875,000**	**$20,370,000**	**$89,073,000**	**$79,658,000**	**$224,976,000**

4.2 Future Economic Impact of ATV Recreation

4.2.1 Future ATV Economic Impact Inputs

Future economic impact was estimated for 2032, approximately 10 years in the future. Assuming a 2 percent growth rate in the number of registered ATVs in Minnesota — which is consistent with the average growth trends between 2011 and 2021 — there will be approximately 378,426 registered ATVs in 2030, an increase of nearly 60,000 compared to 2021. For the purposes of the modeling exercise, trip frequency was held constant and spending inputs were adjusted for inflation assuming a 2.5 percent average annual rate of inflation. Using the same approach to the trip frequency calculation, 378,426 registered vehicles amount to approximately 1,609,300 trips per year assuming an average trip rate of 3.6 trips per year.

4.2.2 Future ATV Recreation Economic Impact Results

Trip and ATV spending is projected to generate $1.07 billion in direct output, $383 million in indirect output and $586 million in secondary impact for a total economic impact of $1.9 billion. ATV recreation is projected to support approximately 13,612 full-time-equivalent jobs each year. The projected 2032 economic impact of ATV recreation in Minnesota is detailed in Table 4.5. Approximately $376 million in federal, state, county and sub-county tax revenue is also projected to be generated each year by ATV recreation (Table 4.6).

Table 4.5 Projected Annual Economic Impact (2032 Dollars)

	Employment (FTEs)	Labor Income	Value Added	Output
Direct	8,632	$520,041,000	$714,395,000	$1,075,081,000
Indirect	1,790	$134,367,000	$201,774,000	$383,822,000
Secondary	3,190	$198,870,000	$343,517,000	$586,549,000
Total	**13,612**	**$853,278,000**	**$1,259,685,000**	**$2,045,452,000**

Table 4.6 Projected Annual Tax Impact (2032 Dollars)

	Sub-county	County	State	Federal	Total
Direct	$47,652,000	$27,052,000	$110,136,000	$69,331,000	$254,171,000
Indirect	$3,265,000	$1,857,000	$12,172,000	$26,412,000	$43,706,000
Secondary	$9,062,000	$5,148,000	$26,607,000	$37,427,000	$78,245,000
Total	**$59,980,000**	**$34,056,000**	**$148,916,000**	**$133,170,000**	**$376,122,000**

4.2.3 Comparison of Existing and Projected ATV Economic Impacts

While this analysis suggests the potential for significant growth in the economic output from ATV usage over the next ten years (67 percent increase), several factors may impact this trend such as larger economic factors that could influence the frequencies of annual recreational ATV trips. A growing market demand for electric ATVs could also alter the spending characteristics for ATV users by shifting from gasoline to electric power. This shift would also have state and local tax implications that affect output calculations. Alternatively, a growing outdoor recreation market for ATVs might accelerate participation beyond historic trends, offsetting changing market trends in technology and their associated impact.

Table 4.7 Comparison of Existing and Future ATV Economic Impacts (2032 Dollars)

	Employment	Labor Income	Value Added	Output
Total (2022)	8,147	$510,371,000	$753,517,000	$1,223,577,000
Total (2032)	13,612	$853,278,177	$1,259,685,232	$2,045,451,818
Increase	5,465	$342,907,177	$506,168,232	$821,874,818
Percent Increase	67 percent	67 percent	67 percent	67 percent

4.3 Economic Impact Conclusions

Spending associated with ATV recreation in Minnesota generates an estimate of $1.22 billion annually. ATV recreation also generates approximately $225 million in federal, state and county tax revenue and supports an estimated 8,147 full-time equivalent jobs. The economic impact of ATV recreation is not distributed evenly throughout the state of Minnesota as ATV activity is concentrated in the northwest and northeast region of the state.

Although a direct comparison between the economic impacts of ATVs and the economic impacts of other recreational activities is not in the scope of this plan, it generally can be concluded that outdoor recreation is a powerful economic development and economic diversification tool. This tool is being utilized by many communities looking to attract visitors, increase quality of life and create jobs. As with any economic development strategy, however, it is important that the specific development activities align with community goals and values identified through community engagement and planning initiatives.

5 PROJECT DEVELOPMENT

5.1 Project Development Process and Flowcharts

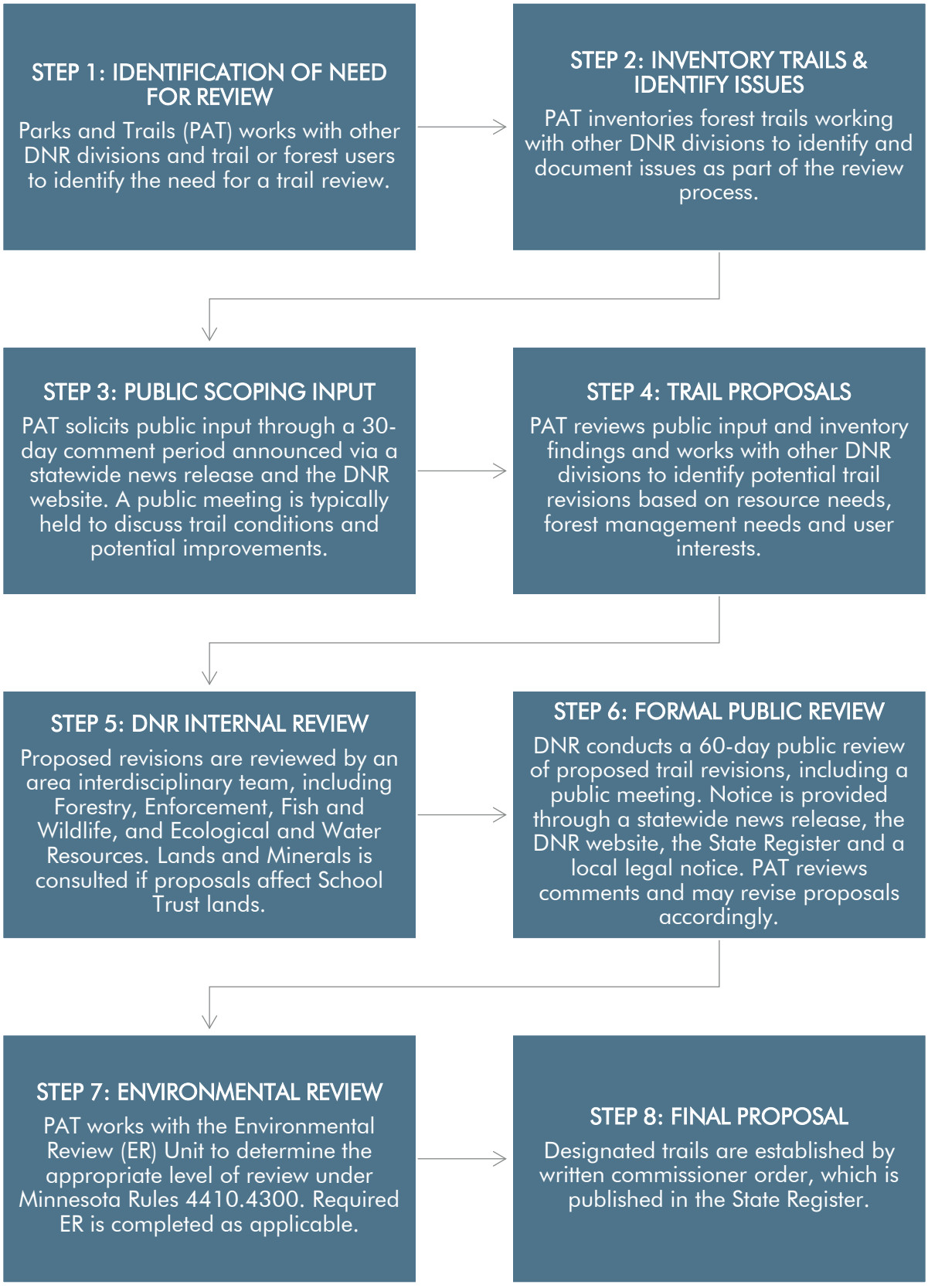
When the DNR oversees a new ATV trail project, the project development process usually comes in two forms: GIA trail development projects and state-designated trail development projects. Each process has a clear set of steps so all interested stakeholders and partners involved in project review, management and development can track projects from their inception to implementation. These steps are demonstrated in the flowcharts below (5.1.1 and 5.1.2). These steps aim to provide clarity and transparency so all interested parties can openly communicate regarding project development, process improvements and overall collaborative efforts.

The DNR intends to use all project guidance in the steps demonstrated in the flowcharts. Such an approach produces a consistent system of names and step numbers to refer to for the various stages of project development. It also assists in project communication and messaging, making it easier for all stakeholders to track projects through various stages of development. The processes in the flowcharts are similarly used in other areas of OHV project development (OHM, ORV, etc.) managed by the DNR.

The DNR has developed a seven-step process to review and implement new trail applications for the GIA program which is shown in section 5.1.1 below. The DNR also reviews state forest trails for sustainability, connectedness and user experience. State forest trail planning can evaluate forest trails and determine if new trails should be considered for connectivity. Parks and Trails leads these evaluations and conducts both internal and external reviews. This process is outlined below in section 5.1.2. The DNR Commissioner designates or undesignates state forest trails through a commissioner's order.

5.1.1 Grant-in-Aid Trails Project Process Flowchart

5.1.2 State-Designated Trails Project Process Flowchart



5.2 Suggested Sustainable Trail Design Guides and Reference Materials

The following trail design guides and reference materials represent the best available guidelines for developing ATV trails that are physically, ecologically and economically sustainable. Collectively, these guidelines provide a comprehensive reference for agencies, trail advocates and other stakeholders. Policy makers can also use these resources as they consider various types of trail development projects. The limitation of these guidelines is that each trail is unique and requires site-specific evaluation to determine the most appropriate design approach. In some cases, refinements or adjustments to the guidelines will be warranted to ensure that the health, safety and welfare of the public is not compromised. While these guidelines are an important reference, they are not a substitute for in-the-field analysis required to make informed decisions about the design and development of a specific ATV trail.

Trail Planning, Design, and Development Guidelines by the Minnesota Department of Natural Resources, Parks and Trails Division (DNR)

Released in 2007, this 300-page publication provides a comprehensive "how-to" guidebook for developing all types of recreational trails and has become a trail design "go-to" throughout Minnesota and the United States. The guidelines and best practices are intended to aid Minnesota land managers in applying new, innovative and environmentally sustainable approaches to trail planning, design and construction. The document can be downloaded from the DNR website.

Trail Construction & Maintenance Notebook by the United States Department of Agriculture, Forest Service (USFS)

First published in 1996 and updated in 2007, the USFS's *Trail Construction & Maintenance Notebook* is a quick, pocket-sized encapsulation of sustainable trail design guidance. Focusing on Forest Service policies and direction, it is a practical guide for trail work that is small and readable. The document can be downloaded from the USFS section of the U.S. Department of Agriculture website.

Designing Sustainable Off-Highway Vehicle Trails, by the United States Department of Agriculture, Forest Service (USFS)

Released in 2013, this guide provides a collection of tools for the construction and management of OHV trails. The guide brings together resources from a variety of sources, including the U.S. Department of Agriculture, Forest Service, the U.S. Department of the Interior, National Park Service, private trail management organizations, the State of Alaska and others. The author developed some of the tools based primarily on experience managing OHV trails in Alaska. The document can be downloaded from the American Trails website.

Great Trails: Providing Quality OHV Trails and Experiences, by the National Off-Highway Vehicle Conservation Council (NOHVCC)

The theme of Great Trails is "balancing the needs of the recreationists with protection of resources." It helps land managers understand that trail planning, design, construction, maintenance and management are not five separate processes but rather one continuous process referred to in the book as "The Great Trail Continuum." The guide stresses the importance of providing trails for riders that are fun, challenging and sustainable. The document can be downloaded from the NOHVCC website.

Minnesota Grant-in-Aid Program Manual, by the Minnesota Department of Natural Resources (DNR)

The GIA Program Manual includes many helpful guidelines for trail design, construction and maintenance. It summarizes key trail design information from two other trail development guides: Minnesota Trail Planning, Design and Development Guidelines and Great Trails: Providing Quality OHV Trails and Experiences. The GIA Program Manual identifies planning constraints such as steep slopes and agricultural lands that affect trail design and other design features that may affect rider speed, trail sustainability and erosion. It also includes invasive species management expectations and references the DNR's invasive species guidance. The manual can be downloaded from the DNR website.

5.2.1 Guiding Principles for Sustainable Trails

The guiding principles discussed below are reflected in each of the suggested trail design guides and reference materials above. Application of these principles will minimize the impact of trails on natural resources and sensitive ecological systems. Importantly, the application of these guiding principles can be balanced against the need to locate trails where they will be of high recreational value to the targeted users, who often want to be close to nature, enjoy beautiful scenes and observe wildlife. This is an important consideration and underscores the need for resource managers and trail designers to work together to determine which values are most important for any given situation.

