Interim Use Permit Application

July 8, 2016
City of Belle Plaine Community Development Department, c/o Cynthia Smith-Strack
218 N. Meridian Street
P.O. Box 129
Belle Plaine, MN 56011

Cynthia:

Attached, please find an application for an Interim Use Permit (IUP) to construct a Community Solar Garden within the City of Belle Plaine. The request is being made by DG Minnesota CSG 4, LLC, a wholly owned subsidiary of NextEra Energy Resources, LLC, for the Devine-Johnson Solar Project (the "Project").

DG Minnesota CSG 4, LLC and NextEra Energy Resources, LLC, are working in partnership with TruNorth Solar, LLC (collectively, the "Proponents").

NextEra Energy Resources

NextEra Energy Resources has specialized in clean energy generation for more than 25 years. We currently own and operate more than 21,140 megawatts (MW) of generating capacity domestically, 95% of which is derived from clean or renewable sources. NextEra Energy Resources is the largest owner and operator of solar and wind power in North America, and our parent company, NextEra Energy Inc., is a Fortune 200 company with nearly $70 billion in total assets as of year-end 2015. We have the financial strength and industry expertise to plan and develop both large and small energy projects, and we are proud to be a leader in clean energy.

NextEra Energy Resource's solar portfolio consists of more than 1,200 MW of operating assets. Our commitment to solar energy includes developing large photovoltaic and solar thermal projects as well as developing decentralized solar projects to help businesses, schools, and municipalities realize the benefits of renewable energy. NextEra Energy Resources has invested over $275 million in the state of Minnesota and pays more than $1.3 million in State property taxes each year.

Devine-Johnson Solar Project

The Project is a proposed 5.0 megawatt (MW) alternating current (AC) Community Solar Garden on approximately 30 acres of land to be annexed into the City of Belle Plaine, off of West South Street, just west of the City. Proponents request a 35-year term for the IUP, the anticipated operational life of the Project.

In 2013, Xcel Energy was directed by the State of Minnesota to procure 1.5% of its energy from solar power by the year 2020. The development of this Community Solar Garden will help the State of Minnesota and Xcel Energy to achieve this requirement.

Exhibits to Application

- **Exhibit A**: IUP Application Form
- **Exhibit B:** Memorandum of Lease
- **Exhibit C**: Proposal Description
- **Exhibit D**: Interconnection Application
- **Exhibit E**: Glare Study
- **Exhibit F:** Decommissioning Plan
- **Exhibit G:** Stormwater Management Plan
- **Exhibit H**: Site Plan and Engineering Drawings
- **Exhibit I**: Technical Equipment Specifications
- **Exhibit J:** Site Maps

Proponents believe this correspondence explains our application and addresses the requirements of the City of Belle Plaine for an IUP. If you have any additional questions or require any additional information regarding the enclosed, please contact Toby Butterfield at 503-294-7744.

Proponents appreciate the assistance we have received from the Planning Department, and we look forward to working with you to serve the public via the Project. Thank you for your consideration of this application.

Sincerely,

Toby Butterfield
Development Project Manager
DG Minnesota CSG 4, LLC
TOBY.BUTTERFIELD@NEXTERAENERGY.COM
503-294-7744

Exhibit A: IUP Application Form

City of Belle Plaine
218 N. Meridian Street
P.O. Box 129
Belle Plaine, MN 56011

Community Development Department
Phone: 952-873-5553
Fax: 952-873-5509
www.belleplainemn.com

Fee: $300.00

INTERIM USE PERMIT APPLICATION

Permit Number:

PROPERTY	Address: 100 West South St.	Belle Plaine, MN	P.I.N: 29020060
Lot #:	Block #:	Subdivision:	
Zoning District: UER			

APPLICANT	☐ Owner	Name: DG Minnesota CSG 4, LLC, c/o Toby Butterfield	Phone: 503-294-7744
Mailing Address: 700 Universe Blvd. LAW/JB, Juno Beach, FL 33408			Cell: 720-771-5236
E-mail: Toby.Butterfield@NextEraEnergy.com			Fax:

OWNER	Name: Kim Devine – Johnson	Phone: 507 351-4285
Mailing Address: 1303 Rockbend Pkwy St. Peter MN 56082		Cell: 507 934-4863
E-mail:		Fax:

Interim Use Permit is requested to: Construct and operate a 5.0 MWac Community Solar Garden (CSG) on a portion of a 160.40 acre taxlot in Blakely Township, to be annexed into the City of Belle Plaine concurrently with approval of this application. The request is being made by DG Minnesota CSG 4, LLC which is a wholly owned subsidiary of NextEra Energy Resources, LLC.

SUBMISSION OF APPLICATION MUST INCLUDE:

☐ Attached site plan (to scale) depicting present and proposed improvements.

I certify that I am the applicant named herein; that I have familiarized myself with the rules and regulations with respect to preparing and filing this application that the foregoing statements and answers herein contained and the information on the attached maps or site plans and any other documents submitted herewith are in all respects true and accurate to the best of my knowledge and behalf.

APPLICANT SIGNATURE: Michael L. Carlson **DATE:** 6/30/16

OFFICE USE ONLY

Zoning District:	**Application Fee:** $	**Form of Payment:**
☐ **Site Plan**	**Other Fee:** $	**Date:**
	Total: $	**Transaction Number:**
		Collected By:

Reviewed by Community Development Director		☐ **Application Complete**		**Date:**
Reviewed by Planning Commission	☐ **Tabled**	☐ **Approved**	☐ **Denied**	**Date:**
Reviewed by City Council	☐ **Tabled**	☐ **Approved**	☐ **Denied**	**Date:**

Annex	CUP	**Interim Use**	Move Building	Non – Conform	Plan Consid.	PUD	Variance
Driveway	Land Excavation		Land Fill	Rental		ROW	Sign

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E-mail: Toby.Butterfield@NextEraEnergy.com			Fax:

OWNER	Name:	Phone:
Mailing Address:		Cell:
E-mail:		Fax:

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APPLICANT SIGNATURE: Kimberly K. Devine **DATE:** 6/30/16

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OWNER	Name:	Phone:
Mailing Address:		Cell:
E-mail:		Fax:

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APPLICANT SIGNATURE: Tammy L Dewin **DATE:** 6/30/16

OFFICE USE ONLY

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Exhibit B: Memorandum of Lease

EXHIBIT C

MEMORANDUM OF LEASE

MEMORANDUM OF LAND LEASE AND SOLAR EASEMENT

THIS MEMORANDUM OF LAND LEASE AND SOLAR EASEMENT ("Memorandum of Lease") is entered into this 11th day of September, 2015 by and between Kimberly Devine-Johnson and Christopher Johnson, married, Tammy L. Devine and Michael C. Carlson, married, (collectively, "**Owner**"), and TruNorth Community Solar, LLC, a Minnesota limited liability company, and its successors and assigns (hereinafter "**Project Company**").

RECITALS:

A. Owner and Project Company have entered into a certain Land Lease and Solar

Easement dated September 11, 2015 (the "**Lease Agreement**"), whereby Owners has agreed to lease to Project Company certain real property, together with access easement rights and a Solar Easement across said premises, in the County of Scott, State of Minnesota, and being more particularly described in Schedule A attached hereto and made a part hereof (the "**Premises**").

B. The parties wish to give notice of the existence of such Lease Agreement.

IN CONSIDERATION of the sum of one and 00/100 Dollar ($1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. Owner and Project Company have entered into the Lease Agreement dated July 15, 2015 (the "**Effective Date**"), to lease and demise the Premises for solar energy purposes and to grant access and Solar Easements. Pursuant to the Lease Agreement, Project Company has the exclusive right to use the Premises for solar energy purposes, together with certain related solar , access and other easement rights and other rights related to the Premises, all as more fully described in the Lease Agreement. Solar energy purposes means converting solar energy into electrical energy and collecting and transmitting the electrical energy so converted, together with any and all activities related thereto.

2. The initial term of the Lease Agreement commences on the Effective Date and expires on December 31, 2016 (the "**Development Period**"). The Lease Agreement will automatically be extended for an Operating Term, as defined below, upon the earlier of (i) the date when at least one solar facility installed on the Premises is a Commercially Operational Solar Facility, as defined therein ("**Operation Date**"); or (ii) date when Owner receives written notice from Project Company of Project Company's election to extend the term of the Lease Agreement for the Operating Term ("**Operating Term Notice Date**"). The Operating Term of the Lease Agreement ("**Operating Term**") is twenty-five (25) years from the earlier of either of the Operation Date or the Operating Term Notice Date unless sooner terminated in accordance

with the terms of the Lease Agreement. In addition, Project Company has a right to extend the Operating Term for one (1) additional period of ten (10) years upon written notice to Owner.

3. Owner will have no ownership and other interest in any solar facilities installed on the Premises by Project Company and Project Company may remove any or all solar facilities at any time.

4. The Lease Agreement and the easement and rights granted Project Company therein will burden the Premises and will run with the land. The Lease Agreement will inure to the benefit of and be binding upon Owner and Project Company and, to the extent provided in any assignment or other transfer under the Lease Agreement, any assignee or Project Company, and their respective heirs, transferees, successors and assigns, and all persons claiming under them.

5. This Memorandum of Lease has been executed and delivered by the parties for the purpose of recording and giving notice of the lease and easement rights in accordance with the terms, covenants and conditions of the Lease Agreement.

