

From: [Tracy Hodel](#)
To: lccmr@lccmr.mn.gov
Bcc: [Tracy Hodel \(Tracy.Hodel@ci.stcloud.mn.us\)](mailto:Tracy.Hodel@ci.stcloud.mn.us)
Subject: ML 2021, Subd. 10
Date: Friday, June 10, 2022 3:13:00 PM
Attachments: [City of Saint Cloud One Page Letter - LCCMR Emerging Issues Account funds.pdf](#)
[Capability Statement and Resolution of Support.pdf](#)
[RNG and Green Hydrogen Demonstration Project Budget Proposal.pdf](#)

Good Afternoon,

The City of St. Cloud is honored to submit an application for consideration of being awarded LCCMR funds from the Emerging Issues Account for renewable energy demonstration projects at wastewater treatment facilities.

The City of St. Cloud has a proven record of success with the implementation of innovative technologies and programs that reduce overall greenhouse gas emissions. The image below illustrates the City's past and future project/initiatives related to enhancing natural resource management and sustainability. The City has been carbon neutral in building energy use and 100% electrical energy from renewable sources since 2020 and the City's Nutrient, Energy, & Water Recovery Facility (Wastewater Treatment Facility) is currently a net zero facility with hopes of not only supplying 100% of its electrical demand on-site with renewable energy sources, but also to generate and provide the green energy to others in the nearby industrial park and or in the grid/pipeline. These successes serve as building blocks to implement new and innovative emerging technologies. Additional information related to the City's capability to carry out the demonstration projects is attached, along with a copy of the Resolution of Support approved by the St. Cloud City Council on June 6, 2022.



Also attached is the requested 1-page letter describing the why and details of the request for

funding to install renewable natural gas and green hydrogen equipment onsite at the City's Nutrient, Energy & Water Recovery Facility, along with the requested budget worksheet.

Thank you for your consideration of this request. We are excited to hear from you.

Best Regards,

Tracy

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>ENGINEERING >PUBLIC WORKS > PUBLIC UTILITIES



Dear Legislative-Citizen Commission on Minnesota Resources Committee,

The current health and safety impacts of climate change on Minnesotans are clear, including a significant uptick in mega-rain events, threats to agricultural security, air quality impacts and more. Urgent action must be taken to prove that revolutionary technologies can be used to expand the use of under-valued resources such as wastewater to generate a diverse array of renewable energy and resources; lower greenhouse gas emissions; and protect the health and well-being of Minnesota's people and natural resources. The pressing problems we are facing can only be mitigated by rapidly accelerating the adoption of new technology and utilizing resources previously thought of as waste.

The proposed project aims to better manage the inherent resources from treated water by using existing flow & capacity to create natural gas, green hydrogen & oxygen

Reduction of greenhouse gas emissions comes from systematic resource transformation. If readily available technology is implemented in industries that are traditionally energy consumers, they can be transformed into renewable resource producers. Utilizing LCCMR emerging issues account funds for Renewable Natural Gas and Green Hydrogen demonstration projects would help give the St. Cloud Nutrient, Energy and Water (NEW) Recovery Facility the potential to create renewable natural gas, green hydrogen and oxygen - reducing greenhouse gas emissions and creating valuable resources from waste streams.

Wastewater is a source of significant resource potential, and the St. Cloud NEW Recovery Facility is experienced in creating and expanding renewable resource projects while spreading knowledge and lessons learned to audiences across the state and region.

Energy from wastewater treatment facilities is an important piece of a clean energy transformation as it's 24/7 reliability counters the intermittency of wind & solar generation. In many wastewater facilities, including St. Cloud's, there is insufficient gas storage available, resulting in flared gas and lost renewable energy potential. This can be mitigated by installing a renewable natural gas system and hydrogen to capture this 'lost' energy in an alternative form. Wastewater contains large amounts of potential energy in the form of hydrogen that can be produced by splitting water molecules into safe, green hydrogen and oxygen. Hydrogen would then be used as a fuel source for hydrogen battery vehicles and generators similar to the biogas engines already in use at St. Cloud NEWRF. Oxygen would be utilized to reduce energy demand in the aeration process.