- Guiding Principle #1: Avoid sensitive ecological areas and critical habitats.
- Guiding Principle #2: Develop trails in areas already influenced by human activity.
- Guiding Principle #3: Provide buffers to avoid/protect sensitive ecological and hydrologic systems.
- Guiding Principle #4: Use natural filtration and best practices for stormwater management.
- Guiding Principle #5: Provide ongoing stewardship of the trails and adjoining natural systems.
- Guiding Principle #6: Ensure that trails remain sustainable.
- Guiding Principle #7: Formally decommission and restore unsustainable trail corridors.

6 FUTURE STRATEGIES

This strategic master plan aims to bring clarity to maintenance and development of the ATV trail system in Minnesota. Many of the strategies for future opportunities discussed in this chapter are already incorporated into day-to-day DNR operations. These strategies are incorporated here to provide transparency for all those interested in ATV recreation in Minnesota. It is important to recognize that capacity for growth in any trail system is limited due to many factors ranging from maintenance and management needs, a need to balance use types and user levels, limitations in funding and an acknowledgement that not every location is suitable for all types of recreation. There are also certain types of opportunities — such as racing areas — that are more conducive to private enterprise than to the public trail system. As ideas and opportunities arise for new ATV trails, the DNR will carefully evaluate all of these considerations and strategies outlined in this chapter and engage with a variety of stakeholders before determining if a specific proposal/opportunity would meet an identified need and align well with the existing trail system.

6.1 Trail Maintenance

For any trail system to be sustainable, adequate maintenance must be a priority. It is important to understand current maintenance needs and to respond to them in a timely manner. Maintenance funding is limited, and before adding new trails it is critical to be sure there are sufficient resources to take good care of the trails we already have. Clubs are pivotal in monitoring trails and evaluating them for maintenance needs and in communicating those needs with the DNR and other stakeholders.

The DNR works with user groups, clubs and riders on a regular basis to make sure maintenance issues are understood and addressed. Holding seasonal user group meetings helps in facilitating ongoing conversations regarding trail maintenance; this practice should continue. It is also important to communicate internally regarding trail maintenance needs. The OHV program should continue to work closely with regional specialists, area offices and divisional staff to ensure maintenance needs are understood and addressed.

The DNR (together with the LGU and club for trails in the GIA program) to monitor trails and address any maintenance concerns. For designated trails, the DNR will explore developing a schedule prior to the start of the riding season to monitor the trail throughout the season. For GIA trails, the DNR should work with the LGU and club to identify maintenance priorities and a monitoring schedule.

The DNR has a roving maintenance crew that can assist with larger OHV trail projects. The roving crew consists of experienced trail builders with specialized equipment to perform maintenance projects. DNR area supervisors can request the roving crew for specific projects. For GIA trails, most maintenance is performed by ATV clubs, with 90 percent of costs reimbursed through the GIA Program. A club may request DNR assistance, including the roving crew, for major projects or storm clean up.

6.1.1 Trail Maintenance Strategies:

- Communicate maintenance needs by regularly meeting internally and externally with user groups, clubs and LGUs. These efforts can be led by OHV program staff.
- Develop best management practices that support sustainable trail conditions (e.g., water mitigation measures), reduce erosion and protect natural resources (e.g., invasive species prevention and management).
- Develop a trail monitoring schedule at the beginning of a riding season.
- Continue to monitor trails in state forests and update signage as needed to reflect changes in conditions, such as those resulting from logging or other forest management activities.

6.2 Connectivity

Connectivity within the ATV trail system was highly prioritized by ATV users in the visioning questionnaire. Improved connectivity between riding areas can enhance the overall user experience, improve the efficiency of the statewide trail system (i.e., reduce the potential for redundancies by connecting areas with different offerings in terms of ability level or type of experience) and reduce user density in individual riding areas by creating defined connection paths that can help reduce instances of user created trails.

Enhancing connectivity throughout the statewide ATV trail system is beneficial as an overarching goal for new ATV development and re-route projects. New connectivity corridors should be pursued between riding areas and challenge parks (such as the IROHVSRA) within each region. New connections between riding areas/challenge parks and nearby downtowns/shopping districts can — if desired by the community — be prioritized to enhance local recreational access and economic development opportunities.

Connectivity strategies can be planned for slightly differently than other ATV opportunities in terms of desired experiences and terrain suitability — these projects may sometimes focus more on access between "Point A" and "Point B" than on the recreational experiences of the trail — but all the guidelines for resource suitability, resource protection and trail sustainability still apply. Options to enhance existing and previously disturbed corridors that already traverse the landscape such as former rail corridors, transmission rights-of-way or highway rights-of-way should be explored where possible.

6.2.1 Connectivity Strategies:

- Place greater emphasis on maintaining and improving existing trails than on creating new trail systems.
- Prioritize the development of connections between riding areas and other points of interest to enhance local recreational access and economic development opportunities. Strategic connections between existing riding areas can greatly enhance user experience and increase trail mileage with relatively low upfront investment.
- Prioritize creating trail connections in areas where county and township roads are restricted for ATV travel to provide riders a safe and legal way to move from one trail to another and reduce the need for trailering their ATV.
- Solicit input on desired connections and connection priorities from ATV clubs, trail users (those who ride ATVs and those who do not), local communities and other stakeholders.

6.3 Grant-in-Aid Process Modernization

As noted previously in this plan, GIA is a partnership between the DNR and a local government unit (LGU) such as a county, city or township. Typically, the LGU will partner with a club to assist with trail construction and maintenance. Proposals are often initiated by a club, which then finds an LGU to act as the project sponsor. The LGU, in partnership with the club, then submits an application for the proposed GIA trail to the DNR. Detailed information regarding the GIA Program and New Project Applications can be found on the MN DNR OHV webpage and in Chapter 5 of this plan. Although the official partnership is between the DNR and the LGU, the communications between the DNR and the club are just as crucial to a successful GIA trail. Throughout the proposal review process, the DNR, LGU and club each have important roles in submitting, reviewing and processing a New Project Application. Until recently, each party mailed hand-written, hard copy forms to the others to move the process along and it was difficult at times for the LGUs, clubs and other interested parties to know the status of any given application.

In 2021, the DNR started an improvement process to review the GIA Program, increase efficiency and ensure the program was working well for stakeholders and members of the public. The process included engagement with OHV organizations (ATV MN, Minnesota 4-Wheel Drive Association and Amateur Riders Motorcycle Club Association) and club members to identify what could be improved. Outcomes of this process include updated reimbursement amounts that better reflect existing construction and maintenance costs as well as the addition of an application for winter trail grooming, plowing and maintenance costs. This improvement process could be further expanded to include a project notification system intended to notify people who opt-in to receive OHV-related updates. Such an improvement process could also lead to enhanced alignment of project review with strategic master plan goals.

6.3.1 GIA Modernization Strategies:

- Consider utilizing an online project proposal interface where all parties can see the status of the project, who has reviewed the information and who is the next reviewer.
- Monitor the GIA proposal process and ensure that the information from proposals is being digitally recorded. Information gleaned from proposals can help guide future management actions.
- Encourage clubs to work closely with DNR staff in early stages of the GIA proposal process to ensure the proposal is complete.
- Evaluate the possibility of requiring GIA proposals to include multiple trail alignment alternatives or a larger corridor within which a preferred alignment could be identified after review of site-specific conditions and considerations.

6.4 Coordination and Collaboration

The overarching goal of the OHV Program's stakeholder and partner engagement and coordination is to support participatory and collaborative planning in the program's projects and activities. Coordination and collaboration involves external stakeholders, partners and internal cross-disciplinary review. The goal is to provide clear information available to all partners on how the engagement process is going to be carried out. It is important to emphasize the importance of listening to the pros and cons of any idea or viewpoint as such an active listening process often leads to a greater understanding of multiple interests.

To ensure DNR's three-part mission is achieved, collaboration across DNR divisions and subject matter experts should continue to be prioritized throughout the ATV trail maintenance and development process.

As a part of this process, the DNR OHV Program identifies specific staff/positions within each division to be involved in various points of a given project, which is referred to as 'interdisciplinary review'.

6.4.1 Coordination and Collaboration Strategies:

- Provide clear access to information for ongoing/new projects and activities.
- Continue to prioritize interdisciplinary review across DNR divisions early in the GIA proposal review process and for any DNR-led projects.
- Provide mechanisms for clubs, LGUs and others interested in ATV recreation to share their contact information with the DNR to be notified of press releases and announcements concerning various ATV-related projects and activities.
- Prioritize DNR staff and recreation provider relationships with ATV regional directors and clubs by encouraging attendance at annual meet ups, trail administrator meetings, maintenance workshops, virtual monthly meetings, etc.
- Continue to communicate with various sub-groups within ATV Minnesota that are pursuing education and safety initiatives such as the Safety Committee and Winter Riding Committee to share resources.
- Increase volunteer maintenance capacity by encouraging volunteer attendance at annual trail maintenance workshops and communicate training needs and requirements (e.g., chainsaw certification, best practices for managing invasive species) to potential volunteers.
- Partner with Explore Minnesota and local destination marketing organizations to create more user-oriented maps and trail friendly business materials that can encompass relevant businesses, services, lodging, downtowns and shopping districts.
- Engage early and often with local and county leadership; also include LGU staff involved in economic development, permitting, planning, lands management, and roads and transportation.
- Build upon and update over time the existing contact database of stakeholders, collaborators and partners to include specific contacts at local and county government, conservation groups, economic development and tourism entities, user groups, land managers, local businesses and other parties interested in ATV development.
- Explore opportunities to continue collaborating with agency partners on long-term OHV monitoring efforts to support adaptive management and knowledge sharing.

6.5 Policy and Regulations

Policy and regulations, along with education, are primary mechanisms land management agencies can use to manage recreational activities. Accordingly, the DNR has developed a system to deliver clear and consistent communication of policies and regulations across the agency and stakeholders. It is also important to address trespass issues involving trails that are adjacent to, or travel through private land (with landowner permission). Using an adaptive management approach to land and resource management, the DNR can continually review and modify ATV policy and regulations over time to ensure recreation activities are properly managed on public land and on public land adjacent to private land.

6.5.1 Policy and Regulations Strategies:

- Continue to communicate vehicle classifications and regulations, such as noise limits, weight and width restrictions, youth operation, etc., as simply and easily as possible and seek to have multiple channels and/or presentations that include printed regulations, interactive websites, signage and other means.
- Review and communicate the effectiveness of the increased trespass fines for illegal motorized vehicle use on private lands.
- Prioritize funding or dedicated staff time for ATV rules and regulations communications. Proactive communication concerning common questions such as seasonal closures, trail conditions, winter riding opportunities, roadway and ditch travel, vehicle classifications and legal vehicle modifications can help educate riders, establish the DNR as an authoritative source of information and increase regulation compliance.
- Establish a presence on popular Minnesota ATV forums to provide information and updates to the ATV community and answer questions related to ATV rules and regulations. Posts and answers could point riders toward resources on the DNR website to encourage riders to check official sources for information.
- Maintain and improve the reporting system where Trail Ambassadors report and catalog maintenance and enforcement issues. This system helps the DNR identify where maintenance funds and enforcement staff can be used more effectively and provides a clearer understanding of on-the-ground conditions to inform coordination with LGUs and Tribal partners.
- Encourage LGUs to develop a comprehensive source of information that includes the status of ATV policies in each township and to share information with other LGUs and Tribal partners. Riders can use this resource to better understand the local differences in ATV policies concerning travel in ditches and on roads.

6.6 Understanding and Responding to Use Trends

Understanding use patterns and addressing evolving trends in recreational use is critical to effectively managing ATVs. Tracking ATV registrations, developing a trail use assessment program that utilizes trail traffic counters, and conducting post-ride or intercept surveys with riders will be important strategies in understanding trends and adapting management strategies over time. Three observable key trends that influence riding activity include a strong interest in winter riding opportunities, the emergence of electric ATVs (e-ATVs) and an industry transition toward wider Class 2 ATVs. These trends require management strategies that consider associated increased maintenance costs (grooming, plowing, etc.) and infrastructure development costs (charging stations, upgrading bridges, etc.). Another trend that continues to grow in Minnesota is the number of new, and potentially inexperienced, ATV riders. Communicating safety information, rules and regulations to these new entrants into the community of recreational ATV riders in Minnesota is important in supporting safe and legal ATV use.

6.6.1 Strategies for Responding to Use Trends:

- Partner with ATV clubs to share available trail use information such as data from trail traffic monitoring.
- Support the development of trails that provide experiences such as technical trails, camping experiences and loop systems.
- Regularly assess new riders' informational needs, particularly pertaining to maps and navigation.

