MONTANA GEOSPATIAL INFORMATION PLAN STATE FISCAL YEARS 2025-2027

DRAFT

MONTANA STATE LIBRARY
GIS COORDINATION

May 09, 2025

MONTANA STATE LIBRARY
msl.mt.gov/geoinfo

MONTANA STATE LIBRARY
A GREATER STATE OF KNOWLEDGE

TABLE OF CONTENTS

MONTANA STATE LIBRARY
A GREATER STATE OF KNOWLEDGE

EXECUTIVE SUMMARY

PLACE HOLDER | To be Written Last

IMPACT OF GEOSPATIAL DATA COLLECTION

Local Governments Utilize Montana Spatial Data Infrastructure to Spend Less Time & Money

"A man who dares to waste one hour of time has not discovered the value of life." Charles Darwin
Maureen Celander, Custer County, Montana GIS Manager

The legislative session for Montana in 1965 could not balance an equitable reapportionment. This outcome caused the Montana Supreme Court to institute the first judicial reapportionment of the legislature using a court-drawn plan.

Redistricting and reapportionment are not easy. That is why in 1971, the Montana Constitutional Convention created the five-member citizen districting commission to oversee the future redistricting every 10 years. Montana has used this Commission to draw congressional and state legislative districts since 1973. In 2020, the Commission had completed the newest redistricting for the State of Montana. Custer County had several changes to come into compliance with these new administrative boundaries. The election administrator for Custer County had worked on the last redistricting with hand drawn maps. This task had taken over six months to complete. On March 7, 2023, the elections administrator said the redistricting needed to be completed and the deadline was drawing near. The newly added GIS department for Custer County was asked to assist the elections administrator in completing the redistricting. With the use of the spatial data administrative boundaries from the Montana State Library, and the new Geographical Information System office in Custer County, this task was considerably less strenuous to achieve. We worked with the Montana State Library geo-enabled elections to get this monumental task completed. By April 5, 2023, we were able to present the new redistricting maps to the Custer County Commissioners and hold the public hearings.

The Custer County elections administrator was so amazed that with the use of the MSDI data from the Montana State Library and GIS technologies, had given them 100 percent accuracy in the data and saved so much time in their workload. The use of the MSDI data boosts operational efficiencies for our local governments.

Researchers at the University of Montana Rely Upon the MSDI for Research & Teaching

Valentijn Hoff, University. of Montana

Elk, cheatgrass seeds, and wildfire each are at home in the Blackfoot Valley in western Montana. They move around on the landscape without regards for political or administrative boundaries. Whether tracking enigmatic wildlife, studying an invasive species, or planning for a fire, spatial data are really important for University of Montana researchers. The Blackfoot Valley is a highly diverse landscape, with many private landowners as well as a lot of public land, managed by a variety of agencies. Some landowners manage their own spatial data repository. Many do not. In addition, the Blackfoot watershed is located in parts of Missoula, Granite, and Powell counties, which leads to inconsistent or sometimes unavailable spatial data. Researchers need maps and data that are consistent, wherever they work. This is a function of good cartography, as well as access to

standardized data across the larger landscape they study. Each researcher will create their own research-specific data but will look elsewhere for ancillary data. The Montana Spatial Data Infrastructure, provided by the Montana State Library, makes it easy to get consistent spatial data for anywhere in Montana. UM researchers use many MSDI themes: transportation, elevation, hydrography, imagery, soils, cadastral, and geographic names. And they work on many different scales, from small plots to whole landscapes. The MSDI works well for both. As an example, researchers at UM's FireCenter work with a variety of land managers in the Blackfoot valley. Currently, they are creating some fire plans for the Blackfoot Challenge, a local conservation organization. Program staff are making maps to accompany these plans and MSDI data are an easily accessible resource. By having knowledge of the location of roads, creeks and topography staff can lay out plots, assign unit boundaries, and start a plan, before they go into the field to verify. The MSDI layers are available in Field Maps when the techs are doing field work in support of the plan. And when teaching a class, it is easy to send new GIS students, who may already be overwhelmed by the unfamiliar software, hard hypotheses, and new-to-them vocabulary, to get the data they need in one friendly place, with good instructions and well-developed meta-data. By using MSDI data, researchers and students can focus on meeting their objectives and spent less time chasing data.

