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

Project Title: **ENRTF ID: 185-E**

Support Tools for Facilitating Renewable Energy Choice

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

Sub-Category:

Total Project Budget: $ 243,232

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

Summary:

Develop and pilot decision support tools for Minnesota's municipal and cooperative utilities to help the 40% of Minnesotans served by these utilities make individual choices to deploy more renewable energy

Name: Gabriel Chan

Sponsoring Organization: U of MN

Title: Assistant Professor

Department: Center for Science, Technology, and Environmental Policy

Address: 301 19th Ave S

Minneapolis MN 55455

Telephone Number: (612) 626-3292

Email gabechan@umn.edu

Web Address https://www.hhh.umn.edu/research-centers/center-science-technology-and-environmental-pol

Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

In regions across the state, Minnesota's munis and co-ops have over 30 community solar programs and 10 green pricing programs. Uptake varies and new program types could be explored

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____%
____ If under $200,000, waive presentation?			

PROJECT TITLE: Support Tools for Facilitating Renewable Energy Choice

I. PROJECT STATEMENT

We propose to develop and pilot a series of decision support tools with Minnesota's municipal and cooperative electric utilities ("munis" and "co-ops") to help implement **voluntary green power programs** to facilitate greater customer choice in accessing cost-effective renewable energy. With this support, more Minnesotans will be able to take meaningful action to reduce their energy bills and contribute to the state's clean energy economy.

Minnesotan energy customers want more choice in how their electricity is produced, the ability to reduce the environmental impacts of their energy use, and options to reduce their utility bills. Many utilities have developed voluntary, opt-in programs that help meet customer demand for renewable energy. Nationally, over 25% of renewable energy has been developed through voluntary programs developed outside of the mandates of state statute. However, developing new business models and utility programs to respond to customer demand for clean, affordable, and reliable energy is challenging, particularly in the regions served by munis and co-ops. Munis and co-ops serve more than 40% of Minnesotan electricity customers, but relatively less technical assistance and research is focused on them than on investor-owned utilities.

In this project, we propose to develop and pilot a **series of decision support tools** that can be used by muni and co-op managers, their boards, and their customers/member-owners to analyze and facilitate greater customer choice in the electricity system through the development and refinement of **voluntary green power programs**. The support tools will take into account the barriers and opportunities for innovation that munis and co-ops face and allow for renewable energy programs to be tailored to meet the demands of energy customers and costs to be shared fairly. We will **pilot** the tools with three munis and co-ops to assess feasibility and refine the support tools. This work will help the 125 munis and 50 co-ops in Minnesota, their customers, and the joint action agencies and generation and transmission co-ops that own the electric generation that serves these utilities.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Evaluation Framework and Assessment of Existing Programs (ENRTF BUDGET: $44,146)
There are at least 10 utility green pricing programs and 30 community solar programs currently available in Minnesota's co-ops and munis. However, voluntary green power programs are not available to all customers and under existing statute, there is a broader range of viable options: (1) Utility green pricing programs, (2) Utility renewable contracts, (3) Unbundled renewable energy credits sales, (4) Power supply contracts, (5) Community energy (e.g. community solar gardens), and (6) Innovative reimbursement for distributed generation (beyond net metering). We will assemble a comprehensive database of all existing programs in Minnesota.

We will also develop an evaluation scheme based on six evaluation criteria to apply to the database of existing programs: ***(1) Environmental effectiveness***: what is the environmental benefit of the program? ***(2) Cost effectiveness***: Is there a cost of participating or does the program present cost-savings? ***(3) Fairness***: does the program impose costs or create benefits for non-participating customers? Does it create costs or benefits to the utility itself? ***(4) Accessibility***: is the program available to all customers in the utility? ***(5) Feasibility***: can the program be implemented and scaled with minimal operational burden? ***(6) Local impacts***: does the program create local value (e.g. job creation or the possibility of attracting companies seeking renewable energy)?

Outcome	Completion Date
1. Development and refinement of evaluation framework	*Dec 31, 2019*
2. Establishment of Minnesota green power program database; Program evaluation	*Dec 31, 2019*

Activity 2: Development of the Decision Support Tools (ENRTF BUDGET: $88,293)
We will develop and pilot decision support tools that apply the Activity 1 evaluation framework to provide quantitative insight into each of the evaluation dimensions of a new or modified voluntary green power

program. The tools will be based on financial and economic analysis using several publicly available data inputs. The outcome of the tools will be a set of open-access spreadsheet models that will be publicly accessible and fully customizable to meet the needs of stakeholder groups in all Minnesota co-ops and munis.

