Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-103

Proposal Title: Linking Minnesota's Forest Ecosystems with Future Forest Bioeconomy

Project Manager Information

Name: John Du Plissis

Organization: U of MN - Duluth - NRRI

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Project Basic Information

Project Summary: Defining the current and future conditions of Minnesota's forests, forest products industry, timber producer's capacity to support existing and emerging forest bioeconomy.

ENRTF Funds Requested: $265,000

Proposed Project Completion: December 31, 2028

LCCMR Funding Category: Small Projects (G)

Secondary 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 17.7 million acres of forest land are vital to the state's ecology, economy, and cultural heritage. Our forests provide critical goods and services, including carbon sequestration, water quality and quantity, recreation, wildlife habitat, and the spiritual life of Minnesota's Tribal Nations, as well as crucial assets for the forest products industry. The forest products sector has experienced a significant decline over the last 20 years, leading to mill closures and downstream impacts across the entire supply chain, such as the reduction of almost 20,000 jobs directly employed by Minnesota's forest products industries. The loss of industry and skilled workforce is heavily impacting our forests. Many goods and services associated with forest ecosystems rely on a specific or a balanced age distribution. Without active forest management, our forests are aging, accumulating fuels on the landscape, increasing wildfire risks, becoming more susceptible to diseases and insect outbreaks, and losing their ability to maintain overall health and resilience.
This project will deliver a robust step-by-step transition to a Sustainable Forest Bioeconomy that will help support rural communities, achieve key climate goals, create new jobs, and support long-term sustainable forest management in Minnesota, while increasing overall forest health and resilience.

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.

Our ambition is to identify value-added horizons for wood products that derive specific products beyond paper and lumber. Forest biomass can be used to generate power (bioenergy), to produce industrial chemicals (biochemicals), and to create biofuels. Much of this biomass could come from mill residues (bark and sawdust), unmerchantable roundwood (undersized trees), unmarketable roundwood (underutilized species), and logging residues (tops of the trees and limbs). To accomplish this we will develop a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) to identify the strengths and weaknesses in social, environmental, and economic systems related to Minnesota's current forest bioeconomy, the potential opportunities to support a Sustainable forest-based bioeconomy, and short- and long-term threats linked to the development, establishment, and sustainability of woody biomass markets in Minnesota.
Our goal is to identify and assess current and future assets that will support the revival, expansion, and development of a strong forest sector without damaging the existing forest products industry or depleting our forest resources. By leveraging Minnesota's forest resources, infrastructure, and skilled workforce, we will co-design an adoption strategy in partnership with research institutions, government agencies, the forest products industry, conservation and habitat management organizations, and environmental NGOs.

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?

This study will provide valuable knowledge of the impacts of the proposed future forest bioeconomy on Minnesota's forest ecosystems, ensuring that value creation does not come at the expense of biodiversity, water quality, wildlife habitat, and people's wellbeing, rights, and lives. It will inform forest policy makers, forest products industry, and all citizens with a deep understanding of the potential opportunities for existing and potential future markets that best support the needs of the state. This will ensure the protection, conservation, and enhancement of Minnesota's forest resources, as well as the growth and economic development of rural Minnesota.

Activities and Milestones

Activity 1: Identify existing strengths and weaknesses of the forest bioeconomy supply chain

Activity Budget: $125,000

Activity Description:
Identifying the components and the current state of the forest bioeconomy supply chain is complex, but it is a crucial step toward developing a successful and realistic transition. We will accomplish this by identifying existing commercial and non-commercial biomass inventory (logging residues, mill co-products, small-diameter timber) and the logistics of the forest products supply chain to understand capabilities and limitations to support new facilities and products. Using multidimensional surveys and workshops with key stakeholders, we will diagnose the strengths and weaknesses of the existing forestry supply chain. Finally, we will hold a regional meeting to present results and seek feedback.

Activity Milestones:

Description	Approximate Completion Date
Analysis of the current state of affairs of the forest bioeconomy supply chain	October 31, 2027
Develop and implement forest bioeconomy sector survey.	December 31, 2027
Compile, analyze and summarize the strengths and weaknesses of the existing forestry supply chain.	March 31, 2028
Present analysis and summary to stakeholders for Iterative feedback and finalize report	June 30, 2028

Activity 2: Identify Opportunities and Threats of a potential market expansion to the forest bioeconomy supply chain.

