Fletcher Tilton_{PC}

Attorneys at law May 16, 2018

VIA HAND DELIVERY

Melanie A. Mangum, Town Clerk Town of Royalston Whitney Hall 5 School Street South Royalston, MA 01368

RE: Energy Development Group LLC - 60 Winchendon Road, Royalston Application for Special Permit and Site Plan Approval

Dear Members of the Board:

With regard to the above referenced Application for a Special Permit and Site Plan Approval enclosed herewith please find seven (7) copies of the following:

- 1. Original Application to the Planning Board for a Special Permit and Site Plan Approval;
- 2. Applicant's Brief to the Planning Board;
- 3. Abutters List;
- 4. Proof of Liability Insurance;
- 5. Zoning District Designation;
- 6. Operations and Maintenance Plan; and
- 7. Copy of Deed and Property Record Card.

In addition, we have enclosed the following:

- 1. Seven (7) full size plans;
- 2. Two (2) Stormwater Reports; and
- 3. Seven (7) Designer Certificates.

We look forward to receiving a hearing date on this matter as soon as possible. If you need further information, feel free to contact me or Attorney Todd E. Brodeur from my office. Thank you and we look forward to working with the Town of Royalston on this matter.

Very truly yours,

Client Files/43816/0008/02736708.DOC

Amanda E. Risch

Direct Line: (508) 459-8209 Direct Fax: (508) 459-8409 E-Mail: arisch@fletchertilton.com Enclosures

cc: Geoff Newton, Building Inspector Kate Collins, Planning Board

Please direct all correspondence to our Worcester office.

FletcherTilton.com

WORCESTER | FRAMINGHAM | PROVIDENCE | CAPE COD | HUDSON | MEDFIELD | NEW BEDFORD

Energy Development Group LLC 60 Winchendon Road, Royalston Application for Special Permit and Site Plan Approval



2885 Route 9 North, Howell, NJ 07731

Energy Development Group LLC 60 Winchendon Road, Royalston Application for Special Permit and Site Plan Approval

- 1. Original Application to the Planning Board for a Special Permit and Site Plan Approval;
- 2. Applicant's Brief to the Planning Board;
- 3. Abutters List;

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- 4. Proof of Liability Insurance;
- 5. Zoning District Designation;
- 6. Operations and Maintenance Plan; and
- 7. Copy of Deed and Property Record Card.

ITEM NO. 1

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The Commonwealth of Massachusetts

TOWN OF ROYALSTON PLANNING BOARD P.O. Box 127, Royalston, MA 01368

SPECIAL PERMIT APPLICATION

1. SPECIAL PERMIT NOTICE OF FILING TO:

ROYALSTON TOWN CLERK

and

TOWN OF ROYALSTON PLANNING BOARD

DATE: May 15, 2018

NAME OF OWNER/ APPLICANT:

ENERGY DEVELOPMENT GROUP LLC

MAIL ADDRESS: 2885 Route 9 North, Howell, New Jersey 07731 TEL: (732) 513-6315

ATTENTION TOWN CLERK AND PLANNING BOARD;

This is to notify you, pursuant to General Laws c.40A, s.9, that I have a Special Permit Application, to be filed with Town Clerk on (date) May 15, 2018 and the Royalston Planning Board on (date) May 15, 2018. (Town Clerk, please verify this Date with the Planning Board.)

2. LAND LOCATION: (State the street address or other sufficient description (Map and Parcel Number) to readily identify land or building which is the subject of this application.)

60 Winchendon Road, Royalston, Massachusetts as more particularly described in a deed recorded with the Worcester South District Registry of Deeds in Book 58337, Page 204. Tax Parcel 2550110007700000.

3. Name and address of each holder of legal title to the land which is the subject of this application? List each name exactly as it appears in the deed or petition and the book and page of the Worcester County Registry of Deeds. Please have available such deed or a copy if needed.

ENERGY DEVELOPMENT GROUP LLC

BOOK: 58337 PAGE: 204

4.) State the name, mailing address and telephone number of each attorney, agent, or other representative of the applicant(s).

Amanda E. Risch, Esq. Fletcher Tilton PC 370 Main Street Worcester, MA 01608 Email: <u>arisch@fletchertilton.com</u> Phone: 508-459-8209

Todd E. Brodeur, Esq. Fletcher Tilton PC 370 Main Street Worcester, MA 01608 Email: <u>tbrodeur@fletchertilton.com</u> Phone: 508-459-8038

Norman Hill Land Planning, Inc. Email: nhill@landplanninginc.com Phone: 508-839-9526

5. TOWN ZONING BYLAW DESIGNATION

The undersigned hereby appeals to the Royalston Planning Board for a Special Permit (Royalston Zoning Bylaw Section V.A.) to conduct a business/project in one of the Zoning Districts outlined in the Town of Royalston By-Laws as follows: (Please check applicable use)

(X) Large Solar Installations 40 kW or greater (Royalston Zoning Bylaw Section VIII.B)

-) Utilities greater than 40 kW
-) Accessory Major Home Occupations (Royalston Zoning Bylaw Section III.E.4.b)
-) Telecommunications & Wireless Towers (Royalston Zoning Bylaw Section VIII.A)
-) Accessory Fixed Wireless Broadband Facilities over ten (10) feet in height
- () Large Wind Energy System (LWES): (80) eighty feet and over in height

PROJECT/BUSINESS DESCRIPTION:

<u>Request for a special permit to construct a 4,774,400W (DC) commercial ground mounted solar</u> photovoltaic power operating system at the above referenced property.

Atty for Applicant Date: 5/15/18 Signature of Applicant

Royalston Town Clerk Signature

Date:

Planning Board Clerk Signature or Representative

Date:

A Pre-application meeting with the Planning Board is encouraged to help facilitate the Special Permit Process. Please contact ______ to reserve a spot on the Planning Board's Agenda.