6. The terms and conditions of the Lease Agreement are incorporated by reference into this Memorandum of Lease as if set forth fully herein at length. In the event of any conflict between the terms and provisions of the Lease Agreement and this Memorandum of Lease, the Lease Agreement will control.

IN WITNESS WHEREOF, the undersigned have caused this instrument to be executed as of the 11 day of September, 2015.

OWNER

Kimberly Devine-Johnson

Christopher Johnson

STATE OF Minnesota)
) ss.
COUNTY OF Necollet)

The foregoing instrument was acknowledged before this 11 day of September, 2015, by _____, single/married [circle one].

LYNN ANN KLUNTZ
Notary Public-Minnesota
My Commission Expires Jan 31, 2020

Notary Public

OWNER

Tammy L. Devine

Tammy L. Devine

Michael C. Carlson

Michael C. Carlson

Michele Diane Norton
Notary Public
Minnesota
My Commission Expires January 31, 2017

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

The foregoing instrument was acknowledged before this 11 day of September, 2015, by _____, single/married [circle one].

Notary Public

STEVEN K KAUL
NOTARY PUBLIC - MINNESOTA
MY COMMISSION EXPIRES 01/31/19

PROJECT COMPANY

TruNorth Community Solar, LLC,
a Minnesota limited liability company

By: Patrick T. Wise

Its: Director of Business Development

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

The foregoing instrument was acknowledged before this 11 day of September, 2015, by Patrick T. Wise, the Director of Business Dev of TruNorth Community Solar, LLC, a Minnesota limited liability company, on behalf of the limited liability company.

STEVEN K KAUL
NOTARY PUBLIC - MINNESOTA
MY COMMISSION EXPIRES 01/31/19

Notary Public

Schedule A

TO MEMORANDUM OF LAND LEASE AND SOLAR EASEMENT

Legal Description of Premises

Parcel ID # 02902-0060
up to 35 acres

Exhibit C: Proposal Description

Legal description and parcel ID#

The Project will be owned and operated by DG Minnesota CSG 4, LLC. The Project site is located at 100 West South Street, Belle Plaine, MN 56011.

Parcel ID Number:

29020060

Legal Description:

The Southeast Quarter (SE 1/4) of Section 2 and the West 88 feet of the South 200 feet of the Southwest Quarter of the Northeast Quarter (SW 1/4 of NE 1/4), all in Section 2, Township 113 North, Range 25 West, Scott County, Minnesota, according to the U.S. Government Survey thereof. Subject to all easements and agreement of record.

Explanation of proposal

Proponents propose to build, operate and maintain a 5.0 MWac solar garden on approximately 30 acres on one parcel of land. Applicable requirements can be found in § 1107.18 Subd. 12(8) of the Belle Plaine City Code.

1. **Project Configuration**

The Project will consist of 20,720 HANWHA Q.PLUS L-G4.2 330 W PV modules, as well as associated cabling, inverters, transformers, and other equipment. The modules will be mounted to racking tables, which will in turn be mounted to piles driven into the earth. The modules will be mounted on a fixed system with no tracking functions, and will therefore be immobile. Consistent with § 1107.18 Subd. 12(8)A(ii) of the City Code, the modules are not to be more than 15 feet above the ground. Lines between panels will be buried underground. Inverters and metering equipment will also be present on site. All equipment will meet applicable electrical and building codes and standards, and PV solar energy system components will have the proper UL certifications. Exact panel, array, inverter, and electrical specifications, drawings, configuration, and collection methods of electrical load will be based on actual equipment selected, within the limits of Project plans. Indicative technical specifications are included in Exhibit I. The specific models ultimately chosen may differ, but will be equivalent in nature.

A 6-foot chain link security fence topped with 1-foot of barbed wire is proposed to be installed continuously around the arrays. It will have a 20 feet wide access gate, as shown in the Site Plan (Exhibit H). Inverters will be monitored remotely with a Supervisory Control and Data Acquisition (SCADA) system. Signage will be posted on the site perimeter fence indicating that the Project is on private property and contains high voltage hazards within the fence boundary. Signage will comply with City Code requirements.

No hazardous materials will be stored on site. There are no proposed buildings or architectural elevations and floor plans associated with the Project.

Equipment on site is temporary and at the end of Project operations, the equipment will be removed and the land will be restored back to agricultural land. A decommissioning plan is detailed in Exhibit F, along with a proposed Security.

2. Project Gen-Tie and Interconnection

The Project's interconnection to Xcel's 13.8 kV distribution system will be located North of the site, alongside County Highway 103 (a.k.a. Union Trail Road). An overhead 13.8 kV transmission line will be run down the bluff on the North edge of the site across Scott County land to reach the Point of Interconnection (POI). Proponents have opened a discussion with the County and are currently negotiating an easement across this land.

The City Code requires the project gen-tie to run underground [§ 1107.18 Subd. 12(8)A(iv)]. However, due to the steep, wooded bluff on the northern property boundary, underground cabling isn't feasible for a variety of reasons, including possible detrimental impacts to the stability of the bluff. Therefore, Proponents are seeking a Variance concurrently with this IUP application to allow the use of an overhead gen-tie.

In accordance with § 1107.18 Subd. 12(8)a(vi) of the City Code, an application for interconnection for the project was submitted to Xcel Energy's Community Solar Garden program, and the executed interconnection agreement is attached in Exhibit D.

3. Project Operations

The site will operate 24 hours a day, 365 days a year between sunrise and sunset. Access to the site will be off West South Street. From there, the proposed access road will follow an existing two-track farm road on the south edge of the currently farmed land. The location and configuration of the proposed road are shown in Exhibit H.

There will be temporary traffic to the site during construction. After construction is complete, traffic to the site is expected to be one visit per month for the first year, and every other month in subsequent years. Maintenance activities may include vegetation management, panel washing, and electrical/mechanical inspections or repair. Most site maintenance will occur during the summer months to maintain vegetation. Emergency site visits may occur if there are equipment failures. Parking on site will be along the access road within the fence line, as there are no designated parking spaces.

4. Annexation from Blakely Township

The Project property is presently within Blakely Township and zoned UER. Concurrent with this IUP Application, Proponents are seeking to have the Project Property annexed into the City of Belle Plaine, where it will be zoned A-2, Rural Residential. An Annexation Meeting has been scheduled for July 11th, with positive initial feedback from both the City and Township. Proponents ask that the Annexation Resolution be considered at the same meeting as this IUP Application and Variance request.

5. Project Property

Following annexation, the parcel on which the Project is located will be zoned as A-2 Rural Residential, with permitted conditional use as a ground mounted community solar energy system. As shown in the site plan (Exhibit H), the site layout meets the required minimum required setbacks from both lot edges, bluffs, and wetlands, all of which are present on the property. The access road will have minimal grading.

The property was selected because of its solar resource, physical characteristics and topography, proximity to electrical distribution lines, applicable zoning and permit requirements, excellent natural visual screening from the wooded bluff to the North, West, and East, and enthusiasm of the landowner. The landowner has signed a long-term lease agreement with TrueNorth Community Solar, LLC (Exhibit B). This agreement will be assigned to DG Minnesota CSG 4, LLC prior to groundbreaking.

The solar garden is not expected to adversely affect the environment. Pasture land and a small amount of agricultural row crops will be replaced with diverse ground-cover vegetation, which will decrease water run-off and chemical inputs to water bodies. No air pollution or noise impacts are anticipated from the Project. There are no potential hazardous wastes associated with the inverters, which will be constructed on 6-inch concrete pads.

There are no wildlife management areas or habitat, Airport Zoning Ordinance safety zones, floodplain districts, or recorded easements on the site. There are both Bluffs and Wetlands as defined in the City Code, and appropriate setbacks have been incorporated into the project design (Exhibit H).

According to the National Resource Conservation Service (NRCS), soils in the leased area consist of loam to clay loam soils ranging from moderately well drained to well drained. A soil engineering study completed in May, 2016, determined that soils are suitable for placement of solar panels.

