

North Star Solar Project



MN Power System Conference

Saint Paul, MN

November 7, 2017



North Star Solar Project

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North Star Solar Project

Community Energy

- Pioneers in renewable energy development and marketing
- Developed more than 1400 megawatts of wind and solar capacity
- Solar portfolio includes projects completed or underway throughout the United States



Comanche Solar
120 MW/AC
Pueblo, CO



Butler Solar
100 MW/AC
Taylor County, GA



Amazon Solar East
80 MW/AC
Delmarva Peninsula, VA



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Northern States Power (Xcel) - 2014 Solar RFP

- Minnesota Solar Energy Standard
- 1 of 3 projects selected out of 111 competitive proposals
- Power Purchase Agreement with Xcel Energy was approved by the MN PUC on 2/12/15



North Star Solar Project

Project details

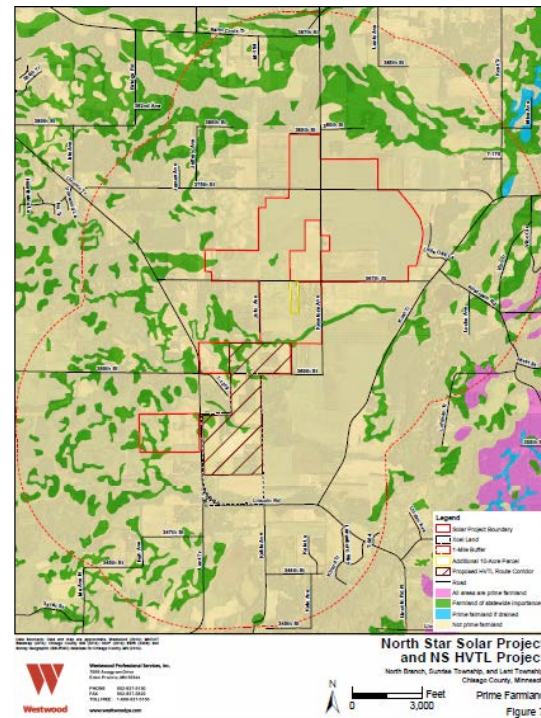
- 100 megawatts of solar photovoltaic capacity (440,000 modules)
- Approximately 800 acres of agricultural land
- Single axis tracking technology to maximize production
- Grid connection at the Chisago substation (115kV)
- 25-year power purchase contract with Xcel Energy



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Why here?

- Chisago substation – infrastructure and strong ties to Xcel Energy load
- Non-prime agricultural land (MN Administrative Rules - .5ac/MW)
- Few environmental constraints
- Existing local ordinances



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Spring 2014 – Land & Interconnection

Getting Site Control

- No project without it!
- Cold calls and face-to-face visits

MISO Interconnection Application

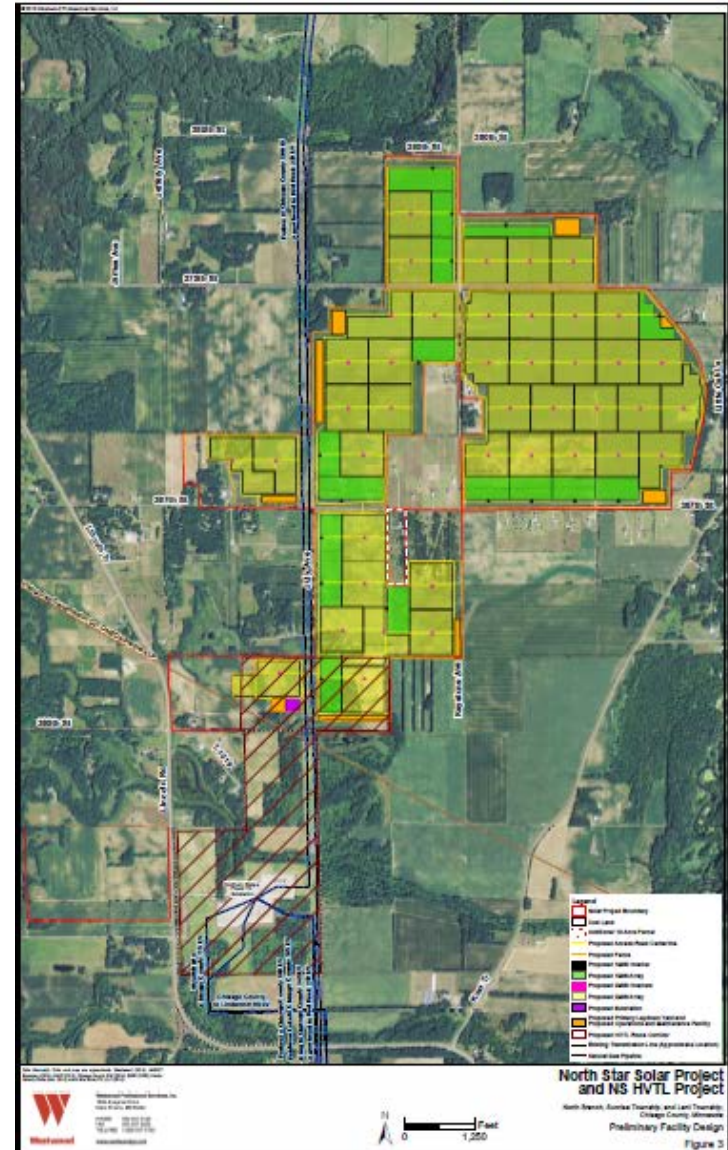
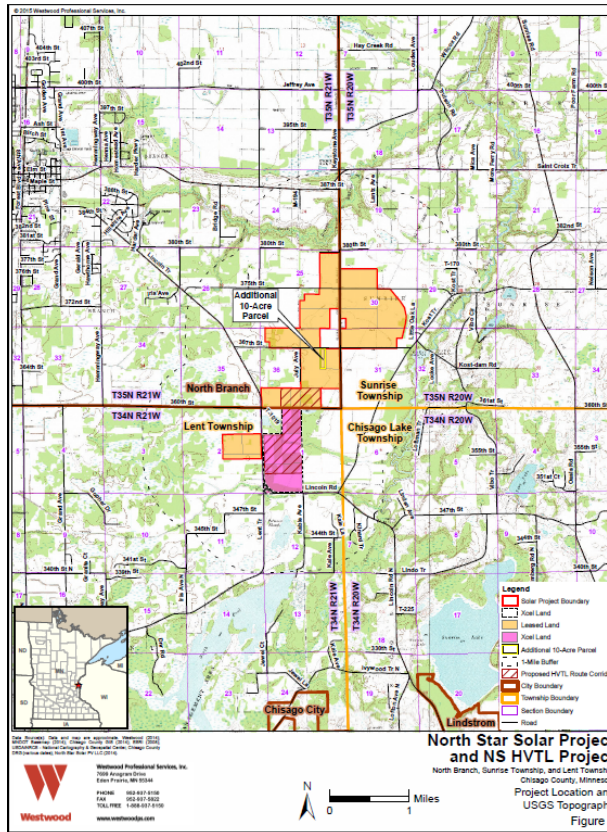
- Application filed prior to RFP response

