PO Box 600
14198 Sussex Highway
Greenwood, Delaware 19950
855-DEC-9090

www.delaware.coop

DELAWARE ELECTRIC CO-OP
"We Keep the Lights On"

Delaware Electric Cooperative, Inc.
Interconnection Application

(For Use with Systems Less than 100 kW DC)

REVISED April 2018

This Interconnection Application also serves as a binding contract between Delaware Electric Cooperative, Inc. (hereinafter referred to as DEC) and each signatory listed herein.

General Instructions and Expectations

1. The preliminary portion of this application (Sections 1 through 12) and Addendum A must be submitted initially along with the application fee or a scanned copy of the check (see Section 6) to:

   Delaware Electric Cooperative, Inc.
   ATTN: Interconnection Application
   PO Box 600
   Greenwood, DE 19950

   Email: interconnection@delaware.coop

2. Should any Interconnection Application require multiple revisions by the Equipment Contractor and subsequent reviews, DEC reserves the right to charge a $50 fee for each additional review.
3. Any Generating System requiring an upgrade to the DEC utility system will require the cooperative member to request that specific upgrade. Payment in full for all costs associated with the requested upgrade is required before construction of the Generating System is permitted to begin.
4. After the preliminary portion of this application (Sections 1 through 12) has been approved by DEC and returned to the Equipment Contractor, construction of the Generating System may begin.
5. The final portion of this application (Sections 1 through 14) and a scanned copy of the Inspection Certificate (if applicable) must be submitted for final approval after construction of the Generating System is complete. Upon submittal, DEC will meet with the Equipment Contractor to perform a field inspection of the installation. Any installations deemed unacceptable to DEC's standards, or any installation that alters the original, approved design intent will be corrected by the Equipment Contractor at no cost to DEC before final approval is granted.
6. When final approval is granted, DEC will install a net meter and return the approved Interconnection Application to the Equipment Contractor. Only at that time, will "Permission to Operate" be granted.
7. This application must be filled out in its entirety or it will be returned without review.

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REVISED January 2018

Type of Application:	Initial X	or	Addition/Upgrade ____
Ownership:	Leased ____	or	Member Owned X
Account(s):	Single X	or	Aggregated ____

1. DEC Member Information

Name: Phillip J Hagen

Address: 16908 Black Marlin Circle

Town: Lewes State: DE Zip: 19958

DEC Account Number: 13187400

Sq Ft of Residence: 3500 Electric Heat? Yes X No ____

2. Equipment Contractor Information

Name: Alutech United Inc

Address: 117 Dixon St

Town: Selbyville State: DE Zip: 19975

Email: Haleigh@greenstreetsolar.com Phone: 800-233-1144

3. Electrical Contractor Information *(If different from above)*

Name: Alutech United Inc

Address: 117 Dixon St

Town: Selbyville State: DE Zip: 19975

Email: Russell@greenstreetsolar.com Phone: 302-841-9059

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4. **Facility Information** *(If different from above)*

Address: _____

Town: _____ State: _____ Zip: _____

Nearest DEC equipment tag number: _____

5. **General Service Requirements**

What size service is required for this system?

Same as existing X ____ 200A ____ 320A ____ 400A ____ 600A ____ CT Metering ____

If this is a new account for the sole purpose of this Generating System, what Voltage/Phase will be required?

120/240V – 1Ø ____

120/208V – 1Ø ____

120/208V – 3Ø ____ (Consult DEC before designing 3Ø systems)

277/480V – 3Ø ____ (Consult DEC before designing 3Ø systems)

6. **Application Fee**

The application fee is $50.00 per application for new or upgraded systems 25 kW DC or less. For systems over 25 kW DC the fee will be $50.00 plus $1.00 for each kW DC over the initial 25 kW DC. The application fee for systems where accounts will be aggregated is $125 per application regardless of kW DC size. All Interconnection Applications submitted to DEC shall be accompanied with the appropriate fee made payable to DEC. The application fee is non-refundable. Applications returned for incomplete information will be subject to an additional $50 application fee when resubmitted. No applications will be considered without the application fee. Returned checks will be assessed an additional fee based on DEC's Returned Check Policy.

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7. Equipment Information

Is this equipment powered from a renewable source? Yes X No ____

Type of energy source:
Solar X Wind ____ Diesel ____ Natural Gas ____ Fuel Oil ____ Other _____

Will excess power be exported to DEC? Yes X No ____

(Typical) Maximum export: 7 kW DC/AC

24 month average usage (kWh) 1425 *(monthly)* Forecast *monthly* production (kWh) 1117

(Note: The forecast monthly production MUST be completed using ***4.5 peak sunlight hours per day***)

Generator (or solar collector) Manufacturer, Model Name, and Number: Q Cells Q.PEAK DUO-G5 320
(A copy of the generator nameplate and manufacturer's specification sheet may be substituted)

Quantity of PV Modules: 34 Size of PV Modules: 320

Inverter Manufacturer, Model Name, and Number: Enphase Energy IQ 7
(A copy of the inverter nameplate and manufacturer's specification sheet may be substituted)

Quantity of Inverters: 34

Please fill out the Initial Rating information if there is currently no Generating System on-site. If adding a Generating System to an existing system, fill out the Initial Rating information, the Added Rating information, and the Total Rating information.

