FIELD ENGINEERING CO., INC.
CONSULTING ENGINEERS

NORTHFIELD SITE PLAN REVIEW / SPECIAL PERMIT PETITION
PROPOSED PINE MEADOW ROAD SOLAR ARRAY "C"

Project Location:
Pine Meadow Road Array "C"
612 Pine Meadow Road
Parcel 54-A8
Northfield, Massachusetts

Prepared for:
BWC Otter Run LLC
c/o BlueWave Solar
111 Huntington Ave, Suite 650
Boston, Massachusetts 02199

11D Industrial Drive
P.O. Box 1178
Mattapoisett, MA 02739
Tel. (508) 758-2749
Fax (508) 758-2849

Project No. 2312

December 28, 2020

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PLANNING BOARD
TOWN OF NORTHFIELD
www.northfieldma.gov
69 MAIN STREET
NORTHFIELD, MASSACHUSETTS 01360-1017
P: (413) 498-2901
F: (413) 498-5103

APPLICATION TO THE PLANNING BOARD FOR SPECIAL PERMIT, VARIANCE OR APPEAL

Application is hereby made for a Special Permit, Variance Determination or Appeal in accordance with Section _____ of the Northfield Protective Regulations By-laws

Date: _____

Applicant: BWC Pine Meadow Brook LLC (Name) 914-815-7248 (Phone) jfirsty@bluewavesolar.com (Email)

Address: 111 Huntington Ave, Suite 650 (Street) Boston (City) MA (State) 02199 (Zip)

Property Owner: Jacob and Robin L'Etoile (Name) _____ (Phone) _____ (Email)

Address: 612 Pine Meadow Road (Street) Northfield (City) MA (State) 01360 (Zip)

Premises Affected: 612 Pine Meadow Road (Street) 54/A8 (Assessor Map/Lot#) 5819-29 (Book & Page #)

DESCRIPTION OF PROPOSED BUILDING OR BUSINESS (SEE APPLICATION GUIDE)
1. Map & scale drawing of lot, structures and setbacks from all property lines must be attached to application.
2. Dimension of structure in feet: N/A (FRONT) N/A (DEPTH) 15' (max) (HEIGHT) N/A (NO. OF STORIES)
3. Occupancy Use (of each floor): N/A
4. Zoning District: RA
5. Type of Structure: Proposed Fixed Tilt Solar Array on Steel Posts
6. Has there been a previous appeal, under zoning, on these premises? N/A

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7. Description of proposed work or use:
The applicant proposes to construct "Pine Meadow Road Array C" consisting of a 0.5 MW+/- solar array consisting of approximately 1,400 fixed tilt solar modules set on posts within an existing farm/field area. Proposed array will be accessed via a gravel access drive off of Pine Meadow Road and completely enclosed with fencing. The proposed array requires a Special Permit under Section 3.4 and Site Plan Approval under Section 3.5 and 10.3 of the Town of Northfield Zoning By-Law.

8. The principal reasons upon which I base my application are as follows:

See attached Project Narrative.

Applicant Signature: _____ Title: _____

Owner/Agent Signature: _____ Title: _____
[Tenant must have owner or authorized agent co-sign this application]

[PLEASE REVEIW AND BECOME FAMILIAR WITH ATTACHED INSTRUCTIONS]

FILING FEE: $150.00 DATE PAID:_____ PAYMENT RECEIVED BY: _____

Additional application review fees may be charged if the Planning Board determines the assistance of outside consultants is warranted due to the size, scale or complexity of a proposed project per the Board of Appeals Regulation on Application-Special Municipal Accounts approved on August 17, 1992

Applicant must include all of the following information or the Town Clerk will not accept the application:

☐ Scale Drawing ☐ Payment ☐Completed Application ☐Lease or rental agreement, if applicable

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PETITION FOR A VARIANCE
Please consider your proposal must not be a substantial detriment to the public good and it must not nullify or substantially derogate the intent and purpose of the zoning ordinance bylaw
Why/how does your petition qualify for a variance in relation to the criteria specified on page 4 of this application? Respond to each criterion.
1. Soil conditions, lot shape, topography?
2. Hardship?
3. Public Good?
In your opinion, is it physically possible to accomplish your proposal on any other location on the property where it would comply with the zoning bylaw? [Please explain your answer]

PLANNING BOARD
TOWN OF NORTHFIELD

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69 MAIN STREET
NORTHFIELD, MASSACHUSETTS 01360-1017

APPLICATION FOR SITE PLAN APPROVAL Fee: $30.00

If the Planning Board determines that professional consultations are necessary to review the application before the Board, due to the complexity of the application, the cost and expense of the consultations will be billed to the applicant. All amounts owed must be paid before any permits will be issued.

The undersigned submits original and 4 accompanying site plans of property located in the Town of Northfield for study, discussion, and approval under Protective Regulations By-law Article X. All requirements of this by-law must be complied with before a planning board review can be scheduled. Copies of Northfield's Protective Regulations may be purchased from the town secretary. It is strongly recommended that the applicant come before the Planning Board with preliminary plans before submitting the official site plan review application.

BWC Pine Meadow Brook LLC, c/o BlueWave Solar
Name of Applicant

111 Huntington Ave., Suite 650, Boston, MA 02199
Address

(914) 815-7248
Phone

Jacob and Robin L'etoile
Name of Landowner (if not applicant):

612 Pine Meadow Road, Northfield, MA 01360
Address:

Phone:

DGT Associates Surveying & Engineering
Name of Surveyor:
255 Park Avenue, Suite 500
Worcester, MA 01609
Address:

857-524-1419
Phone:

Field Engineering Co. Inc. Richard R. Riccio III, P.E.
Name of Engineer:
11D Industrial Drive, P.O. Box 1178
Mattapoisett, MA 02739
Address:

508-759-2749
Phone:

What authority referred you to the Planning Board for site plan review? _____

Deeds of Property recorded in Franklin County Registry of Deeds:

Book 5819 Page 29 Book _____ Page _____

Zone property is located RA

List liens or restrictions, if any on the property, and/or state, county, or town protective zones in which the property is located:

_____

_____

_____
Signature of Owner

_____
Signature of Applicant

Brief description of Project and what action in by-laws triggered a site plan approval

The applicant proposes to construct "Pine Meadow Road Array C" consisting of a 0.5 MW+/- solar array consisting of approximately 1,400 fixed tilt solar modules set on posts within an existing farm/field area. Proposed array will be accessed via an existing driveway off of Pine Meadow Road and completely enclosed with fencing. The proposed array requires a Special Permit under Section 3.4 and Site Plan Approval under Section 3.5 and 10.3 of the Town of Northfield Zoning By-Law.

How will the flowing be addressed: preservation of landscape, open space, circulation, surface water drainage, and compliance with other by-laws?

See attached Project Narrative

OWNER RESPONSIBILITY:

Copy of Site Plan or notification of submission where required to:

	Date Delivered
Building Inspector	_____
Board of Health	_____
Town Clerk Notification	_____
Conservation Commission (if wetlands involved)	_____

Required advertising costs, including notice to abutters
To be determined $_____

Costs for any necessary review costs
To be determined $_____

Date received by Planning Board _____

65 days from receipt _____

PLANNING BOARD RECORD

Application, Site plan (original & 4 copies) _____ Date received

Acknowledgement of receipt by Town Clerk _____ Date received

Reviews made by town officials and /or consultants if required or recommended (comments attached)

Building Inspector	_____ Date	_____ Action
Board of Health	_____ Date	_____ Action
Fire Department	_____ Date	_____ Action
Conservation Commission	_____ Date	_____ Action
Engineering Consultant	_____ Date	_____ Action
Other	_____ Date	_____ Action

Planning Board Action (meeting minutes attached) _____ Date

- ☐ Approved
- ☐ Modified & Approved
- ☐ Disapproved

Reproducible plan signed & returned to applicant _____ Date

TOWN OF NORTHFIELD

www.northfield.ma.us
69 Main Street
Northfield, Massachusetts 01360-1017

Bethany Walker, Clerk
Board of Assessors
413-498-2901 x118

ABUTTERS LIST
FOR:
612 PINE MEADOW RD

PARCEL ID: 54-A8 **ZONE:** RA **BOOK:** 5819 **PAGE** 29 **DATE:** 2/8/2010

OWNER ON RECORD: JACOB L'ETOILE & ROBIN L'ETOILE

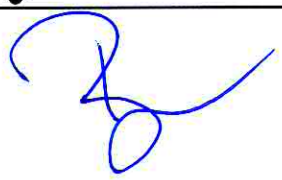
APPLICANT: REBECCA CARVALHO
PHONE: 508-758-2749
BOARD: PLANNING BOARD 300'

DATE RECEIVED: 7/7/2020
REASON: PROPOSED SOLAR ARRAY PROJECT

MAP/PARCEL ID:	LOCATION:	OWNER/MAILING ADDRESS: *ALL NORTHFIELD MA 01360 UNLESS SPECIFIED*
54-A12	578 PINE MEADOW RD	DANIEL L WHITNEY 578 PINE MEADOW RD
54-A10	REAR PINE MEADOW RD	FIRSTLIGHT MA HYDRO LLC 99 MILLERS FALLS RD
54-A9	REAR PINE MEADOW RD	FIRSTLIGHT MA HYDRO LLC 99 MILLERS FALLS RD
54-A8.1	618 PINE MEADOW RD	GARY J & JEAN A DOUGLAS 618 MILLERS FALLS RD
54-A7	622 PINE MEADOW RD	ANDREY & OLGA VDOVICHENKO 622 PINE MEADOW RD
54-A5.1	648 PINE MEADOW RD	PEGGY KOCORAS 179 MAIN ST
54-A3	654 PINE MEADOW RD	FREDERICK T & AMANDA C SKALSKI 654 PINE MEADOW RD
54-A1	REAR PINE MEADOW RD	FIRSTLIGHT MA HYDRO LLC 99 MILLERS FALLS RD
54-B2.2	PINE MEADOW RD	DANIEL L WHITNEY 576 PINE MEADOW RD

MAP/PARCEL ID:	LOCATION:	OWNER/MAILING ADDRESS:
54-B1.01	603 PINE MEADOW RD	FELIX L & SANDRA RAMOS 603 PINE MEADOW RD
54-B1.02	609 PINE MEADOW RD	JAMIE A & ANDREA L BRUNACCIONI 609 PINE MEADOW RD
54-B1.03	6 RIVERVIEW DR	JEFFREY A & LISA M LASHIER 6 RIVERVIEW DR
54-B1.04	619 PINE MEADOW RD	ROBERT H MACEWEN JR 619 PINE MEADOW RD
54-B1.05	12 RIVERVIEW DR	TIMOTHY A & MELANIE L WALDRON 12 RIVERVIEW DR
54-B1.12	9 RIVERVIEW DR	CHELSEA R DEPAULT 9 RIVERVIEW DR

CERTIFIED ABUTTERS LIST PREPARED BY: *Bethany Walker*



BLUEWAVE

OPTION AGREEMENT

THIS OPTION AGREEMENT ("Option") is entered into as of the date of signature of BWC Otter Run, LLC (the "Effective Date") by:

Jacob L'Etoile, an individual of 612 Pine Meadow Road, Northfield, MA 01360;

hereinafter referred to as the "Owner," and

BWC Otter Run, LLC, a Delaware limited liability company with offices at 111 Huntington Avenue, Suite 650, Boston, MA 02199,

hereinafter referred to as "BlueWave." Owner and BlueWave are at times collectively referred to hereinafter as the "Parties" or individually as the "Party".

W I T N E S S E T H:

WHEREAS, Owner is the owner of certain real estate located at the Site Addresses **612 Pine Meadow Road, Northfield, MA 01360**, referred to on the **Northfield Assessor's Database** as the Parcel **54 A8 1**, and being further described in the **Franklin County Registry of Deeds**, in the **Deed Book 5819 Page 29** and comprised of approximately **12.30** acres of land and improvements (the "Property" as shown in Exhibit A); and

WHEREAS, BlueWave is investigating the development of a portion of the Property comprised of approximately **4.0 – 10.0** acres of land and improvements (the "Project Site") for electricity generation (the "Project"); and

WHEREAS, BlueWave desires to obtain from the Owner an option to lease the Project Site, the location and size as generally depicted on Exhibit B; and

WHEREAS, the parties wish to reduce the terms and conditions of their agreement to writing.

NOW THEREFORE, in consideration of the promises set forth herein and other good and valuable consideration and the mutual benefits accruing to each party, the receipt and value of which is hereby acknowledged, the parties hereby covenant and agree as follows:

1. In consideration of the sum of [redacted] (the "First Option Deposit") paid by BlueWave to Owner upon the Effective Date of this Option, Owner hereby grants to BlueWave for a [redacted] ("First Option Period"), in connection with the Project and subject to the terms and conditions contained herein, the exclusive right to explore the development of any portion of the Property for electricity generation and to lease the Project Site, for the purpose of installation, maintenance and operation of a solar energy electric generating facility ("Facility") comprised of solar panels, utility wires, poles, cables, conduits and pipes, and related ground mounted equipment subject to terms and conditions of a Land Lease Agreement, the terms and conditions of which shall include, but shall not be limited to, the matters set forth in Paragraph 11 below.
2. The First Option Period shall terminate, and the First Option Deposit shall be refundable to BlueWave for any reason at the written request of BlueWave received by Owner within the first 30 days following the Effective Date of this Option. In the event Owner does not receive BlueWave's termination of the Option as above described or in the event Owner receives BlueWave's request for a Second Option Period as below described, the First Option Deposit shall become nonrefundable.

3. Prior to the expiration of the First Option Period BlueWave may extend the Option for an additional [redacted] upon written notice to Owner, given not less than two weeks prior to the expiration date, and payment by BlueWave of an additional, [redacted] ("Second Option Deposit"). Prior to the expiration of the Second Option Period BlueWave may extend the Option for an additional [redacted] (the "Third Option Period") upon written notice to Owner, given not less than two weeks prior to the expiration date, and payment by BlueWave of an additional, [redacted] ("Third Option Deposit"). Prior to the expiration of the Third Option Period BlueWave may extend the Option for an additional [redacted] (the "Fourth Option Period") upon written notice to Owner, given not less than two weeks prior to the expiration date, and payment by BlueWave of an additional, [redacted] ("Fourth Option Deposit"). Together, the First Option Deposit, Second Option Deposit, Third Option Deposit and Fourth Option Deposit are referred to herein as "Deposits". Together, the First Option Period, Second Option Period, Third Option Period and Fourth Option Period are called "Option Periods". BlueWave shall have the right to terminate the Option, as to all or any part of the Property, at any time and for any reason, with immediate effect during the Second, Third and Fourth Option Periods.
4. The Option may be further extended beyond the Option Periods by mutual agreement in writing, with time being of the essence. Should BlueWave fail to exercise the Option during the Option Periods or any extension thereof, except for matters that specifically survive, all rights and privileges granted hereunder shall be deemed completely surrendered, this Option terminated, and no additional money shall be payable by either Party to the other. The Deposits shall be deemed refundable at any point during the Option Periods in the event that BlueWave relies on a specific representation by Owner that is negligently or deliberately misleading.

5. If applicable, during the Option Period(s), Owner, at BlueWave's sole expense, agrees to undertake the necessary steps for the release of the Project Site from the provisions of M.G.L. c. 61, c. 61A and c. 61B, including service of notice of the Town of **Northfield's** right to purchase the Project Site as provided in c. 61, c. 61A and c. 61B and preparation of plans as may be necessary to delineate the Project Site for purposes of assessment, including an ANR plan and Form A for submission to the Planning Board. In the event the Town notices Owner of the Town's exercise of its right to purchase the Project Site, Owner shall promptly notify BlueWave, and the Deposits shall be returned in full to BlueWave and this Option shall be null and void nunc pro tunc, and the Owner shall withdraw its request to the Town of **Northfield** for the release of the Project Site from c. 61, c. 61A and c. 61B. BlueWave shall be responsible to pay for all rollback taxes and any other fees and taxes assessed to effectuate the release of the Project Site from the provisions of c. 61, c. 61A and c. 61B.
6. During the Option Period(s) and subject to the terms of the Option, BlueWave has the right to make all necessary governmental and utility company filings, survey, identify and flag wetlands, undertake geotechnical and environmental studies and investigations, and design the Facility at the Project Site. BlueWave agrees to keep Owner reasonably informed, in a timely manner and in writing, of all material events and activities associated with BlueWave's efforts, including the efforts necessary to secure all permits, negotiate agreements with third parties to purchase the output of the generating facility, file an interconnection application, survey, design, undertake subsurface geotechnical and environmental testing, financing activities and otherwise to advance the approvals necessary to proceed with the development, all at no monetary cost to Owner ("Due Diligence"). Owner shall provide BlueWave or its agents with information about the Property and in all other ways cooperate to the extent commercially reasonable in BlueWave's Due Diligence activities at no monetary cost to Owner, including the provision of access to the Property to BlueWave or its agents with twenty-four (24) hour advance notice. BlueWave agrees not to submit any applications or plans to any authority

having jurisdiction over land-use and/or the issuance of permits without first obtaining the approval of same by Owner, which approval Owner agrees not to unreasonably withhold or delay. The final size and configuration of the Project Site, including access and utility easements, shall be approved in advance by Owner in its reasonable discretion.

7. If BlueWave does not exercise its Option as herein provided, it will immediately return all disturbed areas of the Property and Project Site to their former condition. This provision shall survive expiration or termination of this Option.
8. All notices required or permitted to be given under this Option shall be given in writing to the addresses above, by certified mail, return receipt requested or by overnight mail via a qualified commercial courier. Notice is effective on the date posted.
9. BlueWave shall provide notice of Commencement of Construction to Owner adherent to the dates indicated in Table 1. Owner may withdraw requirement of notice at their discretion and at no risk or incurred cost to BlueWave. In the event BlueWave is unable to provide enough notice and Commencement of Construction results in a crop loss for Owner or lessee of Owner, BlueWave shall reimburse the Owner or lessee of Owner at the greater of either the current market value or the contracted value of the lost crop. The Owner and BlueWave shall work in good faith to maintain communication as to adhere to the requirement of notice schedule.

Table 1

Date of Construction	Months' Notice
October 1 – March 31	1
April 1 – July 31	5
August 1 – September 30	3

10. The parties acknowledge this agreement grants BlueWave an irrevocable and exclusive option to lease the Property. In the event BlueWave exercises its option to lease the Property as above provided, the Owner shall be required to enter into a Lease Agreement, the terms and conditions of which shall include, but shall not be limited to, the matters set forth in Paragraph 11 which shall remain non-negotiable whereas all additional terms of the Lease not specifically identified in Paragraph 11 shall be negotiated in good faith. Notwithstanding any condition to the contrary that may be contained in this Agreement, no clause shall be interpreted or deemed to be interpreted to render the Option

conditional. Once exercised by BlueWave in accord with the terms of this Option Agreement, the parties shall execute the lease that includes, at a minimum all the terms set forth in Paragraph 11. The parties shall proceed in good faith to enter into a mutually agreeable Land Lease Agreement [redacted] from the Effective Date of this Option, failing which, except for matters that specifically survive, all rights and privileges granted and obligations required under this Option shall be deemed completely surrendered and each party releases the other from any and all further obligations hereunder.

11. The Land Lease Agreement shall include the following terms and conditions:
    a. Initial term shall be for twenty (20) years ("Initial Term") commencing on the date of Commercial Operation as defined below. Prior to the end of the Initial Term, BlueWave shall have the right, in its sole discretion, to elect to extend the Initial Term for up to three (3) five (5) year extensions (each such extension referred to as a "Renewal Terms"). BlueWave shall provide Owner written notice of its election to exercise the Renewal Term option on or before the commencement of the final year of the Initial Term, or the end of the then-current Renewal Term, whichever is later.
    b. Commencing upon the earlier of the date that BlueWave commences construction of the Project or installation of any component of the Facility ("Construction Phase") [redacted], rent is payable to Owner, [redacted] The Lease Area shall include any areas of the Property granted by Owner to BlueWave in the form of an easement, including but not limited to a shading easement, access easement or temporary construction lay down area easement for the benefit of the Facility.
    c. Commencing on the date that is the earlier of the date of commencement of Commercial Operation or one (1) year from the date of commencement of the

Construction Phase, the rent is payable to Owner [redacted]

d. The parties agree to execute a Commencement Agreement to memorialize the commencement dates of the Construction Phase and Commercial Operation.

e. The parties recognize that one Megawatt of installed capacity will require approximately four to six acres of useable land on the Property. The parties recognize they have a common interest in maximizing the amount of solar installed on the property and will work cooperatively over the period of this Option to make an informed estimate of the potential commercially viable installed capacity acceptable to Owner and BlueWave. The final size of the project shall be subject to certain criteria, including the available capacity on the local feeder, local and regional land-use regulations, engineering considerations related to the site and project design, state regulations pertaining to the sizing and registration of renewable energy projects, and the availability of financing at acceptable terms, and in all instances BlueWave will make every effort to maximize the amount of installed capacity on the Property. Based on these criteria, the final project size shall be described and included in the terms of the Lease.

f. [redacted]

g. BlueWave shall have the responsibility to pay any personal and real property tax, assessments, fines, penalties charges owed on the Project Site which result from and are associated with the installation, maintenance, and operation of the solar photovoltaic system. Owner shall remain responsible for paying any underlying real estate tax.

h. The Lease may contain other terms and conditions if agreed upon by both parties and which are mutually satisfactory to both parties.

i. The Lease shall provide that BlueWave shall require all contractors who come on the Project Site to maintain commercial general liability insurance and statutory workers' compensation insurance. All construction, alterations and other work performed by BlueWave, its agents and subcontractors at the Project Site and Property are to be performed in a workmanlike manner and done so that no liens for the benefit of contractors, materials providers or trades providing labor or materials to the project are filed against the Project Site or Property. Owner shall be listed as additionally insured on all contractors' insurance policies. Further, the Lease will provide that BlueWave indemnifies, holds the Owner harmless and releases the Owner from any and all liability of BlueWave's actions. BlueWave and Owner shall provide mutual provisions regarding release of liability and indemnification regarding the activities conducted by each of them during the Lease term.

j. Event of Default shall be constituted under the Lease in the event that either Party breaches any material covenant, material term of the Lease, becomes bankrupt, or in the event the Lessee fails to pay Lessor any amount owed under the Lease within thirty (30) days of notice by the Lessor.

12. During the Option Period, BlueWave shall require all contractors who come on the Project Site to maintain commercial general liability insurance and statutory workers' compensation insurance. All construction, alterations and other work performed by BlueWave, its agents and subcontractors at the Project Site and Property are to be performed in a workmanlike manner and done so that no liens for the benefit of contractors, materials providers or trades providing labor or materials to the project are filed against the Project Site or Property. Owner shall be listed as additionally insured on all contractors' insurance policies. Further, BlueWave hereby indemnifies, holds the Owner harmless and releases the Owner from any and all liability of BlueWave's actions during the Option Periods and Construction. BlueWave and Owner shall be mutually insulated from the actions of the other during Commercial Operation.

13. The monetary terms of this Option will be held in strict confidence by the Owner and not shared with any third parties including other developers, investors or brokers unless

Owner receives authorization from BlueWave, except for where it shall be required by law, or with an agent of the Owner as required to conduct reasonable business including attorneys, financial advisors, accountants, and lenders of the Properties.

14. This Option shall be binding upon the parties hereto and the respective heirs, successors and assigns of each. Without limiting the foregoing, provided that BlueWave provides Owner with two weeks advance written notice, and provided that Owner consents, this agreement may be assigned to BlueWave's affiliates, subsidiaries and to qualified development and investment partners. Owner's consent to such assignment shall be made to BlueWave within two weeks and shall not be unreasonably conditioned, withheld or delayed.
15. Owner owns fee simple title to the Land and has good, merchantable and insurable title to the Property, free and clear of all liens, encumbrances, claims, options, leases, rights of first refusals, or judgements, except as set forth in Exhibit C.
16. Exhibit C includes information regarding Owner's outstanding mortgages on the Property. The Parties acknowledge that Exhibit C is a disclosure of encumbrances and does not modify the parcels subject to this agreement. This Agreement is contingent upon Owner's obtaining consent to enter into this Agreement from any mortgage holder on the Property.
17. The person executing this Option on behalf of the Owner has the full power and authority to bind Owner to the obligations of Owner set forth herein. The entry into and performance of Owner's obligations under this Option will not violate or result in a breach of any contract, agreement or any law, administrative regulation, or court decree by which Owner or the Property is bound. If Owner is not a natural person, Owner is duly formed and validly existing entity and is qualified to do business in and in good standing under the laws of the State of Massachusetts.
18. Notwithstanding anything appearing to the contrary in this Agreement, no direct or indirect partner, member or shareholder of either party (or any manager, director, officer, principal, trustee, employee or agent of any such direct or indirect partner, member or shareholder), disclosed or undisclosed, shall be personally liable for any debts, liabilities or obligations of the party, or for any claims against the party, arising out of or resulting

from this Agreement. Any such debts, obligations, liabilities or claims shall be satisfied solely out of the assets of the obligated party. In no event shall any personal judgment be sought or obtained against any partner, member, manager, shareholder, director, officer, principal, employee, agent, or owner of either party, direct or indirect, disclosed or undisclosed.

BLUE WAVE

Executed as an instrument under seal on 2/27/19, 2019.

Jacob L'Etoile

By: _____

Name: Jacob L'Etoile

COMMONWEALTH OF MASSACHUSETTS
COUNTY OF Franklin, ss.

On this 27 day of February, 2019, before me, the undersigned notary public, personally appeared Jacob L'Etoile, proved to me through satisfactory evidence of identification, which was MA Dr. Lic, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that s/he signed it voluntarily for its stated purpose on behalf of himself/herself individually.

_____
Printed Name: Shawn F. Streeter
My Commission Expires: March 27, 2020

Executed as an instrument under seal on 3/6, 2019.

BWC Otter Run, LLC

By: BlueWave MA, LLC
Its: Sole Member

By: BWC Holdings, LLC
Its: Sole Member

By: _____

Name: Jonathan M. Mancini

Title: Sr. Vice President

COMMONWEALTH OF MASSACHUSETTS
COUNTY OF SUFFOLK, ss.

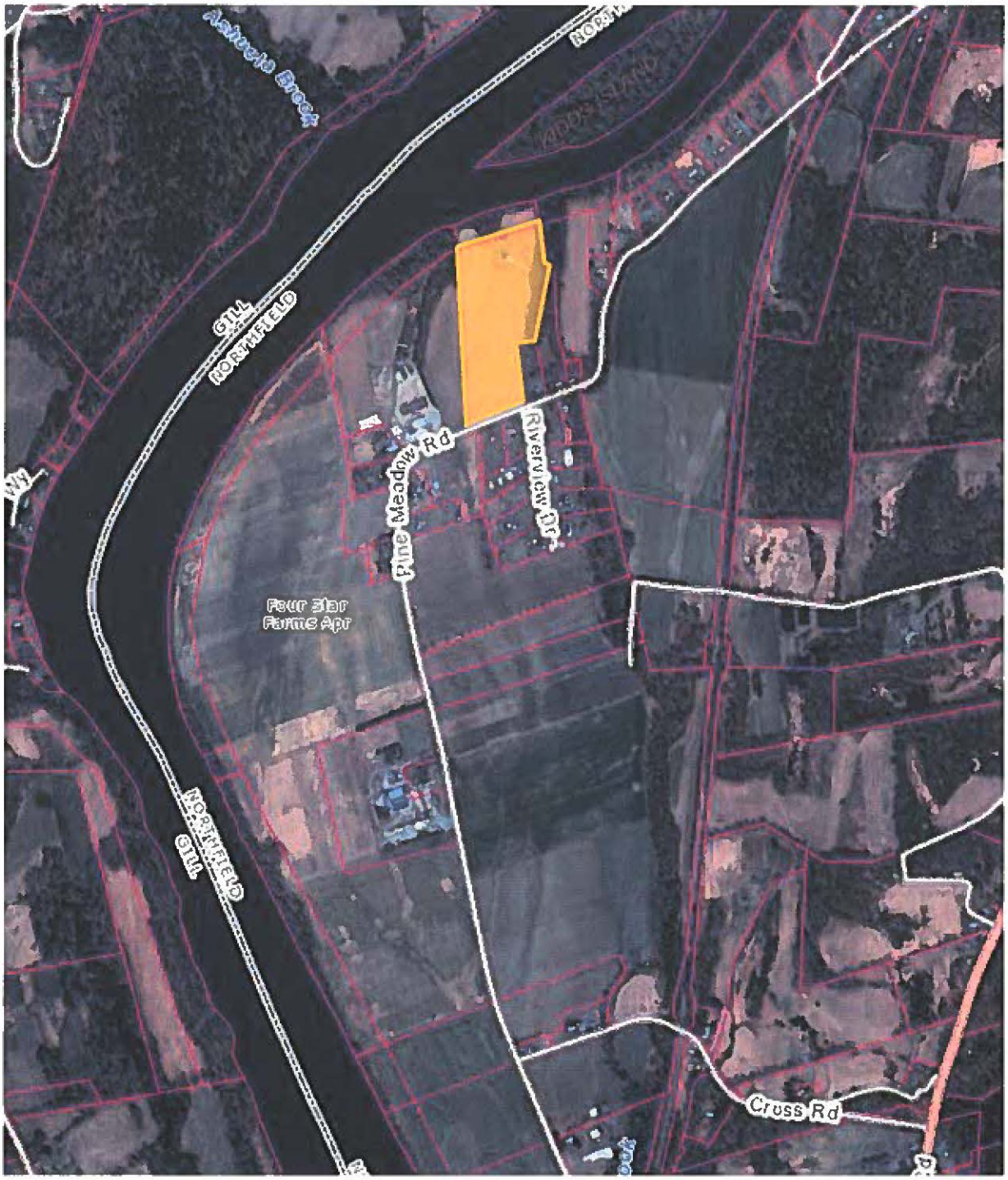
On this 6th day of MARCH, 2019, before me, the undersigned notary public, personally appeared JONATHAN MANCINI, proved to me through satisfactory evidence of identification, which was DRIVER'S LICENSE, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that s/he signed it voluntarily for its stated purpose on behalf of .

