

**Environment and Natural Resources Trust Fund  
2019 Request for Proposals (RFP)**

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**Project Title:**

**ENRTF ID: 137-CH**

Teaching Sustainability through an Economics Lens

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**Category:** H. Proposals seeking \$200,000 or less in funding

**Sub-Category:** C. Environmental Education

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**Total Project Budget: \$** 138,552

**Proposed Project Time Period for the Funding Requested:** June 30, 2021 (2 yrs)

**Summary:**

Stage 2 pilot of Teaching Sustainability through an Economics Lens, an already-developed high-school curriculum, includes teacher trainings, classroom implementation, and Sustainability Summits, attracting -student projects from around the state.

**Name:** Donald Liu

**Sponsoring Organization:** Minnesota Council on Economic Education

**Title:** Executive Director

**Department:** \_\_\_\_\_

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**Location**

**Region:** Statewide

**County Name:** Statewide

**City / Township:**

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**Alternate Text for Visual:**

Stage 2 pilot includes Teacher Training, Classroom Lessons, Undergraduate Ambassadors, and Sustainability Summit. Curriculum presents three core components of sustainability— ecology, ethics, economics — and includes modules on five issue areas.

<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"/>		TOTAL	<input type="checkbox"/>	%
<input type="checkbox"/> If under \$200,000, waive presentation?								



**PROJECT TITLE: Teaching Sustainability through an Economics Lens**

**I. PROJECT STATEMENT:**

*How to be Green While Staying in the Black: Teaching Sustainability through an Economics Lens* is a curriculum developed in 2017-18 for teachers in social studies, business, and agricultural education. It will equip high school students with a basic understanding of selected sustainability issues and inspire them to champion innovative solutions to address environmental, ecological, and related economic challenges. It is being piloted (Stage 1) in 2018-19. This proposal seeks funding for the Stage 2 pilot, which includes all program elements and will be implemented by self-selected teachers. The Stage 2 pilot consists of identical activities in each of two years.

In the curriculum students are challenged to find sustainable solutions in four modules on energy, water, waste and design, and agriculture and food. In a fifth module, students use their entrepreneurial talents to solve social, cultural, and economic problems related to sustainability. The curriculum aligns with Minnesota State Academic Standards in social studies and also certain science and technical reading standards.

Examples of the case studies and lessons in the curriculum include:

- ethanol and unintended consequences
- economic growth and green GDP
- modern farming and managing fertilizer runoffs
- transportation and energy conservation
- clean water and aquifer preservation
- clothing design and reducing toxic wastes
- water shortage, climate change, and impacts on women in the developing world
- international environmental treaties and games in conflict and cooperation

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1: Teacher Training 5-day Workshop Prepares 60 Teachers in Sustainability and Related Economics**

**Content** - Introduces teachers to pressing issues in agricultural and food, energy, water, and waste and design. It instills in teachers the concept of true sustainability, integrating considerations in ecology, ethics, & economics. It will enhance teachers’ understanding of the economic concepts underlying sustainability and will illustrate how sustainability issues can be included in social studies, business, and agricultural education classrooms.

**ENRTF BUDGET Activity 1: \$60,182**

<b>Outcome</b>	<b>Completion Date</b>
1. 60 high school teachers will experience at least a 50% average gain in knowledge of sustainability issues, assessed by pre- and post-testing	Year 1 – 8/31/19 Year 2 – 8/31/20
2. 60 high school teachers will experience a 25% average gain in economic knowledge conducive for analyzing issues in sustainability, assessed by pre- and post-testing	Year 1 – 8/31/19 Year 2 – 8/31/20
3. Surveys will indicate 90% effectiveness of the workshop in achieving its objectives.	Year 1 – 8/31/19 Year 2 – 8/31/20

**Activity 2: Classroom Piloting of Curriculum for 1,000 high school students** – To assist teachers in teaching scientific aspects of the curriculum, a select group of U of MN undergraduate students versed in sustainability issues will be trained and deployed to classrooms, allowing the social studies, business, and agricultural education teachers to focus on implementing the active learning lessons and case studies. Involving college students allows them to gain confidence in becoming sustainability champions as they continue in their careers.



