Montana Real Time Network (MTRN)
January 20, 2022

What is an RTN?

A Real Time Network (RTN) enables a user of Global Navigation Satellite System, commonly referred to as GPS, to establish their location on the ground with high precision and accuracy. RTN software uses information collected by multiple network stations to improve the location accuracy of the RTN-connected device in real time. Use of the RTN improves on the ground positioning or location accuracy from within several feet to within several inches or centimeters.

Benefits of RTN

- Agriculture industry uses it to improve accuracy and repeatability for planting and fertilizer application; use of RTN helps reduce costs for seed and fertilizer and results in higher yield per field.
- Surveying within centimeters for sub-meter precision location information; use of RTN reduces costs for field staff, reduces set-up time, allowing field crews to get more work done in a shorter amount of time. Montana Department of Transportation (MDT) Survey Crews tested the RTN in Fall of 2021. With the use of the RTN, MDT crews were able to complete a control survey in roughly 1/8th the time it takes on a typical non-RTN project.
- Construction grading can require tolerances within an inch; RTN produces accurate information, reduces set-up time in the field and can be used for machine guidance for earth moving.
- Geographic Information System (GIS) mapping for engineering and public works applications requires high accuracy for mapping small infrastructure elements like water and sewer valves and shutoffs.
- Autonomous vehicles rely on an established network for exact location to ensure safe navigation.

What comprises an RTN?

- Reference Stations on the ground: Montana currently has 60 existing reference stations. The minimum target for good statewide coverage is 128 reference stations though this number will likely increase as the network is built out.
- RTN Subscribers: The users of the network are from a variety of industries. States such as Utah and Washington rely on these subscribers who use the network "in real time" to fund their RTNs.
- Wi-Fi or Cellular connections on reference stations to connect to the network.
- Hardware and software to administer the network: MDT is contracting with Trimble to provide network software to support the Montana Real Time Network (MTRN).
- RTN Operators: The Montana State Library (MSL) recently hired the MTRN Operator to run, maintain and manage the network.
- Procedures/Best Practices: set forth by the stakeholders and technical experts.
- Stakeholders & Technical Experts: MSL works in partnership with MDT, Seattle Public Utilities, the lead organization for the Washington State Reference Network (WSRN), Montana Tribes, the Montana Land Information Advisory Council, Montana Association of Registered Land Surveyors, State of Utah - The Utah Reference Network (TURN), Montana RTN Working Group, the Montana agriculture community, Montana Association of Geographic Information Professionals, and the technical experts from a variety of industries.

Where are we now?

Stakeholders began discussing the creation of a Montana RTN in 2017. Since December 2018 Seattle Public Utilities has operated a cooperative pilot RTN for Montana. That pilot will end at the end of January 2022. At that time, MSL will assume administration of an extended Montana-based RTN pilot currently funded by Montana Tribes, MDT, and MSL. The Washington-based pilot RTN currently supports over 100 user who have been notified of the transition to the MTRN. Users will continue to receive the network as a free service for approximately the next eighteen months. Upon completion of the MTRN extended pilot, MSL intends to implement a pay-for-service business model.

Current costs to launch the MTRN are funded through a one-time only appropriation of Montana Land Information Act funds and MDT project dollars. Costs include the network transition, operations, staff, establishment of the MTRN administration including policy and governance development, and creation of a business model, and station buildout. A more detailed budget will be created this biennium.

Fiscal year '22 available funding:

MDT Funding (January 2022)	
Total planned funding	$912,989
Total Spent to Date	$451,984
Remaining funding	$461,005

MSL Funding (OTO) (January 2022)	
Available funding	$462,500

Montana State Reference Network - Pilot   December 29, 2021