

230076

OCALA ELECTRIC UTILITY
OCALA, FLORIDA

FIRST REVISED SHEET NO. 19.0
CANCELS ORIGINAL SHEET NO. 19.0

**APPLICATION FOR INTERCONNECTION OF
CUSTOMER-OWNED RENEWABLE
GENERATION SYSTEMS**

TIER 1 - Ten (10) kW or Less

TIER 2 - Greater than 10 kW and Less Than or Equal to 100 kW

TIER 3 - Greater than 100 kW and Less Than or Equal to Two (2) MW

Note: These customer-owned renewable generation system size limits may be subject to a cumulative enrollment limit on net-metering customers located in the area served by the City of Ocala Electric Utility. Please refer to the Ocala Electric Utility Net-Metering Rate Schedule.

Ocala Electric Utility customers who install customer-owned renewable generation systems (RGS) and desire to interconnect those facilities with the Ocala Electric Utility system are required to complete this application. When the completed application and fees are returned to Ocala Electric Utility, the process of completing the appropriate Tier 1, Tier 2 or Tier 3 Interconnection Agreement can begin. This application and copies of the Interconnection Agreements may be obtained at Ocala Electric Utility, located at 201 SE 3rd Street, Ocala, Florida 34471, or may be requested by email from OEU@ocalafl.org.

1. Customer Information

Name: Jay L. Cortes

Mailing Address: 2305 SE 8th St.

City: Ocala State: FL Zip Code: 34471

Phone Number: 352-229-0221 Alternate Phone Number: _____

Email Address: prig1615 Fax Number: _____

Ocala Electric Utility Customer Account Number: 543220 - 202516

2. RGS Facility Information

Facility Location: 2305 SE 8th St. Ocala, FL 34471

Ocala Electric Utility Customer Account Number: 543220 - 202516

RGS Manufacturer: Aptos + Enphase

Manufacturer's Address: _____

Reference or Model Number: DNA-120-MF26-370W + IQ8PWS-72-2-US

Serial Number: DNA-120-MF26-370W + IQ8PWS-72-2-US

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Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

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3. Facility Rating Information

Gross Power Rating: 16.820 ("Gross power rating" means the total manufacturer's AC nameplate generating capacity of an on-site customer-owned renewable generation system that will be interconnected to and operate in parallel with Ocala Electric Utility's distribution facilities. For inverter-based systems, the AC nameplate generating capacity shall be calculated by multiplying the total installed DC nameplate generating capacity by 0.85 in order to account for losses during the conversion from DC to AC.)

Fuel or Energy Source: Energy Source

Anticipated In- Service Date: _____

4. Application Fee

The application fee is based on the Gross Power Rating and must be submitted with this application. The non-refundable application fee is \$375 for Tier 2 and \$750 for Tier 3 installations. There is no application fee for Tier 1 installations.

5. Interconnection Study Fee

For Tier 3 installations, a deposit in the amount of the estimated costs of the study (to be determined at time of application) must be paid along with this application in addition to the application fee referenced in Article 4 above. This deposit will be applied toward the cost of an interconnection study. The customer will be responsible for the actual costs of the study. Should the actual cost of the study be less than the deposit, the difference will be refunded to the customer. Customer agrees to comply with all interconnection requirements identified in the interconnection study report.

6. Required Documentation

Prior to completion of the Interconnection Agreement, the following information must be provided to the Ocala Electric Utility by the customer.

- A. Documentation demonstrating that the installation complies with (or most current version at time of inspection approval):
1. IEEE 1547 (2018) Standard for Interconnecting Distributed Resources with Electric Power Systems.
 2. IEEE 1547.1 (2005) Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems.
 3. UL 1741 (2010) Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources.

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B. Documentation that the customer-owned renewable generation has been inspected and approved by local code officials prior to its operation in parallel with the Ocala Electric Utility system to ensure compliance with applicable local codes. OEU will also require proof of commission testing by a qualified 3rd party testing company (not affiliated in any way with the manufacturer, vendor or installation contractor), for compliance with all required and applicable codes, standards, and interconnection study requirements, prior to setting of OEU metering equipment.

C. Proof of insurance in the amount of:

Tier 1 - \$100,000.00
Tier 2 - \$1,000,000.00
Tier 3 - \$2,000,000.00

Customer

By: Jay L. Cortes Date: 10/21/22
(Print Name)

x 
(Signature)

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Electric Utility Director

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OCALA ELECTRIC UTILITY
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FIRST REVISED SHEET NO. 22.0
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**Tier 2
Standard Interconnection Agreement
Customer-Owned Renewable Generation System**

This Agreement is made and entered into this 21st day of October, 2022, by and between Jay L. Cortes, (hereinafter called "Customer"), located at 2305 SE 8th St. in Ocala, Florida, and the City of Ocala doing business as Ocala Electric Utility (hereafter called "OEU"), a body politic. Customer and OEU shall collectively be called the "Parties". The physical location/premise where the interconnection is taking place: 2305 SE 8th St. Ocala, FL 34471

WITNESSETH

Whereas, a Tier 2 Renewable Generation System (RGS) is an electric generating system that uses one or of more of the following fuels or energy sources: hydrogen, biomass, solar energy, geothermal energy, wind energy, ocean energy, waste heat, or hydroelectric power as defined in Section 377.803, Florida Statutes, rated at more than 10 kilowatts (10 kW) but not greater than 100 kilowatts (100 kW) alternating current (AC) power output and is primarily intended to offset part or all of the customer's current electric requirements; and

Whereas, OEU operates an electric system serving parts of the City of Ocala and Marion County; and

Whereas, Customer has made a written Application to OEU, a copy being attached hereto, to interconnect its RGS with OEU's electrical supply grid at the location indentified above; and

Whereas, the City of Ocala and the Florida Municipal Power Agency (hereinafter called "FMPA") have entered into the All-Requirements Power Supply Contract pursuant to which OEU has agreed to purchase and receive, and FMPA has agreed to sell and supply OEU with all energy and capacity necessary to operate OEU's electric system, which limits OEU's ability to directly purchase excess energy from customer-owned renewable generation; and

Whereas, in order to promote the development of small customer-owned renewable generation by permitting OEU to allow its customers to interconnect with OEU's electric system and to allow OEU customers to offset their electric consumption with customer-owned renewable generation, FMPA, in accordance with the terms and conditions of this agreement, has agreed to purchase excess customer-owned generation from OEU customers interconnected to OEU's electric system; and

Whereas, OEU desires to provide interconnection of a RGS under conditions which will insure the safety of OEU customers and employees, reliability and integrity of its distribution system;

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Electric Utility Director

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NOW, THEREFORE, for and in consideration of the mutual covenants and agreements herein set forth, the parties hereto covenant and agree as follows:

1. The Customer shall be required to enter into a Tri-Party Net-Metering Purchase Power Agreement with FMPA and OEU.
2. "Gross power rating" (GPR) means the total manufacturer's AC nameplate generating capacity of an on-site customer-owned renewable generation system that will be interconnected to and operate in parallel with OEU distribution facilities. For inverter-based systems, the GPR shall be calculated by multiplying the total installed DC nameplate generating capacity by 0.85 in order to account for losses during the conversion from DC to AC.
3. This agreement is strictly limited to cover a Tier 2 RGS as defined above. It is the Customer's responsibility to notify OEU of any change to the GPR of the RGS by submitting a new application for interconnection specifying the modifications at least 30 days prior to making the modifications. In no case should modifications to the RGS be made such that the GPR increases above the 100 kilowatts (100 kW) limit.
4. The RGS GPR must not exceed 90 percent (90%) of the Customer's OEU calculated distribution service rating at the Customer's location (including shared electric facilities). If the GPR does exceed the 90 percent (90%) limit, the Customer shall be responsible to pay the cost of upgrades to the distribution facilities required to accommodate the GPR capacity and ensure the 90 percent (90%) threshold is not breached. OEU will not allow a RGS GPR greater than required to offset the customer's annual kWh energy consumption (based on customer's historical consumption data or by means of estimated usage of similar type of service as determined by OEU).
5. The Customer shall be required to pay a non-refundable application fee of \$375 for the review and processing of the application.
6. The Customer shall fully comply with OEU's Rules and Regulations and Electric Service Specifications as those documents may be amended or revised by OEU from time to time.
7. The Customer certifies that its installation, its operation and its maintenance shall be in compliance with the following standards (or most current version at time of inspection approval):
 - a. IEEE-1547 (2018) Standard for Interconnecting Distributed Resources with Electric Power System;
 - b. IEEE-1547.1 (2005) Standard Conformance Test Procedures for Equipment Interconnection Distributed Resources with Electric Power Systems;
 - c. UL-1741 (2010) Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed *Energy Resources*.