Outcome	Completion Date
1. Spreadsheet models to evaluate programs for utility mangers, customers, partner orgs.	*June 30, 2020*
2. Refinement of spreadsheet models after experience with pilots	*June 30, 2021*

Activity 3: Pilot Implementation (ENRTF BUDGET: $48,146)

We will work with local stakeholders and our project partners to identify three Minnesota munis/co-ops to pilot implementation of a new or reformed voluntary green power program. We will partner with a diversity of utilities based on their geographic region and specific economic circumstances so that the lessons from the pilot can be more broadly applicable. Throughout implementation, we will refine the decision support tools.

Outcome	Completion Date
1. Establish partnerships with three co-ops and munis	*June 30, 2020*
2. Operation of pilot voluntary green power programs; feedback to/from support tools	*June 30, 2021*

Activity 4: Dissemination and Outreach (ENRTF BUDGET: $62,646)

We will develop the tools on a publicly accessible internet site and convene a round of workshops across the state to engage utility managers, board members, and customers/member-owners in piloting and using the tools. Our outreach will leverage existing state networks, like the Clean Energy Resource Teams (CERTs) and its staff at the University of Minnesota Extension. We will also contribute to the limited literature on energy policy formulation and implementation that takes into account the unique structures of munis and co-ops.

Outcome	Completion Date
1. Workshops with MN utilities to share results and best practices	*June 30, 2021*
2. Website development; Conference participation; Academic/non-academic publications	*June 30, 2021*

III. PROJECT PARTNERS:

The proposed work is built on several past and ongoing research efforts to understand utility innovation in Minnesota's munis and co-ops conducted through the University of Minnesota's Center for Science, Technology, and Environmental Policy (CSTEP) and Energy Transition Lab (ETL). These efforts have been led by Project Manager Gabe Chan (Assistant Professor in CSTEP) and Ellen Anderson (Executive Director of ETL). Through their work, CSTEP and ETL have directly engaged or partnered with 50 of the state's munis and co-ops.

Partners receiving ENRTF funding: **Prof. Gabriel Chan** (CSTEP): Project Manager, staff supervision, engagement with partners; **Exec. Dir. Ellen Anderson** (ETL): Project Partner, staff supervision, engagement with partners; **Graduate research assistants and researchers** (to be named): research execution, database/tool development.

Partners not receiving ENRTF funding: **State networks** (e.g. CERTs); **Partner munis and co-ops in pilots**

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

As the costs of renewable energy continue to decline, utilities can create new opportunities to save customers money while reducing environmental impact. This project will help munis and co-ops adapt to the changes in the energy landscape and accelerate the deployment of locally appropriate renewable energy. The results of this work will directly engage three utilities but will develop tools that will be periodically updated with minimal recurring research funds so that they can be broadly adopted by all munis/co-ops in the state after the project.

V. TIME LINE REQUIREMENTS:

This project is anticipated to last two years, one year for the development of the evaluation framework and support tools and a second year for pilot implementation, refinement, and dissemination.

2019 Proposal Budget Spreadsheet

Project Title:

IV. TOTAL ENRTF REQUEST BUDGET: 2 years

BUDGET ITEM (See "Guidance on Allowable Expenses")	**AMOUNT**
Personnel:	**$ 220,732**
Gabriel Chan, Principal Investigator, 8% FTE years in 1 and 2, salary $20,468, fringe (rate 33.5%) $6,857	$ 27,325
Ellen Anderson, Co-PI, 8% FTE in years 1 and 2, salary $17,277, fringe (rate 35.5%) $5,788	$ 23,065
TBN, (1) Grad RA, PhD Level, 50% time during years 1 and 2, during academic year, salary $34,666, fringe health (rate 15%) $5,200, fringe tuition $32,376	$ 72,242
TBN, (1) Grad RA, PhD Level, 50% time years 1 and 2, during summer session, salary $11,555, fringe health(rate 15%) $1,733	$ 13,289
TBN, (2) Grad RA, Master Level, 25% years 1 and 2, during academic year, salary $31,598, fringe health (rate 15%) $4,738, fringe tuition $32,376	$ 68,712
TBN, Support Staff, 12.5% time during years 1 and 2, salary $12,656, fringe (rate 27.2%) $3,443	$ 16,099
Professional/Technical/Service Contracts:	**$ 7,000**
Professional Services: Website Development	$ 7,000
Equipment/Tools/Supplies:NONE	$ -
Acquisition (Fee Title or Permanent Easements): NONE	$ -
Travel:	**$ 10,000**
In-state travel to offices of munis and co-ops throught the state for pilot implementation and direct engagement, conference travel, convening external experts; $5,000 in year one and two	$ 10,000
Additional Budget Items:	$ 5,500
Workshop costs to convene munis and co-ops, their generation partners, and external experts to disseminate results and receive feedback on tools, $5,000 in year one	$ 5,000
Publication costs, $250 in year one and two	$ 500
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	**$ 243,232**

