

Environment and Natural Resources Trust Fund (ENRTF) 2010 Work Program

Date of Report: 12/30/2009
Date of Next Progress Report: 1/15/2011
Date of Work Program Approval:
Project Completion Date: 6/30/2012

I. PROJECT TITLE: Demonstrating Sustainable Energy Practices at Residential Environmental Learning Centers (RELCs) – Long Lake Conservation Center (7d-5)

Project Manager: Todd Roggenkamp
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Location: Aitkin, Cass, Fillmore, Lake, Pine, and St. Louis

Total ENRTF Project Budget:	ENRTF Appropriation	\$240,000
	Minus Amount Spent:	\$ 0
	Equal Balance:	\$240,000

Legal Citation: M.L. 2010, Chp. 362, Sec. 2, Subd. 7d5

Appropriation Language:

\$1,500,000 is from the trust fund to the commissioner of natural resources for agreements as follows: \$206,000 with Audubon Center of the North Woods; \$212,000 with Deep Portage Learning Center; \$350,000 with Eagle Bluff Environmental Learning Center; \$258,000 with Laurentian Environmental Learning Center; \$240,000 with Long Lake Conservation Center; and \$234,000 with Wolf Ridge Environmental Learning Center to implement renewable energy, energy efficiency, and energy conservation practices at the facilities. Efforts will include dissemination of related energy education.

II. PROJECT SUMMARY AND RESULTS: Six Residential Environmental Learning Centers (RELCs - Audubon Center, Deep Portage, Eagle Bluff, Laurentian, Long Lake and Wolf Ridge) will reduce their carbon footprints while disseminating energy education that focuses on renewable energy, energy efficiency, and conservation options. Long Lake Conservation Center, with support from the Bush and Butler foundations chose to invest in a professional energy audit utilizing the engineering and consulting firm McKinstry. The audit evaluated existing buildings, technologies, and energy uses resulting in state-of-the-art recommendations for energy efficiency

measures, renewable energy possibilities, and demonstration opportunities. Due to variations of each center's location, the suggested solutions made by McKinstry represent a variety of options that make the combined effort of all six centers important for statewide dissemination. McKinstry's study is the basis for our collective energy investment and education development request.

Funding from the Environment and Natural Resource Trust Fund will allow LLCC to: 1) Increase conservation measures and energy efficiency in the targeted buildings; 2) invest in renewable energy technology applications that LLCC currently does not have; and 3) use these conservation measures and renewable energy applications to educate users on making choices about conservation and renewable energy options that are applicable to their everyday lives. Collectively for all six centers, a web consultant will design and construct a website showing each center's energy related information for educational use while providing statewide verification of the engineering and installation results. Eagle Bluff will coordinate the collective efforts of the six centers to achieve Results 2, 3, and 4. LLCC will work collectively with the other centers to develop evaluation, monitoring, and outreach components to be used by all centers. This will be to insure the message and information being given to all users is consistent.

In 10 years this collective education program would reach nearly 100,000 people who will attend LLCC and participate in its programs. This includes 55-60 K-12 schools annually and a number of other colleges and organizations who use LLCC.

III. PROGRESS SUMMARY AS OF 11/30/2009

IV. OUTLINE OF PROJECT RESULTS: Implementation of carbon and energy reduction systems for education and demonstration purposes at Long Lake Conservation Center. Budget \$240,000. Completion Date June 30, 2012.

RESULT/ACTIVITY 1: Implementation of carbon and energy reduction systems for education and demonstration purposes at Long Lake Conservation Center. Budget \$240,000. Completion Date June 30, 2012.

Description: Long Lake Conservation Center (LLCC), an RELC situated on 760 acres is located in northeastern Minnesota near the towns of Aitkin and Palisade. The facility is owned and operated through Aitkin County. Every year around 10,000 users come to learn about the ecology of the Arrowhead region of Minnesota and how to be good environmental citizens.