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- d. The National Electric Code, state and/or local building codes, mechanical codes and/or electrical codes;
 - e. The manufacturer's installation, operation and maintenance instructions.
8. The Customer is not precluded from contracting for the lease, operation or maintenance of the RGS with a third party. Such lease may not provide terms or conditions that provide for any payments under the agreement to any way indicate or reflect the purchase of energy produced by the RGS. Customer shall not enter into any lease agreement that results in the retail purchase of electricity; or the retail sale of electricity from the customer-owned renewable generation. Notwithstanding this restriction, in the event that Customer is determined to have engaged in the retail purchase of electricity from a party other than OEU, then Customer shall be in breach of this Agreement and may be subject to the jurisdiction of the Florida Public Service Commission and to fines/penalties.
9. The Customer shall provide a copy of the manufacturer's installation, operation and maintenance instructions to OEU. If the RGS is leased to the Customer by a third party, or if the operation or maintenance of the RGS is to be performed by a third party, the lease and/or maintenance agreements and any pertinent documents related to these agreements shall be provided to OEU.
10. Prior to commencing parallel operation with OEU's electric system, Customer shall have the RGS inspected and approved by the appropriate code authorities having jurisdiction. Customer shall provide a copy of this inspection and approval to OEU.
11. The Customer agrees to permit OEU, if it should so choose, to inspect the RGS and its component equipment and the documents necessary to ensure compliance with this Agreement both before and after the RGS goes into service and to witness the initial testing of the RGS equipment and protective apparatus. OEU will provide Customer with as much notice as reasonably possible, either in writing, email, facsimile or by phone as to when OEU may conduct inspections and or document review. Upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, Customer agrees to provide OEU access to the Customer's premises for any purpose in connection with the performance of the obligations required by this Agreement or, if necessary, to meet OEU's legal obligation to provide service to its customers. At least ten (10) business days prior to initially placing the customer-owned renewable generation system in service, Customer shall provide written notification to OEU advising OEU of the date and time at which Customer intends to place the system in service, and OEU shall have the right to have personnel present on the in-service date in order to ensure compliance with the requirements of this Agreement.

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12. The Customer's RGS must have an appropriately sized grid-tie inverter system that includes applicable protective systems. Customer certifies that the RGS equipment includes a utility-interactive inverter or interconnection system equipment that ceases to interconnect with the OEU system upon a loss of OEU power. The inverter shall be considered certified for interconnected operation if it has been submitted by a manufacturer to a nationally recognized testing laboratory (NRTL) to comply with UL 1741. The NRTL shall be approved by the Occupational Safety & Health Administration (OSHA).

13. If Customer adds another RGS which (i) utilizes the same utility-interactive inverter for both systems; or (ii) utilizes a separate utility-interactive inverter for each system, then Customer shall provide OEU with sixty (60) days advance written notice of the addition.

14. The Customer shall not energize the OEU system when OEU's system is deenergized. The Customer shall cease to energize the OEU system during a faulted condition on the OEU system and/or upon any notice from OEU that the deenergizing of Customer's RGS equipment is necessary. The Customer shall cease to energize the OEU system prior to automatic or non-automatic reclosing of OEU's protective devices. There shall be no intentional islanding, as described in IEEE 1547, between the Customer's and OEU's systems.

15. The Customer is responsible for the protection of its generation equipment, inverters, protection devices, and other system components from damage from the normal and abnormal operations that occur on OEU's electric system in delivering and restoring system power. Customer agrees that any damage to any of its property, including, without limitation, all components and related accessories of its RGS system, due to the normal or abnormal operation of OEU's electric system, is at Customer's sole risk and expense. Customer is also responsible for ensuring that the customer-owned renewable generation equipment is inspected, maintained, and tested regularly in accordance with the manufacturer's instructions to ensure that it is operating correctly and safely.

16. The Customer must install, at their expense, a manual disconnect switch of the visible load break type to provide a separation point between the AC power output of the customer-owned renewable generation system and any Customer wiring connected to OEU's electric system such that back feed from the customer-owned renewable generation system to OEU's electric system cannot occur when the switch is in the open position. The manual disconnect switch shall be mounted separate from the meter socket on an exterior surface adjacent to the meter. The switch shall be readily accessible to OEU and capable of being locked in the open position with an OEU padlock. When locked and tagged in the open position by OEU, this switch will be under the control of OEU.

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17. Subject to an approved inspection, including installation of acceptable disconnect switch, this Agreement shall be executed by OEU within thirty (30) calendar days of receipt of a completed application. Customer must execute this Agreement and return it to OEU at least thirty (30) calendar days prior to beginning parallel operations with OEU's electric system, subject to the requirements of Sections 18 and 19, below, and within one (1) year after OEU executes this Agreement.

18. Once OEU has received Customer's written documentation that the requirements of this Agreement have been met, all agreements and documentation have been received and the correct operation of the manual switch has been demonstrated to an OEU representative, OEU will, within fifteen (15) business days, send written notice that parallel operation of the RGS may commence.

19. OEU requires the Customer to maintain general liability insurance for personal injury and property damage in the amount of not less than one million dollars (\$1,000,000.00).

20. OEU will furnish, install, own and maintain metering equipment capable of measuring the flow of kilowatt-hours (kWh) of energy. The Customer's service associated with the RGS will be metered to measure the energy delivered by OEU to Customer, and also measure the energy delivered by Customer to OEU. Customer agrees to provide safe and reasonable access to the premises for installation, maintenance and reading of the metering and related equipment. The Customer shall not be responsible for the cost of the installation and maintenance of the metering equipment necessary to measure the energy delivered by the Customer to OEU.

21. The Customer shall be solely responsible for all legal and financial obligations arising from the design, construction, installation, operation, maintenance and ownership of the RGS.

22. The Customer must obtain all permits, inspections and approvals required by applicable jurisdictions with respect to the generating system and must use a licensed, bonded and insured contractor to design and install the generating system. The Customer agrees to provide OEU with a copy of the local building code official inspection and certification of installation. The certification shall reflect that the local code official has inspected and certified that the installation was permitted, has been approved, and has met all electrical and mechanical qualifications.

23. In no event shall any statement, representation, or lack thereof, either express or implied, by OEU, relieve the Customer of exclusive responsibility for the Customer's system. Specifically, any OUS inspection of the RGS shall not be construed as confirming or endorsing the system design or its operating or maintenance procedures or as a warranty or guarantee as to the safety, reliability, or durability of the RGS. OEU's inspection, acceptance, or its failure to inspect shall not be deemed an endorsement of any RGS equipment or procedure. Further, as set forth in Sections 15 and 26 of this Agreement, Customer shall remain solely responsible for any and all losses, claims, damages and/or expenses related in any way to the operation or misoperation of its RGS equipment.

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24. Notwithstanding any other provision of this Interconnection Agreement, OEU, at its sole and absolute discretion, may isolate the Customer's system from the distribution grid by whatever means necessary, without prior notice to the Customer. To the extent practical, however, prior notice shall be given. The system will be reconnected as soon as practical once the conditions causing the disconnection cease to exist. OEU shall have no obligation to compensate the Customer for any loss of energy during any and all periods when Customer's RGS is operating at reduced capacity or is disconnected from OEU's electrical distribution system pursuant to this Interconnection Agreement. Typical conditions which may require the disconnection of the Customer's system include, but are not limited to, the following:

- a. OEU utility system emergencies, forced outages, uncontrollable forces or compliance with prudent electric utility practice.
- b. When necessary to investigate, inspect, construct, install, maintain, repair, replace or remove any OEU equipment, any part of OEU's electrical distribution system or Customer's generating system.
- c. Hazardous conditions existing on OEU's utility system due to the operation of the Customer's generation or protective equipment as determined by OEU.
- d. Adverse electrical effects (such as power quality problems) on the electrical equipment of OEU's other electric consumers caused by the Customer's generation as determined by OEU.
- e. When Customer is in breach of any of its obligations under this Interconnection Agreement or any other applicable policies and procedures of OEU.
- f. When the Customer fails to make any payments due to OEU by the due date thereof.

25. Upon termination of services pursuant to this Agreement, OEU shall open and padlock the manual disconnect switch and remove any additional metering equipment related to this Agreement. At the Customer's expense, within thirty (30) working days following the termination, the Customer shall permanently isolate the RGS and any associated equipment from OEU's electric supply system, notify OEU that the isolation is complete, and coordinate with OEU for return of OEU's lock.

26. To the fullest extent permitted by law, and in return for adequate, separate consideration, Customer shall indemnify, defend and hold harmless OEU, any and all of their members of its governing bodies, and its officers, agents, and employees for, from and against any and all claims, demands, suits, costs of defense, attorneys' fees, witness fees of any type, losses, damages, expenses, and liabilities, whether direct, indirect or consequential, related to, arising from, or in any way connected with:

- a. Customer's design, construction, installation, inspection, maintenance, testing or operation of Customer's generating system or equipment used in connection with this Interconnection Agreement, irrespective of any fault on the part of OEU.

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Electric Utility Director

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- b. The interconnection of Customer's generating system with, and delivery of energy from the generating system to, OEU's electrical distribution system, irrespective of any fault on the part of OEU.
- c. The performance or nonperformance of Customer's obligations under this Interconnection Agreement or the obligations of any and all of the members of Customer's governing bodies and its officers, contractors (and any subcontractor or material supplier thereof), agents and employees.

Customer's obligations under this Section shall survive the termination of this Interconnection Agreement.

27. Customer shall not have the right to assign its benefits or obligations under this Agreement without OEU's prior written consent and such consent shall not be unreasonably withheld. If there is a change in ownership of the RGS, Customer shall provide written notice to OEU at least thirty (30) days prior to the change in ownership. The new owner will be required to assume, in writing, the Customer's rights and duties under this Agreement, or execute a new Standard Interconnection Agreement. The new owner shall not be permitted to net meter or begin parallel operations until the new owner assumes this Agreement or executes a new Agreement.

28. This Agreement supersedes all previous agreements and representations either written or verbal heretofore made between OEU and Customer with respect to matters herein contained. This Agreement, when duly executed, constitutes the only Agreement between parties hereto relative to the matters herein described. This Agreement shall continue in effect from year to year until either party gives sixty (60) days notice of its intent to terminate this Agreement.

