



Mankato Hydrogen Energy Plant

Conditional Use Permit – City of Mankato

2400 North Riverfront Drive
Mankato, Minnesota 56001

PREPARED BY



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1. OVERVIEW

1.1 PROJECT DESCRIPTION

CenterPoint Energy Minnesota Gas (CenterPoint) is submitting this application to the City of Mankato for a Final Plat and Conditional Use Permit (CUP) to install a green hydrogen production and storage facility at their existing site located at 2400 North Riverfront Drive in Mankato, Minnesota 56001. The proposed facility is referred to as the Mankato Hydrogen Energy Plant Project (Project) and is located in an M-2 Industrial District.

The proposed Project will include a hydrogen facility that uses renewable energy from a 1 megawatt (MW) on-site solar panel array to split water into hydrogen and oxygen. The hydrogen will either be blended at low concentrations into the existing natural gas distribution system or stored on-site in a mobile hydrogen storage unit. The solar panel array will consist of approximately 2,120 590W panels on roughly 3.2 acres of land within a restored prairie located west of the current facility. The hydrogen production and storage facility will be installed within an existing gravel area located east of the existing on-site propane tanks.

The on-site solar panel array is expected to operate on the property for the interim for 25 years. CenterPoint is coordinating with Xcel Energy, the site's electric utility, regarding how solar array will interact with the local grid when production exceeds demand from the hydrogen facility.

The on-site solar panel consists of steel driven posts embedded into the ground, with modules attached to the top of the posts via fixed steel racking. The panels are planned to sit approximately 8 feet off the ground at the highest point with a 20-degree tilt. The Project utilizes silicon based solar panels which have an anti-reflective coating. The solar panel array will be accessible through a locked gate near the southwest corner of the property. The cover plantings inside the solar array footprint will be a combination of low growth native crops and a seed mix that promotes pollinator friendly habitats.

1.2 PROPOSED USE AND JUSTIFICATION

In July 2024, CenterPoint received approval from the Minnesota Public Utilities Commission to implement a diverse set of innovative pilot projects that aim to reduce greenhouse gas emissions and advance decarbonization efforts for our Minnesota customers. The projects are part of a five-year innovation plan submitted under a landmark state energy law: the Natural Gas Innovation Act (NGIA). Passed with bipartisan support, NGIA created a new regulatory framework for natural gas utilities to invest in renewable energy resources and innovative technologies.

As part of this NGIA strategy, CenterPoint is exploring the potential of green hydrogen to reduce carbon emissions across their natural gas distribution system. This Project is one of the pilot projects CenterPoint is using to explore green hydrogen's potential. More information about CenterPoint's green hydrogen programs can be found at the following link:
<https://www.centerpointenergy.com/en-us/residential/services/cleaner-energy-and-innovation/green-hydrogen?sa=mn>
<https://www.centerpointenergy.com/en-us/residential/services/cleaner-energy-and-innovation/green-hydrogen?sa=mn>

1.3 PROJECT PHASING AND CONSTRUCTION SCHEDULE

Construction will occur in two phases to minimize environmental impacts and maintain compliance with applicable regulations. Phase 1, scheduled to commence in the 3rd quarter of 2026, will include site preparation, installation of erosion and sediment controls, initial grading, and installation of the Solar Array. Phase 2, anticipated to commence in the 4th quarter of 2026, will include hydrogen production and storage facility construction, final grading, and site stabilization. Best Management Practices (BMPs) will be implemented throughout all phases to prevent sediment discharge and protect water quality. The schedule is subject to change pending weather conditions, permitting timelines, and equipment delivery lead times, and all work will be coordinated with local agencies to ensure compliance.

1.4 VARIANCE – NOT REQUIRED

A variance will not be required in connection with the proposed conditional use, as the Project has been designed to comply with all applicable City of Mankato zoning, setback, access, and site development standards. The facility will be located within an existing industrial area, utilize established access routes, and will not introduce impacts that would necessitate deviations from City Code requirements. As such, no conditions have been identified that would warrant a variance request.

Additionally, the site is currently zoned M-2 Heavy Industrial and will remain under this designation following the installation of the Project.

2. PRELIMINARY AND FINAL PLATS

The Preliminary and Final Plats for the Project are included as an attachment to the ePortal online CUP application (Appendix A).

