



Environment and Natural Resources Trust Fund

M.L. 2020 Approved Work Plan

General Information

ID Number: 2020-061

Staff Lead: Rory Anderson

Date this document submitted to LCCMR: August 13, 2021

Project Title: Teach Science: Schools as STEM Living Laboratories

Project Budget: \$250,000

Project Manager Information

Name: Kristen Poppleton

Organization: Climate Generation: A Will Steger Legacy

Office Telephone: (612) 278-7147

Email: kristen@climategen.org

Web Address: <https://www.climategen.org/>

Project Reporting

Date Work Plan Approved by LCCMR: August 13, 2021

Reporting Schedule: April 1 / October 1 of each year.

Project Completion: June 30, 2024

Final Report Due Date: August 14, 2024

Legal Information

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 05c

Appropriation Language: \$250,000 the second year is from the trust fund to the commissioner of natural resources for an agreement with Climate Generation: A Will Steger Legacy to prepare students for the challenges and careers of the future by connecting new science standards, renewable energy, and STEM opportunities in teacher trainings, classroom demonstrations, and program support across the state.

Appropriation End Date: June 30, 2024

Narrative

Project Summary: TeachScience will connect new science standards, renewable energy, and STEM opportunities through teacher training and support across the state to prepare students for the challenges and careers of the future.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Schools are living laboratories of learning: a place where the environment and infrastructure surrounding students can bring science and engineering practices to life. Through the TeachScience project, 200 middle school science teachers from across Minnesota (Mankato,, Ely, TC Metro), representing over 2,000 students, will receive hands-on training and ongoing support to make their schools living laboratories of learning about energy and the environment. As more schools and cities add renewable energy as an electricity source, and the need for jobs in this sector grows, there is an opportunity and need to integrate renewable energy and green jobs skills into our classrooms. Additionally, Minnesota science teachers are on the edge of a new era of science education as the first change in science standards in 10 years are adopted in summer 2019. There is a critical need to support teachers, schools, and districts throughout Minnesota as they begin the process of implementing these standards.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

Through participation in TeachScience, teachers will receive resources and support to make their schools living laboratories, highlighting the renewable energy infrastructure on their school or in their community and the opportunity of green STEM careers. The new science standards offer the ideal platform to emphasize these concepts, with their focus on the practice of doing science and engineering, and the inclusion of more environmental and earth science content than in the past. During the school year, teachers will receive support through monthly virtual network meetings and 5 virtual classroom presentations on energy and environmental topics. Climate Generation has over 15 years of experience building the comfort, confidence, and competence of teachers to deliver STEM and environmental-based education in their classrooms, and a suite of curriculum resources already developed and ready to share. Our teacher network includes over 4,000 Minnesota teachers, and this project will leverage this network, our partners in the private energy and public education sector, and our expertise, to develop a new generation of Minnesota students with the STEM-based knowledge and skills for environmental leadership.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

This project is founded on the recognition that schools and communities are rich in environmental learning opportunities with a diversity of examples of natural resource protection, conservation, preservation, and enhancement. Through TeachScience teachers will be connected with natural resource career professionals and will learn ways to connect local, relevant examples to their science curriculum. Students will see how science learning connects with their local community, and build a stronger conservation ethic.

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Develop and plan trainings and teacher support network

Activity Budget: \$101,700

Activity Description:

We will review the new Minnesota Science Standards, work with statewide partners to identify renewable energy and environmental community themes, and build relationships with 3 schools and districts in and near Mankato, Ely, and the Twin Cities to develop and plan trainings around the state to support the 2023-2024 school year. In addition, we will plan follow up support for teachers in the form of 9 monthly virtual meetings including topics on effective teaching and equity, with the opportunity for discussion. We will also develop 3 virtual classroom presentations featuring energy and environmental topics and speakers.

Activity Milestones:

Description	Completion Date
Identify specific locations, build partnerships, promote 3 teacher trainings, recruit teachers through our CG network and partner networks	August 31, 2023
Develop content, purchase supplies, identify speakers, and revise resources for each of 3 training locations	October 31, 2023
Develop plan, identify topics, coordinate speakers, for 9 teacher support network virtual meetings during the school-year.	June 30, 2024
Develop plan, identify topics, coordinate speakers for 3 virtual classroom presentations reaching 3000 students during	June 30, 2024

Activity 2: Implement trainings

Activity Budget: \$60,000

Activity Description:

We will implement 3 trainings for 200 middle school science teachers in Mankato Ely, and, the Twin Cities. Trainings will be held Spring-Fall of 2023.