Let's see some maps!



North Star Solar Project

Spring 2014 – Land & Interconnection



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Project Permitting

MN PUC – Combined Site & Route Permit

- Agency Participation (Federal, State & Local)

State Permits

- Wetland Conservation Act (USACE)
- MPCA (NPDES, SWPP)
- MN DNR
- MN Dept. of Health (wells)

Local Permits – multiple jurisdictions

- Building Permit
- Access Permits
- Crossing Permits

NORTH STAR SOLAR PV LLC

Joint Application to the
Minnesota Public Utilities Commission
For a Site Permit and Route Permit

NORTH STAR SOLAR ELECTRIC POWER
GENERATING PLANT AND NORTH STAR
115kV HIGH VOLTAGE TRANSMISSION LINE

Alternative Permitting Process
MPUC Docket No. GS-15-33

FEBRUARY 11, 2015



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MN PUC Permitting Calendar

2/11/2015 - MN PUC Site & Route Permit Submitted

4/30/2015 – MN DOC EA Scoping Meeting (Stacy, MN)

9/24/2015 – Environmental Assessment Completed

10/7/2015 – EA Public Hearing (North Branch, MN)

12/16/2015 – OAH Findings of Fact, Conclusions of Law, and Recommendations

2/16/2016 – MN PUC Order Granting Site & Route Permit

2/26/2015 – Reconsideration

4/6/2016 – MN PUC Order Denying Reconsideration



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MISO Interconnection

February West 2015 – Definitive Planning Phase

- Delayed by about 1 year
- Optional Study Path
- Engineering & Procurement Agreement with Xcel
- Provisional Generator Interconnection Agreement
- Southwest Power Pool - Affected Systems



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Construction, operation and decommissioning

Site prep – trenching – pile installation – racking and module installation

- April 2016 – Construction Start
- October 2016 – Mechanical Completion

Electrical connections – testing – commissioning

- Construction of short transmission line to the Chisago substation
- Grid connection and facility commissioning

Operations

- Commercial operations December 2016
- Regular maintenance and inspections

Decommissioning



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Project economics

- \$180M total investment
- Approximately 300 local jobs associated with construction and installation
- More than 1,000 direct and indirect jobs

Operations

- \$2.5M in annual economic output
- Approximately \$350k in annual property taxes
- 6-12 full-time employees
- Annually generate enough electricity for 20,000 homes



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Vegetation plan

Minnesota Department of Natural Resources

- Opportunity to manage vegetation at project sites as restored short-grass prairies or meadows
- Native plants and flowers that are beneficial to wildlife and pollinators

Anticipated benefits

- Improved water quality
- Reduced soil erosion
- Increased water retention
- Improved soil composition
- Less use of fertilizers and herbicides
- Critical habitat



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Landscaping and visual buffers

- A key development focus: residences and public corridors
- Professional landscape design using native vegetation
- Residential buffering - combination of setback, plant type, density and placement, and fencing



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Fencing aesthetics

- Deer fence / agricultural fence
- NEC requirements



<https://blogs.cornell.edu/hort/2013/12/04/deer-fencing-installed-at-freeville-farm/>

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Solar energy – a global perspective



Thank You



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