Activity Budget: $79,000

Activity Description:
We will identify the opportunities that may exist to create new products and the types of industrial facilities necessary to create those products as well as the workforce and community infrastructure development necessary to support an emerging forest bioeconomy. We will also identify the threats that this expansion could pose to each of the components of the existing supply chain that serves the existing forest products industry in Minnesota and surrounding states. We will accomplish this by identifying the key components of a regional marketing strategy for new forest-based bio-products, the threats that these new products and the location of industrial facilities could present to each link in the existing supply chain especially the threats to forest resources and the impact on other forest management objectives designed to enhance or improve biodiversity, water quality and quantity, wildlife habitat and recreation as well as existing workforce, workforce development and community infrastructure development to support the expansion of the forest bioeconomy sector and the development of new markets and products

Activity Milestones:

Description	Approximate Completion Date
Identify key components of a regional marketing strategy for new forest-based bio-products	March 31, 2028
Identify the threats to each link in the supply chain	June 30, 2028
Compile, analyze and summarize data and create report on Opportunities and Threats	September 30, 2028
Present analysis and summary to stakeholders for Iterative feedback and finalize report	December 31, 2028

Activity 3: Building a roadmap to the future of Minnesota's Forest bioeconomy sector

Activity Budget: $61,000

Activity Description:

A key component of the project will be engaging stakeholders through education and collaborative learning opportunities. Working with University of Minnesota Extension, we will engage stakeholders and foster cross-sector partnerships that bring together their diverse perspectives and expertise. Identifying and involving key partners including but not limited to the Minnesota Department of Natural Resources , Minnesota County Land Commissioners, private landowners, Tribal Nations, forest product industry, Minnesota Logger Association, The Nature Conservancy, habitat management organization and environmental NGOs and local communities, among others will be essential to successfully develop a practical action plan from research our research findings (the SWOT analysis report). Together, we will explore potential future pathways for Minnesota's forest bioeconomy - one that prioritizes the health and resilience of forest ecosystems while supporting the well-being and prosperity of communities across the state.

Activity Milestones:

Description	Approximate Completion Date
Identify key stakeholders and establish advisory committee	September 30, 2027
Build and expand cross-sector partnerships in forest-based bioeconomy	September 30, 2028
Workshops with all partners to co-design the future of MN's forestry sector together	December 31, 2028

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Dr. Irene De Pellegrin Llorente	University of Minnesota	Dr. De Pellegrin Llorente will lead the review of the forest product industry supply chain analysis and provide support for the development of the proposed "road map" for the future bioeconomy that is the planned outcome of this project	Yes
Dr. Eric Singsaas	University of Minnesota, Natural Resources Research Institute	Dr. Singsaas will lead the "Horizon Scanning" portion of the SWOT analysis focusing on potential forest products and the required processing and manufacturing needed. He will provide support for the development of the proposed "road map" for the future bioeconomy that is the planned outcome of this project	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 study will involve key forest stakeholders in Minnesota, such as the Minnesota Department of Natural Resources, Minnesota County Land Commissioners, private landowners, Tribal Nations, the timber industry, the Minnesota Logger Association, The Nature Conservancy, and the local community, among others, from the beginning of the project, making this project 100% stakeholder driven.

Before and during the completion of this project, we will involve the former agencies in regular meetings. We will share project details and ask for their participation. In addition, we will attend local conferences in Minnesota annually, such as the annual Minnesota Society of American Foresters conference and the Forest Resources Association Lake States Region Meeting, to reach different audiences and gather diverse feedback that we can incorporate into the project. We will also use other outlets such as webinars, posts, technical reports, and peer-reviewed publications to reach a broader audience in a very accessible way.
Additionally, we will partner with the University of Minnesota's Sustainable Forestry Education Cooperative to develop an outreach plan to reach the broadest possible audience for dissemination and feedback

We will appropriately acknowledge the Environment and Natural Resources Trust Fund in all our outreach activities and sharing of materials and products by using the trust fund logo or attribution language on project print and electronic media, publications, and other communications per the ENTRF Acknowledgment Guidelines.

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 will lead to a better understanding of the strengths, weaknesses, opportunities, and threats of the emerging forest-based bioeconomy to Minnesota's forest ecosystems. It will also provide insights into the creation of a forest-based bioeconomy network and yield future research ideas and funding opportunities for workforce and product development.

The funding for this project will be key to opening the door to additional funding that will help create a detailed implementation plan. By partnering with all key on-the-ground stakeholders, this project lays the groundwork for a future forest bioeconomy path that cares for and protects Minnesota's forest ecosystems.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Integrating Remotely Sensed Data with Traditional Forest Inventory	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 03q	$191,000

Project Manager and Organization Qualifications

Project Manager Name: John Du Plissis

Job Title: Silviculture Research Program Manager

Provide description of the project manager's qualifications to manage the proposed project.
DuPlissis' provides direction and leadership for the NRRI's Silviculture Research Program focused on developing cutting-edge, applied forest management research leading to stabilization and expansion of forest-based industry in Minnesota. This includes development of a full range of silvicultural strategies from intensive forest management and multiple-use forestry to conservation forestry. Existing programs include research on intermediate stand treatments for aspen and red pine ecosystems, growth, yield and harvest volume modeling, regional resource analyses to assess timber quantity and availability and assessment of remote sensing data to accurately quantify stand forest volumes.

