



Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-135

Proposal Title: Climate Mitigation Through Improved Forest Understory Health

Project Manager Information

Name: Ashley McFarland

Organization: Dovetail Partners Inc

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Project Basic Information

Project Summary: This work seeks to support climate change mitigation strategies by promoting healthy and wildfire-resilient forests in Minnesota through improved management and utilization of small-diameter, forest understory biomass.

Funds Requested: \$179,000

Proposed Project Completion: 2023-06-30

LCCMR Funding Category: Small Projects (H)

Secondary Category: Air Quality, Climate Change, and Renewable Energy (E)

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.

Climate change will alter Minnesota's forest species composition, diversity, and health in ways that increase incidence of wildfires. Minnesota's Next Generation Energy Act of 2007 outlined goals for reducing greenhouse gas emissions across all sectors and Minnesota's Climate Solutions and Economic Opportunities (2016) specifically calls for investment in forests 'to maintain and expand sequestered carbon,' highlighting a natural climate solution that provides significant climate change mitigation.

Minnesota's forest products industry experienced a severe contraction with closures of several paper mills and oriented strand board plants following the 2008 recession. As a result, less biomass materials are harvested from our forests, leading to an increased amount of dead, dying, and diseased trees, as well as increased volumes of understory material (e.g., balsam fir) as stands age. This has led to degraded forest health, creating an increased risk of catastrophic losses from uncharacteristic wildfires. Improved forest management will restore forest health and resiliency, and increase ecological benefits that forests provide to the state. This strategy minimizes carbon release from tree decay and wildfire and stores carbon long-term in forest products. Profitable markets for this low-merchantability material must be identified in order to make this improved management feasible.

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

For our forests to play a significant role as a natural climate solution, the strategies we deploy must be environmentally sound, socially acceptable, and economically viable. The thinning of understory trees that are otherwise vulnerable to pests, drought, and catastrophic wildfire, is a management tool proven to improve forest health and mitigate significant and immediate carbon release into the atmosphere. Historically, periodic and low-intensity fires would have maintained more open understories in Minnesota's forests. However, due to fire suppression and reduced harvest rates, many forests are now thick with fire-prone species and brush. The U.S. Forest Service's Forest Inventory and Analysis (FIA) resource data supports increased harvest of Minnesota's understory material.

New market opportunities for these thinned materials within the forest products industry (beyond traditional lumber, engineered wood products, furniture/cabinets, and pulp/paper) are necessary for these strategies to be economically viable. Emerging forest product technologies, such as mass timber and biochar produced from pyrolyzed biomass, will be analyzed to determine which opportunities have the greatest potential to utilize understory material, improve forest health and maximize long-term carbon storage. Improved markets will support forest health and their ability to serve as a natural climate solution.

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 project aligns with priority E(3) as outcomes are tied to specific research to help understand how to mitigate, adapt, or make Minnesota's ecosystems more resilient to climate change impacts, including drought and other extreme weather events. Project outcomes can mitigate catastrophic wildfire exacerbated by climate change and identify solutions for how to reduce the release of carbon, instead storing that carbon in forest products that deliver increased economic benefits to Minnesota. Furthermore, the identified strategies will support greater overall forest health, further increase carbon storage, and reduce carbon release from fire and decay.

Activities and Milestones

Activity 1: Collection, aggregation, and analysis of foundational forest environmental, social and economic data

Activity Budget: \$59,962

Activity Description:

- Determine locations and volumes of targeted forest stands in Minnesota using data from the U.S. Forest Service’s Forest Inventory and Analysis database, the MN DNR Division of Forestry’s Forest Inventory Management System and county land department inventories. Targeted forest stands are stands with forest understories that have the greatest potential for improved forest management (IFM) strategies.
- Develop improved forest management practices for improving understories - forest stand improvement, fuels reduction treatments, etc.
- Utilize Social Network Analysis to map the network of people, businesses, and organizations currently harvesting, transporting, and using these understory materials, and identify clusters of potential utilization by wood products manufacturers in Minnesota. Social networks are defined as relationships and trust between people. Social networks are critical to building markets for technological products: they have an important role in information sharing, technological development and economic growth.

