**PROJECT TITLE: LSC Living Lab: Operations and Dissemination**

1. **PROJECT STATEMENT**

We seek support for the LSC Living Lab. a new 2-acre outdoor classroom for teaching, research and demonstration devoted to sparking entrepreneurship around sustainable agriculture, renewable energy, and value-added processing.  This living classroom will showcase economic methods and benefits generated by increased local food production, processing, marketing and distribution and co-located renewable energy systems. It will serve as the core for a new two-year Associate of Science Degree Program in Eco-Entrepreneurship at Lake Superior College (LSC), which integrates science, applied science, entrepreneurship and social analysis in advancing sustainable food and energy systems (to be launched fall of 2019).  Our launch of the Eco-Entrepreneurship Program responds to increased citizen/consumer interest in local/healthy foods and the tremendous economic development potential offered by local food production. We propose to develop, demonstrate and disseminate promising small-scale sustainable and regenerative farming methods (bio-intensive, open field sustainable and organic, permaculture, hydroponic, etc.) that have the potential to improve human health and stimulate regional economic development while reducing the environmental impacts of agriculture.  These methods have been shown to increase farm revenues (via increased multi-enterprising production, season extension and new market penetration) while reducing land and water use by approximately 90%; energy and nutrient use by 50%; and eliminating chemical inputs, soil erosion and nutrient runoff.  We will develop a working farm (8,000 ft2 of greenhouse space and 2 acres of land) at Lake Superior College (LSC) to monitor, improve upon and demonstrate the economic and environmental performance of the most promising new sustainableorganic farming methods. This teaching and demonstration farm will include production, processing, marketing and distribution activities. We will then disseminate these methods and their environmental/economic performance data to MN farmers, community groups and future farmers (K-12 schools and LSC students) via a web site, social media, printed materials (flyers and posters) speaking engagements, local media, site tours, field days, open houses, workshops and training programs. The project will primarily serve NE Minnesota, where smaller scale agriculture is particularly fitting, growing, and in need of institutional support, but project results will be applicable and useful throughout MN.

**II. PROJECT ACTIVITIES AND OUTCOMES**

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| **Activity 1 Title: Develop and Demonstrate Sustainable Farming Methods****Description:** Establish a 2-acre ‘living laboratory’ outdoor classroom on the LSC campus that demonstrates diverse sustainable agriculture methods (two 30’ x 80’ high tunnels, bio-intensive, open field raised bed, organic, permaculture, hydroponic, etc.) along with their associated processing, marketing and distribution systems.  We will monitor and continuously work to improve their environmental and economic performance.  The objective is to develop, demonstrate and educate students and the public about diverse small-scale sustainable agriculture methods that can be readily duplicated throughout MN to increase access to locally harvested foods and generate local economic development.  The outcomes of this educational initiative are to generate entrepreneurial-based economic development, improve human and environmental health, and contribute to enhanced social inclusion and well-being associated with increased local food production. This activity will also provide all content necessary for Activity #2.  The diverse sustainable agriculture, processing, marketing and distribution methods will be evaluated based on their environmental and economic performance.**ENRTF BUDGET: $127,386** |  |

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| **Outcome** | **Completion Date** |
| *1. Establish working farm to develop and demonstrate sustainable agricultural methods* | *September 2020* |
| *2. Collect environmental and economic performance data for each production system* | *June 2022* |
| *3. Analyze performance data and compare results of various production systems* | *June 2022* |

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| **Activity 2 Title: Project Result Dissemination and Training****Description:**The sustainable model farming methods along with their environmental and economic performance will be disseminated to a wide variety of audiences (k-12 students, LSC students, community leaders, farmers and farming organizations) via a web site, social media, printed materials (flyers and posters) speaking engagements, local media, site tours, field days and open houses. In addition, a specific set of training programs will be developed and offered through LSC to anyone interested in mastering these new production, processing and marketing techniques. Graduates of these trainings will be in a position to incorporate these methods into their new or existing farming operations. The object of this activity is to communicate our project results with as many people as possible, and to generate widespread duplication of our production methods. The impact of these outcomes will be evaluated by measuring visitation to our web and social media sites, surveying the effectiveness of our presentations and materials, numbers visiting our field site and enrollment in our workshops and trainings. Ultimately our project effectiveness will be evaluated by the number of individuals or groups that actually duplicate these methods, along with tracking the resulting increase in local food production/consumption, the decline in negative environmental impacts associated with regional farming and the increase in local economic development.**ENRTF BUDGET: $130,672** |  |

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| **Outcome** | **Completion Date** |
| *1. Develop all Dissemination Materials (social media, website, posters, fliers, etc…)* | *May 2021* |
| *2. Develop and conduct site tours, open houses and annual field day celebrations* | *June 2022* |
| *3. Develop/Conduct trainings to feature production, processing and marketing methods* | *June 2022* |

1. **PROJECT PARTNERS AND COLLABORATORS:**

Dr. Michael Mageau and Dr. Randel Hanson have recently been hired by LSC to develop and Direct the new Eco-Entrepreneurship Program and associated Living Lab Field Site. Together they will co-manage the project. Dr. Mageau directed the interdisciplinary Environment and Sustainability (ES) degree program and has been working on the development of sustainable food and energy systems for the past 20 years at the University of MN, Duluth (UMD). Dr. Hanson established and directed UMD’s Land Lab for the past 10 years and co-directed the ES Program. LSC will hire an experienced farm manager in May of ’19 to assist Dr. Mageau and Dr. Hanson with the management of the new degree program, sustainable farming operations and educational/dissemination activities at LSC. We will also be working with Tamara Arnott, LSC Dean of Workforce Development, and her administrative assistant to develop and administer the workshops/trainings. Finally, we will have the assistance of numerous LSC faculty, staff and students to conduct this project. Outside of LSC, we will be working with our regional Sustainable Farming Association (SFA) and the American Indian Community Housing Organization (AICHO) to develop the specific trainings and identify regional farmers to help with training instruction. We will also work with the several Duluth area grocery stores and restaurants that purchase our produce, as well as Anna Wirta-Kosobuski, UMD Medical School, who is working with the Nett Lake Reservation in NE MN to improve the health of its population, and will be purchasing our produce to aid in this effort.

1. **LONG-TERM IMPLEMENTATION AND FUNDING:**

Given the LCCMR support required to launch this proposed project, activities and results will be implemented indefinitely. We will continue to develop and demonstrate the most promising production, processing and marketing techniques, gather the environmental and economic performance data, disseminate project results and conduct the educational activities, workshops and trainings. These ongoing efforts will be funded by a combination of LSC, produce sales, revenues from workshops/trainings and future grants.

**V. SEE ADDITIONAL PROPOSAL COMPONENTS: Attached Separately (A, B, F, H)**