Initial Rating:

DC System Design Capacity 10.88 (kW)
AC System Design Capacity 8.16 (kW) 8160 (kVA)

Added Rating:

DC System Design Capacity _____ (kW)
AC System Design Capacity _____ (kW) _____ (kVA)

Total Rating:

DC System Design Capacity _____ (kW)
AC System Design Capacity _____ (kW) _____ (kVA)

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In order to comply with Delaware State Law regarding output of an interconnection facility, DEC uses the following formula:

1.	Enter the 24 month average usage (kWh):	1425	(Per month)
2.	Multiply line 1 by 110%:	1568	(Maximum output permitted by Delaware law)
3.	Enter maximum inverter rating (kVA):	8.16	(From nameplate, at appropriate voltage)
4.	Multiply line 3 by 4.5 (hours):	36.72	(This is the maximum kWh possible per day)
5.	Multiply line 4 by 365 (days):	13403	(This is the maximum kWh possible per year)
6.	Divide line 5 by 12 (months):	1117	(This is the maximum kWh possible per month)

If line six (6) is equal to or less than line two (2), the system, as designed, will be approved by DEC.

For DEC members that have greater than 12 months of usage history and less than 24 months of usage history, the most recent 12 months of usage history shall be used to obtain the average monthly usage necessary for calculating the inverter size as described above.
For DEC members that have no usage or less than 12 months of usage history, please consult DEC before designing the Generating System.

8. Generator Disconnect Switch

A lockable disconnect device shall be installed within three (3) feet of the DEC meter and accessible at all times by DEC personnel. The cost of this device and the installation thereof shall not be the responsibility of DEC.

9. Equipment Certification

Equipment that utilizes inverter technology must be compliant with *IEEE 929* and *Underwriters Lab. UL1741*. Equipment that utilizes a rotating machine must be compliant with DEC's *Technical Requirements for Parallel Operation of Member Owner Generation* document. **By signing below, the Equipment Contractor certifies that the installed generating equipment meets the appropriate preceding requirement(s) and can supply documentation that confirms compliance.**

Company: Alutech United Inc

Name (print): Russell Pfaller Date: 11/26/18

Signature: Russ Pfaller

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10. Aggregate Meter Information *(if applicable)*

The following accounts shall be combined for the purpose of determining the twenty-four (24) months average usage (kWh) as required in the aforementioned formula regarding inverter sizing. Any surplus energy produced by the Generating System will be credited back to the accounts listed below. Each account must be active and ranked according to the order in which credit shall be applied. The specific method of remuneration will be determined by Delaware State Law, the DEC tariff, and member approval.

1. Name: _____ Rate: _____

   Account No. _____ 24 month average usage (kWh): _____ (*monthly*)

2. Name: _____ Rate: _____

   Account No. _____ 24 month average usage (kWh): _____ (*monthly*)

3. Name: _____ Rate: _____

   Account No. _____ 24 month average usage (kWh): _____ (*monthly*)

4. Name: _____ Rate: _____

   Account No. _____ 24 month average usage (kWh): _____ (*monthly*)

5. Name: _____ Rate: _____

   Account No. _____ 24 month average usage (kWh): _____ (*monthly*)

Any additional meters associated with the aggregated system must be supplied on a separate sheet in the same format.

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11. Signatures

DEC Member

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Application is true and correct.

Name (print): Phillip J Hagen Date: 11/26/18

Signature: Philip J Hagen

Equipment Contractor

I hereby certify that the information regarding the Generating System is complete, accurate, and shall be installed as designed in accordance with all applicable standards.

Company: Alutech United Inc

Name (print): Russell Pfaller Date: 11/26/18

Signature:

Electrical Contractor (if different from above)

I hereby certify that all wiring and installation of associated equipment shall be completed in compliance with all applicable *NEC* codes.

Company: Alutech United Inc

Name (print): Russell Pfaller Date: 11/26/18

Signature:

12. PRELIMINARY Approval to Proceed with Interconnection

Returned without review due to insufficient information: _____

Delaware Electric Cooperative: Has Approved X Has Not Approved ____ this preliminary application.