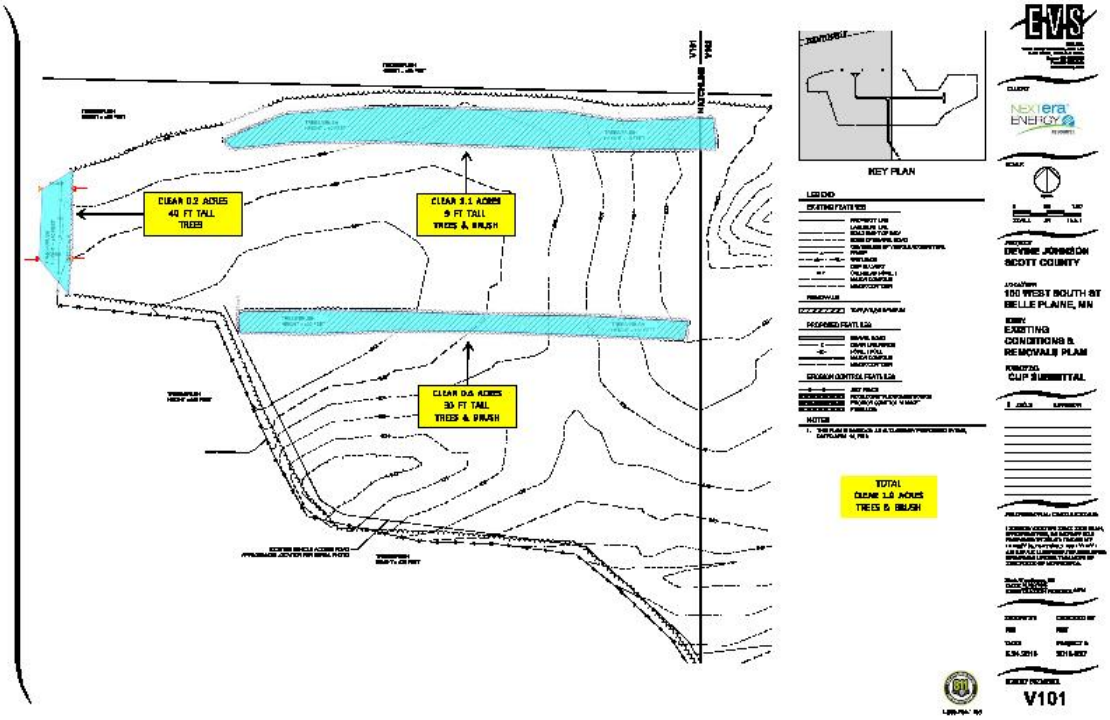
Existing vegetation on site consists of pasture/hay and agricultural row crops, along with some trees around the periphery of the project outside the fence line. Land in the Project will be converted to solar energy system use and will host a community solar garden. When the Project is no longer operational, the land could be returned to productive agricultural use. The Project would only temporarily displace the current agricultural activities, will not change the physical integrity of the farmland or its soils, and in fact may benefit future agricultural production of the Project area by allowing the soil to “rest”.

During the lifetime of the Project, a portion of this parcel will experience a temporary change in use-class as defined by the Scott County Assessor, resulting in additional property tax revenue for the City and Scott County.

6. Tree Clearing

Proponents intend to clear the following trees within the project site:

0.6 acres	Hedgerow of 30' trees
1.1 acres	9' Tall shrubs along top of bluff
0.2 acres	40' Tall trees on flat ground in NW corner
1.9 acres	Total Clearing of Trees



7. Full Civil Submittal with Building Permit Application

Proponent is continuing to refine the engineering designs and will provide the City with a final civil design submittal as part of Building and Grading Permit applications, following IUP approval.

Exhibit D: Interconnection Application

First page and signature page only

Northern States Power Company, a Minnesota corporation
and wholly owned subsidiary of Xcel Energy Inc.
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

APPENDIX E: Interconnection Agreement

State of Minnesota
Proposed Interconnection Agreement
For the Interconnection of Extended Parallel Distributed Generation Systems With Electric Utilities

This Generating System Interconnection Agreement is entered into by and between Xcel Energy, "Northern States Power Company, a Minnesota corporation" and the Interconnection Customer "DG Minnesota CSG 4, LLC". The Interconnection Customer and Xcel Energy are sometimes also referred to in this Agreement jointly as "Parties" or individually as "Party".

In consideration of the mutual promises and obligations stated in this Agreement and its attachments, the Parties agree as follows:

I. SCOPE AND PURPOSE

A. Establishment of Point of Common Coupling. This Agreement is intended to provide for the Interconnection Customer to interconnect and operate a Generation System with a total Nameplate Capacity of 10MWs or less in parallel with Xcel Energy at the location identified in Exhibit C and shown in the Exhibit A one-line diagram.

B. This Agreement governs the facilities required to and contains the terms and condition under which the Interconnection Customer may interconnect the Generation System to Xcel Energy. This Agreement does not authorize the Interconnection Customer to export power or constitute an agreement to purchase or wheel the Interconnection Customer's power. Other services that the Interconnection Customer may require from Xcel Energy, or others, may be covered under separate agreements.

C. To facilitate the operation of the Generation System, this agreement also allows for the occasional and inadvertent export of energy to Xcel Energy. The amount, metering, billing and accounting of such inadvertent energy exporting shall be governed by Exhibit D (Operating Agreement). This Agreement does not constitute an agreement by Xcel Energy to purchase or pay for any energy, inadvertently or intentionally exported, unless expressly noted in Exhibit D or under a separately executed power purchase agreement (PPA).

D. This agreement does not constitute a request for, nor the provision of any transmission delivery service or any local distribution delivery service.

E. The Technical Requirements for interconnection are covered in a separate Technical Requirements document know as, the "State of Minnesota Distributed Generation Interconnection Requirements", a copy of which as been made available to the Interconnection Customer and incorporated and made part of this Agreement by this reference.

(Continued on Sheet No. 10-114)

APPENDIX E: Interconnection Agreement (Continued)

J) **NO PARTNERSHIP**

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

XIII. SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: Matt Handel

Title: Vice President

Date: 6/2/16

Xcel Energy

Lee Gabler Digitally signed by Lee Gabler
DN: cn=Lee Gabler, o=Customer Solutions, ou=Sr Director, Customer Strategy and Solutions, email=lee.e.gabler@xcelenergy.com, c=US
Date: 2016.07.28 13:46:53 -05'00'

By: _____

Name: Lee Gabler

Title: Sr. Dir. Customer Strategy and Solutions

Date: _____

(Continued on Sheet No. 10-128)

Exhibit E: Glare Study

Portfolio: Minnesota Community Solar Garden
Property: Devine-Johnson
Output: 5.0 MWac
Address: 100 West South Avenue, Belle Plaine MN
Review: Glare Analysis Memo
By: T. Butterfield 6/30/16

The Devine-Johnson Community Solar Garden Solar Project (Project) is a proposed distributed generation solar energy facility located in Belle Plaine, Minnesota. The Project consists of a 5.0 megawatt (MW) AC photovoltaic solar array. Solar panels have the potential to reflect sun light creating unwanted glare that may distract or harm observers. The project's PV panels are designed specifically to absorb as much light as possible, and have an anti-reflective coating to minimize the hazard of glare.

Sandia National Laboratories Solar Glare Hazard Analysis Tool

Sandia National Laboratories (Sandia) have developed the Solar Glare Hazard Analysis Tool (SGHAT) to analyze potential glare hazards. SGHAT is an online tool which allows a user to specify the project location, array specifications, and observation locations. Using this information and data regarding the position and intensity of the sun throughout the year, SGHAT calculates the potential glare effect, if any, caused by the solar array at the observation points. Program inputs include the latitude, longitude, and elevation of the proposed PV array and specific observer locations. The program uses the sun's position throughout the year and calculates the vectors between the sun, the array, and the observer location. Other information used by the program includes orientation and tilt of the PV panels, orientation of the arrays, and reflectance. If a glare hazard is identified, Sandia has also developed the Analytical Glare Estimation Tool to measure the potential impact of a hazard. The results are presented in a simple, easy-to-interpret plot that specifies when glare will occur throughout the year, with color codes indicating the potential ocular hazard.

- Potential for permanent eye damage
- Potential for temporary after-image, similar to glare off a car windshield
- Low potential for temporary after-image
- No glare

SGHAT Analysis

The SGHAT was utilized to determine the potential glare impact of the project. For this analysis, seven (7) observation points were set around the project. These sites were selected to represent potential glare on surrounding homes and roadways. The tool provides a quantified assessment of when and where glare will occur throughout the year for a prescribed solar installation and the potential effects on the human eye at locations where glare occurs. SGHAT has several technical limitations which are important to note. The tool only takes into account the geometry of the sun, the array, and the local topography. There are several glare-

mitigating factors which are not included in the calculation, including existing screening in the form of vegetation or structures, any proposed screening, diminished intensity of reflected light due to atmospheric haze or dust, and reduced panel reflectance due to soiling. As a result, the tool provides a “worst-case” view of potential glare impacts.

INPUTS

PV array axis tracking	none
Orientation of array	180.0 degrees
Tilt of solar panels	25.0 degrees
Rated power	5.0 MW AC
PV surface material	Smooth glass with ARC
Panel height	8 feet
Time zone offset	-6.0 hours
Time interval	1 minute
Slope error	10 mrad

Six Observations Points

Analysis

Observation Point	Potential Glare	Time of Day and Year for Potential Glare	Observation Point Notes
1	No glare		Residence approximately 800' S of the array will not experience glare
2	No glare		Residence approximately 2000' SE of the array will not experience glare
3	No glare		The project driveway at West South Road will not experience glare
4	Low	A few minutes each day during June from 6:00 – 6:30 p.m.	Residence approximately 2500' SE of the array could potentially experience very infrequent, short-lived, and low-intensity glare during June, however, this effect should be entirely mitigated by trees along the Eastern edge of the Project and the Western edge of the subdivision
5	No glare		Residences approximately 3000' SE of the array will not experience glare
6	No glare		Residence approximately 2500' SW of the array will not experience glare

Exhibit F: Decommissioning Plan

Exhibit F: Decommissioning Plan

The Devine-Johnson 5.0 MW AC community solar garden is designed to last 35 years. At the end of the project's operation, structures and foundations will be removed and the land restored as detailed below. All equipment will be removed from the site within twelve (12) months of termination of the lease agreement or twelve (12) consecutive months of the cessation of electric generation.

A portion of the Community Solar Garden (CSG) consists of recyclable materials and the scrap value of the system will help offset removal costs. A security will be set aside in the amount of $153,580 available to the City of Belle Plaine if DG Minnesota CSG 4, LLC are unwilling to commence with decommissioning activities within a reasonable period of time.