- Support the provision of additional maps and information, toilet facilities and campsites (private or non-state park) around popular ATV routes.
- Continue to ensure that information about ATV safety courses is readily and easily available on the DNR website.
- Track the emergence of e-ATVs through industry research. Registration forms could also request information on vehicle type to track Minnesota-specific e-ATV use.
- Continue to evaluate the implications of wider and heavier vehicles on trails and trail infrastructure (bridges, boardwalks, limiters, etc.).
- Create a clear process for requesting, evaluating and conducting allowable motorized events on state managed lands.

6.7 ATV Communications

The DNR pursues opportunities to improve communications with ATV riders through all its messaging, particularly regarding maps and other navigation information. An integrated and consistent graphic style for the ATV program with consistency across websites, trailhead and on-trail signage, project plans/documents, regulation books and other materials could improve overall communications. More information about the GIA program could also be shared with Minnesota residents to raise awareness about the program generally.

6.7.1 ATV Communications Strategies:

- Pursue opportunities to improve communications with ATV riders through messaging, particularly maps and other navigation information.
- Ensure all promotional material showcases best practices in ATV etiquette and safety.
- Encourage participation in social media and in-person events to engage with existing ATV users.
- Prioritize the placement of ATV signage in multi-use trail areas to encourage respectful and safe riding.
- Share information about project development, benefits of recreation, recreational use statute and landowner liability and other relevant ATV topics with public land users, riders, ATV clubs, local government representatives and other stakeholders and partners.
- Conduct an ongoing assessment of users' informational needs, particularly pertaining to maps and navigation.
- Create a trail advisory group with representatives from a variety of motorized and nonmotorized trail users, including ATV riders, to provide input to the DNR as we manage public lands for multiple uses and to improve communication among user groups.

6.8 ATV Education and Stewardship

Education is a critical element of enhancing stewardship at the local, state and even national level. The Division of Enforcement provides the bulk of ATV-oriented education in Minnesota, but there are opportunities for improving education and information-sharing with the ATV community in Minnesota through further collaboration with the Enforcement Division and by engaging other partners in the DNR.

There are also opportunities to encourage stewardship and empower greater conservation of natural resources through better information sharing.

6.8.1 ATV Education and Stewardship Strategies:

- Continue to provide videos and other educational information on safety, etiquette and rules and regulations.
- Continue to work with ATV Minnesota to support trail building and trail maintenance workshops. These workshops, which emphasize stewardship, could be coordinated with existing ATV Minnesota annual events.
- Collaborate with other DNR divisions and natural resource specialists to share wildlife, habitat, natural communities and other natural resource information geared toward sustainable trail practices.
- Add stewardship-focused questions to GIA New Project Applications to help the DNR continue to ensure sustainability and stewardship in any proposed operations.
- Identify reoccurring opportunities for rider education, safety, and respectful and responsible riding courses for the public.
- Promote awareness of sustainable trail practices and of trail design guidelines.

6.9 Summary

It is important to continue to emphasize that maintenance and the ongoing review of Minnesota's current ATV trail system are important to the system's sustainability. It should also be reiterated that ecological impact is at the forefront of sustainability considerations and is paramount to the DNR. Being sure to consider the role that connections to neighboring communities and existing trails can play in local economies and user enjoyment of ATV trails can also guide key decisions regarding ATV trail development. Planning can help ensure a sustainable and enjoyable recreation system for all Minnesotans to explore while simultaneously promoting responsible ATV trail management and best riding practices through education, outreach and stewardship.

REFERENCES

In-Text Citation	Full Citation
Apportionment Of Tax; Deposit Of Proceeds, 2021	Apportionment Of Tax; Deposit Of Proceeds. 2021 Minnesota Statutes §296A.18. 2021. Available at: https://www.revisor.mn.gov/statutes/cite/296A.18
ATV Minnesota, 2018	Mission & Accomplishments. 2018. ATV Minnesota. Available at: https://www.atvmn.org/atvmn/mission-accomplishments
ATV Scene, 2009	Who Invented the 3-wheeled ATV? 2009. ATV Scene. Available at: https://atvscene.com/invented-3-wheeled-atv/
Cooney, 2020	5 Best ATV and UTV Features and Innovations. 2020. Cooney. Available at: https://www.atv.com/features/5-best-atv-and-utv-features-and-innovations
Forest Service, 2004	Forest Service. 2004. Chippewa National Forest Plan. Available at: https://www.fs.usda.gov/r09/chippewa/planning
Forest Service, 2005	Forest Service. 2005. Travel Management. Available at: https://www.fs.usda.gov/science-technology/travel-management
Forest Service, 2015a	Forest Service. 2015. Chippewa National Forest Forest-Wide Travel Analysis Report.
Forest Service, 2015b	Forest Service. 2015. Superior National Forest Forest-wide Roads Study Report.
Lakes Area Powersports, 2021	History of All-Terrain Vehicles. 2021. Lakes Area Powersports. Available at: https://www.lakesareapowersports.com/blog/off-road-vehicles
Midwest Traction, 2018	History of the ATV. 2018. Midwest Traction. Available at: https://www.midwesttraction.com/resource-center/atv/history-of-the-atv/
MN DNR, 2023	Department of Natural Resources. 2023. Department of Natural Resources Strategic Plan. Available at: https://files.dnr.state.mn.us/aboutdnr/reports/conservationagenda/2023-2027-dnr-strategic-plan.pdf

OHV Program, 2022a	OHV Program. 2022. OHV Trail Planning. Available at: https://www.dnr.state.mn.us/input/mgmtplans/ohv/plans/index.html
OHV Program, 2022b	OHV Program. 2022. Off-Highway Vehicle Grant-In-Aid. Available at: https://www.dnr.state.mn.us/grants/recreation/gia_ohv.html
Wisconsin Department of Tourism Research, 2004	Wisconsin Department of Tourism. 2004. Economic & Demographic Profile of Wisconsin's ATV Users. Available at: https://dpla.wisc.edu/wp-content/uploads/sites/1021/2017/06/2003ATVReport.pdf
Wisconsin DNR, 2020	Wisconsin Department of Natural Resources. 2020. State of Wisconsin Department of Natural Resources Agency Budget Request 2021-2023 Biennium. Available at: https://doa.wi.gov/budget/SBO/2021-23%20370%20DNR%20Budget%20Request.pdf
Wisconsin DNR, 2022	Wisconsin Department of Natural Resources. 2022. ATV/UTV Registrations. Available at: https://dnr.wisconsin.gov/sites/default/files/topic/Aid/grants/councils/ORV/ATVAttachments08_31_2022.pdf

APPENDIX A: STAKEHOLDERS AND PARTNERS INVITED TO PARTICIPATE

- 4x4 Unlimited
- Action Sports
- Aitkin County Economic Development
- Amateur Riders Motorcycle Association (ARMCA)
- Arrowhead Regional Development Commission
- ATV Association of Minnesota (ATV MN)
- Backcountry Hunters and Anglers
- Bagley Motor Sports
- Bemidji Sports Centre
- Bike MN
- Bluffton Hardware
- Cannon Power Sports
- Chopper City Sports
- Conservation MN
- Cook County Joint Economic Development Authority
- County, City and Township Government
- Cross Thread Offroad
- Cuyuna Lakes Mountain Bike Crew
- Dan's Mobile Repair
- Derby 4 Wheel Drive
- Duluth Audubon Society
- Duluth Foot Trails Alliance
- Environment MN
- Environmental Initiative
- Environmental Law and Policy Center
- Explore Minnesota
- Extreme Terrain
- Five Seasons Sports
- Forest History Center
- Freedom Ridge
- Fresh Energy
- Friends of Sax-Zim Bog
- Friends of the Minnesota Valley
- Frontenac Farms Off Road Park
- Frontier Powersports
- Guided Overland Adventure Tours
- Honor the Earth
- Howling for Wolves
- Iron Range Tourism
- Iron Rock Off Road
- Izaak Walton League
- Lake Vermilion Resort Association
- Lakes Area Powersports
- Lakeville Off-Road
- Legacy of Nature Alliance
- Mille Lacs Area Tourism Council
- Minnesota 4 Wheel Drive Association
- Minnesota Association of Land Commissioners

- Minnesota Center for Environmental Advocacy
- Minnesota Deer Hunters Association
- Minnesota Environmental Partnership
- Minnesota Nordic Ski Association
- Minnesota Off-Road Cyclists
- Minnesota Public Lands Coalition
- Minnesota Recreational Trail Users Association (MRTUA)
- Minnesota Trail Riders Assoc (Equestrian)
- MN Land Trust
- MN USA Snowmobile
- MN350
- Motorized vehicle associations
- Nature Conservancy
- North Country Trail Association
- Northeast Minnesotans for Wilderness
- Northern Drivetrain
- Northstar Powersports
- Parks & Trails Council of Minnesota
- Parks & Trails Legacy Advisory Committee
- Power Lodge Brainerd
- Power Lodge Mille Lacs
- Proctor Tourism
- Public land organizations
- Ray's Sport & Marine
- Regional Chamber of Commerce members
- Save Our Bluffs
- Save the Boundary Waters
- Sidco 4x4
- Sierra Club North Star Chapter
- St. Paul Audubon Society
- Superior Hiking Trail Association
- The Belwin Conservancy
- The Nature Conservancy in Minnesota
- The Shop
- The Wildlife Research Institute
- Tousley Motorsports
- Trail Administrators for trail systems across the state
- Trust for Public Land
- Two Harbors / Lake County
- Upper Minnesota Valley Regional Development Commission
- Visit Ely
- Visit Grand Rapids
- Voyageurs Conservancy
- Wilderness in the City
- Women's Environmental Institute
- Zeus Off Road

Note: A public project website was available for all members of the public to gain insight and updates regarding the strategic master planning process.

APPENDIX B: PUBLIC VISIONING QUESTIONNAIRE RESULTS

Questionnaire Summary

The Minnesota ATV Public Visioning Questionnaire received 1,868 responses of which 1,302 (69 percent) were complete and 566 (31 percent) were partial or incomplete. The questionnaire was open from May 31, 2022, to September 30, 2022, and was taken primarily by Minnesota residents, although it was answered by some non-residents who were interested in providing feedback on their experience with ATVs in Minnesota. The questionnaire was advertised on a variety of platforms including Minnesota ATV social media, the project website, and MN DNR news releases and newsletters.

Respondent Demographics

- **GENDER:** 69 percent male, 27 percent female, 2 percent no response or other.
- **AGE:** 52 percent of respondents were between the ages of 40 and 60. Respondents between 18-29 years old represented 6 percent of the questionnaire population, and those 60 and older made-up 24 percent.
- **RACE:** Respondents to this questionnaire were predominately white (89 percent). 1 percent of respondents stated they were two or more races, and 7 percent of respondents preferred not to give a response. 1.3 percent of respondents stated their ethnicity as Asian, Black or African American, Native American, or Native Hawaiian or Pacific Islander.
- **INCOME:** 2.6 percent of respondents reported a household income of less than $35,000. 17.2 percent of respondents reported a household income between $35,000 and $75,000. 38 percent of respondents reported a household income between $75,000 and $125,000. 30 percent of respondents reported a household income of over $125,000. 11 percent chose not to report household income.
- **RESIDENCY:** 97 percent of respondents live in Minnesota. The remaining 3 percent live in Wisconsin, North Dakota, Colorado, Arizona, Illinois, Iowa and Pennsylvania.
- **COUNTY:** Respondents from 82 different counties in Minnesota participated in this questionnaire. The counties most represented were:
  - St. Louis County (20 percent)
  - Anoka County (6 percent)
  - Dakota County (4.3 percent)
  - Koochiching County (4.3 percent)
  - Crow Wing County (4 percent)
  - Hennepin County (3.7 percent)

- Itasca County (3.7 percent)

ATV Riders

User Profile

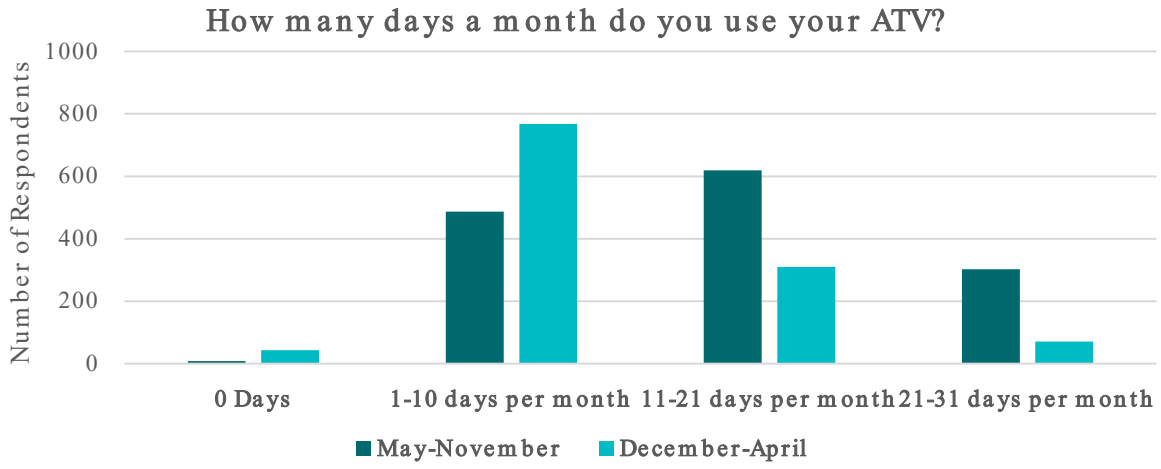
ATV PARTICIPATION: 89 percent of questionnaire respondents stated they currently use an ATV.