_____

Printed Name: NASHELSKEY ULYSSE
My Commission Expires: 12/23/2023

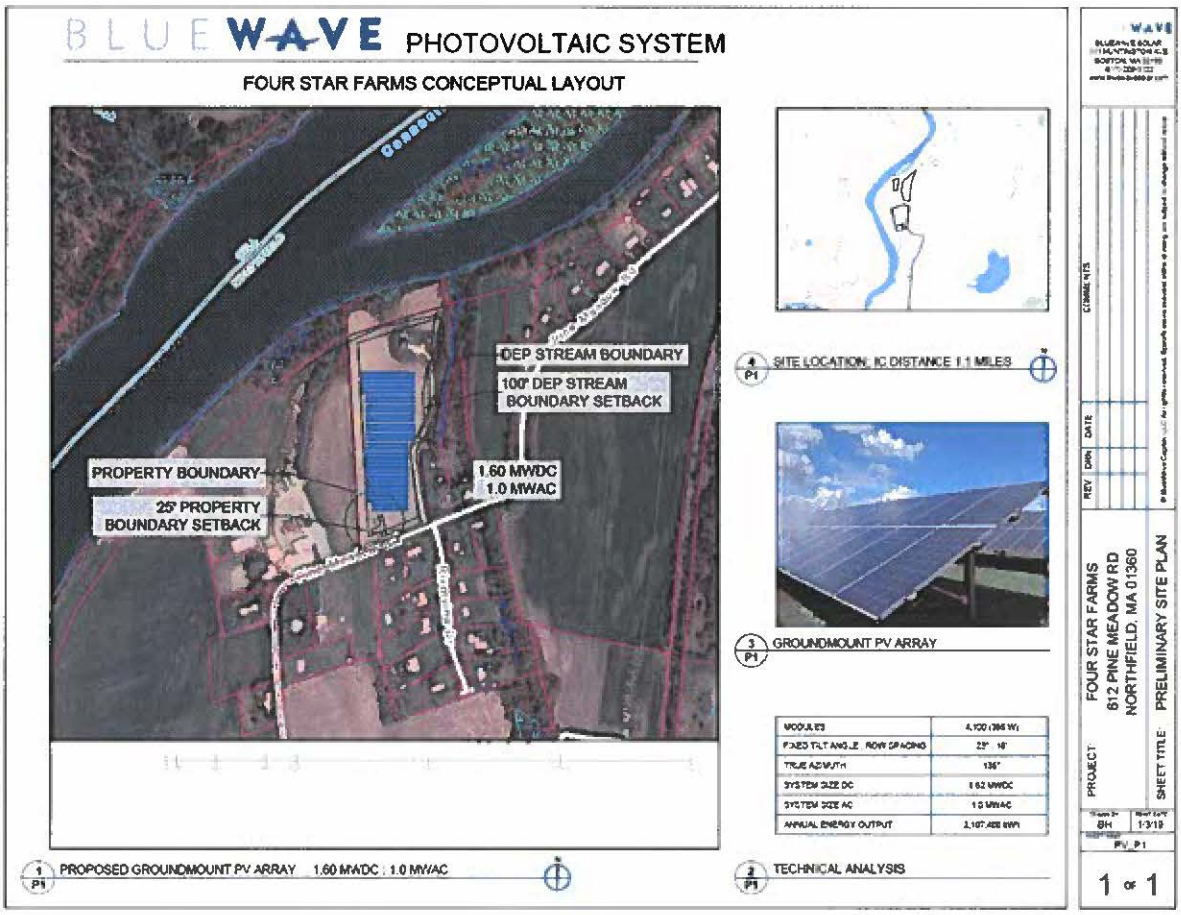
NASHELSKEY ULYSSE
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
December 23, 2022

EXHIBIT A: The Property



BLUE WAVE

EXHIBIT B: The Project Site
(note: exact usable acreage of the Project Site is to be determined)



2011 00009820
Bk: 6070 Pg: 62 Franklin County
Page: 1 of 18 09/16/2011 01:15 PM

After Recording Return To:

Greenfield Co-operative Bank
63 Federal Street, P.O. Box 1345
Greenfield MA, 01302

Property Address:

612 PINE MEADOW ROAD
Northfield, MA 01360

[Space Above This Line For Recording Data]

MORTGAGE

DEFINITIONS

Words used in multiple sections of this document are defined below and other words are defined in Sections 3, 11, 13, 18, 20, and 21. Certain rules regarding the usage of words used in this document are also provided in Section 16.

(A) **"Security Instrument"** means this document, which is dated **September 15, 2011**, together with all Riders to this document.

(B) **"Borrower"** is **JACOB A. L'ETOILE and ROBIN C. L'ETOILE**

Borrower is the mortgagor under this Security Instrument.

(C) **"Lender"** is **Greenfield Co-operative Bank**.
Lender is a **A CO-OPERATIVE BANK** organized and existing under the laws of **STATE OF MASSACHUSETTS**. Lender's address is **63 FEDERAL STREET, GREENFIELD, MA 01301**. Lender is the mortgagee under this Security Instrument.

(C-1) **"Mortgage Broker"** is . Mortgage Broker's post office address is

and Mortgage Broker's license number is .

Title # 4436-B
Valley Title Company
413-774-6369

(C-2) "Mortgage Loan Originator" is **Melissa Tetreault** . Mortgage Loan Originator's post office address is **P.O. Box 1345 Greenfield, MA 01302**

and Mortgage Loan Originator's license number is **436671** .

(D) "Note" means the promissory note signed by Borrower and dated **September 15, 2011** . The Note states that Borrower owes Lender **Three Hundred Thousand Dollars And No Cents** Dollars (U.S. $ **300,000.00**) plus interest. Borrower has promised to pay this debt in regular Periodic Payments and to pay the debt in full not later than **October 1, 2042** .

(E) "Property" means the property that is described below under the heading "Transfer of Rights in the Property."

(F) "Loan" means the debt evidenced by the Note, plus interest, any prepayment charges and late charges due under the Note, and all sums due under this Security Instrument, plus interest.

(G) "Riders" means all Riders to this Security Instrument that are executed by Borrower. The following Riders are to be executed by Borrower [check box as applicable]:

☐ Adjustable Rate Rider	☐ Condominium Rider	☐ Second Home Rider
☐ Balloon Rider	☐ Planned Unit Development Rider	☐ VA Rider
☐ 1-4 Family Rider	☐ Biweekly Payment Rider	☒ Other(s) [specify] **CONSTRUCTION**

(H) "Applicable Law" means all controlling applicable federal, state and local statutes, regulations, ordinances and administrative rules and orders (that have the effect of law) as well as all applicable final, non-appealable judicial opinions.

(I) "Community Association Dues, Fees, and Assessments" means all dues, fees, assessments and other charges that are imposed on Borrower or the Property by a condominium association, homeowners association or similar organization.

(J) "Electronic Funds Transfer" means any transfer of funds, other than a transaction originated by check, draft, or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument, computer, or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account. Such term includes, but is not limited to, point-of-sale transfers, automated teller machine transactions, transfers initiated by telephone, wire transfers, and automated clearinghouse transfers.

(K) "Escrow Items" means those items that are described in Section 3.

(L) "Miscellaneous Proceeds" means any compensation, settlement, award of damages, or proceeds paid by any third party (other than insurance proceeds paid under the coverages described in Section 5) for: (i) damage to, or destruction of, the Property; (ii) condemnation or other taking of all or any part of the Property; (iii) conveyance in lieu of condemnation; or (iv) misrepresentations of, or omissions as to, the value and/or condition of the Property.

(M) "Mortgage Insurance" means insurance protecting Lender against the nonpayment of, or default on, the Loan.

(N) "Periodic Payment" means the regularly scheduled amount due for (i) principal and interest under the Note, plus (ii) any amounts under Section 3 of this Security Instrument.

(O) "RESPA" means the Real Estate Settlement Procedures Act (12 U.S.C. § 2601 et seq.) and its implementing regulation, Regulation X (24 C.F.R. Part 3500), as they might be amended from time to time, or any additional or successor legislation or regulation that governs the same subject matter. As used in this Security Instrument, "RESPA" refers to all requirements and restrictions that are imposed in regard to a "federally related mortgage loan" even if the Loan does not qualify as a "federally related mortgage loan" under RESPA.

(P) "Successor in Interest of Borrower" means any party that has taken title to the Property, whether or not that party has assumed Borrower's obligations under the Note and/or this Security Instrument.

TRANSFER OF RIGHTS IN THE PROPERTY

This Security Instrument secures to Lender: (i) the repayment of the Loan, and all renewals, extensions and modifications of the Note; and (ii) the performance of Borrower's covenants and agreements under this Security Instrument and the Note. For this purpose, Borrower does hereby mortgage, grant and convey to Lender and Lender's successors and assigns, with power of sale, the following described property located in the **COUNTY** of **Franklin** :
[Type of Recording Jurisdiction] [Name of Recording Jurisdiction]

SEE SCHEDULE ATTACHED HERETO AND MADE A PART HEREOF

which currently has the address of **612 PINE MEADOW ROAD,**
[Street]
Northfield, , Massachusetts **01360** ("Property Address"):
[City] [Zip Code]

TOGETHER WITH all the improvements now or hereafter erected on the property, and all easements, appurtenances, and fixtures now or hereafter a part of the property. All replacements and additions shall also be covered by this Security Instrument. All of the foregoing is referred to in this Security Instrument as the "Property."

BORROWER COVENANTS that Borrower is lawfully seised of the estate hereby conveyed and has the right to mortgage, grant and convey the Property and that the Property is unencumbered, except for encumbrances

of record. Borrower warrants and will defend generally the title to the Property against all claims and demands, subject to any encumbrances of record.

THIS SECURITY INSTRUMENT combines uniform covenants for national use and non-uniform covenants with limited variations by jurisdiction to constitute a uniform security instrument covering real property.

UNIFORM COVENANTS. Borrower and Lender covenant and agree as follows:

1. Payment of Principal, Interest, Escrow Items, Prepayment Charges, and Late Charges. Borrower shall pay when due the principal of, and interest on, the debt evidenced by the Note and any prepayment charges and late charges due under the Note. Borrower shall also pay funds for Escrow Items pursuant to Section 3. Payments due under the Note and this Security Instrument shall be made in U.S. currency. However, if any check or other instrument received by Lender as payment under the Note or this Security Instrument is returned to Lender unpaid, Lender may require that any or all subsequent payments due under the Note and this Security Instrument be made in one or more of the following forms, as selected by Lender: (a) cash; (b) money order; (c) certified check, bank check, treasurer's check or cashier's check, provided any such check is drawn upon an institution whose deposits are insured by a federal agency, instrumentality, or entity; or (d) Electronic Funds Transfer.

Payments are deemed received by Lender when received at the location designated in the Note or at such other location as may be designated by Lender in accordance with the notice provisions in Section 15. Lender may return any payment or partial payment if the payment or partial payments are insufficient to bring the Loan current. Lender may accept any payment or partial payment insufficient to bring the Loan current, without waiver of any rights hereunder or prejudice to its rights to refuse such payment or partial payments in the future, but Lender is not obligated to apply such payments at the time such payments are accepted. If each Periodic Payment is applied as of its scheduled due date, then Lender need not pay interest on unapplied funds. Lender may hold such unapplied funds until Borrower makes payment to bring the Loan current. If Borrower does not do so within a reasonable period of time, Lender shall either apply such funds or return them to Borrower. If not applied earlier, such funds will be applied to the outstanding principal balance under the Note immediately prior to foreclosure. No offset or claim which Borrower might have now or in the future against Lender shall relieve Borrower from making payments due under the Note and this Security Instrument or performing the covenants and agreements secured by this Security Instrument.

2. Application of Payments or Proceeds. Except as otherwise described in this Section 2, all payments accepted and applied by Lender shall be applied in the following order of priority: (a) interest due under the Note; (b) principal due under the Note; (c) amounts due under Section 3. Such payments shall be applied to each Periodic Payment in the order in which it became due. Any remaining amounts shall be applied first to late charges, second to any other amounts due under this Security Instrument, and then to reduce the principal balance of the Note.

If Lender receives a payment from Borrower for a delinquent Periodic Payment which includes a sufficient amount to pay any late charge due, the payment may be applied to the delinquent payment and the late charge. If more than one Periodic Payment is outstanding, Lender may apply any payment received from Borrower to the repayment of the Periodic Payments if, and to the extent that, each payment can be paid in full. To the extent that any excess exists after the payment is applied to the full payment of one or more Periodic Payments, such excess may be applied to any late charges due. Voluntary prepayments shall be applied first to any prepayment charges and then as described in the Note.

Any application of payments, insurance proceeds, or Miscellaneous Proceeds to principal due under the Note shall not extend or postpone the due date, or change the amount, of the Periodic Payments.

3. Funds for Escrow Items. Borrower shall pay to Lender on the day Periodic Payments are due under the Note, until the Note is paid in full, a sum (the "Funds") to provide for payment of amounts due for: (a) taxes and assessments and other items which can attain priority over this Security Instrument as a lien or encumbrance on the Property; (b) leasehold payments or ground rents on the Property, if any; (c) premiums for any and all insurance required by Lender under Section 5; and (d) Mortgage Insurance premiums, if any, or any sums payable

by Borrower to Lender in lieu of the payment of Mortgage Insurance premiums in accordance with the provisions of Section 10. These items are called "Escrow Items." At origination or at any time during the term of the Loan, Lender may require that Community Association Dues, Fees, and Assessments, if any, be escrowed by Borrower, and such dues, fees and assessments shall be an Escrow Item. Borrower shall promptly furnish to Lender all notices of amounts to be paid under this Section. Borrower shall pay Lender the Funds for Escrow Items unless Lender waives Borrower's obligation to pay the Funds for any or all Escrow Items. Lender may waive Borrower's obligation to pay to Lender Funds for any or all Escrow Items at any time. Any such waiver may only be in writing. In the event of such waiver, Borrower shall pay directly, when and where payable, the amounts due for any Escrow Items for which payment of Funds has been waived by Lender and, if Lender requires, shall furnish to Lender receipts evidencing such payment within such time period as Lender may require. Borrower's obligation to make such payments and to provide receipts shall for all purposes be deemed to be a covenant and agreement contained in this Security Instrument, as the phrase "covenant and agreement" is used in Section 9. If Borrower is obligated to pay Escrow Items directly, pursuant to a waiver, and Borrower fails to pay the amount due for an Escrow Item, Lender may exercise its rights under Section 9 and pay such amount and Borrower shall then be obligated under Section 9 to repay to Lender any such amount. Lender may revoke the waiver as to any or all Escrow Items at any time by a notice given in accordance with Section 15 and, upon such revocation, Borrower shall pay to Lender all Funds, and in such amounts, that are then required under this Section 3.

Lender may, at any time, collect and hold Funds in an amount (a) sufficient to permit Lender to apply the Funds at the time specified under RESPA, and (b) not to exceed the maximum amount a lender can require under RESPA. Lender shall estimate the amount of Funds due on the basis of current data and reasonable estimates of expenditures of future Escrow Items or otherwise in accordance with Applicable Law.

The Funds shall be held in an institution whose deposits are insured by a federal agency, instrumentality, or entity (including Lender, if Lender is an institution whose deposits are so insured) or in any Federal Home Loan Bank. Lender shall apply the Funds to pay the Escrow Items no later than the time specified under RESPA. Lender shall not charge Borrower for holding and applying the Funds, annually analyzing the escrow account, or verifying the Escrow Items, unless Lender pays Borrower interest on the Funds and Applicable Law permits Lender to make such a charge. Unless an agreement is made in writing or Applicable Law requires interest to be paid on the Funds, Lender shall not be required to pay Borrower any interest or earnings on the Funds. Borrower and Lender can agree in writing, however, that interest shall be paid on the Funds. Lender shall give to Borrower, without charge, an annual accounting of the Funds as required by RESPA.

If there is a surplus of Funds held in escrow, as defined under RESPA, Lender shall account to Borrower for the excess funds in accordance with RESPA. If there is a shortage of Funds held in escrow, as defined under RESPA, Lender shall notify Borrower as required by RESPA, and Borrower shall pay to Lender the amount necessary to make up the shortage in accordance with RESPA, but in no more than 12 monthly payments. If there is a deficiency of Funds held in escrow, as defined under RESPA, Lender shall notify Borrower as required by RESPA, and Borrower shall pay to Lender the amount necessary to make up the deficiency in accordance with RESPA, but in no more than 12 monthly payments.

Upon payment in full of all sums secured by this Security Instrument, Lender shall promptly refund to Borrower any Funds held by Lender.

4. Charges; Liens. Borrower shall pay all taxes, assessments, charges, fines, and impositions attributable to the Property which can attain priority over this Security Instrument, leasehold payments or ground rents on the Property, if any, and Community Association Dues, Fees, and Assessments, if any. To the extent that these items are Escrow Items, Borrower shall pay them in the manner provided in Section 3.

Borrower shall promptly discharge any lien which has priority over this Security Instrument unless Borrower: (a) agrees in writing to the payment of the obligation secured by the lien in a manner acceptable to Lender, but only so long as Borrower is performing such agreement; (b) contests the lien in good faith by, or defends against enforcement of the lien in, legal proceedings which in Lender's opinion operate to prevent the enforcement of the lien while those proceedings are pending, but only until such proceedings are concluded; or (c) secures from the

holder of the lien an agreement satisfactory to Lender subordinating the lien to this Security Instrument. If Lender determines that any part of the Property is subject to a lien which can attain priority over this Security Instrument, Lender may give Borrower a notice identifying the lien. Within 10 days of the date on which that notice is given, Borrower shall satisfy the lien or take one or more of the actions set forth above in this Section 4.

Lender may require Borrower to pay a one-time charge for a real estate tax verification and/or reporting service used by Lender in connection with this Loan.

5. Property Insurance. Borrower shall keep the improvements now existing or hereafter erected on the Property insured against loss by fire, hazards included within the term "extended coverage," and any other hazards including, but not limited to, earthquakes and floods, for which Lender requires insurance. This insurance shall be maintained in the amounts (including deductible levels) and for the periods that Lender requires. What Lender requires pursuant to the preceding sentences can change during the term of the Loan. The insurance carrier providing the insurance shall be chosen by Borrower subject to Lender's right to disapprove Borrower's choice, which right shall not be exercised unreasonably. Lender may require Borrower to pay, in connection with this Loan, either: (a) a one-time charge for flood zone determination, certification and tracking services; or (b) a one-time charge for flood zone determination and certification services and subsequent charges each time remappings or similar changes occur which reasonably might affect such determination or certification. Borrower shall also be responsible for the payment of any fees imposed by the Federal Emergency Management Agency in connection with the review of any flood zone determination resulting from an objection by Borrower.

If Borrower fails to maintain any of the coverages described above, Lender may obtain insurance coverage, at Lender's option and Borrower's expense. Lender is under no obligation to purchase any particular type or amount of coverage. Therefore, such coverage shall cover Lender, but might or might not protect Borrower, Borrower's equity in the Property, or the contents of the Property, against any risk, hazard or liability and might provide greater or lesser coverage than was previously in effect. Borrower acknowledges that the cost of the insurance coverage so obtained might significantly exceed the cost of insurance that Borrower could have obtained. Any amounts disbursed by Lender under this Section 5 shall become additional debt of Borrower secured by this Security Instrument. These amounts shall bear interest at the Note rate from the date of disbursement and shall be payable, with such interest, upon notice from Lender to Borrower requesting payment.

All insurance policies required by Lender and renewals of such policies shall be subject to Lender's right to disapprove such policies, shall include a standard mortgage clause, and shall name Lender as mortgagee and/or as an additional loss payee. Lender shall have the right to hold the policies and renewal certificates. If Lender requires, Borrower shall promptly give to Lender all receipts of paid premiums and renewal notices. If Borrower obtains any form of insurance coverage, not otherwise required by Lender, for damage to, or destruction of, the Property, such policy shall include a standard mortgage clause and shall name Lender as mortgagee and/or as an additional loss payee.

In the event of loss, Borrower shall give prompt notice to the insurance carrier and Lender. Lender may make proof of loss if not made promptly by Borrower. Unless Lender and Borrower otherwise agree in writing, any insurance proceeds, whether or not the underlying insurance was required by Lender, shall be applied to restoration or repair of the Property, if the restoration or repair is economically feasible and Lender's security is not lessened. During such repair and restoration period, Lender shall have the right to hold such insurance proceeds until Lender has had an opportunity to inspect such Property to ensure the work has been completed to Lender's satisfaction, provided that such inspection shall be undertaken promptly. Lender may disburse proceeds for the repairs and restoration in a single payment or in a series of progress payments as the work is completed. Unless an agreement is made in writing or Applicable Law requires interest to be paid on such insurance proceeds, Lender shall not be required to pay Borrower any interest or earnings on such proceeds. Fees for public adjusters, or other third parties, retained by Borrower shall not be paid out of the insurance proceeds and shall be the sole obligation of Borrower. If the restoration or repair is not economically feasible or Lender's security would be lessened, the insurance proceeds shall be applied to the sums secured by this Security Instrument, whether or not then due, with the excess, if any, paid to Borrower. Such insurance proceeds shall be applied in the order provided for in Section 2.

If Borrower abandons the Property, Lender may file, negotiate and settle any available insurance claim and related matters. If Borrower does not respond within 30 days to a notice from Lender that the insurance carrier has offered to settle a claim, then Lender may negotiate and settle the claim. The 30-day period will begin when the notice is given. In either event, or if Lender acquires the Property under Section 22 or otherwise, Borrower hereby assigns to Lender (a) Borrower's rights to any insurance proceeds in an amount not to exceed the amounts unpaid under the Note or this Security Instrument, and (b) any other of Borrower's rights (other than the right to any refund of unearned premiums paid by Borrower) under all insurance policies covering the Property, insofar as such rights are applicable to the coverage of the Property. Lender may use the insurance proceeds either to repair or restore the Property or to pay amounts unpaid under the Note or this Security Instrument, whether or not then due.

6. **Occupancy.** Borrower shall occupy, establish, and use the Property as Borrower's principal residence within 60 days after the execution of this Security Instrument and shall continue to occupy the Property as Borrower's principal residence for at least one year after the date of occupancy, unless Lender otherwise agrees in writing, which consent shall not be unreasonably withheld, or unless extenuating circumstances exist which are beyond Borrower's control.

7. **Preservation, Maintenance and Protection of the Property; Inspections.** Borrower shall not destroy, damage or impair the Property, allow the Property to deteriorate or commit waste on the Property. Whether or not Borrower is residing in the Property, Borrower shall maintain the Property in order to prevent the Property from deteriorating or decreasing in value due to its condition. Unless it is determined pursuant to Section 5 that repair or restoration is not economically feasible, Borrower shall promptly repair the Property if damaged to avoid further deterioration or damage. If insurance or condemnation proceeds are paid in connection with damage to, or the taking of, the Property, Borrower shall be responsible for repairing or restoring the Property only if Lender has released proceeds for such purposes. Lender may disburse proceeds for the repairs and restoration in a single payment or in a series of progress payments as the work is completed. If the insurance or condemnation proceeds are not sufficient to repair or restore the Property, Borrower is not relieved of Borrower's obligation for the completion of such repair or restoration.

Lender or its agent may make reasonable entries upon and inspections of the Property. If it has reasonable cause, Lender may inspect the interior of the improvements on the Property. Lender shall give Borrower notice at the time of or prior to such an interior inspection specifying such reasonable cause.

8. **Borrower's Loan Application.** Borrower shall be in default if, during the Loan application process, Borrower or any persons or entities acting at the direction of Borrower or with Borrower's knowledge or consent gave materially false, misleading, or inaccurate information or statements to Lender (or failed to provide Lender with material information) in connection with the Loan. Material representations include, but are not limited to, representations concerning Borrower's occupancy of the Property as Borrower's principal residence.

9. **Protection of Lender's Interest in the Property and Rights Under this Security Instrument.** If (a) Borrower fails to perform the covenants and agreements contained in this Security Instrument, (b) there is a legal proceeding that might significantly affect Lender's interest in the Property and/or rights under this Security Instrument (such as a proceeding in bankruptcy, probate, for condemnation or forfeiture, for enforcement of a lien which may attain priority over this Security Instrument or to enforce laws or regulations), or (c) Borrower has abandoned the Property, then Lender may do and pay for whatever is reasonable or appropriate to protect Lender's interest in the Property and rights under this Security Instrument, including protecting and/or assessing the value of the Property, and securing and/or repairing the Property. Lender's actions can include, but are not limited to: (a) paying any sums secured by a lien which has priority over this Security Instrument; (b) appearing in court; and (c) paying reasonable attorneys' fees to protect its interest in the Property and/or rights under this Security Instrument, including its secured position in a bankruptcy proceeding. Securing the Property includes, but is not limited to, entering the Property to make repairs, change locks, replace or board up doors and windows, drain water from pipes, eliminate building or other code violations or dangerous conditions, and have utilities turned on or off. Although Lender may take action under this Section 9, Lender does not have to

do so and is not under any duty or obligation to do so. It is agreed that Lender incurs no liability for not taking any or all actions authorized under this Section 9.

Any amounts disbursed by Lender under this Section 9 shall become additional debt of Borrower secured by this Security Instrument. These amounts shall bear interest at the Note rate from the date of disbursement and shall be payable, with such interest, upon notice from Lender to Borrower requesting payment.

If this Security Instrument is on a leasehold, Borrower shall comply with all the provisions of the lease. If Borrower acquires fee title to the Property, the leasehold and the fee title shall not merge unless Lender agrees to the merger in writing.

10. Mortgage Insurance. If Lender required Mortgage Insurance as a condition of making the Loan, Borrower shall pay the premiums required to maintain the Mortgage Insurance in effect. If, for any reason, the Mortgage Insurance coverage required by Lender ceases to be available from the mortgage insurer that previously provided such insurance and Borrower was required to make separately designated payments toward the premiums for Mortgage Insurance, Borrower shall pay the premiums required to obtain coverage substantially equivalent to the Mortgage Insurance previously in effect, at a cost substantially equivalent to the cost to Borrower of the Mortgage Insurance previously in effect, from an alternate mortgage insurer selected by Lender. If substantially equivalent Mortgage Insurance coverage is not available, Borrower shall continue to pay to Lender the amount of the separately designated payments that were due when the insurance coverage ceased to be in effect. Lender will accept, use and retain these payments as a non-refundable loss reserve in lieu of Mortgage Insurance. Such loss reserve shall be non-refundable, notwithstanding the fact that the Loan is ultimately paid in full, and Lender shall not be required to pay Borrower any interest or earnings on such loss reserve. Lender can no longer require loss reserve payments if Mortgage Insurance coverage (in the amount and for the period that Lender requires) provided by an insurer selected by Lender again becomes available, is obtained, and Lender requires separately designated payments toward the premiums for Mortgage Insurance. If Lender required Mortgage Insurance as a condition of making the Loan and Borrower was required to make separately designated payments toward the premiums for Mortgage Insurance, Borrower shall pay the premiums required to maintain Mortgage Insurance in effect, or to provide a non-refundable loss reserve, until Lender's requirement for Mortgage Insurance ends in accordance with any written agreement between Borrower and Lender providing for such termination or until termination is required by Applicable Law. Nothing in this Section 10 affects Borrower's obligation to pay interest at the rate provided in the Note.

Mortgage Insurance reimburses Lender (or any entity that purchases the Note) for certain losses it may incur if Borrower does not repay the Loan as agreed. Borrower is not a party to the Mortgage Insurance.

Mortgage insurers evaluate their total risk on all such insurance in force from time to time, and may enter into agreements with other parties that share or modify their risk, or reduce losses. These agreements are on terms and conditions that are satisfactory to the mortgage insurer and the other party (or parties) to these agreements. These agreements may require the mortgage insurer to make payments using any source of funds that the mortgage insurer may have available (which may include funds obtained from Mortgage Insurance premiums).

As a result of these agreements, Lender, any purchaser of the Note, another insurer, any reinsurer, any other entity, or any affiliate of any of the foregoing, may receive (directly or indirectly) amounts that derive from (or might be characterized as) a portion of Borrower's payments for Mortgage Insurance, in exchange for sharing or modifying the mortgage insurer's risk, or reducing losses. If such agreement provides that an affiliate of Lender takes a share of the insurer's risk in exchange for a share of the premiums paid to the insurer, the arrangement is often termed "captive reinsurance." Further:

(a) Any such agreements will not affect the amounts that Borrower has agreed to pay for Mortgage Insurance, or any other terms of the Loan. Such agreements will not increase the amount Borrower will owe for Mortgage Insurance, and they will not entitle Borrower to any refund.

(b) Any such agreements will not affect the rights Borrower has—if any—with respect to the Mortgage Insurance under the Homeowners Protection Act of 1998 or any other law. These rights may include the right to receive certain disclosures, to request and obtain cancellation of the Mortgage

Insurance, to have the Mortgage Insurance terminated automatically, and/or to receive a refund of any Mortgage Insurance premiums that were unearned at the time of such cancellation or termination.

11. Assignment of Miscellaneous Proceeds; Forfeiture. All Miscellaneous Proceeds are hereby assigned to and shall be paid to Lender.