29. This Agreement shall be governed by and construed and enforced in accordance with the laws, rules and regulations of the State of Florida and OEU's tariff as it may be modified, changed, or amended from time to time, including any amendments modification or changes to OEU's Net-Metering Service Rate Schedule, the schedule applicable to this Agreement. The Customer and OEU agree that any action, suit, or proceeding arising out of or relating to this Interconnection Agreement shall be initiated and prosecuted in the state court of competent jurisdiction located in Marion County, Florida, and OEU and the Customer irrevocably submit to the jurisdiction and venue of such court. To the fullest extent permitted by law, each Party hereby irrevocably waives any and all rights to a trial by jury and covenants and agrees that it will not request a trial by jury with respect to any legal proceeding arising out of or relating to this Interconnection Agreement.

None of the provisions of this Interconnection Agreement shall be considered waived by either Party except when such waiver is given in writing. No waiver by either Party of any one or more defaults in the performance of the provisions of this Interconnection Agreement shall operate or be construed as a waiver of any other existing or future default or defaults. If any one or more of the provisions of this Interconnection Agreement or the applicability of any provision to a

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specific situation is held invalid or unenforceable, the provision shall be modified to the minimum extent necessary to make it or its application valid and enforceable, and the validity and enforceability of all other provisions of this Interconnection and all other applications of such provisions shall not be affected by any such invalidity or unenforceability. This Interconnection Agreement does not govern the terms and conditions for the delivery of power and energy to non-generating retail customers of OEU's electrical distribution system.

30. This Agreement incorporates by reference the terms of the tariff filed with the Florida Public Service Commission by OEU, including OEU's Net-Metering Service Rate Schedule, and associated technical terms and abbreviations, general rules and regulations and standard electric service requirements (as may be applicable) are incorporated by reference, as amended from time to time. To the extent of any conflict between this Agreement and such tariff, the tariff shall control.

31. OEU and Customer recognize that the Florida Statutes and/or the Florida Public Service Commission Rules, including those directly addressing the subject of this Agreement, may be amended from time to time. In the event that such statutes and/or rules are amended that affect the terms and conditions of this Agreement, OEU and Customer agree to supersede and replace this Agreement with a new Interconnection Agreement which complies with the amended statutes/rules.

32. Customer acknowledges that its provision of electricity to OEU hereunder is on a first-offered first-accepted basis and subject to diminution and/or rejection in the event the total amount of electricity delivered to OEU pursuant to the OEU's Net-Metering Service Rate Schedule (as filed with the Florida Public Service Commission), from all participating OEU customers, exceeds 2.5 percent (%) of the aggregate customer peak demand on OEU's electric system.

33. This Agreement is solely for the benefit of OEU and Customer and no right nor any cause of action shall accrue upon or by reason, to or for the benefit of any third party not a formal party to this Agreement. Nothing in this Agreement, expressed or implied, is intended or shall be construed to confer upon any person or corporation other than OEU or Customer, any right, remedy, or claim under or by reason of this Agreement or any of the provisions or conditions of this Agreement; and, all provisions, representations, covenants, and conditions contained in this Agreement shall inure to the sole benefit of and be binding upon OEU and Customer and their respective representatives, successors, and assigns. Further, no term or condition contained in this Agreement shall be construed in any way as a waiver by OEU of the sovereign immunity applicable to OEU as established by Florida Statutes, 768.28.

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IN WITNESS WHEREOF, Customer and OEU have executed this Agreement the day and year first above written.

OUS:

By: Ken Whitehead

Title: Asst. City Manager

Date: 12 / 16 / 2022

Customer:

By: Jay L Cortes
(Print Name)

α [Signature]
(Signature)

Date: 10/21/22

City of Ocala Electric Utility Account Number:

543220-202516

Approved as to form and legality:

William E. Sexton

~~Robert W. Batsel, Jr.~~ William E. Sexton
~~Assistant~~ City Attorney

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

OCALA ELECTRIC UTILITY
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FIRST REVISED SHEET NO. 20.0
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Tri-Party Net-Metering Power Purchase Agreement

This Tri-Party Net-Metering Power Purchase Agreement (this "Agreement") is entered into this 21st day of October, 2022, by and between the Florida Municipal Power Agency, a governmental joint action agency created and existing under the laws of the State of Florida (hereinafter "FMPA"), the City of Ocala doing business as Ocala Electric Utility, a body politic (hereinafter "OEU"), and Jay L. Cortes, a retail electric customer of OEU (hereinafter "Customer").

Section 1. Recitals

1.01. OEU and Customer have executed OEU's Standard Interconnection Agreement for a Customer-Owned Renewable Generation System (RGS) pursuant to which OEU has agreed to permit interconnection of Customer's renewable generation to OEU's electric system at Customer's presently-metered location, and Customer has agreed to deliver excess electric energy generated by Customer's Renewable Generation System to OEU's electric distribution system;

1.02. The City of Ocala and FMPA have entered into the All-Requirements Power Supply Contract, dated as of May 1, 1986, (hereinafter the "ARP Contract") pursuant to which the City of Ocala has agreed to purchase and receive, and FMPA has agreed to sell and supply OEU with all energy and capacity necessary to operate the OEU electric system, which limits OEU's ability to directly purchase excess energy from customer-owned renewable generation.

1.03. In order to promote the development of small customer-owned renewable generation by permitting OEU to allow its customers to interconnect with OEU's electric system and to allow OEU's electric customers to offset their electric consumption with customer-owned renewable generation, FMPA, in accordance with the terms and conditions of this agreement, has agreed to purchase excess customer-owned generation from OEU's electric customers interconnected to OEU's electric system.

NOW THEREFORE, for and in consideration of the mutual covenants and agreements set forth herein, the Parties covenant and agree as follows:

Section 2. Interconnection

2.01. Customer shall not begin parallel operations with the OEU electric distribution system until Customer has executed OEU's electric Standard Interconnection Agreement for Small Customer-Owned Renewable Generation and is in compliance with all terms and conditions

OEU requires that the customer install and operate the RGS in accordance with all applicable safety codes and standards. OEU shall establish and enforce terms and conditions of operation and disconnection of all interconnected customer-owned renewable generation as it relates to the effect of the RGS on OEU's electric distribution system.

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Electric Utility Director

Effective: October 1, 2019

Section 3. Metering

3.01 In accordance with the OEU's Standard Interconnection Agreement for Customer-Owned Renewable Generation, OEU shall install metering equipment at the point of delivery capable of recording two separate kWh meter readings: (1) the flow of electricity from OEU to the Customer (Delivered), and (2) the flow of excess electricity from the Customer to OEU. OEU shall take meter readings on the same cycle as the otherwise applicable rate schedule.

Section 4. Purchase of Excess Customer-Owned Renewable Generation

4.01. Customer-owned renewable generation shall be first used for Customer's own load and shall offset Customer's demand for OEU's electricity. All electric power and energy delivered by OEU to Customer shall be received and paid for by Customer to OEU (Received) pursuant to the terms, conditions and rates of the OEU otherwise applicable rate schedule.

4.02. Excess customer-owned renewable generation shall be delivered to the OEU Electric distribution system. For purposes of this Agreement, the term "excess customer-owned renewable generation" means any kWh of electrical energy produced by the customer-owned renewable generation system that is not consumed by Customer and is delivered to the OEU electric distribution system. FMPA agrees to purchase and receive, and Customer agrees to sell and deliver, all excess customer-owned renewable generation at the energy rate established by FMPA, which shall be calculated in accordance with Schedule A. Excess customer-owned renewable generation shall be purchased in the form of a credit on Customer's monthly energy consumption bill from OEU.

4.03. In the event that a given monthly credit for excess customer-owned renewable generation exceeds the total billed amount for Customer's consumption in any corresponding month, then the excess credit shall be applied to the subsequent month's bill. Excess energy credits produced pursuant to the preceding sentence shall accumulate and be used to offset Customer's energy consumption bill for a period of not more than twelve (12) months. At the end of each calendar year, any unused excess energy credits shall be paid by OEU to the Customer in accordance with the OEU Electric Net-Metering Service Rate Schedule.

(Continued on Sheet No. 20.2)

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

OCALA ELECTRIC UTILITY
OCALA, FLORIDA
(Continued from Sheet No. 20.1)

FIRST REVISED SHEET NO. 20.2
CANCELS ORIGINAL SHEET NO. 20.2

4.04. FMPA and OEU shall not be required to purchase or receive excess customer-owned renewable generation, and may require Customer to interrupt or reduce production of customer-owned renewable generation, (a) when necessary in order to construct, install, maintain, repair, replace, remove, investigate, or inspect any OEU equipment or part of OEU's system; or (b) if either FMPA or OEU determine, in their sole judgment, that curtailment, interruption, or reduction is necessary because of emergencies, forced outages, force majeure, or compliance with any applicable electric code or standard.

4.05. Customer acknowledges that its provision of electricity to OEU hereunder is on a first-offered, first-accepted basis and subject to diminution and/or rejection in the event the total amount of electricity delivered to OEU pursuant to the Net-Metering Service Rate Schedule (as filed with the Florida Public Service Commission), from all participating OEU customers, exceeds two and one-half percent (2.5%) of the aggregate customer peak demand on the OEU electric system.

Section 5. Renewable Energy Credits

5.01. Customer shall offer FMPA a first right of refusal before selling or granting to any third party the right to the Green Attributes associated with its customer-owned renewable generation that is interconnected to OEU electric distribution system. The term "Green Attributes" shall include any and all credits, certificates, benefits, environmental attributes, emissions reductions, offsets, and allowances, however entitled, attributable to the generation of electricity from the customer-owned-renewable generation and its displacement of conventional energy generation.

5.02. Any additional meter(s) installed to measure total renewable electricity generated by the Customer for the purposes of measuring Green Attributes, including and renewable energy certificates (or similarly titled credits for renewable energy generated), shall be installed at the expense of the Customer, unless determined otherwise during negotiations for the sale of the Customer's credits to FMPA.