Reason for not approving: _____

Name: LPGIII Date: 12/3/18

Signature: L. Paul Greenlee III Digitally signed by L. Paul Greenlee III DN: cn=L. Paul Greenlee III, o=Delaware Electric Coop, ou, email=pgreenlee@delaware.coop, c=US Date: 2018.12.03 14:38:02 -05'00'

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13. Installation Details

The Generating System will be installed by: Owner ____ State Licensed Electrician X

Installing Electrician: James Rodrigue

Company: Alutech United Inc License No.: T1-0005686

Mailing Address: Alutech United Inc

Town: Selbyville State: DE Zip: 19975

Email: Haleigh@greenstreetsolar.com Phone: 800-233-1144

Supply certification that the generating system has been installed and inspected in compliance with the local Building/Electrical code of the municipality of _____.

Signed (Inspector): _____ Date: _____

(In lieu of signature of Inspector, a copy of the final inspection certificate may be attached)

14. FINAL Approval or Non-Approval

Delaware Electric Cooperative: Has Approved X Has Not Approved ____ this interconnection application.

Name: LPGIII Date: 2/6/19

Signature: L. Paul Greenlee III Digitally signed by L. Paul Greenlee III DN: cn=L. Paul Greenlee III, o=Delaware Electric Coop, ou, email=pgreenlee@delaware.coop, c=US Date: 2019.02.06 12:33:49 -05'00'

Reason for not approving this Interconnection Application: _____

_____

"Permission to Operate" has been granted as of: 2/6/19

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ADDENDUM A- INTERCONNECTION AGREEMENT TERMS AND CONDITIONS

1. **Scope of Agreement.** The Interconnection Application ("Application") and this Addendum ('collectively the "Agreement") establish the conditions pursuant to which Delaware Electric Cooperative (hereinafter "DEC") and Phillip J Hagen (hereinafter "Member") agree that the electric generating facilities (the "Facilities") listed in the Application may be interconnected to DEC's electric distribution system ("System").

2. **Establishment of Point of Interconnection.** The point where the electric energy first leaves the wires or facilities owned by DEC and enters the wires or facilities provided by Member is the "Point of Interconnection." DEC shall determine the Point of Interconnection in accordance with its rules, regulations, by-laws, rates, and tariffs (the "Rules"), which are incorporated herein by reference. Any interconnection equipment installed by Member ("Interconnection Facilities") shall also be in accordance with the Rules.

3. **Responsibilities of DEC and Member for Installation, Operation and Maintenance of Facilities.** Member will, at its own cost and expense, install, operate, maintain, repair, and inspect, and shall be fully responsible for, the Facilities listed in the Application and Member's Interconnection Facilities. Member's Facilities shall be designed, installed, maintained and operated in a safe and reliable manner, in compliance with all aspects of the Rules, and in accordance with industry standard prudent engineering practice. Maintenance of the Facilities and Interconnection Facilities shall be performed in accordance with the applicable manufacturers' recommended maintenance schedule.

Member also agrees that the design, installation, maintenance and operation of its Facilities and Interconnection Facilities shall minimize the likelihood of a malfunction or other disturbance, damaging or otherwise affecting or impairing the System. Member shall comply with all applicable laws, regulations, zoning codes, building codes, safety rules and environmental restrictions applicable to the design, installation, operation and maintenance of its Facilities and Interconnection Facilities. Member shall obtain all environmental and other permits lawfully required by governmental authorities prior to the commencement of construction of the Facilities and Interconnection Facilities.

DEC will notify Member if there is evidence that operation of the Facilities or Interconnection Facilities causes, or may cause, disruption or deterioration of service to other members of DEC served by the System, or if operation of the Facilities or Interconnection Facilities causes, or may cause, damage or impairment to the System. Member will notify DEC of any emergency or hazardous condition or occurrence with the Facilities or Interconnection Facilities, which could affect safe operation of the System.

4. **Modifications.** Member will not increase the output of the Facilities or make other material changes or modifications to the configuration or operation of the Facilities or Interconnection Facilities without the prior written consent of DEC. In the event that Member plans to undertake a modification that reasonably may be expected to impact the System, Member shall provide DEC with sufficient information to allow DEC to evaluate the potential impact of the modification prior to commencement of any work.

5. **Net Metering.** All power sales to DEC and net metering shall be governed by DEC's tariff and Delaware law, Chapter 10 of Title 26 (Electric Utility Restructuring). Interconnection of the Facilities with the System does not grant Member the right to export power in excess of the applicable limits set forth in DEC's tariff of Delaware law, Chapter 10 of Title 26 (Electric Utility Restructuring), nor does it constitute an agreement by DEC to purchase or wheel excess power.

