Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-558

Proposal Title: Gap-Filling Weather Data to Improve Watersheds/Community Resilience

Project Manager Information

Name: Ace Bonnema

Organization: Kandiyohi County

Office Telephone: (320) 231-6520

Email: ace.bonnema@kcmn.us

Project Basic Information

Project Summary: Improve Minnesota natural resource management by providing high-resolution weather radar data to fill observation gaps, enhancing flood forecasting, water quality monitoring, agricultural and community resilience, and wildfire awareness statewide.

ENRTF Funds Requested: $3,750,000

Proposed Project Completion: June 30, 2030

LCCMR Funding Category: Resiliency (A)

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Minnesota's lakes, rivers, forests, and agricultural lands are increasingly impacted by extreme precipitation, flooding, and wildfire risk. Accurate precipitation data is essential for managing flood risk, protecting water quality, and understanding watershed impacts, yet large portions of the state lack reliable low-level weather observations due to gaps in the federal radar network. As a result, 72 of Minnesota's 87 counties and 8 of 11 tribal nations are located in areas where rainfall and storm characteristics cannot be directly measured.

These observation gaps limit the ability of agencies and researchers to monitor storm-driven processes, contributing to increased environmental and economic risk. Since 2000, flooding has caused more than $4 billion in damages statewide, while extreme rainfall accelerates nutrient runoff, erosion, and water quality degradation. Large storm events can increase nutrient runoff by 30–70 percent, impacting lakes, rivers, wetlands, and downstream ecosystems.

Without accurate precipitation data, watershed modeling, water quality management, agricultural decision-making, wildfire awareness, and community resilience are constrained. Addressing these gaps represents a critical opportunity to mitigate the economic toll of disasters and improve environmental monitoring, reduce storm-driven impacts, and strengthen resilience of Minnesota's natural resources and communities.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

This project will provide high-resolution, gap-filling weather radar observations in underserved regions through a scalable data service model, improving environmental intelligence across Minnesota. These observations will enhance measurement of rainfall, storm structure, wind, and wildfire signatures in areas currently lacking reliable low-level coverage, including regions with limited precipitation visibility across much of the state.

Radar data will be integrated into systems used by state agencies, watershed districts, counties, tribal governments, and researchers to support flood forecasting, watershed monitoring, water quality analysis, agricultural decision-making, wildfire detection, and storm impact assessment.

The project will deliver three years of real-time and archived environmental data while evaluating how improved precipitation observations enhance natural resource management outcomes. Data will be operationalized for agency needs while University and agency partners will support geospatial analysis and environmental research using multi-season datasets.

By improving precipitation accuracy and timeliness, this project delivers a practical solution aligned with LCCMR priorities to reduce the impacts of extreme weather on natural resources, enabling more proactive and effective management of Minnesota's water, land, forests, and agricultural systems, and strengthening real-time environmental decision-making across multiple agencies, from state to local government and across academia.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

The project will improve protection and management of Minnesota's natural resources by enhancing and improving precipitation measurement and environmental monitoring. Outcomes include improved flood forecasting and reduced flood impacts; strengthened watershed and water quality management through better understanding of runoff and nutrient transport; enhanced agricultural resilience through improved precipitation data; and earlier wildfire detection and monitoring. The project will produce three years of high-resolution datasets to support long-term research and decision-making. Even modest improvements in precipitation accuracy and lead time can reduce environmental damage and contribute to significant avoided costs associated with flooding, water treatment, and ecosystem degradation.

Activities and Milestones

Activity 1: Data Service Procurement, Deployment, Analysis, and Dissemination

Activity Budget: $3,750,000

Activity Description:
This activity will implement a complete, end-to-end data service approach to deliver high-resolution, gap-filling weather radar observations across underserved regions of Minnesota. Kandiyohi County will conduct a competitive procurement process (RFP) to select a qualified provider capable of delivering real-time and archived environmental radar data through a scalable service model for the region.