Decommissioning of the solar PV system shall be implemented in accordance with the Decommission Plan process. The Belle Plaine Planning Department shall receive a copy of the security document. DG Minnesota CSG 4, LLC will be responsible for all of the decommission costs and will list the City of Belle Plaine as having access to the security in the event decommissioning is required. DG Minnesota CSG 4, LLC will maintain a lease with the Property Owner for the life of the solar energy array and until decommissioning is complete.

Installation will be done with minimal permanent alterations to the land. Upon removal, DG Minnesota CSG 4, LLC will restore the project site to pre-construction conditions as is reasonably practical, including removal of structures, foundation, and restoration of soil and vegetation. The system will be dismantled and removed using minimal impact construction equipment and materials will be safely recycled or disposed. During the decommissioning, DG Minnesota CSG 4, LLC will use appropriate temporary construction-related erosion and sediment control best management practices (BMP).

Much of the material in a Community Solar Garden is recyclable; including glass, semiconductor material, steel, aluminum, copper and plastics. The scrap value of the system will offset the removal cost. When the project has reached the end of its operational life, the components and parts will be dismantled and recycled as described below.

Decommissioning requirements:

DG Minnesota CSG 4, LLC shall:

1. Obtain any permits required for the decommissioning, removal, and legal disposal of the system components prior to the commencement of the decommissioning activities
2. Remove all hazardous materials (if any) and transport them to be disposed of by licensed contractors at an appropriate facility in accordance with rules and regulations
3. Work with utility to disconnect PV array from power grid.
4. Remove transformer, inverters switch gear, power poles and fencing.
4. Break up concrete foundations and recycle materials.
5. Remove modules, DC wiring, junction boxes and steel racking.
6. Pull AC wiring from underground conduits.
7. Excavate and remove any conduit buried less than 3' deep.
8. Fill in storm-water ponds.
9. Reclaim gravel from access road.
10. Re-grade area to an approximation of the original contours

11. Reseed and mulch distributed areas using a seed mix pre-approved by the County or allow farm owner to re-seed.
12. Recycle gravel, concrete, rebar, fencing, steel piers, steel racking, solar modules, copper and aluminum wiring, inverters, disconnects, switchgear and transformer.

The project site may be converted to other uses in accordance with applicable land use regulations at the time of decommissioning. There will be very limited grading done to build the project, so only limited grading will be required to restore the land to its original condition. Any soil removed for construction purposes will be relocated on the site or used for landscaping after construction is complete.

Estimated Cost of Decommissioning:

Demo & Restoration Cost:	$ 122,864
Salvage Value:	($ 142,200)
Total Net Cost:	($ 19,336)

Decommissioning Fund:
The purpose of the decommissioning fund is to ensure there is sufficient money available to return the project site to an appropriate condition at the end of the project's useful life, or earlier.

The City will be designated beneficiary of the fund and will be provided a copy of the document establishing the security before construction commences. The decommissioning fund will initially be an irrevocable standby letter of credit, bond or escrow fund.

If DG Minnesota CSG 4, LLC is unable or unwilling to commence decommissioning activities within a reasonable period of time, not to exceed the allotted twelve-month period, the City of Belle Plaine will be granted access to demand payment under the security. Security will be in the amount of $153,580 (125% of decommissioning costs). It is also important to note that the project company's parent is a publically traded company with significant financial resources to ensure the proper decommissioning of the system.

Decommissioning Budget

No	Item	Unit	Est. Qty	Unit Price	Total
1	Fence Removal	/ft	5,483	$ 2.00	$ 10,966
2	Racking Frames	/frame	2,100	$ 4.00	$ 8,400
3	Racking Posts	/post	2,100	$ 5.00	$ 10,500
4	Solar Modules	/module	20,720	$ 3.25	$ 67,340
5	Inverters	/inverter	5	$ 1,000.00	$ 5,000
6	Transformers	/transformer	5	$ 1,000.00	$ 5,000
7	Wire (Copper)	/lb	14,920	$ 0.30	$ 4,476
8	Wire (Aluminum)	/lb	17,440	$ 0.30	$ 5,232
9	Concrete Removal	/sq. ft.	600	$ 4.50	$ 2,700
10	Site Restoration	/acre	26	$ 125.00	$ 3,250

Total $ 122,864

Salvage Value

No	Item	Unit	Est. Qty	Unit Price	Total
1	Fence Removal	/ft	5,483	$ 0.22	$ 1,206
2	Racking Frames	/frame	2,100	$ 0.68	$ 1,428
3	Racking Posts	/post	2,100	$ 0.16	$ 336
4	Solar Modules	/module	20,720	$ 4.00	$ 82,880
5	Inverters	/inverter	5	$ 1,000.00	$ 5,000
6	Transformers	/transformer	5	$ 2,000.00	$ 10,000
7	Wire (Copper)	/lb	14,920	$ 2.00	$ 29,840
8	Wire (Aluminum)	/lb	17,440	$ 0.66	$ 11,510

Total $ 142,200

Exhibit G: Stormwater Management Plan

Exhibit H: Site Plan and Engineering Drawings

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Exhibit I: Technical Equipment Specifications

The following is the Datasheet for the Power Electronics HEC-US 1500VDC Inverter

Note - The Power Electronics HEC-US 1500VDC inverter was selected for its reliability, quality, and cost at the time of this submittal. When the final engineering design is underway and construction documents are in the process of being prepared, Nextera reserves the right to re-evaluate the inverter market and make a selection change of an equal or better inverter.

POWER ELECTRONICS

HEC-US 1500VDC

TECHNICAL CHARACTERISTICS

		690VAC - MPPt Window 976V-1250V				
		FRAME 3	FRAME 4	FRAME 5	FRAME 6	FRAME 7
NUMBER OF MODULES		3	4	5	6	7
REFERENCE		FS1275CU15	FS1700CU15	FS2125CU15	FS2550CU15	FS3000CU15
OUTPUT	AC Output Power(kVA/kW) @50°C	1275	1700	2125	2550	3000
	AC Output Power(kVA/kW) @25°C	1530	2040	2550	3060	3500
	AC Output Power(kW) @50°C; PF=0.9	1150	1530	1910	2250	2700
	Max. AC Output Current (A) @25°C	1285	1710	2140	2570	3000
	Operating Grid Voltage (VAC)	690V ±10%				
	Operating Grid Frequency (Hz)	60Hz				
	Current Harmonic Distortion (THDi)	< 3% per IEEE519				
	Power Factor (cosine phi) [1]	0.0 leading ... 0.0 lagging / Reactive Power injection at night				
	Power Curtailment (kVA)	0...100% / 0.1% Steps				
INPUT	MPPt @full power (VDC) [2]	976V - 1250V				
	Maximum DC voltage	1500V				
	Minimum Start Voltage	1100V - User configurable				
	Max. DC continuous current (A)	1600	2140	2675	3210	3745
	Max. DC short circuit current (A)	2320	3100	3880	4650	5450
EFFICIENCY & AUX. SUPPLY	Efficiency (Max) (η) / CEC (η)	98.4% / 98.0% (preliminary)				
	Max. Standby Consumption (Pnight)	< approx. 40W/per module				
	Control Power Supply	120V / 208VAC-1kVA power supply available for external equipment				
	Max. Power Consumption	-	-	-	-	-
CABINET	Dimensions [WxDxH] [inches]	119.6"x37.2"x86.5"	147.6"x37.2"x86.5"	175.7"x37.2"x86.5"	203.8"x37.2"x86.5"	231.9"x37.2"x86.5"
	Dimensions [WxDxH] [mm]	3038x945x2198	3751x945x2198	4464x945x2198	5177x945x2198	5890x945x2198
	Weight (lbs)	-	-	-	-	-
	Weight (kg)	-	-	-	-	-
	Air Flow	Bottom intake. Exhaust top rear vent.				
	Type of ventilation	Forced air cooling				
ENVIRON-MENT	Degree of protection	NEMA 3R				
	Permissible Ambient Temperature	-22°F to +122°F / -30°C[3] to +50°C, >50°C / Active Power derating (>50°C/122°F)				
	Relative Humidity	4% to 100% Condensing				
	Max. Altitude (above sea level)	1000m / >1000m power derating 1% Sn (kVA) per 100m (Max. 4000m)				
	Noise level [4]	< 79 dBA				
CONTROL INTERFACE	Interface	Graphic Display (inside cabinet) / Optional Freesun App display or Web display				
	Communication protocol	Modbus RTU, Modbus TCP/IP				
	Power Plant Controller	Optional				
	Keyed ON/OFF switch	Standard				
	Digital I/O	User configurable				
	Analog I/O	User configurable				
PROTECTIONS	Ground Fault Protection	Floating PV array: Isolation Monitoring per MPP NEC2014 Grounded PV Array: GFDI protection Optional PV Array transfer kit: GFDI and Isolation monitoring device				
	Humidity control	Active Heating				
	General AC Protection & Disconn.	Circuit Breaker				
	General DC Protection & Disconn.	External Disconnecting Unit Cabinet				
	Module AC Protection & Disconn.	AC contactor & fuses				
	Module DC Protection & Disconn.	DC contactor & DC fuses				
	Overvoltage Protection	AC and DC protection (type 2)				
CERTI-FICA-TIONS	Safety	UL 1741; CSA 22.2 No.107.1-01 (Pending)				
	Utility interconnect	IEEE 1547 with Utility Interactive Control functions				

NOTES [1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$
[2] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.
[3] Heating kit option required below -20°C.
[4] Sound pressure level at a distance of 1m from the rear part.