A Forester's Story: Small Business Improve Efficiencies with the MSDI

Jonathon Lewis, Montana Forest Consultants

As a Consulting Forester, publicly available geospatial information significantly impacts decisions on deciphering project feasibility and improves overall efficiency. We are frequently contacted by landowners inquiring about assessment and evaluation for their property. Immediately, we look to Montana Cadastral to determine and verify location, address, total acreage, latitude/longitude coordinates, and view property boundaries. The Montana Cadastral application (cadastral.mt.gov) is baseline for all the maps we make and helps us prepare to conduct site visits. Once we verify property descriptions, there are a variety of useful tools and datasets, through MSDI/MGIA, that help with the assessment on the feasibility and scope of work on each property.

Since we are a small company, we do not have access to our own large geospatial databases. The Hydrography, Imagery, Wetlands & Riparian, Transportation and Elevation themes give me a jump start in making overview maps of a project. Recently, the LiDAR data available through the state has allowed us to get even better insights on new projects. We can provide 1-meter resolution slope angle maps to equipment operators. This geospatial information allows us to inform operators about acceptable work areas and potential trouble spots. Additionally, we've been using LiDAR to help identify areas with merchantable timber and for estimating trees per acre.

The MDSI themes provide us with information that make it easier to get work done on the ground. It is important to us that these themes are regularly maintained and updated. We appreciate the work of the Montana State Library on these essential geospatial information services, applications, and technology.

The Value of GIS Coordination & Planning: Collecting Lidar for Montana

The publication of the 2019 Montana Lidar Plan proved to be a crucial step in gaining partner involvement in acquiring statewide lidar. For example, seeing the plan encouraged a Bureau of Indian Affairs (BIA) representative to join the Montana Elevation Working Group in 2022 and initiate efforts to secure funding for lidar acquisition on the Crow Indian Reservation and surrounding counties.

The existence of the state lidar plan proved invaluable. The BIA Regional Geospatial Coordinator could readily reference the plan in discussions with the Deputy Director about acquiring lidar on the Crow Indian Reservation. Furthermore, the plan underscored the broader statewide effort and momentum underway, instilling confidence in the project's success.

The MSL-BIA coordination efforts resulted in a significant federal partnership with the USGS 3D Elevation Program. The BIA contributed over one million dollars, that along with the USGS, USFS, and other federal partner contributions, resulted in the collection of over 20,000 square miles of lidar, including 5,000 square miles of Quality Level 1 lidar for the Crow Reservation. The presence of a well-defined plan, demonstrated coordination between agencies, and the visible progress and momentum generated by the statewide lidar initiative at MSL served as the catalyst for a successful funding partnership.

MONTANA GEOSPATIAL INFORMATION PLAN GOALS, OBJECTIVES & TASKS

1. PRIORITIZE NEEDS TO COLLECT, MAINTAIN, & DISSEMINATE GEOSPATIAL INFORMATION

1.1 MAINTAIN A SUSTAINABLE MONTANA SPATIAL DATA INFRASTRUCTURE

- Framework Continue to maintain standardized updates to the MSDI Framework Theme Datasets & Services. [See Section 2.1-2.3]

1.2 IMPLEMENT A SCALABLE GEOSPATIAL ARCHITECTURE TO SUPPORT THE NEEDS OF THE MSDI

- Update the architecture

1.3 PREPARE FOR THE MODERNIZATION OF NATIONAL SPATIAL REFERENCE SYSTEM (NSRS)

- Collaborate and coordinator with stakeholders from state, local, tribal, federal, nonprofit, private, university, and professional associations on the development of standards, best practices, tools, and training opportunities for the preparation and implementation of NSRS modernization.