If the Property is damaged, such Miscellaneous Proceeds shall be applied to restoration or repair of the Property, if the restoration or repair is economically feasible and Lender's security is not lessened. During such repair and restoration period, Lender shall have the right to hold such Miscellaneous Proceeds until Lender has had an opportunity to inspect such Property to ensure the work has been completed to Lender's satisfaction, provided that such inspection shall be undertaken promptly. Lender may pay for the repairs and restoration in a single disbursement or in a series of progress payments as the work is completed. Unless an agreement is made in writing or Applicable Law requires interest to be paid on such Miscellaneous Proceeds, Lender shall not be required to pay Borrower any interest or earnings on such Miscellaneous Proceeds. If the restoration or repair is not economically feasible or Lender's security would be lessened, the Miscellaneous Proceeds shall be applied to the sums secured by this Security Instrument, whether or not then due, with the excess, if any, paid to Borrower. Such Miscellaneous Proceeds shall be applied in the order provided for in Section 2.

In the event of a total taking, destruction, or loss in value of the Property, the Miscellaneous Proceeds shall be applied to the sums secured by this Security Instrument, whether or not then due, with the excess, if any, paid to Borrower.

In the event of a partial taking, destruction, or loss in value of the Property in which the fair market value of the Property immediately before the partial taking, destruction, or loss in value is equal to or greater than the amount of the sums secured by this Security Instrument immediately before the partial taking, destruction, or loss in value, unless Borrower and Lender otherwise agree in writing, the sums secured by this Security Instrument shall be reduced by the amount of the Miscellaneous Proceeds multiplied by the following fraction: (a) the total amount of the sums secured immediately before the partial taking, destruction, or loss in value divided by (b) the fair market value of the Property immediately before the partial taking, destruction, or loss in value. Any balance shall be paid to Borrower.

In the event of a partial taking, destruction, or loss in value of the Property in which the fair market value of the Property immediately before the partial taking, destruction, or loss in value is less than the amount of the sums secured immediately before the partial taking, destruction, or loss in value, unless Borrower and Lender otherwise agree in writing, the Miscellaneous Proceeds shall be applied to the sums secured by this Security Instrument whether or not the sums are then due.

If the Property is abandoned by Borrower, or if, after notice by Lender to Borrower that the Opposing Party (as defined in the next sentence) offers to make an award to settle a claim for damages, Borrower fails to respond to Lender within 30 days after the date the notice is given, Lender is authorized to collect and apply the Miscellaneous Proceeds either to restoration or repair of the Property or to the sums secured by this Security Instrument, whether or not then due. "Opposing Party" means the third party that owes Borrower Miscellaneous Proceeds or the party against whom Borrower has a right of action in regard to Miscellaneous Proceeds.

Borrower shall be in default if any action or proceeding, whether civil or criminal, is begun that, in Lender's judgment, could result in forfeiture of the Property or other material impairment of Lender's interest in the Property or rights under this Security Instrument. Borrower can cure such a default and, if acceleration has occurred, reinstate as provided in Section 19, by causing the action or proceeding to be dismissed with a ruling that, in Lender's judgment, precludes forfeiture of the Property or other material impairment of Lender's interest in the Property or rights under this Security Instrument. The proceeds of any award or claim for damages that are attributable to the impairment of Lender's interest in the Property are hereby assigned and shall be paid to Lender.

All Miscellaneous Proceeds that are not applied to restoration or repair of the Property shall be applied in the order provided for in Section 2.

12. Borrower Not Released; Forbearance By Lender Not a Waiver. Extension of the time for payment or modification of amortization of the sums secured by this Security Instrument granted by Lender to Borrower

or any Successor in Interest of Borrower shall not operate to release the liability of Borrower or any Successors in Interest of Borrower. Lender shall not be required to commence proceedings against any Successor in Interest of Borrower or to refuse to extend time for payment or otherwise modify amortization of the sums secured by this Security Instrument by reason of any demand made by the original Borrower or any Successors in Interest of Borrower. Any forbearance by Lender in exercising any right or remedy including, without limitation, Lender's acceptance of payments from third persons, entities or Successors in Interest of Borrower or in amounts less than the amount then due, shall not be a waiver of or preclude the exercise of any right or remedy.

13. Joint and Several Liability; Co-signers; Successors and Assigns Bound. Borrower covenants and agrees that Borrower's obligations and liability shall be joint and several. However, any Borrower who co-signs this Security Instrument but does not execute the Note (a "co-signer"): (a) is co-signing this Security Instrument only to mortgage, grant and convey the co-signer's interest in the Property under the terms of this Security Instrument; (b) is not personally obligated to pay the sums secured by this Security Instrument; and (c) agrees that Lender and any other Borrower can agree to extend, modify, forbear or make any accommodations with regard to the terms of this Security Instrument or the Note without the co-signer's consent.

Subject to the provisions of Section 18, any Successor in Interest of Borrower who assumes Borrower's obligations under this Security Instrument in writing, and is approved by Lender, shall obtain all of Borrower's rights and benefits under this Security Instrument. Borrower shall not be released from Borrower's obligations and liability under this Security Instrument unless Lender agrees to such release in writing. The covenants and agreements of this Security Instrument shall bind (except as provided in Section 20) and benefit the successors and assigns of Lender.

14. Loan Charges. Lender may charge Borrower fees for services performed in connection with Borrower's default, for the purpose of protecting Lender's interest in the Property and rights under this Security Instrument, including, but not limited to, attorneys' fees, property inspection and valuation fees. In regard to any other fees, the absence of express authority in this Security Instrument to charge a specific fee to Borrower shall not be construed as a prohibition on the charging of such fee. Lender may not charge fees that are expressly prohibited by this Security Instrument or by Applicable Law.

If the Loan is subject to a law which sets maximum loan charges, and that law is finally interpreted so that the interest or other loan charges collected or to be collected in connection with the Loan exceed the permitted limits, then: (a) any such loan charge shall be reduced by the amount necessary to reduce the charge to the permitted limit; and (b) any sums already collected from Borrower which exceeded permitted limits will be refunded to Borrower. Lender may choose to make this refund by reducing the principal owed under the Note or by making a direct payment to Borrower. If a refund reduces principal, the reduction will be treated as a partial prepayment without any prepayment charge (whether or not a prepayment charge is provided for under the Note). Borrower's acceptance of any such refund made by direct payment to Borrower will constitute a waiver of any right of action Borrower might have arising out of such overcharge.

15. Notices. All notices given by Borrower or Lender in connection with this Security Instrument must be in writing. Any notice to Borrower in connection with this Security Instrument shall be deemed to have been given to Borrower when mailed by first class mail or when actually delivered to Borrower's notice address if sent by other means. Notice to any one Borrower shall constitute notice to all Borrowers unless Applicable Law expressly requires otherwise. The notice address shall be the Property Address unless Borrower has designated a substitute notice address by notice to Lender. Borrower shall promptly notify Lender of Borrower's change of address. If Lender specifies a procedure for reporting Borrower's change of address, then Borrower shall only report a change of address through that specified procedure. There may be only one designated notice address under this Security Instrument at any one time. Any notice to Lender shall be given by delivering it or by mailing it by first class mail to Lender's address stated herein unless Lender has designated another address by notice to Borrower. Any notice in connection with this Security Instrument shall not be deemed to have been given to Lender until actually received by Lender. If any notice required by this Security Instrument is also required under Applicable Law, the Applicable Law requirement will satisfy the corresponding requirement under this Security Instrument.

16. Governing Law; Severability; Rules of Construction. This Security Instrument shall be governed by federal law and the law of the jurisdiction in which the Property is located. All rights and obligations contained in this Security Instrument are subject to any requirements and limitations of Applicable Law. Applicable Law might explicitly or implicitly allow the parties to agree by contract or it might be silent, but such silence shall not be construed as a prohibition against agreement by contract. In the event that any provision or clause of this Security Instrument or the Note conflicts with Applicable Law, such conflict shall not affect other provisions of this Security Instrument or the Note which can be given effect without the conflicting provision.

As used in this Security Instrument: (a) words of the masculine gender shall mean and include corresponding neuter words or words of the feminine gender; (b) words in the singular shall mean and include the plural and vice versa; and (c) the word "may" gives sole discretion without any obligation to take any action.

17. Borrower's Copy. Borrower shall be given one copy of the Note and of this Security Instrument.

18. Transfer of the Property or a Beneficial Interest in Borrower. As used in this Section 18, "Interest in the Property" means any legal or beneficial interest in the Property, including, but not limited to, those beneficial interests transferred in a bond for deed, contract for deed, installment sales contract or escrow agreement, the intent of which is the transfer of title by Borrower at a future date to a purchaser.

If all or any part of the Property or any Interest in the Property is sold or transferred (or if Borrower is not a natural person and a beneficial interest in Borrower is sold or transferred) without Lender's prior written consent, Lender may require immediate payment in full of all sums secured by this Security Instrument. However, this option shall not be exercised by Lender if such exercise is prohibited by Applicable Law.

If Lender exercises this option, Lender shall give Borrower notice of acceleration. The notice shall provide a period of not less than 30 days from the date the notice is given in accordance with Section 15 within which Borrower must pay all sums secured by this Security Instrument. If Borrower fails to pay these sums prior to the expiration of this period, Lender may invoke any remedies permitted by this Security Instrument without further notice or demand on Borrower.

19. Borrower's Right to Reinstate After Acceleration. If Borrower meets certain conditions, Borrower shall have the right to have enforcement of this Security Instrument discontinued at any time prior to the earliest of: (a) five days before sale of the Property pursuant to any power of sale contained in this Security Instrument; (b) such other period as Applicable Law might specify for the termination of Borrower's right to reinstate; or (c) entry of a judgment enforcing this Security Instrument. Those conditions are that Borrower: (a) pays Lender all sums which then would be due under this Security Instrument and the Note as if no acceleration had occurred; (b) cures any default of any other covenants or agreements; (c) pays all expenses incurred in enforcing this Security Instrument, including, but not limited to, reasonable attorneys' fees, property inspection and valuation fees, and other fees incurred for the purpose of protecting Lender's interest in the Property and rights under this Security Instrument; and (d) takes such action as Lender may reasonably require to assure that Lender's interest in the Property and rights under this Security Instrument, and Borrower's obligation to pay the sums secured by this Security Instrument, shall continue unchanged. Lender may require that Borrower pay such reinstatement sums and expenses in one or more of the following forms, as selected by Lender: (a) cash; (b) money order; (c) certified check, bank check, treasurer's check or cashier's check, provided any such check is drawn upon an institution whose deposits are insured by a federal agency, instrumentality or entity; or (d) Electronic Funds Transfer. Upon reinstatement by Borrower, this Security Instrument and obligations secured hereby shall remain fully effective as if no acceleration had occurred. However, this right to reinstate shall not apply in the case of acceleration under Section 18.

20. Sale of Note; Change of Loan Servicer; Notice of Grievance. The Note or a partial interest in the Note (together with this Security Instrument) can be sold one or more times without prior notice to Borrower. A sale might result in a change in the entity (known as the "Loan Servicer") that collects Periodic Payments due under the Note and this Security Instrument and performs other mortgage loan servicing obligations under the Note, this Security Instrument, and Applicable Law. There also might be one or more changes of the Loan Servicer unrelated to a sale of the Note. If there is a change of the Loan Servicer, Borrower will be given written notice of

the change which will state the name and address of the new Loan Servicer, the address to which payments should be made and any other information RESPA requires in connection with a notice of transfer of servicing. If the Note is sold and thereafter the Loan is serviced by a Loan Servicer other than the purchaser of the Note, the mortgage loan servicing obligations to Borrower will remain with the Loan Servicer or be transferred to a successor Loan Servicer and are not assumed by the Note purchaser unless otherwise provided by the Note purchaser.

Neither Borrower nor Lender may commence, join, or be joined to any judicial action (as either an individual litigant or the member of a class) that arises from the other party's actions pursuant to this Security Instrument or that alleges that the other party has breached any provision of, or any duty owed by reason of, this Security Instrument, until such Borrower or Lender has notified the other party (with such notice given in compliance with the requirements of Section 15) of such alleged breach and afforded the other party hereto a reasonable period after the giving of such notice to take corrective action. If Applicable Law provides a time period which must elapse before certain action can be taken, that time period will be deemed to be reasonable for purposes of this paragraph. The notice of acceleration and opportunity to cure given to Borrower pursuant to Section 22 and the notice of acceleration given to Borrower pursuant to Section 18 shall be deemed to satisfy the notice and opportunity to take corrective action provisions of this Section 20.

21. Hazardous Substances. As used in this Section 21: (a) "Hazardous Substances" are those substances defined as toxic or hazardous substances, pollutants, or wastes by Environmental Law and the following substances: gasoline, kerosene, other flammable or toxic petroleum products, toxic pesticides and herbicides, volatile solvents, materials containing asbestos or formaldehyde, and radioactive materials; (b) "Environmental Law" means federal laws and laws of the jurisdiction where the Property is located that relate to health, safety or environmental protection; (c) "Environmental Cleanup" includes any response action, remedial action, or removal action, as defined in Environmental Law; and (d) an "Environmental Condition" means a condition that can cause, contribute to, or otherwise trigger an Environmental Cleanup.

Borrower shall not cause or permit the presence, use, disposal, storage, or release of any Hazardous Substances, or threaten to release any Hazardous Substances, on or in the Property. Borrower shall not do, nor allow anyone else to do, anything affecting the Property (a) that is in violation of any Environmental Law, (b) which creates an Environmental Condition, or (c) which, due to the presence, use, or release of a Hazardous Substance, creates a condition that adversely affects the value of the Property. The preceding two sentences shall not apply to the presence, use, or storage on the Property of small quantities of Hazardous Substances that are generally recognized to be appropriate to normal residential uses and to maintenance of the Property (including, but not limited to, hazardous substances in consumer products).

Borrower shall promptly give Lender written notice of (a) any investigation, claim, demand, lawsuit or other action by any governmental or regulatory agency or private party involving the Property and any Hazardous Substance or Environmental Law of which Borrower has actual knowledge, (b) any Environmental Condition, including but not limited to, any spilling, leaking, discharge, release or threat of release of any Hazardous Substance, and (c) any condition caused by the presence, use or release of a Hazardous Substance which adversely affects the value of the Property. If Borrower learns, or is notified by any governmental or regulatory authority, or any private party, that any removal or other remediation of any Hazardous Substance affecting the Property is necessary, Borrower shall promptly take all necessary remedial actions in accordance with Environmental Law. Nothing herein shall create any obligation on Lender for an Environmental Cleanup.

NON-UNIFORM COVENANTS. Borrower and Lender further covenant and agree as follows:

22. Acceleration; Remedies. Lender shall give notice to Borrower prior to acceleration following Borrower's breach of any covenant or agreement in this Security Instrument (but not prior to acceleration under Section 18 unless Applicable Law provides otherwise). The notice shall specify: (a) the default; (b) the action required to cure the default; (c) a date, not less than 30 days from the date the notice is given to Borrower, by which the default must be cured; and (d) that failure to cure the default on or before the date specified in the notice may result in acceleration of the sums secured by this Security

Instrument and sale of the Property. The notice shall further inform Borrower of the right to reinstate after acceleration and the right to bring a court action to assert the non-existence of a default or any other defense of Borrower to acceleration and sale. If the default is not cured on or before the date specified in the notice, Lender at its option may require immediate payment in full of all sums secured by this Security Instrument without further demand and may invoke the STATUTORY POWER OF SALE and any other remedies permitted by Applicable Law. Lender shall be entitled to collect all expenses incurred in pursuing the remedies provided in this Section 22, including, but not limited to, reasonable attorneys' fees and costs of title evidence.

If Lender invokes the STATUTORY POWER OF SALE, Lender shall mail a copy of a notice of sale to Borrower, and to other persons prescribed by Applicable Law, in the manner provided by Applicable Law. Lender shall publish the notice of sale, and the Property shall be sold in the manner prescribed by Applicable Law. Lender or its designee may purchase the Property at any sale. The proceeds of the sale shall be applied in the following order: (a) to all expenses of the sale, including, but not limited to, reasonable attorneys' fees; (b) to all sums secured by this Security Instrument; and (c) any excess to the person or persons legally entitled to it.

23. Release. Upon payment of all sums secured by this Security Instrument, Lender shall discharge this Security Instrument. Borrower shall pay any recordation costs. Lender may charge Borrower a fee for releasing this Security Instrument, but only if the fee is paid to a third party for services rendered and the charging of the fee is permitted under Applicable Law.

24. Waivers. Borrower waives all rights of homestead exemption in the Property and relinquishes all rights of curtesy and dower in the Property.

BY SIGNING BELOW, Borrower accepts and agrees to the terms and covenants contained in pages 1 through 15 of this Security Instrument and in any Rider executed by Borrower and recorded with it.

JACOB A. L'ETOILE (Seal) -Borrower

ROBIN C. L'ETOILE (Seal) -Borrower

(Seal) -Borrower

(Seal) -Borrower

(Seal) -Borrower

(Seal) -Borrower

Commonwealth of Massachusetts Franklin County ss:

On this 15th day of September, 2011, before me, the undersigned notary public, personally appeared
JACOB A. L'ETOILE AND ROBIN C. L'ETOILE

(name of document signer), proved to me through satisfactory evidence of identification, which were MA Driver's Licenses, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

DAVID J. SINGER Notary Public

My commission expires: 12/27/13

DAVID J SINGER
Notary Public
Commonwealth of Massachusetts
My Commission Expires Dec 27, 2013

ADJUSTABLE RATE RIDER
(1, 3 or 5 Year Treasury Index - Rate Caps)

CONSTRUCTION LOAN

THIS ADJUSTABLE RATE RIDER is made this **15th** day of **September, 2011** and is incorporated into and shall be deemed to amend and supplement the Mortgage, Deed of Trust or Security Deed (the "Security Instrument") of the same date given by the undersigned (the "Borrower") to secure Borrower's Adjustable Rate Note (the "Note") to GREENFIELD CO-OPERATIVE BANK (the "Lender") of the same date and covering the property described in the Security Instrument and located at:

612 PINE MEADOW ROAD, Northfield, MA 01360
Property Address

THE NOTE CONTAINS PROVISIONS ALLOWING FOR CHANGES IN THE INTEREST RATE AND THE MONTHLY PAYMENT. THE NOTE LIMITS THE AMOUNT THE BORROWER'S INTEREST RATE CAN CHANGE AT ANY ONE TIME.

Additional Covenants. In addition to the covenants and agreements made in the Security Instrument, Borrower and Lender further covenant and agree as follows:

A. INTEREST RATE AND MONTHLY PAYMENT CHANGES

The Note provides for an initial interest rate of **3.625%**. The Note provides for changes in the interest rate and the monthly payments, as follows:.

(A) Change Dates
The interest rate I will pay may change on the first day of **October 1, 2017** and on that day every 12th month thereafter. Each date on which my interest rate could change is called a "Change Date."

(B) The Index
Beginning with the first Change Date, my interest will be based on an index. The "index" is the **weekly** average yield on United States Treasury securities adjusted to a constant Maturity of ONE year(s), as made available by the Federal Reserve Board. The most recent index figure available as of the date 45 days before each Change Date is called the "Current Index." If the index is no longer available, the Note Holder will choose a new index which is based upon comparable information. The Note Holder will give me notice of this choice.

(C)Calculation of Changes
Before each Change Date, the Note Holder will calculate my new interest rate by adding **Three** percentage points (**3** %) to the Current Index. The Note Holder will then round the result of this addition to the nearest one-eighth of one percentage point (.125%). Subject to the limits stated in Section 4(d) below, this rounded amount will be my new interest rate until the next Change Date. The Note Holder will then determine the amount of the monthly payment that would be sufficient to repay the unpaid principal that I am expected to owe at the Change Date in full on the maturity date of my new interest rate in substantially equal payments. The result of this calculation will be the new amount of my monthly payment.

(D) Limits on Interest Rate Changes
The interest rate I am required to pay at the first Change Date will not be greater than **5.625%** or less than **1.625%**. Thereafter, my interest rate will never be increased or decreased on any single Change Date by more than TWO percentage points (2.000%) from the rate of interest I have been paying for the preceding 12 months. My interest rate will never be greater than **8.625%**.

(E) Notice of Changes
The Note Holder will deliver or mail to me a notice of any changes in my interest rate and the amount of my monthly

payment before the effective date of any change. The notice will include information required by law to be given me and also the title and telephone of a person who will answer any question I may have regarding this notice.

B. TRANSFER OF THE PROPERTY OR A BENEFICIAL INTEREST IN BORROWER

Uniform Covenant 18 of the Security Instrument is amended to read as follows:

Transfer of Property or a Beneficial Interest in Borrower. If all or any part of the Property or any interest in it is sold or transferred (or if a beneficial interest in Borrower is sold or transferred and Borrower is not a natural person) without Lender's prior written consent, Lender may, at its option, require immediate payment in full of all sums secured by this Security Instrument. However, this option shall not be exercised by Lender if exercise is prohibited by federal law as of the date of this Security Instrument. Lender also shall not exercise this option if; (a) Borrower causes to be submitted to Lender information required by Lender to evaluate the intended transferee as if a new loan were being made to the transferee; and (b) Lender reasonably determines that Lender's security will not be impaired by the loan assumption and that the risk of a breach of any covenant or agreement in this Security Instrument is acceptable to Lender.

To the extent permitted by applicable law, Lender may charge a reasonable fee as a condition to Lender's consent to the loan assumption. Lender may also require the transferee to sign an assumption agreement that is acceptable to Lender and that obligates the transferee to keep all the promises and agreements made in the Note and in this Security Instrument. Borrower will continue to be obligated under the Note and this Security Instrument unless Lender releases Borrower in writing.

If Lender exercises the option to require immediate payment in full, Lender shall give Borrower notice of acceleration. The notice shall provide a period of not less than 30 days from the date the notice is delivered or mailed within which Borrower must pay all sums secured by this Security Instrument. If Borrower fails to pay these sums prior to the expiration of this period, Lender may invoke any remedies permitted by the Security Instrument without further notice or demand on Borrower.

By SIGNING BELOW, Borrower accepts and agrees to the terms and covenants contained in this Adjustable Rate Rider.

_____(SEAL)
Borrower **JACOB A L'ETOILE**

_____(SEAL)
Borrower **ROBIN C. L'ETOILE**

EXHIBIT "A"

the land located in Northfield, Franklin County, Massachusetts, identified in the Town of Northfield Assessor's Records as Parcel 54-A-8 and more particularly bounded and described as follows:

Beginning at a stake and stones at the southwest corner of land now or formerly of John W. Smith and running westerly on the north side of Pine Meadow Road forty-two rods to a stake and stones; thence northerly by land now or formerly of Samuel F. Browning nine rods to a stake and stones; thence easterly by land now or formerly of Samuel F. Browning ten rods to a stake and stones; thence northerly by land now or formerly of Samuel F. Browning seventy-seven rods and ten links to the Connecticut River; thence easterly by said river to land now or formerly of Artimus Nye; thence southerly by said Nye's land and land now or formerly of John W. Smith to Pine Meadow Road and the place of beginning. Containing eighteen acres, more or less.

Excepting 50,119.44 square feet conveyed to Gary J. Douglas and Jean A. Douglas by deed dated January 11, 1995 and recorded in Franklin Registry of Deeds in Book 2970, Page 144.

Excepting 3.72 acres, more or less, being land conveyed by August and Anna Ostroski to Turners Falls Power and Electric Company by deed dated June 8, 1929 and recorded in Franklin Registry of Deeds, Book 750, Page 292; and there is appurtenant to the remaining land the rights to the use of the excepted tract as reserved in said deed to Turners Falls Power and Electric Company.

Subject to a Boundary Line Agreement between Lawrence D. Whitney and Bonnie Tucker L'Etoile and Eugene L'Etoile dated March 14, 2002 and recorded in said Registry in Book 3982, Page 3.

Meaning and intending to convey and hereby conveying the property conveyed to Eugene A. L'Etoile, Bonnie Tucker L'Etoile, Jacob L'Etoile and Robin L'Etoile by deed of Eugene A. L'Etoile and Bonnie Tucker L'Etoile dated December 22, 2009 and recorded in the Franklin County Registry of Deeds at Book 5799, Page 25.

See also deed from Eugene A. L'Etoile and Bonnie Tucker L'Etoile dated December 22, 2009 and recorded at Book 5819, Page 29.

Section 5 – Narrative to Accompany Planning Board Petition

PROJECT NARRATIVE
PROPOSED DUAL-USE SOLAR ASSEMBLAGE
BWC PINE MEADOW BROOK, LLC
AND BWC OTTER RUN, LLC
VARIOUS LOTS OFF PINE MEADOW ROAD
NORTHFIELD, MASSACHUSETTS

1.0 PROJECT OVERVIEW

On behalf of our clients, BWC Pine Meadow Brook, LLC and BWC Otter Run, LLC, Field Engineering has prepared this Project Narrative to accompany Permit Applications for the construction of a proposed assemblage of three solar arrays to be located on various parcels of land located on Pine Meadow Road in the Town of Northfield, Massachusetts. Two of the three arrays are being proposed as "dual-use" agricultural arrays such that the underlying land can be retained in agricultural use with either grazing animals or planting of crops. Permit applications being filed for each array include a Site Plan Review and Special Permit Petition with the Town of Northfield Planning Board in accordance with Sections 3.4, 3.5, and 10.3.C. of the Town of Northfield Zoning By-Law and applicable permit applications with the Town of Northfield Conservation Commission.

A summary of the three arrays, including project name, size, subject parcels, and landowner are provided in the table below:

Project	Type of Array	System Size (MW DC)	Northfield Assessor's Parcel(s)	Current Landowner
Pine Meadow Road Array A (BWC Pine Meadow Brook, LLC)	**Dual-Use Single Axis Trackers**	6.0 MW	53-E1 54-B7	Bonnie and Eugene L'Etoile & Hopping Ahead LLC
Pine Meadow Road Array B (BWC Pine Meadow Brook, LLC)	**Dual-Use Single Axis Trackers**	4.3 MW	54-B5 55-B1	Hopping Ahead LLC
Pine Meadow Road Array C (BWC Otter Run, LLC)	**Conventional Fixed Tilt**	0.6 MW	54-A8 (612 Pine Meadow Road)	Jacob and Robin L'Etoile

The applicant is proposing to construct three ("PV") power generation facilities on the various parcels of land listed above with three points of interconnection along Pine Meadow Road. Two of the three arrays will consist of the construction of multiple solar panels on an above ground mounting system with single axis tracker racking which will allow the panels to follow

the sun throughout the day. The third array will consist of multiple solar panels on a fixed tilt racking and foundation system. The applicant is proposing a "dual-use" of the subject properties utilizing the single axis tracker foundations with the panels being constructed in a canopy configuration above the ground to allow enough vertical clearance for the free movement of people and equipment for the continued agricultural use of the property within the footprint of the array. The disturbed areas beneath the solar panel arrays will be restored and seeded as necessary to stabilize the ground following installation of the solar panel foundations and structures, and the array area on the two "dual-use" arrays will be maintained in the future as an agricultural use, supporting either light livestock for grazing or planting of various food crops.

The three sites will be accessed via separate gravel access driveways off of Pine Meadow Road with adequate turnarounds for emergency vehicle access located at the various components of each array. Each installation will be secured with a woven wire agricultural fence installed around the perimeter of the project site. As the solar facility will not require regular staffing on-site, there will be water or sewer utilities required for this project. However, the two "dual-use" arrays will have wells driven on the property for irrigation purposed. The proposed installations will be tied into the existing power lines along Pine Meadow Road via an overhead (or underground) wire connection from the proposed customer owned equipment pads at each array site to the existing power lines. The details of the proposed interconnection are currently being finalized between the applicant and WMEC. The proposed interconnection will require a significant upgrade to the existing pole line along portions of Pine Meadow Road between the project site and an existing substation to provide for three-phase power along the interconnection route.

2.0 EXISTING CONDITIONS

The three arrays comprising the proposed assemblage will sit on a number of parcels of land as listed in the table in Section 1.0. Each parcel of land on which the assemblage would sit is located along Pine Meadow Road in the southwestern portion of Northfield, Massachusetts. A more detailed description of the existing conditions for each array is as follows:

Pine Meadow Road Array A

The Pine Meadow Road Array A is to be situated on two parcels of land shown as Map 53, Lot E1 and Map 54, Lot B7 on the Town of Northfield Assessor's Maps. These parcels are currently owned by Bonnie and Eugene L'Etoile & Hopping Ahead, LLC respectively and consist mainly of farmed field areas with some peripheral wooded areas along the easterly sides of the site. The total acreage of these two parcels is approximately 53.2 Acres. The parcels consist mainly of farmed upland areas with some bordering vegetated wetland areas as shown on the site plans. The flagged wetland areas shown along the easterly side of the site were flagged by Mr. David Gordon CWS, CPSS, Manager of Thunderchase

Environmental LLC in November 2019. According to the last Federal Emergency Management Agency (FEMA) Flood Insurance mapping of the area, Community Panel No 250124-0010B, dated 9/30/1980, no portions of these properties falls within a Special Flood Hazard area. Additionally, no portion of the project site is located within any mapped habitat according to the latest Natural Heritage and Endangered Species Program (NHESP) mapping. It should also be noted that the parcels of land being utilized for Pine Meadow Road Array A are currently in Chapter 61A and also covered by a Farm Viability Plan through the Massachusetts Department of Agricultural Resources (MDAR). Both of these restrictions will be removed upon successful permitting and installation of the proposed array.