- 43 percent of those who currently use an ATV stated they are a member of an ATV club or organization (n=724).
- Of those who are club members, 69 percent stated their club maintains trails through the grant-in-aid program.
- 21.5 percent of those who currently use an ATV stated they are not a member of an ATV club or organization but would like to be.

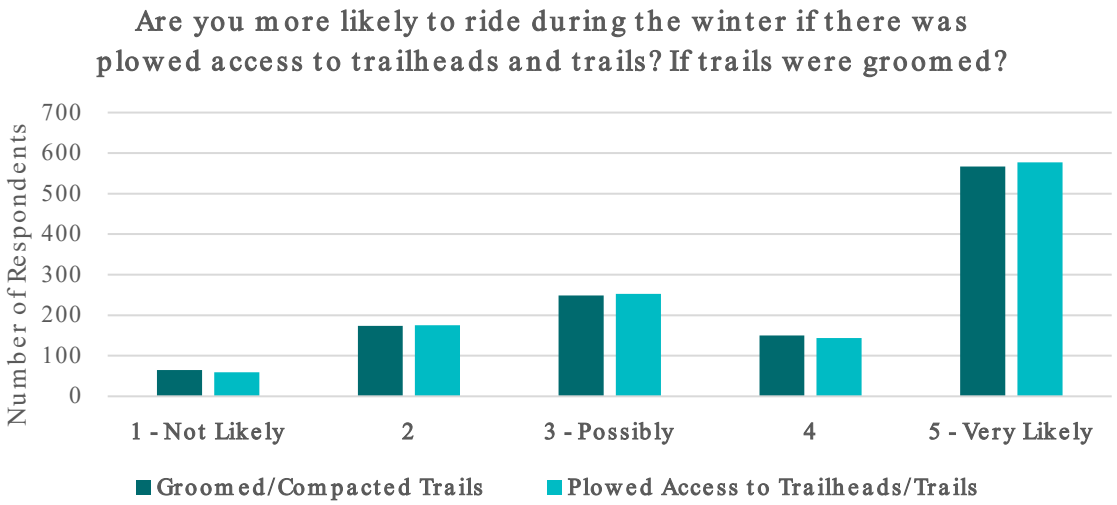
USE FREQUENCY (May-November): Between May and November, 34 percent of riders reported riding between 1-10 days a month, 43 percent reported riding between 11-20 days a month, and 20 percent of riders reported riding between 21-31 days a month. The population average is 14 riding days per month between May and November.

- 26 percent stated they ride weekly and 16 percent state they ride once or twice a summer. Write in comments included interest in going more if trails were closer and that ATV use may be higher during hunting season in the fall.

USE FREQUENCY (December-April): 3 percent of respondents stated that they do not go wheeling in the winter months and 15 percent stated they go once or twice. 26 percent of users stated they ride between 11-20 days per month in the winter and 5 percent stated they ride between and 21 and 31 days per month in the winter.



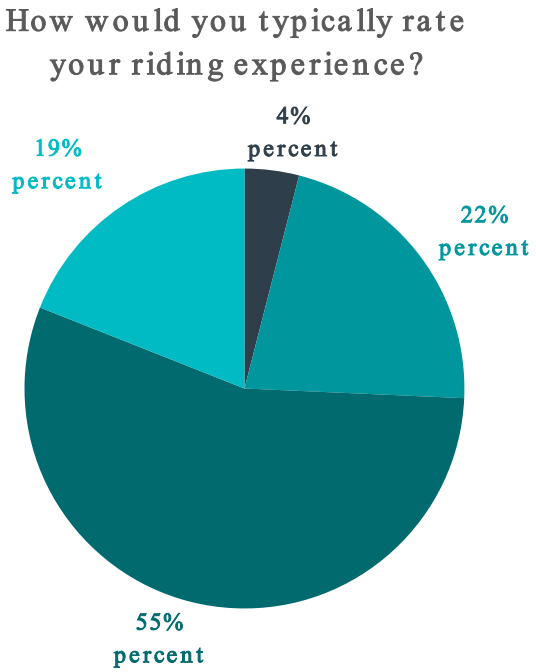
WINTER RIDING: Respondents answered questions regarding their interest in winter riding opportunities. Many respondents (46 percent) answered they would be very likely to ride more in the winter if there was plowed access to trails and trailheads, and if trails were groomed and compacted.



Recreation Experience

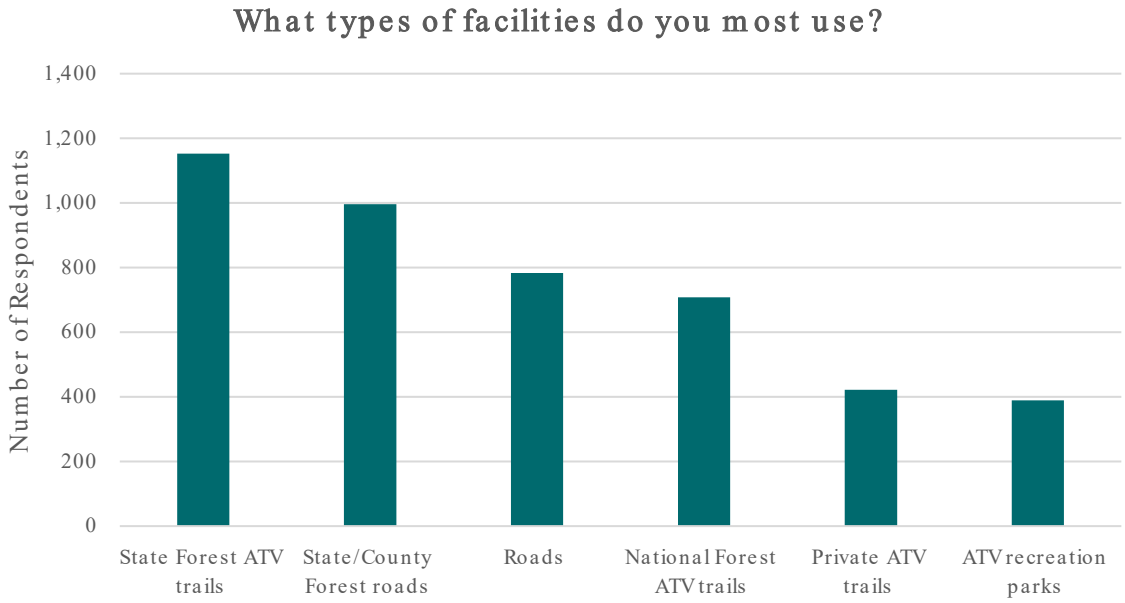
EXPERIENCE: The majority of respondents stated they would typically rate their off-roading experience as good (55 percent), 19 percent as excellent and 22 percent as fair.

RECREATION LOCATION: Respondents were asked to select where they typically recreate between in-state/out-of-state, public land/private land, and in the county where they live/outside of the county. 89 percent of respondents state they most often ride in Minnesota, 90 percent state they ride on public land and 56 percent of people state they most often ride outside of the county in which they live. Counties where respondents stated they most often ride include St. Louis County (23.7 percent), Cass County (8.5 percent), Aitkin County (7.4 percent), Crow Wing County (7.2 percent), Itasca County (6.7 percent) and Pine County (6.7 percent).

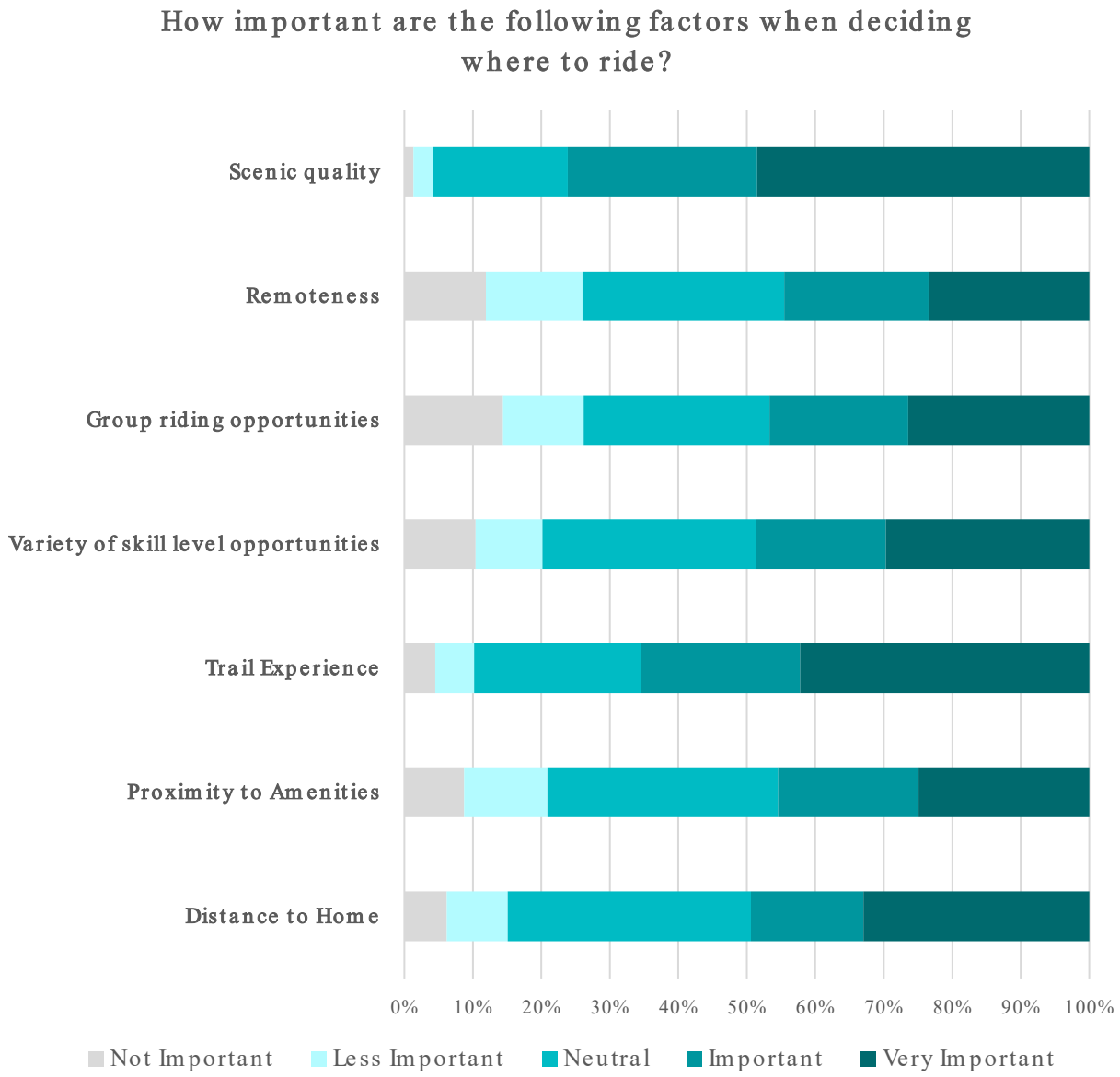


RECREATION FACILITIES: Respondents were also asked what facilities they most used to recreation (recreation parks, state forests trails, national forest routes, etc.).

80 percent of respondents stated they typically ride on state forest ATV trails and 68 percent of respondents stated they typically ride on state/county forest roads. Other frequently visited facilities include national forest ATV trails (48 percent). Common write-in answers included logging roads, personal private property and frozen lakes in the winter.