1.4 RESEARCH & LEARN GEOSPATIAL SECURITY PRACTICES, POLICIES, AND PROTOCOLS

- Work with stakeholders to plan for and execute a geospatial security tabletop exercise.

1.5 IDENTIFY & REDUCE THE DUPLICATION OF GEOSPATIAL DATA EFFORTS

- Coordinate with state agencies to identify duplication of state geospatial data assets and work to reduce duplicative efforts.

2 IMPROVE MSDI GEOSPATIAL DATA VALUE

2.1 THE GIS COORDINATOR, THEME LEADS, MSDI WORKING GROUPS, AND COUNCIL WILL WORK TO DEFINE DATASETS, VALUE MEASURES & ASSESS VALUE MEASURE FOR EACH FRAMEWORK THEME:

- Define datasets and data themes that should be examined for value-related data quality.
- Define measures of geospatial data value for datasets & data themes.
- Assess datasets and data themes using the value measures.
- Assess each MSDI Framework Theme data for status, near-term quality implement, and long-term quality improvement.

2.2 DETERMINE ACTIONS NEEDED TO IMPROVE THE VALUE OF THE MSDI FRAMEWORK DATASETS & DATA THEMES:

- Train MSDI Framework Theme Leads to develop Theme Specific Data Value Matrices.
- Develop MSDI Theme Plan Templates for implementation of identified data quality improvements.
- Train MSDI Theme Leads on the creation of MSDI Theme Plans.
- Complete Data Value Matrices for each MSDI Framework Theme.

2.3 CREATE OR UPDATE MSDI FRAMEWORK THEME PLANS

- Each Theme Lead, in coordination with GIS Coordinator, Theme Working Groups, and the MGIA Council, will develop MSDI Theme Plan Templates for implementation of identified data quality improvements.
- Support the MSDI Theme Leads and respective working groups on the creation of MSDI Theme Plans.
- Develop plans for each identified MSDI Framework Theme Plans that identifies the following:
    - MSDI Theme Definition,
    - Data Improvement Actions,
    - Resources needed to achieve plan outcomes/actions, and
    - How Progress/Achievements will be tracked and reported.

3 PRIORITIES FOR GEOSPATIAL COORDINATION

Prioritization is vital in time management as it helps individuals focus on what truly matters, allocate resources efficiently, and ensure that important tasks are completed in a timely manner.

3.1 GEOSPATIAL GOVERNANCE: POLICY STANDARDS & BUSINESS PRACTICES

- Research geospatial accessibility polices, workflows & best practices

3.2 PROVIDE GEOSPATIAL INFORMATION & TECHNOLOGY CONSULTATION TO MSDI DATA PARTNERS, CITIZENS

- Consult with current MSDI Data Partners to understand needs, plans, and collaboration opportunities.

3.3 EDUCATION & TRAINING

- Implementation of MSDI Data within key state of Montana workflows.
- Prepare for the implementation of the Modernized NSRS
- Research and implement modern education tools for non-geospatial professionals.

3.4 CREATE & STRENGTHEN MSDI PARTNERSHIPS

- Advance the implementation of MSDI Data within key state of Montana workflows.
- Continued outreach, coordination, & education for stakeholder groups.
- Targeted outreach to Tribal MSDI Data Partners.

- Research and prepare for new partnership opportunities.
- Research and devise a plan to host an Annual MSDI Partner Conference.

3.5 IMPROVE GEOSPATIAL DATA GOVERNANCE THROUGH POLICIES AND BEST PRACTICES

- Coordinate with the Montana Chief Information Office, Chief Data Officer and the Montana Geospatial Advisory Council (MGIAC) to define geospatial governance scope.
- Complete a review of the Geospatial Governance Structure & Process:
  - Current adopted process: https://ftpaspen.msl.mt.gov/EventResources/20240307084234_26130.pdf.
- Educate Stakeholders, including the MSDI Theme Leads, on the Geospatial Governance Structure & Process to help establish theme-specific polices.
- Adopt a work plan to establish Geospatial Data Governance Principles and Polices that enact them.
  - In Partnership with the MGIAC, MSDI Theme Leads, MSDI Working Groups, & other stakeholders, identify the top priority policies and associated standards and/or best practices.