3. TITLE WORK AND LEGAL DISCRPTION

The CenterPoint Energy Mankato Facility is legally described as part of the South Half of the Northwest Quarter of Section 5, Township 108 North, Range 26 West; AND, part of the South Half of the Northwest Quarter of Section 5, Township 108 North, Range 26 West; AND, a tract of land located in the South Half of the Northwest Quarter of Section 5, Township 108 North, Range 26 West; AND, part of a parcel lying within the Southeast Quarter of the Northwest Quarter, Section 5, Township 108 North, Range 26 West, all located in the City of Mankato, Blue Earth County (2400 N. Riverfront Drive / BEC PID's R010905176004, R010905176003, R010905176002, R010905176001).

A Microsoft Word (docx) standard format with the subject property legal description was included as an attachment to the ePortal online CUP application (Appendix B).

4. CIVIL PLAN SET

A Civil Plan Set consisting of the following information was included as an attachment to the ePortal online CUP application (Appendix C).

4.1 DEVELOPMENT CONCEPT PLAN

Plans included in the ePortal online CUP application include a Site Plan, Emergency Access Plan, Grading Drainage and Erosion Control Plan, Landscape and Screening Plan, Photometric Plan Utility Plan, and Phasing Plan.

4.2 DRAINAGE REPORT

A Drainage Report was included in the application in Appendix D.

4.3 EASEMENTS

The Preliminary Plat identifies all private easements. The proposed Project disturbance limits described in this application will not impact the private easements. CenterPoint is coordinating with the owner of the private easements to ensure continued access is provided between North Riverfront Drive and the property immediately west of CenterPoint's property.

A 10-foot drainage and utility easement is proposed around the parcel boundary, as shown in the Preliminary Plat.

5. ACCESS AND TRAFFIC ROUTES

5.1 SITE ACCESS

The hydrogen facility will be accessible through the existing main facility entrance and paved access routes, while the solar panel array will be accessible through a locked gate at the southeast edge of the array. No new access points from public roadways or turning lanes on public rights-of-way will be required.

5.2 PARKING AND LOADING PLAN

No off-street parking or loading facilities will be required.

5.3 TRAFFIC CIRCULATION PATTERNS

The project will use the existing site access routes and will have minimal impact on existing traffic circulation patterns. This is an unmanned facility, requiring monthly, quarterly, and annual routine maintenance by one to three trained personnel; therefore, no long-term changes to roadway configuration or traffic flow are anticipated. Any construction-related disruptions will be minor and temporary, with normal traffic circulation maintained throughout the construction period.

5.4 EMERGENCY VEHICLE ACCESS AND FIRE HYDRANT LOCATION PLAN

An Emergency Vehicle Access and Fire Hydrant Location Plan is included as an attachment to the ePortal online CUP application in the Civil Plan Set – Sheet 5.01 (Appendix C). The plan was prepared in accordance with the City of Mankato Fire Department Access Guidelines and depicts emergency vehicle circulation and turning radius, site access routes, and fire hydrant locations. Emergency and fire vehicle access to the facility is currently provided via strobe access and will continue as such.

The facility currently has three fire hydrants in proximity to the hydrogen facility. Access to the existing fire hydrants is not restricted and remains readily available to emergency personnel. Therefore, no additional fire hydrants are necessary or proposed as part of the Project.

6. BUILDING PLAN

6.1 BUILDING MATERIALS

The proposed Building Design will be consistent with the existing building materials found on site. A photo of a similar building is included in the attached figures.

6.2 FLOOR AND ELEVATION PLANS

The floor and elevation plans of the proposed hydrogen facility building are part of the Architectural Plan set that was included as an attachment to the ePortal online CUP application (Appendix E).

7. FENCING

A 7-foot-tall perimeter fence is proposed around the solar panel installation to restrict access to the system from unqualified personnel. Fence design will be in accordance with City of Mankato screening requirements. Refer to the Civil Plan Set – Sheet 10.04 that was included as an attachment to the ePortal online CUP application (Appendix C).

8. GLINT AND GLARE STUDY

A Glint and Glare Study of the solar array identified nine potential receptor locations; however, no “yellow flare” (potential to cause after-image) was present on the results for each ‘receptor’ location.