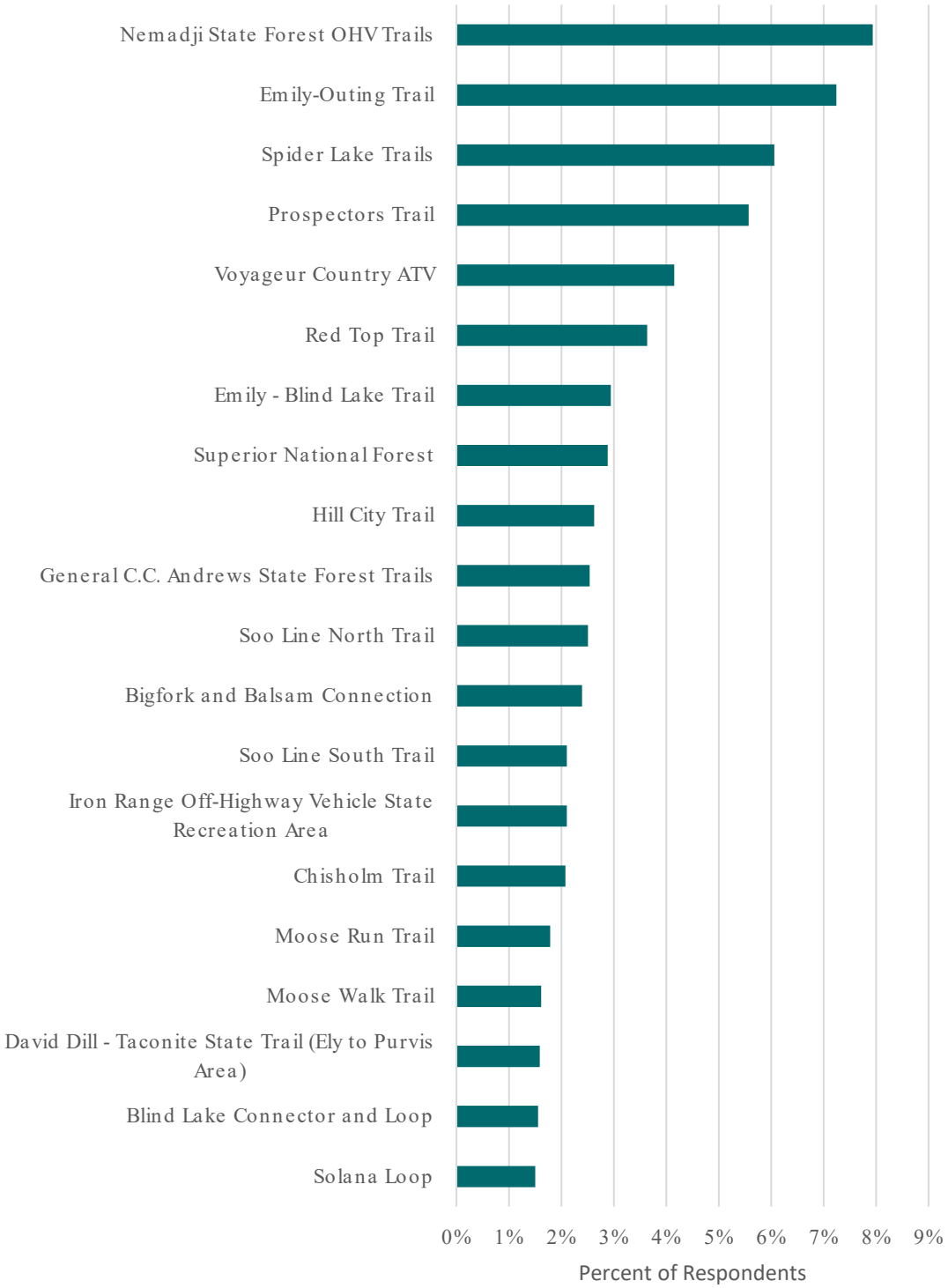


RIDE CHOICE FACTORS: Riders were asked what factors were important when deciding where to ride. Scenic quality was the factor ranked most important (48 percent of respondents ranked it as very important) followed closely by trail experience (42 percent ranked it as very important). Group riding opportunities and proximity to amenities (lodging, food, services, etc.) were overall considered less important but still had respondents who ranked them as very important factors.

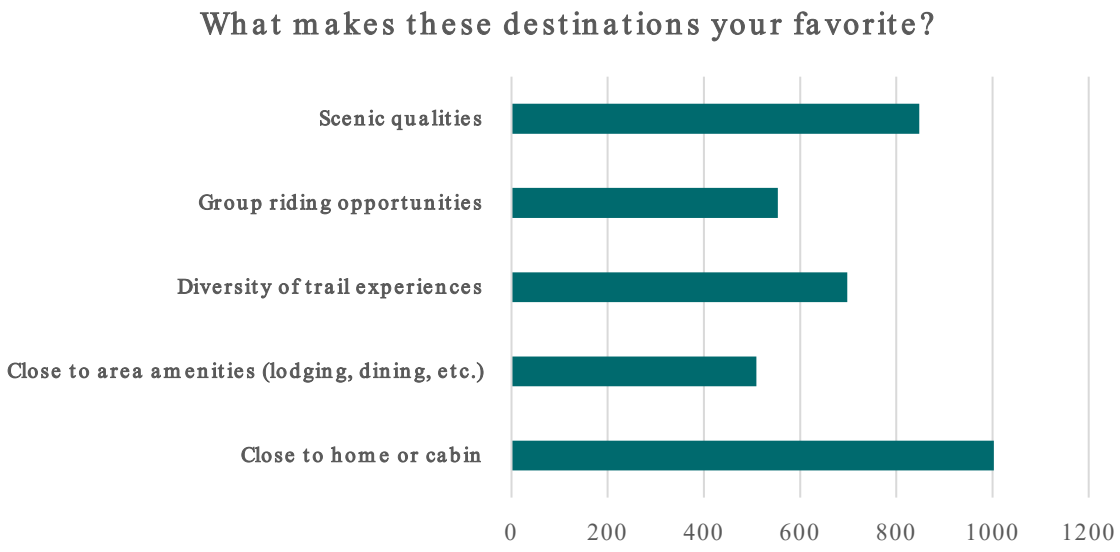


FAVORITE RECREATION DESTINATIONS: Riders were asked where their top three destinations to ride were. For the first choice, Prospectors Trail, Nemadji State Forest OHV Trails and Emily-Outing Trail were frequently mentioned. When riders top three options were combined, Nemadji State Forest OHV Trails, Emily-Outing Trail and Spider Lake Trails were frequently mentioned. The chart below displays the top 20 riding destinations. Common write-in answers included Paul Bunyan State Forest and Foot Hills State Forest.

When ATVing on public land in Minnesota, what are your top destinations

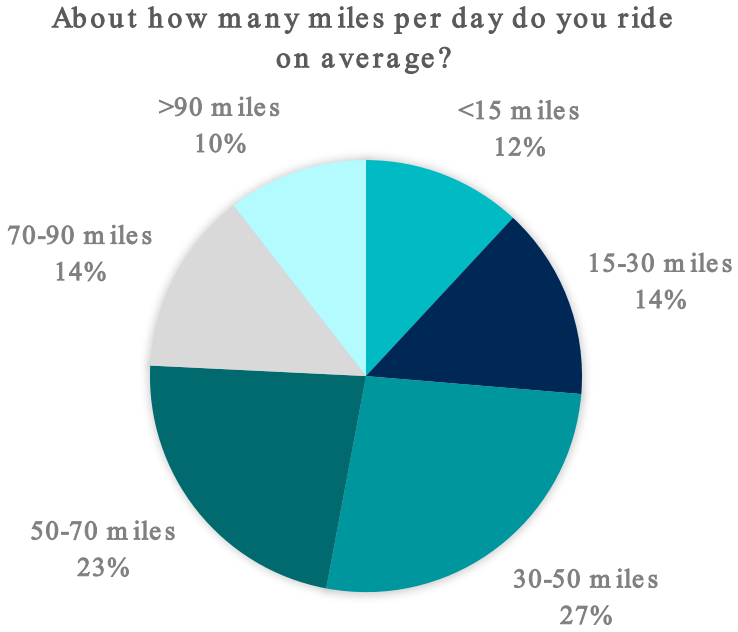


FAVORITE AREA QUALITIES: Respondents stated these were their favorite areas because of the proximity to their home/cabin, diversity of trail experiences and the scenic qualities of the area. Common write-in answers included the proximity/availability of camping facilities, proximity to friends and the availability of technical terrain.



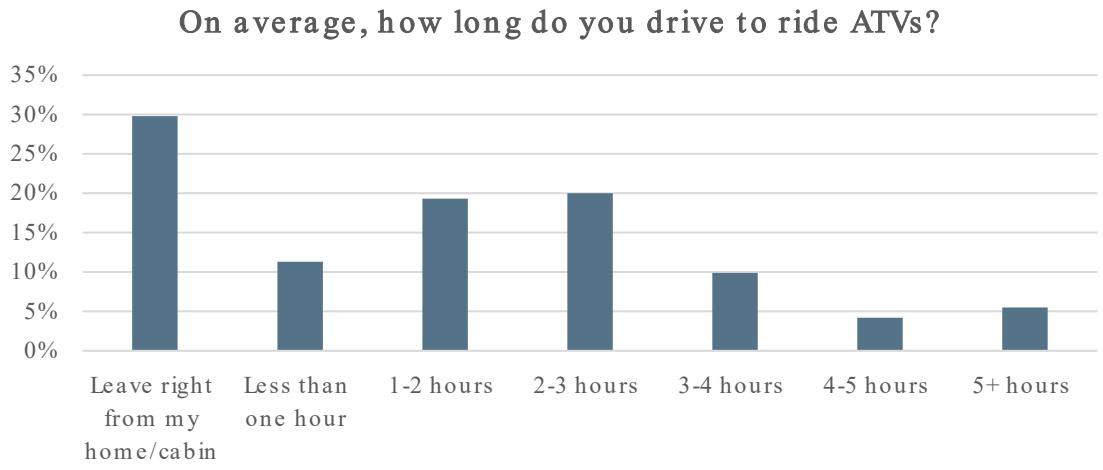
AVERAGE MILEAGE: 26 percent of respondents stated they ride approximately 30-50 miles per day. 35 percent of respondents stated they ride between 50-90 miles on average per day and 10 percent stated they ride over 90 miles in a day.

- 46 percent of respondents ride for a half day (3-5 hours) and 38 percent of respondents ride for a full day (6+ hours).



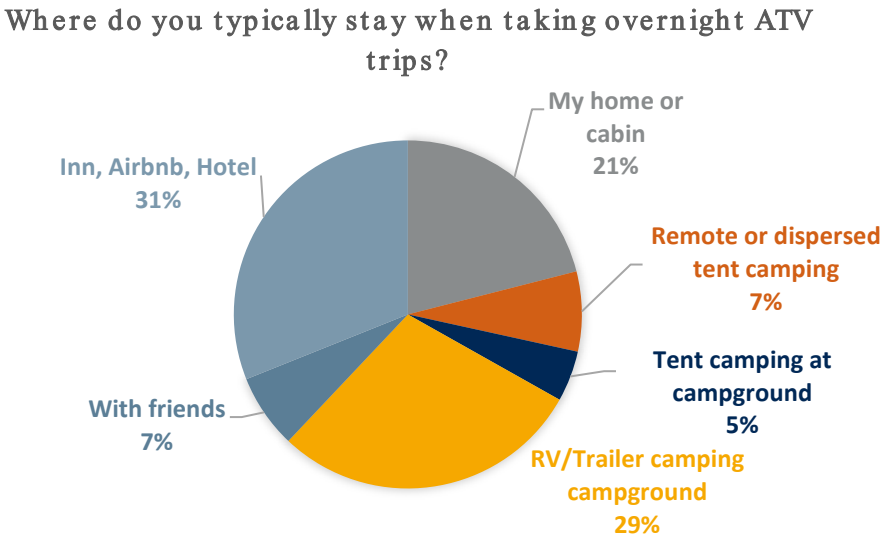
TRAVEL TIME: 58 percent of respondents stated they travel over 1 hour to get to an ATV riding area and 40 percent of respondents travel over 2 hours. 29 percent of respondents ride their ATV directly from their home/cabin.

- On average, respondents travel 1.7 hours to visit ATV riding areas.
- 87 percent of respondents stated that it is important to them to have ATV opportunities within an hour of their home or cabin.