3.6 IMPROVE COMMUNICATION FOR GIS COORDINATION

- Continue to support incoming requests for geospatial information, MSDI expertise, and technical support.
- Create, maintain, and publish a knowledge base on the MSDI.
- Restructure MSDI Framework Theme Pages and any relational dataset web pages, and applications, for ease of use and discoverability.
  - Finalize implementation of the new Montana Geospatial Data Portal; utilizing existing investment in state Commercial Off-The-Shelf (COTS) geospatial technology.
  - Train and support the MSDI Framework Theme Leads in transitioning to new web pages and data publishing workflows.
  - Train MSDI Framework Theme Leads, data providers, and other key stakeholders on geospatial website data discovery and geospatial information data sharing through the Montana Geospatial Data Portal.

4 MONTANA GEOSPATIAL INFORMATION ACT GRANT PROGRAM

4.1 IMPROVE COMMUNICATION ON THE MGIA GRANT PROGRAM'S GRANT CRITERIA

4.2 CONDUCT AN INTERNAL REVIEW OF MGIA GRANT PROGRAM

- Present internal review findings to the MGIA Council

4.3 PRIORITIZE GRANT AWARDS THAT DIRECTLY IMPACT THE IMPROVEMENT OF THE FOLLOWING MSDI THEME & DATA INITIATIVES

- ***MSDI Theme Priorities***:
  - Administrative Boundaries

- Cadastral
- Elevation
- Hydrography
- Transportation
- Structures & Addresses

- ***Key Geospatial Data Initiatives***:
  - NG9-1-1 County Data Development
  - Geo-Enabling Montana's Elections
  - 3DHP/Elevation Derived Hydrography Project

5 BUDGET – GAP ANALYSIS & FUNDING SOURCES

The Montana Geospatial Information Account

The Montana Geospatial Information Act also created the Geospatial Information Account, which is funded from a portion of recordation fees collected at each county. "Fee for recording a standard document" are assessed on a per page basis. Of the fees collected, 50 cents are deposited in each individual county's land information account and $1.50 dollars are transmitted to the State Department of Revenue to be placed in the Montana Geospatial Information Account (Section 7-4-2637, MCA).

Figure 7.1

MGIA Collections & Recordations

FY2024 - FY2019

	Collections	***Recordations****
	Millions	
FY2024	1.18	0.785
FY2023	1.26	0.839
FY2022	2.07	1.38
FY2021	1.27	1.7
FY2020	1.01	1.35
FY2019	0.736	0.981

**estimated based on incoming MGIA state dollars*

Section 90-1-404, MCA requires the MSL to administer the Montana Geospatial Information Act. When possible, these funds may be supplemented by the State of Montana's General Fund or other funding sources. Funds for the state Geospatial Information Account are generated through collection of county recordation fees as described in Section 7-4-2637 (3) (a) (iii), MCA. This account represents the primary state funding source to accomplish the priorities of the Geospatial Information Plan.

The Montana State Library maintains a dashboard of the MGIA collections over time. This dashboard features maps, counts by county, annual collections, a full history of recordations, and other important information. The dashboard is updated monthly and can be discovered through *msl.mt.gov/mgiagrants* or here: https://arcg.is/K8bif2.

In the Spring of 2024, the Montana State Library was tracking historically low revenue from the fees

collected for recorded documents used to fund geospatial coordination and grants in Montana. As a result, the State Library reduced budgets and suspended its Montana Geospatial Information Act grant program for state fiscal years 2025-2026.

House Bill 192, a bill carried by the Montana Clerks & Recorders during the 2025 Regular Legislative Session, was passed to increase the portion fees that support both the county land information accounts and the MGIA Account. The increase to fees will take place on October 1, 2025, and an inflationary adjustment will be calculated and added to fee structure moving forward after each biennium: July 2027. The table (Figure 7.2) below describes the increases.