The analysis conservatively ignores any screening provided by new trees, as described in the Civil Plan, and the 10-ft high earthen berm separating the roadway from the solar array. CenterPoint will ensure screening on site is sufficient to protect drivers from hazardous glare. Additionally, Federal Aviation Administration (FAA) pre-screening of the solar panel glare analysis determined that the Project is not required to file a Notice with the FAA.

A copy of the Glint and Glare Study and FAA Pre-screening Results were included as attachments to the ePortal online CUP application (Appendix F).

9. GRADING, EROSION, AND SEDIMENT CONTROL PLAN

The Project is located on privately owned land held by CenterPoint, encompassing approximately 14.83-acres across four parcels. Of this area, approximately 4.0 acres will be disturbed during construction. BMPs will be implemented to prevent sediment release from the construction site. Refer to the attached Civil Plans – Sheets 8.01, 8.02, 10.01, 10.02, and 10.03 for the planned BMP locations. Where necessary, final grading will restore the site to pre-construction contours.

Pursuant to the requirements outlined by the City of Mankato Ordinance, Chapter 8 – Erosion and Sediment Control, CenterPoint will apply for a land-disturbing activity permit. In addition, CenterPoint will apply to the Minnesota Pollution Control Agency for coverage under the National

Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Program – Construction Stormwater General Permit (MNR100001).

10. HISTORICAL RESOURCE REVIEW

A review of the National Park Service's National Register of Historic Places database confirmed that no historic structures, cultural resources, or design features are present within the proposed project. The closest listed historic property (Stewart, William E., House) is situated approximately 1.65 miles southwest of the proposed project. As a result, no impacts are anticipated by the Project on any historic properties. Refer to the attached National Historic Place review memo (Appendix G).

11. LIGHTING (PHOTOMETRIC) PLAN

A Photometric Plan and details are included as an attachment to the ePortal online CUP application in the Civil Plan Set – Sheet 7.01 (Appendix C). As indicated in this plan, adequate safety and security lighting is proposed for the hydrogen facility building.

12. LANDSCAPING AND SCREENING PLAN

A Landscaping and Screening Plan has been developed in coordination with the City standards. Refer to the Civil Plan Set – Sheet 6.01 that was included as an attachment to the ePortal online CUP application (Appendix C).

13. NOISE ASSESSMENT

A pre-construction noise assessment has been completed for the Project. The assessment included detailed noise calculations of the major facility noise generating equipment operating under full-load conditions and a comparison to the noise regulations within the State of Minnesota Administrative Rules.

The operational noise assessment revealed that Project-generated noise levels are expected to be in compliance with the applicable noise regulations. Operational Project noise levels were shown to be less than 50 dBA at the nearest residential and recreational property lines for both daytime and nighttime hours. The noise calculations did not include factors such as the barrier effect of existing buildings and equipment, the screening effect of vegetation, or changes in topography, resulting in a conservative assessment. A copy of the report was included as an attachment to the ePortal online CUP application (Appendix H).

Additionally, the proposed construction of the Project will be within working hours, between the hours of 7am and 7pm, Monday through Friday. Weekend work may take place if there are significant project construction delays due to weather. These hours are flexible and are intended to work with the community to control noise and disturbance.

14. OPERATIONS, MAINTENANCE, AND SAFETY PLAN

CenterPoint Energy has significant experience in hydrogen production and has safely operated a similar hydrogen blending facility in Minneapolis, Minnesota since 2022. Lessons learned from that facility continue to inform system design, safety protocols, and operational practices for this Project.

The Project will be designed, constructed, and operated in accordance with applicable federal, state, and local regulations and permit conditions. Required permits and approvals will be obtained, as applicable, prior to corresponding construction and operational activities. A comprehensive Operations and Maintenance (O&M) Manual will be developed and implemented to ensure safe, reliable operation and long-term system performance while protecting human health, the environment, and the surrounding community. The manual will include procedures for emergency response, routine inspections, preventive maintenance, and system testing, and will incorporate industry best practices and site-specific conditions. The final manual can be available to the City for review upon request following construction.

Hazards associated with the Project, including hydrogen, oxygen, electricity, natural gas, and personnel and vehicle traffic, have been evaluated through a safety risk assessment conducted during design. Mitigation measures have been incorporated into system design and will guide ongoing operations. Environmental protection measures will include stormwater and erosion controls, spill prevention and response procedures, and proper waste management practices to minimize the potential for impacts to surrounding resources.