Activity Milestones:

Description	Completion Date
Implement two-day training in Mankato for up to 100 teachers.	October 31, 2023
Implement two-day training in Ely for up to 50 teachers.	October 31, 2023
Implement two-day training in Twin Cities Metro for up to 150 teachers.	October 31, 2023

Activity 3: School Year Virtual Support of Teachers and Students

Activity Budget: \$77,600

Activity Description:

We will coordinate 9 monthly virtual meetings for 200 teachers and provide 3 virtual classroom presentations for 2,000 students. Meetings and presentations will be recorded for future use.

Activity Milestones:

Description	Completion Date
Provide 9 monthly virtual meetings for 200 teachers featuring content/opportunity for collaboration and discussion.	May 31, 2024

Provide and record for future use 5 virtual classroom presentations on energy and environmental topics. Reach: 5000 students	May 31, 2024
--	--------------

Activity 4: Project Evaluation

Activity Budget: \$10,700

Activity Description:

Project evaluation will provide important feedback on the trainings to inform future trainings, demonstrate change in capacity to implement the new science standards throughout the year, and demonstrate change in student interest and knowledge on energy, environmental science and engineering concepts.

Activity Milestones:

Description	Completion Date
Develop comprehensive evaluation plan including formative and summative evaluation.	October 31, 2023
Develop and implement pre and post evaluation for teachers attending trainings and for full year of network support.	June 30, 2024
Develop and implement pre/post evaluation for students attending virtual presentations.	June 30, 2024
Develop final project report.	June 30, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Community experts receiving honorariums to present at trainings	TBD	We will invite community experts in renewables, engineering, career opportunities, relevant scientific topics, and science education, to present at trainings.	Yes
Contract Web Support/Systems Administrator	Oz Technology	Sole web contractor with Climate Generation since 2013, hired through competitive bidding process, located in Minnesota. Will maintain website and resources	Yes
Minnesota Science Teachers Association	Minnesota Science Teachers Association	Supporting outreach, reviewing materials, suggesting speakers and topics relevant to Minnesota Science teachers.	No
Minnesota Earth Science Teachers Association	Minnesota Earth Science Teachers Association	Supporting outreach, reviewing materials, suggesting speakers and topics relevant to Earth Science standards.	No
Minnesota Association for Environmental Education	Minnesota Association for Environmental Education	Supporting outreach, reviewing materials, suggesting speakers and topics relevant to environmental educators.	No
Department of Education: Science	Department of Education: Science	Providing outreach, suggesting and/or providing speakers	No
Department of Commerce: Energy Division	Department of Commerce: Energy Division	Suggesting and/or providing speakers	No
IPS Solar	IPS Solar	Speaker suggestion, outreach to teachers	No
All Energy Solar	All Energy Solar	Speaker suggestion, outreach to teachers	No
Clean Grid Alliance	Clean Grid Alliance	Speaker suggestion, outreach to teachers	No
RREAL	RREAL	Speaker suggestion, outreach to teachers, connection with tribes doing solar	No
Great Plains Institute	Great Plains Institute	Speaker suggestions, topic suggestions	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

Media will be alerted to each of our community visits for additional coverage and outreach. Additionally, teachers will be encouraged to share their experiences and resources with colleagues for dissemination. Outreach for training will occur at relevant education conferences. Additionally we will be determining through research and evaluation a set of best practices in using communities as a context for science education. We will disseminate our resources and findings via our website (www.climategen.org), the Climate Generation listserv, the Education Minnesota Statewide Educator Conference, the Minnesota Science Teachers Association Conference, MNCERTS (Minnesota Clean Resource Energy Teams) Conference, social media outlets including Facebook, Twitter, and Instagram as well as through the many partners associated with the trainings.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust

fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?