Statewide Impacts



Showcase wastewater as a valuable energy source beyond only electricity production



Serve as proof of feasibility and financial viability for implementing biogas to RNG systems & green hydrogen in treatment facilities nationwide



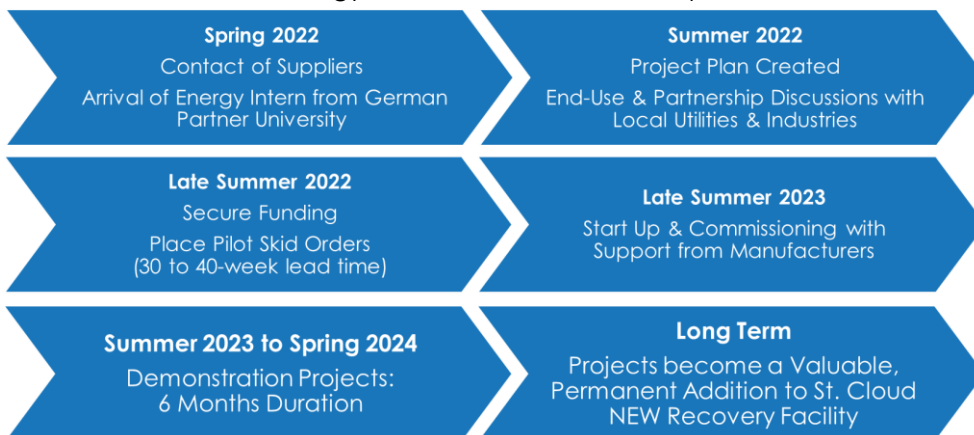
Spark discussion throughout Minnesota & share lessons learned from the demonstration project



Act as a driver & proof of concept for the launch of permanent RNG & Green Hydrogen systems at facilities like the St. Cloud NEW Recovery Facility



Lower GHG emissions & climate impact of traditionally energy intense wastewater treatment while transforming to clean energy production



The funds from LCCMR will be used to acquire RNG and green hydrogen equipment, install site infrastructure and piping, and hire engineering consultants. St. Cloud is currently in communication with the local natural gas utility and local industries to create additional funding and partnership opportunities. The St. Cloud City Council has passed a resolution of support for the application.

St. Cloud, MN Statement of Capability for Carrying out Renewable Natural Gas and Green Hydrogen Projects

St. Cloud is capable of carrying out renewable natural gas and green hydrogen demonstration projects. Energy potential and staff capacity are already in place on-site; infrastructure and site preparation work have begun for renewable natural gas (RNG) and green hydrogen demonstration projects; previous pilot projects have been completed successfully and expanded upon at the facility; and the St. Cloud Nutrient, Energy and Water (NEW) Recovery Facility is researching the expansion of renewable natural gas and green hydrogen demonstrations into a full-scale, permanent on-site projects in the future. The goal is to fully utilize and expand upon renewable energy production for facility needs and beyond.

The St. Cloud NEW Recovery Facility has the surplus energy capacity to produce enough biogas to fuel an RNG pilot skid. The facility plans to utilize energy potential that is already being produced, but that the facility is forced to 'flare' or waste due to electrical energy production capacity limits. Current standard operating procedures would provide adequate fuel sources to utilize the pilot skid to its full capacity. There is also room to expand energy production and create additional renewable natural gas.

The water that goes through the facility is a valuable source of green hydrogen production as well, and current flows can produce a significant amount of green hydrogen and oxygen that would be utilized onsite.

Staff are well-versed in the field of on-site pilot projects – particularly ones that can be expanded upon and used as permanent additions to the wastewater treatment process. Recently, multiple pilots were completed to enhance nutrient harvesting, water quality improvements and create additional high strength waste stream options. The nutrient harvesting pilot has already been expanded to be a full-scale, permanent process on-site, removing a significant amount of phosphorous from receiving waters.

The NEW Recovery Facility is staffed 24/7 by staff that are very experienced and well-versed in expanding operational procedures to include monitoring and responding to energy recovery equipment.

St. Cloud has a strong working relationship with the utility provider, Xcel Energy, which has enhanced the ability to recover electricity from wastewater. Conversations are ongoing with Xcel Energy regarding RNG projects and end-uses. St. Cloud has created and submitted an updated Facilities Plan that includes a commitment to monetary investments in on-site infrastructure needs and improvements for making a permanent RNG project feasible. Local industry partners are in discussion for partnerships that would utilize the hydrogen recovered for clean transportation manufacturing. The St. Cloud City Council has passed a Resolution of Support for securing funding for these projects.