POWER ELECTRONICS

HEC-US 1500VDC

TECHNICAL CHARACTERISTICS

		645VAC - MPPt Window 913V-1250V				
		FRAME 3	FRAME 4	FRAME 5	FRAME 6	FRAME 7
NUMBER OF MODULES		3	4	5	6	7
REFERENCE		FS1200CU15	FS1600CU15	FS2000CU15	FS2400CU15	FS2800CU15
OUTPUT	AC Output Power(kVA/kW) @50°C	1200	1600	2000	2400	2800
	AC Output Power(kVA/kW) @25°C	1430	1910	2390	2860	3345
	AC Output Power(kW) @50°C; PF=0.9	1080	1440	1800	2160	2520
	Max. AC Output Current (A) @25°C	1285	1710	2140	2570	3000
	Operating Grid Voltage (VAC)	645V ±10%				
	Operating Grid Frequency (Hz)	60Hz				
	Current Harmonic Distortion (THDi)	< 3% per IEEE519				
	Power Factor (cosine phi) [1]	0.0 leading ... 0.0 lagging / Reactive Power injection at night				
	Power Curtailment (kVA)	0...100% / 0.1% Steps				
INPUT	MPPt @full power (VDC) [2]	913V - 1250V				
	Maximum DC voltage	1500V				
	Minimum Start Voltage	1075V - User configurable				
	Max. DC continuous current (A)	1600	2140	2675	3210	3745
	Max. DC short circuit current (A)	2320	3100	3880	4650	5450
EFFICIENCY & AUX. SUPPLY	Efficiency (Max) (η) / CEC (η)	98.4% / 98.0% (preliminary)				
	Max. Standby Consumption (Pnight)	< approx. 40W/per module				
	Control Power Supply	120V / 208VAC-1kVA power supply available for external equipment				
	Max. Power Consumption	-	-	-	-	-
CABINET	Dimensions [WxDxH] [inches]	119.6"x37.2"x86.5"	147.6"x37.2"x86.5"	175.7"x37.2"x86.5"	203.8"x37.2"x86.5"	231.9"x37.2"x86.5"
	Dimensions [WxDxH] [mm]	3038x945x2198	3751x945x2198	4464x945x2198	5177x945x2198	5890x945x2198
	Weight (lbs)	-	-	-	-	-
	Weight (kg)	-	-	-	-	-
	Air Flow	Bottom intake. Exhaust top rear vent.				
	Type of ventilation	Forced air cooling				
ENVIRON-MENT	Degree of protection	NEMA 3R				
	Permissible Ambient Temperature	-22°F to +122°F / -30°C[3] to +50°C, >50°C / Active Power derating (>50°C/122°F)				
	Relative Humidity	4% to 100% Condensing				
	Max. Altitude (above sea level)	1000m / >1000m power derating 1% Sn (kVA) per 100m (Max. 4000m)				
	Noise level [4]	< 79 dBA				
CONTROL INTERFACE	Interface	Graphic Display (inside cabinet) / Optional Freesun App display or Web display				
	Communication protocol	Modbus RTU, Modbus TCP/IP				
	Power Plant Controller	Optional				
	Keyed ON/OFF switch	Standard				
	Digital I/O	User configurable				
	Analog I/O	User configurable				
PROTECTIONS	Ground Fault Protection	Floating PV array: Isolation Monitoring per MPP NEC2014 Grounded PV Array: GFDI protection Optional PV Array transfer kit: GFDI and Isolation monitoring device				
	Humidity control	Active Heating				
	General AC Protection & Disconn.	Circuit Breaker				
	General DC Protection & Disconn.	External Disconnecting Unit Cabinet				
	Module AC Protection & Disconn.	AC contactor & fuses				
	Module DC Protection & Disconn.	DC contactor & DC fuses				
	Overvoltage Protection	AC and DC protection (type 2)				
CERTI-FICA-TIONS	Safety	UL 1741; CSA 22.2 No.107.1-01 (Pending)				
	Utility interconnect	IEEE 1547 with Utility Interactive Control functions				

NOTES [1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$
[2] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.
[3] Heating kit option required below -20°C.
[4] Sound pressure level at a distance of 1m from the rear part.

POWER ELECTRONICS

HEC-US 1500VDC

TECHNICAL CHARACTERISTICS

		600VAC - MPPt Window 849V-1250V				
		FRAME 3	FRAME 4	FRAME 5	FRAME 6	FRAME 7
NUMBER OF MODULES		3	4	5	6	7
REFERENCE		FS1100CU15	FS1475CU15	FS1850CU15	FS2225CU15	FS2600CU15
OUTPUT	AC Output Power(kVA/kW) @50°C	1100	1475	1850	2225	2600
	AC Output Power(kVA/kW) @25°C	1335	1780	2225	2660	3110
	AC Output Power(kW) @50°C; PF=0.9	990	1325	1665	2000	2340
	Max. AC Output Current (A) @25°C	1285	1710	2140	2570	3000
	Operating Grid Voltage (VAC)	600V ±10%				
	Operating Grid Frequency (Hz)	60Hz				
	Current Harmonic Distortion (THDi)	< 3% per IEEE519				
	Power Factor (cosine phi) [1]	0.0 leading ... 0.0 lagging / Reactive Power injection at night				
	Power Curtailment (kVA)	0...100% / 0.1% Steps				
INPUT	MPPt @full power (VDC) [2]	849V - 1250V				
	Maximum DC voltage	1500V				
	Minimum Start Voltage	1050V - User configurable				
	Max. DC continuous current (A)	1600	2140	2675	3210	3745
	Max. DC short circuit current (A)	2320	3100	3880	4650	5450
EFFICIENCY & AUX. SUPPLY	Efficiency (Max) (η) / CEC (η)	98.4% / 98.0% (preliminary)				
	Max. Standby Consumption (Pnight)	< approx. 40W/per module				
	Control Power Supply	120V / 208VAC-1kVA power supply available for external equipment				
	Max. Power Consumption	-	-	-	-	-
CABINET	Dimensions [WxDxH] [inches]	119.6"x37.2"x86.5"	147.6"x37.2"x86.5"	175.7"x37.2"x86.5"	203.8"x37.2"x86.5"	231.9"x37.2"x86.5"
	Dimensions [WxDxH] [mm]	3038x945x2198	3751x945x2198	4464x945x2198	5177x945x2198	5890x945x2198
	Weight (lbs)	-	-	-	-	-
	Weight (kg)	-	-	-	-	-
	Air Flow	Bottom intake. Exhaust top rear vent.				
	Type of ventilation	Forced air cooling				
ENVIRON-MENT	Degree of protection	NEMA 3R				
	Permissible Ambient Temperature	-22°F to +122°F / -30°C[3] to +50°C, >50°C / Active Power derating (>50°C/122°F)				
	Relative Humidity	4% to 100% Condensing				
	Max. Altitude (above sea level)	1000m / >1000m power derating 1% Sn (kVA) per 100m (Max. 4000m)				
	Noise level [4]	< 79 dBA				
CONTROL INTERFACE	Interface	Graphic Display (inside cabinet) / Optional Freesun App display or Web display				
	Communication protocol	Modbus RTU, Modbus TCP/IP				
	Power Plant Controller	Optional				
	Keyed ON/OFF switch	Standard				
	Digital I/O	User configurable				
	Analog I/O	User configurable				
PROTECTIONS	Ground Fault Protection	Floating PV array: Isolation Monitoring per MPP NEC2014 Grounded PV Array: GFDI protection Optional PV Array transfer kit: GFDI and Isolation monitoring device				
	Humidity control	Active Heating				
	General AC Protection & Disconn.	Circuit Breaker				
	General DC Protection & Disconn.	External Disconnecting Unit Cabinet				
	Module AC Protection & Disconn.	AC contactor & fuses				
	Module DC Protection & Disconn.	DC contactor & DC fuses				
	Overvoltage Protection	AC and DC protection (type 2)				
CERTI-FICA-TIONS	Safety	UL 1741; CSA 22.2 No.107.1-01 (Pending)				
	Utility interconnect	IEEE 1547 with Utility Interactive Control functions				

NOTES [1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$
[2] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.
[3] Heating kit option required below -20°C.
[4] Sound pressure level at a distance of 1m from the rear part.