Section 6. Term and Termination

6.01. This Agreement shall become effective upon execution by all Parties, and shall remain in effect thereafter on a month-to-month basis until terminated by any Party upon thirty (30) days written notice to all other Parties.

6.02. This Agreement shall terminate immediately and without notice upon: (a) termination of the electric distribution service by OEU or (b) failure by Customer to comply with any of the terms and conditions of this Agreement or OEU's Standard Interconnection Agreement for Customer-Owned Renewable Generation.

(Continued on Sheet No. 20.3)

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

OCALA ELECTRIC UTILITY
OCALA, FLORIDA
(Continued from Sheet No. 20.2)

FIRST REVISED SHEET NO. 20.3
CANCELS ORIGINAL SHEET NO. 20.3

Section 7. Miscellaneous Provisions

7.01. Assignment. It is understood and agreed that no party may transfer, sell, mortgage, pledge, hypothecate, convey, designate, or otherwise assign this Agreement, or any interest herein or any rights or obligations hereunder, in whole or in part, either voluntarily or by operation of law, (including, without limitation, by merger, consolidation, or otherwise), without the express written consent of the other parties (and any such attempt shall be void), which consent shall not be unreasonably withheld. Subject to the foregoing, this Agreement shall inure to the benefit of and be binding upon the parties and their respective successors and permitted assigns.

7.02. Amendment. It is understood and agreed that FMPA and OEU reserve the right, on no less than an annual basis, to change any of the terms and conditions, including pricing, in this Agreement on sixty (60) days advance written notice. FMPA and OEU may make such changes on an immediate basis in the event any applicable law, rule, regulation or court order requires them. In such event, FMPA and OEU will give Customer as much notice as reasonably possible under the circumstances.

7.03. Indemnification. To the fullest extent permitted by laws and regulations, and in return for adequate, separate consideration, Customer shall defend, indemnify, and hold harmless FMPA and OEU, their officers, directors, agents, guests, invitees, and employees from and against all claims, damages, losses to persons or property, whether direct, indirect, or consequential (including but not limited to fees and charges of attorneys, and other professionals and court and arbitration costs) arising out of, resulting from, occasioned by, or otherwise caused by the operation or misoperation of the customer-owned renewable generation, or the acts or omissions of any other person or organization directly or indirectly employed by the Customer to install, furnish, repair, replace or maintain the customer-owned renewable generation system, or anyone for whose acts any of them may be liable.

7.04. Governing Law. The validity and interpretation of this Agreement and the rights and obligations of the parties shall be governed and construed in accordance with the laws of the State of Florida without regard for any conflicts of law provisions that might cause the law of other jurisdictions to apply. All controversies, claims, or disputes arising out of or related to this Agreement or any agreement, instrument, or document contemplated hereby, shall be brought exclusively in the County or Circuit Court for Marion County, Florida, or the United States District Court sitting in Marion County, Florida, as appropriate.

(Continued on Sheet No. 20.4)

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

OCALA ELECTRIC UTILITY
OCALA, FLORIDA
(Continued from Sheet No. 20.3)

FIRST REVISED SHEET NO. 20.4
CANCELS ORIGINAL SHEET NO. 20.4

7.05. Enforcement of Agreement. In the event that either party is required to enforce this Agreement by court proceedings or otherwise, the prevailing party shall be entitled to recover all fees and costs incurred, including reasonable attorney's fees and costs for trial, alternative dispute resolution, and/or appellate proceedings.

7.06. Severability. To the extent any provision of this Agreement is prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Agreement.

7.07. Third Party Beneficiaries and Sovereign Immunity. This Agreement is solely for the benefit of FMPA, OEU, and Customer and no right nor shall any cause of action accrue upon or by reason, to or for the benefit of any third party not a formal party to this Agreement. Nothing in this Agreement, expressed or implied, is intended or shall be construed to confer upon any person or corporation other than FMPA, OEU, or Customer, any right, remedy, or claim under or by reason of this Agreement or any of the provisions or conditions of this Agreement; and, all provisions, representations, covenants, and conditions contained in this Agreement shall inure to the sole benefit of and be binding upon FMPA, OEU, and Customer and their respective representatives, successors, and assigns. Further, no term or condition contained in this Agreement shall be construed in any way as a waiver by either FMPA or OEU of the sovereign immunity applicable to either or both of them as established by Florida Statutes, 768.28.

(Continued on Sheet No. 20.5)

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

OCALA ELECTRIC UTILITY
OCALA, FLORIDA
(Continued from Sheet No. 20.4)

FIRST REVISED SHEET NO. 20.5
CANCELS ORIGINAL SHEET NO. 20.5

IN WITNESS WHEREOF, Customer and OEU have executed this Agreement the day and year first above written.

City of Ocala Electric Utility

By: Ken Whitehead

Title: Asst. City Manager

Date: 12 / 16 / 2022

Florida Municipal Power Agency

By: [Signature]

Title: Bus Dev and Sys Ops Director

Date: 12 / 16 / 2022

Customer

By: Jay L. Cortes

(Print Name)

Date: 10/21/22

x

Authorized by

[Signature]

(Signature)

Customer's City of Ocala Electric Utility Account Number: 543220 - 202516

Approved as to form and legality:

William E. Sexton

~~Robert W. Batsel, Jr.~~ William E. Sexton
~~Assistant~~ City Attorney

(Continued on Sheet No. 20.6)

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

OCALA ELECTRIC UTILITY
OCALA, FLORIDA
(Continued from Sheet No. 20.5)

FIRST REVISED SHEET NO. 20.6
CANCELS ORIGINAL SHEET NO. 20.6

**Tri-Party Net-Metering Power Purchase Agreement
Schedule A**

I. All-Requirements Project Calculation of Excess Customer-Owned Renewable Generation Credit

- a) FMPA shall pay OEU for the excess kWh energy delivered by customer-owned renewable generation to OEU's electric system. Every month, OEU shall determine the total kWh of customer-owned renewable generation that is delivered to OEU's electric system, and shall send the information to FMPA as soon as it becomes available, but no later than the second working day of every month. FMPA will then provide a monthly payment to OEU in the form of a credit on the ARP power bill for the excess energy delivered to the distribution grid. The ARP Renewable Generation Credit will be calculated as follows:

ARP Renewable Generation Credit = Quarterly Energy Rate * Monthly kWh of excess customer-owned renewable generation

Quarterly Energy Rate = 3 month average of ARP energy rate. FMPA will update the Quarterly Energy Rate every April 1, July 1, October 1 and January 1.

- b) As part of the monthly bill adjustment, FMPA will also increase OEU's kWh billing amount by the same kWh amount as the customer-owned renewable generation purchased by FMPA. This adjustment is necessary because excess customer generation that flows onto OEU's electric system has been purchased by FMPA, but will remain on OEU's electric system and be used by OEU to meet its other customers' electric needs. As a result, OEU's monthly ARP bill will be adjusted accordingly to reflect FMPA's subsequent sale of this energy to OEU.

II. Payment for Unused Excess Energy Credits

- a) Monthly excess energy credits shall accumulate and be used to offset the Customer's following month energy consumption bill for a period of not more than twelve (12) months.
- b) At the end of each calendar year, OEU shall pay the Customer for any unused excess energy credits in accordance with the OEU Electric Net-Metering Service Rate Schedule.

Issued by: Michael Poucher, P.E.
Electric Utility Director

Effective: October 1, 2019

PERSONAL UMBRELLA LIABILITY COVERAGE PART DECLARATIONS

ITEM 1. NAMED INSURED AND ADDRESS

JAY CORTES & BRIANNA PERDUE
2305 SE 8TH STREET
OCALA, FL 34471

Policy No. **PCL1748770**

ITEM 2. POLICY PERIOD: This policy period begins and ends at 12:01 A.M.
Standard Time at the mailing address above.

Effective Date: **10/03/2022**

Expiration Date: **10/03/2023**

ITEM 3. Policy Limits

Coverage A - Personal Umbrella Liability

\$1,000,000

SELF INSURED RETENTION

\$0

ITEM 4. Residences - Coverage is provided to those residences that are covered by underlying insurance.

ITEM 5. Automobiles - Coverage is provided to those automobiles that are covered by underlying insurance.

Policy Exposures

Residences

1

PERSONAL UMBRELLA LIABILITY COVERAGE PART DECLARATIONS

Policy No. Policy No. **PCL1748770**

ITEM 6: Required Underlying Insurance Coverage. You agree that the higher of the MINIMUM UNDERLYING LIMITS below, or the limit shown on the PCL-117 Schedule of Underlying Insurance Endorsement (if the PCL-117 is shown below):

- (1) is in force and will continue in force; and
- (2) insures all **residences, automobiles, recreational vehicles or watercraft** owned by, leased or regularly furnished to you.

Type of Policy or Coverage		Minimum Underlying Limits	
<i>Comprehensive Personal Liability & Rental Property Liability</i>		<i>Single Limit</i>	
		\$300,000 Bodily Injury, Personal Injury and Property Damage Combined	
<i>Recreational Vehicle Liability</i>	<i>Dual Limit</i>	<i>OR</i>	<i>Single Limit</i>
Bodily Injury	\$250,000 each person		\$300,000 Bodily Injury and Property Damage Combined
	\$500,000 each accident		
Property Damage	\$100,000 each accident		

CITY OF OCALA BUILDING PERMIT

THIS CARD TO BE POSTED ON STREET SIDE OF LOT BEFORE WORK IS STARTED
The Issuance of this Permit is conditioned upon full compliance with the provisions of the
laws as set forth and provided for in Chapter 7 of the Ocala Code of Ordinances.