DuPlissis background includes serving as the Rural Forestry Program Leader for the University of Nebraska – Nebraska Forest Service where he oversaw program that deliver technical and financial assistance to help woodland owners improve the health, diversity and resiliency of their woodlands from 2015 through 2018 and as an Extension Forester and a Professor of Forestry in the College of Natural Resources at the University of Wisconsin - Stevens Point. John has an extensive background in applied research to characterize forest resources, forest resource management, public participation, and community development, both locally and overseas.

DuPlissis has extensive experience in the development, implementation and management of resource management and applied research projects funded by grants from private foundations and state and federal agencies. DuPlissis has served as the project manager on over a dozen grants, from nine different agencies or organizations, totaling nearly $6,000,000, to fund cost-share assistance to implement forest restoration project or applied research to guide land management decisions.

Organization: U of MN - Duluth - NRRI

Organization Description:
The Natural Resources Research Institute (NRRI) is a state-chartered applied research institute of the University of Minnesota's Research and Innovation Office. NRRI maintains three sites in Northern Minnesota, focused on informing sound, long-term decisions on the use and stewardship of natural resources.

Our mission: Deliver integrated research solutions that value our resources, environment and economy for a sustainable and resilient future.

NRRI collaborates broadly across the University system, the state and the region to address the challenges of a natural resource-based economy. Research is developed via extensive partnerships with industry, state and federal agencies and governmental units.

As an impartial, science-based resource, NRRI develops and translates knowledge through large-scale, interdisciplinary research. Our expertise focuses on defining resource opportunities, minimizing waste and environmental impact, maximizing natural resource value, and maintaining or restoring ecosystem function.

Major outcomes from NRRI projects include informing environmental management and policy and assisting industry and communities in defining and maintaining the social license to operate in natural systems. NRRI has established mechanisms for sharing outcomes through press releases, peer-reviewed journals, technical reports, annual reports, periodicals, and social media.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
John Du Plissis		Primary Investigator			26.8%	0.15		$24,200
Irene De Pellegrin Llorente		Co-Primary Investigator			26.8%	0.15		$26,000
Eric Singsaas		Co-Primary Investigator			26.8%	0.15		$33,500
TBD		research scientist			32.3%	1.5		$148,500
							Sub Total	**$232,200**
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Equipment								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	8 meetings, four people, 5,200 miles miles / meals / lodging at UMN standard rates	Travel to host regional meetings with stakeholders to check-in on results and to report out findings.					$10,200
	Other	Mileage, UMN standard rates for fleet vehicle rental	UMN fleet vehicle rental rate for travel in state to interview stakeholders and other relevant people includes travel					$13,500

			for senior staff to travel and meet with post-doc researcher					
							Sub Total	**$23,700**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
		Workshop	two one-day workshops to report out findings, layout Matrix analysis and discuss next steps with stakeholders and decision makers					$9,100
							Sub Total	**$9,100**
							Grand Total	**$265,000**

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				
In-Kind	UMN unrecovered indirect costs are calculated at the UMN negotiated rate for research of 54% modified total direct costs.	Indirect costs are those costs incurred for common or joint objectives that cannot be readily identified with a specific sponsored program or institutional activity. Examples include utilities, building maintenance, clerical salaries, and general supplies. (https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs)	Secured	$107,210
			Non State Sub Total	**$107,210**
			Funds Total	**$107,210**

Total Project Cost: $372,210

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: d02104dd-7ce.pdf

Alternate Text for Visual Component

The visual for this projects highlights the connectivity between woods workers, sustainable forest management and forest products industry. This project will lead to a better understanding of the strengths, weaknesses, opportunities, and threats of the emerging forest-based bioeconomy to Minnesota's forest ecosystems, rural economies and forest products industry....

Supplemental Attachments

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

Title	File
Du Plissis_LCCMR Transmittal letter	551ba466-aec.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?

Yes, I understand the UMN Policy on travel applies.

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:

Dr. Irene de Pellegrin Llorente (University of Minnesota), Megan Gorder (University of Minnesota), and Lita Lind (University of Minnesota Duluth)

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

N/A