6. **Limitation of Liability and Indemnification.** (a) Member shall be responsible for the safe installation, maintenance, repair and condition of the Facilities and Interconnection Facilities. DEC does not assume any duty of inspecting Member's lines, wires, switches, or other equipment or property and will not be responsible therefor. Member assumes all liability for and shall indemnify DEC and its members, directors, officers, managers, employees, agents, representatives, affiliates, successors and assigns for and shall hold them harmless from and against any claims, losses, costs, and expenses of any kind or character that are the result from Member's negligence or other wrongful conduct in connection with the design, construction, installation, operation or maintenance of the

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Facilities or Interconnection Facilities. Such indemnity shall include, but is not limited to, financial responsibility for (i) monetary losses; (ii) reasonable costs and expenses of defending an action or claim; (iii) damages related to death or injury; (iv) damages to property; and (v) damages for the disruption of business.

DEC's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damages actually incurred. In no event shall DEC be liable to Member any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever. Member shall indemnify, defend, and save DEC harmless from any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the construction, design, installation, operation and maintenance of the Facilities.

7. **Right of Access, Equipment Installation, Removal & Inspection.** DEC may send employees, agents or contractors to Member's premises at any time, whether before, during or after the time the Facilities first produce energy to inspect the Facilities and Interconnection Facilities. DEC may monitor and observe the Facility's installation, commissioning (including any testing), startup, operation, and maintenance. DEC shall at all times have direct, unabated access to the disconnect switch and metering equipment of the Facility. DEC shall provide reasonable notice to Member when possible prior to exercising its right of access.

8. **Disconnection of Facilities.**

(a) DEC may temporarily disconnect the Facilities upon any of the following conditions:

(1) For scheduled outages upon reasonable notice;
(2) For unscheduled outages or emergency conditions;
(3) If the Facilities or Interconnection Facilities do not operate in a manner consistent with the Application or these Terms and Conditions;
(4) For improper installation or if the Facilities or Interconnection Facilities create a safety, reliability or a power quality problem; or
(5) The Member's Interconnection Facilities are de-listed by the Nationally Recognized Testing Laboratory that provided the listing at the time the interconnection was approved.

(b) DEC may permanently disconnect or direct Member to disconnect Member's Facility and Interconnection Facilities if this Agreement is terminated.

9. **Governing Law, Regulatory Authority, and Rules.** The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Delaware. Nothing in this Agreement is intended to affect any other agreement between DEC and Member. However, in the event that a provision of the Agreement conflicts with any provision of DEC's tariff, the tariff shall control.

10. **Termination**. This Agreement may be terminated under the following conditions:

(a) By Member: Member may terminate Agreement at any time by providing written notice to DEC;

(b) By DEC: DEC may terminate this Agreement if Member fails to remedy a violation of the terms of this Agreement within 30 calendar days after notice, or such other date as may be mutually agreed to prior to the expiration of the 30 day period.

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11. **Severability.** If any portion or provision of this Agreement is held for any reason to be invalid or illegal or unenforceable by any court of competent jurisdiction, such portion shall be deemed to be separate, independent and severable, and the remainder of this Agreement shall remain in full force and effect.

12. **Entirety of Agreement; Amendments.** This Agreement, including the Rules, which are expressly made a part hereof for all purposes, constitutes the entire agreement and understanding between the Parties with regard to the interconnection of the Facilities. No amendments or modifications to this Agreement shall be effective unless in writing and signed by the Parties hereto.

13. **Notices.** Notices given under this Agreement are deemed to have been duly delivered if hand delivered or sent by United States certified mail, return receipt requested, postage prepaid, to Member at the address listed in the Application and to DEC at P.O. Box 600, Sussex Highway, Greenwood, Delaware 19950.

14. **Member Certification.** I hereby certify that: 1) I have read and understand the Terms and Conditions of the Agreement; 2) I have read and understand the Technical Requirements for Member-Owned Generation; 3) I agree to comply with all provisions of the Terms and Conditions; and 4) to the best of my knowledge and belief, all information provided by me in the Application is true and complete.

Philip J Hagen

Member Signature

Phillip J Hagen

Printed Name

Date: 2018-11-26

First State Inspection Agency, Inc.
Milford, DE 19963
1001 Mattlind Way

1-800-468-7338
302-422-3859

Alutech United, Inc.
James Rodrigue
PO Box 329
Selbyville, DE 19975

CERTIFICATE

Final Inspection Date:	1-31-19
Application #:	056271
Owner:	Marie & Phil Hagen
Occupancy:	10.88 KW Solar Array
Location:	16908 Black Marlin Circle Lewes, Sussex Co., DE

This certifies that the installation of electrical equipment listed on referenced application has been approved as meeting the requirements of the National Electric Code, utility, municipalities and Agency rules. Any modification, addition or alteration of the electrical system, after the date of final inspection, will require a new application for inspections and certifications.

Chief Electrical Inspector

F.S. CERT