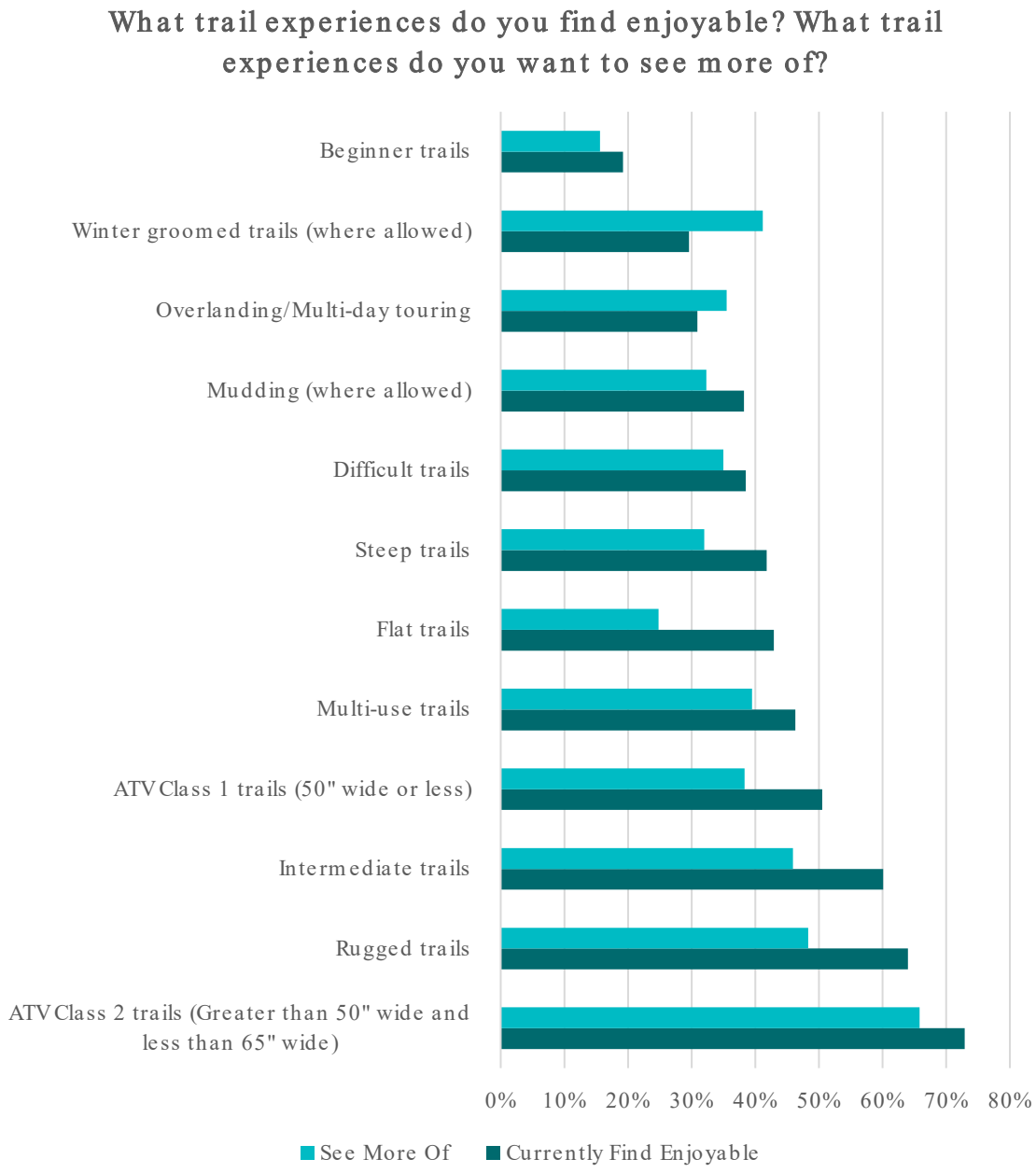


OVERNIGHT TRIPS: 45 percent of respondents stated they take overnight trips where the primary purpose is ATV riding once or twice a year. 20 percent stated once a month and 10 percent stated twice a month. 22 percent of respondents stated they never take overnight trips where the primary purpose is ATVing.

ACCOMODATIONS: When staying overnight, 31 percent of respondents stated they typically stay in a short term vacation rental, inn or hotel. 29 percent of respondents stated they stay at a campground in an RV/trailer. 21 percent of respondents stated they typically stay at their home or cabin.

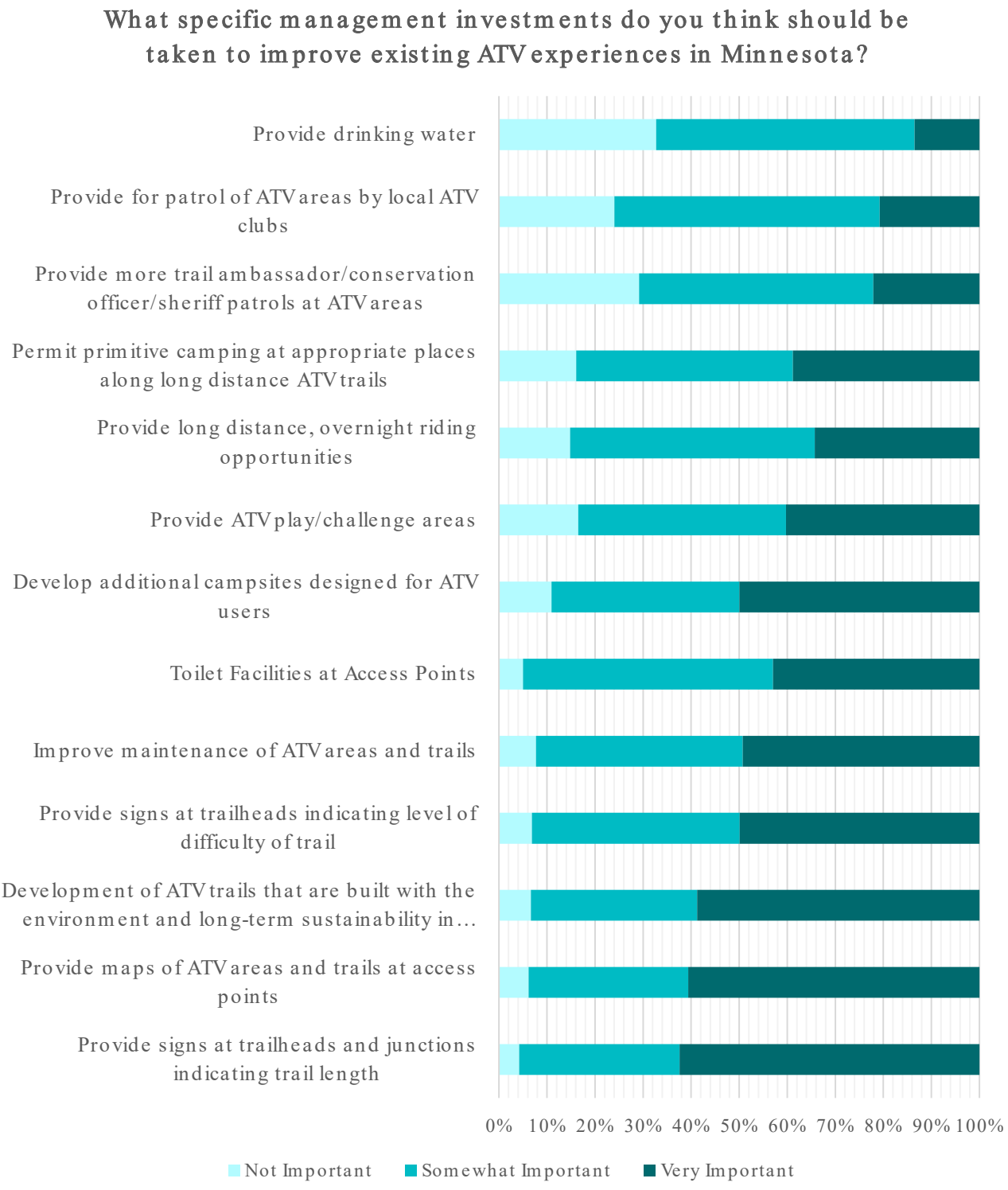


DESIRED TRAIL EXPERIENCES: Respondents were asked what sorts of trail experiences they enjoyed and what trail experiences they want to see more of. Existing trail experiences that were rated highest include ATV Class 2 trails, rugged trails and intermediate trails. ATV Class 1 trails and multi-use trails were less popular but still received mentions from about 50 percent of respondents. For future trail development, 65 percent of respondents wanted more ATV Class 2 trails, 45 percent wanted more rugged trails, intermediate trails, and winter groomed trails. Common write-in responses included single-use trails, connected trails, forested trails, gravel pits/open riding areas and scenic trails.



Management Actions

AMENITIES: Investments in signage (on-trail and trailhead signage) and sustainable trails were regarded as the most important management investments. Other highly rated investment options include improved maintenance of existing trails and additional camping opportunities for ATV users.

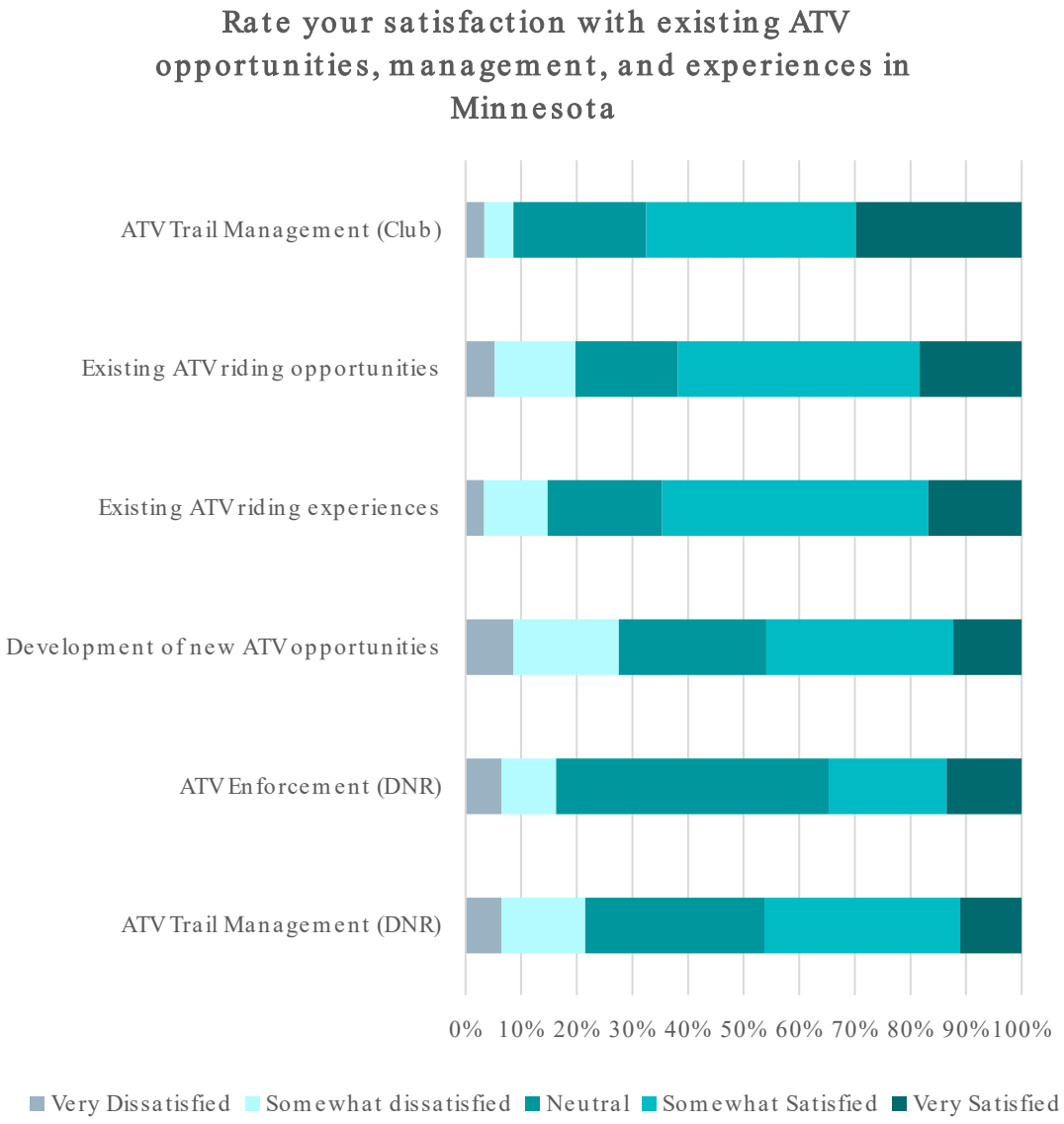


ATV OPPORTUNITIES: 62 percent of ATV riders stated they are somewhat or very satisfied with existing ATV opportunities. 20 percent of riders state they are somewhat or very dissatisfied and the remaining were neutral.

DEVELOPMENT OF NEW OPPORTUNITIES: 46 percent of riders stated they are somewhat or very satisfied with development of new ATV opportunities. 28 percent state they are somewhat or very dissatisfied with development of new ATV opportunities.