RESOLUTION AUTHORIZING GRANT APPLICATION TO THE LEGISLATIVE CITIZEN COMMISSION ON MINNESOTA RESOURCES (LCCMR) ENVIRONMENTAL AND NATURAL RESOURCES AND TRUST FUND FOR RENEWABLE ENERGY DEMONSTRATION PROJECTS AT THE ST. CLOUD NUTRIENT, ENERGY & WATER RECOVERY FACILITY

WHEREAS, the City of St. Cloud is a political subdivision/local government unit of Minnesota organized/operating under the laws of the State of Minnesota; and

WHEREAS, the City of St. Cloud has been a state and national clean energy and sustainability leader; and

WHEREAS, the City of St. Cloud supports the 2022 LCCMR grant application for the installation of renewable energy demonstration projects at St. Cloud's Nutrient, Energy & Water Recovery Facility; and

WHEREAS; if the City of St. Cloud is awarded a grant by the LCCMR, the City of St. Cloud hereby agrees to accept the grant award and may enter into an agreement with the LCCMR for the above referenced project; and

WHEREAS, the City of St. Cloud will comply with all applicable laws and environmental requirements as stated in the grant agreement; and

WHEREAS, the Mayor or designee are hereby authorized to execute the grant agreement and related project agreements on behalf of the City of St. Cloud; and

BE IT RESOLVED THAT THE COUNCIL OF THE CITY OF ST. CLOUD, MINNESOTA:

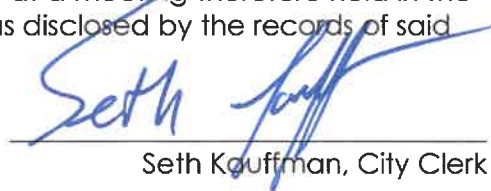
Hereby agrees to comply with all the terms, conditions, and matching provisions of the agreement and authorizes and directs its Mayor and City Clerk to sign the agreement on its behalf.

Adopted this 6th day of June, 2022.

CERTIFICATION

State of Minnesota
County of Stearns
City of St. Cloud

I hereby certify that the foregoing Resolution is a true and correct copy of a resolution presented to and adopted by the City Council of St. Cloud at a meeting therefore held in the City of St. Cloud, Minnesota, on the 6th day of June 2022, as disclosed by the records of said City in my possession.



Seth Kauffman, City Clerk

(SEAL)

Project Budget Spreadsheet
Environment and Natural Resources Trust Fund
Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 10
Project Manager: Tracy Hodel
Project Title: Renewable Natural Gas and Green Hydrogen Demonstration Project
Organization: City of St. Cloud
Project Budget: \$3,000,000
Project Length and Completion Date: 12 months, estimated completion date August 31, 2023
Today's Date: May 26, 2022



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ -	\$ -	\$ -
Professional/Technical/Service Contracts				
Engineering		\$ 400,000		
Equipment Commissioning		\$ 100,000		
Equipment & Piping Installation		\$ 700,000	\$ -	\$ -
Equipment/Tools/Supplies				
		\$ -	\$ -	\$ -
Capital Expenditures Over \$5,000				
50 scfm RNG Skid & Compression System		\$ 1,400,000		
Green Hydrogen (Water Treatment, Electrolyzer, Compression System)		\$ 400,000	\$ -	\$ -
Fee Title Acquisition				
		\$ -	\$ -	\$ -
Easement Acquisition				
		\$ -	\$ -	\$ -
Professional Services for Acquisition				
		\$ -	\$ -	\$ -
Printing				
		\$ -	\$ -	\$ -
Travel expenses in Minnesota				
		\$ -	\$ -	\$ -
Other				
		\$ -	\$ -	\$ -
COLUMN TOTAL		\$ 3,000,000	\$ -	\$ -
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT				
	Status (secured or pending)	Budget	Spent	Balance
Non-State: Utility Provider - Xcel Energy			\$ -	\$ -
State:		\$ -	\$ -	\$ -
In kind: Wastewater Utility			\$ -	\$ -
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS				
	Amount legally obligated but not yet spent	Budget	Spent	Balance
Highbanks Project - 2021		\$ 825,000	\$ 174,000	\$ 651,000