To further reduce environmental risk, the facility will implement spill prevention and response measures, including maintaining appropriately sized and strategically located spill response kits, secondary containment where applicable (e.g., for fuels, oils, or chemicals), and training personnel in proper spill response procedures. Any releases will be promptly contained, cleaned up, documented, and reported in accordance with regulatory requirements. The site will also maintain clearly posted emergency contact information consistent with CenterPoint Energy's emergency communication protocols to ensure rapid response coordination.

CenterPoint Energy will prioritize community safety through controlled site access, perimeter fencing, clear signage, and coordination with local emergency responders. The facility will be designed and operated to minimize noise, traffic, and visual impacts.

14.1 EMERGENCY RESPONSE

A site-specific Emergency Response Plan will be developed and maintained for the facility. This plan will include emergency contacts, notification procedures, coordination with emergency services, description of site-specific hazards, description of on-site emergency equipment and controls, detailed response procedures for emergency scenarios, and other information necessary to prepare for and react to emergencies. The Emergency Response Plan will be periodically reviewed and updated based on operational experience and evolving best practices.

Prior to start of Operation, CenterPoint will coordinate with First Responders including local fire, police, EMS, and emergency management officials to provide training related to site-specific

hazards. Training may include classroom briefings, tabletop exercises, or site walk-throughs, as appropriate. Updated site maps, emergency contact information, and safety documentation will be provided to responding agencies.

14.2 HYDROGEN FACILITY

The hydrogen facility will consist of the electrolyzer, balance of plant, water treatment system, blending infrastructure, and compression and storage systems. All equipment will meet applicable industry standards and hazard classifications. The hydrogen facility is an unmanned facility that will operate continuously, except during occasional periods of scheduled maintenance. The facility requires routine monthly, quarterly, and annual maintenance and is designed to be started and stopped locally.

Key safety system features include hazardous detection, notification, and response systems that collectively monitor for hazardous accumulation of hydrogen and oxygen, notify site operators of any hazards, and shut down the system in a safe manner if hazards are detected. Other key safety features include, but are not limited to, manual emergency shutdown buttons, relief stacks, and oxygen venting systems. The facility will be monitored remotely 24/7 by trained staff at CenterPoint Energy's Gas Control Center in Minneapolis.

Major components of the hydrogen facility include:

- RODI skid
- Water and oxygen separation skid
- Electrolyzer stack
- Power supply and rectifier skid
- Cooling systems
- Hydrogen handling and compression equipment
- PLC control system
- Power distribution equipment
- Backup generator
- Hydrogen gas compressor
- Mobile hydrogen storage

The mobile hydrogen storage unit will have a maximum storage capacity of 146 kg of hydrogen at 6500 psi. The unit is designed to be towed by commercial transport. The unit will be managed in accordance with applicable storage, handling, and transportation safety requirements, including regular inspection and secure containment to prevent accidental releases.

The proposed building for the hydrogen facility will require both water and sanitary municipal services, also discussed in Section 17 – Utility Services Plan. Water service will connect through a planned 6-inch lateral to the existing 8-inch watermain, and sewer service will connect through a planned 6-inch lateral to the existing 8-inch sanitary line. During normal continuous operation, the hydrogen facility is expected to consume approximately 2 gallons of water per minute. The water treatment skid will discharge approximately 1 gallon of wastewater per minute, while the remaining gallon is consumed in the production of hydrogen.

14.3 SOLAR PANEL ARRAY

Design and installation of all components of the solar array will be in accordance with applicable electrical and fire safety codes. All equipment will be appropriate for the range of electrical demand it will be exposed to, with appropriate disconnects, circuit breakers, and labeling as necessary. The array will also be monitored remotely 24/7 by trained staff at CenterPoint Energy's Gas Control Center in Minneapolis.

The solar array will be surrounded by a new chain-link fence to restrict access for unauthorized personnel. The site will be accessible via a locked gate at the southeast edge of the array. Signage will be installed to deter trespassing and provide safety information.