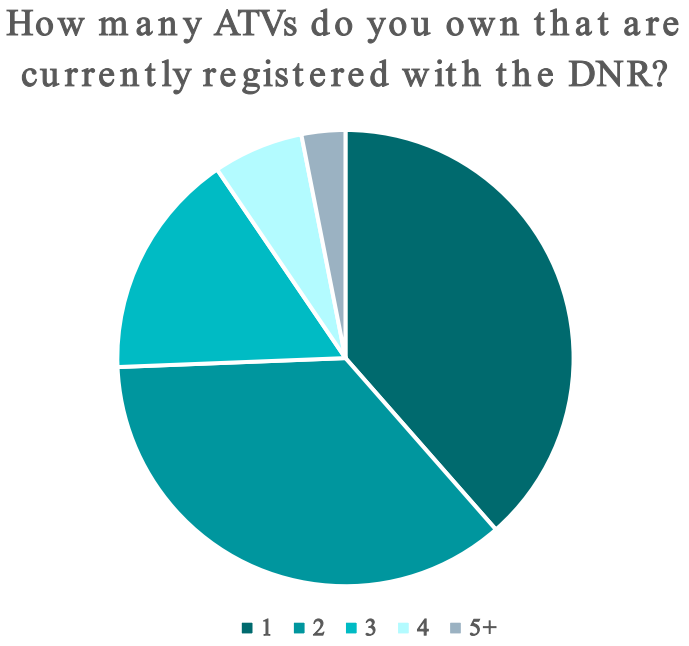
ATV TRAIL MANAGEMENT: 46 percent of riders state they are somewhat or very satisfied with ATV trail management, 15 percent somewhat dissatisfied and 6 percent very dissatisfied.

ATV RIDING EXPERIENCES: 65 percent of riders state they are somewhat or very satisfied with ATV experiences and 15 percent somewhat or very dissatisfied.



Vehicle characteristics

REGISTRATION: 40 percent of respondents own 1 ATV that is currently registered with the DNR. 36 percent own 2 ATVs currently registered with the DNR and 25 percent own 3 or more ATVs currently registered with the DNR.

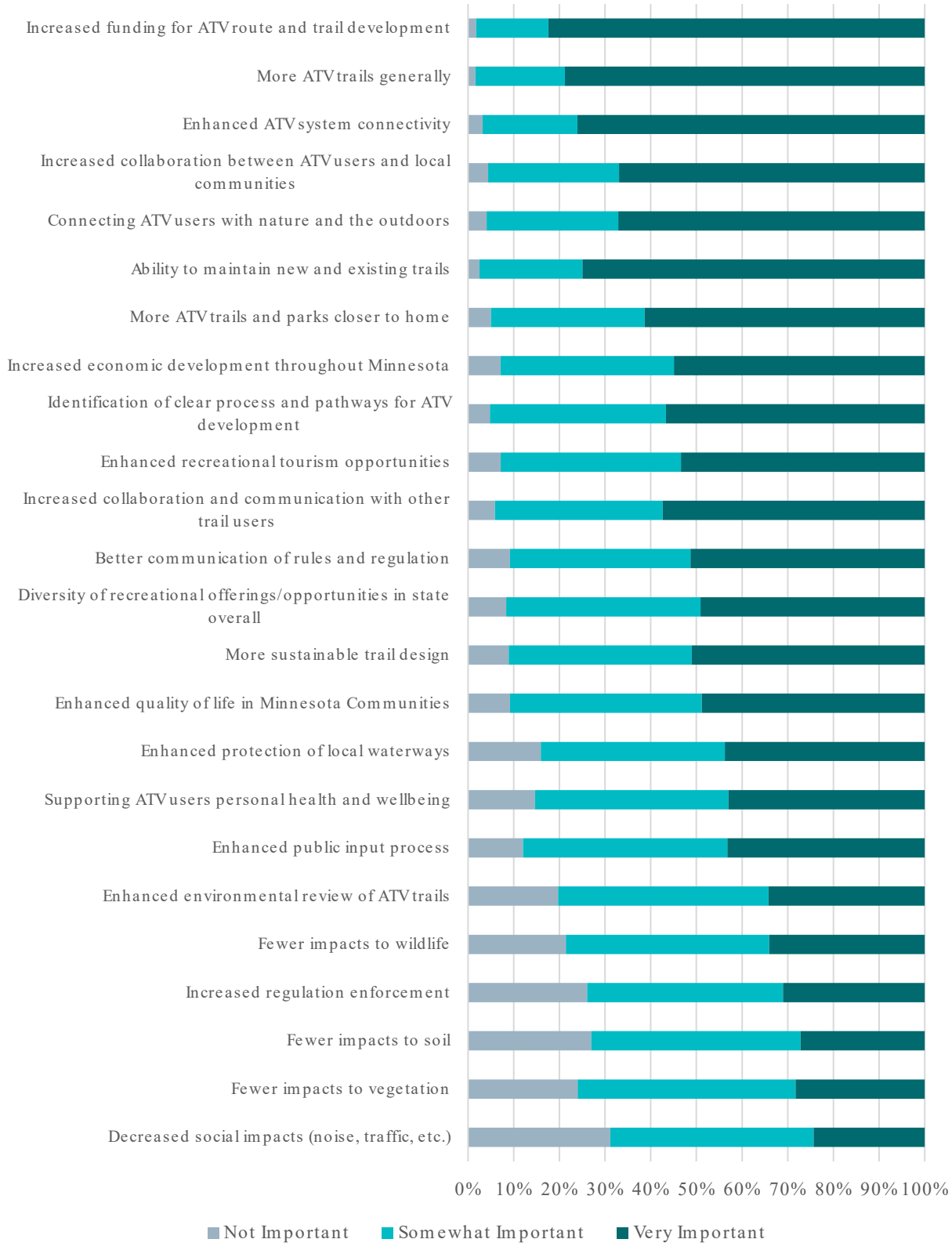


Trip and Vehicle Spending Profile

Trip Spending Category	Average Spend (per rider per trip)
Lodging/Camping Fees	$40
Food and Beverage	$62
Transportation (fuel and parking fees)	$73
Admission/Fees	$11
Other (clothing, souvenirs, etc.)	$21
Total	**$207**

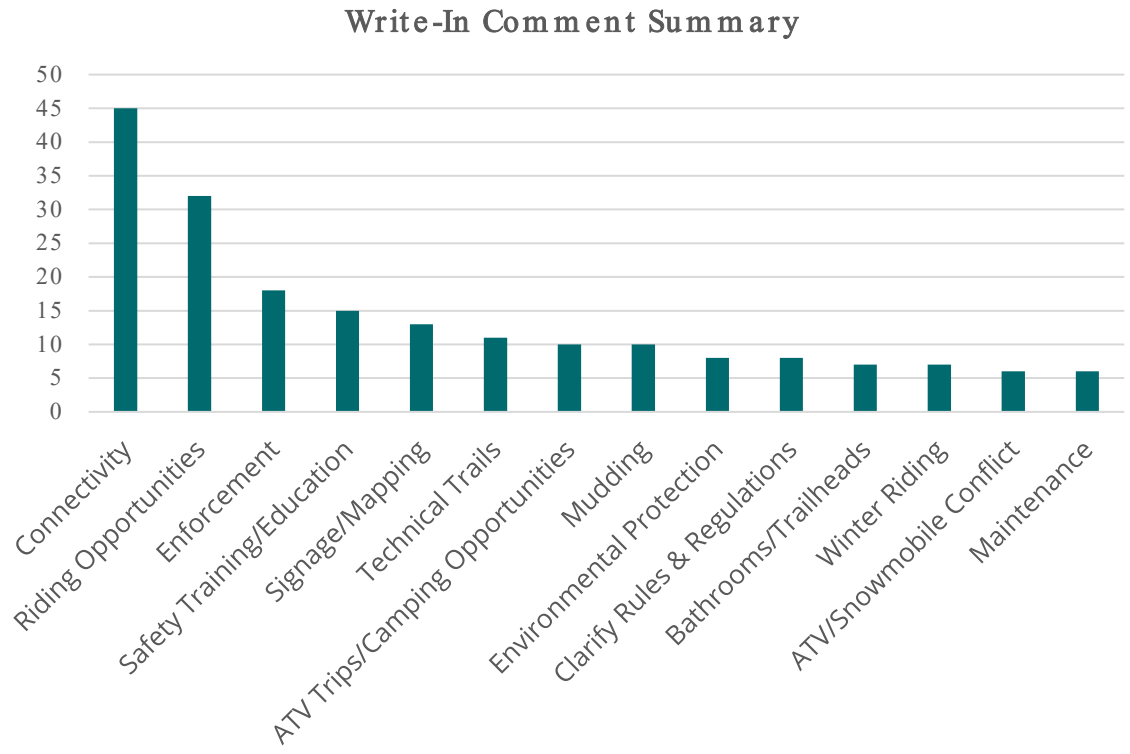
ATV Spending Category	Average Spend (per rider per year)
ATVs purchased	$5,400
Repairs and Maintenance	$120
Modifications/Upgrades	$78
Insurance	$63
Other	$53
Total	**$5,714**

Plan Considerations



Write-in Comments

641 respondents left write in comments to answer the question "Is there anything else you would like this plan to consider?" Responses included strong support for a connected trail system as well as increased connectivity between trail systems and towns/services. A desire for riding opportunities closer to the twin cities and in the southern portion of the state was mentioned several times. The importance of enforcement and adequate safety training/education opportunities was mentioned frequently, especially in light of new riders entering the sport and the importance of upholding a responsible image of the ATV community. Other common responses included a desire for technical trails and camping opportunities.



Respondents Who Don't Participate in ATV Recreation

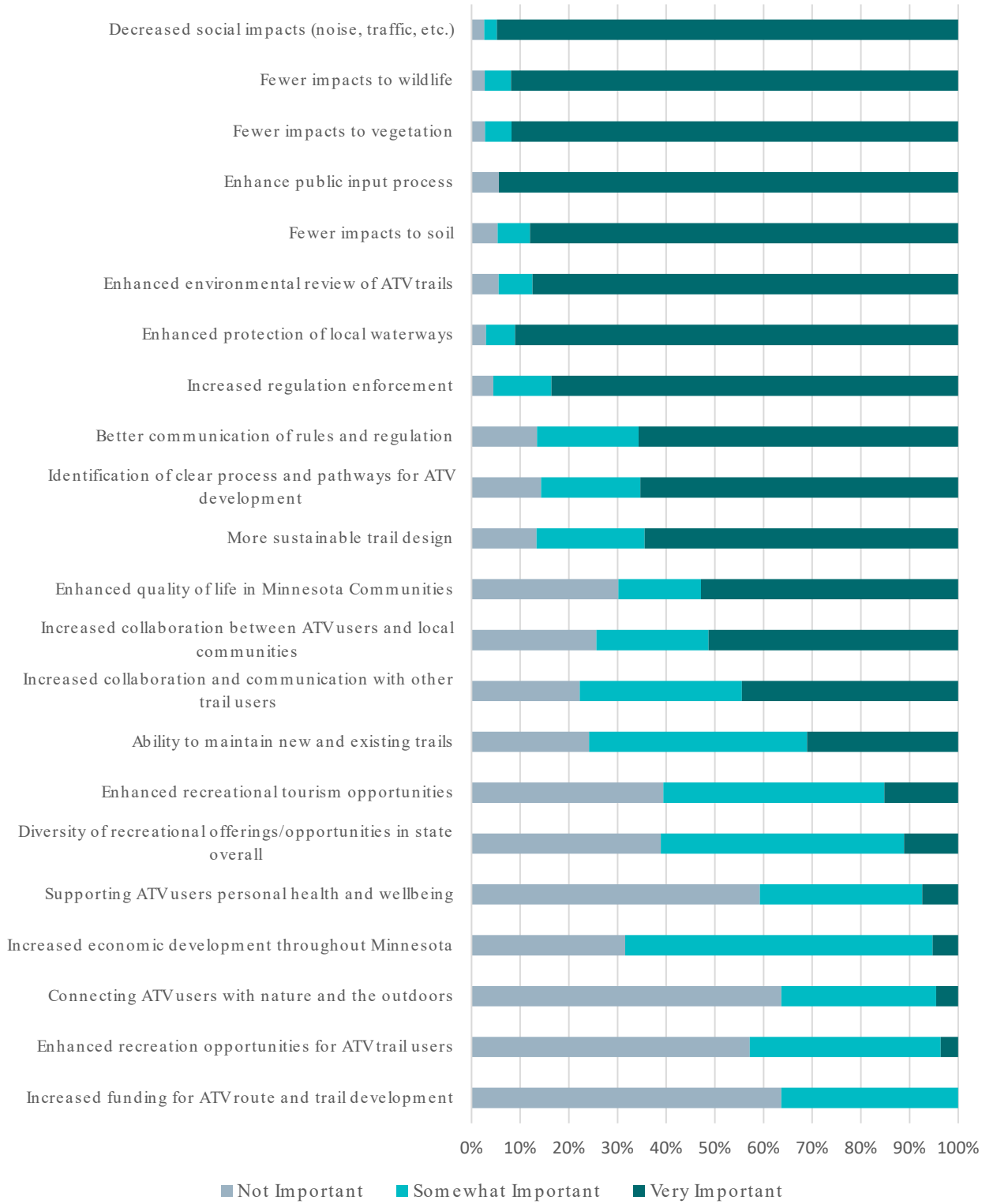
Participation

- Respondents who stated they do not currently and have never used an ATV for recreation cited reasons such as prefer self-propelled recreation (63 percent), not interested (30 percent), user conflict concerns (36 percent), safety concerns (36 percent) and cost (24 percent).
- Write in responses in the "Other" category included comments citing environmental impacts such as sound, pollution and land degradation.
- Those who were interested in trying ATVing stated they would be more likely to try if there were more affordable rental vehicles and demo days/intro lessons.