Permit No. BLD22-2551 Date 9/20/2022

Location 2305 SE 8TH ST Parcel No. 2887-003-011

Owner CORTES JAY

Contractor TRANSFORM SOLAR

Zone _____ Use _____

Setbacks: Front _____ Side _____ Rear _____

BUILDING	PLUMBING	HARV	ELECTRIC
Footings INSPECTOR _____ Date _____	Ground Rough INSPECTOR _____ Date _____	Rough INSPECTOR _____ Date _____	Temp. Serv. INSPECTOR _____ Date _____
Slab INSPECTOR _____ Date _____	Rough INSPECTOR _____ Date _____	Final INSPECTOR _____ Date _____	UFER Grd. INSPECTOR _____ Date _____
Lintel INSPECTOR _____ Date _____	Final INSPECTOR _____ Date _____	SITE	Slab INSPECTOR _____ Date _____
Roof Sheathing INSPECTOR _____ Date _____	Sewer INSPECTOR _____ Date _____	Drainage INSPECTOR _____ Date _____	Rough In INSPECTOR _____ Date _____
Wall Sheathing INSPECTOR _____ Date _____	Water Serv. INSPECTOR _____ Date _____	Driveway INSPECTOR _____ Date _____	Above ceiling INSPECTOR _____ Date _____
Framing INSPECTOR _____ Date _____	Septic Tank INSPECTOR _____ Date _____	Utilities INSPECTOR _____ Date _____	Semi Perm INSPECTOR _____ Date _____
Dry-In INSPECTOR _____ Date _____	GAS	Final INSPECTOR _____ Date _____	Under- Ground INSPECTOR _____ Date _____
Lath INSPECTOR _____ Date _____	Rough-In INSPECTOR _____ Date _____	Rough INSPECTOR _____ Date _____	Serv Ugrd. INSPECTOR _____ Date _____
Insulation INSPECTOR _____ Date _____	Final INSPECTOR _____ Date _____	Final INSPECTOR _____ Date _____	Change of Serv. INSPECTOR _____ Date _____
Final INSPECTOR _____ Date _____	Other _____	Other _____	Final INSPECTOR _____ Date _____
Other _____			

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

NOTICE: IN ADDITION TO THE REQUIREMENTS OF THIS PERMIT, THERE MAY BE ADDITIONAL RESTRICTIONS APPLICABLE TO THIS PROPERTY THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY, AND THERE MAY BE ADDITIONAL PERMITS REQUIRED FROM OTHER GOVERNMENTAL ENTITIES SUCH A WATER MANAGEMENT DISTRICTS, STATE AGENCIES OR FEDERAL AGENCIES.

The City of Ocala Building Division is not liable in any civil action for any inaccurate information submitted by an owner or contractor using the authority's electronic confirmation system for permits that are submitted and approved per Florida Statutes Chapter 713, OWNER'S ELECTRONIC SUBMISSION STATEMENT: Under penalty of perjury, I declare that all the information contained in this building permit application is true and correct.

FOR FIRE INSPECTORS CALL: (352) 629-8398

For Inspections Visit: <http://crwtrakit.ocalafl.org/eTRAKiT3/>

Andrew Babbitt, Chief Building Official

Phone (352) 629 - 8421

Search Results

Permit #BLD22-2551

Permit Info

Site Info

Contacts **

Fees \$0.00

Inspections(1)

Chronolc 

PERMIT #
BLD22-2551

Type	Result	Scheduled Date	Time	Completed	Time	
**FINAL BUILDING	APPROVED	10/6/2022		10/6/2022		More Info

Permit #ELE22-1115

Permit Info

Site Info

Contacts **

Fees \$0.00

Inspections(1)

Chronology **

Reviews

Type	Result	Scheduled Date	Time	Completed	Time	
**FINAL ELECTRIC	APPROVED	10/3/2022		10/3/2022		More Info

Pacifico Engineering PC
700 Lakeland Ave, Suite 2B
Bohemia, NY 11716



Engineering Consulting
Ph: 631-988-0000
solar@pacificoengineering.com

July 5, 2022

City of Ocala
Building Division
110 SE Watula Ave.
Ocala, FL 34471

Subject: Solar Energy Installation for
Jay Cortes
2305 SE 8th Street
Ocala, FL 34471

I have reviewed the roofing structure at the subject address. The structure can support the additional weight of the roof mounted system. The units are to be installed in accordance with the manufacturer's installation instructions. Per FSS 377.705 paragraph 4(d), the solar energy system is certified in lieu of FSEC certification. I have determined that the installation will meet the requirements of the 2020 Florida Building Code - Residential, Seventh Edition, and ASCE 7-16 when installed in accordance with the manufacturer's instructions.

Roof Section	A	B	C
Mean roof height	15.0 ft	15.0 ft	15.0 ft
Pitch	4 degrees	18 degrees	18 degrees
Roof rafter	2x6	2x4 Truss	2x4 Truss
Rafter spacing	16 inch on center	24 inch on center	24 inch on center
Reflected roof rafter span	14.4 ft	6.1 ft	5.5 ft
Table R802.5.1(1) max allowable	14.6 ft	7.5 ft	7.5 ft

The climactic and load information is below:

CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA		Exposure Category	Ground Snow Load, Pg, psf	Wind Speed, 3 sec gust, mph	Live Load, Pnet per ASCE 7, psf	Point pullout load, lb	Fastener Type
Roof Section	A	B	0	140	22	255	SS 5/16" dia lag bolt, 4-3/4" length
	B				39	451	SS 5/16" dia lag bolt, 4-3/4" length
	C				39	451	SS 5/16" dia lag bolt, 4-3/4" length

Weight Distribution

array dead load 3.5 psf
load per attachment 54.0 lb

The subject roof has 1 layer of shingles.

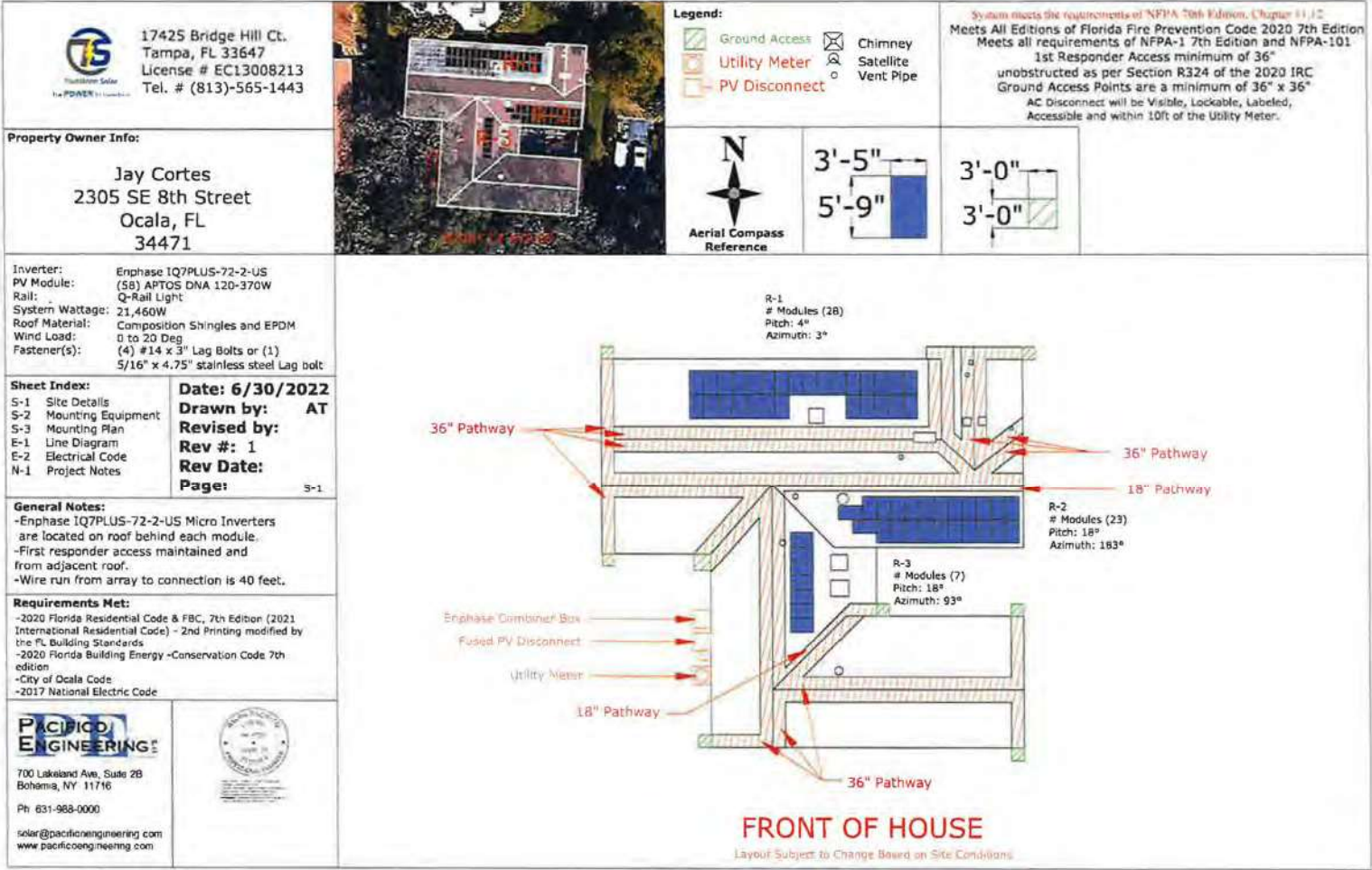
Panels mounted flush to roof no higher than 6 inches above roof surface.