Pine Meadow Road Array B

The Pine Meadow Road Array B is to be situated on two parcels of land shown as Map 54, Lot B5 and Map 55, Lot B1 on the Town of Northfield Assessor's Maps. These parcels are currently owned by Hopping Ahead, LLC and consist mainly of farmed field areas with some peripheral wooded areas along the easterly side of the site associated with the adjacent Pine Meadow Brook. The total acreage of these two parcels is approximately 81.5 Acres. The parcels consist mainly of farmed upland areas with some bordering vegetated wetland areas associated with the Pine Meadow Brook located within the tree line along the easterly side of the site. Approximate bordering vegetated wetland areas are shown on the plan based on topography along Pine Meadow Brook and limits of mapped hydric soils to the south of the project site. According to the last Federal Emergency Management Agency (FEMA) Flood Insurance mapping of the area, Community Panel No 250124-0010B, dated 9/30/1980, there are portions of the site that fall within Flood Zones A1, A16, A17, B and C as shown on the site plans. Additionally, no portion of the project site is located within any mapped habitat according to the latest Natural Heritage and Endangered Species Program (NHESP) mapping. It should also be noted that the parcels of land being utilized for Pine Meadow Road Array B are currently in Chapter 61A and also covered by a Farm Viability Plan through the Massachusetts Department of Agricultural Resources (MDAR). Both of these restrictions will be removed upon successful permitting and installation of the proposed array.

Pine Meadow Road Array C

The Pine Meadow Road Array C is to be situated on one parcel of land shown as Map 54, Lot A8 on the Town of Northfield Assessor's Maps. This parcel is currently owned by Jacob and Robin L'Etoile and consists mainly of field areas and an existing single-family dwelling. The total acreage of this parcel is approximately 13.1 Acres. The parcel consists mainly of field areas along with the driveway and residential dwelling with existing streams associated with the Connecticut Rive along the easterly and westerly side of the site. The flagged bank areas shown along the easterly and westerly side of the site were flagged by Mr. David Gordon CWS, CPSS, Manager of Thunderchase Environmental LLC in November 2019. According to the last Federal Emergency Management Agency (FEMA) Flood Insurance mapping of the area, Community Panel No 250124-0010B, dated 9/30/1980, there are

portions of the site that fall within Flood Zones A1, A16, A17, B and C as shown on the site plans. Additionally, no portion of the project site is located within any mapped habitat according to the latest Natural Heritage and Endangered Species Program (NHESP) mapping.

3.0 PROPOSED CONDITIONS

3.1 PROPOSED SOLAR PANEL ARRAYS

The overall project consists of the construction of an approximate 10.9 megawatt-DC, assemblage of PV power generating facilities on the subject parcels of land as described above. The assemblage will consist of almost 26,000 individual solar panels mounted on either a single axis tracker system or fixed tilt racking system. The single axis tracker systems will slowly rotate as the sun moves for maximum exposure. The proposed panels will be raised a minimum of 10' off the ground and spaced adequately to allow sunlight to reach the ground providing for the capability of a "dual-use" of the property with the solar array above continued unimpeded agricultural use by the landowner. The fixed tilt racking system will be installed at a specific angle for maximum exposure to the sun. Both types of system will be supported by either driven piles or piles with pre-drilled holes to the extent sub-surface conditions require into the ground. The power produced by the panels will be fed into an inverter and transformer to convert from DC to AC power for connection into the existing power grid locating along Pine Meadow Road. The power produced will also feed an energy storage system located on site which will distribute power to the grid at times of low energy production due to darkness or cloud cover.

Construction of the arrays will not require any significant clearing of vegetation within the array footprint in areas as each footprint is currently used for agriculture. Measures to avoid soil compaction to the greatest extent practicable (e.g. use of ground mats, construction logistics plan, and de-compacting the soil following construction) will be implemented across the sites. The proposed arrays will follow the contours of the land with minimal site grading required other than to level out mounds and holes to provide better access across each site. In areas proposed for grazing, the disturbed area will be hydroseeded with a conservation/wildlife mix for erosion control and to establish a managed pasture. In areas designated for crop cultivation, the land will be planted with an initial cover crop appropriate for winter-time preparation for the following year's growing season. The operation and maintenance plan for the arrays prohibit the use of any chemicals or pesticides within the array footprint other than those allowed and approved for the continued agricultural use of the property. In addition, any additional supplemental plantings that may be proposed during the construction of the project will consist of native species.

The individual solar panels currently proposed will produce 420 watts of power (panel selection and wattage will depend on availability at time of construction) and measure approximately 3.35 feet by 6.65 feet. The panels will sit at a minimum of 10' off the ground when horizontal, with an edge at 13 feet off the ground at the highest point of tracking and have a warranty of approximately 30 years. The anticipated noise from the solar facility is minimal and only occurs during the day, directly adjacent to the power inverters, switchgear, and transformer equipment. The inverters, switchgear, transformers, and metering equipment will be placed on concrete pads and will not require any running water or sewage facilities. The proposed assemblage will be tied into the existing WMEC infrastructure along Pine Meadow Road which will also be upgraded as a result of the project.

A summary of the array, including size of project and number of panels is provided in the following table and a more detailed description the specific features of the project is provided below the table.

Array	System Size (MW DC)	Number of Panels	Approximate Fenced Area
Pine Meadow Road Array A (BWC Pine Meadow Brook, LLC)	6.0 MW	14,456	41.3
Pine Meadow Road Array B (BWC Pine Meadow Brook, LLC)	4.3 MW	10,218	26.1
Pine Meadow Road Array C (BWC Otter Run, LLC)	0.6 MW	1,350	1.8

3.2 ACCESS ROADS

The proposed project will be accessed via 18' wide gravel access driveways off of Pine Meadow Road as shown on the project plans. The proposed access driveways will be located as shown on the plans and be used to access the main equipment pads. The access driveway will be inspected during the regular maintenance visits to the facility and gravel will be replaced and re- graded as necessary to provide proper access. During the winter, the access driveways will be plowed after snow events of 4" or more or when snow accumulation in these areas is greater than 4". Complete plowing of the access road will occur within 24 hours of such snow event or accumulation trigger. No sodium chloride, rock salt or chemicals of any kind will be used onsite. Inside the array area, snow will be removed at the conclusion of each snow event once the amount has reached an amount of 12" depth. It is anticipated that the operators of the assemblage will contract with a local snow removal contractor or the property owner to perform the snow removal operations for the access driveways.

3.3 SECURITY MEASURES AND SCREENING

The proposed facility will be totally enclosed by fencing for safety purposes and to eliminate trespassing, potential issues with vandalism, as well as the potential for migration or "wandering" of grazing animals on the project site. The proposed fencing will consist of 8' high woven wire agricultural fencing around the perimeter of each array. The fenced area on the "dual-use" arrays has been maximized to provide as much contiguous grazing or farmland within the fence as possible, while not encroaching into any of the treed areas on the project sites. The facility will be monitored remotely and the site will be visited on a regular basis by off-site employees responsible for monitoring, inspecting, and repairing the equipment. There will be no full-time manning of the facility with employees associated with the operation of the solar array. Signs will also be posted on the perimeter fence around the facility and at the front entrance gates with emergency contact information. The proposed facilities are located on portions of the property set back significantly from the roadway such that the visual impact to the neighborhood would be minimal. For Array A, which is located closer to Pine Meadow Road than the other arrays, the applicant is proposing a row of screening trees along the northerly fence line of the array to serve to limit the visibility of the facility from the adjacent streets and properties. The applicant is committed to designing and providing visual screening along the northern side of Array A to ensure that there are no adverse impacts to the neighboring properties. The applicant is also committed to ensuring that the visual screening is designed to be compatible with the agricultural character of the neighborhood and beneficial for local ecology.

3.4 STORMWATER MANAGEMENT SYSTEM AND COMPLIANCE WITH APPLICABLE STANDARDS

The proposed stormwater management system has been designed to comply with DEP's stormwater management standards that were incorporated into the regulations on January 2, 2008 (see 310 CMR 10.05(6)(k)) and incorporates a number of Best Management Practices (BMPs), as prescribed in the Department of Environmental Protection Stormwater Management Handbook. These practices include structural and non-structural measures providing stormwater quantity and quality management. These BMPs will function to minimize potential adverse water quality impacts to the surrounding wetland ecosystem. The Stormwater Management System Report prepared by Field Engineering Co. Inc. describes the temporary and permanent stormwater BMPs proposed for the site development and includes drainage calculations prepared by a Registered Professional Engineer, a DEP Stormwater Management Form Checklist, and a Post Construction Operation and Maintenance Plan with Long Term Pollution Prevention Plan.

The proposed stormwater management plan has been developed based on the projected site conditions and the present condition of the water resource areas and adjacent properties

that receive stormwater runoff from the site. The proposed BMPs have been designed to comply with the Massachusetts Stormwater Management Handbook.

There is minimal impervious area being proposed for this project as the project simply consists of the gravel access driveway with above ground solar panels mounted on a racking system supported by driven posts. The proposed stormwater management plan focuses on the temporary impacts of stormwater runoff on adjacent properties during construction and includes the installation and maintaining of erosion control BMP's around the construction zone to until such time as the site is fully stabilized with vegetation. The site will be inspected on a regular basis to ensure that full stabilization of the site is maintained and there are no erosion or sedimentation issues on adjacent properties. As the plans show, the applicant is proposing to install crushed stone edge drain infiltration trenches along portions of the proposed gravel access drives to intercept water that may run off the driveways and promote infiltration of the water into the soils. These will also serve as filter strips to minimize the migration of sediment from the gravel access drives towards agricultural areas, the existing roadway, or adjacent properties.

In addition, the materials used to construct the solar array are not considered hazardous and have no liquid components that could potentially contaminate the groundwater. The only fluids on-site would be contained within the transformers and inverters and are stored in self-contained vessels at the equipment location. As mentioned previously, the site is monitored remotely and any issues that may arise will be addressed immediately.

Finally, the Project Proponent will file for coverage under the National Pollutant Discharge and Elimination System Construction General Permit. Prior to construction, the Project Proponent will develop Stormwater Pollution Prevention Plan ("SWPPP") identifying BMPs that will be implemented to prevent erosion and sedimentation. A copy of this SWPPP will be forwarded to the Conservation Commission upon completion. The SWPPP will be finalized prior to construction in conjunction with the selection of the site contractor. The SWPPP will be updated as necessary during construction and maintained throughout the period of construction.

3.5 SEDIMENTATION AND EROSION CONTROLS

The site contractor will use appropriate erosion control and best management practices during construction. This includes appropriately sized sediment basins for dewatering, the installation of straw wattles and silt fence along the limits of work of the project, the use of erosion control blankets or mats or straw mulch on exposed slopes for stabilization, and the use of designated construction entrances enhanced with crushed stone to prevent off-site vehicle tracking of sediment.

4.0 COMPLIANCE WITH NORTHFIELD ZONING BYLAWS

4.1 ZONING BYLAW – DECISION CRITERIA FOR SPECIAL PERMITS (NORTHFIELD ZBL SEC. 3.4.C)

Decision Criteria. Unless otherwise specified herein, special permits shall be granted by the special permit granting authority only upon its written determination that the adverse effects of the proposed use will not outweigh its beneficial impacts to the town or the neighborhood, in view of the particular characteristics of the site, and of the proposal in relation to that site. The determination shall include findings that all of the following criteria for granting a special permit are met:

1. **The use is in harmony with the general purpose and intent of this Zoning Bylaw;**

   We feel that the proposed use is in harmony with the general purpose and intent of the Zoning Bylaw as it will allow the applicant to maintain an active agricultural presence in the Town at their current location by supplementing the landowner with consistent income, providing improved utilities and infrastructure for the more efficient operation of the landowner's operations and increasing the tax base within the Town without an additional strain on Town resources (i.e. schools, emergency services, roadway infrastructure, etc.) As further described below, the proposed use will not be detrimental to the neighboring properties and will further the goals and policies of the Northfield Master Plan.

2. **The use is in an appropriate location and is not detrimental to the neighborhood and does not significantly alter the character of the zoning district;**

   The proposed use will not be detrimental to the neighborhood and will not significantly alter the character of the district as the proposed arrays will be set will back from the existing roadway or will be screened from view of adjacent properties where necessary. The proposed use will allow the applicants to keep this land and their other lands in the vicinity of the project in agricultural use, therefore preserving the character of the zoning district.

3. **Adequate and appropriate facilities will be provided for the operation of the proposed use;**

   The proposed assemblage will be accessed from one of three gravel driveways located off of Pine Meadow Road as shown on the design plans. These driveways will provide adequate access to the equipment pads for emergency vehicles as well as provide access to the agricultural uses that will remain on the property. There are no water and sewer facilities proposed or required for the proposed solar uses on the property as these will be unmanned facilities. As there is minimal change in the overall ground cover on the project site, stormwater drainage leaving the site will remain relatively unchanged from pre-developed conditions. Utilities to connect the proposed arrays to the existing grid will be installed in accordance with WMEC requirements.

4. **The proposed use will not be detrimental or otherwise offensive to the adjoining zoning districts and neighboring properties due to the effects of lighting, odors, smoke, noise, sewage, refuse materials, or visual or other nuisances;**

   The proposed use will not be detrimental to the adjoining zoning district and neighboring proposed as there will be no lighting, odors, smoke, sewage or refuse materials resulting from the project. There is minimal noise associated with the proposed electrical equipment (i.e. inverters and transformers) and these pads have been situated in locations where the audible radius would not impact any neighboring properties. The proposed use is situated well off of Pine Meadow Road where possible and has been screened with evergreen vegetation in areas where the array is closer to the street, to minimize the potential for any visual impacts of the project.

5. **The proposed use will not cause undue traffic congestion in the immediate area;**

   The proposed project will not require on-site staffing for the operation and maintenance of the solar arrays; therefore, the facility will only be visited sporadically over the year for general maintenance and to response to any mechanical problems. The solar facility will be remotely monitored by the proponents of the site; therefore, minimal traffic is anticipated related to the solar following construction. The proposed access driveway for each array is a minimum of 18' wide to provide access to all of the major equipment and panels, therefore providing adequate access for safety vehicles to the array installation. The agricultural use associated with the project site will continue as in current conditions and traffic flow and safety to and from the project site will remain relatively unchanged following construction of the array.

6. **To the maximum extent possible, the proposed use conforms to the Principles of Rural Design in Section 8.1.1 of this Bylaw;**

   A. **Wherever feasible, retain and reuse existing old farm or forestry woods roads and lanes rather than constructing new roads or driveways. This minimizes clearing and disruption of the landscape and takes advantage of the attractive way that old lanes are often lined with trees and stone walls.**

      The applicant is proposing to construct new driveways only as necessary to access the equipment pads for emergency purposes. Where possible, the applicant is proposing to use existing access drive locations to access the property (i.e. Array A)

   B. **Preserve stone walls and hedgerows. These traditional landscape features define outdoor areas in a natural way and create corridors useful for wildlife. Using these features as property lines is often appropriate, as long as setback requirements do not result in constructing buildings in the middle of fields.**

There are no stone walls or hedgerows in the vicinity of the arrays that would be impacted be the project.

C. Avoid placing buildings in the middle of open fields. Place them either at the edges of fields or in wooded areas. Septic systems and leach fields may be located in fields, however.

There are no proposed buildings associated with this project with the exception of three proposed “hoop houses” associated with the continued agricultural use of the property associated with Array A. These structures are located well away from view from existing roadways or residences.

D. Use existing vegetation and topography to buffer and screen new buildings if possible, unless they are designed and located close to the road in the manner historically found in the Town. If vegetative buffers are used, a minimum depth of 50 feet of mixed ground-covers, shrubs, and trees should be provided. Group buildings in clusters or tuck them behind tree lines or knolls rather than spreading them out across the landscape in a "sprawl" pattern.

The proposed assemblage of arrays will not require any changes in grade or clearing of trees for the construction or operation of the project. The intent is to maintain the existing limits of trees and farm fields and maintain the agricultural use of the underlying ground.

E. Minimize clearing of vegetation at the edge of the road, clearing only as much as is necessary to create a driveway entrance with adequate sight distance. Use curves in the driveway to increase the screening of buildings.

The proposed driveways have been placed in locations to maintain existing trees and vegetation at the edge of the road and still provide adequate sight distance for vehicles leaving the site.

F. Site buildings so that they do not protrude above treetops and crestlines of hills as seen from public places and roads. Use vegetation as a backdrop to reduce the prominence of the structure. Wherever possible, open up views by selective cutting of small trees and pruning lower branches of large trees, rather than by clearing large areas or removing mature trees.

Once again, there are no building associated with the project other than the construction of three “hoop houses” to support the agricultural operations on Array A. These structures are located behind the existing tree line and would not be visible from the road or over the existing canopy.

G. Minimize crossing of steep slopes with roads and driveways. When building on slopes, take advantage of the topography by building multi-level structures with entrances on more than one level (e.g., walk-out basements, garages under buildings), rather than grading the entire site flat. Use the

flattest portions of the site for subsurface sewage disposal systems and parking areas.

The proposed access driveways will follow existing grades and not require any substantial grading for their construction. Additionally, there are no proposed grade changes over the footprints of each array other than to smooth out any depressions or high points to provide a level surface for construction.

H. Where feasible, site buildings and other areas to be developed in a manner that does not block trails or paths that have traditionally provided access to back land. This provision shall not be construed to create any public access rights that do not otherwise exist.

The proposed assemblage of arrays will not block trails or paths that have provided access to back lands on these properties. The landowner shall retain access to all portions of the project sites whether, within or outside the proposed fence line.

7. The proposed use is consistent with the Northfield Master Plan;

The proposed use is consistent with a number of the stated goals of the Northfield Master Plan. The proposed use will promote the preservation of open space and natural features as it will allow the landowner to maintain agricultural uses over their lands without pursuing significant other development possibilities. The proposed use will also promote opportunities for recreation and community gathering as it will provide an opportunity for training and educational programs related to the "dual-use" of the project. Finally, the project will also serve to improve public services as it will allow expensive upgrades of the existing electric infrastructure along Pine Meadow Road to provide three phase service to this corridor. This three-phase electrical service will allow for more efficient operations of equipment for the landowner as well as surrounding properties.

4.3 ZONING BYLAW – COMPLIANCE WITH SOLAR BYLAW (NORTHFIELD ZBL SECTION 10.3)

The following requirements are common to all Large-Scale Ground-Mounted Solar Photovoltaic Installations to be sited in Designated Locations.

A. Compliance with Laws and Regulations. The construction and operation of all Large-Scale Ground-Mounted Solar Photovoltaic Installations shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, electrical, and communications requirements. All buildings and fixtures forming part of a solar photovoltaic installation shall be constructed in accordance with the Massachusetts State Building Code.

The proposed assemblage has been designed to be constructed and operated consistent with all applicable local, state, and federal requirements including but not limited to the Massachusetts State Building Code and the National Electrical Code.

B. Building Permit. No Large-Scale Ground-Mounted Solar Photovoltaic Installation shall be constructed, installed, or modified without first obtaining a building permit.

The applicant shall apply for and obtain all necessary building permits and electrical permits prior to construction of the facility.

C. Fees. The application for a building permit for a Large-Scale Ground-Mounted Solar Photovoltaic Installation must be accompanied by the application fees required for a building permit and Site Plan Review.

The Site Plan Review fees have been included with this application package. The applicant shall furnish the required application fees for the building permits upon submittal of those applications.

D. Site Plan Review. Large-Scale Ground-Mounted Solar Photovoltaic Installations shall be subject to Site Plan Review by the Planning Board in accordance with this Section and Section 3.5 prior to construction, installation, or modification. Site plan submission requirements and procedures shall be in accordance with the Planning Board's rules and regulations.

An application for Site Plan Review has been included with this application package. The Site Plan is being submitted in accordance with the submission requirements and procedures discussed on the Site Plan Review Application in accordance with the Planning Board's Rules and Regulations.

E. Setback and Height Requirements. For Large-Scale Ground-Mounted Solar Photovoltaic Installations, including Appurtenant Structures and parking areas, setbacks shall be at least 100 feet from any property boundary; the minimum setback areas are not included in the calculation of the 5-acre maximum specified in this Solar Generation Zoning By-law. The height of a Large-Scale Ground-Mounted Solar Photovoltaic Installation or any Appurtenant Structure, shall not exceed 20 feet.

As the attached Site Plans depict, the proposed project complies with all setback and height requirements of the Zoning By-Law. All panels and equipment with the solar assemblage are located over 100 feet from any property boundary and no structure will exceed 20 feet in height.

F. Appurtenant Structures All such Appurtenant Structures, including but not limited to, equipment shelters, storage facilities, transformers, and substations, shall be architecturally compatible with each other. Whenever reasonable, structures should be shaded from view by vegetation and/or joined or clustered to avoid adverse visual impacts.

The design of the appurtenant structures of the proposed array has been prepared to be compatible and consistent with commonly used structures for the industry. The proposed equipment pads are set back from the road and/or screened from view with vegetation such that there will be no adverse visual impacts from these structures.

G. Design and Performance Standards

1. **Lighting. Lighting of solar photovoltaic installations shall be consistent with local, state and federal law. Lighting of other parts of the installation, such as appurtenant structures, shall be limited to that required for safety and operational purposes, and shall be reasonably shielded from abutting properties. Where feasible, lighting of the solar photovoltaic installation shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.**

   There is no proposed lighting associated with this project.

2. **Signage. Signs on Large-Scale Ground-Mounted Solar Photovoltaic Installations shall comply with section 11.05 of the By-law. A sign consistent with the By-law shall be required to identify the owner and provide a 24-hour emergency contact phone number. Solar electric installations shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the solar electric installation.**

   All signage will be installed as required for safety and identification under state and local requirements and the National Electrical Code. A typical site identification sign is provided on the Site Drawings and typical signage details for signate within the array and associated with the proposed electrical equipment is included in this Application Package.

3. **Utility Connections. Reasonable efforts, as determined by the Planning Board, shall be made to place all utility connections from the solar photovoltaic installation underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider.**

The details of the interconnection design are still being worked on with the Utility Company, WMEC. The applicant is committed to minimizing the amount of above-ground infrastructure as required by the By-Law but will be required to comply with WMEC requirements. As the site plans currently show, the applicant is proposing an underground conduit run of the medium voltage power from the equipment pads to a minimum number of utility poles located at the driveway entrance to each site, as required by WMEC.

4. **Roads. Access roads shall be constructed to minimize grading, removal of stone walls or street trees, and minimize impacts to environmental or historical resources.**

   The proposed access drives have been designed and will be constructed to minimize grading by following existing grades to the maximum extent practicable. They have also been strategically located along the Pine Meadow Road frontage of each parcel to be situated in close proximity to the point of interconnection of each array and minimize any impacts to stone walls and/or street trees.

5. **Control of Vegetation. Herbicides may not be used to control vegetation at the solar electric installation. Mowing or the use of pervious pavers or geotextile materials underneath the solar array are possible alternatives.**

   The operation and maintenance plan for the arrays prohibit the use of any chemicals, herbicides, or pesticides within the array footprint other than those allowed and approved for the continued agricultural use of the property.

6. **Hazardous Materials. Hazardous materials stored, used, or generated on site shall not exceed the amount for a Very Small Quantity Generator of Hazardous Waste as defined by the DEP pursuant to MassDEP regulations 310 CMR 30.000 and shall meet all requirements of the DEP including storage of hazardous materials in a building with an impervious floor that is not adjacent to any floor drains to prevent discharge to the outside environment. If hazardous materials are utilized within the solar electric equipment then impervious containment areas capable of controlling any release to the environment and to prevent potential contamination of groundwater are required.**

The materials used to construct the solar array are not considered hazardous and have no liquid components that could potentially contaminate the groundwater. The only fluids on-site would be contained within the transformers and inverters and are stored in self-contained vessels at the equipment location. As mentioned previously, the site is monitored remotely and any issues that may arise will be addressed immediately.

7. **Noise. Sound or noise levels may not exceed 50 dBA at the boundary of the property.**

   The only noise associated with the project comes from the transformer and inverter pads which have been strategically located such that the audible radius from the pads is contained entirely on the property. There should be no audible impact from the project to the boundaries of the property.

8. **Safety and Environmental Standards**

   H. **Emergency Services. The Large-Scale Ground-Mounted Solar Photovoltaic Installation owner or operator shall provide a copy of the project summary, electrical schematic, and site plan to the Northfield Fire Chief. Upon request the owner or operator shall cooperate with local emergency services in developing an emergency response plan. All means of shutting down the solar photovoltaic installation shall be clearly marked. The owner or operator shall identify a responsible person for public inquiries throughout the life of the installation.**

   Upon completion of the Construction Drawings and prior to application for Building Permits, the chosen contractor will provide a complete set of drawings, project summary, and electrical plans to the Northfield Fire Chief for review and approval. Additionally, prior to commissioning of the facility, the contractor shall provide training on the operation, maintenance, and requirements for shutting down the facility for emergency personnel. The Site Plans currently show fencing around the entire facility with vehicular access gates located along the access driveways. Any gates to be used for vehicular emergency access will be equipped with Knox Box (or other options approved by the Fire Department) for emergency access into the facility.

   I. **Land Clearing, Soil Erosion and Habitat Impacts. Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the Large-Scale Ground-Mounted Solar Photovoltaic Installation or otherwise prescribed by applicable laws, regulations, and this By-law.**

As the proposed site plans show, there is minimal clearing of any natural vegetation required for the installation and operation of the proposed solar assemblage. The proposed array has been strategically situated in areas of the site that will not be shaded by existing tree lines. There are also minimal requirements for soil excavation and site grading, therefore the potential for soil erosion is minimal. The site contractor will be required to comply with a Stormwater Pollution Prevention Plan as required under the EPA's NPDES Construction General Permit for discharges from construction activities on sites over one acre.

4.3 ZONING BYLAW – COMPLIANCE WITH SOLAR BYLAW (FORMERLY NORTHFIELD ZBL CHAPTER 11)

Pursuant to the Site Plan Review process, the project proponent shall provide the following documents:

(a) A site plan showing:

i. Property lines and physical features, including roads, for the project site;

All property lines and physical features such as roads, topography, and existing tree lines are provided on the Site Plans.

ii. Proposed changes to the landscape of the site, grading, vegetation clearing and planting, exterior lighting, screening vegetation or structures;

All proposed conditions including proposed structures, fencing, and plantings are provided on the Site Plans. There is no substantial grading or vegetation clearing proposed for the site and there is no exterior lighting required for the project.

iii. Locations of wetlands and Priority Habitat Areas defined by the Natural Heritage & Endangered Species Program (NHESP);

Locations of wetlands and wetland resource areas are provided on the Site Plans. There are no arears on the subject parcels located within Priority Habitat Areas as defined by NHESP.

iv. **Locations of Floodplains or inundation areas for moderate or high hazard dams;**

The locations of the Flood Hazard areas as shown on the current FEMA Flood Maps are shown on the Site Plans.

v. **Locations of Priority Heritage landscapes and local or National Historic districts;**

The proposed arrays are not located within any Priority Heritage landscapes or local/National Historic districts.

vi. **A list of hazardous materials proposed to be located on the site in excess of household quantities and a plan to prevent their release to the environment as appropriate;**

There are no hazardous materials proposed to be located on the site.

vii. **Blueprints or drawings of the solar photovoltaic installation signed by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts showing the proposed layout of the system and any potential shading from nearby structures**

The proposed site plans have been signed and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The proposed layout of the system is shown on the plans as well as typical shade sprays from the trees located at the limit of work line.

viii. **One- or three-line electrical diagram detailing the solar photovoltaic installation, associated components, and electrical interconnection methods, with all National Electrical Code compliant disconnects and overcurrent devices;**

One-line electrical diagrams have been provided as an Attachment to the Site Plan Review/Special Permit Application Package.

ix. **Documentation of the major system components to be used, including the PV panels, mounting system, and inverter;**

Documentation of the major system components to be used for the project has been provided as an Attachment to the Site Plan Review/Special Permit application package.

x. **Name, address, and contact information for proposed system installer;**

The project will be competitively bid by a number of EPC Contractors for the detailed engineering design and installation of the facility. Once the system installer is chosen, their contact information will be provided.

xi. **Name, address, phone number and signature of the project proponent, as well as all co-proponents or property owners, if any;**

Contact information for the Project Proponent and property owners is provided on the Site Plan Review/Special Permit Petition and on the cover sheet of the drawings.

xii. **The name, contact information and signature of any agents representing the project proponent;**

Field Engineering Co. Inc. is acting as the agent representing the Project Proponents, BWC Pine Meadow Brook, LLC and BWC Otter Run, LLC. Contact information for Field Engineering Co. Inc. is provided on the site drawings.

(b) Site Control. The project proponent shall submit documentation of actual or prospective access and control of the project site sufficient to allow for construction and operation of the proposed solar photovoltaic installation.

A redacted Lease Option Agreement between the Proponents of the Project and the Landowners for each array has been included in this application package.

(c) Operation & Maintenance Plan. The project proponent shall submit a plan for the operation and maintenance of the Large-Scale Ground-Mounted Solar Photovoltaic Installation, which shall include measures for maintaining safe access to the installation, storm water controls, as well as general procedures for operational maintenance of the installation.

An operation and maintenance plan for the proposed installation has been provided as an Attachment to the Site Plan Review/Special Permit application package. In addition, the post construction stormwater management facility operation and maintenance plan is provided in the Stormwater Management System Report and on the site plans.

(d) Utility Notification. No Large-Scale Ground-Mounted Solar Photovoltaic Installation shall be constructed until evidence has been given to the Planning Board that the utility company that operates the electrical grid where the installation is to be located has been informed of the solar photovoltaic installation owner or operator's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.

Evidence that the utility company (WMEC) has been informed of the solar photovoltaic installation owner's intent to install an interconnected customer-owner generator has been provided as an Attachment to the Site Plan Review/Special Permit application package.

(e) Zoning District Designation. The project proponent shall submit a zoning district designation for the parcel(s) of land comprising the project site (submission of a copy of a zoning map with the parcel(s) identified is suitable for this purpose).