The McKinstry study done at Long Lake Conservation Center showed that each one of nine buildings on the property was in need of envelope improvements to improve energy efficiency. Certain buildings were shown to have capabilities to have solar applications to reduce dependency on grid electricity. Some buildings also were shown to have opportunities for reducing dependency on propane use through updates of air/heating systems. Outdoor lighting was identified as well for helping reduce energy dependence and further solar applications.

The targets identified from the McKinstry study to use ENRTF funds for is our dining hall, two dormitories and current outdoor campus lighting systems. One of these buildings was constructed in the mid eighties with the other two being built in the late nineties. All three buildings see a significant amount of use by our users. With these three buildings using the

majority of hot water, installing a solar application to help with producing and storing domestic hot water was deemed to be a good application of funds. The dining hall would also have the air make-up system be reconfigured to take it off propane and converted to the solar hot water system. A Solar LED application was identified for the campus lighting system as well to reduce the dependency on grid electricity and to increase efficiency. The reasons these applications from the McKinstry study were chosen is: 1)they have the ability to reduce LLCC's carbon production the most while increasing efficiency; 2)the applications use a renewable energy application; 3) and they all can be used for demonstration purposes for educating users on their benefits to reduce carbon. A design/build team will be brought in to help develop and oversee the best way to accomplish these goals. Monitoring equipment will also be installed this time on the new and existing systems to establish base line data and monitor improvements.

Summary Budget Information for Result/Activity 1:

ENRTF Budget: \$ 240,000
Amount Spent: \$ 0
Balance: \$ 240,000

Deliverable/Outcome	Completion Date	Budget	Estimated Carbon Reduction #'s
1-1 Solar Hot Water installed in all three buildings	12/31/10	\$128,000	75,008
1-2 Make-up air system in dining hall converted to solar hot water	12/31/10	\$ 54,000	31,812
1-3 Campus lighting installed	12/31/10	\$ 32,000	41,600
1-4 Monitoring equipment installed	12/31/10	\$ 26,000	0

Result Completion Date: *June 31, 2012*

Result Status as of 1/15/2011:

Result Status as of 7/15/2011:

Result Status as of 1/15/2012:

Result Status as of 7/15/2012:

Final Report Summary: 7/15/2012

V. TOTAL ENRTF PROJECT BUDGET:

Contracts: Professional/technical assistance for a design/build team (to be determined through competitive process) \$24,000

Supplies: \$0

Capital Improvements: Renewable: Solar Hot water \$122,000= 60% equipment/40% installation

Conservation: Mechanical improvements\$49,000= 60% equipment/ 40% installation

Conservation: Campus lighting\$25,000= 70% equipment/30% installation
 Monitoring Equipment: \$20,000= equipment 70% equipment/30% installation

TOTAL ENRTF PROJECT BUDGET: \$240,000

Explanation of Capital Expenditures Greater Than \$3,500: The capital improvements made with these funds are fixed capital assets and will remain in place and will continue to be used for the same program through its useful life.

VI. PROJECT STRATEGY:

A. Project Partners: Audubon Center, Sandstone; Deep Portage, Walker; Eagle Bluff, Lanesboro; Laurentian, Britt; Long Lake, McGregor; and Wolf Ridge, Finland.

B. Project Impact and Long-term Strategy: The RELCs sustainable energy campaign has two phases or main goals. Phase 1 is to retrofit our campuses using conservation, efficiency, and renewable resources to reduce the RELCs collective carbon emissions by 80% and lower energy costs. The ENRTF funds will be used to implement one quarter of the Phase 1 goal and sets the stage for our Phase 2 educational programs. Long Lake Conservation Center will continue to seek funds until all of the Phase 1 work identified in the McKinstry report is completed. Phase 2 is to create and implement education efforts that compliment the building improvements done in Phase 1, thus using the campuses as models for sustainable retrofitting and practical carbon-neutral lifestyles. Long Lake Conservation Center currently uses 5 GARN wood burning units to heat all of Long Lake’s campus buildings. The ENRTF funds will allow us to expand our renewable energy use by introducing solar hot-water technology and solar campus lighting. This added technology will help to significantly increase the energy conservation and efficiency of three of our buildings as well as the whole campus proper. Monitoring equipment will also be installed to track our renewable energy technology and help maintain a high level of energy efficiency and for use in our education programs in Phase 2.