Ralph Pacifico, PE
Professional Engineer



Ralph
Pacifico

Digitally signed
by Ralph Pacifico
Date: 2022.07.05
14:31:42 -04'00'





17425 Bridge Hill Ct.
Tampa, FL 33647
License # EC13008213
Tel. # (813)-565-1443

Property Owner Info:

Jay Cortes
2305 SE 8th Street
Ocala, FL
34471

Inverter: Enphase IQ7PLUS-72-2-US
PV Module: (58) APTOS DNA 120-370W
Rail: Q-Rail Light
System Wattage: 21,460W
Roof Material: Composition Shingles and EPDM
Wind Load: 0 to 20 Deg
Fastener(s): (4) #14 x 3" Lag Bolts or (1)
5/16" x 4.75" stainless steel Lag bolt

2020 FBC Roof Mounted PV Design Criteria:

-Roof Height: 15'
-Wind Speed(Vult): 130mph 3 sec
gust
-Exposure Category: B
-Designed as per ASCE7-16

Date: 6/30/2022

Drawn by: AT

Revised by:

Rev #: 1

Rev Date:

Page: S-2

**PACIFIC
ENGINEERING**

700 Lakeland Ave. Suite 2B
Bohemia, NY 11716

Ph: 631-968-0000

soar@pacificengineering.com
www.pacificengineering.com



Roof(s)	Pitch	Roof Structure	Overhang	Roof Type	Notes:
R1	1/12	2" x 6" @ 16" O.C.	12"	Flat	
R2-R3	4/12	2" x 4" @ 24" O.C.	12"	Gable	Truss

General Notes:

- Sunmodo Nano Mount are secured to rafters using 5/16" x 4.75" stainless steel Lag bolts.
- Sunmodo Nano Mount are secured to plywood decking using (4) #14 x 3" stainless steel Lag bolts.
- Subject roof has One layer.
- All penetrations are sealed.



Mount Attachment



Rail





17425 Bridge Hill Ct.
Tampa, FL 33647
License # EC13008213
Tel. # (813)-565-1443

Property Owner Info:

Jay Cortes
2305 SE 8th Street
Ocala, FL
34471

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2020 FBC Roof Mounted PV Design Criteria:

-Roof Height: 15'
-Wind Speed(Vult): 130mph 3 sec
gust
-Exposure Category: B
-Designed as per ASCE7-16

Date: 6/30/2022

Drawn by: AT

Revised by:

Rev #: 1

Rev Date:

Page: S-3



700 Lakeland Ave., Suite 2B
Bohemia, NY 11716

Ph: 631-988-0000

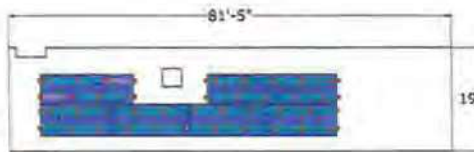
solar@pacificengineering.com
www.pacificengineering.com



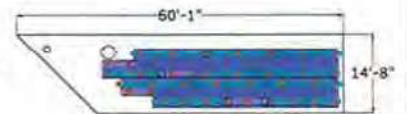
Plans specify zones (FBC-3510.7.1)
Install will be done to Manufacturer Spec

Mount Attachment locations

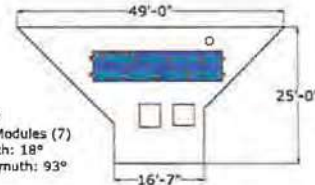
- Q-Rail Light
- 21 Splice Bar
 - 94 Sunmado NanoMounts
 - 104 QM Nuts
 - 26 QM Ends/End Caps
 - 2 Roof Top Combiner
 - 1 606 Junction Box
 - 6 QM Ground Lugs
 - 58 APTOS DNA 120-370W
 - 58 Enphase IQ7PLUS-72-2-US
 - 1 125A Load Center
 - 5 20A 2P Breakers
 - 1 100A Fused Disconnect
 - 2 30A Fuses
 - 1 15A 2P Breaker
 - 1 Envy



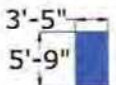
R-1
Modules (28)
Pitch: 4°
Azimuth: 3°



R-2
Modules (23)
Pitch: 18°
Azimuth: 183°



R-3
Modules (7)
Pitch: 18°
Azimuth: 93°



All max cantilevers per manufacturer spec.

Max Cantilever = Max Span * ($\frac{1}{3}$)

R1

Deck

Zone 1: Max Span = 64"
Max Cantilever = 21.33"
Zone 1: Max Span = 48"
Max Cantilever = 16"
Zone 2: Max Span = 32"
Max Cantilever = 10.6"
Zone 3: Max Span = 16"
Max Cantilever = 5.33"

Rafter

Zone 1: Max Span = 64"
Max Cantilever = 21.33"
Zone 1: Max Span = 64"
Max Cantilever = 21.33"
Zone 2: Max Span = 64"
Max Cantilever = 21.33"
Zone 3: Max Span = 48"
Max Cantilever = 16"

R2-R3

Deck

Zone 1: Max Span = 24"
Max Cantilever = 8"
Zone 2e: Max Span = 24"
Max Cantilever = 8"
Zone 2n: Max Span = 24"
Max Cantilever = 8"
Zone 2r: Max Span = 24"
Max Cantilever = 8"
Zone 3e: Max Span = 24"
Max Cantilever = 8"
Zone 3r: Max Span = 24"
Max Cantilever = 8"

Rafter

Zone 1: Max Span = 72"
Max Cantilever = 24"
Zone 2e: Max Span = 48"
Max Cantilever = 16"
Zone 2n: Max Span = 48"
Max Cantilever = 16"
Zone 2r: Max Span = 48"
Max Cantilever = 16"
Zone 3e: Max Span = 48"
Max Cantilever = 16"
Zone 3r: Max Span = 48"
Max Cantilever = 16"



17425 Bridge Hill Ct.
Tampa, FL 33647
License # EC13008213
Tel. # (813)-565-1443

Property Owner Info:

Jay Cortes
2305 SE 8th Street
Ocala, FL
34471

Inverter: Enphase IQ7PLUS-72-2-US
PV Module: (58) APTOS DNA 120-370W
System Wattage: 21,460W

Note:

-All wiring to meet the 2017 NEC and Florida electric codes.
-Type of conduit to be determined on site by contractor.
-Number of rooftop Junction Boxes to be determined on site and are at least NEMA 3R rated.
-AC Disconnect will be visible, lockable, labeled, accessible, and located within 10ft of Utility Meter.
-12-2 Romex may be used for interior building and attic runs only. 12-2 Romex not to be used in conduit or outdoor environments.

Date: 6/30/2022

Drawn by: AT

Revised by:

Rev #: 1

Rev Date:

Page: E-1

PACIFIC ENGINEERING, INC.

700 Lakeland Ave., Suite 200
Bohemia, NY 11716

Ph: 631-388-0000

sales@pacificengineering.com
www.pacificengineering.com



Label	Wire Type	Wire Size (AWG)	Ground (AWG)	Min. Conduit Size
A	AC Cable & Bare Copper	12	6	N/A
B	NM-B	12	12	3/4"
C	THHN	3	8	1.25"
D	THHN	3	N/A	1.25"

Overcurrent Protection Device (OCPD) Calculation

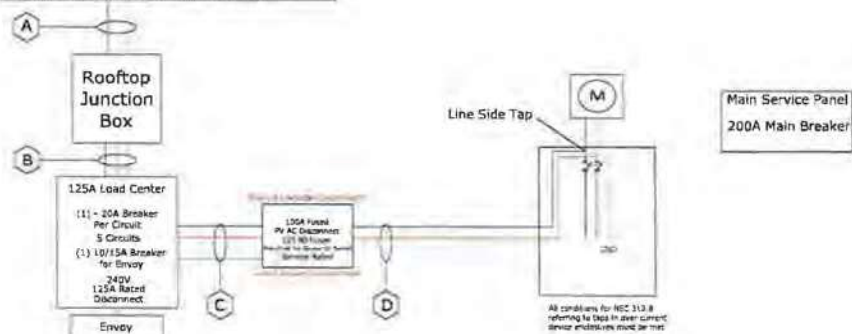
Max AC Output Current	1.21A
No. of Inverters	58
Total Output Current	70.18A
Total * 125%	87.72A
OCPD Size	90A
Conductor Size	#3AWG
No. Current Carrying Conductors	<4

Photovoltaics:
(58) APTOS DNA 120-370W

Inverters:
(58) Enphase IQ7PLUS-72-2-US Micro Inverters

Circuits:
(4) circuits of (12) Inverters
(1) circuits of (10) Inverters

Maximum Inverters Per 20A Circuit (13)





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Tampa, FL 33647
License # EC13008213
Tel. # (813)-565-1443

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Ocala, FL
34471

Inverter: Enphase IQ7PLUS-72-2-US
PV Module: (58) APTOS DNA 120-370W
System Wattage: 21,460W

Note:

- Subject PV Systems has been designed to meet the requirements of the NEC 2017, and those set forth by the Florida Solar Energy Center Certification, including Maximum Number of Module Strings, Maximum number of modules per string, Maximum Output, Module Manufacturer and model number, inverter manufacturer and model number, as applicable.
- All wiring to meet the 2017 NEC and Florida electric codes.
- 100A Disconnect
- Type of conduit to be determined on site by contractor.