**Environment and Natural Resources Trust Fund (ENRTF)  
2019 Main Proposal**

**ENRTF BUDGET Activity 2: \$35,436**

<b>Outcome</b>	<b>Completion Date</b>
1. A minimum of 40 high school teachers will pilot the curriculum in their classrooms.	<i>Year 1 – 5/31/20 Year 2 – 5/31/21</i>
2. 80% percent of a minimum of 1,000 high school students will achieve average 75% gain in knowledge of both sustainability and economic concepts, assessed by pre- and post-tests.	<i>Year 1 – 5/31/20 Year 2 – 5/31/21</i>
3. 30 undergraduate students will be trained to support classroom implementation and will assist classroom teachers in teaching sustainability issues.	<i>Year 1 – 5/31/20 Year 2 – 5/31/21</i>
4. Deficiencies in the curriculum and its implementation, along with specific successes and suggestions for improvement, will be identified by teachers. 75% will complete surveys.	<i>Year 1 – 5/31/20 Year 2 – 5/31/21</i>

**Activity 3: One-day Sustainability Summits engage 200 students and recognize their achievements in designing sustainable solutions.** To engage students in active learning and as part of the social entrepreneurship component of the curriculum, student teams of three or four students will be formed in their classrooms. Teams will read and discuss case studies and identify specific problems that they will tackle. Teams will formulate a proposal for an organization or an innovation that could address the identified sustainability problem. An in-school panel will choose one winning team, which will participate in an annual Sustainability Summit.

By engaging students in sustainability projects and bringing them to the Summit to share ideas and interact with key players, we seek to inspire them to continue to pursue this important topic and to champion innovative solutions to address the environmental, ecological, and related economic challenges facing the planet.

The Sustainability Summits will consist of a keynote speaker and panel presentations by university professors, industry participants, and government representatives. In addition to the participating students and their teachers, corporate volunteers will be invited to attend. At the Summit, each student team will display its poster, make brief presentations, and answer questions. The top five teams will be selected by a panel of judges, and each will make a 15-minute oral presentation to the audience and the judges will select the first-, second- and third-place finishers. In addition to the “expert awards” selected by the judge panel, students and teachers will vote on their favorite poster presentation to determine winners of the “People’s Choice” awards.

**ENRTF BUDGET Activity 3: \$42,934**

<b>Outcome</b>	<b>Completion Date</b>
1. 60 teachers and 200 students will participate in the Sustainability Summits.	<i>Year 1 – 4/30/20 Year 2 – 4/30/21</i>
2. 75% of teachers & students will indicate the Summit was successful in inspiring students to continue to pursue education in sustainability and to champion innovative solutions.	<i>Year 1 – 4/30/20 Year 2 – 4/30/21</i>

**III. PROJECT PARTNERS RECEIVING RECEIVING ENRTF FUNDING:**

- A. Dr. Kimberly Byrd, Visiting Professor in Sustainability, University of Minnesota, Teacher Training Expert
- B. Dr. Kristine West, Professor of Economics, Saint Catherine University, Classroom Implementation Expert

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

With two years of results from Stage 2 piloting funded by LCCMR, MN Council on Economic Education will be able to secure future funding from its corporate and foundation partners, e.g., Cargill, LandO’Lakes, 3M, Mosaic, and CHS, all of whom are represented on MCEE’s Board of Directors. For almost 60 years, MCEE has successfully funded its programs with help from our impressive and committed Board of Directors.

## 2019 Proposal Budget Spreadsheet

**Project Title: Teaching Sustainability through an Economics Lens**

### IV. TOTAL ENRTF REQUEST BUDGET 2 years

BUDGET ITEM (See "Guidance on Allowable Expenses")	AMOUNT
<b>Personnel:</b> These MN Council on Econ Ed positions are grant funded. Payment is for project-specific work. Without grant funding, this project will not be undertaken.	
Executive Director/Content Expert, 26.5 days @\$745.44, 75% salary, 25% fringe	\$ 19,754
Associate Director, 4 days @\$366.64, 78% salary, 22% fringe	\$ 1,467
Education Coordinator, 32 days @\$327.36, 75% salary, 25% fringe	\$ 10,475
Program Manager, 28 days @\$260.44, 78% salary, 22% fringe	\$ 7,292
Student Worker, 16 days @\$120.00, 100% salary	\$ 1,920
<b>Professional/Technical/Service Contracts:</b>	
Workshop instructors, 2@\$250/day x 10 days, 1@\$400/day x 10 days, 1@\$450/day x 2 days, 1@\$200/day x 2 days	\$ 10,300
Honoraria for keynote presenters and panelists at Summits	\$ 4,000
Online mentoring for teachers	\$ 900
<b>Equipment/Tools/Supplies:</b>	
Workshop and Summit copies and other supplies	\$ 3,020
Workshop and Summit lunch/refreshments	\$ 14,464
<b>Travel:</b>	
Teacher workshop travel expense, 20 @\$320	\$ 6,400
Workshop instructor travel reimbursement	\$ 1,000
College student travel reimbursement	\$ 1,000
Buses for Summits, 30 @\$200	\$ 6,000
<b>Additional Budget Items:</b>	
Teacher workshop compensation, 60 @\$150 (We have found that we must offer incentives for teachers to invest their time in new curricula.)	\$ 9,000
Teacher classroom implementation compensation, 30 @\$450, 10 @\$350 (To compensate for time pre- and post -testing, critiquing curriculum, supevising college students, etc.)	\$ 17,000
College student workshop compensation, 30 @\$100	\$ 3,000
College student classroom visit compensation, 60 visits @\$60	\$ 3,600
Student prizes, 40 @\$100, 4 @\$1,000, 4 @\$500, 4 @\$350	\$ 11,400
Room and equipment rental for Summits	\$ 3,000
Teacher replacement expense for teachers attending Summits (16 @\$160)	\$ 2,560
Photographer for Summits	\$ 1,000
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	<b>\$ 138,552</b>