Please be advised that the Special Permit Applicant will be responsible for costs related to processing the Special Permit; including abutter's notification, abutter's list, and public hearing notices.

FOR YOUR MEETING WITH THE PLANNING BOARD, INCLUDE THE FOLLOWING:

- 1. Plans date stamped by the Town Clerk
- 2. Abutters list
- Application/Notice of Filing signed and date stamped by the Town Clerk 3.

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ITEM NO. 2

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TOWN OF ROYALSTON PLANNING BOARD

RE: ENERGY DEVELOPMENT GROUP LLC 60 WINCHENDON ROAD, ROYALSTON, MASSACHUSETTS

MEMORANDUM IN SUPPORT OF APPLICATION

I. INTRODUCTION.

Energy Development Group LLC (the "Applicant") is a privately held energy services company currently developing up to 100MW of solar projects in The Commonwealth of Massachusetts. The Applicant proposes to construct a 4,774,400W (DC) commercial ground mounted solar photovoltaic power operating system on an approximately 20-acre site known as 60 Winchendon Road, Royalston, Massachusetts (the "Premises") as described in a deed recorded with the Worcester South District Registry of Deeds in Book 58226, Page 335. The Premises is shown on the site plan filed with the application form attached hereto and on Assessor's Map as Parcel 11-77. The Premises is located within the Rural Residential & Agricultural Zoning District.

In order to construct the 4,774,400W (DC) commercial ground mounted solar photovoltaic power operating system, as more completely described in this Memorandum, the Applicant requires the following from the Planning Board:

1. Special Permit and Site Plan Approval pursuant to Section VIII(B) Large-Scale Ground-Mounted Solar Photovoltaic Installations from the Zoning Bylaw of the Town of Royalston, Massachusetts (the "Bylaw") to allow for a commercial ground mounted solar photovoltaic power operating system to be permitted in the Rural Residential & Agricultural Zoning District; and

II. DESCRIPTION OF PROPOSAL.

The Applicant proposes to utilize the approximately 20 acres to construct a commercial ground mounted solar photovoltaic power operating system. The purpose of this Application is to ascertain whether the Town of Royalston, through its Planning Board, will authorize the use of the parcel as is being proposed by the Applicant. The premises will also require the Planning Board to approve the Site Plan.

III. STANDARD FOR REVIEW FOR A SPECIAL PERMIT.

In order for the Planning Board to grant a special permit, the Planning Board must find that the proposed use will not have adverse effects on either the neighborhood or the town, in view of the particular characteristics of the site and of the proposal in relation to that site.

In support of the grant of the special permit requested, the Applicant states the following:

a. The premises in question is reasonably adaptable to the proposed use, and adequate parking will be provided, for the following reasons:

This particular property is reasonably adaptable to the proposed use – namely a commercial ground mounted solar photovoltaic power operating system due to the size of the parcel and the relatively isolated nature of the Premises. There are few abutters to the Premises and a significant vegetative buffer

will afford adequate protection against any adverse consequences from providing a special permit for use of the Premises in the fashion as requested by the Applicant.

b. The premises in question will not cause traffic congestion, danger of fire, or create a common nuisance, for the following reasons:

The use of the Premises for a commercial ground mounted solar photovoltaic power operating system will have a negligible impact on traffic along Winchendon Road. Once constructed, the commercial ground mounted solar photovoltaic power operating system will run independently with low levels of periodic maintenance. There will not be a consistent flow of vehicles entering and exiting the Premises. The sounds emanating from the Premises will be minimal. Noise created by the project will be regulated by the Town in a fashion consistent with other development projects. Any lighting at the Premises shall be in accordance with the regulations of the Bylaw. There will be little to no glare to abutting residential properties. The construction of a commercial ground mounted solar photovoltaic power operating system will not create odors that may disturb adjoining properties. The Applicant will comply with the requests of the Royalston Fire Department to address any fire concerns.

c. *The premises in question will not have an adverse effect on the value of properties in the area, for the following reasons:*

The Applicant's proposed use for the Premises is in harmony with the general purpose and intent of the Bylaw. The proposed use for the Premises will undoubtedly result in an increase to the real estate taxes assessed against the Premises as well as the personal property tax collection in relation to the commercial ground mounted solar photovoltaic power operating system. The project represents a productive redevelopment of vacant land that does not derogate from the intent and purpose of the Bylaw.

d. The premises in question will not produce noise, vibrations, smoke, dust, pollution, heat, or glare in amounts detrimental to the normal use of adjacent property, for the following reasons:

The sounds emanating from the Premises will be minimal. Noise created by the project will be regulated by the Town in a fashion consistent with other development projects. There will be little to no glare to abutting residential properties. The construction of a commercial ground mounted solar photovoltaic power operating system will not create odors that may disturb adjoining properties.

e. The premises in question is harmonious with the existing character of the area, for the following reasons:

The use of the premises for solar use is reasonably compatible with other uses permitted in the Rural Residential Zoning District. The area surrounding the Premises is comprised primarily of agricultural uses.

f. Low Impact Development (LID) was considered for use and incorporated in the design when it was environmentally and cost effective, for the following reasons:

The project offers reasonable mechanisms to ensure that there is not a detrimental impact to the environment and that the natural rural character of the area is preserved.

IV. CONCLUSION

For the reasons stated herein, the Applicant respectfully requests that the Planning Board grant the requested relief.