Activity Milestones:

Description	Completion Date
Comprehensive inventory of forest stands with understories that have the greatest potential for IFM	2021-11-30
Develop IFM strategy guidance for land managers to improve forest health and increase carbon storage	2022-01-31
Social Network Analysis completed to capture potential market opportunities within the forest products industry	2022-02-28

Activity 2: Analyze forest product opportunities to determine optimal utilization strategies for understory material

Activity Budget: \$67,126

Activity Description:

- Identify forest product opportunities through stakeholder surveys informed by knowledge gained in Activity 1
- Utilize focus groups composed of forest product industry stakeholders to identify economic and environmental benefits and barriers limiting utilization of understory material
- Utilize non-market valuation techniques and techno-economic analysis to determine environmental costs and benefits of identified alternatives for understory material utilization
- Determine economic costs and benefits of identified alternatives, including costs of taking no new actions
- Summarize the above analyses to determine optimal utilization strategies for understory material

Activity Milestones:

Description	Completion Date
Identify 3-4 forest product options prioritizing understory material utilization and carbon storage potential	2022-06-30
Utilize focus groups to identify economic, social, and environmental benefits and barriers of each option	2022-08-31
Determine the impacts of each option (including no action) on forest health and the economy	2022-09-30
Utilizing gained knowledge, develop recommendations for understory IFM to improve forest health and store carbon	2022-11-30

Activity 3: Dissemination of results

Activity Budget: \$51,912

Activity Description:

The team will synthesize the collected data and gained knowledge to develop outreach materials for land managers and key stakeholders throughout the forest products industry. The primary objective of this outreach will be to promote IFM strategies that improve understory forest health while decreasing fuel loads that contribute to catastrophic loss through uncharacteristic fire. These strategies will be supported by identification of new opportunities that can utilize that harvested material and promote long-term carbon storage in forest products. Each partner will leverage their existing communication infrastructure and networks to ensure the greatest distribution of knowledge.

Activity Milestones:

Description	Completion Date
Deliver a webinar with project findings to key stakeholders	2023-04-30
Distribute report through Dovetail Partners newsletter (40,000+ subscribers) and share results through NRRRI newsletter	2023-05-31
Attend and present project findings at relevant local, regional, and national conferences	2023-05-31
Leverage project partners' social media outlets to maximize the extension of information throughout the project	2023-06-30
One peer-reviewed journal article drafted and submitted to a relevant journal	2023-06-30

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Pat Donahue	University of Minnesota Duluth, Natural Resources Research Institute	Donahue, Building Products Research Program Manager, will primarily assist with the Social Network Analysis and identify clusters of potential utilization by wood products manufacturers in Minnesota by leveraging his expansive professional network within Minnesota's forest products industry. He will also help with disseminating project results to key stakeholders.	Yes
Matthew Aro	University of Minnesota Duluth, Natural Resources Research Institute	Aro, Forest Products Research Program Manager, will assist in determining environmental and economic costs and benefits of identified product opportunities; determining the cost of no-action resulting in degraded forest health, increased wildfire potential, and increased carbon release; and disseminating project results to key stakeholders.	Yes
John Duplissis	University of Minnesota Duluth, Natural Resources Research Institute	Duplissis, Silviculture Program Manager, will lend his technical expertise in forest stand inventory data to ensure an appropriate accounting of potential acreage for project consideration. He will also assist in developing recommended improved forest management strategies to promote forest health and resiliency.	Yes
Ashley McFarland	Dovetail Partners	McFarland, Executive Director of Dovetail Partners, will serve as the project manager ensuring deliverables are met, finances are tracked, and reports are submitted as required. She will also play a significant role in outreach efforts by organizing content and disseminating it to key stakeholders.	Yes
TBD	University of Minnesota Extension	The lead Extension educator will utilize Social Network Analysis to map the network of people, businesses, and organizations in Minnesota harvesting, transporting, and processing understory materials, leading to identification of clusters of potential utilization by wood products manufacturers. They will also lead focus groups and actively participate in outreach efforts.	Yes
Dr. Saleh Mamun	University of Minnesota Duluth, Natural Resources Research Institute	Mamun is a resource economist with expertise in non-market valuation, techno-economic analysis, and modeling and simulation. Mamun's role is to conduct cost-benefit analyses of different alternative uses of understory materials and assist in project dissemination.	Yes
Kathryn Fernholz	Dovetail Partners	Fernholz, President/CEO of Dovetail Partners, has 23 years of forest management experience in Minnesota, and has been active in the national Fire Adapted Communities Network. Her role includes review and development of treatment techniques, assistance in market analysis, and communications.	Yes