Reference Maps, including a copy of the zoning map with the parcel(s) identified have been included in the Site Plan Review/Special Permit application package.

(f) Proof of Liability Insurance. The project proponent shall submit to the Planning Board proof of liability insurance for the project.

Proof of Liability Insurance of the Project Proponent has been included in the Site Plan Review/Special Permit application package.

(g) Financial Surety. The project proponent shall submit a description of financial surety that satisfies Section 11.08.06.

A Stamped Preliminary Decommissioning Report and sample form of surety has been included in the Application Package. The Decommissioning Report includes a mechanism for increased costs due to inflation.

THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT VALID FOR LEGAL DESCRIPTION OR CONVEYANCE.

THE HORIZONTAL DATUM IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 83.

ORIGINAL PROPERTY MAPS WERE PREPARED USING PHOTOGRAMMETRIC METHODS BY GENERAL MAPPING, INC. COMPLETION DATE: 5/4/1973
AERIAL PHOTOGRAPHY DATE: 4/29/1972

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LEGEND

AREA SURVEYED ... Ac
AREA CALCULATED ... AcC
RECORD DIMENSION ... 100'
SCALED DIMENSION ... 100'S
BLOCK NUMBER ... A
MATCH LINE ... M.L.
WATER ... -W-
EXEMPT PROPERTY ... (E)
SUBDIVISION LOT NO. ... (2)
BUILDING
RIGHT OF WAY/ACCESS ... 600
TRACT LINES
WETLANDS

SCALE: 1" = 200'
FEET 200 100 0 200 400 600
METERS 50 25 0 50 100 150

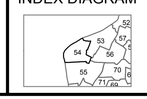
REVISED TO: JANUARY 1, 2017

PROPERTY MAPS

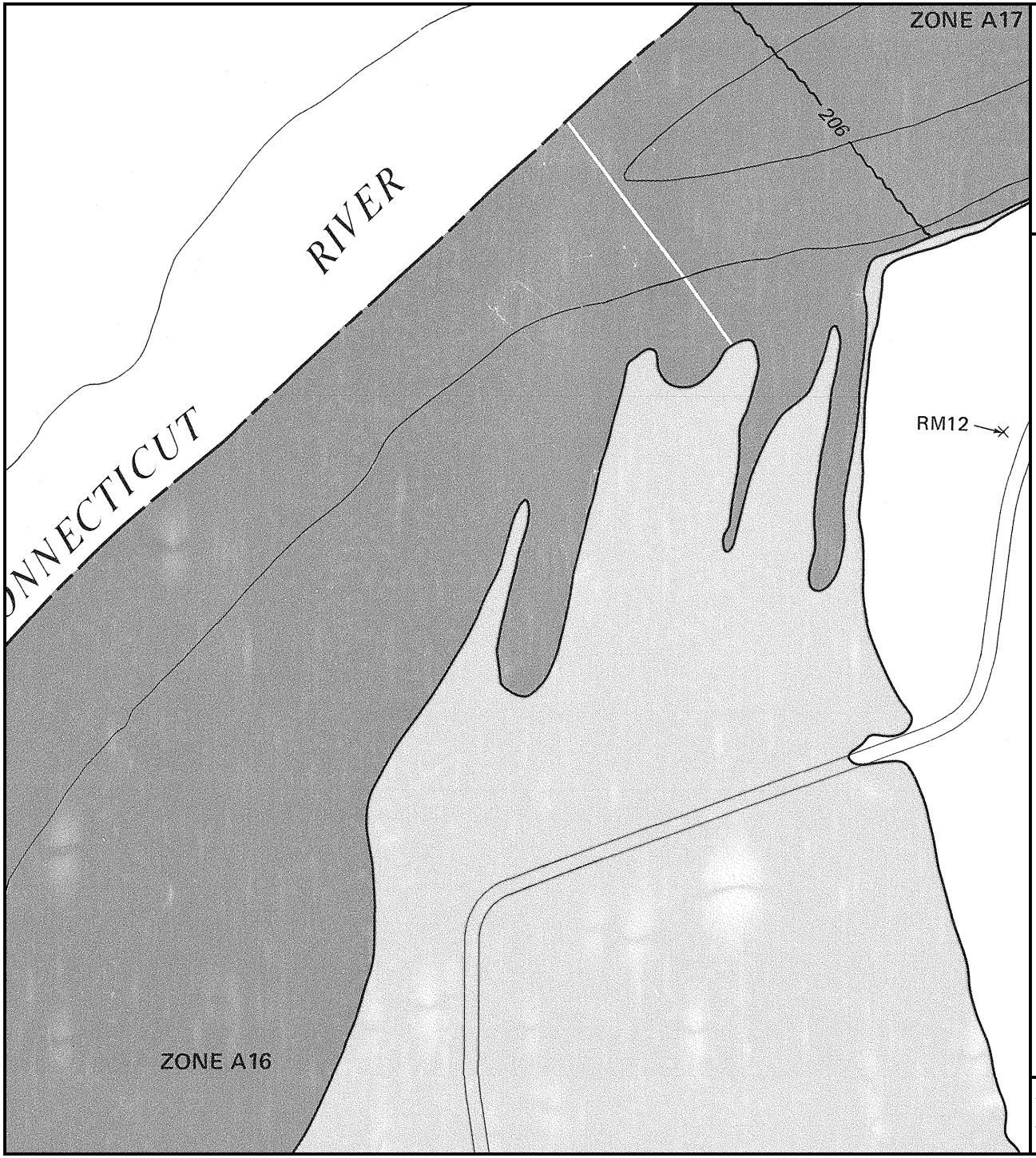
NORTHFIELD

MASSACHUSETTS

INDEX DIAGRAM



MAP NO. 54



APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
NORTHFIELD,
MASSACHUSETTS
FRANKLIN COUNTY

PANEL 10 OF 13
(SEE MAP INDEX FOR PANELS NOT PRINTED)

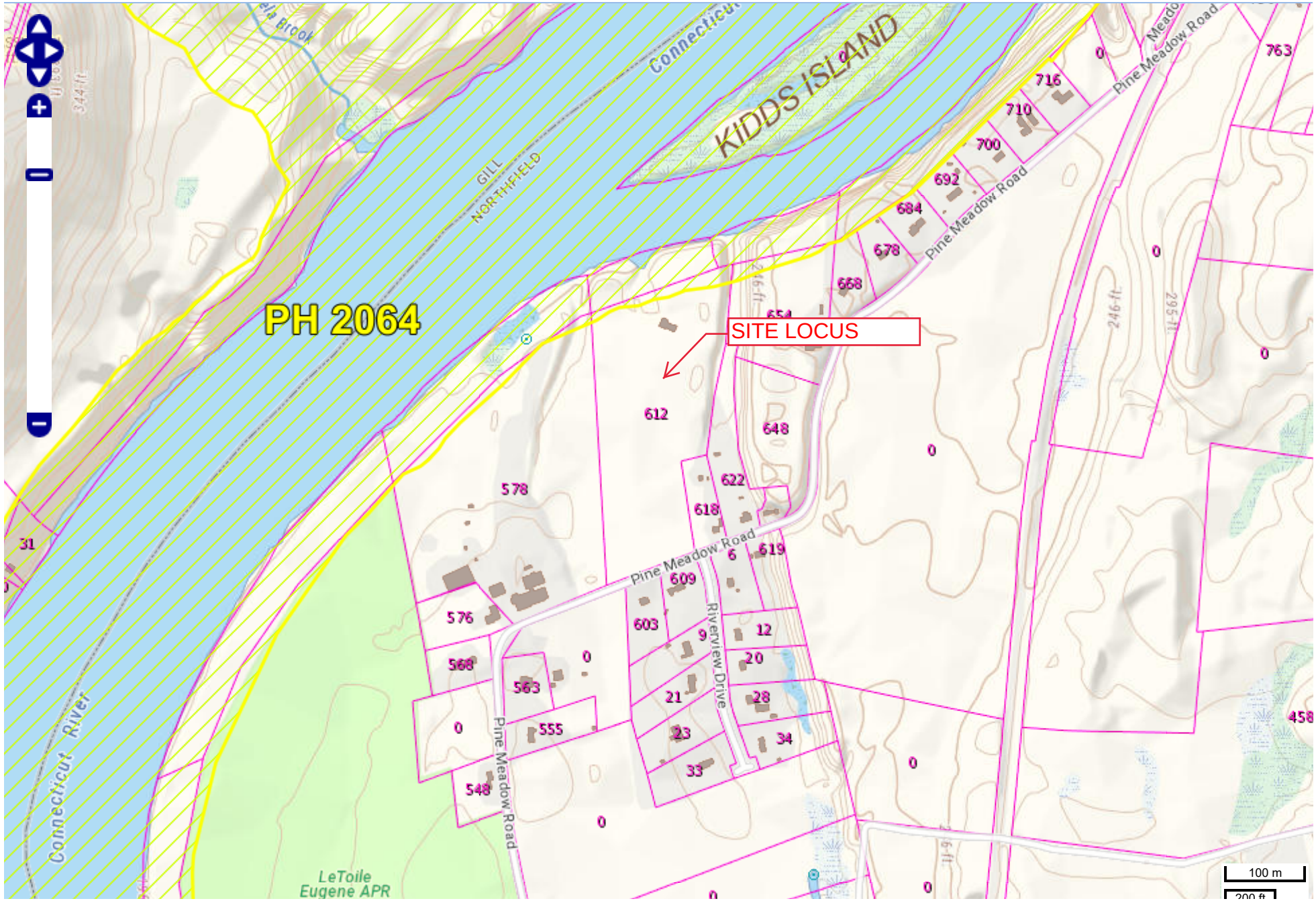
COMMUNITY-PANEL NUMBER
250124 0010 B

EFFECTIVE DATE:
SEPTEMBER 30, 1980

U.S. DEPARTMENT OF HOUSING
AND URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

OLIVER: MassGIS's Online Mapping Tool [Please take our user survey]

Search for a location | Zoom to a town



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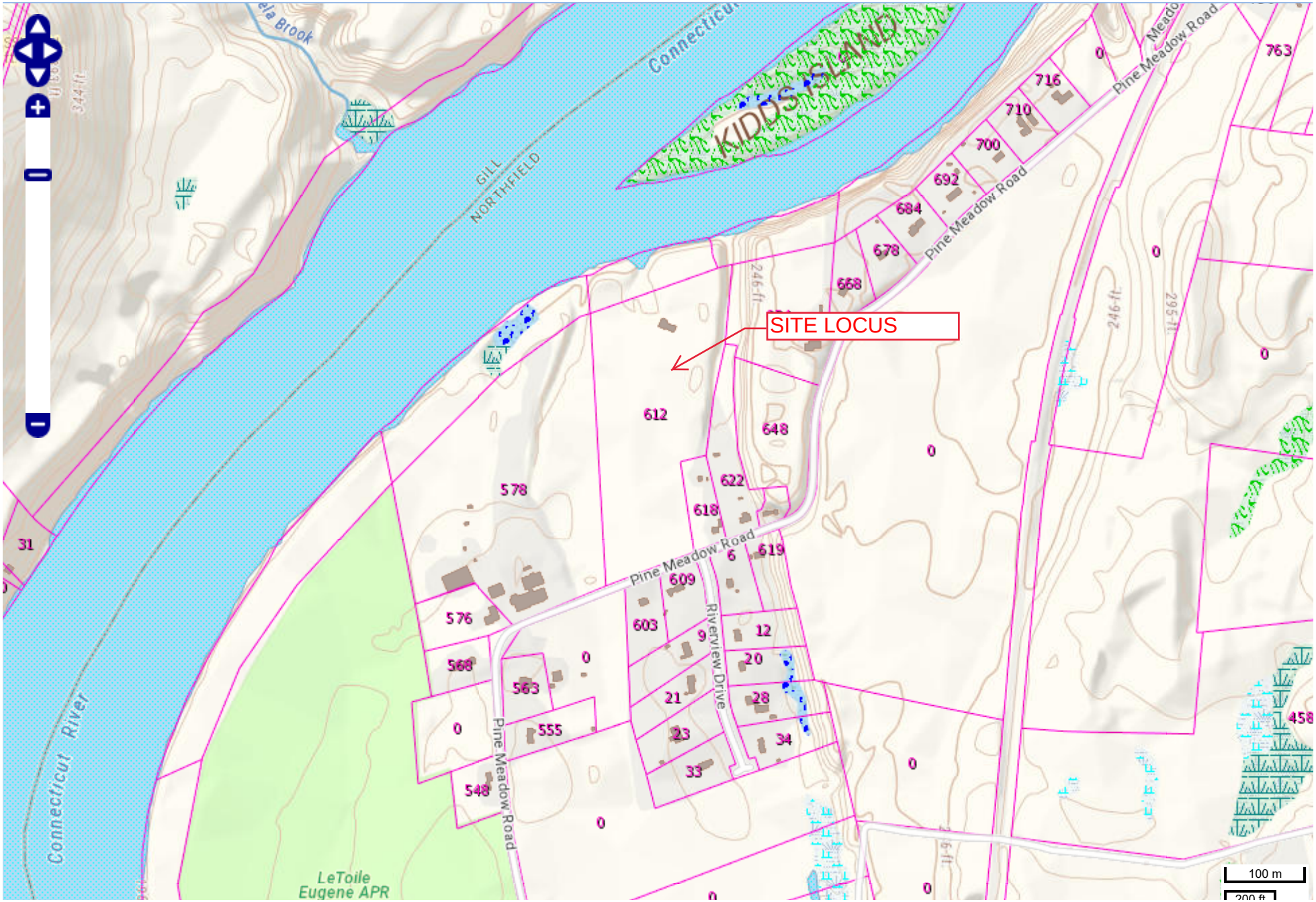


FIELD
ENGINEERING CO., INC.
CONSULTING ENGINEERS

11D Industrial Drive, P.O. Box 1178
Mattapoisett, Massachusetts 02739
Telephone: (508) 758-2749
Facsimile: (508) 758-2849

December 22, 2020
Project No. 2312

Ms. Jackie Firsty
BWC Otter Run, LLC
c/o BlueWave Solar
111 Huntington Avenue, Suite 650
Boston, MA 02199

RE: Decommissioning Cost Estimate
BWC Pine Meadow Brook Solar Array "C"
Northfield, Massachusetts

Dear Ms. Firsty:

As you have requested, Field Engineering Co. Inc. (FEC) has prepared this Decommissioning Plan and Cost Estimate for the proposed 0.6 MW DC solar array known as Pine Meadow Brook Solar Array "C" to be located on various parcels of land off of Pine Meadow Road in the Town of Northfield, Massachusetts.

Decommissioning Plan

- Electrical equipment will be sold back to the manufacturer or to a recycling facility.
- The project contains large amounts of copper, aluminum and other conductive metals which are easily recyclable.
- All non-recyclable materials will be taken to the nearest approved landfill for disposal.
- All resulting depressions, voids and excavation areas will be backfilled, graded to the proper elevation.
- All disturbed areas associated with the array will be re-vegetated in effort to return the landscape of the earth as close to its previous state as possible. This includes the gravel access drives within the fenced array area.
- A portion of the gravel access drive into the site will be retained for owner access to the property.
- Transformers, inverters and switchgear will be removed from their respective concrete pads.
- Fencing will be rolled up on an industrial sized spool and removed from the site.
- PV Panels will be detached from the racking system by and stacked for removal.
- Sections of the racking system will be scissored together and stacked for removal.
- Energy storage containers will be removed in accordance with applicable local, state, and federal regulations.
- Racking posts will be taken out of the ground using an excavator or front-end loader.
- The concrete foundations for the energy storage container, transformers and switchgear will be lifted, secured onto flat beds, and transported off-site for processing.
- AC and DC wiring, after proper disconnection, will be pulled out with an excavator.
- Any on site power poles for above ground wiring will be dug out and removed.
- The 13.2 KV electric lines will be removed by the local utility and are not the subject of this study.

Concrete that is "clean", meaning it doesn't have substantial amounts of rebar could be recycled at a local recycling facility free of charge.

Decommissioning Cost Estimate

Based on previous experience and work on a variety of different projects, we have developed a Decommissioning Cost Estimate based on the following assumptions for labor and equipment costs:

- Assume 10 minutes per pair of modules to calculate labor costs for module removal.
- Assume 8 minutes per post to calculate labor costs for post removal.
- Assume 8 minutes per post to calculate equipment costs associated with post removal.

The decommissioning costs have been based on the following information:

- 0.6 MW DC (approximately 1,350 Modules)
- Approximately 1.9 Acres of Fenced Area
- Two Equipment Pads including One Energy Storage System Pad

LABOR AND EQUIPMENT CALCULATIONS

Decommissioning Estimate Breakdown-Total Project						
Resource	Task	Task Quantity	Task Duration	Hours	Rate	Cost
Labor	Remove modules	675 pairs	10 minutes per pair	112.5	$ 30.00	$ 3,375.00
Labor	Remove Posts	340 posts	8 minutes per post	45.3	$ 30.00	$ 1,360.00
Labor	Remove fencing		8 Hours	8.0	$ 30.00	$ 240.00
Labor	Fine Grade & Seed Site		8 Hours	8.0	$ 30.00	$ 240.00
Labor	Remove Conduit		8 Hours	8.0	$ 30.00	$ 240.00
Labor	Remove Pad Equip.		8 Hours	8.0	$ 30.00	$ 240.00
Equipment	Remove posts	340 posts	8 minutes per post	45.3	$ 150.00	$ 6,800.00
Equipment	Excavate trenching		8 Hours	8.0	$ 150.00	$ 1,200.00
Equipment	Fine Grade & Seed Site		8 Hours	8.0	$ 150.00	$ 1,200.00
Equipment	Remove fencing		8 Hours	8.0	$ 150.00	$ 1,200.00
Equipment	Remove scrap		8 Hours	8.0	$ 150.00	$ 1,200.00
Equipment	Remove Pad Equip.		8 Hours	8.0	$ 150.00	$ 1,200.00
Equipment	Remove Pads		8 Hours	8.0	$ 150.00	$ 1,200.00

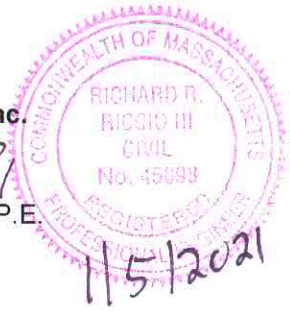
Totals				
Resource	Hours	Cost	# of Days	
Labor	189.83	$ 5,695.00	2.97	
Equipment	93.33	$ 14,000.00	5.83	

DECOMMISSIONING COST SUMMARY

Removal Cost Summary		
		Comments
Array Removal		
Laborers	$ 6,000.00	See above calculations
Equipment	$ 14,000.00	See above calculations
Debris containers w/ disposal	$ 4,000.00	5 Days X $800.00 per day
Energy Storage Container Removal	$ 10,000.00	Disposal and Hauling
Subtotal	$ 34,000.00	
Salvage Credit	($5,000.00)	Material Salvage + Hauling
Site Restoration Materials		
Seeding	$ 600.00	Assume 10 lb/acre @ $30/lb
Total Cost (2020 Dollars)	**$ 29,600.00**	
Total Cost (Year 20 Dollars)	**$ 46,900.00**	

If you have any questions or require any additional information, please do not hesitate to contact me directly at 508-758-2749.

Sincerely,
Field Engineering, Inc.



Richard R. Riccio III, P.E.
Project Manager

Execution Copy

Form of Removal Bond

Bond No._____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____, collectively as Principal, and SURETY COMPANY NAME, licensed to do business in the Commonwealth of Massachusetts, as Surety, are held and firmly bound unto the _____ (Obligee), in the penal sum_____ Dollars, lawful money of the United States of America, for the payment of which sum, well and truly to be made, the Principal and Surety do bind themselves, their heirs, executors, administrators, and successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the above bounden Principal has entered into a certain written Contract with the above named Obligee entitled "_____effective the ___ day of _____, 2018 and terminating twenty (20) years after _____, as defined in and more fully described in said Contract, which Contract is made a part hereof and incorporated herein by reference, except that nothing said therein shall alter, enlarge, expand or otherwise modify the term of the bond as set out below. Under said Contract, Principal is obligated to remove the Project from, and to restore, the Property as defined in Section ___ (Decommissioning Assurance) of the Contract.

NOW, THEREFORE, if Principal, its executors, administrators, successors and assigns shall promptly and faithfully perform the Contract according to the terms, stipulations and conditions of Section ___ (Decommissioning Assurance) of the Contract, then this obligation shall become null and void, otherwise to remain in full force and effect. Surety waives any right to receive any notice of any modifications or amendments to the Contract. This bond is executed by the Surety and accepted by the Obligee subject to the following express condition:

Notwithstanding the provisions of the Contract, the term of this bond shall apply from _____, _____, until _____, _____, and may be extended by the Surety by Continuation Certificate. However, neither nonrenewal by the Surety, nor the failure or inability of the Principal to file a replacement bond in the event of nonrenewal, shall itself constitute a loss to the Obligee recoverable under this bond or any renewal or continuation thereof, provided that the foregoing shall not relieve Principal of its obligation to furnish a replacement bond in the event of nonrenewal, as set forth in the Contract, nor for any liabilities arising from its failure to do so. The liability of the Surety under this bond and all continuation certificates issued in connection therewith shall not be cumulative and shall in no event exceed the amount as set forth in this bond or in any additions, riders, or endorsements properly issued by the Surety as supplements thereto.

Sealed with our seals and dated this ___ day of _____, _____.

_____
(Principal) (Seal)

_____ _____
(Witness) (Title)
SURETY COMPANY

_____ _____
(Attest) (Attorney -in-Fact)

Section 8 – Proof of Utility Notification and Preliminary One-Line Electrical Diagram

EVERSOURCE

Generating Facility Expedited/Standard Process
Interconnection Application

Contact Information: Date Prepared: 1/29/19

Legal Name and address of Interconnecting Customer

Interconnecting Customer (print): BWC Pine Meadow Brook, LLC Contact Person: Eric Graber-Lopez

Mailing Address: 111 Huntington Ave, Suite 650

City: Boston State: MA Zip Code: 02199

Telephone (Daytime): 617-209-3122 (Evening): -

Facsimile Number: 617-395-2730 E-Mail Address: interconnection@bluewavesolar.com

Customer name (if Customer is not Interconnecting Customer) _____

Customer email: _____ Customer telephone: _____

Customer Mailing Address:

_____

City: _____ State: _____ Zip Code: _____

Landowner name (if neither Interconnecting Customer nor Customer)

Hopping Ahead, LLC

Landowner email: - Landowner telephone: 413-498-2968

Landowner Mailing Address:

496 Pine Meadow Rd

City: Northfield State: MA Zip Code: 01360

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Alternative Contact Information
(e.g., system installation contractor or coordinating company, if appropriate):

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Ownership (include % ownership by any electric utility):
0

Site Control? (Y/N) Y

Will Facility be constructed on a single parcel of land? (Y/N) N

Authorized/Proposed generation capacity already exists (check all that apply):

☐ On Current Account ☐ On Same Legal Parcel of Land ☐ In Same Building/Structure

If any apply, include existing generation capacity on design diagrams, and provide Application Number(s): _____

Confidentiality Statement: "I agree to allow information regarding the processing of my application (without my name and address) to be reviewed by the Massachusetts DG Working Group that is exploring ways to further expedite future interconnections." Yes X No ____

Group Study Agreement: "I understand and agree if my project becomes part of a Group Study, the Company is authorized to share my contact information and project details with other parties that are also involved in the Group Study."

Generating Facility Information

Please provide all Pre-Application Reports (either mandatory or optional) as attachments. This is mandatory for systems greater than or equal to 500 kW.

Address of Facility: 0 Pine Meadow Rd

City: Northfield State: MA Zip Code: 01360

Electric Distribution Company:
WMECO

Account Number: New Account #

Meter Number: New Meter #

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System Design Capacity: Nominal 4980 (kW) 4980 (kVA)

Maximum 4980 (kW) 4980 (kVA)

For Solar PV provide the DC-STC rating: 6980 (kW_{DC})

Type of Generating Unit: Synchronous _____ Induction _____ Inverter X

Manufacturer: Power Electronics Model: FS2600CU15

Prime Mover: ☐ Fuel Cell ☐ Reciprocating Engine ☐ Gas Turbine ☐ Steam Turbine ☐ Microturbine ☒ Photovoltaic Other _____

Energy Source: ☒ Solar ☐ Wind ☐ Hydro ☐ Diesel ☐ Natural Gas ☐ Fuel Oil Other _____ (Please Specify)

For Solar PV provide the DC-STC rating: 6980 (kW)

IEEE 1547.1 (UL 1741) Listed? Yes X No _____

1) Generating Unit Type 1

Manufacturer: Power Electronics Model Name and Number: FS2600CU15

Quantity: 2

Single __ or Three X Phase

AC Rating: Nominal: 2600 (kW) 2600 (kVA) 600 (AC Volts)

Maximum: 3110 (kW) 3110 (kVA) 600 (AC Volts)

Values above are original nameplate only. Units will be de-rated to 2490 kW maximum.

2) Generating Unit Type 2 (if applicable)

Manufacturer: _____ Model Name and Number: _____

Quantity: _____

Single __ or Three __ Phase

AC Rating: Nominal: _____ (kW) _____ (kVA) _____ (AC Volts)

Maximum: _____ (kW) _____ (kVA) _____ (AC Volts)

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3) Generating Unit Type 3 (if applicable)

Manufacturer: _____Model Name and Number: _____

Quantity: _____

Single __ or Three __ Phase

AC Rating: Nominal: _____ (kW) _____ (kVA) _____ (AC Volts)

Maximum: _____ (kW) _____ (kVA) _____ (AC Volts)

Need an air quality permit from DEP? Yes ____ No X Not Sure ____

If "yes", have you applied for it? Yes ____ No ____

Planning to Export Power? Yes X No ____ A Cogeneration Facility? Yes____ No X

Anticipated Export Power Purchaser:

_____

Export Form? Simultaneous Purchase/Sale ____ Net Purchase/Sale ____ Net Metering ____

Other (Specify)

_____

If net metering, please refer to Schedule Z of the Standards for Interconnection of Distributed Generation.Please note that if under the public cap, all off-takers must be a Municipality or Other Governmental Entity (as defined in 220 C.M.R. 18.02) and therefore be certified by the DPU.

Est. Install Date: 1/29/20 Est. In-Service Date: 1/29/20 Agreement Needed By: 1/29/20

Application Process

I am opting to forego the Expedited Process. Please review this application under the Standard Process. Yes X No ____

I hereby certify that, to the best of my knowledge, all of the information provided in this application is truc:

Interconnecting Customer Signature: _____ Title: Sr. Vice Pres. Date: February 19, 2019

_____

The information provided in this application is complete:

Company Signature: _____ Title: _____ Date:

_____

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Generating Facility Technical Detail

Information on components of the generating facility that are currently Listed

	Equipment Type	Manufacturer	Model	National Standard
1.	Inverter	Power Electronics	FS2600CU15	UL1741SA, IEEE1547.1
2.	Recloser	Tavrida	OSM25	ANSI C37
3.	Transformer	TBD	TBD	ANSI C57
4.	Protective Relay	SEL	651R	ANSI C37
5.				
6.				

Total Number of Generating Units in Facility?
2

Generator Unit Power Factor Rating:
>0.99

Max Adjustable Leading Power Factor? 0.00 Max Adjustable Lagging Power Factor? 0.00

Generator Characteristic Data (for all inverter-based machines)

Max Design Fault Contribution Current? 10,293A pk / 1890A RMS PER INVERTER Instantaneous ____ or RMS? ____

Harmonics Characteristics:
THD <3% per IEEE519

Start-up power requirements:

Generator Characteristic Data (for all rotating machines)

Rotating Frequency: _____ (rpm) Neutral Grounding Resistor (If Applicable): _____

Additional Information for Synchronous Generating Units

Synchronous Reactance, Xd: _____ (PU) Transient Reactance, X'd: _____ (PU)

Subtransient Reactance, X'd: _____ (PU) Neg Sequence Reactance, X2: _____ (PU)

Zero Sequence Reactance, Xo: _____ (PU) kVA Base: _____

Field Voltage: _____ (Volts) Field Current: _____ (Amps)

Additional information for Induction Generating Units

Rotor Resistance, Rr: _____ Stator Resistance, Rs: _____

Rotor Reactance, Xr: _____ Stator Reactance, Xs: _____

Magnetizing Reactance, Xm: _____ Short Circuit Reactance, Xd": _____

Exciting Current: _____ Temperature Rise: _____

Frame Size: _____

Total Rotating Inertia, H: _____ Per Unit on kVA Base: _____

Reactive Power Required In Vars (No Load): _____

Reactive Power Required In Vars (Full Load): _____

Additional information for Induction Generating Units that are started by motoring

Motoring Power: _____ (kW) Design Letter: _____

Interconnection Equipment Technical Detail Date:_____

Will a transformer be used between the generator and the point of interconnection?
Yes X No _____

Will the transformer be provided by Interconnecting Customer? Yes X No ____

Transformer Data (if applicable, for Interconnecting Customer-Owned Transformer):

Nameplate Rating: (2) 2500 (kVA) Single ____ or Three X Phase

Transformer Impedance: 5.75 (%) on a 2500 kVA Base

If Three Phase:
Transformer Primary: 13800 (Volts)____ Delta____ Wye X WyeGrounded ____ Other
Transformer Secondary: 600 (Volts)____ X Delta____ Wye____ WyeGrounded ____ Other

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Transformer Fuse Data (if applicable, for Interconnecting Customer-Owned Fuse):
(Attach copy of fuse manufacturer's Minimum Melt & Total Clearing Time-Current Curves)

Manufacturer: _____ Type: _____ Size: _____ Speed: _____

Interconnecting Circuit Breaker (if applicable):

Manufacturer: _____ Type: _____ Load Rating: _____ (Amps)
Interrupting Rating: _____ (Amps) Trip Speed: _____ (Cycles)

Interconnection Protective Relays (if applicable):
(If microprocessor-controlled)

List of Functions and Adjustable Setpoints for the protective equipment or software:

	Setpoint Function	Minimum	Maximum
1.	See Oneline Diagram		
2.			
3.			
4.			
5.			
6.			