Respectfully submitted,

Amanda E. Risch, Esquire

Amanda E. Kisch, Esquire Fletcher Tilton PC 370 Main Street, 11th Floor Worcester, MA 01608 (508) 459-8209 Email: arisch@fletchertilton.com

ITEM NO. 3

| PARCEL ID | ADDRESS | BLDG VALL | AND VALL | OTHER VALT | TOTAL VAL L | OT SIZE LOT UNIT | TS USE CODE USE CODE OWNER_1 | OWNER_ADDRESS | OWNER_COMMUNITY | OWNER_STATE | OWNER_ZIP O | WNER_C REGISTRY I |
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ITEM NO. 4



CERTIFICATE OF LIABILITY INSURANCE

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| TH CE BE RF | THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER. | | | | | | | | | | | | | |
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| PROD | UCER | | | | | NAME: | Peter Han | way | FAX | (0.00.41 | 140/1 | | | |
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ITEM NO. 5

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ITEM NO. 6

Energy Development Group

Operations and Maintenance Manual

EDG-004 – Royalston, MA

These general guidelines meet the basic requirements of site operations and maintenance and present appropriate emergency protocols. They may be modified based on site-specific considerations as may be required during detailed development.

Contact Information:

Energy Development Group, LLC 2885 Route 9 N Howell, NJ 07731 Phone: 732-370-1446

Operation and Maintenance Manual

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IMPORTANT - READ ALL SAFETY WARNINGS AND CAUTIONS FIRST Contents

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1.0 SAFETY - READ THIS FIRST!

The maintenance and repair of the Solar Power System involves possible contact with potentially lethal voltages and currents. No attempt to service the system should be made by anyone who is not a qualified, trained technician familiar with electrical installations and power electronic equipment.

Contact EDG, LLC BEFORE attempting any repairs.

1.1 WARNINGS - READ THIS FIRST!

WARNING Read these operation and maintenance instructions completely before using and maintaining the Power System. Contact with electrically active parts of the solar panels such as wires and connectors can result in burns, sparks, and lethal shock whether the solar panels are connected or disconnected. The word "panel" refers to the solar panel. An array refers to an assembly of panels.

WARNING High voltages are present in this system. Voltages of up to 1000 volts DC and 13,200 volts AC or higher can be present. High voltage DC power requires special precautions. DC current will not "throw" a victim off a live part, but will instead cause their muscles to contract. DC arcing is more severe and more difficult to extinguish.

WARNING Solar power system repair should only be performed by trained and qualified personnel. All personnel supervising the installation or repair of a photovoltaic system should be familiar with and understand the provisions of the National Electric Code (NEC) (especially Article 690). Unauthorized persons should not be allowed near the solar electric installation.

WARNING Solar panels produce electricity whenever sunlight illuminates the solar cells. The voltage from a single panel is a shock hazard. Panel voltages are independent of sunlight strength and therefore full voltages may be present just after sunrise and before sunset.

WARNING The terminals within the DC section of an inverter will be energized to the array voltage whenever sunlight is present unless the DC disconnect is first opened (off). The solar array source circuits within the combiner boxes and array wiring will remain energized. High voltage will still be present on the array side of the disconnect switch.

WARNING The high voltage capacitors within an inverter require time to discharge after an inverter is shut down. Refer to the Inverter Maintenance manual for the specific time delay.

WARNING If you have any questions or are unsure about how to proceed, call <u>EDG, LLC</u> **BEFORE** performing any tasks.

1.2 CAUTIONS - READ THIS FIRST!

- Maintain good housekeeping conditions and perform all maintenance and repairs in a safe, professional manner.
- A panel generates DC electricity when exposed to sunlight or other light sources.
- Work only under dry conditions with a dry panel and tools.
- Do not stand or step on the panels.
- Do not drill or cut holes in the panel, solar modules or wiring.
- Artificially concentrated sunlight shall not be directed on the panels. Do not reflect sunlight onto the modules this may damage the modules and will void the manufacturer's warranty.
- Use the panel for its intended use only. Do not disassemble the panel or remove any part or label installed by the manufacturer. The panels contain no user serviceable parts.

1.3 SYSTEM SAFETY - READ THIS FIRST!

SOLAR ARRAY

- Both the DC and AC disconnect switches must be OFF to ensure that the inverter side of the disconnect switch is dead.
- The Solar Panel side of the DC disconnect switch is always live when the array has sunlight. Solar panels generate voltage when they are exposed to sunlight. There is no OFF switch on the solar panels or on the wiring from the solar array. If there is sunlight, then the panel can be at or near 1000 Volts.
- A solar electric power system has unique electrical characteristics and unique hazards not common with other power sources. If you do not have the proper background and experience, do not attempt to open enclosures or work on the system.
- Test all points with a multi-meter prior to working on any conductors or terminals.
- Use appropriate tools and safety equipment rated for the appropriate voltages.
- Work with a partner in sight and have a plan in case there is an accident.
- Lock-out all disconnect switches in the OFF (open) position when you are working on the PV system and there is any possibility that someone else may switch the disconnect switch ON (closed) without your knowledge.
- Follow safe practices and standard guidelines for working with electrical distribution systems and/or generators.
- Do not open the combiner box fuse holders while the system is operating. The fuse holders are not designed to interrupt the source circuit current and may arc if opened under load.

INVERTER

- The inverter enclosure contains exposed high voltage conductors. The inverter cover should remain closed except during maintenance and testing by experienced and authorized personnel.
- To reduce the risk of electric shock, do not perform any servicing other than specified by the inverter operating instructions.
- Do not open the inverter cabinet if moisture (wet floor, rain, heavy dew) is present.
- For specific inverter information, refer to the inverter manufacturer's manual in this operation and maintenance binder.

2.0 Project Specific Information

This manual describes the photovoltaic system at **60 Winchendon Rd**, **Royalston**, **MA 01368**. It should not be used to maintain or troubleshoot any other photovoltaic system.

The National Electric Code, local building codes, and OSHA safe work practices should take precedence in case of conflict with any statements made in this manual.

2.1 Purpose of the Operation and Maintenance Manual

This manual provides information for the operation and maintenance of the solar power system. This manual also contains important safety information.