Major components of the solar array include:

- Approximately 2,120 590W panels (~8 feet high, 20-degree tilt)
- Fixed racking and pilings
- Inverters, switchgear, and transformer

A pollinator-friendly vegetative mix will be used for ground cover beneath the array to support local ecosystems, reduce erosion, and improve soil stability. CenterPoint Energy will work with a qualified third-party vendor to manage site vegetation, including conducting regular maintenance to ensure site meets applicable pollinator-friendly requirements and remove observed noxious weeds. Vegetation management may include mechanical methods and selective herbicide application, as needed, in accordance with applicable regulations and label requirements to prevent impacts to non-target species, surface water, and groundwater.

Stormwater management practices will be implemented to minimize runoff, control erosion, and prevent sediment transport from the site. Routine inspections will ensure that drainage features and ground cover remain effective.

14.4 COMMITMENT TO COMPLIANCE AND COMMUNICATION

CenterPoint Energy will maintain compliance with applicable requirements throughout the life of the facility and will promptly address any health, safety, or environmental concerns. The company is committed to transparent communication with City staff, regulatory agencies, and the community, and will provide safety information and respond to inquiries as requested.

15. SITE RESTORATION AND DECOMMISSIONING

CenterPoint will be responsible for costs associated with decommissioning the system and restoring the site at the end of its service life or if the system is permanently taken out of use.

The solar panel array will be decommissioned and the site restored to a condition comparable to its pre-conditional condition once the equipment reaches the end of its useful service life, unless a plan is submitted to the City of Mankato to repower the facility or repurpose the site and equipment for another approved use. All applicable equipment will be removed and either recycled or disposed of in accordance with applicable regulations within a reasonable timeline after being determined to

have reached the end of its useful service life. A financial surety will be provided to the City of Mankato to ensure decommissioning of the equipment. CenterPoint Energy proposes a surety of \$70,000 to cover decommissioning costs, as quoted in Appendix I.

The hydrogen facility can operate independently from the solar panel array and is not expected to be decommissioned alongside the solar array. The facility is located within an existing industrial area and is designed for long-term operation. Components will be repaired or replaced as needed to maintain safe and reliable performance. In the event the hydrogen facility is permanently taken out of service, CenterPoint Energy will implement a formal decommissioning process.

16. TREES

No tree removal will be required within City rights-of-way as part of the Project.

17. UTILITY SERVICES PLAN

The proposed building for the hydrogen facility will require both water and sanitary municipal services. Water service will connect through a planned 6-inch lateral to the existing 8-inch watermain, and sewer service will connect through a planned 6-inch lateral to the existing 8-inch sanitary line. Refer to the Civil Plan Set – Sheets 9.01 and 9.02 that was included as an attachment to the ePortal online CUP application (Appendix C).

During normal continuous operation, the hydrogen facility is expected to consume approximately 2 gallons of water per minute. The water treatment skid will discharge approximately 1 gallon of wastewater per minute, while the remaining gallon is consumed in the production of hydrogen. Based on these rates:

- Estimated Daily Water Use:
 - $2 \text{ gallons/min} \times 60 \text{ minutes/hour} \times 24 \text{ hours/day} = 2,880 \text{ gallons/day}$
- Estimated Daily Wastewater Discharge:
 - $1 \text{ gallon/min} \times 60 \text{ minutes/hour} \times 24 \text{ hours/day} = 1,440 \text{ gallons/day}$
- Estimated Monthly (30-day) Water Use:
 - $2,880 \text{ gallons/day} \times 30 \text{ days} = 86,400 \text{ gallons/month}$
- Estimated Monthly (30-day) Wastewater Discharge:
 - $1,440 \text{ gallons/day} \times 30 \text{ days} = 43,200 \text{ gallons/month}$

These estimates reflect continuous operation and will be used for utility planning, service sizing, and evaluating billing impacts. If operational schedules change or if the City requires a different calculation basis (e.g., maximum day or average month), updated estimates can be provided.

18. WETLAND DELINEATION

CenterPoint completed a wetland delineation survey and received a Notice of Decision from the City of Mankato Technical Evaluation Panel (TEP) on December 10, 2025, confirming a no-loss determination under Minnesota Rule 8420.0415, Subpart A (“an activity that will not impact a wetland”). A copy of the issued Notice of Decision was included as an attachment to the ePortal online CUP application (Appendix J).

19. ZONING

No zoning changes are required. The site is currently zoned M-2 Heavy Industrial and will remain under this designation following the installation of the Project