POWER ELECTRONICS

HEC-US 1500VDC

TECHNICAL CHARACTERISTICS

		565VAC - MPPt Window 800V-1250V				
		FRAME 3	FRAME 4	FRAME 5	FRAME 6	FRAME 7
NUMBER OF MODULES		3	4	5	6	7
REFERENCE		FS1050CU15	FS1400CU15	FS1750CU15	FS2100CU15	FS2450CU15
OUTPUT	AC Output Power(kVA/kW) @50°C	1050	1400	1750	2100	2450
	AC Output Power(kVA/kW) @25°C	1250	1675	2090	2510	2930
	AC Output Power(kW) @50°C; PF=0.9	945	1260	1575	1890	2205
	Max. AC Output Current (A) @25°C	1285	1710	2140	2570	3000
	Operating Grid Voltage (VAC)	565V ±10%				
	Operating Grid Frequency (Hz)	60Hz				
	Current Harmonic Distortion (THDi)	< 3% per IEEE519				
	Power Factor (cosine phi) [1]	0.0 leading ... 0.0 lagging / Reactive Power injection at night				
	Power Curtailment (kVA)	0...100% / 0.1% Steps				
INPUT	MPPt @full power (VDC) [2]	800V - 1250V				
	Maximum DC voltage	1500V				
	Minimum Start Voltage	1050V - User configurable				
	Max. DC continuous current (A)	1600	2140	2675	3210	3745
	Max. DC short circuit current (A)	2320	3100	3880	4650	5450
EFFICIENCY & AUX. SUPPLY	Efficiency (Max) (η) / CEC (η)	98.4% / 98.0% (preliminary)				
	Max. Standby Consumption (Pnight)	< approx. 40W/per module				
	Control Power Supply	120V / 208VAC-1kVA power supply available for external equipment				
	Max. Power Consumption	-	-	-	-	-
CABINET	Dimensions [WxDxH] [inches]	119.6"x37.2"x86.5"	147.6"x37.2"x86.5"	175.7"x37.2"x86.5"	203.8"x37.2"x86.5"	231.9"x37.2"x86.5"
	Dimensions [WxDxH] [mm]	3038x945x2198	3751x945x2198	4464x945x2198	5177x945x2198	5890x945x2198
	Weight (lbs)	-	-	-	-	-
	Weight (kg)	-	-	-	-	-
	Air Flow	Bottom intake. Exhaust top rear vent.				
	Type of ventilation	Forced air cooling				
ENVIRON-MENT	Degree of protection	NEMA 3R				
	Permissible Ambient Temperature	-22°F to +122°F / -30°C[3] to +50°C, >50°C / Active Power derating (>50°C/122°F)				
	Relative Humidity	4% to 100% Condensing				
	Max. Altitude (above sea level)	1000m / >1000m power derating 1% Sn (kVA) per 100m (Max. 4000m)				
	Noise level [4]	< 79 dBA				
CONTROL INTERFACE	Interface	Graphic Display (inside cabinet) / Optional Freesun App display or Web display				
	Communication protocol	Modbus RTU, Modbus TCP/IP				
	Power Plant Controller	Optional				
	Keyed ON/OFF switch	Standard				
	Digital I/O	User configurable				
	Analog I/O	User configurable				
PROTECTIONS	Ground Fault Protection	Floating PV array: Isolation Monitoring per MPP NEC2014 Grounded PV Array: GFDI protection Optional PV Array transfer kit: GFDI and Isolation monitoring device				
	Humidity control	Active Heating				
	General AC Protection & Disconn.	Circuit Breaker				
	General DC Protection & Disconn.	External Disconnecting Unit Cabinet				
	Module AC Protection & Disconn.	AC contactor & fuses				
	Module DC Protection & Disconn.	DC contactor & DC fuses				
	Overvoltage Protection	AC and DC protection (type 2)				
CERTI-FICA-TIONS	Safety	UL 1741; CSA 22.2 No.107.1-01 (Pending)				
	Utility interconnect	IEEE 1547 with Utility Interactive Control functions				

NOTES [1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$
[2] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.
[3] Heating kit option required below -20°C.
[4] Sound pressure level at a distance of 1m from the rear part.

The following is the Datasheet for the

Q.Plus LG4.2 330 watt module

Note - Q.Plus LG4.2 330 watt module was selected for its reliability, quality, and cost at the time of this submittal. When the final engineering design is underway and construction documents are in the process of being prepared, Nextera reserves the right to re-evaluate the module market and make a selection change of an equal or better module.

Q.PLUS L-G4.2 330-340

Q.ANTUM SOLAR MODULE

The Q.ANTUM solar module Q.PLUS L-G4.2 with power classes up to 340 Wp is the strongest module of its type on the market globally. Powered by 72 Q CELLS solar cells Q.PLUS L-G4.2 was specially designed for large solar power plants to reduce BOS costs. Only Q CELLS offers German engineering quality with our unique triple Yield Security.

LOW ELECTRICITY GENERATION COSTS
Higher yield per surface area and lower BOS costs thanks to higher power classes and an efficiency rate of up to 17.4 %.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti-PID Technology[1], Hot-Spot-Protect and Traceable Quality Tra.Q™.

LIGHT-WEIGHT QUALITY FRAME
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (2400 Pa).

A RELIABLE INVESTMENT
Inclusive 12-year product warranty and 25-year linear performance guarantee[2].

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2015

Q CELLS YIELD SECURITY – ANTI PID TECHNOLOGY (APT) – HOT-SPOT PROTECT (HSP) – TRACEABLE QUALITY (TRA.Q™)

Photon – Q CELLS – Best polycrystalline solar module 2013 – Q.PRO-G2 235 – 151 modules tested

[1] APT test conditions: Cells at -1000 V against grounded, with conductive metal foil covered module surface, 25°C, 168h

[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

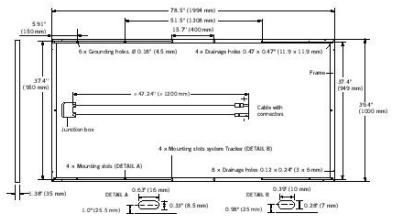
Ground-mounted solar power plants

Engineered in **Germany**

Q CELLS

MECHANICAL SPECIFICATION

Format	78.5 in × 39.4 in × 1.38 in (including frame) (1994 mm × 1000 mm × 35 mm)
Weight	52.9 lb (24 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodised aluminum
Cell	6 × 12 Q.ANTUM solar cells
Junction box	3.35-4.13 in × 2.36-3.15 in × 0.59-0.67 in (85-105 mm × 60-80 mm × 15-17 mm), Protection class ≥ IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 47.24 in (1200 mm), (-) ≥ 47.24 in (1200 mm)
Connector	Amphenol H4 UTX, IP68

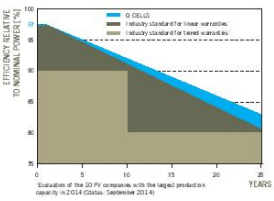


ELECTRICAL CHARACTERISTICS

POWER CLASS				330	335	340
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / -0 W)						
Minimum	Power at MPP[2]	P_{MPP}	[W]	330	335	340
	Short Circuit Current*	I_{SC}	[A]	9.49	9.54	9.59
	Open Circuit Voltage*	V_{OC}	[V]	46.55	46.81	47.07
	Current at MPP*	I_{MPP}	[A]	8.91	8.97	9.03
	Voltage at MPP*	V_{MPP}	[V]	37.02	37.33	37.63
	Efficiency[2]	η	[%]	≥ 16.5	≥ 16.8	≥ 17.1
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC[3]						
Minimum	Power at MPP[2]	P_{MPP}	[W]	244.7	248.4	252.1
	Short Circuit Current*	I_{SC}	[A]	7.65	7.69	7.73
	Open Circuit Voltage*	V_{OC}	[V]	43.44	43.68	43.92
	Current at MPP*	I_{MPP}	[A]	6.99	7.04	7.09
	Voltage at MPP*	V_{MPP}	[V]	35.01	35.29	35.56

[1] 1000 W/m², 25 °C, spectrum AM 1.5 G [2] Measurement tolerances STC ± 3%; NOC ± 5% [3] 800 W/m², NOCT, spectrum AM 1.5 G *typical values, actual values may differ

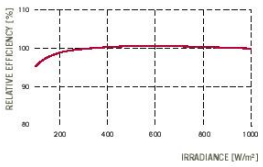
Q CELLS PERFORMANCE WARRANTY



At least 97 % of nominal power during first year. Thereafter max. 0.6 % degradation per year.
At least 92 % of nominal power after 10 years.
At least 83 % of nominal power after 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.29
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.40	Normal Operating Cell Temperature	NOCT	[°F]	113 ± 5.4 (45 ± 3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500 (IEC) / 1500 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	15	Fire Rating	C / TYPE 1
Max Load (UL)[2]	[lbs/ft²]	75 (3600 Pa)	Permitted module temperature on continuous duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Load Rating (UL)[2]	[lbs/ft²]	33 (1600 Pa)	[2] see installation manual	

QUALIFICATIONS AND CERTIFICATES

IEC 61215 (Ed. 2); IEC 61730 (Ed. 1), Application class A
This data sheet complies with DIN EN 50380.