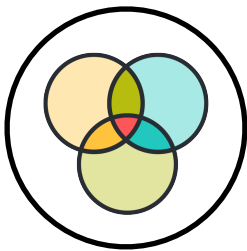
### V. OTHER FUNDS (This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)

SOURCE OF FUNDS	AMOUNT	Status
<b>Other Non-State \$ To Be Applied To Project During Project Period:</b>		
Multiple funders to fund indirect expenses	\$ 48,500	Pending
Note: Project will operate whether or not all these funds are obtained.		
<b>Other State \$ To Be Applied To Project During Project Period:</b>		
	\$ -	N/A
<b>In-kind Services To Be Applied To Project During Project Period:</b>		
	\$ -	N/A
<b>Past and Current ENRTF Appropriation:</b>		
	\$ -	N/A
<b>Other Funding History:</b>		
	\$ -	N/A



# VIEWING SUSTAINABILITY THROUGH AN ECONOMICS LENS

## ◆ PHASE 2 PILOT ◆



### THE CURRICULUM

The five-part sustainability and economics curriculum, written in 2017-2018, presents the three core components of sustainability – ecology, ethics, and economics – and includes modules on ◆ energy ◆ food systems ◆ water ◆ waste and ◆ social entrepreneurship.

### Special Events

### In Classrooms



### TEACHER TRAINING

Five-day intensive training workshops for 60 high school teachers in social studies, business, and agricultural education (Summer 2019 and Summer 2020)



### CLASSROOM LESSONS

Stage 2 piloting of the curriculum with 40 self-selected teachers and 1,000 students (Academic years 2019-2020; 2020-2021)



### SUSTAINABILITY SUMMIT

One-day Sustainability Summits for 60 Student Teams, their teachers, industry leaders, sustainability practitioners, and government representatives (Spring 2020 and Spring 2021)



### UNDERGRADUATE AMBASSADORS

Undergraduate students at UMN learn the curriculum and assist high school teachers in scientific aspects of classroom discussions (2019-2020; 2020-2021)

**MINNESOTA COUNCIL ON ECONOMIC EDUCATION  
PROJECT MANAGER QUALIFICATIONS AND ORGANIZATIONAL DESCRIPTION**

Project Manager **Professor Donald Liu** is Executive Director, Minnesota Council on Economic Education, and Professor, Department of Applied Economics, University of Minnesota. He is the winner of numerous teaching awards, including the University of Minnesota Award for Outstanding Contributions to Undergraduate Education and the Morse-Alumni Distinguished Teaching Award, the American Agricultural Economics Association Distinguished Undergraduate Teaching Award, and the U.S. Department of Agriculture National Award for Excellence in College and University Teaching in the Food and Agricultural Sciences. He is most recently Project Director of *Teaching Economics to K-12 Teachers by Examining Issues in Five Priority Areas through an Economics Lens*, sponsored by the National Institute for Food and Agriculture. For many years, Dr. Liu has served as the Coordinator of the University's College in the Schools Applied Economics program, working high school teachers and their students in economic education and professional development.

The **Minnesota Council on Economic Education (MCEE)** is a non-profit, non-partisan 501(c)(3) organization founded in 1961. MCEE is hosted by the Department of Applied Economics in the College of Food, Agricultural, and Natural Resource Sciences at the University of Minnesota-Twin Cities. With its own Board of Directors, MCEE is responsible for fundraising to cover salaries and program expenses. MCEE is primarily funded by Foundation, corporate, and individual contributions.

To serve the entire state, MCEE works with a state-wide network of PhD faculty at university-based centers for economic education based in the Twin Cities, Mankato, St. Cloud, Moorhead, and Duluth, as well as K-12 Master Teachers located throughout the state. The center directors are in-kind contributions by their universities as a partnership pledge with MCEE to bring improved economic understanding to Minnesota educators and their K-12 students.

MCEE is unique in its focus on K-12 teacher professional development in economics, sustainability, and personal finance, and helps Minnesotans understand and make sound economic choices, improve individual personal financial situations, and participate effectively in their community and state (and national/world) economies.

Since 1961, MCEE has trained over 30,000 teachers, affecting the lives of over 2.8 million young people. Since 2005, MCEE has also worked with 104 community organizations, providing personal finance education to over 2,800 low-income Minnesotans.