Following procurement, the selected provider will deliver continuous observations of precipitation intensity, storm structure, wind, and wildfire signatures. Data will be provided to systems used by the Minnesota Department of Natural Resources (DNR), Minnesota Pollution Control Agency (MPCA), Minnesota Department of Agriculture (MDA), watershed districts, counties, Tribal governments, and research partners such as the University of Minnesota.

Project performance and outcomes will be evaluated through ongoing analysis, including quarterly case study reviews and annual end-of-year reports documenting real-world applications, environmental benefits, and system performance.

Dissemination will leverage existing networks, including the Minnesota Association of Watershed Districts, Minnesota Emergency Management Association, and national partners such as the American Meteorological Society, to efficiently share results through briefings, reports, and conference presentations. Outputs include an executed data service agreement, operational data delivery, case study documentation, annual reports, and a final evaluation of environmental outcomes and return on investment.

Activity Milestones:

Description	Approximate Completion Date
Procurement and Contract Execution	September 30, 2027
Data Delivery and Integration	December 31, 2027
Quarterly Case Study Review - 1	March 31, 2028
Quarterly Case Study Review - 2	June 30, 2028
Quarterly Case Study Review - 3	September 30, 2028
End of Year Report - Year 1	December 31, 2028
Quarterly Case Study Review - 4	March 31, 2029
Quarterly Case Study Review - 5	June 30, 2029
Quarterly Case Study Review - 6	September 30, 2029
End of Year Report - Year 2	December 31, 2029
Quarterly Case Study Review - 7	March 31, 2030
End of Project Report and Recommendations	June 30, 2030
Project Closeout	June 30, 2030

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Tara Leigh Goode	Climavision	Technical Partner	Yes

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
This project will deliver real-time and archived environmental radar data directly to Minnesota end users through existing operational systems and partner platforms, ensuring immediate usability without requiring new infrastructure. Data will be accessible to state agencies (e.g., DNR, PCA, MDA), watershed districts, counties, Tribal governments, and researchers to support flood forecasting, water resource management, agricultural decision-making, wildfire detection, and storm response.

Dissemination will be carried out efficiently by leveraging established partner networks and associations, including state agency networks, watershed organizations, and professional associations such as the American Meteorological Society (AMS), to distribute information, host briefings, and promote adoption.

Project results will be documented and shared through:

- Quarterly case study reviews highlighting real-world applications of the data (e.g., flood events, severe storms, agricultural impacts), developed in coordination with partner agencies and shared through existing association channels

- Annual end-of-year reports summarizing system performance, coverage improvements, and environmental benefits

- A final project report evaluating natural resource management outcomes and return on investment

The project will also support ongoing awareness efforts about weather observation gaps and their impacts, amplified through association-led communications, newsletters, and events. These efforts will help sustain visibility of the issue and encourage continued use of improved environmental data across Minnesota.

Rather than creating new forums, the project team will present findings through existing meetings, conferences, and association-led events (e.g., water resource, agricultural, and emergency management groups), ensuring broad reach with minimal additional cost.

To ensure public accessibility, the project will provide concise, public-facing summaries and web-based content with key findings and data visualizations. All materials will acknowledge support from the Environment and Natural Resources Trust Fund (ENRTF), including required attribution language and signage.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?
This project demonstrates the value of improved weather observations for natural resource management through a

scalable data service model that does not require state ownership of infrastructure. Results will inform future state, regional, and local investments in environmental monitoring and resilience. Following project completion, participating agencies and partners may continue accessing radar data through cost-shared agreements or operational funding aligned with their missions. The project's datasets and evaluation results will support long-term integration into environmental monitoring, watershed management, and research programs, ensuring continued benefits to Minnesota's natural resources without requiring ongoing capital investment by the state.

Project Manager and Organization Qualifications

Project Manager Name: Ace Bonnema

Job Title: Kandiyohi County Emergency Management Director

Provide description of the project manager's qualifications to manage the proposed project.
Ace Bonnema serves as the Emergency Management Director for Kandiyohi County, Minnesota, where he leads the county's comprehensive emergency preparedness, response, mitigation, and recovery efforts. With more than 30 years of experience in government and emergency management, Director Bonnema has built a strong record of leading complex, cross-agency initiatives that strengthen public safety and community resilience across the region.