Date: 6/30/2022

Drawn by: AT

Revised by:

Rev #: 1

Rev Date:

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Combined Inverter Output

Design Temperature (°F)	94	
Max Ambient Temperature Range (°F)	87-95	310.15(8)(2)(a)
Conductor Temp Rating (°C)	75	
# of Current Carrying Conductors	<4	310.15(8)(3)(a)
Max AC Output Current	1.21A	
# of Inverters	58	
Total Output Current	70.18A	690.8(A)(3)
Total * 125%	87.72A	690.8(B)(1)
OCPD Size	90A	
Conductor Size	3AWG	
Ambient Temp Correction Factor	0.94	310.15(8)(2)(a)
Raceway Fill Adjustment Factor	100%	310.15(8)(3)(a)
Conductor Allowable Ampacity	100A	
Conductor Adjusted Ampacity	94A	135A*0.94=94A

100% Disconnect with one disconnect at the Solar Array, 100% disconnect for Inverter Disconnect

Combiner box in compliance
Per Code NEC 705.12
S* 20A < 125A
*No other loads to be added

**PHOTOVOLTAIC SYSTEM
1AC DISCONNECT**

RATED AC OUTPUT CURRENT 70.18A
NORMAL OPERATING VOLTAGE 240VAC

- NEC 705.12(b)(1) (b)(2) (b)(3) (b)(4) (b)(5) (b)(6) (b)(7) (b)(8) (b)(9) (b)(10) (b)(11) (b)(12) (b)(13) (b)(14) (b)(15) (b)(16) (b)(17) (b)(18) (b)(19) (b)(20) (b)(21) (b)(22) (b)(23) (b)(24) (b)(25) (b)(26) (b)(27) (b)(28) (b)(29) (b)(30) (b)(31) (b)(32) (b)(33) (b)(34) (b)(35) (b)(36) (b)(37) (b)(38) (b)(39) (b)(40) (b)(41) (b)(42) (b)(43) (b)(44) (b)(45) (b)(46) (b)(47) (b)(48) (b)(49) (b)(50) (b)(51) (b)(52) (b)(53) (b)(54) (b)(55) (b)(56) (b)(57) (b)(58) (b)(59) (b)(60) (b)(61) (b)(62) (b)(63) (b)(64) (b)(65) (b)(66) (b)(67) (b)(68) (b)(69) (b)(70) (b)(71) (b)(72) (b)(73) (b)(74) (b)(75) (b)(76) (b)(77) (b)(78) (b)(79) (b)(80) (b)(81) (b)(82) (b)(83) (b)(84) (b)(85) (b)(86) (b)(87) (b)(88) (b)(89) (b)(90) (b)(91) (b)(92) (b)(93) (b)(94) (b)(95) (b)(96) (b)(97) (b)(98) (b)(99) (b)(100) (b)(101) (b)(102) (b)(103) (b)(104) (b)(105) (b)(106) (b)(107) (b)(108) (b)(109) (b)(110) (b)(111) (b)(112) (b)(113) (b)(114) (b)(115) (b)(116) (b)(117) (b)(118) (b)(119) (b)(120) (b)(121) (b)(122) (b)(123) (b)(124) (b)(125) (b)(126) (b)(127) (b)(128) (b)(129) (b)(130) (b)(131) (b)(132) (b)(133) (b)(134) (b)(135) (b)(136) (b)(137) (b)(138) (b)(139) (b)(140) (b)(141) (b)(142) (b)(143) (b)(144) (b)(145) (b)(146) (b)(147) (b)(148) (b)(149) (b)(150) (b)(151) (b)(152) (b)(153) (b)(154) (b)(155) (b)(156) (b)(157) (b)(158) (b)(159) (b)(160) (b)(161) (b)(162) (b)(163) (b)(164) (b)(165) (b)(166) (b)(167) (b)(168) (b)(169) (b)(170) (b)(171) (b)(172) (b)(173) (b)(174) (b)(175) (b)(176) (b)(177) (b)(178) (b)(179) (b)(180) (b)(181) (b)(182) (b)(183) (b)(184) (b)(185) (b)(186) (b)(187) (b)(188) (b)(189) (b)(190) (b)(191) (b)(192) (b)(193) (b)(194) (b)(195) (b)(196) (b)(197) (b)(198) (b)(199) (b)(200) (b)(201) (b)(202) (b)(203) (b)(204) (b)(205) (b)(206) (b)(207) (b)(208) (b)(209) (b)(210) (b)(211) (b)(212) (b)(213) (b)(214) (b)(215) (b)(216) (b)(217) (b)(218) (b)(219) (b)(220) (b)(221) (b)(222) (b)(223) (b)(224) (b)(225) (b)(226) (b)(227) (b)(228) (b)(229) (b)(230) (b)(231) (b)(232) 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17425 Bridge Hill Ct.
Tampa, FL 33647
License # EC13008213
Tel. # (813)-565-1443

Property Owner Info:

Jay Cortes
2305 SE 8th Street
Ocala, FL
34471

Inverter: Enphase IQ7PLUS-72-2-US
PV Module: (58) APTOS DNA 120-370W
Rail: Q-Rail Light
System Wattage: 21,460W
Roof Material: Composition Shingles and EPDM
Wind Load: 0 to 20 Deg
Fastener(s): (4) #14 x 3" Lag Bolts or (1)
5/16" x 4.75" stainless steel Lag bolt

Date: 6/30/2022

Drawn by: AT

Revised by:

Rev #: 1

Rev Date:

Page: N-1

Requirements Met:

- 2020 Florida Residential Code & FBC, 7th Edition (2021 International Residential Code) - 2nd Printing modified by the Florida Building Standards.
- 2020 Florida Building Energy-Conservation Code 7th edition
- City of Ocala Code
- 2020 National Electric Code



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PROJECT NOTES:

- THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURERS' LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
- ALL PV SYSTEM COMPONENTS: MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC 690.4 & NEC 690.40. PV MODULES: UL1703, IEC61730, AND IEC61215, AND NEMA 7 CLASS C FINE INVERTERS: UL 1741 CERTIFIED, IEEE 1547, 929, 519 COMBINER BOXES: UL 1703 OR UL 1741 ACCESSORY.
- NEC 690.35 REFERS SPECIFICALLY TO "UNGROUND" PV SYSTEMS; ALSO DESIGNATED AS "TRANSFORMERLESS" BY INVERTER MANUFACTURERS AND "NON-ISOLATED" BY UNDERWRITERS LABORATORY.
- INVERTER(S) USED IN UNGROUNDING SYSTEM SHALL BE LISTED FOR THIS USE (NEC 690.35 (G)).
- AS SPECIFIED BY THE AHJ, EQUIPMENT USED IN UNGROUNDING SYSTEMS LABELED ACCORDING TO NEC 690.35 (F).
- MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC. IF UNAVAILABLE, MAX DC VOLTAGE CALCULATED ACCORDING TO NEC 690.7.
- ALL INVERTERS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AND SOURCE CIRCUIT COMBINERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D) SHALL BE INSTALLED ACCORDING TO ANY INSTRUCTIONS, FROM LISTING OR LABELING (NEC 110.3).
- ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLACES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

SCOPE OF WORK:

- PRIME CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC SYSTEM RETROFIT. PRIME CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTING EXISTING ON-SITE REQUIREMENTS TO DESIGN, SPECIFY, AND INSTALL THE ROOF MOUNT ARRAY PORTION OF THE PHOTOVOLTAIC SYSTEMS DETAILED IN THIS DOCUMENT.

SITE NOTES:

- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING OR MECHANICAL PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION NEC 110.26.

EQUIPMENT LOCATIONS:

- ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY NEC 110.26.
- WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR DIRECT OPERATING TEMPERATURE AS SPECIFIED BY NEC 690.31 (A), (C) AND NEC TABLES 310.15 (B)(1)(A) AND 310.15 (B)(1)(C).
- UTILITY AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO NEC 690.34.
- ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
- ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.
- SOLAR ARRAY LOCATION SHALL BE ADJUSTED ACCORDINGLY TO MEET LOCAL SETBACK REQUIREMENTS.

STRUCTURAL NOTES:

- RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.
- JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IT SHALL BE SEALED PER LOCAL REQUIREMENTS.
- ALL PV RELATED ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.

GROUNDING NOTES:

- GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
- AS IN CONVENTIONAL PV SYSTEMS, UNGROUNDING PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND STRUCTURAL COMPONENTS BONDED TO GROUND, IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDING.
- PV EQUIPMENT SHALL BE GROUNDING ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.120.
- METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDING IN ACCORD WITH 250.134 AND 250.136(A).
- EACH MODULE WILL BE GROUNDING USING WEBS GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

- THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
- GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER (NEC 250.119).
- THE GROUNDING ELECTRODES SYSTEM COMPLETES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.105. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND 401.
- ACCORDING TO NEC 400.47 (C)(3), UNGROUNDING SYSTEMS INVERTER MAY SIZE DC GEC ACCORDING TO EGC REQUIREMENTS OF NEC 250.122. HOWEVER, DC GEC TO BE UNPLUGGED OR IRREVERSIBLY SPliced.
- IN UNGROUNDING INVERTERS, GROUND FAULT PROTECTION IS PROVIDED BY "ISOLATION MONITOR INTERCEPTOR" AND GROUND FAULT DETECTION PERFORMED BY "RESIDUAL-CURRENT DETECTOR."

INTERCONNECTION NOTES:

- LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH (NEC 690.64 (B)).
- THE SUM OF THE UTILITY DCPO AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING (NEC 705.12(D)(1)(3)).
- PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE DCPO (NEC 705.12(D)(1)(3)).
- AT MULTIPLE INVERTERS OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED.
- ACCORDING TO NEC 705.12 (D)(2)(3)(C).
- FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (D)(2)(1).
- SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 430.42.
- BACKFEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING (NEC 705.12 (D)(2)).

