

**Environment and Natural Resources Trust Fund
2014 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 134-E

District Heating With Renewable Biomass at Camp Ripley

Category: E. Air Quality, Climate Change, and Renewable Energy

Total Project Budget: \$ 1,970,000

Proposed Project Time Period for the Funding Requested: 3 Years, July 2014 - July 2017

Summary:

Decrease dependence on natural gas by replacing 14,100 mcf and a reduction in CO2 emissions by 740 metric tonnes annually through district heating with renewable biomass at Camp Ripley.

Name: Mark Anderson

Sponsoring Organization: Minnesota Department of Military Affairs/Minnesota National Guard

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Location

Region: Central

County Name: Statewide, Cass, Crow Wing, Morrison, Todd, Wadena

City / Township: Little Falls

<input type="checkbox"/> Funding Priorities	<input type="checkbox"/> Multiple Benefits	<input type="checkbox"/> Outcomes	<input type="checkbox"/> Knowledge Base
<input type="checkbox"/> Extent of Impact	<input type="checkbox"/> Innovation	<input type="checkbox"/> Scientific/Tech Basis	<input type="checkbox"/> Urgency
<input type="checkbox"/> Capacity Readiness	<input type="checkbox"/> Leverage	<input type="checkbox"/> Employment	<input type="checkbox"/> TOTAL <input type="checkbox"/> %



PROJECT TITLE: District Heating with Renewable Biomass at Camp Ripley Training Center

I. PROJECT STATEMENT

Installation of a district heating renewable biomass boiler plant would provide Camp Ripley, a facility owned by the State of Minnesota, with the opportunity to develop an environmentally sound and sustainable process to heat numerous building. This proposal would offset natural gas usage by 14,100 thousand cubic feet which would reduce net CO₂ emissions by approximately 740 metric tonnes. This proposal would also provide economic benefits to the local economy and increase energy security through utilization of a closed loop biomass system using feedstock harvested on the same State of Minnesota owned property. Camp Ripley Training Center has an integral role in the continuation of government in the event of a major disaster and this proposal would further the security, and readiness of the facility to assist in the support of our Governor, state and local communities should the need be there.

This proposed project would also demonstrate, on a significant scale, sustainable forest management for the purpose of generating energy. Currently Camp Ripley harvests 300 acres of timber annually; with this proposed project selective harvest of northern hardwoods and utilization of storm blow down material would be implemented and managed with assistance from the Minnesota Department of Natural Resources. While there are approximately 35,000 acres of forest available, the primary focus would be on 1800 acres located off base, which are open to the public for non-motorized recreation and hunting. While managing these lands significant ecological benefits could be realized, in specific a parallel focus on wildlife habitat improvement.

The proposal is to install a 5.0 mmBtu/hr advanced biomass combustion unit and hot water boiler would replace 90% of the total natural gas usage at seven buildings located in Areas 11 and 17 (See Map). Buried pre-insulated piping would be installed to connect the central biomass plant to the existing heating systems at each building. This proposal is nested well into the LCCMR Six Year Strategic Plan. The proposal parallels the initiatives in Energy Recommendations 3, 10 (incorporating our current wind energy feasibility study), 15 and 17.

The Department of Military Affairs and Minnesota National Guard will use the final project as an example of cost effective renewable thermal energy and an educational example for the State of Minnesota, for the tens of thousands of our Soldiers whom train at Camp Ripley, and our local communities. Additionally, Camp Ripley environmental staff gives over 100 presentations a year and reach about 6,000 students and this biomass project would be showcased as one of our sustainable initiatives.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Measurement and Verification

Budget: \$10,000

Installing Btu monitors in the hot water distribution piping for existing boiler plants capable of measuring and logging Btu usage in real time. This will augment natural gas usage records by taking into account individual efficiencies of the current boiler systems.

Outcome	Completion Date
1. Confirmation or modification of 5.0 mmBtu/hr biomass boiler plant sizing	May 31, 2015



Environment and Natural Resources Trust Fund (ENRTF)

2014 Main Proposal

Project Title: District Heating with Renewable Biomass at Camp Ripley Training Center

Activity 2: Biomass Plant Siting

Budget: \$195,000

This activity would include site investigation of proposed location. Utilities, geotechnical, topographical and environmental data along with data from Activity 1 would further develop the biomass plant layout.