READ THIS MANUAL BEFORE ATTEMPTING TO OPERATE THIS SYSTEM.

<u>EDG, LLC</u> shall not be liable for any damage, personal injury or reduced system performance caused by a failure to follow the instructions provided in this manual, nor when caused by failure to follow standard industry work practices or adherence to appropriate safety guidelines.

The installation of photovoltaic systems is "governed" by local building jurisdictions, which typically use the National Electric Code (NEC), and in particular NEC articles 690, and 705, as their guideline for electrical inspection requirements. NEC Article 690 provides rules for safe installation of PV systems including accepted system components. All components used in the installation of this system shall be listed to the appropriate Underwriters Laboratories Standards. All personnel supervising the installation or repair of a photovoltaic system should be familiar with and understand the provisions of the National Electric Code.

PROJECT DEPICTION



2.2 Project Description

Power System for the EDG-004 4.7744MW PV Array consists of the following system components:

| Component | Manufacturer | Model | Quantity | | | | |
|---------------------------|-------------------------------------------|---------|----------|--|--|--|--|
| PV Module | LG | 390W | 11,936 | | | | |
| PV Inverter | SunGrow | 60KU-M | 57 | | | | |
| MV Transformer | | 2000kVA | 2 | | | | |
| Obvius Weather Station | Wireless Meteorological data collector | 2 | 1 | | | | |

STC = Standard Test Conditions of irradiance of 1000 watts/meter², Air Mass 1.5 spectrum, and cell temperature of 25° C (77° F) also known as factory test conditions.

PTC = PVUSA Test Conditions of irradiance of 1000 watts/meter², Air Mass 1.5 spectrum, ambient temperature of 20° C (68° F) at 1 meter/second wind speed 10 meters above grade.

3.0 SYSTEM DESCRIPTION

The Solar Power System converts sunlight into electricity to provide clean, reliable, longlasting renewable energy to meet local electrical loads and offset utility power consumption.

3.1 System Components and Descriptions

The Solar Module

The Solar Modules are ridged glass solar electric panels designed to serve the needs of renewable power generation. The wiring interconnecting all of the PV modules is rated for wet, outdoor, and full-sun conditions, with quick-connectors to meet the National Electrical Code (NEC) 2014 requirements.

String Inverters

The Inverters provide a connection point for the solar modules and meets the NEC 2014 requirement for series fusing of solar modules. Multiple panels are connected in series to produce one source circuit with the correct inverter DC input voltage. Each source circuit is connected at 1000 VDC. The Inverter is used to connect these multi-panel series strings together in parallel in accordance with the NEC and best industry practices.

The DC Disconnect Switches

The direct current safety switch provides a means for disconnecting the solar array from the inverter and meets the NEC disconnecting requirement.

The AC Panelboards

There are one panelboard connecting to 57 string inverters. In the panelboard, there is a three pole, 100 amp circuit breaker for each inverter.

The Utility Interface

The utility interface equipment consists of the utility required locking disconnect switch, metering, transformers and relays necessary for interconnection of the renewable energy system.

User Serviceable Parts

There are no user serviceable parts.

Substitute Parts

Never use substitute parts.

4.0 SYSTEM OPERATION

This section applies specifically to the Photovoltaic system installed at **60 Winchendon Rd, Royalston, MA 01368.**

4.1 WARNINGS

- The equipment contains lethal DC and AC voltages.
- Only authorized personnel are permitted site access.
- These instructions are only for use by qualified personnel.
- Equipment power is supplied from multiple sources.
- The inverter contains energy storage devices that require 15 minutes to safely discharge lethal voltages.

4.2 SITE SAFETY PROCEDURES

All personnel operating, maintaining and repairing the Solar Power System must follow the specific safety procedures in this manual and general electrical safety practices.

4.3 NOMINAL OPERATING PARAMETERS

The following list of parameters gives a general description of the photovoltaic system and equipment for the system installed at **60 Winchendon Rd, Royalston, MA 01368**.

| 66 kWac |
|------------------|
| 480 Vac, 3ø |
| 80 Aac |
| 60 Hz |
| |
| 480 Vac, 3 phase |
| |
| 2000 kVA |
| 13.2 kV, 3ø |
| 13.2 kV |
| |

4.4 INVERTER MANUAL START and RESTART

Under normal operation, when there is sunlight on the solar array, the inverter will take the DC power produced by the array, convert it to AC power and feed it to the medium voltage step-up transformer. Produced power will feed to the utility grid.

The inverter has three modes of operation:

- 1. Power Tracking This is the normal operating mode with the inverter supplying power from the solar array to the grid.
- 2. Sleep Mode The inverter is in this state at night when there is insufficient array power to operate.
- 3. Fault This represents an abnormal condition.

The output of the solar array depends on the amount of sunlight. Clouds, temperature, dust and dirt, shading time of day and season will all affect the power produced.

Note: Even at low sunlight and power levels, the solar array voltage will be close to its normal operating or open circuit voltages of up to 1000 volts DC.

At night, the inverter will switch to the sleep mode and wait until the solar array voltage rises to the preset inverter start voltage the next morning. At this point, it will automatically "wake up" and begin drawing power from the array.

If the inverter detects an abnormal condition, it will shut down and go to the fault mode. Depending on the error detected, the unit may re-start automatically or may require a technician to reset the unit manually.

The inverter gets its control power from the grid. If the grid is disconnected from the inverter or if there is a grid power failure, the inverter will not operate. When the grid power failure is connected and grid power is at the proper voltage and frequency, the inverter will restart automatically.

Energizing the Solar Power System

- 1. Remove any lock-out devices on the disconnect switches.
- 2. Close (turn on) the 100 amp circuit breaker at the utility service panelboard.
- 3. Close (turn on) the AC disconnect switch.
- 4. Turn on the inverter DC switch located on the front of the inverter. Wait for inverter to power up. See Inverter Manual for specific information. Confirm that there are no alarm indications. There is a 5-minute delay before the inverter will go into the Power Tracking mode if DC power is available from the solar array and grid voltage is correct.
- 5. Close (turn on) the DC disconnect switches.
- 6. The system is now operational.

