Alaska Real-Time Global Navigations Satellite System Network | **FY2022 Request: $5,000,000** | **Reference No: AMD 63438**

AP/AL: Appropriation
Category: Development
Location: Statewide
Impact House District: Statewide (HD 1-40)
Estimated Project Dates: 07/01/2021 - 06/30/2026

Project Type: Research / Studies / Planning
House District: Statewide (HD 1-40)
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Brief Summary and Statement of Need:
Alaska's existing Continuous Operating Reference Stations (CORS) provide geodetic quality Global Navigations Satellite System (GNSS) data at a known location which enables users to improve three-dimensional positioning, meteorology, public safety, and geophysical applications. It is the cornerstone of the National Spatial Reference System (NSRS). However, Alaska's CORS are currently operating independently and are not linked as a system. These linked systems are called Real-Time GNSS Networks.

Funding:	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	Total
1002 Fed Rcpts							$0
1004 Gen Fund							$0
1243 SBR	$5,000,000						$5,000,000
Total:	$5,000,000	$0	$0	$0	$0	$0	$5,000,000

☐ State Match Required ☐ One-Time Project ☐ Phased - new ☐ Phased - underway ☑ Ongoing
0% = Minimum State Match % Required ☑ Amendment ☐ Mental Health Bill

Operating & Maintenance Costs:

	Amount	Staff
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Prior Funding History / Additional Information:

Linking Alaska's existing CORS sites with low latency communications, upgrading others, and adding 28 additional sites to fill in gaps would create a powerful Real-Time GNSS Network that could send positional information to a central server. This data would be integrated into a system that provides real-time positional accuracy of 2 cm horizontal and 5 cm vertical instantaneously to the user in the field.

Project Description/Justification:
A fully realized Real-Time GNSS Network would benefit all forms of emergency management, hazards assessment, early warning systems, increase public safety through e911 integration, support autonomous and semi-autonomous vehicles such as snowplows and semi-trucks, and significantly reduce the cost and time to develop land in Alaska.

This technology is ubiquitous in the lower 48. Alaska can take advantage of what has been learned by other states and leverage existing infrastructure to build a modern integrated CORS-augmented GPS

Real-Time Network that would meet the needs of Alaska now and make Alaska more competitive in the future.

Benefits of the Alaska Real-Time GNSS Network include:

- Developing geographic information systems for planning and management functions. These include boundary determination for site planning, land use, hydrology and minerals management.
- Infrastructure mapping and asset maintenance including roads, pipelines and utilities for projects such as Ambler Road, Donlin Gold, Alaska to Alberta Railway, AK LNG, DOT&PF transportation projects and enhancing Wildlife fire response.
- Precise locations of cell phone calls for e911 emergency systems through augmented GPS (aGPS).
- Coastal hazard mapping requires collecting precise, survey-grade elevations to support mapping of flood elevations, shoreline erosion/accretion, or local topography/bathymetry.
- Calibrating tide gauge data for monitoring sea level rise or glacial rebound and creating accurate storm surge and tsunami inundation models.
- Assessments of relative sea level use continuously operating GPS systems to determine the magnitude of vertical land motion, which is then compared to eustatic sea level to understand the local magnitude of relative sea level rise or decline and the impacts of local sea level on coastal inundation.
- Unmanned Aircraft Systems guidance system integration for commercial, scientific and fire mapping.
- Creating a structure for high precision agriculture, mining and transportation safety allowing on-board steering and controls.
- Determining the travel path of moving platforms, including positions of aircraft. This contributes to many types of mapping, assessing airport approaches and runway obstructions and assessing storm damage.
- Monitoring horizontal and vertical crustal motion and plate tectonics for earthquake prediction.
- Determining legal marine and land boundaries, determining wetlands, fishing areas, mineral rights, cadastral, etc.
- Measuring and monitoring fault displacement.
- Monitoring the distribution of precipitable water vapor in the atmosphere for weather prediction.
- Mapping the distribution of free electrons in the atmosphere to predict and measure space weather, which can have large effects on aircraft, power grids and telecommunications.