MGIA Collections Over Time 2021-2027 ***Figure 7.2***

Account Description	***Fee per Page July 2021 – September 2025***	***Fee per Page October 2025 – July 2027***
Montana Geospatial Information Account (90-1-409)	$1.50	$2.25
County Land Information Accounts (7-6-2230)	$0.50	$0.75

While historically low MGIA Collection Revenues and other budget concerns have slowed progress, the work continues. The MGIA Geospatial Information Plan budget will be finalized at the September 2025 Council Meeting. And this Plan will be updated with the finalized budget. In addition, in line with MSL's GIS Coordination Strategic Goals, each MSDI Framework will be conducting in-depth review and document/reporting the needs for thematic data improvement. As a part of defining data improvement needs, the Theme Leads, GIS Coordinator, and the Council will start to develop the full financial picture. An internal budget review was conducted, defining the budget based on known needs to-date. After each MSDI Framework Theme has been fully reviewed and individual plans are created a full financial plan can be developed for the MSDI in it's entirety.

Figure 7.3

MGIA 5-Year Budget Planning						
	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030
Collections*	$ 1,180,000	$ 1,780,000	$ 1,780,000	$ 1,780,000	$ 1,780,000	$ 1,780,000
Base	$ 2,163,200	$ 2,228,500	$ 2,360,950	$ 2,538,021	$ 2,231,185	$ 2,398,524
Gap 1	$ (983,200)	$ (448,500)	$ (580,950)	$ (758,021)	$ (451,185)	$ (618,524)
Priority 1	$ -	$ 13,175,000	$ 3,505,275	$ 12,970,129	$ 3,585,436	$ 13,334,924
Priority 2	$ -	$ 1,500,000	$ 1,445,500	$ 1,492,479	$ 1,540,984	$ 1,591,066
Priority 3	$ -	$ 160,000	$ 61,950	$ 63,963	$ 66,042	$ 68,189
Gap (base & all priorities)	$ (983,200)	$ (15,283,500)	$ (5,593,675)	$ (15,284,592)	$ (5,643,647)	$ (15,612,704)

**Estimated based on fiscal analysis HB192*

POTENTIAL APPENDICES & SUPPLEMENTAL INFORMATION/RESOURCES

---

i. GUIDING MONTANA MCA & ARM

a) MCA

b) ARM - 10.102.9104 GEOSPATIAL INFORMATION PLAN

(1) A geospatial information plan will be developed to meet the purpose of the Montana Geospatial Information Act, including the coordination, creation, collection, maintenance, integration, or dissemination of MSDI themes, geospatial standards, or other associated work.

(2) Theme stewards may provide to the council suggested specific goals and objectives relating to the theme they represent.

(3) By September 1 of each fiscal year, the State Library will complete a review of the geospatial information plan.

(4) If a rewrite or updates are necessary, the State Library will prepare the geospatial information plan and the budget necessary to carry out these duties and responsibilities. The plan will include specific goals and objectives based upon input from theme stewards, the state library and comments received during the public comment period along with a budget for the state library's duties and responsibilities as defined in 90-1-404, MCA.

(5) The State Library will seek public comment on the plan.

(6) The State Library will submit the draft plan to the council and the council will advise the State Library