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 be funded?

Project partners will leverage their networks to ensure findings are shared with appropriate stakeholder groups to spur forest products industry innovations and investments that develop and grow necessary markets that bring viability to IFM strategies. These innovations will likely benefit other sectors of the forest products industry as well by increasing

utilization of forest residuals (e.g., tops/limbs) and diversifying the species that can be used in emerging technologies, such as cross-laminated timber (CLT). Strategies will also be shared with land managers to promote forest health and climate mitigation. Project Activity 3 details the dissemination plan.

Project Manager and Organization Qualifications

Project Manager Name: Ashley McFarland

Job Title: Executive Director

Provide description of the project manager's qualifications to manage the proposed project.

Ashley McFarland, Executive Director with Dovetail Partners, will serve as the project manager. She has served in this role on numerous multi-disciplinary projects over the past 15 years, ensuring timely and efficient management of funds and completion of deliverables. She received her B.A. in Political Science and Environmental Studies from Central College and an M.S. in Environmental Science, Water Resources from Iowa State University. McFarland has successfully secured nearly \$2.5 million in grant funds from varying sources, both public and private, throughout her career, primarily serving as the lead principal investigator or project manager. She is well-versed in budget management and is experienced in reporting outcomes.

McFarland's organization, Dovetail Partners, is an environmental non-profit based in Minnesota that excels in providing authoritative information about the impacts and trade-offs of environmental decisions, including consumption choices, land use, and policy alternatives, which makes them uniquely qualified to lead the proposed work. As leaders in the forest sector, Dovetail staff and associates are strongly networked with the industries supported in this project and have successfully executed multiple grants and contracts in the past. Kathryn Fernholz, President/CEO of Dovetail Partners is qualified to support the proposed project because she has more than twenty years of experience in the forest sector, including leadership roles related to sustainable forest management and responsible sourcing.

Organization: Dovetail Partners Inc

Organization Description:

Dovetail Partners seeks to engage you in thoughtful, collaborative processes so that we can create an inspiring path forward and empower you to lead with confidence. Dovetail seeks to accomplish that by providing authoritative information about the impacts and trade-offs of environmental management, including consumption choices, land use decisions, and policy alternatives. Dovetail is a highly skilled team that fosters sustainability and responsible behaviors through collaboration to develop unique concepts, systems, models, and programs. Dovetail excels at solving complex problems and helping responsible organizations succeed. We also help define programs that increase job creation and job quality in resource-based industries. Dovetail Partners is a 501(c)(3) nonprofit corporation.

- We promise to be an honest, professional partner serving your goals and needs, without judgment or agenda.
- We promise to listen closely to you to help you find an inspiring and successful path forward.
- We promise to empower you to confidently take that path with our expertise, connections, strategic processes, and - innovative problem-solving capacities.
- We build trust through reliability, collaborative relationships, and excellent work.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
McFarland		Project Manager			0%	0.28		\$22,500
Fernholz		Technical expertise			0%	0.2		\$20,000
Dovetail Associate		Technical expertise			0%	0.2		\$20,000
							Sub Total	\$62,500
Contracts and Services								
University of Minnesota Duluth, Natural Resources Research Institute	Sub award	Staff from NRRI will contribute to the project, lending their expertise in forest inventory data, techno-economic analysis, forest products development, and Social Network Analysis. Furthermore, they will be engaged in meeting deliverables related to project outreach and communications. This subaward includes project-related travel, software, and publication expenses.				0.98		\$110,239
							Sub Total	\$110,239
Equipment, Tools, and Supplies								
	Tools and Supplies	Misc. supplies; paper, printing, mailing, facilitation supplies, etc.	Developing and conducting survey and conducting focus groups					\$1,455
							Sub Total	\$1,455
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-