Climate Generation has pioneered the development of STEM-based resources and training for over 15 years and is committed to including this as a key component of our K-12 programming. Our diverse funding base ensures the continuity of our programming.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Educating Minnesotans about Potential Impacts of Changing Climate	M.L. 2014, Chp. 226, Sec. 2, Subd. 09e	\$325,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Senior Director of Programs/Project Manager		Manage, oversee budget, and evaluate			22%	0.25		\$21,000
Education Manager		Coordinate, develop, implement program			22%	1.25		\$78,500
Education Coordinator		Support program development and implementation			22%	1.25		\$63,500
Finance Manager		Administrative and budget reporting support			22%	0.25		\$18,000
Communications Coordinator		support communication and graphic design of materials and video support			22%	0.13		\$6,100
Program Intern		outreach and dissemination support, program delivery			0%	0.13		\$14,500
							Sub Total	\$201,600
Contracts and Services								
Systems Administrator: Laura Borgendale	Professional or Technical Service Contract	technology support, webpage integration- web contractor with Climate Generation since 2019, hired through competitive bidding process, located in Minnesota				0		\$14,500
							Sub Total	\$14,500
Equipment, Tools, and Supplies								
	Tools and Supplies	Killawatt meter/teacher \$20*300=\$6000	For use in training to bring back to classroom for activities					\$6,000
	Tools and Supplies	Workshop materials (markers, flipchart paper, snacks \$150/workshop)	For activities and support of workshops					\$450
	Tools and Supplies	Infrared heat sensor	use in workshops for educators to do energy audits (\$20/300 teachers)					\$6,000
							Sub Total	\$12,450

Capital Expenditures									
								Sub Total	-
Acquisitions and Stewardship									
								Sub Total	-
Travel In Minnesota									
	Miles/ Meals/ Lodging	Staff travel to Ely and Mankato for trainings (\$952 hotel/meals (2 nights each location, 2 days of per diem each location), \$448 mileage - 800 x.56) plus travel for planning meetings (\$100) per Commissioner's plan.	For travel to trainings and planning meetings						\$1,500
	Conference Registration Miles/ Meals/ Lodging	Minnesota Science Teachers Conference Exhibit and Registration \$250)	for program dissemination and presentation						\$250
	Conference Registration Miles/ Meals/ Lodging	Education Minnesota Exhibit and Registration (\$500)	For program dissemination and presentation						\$500
								Sub Total	\$2,250
Travel Outside Minnesota									
								Sub Total	-
Printing and Publication									
	Printing	Workshop materials (25*200=5000)	Handouts, activity outlines for trainings						\$5,000
								Sub Total	\$5,000
Other Expenses									
		Facility Rental for 3 workshop locations (\$1000/location)	Locations to hold workshops for teachers						\$3,000
		Workshop meals for participants (Breakfast/lunch for 2 days, 200 teachers: \$25/teacher/day, \$50*200=10000 Participants will be spending full	Workshops will be held over a full day and depending on location may not be close to food. Providing lunch						\$10,000

		days over meal hours in possibly remote locations. Modest meals will be provided to sustain them and ensure work flow can continues uninterrupted	will be critical to maximize time and make the day usefu.					
		Speaker Honorariums (\$200/speaker, 2 speakers/training*3 trainings=400*3=1200)	Speakers will travel to training and be sharing their expertise and will need compensation					\$1,200
							Sub Total	\$14,200
							Grand Total	\$250,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
---------------	---------------------	-------------	--

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
Cash	Xcel Energy Foundation	Teacher network support	Pending	\$10,000
Cash	Olseth Family Foundation	K-12 Program Support	Secured	\$20,000
In-Kind	Executive Director time	Time spent supporting project	Secured	\$10,000
In-Kind	Climate Generation curricula resources	Already developed materials used to support the project	Secured	\$15,000
			Non State Sub Total	\$55,000
			Funds Total	\$55,000

Attachments

Required Attachments

Visual Component

File: [8c44a748-855.pdf](#)

Alternate Text for Visual Component

The graphic is a flow chart of the project demonstrating the work and the outcomes. It shows a map with 3 stars in different locations of MN and reads: 3 science teacher workshops. This flows to a list of workshop topics including: new science standards, equity, renewable energy, green careers. This flows to an image of a computer and the words: teacher and student support through virtual meetings and presentations. This flows to an image of renewable energy resources and the words Minnesota ...

Financial Capacity

File: [2e9ca5e5-20b.pdf](#)

Board Resolution or Letter

Title	File
Climate Generation Board Resolution	983de273-ce7.pdf

Optional Attachments

Support Letter or Other

Title	File
Climate Generation Background Check Certification	0e39724b-4f8.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

Due to the decrease in funding to \$250,000 we scaled back our deliverables from 5 trainings to 3 trainings. Additionally we adjusted our milestones to reflect the new timeline which extends until June 30, 2024.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I agree to the Commissioner's Plan.

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

TEACHSCIENCE: SCHOOLS AS STEM LIVING LABORATORIES