In his role, Director Bonnema coordinates closely with local governments, state agencies, first responders, and federal partners to ensure effective planning and response to natural hazards and other emergencies. His responsibilities include oversight of the county's emergency operations planning, hazard mitigation strategies, training and exercises, and disaster response coordination. He regularly collaborates with partners including the Minnesota Department of Public Safety, Minnesota Homeland Security and Emergency Management, and the Federal Emergency Management Agency (FEMA).

Throughout his career, Director Bonnema has successfully led and supported numerous multi-jurisdictional projects designed to improve preparedness, situational awareness, and emergency response capabilities across Minnesota. His ability to bring together technical experts, government partners, and local stakeholders has been critical in advancing initiatives that require coordination across agencies and levels of government.

Director Bonnema's extensive operational experience, leadership in cross-agency collaboration, and deep understanding of the needs of emergency managers and public safety officials position him well to manage the proposed project and ensure its successful implementation.

Organization: Kandiyohi County

Organization Description:
Kandiyohi County is a regional unit of government located in west-central Minnesota serving approximately ~43,000 residents across a diverse landscape of agricultural communities, lakes, and growing rural towns. The County provides a wide range of public services including public safety, emergency management, environmental services, public works, health and human services, and land management.

Kandiyohi County Emergency Management works to prepare for, respond to, and recover from emergencies and natural hazards that impact the county and surrounding region. The department coordinates closely with local jurisdictions, first responders, state agencies, and federal partners to strengthen community preparedness and situational awareness for severe weather, flooding, and other hazards common to Minnesota.

Through its leadership and collaborative partnerships, Kandiyohi County has experience coordinating multi-agency initiatives that improve public safety, infrastructure resilience, and emergency response capabilities. The County

regularly works with the Minnesota Department of Public Safety, Minnesota Homeland Security and Emergency Management, and federal agencies to support regional preparedness and hazard mitigation efforts.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
							Sub Total	**-**
Contracts and Services								
TBD	Service Contract	The selected provider will deliver high-resolution weather radar data as a service, including real-time and archived observations of precipitation, storm structure, wind, and wildfire signatures. Data are validated and already integrated with federal partners, and will supporting flood forecast, watershed monitoring, water quality analysis, agriculture, and wildfire detection.				-		$3,750,000
							Sub Total	**$3,750,000**
Equipment, Tools, and Supplies								
							Sub Total	**-**
Capital Equipment								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
							Sub Total	**-**
Travel Outside Minnesota								

							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$3,750,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**-**

Total Project Cost: $3,750,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: 319e222a-db4.pdf

Alternate Text for Visual Component

This document contains multiple case studies demonstrating the ability of supplemental radar systems to detect wildfires, wildfire smoke, rainfall, wind gusts, outflow boundaries and more. The image also contains a map of radar sites proposed in this application and location of federal systems....

Financial Capacity

Title	File
Kandiyohi County Audit	d24df508-b67.pdf

Board Resolution or Letter

Title	File
Board Resolution - Kandiyohi County	59d6f338-3a6.pdf

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Association of Minnesota Counties Letter of Support	47f161f7-89f.pdf
Grant County Radar install	1d4bfbce-31e.jpe
Grant County Radar	95d883ef-b34.jpe
Kandiyohi County Audit	011a8c31-16b.pdf
Kandiyohi County Board Resolution	80ce93be-1de.pdf
Media Reference and Testimonials	fa85cf15-ea6.pdf
Observed Precipitation Record	ae8ae5fa-3ca.pdf
Minnesota Impacts	328db2b7-679.pdf
Advanced Weather Monitoring for Minnesota Details	2f37ceba-938.pdf
Minnesota Pollution Control Agency Letter of Support	eccac653-e42.pdf
Association of Minnesota Emergency Managers Letter of Support	877b505b-646.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

N/A

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

Tina Riley, Grant County, Tara Leigh Goode, Climavision

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand