

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

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**Project Title:**

**ENRTF ID: 135-E**

Climate Readiness in Tourism-Dependent North Shore Communities

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

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**Total Project Budget: \$** 279,185

**Proposed Project Time Period for the Funding Requested:** 2 Years, July 2014 - June 2016

**Summary:**

Recreation and tourism systems are sensitive to climate change. We propose research and outreach to assess and build climate readiness in Lake Superior north shore communities dependent on nature-based tourism.

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**Sponsoring Organization:** U of MN

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**Location**

**Region:** Northeast

**County Name:** Cook, Lake

**City / Township:**

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_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

## **Environment and Natural Resources Trust Fund (ENRTF)**

### **2014 Main Proposal**

#### **Project Title: Climate Readiness in Tourism-Dependent North Shore Communities**

##### **I. PROJECT STATEMENT**

Tourism is an \$11 billion industry in Minnesota. In 2010 the tourism industries in Cook and Lake counties topped 80 million in gross sales, generated more than \$5 million in sales tax and supported nearly 1,700 jobs (Explore Minnesota Tourism 2012). A study by Davidson-Peterson Associates found that 5.76 million person-visits in the northeast region between June 2007 and May 2008 contributed more than \$1 billion in travel-related expenditures, which directly supported 25,000 full-time equivalent jobs. Two-thirds of visitors to region participate in active recreation and the region exceeds state averages in participation rates for gathering wild foods, off-road ATV driving, snowmobiling, hunting, and fishing. However, recent DNR recreation surveys show a decline in recreation participation and when asked why, Minnesotans blamed time, cost and effort, and outdoor pests. Unfortunately, climate-related impacts have the potential to exacerbate these constraints. Climate-related impacts to tourism and recreation systems take multiple forms and include cataclysmic events (e.g., extreme rain events that flood destination areas and damage infrastructure), as well as slow, incremental changes in conditions over time (e.g., delayed lake freeze dates and decreased snow depths that shorten winter recreation seasons). While real physical changes can impact access to and enjoyment of recreation and tourism opportunities, the perception of risk associated with climate and ecological impacts also can affect participation, visitation, and economic expenditures.

Project personnel's communication with recreation and tourism resource professionals and stakeholders in the region including the Department of Natural Resources, Explore Minnesota Tourism, Cook County Visitor Bureau, and Sugarloaf: The North Shore Stewardship Association suggests that north shore communities are ready to examine and begin preparing for the ecological, social, and economic impacts of climate change. Therefore, we propose a multiple methods, community-based research and outreach project to assess and build climate readiness in two nature-based tourism dependent communities on Lake Superior's north shore. The project goals are to investigate two underlying factors contributing to readiness to prepare for and respond to climate change: destination risk and adaptive capacity. Destination risk is visitors' perceptions of a threshold of biophysical conditions/events that would diminish the quality of recreation and tourism experiences (i.e., destination performance) and in turn decrease the likelihood of future visits/expenditures to that destination (i.e., recreation demand). Destination risk will be examined through modeling recreation/ tourism responses (e.g., visitation, expenditures) to climate-related impacts (e.g., temperature, precipitation, snow depth, lake freeze/ice out, fire hazard). Adaptive capacity is a community's ability to learn from the past and develop long-term strategies to respond to future problems. Capacity assessments and destination risk scenarios will frame workshop discussions with tourism/recreation providers, parks and trails managers and local government officials in the region.

##### **II. DESCRIPTION OF PROJECT ACTIVITIES**

###### **Activity 1: Assess recreation and tourism destination risk      Budget: \$143,389**

Project personnel will administer a recreation/tourism visitor survey in select north shore summer and winter destinations to evaluate beliefs and behaviors (e.g., visitation, coping, expenditures) associated with climate-related environmental change. Personnel will estimate economic expenditures and predict economic impacts in tourism/recreation response models. The local economic impacts of climate-related changes that alter expenditure patterns will be quantified using an input-output model that characterizes spending flows across different sectors of an economy. Historical expenditure data will provide a baseline from which economic impacts will be measured under the various climate scenarios. Changes in economic activity in one sector of the local economy impact other sectors through changes in the demand for other non-wage inputs (indirect effects) and by providing income for additional expenditures by workers (induced effects).

<b>Outcome</b>	<b>Completion Date</b>
1. Recreation/tourism visitor survey designed, pretested and administered	June 2015
2. Economic impact data compiled	June 2015
3. Survey and economic data analyzed	September 2015
4. Final report of activity results submitted	December 2015

**Activity 2: Assess recreation and tourism system adaptive capacity** **Budget: \$68,764**

Adaptive capacity will be assessed using a rapid assessment process that includes document and secondary data analysis, key informant interviews, and focus groups with local stakeholders. To develop a baseline understanding of existing governance capacity we will conduct an evaluation of hazard mitigation and emergency plans, natural resource plans, and climate adaptation plans across governmental units in our study area. Interviews and focus groups will be conducted with tourism and recreation professionals and industry representatives, parks and trails managers, water and forest resource professionals and local government officials to identify and map community assets and needs, as well as capacities and constraints to address past and future climate-related impacts.

<b>Outcome</b>	<b>Completion Date</b>
1. Project advisory team assembled	December 2014
2. Capacity data gathered through document analysis, interviews & focus groups	March 2016
3. Adaptive capacity data analyzed	May 2016
4. Final report of activity results submitted	June 2016

**Activity 3: Develop and deliver decision-support to enhance recreation/tourism system readiness**

**Budget: \$67,032**

The research team will present climate scenarios, help leaders visualize potential impacts to recreation and tourism, and discuss adaptation strategies to protect valued assets and diversify tourism/recreation opportunities in capacity-building workshops. Workshops will be conducted with the project advisory team and in each study community. Findings from the recreation/tourism visitor survey and the economic impact analysis will be combined to develop web-based geovisualizations of climate change scenarios.

<b>Outcome</b>	<b>Completion Date</b>
1. Project advisory team workshop conducted	June 2016
2. Local recreation/tourism system stakeholder workshops conducted	June 2016
4. Final report of activity results submitted	June 2016

### **III. PROJECT STRATEGY**

#### **A. Project Team/Partners**

Project team members who will contribute time and effort to and receive funds from the project while assisting with the research are Mae Davenport (Forest Resources), Sherry Enzler (Forest Resources), and Cynthia Messer (Tourism Center) from the University of Minnesota, and subcontractors. Project cooperators: Explore Minnesota Tourism, Minnesota Department of Natural Resources, Cook County Visitor Bureau, and Sugarloaf: The North Shore Stewardship Association, have expressed support for the project and representatives from these organizations will serve on the project's Advisory Team.

#### **B. Timeline Requirements**

A two-year project will enable project personnel to gather background information, collect and analyze the data, conduct capacity-building workshops and prepare project summary reports.

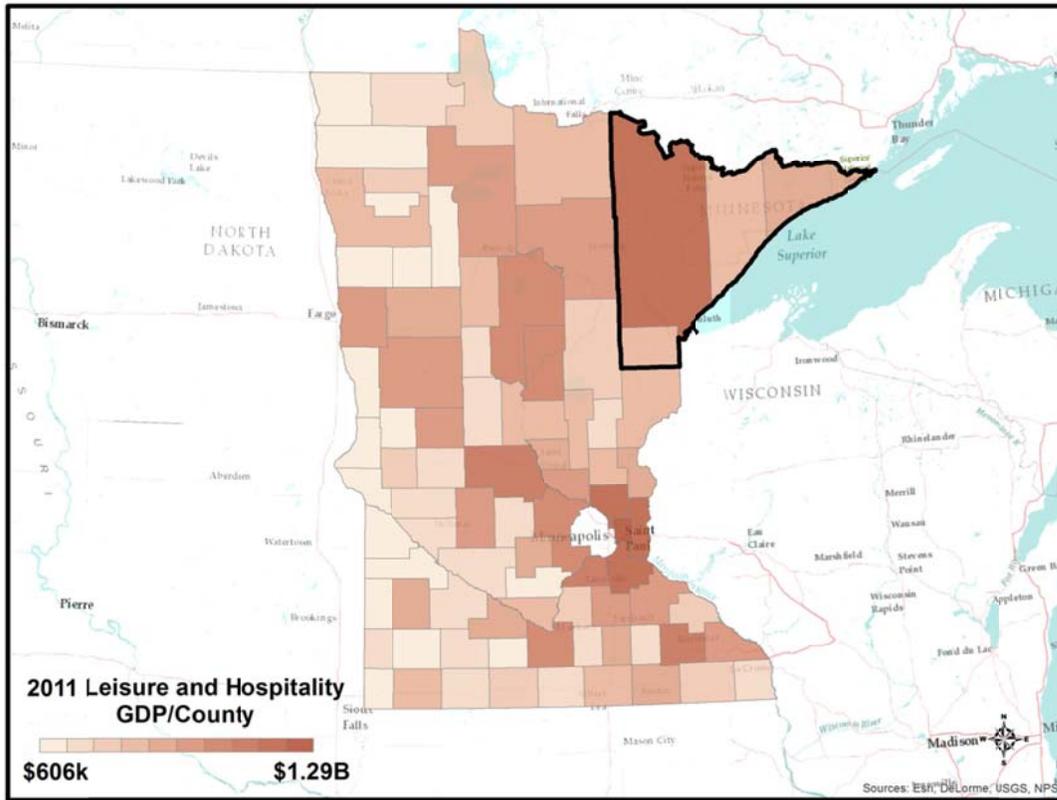
#### **C. Long-Term Strategy and Future Funding Needs**

It is anticipated that the project will be completed within a two-year period beginning July 2014.