Inverter Manual Shutdown

- 1. Turn off the inverter switch. **Caution:** The capacitors in the inverter will still be energized for a period of time after shutdown.
- 2. Open (turn off) the DC disconnect switches. **Caution:** The solar array source circuits within the combiner boxes and on the array side of the disconnect switch will remain energized. High voltage will still be present.
- 3. Open (turn off) the AC disconnect switch.
- 4. Open (turn off) the circuit breaker at the utility service panelboard.
- 5. Install lock-out devices and tags on the disconnect switches.

5.0 SYSTEM TESTING AND COMMISSIONING

IMPORTANT - Read and understand this entire manual before performing system commissioning. System commissioning is to be performed only by authorized personnel with knowledge and experience with photovoltaic power systems.

PV System hardware - Inverter and related equipment

- 1. Ensure all point of interconnection conduit, fittings, conductors and terminations are correct.
- 2. Ensure PV system ground is tied to the electrical grounding system.
- 3. Utility disconnect switch installed near kWh meter.
- 4. Utility disconnect switch is of a "visible and lockable" type required by local utility.
- 5. Utility disconnect switch conduit, fittings, conductors, and ground are correct.
- 6. System kWh meter installed correctly.
- 7. AC disconnect switch current and voltage ratings are correct per single-line diagram.
- 8. AC disconnect switch conduit, fittings, conductors, and ground are correct.
- 9. Inverter installed correctly per manufacturer's installation manual.
- 10. Inverter conduit, fittings, conductors and ground are correct.
- 11. Fuse box installed correctly.
- 12. Fuse box current and voltage ratings are correct.
- 13. Fuse box conduit, fittings, conductors and ground are correct.

PV system hardware - PV modules and array

- 1. PV panel location meets intent of plans.
- 2. PV panels are clean and undamaged.
- 3. PV panels are secured correctly to the support structure.
- 4. PV array junction and/or combiner boxes installed correctly.
- 5. PV panel conductors and grounds are correct per single-line diagram.

PV System Operational Checks (to be completed during consistent sunlight)

- 1. Isolate each PV source circuit (remove fuses and/or open DC disconnect switch).
- 2. Verify system grounding.
- 3. Measure and record Voc (open circuit voltage) for each source circuit. Check polarity of each source circuit during these voltage measurements.
 - Note: Open circuit voltages should be between 334 VDC and 1000 VDC (depending on module temperature) and each voltage should be within ±5% of predicted design values.
- 4. Check for ground faults in the isolation transformer, circuit breakers and fused disconnects.
- 5. Verify voltages and polarities at DC and AC disconnect switches while open.
- 6. Power up inverter per inverter's installation manual start-up procedures and allow inverter to reach a steady operating power level (approx. 5 minutes). Perform inverter operational tests including local operation, control, wake-up and sleep separation.

7. Measure and record operating current of each source circuit using a clamp-on DC Amp meter.

Note: If array is clear of shade, all currents should be within +/- 5% of each other.

6.0 DAILY OPERATIONS

- 6.1 8:00am Procedures (remote)
 - 1. Perform daily/weekly system maintenance
 - 2. Review prior day's logs for system alerts (multiple days if holidays or weekends intervened)
 - 3. Review security footage
 - 4. Examine maintenance logs and schedules. Schedule upcoming maintenance.
 - 5. Confirm system interface with Massachusetts Production Tracking System (PTS)

6.2 11:00am Procedures (remote)

- 1. Verify expected output vs. actual output
- 2. Record Variance
- 3. Monitor system alerts

6.3 3pm Procedures (remote)

- 1. Verify expected output vs. actual output
- 2. Record Variance
- 3. Monitor system alerts

7.0 SYSTEM MAINTENANCE

IMPORTANT Read and understand all safety precautions and warnings. This is a high voltage power plant. Do not attempt any activity without a complete understanding of what you are doing. Follow appropriate lock-out/tag-out procedures before performing any maintenance.

The solar electric system is automatic and requires very little maintenance. However, regular maintenance and trouble-free operation go hand-in-hand.

7.1 Grounds Maintenance (Quarterly)

- Visually inspect perimeter fencing for damage. Report to EDG, LLC as observed.
- Mechanical vegetation control if average height is higher than 12 inches.
 - o Late May
 - o Late August
- Review security footage.

7.2 Electrical System Maintenance

7.2.1 Daily

• Monitor alerts from array monitoring system indicating a situation requiring urgent action. If alerts are present, see Section 9.0.

7.2.2 Weekly

- Review performance data from monitoring system, comparing actual generation with predicted and historic data.
- Examine data for evidence of string failures.

7.2.3 Monthly Maintenance

- Visually inspect the solar array for dirt, dust and other debris. Clean as necessary.
 - See Section 8.0 for Cleaning Protocol
- Perform the inverter monthly maintenance (see inverter manufacturer's manual).

7.2.4 Every 6 Months

- Visually inspect the solar array for dirt, dust and other debris. Clean as necessary.
- Perform the inverter 6-month interval maintenance (see inverter manufacturer's manual).

7.2.5 Every 12 Months

- Visually inspect the solar array for dirt, dust and other debris. Clean as necessary.
- Perform the inverter 6-month interval maintenance (see inverter manufacturer's manual).
- Measure and record source circuit currents at the combiner boxes for all panels using a DC current clamp. Record irradiation and temperature for each combiner box at the time of measurement.

7.2.6 Year 15

• Prepare for Inverter replacement

8.1 SOLAR PANEL CLEANING & GROUNDS MAINTENANCE PROTOCOL

IMPORTANT WARNING -

Solar panels produce high voltage dc electricity and should only be cleaned, serviced and maintained by qualified, trained personnel.

