

File no. \_\_\_\_\_

**SPECIAL EXCEPTION APPLICATION**

**APPLICATION CHECKLIST**

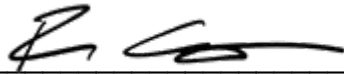
Please use the checklist to ensure that all items required by your application have been included.

**INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED**

Should you have any questions, please call the County Commissioners' Office at

Completed	Description
X	Letter of intent (see page 3, item 4B of the application)
X	Map and parcel number of subject property
X	Current Land Use District of subject property
X	If the applicant is different from the owner, a notarized letter of authorization from the property owner stating that the applicant may act on their behalf
X	List of adjacent property owners obtained from the Tax Assessor's office (see page 4, item 4D of the application)
X	Conceptual site plan (see page 4, item 4E of the application)
X	Signature of the applicant
X	Date
X	\$120.00 application fee
X	\$7.00 fee per adjacent property owners for notification
X	\$100.00 advertising fee

**I certify that the above items have been completed.**

  
\_\_\_\_\_

Signature of Applicant

11/26/2022  
\_\_\_\_\_  
Date

**SPECIAL EXCEPTION APPLICATION**

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**OFFICIAL USE ONLY**

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**SUBMITTAL DEADLINE** \_\_\_\_\_ **Application fee** \_\_\_\_\_  
**Public Hearing Dates** \_\_\_\_\_ **Advertising Charge** \_\_\_\_\_  
**Planning Commission** \_\_\_\_\_ **Certified Mail Fees** \_\_\_\_\_  
**Board of Commissioners** \_\_\_\_\_ **Total Application Fee** \_\_\_\_\_  
Date received: \_\_\_\_\_ Letters mailed: \_\_\_\_\_ Property Posted: \_\_\_\_\_

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This is an application for a Special Exception. This completed application, together with all required attachments and fees, must be completed and returned to the Land Use Administrator by one of the established monthly deadlines in order to initiate review and consideration of the request. The applicant is responsible for the completeness, accuracy, and timely submittal of this application, including all of its attachments and fees. Unless otherwise stated, please type or neatly print the responses to each of the following.

**1. Applicant Information:** Contact person authorized to receive all communication regarding this application:

Name: Mikala Newsom

Complete Address: 130 Roberts Street, Asheville, NC Phone: 828-232-6471

Has the applicant made any campaign contributions over \$250.00 to any local government official of the local government considering the application?

YES \_\_\_\_\_ NO X \_\_\_\_\_

118 0015, 118 0014,  
112 0023, 112 0024,  
111 0005, 111 0006,  
111 00061, 111 00062,  
111 00063, 111 00064,  
111 0005A

**2. Property Information:**

Map Number: \_\_\_\_\_ All or Part (circle one) of Parcel Number: 111 00063, 111 00064  
111 0005A

General Location Description: Lawson Mill Pond Rd., Morven, GA

Existing Use of the Property: Farm Land/Timber

Acreage (or square footage if less than 1 acre): 940.3 acres

Current Land Use District: Agricultural

Has this property been denied a Land Use Change during the past 12 months?

YES \_\_\_\_\_ NO X

Has any public hearing been held regarding this property during the past 3 years?

(If so, describe.) No

How will the property receive water and sewer services? (Public, private, community, septic, etc.)

N/A, solar farm

**3. Owner Information:** (If the applicant listed above is not the current owner of the property, then list the names and addresses of all owners of record for each property that is the subject of this application.) Also, if the applicant is not the current owner or is one of multiple owners, a notarized Letter of Authorization shall be signed and submitted by all owner(s).

<u>Map/Parcel Number</u>	<u>Owner of Record</u>	<u>Mailing Address</u>
<u>118 0015, 118 0014</u>	<u>Howard Lawson</u>	<u>PO Box 8, Morven, GA 31638</u>
<u>111 00063, 111 00064, 111 0006</u>	<u>Daniel Anglin</u>	<u>1081 Lawson Pond Road, Morven, GA 31638</u>
<u>112 0023</u>	<u>Jerry Sapp</u>	<u>PO Box 156, Morven, GA 31638</u>

**4. Special Exception Request:** For Solar to be an accepted use within the current  
Agricultural zoning designation

**5. Approximate cost of work involved:** \$74,540,450

**6. Please explain why the Special Exception should be granted:** \_\_\_\_\_

Per the Zoning Ordinance of Brooks County amended on 1/1/2021 for designated  
permissible uses of solar electrical systems, solar is an accepted and approved use  
under an Agricultural zoning designation if a Special Exception Application is submitted  
with all application materials following code.

Special Exceptions granted by the County Commission shall be executed within a period of twelve (12) months from date of approval. Special Exceptions not executed within this time period shall become null and void and are subject for procedures for resubmission. Special Exceptions are not transferable except upon written approval of the appropriate governing body.

Map/Parcel	Number Owner of Record	Mailing Address
112 0024, 111 0005 , 111 0005A	C&M Land Holdings, LLC	PO Box 207, Morven, GA 31638
111 00061	Stuart Chappell	PO Box 207, Morven, GA 31638
111 00062	Freddie Dell	255 Hall Road, Barney, GA 31625

LANDOWNER & PARCEL INFO					
<u>PARCEL ID#</u>	<u>LANDOWNER</u>	<u>ARRAY SECTION NUMBERS</u>	<u>PARCEL ACREAGE</u>	<u>LEASE ACREAGE (SUP &amp; SE APP ACREAGE)</u>	<u>PROPOSED DISTURBANCE ACREAGE</u>
118 0014	HOWARD I LAWSON	EASEMENT TO 3	29.0	2.0	1.5
118 0015	HOWARD I LAWSON	1 & 2	580.4	395.0	258.1
112 0023	JERRY ALVIN SAPP	PORTION OF 3	106.9	55.0	43.9
111 0005	C&M LAND HOLDINGS, LLC / RICHARD STUART CHAPPELL	PORTION OF 5	193.0	172.0	102.1
111 005A	C&M LAND HOLDINGS, LLC / RICHARD STUART CHAPPELL	PORTION OF 5	4.0	4.0	0.7
112 0024	C&M LAND HOLDINGS, LLC / RICHARD STUART CHAPPELL	PORTION OF 3 & 4	210.0	188.0	101.1
111 00061	C&M LAND HOLDINGS, LLC / RICHARD STUART CHAPPELL	PORTION OF 5	38.4	34.0	17.5
111 00063	DANIEL ANGLIN	PORTION OF 5	38.4	35.0	30.3
111 00064	DANIEL ANGLIN	PORTION OF 5	33.1	20.0	22.2
111 0006	DANIEL ANGLIN	EASEMENT TO 5	3.3	3.3	0.1
111 00062	FREDDIE DELL	PORTION OF 5	32.4	32.0	26.3
<b>TOTAL</b>	-	-	1268.7	940.3	603.8

**7. Attachments:** The following items must be submitted in full prior to acceptance of this application.

- A. **List of all current owners of record** for properties located immediately adjacent to or directly across any right-of-way from the subject property. The list shall include the current names, mailing addresses, and tax map/parcel numbers as reflected on the current tax roll of Brantley County. (This information may be obtained from the Brantley County Tax Assessor's Office.) Please list on page 7 and sign.
- B. **Letter of Intent**; stating the request, why the request is being made, and any other specific information.
- C. **Proposed Conceptual Site Plan** that includes:
  - a. Applicant name, date of drawing, and revision dates if applicable.
  - b. The size and location of the lot.
  - c. The dimensions and location of the existing building or structure(s) on the lot in question.
  - d. The dimensions and location of the proposed building, structure, or addition(s) on the lot.
  - e. If applicable, the location of any existing buildings on adjacent lots and their property line distance.
  - f. Any additional information necessary to allow understanding of the proposed use and development.

**Special Exception Process:** The Brooks County Planning Commission shall review the application for a Special Exception at a public hearing and shall make a **recommendation only** to the Brooks County Commissioners. At a second public hearing, the Brooks County Commissioners shall hear and decide all requests for Special Exceptions. In making this decision, per §13-2.8(F), the governing body shall consider the following:

- 1) Is the type of street providing access to the use adequate to serve the proposed Special Exception use?  
Yes, project will have access points branching from Peach Rd, Lawson Mill Pond Rd, and Guess Rd. All access roads will be approved and maintained per GDOT requirements.
- 2) Is access into and out of the property adequate to provide for traffic and pedestrian safety, the anticipated volume of traffic flow, and to allow access by emergency vehicles?  
Yes, all access road entrances will be approved and maintained per GDOT requirements.

- 3) Are public facilities such as schools, water, sewer or other public utilities and police and fire protection adequate to serve the proposed Special Exception use?

Yes, project will coordinate with all public facilities as required by Brooks County code

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- 4) Are refuse, service parking and loading areas on the property located or screened to protect other properties in the area from such adverse effects as noise, light glare and other negative impacts?

Yes, project will follow all requirements per Brooks County code

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- 5) Will the hours and manner of operation of the Special Exception use have no adverse impacts on other properties in the area?

No impact, see visual and noise renderings provided for further information

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- 6) Will the height, size or location of the buildings or other structures on the property is compatible with the height, size or location of buildings or other structures on neighboring properties?

Yes, solar panels will be 15ft tall at the maximum per Brooks County code

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The County Commission may impose or require such additional restrictions and standards as may be necessary to protect the health and safety of workers and residents in the community, and to protect the value and use of property in the general neighborhood. Wherever the County Commission shall find, in the case of any permit granted pursuant to the provisions of these regulations, that any term, condition or restrictions upon which such permit was granted are not being complied with, said County Commission shall rescind and revoke such permit after giving due notice to all parties concerned and granting full opportunity for a public hearing.

**PLEASE READ THE ABOVE AND THEN SIGN BELOW.**

**I do hereby certify that to the best of my knowledge, the above information and attachments are true and correct. I authorize the staff of the Land Use Office or their designee to enter and inspect the premises, which are the subject of this application.**



\_\_\_\_\_  
Signature of Applicant

11/29/2022

\_\_\_\_\_  
Date

**ADJACENT PROPERTY OWNERS**

Map & Parcel Number:

Name and Mailing Address:

1. 118 0017

1. Sandra Williams

P.O. Box 236

Morven, GA

2. 118 00171

2. Wesley R Williams

PO Box 56

Barney, GA

3. 118 0017A

3. Ben C Williams

694 Guess Road

Morven, GA

4. 119 0001

4. Timothy Heirs

2352 Cooper Rd

Barney, GA

5. 112 00231

5. Jerry & Sherry Sapp

PO Box 156

Morven, GA

6. 111 00051

6. Robin & Dennis Plymale

PO Box 87


Morven, GA

7. 11 00062A

7. Christie Dell Akins

980 Lawson Pond Road

Morven, GA

  
\_\_\_\_\_  
Signature of Applicant

11/29/2022  
\_\_\_\_\_  
Date

**ADJACENT PROPERTY OWNERS**

Map & Parcel Number:

Name and Mailing Address:

1. 111 0004D, 111 0004A,  
111 0008A, 111 0008, 111 0007,

Van Murphy  
9284 Valdosta Hwy  
Quitman, GA

2. 111 00081

Megan Murphy  
9238 Valdosta Hwy  
Quitman, GA

3. 111 00145

Johnny & Pamela Whiddon  
9778 Valdosta Hwy  
Quitman, GA

4. 111 011

Virgina Cunningham  
62 Edna Roberts Dr  
Alexander, NC

5. 119 0006

Langdale Woodlands  
PO Box 10388  
Valdosta, GA

6.

7.



\_\_\_\_\_  
Signature of Applicant

11/29/2022

\_\_\_\_\_  
Date



# **Additional Supporting Materials**

1. Letter of Intent
2. Property Descriptions
3. Landowner Authorizations
4. Noise Rendering
5. Overview of the Engineering, Procurement, and Construction Company – Blue Ridge Power, LLC
6. Information on Job Creation
7. Overview of Blue Ridge Power's PowerUp Program
8. Pine Gate Renewables' Waste Management Guidelines
9. Current Equipment Specification Sheets

# **1. Letter of Intent**

November 4, 2022

Attn: Melissa Smith, Code Enforcement Agent  
Brooks County Development Services  
1625 Johnson Short Rd  
Quitman, Georgia 31643  
229-263-8817  
mssmith@brookscountyga.gov

### **Letter of Intent for Morven Solar LLC Large Scale Solar Energy System Special Exception Application**

To Whom It May Concern,

Please find enclosed the Special Exception Application for the Morven Solar LLC Large Scale Solar Energy System. As per Ordinance 2012-01-01 of the Brooks County Zoning Ordinance, hereafter called the Solar Ordinance, a Large-Scale Solar Energy System is an accepted and approved use under an Agricultural zoning designation if a Special Exception Application is submitted with all application materials, as required by the Solar Ordinance.

The enclosed application will request that the entirety of the 80-megawatt project to be located on 940.3 acres on a portion of 11 parcels be covered under this approval. The project entity, Morven Solar, LLC, maintains Site Control Agreements with the 5 landowners of these 11 parcels. This includes Richard Stuart Chappell (owner of C&M Land Holdings, LLC), Howard Lawson, Daniel Anglin, Jerry Alvin Sapp, and Freddie Dell. These landowners have each provided Notarized Authorization Letters allowing the project entity to submit for this Special Exception Application on their property.

The enclosed application is accompanied with all documentation required per the Solar Ordinance as listed below:

- Letter of Intent
- Property Descriptions
- Landowner Authorizations
- A Site Plan (“ZPP”) with the following:
  - General Site Map with Large Scale SES Code Requirements labeled (Page ZPP-101)
  - USGS Topographic Site Map (Page ZPP-102)
  - Sediment and Erosion Control Map & Plan (Pages ZPP-103 & ZPP-103A )
  - GA DNR Species Map (Page ZPP-104)
  - Habitat Mitigation Plan (Page ZPP-104A & ZPP-104B)
  - USFWS Species Map (Page ZPP-105)
  - NRCS Farmland Classifications Map & Mitigation Plan (Page ZPP-106)
  - Tree Survey & Removal Map (Page ZPP-107 & ZPP-107A)
  - FAA 5 Nautical Miles Map & Clearance Confirmation (Page ZPP-108)
  - Warning Signage and Fence & Access Road Specs (Page APP-100)
  - Decommissioning Plan, Cost Estimate, and Bond Commitment Letter (Page APP-101 & APP-102)
  - Single Line Drawing (Page APP-103 & APP-104)
  - Brooks County Zoning Map (Page APP-105)

- Visual Rendering of the required Visual Buffer (Page APP-106)

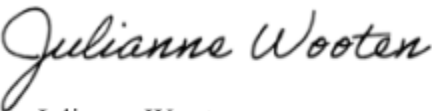
Additional Supporting Materials added to the application are as follows:

- Noise Rendering
- Overview of the Engineering, Procurement, and Construction Company – Blue Ridge Power, LLC
- Overview of Blue Ridge Power’s PowerUp Program
- Pine Gate Renewables Waste Management Guidelines

If you have any questions or concerns, please reach out to the Development Project Manager, Mikala Newsom, at (828) 232-6471 or [mnewsom@pgrenewables.com](mailto:mnewsom@pgrenewables.com).

Sincerely,

Morven Solar, LLC

By: 

Name: Julianne Wooten

Title: Authorized Person

## **2. Property Descriptions**

## Description of Property

**Location:** Lawson Mill Pond Brooks County, GA

**Owner:** Howard Lawson

**Tax Parcel ID Number (PIN):** 118 0014 and 118 0015

**Parcel Acreage:** 609.39 acres

**Lease Acreage:** 397 acres



**\*Property is outlined by a white line (subject to final survey)**

## Depiction of the Land

**Property Location:** Lawson Mill Pond Road, Brooks County, GA

**Owner:** Daniel Anglin (Son of Japonica Dell Haefele)

**Parcel IDs:** 111 00063 and 111 00064

**Parcel Acreage:** 71.45 acres

**Lease Acreage:** 65 acres



**\*Property is outlined by a white line (subject to final survey)**

## Description of Easement

**Property Location:** Lawson Mill Pond Road, Brooks County, GA

**Owner:** Daniel Anglin (Son of Japonica Dell Haefele)

**Tax Parcel ID Number (PIN):** 111 0006

**Parcel Acreage:** 3.27 acres

**Lease Acreage:** 3.27 acres



**\*The narrow strip of Property in white on Parcel 111 0006 connecting Lawson Pond Rd. to the northern half of the Solar Farm to shall be 50 ft. wide.**



### Description of Property

**Property Location:** Peach Road, Brooks County, GA

**Owner:** Jerry Alvin Sapp

**Lease Acreage:** 55 acres

**Tax Parcel ID Number (PIN):** 112 0023

**Parcel Acreage:** 106.9 acres



**\*Property is outlined by a white line (subject to final survey)**

### Description of Property

**Location:** Lawson Pond Rd., Brooks County, GA

**Lease Acreage:** 398 acres

Parcel ID	Parcel Acreage	Ownership
111 0005	192.98	C&M Land Holdings, LLC
111 0005A	4.0	C&M Land Holdings, LLC
111 00061	38.36	Richard Stuart Chappell
112 0024	210.0	C&M Land Holdings, LLC



**\*Property is outlined by a white line (subject to final survey)**

**\*\*The narrow strip of Property on Parcel 111 00061 connecting the southern half of the Property to Lawson Pond Rd. shall be 50 ft. wide.**

## DESCRIPTION OF PROPERTY

**LOCATION:** Brooks County GA

**Parcel Total Acreage:** Approximately 32 acres

**APN Numbers:** 111 00062

APN/Legal Description	Lease Acreage	Notes
111 00062	32	Grantee will not be required to lease any portions of the Property that cannot be used for the development of the Project due to Applicable Law, including as a result of Applicable Laws disallowing development within a certain distance of the property line (setback restrictions), restrictions on portions of the Property being located on wetlands or other restrictions based on Applicable Law
<b>Total</b>	<b>32</b>	

## PROPERTY MAP



### **3. Landowner Authorizations**



Asheville: 130 Roberts Street, Asheville, NC 28801 ♦ Charlotte: 301 Camp Road, Suite 104, Charlotte, NC 28206  
Jacksonville: 315 3rd Avenue N., Jacksonville Beach, FL 32250 ♦ info@pgrenewables.com ♦ www.pgrenewables.com

**LANDOWNER AUTHORIZATION**

This form authorizes Morven Solar, LLC, owned by Pine Gate Renewables, to act on behalf of the landowner to apply for any special exception, special use, or other permits and approvals Brooks County requires for the development of the Morven Solar Project.

Landowner Name: Daniel Anglin

Contact Information: 229-563-2937, daniel.1033services@gmail.com

Parcel ID#: 111 00063, 111 00064, 111 0006


Parcel Acreage: 38.36 + 33.09 + 3.27 = 74.72 acres

Lease Acreage: 68.27 acres

Proposed Disturbance Area Acreage: 52.5 acres

Reason for Partial Use of Lease Acreage: Due to wetlands and other site conditions that limit the footprint of the solar project, only 52.5 acres of the 68.27 acres available in the Agreement will be a part of the Proposed Disturbance Area.

By signing the below, I authorize Pine Gate Renewables to apply for any permits or approvals with Brooks County needed for the Morven Solar Project. I, the undersigned, am either a duly authorized owner of record of the property identified herein, or acting as the duly authorized agent of the owner of record of the property.

Signature:  BC6EE0914B79422...

Print Name: Daniel Anglin

Capacity:  Owner  Authorized Agent

Date: 9/25/2022



Asheville: 130 Roberts Street, Asheville, NC 28801  
Jacksonville: 315 3rd Avenue N., Jacksonville Beach, FL 32250

Charlotte: 301 Camp Road, Suite 104, Charlotte, NC 28206  
info@pgrenewables.com www.pgrenewables.co

### LANDOWNER AUTHORIZATION

This form authorizes Morven Solar, LLC, owned by Pine Gate Renewables, to act on behalf of the landowner to apply for any special exception, special use, or other permits and approvals Brooks County requires for the development of the Morven Solar Project.

Landowner Name: Richard Stuart Chappell and C&M Land Holdings, LLC

Contact Information: 229-560-9472, chappell.1@hotmail.com

Parcel ID#: 111 0005, 111 0005A, 111 00061, 112 0024

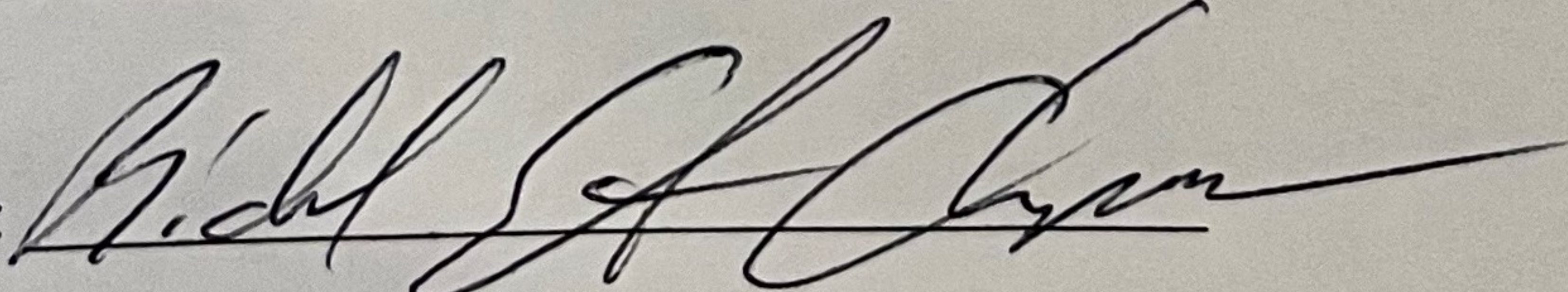
Parcel Acreage: 192.98 + 4 + 38.36 + 210 = 445.34 acres

Lease Acreage: 398 acres

Proposed Disturbance Area Acreage: 222.3 acres

Reason for Partial Use of Lease Acreage: In the Site Control Agreement between Richard Stuart Chappell & C&M Land Holdings, LLC and Morven Solar, LLC, there is a minimum lease acreage of 398 acres. Due to wetlands and other site conditions that limit the footprint of the solar project, only 222.3 acres of the 398 acres available in the Agreement will be a part of the Proposed Disturbance Area.

By signing the below, I authorize Pine Gate Renewables to apply for any permits or approvals with Brooks County needed for the Morven Solar Project. I, the undersigned, am either a duly authorized owner of record of the property identified herein, or acting as the duly authorized agent of the owner of record of the property.

Signature: 

Print Name: Richard Stuart Chappell

Capacity:  Owner  Authorized Agent

Date: 9.24.2022

# LANDOWNER AUTHORIZATION

This form authorizes Morven Solar, LLC, owned by Pine Gate Renewables, to act on behalf of the landowner to apply for any special exception, special use, or other permits and approvals Brooks County requires for the development of the Morven Solar Project.

Landowner Name: Freddie Dell

Contact Information: 229-561-2816

Parcel ID#: 111 00062

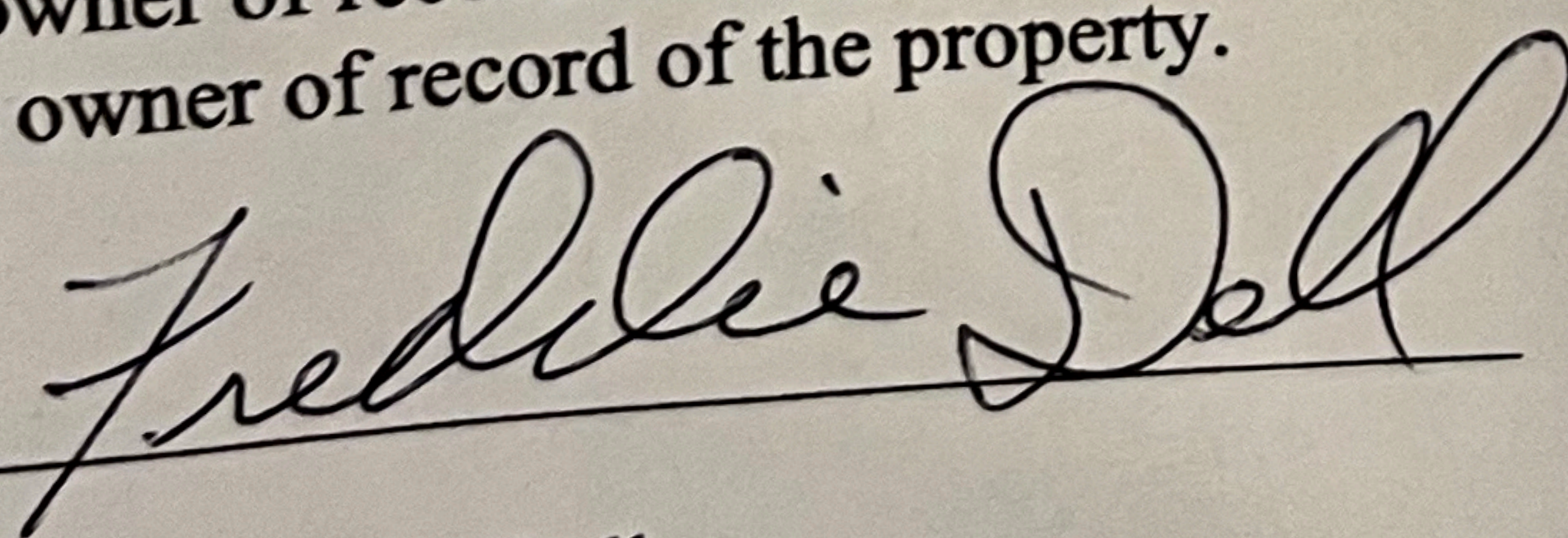
Parcel Acreage: 32.36 acres

Lease Acreage: 32 acres

Proposed Disturbance Area Acreage: 26.3 acres

Reason for Partial Use of Lease Acreage: In the Site Control Agreement between Freddie Dell and Morven Solar, LLC, there is a minimum lease acreage of 32 acres. Due to wetlands and other site conditions that limit the footprint of the solar project, only 26.3 acres of the 32 acres available in the Agreement will be a part of the Proposed Disturbance Area.

By signing the below, I authorize Pine Gate Renewables to apply for any permits or approvals with Brooks County needed for the Morven Solar Project. I, the undersigned, am either a duly authorized owner of record of the property identified herein, or acting as the duly authorized agent of the owner of record of the property.

Signature: 

Print Name: Freddie Dell

Capacity:  Owner  Authorized Agent

Date: 9/24/22



Asheville: 130 Roberts Street, Asheville, NC 28801 ♦ Charlotte: 301 Camp Road, Suite 104, Charlotte, NC 28206  
Jacksonville: 315 3rd Avenue N., Jacksonville Beach, FL 32250 ♦ info@pgrenewables.com ♦ www.pgrenewables.com

### LANDOWNER AUTHORIZATION

This form authorizes Morven Solar, LLC, owned by Pine Gate Renewables, to act on behalf of the landowner to apply for any special exception, special use, or other permits and approvals Brooks County requires for the development of the Morven Solar Project.

Landowner Name: Howard I Lawson

Contact Information: 229-561-4862

Parcel ID#: 118 0014 and 118 0015

Parcel Acreage: 580.39 + 29 = 609.39 acres

Lease Acreage: 397 acres

Proposed Disturbance Area Acreage: 260.4 acres

Reason for Partial Use of Lease Acreage: In the Site Control Agreement between Howard I

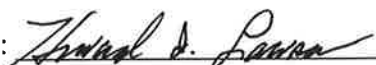
Lawson and Morven Solar, LLC, there is a minimum lease acreage of 397 acres. Due to Parcel

ID# 118 0014 only being used for a 30 foot wide easement, wetlands, and other site conditions

that limit the footprint of the solar project, only 260 acres of the 397 acres available in the

Agreement will be a part of the Proposed Disturbance Area.

By signing the below, I authorize Pine Gate Renewables to apply for any permits or approvals with Brooks County needed for the Morven Solar Project. I, the undersigned, am either a duly authorized owner of record of the property identified herein, or acting as the duly authorized agent of the owner of record of the property.

Signature: 

Print Name: Howard I Lawson

Capacity:  Owner  Authorized Agent

Date: 9/23/22



**LANDOWNER AUTHORIZATION**

This form authorizes Morven Solar, LLC, owned by Pine Gate Renewables, to act on behalf of the landowner to apply for any special exception, special use, or other permits and approvals Brooks County requires for the development of the Morven Solar Project.

Landowner Name: Jerry Alvin SappContact Information: 229-506-0695Parcel ID#: 112 0023Parcel Acreage: 106.9 acresLease Acreage: 55 acresProposed Disturbance Area Acreage: 43.9 acres

Reason for Partial Use of Lease Acreage: In the Site Control Agreement between Jerry Alvin Sapp and Morven Solar, LLC, there is a minimum lease acreage of 55 acres. Due to wetlands and other site conditions that limit the footprint of the solar project, only 43.9 acres of the 55 acres available in the Agreement will be a part of the Proposed Disturbance Area.

By signing the below, I authorize Pine Gate Renewables to apply for any permits or approvals with Brooks County needed for the Morven Solar Project. I, the undersigned, am either a duly authorized owner of record of the property identified herein, or acting as the duly authorized agent of the owner of record of the property.

Signature: Jerry Alvin SappPrint Name: Jerry Alvin SappCapacity:  Owner  Authorized AgentDate: 9-22-22

## **4. Noise Rendering**



July 29, 2022

Andrew Varrow  
Pine Gate Renewables

**Subject:** *Morven Solar Project – Sound Study  
Brooks County, Georgia*

### **Executive Summary**

The purpose of this technical memorandum is to summarize the evaluated sound levels associated with the operational equipment located throughout the proposed Morven Solar Project in Brooks County, GA.

The proposed solar photovoltaic project site is partially within the City of Morven, with the eastern portion of the site in an unincorporated part of Brooks County, and is located approximately 11 miles northwest of Valdosta and approximately 11 miles northeast of Quitman. The site is generally located east of GA-133 (Valdosta Highway) and Peach Road, west of Guess Road, and bisected by Lawson Mill Pond Road. The solar site will be located on agricultural and forested land with rural residential properties surrounding the project area. The location of the proposed Morven Solar Project is shown in **Figure 1**.

### **Project Description**

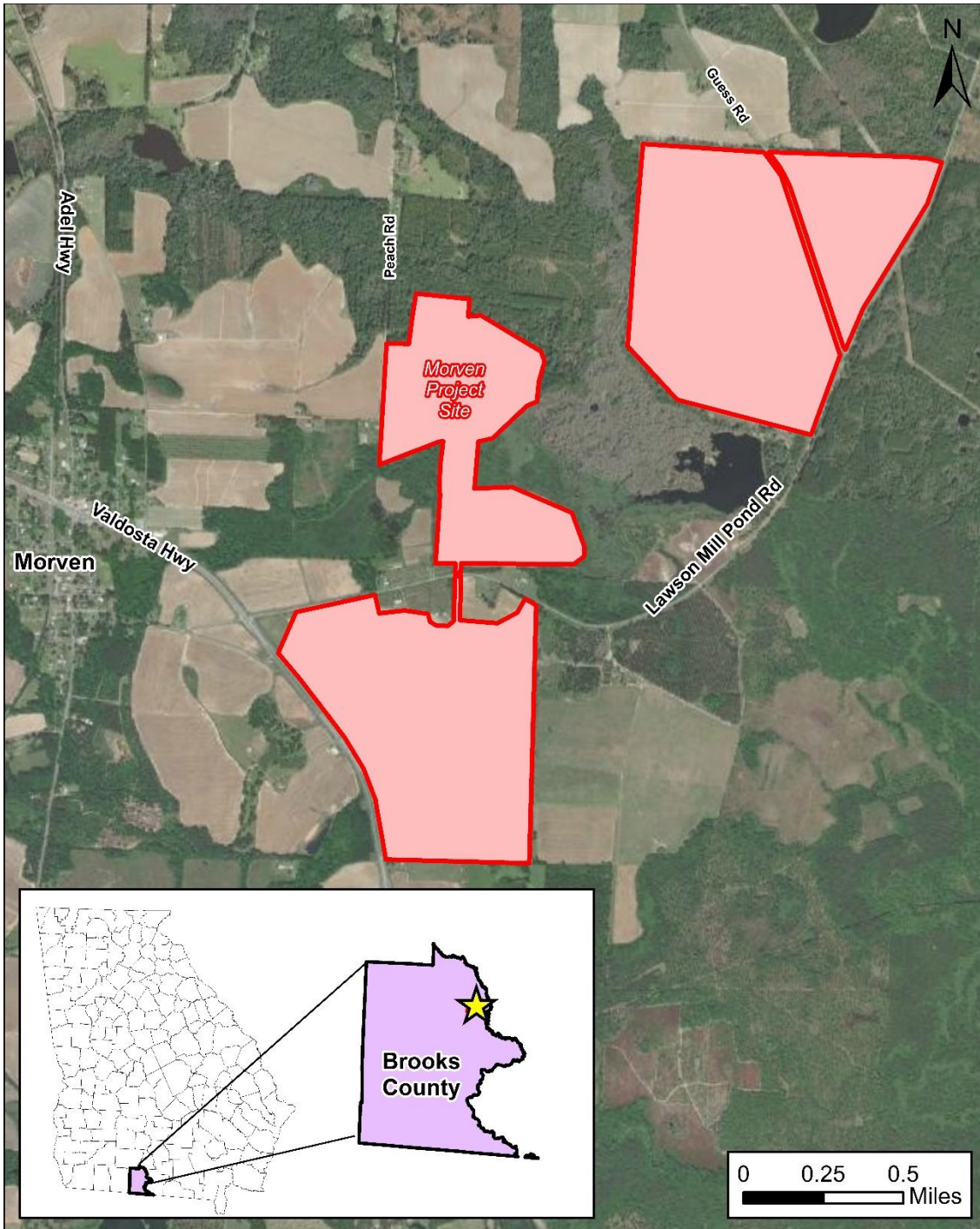
The proposed Morven Solar Project will be developed on approximately 1,100 acres of agricultural and forested land within the City of Morven and unincorporated Brooks County, GA. The solar site will consist of solar arrays and inverters throughout the project area as well as a power substation with transformers.

### **Local Regulations**

Ordinances and regulations for solar energy systems in Brooks County, GA were not identified; therefore, decibel or frequency limits for solar sites were not available for comparison purposes.

However, a threshold of 50 dB(A) was established as a reference for operational noise at the Morven Solar Project to be conservative.

Figure 1: Site Location and Vicinity



## Characteristics of Noise

Noise is generally defined as unwanted sound. It is emitted from many natural and man-made sources. Sound pressure levels are usually measured and expressed in decibels (dB). The decibel scale is logarithmic and expresses the ratio of the sound pressure unit being measured to a standard reference level. Most sounds occurring in the environment do not consist of a single frequency, but rather a broad band of differing frequencies. The intensities of each frequency add together to generate sound. Because the human ear does not respond to all frequencies equally, the method commonly used to quantify environmental noise consists of evaluating all of the frequencies of a sound according to a weighting system. It has been found that the A-weighted decibel [dB(A)] filter on a sound level meter, which includes circuits to differentially measure selected audible frequencies, best approximates the frequency response of the human ear.

The degree of disturbance from exposure to unwanted sound – noise – depends upon three factors:

1. The amount, nature, and duration of the intruding noise
2. The relationship between the intruding noise and the existing sound environment; and
3. The situation in which the disturbing noise is heard

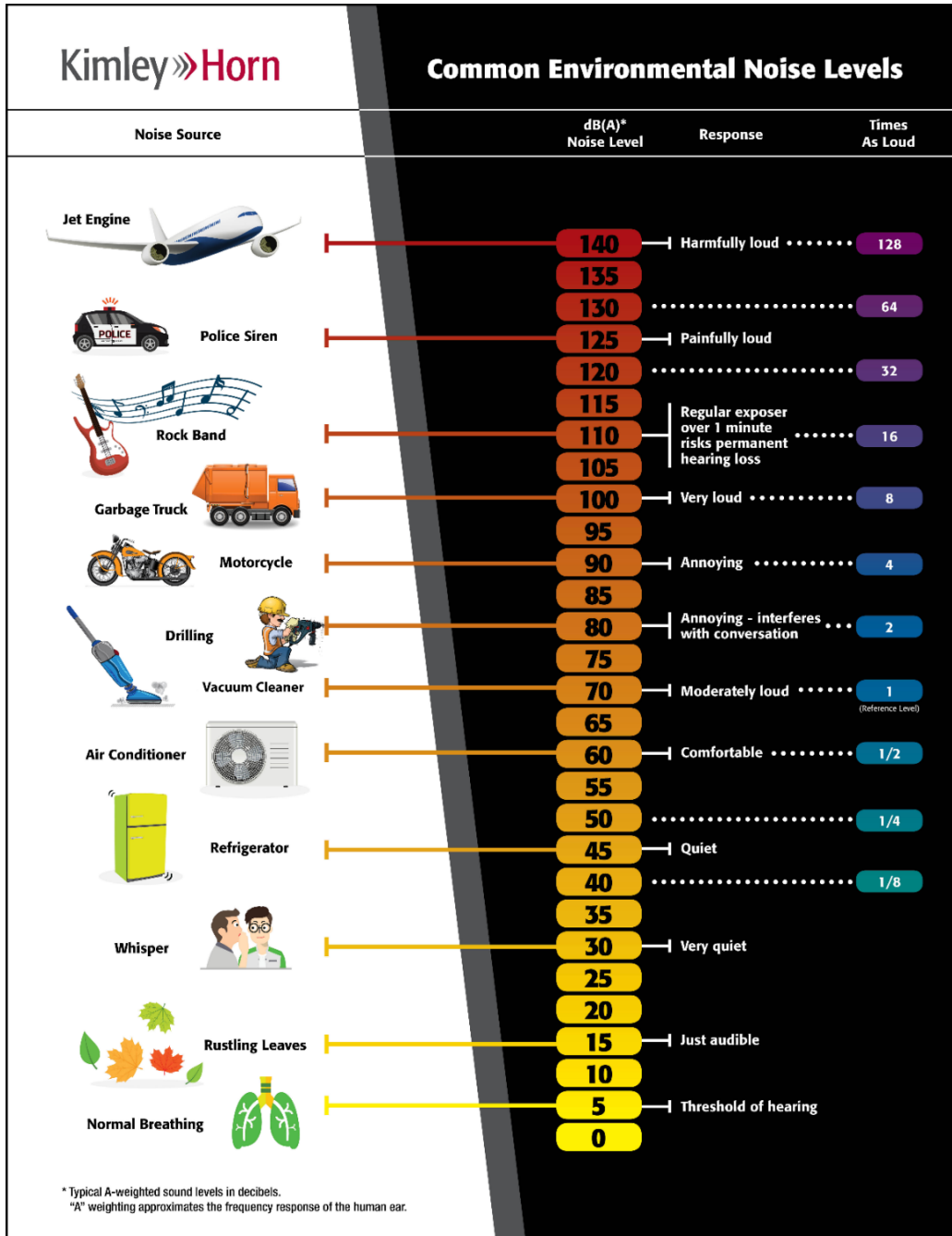
In considering the first of these factors, it is important to note that individuals have varying sensitivity to noise. Loud noises bother some people more than other people, and some individuals become increasingly upset if an unwanted noise persists. The time patterns and durations of noise(s) also affect perception as to whether or not it is offensive. For example, noises that occur during nighttime (sleeping) hours are typically considered to be more offensive than the same noises in the daytime.

With regard to the second factor, individuals tend to judge the annoyance of an unwanted noise in terms of its relationship to noise from other sources (background noise). A car horn blowing at night when background noise levels are low would generally be more objectionable than one blowing in the afternoon when background noise levels are typically higher. The response to noise stimulus is analogous to the response to turning on an interior light. During the daytime an illuminated bulb simply adds to the ambient light, but when eyes are conditioned to the dark of night, a suddenly illuminated bulb can be temporarily blinding.

The third factor – situational noise – is related to the interference of noise with activities of individuals. In a 60 dB(A) environment such as is commonly found in a large business office, normal conversation would be possible, while sleep might be difficult. Loud noises may easily interrupt activities that require a quiet setting for greater mental concentration or rest; however, the same loud noises may not interrupt activities requiring less mental focus or tranquility.

As shown in **Figure 2**, most individuals are exposed to fairly high noise levels from many sources on a regular basis. To perceive sounds of greatly varying pressure levels, human hearing has a non-linear sensitivity to sound pressure exposure. Doubling the sound pressure results in a three decibel change in the noise level; however, variations of three decibels [3 dB(A)] or less are commonly considered “barely perceptible” to normal human hearing. A five decibel [5 dB(A)] change is more readily noticeable. A ten-fold increase in the sound pressure level correlates to a 10 decibel [10 dB(A)] noise level increase; however, it is judged by most people as only sounding “twice as loud”.

Figure 2: Common Noise Levels



Over time, individuals tend to accept the noises that intrude into their lives on a regular basis. However, exposure to prolonged and/or extremely loud noise(s) can prevent use of exterior and interior spaces and has been theorized to pose health risks.

**Existing Conditions**

The site is generally located east of GA-133 (Valdosta Highway) and Peach Road, west of Guess Road, and bisected by Lawson Mill Pond Road. The solar site will be located on agricultural and forested land with rural residential properties surrounding the project area.

The predominant source of noise in the vicinity of the proposed solar site is anticipated to be traffic noise along GA-133 (Valdosta Highway) and Lawson Mill Pond Road, as well as other rural roadways, including Peach Road and Guess Road.

Other sources of noise include ambient environmental noise, which includes wind, birds chirping, insects, household appliances, landscaping equipment, etc. Also, it is assumed that agricultural equipment contributes to the existing noise environment during the planting and growing seasons.

**Sound Study**

Sound levels from the proposed Morven Solar Project were evaluated using SoundPLAN. This program computes predicted sound levels at noise-sensitive areas through a series of adjustments to reference sound levels. SoundPLAN can also account for topography, groundcover type, and intervening structures. Sound levels generated from inverters and transformers are anticipated to be the main source of sound from the proposed solar photovoltaic project site.

It should be noted that noise from surrounding roadways was not included in this analysis, although GA-133 (Valdosta Highway), Lawson Mill Pond Road, and other rural roadways are anticipated to contribute to the ambient noise environment throughout the entire day.

*Inverters*

Photovoltaic (PV) inverter equipment generates steady, unvarying sound that can create issues when located near noise-sensitive areas. It was assumed that PV inverters would be distributed throughout the solar site. Based on typical noise emission levels for inverter equipment, a reference sound level of 79 dB(A) at 1 meter for each PV inverter was used. The sound from the simultaneous operation of the PV inverter equipment was calculated at the closest noise-sensitive receptors surrounding the project area using SoundPLAN.

Sound generated by the inverters is not anticipated to significantly contribute to the existing environmental sound levels surrounding the site. Also, sound generated by the inverters is expected to be mitigated by providing sufficient offsets between the inverters and surrounding noise-sensitive land uses as well as by the physical presence of the solar arrays, which are anticipated to shield and disperse some of the sound generated by the inverters.

*Transformers*

Transformers also generate steady, unvarying sound that can create issues when located near noise-sensitive areas. It was assumed that transformers would be located at the proposed substation north of Lawson Mill Pond Road and east of Guess Road. A reference sound level for a transformer of 75 dB(A) at 1 meter was used. The sound from the simultaneous operation of the transformers was

calculated at the closest noise-sensitive receptors in the area near the proposed substation using SoundPLAN.

Sound generated by the transformers is not anticipated to significantly contribute to the existing environmental sound levels surrounding the site. Also, sound generated by the transformers is expected to be mitigated by providing sufficient offsets between the transformers and surrounding noise-sensitive land uses.

## Results

The SoundPLAN-predicted maximum equivalent operational sound levels at the residential structures surrounding the site are anticipated to be at or below approximately 50 dB(A).

Since the predicted operational sound levels are anticipated to be near or below the established threshold of 50 dB(A) established for reference purposes, noise mitigation measures do not need to be included in the project design. The anticipated operational sound contours are shown in **Figure 4**.

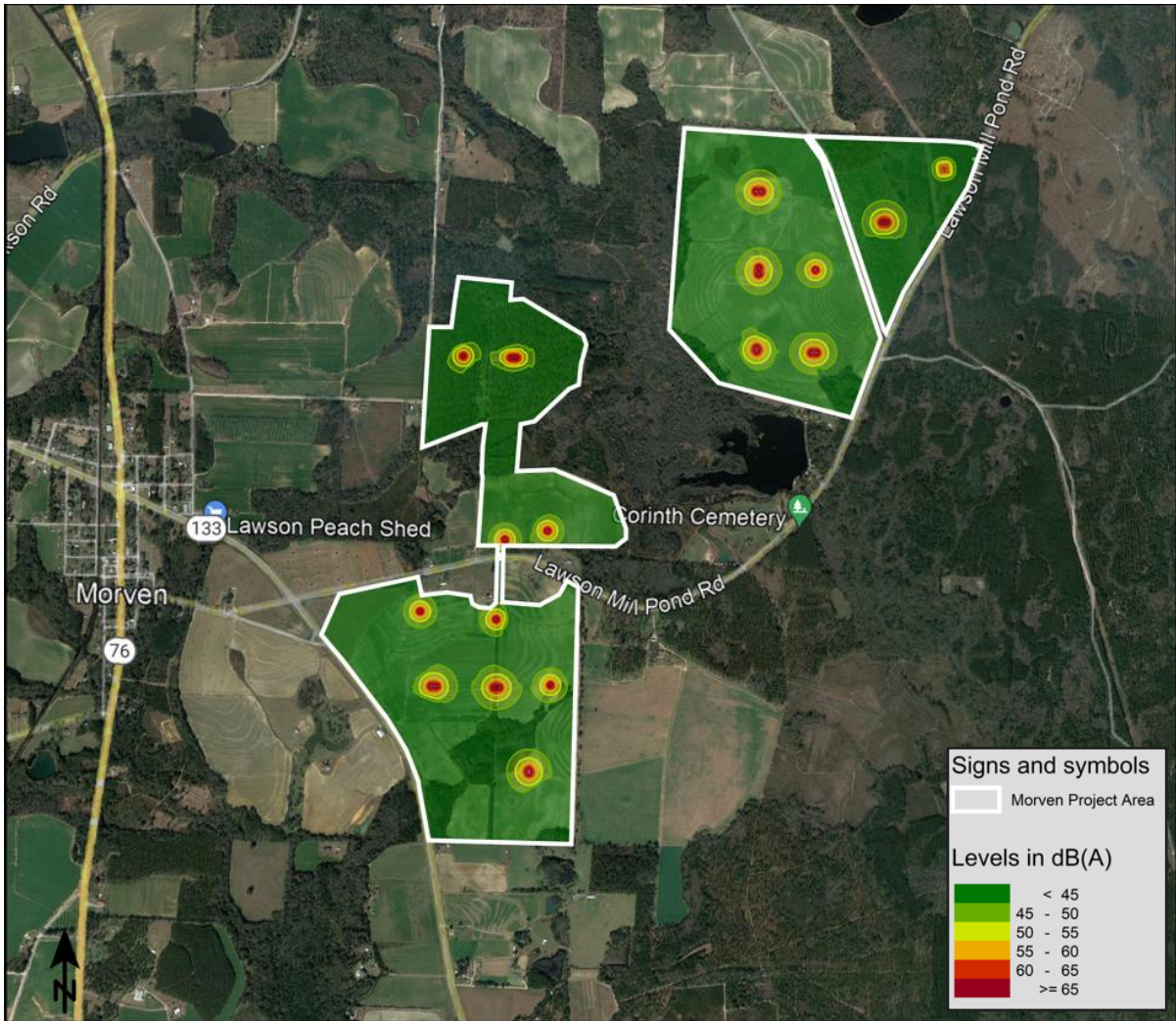
## Conclusions

The site is generally located east of GA-133 (Valdosta Highway), east of Peach Road, west of Guess Road, and intersected by Lawson Mill Pond Road. The solar site will be located on agricultural and forested land with rural residential properties surrounding the project area.

After modeling and analyzing the anticipated operational sound levels throughout the proposed solar site, it was determined that noise mitigation measures are not needed since the anticipated operational sound levels will be below the established sound level threshold of 50 dB(A) at a noise-sensitive land use.



Figure 4: Operational Sound Contours



## **5. Overview of the Engineering, Procurement, and Construction Company – Blue Ridge Power, LLC**



# Statement of Qualifications

General Contractor License #: Blue Ridge Power, LLC GCC0007523



## COMPANY OVERVIEW

Blue Ridge Power is a full-service EPC company for renewable energy projects across the United States. The company offers integrated engineering, a qualified professional labor force and an expansive fleet of equipment to serve the needs of its clients looking for a turnkey solution for solar and solar + storage projects.

Merging the talents of the EPC team at Pine Gate Renewables and Horne Brothers Construction, Blue Ridge Power was formed to create a best-in-class company that is a leader in the solar industry. The company has built 6GW of projects and holds General Contractor and Electrical Licenses in Georgia, North Carolina, South Carolina, and Virginia, along with a General Contractor License in Arizona and Nebraska. Blue Ridge Power has the ability to obtain General Contractor and Electrical Licenses in Alabama, Florida, Louisiana, Mississippi, Tennessee, West Virginia, Oregon, Nevada, and Utah.

In 2021 alone, the company constructed and completed 1.5GW of projects across the Carolinas, Georgia, Michigan, Oregon, Pennsylvania, and Massachusetts.

Headquartered in Asheville, NC, Blue Ridge Power has deep relationships working with utility partners and vendors, relying on experience and dedication to get the job done right.



**Grubbing**



**Grading**



**Erosion Control**



**Pile Driving**



**Substation Interconnection**



**Substation Buildout**



**Electrical Installation**



**Rack & Module Installation**

## MILESTONES

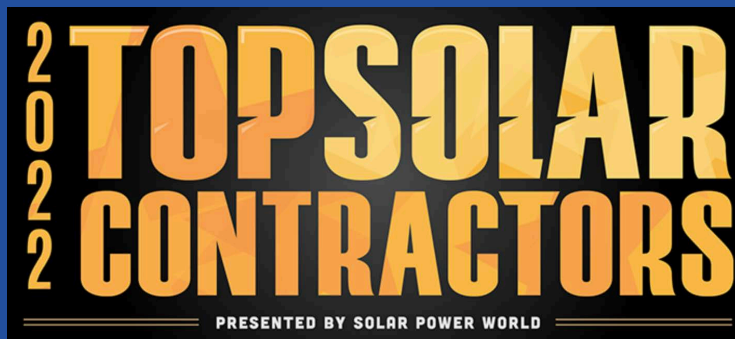
**1GW** of operational assets

**1.3GW** under construction

**800+** employees

**16** active states

**4.8GW** in the pipeline



## SAFETY INITIATIVE

At Blue Ridge Power, safety is not simply a lack of injuries or accidents. Instead, safety means we focus on the prevention of injury and accidents in everything we do. Safety is not only an outcome—it's how we work.

### Safety in Action

Practicing our company core values of collaboration, ownership, grit and creativity allows us to work safely through all stages of the Planning, Doing, Checking, Adjusting (PDCA) cycle:



- Collaboration is planning our work together to achieve the best safety outcomes. The Environmental Health & Safety team is an advocate, resource and facilitator for safe work.
- Ownership is doing the work. Safe work practices are owned by those performing the work, and each of our employees takes personal ownership to raise any safety concerns.
- Grit is checking and verifying that we are doing our best, making extra efforts to improve, and taking time to solve problems before they arise.
- Creativity means adjusting and thinking outside of the box for workable solutions that go above and beyond meeting OSHA requirements and regulations.

“Blue Ridge Power has been an outstanding company to partner with from both a **strategic and financial perspective**. They plan ahead and honor their commitments.”

- Sam Thompson, Sales Manager, Trina Solar

**Blue Ridge was one of the first solar developers to deploy bi-facial modules for utility-scale installation in the country.**

**“The team at Blue Ridge Power consistently demonstrates their mastery of managing an efficient supply chain. Their ability to execute project plans and deliver on their commitments is outstanding.”**

- Mark Borgman, VP of Logistics,  
One Source Freight Solution

Knowing each project is unique, we recognize that the greatest opportunity to optimize efficiency and reduce cost on each site is to engage with the project as early in the process as possible. Our pre-construction services optimize the electrical and civil design while choosing equipment that best suits each site. Blue Ridge is a leader in innovation and delivers high-quality projects **on time and on budget.**

Our engineers design our customers' projects to ensure that they meet code requirements for all stakeholders. Blue Ridge works closely with selected design engineers to review plans and ensure the project is constructible and meets code requirements.

Our procurement team reviews all equipment specifications to ensure that all projects completed are technically and are mechanically correct. Our team has relationships with the top vendors in the United States to ensure that we are working with the most up-to-date technology, our costs are the most efficient, and our materials and products are of the best quality.

We negotiated a three-year, forward-looking solar module contract exclusively to buy bi-facial modules with Canadian Solar. This was done on a cost plus basis that allowed us to be more cost effective and ensures that supply is readily available for our projects. Additionally, we house equipment in three storage facilities around the state of North Carolina so it remains safe, secure and ready for installation at any time.

## CONSTRUCTION



## WHERE WE'VE BUILT

- Alabama
- Georgia
- Maine
- Maryland
- Massachusetts
- Michigan
- Mississippi
- North Carolina
- Oregon
- Pennsylvania
- South Carolina
- Tennessee
- Vermont
- Virginia

We've been in this business a long time and know what it takes to launch a project from start to finish. We have a dedicated resource for "Pre-Construction" and a unique fleet of equipment and trained personnel to execute projects better than anyone else in the industry. We have successfully completed more than 367 projects with 6GWdc of solar installations.

Blue Ridge Power operates with some of the best and most experienced sub-contractors to complete our projects. Our Project Managers oversee any sub-contract work that is taking place and work very closely with our highly trained and qualified QA/QC Managers. Our construction team has the responsibility to ensure that all our contract and code requirements, as well as stakeholders' expectations are met.



## OPERATIONS AND QUALITY

As asset owners, we recognize a solar project is a long-term asset and that value is top-of-mind as we plan and execute projects that are built to last for years to come. We ensure peak performance of all major and balance of systems equipment by pairing our rigorous quality control process with site specific technology. We work diligently to ensure all OEM required maintenance is performed as specified to keep the power plant running as intended and without interruption.



## ENERGY STORAGE

Energy storage provides critical on-demand clean renewable power and energy services to the utility grid, ensuring reliability, efficiency and resilience of service and cost savings to customers. With our strategic partner, Pine Gate Renewables, which is a leader in developing and financing solar projects across the country, we are deploying the first three utility-scale DC coupled solar + storage systems together rated 50MW, 200 MWhs and first of its kind in South Carolina with CODs in 2022 and 2023.

Blue Ridge Power Energy Storage and Integration Services include:

- BESS sizing and optimization
- Engineering and design
- Procurement
- Construction and project management
- Land optimization
- Permitting
- Site development and assessment
- Site layout
- System Controls Integration (EMS, PPC and SCADA)
- Commissioning & Quality Assurance
- Project budgeting and financing
- Regulatory work
- Safety Training
- System Operations & Maintenance

# SERVICE OFFERINGS

## Engineering

- Preliminary Design
- Construction Drawings
- Feasibility Studies
- Utility Coordination
- Value Engineering

## Pre-Construction

- Budget Development
- Constructability Reviews
- Major Equipment & BOS Procurement
- Schedule Development
- Permitting
- Safety & Environmental Training
- Proactive Stakeholder / Landowner Engagement

## Construction

- Logistics Coordination
- Critical Path Management
- Progress Reporting
- Safety & Environmental Training
- Quality Assurance / Control
- SWPP Management

## Post-Construction

- Commissioning & Startup
- Performance Testing
- Performance Guarantees
- Warranty Management
- Spare Parts Coordination
- O&M Service

# LEADERSHIP



**Chris Dunbar**  
CEO



**Martin White**  
CFO



**Alex Epstein**  
COO



**Bru Weber**  
CPO



**Clint Lloyd**  
General Counsel



**Jack Horne**  
EVP of Construction



**Tom Kosto**  
EVP of Pre-Construction



**Tripp McSwain**  
SVP of Project  
Management



**Matt Massarelli**  
EVP of Safety, Quality  
& Environment



**Max Isaacs**  
SVP of Safety, Quality  
& Environment



**Jack Bolton**  
SVP of EPC Sales



**Brian Taddonio**  
VP of Engineering



**JR Whitley**  
VP of Quality  
& Commissioning



**Claudia Emerson**  
Director of  
Sustainability



**James Froelicher**  
VP of Construction



**Jeff Huntley**  
VP of Project  
Execution



**Grayson Newell**  
VP of Project  
Execution



**John West**  
VP of Project  
Execution

## PROJECT HIGHLIGHTS



### **Sugar**

**Yadkin County, NC**

Size: 81 MWdc

Utility: [Duke Energy Carolinas](#)

Commercial Operating Date: [Q4 2021](#)



### **Lyons Road**

**Shiawassee County, MI**

Size: 28 MWdc

Utility: [Consumers Energy](#)

Commercial Operating Date: [Q1 2022](#)



### **Beulah**

**Saluda and Lexington  
Counties, SC**

Size: 101 MWdc

Utility: [Dominion Energy](#)

Commercial Operating Date: [Q1 2022](#)



### **Brightwood**

**Clackamas County, OR**

Size: 13 MWdc

Utility: [Portland General Electric](#)

Commercial Operating Date: [Q1 2022](#)

## PARTNER WITH US

### Contact

(833) 436-1249

[info@blueridgepower.com](mailto:info@blueridgepower.com)

[blueridgepower.com](http://blueridgepower.com)

### Headquarters

105 Fairview Road  
Suite 30  
Asheville, NC 28803

1682 Middle River Loop  
Fayetteville, NC 28312



## **6. Information on Job Creation**

## Morven Solar Job Creation

While the Morven Solar Project will not lead to any permanent jobs working *specifically* for the Morven Solar facility itself or Pine Gate Renewables, we aim for the project to initiate the hire of approximately 30 new permanent employees from Brooks County into Blue Ridge Power. Blue Ridge Power is Pine Gate Renewables' Engineering, Procurement, and Construction (EPC) sister company that will be constructing the project.

Blue Ridge Power has established a new professional apprenticeship program called the PowerUp Program. This program is designed to recruit new employees and provide training so that they may fill more positions within their rapidly growing company. Another project owned by Pine Gate Renewables that is of similar size to the Morven Solar Project is Eastover Solar, located in Richland County, SC. This project and has created 230 temporary jobs during construction, and through the Power-Up Program, Blue Ridge Power was able to gain 32 new permanent employees that were all recruited *directly* from Richland County.

In Georgia, Pine Gate Renewables currently has 10 solar projects in development, and we aim to initiate many more as we grow in the state's solar market. Blue Ridge Power's Power-Up Program will become vital in order to build up a substantial Georgia-based workforce. Please see <https://blueridgepower.com/power-up> for more information on this program. With the Morven Solar project being one of the first solar projects Blue Ridge Power will construct in the South Georgia area, Brooks County will become a major recruiting location for new Georgia-based employees. Blue Ridge Power would be more than happy to co-ordinate PowerUp events with the Brooks County Development Agency to initiate recruitment from the community.

In addition to the jobs Blue Ridge Power can potentially create, Brooks County will become the temporary home to a 250+ work force that will provide a significant boost to local hotels, restaurants, convenience stores, and gas stations during the 12 months construction is estimated to take. In addition, the Morven Solar Project will bring in substantial business to local contractors and vendors for construction related needs. Pine Gate Renewables and Blue Ridge Power take pride in the communities we build our projects in, and we hope to work closely with the Brooks County Development Agency through the life of the project to continually find ways to boost the Brooks County community.

## **7. Overview of Blue Ridge Power's PowerUp Program**





# PowerUp Workforce Development Programs

[INTERNSHIPS](#) | [PRE-APPRENTICESHIPS](#) | [POWERUP ACADEMY](#) | [APPRENTICESHIPS](#)

As the U.S. solar energy industry continues to grow at a record pace, Blue Ridge Power’s PowerUp Workforce Development Programs create multiple entry points for careers in solar to meet the demand for skilled professionals.

From high school students to working adults, these programs are for those who are ready to jump into a high-paying and fulfilling career in solar through paid internships, pre-apprenticeships and apprenticeships—no college required.

Focused on industry leading training and support, PowerUp interns, pre-apprentices and apprentices will gain the knowledge, skills and certifications to become successful solar technicians and leaders in the field.



## Internships

PowerUp High School Internships provide high school and college students the opportunity to earn academic credit and get paid while learning about various roles in our Asheville, NC and Fayetteville, NC offices, including marketing, IT, fleet maintenance, mechanical shop, field engineering, and construction.



## Pre-Apprenticeships

PowerUp Pre-Apprenticeships are designed for high school students who want to explore a career in solar construction while getting paid. Following their completion of this 16-week program, pre-apprentices will be eligible to apply for the PowerUp Apprenticeship Program.



## PowerUp Academy

This one-week training program provides all Blue Ridge Power entry-level solar technicians with hands-on experience in constructing a solar array. Employees learn the safety, tool skills, and mechanics of solar site construction, and understand how they contribute to Blue Ridge Power’s goals and vision.



## Apprenticeships

Following PowerUp Academy, employees can apply for our PowerUp Apprenticeship Program. They spend their first year with Blue Ridge Power cycling through each division of solar construction, accelerating their career progression and increasing eligibility for leadership roles.

### About Blue Ridge Power

Blue Ridge Power is a clean infrastructure construction company for projects across the United States. The company brings integrated engineering, a qualified professional labor force and an expansive fleet of equipment to serve the needs of clients looking for a turnkey solution for solar and solar + storage projects. Blue Ridge Power currently oversees more than 1 GW of operational assets and has 1.3 GW under construction, with 4.8 GW in the pipeline for construction in 2022-24. For more information, visit [blueridgepower.com](http://blueridgepower.com).

[LEARN MORE](#)



[blueridgepower.com/power-up](http://blueridgepower.com/power-up)

## **8. Pine Gate Renewables Waste Management Guidelines**



**Headquarters:** 130 Roberts Street, Asheville, NC 28801

**Charlotte Office:** 301 Camp Road, Suite 104, Charlotte, NC 28206

**Jacksonville Office:** 315 3<sup>rd</sup> Avenue N, Jacksonville Beach, FL 32256

[info@pgrenewables.com](mailto:info@pgrenewables.com) ♦ [www.pinegaterenewables.com](http://www.pinegaterenewables.com)

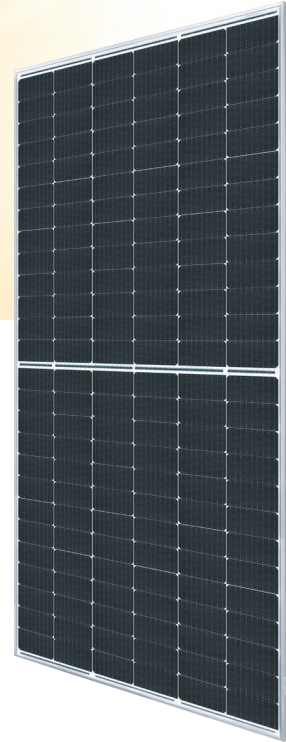
**Pine Gate Renewables, LLC will hold its EPC contractor to the following standards for removal of trash, waste material, and modules from sites:**

- All damaged material is documented and removed from the array.
- Material is not thrown away from the site until it is inspected and deemed 'BAD.'
- All metal parts will be thrown away into a metal only dumpster.
- Trash dumpsters will be placed around the site to follow install crews, to be used for daily trash.
- Dumpsters will be hauled as needed to the local landfill.
- Broken modules that are damaged onsite will be documented and placed out of service. They are placed on a pallet 25 pcs. high and marked BAD, placed at a location deemed by site management until closer to the end of the site.
- Modules are submitted to multiple landfills to see who will accept them. Once a landfill is selected that will accept the broken modules, a plan is put in place to remove them to the landfill closer to the end of the project.
- The project will be swept for trash and debris before calling off equipment.
- An inventory of broken modules will be kept for warrantee replacement purposes.

## **8. Current Equipment Specification Sheets**



Preliminary Technical Information Sheet



# BiHiKu5 Mono

**BIFACIAL MONO PERC**

**465 W ~ 485 W**

**UP TO 30% MORE POWER FROM THE BACK SIDE**

**CS3Y-465 | 470 | 475 | 480 | 485MB-AG**

## MORE POWER



Module power up to 485 W  
Module efficiency up to 20.5 %



Lower LCOE & BOS cost,  
cost effective product for utility power plant



Comprehensive LID / LeTID mitigation  
technology, up to 50% lower degradation



Compatible with mainstream trackers



Better shading tolerance

## MORE RELIABLE



Minimizes micro-crack impacts



Heavy snow load up to 5400 Pa,  
wind load up to 2400 Pa\*

\* For detailed information, please refer to the Installation Manual.



**Enhanced Product Warranty on Materials and Workmanship\***



**Linear Power Performance Warranty\***

**1<sup>st</sup> year power degradation no more than 2%  
Subsequent annual power degradation no more than 0.45%**

\*According to the applicable Canadian Solar Limited Warranty Statement.

## MANAGEMENT SYSTEM CERTIFICATES\*

ISO 9001:2015 / Quality management system  
ISO 14001:2015 / Standards for environmental management system  
OHSAS 18001:2007 / International standards for occupational health & safety

## PRODUCT CERTIFICATES\*

\* As there are different certification requirements in different markets, please contact your local Canadian Solar sales representative for the specific certificates applicable to the products in the region in which the products are to be used.

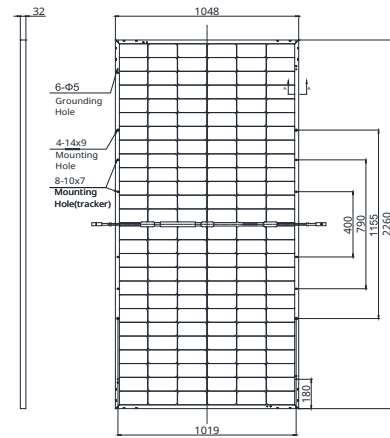
**CANADIAN SOLAR (USA), INC.** is committed to providing high quality solar products, solar system solutions and services to customers around the world. No. 1 module supplier for quality and performance/price ratio in IHS Module Customer Insight Survey. As a leading PV project developer and manufacturer of solar modules with over 40 GW deployed around the world since 2001.

**CANADIAN SOLAR (USA), INC.**

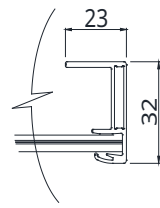
3000 Oak Road, Suite 400, Walnut Creek, CA 94597, USA | [www.canadiansolar.com/na](http://www.canadiansolar.com/na) | [sales.us@canadiansolar.com](mailto:sales.us@canadiansolar.com)

## ENGINEERING DRAWING (mm)

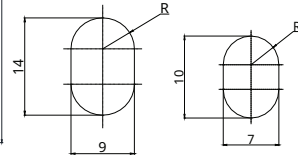
### Rear View



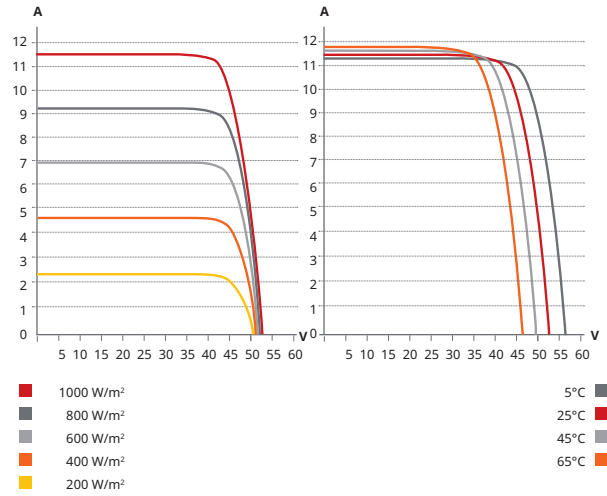
### Frame Cross Section A-A



### Mounting Hole



## CS3Y-480MB-AG / I-V CURVES



## ELECTRICAL DATA | NMOT\*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency
<b>CS3Y-465MB-AG</b>	348 W	40.6 V	8.58 A	49.2 V	9.21 A	
<b>CS3Y-470MB-AG</b>	352 W	40.8 V	8.63 A	49.4 V	9.25 A	
<b>CS3Y-475MB-AG</b>	356 W	41.0 V	8.69 A	49.5 V	9.29 A	
<b>CS3Y-480MB-AG</b>	359 W	41.2 V	8.73 A	49.7 V	9.33 A	
<b>CS3Y-485MB-AG</b>	363 W	41.4 V	8.78 A	49.9 V	9.37 A	

\* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m<sup>2</sup> spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

## MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	156 [2X (13 X6)]
Dimensions	2260 X 1048 X 32 mm (89.0 X 41.3 X 1.26 in)
Weight	29.9 kg (65.9 lbs)
Front / Back Glass	2.0 mm heat strengthened glass
Frame	Anodized aluminium alloy
J-Box	IP68, 3 diodes
Cable	4.0 mm <sup>2</sup> (IEC), 12 AWG (UL)
Cable Length (Including Connector)	Portrait: 400 mm (15.7 in) (+) / 280 mm (11.0 in) (-); landscape: 1400 mm (55.1 in); leap-frog connection: 1850 mm (72.8 in)*
Connector	T4 series or MC4
Per Pallet	33 pieces
Per Container (40' HQ)	660 pieces

\* For detailed information, please contact your local Canadian Solar sales and technical representatives.

## TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.35 % / °C
Temperature Coefficient (Voc)	-0.27 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

## PARTNER SECTION



## ELECTRICAL DATA | STC\*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency
<b>CS3Y-465MB-AG</b>	465 W	43.4 V	10.72 A	52.1 V	11.42 A	19.6%
<b>Bifacial Gain**</b>	5% 488 W	43.4 V	11.26 A	52.1 V	11.99 A	20.6%
	10% 512 W	43.4 V	11.8 A	52.1 V	12.56 A	21.6%
	20% 558 W	43.4 V	12.86 A	52.1 V	13.7 A	23.6%
	30% 605 W	43.4 V	13.95 A	52.1 V	14.85 A	25.5%
<b>CS3Y-470MB-AG</b>	470 W	43.6 V	10.78 A	52.3 V	11.47 A	19.8%
<b>Bifacial Gain**</b>	5% 494 W	43.6 V	11.34 A	52.3 V	12.04 A	20.9%
	10% 517 W	43.6 V	11.86 A	52.3 V	12.62 A	21.8%
	20% 564 W	43.6 V	12.94 A	52.3 V	13.76 A	23.8%
	30% 611 W	43.6 V	14.01 A	52.3 V	14.91 A	25.8%
<b>CS3Y-475MB-AG</b>	475 W	43.8 V	10.85 A	52.5 V	11.52 A	20.1%
<b>Bifacial Gain**</b>	5% 499 W	43.8 V	11.40 A	52.5 V	12.10 A	21.1%
	10% 523 W	43.8 V	11.95 A	52.5 V	12.67 A	22.1%
	20% 570 W	43.8 V	13.02 A	52.5 V	13.82 A	24.1%
	30% 618 W	43.8 V	14.12 A	52.5 V	14.98 A	26.1%
<b>CS3Y-480MB-AG</b>	480 W	44.0 V	10.91 A	52.7 V	11.57 A	20.3%
<b>Bifacial Gain**</b>	5% 504 W	44.0 V	11.46 A	52.7 V	12.15 A	21.3%
	10% 528 W	44.0 V	12.00 A	52.7 V	12.73 A	22.3%
	20% 576 W	44.0 V	13.09 A	52.7 V	13.88 A	24.3%
	30% 624 W	44.0 V	14.18 A	52.7 V	15.04 A	26.3%
<b>CS3Y-485MB-AG</b>	485 W	44.2 V	10.98 A	52.9 V	11.62 A	20.5%
<b>Bifacial Gain**</b>	5% 509 W	44.2 V	11.53 A	52.9 V	12.2 A	21.5%
	10% 534 W	44.2 V	12.09 A	52.9 V	12.78 A	22.5%
	20% 582 W	44.2 V	13.18 A	52.9 V	13.94 A	24.6%
	30% 631 W	44.2 V	14.28 A	52.9 V	15.11 A	26.6%

\* Under Standard Test Conditions (STC) of irradiance of 1000 W/m<sup>2</sup>, spectrum AM 1.5 and cell temperature of 25°C.

\*\* Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

## ELECTRICAL DATA

Operating Temperature	-40°C ~ +85°C
Max. System Voltage	1500 V (IEC/UL) or 1000 V (IEC/UL)
Module Fire Performance	TYPE 3 (UL 61730) or CLASS C (IEC61730)
Max. Series Fuse Rating	25 A
Application Classification	Class A
Power Tolerance	0 ~ + 10 W
Power Bifaciality*	70 %

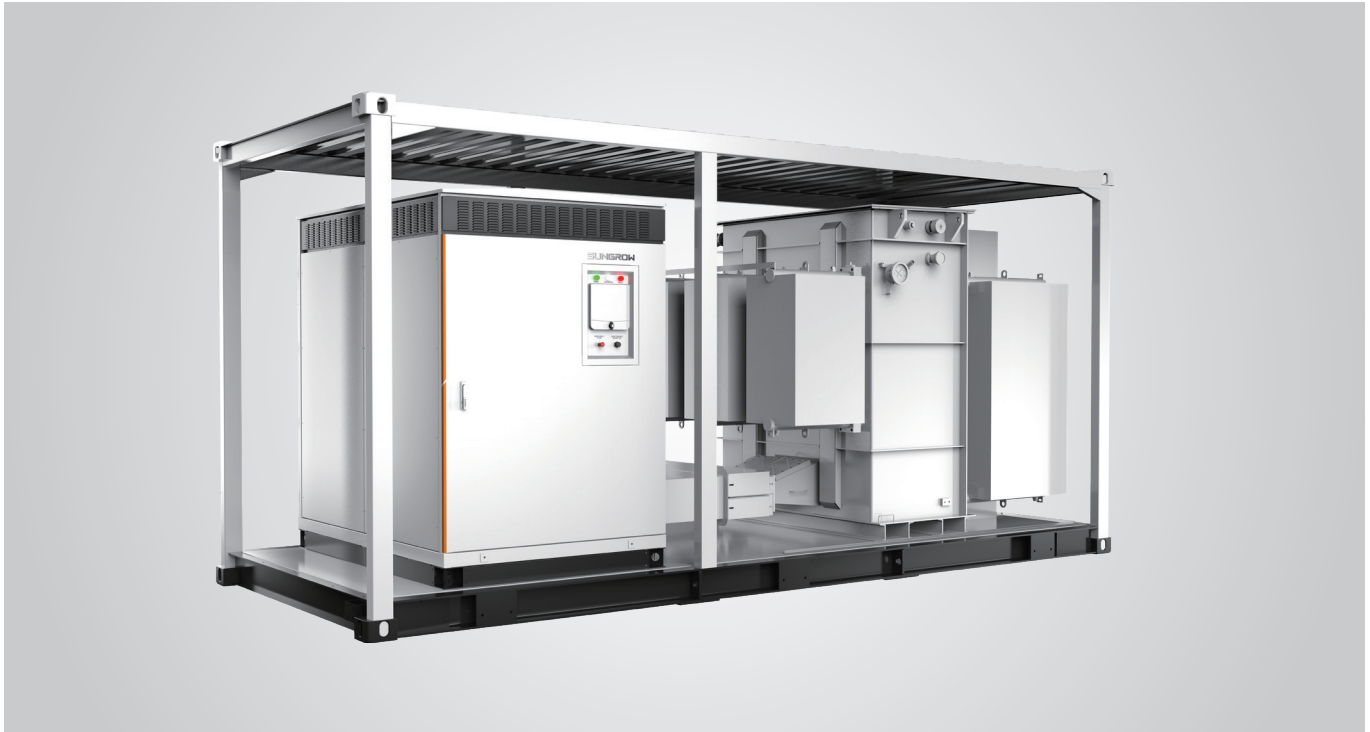
\* Power Bifaciality =  $P_{max_{rear}} / P_{max_{front}}$ , both  $P_{max_{rear}}$  and  $P_{max_{front}}$  are tested under STC, Bifaciality Tolerance: ± 5 %

\* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. Canadian Solar Inc. reserves the right to make necessary adjustment to the information described herein at any time without further notice.

Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

# SG3425/3600UD-MV Preliminary

Turnkey Station for North America 1500 Vdc System - MV  
Transformer Integrated



## HIGH YIELD

- Advanced three-level technology, max. efficiency 98.9%
- Full power operation at 45 °C (113 °F)
- Effective cooling, wide operation temperature
- Max. DC/AC ratio up to 2.0

## EASY O&M

- Integrated current, voltage and MV parameters monitoring function for online analysis and trouble shooting
- Modular design, easy for maintenance

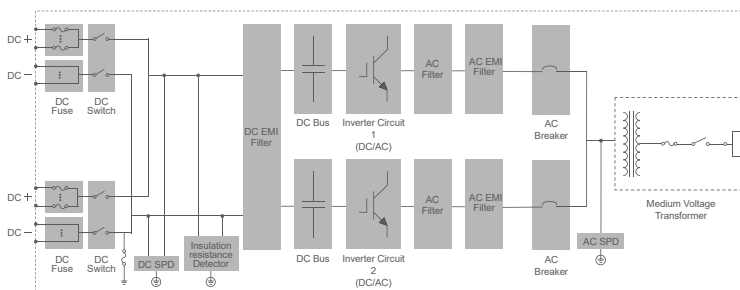
## SAVED INVESTMENT

- Low transportation and installation cost due to 20-foot container size design
- DC 1500V system, low system cost
- Integrated MV transformer and LV auxiliary power supply
- Q at night optional

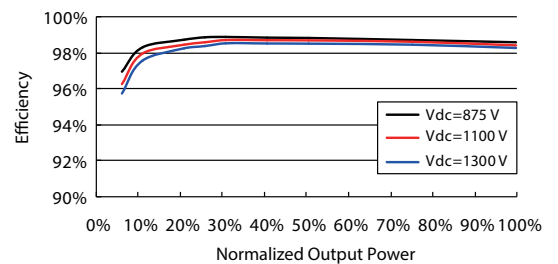
## GRID SUPPORT

- Compliance with standards: UL 1741, UL 1741 SA, IEEE 1547, Rule 21 and NEC code
- Low / High voltage ride through (L/HVRT), L/HFRT, soft start / stop
- Active & reactive power control and power ramp rate control

## CIRCUIT DIAGRAM



## EFFICIENCY CURVE (SG3425UD)



Type designation	SG3425UD-MV	SG3600UD-MV
<b>Input (DC)</b>		
Max. PV input voltage	1500V	
Min. PV input voltage / Startup input voltage	875 V / 915 V	915 V / 955 V
Available DC fuse sizes	250A, 315A, 400A, 450A, 500A	
MPP voltage range for nominal power	875 – 1300 V	915 – 1300 V
No. of independent MPP inputs	1	
No. of DC inputs	20 (optional: 22 / 24 / 26 / 28)	
Max. DC short-circuit current	10000 A	
PV array configuration	Negative grounding or floating	
<b>Output (AC)</b>		
AC output power	3425 kVA @ 45 °C (113 °F), 3083 kVA @ 50 °C (122 °F)	3600 kVA @ 45 °C (113 °F), 3240 kVA @ 50 °C (122 °F)
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 50 – 65 Hz	
THD	< 3 % (at nominal power)	
DC current injection	< 0.5 % I <sub>n</sub>	
<b>Efficiency</b>		
Inverter Max. efficiency	98.9 %	
Inverter CEC efficiency	98.5 %	
<b>Transformer</b>		
Transformer rated power	3425 kVA	3600 kVA
Transformer max. power	3425 kVA	3600 kVA
LV / MV voltage	0.6 kV / (12 – 35) kV	0.63 kV / (12 – 35) kV
Transformer vector	Dy1 or Dy11	
Transformer cooling type	ONAN (Optional: KNAN)	
<b>Protection</b>		
DC input protection	Load break switch + fuse	
Inverter output protection	Circuit breaker	
AC MV output protection	Load break switch + fuse	
Overvoltage protection	DC Type II / AC Type II	
Grid monitoring / Ground fault monitoring	Yes / Yes	
Insulation monitoring	Yes	
Overheat protection	Yes	
<b>General Data</b>		
Dimensions (W * H * D)	6058 * 2896 * 2438 mm 238.5" * 114.0" * 96.0"	
Weight	18000 kg 39683.2 lbs	
Degree of protection	NEMA 4X (Electronic for Inverter) / NEMA 3R (Others)	
Auxiliary power supply	5kVA, 120Vac/240Vac; Optional: 30kVA, 480Vac/277Vac	
Operating ambient temperature range	-35 to 60 °C (> 45 °C derating) / optional: -40 to 60 °C (> 45 °C derating) -22 to 140 °F (> 113 °F derating) / optional: -40 to 140 °F (> 113 °F derating)	
Allowable relative humidity range	0 - 100 %	
Cooling method	Temperature controlled forced air cooling	
Max. operating altitude	1000 m (Standard) / > 1000 m (Customized) (3280.8 ft (standard) / > 3280.8 ft (Customized))	
DC-Coupled storage interface	Optional	
Charging power from the grid	Optional	
Communication	Standard: RS485, Ethernet; Optional: optical fiber	
Compliance	UL 1741, IEEE 1547, UL1741 SA, NEC 2017, CSA C22.2 No.107.1-01	
Grid support	Q at night function (optional), L/HVRT, L/HFRT, Active & reactive power control and power ramp rate control, Volt-var, Frequency-watt	