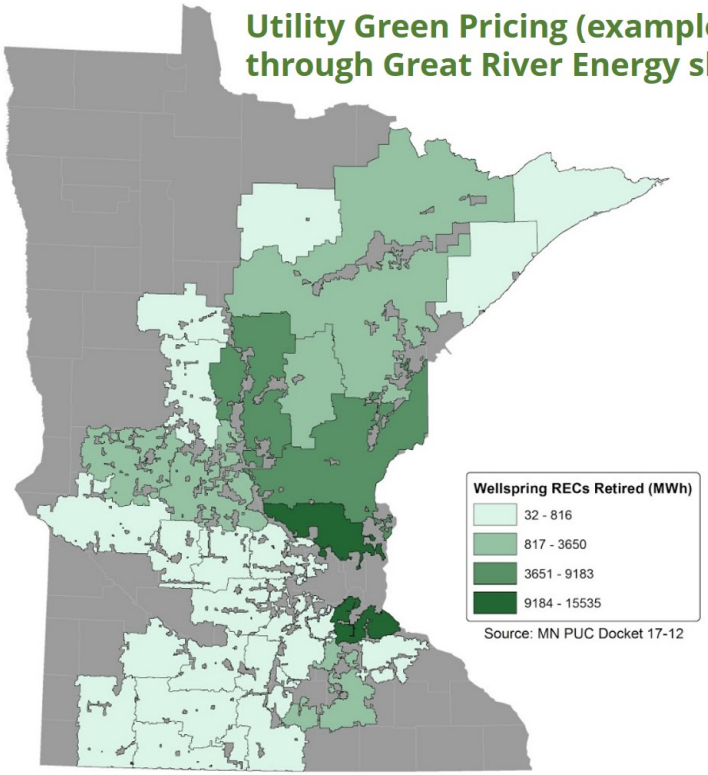
V. OTHER FUNDS *(This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)*

SOURCE OF FUNDS	**AMOUNT**	**Status**
Other Non-State $ To Be Applied To Project During Project Period: NA	$ -	
Other State $ To Be Applied To Project During Project Period: NA	$ -	
In-kind Services To Be Applied To Project During Project Period: NA	$ -	
Past and Current ENRTF Appropriation: NA	$ -	
Other Funding History:	$ -	

Voluntary Green Power Programs in Co-Ops and Munis

Voluntary green power programs are taking off across Minnesota, but more options that **deliver customer benefits and reduce environmental impacts** should be explored as renewables continue to become more affordable and prevalent