Travel In Minnesota								
	Miles/ Meals/ Lodging	Mileage (1686 mi/year x 2 years)	Travel related to project meetings, focus groups, stakeholder engagement					\$1,956
	Conference Registration Miles/ Meals/ Lodging	Mileage (\$200), hotel 2 nights (\$400), conference registration (\$200), per diem/other expenses (\$150) x 3 participants	In-state conference attendance to participate in formal presentation of project findings					\$2,850
							Sub Total	\$4,806
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
							Sub Total	-
Other Expenses								
							Sub Total	-
							Grand Total	\$179,000

Classified Staff or Generally Ineligible Expenses

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

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
In-Kind	Unrecovered indirect funds to support project operations; 20% on Dovetail Partners total request plus 20% on up to 25% of subaward	Indirect costs associated with project not requested in budget	Secured	\$18,752
In-Kind	In-kind match time from Dovetail Partners through McFarland's time on project beyond what is requested (100 hours over two years @ \$75/hour)	Contribution of additional time to support project management	Secured	\$7,500
			Non State Sub Total	\$26,252
			Funds Total	\$26,252

Attachments

Required Attachments

Visual Component

File: [4cc1382a-29c.pdf](#)

Alternate Text for Visual Component

Infographic highlighting the current conditions that have led to deteriorating forest health and how improved forest management can lead to healthier forests, increased long-term storage of carbon, and climate change mitigation in Minnesota.

Financial Capacity

File: [Of4fa2a3-8fd.pdf](#)

Board Resolution or Letter

Title	File
Dovetail Partners Board Letter	bff0ee76-26e.pdf

Optional Attachments

Support Letter or Other

Title	File
Letters of Support	06616415-d8e.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

No

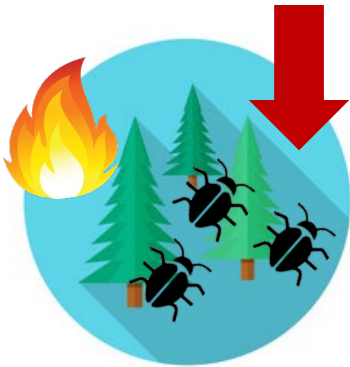
Climate Mitigation Through Improved Forest Understory Health



Forest products industry shrinking & evolving



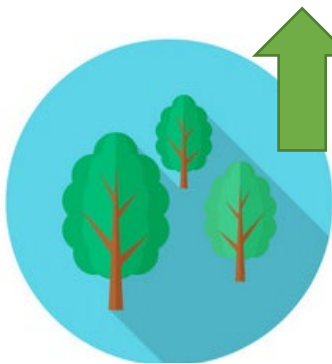
Less material harvested from the woods



Degrading forest health leading to forest vulnerability



Climate change a growing concern



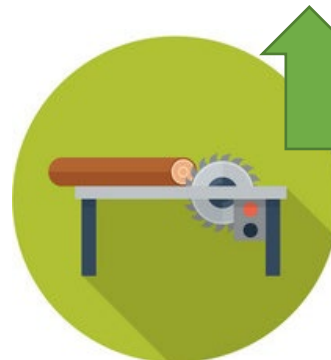
Improved forest management (IFM) = natural climate solution



IFM (thinning understories) cannot happen without markets



New markets needed for long-term carbon storage



Increased IFM = healthier forests = increased carbon mitigation