Do not climb or walk on solar panels.

Never work unassisted on a solar array. Always work with skilled assistants who have successfully completed safety, first aid and CPR training.

Do not use sharp tools or objects. Extra care should be taken to make sure cleaning does not cause physical damage to the solar panels.

Soiling of the surface of the solar panels with dust, dirt and other debris can block full sunlight from the solar cells and reduce system performance. The amount of soiling varies with local conditions.

At locations with extended dry periods, excessive accumulation of dust, dirt and pollutants may occur necessitating cleaning of the solar roofing system to improve performance and for aesthetic reasons. The solar panels can be hosed clean with plain water using water pressure ranging from **20 to 50 psi**. Washing must be done only when the solar panels are cool. The best time to wash the panels is the early morning.

- Do not wash the panels when they are hot from the sun.
- Do not wash the panels at night.
- Do not direct the water at electrical equipment.

8.1 PANEL WASHING

- Washing will be scheduled in <u>early June</u> and <u>late October</u>.
- Washing hours will be 4am to 7am in June and 5am to Sam in October
- Best efforts will be taken to assure washing occurs more than seven days after most recent significant rainfall.
- Pressure washing truck with minimum <u>300 gallon tank</u> and pressure capability of at least <u>20 PSI</u> to be used.
- Minimum rear tire width of 265mm
- Driver will operate vehicle at less than 5 mph within solar field. Each inter-row space will be traversed in order (either south to north, or north to south).
- Wherever possible, driver will utilize gravel access pathways.
- Washing operator will direct pressurized water to panels from top to bottom, covering each panel with pressurized water.
- No detergents will be used.
- Truck refueling and water reservoir recharge will take place off site.
- Water shall NOT be directed at inverters, junction boxes, transformers or the underside of panels.

8.2 GROUNDS

- o Grass to be mowed only by tractors with less than 6-foot cutting diameter.
- Vegetation mowed minimally to standard as noted in Section 7.1
- Hand-held trimmers to be used around inverters, transformers and exposed junction boxes or wire conduits.

9.0 TROUBLESHOOTING AND REPAIR

Contact EDG, LLC_BEFORE attempting any repairs.

The solar electric power system is designed to be reliable and requires no user adjustments. System troubleshooting requires understanding the system configuration and components. Troubleshooting should only be performed by technicians with grid connected photovoltaic power system experience.

FIRST: Always look for open circuit breakers, blown fuses and loose wires.

Inverter alarm is tripped:

1. Follow the inverter manufacturer's manual troubleshooting instructions. If the alarm clears, attempt to restart the inverter. If the alarm persists, check the items listed below.

Inverter will not turn on:

- 1. Check that all AC disconnect switches are ON (closed).
- 2. Make sure all enclosure doors are closed tightly (some inverters have door sensors that will prevent the inverter from running if a cabinet door is left open).
- 3. Check the utility line voltage at the inverter's AC disconnect switch.
- 4. Check fuses in the AC disconnect switch(es).

Inverter does not produce power or power is low for existing conditions:

- 1. Check inverter display for fault indications.
- 2. Check that the DC disconnect switch is ON (closed).
- 3. Check the DC voltage from the array at the DC disconnect switch.
- 4. Check fuses in the DC disconnect switch.
- 5. Check solar panels for heavy dirt, debris, dust accumulation or shading.
- 6. Check for damaged solar panels.
- 7. Check fuses in the combiner boxes. **DO NOT check fuses under load** power down the inverter and open the DC disconnect switch before checking fuses in the combiner boxes.

Panel string voltage not as predicted:

- 1. With AC power off, disconnect the solar panel at the roof junction box and measure panel open circuit voltage (Voc).
- 2. If panel Voc is incorrect, contact EDG, LLC for instructions.
- 3. If panel Voc is correct, test the homerun wire to the Combiner Box for opens, shorts or incorrect resistance reading. If wiring is bad, ensure that all conduit and conduit fittings are in good condition and replace the bad wire with new wire.

10.0 STARTUP/SHUTDOWN PROCEDURES

EDG - 004 - Royalston PV Array

NOTE: Shutdown to be done by non-EDG, LLC personnel only during an emergency.

Normal Startup

Close the following in order:

- 1. 1. Press the ON button on the Recloser Control cubicle operator panel, confirm that the position LED is lit and complies with the position indicator onboard the recloser.
- 2. Press the red CLOSE push button and confirm that the recloser closes and the CLOSED LED is lit.
- 3. Move GOAB 600A Main Breaker into CLOSED position.
- Move switchboard Individual Breakers Connecting Inverters into CLOSED position.
- 5. Move inverter AC Circuit Breaker in Panelboard into CLOSED position.
- 6. Move inverter DC Disconnect into CLOSED position.

Normal Shutdown

Open the following in order:

- 1. Move inverter DC Disconnect into OPEN position.
- 2. Move inverter AC Circuit Breaker in AC Panelboard into OPEN position.
- 3. Move switchboard Individual 60 amp Breakers Connecting Inverters into CLOSED position.
- 4. Move GOAB 600A Main Breaker into CLOSED position.
- 5. Press the green trip button on the Reclosure Control Panel and confirm the recloser opens, the OPEN LED is lit and the indicator shows the correct status.