MONTANA STATE LIBRARY
GIS COORDINATION

DRAFT - Montana Geospatial Information Act - 5 Year Budget Priorities & Costs

#	Item	GeoInfo Section	Priority[1]	Category	Dependencies	Frequency	Compounding Increases	FY2026	FY2027	FY2028	FY2029	FY2030	5 Year Totals
0	Annual MGIA Base of Operations[2]	All	0	All	MGIA Revenue	On-Going	7.50%	$2,228,500	$2,360,950	$2,538,021	$2,231,185	$2,398,524	$11,757,181
1	Lidar Data in National Map Contracting	Info Management - Water Information	1	Data Maintenance	None	On-Going	3.25%	$50,000	$51,625	$53,303	$55,035	$56,824	$266,787
2	Elevation Derived Hydro - Data Conversion	Info Management - Water Information	2	Data Maintenance/Quality Improvements	None	Phases		$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$10,000,000
3	Imagery / Repository (FTE & Operations)	GIS Coordination/ Information Management	1	Data Accessibility	Funding	On-Going	3.25%	$150,000	$154,875	$159,908	$165,105	$170,471	$800,360
4	Imagery Repository (Architecture)	GIS Coordination/ Information Management	1	Data Accessibility	Imagery FTE & Operations	On-Going	15%	$400,000	$460,000	$529,000	$608,350	$699,603	$2,696,953
5	GIS Architecture Upgrades	GIS Coordination/ Information Management/ Information Products	1	Geospatial Coordination, Data Creation, & Accessibility	Funding & State Partnerships	On-Going	15%	$400,000	$460,000	$529,000	$608,350	$699,603	$2,696,953
6	Montana Imagery Program (6") - 2 year cadence	GIS Coordination/ Information Management	2	Geospatial Coordination, Data Creation, & Accessibility	Funding & Partnerships |Imagery FTE & Operations	On-Going		$9,555,000		$9,555,000		$9,555,000	$28,665,000
7	Geospatial MSDI/MGIA Program Support (FTE & Operations)	GIS Coordination	2	Geospatial Coordination Operations Support	Funding	On-Going	3.25%	$135,000	$139,388	$143,918	$148,595	$153,424	$720,324
8	Strategic Operations (Plan Implementation)	GIS Coordination	1	Geospatial Coordination Operations Support	Funding	OTO		$100,000	$100,000	$0	$0	$0	$200,000
9	Data Enhancement - Support Addressing MSDI Data Layers (NG911 & GEE) (Contracting)	Info Management - Land Information	1	Data Maintenance/Quality Improvements	Funding	Phases		$250,000	$0	$0	$0	$0	$250,000
10	Data Enhancement - Support Transportation MSDI Data Layers (NG911 & GEE) (FTE Term)	Info Management - Land Information	1	Data Maintenance/Quality Improvements	Funding	Term	3.25%	$135,000	$139,388	$0	$0	$0	$274,388
11	PLSS Plan - 10 Year	Info Management - Land Information	3	Data Maintenance/Quality Improvements	Funding & Partnerships	10 Year Project	$1,750 per point & 3.25%	$875,000	$903,438	$932,799	$963,115	$994,416	$4,668,768
12	Re-Monumentation Program	Info Management - Land Information	3	Data Maintenance/Quality Improvements	Funding & Partnerships	On-Going	$8,750 per remont. & 3.25%	$525,000	$542,063	$559,680	$577,869	$596,650	$2,801,261
13	Application Migration	Information Products	1	Data Accessibility & Applications Support	Funding	OTO		$100,000		$0	$0	$0	$100,000
14	Cadastral Application - Web Services Redevelopment & Enhancement to Increase Response	Information Products	1	Data Accessibility & Applications Support	Geospatial MSDI/MGIA Program Support	OTO		$100,000		$0	$0	$0	$100,000
15	Application Enhancement Support / Interoperability (1/2 FTE & Operations)	Information Products	1	Data Accessibility & Applications Support	Geospatial MSDI/MGIA Program Support FTE	On-Going	3.25%	$60,000	$61,950	$63,963	$66,042	$68,189	$320,144
16	Application Upgrades & Enhancements	Information Products	2	Data Accessibility & Applications Maintenance & Support	Funding	On-Going - 3 Year Cadence	3.25%		$250,000			$275,175	$525,175
							Totals	$ 17,063,500	$ 7,623,675	$ 17,064,592	$ 7,423,647	$ 17,667,879	$ 66,843,293

[1] - Priorities Defined by MSL GeoInfo Leads

[2] - Funding for RTN (HB2 Special MGIA Budget) will end in FY2028