Outcome	Completion Date
1. Verification of suitability of location	December 31, 2015
2. Final engineering plans completed	May 31, 2016

Activity 3: Construction Phase

Budget: \$1,765,000

This activity would include all site work, facility construction, installation of pre-insulated distribution piping, connection to existing systems with the seven buildings.

Outcome	Completion Date
1. Request for Proposals issued and executed	August 30, 2016
2. Construction completed	NLT July 1, 2017

III. PROJECT STRATEGY

A. Project Team/Partners

Project team will consist of Department of Military Affairs employees and Minnesota National Guard Soldiers, including civil engineers, architects, energy manger, public works staff and others as needed based on project activity.

The USDA Forest Service Wood Education and Resource Center (WERC) would provide technical assistance to promote and support projects which utilize wood energy in a sustainable manner. Additionally, the Minnesota Department of Natural Resources will be instrumental in developing a sustainable timber management plan for renewable woody biomass and ecological enhancement.

The University of Minnesota – Morris has provided our organization with a better understanding of heating with biomass and the integration of renewable technologies in efforts of sustainability. This is a partnership our organization would look to for project input. Our proposal partners well with the Region 5 Development Commission Resilient Region Plan and would look to partner in education and awareness of this proposal to Region 5.

B. Timeline Requirements

The proposed project will require one heating cycle to verify the sizing of the biomass plant. By ensuring proper sizing expenses and long term issues could be avoided. Through the preliminary feasibility study completed in 2012 a strong base is already in place which will expedite the final design phases and construction.

C. Long-Term Strategy and Future Funding Needs

The long term strategy of this project is to be part of a much larger endeavor to meet net-zero in energy. Not only with the proposed project further the net-zero vision, the Department of Military Affairs and Minnesota National Guard will use the final project as an example of cost effective renewable thermal energy and an educational example to be shared with all who visit this great facility.

2014 Detailed Project Budget

Project Title: *District Heating with Renewable Biomass at Camp Ripley Training Center*