CONTACT: EDG, LLC 2885 Route 9 N Howell, NJ 07731 Phone: 732-370-1446

11.0 EMERGENCY RESPONSE PROCEDURE

- 1. Ascertain nature of the emergency
 - Police
 - Trespassing
 - o Theft
 - o Vandalism/Physical Damage
 - o Other Crime
 - Fire
 - o **Injury**
 - o Fire
 - o Smoke
 - Electrical Arcing
 - Hazardous Materials
 - Electrical
 - o Damaged Wires
 - o Damaged Inverters
 - Damaged Transformers
 - Grid Related Issues
- 2. Contact appropriate responder below
- 3. Notify EDG, LLC
- 4. If required Initiate Emergency Shutdown (Front and Back pages)
- 11.1 <u>Police</u>

Town of Royalston Police Department 1 Athol Rd, Royalston, MA 01368 <u>978) 249-5838</u>

11.2 <u>Fire</u> Town of Royalston Fire Department 3 Athol Rd, Royalston, MA 01368 (978) 249-8138

11.3 <u>Electric</u> National Grid 1-800-233-5325 or 911

11.4 <u>Owner's Contact Information</u> EDG, LLC 2885 Route 9 N Howell, NJ 07731 Phone: 732-370-1446

ITEM NO. 7

*



Bk: 58337 Pg: 204 Page: 1 of 2 01/19/2018 10:56 AM WD

QUITCLAIM DEED

Infiniti Energy Services LLC, a New Jersey limited liability company having an address of 2885 Route 9 North, Howell, New Jersey 07731

for consideration paid and in full consideration of Less Than One Hundred Dollars (\$100.00)

Grants to Energy Development Group LLC, a New Jersey limited liability company having an address of 2885 Route 9 North, Howell, New Jersey 07731

WITH QUITCLAIM COVENANTS

A certain parcel of land situated on the southerly side of Winchendon Road in the easterly part of Royalston, Worcester County, Massachusetts, bounded and described as follows:

Beginning at the northeasterly corner thereof at a corner of walls in the southerly line of Winchendon Road, at land now or formerly of one Adams and formerly of one Hutchinson, said corner of walls being located 248 feet westerly of a wall marking the division line between former owners of Hutchinson and on Leathe or about 1545 feet westerly of New Boston Road;

Thence South 6° West by land now or formerly of one Adams about 2100 feet to a stonewall in line of other land now or formerly of one Adams;

Thence North 83° West by a stonewall by land of said Adams 550 feet to a corner;

Thence North 7° East by land formerly of C. E. Putitorak, Inc., about 2155 feet to a corner of walls in the southerly line of Winchendon Road;

Thence South 76 ¹/₂° East by the said line of said road 528 feet to the place of beginning.

Containing 26 acres, more or less.

Property Address: 60 Winchendon Road, Royalston, MA 01368

Being the same premises conveyed to the Grantor by deed dated December 8, 2017 and recorded with the Worcester District Registry of Deeds in Book 58226, Page 335.

Grantor hereby certifies that no member of the LLC has an ex-spouse or civil union partner who occupies or intends to occupy the land as a principal residence or is entitled to claim the benefit of an existing estate of homestead in the property by court order or otherwise.

This does not constitute all or substantially all of the assets of Grantor located in the Commonwealth of Massachusetts.

Client Files/43816/0008/02621848.DOC

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IN WITNESS WHEREOF, the said Infiniti Energy Services LLC has caused these presents to be signed, sealed, acknowledged and delivered in its name and behalf by Michael Garofalo, Manager hereby duly authorized this 22 day of December, 2017.

Infiniti Energy Services LLC

By:

Michael Garofalo, Manager

STATE OF NEW JERSEY

Ocean County:

On this 22 day of December, 2017 before me, the undersigned notary public, personally appeared Michael Garofalo, proved to me through satisfactory evidence of identification, which was photographic identification with signature issued by a federal or state governmental agency, oath or affirmation of a credible witness, personal knowledge of the undersigned, to be the person whose name is signed on the preceding or attached document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his knowledge and belief and acknowledged to me that he signed it voluntarily for its stated purpose as Manager of Infiniti Energy Services LLC.

My Commission Expires:

DARA IPPOLITTO NOTARY PUBLIC OF NEW JERSEY My Commission Expires 5/24/2021

Client Files/43816/0008/02621848.DOC

Residential Property Record Card

| | | Parcel ID: | 255/011.0-0 | 0077-0000.0 | MAP: | 011.0 | BLOCK: | 0077 | LOT: | 0000.0 | Parce | Addres | ss: 60 V | INCHENDO | N RD. | FY: | 2017 | | |
|-----------------|-----------|---------------|-------------|---------------|--------------------|------------|--------------------|------------|--------|------------------------|------------|-----------|-----------------------|---------------|--------|-------------|---------------|--------|------------|
| PARCEL INFO | RMATIO | N | ι | Jse-Code: | 101 | S | Sale Price: | 1 | 83,500 | Book: | | 3523 | 8 | Road Typ | e: | т | Inspect Date |); | 10/05/2011 |
| Owner: | | | Tax Class: | | т | Sale Date: | | 12/06/2004 | | Page: | | | | Rd Condition: | | Р | Meas Date: | | |
| TOURIGNY, A. | CRAIG | | Ţ | ot Fin Area: | 1424 | Sale Type: | | P | | Cert/Doc: | | QUITCLAIM | | Traffic: | | М | Entrance: | | |
| Address: | | | Т | ot Land Area: | 20.000 | S | Sale Valid: | Y | | | | | | Water: | | IW | Collect Id: | | |
| 186 WILLARD | RD | | 5 | Sewer: | 100 | | Grantor. POULIN | | OULIN | A Company of the State | | | | Sewer | | SP | Inspect Rea | s: | м |
| ASHBURNHA | M MA 0143 | 0-1426 | E | Exempt-B/L% | 0/0 | F | Resid-B/L% 100/100 | | 00/100 | Comm-B/L | n-B/L% 0/0 | | Indust-B/L% | | 0/0 | Open Sp-B/I | L% | 0/0 | |
| | | 1 | RESIDEN | CE INFORMATIO | N | | | | | | | | | LAND | NFORMA | TION | | | |
| Style: | CN | Tot Rooms: | 3 | Main Fn Area | : 1088 | A | ttic: | S. V | NBH | ID CODE: | 3 | | NBHD C | LASS: | | ZONE: | R1 | | |
| Story Height: | 1.50 | Bedrooms: | 1 | Up Fn Area: | 336 | B | smt Area: | | Seg | Туре | Cod | 0 | Method | Sq-Ft | Acres | Influ-Y/N | Value | Class | |
| Roof: | G | Full Baths: | 1 | Add Fn Area: | | Fr | n Bsmt Area: | 1280 | 1 | P | 101 | | A | | 3.000 | Ν | 37,152 | | |
| Ext Wall: | WS | Half Baths: | 1 | Unfin Area: | 408 | 8 | smt Grade: | | 2 | R | 101 | | A | | 17.000 | Ν | 11,900 | | |
| Masonry Trim: | | Ext Bath Fix: | | Tot Fin Area: | 1424 | Fo | oundation: | CB | 5.03 | | | | DETA | CHED STR | UCTURE | INFORMAT | ION | | |
| Bath Qual: | т | RCNLD: | 81693 | Kitch Qual: | т | Ef | ff Yr Built: | 1970 | Str | Unit | Msr | 4 | Msr-2 | E-YR-Blt | Grade | Cond | %Good P/F/E/R | Cost | Class |
| Mkt Adj: | | Heat Type: | FA | Ext Kitch: | | Y | ear Built: | 1970 | SE | S | 10 | | 40.00 | 1950 | A | F | ///33 | 1,500 | |
| Sound Value: | | Fuel Type: | 0 | Grade: | А | C | ost Bldg: | 89,900 | SE | S | 10 | | 8.00 | 1940 | A | F | ///33 | 300 | |
| Fireplace: | 1 | Bsmt Gar Cap | | Condition: | A | A | tt Str Val1: | | PA | С | 1 | | | 2005 | A | А | ///94 | 1,000 | 1 |
| Central AC: | | Bsmt Gar SF: | | Pct Complete | ete: Att Str Val2: | | | | | | | | VALUATION INFORMATION | | MATION | | | | |
| Att Gar SF: | | %Good P/F/E | R: | 1//75 | | | iter i state | | Curr | ent Total: | 141, | 800 | Bldg: | 92,700 | Land: | 49,100 | MktLnd: | 49,100 | |
| Porch Type E | | Porch Area | | Porch Grade | Factor | | | | Prior | r Total: | 143, | 100 | Bldg: | 95,100 | Land: | 48,000 | MktLnd: | 48,000 | |

Photo

Sketch



No Picture Available

| RENEY, MORAN, & TIVNAN REGISTERED LAND SURVEYORS 75 HAMMOND STREET - FLOOR 2 WORCESTER, MA 01610-1723 PHONE: 508-752-8885 FAX: 508-752-8895 RMTCHSTGROUP.NET A Division of H. S. & T. Group, Inc. | MORTGAGE INSPECTION PLAN NAME INFINITY ENERGY SERVICE, LLC LOCATION 60 WINCHENDON ROAD ROYALSTON, MA SCALE 1" = 400' DATE 12/14/2017 | JOB # 12-3; |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| REGISTRY WORCESTER SOUTH BASED UPON DOCUMENTATION PROVIDED, REQUIRED MEASURE- MENTS WERE MADE OF THE FRONTAGE AND BUILDING(S) SHOWN ON THIS MORTGAGE INSPECTION PLAN, IN OUR JUDGEMENT ALL VISIBLE CASEMENTS ARE SHOWN AND THERE ARE NO VOLATIONS OF ZONING REQUIREMENTS ARE SHOWN AND THERE ARE NO VOLATIONS OF ZONING IUNLESS OTHERWISE NOTED IN DRAWING BELOW). NOTE: NOT DEFINED ARE ABOVEGOUND POOLS, DRIVEWAYS, OR PLAN: NOT AN INSTRUMENT SURVEY, DO NOT USE TO ERECT FENCES, OTHER WISE NOTED IN DRAWING BELOW). LOCATION OF THE STRUCTURES, OR TO PLANT SHRUBS. LOCATION OF THE STRUCTURES, SHOWN HEREON IS ETHER IN COMPLANCE WITH LOCAL ZONING FOR PROPERTY LINE OFFSET REQUIREMENTS, OR IS EXEMPT FROM VOLATION ENFORCEMENT ACTION UNDER MASS. GL. TITLE VIL CHAP. 40A, SEC. 7, UNLESS OTHERWISE NOTED. INS CERTIFICATION SA SEC. 7, UNLESS OTHERWISE NOTED. INS CERTIFICATION THAT THE MESUREMENTS. ADOVE CERTIFICATIONS ARE MADE WITH THE PROVISION THAT THE INFORMATION PROVIDED IS ACCURATE AND THAT THE MESUREMENTS. | DEED BOOK/PAGE 35238/103 PLAN BOOK/PLAN 676/52 WE CERTIFY THAT THE BUILDING(S) ARE NOT WITHIN THE SPECIAL FLOOD HAZARD AREA. SEE HUD MAP: 0108 DTD 06-15-83 FLOOD HAZARD ZONE HAS BEEN DETERMINED BY SCALE AND IS NOT NECESSARILY ACCURATE. UNTIL DEFINITIVE PLANS ARE ISSUED BY HUD AND/OR A VERTICAL CONTROL SURVEY IS PERFORMED, PRECISE ELEVATIONS CANNOT BE DETERMINED. | 28-17 |
| PORCH STRUCTURE HOUSE SHED # 60 | BURCHERDOOR ROAD Savoratesattiture Hastiar Hastiar Burgars Burgars | |
| REQUESTING OFFICE: FLETCHER TILTON, P.C. REQUESTED BY: | DRAWN BY: JV CHECKED BY: | |