DISCONNECT AND OVER-CURRENT PROTECTION NOTES:

- DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
- DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.
- BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDING, THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO NEC 690.13, 2.6.5. DC DISCONNECT INTEGRATED INTO DC COMBINER OR INSTALLED WITHIN 6 FT. ACCORDING TO NEC 690.15 (C).

- RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS #10V AND #240VA (NEC 690.12). LOCATION OF LABELS ACCORDING TO AHJ.
- ALL DCPO RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
- BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDING, THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION, ACCORDING TO NEC 240.21. (SEE EXCEPTION IN NEC 690.9) 2.6.5 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.
- THE SERVICE DISCONNECTING MEANS SHALL HAVE A RATING NOT LESS THAN THE CALCULATED LOAD TO BE CARRIED, DETERMINED IN ACCORDANCE WITH PART III, IV, OR V OF ARTICLE 220, AS APPLICABLE. IN NO CASE SHALL THE RATING BE LOWER THAN SPECIFIED IN 230.70(A), (B), (C), OR (D).
- SERVICE DISCONNECTING MEANS WILL BE IN COMPLIANCE WITH NEC 230.71 AND NEC 230.72.

WIRING & CONDUIT NOTES:

- ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT WIRING.
- ALL CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
- EXPOSED UNGROUNDING PV SOURCE AND OUTPUT CIRCUITS SHALL USE WIRE LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE (690.35 (D)). PV MODULES WIRE LEADS SHALL BE LISTED FOR USE WITH UNGROUNDING SYSTEMS, ACCORDING TO NEC 690.35 (D)(3).
- PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE (NEC 200.6 (A)(5)).
- MODULE WIRING SHALL BE LOCATED AND SECURED UNDER THE ARRAY.
- ACCORDING TO NEC 200.7, UNGROUNDING SYSTEMS DC CONDUCTORS COLORED OR MARKED AS FOLLOWS: DC POSITIVE- RED, OR OTHER COLOR EXCLUDING WHITE, GRAY AND GREEN DC NEGATIVE- BLACK OR OTHER COLOR EXCLUDING WHITE, GRAY AND GREEN.
- AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE, OR OTHER CONVENTION IF NEUTRAL, WHITE OR GRAY - IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE (NEC 110.15).
- ELECTRICAL WIRES INTERCHANG SHALL BE AT LEAST 1/8IN. BELOW GRADE (RESIDENTIAL).



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English Networking

**Enphase
IQ Combiner 3**
(X-IQ-AM1-240-3)

The **English IQ Converter 2.0** is a program by The IQ Institute that is the most accurate program to date. It has been used by thousands of people and has been found to be accurate and reliable. It is a free program that can be downloaded from the Internet. It is a great tool for anyone who is interested in IQ testing.



Smart.

- **Interference** by **other** in **communication** and **coordination**
- **Disrupt** - **interfering** **negatively** **disturb** **disrupt** **interference**
- **Disruptive** **technology** **disruptive** **technology** **disruptive**
- **Disruptive** **technology** **disruptive** **technology** **disruptive**
- **Disruptive** **technology** **disruptive** **technology** **disruptive**

to provide

- The level of the **intentional** component
- The level of **responsibility** for the **causal** component
- The level of **control** for the **causal** component
- The **degree** of **freedom** of the **causal** component
- The **degree** of **freedom** of the **causal** component
- The **degree** of **freedom** of the **causal** component

whole

1. 证明: 若 $f(x)$ 在 $[a, b]$ 上连续, 且 $f(a) = f(b)$, 则存在 $\xi \in (a, b)$, 使得 $f'(\xi) = 0$.
 2. 证明: 若 $f(x)$ 在 $[a, b]$ 上连续, 且 $f(a) = f(b)$, 则存在 $\xi \in (a, b)$, 使得 $f'(\xi) = 0$.
 3. 证明: 若 $f(x)$ 在 $[a, b]$ 上连续, 且 $f(a) = f(b)$, 则存在 $\xi \in (a, b)$, 使得 $f'(\xi) = 0$.
 4. 证明: 若 $f(x)$ 在 $[a, b]$ 上连续, 且 $f(a) = f(b)$, 则存在 $\xi \in (a, b)$, 使得 $f'(\xi) = 0$.



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Enphase IQ Combiner 3

[illegible]

To learn more about our new offerings, visit enphase.com



DN4™ 120

Engineered & Manufactured



Solar for Innovators

Designed & Engineered in Silicon Valley
370W | 365W | 360W

Our DN4™ Solar Cell Series represents the most advanced solar technology to date in terms of performance. Our patented Dual Pass Absorber (DNA™) technology allows the panel to operate at high efficiency in extreme temperatures, providing the solar technology of the future today in a first-of-its-kind entry solar panel.

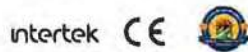
⚡ Patented DNA™ technology boosts power performance & module efficiency

🔌 Advanced split cell technology with 9 ultra-thin busbars allows for less resistance and more photon capture

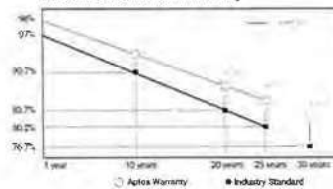
☀️ Ideal solution for applications affected by shading

⚡️ All-black design for pristine aesthetics
No excessive silver bussing or ribbons

☁️ Robust product design is resilient in extreme weather. Up to 5400 Pa snow load and 21.2 mph wind speeds

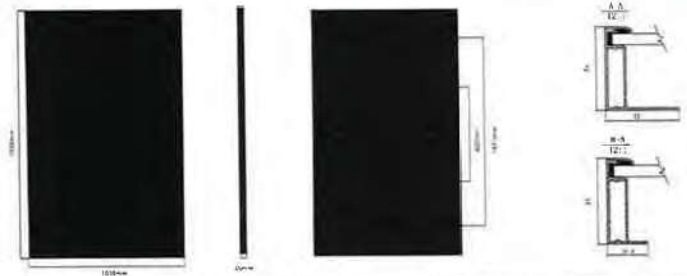


Linear Performance Warranty



DN4™ 120

Solar for Innovators



Electrical Specifications

	120W	360W	370W
Maximum Power (P _{max})	120W	360W	370W
Maximum Power Voltage (V _{mp})	17.5V	17.5V	17.5V
Maximum Power Current (I _{mp})	6.8A	20.6A	21.1A
Open Circuit Voltage (V _{oc})	21.5V	21.5V	21.5V
Short Circuit Current (I _{sc})	9.5A	29.5A	30.5A

Temperature Coefficients

Temperature Coefficient (P _{max})	-0.40%/°C
Temperature Coefficient (V _{oc})	-0.30%/°C
Temperature Coefficient (I _{sc})	0.05%/°C

Test Operating Conditions

Maximum Irradiance	1000 W/m²
Reference Spectrum	AM1.5 Global
Air Mass	1.5
Cell Temperature	25°C

Packaging Configuration

Number of Modules per Pallet	40
Weight of Module (kg)	10.5
Weight of Pallet (kg)	420
Weight of Pallet (lb)	925

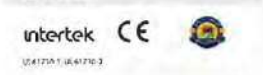
Mechanical Properties

Cell Size	156mm x 156mm
Cell Pitch	166mm
Module Size	1654mm x 992mm
Module Weight	10.5kg
Module Thickness	30mm
Module Depth	30mm
Module Width	992mm
Module Height	1654mm

I-V Curve



Certifications



3140 De La Cruz Blvd., Ste 200
Santa Clara, CA 95051
www.aptosolar.com
info@aptosolar.com



QRail™ — Fully Integrated Mounting and Racking System

The QRail Series is a strong and versatile solar array mounting system that provides unrivaled benefits to solar designers and installers. Combined with Quick Mount PV's industry-leading waterproof mounts, QRail offers a complete racking solution for mounting solar modules on any roof.



Easily design array configurations with the QDesign software application. Generate complete engineering reports and calculate a precise bill of materials for all the mounting, racking and accessories needed for a complete solar array.



Comprehensive, One-Source Solution

QRail, together with Quick Mount PV's waterproof mounting products, provides the benefit of a single-sourced, seamlessly integrated rooftop installation that works with all roof types — composition/asphalt shingles, flat or curved tile, metal shingle, shake, slate and low slope roofs. The QRail system also works with any roof attachment system for maximum flexibility.

Superior Strength and Versatility

QRail is engineered for optimal structural performance. The system is certified to UL 2703, fully code compliant and backed by a 25-year warranty. QRail is available in Light, Standard and Heavy versions to match all geographic locations. QRail is compatible with virtually all modules and works on a wide range of pitched roof surfaces. Modules can be mounted in portrait or landscape orientation in standard or shaped-rail configurations.



QRails come in two lengths: 68 inches (14 ft) and 208 inches (17.3 ft). Mill and Stock finish.

Fast, Simple Installation: It Just Clicks

QClick™ Technology[®]

The universal mid and end clamps use QClick technology to simply "click" into the rail channel and remain upright, ready to accept the module. The pre-assembled clamps fit virtually all module frames and require no extra hardware, eliminating pre-loading and reducing installation time.



Installing is as easy as 1 2 3



UNIVERSAL END CLAMP
7 clamps fit modules from 30-15mm or 38-50mm thick



UNIVERSAL BONDED MID CLAMP
7 clamps for modules from 30-43mm or 38-50mm thick

QSplice™ Technology

QRail's innovative internal QSplice installs in seconds, requiring no tools or screws. Simply insert QSplice into the rail and slide the other rail on to create a fully structural, bonded splice. An external splice is also available.



Installs in seconds — no tools or screws required

Fully Integrated Electrical Bonding

The QRail system provides an integrated electrical bonding path, ensuring that all exposed metal parts and the solar module frames are electrically connected. All electrical bonds are created when the components are installed and tightened down.

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