B. Funding Sources	Overall RELC Project	Long Lake Conservation Center
LCCMR 2010 Request - Pending	\$1,500,000	
2009 Federal Allocation - \$300,000/ctr. – 5 Northern Ctrs. - Pending	1,500,000	
2010 Federal Allocation - \$300,000/ctr. – 6ctrs. – In Process	\$1,800,000	
Federal Stimulus EECBG Grant – Long Lake – Under consideration		\$100,000

C. Other Funds Proposed to be spent during the Project Period:

C. Other Funds	Overall RELC Project	Long Lake Conservation Center
In-kind Staff - \$30,000		\$5,000 per ctr.
2009 Federal Allocation - \$300,000/ctr. – 5 Northern Centers	\$1,500,000	\$300,000
Continue Project Development – Butler Family Foundation	\$30,000	
2010 Federal Allocation - \$300,000/ctr. – 6ctrs. – In Process	\$1,800,000	

D. Spending History:

D. Spending History	Overall RELC Project	Long Lake Conservation Center
Bush Foundation – McKinstry Study	\$176,000	
Butler Family Foundation – Project Development	\$30,000	

VII. DISSEMINATION: Information about this project will be disseminated through a collaborative website that will be available to the public for learning about the process and successes of each individual centers projects. Long Lake Conservation Center (LLCC) will also have information available on its own website as well as the Aitkin County Government website. LLCC will also put this information out in its newsletter, email blasts, and through articles/press releases through local paper media. It will also be discussed in all future New Energy Resource Advisor (ERA) training seminars to be held on-site at each center.

Energy Resource Advisor (ERA) Certificate

This curriculum is the *first of its kind in Minnesota*. It is a non-credit, continuing education course for adults 18 years of age and older, using online instructional technology combined with applied, field experience. It is intended to foster understanding and leadership of environmental sustainability in our communities, homes and workplaces. This class will be taught online as well as having a contextual field component. The contextual field component will give participants a chance to apply knowledge gained to real world challenges. After completing this course, the successful participant may serve as an energy resource advisor and “green” consultant in the community and workplace.

VIII. REPORTING REQUIREMENTS: Periodic work program progress reports will be submitted not later than 1/15/2011, 7/15/2011, and 1/15/2012 A final work program report and associated products will be submitted between June 30 and August 1, 2012 as requested by the LCCMR.

Attachment A: Budget Detail for 2010 Projects - Summary and a Budget page for each partner (if applicable)									
Project Title: Demonstrating Sustainable Energy Practices at Residential Environmental Learning Centers (RELCs) 7d-5 Long Lake Conservation Center									
Project Manager Name: Todd Roggenkamp									
Trust Fund Appropriation: \$ 1,500,000									
2010 Trust Fund Budget	Result 1 Budget:	Amount Spent (date)	Balance (date)	TOTAL BUDGET	TOTAL BALANCE				
	Implementation of carbon and energy reduction systems for education and demonstration purposes.								
BUDGET ITEM									
Contracts									
Professional/technical- for design/build (contractor will be determined through competitive process)	24,000		24,000	24,000	24,000				
Capital equipment over \$3,500									
Renewables-Solar Hot Water- 60% equipment,40% installation	122,000	0	122,000	122,000	122,000				
Conservation-Mechanical Improvements- 60% equipment,40%installation	49,000	0	49,000	49,000	49,000				
Conservation-Campus Lighting- 70% equipment, 30% installation	25,000	0	25,000	25,000	25,000				
Monitoring Equipment-70% equipment,30% installation	20,000	0	20,000	20,000	20,000				
		0							
COLUMN TOTAL	\$240,000	\$0	\$240,000	\$240,000	\$240,000				