Plan Considerations

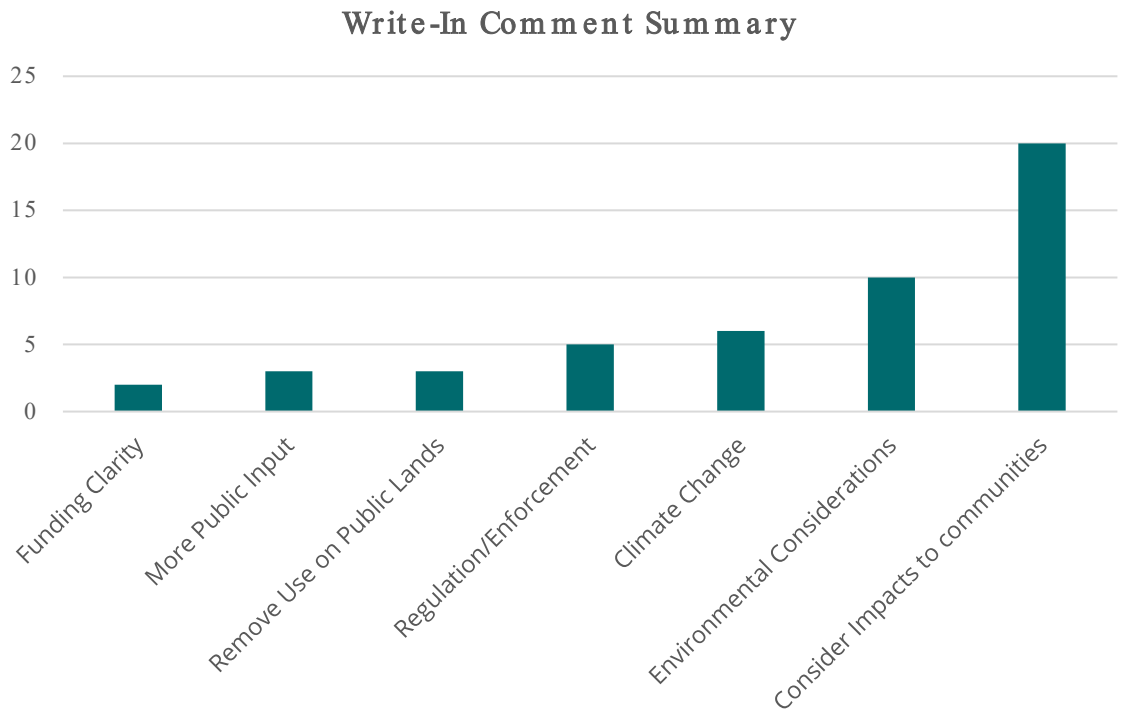
- Respondents in the non-user category felt it was very important that this plan consider ways that existing and future ATV areas could have fewer impacts to wildlife, soil and vegetation as well as decreased social impacts. Other considerations that respondents found very important include an in-depth public input process and applicable environmental reviews of ATV trails.
- Considerations that fell mainly into the not important category included enhanced opportunities for ATV trail users and increased funding for ATV routes and trail development.

What do you think are the most important elements to consider throughout the planning process?



Write-In Comments

- 55 respondents left write in comments to answer the question "Is there anything else you would like this plan to consider?" Most write-in comments stressed the importance of considering ATV trail development impacts on communities proximate to proposed development. Other comments related to general environmental concerns about sound, soil degradation, soil erosion and wildlife impacts. Other common comments related to more regulation and enforcement and the removal of ATV use on public lands.



APPENDIX C: SPATIAL ANALYSIS DATA

Geographic Scope Determination

- NLCD Land Cover
- National Wilderness Areas
- MN DNR Regions
- Tribal Land Data

Natural Environment Analysis

- National Wetland Inventory for Minnesota
- State Designated Trout Streams
- MNWAP Wildlife Action Network Habitat Mapping
- NLCD Land Cover
- MN DNR Native Plant Communities
- USA Soils Erosion Hazard
- FS Lynx Critical Habitat
- MN DNR Moose Habitat
- MN DNR Conservation Opportunity Areas
- Minnesota Biological Survey (MBS) Biodiversity Sites of Significance

Terrain Analysis

- Lidar Elevation Data for Minnesota (slope, elevation range)

Human Environment Analysis

- Campgrounds (FS and MN DNR Mapping)
- Minnesota Trails – Division of Parks and Trails
- MN State Recreation Areas
- MN Roads
- ESRI Population Data
- MN Townships
- MN State Recreation Area Activities
- National Forest System Trails

- National Forest System Roads
- Motor Vehicle Use Map: Roads
- Motor Vehicle Use Map: Trails

Ownership and Land Management

- State Parks and Waysides
- State Recreation Areas
- Administrative Forest Boundaries
- MN Scientific and Natural Area Units
- Superior National Forest Management Areas
- Chippewa National Forest Management Areas
- Waterfowl Production Areas
- National Wildlife Refuge System
- State Surface Interests Administered by DNR or by Counties
- State Forest Statutory Boundaries and Management Units
- School Trust Lands
- State Administered Lands - DNR Management Units
- MNDOT land (7-County Metro)
- Minnesota GAP Stewardship

Recreation Usage and Demand Factors

- ESRI Population Data
- MN ATV Registration Data

APPENDIX D: COUNTY ATV REGULATIONS AND POLICIES

Table D1. County Roadway Allowances

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Aitkin County	N	Class 1 and Class 2 allowed, roadway or ditch		
Anoka County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Becker County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		County Roads 44, 50, 125, 135, 152
Beltrami County	N	Class 1 not allowed roadway/ditch; Class 2 allowed	ATVs permitted in roadway or ditch on County State Aid Highways 10, 23, 24, 39, 41, 44, 47, 58, 90	County Roads 102, 107, 110, 111, 112, 113, 300, 304, 307, 328, 700, 701, 702, 706, 709, 710, County State Aid Highways 1, 22, 23, 30, 31, 35, 36, 37, 38, 39, 41, 43, 44, 55, Unincorporated Township Roads 15, 18, 33, 53, 423, 780, 781, 782, 783, 784
Benton County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		
Big Stone County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Blue Earth County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Brown County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Carlton County	N	Class 1 and Class 2: roadway or ditch		
Carver County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Cass County	N	Class 1: ditch; Class 2: roadway (state ordinance)		County State Aid Highway 58

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Chippewa County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Chisago County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		
Clay County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		
Clearwater County	N	Class 1 and Class 2: roadway or ditch		County State Aid Highway 23
Cook County	N	Class 1 and Class 2 allowed, roadway only, no ditch		
Cottonwood County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Crow Wing County	N	Class 1 and Class 2: roadway or ditch		County Roads 113, 117, 139, 148, County State Aid Highways 2, 8, 23, 24, 45, 66
Dakota County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Dodge County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Douglas County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Faribault County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Fillmore County	Y	Class 1 and Class 2: roadway only, no ditch		
Freeborn County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Goodhue County	Y	Class 1 and Class 2: roadway only, no ditch	ATVs restricted on County State Aid Highways 1, 18, 20, County Road 53	
Grant County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Hennepin County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Houston County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Hubbard County	N	Class 1: ditch; Class 2: roadway (state ordinance)		County Roads 95, 118, County State Aid Highways 2, 25
Isanti County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		
Itasca County	N	Class 1 and Class 2: roadway or ditch	ATVs not allowed on roadway or ditch on County State Aid Highway 75	County Roads 123, 126, 131, 141, 145, 149,154, 159,163,195, 333, 337, 341, 560, 573, 574, County State Aid Highways 4, 7, 16, 24, 26, 29, 31, 32, 33, 34, 37, 45, 53, Unincorporated Township Roads 158, 336, 2153
Jackson County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Kanabec County	N	Class 1 and Class 2: roadway or ditch		
Kandiyohi County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Kittson County	N	Class 1: ditch; Class 2: roadway (state ordinance)		
Koochiching County	N	Class 1 and Class 2: roadway only, no ditch		County State Aid Highway 28
Lac qui Parle County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Lake County	N	Class 1 and Class 2: roadway or ditch	ATVs restricted on County State Aid Highways 2, 18	
Lake of the Woods County	N	Class 1 and Class 2: roadway or ditch		County State Aid Highway 2, Unincorporated Township Roads 465
Le Sueur County	Y	Class 1 and Class 2: roadway only, no ditch		
Lincoln County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Lyon County	Y	ATVs not allowed on roadway/ditch		
Mahnomen County	N	Class 1: ditch; Class 2: roadway (state ordinance)		
Marshall County	N	Class 1 and Class 2: roadway or ditch	ATVs not allowed on roadway or ditch on County State Aid Highways 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 17, 20, 23, 24, 28, 29, 32, 34, 35, 36, 38, 39, 40, 44, 46, 49, 50, 52, 54, 56, 57, 58, 59, 60, 61, 62, 63, 64, County Roads 108, 138	County Road 134, County State Aid Highways 55
Martin County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
McLeod County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Meeker County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Mille Lacs County	N	Class 1 and Class 2: roadway or ditch		
Morrison County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		
Mower County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Murray County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Nicollet County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Nobles County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Norman County	N	Class 1: ditch; Class 2: roadway (state ordinance)		

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Olmsted County	Y	Class 1 and Class 2: roadway/ditch (ag zone)		
Otter Tail County	Y/N	Class 1: ditch (ag zone rule); Class 2: roadway (state ordinance)		
Pennington County	N	Class 1: ditch; Class 2: roadway (state ordinance)		
Pine County	N	Class 1 and Class 2: roadway or ditch		
Pipestone County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Polk County	N	Class 1 and Class 2: roadway or ditch		
Pope County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Ramsey County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Red Lake County	N	Class 1: ditch; Class 2: roadway (state ordinance)		
Redwood County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Renville County	Y	Class 1 and Class 2: roadway only, no ditch		
Rice County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Rock County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Roseau County	N	Class 1 and Class 2: roadway only, no ditch		County Road 141, County State Aid Highways 5, 18, Unincorporated Township Roads 400, 403, 404, 406
Scott County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Sherburne County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Sibley County	Y	Class 1 and Class 2: roadway only, no ditch		

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Saint Louis County	N	Class 1 and Class 2: roadway or ditch	ATVs not allowed on roadway/ditch along Alley Roads 13, 15, 16, 17, County Roads 102, 161, 234, 244, 248, 288, 291, 315, 316, 346, 372, 428, 451, 452, 453, 464, 496, 565, 577, 583, 593, 610, 619, 620, 633, 642, 647, 657, 666, 668, 677, 696, 697, 698, 710, 711, 715, 724, 755, 761, 763, 788, 789, 790, 838, 839, 856, 861, 862, 901, 921, 928, 945, 955, 961, 966, County State Aid Highways 2, 3, 4, 5, 7, 8, 9, 11, 12, 13, 14, 16, 17, 20, 21, 23, 24, 25, 29, 30, 31, 32, 34, 39, 54, 56, 62, 64, 66, 70, 76, 88, 89, 90, 91, 92, 97, 101, 102, 103, 105, 109, 110, 115, 117, 118, 121, 124, 125, 126, 130, 137, 138, 141, 142, 143, 144, 145, 146, 147, 148, 150, 151, 152, 153, 154, 155, 156, 157, 158	County Roads 635, 766, 847, 851, County State Aid Highways 65, Unincorporated Township Roads 3425, 8112, 8153, 8128

County	Ag Zone (Y/N)	Policy	Exceptions	Designated ATV Routes
Stearns County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Steele County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Stevens County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Swift County	Y	Class 1 and Class 2: roadway only, no ditch		
Todd County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Traverse County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Wabasha County	Y	Class 1 and Class 2: roadway or ditch (ag zone)		
Wadena County	Y/N	Class 1: ditch; Class 2: roadway (state ordinance); Class 1: ditch (ag zone rule); Class 2: roadway		
Waseca County	Y	Class 1 and Class 2: roadway and ditch (ag zone)		
Washington County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Watonwan County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Wilkin County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Winona County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Wright County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		
Yellow Medicine County	Y	Class 1: ditch (ag zone rule); Class 2: roadway		