(If discrete components)

(Enclose copy of any proposed Time-Overcurrent Coordination Curves)

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Current Transformer Data (if applicable):

(Enclose copy of Manufacturer's Excitation & Ratio Correction Curves)

Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: ____

Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: ____

Potential Transformer Data (if applicable):

Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: ____

Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: ____

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General Technical Detail Date: _____

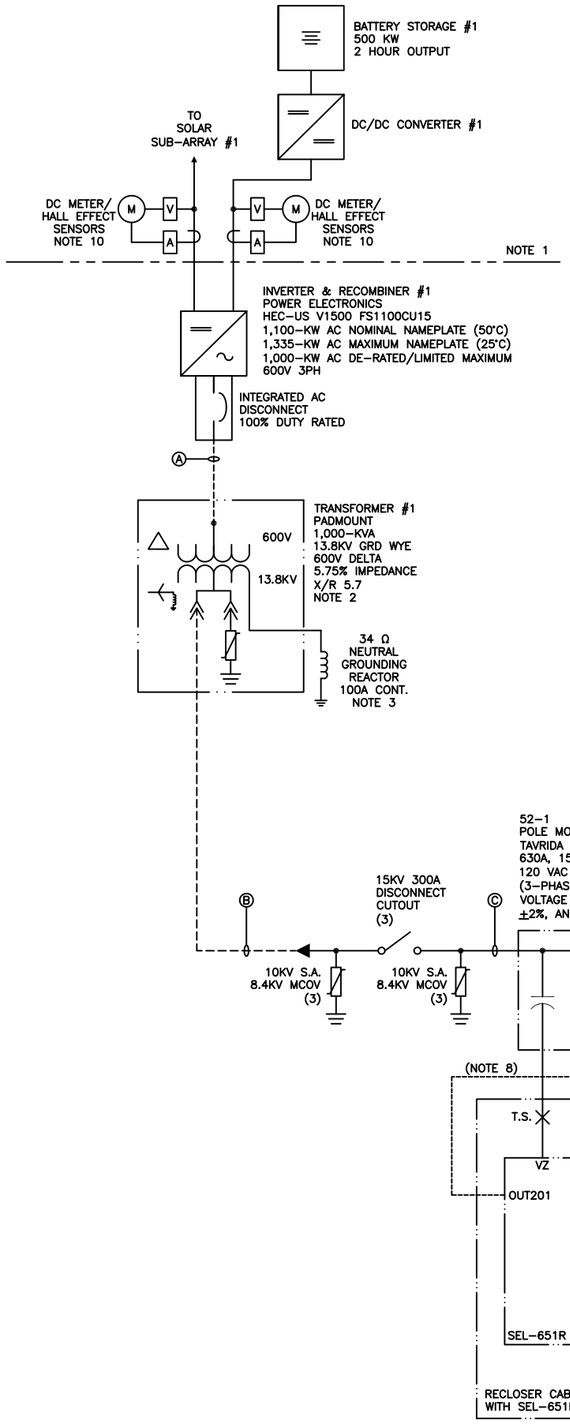
Enclose 3 copies, or send 1 electronic copy, of site electrical One-Line Diagram showing the configuration of all generating facility equipment, current and potential circuits, and protection and control schemes with a Massachusetts registered professional engineer (PE) stamp. Enclose 3 copies, or send 1 electronic copy, of any applicable site documentation that indicates the precise physical location of the proposed generating facility (e.g., USGS topographic map or other diagram or documentation).

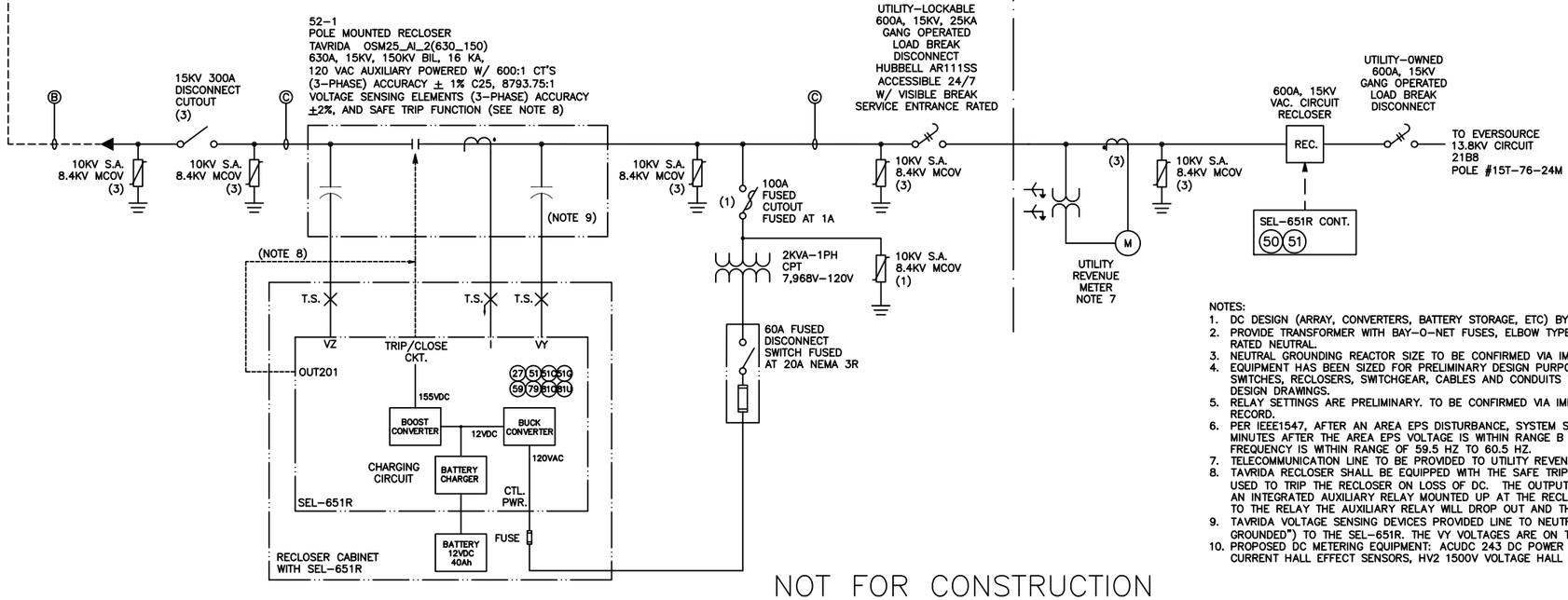
Proposed Location of Protective Interface Equipment on Property:
(Include Address if Different from Application Address)

Enclose copy of any applicable site documentation that describes and details the operation of the protection and control schemes.

Enclose copies of applicable schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (if applicable).

When mailing application fee checks, please enclose a copy of this signed interconnection application form with the payment.Please enclose any other information pertinent to this Facility.





NOT FOR CONSTRUCTION

WIRE AND CONDUIT SCHEDULE				
ID	VOLTAGE	SETS	WIRE	CONDUIT
A	1000V	4	(3) 600 KCMIL CU	(4) 4"
B	15KV	1	(3) #2 AWG AL, FULL NEUTRAL, XLPE-133%, MV-105	(1) 4"
C	15KV	1	(3) #2 AWG ACSR COVERED OVERHEAD WIRE	N/A

INVERTER PROTECTIVE SETTINGS			
INVERTER PROTECTIVE FUNCTIONS	PICKUP SETTING		OPERATING TIME CYC. (SEC.)
	PERCENT	VALUE	
27P1 – UNDERVOLTAGE	50%	300.0V	66 (1.10)
27P2 – UNDERVOLTAGE	88%	528.0V	120 (2.00)
59P1 – OVERVOLTAGE	110%	660.0V	120 (2.00)
59P2 – OVERVOLTAGE	120%	720.0V	9.6 (0.16)
81U1 – UNDERFREQUENCY	–	56.5 Hz	9.6 (0.16)
81U2 – UNDERFREQUENCY	–	58.5 Hz	18000 (300)
81O1 – OVERFREQUENCY	–	61.2 Hz	18000 (300)
81O2 – OVERFREQUENCY	–	62.0 Hz	9.6 (0.16)

* SETTINGS ARE BASED ON IEEE-1547 AND NPCC DIRECTIVE 12 FIGURE 1 CURVE.
* VOLTAGE SETTINGS ARE BASED ON LINE TO LINE VOLTAGES.

PROTECTIVE RELAY SETTINGS 52-1			
SEL-651R PROTECTIVE FUNCTIONS	PICKUP SETTING		OPERATING TIME (SECONDS)
	PERCENT	VALUE	
27P1 – UNDERVOLTAGE	50%	0.45V (3,984V)	TOTAL: 1.10 RELAY: 1.05
27P2 – UNDERVOLTAGE	88%	0.80V (7,012V)	TOTAL: 2.00 RELAY: 1.95
59P1 – OVERVOLTAGE	110%	1.00V (8,764V)	TOTAL: 2.00 RELAY: 1.95
59P2 – OVERVOLTAGE	120%	1.09V (9,561V)	TOTAL: 0.16 RELAY: 0.11
81UP1 – UNDERFREQUENCY	–	56.5 Hz	TOTAL: 0.16 RELAY: 0.11
81UP2 – UNDERFREQUENCY	–	58.5 Hz	TOTAL: 300.00 RELAY: 299.95
81OP1 – OVERFREQUENCY	–	61.2 Hz	TOTAL: 300.00 RELAY: 299.95
81OP2 – OVERFREQUENCY	–	62.0 Hz	TOTAL: 0.16 RELAY: 0.11
51 – PHASE TIME OVERCURRENT	0.09A (52A PRI.)		CURVE: U4 T.D.: 2.0
51G – GROUND TIME OVERCURRENT	0.04A (21A PRI.)		CURVE: U4 T.D.: 2.0
79 – AUTO RESTORE VOLT. RANGE	1.49 (13,110)≤V≤1.66 (14,600)		300
79 – AUTO RESTORE FREQ. RANGE	59.5≤f≤60.5		300
ALARM – HARDWARE AND LOSS OF POWER (AC AND DC)	–	–	< 120

* 79 FUNCTION IS ONLY ENABLED ON VOLTAGE AND FREQUENCY DISTURBANCES. A 5 MINUTE DELAY FOR THE 79 FUNCTION IS ENABLED ON VOLTAGE AND FREQUENCY DISTURBANCES ONLY. A 5 MINUTE DELAY WILL BE SET FOR RECLOSING UPON GOOD QUALITY VOLTAGE. THE FIVE MINUTE TIME INTERVAL WILL RESTART IF THE UTILITY VOLTAGE OR FREQUENCY FALLS OUTSIDE OF THE WINDOW IDENTIFIED IN THE ABOVE CHART. RECLOSER WILL LOCKOUT ON OVERCURRENT OPERATION.

* RECLOSER WILL ONLY BE ALLOWED TO CLOSE WHEN THE VOLTAGE AND FREQUENCY ARE IN COMPLIANCE WITH IEEE-1547 AND ANSI C84.1, TABLE 1. VOLTAGE RANGE 95% TO 105.8% OF NOMINAL. VOLTAGE IS BASED ON LINE TO LINE VOLTAGE. FREQUENCY BETWEEN 59.5HZ TO 60.5HZ.

* SETTINGS ARE BASED ON IEEE-1547 AND ANSI C84.1 AND NPCC DIRECTIVE 12 FIGURE 1 CURVE.

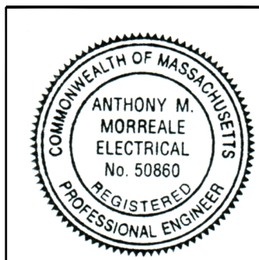
* RELAY WILL AUTOMATICALLY TRIP AND BLOCK CLOSE IF THERE IS A HARDWARE FAILURE OR POWER SUPPLY FAILURE AND ON ANY OVERCURRENT OPERATION (51, 51C, 51G). THIS WILL BE DONE VIA LOGIC IN THE SEL-651R RELAY.

* TOTAL CLEARING TIME INCLUDES RELAY OPERATING TIME AND RECLOSER OPERATING TIME. RECLOSER OPERATING TIME IS 3.0 CYCLES.

* VOLTAGE SETTINGS BASED ON LINE TO NEUTRAL VOLTAGE.

AGGREGATE AC SYSTEM RATING		
INVERTER RATING	QTY	AGGREGATE RATING
1,000-KW DE-RATED	1	1,000 KW DE-RATED

NOTES:
1. DC DESIGN (ARRAY, CONVERTERS, BATTERY STORAGE, ETC) BY OTHERS.
2. PROVIDE TRANSFORMER WITH BAY-O-NET FUSES, ELBOW TYPE S.A. (8.4KV MCOV), AND FULLY RATED NEUTRAL.
3. NEUTRAL GROUNDING REACTOR SIZE TO BE CONFIRMED VIA IMPACT STUDY.
4. EQUIPMENT HAS BEEN SIZED FOR PRELIMINARY DESIGN PURPOSES. ALL EQUIPMENT, INCLUDING, SWITCHES, RECLOSERS, SWITCHGEAR, CABLES AND CONDUITS TO BE SIZED AND LISTED ON FINAL DESIGN DRAWINGS.
5. RELAY SETTINGS ARE PRELIMINARY. TO BE CONFIRMED VIA IMPACT STUDY AND ENGINEER OF RECORD.
6. PER IEEE1547, AFTER AN AREA EPS DISTURBANCE, SYSTEM SHALL NOT RECONNECT UNTIL 5 MINUTES AFTER THE AREA EPS VOLTAGE IS WITHIN RANGE B OF ANSI C84.1-1995, TABLE 1 AND FREQUENCY IS WITHIN RANGE OF 59.5 HZ TO 60.5 HZ.
7. TELECOMMUNICATION LINE TO BE PROVIDED TO UTILITY REVENUE METERING.
8. TAVRIDA RECLOSER SHALL BE EQUIPPED WITH THE SAFE TRIP FUNCTION. THIS FUNCTION WILL BE USED TO TRIP THE RECLOSER ON LOSS OF DC. THE OUTPUT CONTACT (OUT201) IS WIRED TO AN INTEGRATED AUXILIARY RELAY MOUNTED UP AT THE RECLOSER. UPON LOSS OF ALL POWER TO THE RELAY THE AUXILIARY RELAY WILL DROP OUT AND THE RECLOSER WILL TRIP.
9. TAVRIDA VOLTAGE SENSING DEVICES PROVIDED LINE TO NEUTRAL VOLTAGE INPUTS ("WYE GROUNDED") TO THE SEL-651R. THE VY VOLTAGES ARE ON THE UTILITY SIDE OF THE RECLOSER.
10. PROPOSED DC METERING EQUIPMENT: ACUDC 243 DC POWER AND ENERGY METERS, HAK & HAB CURRENT HALL EFFECT SENSORS, HV2 1500V VOLTAGE HALL EFFECT SENSORS.



FIRM NAME: LIG CONSULTANTS, PC	
FIRM REG #: N/A	
PROF. ENGINEER: ANTHONY M. MORREALE, P.E.	
ENGINEER LICENSE #: 50860	

REV	DATE	DESCRIPTION	DRW	APR'D

DES	
DRW	
CHK	

LIG Consultants, PC

BWC OTTER RUN, LLC
PINE MEADOW RD C, NORTHFIELD, MA
1.0 MW-AC SOLAR PV & STORAGE SYSTEM – INTERCONNECTION ONELINE

SIZE	DATE: 4/16/2019
B	SCALE: NTS
SHEET 1of1	DWG NO: E-001
	FILE NO:

RBI SOLAR

Solar Mounting Systems

GROUND MOUNT

DESIGN ENGINEERING MANUFACTURING INSTALLATION

www.rbisolar.com

somera

HIGH EFFICIENCY MONO-Si PV MODULES

vikramsolar

CREATING CLIMATE FOR CHANGE

SOMERA VSMDHT.72.AAA.05 | MONOCRYSTALLINE SOLAR PV MODULES | 144 CELLS | 380-420 WATT

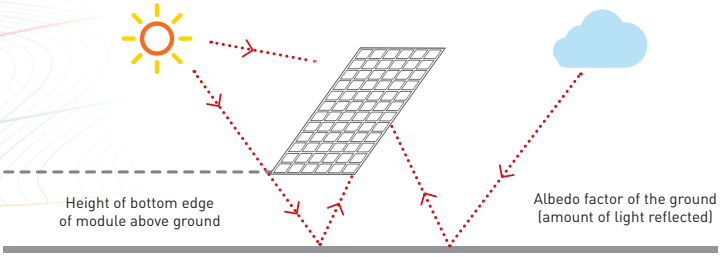
SOMERA P-DUPLEX HALF-CELL144 P-TYPE BIFACIAL MODULE

BIFACIAL MODULE

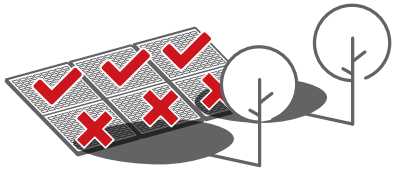
UP TO 480 W @15% BIFACIAL GAIN

144 MONO PERC SOLAR CELLS

- **UP TO 27 YEARS** linear power warranty
- **HIGHER LIFETIME YIELD** by using transparent Dupont® backsheet
- **UP TO 15% POWER GAIN** from ground facing side
- Bypass diodes and innovative series-parallel connections enable the module to perform better in **PARTIAL SHADOW CONDITIONS**
- Half-cell generates only half the current, lowering heat production and **LESS HOT SPOT**, increasing module reliability
- **LIGHT WEIGHT** easy to install bifacial module



INCREASED SHADE TOLERANCE



HALF-CELL MODULE

Functions like two parallel modules, enabling the half-cell string to work in partial shading

Þ Applicable in USA | µ Applicable in Europe, Indian Subcontinent and ROW (excluding USA) | ¢ Applicable in India

QUALITY AND SAFETY

- 27 years of linear power output warranty **
- Rigorous quality control meeting the highest international standards
- 100% EL tested to minimise micro crack
- Certified for salt mist corrosion resistance – severity VI
- Excellent anti-PID performance
- Positive power tolerance

APPLICATIONS

- Utility scale applications
- Greenhouse applications
- Agricultural industry applications

TECHNICAL DATA

SOMERA P-DUPLEX HALF-CELL

144 P-TYPE BIFACIAL MODULE

vikramsolar
CREATING CLIMATE FOR CHANGE

THIS DATASHEET IS APPLICABLE FOR: SOMERA VSMDHT.72.AAA.05 (AAA=380-420)

Electrical Data[1,2]

All data refers to STC (AM 1.5, 1000 W/m², 25°C)

Peak Power P_{max} (Wp) (0~ +4.99Wp)	380	385	390	395	400	405	410	415	420
Maximum Voltage V_{mpp} (V)	40.3	40.4	40.5	40.6	40.7	40.8	41.1	41.3	41.4
Maximum Current I_{mpp} (A)	9.43	9.53	9.62	9.73	9.83	9.92	9.97	10.06	10.14
Open Circuit Voltage V_{oc} (V)	47.2	47.3	47.4	47.5	47.6	47.7	48.0	48.2	48.2
Short Circuit Current I_{sc} (A)	10.05	10.17	10.28	10.39	10.51	10.61	10.67	10.77	10.88
Module Efficiency η(%)	18.63	18.88	19.13	19.37	19.62	19.86	20.11	20.35	20.60

1) STC:1000 W/m² irradiance, 25°C cell temperature, AM1.5g spectrum according to EN 60904-3. | 2) Power measurement uncertainty is within +/- 3%.

Electrical Parameters at NOCT[3]

Power (W)	281.2	284.9	288.6	292.3	296.0	299.7	303.4	307.1	310.8
V@P_{max} (V)	37.1	37.2	37.3	37.4	37.4	37.6	37.8	38.0	38.1
I@P_{max} (A)	7.56	7.64	7.72	7.81	7.89	7.96	8.00	8.07	8.14
V_{oc} (V)	43.6	43.7	43.8	44.0	44.0	44.2	44.4	44.6	44.6
I_{sc} (A)	8.05	8.14	8.23	8.31	8.40	8.48	8.54	8.62	8.71

3) NOCT irradiance 800 W/m², ambient temperature 20°C, wind speed 1 m/sec

Equivalent Bifacial Output

Bifacial Gain	Overall Power output (W)						
5%	410	415	420	425	431	436	441
10%	429	435	440	446	451	457	462
15%	449	454	460	466	472	477	483

Temperature Coefficients (Tc) permissible operating conditions

Tc of Open Circuit Voltage (β)	-0.27%/°C
Tc of Short Circuit Current (α)	0.065%/°C
Tc of Power (γ)	-0.35%/°C
Maximum System Voltage	1500V
NOCT	45°C ± 2°C
Temperature Range	-40°C to + 85°C

Mechanical Data

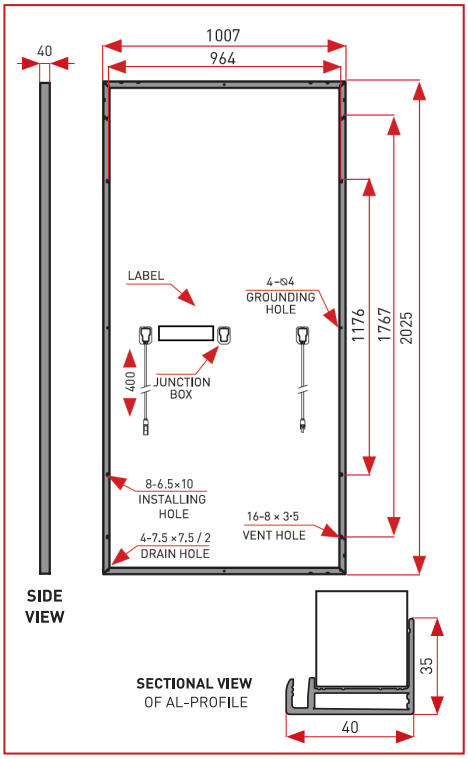
Length × Width × Height	2025 × 1007 × 40 mm(79.72 × 39.64 × 1.57 inches)
Weight	22.8 kg (50.26 lbs)
Junction Box	IP68/IP67, Split Junction Box with individual bypass diodes
Cable & Connectors#	400 mm length cables,MC4 Compatible/MC4 Connectors
Application Class	Class A (Safety class II)
Superstrate	3.2 mm (0.125 inches) high transmission low iron tempered glass, AR coated
Cells	72 Mono PERC (144 half-cells) P-Type Bifacial solar cells
Back Sheet	High Transmittance Composite film with Clear Tedlar® from Dupont®
Frame	Anodized aluminium frame with twin wall profile
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Maximum Series Fuse Rating	20 A

Warranty and Certifications

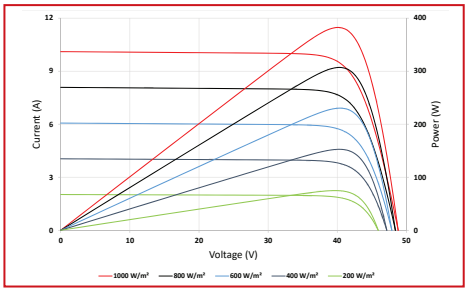
Product Warranty**	10 years
Performance Warranty**	Linear Power Warranty for 27 years with 3% for 1st year degradation and 0.65% from year 2 to year 27
Approvals and Certificates^	IEC 61215 : 2016, IEC 61730 : 2016, IEC 61701, IEC 62716, IEC 60068-2-68, IEC 62804, CE, CEC (California), UL 1703

^ All (^) certifications under progress. | ** Refer to Vikram Solar's warranty document for terms and conditions. | # 1200mm (47.24 inches) cable length is also available

Dimensions in mm

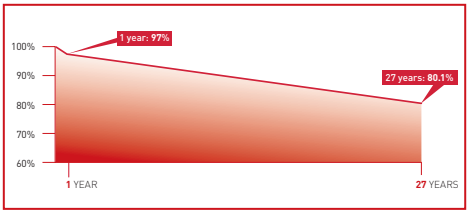


Typical I-V Curves[4]



4) Average relative efficiency reduction of 5% at 200 W/m² according to EN 60904-1.

Performance Warranty



Packaging Information

Quantity /Pallet	27
Pallets/Container (40'HC)	22
Quantity/Container (40'HC)	594

CAUTION: READ SAFETY AND INSTALLATION MANUAL BEFORE USING THE PRODUCT.

Design flexibility

- 1000 V DC or 600 V DC
- Two independent DC inputs
- 15° to 90° mounting angle range
- Detachable DC Connection Unit

System efficiency

- 98.0% CEC, 98.6% Peak
- 1000 V DC increases system efficiency
- OptiTrac Global Peak MPPT

Enhanced safety

- Integrated DC AFCI
- Floating system with all-pole sensitive ground fault protection
- Reverse polarity indicator in combination with Connection Unit

Future-proof

- Complete grid management feature set
- Integrated Speedwire, WebConnect, ModBus interface
- Bi-directional Ethernet communications
- Utility-interactive controls for active and reactive power

SUNNY TRIPOWER 12000TL-US / 15000TL-US / 20000TL-US / 24000TL-US / 30000TL-US

The ultimate solution for decentralized PV plants, now up to 30 kilowatts

The world's best-selling three-phase PV inverter, the SMA Sunny Tripower TL-US, is raising the bar for decentralized commercial PV systems. This three-phase, transformerless inverter is UL listed for up to 1000 V DC maximum system voltage and has a peak efficiency above 98 percent, while OptiTrac Global Peak minimizes the effects of shade for maximum energy production. The Sunny Tripower delivers a future-proof solution with full grid management functionality, cutting edge communications and advanced monitoring. The Sunny Tripower is also equipped with all-pole ground fault protection and integrated AFCI for a safe, reliable solution. It offers unmatched flexibility with a wide input voltage range and two independent MPP trackers. Suitable for both 600 V DC and 1,000 V DC applications, the Sunny Tripower allows for flexible design and a lower levelized cost of energy.

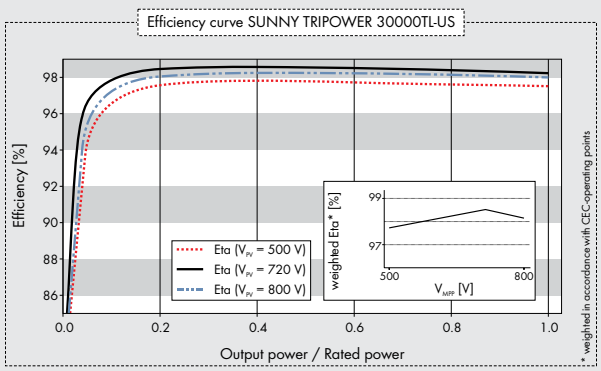
Technical data	Sunny Tripower 12000TL-US	Sunny Tripower 15000TL-US	Sunny Tripower 20000TL-US	Sunny Tripower 24000TL-US	Sunny Tripower 30000TL-US
Input (DC)					
Max. usable DC power (@ cos φ = 1)	12250 W	15300 W	20400 W	24500 W	30800 W
Max. DC voltage	*1000 V	*1000 V	*1000 V	*1000 V	1000 V
Rated MPPT voltage range	300 V...800 V	300 V...800 V	380 V...800 V	450 V...800 V	500 V...800 V
MPPT operating voltage range	150 V...1000 V	150 V...1000 V	150 V...1000 V	150 V...1000 V	150 V...1000 V
Min. DC voltage / start voltage	150 V / 188 V	150 V / 188 V	150 V / 188 V	150 V / 188 V	150 V / 188 V
Number of MPP tracker inputs	2	2	2	2	2
Max. input current / per MPP tracker input	66 A / 33 A	66 A / 33 A	66 A / 33 A	66 A / 33 A	66 A / 33 A
Output (AC)					
AC nominal power	12000 W	15000 W	20000 W	24000 W	30000 W
Max. AC apparent power	12000 VA	15000 VA	20000 VA	24000 VA	30000 VA
Output phases / line connections	3 / 3-N-PE				3 / 3-N-PE, 3-PE
Nominal AC voltage	480 / 277 V WYE				480 / 277 V WYE, 480 V Delta
AC voltage range	244 V...305 V				
Rated AC grid frequency	60 Hz				
AC grid frequency / range	50 Hz, 60 Hz / -6 Hz...+5 Hz				
Max. output current	14.4 A	18 A	24 A	29 A	36.2 A
Power factor at rated power / adjustable displacement	1 / 0.0 leading...0.0 lagging				
Harmonics	< 3%				
Efficiency					
Max. efficiency / CEC efficiency	98.2% / 97.5%	98.2% / 97.5%	98.5% / 97.5%	98.5% / 98.0%	98.6% / 98.0%
Protection devices					
DC reverse polarity protection	●	●	●	●	●
Ground fault monitoring / grid monitoring	●	●	●	●	●
All-pole sensitive residual current monitoring unit	●	●	●	●	●
DC AFCI compliant to UL 1699B	●	●	●	●	●
AC short circuit protection	●	●	●	●	●
Protection class / overvoltage category	I / IV	I / IV	I / IV	I / IV	I / IV
General data					
Dimensions (W / H / D) in mm (in)	665 / 650 / 265 (26.2 / 25.6 / 10.4)				
Packing dimensions (W / H / D) in mm (in)	780 / 790 / 380 (30.7 / 31.1 / 15.0)				
Weight	55 kg (121 lbs)				
Packing weight	61 kg (134.5 lbs)				
Operating temperature range	-25°C...+60°C				
Noise emission (typical) / internal consumption at night	51 dB(A) / 1 W				
Topology	Transformerless				
Cooling concept / electronics protection rating	OptiCool / NEMA 3R				
Features					
Display / LED indicators (Status / Fault / Communication)	–/●				
Interface: RS485 / Speedwire, WebConnect	o/●				
Data interface: SMA Modbus / SunSpec ModBus	●/●				
Mounting angle range	15°...90°				
Warranty: 10 / 15 / 20 years	●/o/o				
Certifications and approvals	UL 1741, UL 1998, UL 1699B, IEEE 1547, FCC Part 15 (Class A & B), CAN/CSA C22.2 107.1-1				
NOTE: US inverters ship with gray lids. Data at nominal conditions. *Suitable for 600 V DC max. systems					
● Standard features o Optional features – Not available					
Type designation	STP 12000TL-US-10	STP 15000TL-US-10	STP 20000TL-US-10	STP 24000TL-US-10	STP 30000TL-US-10

Accessories

RS485 interface
DM-485CB-US-10

Connection Unit
CU 1000-US-10

SMA Cluster Controller
CLCON-10



RBI Solar designs, engineers, manufactures and installs solar mounting systems. This single-source responsibility is focused on delivering value throughout the solar value chain.