PACKAGING INFORMATION

Number of Modules per Pallet	29
Number of Pallets per 40' Container	22
Pallet Dimensions (L × W × H)	81.3 × 45.3 × 46.9 in (2065 × 1150 × 1190 mm)
Pallet Weight	1671 lbs (758 kg)

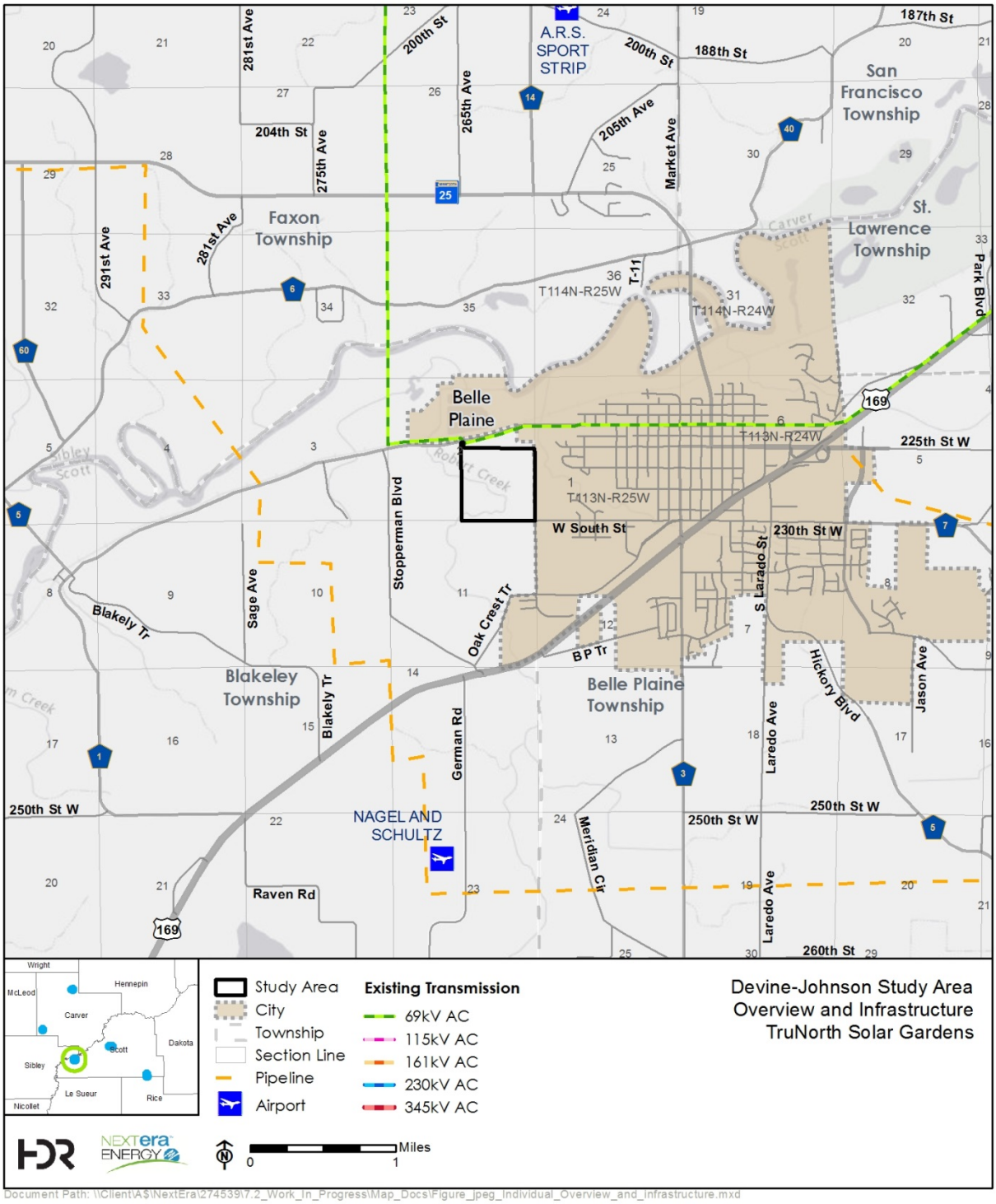
NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS USA Corp.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA I TEL +1 949 748 59 96 I WEB www.q-cells.com