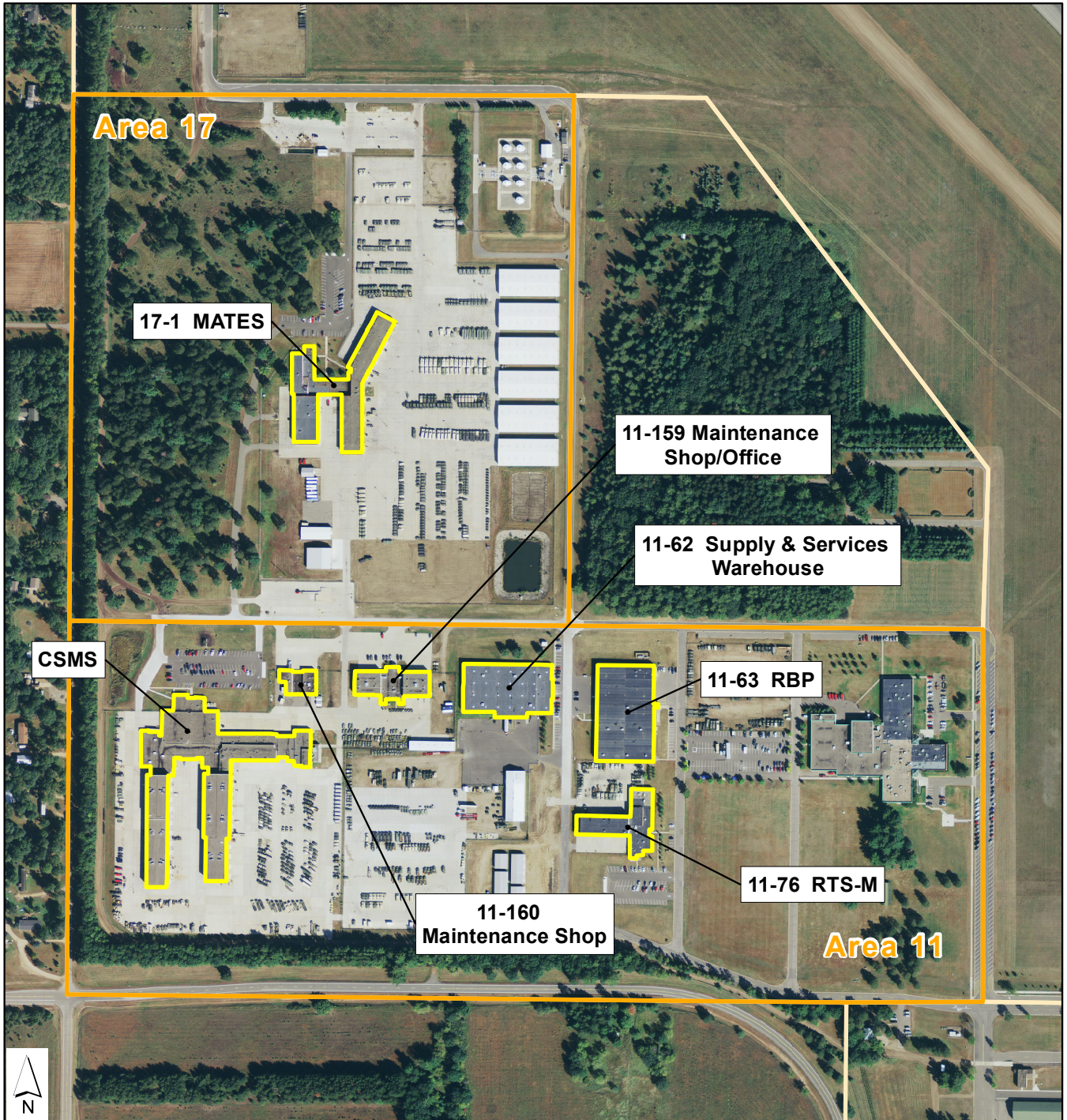
IV. TOTAL ENRTF REQUEST BUDGET 3 years

BUDGET ITEM (See "Guidance on Allowable Expenses", p. 13)	AMOUNT
Contracts: Design & Engineering - <i>not yet determined</i>	\$ 195,000
Contracts: Biomass Boiler Manufacture Contractor - <i>not yet determined</i>	\$ 520,000
Contracts: General Contractor - <i>not yet determined</i>	\$ 1,245,000
Equipment/Tools/Supplies: <i>Purchase and install of BtU monitors for proper boiler sizing</i>	\$ 10,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 1,970,000

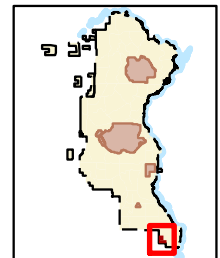
V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ Being Applied to Project During Project Period: Construction of an estimated 300' x 45' storage facility for 1 year biomass fuel needs (Federal)	\$ 500,000	<i>Pending</i>
Other Non-State \$ Being Applied to Project During Project Period: Machinery for facility operation - Wheel Loader for stacking	\$ 250,000	<i>Pending</i>
Other Non-State \$ Being Applied to Project During Project Period: Machinery for facility operation - Elevator for stacking	\$ 6,000	<i>Pending</i>
In-kind Services During Project Period: <i>Personell services, .10 FTE Project Management (3 years)</i>	\$ 6,000	<i>Pending</i>
In-kind Services During Project Period: <i>Personell services, .50FTE Public Works (3 years)</i>	\$ 35,000	<i>Pending</i>
In-kind Services During Project Period: <i>Personell services, .05FTE Pupchasing (3 years)</i>	\$ 4,000	<i>Pending</i>
Funding History: Federal funds used for the Preliminary Feasability Study & three site visits to view installed biomass facilities.	\$ 5,000	

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Buildings outlined in yellow are included in the district heating proposal.





Environment and Natural Resources Trust Fund (ENRTF)
2014 Project Manager & Organizational Information
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I. PROJECT MANAGER – *Mr. Mark Anderson*

Mr. Anderson received his Bachelor of Science degree in Environmental Studies from the University of Minnesota in 1995. Since, Mr. Anderson has been involved in varying industries. Mr. Anderson has been with the Department of Military Affairs for approximately 1 year and previously worked for over six years with Morrison County in varying roles, Land Use Planner as the most current.

Mr. Anderson's role in this proposal is to be the point of contact for the project as it moves throughout the activities. There will be numerous project team members with special areas of interest that will support the project as it moves forward. Mr. Anderson will maintain reporting requirements and contact with LCCMR.

II. ORGANIZATIONAL INFORMATION

The MNNG's enduring mission is to protect the nation by providing forces and capabilities in support of the Governor, Combatant Commanders and domestic operations. The MNNG remains a community-based organization with a clear understanding of our dual role: to serve in support of our national defense and to serve the Governor and the people of Minnesota in a wide range of capabilities.