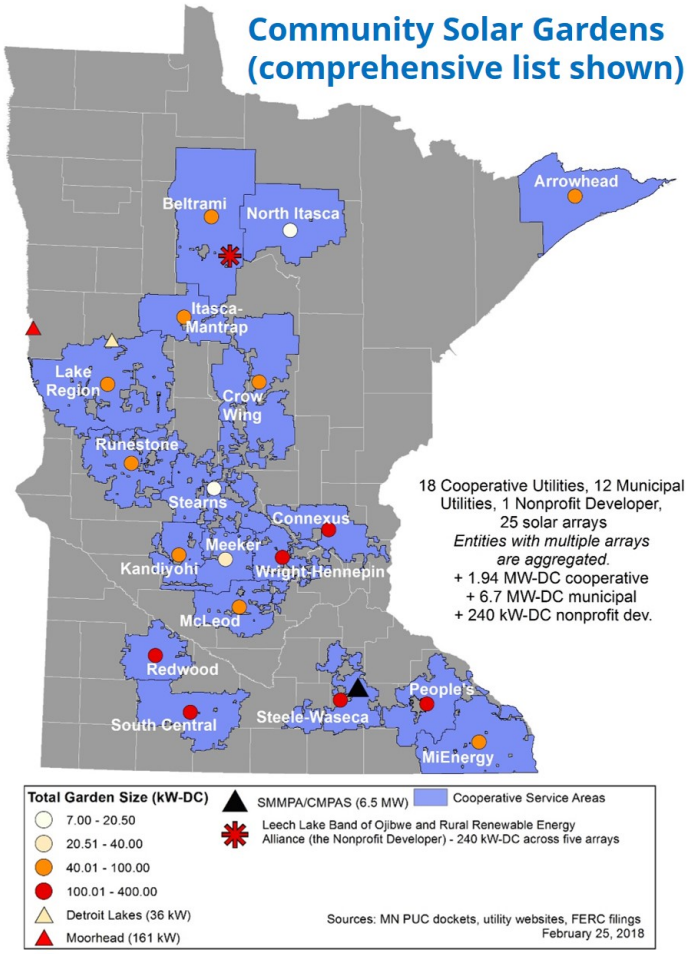
Utility Green Pricing (examples through Great River Energy shown)



Voluntary Green Power Options:

1) **Utility green pricing programs**
2) Utility renewable contracts
3) Unbundled renewable energy credits
4) Power supply contracts
5) **Community energy (e.g. community solar gardens)**
6) Innovative reimbursement for distributed generation (beyond net metering)

Community Solar Gardens (comprehensive list shown)



Evaluation Framework → Assess Existing Programs → Decision Support Tool → Pilot Implementation → Dissemination & Outreach

05/08/2018

Gabriel Chan, Project Manager

Gabriel Chan is an Assistant Professor and the Director of Graduate Study in Science, Technology, and Environmental Policy at the University of Minnesota's Humphrey School of Public Affairs. He has experience researching energy and climate policy for over 10 years.

Professor Chan's recent research has focused on state and national renewable energy policies, community solar, energy innovation, and international climate and sustainable development policy. His writing has appeared in publications such as *The Electricity Journal*, *Nature*, *The Proceedings of the National Academies of Science*, and *The Energy Journal.*

Professor Chan is a faculty member of the **Center for Science, Technology, and Environmental Policy (CSTEP)** at the University of Minnesota. CSTEP is a nationally recognized academic research center on public issues arising at the intersection of science, technology, environment, and society that shape economic development, environmental sustainability, human health, and well-being. By integrating science with public policy, community action, and multi-sector governance, the center advances the common good in a complex and diverse world. https://www.hhh.umn.edu/research-centers/center-science-technology-and-environmental-policy

Chan is also a Faculty Associate at **the Institute on the Environment (IonE)** at the University of Minnesota. IonE enables a future where people and planet prosper together through interdisciplinary scholarship and engagement with society outside the academy.

Chan has a PhD in Public Policy from Harvard University and a B.S. in Political Science and in Earth, Atmospheric, and Planetary Science from M.I.T.

Ellen Anderson, Project Partner

Ellen Anderson is Executive Director of the **Energy Transition Lab (ETL)** and Adjunct Associate Professor at the University of Minnesota Law School and Sustainability Studies program. Anderson is an expert on Minnesota energy laws and policies and served many years in the public sector crafting them.

ETL is supported by the University of Minnesota's Institute on the Environment and the Law School. It leverages University expertise in law, policy, and many other disciplines, in partnership with the public, private, community, and nonprofit sectors, to help solve our biggest energy challenges for the future. ETL conducts research and analysis relating to renewable energy and has numerous collaborations with Minnesota energy stakeholders, including utilities.

Anderson served in the Minnesota Senate from 1993 to 2011 and was re-elected five times, representing several neighborhoods of St. Paul and the city of Falcon Heights. She chaired the Jobs, Energy and Community Development Committee; the Commerce Committee; the Energy and Telecommunications Committee; and the Environment, Energy and Natural Resources Finance Committee. From 2012 to 2014, Anderson was Senior Advisor on Energy and Environment to Governor Mark Dayton and assisted the state Environmental Quality Board (EQB). From 2011 to 2012 she was Chair of the Minnesota Public Utilities Commission.

Anderson has a J.D. *cum laude* from the University of Minnesota and a B.A. from Carleton College.