Features & Benefits

- **Custom engineered to specific site conditions**
- **High strength steel with corrosion protection**
- **Designed to minimize field installation labor**
  - Reduced number of posts compared to traditional racking
  - Follows contours to mitigate civil/site work
  - Same hardware throughout
  - Optional pre-assembly
- **Design and engineering at every step of the way**
  - In-house engineers
  - Stamped drawings including foundation
- **Pile driving test available**
- **Flexible to mount any module type**
- **Nationwide installation**
- **Various foundation options**
- **UL 2703 classification available**
- **Procurement and manufacturing:**
  - Leverage with national and international facilities
  - Material certification available
  - ARRA compliant; "Made in the USA" certification available

RBI Solar Background

Family owned and operated, we pride ourselves in 80+ years of experience in commercial design-build specialty structures. RBI Solar's unique design capabilities and multiple manufacturing facilities help us develop the most economical, reliable and robust solutions for any structural solar mounting challenge. We are committed to taking single point responsibility for the entire project starting from the initial design to complete installation of solar modules.

Engineered Foundation Options

Our engineers consider many factors when determining the most reliable and cost-effective foundation solution for our projects. Incorporating and analyzing data from available certified geotechnical reports, on-site pile testing, wind tunnel testing, and all applicable codes and loading considerations, our team can provide various foundation options:

- Driven post
- Concrete pier
- Dual post
- Screw piles
- Pre-cast or cast-in-place concrete ballast
- Spread footings

Installation Services

With experience of completing multiple solar racking jobs for commercial, institutional and utility customers, RBI Solar is the most trusted name when it comes to solar racking installation. Our highly trained project managers and installation crews work with your on-site engineers to install custom engineered solar racking systems. Racking installation is essential for meeting project time and budget goals. Advantages of using RBI Solar for installation include:

- Company owned post driving equipment
- Highly skilled construction crews that specialize in solar racking
- Dedicated project managers

Technical Specifications

Description of product	Fixed tilt racking
Efficient designs	GM-I, GM-T and GM-B
Module configuration	Landscape or portrait ; designed to accomodate any module type
Tilt angle	0° to 45°
Array height	Project specific design
Ground cover ratio	Project specific design
Installation options	Posts, racking and module mounting
Geographical range	Nationwide
Grounding	Continuously bonded racking; tested by ETL to UL2703 standards (GM-I & GM-T)
Wire management	Built-in wire management options
Design criteria	Engineered to meet applicable structural codes
Warranty	20-year limited warranty

Contact Us 5513 Vine Street Cincinnati, OH 45217 | **www.rbisolar.com** *call* 513.242.2051 *email* **info@rbisolar.com**

SINGLE SOURCE PROVIDER

DESIGN

System classified to UL 2703, with in-house designers and engineers. Our focus is to deliver the most effective and efficient racking solution based upon the array layout and site conditions.

ENGINEERING

Our in-house engineers, licensed and registered in all states, provide structural calculations applying RBI proprietary wind tunnel analysis and focus on delivering appropriate racking and foundation design based on existing soil conditions.

MANUFACTURING

Multiple state-of-the-art manufacturing facilities, along with a vertically integrated procurement and manufacturing protocol, ensures overall quality of product with reduced lead times for material.

INSTALLATION

Single source responsibility, with in-house project management and installation crews. This approach reduces duplication of efforts throughout the enterprise, focused on delivering projects on time and within budget.

GROUND MOUNT • ROOF MOUNT • SPECIALTY STRUCTURES • LANDFILL

Racking questions? We are here to answer.
Contact us at info@rbisolar.com or call (513)242-2051

www.rbisolar.com

RBI SOLAR

HEC-US PLUS

UTILITY SCALE SOLAR INVERTER

EXTENDED MPPT
MPPt

AUTOMATIC REDUNDANT MODULAR MULTI-MASTER SYSTEM
ARM²S

iCOOL

ADJUSTABLE POWER
DAY
NIGHT

OUTDOOR DURABILITY

INGRESS PROTECTION

ACTIVE HEATING

HEC-US PLUS

Power Electronics HEC-US PLUS outdoor inverters are powerful and reliable 1,000Vdc Utility Scale PV inverters for the US market. The HEC-US PLUS inverter family ranges from 1MW to 2.4MW inverters at 50°C with no derating with a 98.0% CEC rated efficiency.

The HEC-US PLUS is built on the proven Power Electronics modular topology with up to 10 200kW-240kW power modules connected in parallel. The HEC-US PLUS has a standard outdoor stainless steel enclosure, 50mm mineral isolation panels and an advanced air cooled iCOOL filterless system to ensure reliable performance in the most demanding environments.

Power Electronics offers customized NEC2014 compliant FSDK external DC Recombiner cabinets. The FSDK includes user specified overcurrent protection up to 400 Amps with 20 or 40 inputs to support higher DC:AC ratio PV designs. FSDK cabinets include current monitoring.

HEC-US PLUS
THE MOST POWERFUL AND
RELIABLE UTILITY-SCALE PV
INVERTER IN THE MARKET

HEC-US PLUS TOPOLOGY

• NO CONDENSATION
The active cabinet heating regulates temperature and prevents internal water condensation.

• DOUBLE GASKETED DOORS
NEMA4 rated electronic area, protected from dust and moisture.

• STAINLESS STEEL ENCLOSURE
Inox construction with 2mm thickness for maximum enclosure longevity.

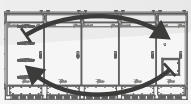
• SPECIAL PAINT
Anti-corrosive polymeric paint (C4) ISO-9223 is used on all HEC-US inverters.

• INSULATION
50mm of insulation material protects internal components from external solar heat gains.

NEC2014 Recombiner

- Up to 40 fused inputs.
- Zone monitoring. CT's in each input.
- Up to 40 contactors with lockout/ tagout safety features.

• MIRROR UNITS
Shift AC and DC modules to improve skid integration.



DC CABINET

• **REVERSING AIR VENTS**
Roof cover design dissipates solar radiation, reduces heat build-up and prevents water intrusion. It is available with front or back exhaust air vents for flexibility in skid integration.

REVOLUTIONARY COOLING CONCEPT

DC FUSE AND CONTACTOR

AUX. POWER TRANSFORMER

MAIN AC CIRCUIT BREAKER

POWER BLOCK

AC CONNECTIONS

EASY TO SERVICE
By providing full front and rear access the HEC series simplifies the maintenance tasks. The frontal access allows the checking of the whole electronic cabinet (electronics boards, semiconductors, power supply, contactors...) while the rear access permits the revision of AC fuses and LCL filter.

• **TESTS**
Random units are batch tested at the Factory for NEMA3R compliance.

• **CONFORMAL COATING**
Conformal coating on electronic board shields PCBs from harsh environments.

AUTOMATIC REDUNDANT MODULAR MULTI-MASTER SYSTEM

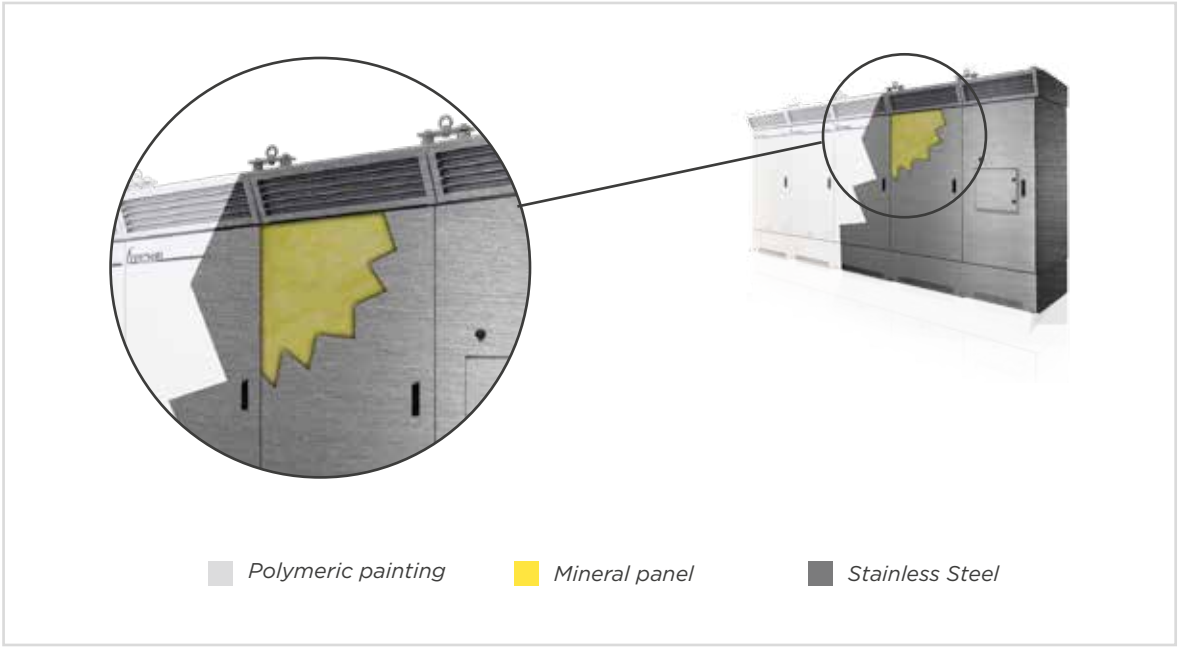
The HEC-US PLUS is a central inverter based on an Automatic Redundant Modular Multi-Master System (200kVA to 240kVA per module).

The unit's redundant multi-master capability translates into more availability and therefore more power production. Modularity allows for the use of fewer type of components throughout the product range, reducing maintenance costs and simplifying the stock of spare parts.

ROBUST DESIGN

HEC-US PLUS inverters have been designed to last for more than 20 years of operation in harsh environments and extreme weather conditions. HEC-US PLUS units are tested and ready to withstand conditions from the frozen siberian tundra to the californian Death Valley, featuring:

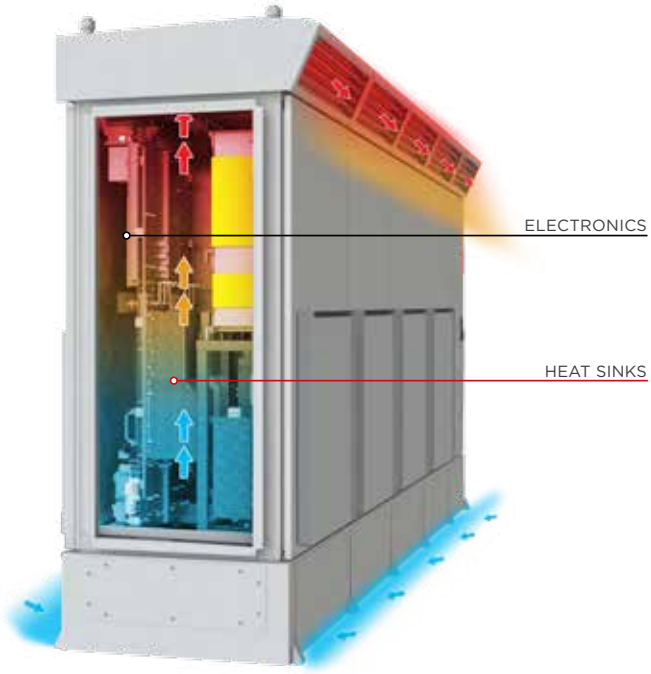
- Totally sealed cabin for protecting electronics against dust and moisture.
- Conformal coating on electronic boards shields PCBs from harsh atmospheres.
- Temperature and humidity controlled active heating prevents internal water condensation.
- Stainless Steel construction with 2mm thickness for maximum enclosure longevity.
- Anti-corrosive polymeric C4 paint coat according to ISO 9223 used in the most unforgiving environments. The HEC-US PLUS is also available in a C5-M degree of protection by request.
- 50mm mineral panel isolates the cabinet from solar heat gains.
- Roof cover designed to dissipate solar radiation, reduce heat build-up and avoid water leakages. The solid HEC-US PLUS structure avoids the need of additional external structures.
- Random units selected to pass a Factory Water Tightness Test ensuring product quality.



REVOLUTIONARY COOLING SYSTEM

The design philosophy for the HEC-US PLUS inverters is to oversize sensitive components (like IGBTs & DC bus capacitors) and provide sufficient margin so the HEC-US PLUS can operate at 122°F (50°C) with no power derating. Power Electronics equipment is installed in mines, water treatment plants and concentrated solar power facilities in the most demanding locations in the world. Our expertise in harsh environments is the foundation for the perfect technical solution for our outdoor solar inverters.

The cooling systems on the HEC-US PLUS modules are divided into two main areas: the clean area (electronics) and the hot area (LC filters and heat sinks). The electronics are sealed in a NEMA 4 area and use a temperature control low flow cooling system that reduces filter maintenance. The hot area integrates independent speed controlled fans per each module that reduce stand-by consumption at low capacity, minimize audible noise and increase cooling capacity for PV installations located in hot environments or high altitudes.



AVAILABLE WITH FRONT OR BACK EXHAUST AIR VENTS FOR FLEXIBILITY IN SKID INTEGRATION

VAR AT NIGHT

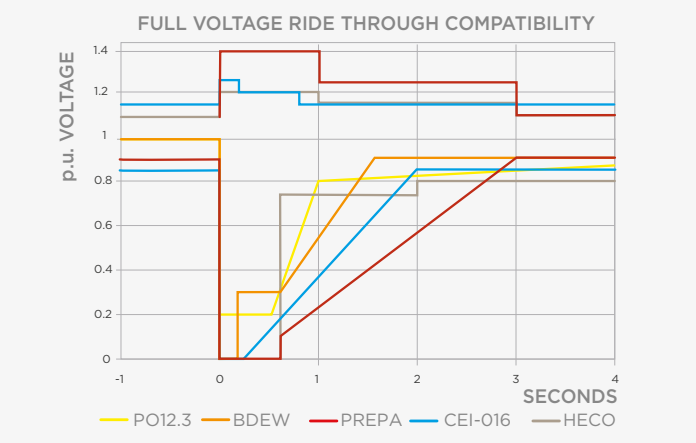
At night, the HEC-US PLUS inverter can shift to reactive power compensation mode. The inverter can respond to an external dynamic signal, a Power Plant Controller command or pre-set reactive power level (kVAr).

ACTIVE HEATING

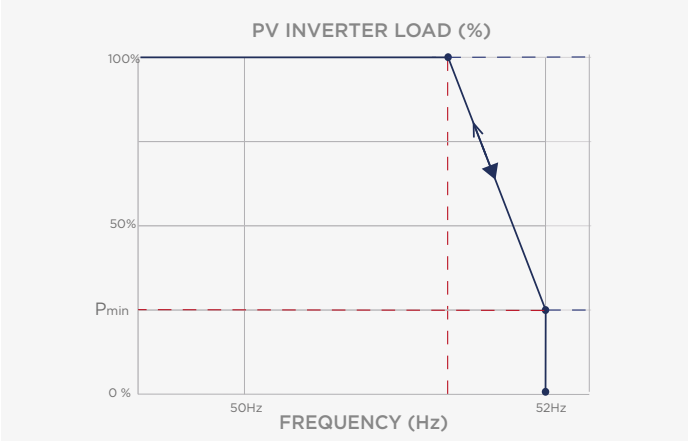
At night, when the unit is not actively exporting power, the inverter can import a small amount of power to keep the inverter internal ambient temperature above -20°C, without using external resistors. This autonomous heating system is the most efficient and homogeneous way to prevent condensation, increasing the inverters availability and reducing the maintenance. (patented)

DYNAMIC GRID SUPPORT

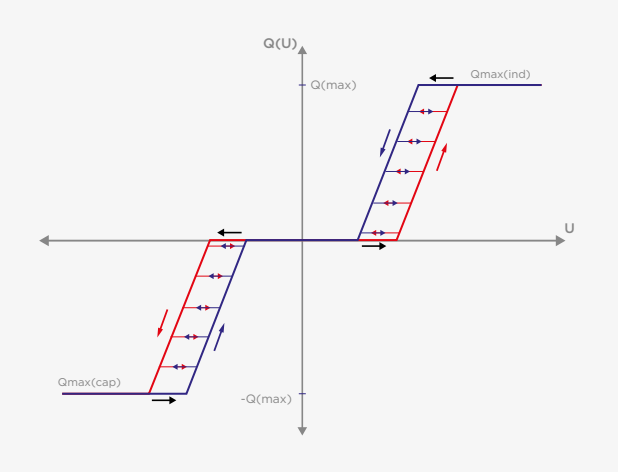
HEC-US PLUS firmware includes the latest utility interactive features (LVRT, OVRT, FRS, FRT, Anti-islanding, active and reactive power curtailment...), and is compatible with all the specific requirements of the utilities.

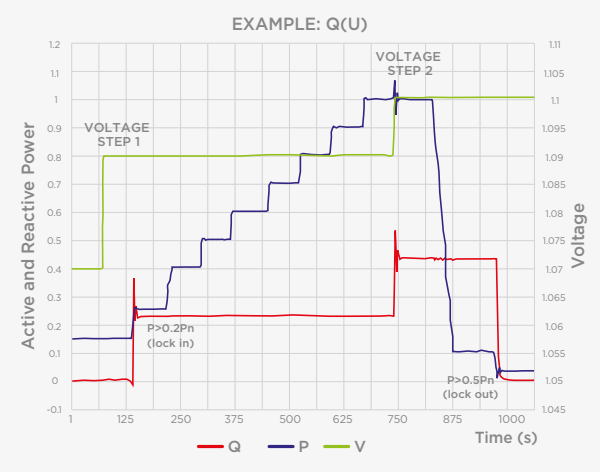


▲ **LVRT or ZVRT (Low Voltage Ride Through).** Inverters can withstand any voltage dip or profile required by the local utility. The inverter can immediately feed the fault with full reactive power, as long as the protection limits are not exceeded.

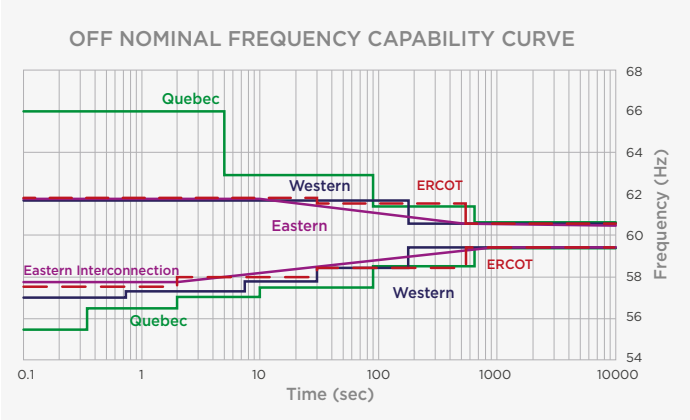


▲ **FRS (Frequency Regulation System).**
Frequency droop algorithm curtails the active power along a preset characteristic curve supporting grid stabilization.

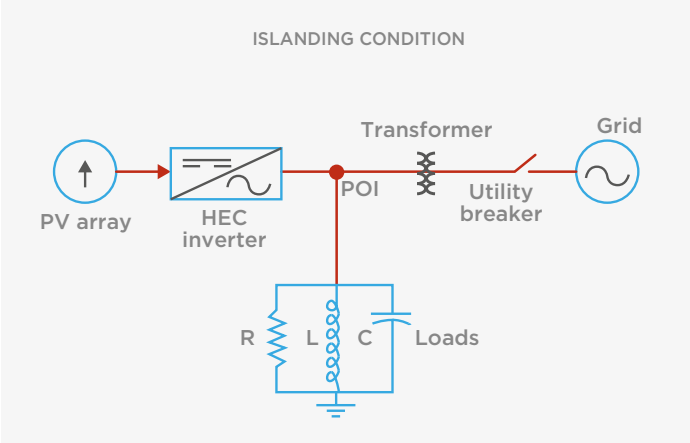




▲ **Q(V) curve:** It is a dynamic voltage control function which provides reactive power in order to maintain the voltage as close as possible to its nominal value.



▲ **FRT (Frequency Ride Through):** Freesun solar inverters have flexible frequency protection settings and can be easily adjusted to comply with future requirements.



▲ **Anti-islanding:** This protection combines passive and active methods that eliminates nuisance tripping and reduces grid distortion according to IEC 62116 and IEEE1547.

HEC-US PLUS 440VAC

TECHNICAL CHARACTERISTICS

		440VAC - MPPt Window 623V-900V					
		FRAME 2		FRAME 3		FRAME 4	
NUMBER OF MODULES		5	6	7	8	9	10
REFERENCE		FS1112CU	FS1331CU	FS1550CU	FS1770CU	FS1991CU	FS2200CU
OUTPUT	AC Output Power(kVA/kW) @50°C	1110	1330	1550	1770	1990	2200
	AC Output Power(kVA/kW) @25°C	1220	1460	1710	1950	2190	2440
	Max. Power (kW@PF=0.9, @50°C)	1000	1190	1390	1590	1790	1980
	Max. AC Output Current (A) @25°C	1600	1920	2240	2560	2880	3200
	Operating Grid Voltage(VAC)	440Vac ±10%					
	Operating Grid Frequency	60Hz					
	Current Harmonic Distortion (THDi)	< 3% per IEEE519					
	Power Factor (cosine phi)[1]	0.00 leading ... 0.00 lagging adjustable/ Reactive Power injection at night					
	Power Curtailment (kVA)	0...100%/0.1% Steps					
INPUT	MPPt Voltage Window (VDC)[2]	623V-900V					
	MPPt window @full power (VDC)[2]	642V-820V @50°C / 712V-820V @25°C					
	Maximum DC Voltage	1000V					
	Minimum Start Voltage	700V - User configurable					
	Max. DC continuous current (A)	1750	2100	2450	2800	3150	3500
	Max. DC short circuit current (A)	2275	2730	3185	3640	4095	4550
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency / CEC (η)	98.6% / 98.0%					
	Euroeta (η)	98.3%		98.4%			
	Max. Standby Consumption (Pnight)	< approx. 40W/per module					
	Control Power Supply	120V / 208VAC-1kVA power supply available for external equipment					
	Max. Power Consumption	2300W	2760W	3220W	3680W	4140W	4600W
CABINET	Dimensions [WxDxH] [inches]	153.5"x40.12"x94.5"		192.9"x40.12"x94.5"		232.3"x40.12"x94.5"	
	Dimensions [WxDxH] [mm]	3900x1050x2400		4900x1050x2400		5900x1050x2400	
	Weight (lbs)	7804	8487	10119	10802	12434	13117
	Weight (kg)	3540	3850	4590	4900	5640	5950
	Air Flow	Bottom intake. Exhaust top vent (Front or Rear option)					
	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 / Active Power derating >50°C/122°F					
	Relative Humidity	0% to 100% non condensing					
	Max. Altitude (above sea level)	1000m; >1000m power derating 1% Sn (kVA) per 100m					
	Noise level [4]	< 79 dBA					
CONTROL INTERFA-CE	Interface	Alphanumeric Display (inside cabinet) / Optional Freesun App					
	Communication Protocol	RS232 / RS485 / USB / Ethernet, (Modbus RTU, Modbus TCP/IP)					
	Power Plant Controller	Optional					
	Keyed ON/OFF switch	Standard					
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 (FSDK)					
	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					
	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.

HEC-US PLUS 420VAC

TECHNICAL CHARACTERISTICS

		420VAC - MPPt Window 594V-900V					
		FRAME 2		FRAME 3		FRAME 4	
NUMBER OF MODULES		5	6	7	8	9	10
REFERENCE		FS1051CU	FS1271CU	FS1480CU	FS1690CU	FS1901CU	FS2110CU
OUTPUT	AC Output Power(kVA/kW) @50°C	1050	1270	1480	1690	1900	2110
	AC Output Power(kVA/kW) @25°C	1160	1400	1630	1860	2100	2330
	Max. Power (kW@PF=0.9, @50°C)	940	1140	1330	1520	1710	1900
	Max. AC Output Current (A) @25°C	1600	1920	2240	2560	2880	3200
	Operating Grid Voltage(VAC)	420Vac ±10%					
	Operating Grid Frequency	60Hz					
	Current Harmonic Distortion (THDi)	< 3% per IEEE519					
	Power Factor (cosine phi)[1]	0.00 leading ... 0.00 lagging adjustable/ Reactive Power injection at night					
	Power Curtailment (kVA)	0...100%/0.1% Steps					
INPUT	MPPt Voltage Window (VDC)[2]	594V-900V					
	MPPt window @full power (VDC)[2]	616V–820V @50°C / 680V–820V @25°C					
	Maximum DC Voltage	1000V					
	Minimum Start Voltage	700V - User configurable					
	Max. DC continuous current (A)	1750	2100	2450	2800	3150	3500
	Max. DC short circuit current (A)	2275	2730	3185	3640	4095	4550
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency / CEC (η)	98.6% / 98.0%					
	Euroeta (η)	98.3%		98.4%			
	Max. Standby Consumption (Pnight)	< approx. 40W/per module					
	Control Power Supply	120V / 208VAC–1kVA power supply available for external equipment					
	Max. Power Consumption	2300W	2760W	3220W	3680W	4140W	4600W
CABINET	Dimensions [WxDxH] [inches]	153.5"x40.12"x94.5"		192.9"x40.12"x94.5"		232.3"x40.12"x94.5"	
	Dimensions [WxDxH] [mm]	3900x1050x2400		4900x1050x2400		5900x1050x2400	
	Weight (lbs)	7804	8487	10119	10802	12434	13117
	Weight (kg)	3540	3850	4590	4900	5640	5950
	Air Flow	Bottom intake. Exhaust top vent (Front or Rear option)					
	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 / Active Power derating >50°C/122°F					
	Relative Humidity	0% to 100% non condensing					
	Max. Altitude (above sea level)	1000m; >1000m power derating 1% Sn (kVA) per 100m					
	Noise level [4]	< 79 dBA					
CONTROL INTERFA-CE	Interface	Alphanumeric Display (inside cabinet) / Optional Freesun App					
	Communication Protocol	RS232 / RS485 / USB / Ethernet, (Modbus RTU, Modbus TCP/IP)					
	Power Plant Controller	Optional					
	Keyed ON/OFF switch	Standard					
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 (FSDK)					
	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					
	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.

HEC-US PLUS 400VAC

TECHNICAL CHARACTERISTICS

		400VAC - MPPt Window 566V-900V					
		FRAME 2		FRAME 3		FRAME 4	
NUMBER OF MODULES		5	6	7	8	9	10
REFERENCE		FS1004CU	FS1201CU	FS1401CU	FS1600CU	FS1801CU	FS2000CU
OUTPUT	AC Output Power(kVA/kW) @50°C	1000	1200	1400	1600	1800	2000
	AC Output Power(kVA/kW) @25°C	1110	1330	1550	1770	2000	2220
	Max. Power (kW@PF=0.9, @50°C)	900	1080	1260	1440	1620	1800
	Max. AC Output Current (A) @25°C	1600	1920	2240	2560	2880	3200
	Operating Grid Voltage(VAC)	400Vac ±10%					
	Operating Grid Frequency	60Hz					
	Current Harmonic Distortion (THDi)	< 3% per IEEE519					
	Power Factor (cosine phi)[1]	0.00 leading ... 0.00 lagging adjustable/ Reactive Power injection at night					
	Power Curtailment (kVA)	0...100%/0.1% Steps					
INPUT	MPPt Voltage Window (VDC)[2]	566V-900V					
	MPPt window @full power (VDC)[2]	584V-820V @50°C / 648V-820V @25°C					
	Maximum DC Voltage	1000V					
	Minimum Start Voltage	700V - User configurable					
	Max. DC continuous current (A)	1750	2100	2450	2800	3150	3500
	Max. DC short circuit current (A)	2275	2730	3185	3640	4095	4550
EFFICIENCY & AUXILIARY SUPPLY	Max. Efficiency / CEC (η)	98.6% / 98.0%					
	Euroeta (η)	98.3%		98.4%			
	Max. Standby Consumption (Pnight)	< approx. 40W/per module					
	Control Power Supply	120V / 208VAC-1kVA power supply available for external equipment					
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CABINET	Dimensions [WxDxH] [inches]	153.5"x40.12"x94.5"		192.9"x40.12"x94.5"		232.3"x40.12"x94.5"	
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	Air Flow	Bottom intake. Exhaust top vent (Front or Rear option)					
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ENVIRON-MENT	Degree of protection	NEMA 3R					
	Permissible Ambient Temperature	-22°F to +122°F, -30°C[3] to +50°C / Active Power derating >50°C/122°F					
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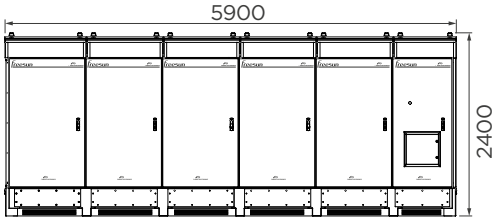
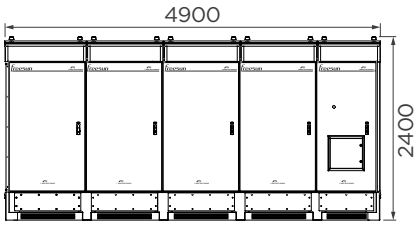
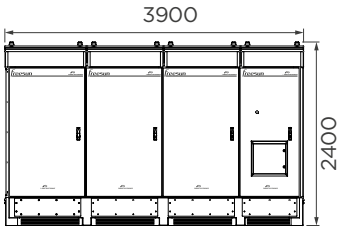
NOTES [1] Consult P-Q charts available: $Q(kVAr)=\sqrt{(S(kVA)^2-P(kW)^2)}$
[2] Values at 1.00•Vac nom and cos Φ= 1. Consult Power Electronics for derating curves.
[3] Heating kit option required below -20°C.
[4] Sound pressure level at a distance of 1m from the rear part.