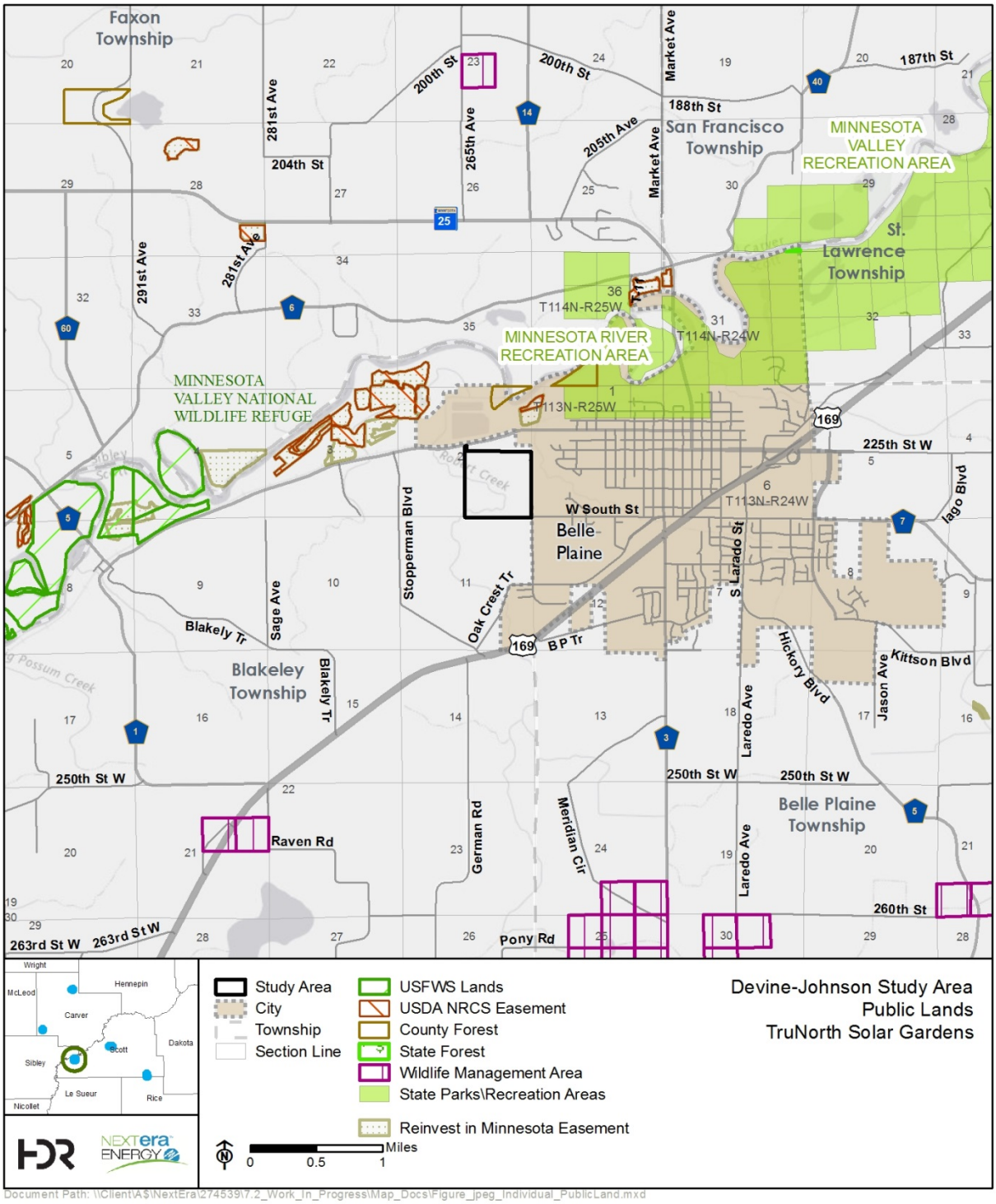
Engineered in **Germany**

Exhibit J: Site Maps

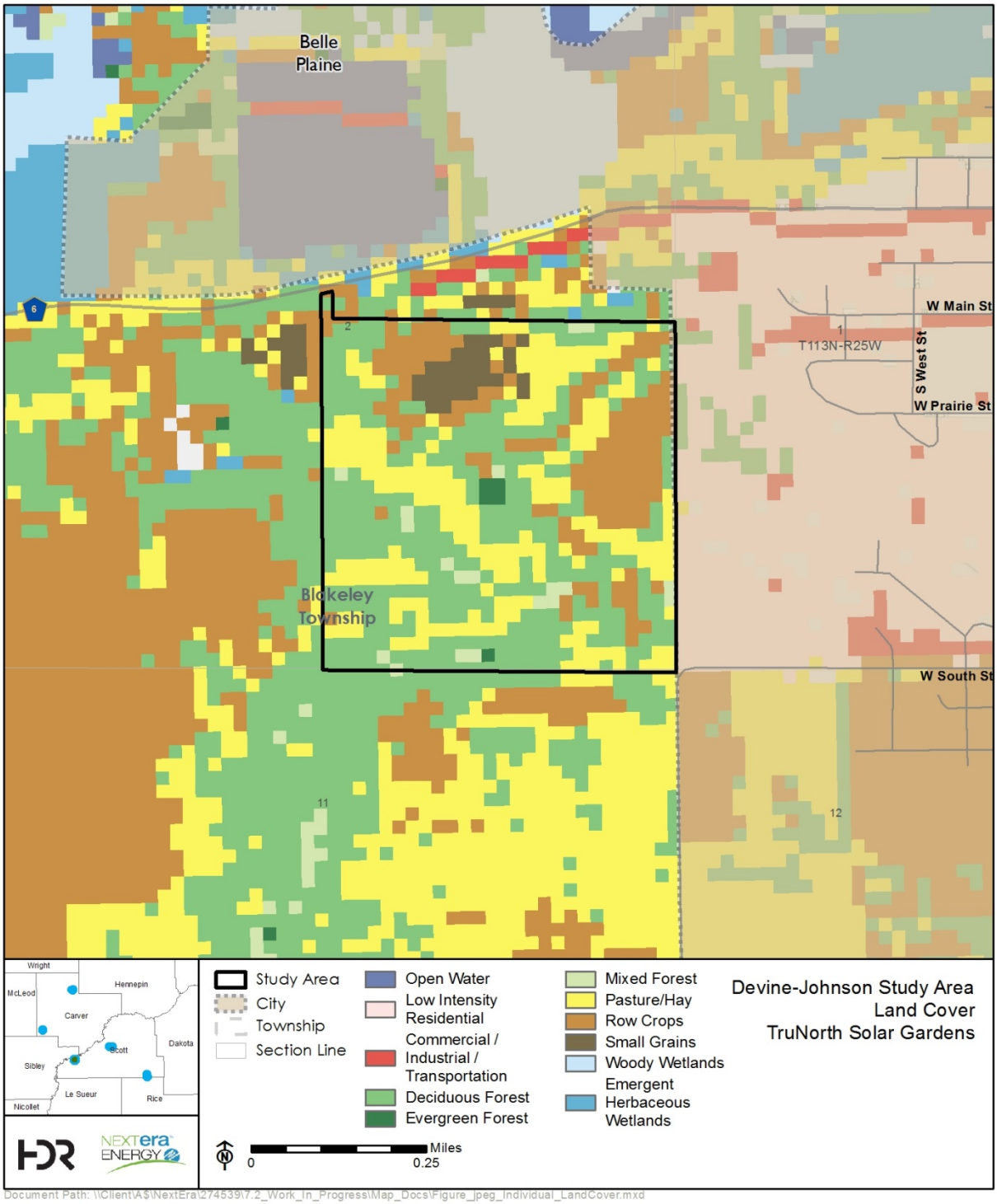
Site Overview Map



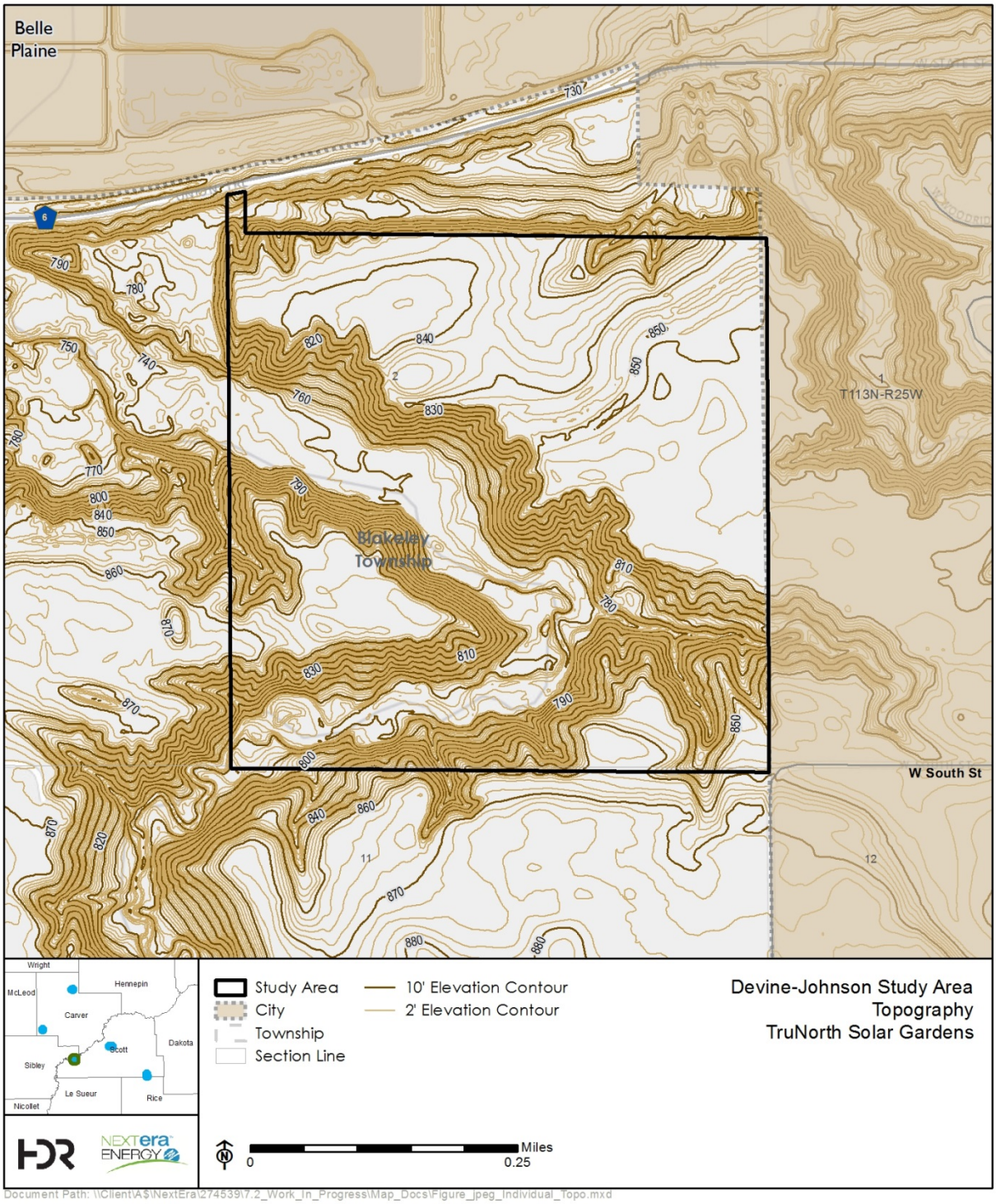
Map of Nearby Public Lands



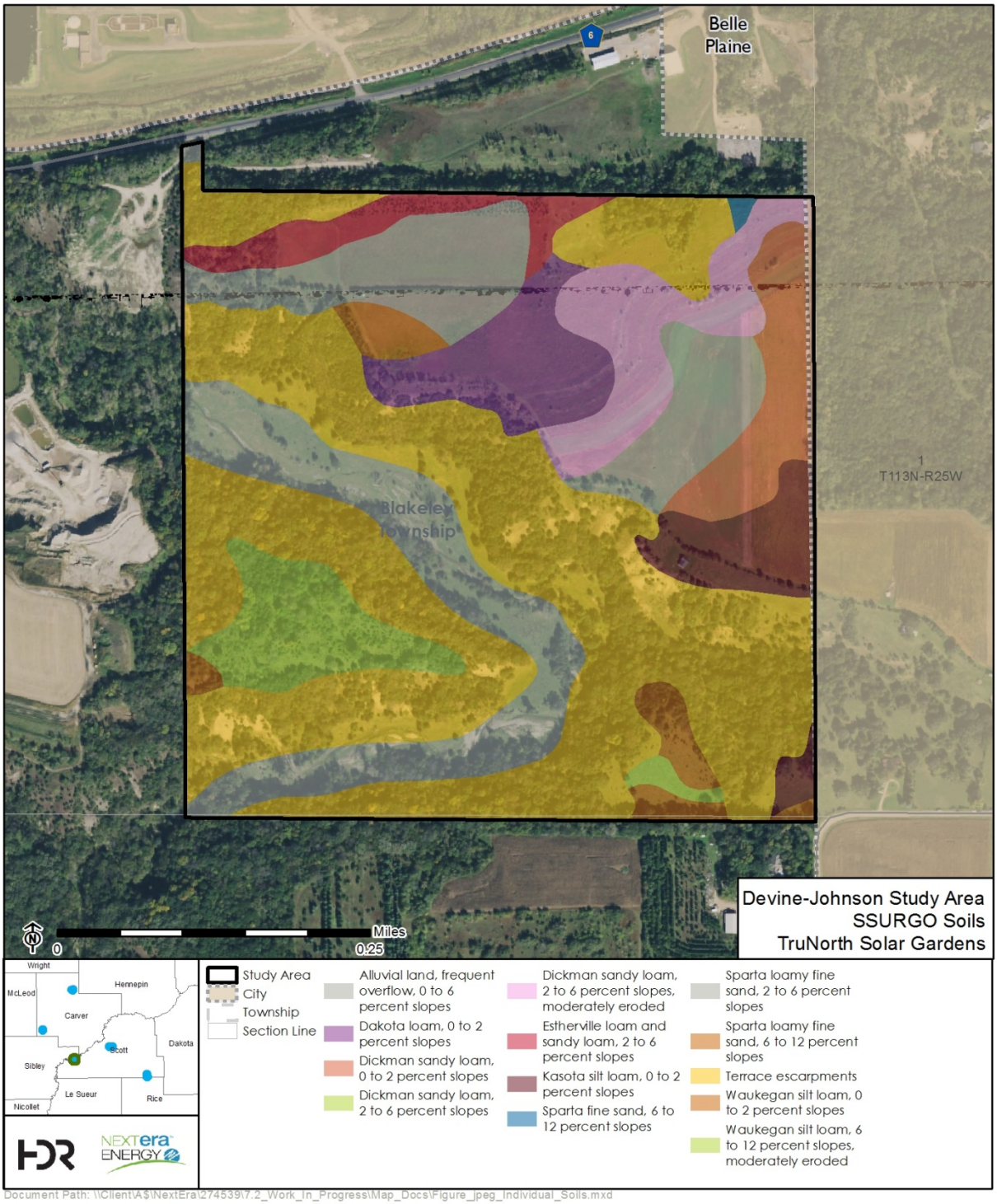
Site Land Cover Map



Site Topographical Map



Site Soil Classification Map



Site Hydrology Map