**2012-2013 Detailed Project Budget**  
**Overall Project Budget**

**IV. TOTAL ENRTF REQUEST BUDGET: 2 years**

<b><u>BUDGET ITEM</u></b>	<b><u>AMOUNT</u></b>
<b>Personnel:</b> 8 weeks of summer salary and fringe (0.36) for University of Minnesota Co-PI Davenport and 6 weeks of summer salary and fringe (0.36) for University of Minnesota Co-PI Enzler.	\$ 41,357
Salary and fringe (0.8636) for University of Minnesota two graduate student at 1.5 years each at 50% time (20 hours/week). Graduate fringe is budgeted at 0.8636 of salary load and includes tuition for the academic year, health care for the fiscal year, and social security and Medicare for 6.5 pay periods (summer)	\$ 111,378
Salary and fringe (0.0743) for a University of Minnesota work-study undergraduate student for 1.5 years	\$ 9,600
<b>Contracts:</b> 100 hours of salary (\$90/hr) for Messer (University of Minnesota Tourism Center) for one year to plan and facilitate outreach workshops. Four weeks of salary and fringe (30%) for economist for economic impact analysis, destination risk scenario development and decision support tools and undergraduate student for one year (25 hrs/week) for economic data collection TBD. Eight weeks of salary and fringe (30%) for survey research instrument development, destination risk scenario development and decision support tools TBD. Salary and Fringe for graduate student for 9 months at 50% time (10 hrs/week) plus fringe (19%) for survey data collection and analysis TBD. \$8,000 for imagery collection and web-support for the mapping tools.	\$ 79,350
<b>Travel:</b> Travel within Minnesota to pay mileage (75%) and per diem costs (25%) for researchers, graduate students and undergraduate students to collect project data and meet with study collaborators.	\$ 25,000
<b>Additional Budget Items:</b> Letterhead, envelopes, postage, and printing costs associated with administering the national survey of timber sale administrators.	\$ 12,500
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	<b>\$ 279,185</b>



**Figure 1.** 2011 GDP per County from the Leisure and Hospitality Industry.

Table 1. Seasonal variables of interest for scenario development

<b>Variables of interest: Summer</b>	<b>Variables of interest: Winter</b>
Average air temperature (highs/lows)	Average air temperature (highs/lows)
Average stream temperature	Average snow depth
Average inland lake temperature	Estimated lake freeze date
Occurrence of forest fire	Estimated lake thaw date
Average days of rain	Number of days of snow
Average trout catch rate (trout)	Average ice fishing catch rate
Average days of beach closure	Number of seasonal
Number of road/bridge washouts	Unsafe ice-related deaths
Number of seasonal flooding-related deaths	

## **Project Manager Qualifications & Organization Description**

Dr. Mae Davenport has 15 years of experience in applied social science research focusing on the human dimensions of natural resources planning and management. This project will build upon her ongoing research at the University of Minnesota (UMN) investigating community capacity to adapt to ecosystem change in nature-based tourism dependent communities and agricultural communities. Davenport has recently published technical reports (<http://www.forestry.umn.edu/People/Davenport/>) and journal articles on the topic (see Davenport & Seekamp, 2013). Davenport has provided social science consultation to multiple natural resource management organizations and inter-organization efforts such as the Minnesota Department of Agriculture (MDA), Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, Minnesota Interagency Civic Engagement Steering Committee, Minnesota River Interagency Team, Minnesota Water Sustainability Framework, and the Missouri River Ecosystem Restoration Plan. Davenport has led over 35 projects as project manager or primary social analyst and has extensive experience in both qualitative (interview and focus group) and quantitative (survey) research. During the past 13 years she has concentrated her research on the relationships between communities and the natural environment, and in particular how community institutions, groups and individuals negotiate and participate in watershed, ecosystem, and habitat management. She has led trainings and taught courses on land use planning, interdisciplinary issues on the environment, natural resource conflict management, and research methods. Davenport won the College of Food Agricultural and Natural Resource Sciences 2013 Richard C. Newman Community Impact Award for her outreach and service to local communities in natural resource management.

The University of Minnesota is a land-grant Institution with the tradition of being a “people’s university.” The University has a three-part mission associated with (1) research and discovery, (2) teaching and learning, and (3) outreach and public service. The Department of Forest Resources is the leading research and educational institution on forest related issues in Minnesota. For over 100 years the department has played a key role in discovering and fostering sustainable forest resource, recreation, and protected area management activities in Minnesota.