DIMENSIONS

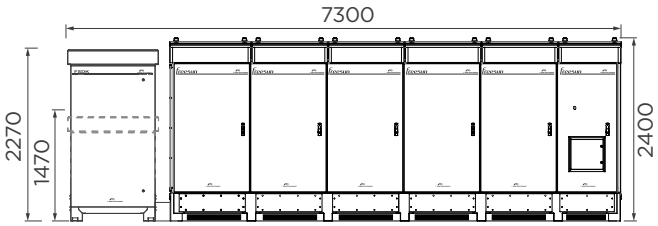
HEC-US PLUS

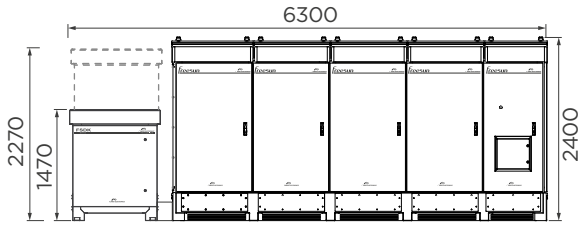


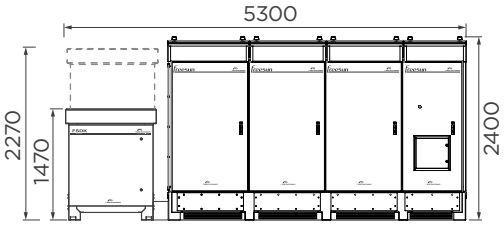




HEC PLUS-US + FSDK







NOTE Depth of all units is 1020mm.
Preliminary dimensions, consult Power Electronics.

Operation and Maintenance Plan

Property Location: Various Lots off of Pine Meadow Road
Northfield, Massachusetts

Property Owners: Hopping Ahead LLC
496 Pine Meadow Road
Northfield, Massachusetts 01360

Project Developer: BWC Pine Meadow Brook, LLC
C/O BlueWave Capital
111 Huntington Ave, Suite 650
Boston, Massachusetts 02119

Solar Array
Operation and Maintenance Plan
During Construction

- Contractor shall provide Building Inspector, Police Department and Fire Department with emergency contact information, including supervisor's names, addresses and telephone numbers.
- Contractor shall comply with all requirements of the Police and Fire Departments regarding emergency access to the job site.
- Contractor shall be required to post and maintain required signage at the job site.
- Contractor shall keep copies of any Town or State permits & approvals on site.
- Contractor activities shall occur between the hours of 7:00 a.m. and 5:00 p.m. unless further regulated by the Town.
- Contractor shall secure the site on a daily basis by closing and locking gates.
- Contractor shall keep construction vehicles, including worker's automobiles, from parking on Pine Meadow Road or obstructing access along Pine Meadow Road.
- Contractor shall do its best to minimize disturbance to residential neighbors located on Pine Meadow Road.
- Equipment fueling and maintenance of vehicles shall be performed off-site.

Post Construction Solar Array
Operation and Maintenance Plan

- Operation and maintenance of the facility will be done remotely. Any problems detected at the site will be addressed by the Developer.
- Maintenance of the grounds, including mowing, trimming, pruning, replacing vegetation, etc. will be done on an as needed basis.
- Emergency access to the site will be maintained year round, including snow plowing.
- The security fence will be inspected and repaired as needed.
- Cleaning and maintenance of the solar panels and equipment will be done as needed.
- The facility shall be maintained in good condition, including signage, access gates, & locks.

Post Construction Stormwater Management System
Operation and Maintenance Plan

1. The contractor shall be responsible for the proper inspection and maintenance of all stormwater management facilities including the continued stabilization of the site until such time as the project is accepted by the owner. Thereafter, the owner shall be responsible for the proper inspection and maintenance of any stormwater facilities in accordance with this operation and maintenance plan.

2. All Structural Best Management Practices (BMP's) including the siltation control should be inspected after every major rainfall event exceeding 1.0-inch for the first 6 months after construction to ensure proper stabilization and construction.

3. Thereafter, regular BMP inspections should be conducted according to the following schedule:

BMP Structure	Inspections per Year
Crushed Stone Edge Drains	2

4. Accumulated silt and sediment ahead of the siltation controls should be removed if the accumulated depth of sediment exceeds one half of the height of the structure.

5. The crushed stone edge drains and infiltration trenches shall be inspected twice per year. If it is determined that the top stone above the filter fabric is silted or compromised, the top

stone shall be removed, any damaged filter fabric shall be removed and replaced and clean stone shall be placed over the filter fabric.

6. All removed sediments are to be properly disposed of at a location to be approved by the Board of Health. Transportation and disposal of sediments shall comply with all local, state and federal regulations.

7. The access driveway into the facility shall be plowed after all snow events to maintain emergency access to the facility. Snow shall be stockpiled within the fenced area and allow to melt on-site and flow overland following natural drainage patterns.

8. The access driveway shall be monitored on a regular basis to insure its suitability for access. Gravel along the access driveway shall be replaced as necessary to maintain suitable access to the array. In addition, the entire facility shall be monitored on a regular basis for any signs of erosion due to stormwater runoff. Eroded areas shall be stabilized as soon as possible.

9. The site shall be monitored to insure proposed drainage patterns are maintained following construction. Should channel flow from runoff develop within the site that requires corrective measures, these measures shall be reviewed with the Planning Board prior to their implementation.

10. The site should be inspected for trash on a regular basis. Any accumulated trash, litter, and discarded materials should be removed.

11. The contractor and the owner shall maintain a BMP Inspection Report following each site inspection as recommended above. The BMP Inspection Report shall identify the date of inspection, the name and contact number of the responsible party, specific structures inspected, specific maintenance require and observations. At a minimum, inspection reports should address the following conditions where applicable:

    1. Embankment Subsidence
    2. Erosion
    3. Cracking of Containment Berm
    4. Inlet/Outlet Conditions
    5. Sediment Accumulations
    6. Slope Stability

12. No hazardous material shall be stored on-site during and/or following construction of the solar array.

13. No fertilizers or herbicides of any kind shall be used or stored on-site during and/or following construction of the proposed solar array, unless authorized and required for the agricultural uses on the property.

BLUESOL-01 JHOGAN

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 12/22/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Roblin Insurance, a division of EPIC 144 Gould Street Suite 100 Needham, MA 02494	PHONE (A/C, No, Ext): (781) 455-0700	FAX (A/C, No): (781) 449-8976
	E-MAIL ADDRESS: certificates@roblininsurance.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : AXIS Specialty Insurance Company	15610
INSURED	INSURER B : RLI	
BWC Otter Run, LLC 111 Huntington Avenue, Suite 650 Boston, MA 02199	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 1,000,000
	[ ] CLAIMS-MADE [X] OCCUR			3386420	12/14/2020	12/14/2021	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	X POLICY [ ] PRO-JECT [ ] LOC						PRODUCTS - COMP/OP AGG	$ 1,000,000
	[ ] OTHER:							$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$
	[ ] ANY AUTO						BODILY INJURY (Per person)	$
	[ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	[ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
	[ ] UMBRELLA LIAB [ ] OCCUR						EACH OCCURRENCE	$
	[ ] EXCESS LIAB [ ] CLAIMS-MADE						AGGREGATE	$
	[ ] DED [ ] RETENTION $							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						[ ] PER STATUTE [ ] OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] (Mandatory in NH)	N / A					E.L. EACH ACCIDENT	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
B	Professional Liabili			E & O	12/14/2020	12/14/2021	E&O	3,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

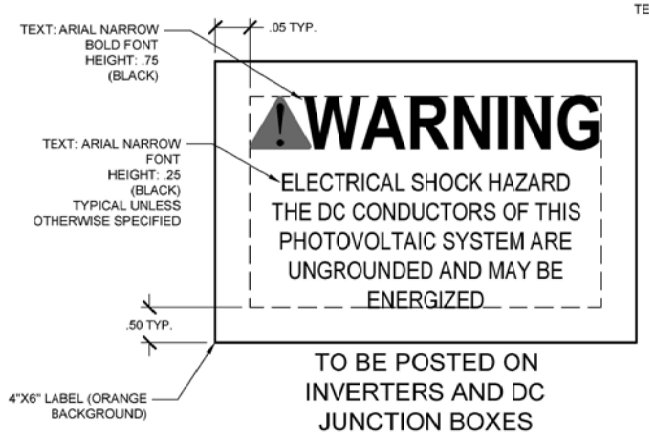
CERTIFICATE HOLDER

Issued as Evidence of Insurance

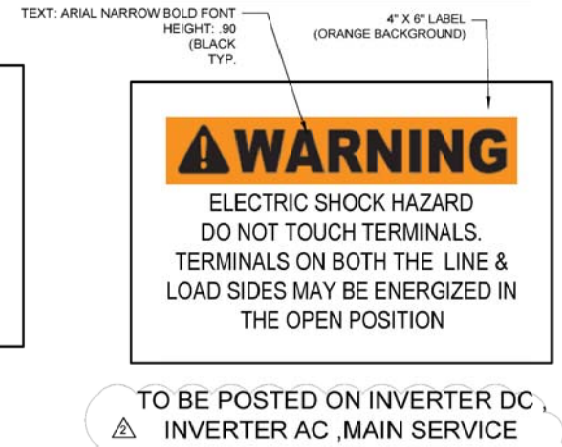
CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

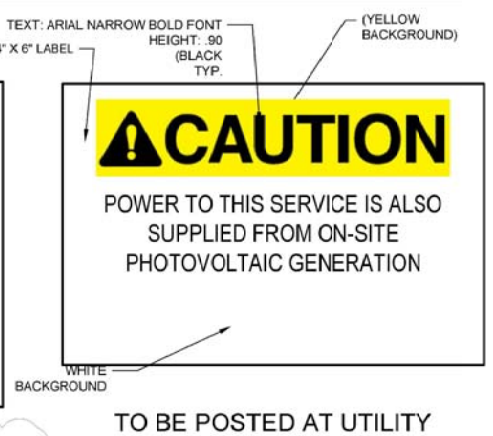


TO BE POSTED ON INVERTERS AND DC JUNCTION BOXES PER NEC 690.35 (F)

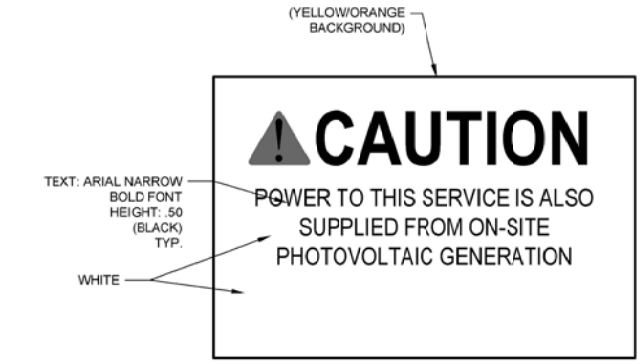


TO BE POSTED ON INVERTER DC , INVERTER AC ,MAIN SERVICE DISCONNECTS AND PANELBOARDS PER NEC 690.17 (E)

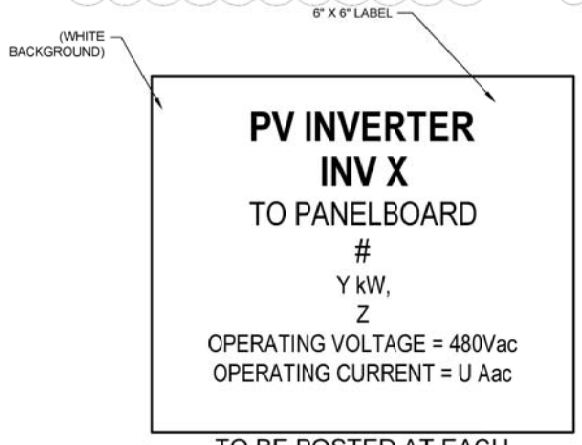
TO BE POSTED AT EACH DC CONNECTION UNIT AND PANELBOARDS AND INVERTER



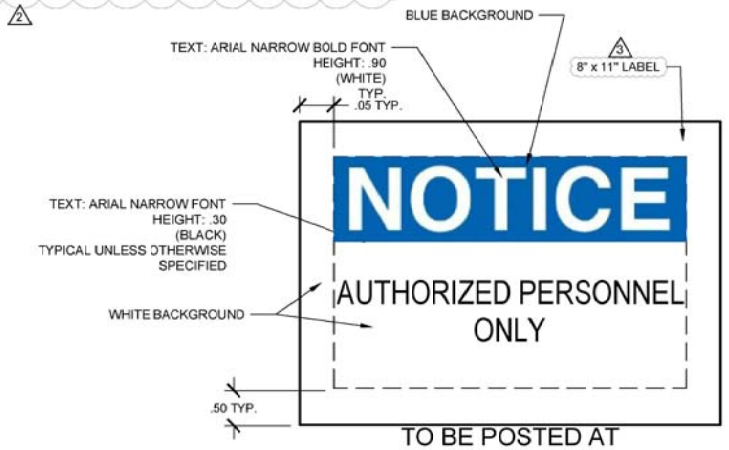
TO BE POSTED AT UTILITY METER



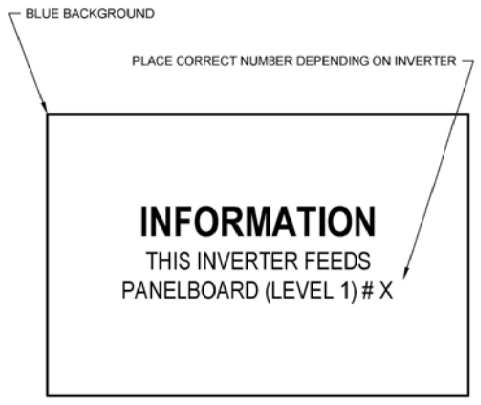
TO BE POSTED AT UTILITY METER



TO BE POSTED AT EACH INVERTER

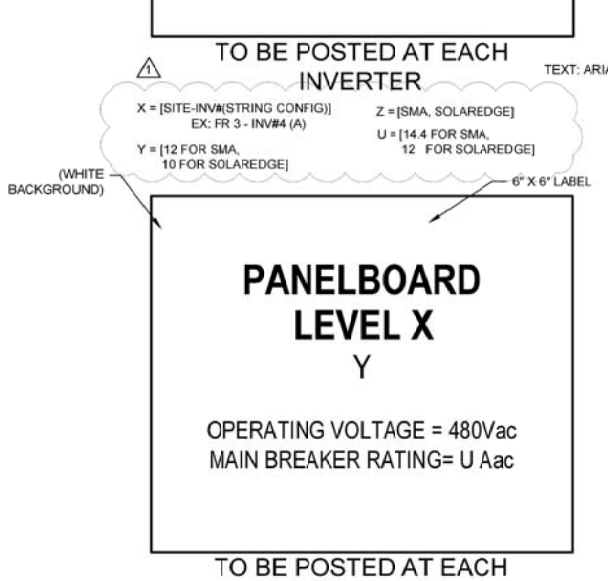


TO BE POSTED AT THE GATES



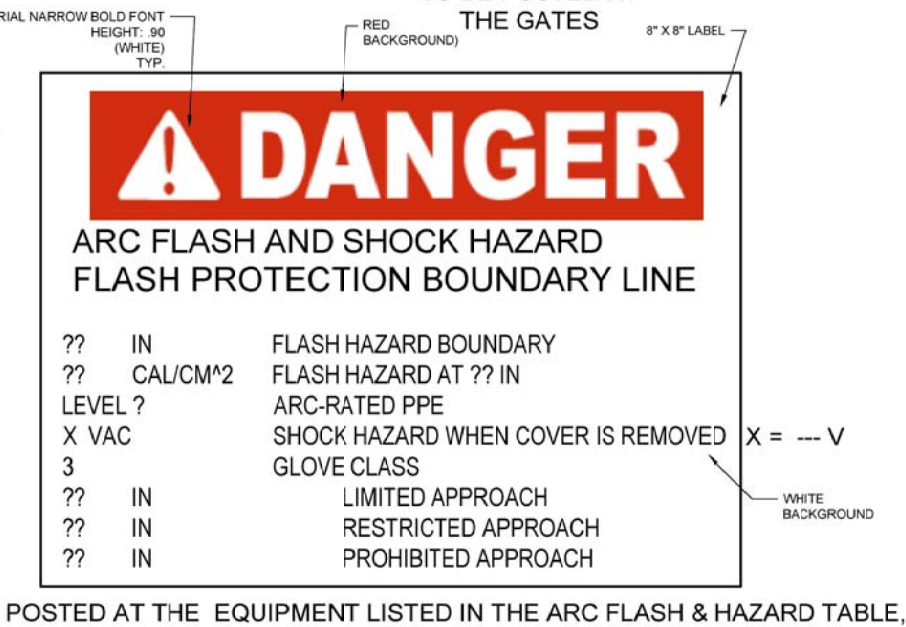
TO BE POSTED AT EACH INVERTER

X = [SITE-SPB-#] EX: FR3 - SPB-2



TO BE POSTED AT EACH PANELBOARD

X = [(1, FOR SPB'S), (2, FOR MPB'S), (3, FOR MASTER PANELBOARDS)]
Y = [PANELBOARD NAME, SEE AC ONE-LINE FOR DETAIL]
EX: FR 2 - SPB 2
U = [SEE AC ONE LINE FOR MAIN BREAKER RATING]



TO BE POSTED AT THE EQUIPMENT LISTED IN THE ARC FLASH & HAZARD TABLE, WAITING FOR ARC FLASH & SHOCK HAZARD ANALYSIS

2312-SIGN DETAILS.DWG

FIELD ENGINEERING CO., INC.
CONSULTING ENGINEERS
11D INDUSTRIAL DRIVE
P.O. BOX 1178
MATTAPOISETT, MA 02739
TEL: (508) 758-2749
FAX: (508) 758-2849

PROPOSED SIGNS
BWC OTTER RUN LLC

PINE MEADOW ROAD
NORTHFIELD, MASSACHUSETTS

Project No.	Date
2312	12/18/2020
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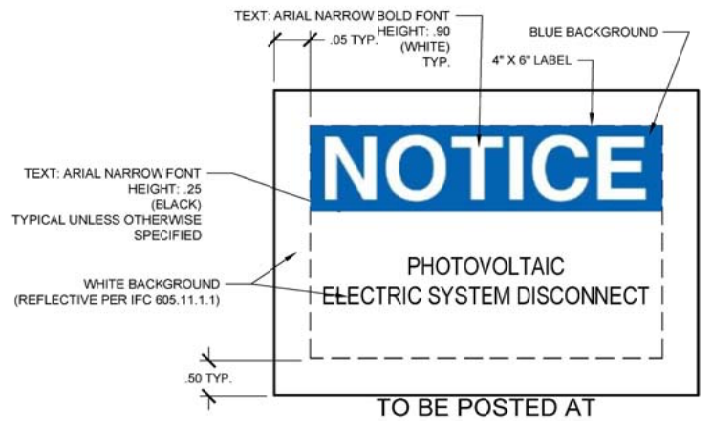
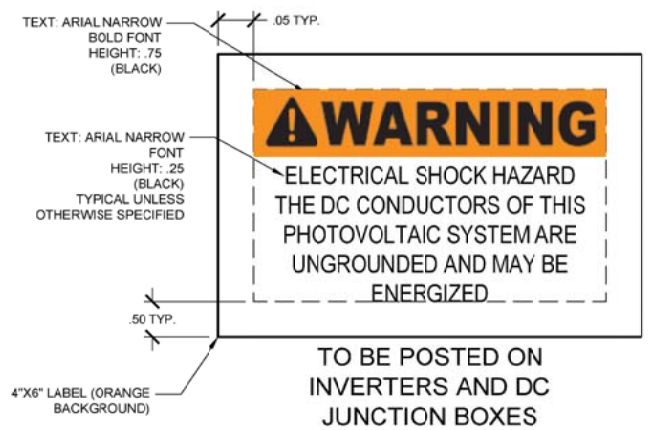
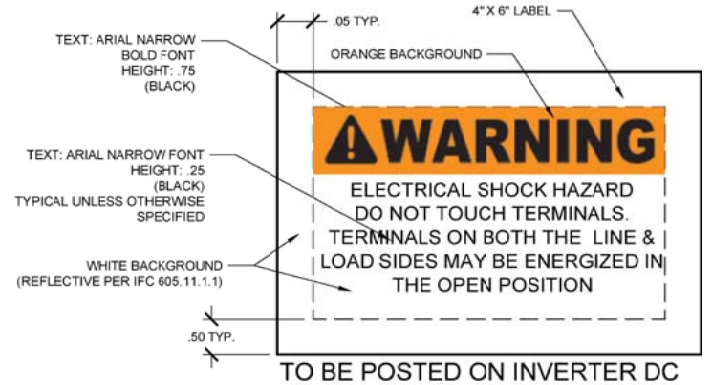


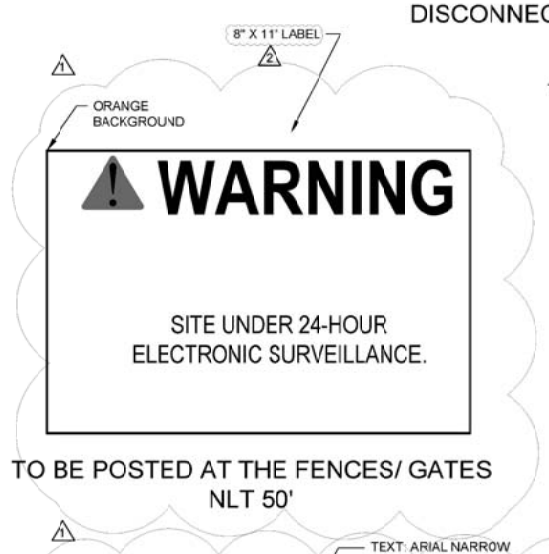
TO BE POSTED AT
MAIN SERVICE
DISCONNECT



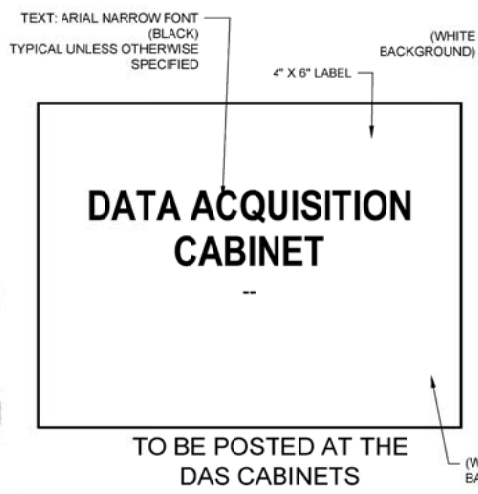
TO BE POSTED ON
INVERTERS AND DC
JUNCTION BOXES
PER NEC 690.35 (F)



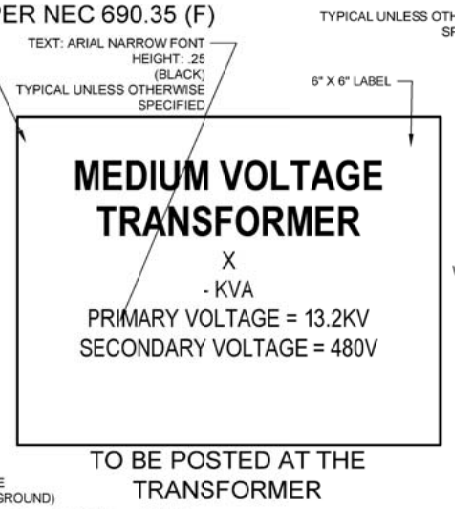
TO BE POSTED ON INVERTER DC
DISCONNECTS
PER NEC 690.17(E)



TO BE POSTED AT THE FENCES/ GATES
NLT 50'

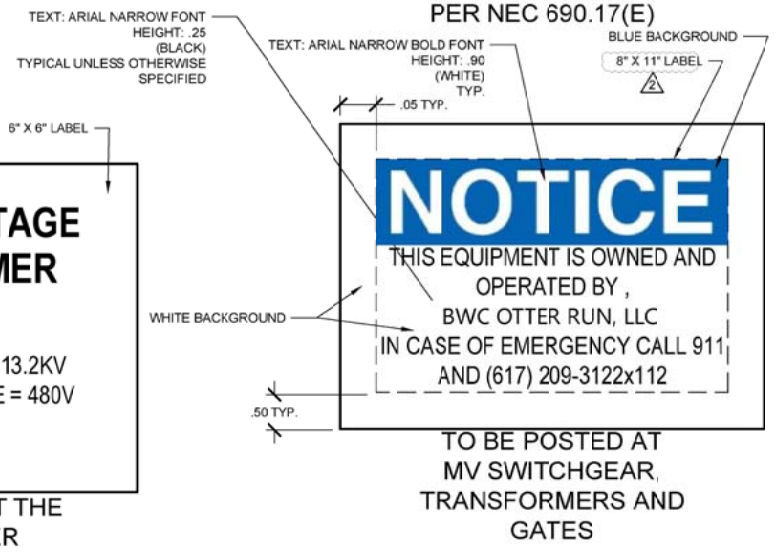


TO BE POSTED AT THE
DAS CABINETS

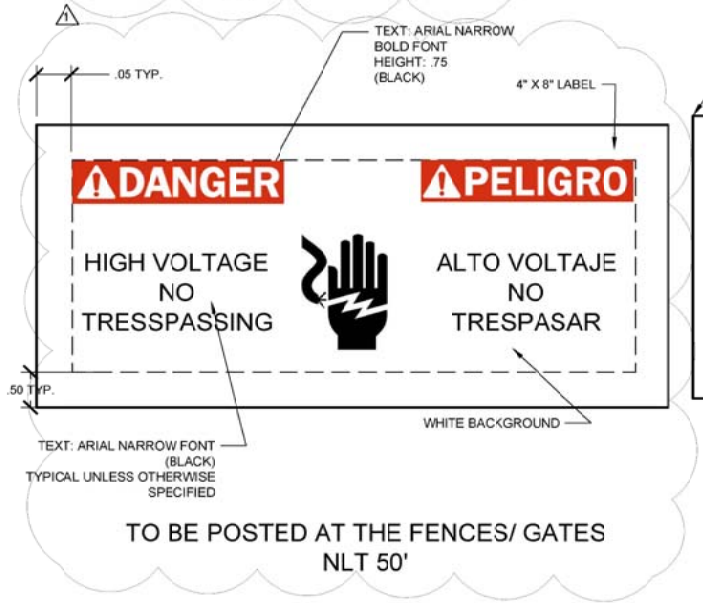


TO BE POSTED AT THE
TRANSFORMER
X = [SITE - T-#]

EX: SR 2A - T-01

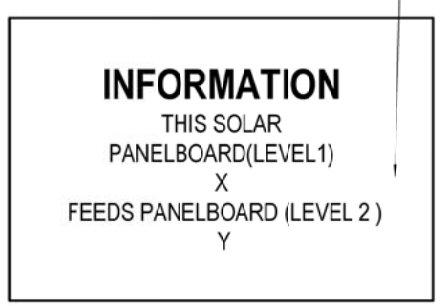


TO BE POSTED AT
MV SWITCHGEAR,
TRANSFORMERS AND
GATES



TO BE POSTED AT THE FENCES/ GATES
NLT 50'

TO BE POSTED ON ALL
PANELBOARDS



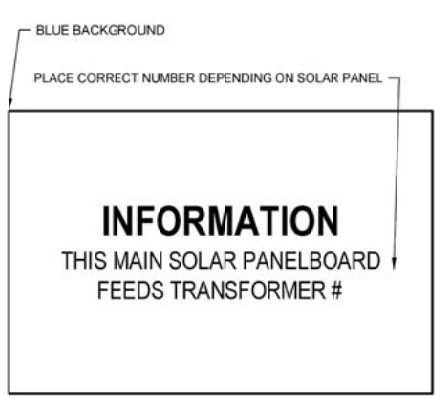
TO BE POSTED AT EACH LEVEL
(SPB)PANELBOARD

X = [SITE-SPB-#]

EX: FR 3 - SPB-2

Y = [SITE-MPB-#]

EX: FR 3 - MPB-1



TO BE POSTED AT EACH MASTER
PANELBOARD

2312-SIGN DETAILS.DWG

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Project No. 2312	Date 12/18/2020
Scale N.T.S.	Revised
Issued For PERMITTING	Sheet 2 OF 2