

The MLP Residential Solar Rebate Program

Contractor Information

The Department of Energy Resources (DOER) has partnered with certain Municipal Light Plants (MLPs) to offer a rebate program for the installation of solar photovoltaic systems in MLP service territories. The DOER and the participating utilities will offer rebates of \$1.20 per watt, up to 50% of system costs, on installations of 25 kW DC or less. DOER and participating MLPs will each provide half of the funding for these rebates. Energy New England will work on behalf of MLP's to administer the program.

Eligibility

- The applicant must be the installer or the property owner
- The project site must be within the municipal utility's service area
- The solar panels must be installed by a professional, licensed contractor
- The DOER caps projects at 25 kW but check with your municipal utility, as some restrict the size
- The solar project must meet technical, installation, and equipment requirements outlined in the program manual
- All installations must use a Locus Production Meter

Program Term

DOER grant funds will be available from the program start date until either funds run out or June 30, 2020.

Completing the Application Process

You will need to complete the required paperwork to both interconnect to the local electric distribution system and for the rebate program. Visit your local utility's website for information, requirements and documentation needed to install residential solar in your town. In addition, your local utility may have additional program requirements and restrictions.

1. Complete the paperwork and requirements for your local utility
2. Submit request to your local utility and get permission to construct
3. Complete the paperwork required for the rebate and provide to the utility
4. Upon approval (Award Reservation) proceed with installation and interconnection
5. Submit required documents for Validation Request
6. Receive rebate award

Document Checklist

Reservation Request:

- ✓ Utility Solar Application, and documents required by the utility
- ✓ Municipal Solar Rebate Application

- ✓ Participant's Agreement (includes Renewable Energy Certificate Assignment)
- ✓ Proof of Property Ownership (Deed, tax bill)
- ✓ Copy of signed Contractor/Homeowner Agreement
- ✓ Shading Analysis (Use your own tool or the DOER's dual-use shading analysis tool: <https://s3.us-east-2.amazonaws.com/bluewave-shade/jan31-1545/index.html>)

Validation Request:

- ✓ Certificate of Completion
- ✓ Project Completion Form (provided by DOER upon reservation award)
- ✓ Evidence of utility authorization to interconnect and permission to operate
- ✓ Evidence Locus production meter has been installed and is communicating
- ✓ Locus Meter Connection Form
- ✓ Change Request Form (if applicable) (provided by DOER upon reservation award)
- ✓ Invoice from installer

Forms

Municipal Light Plan Solar Rebate Application: Application for the rebate reservation.

This form contains necessary information about the project.

Participant's Agreement: The applicant signs this agreement to adhere by the program's terms. As part of this agreement the customer will assign any Renewable Energy Credits created by their systems to their local municipal utility in exchange for the rebate.

Project Completion Form: Provided by the DOER upon reward reservation. This form is completed and returned upon validation request.

Change Request Form: Provided by the DOER upon reward reservation. This form must be provided for any changes in technical or site conditions from the original application.

Locus Meter Connection Form: Information and picture of activated Locus meter so that ENE can set up customer account and connect to meter.

Production Metering Requirements

Energy New England will be requiring that all systems use Locus for the production meter and Data Acquisition Service (DAS). Locus has provided pricing based on estimated quantities of this program. In addition, you must pay for 10 years of monitoring/cell service up front directly to Locus. There is a five year warranty on the Locus production meter.

Contact Amy Atwood @ amy.atwood@alsoenergy.com or Jeff Muench @ jeff.muench@alsoenergy.com and request a quote for the **LGate120-LTEEx-ENE**. Provide quantity and shipping address.

Order:**LGate120-LTEEx-ENE**

- 10 Years of Revenue Grade PV Production Monitoring
- 10 Years of 4G LTE Cellular Connectivity

Item #	Description	Price
R-LGate120-LTEEx-Meter-UL	Locus - UL Single-Phase Revenue Meter	\$305.00
R-LGate120-LTEEx-Kit	Locus - LGate120-LTEEx-Kit	
R-LGate120-LTEEx-Board	Locus - LGate120-LTEEx-Board	
R-LTE Cell-SIM	Locus - Sim Card for LTEEx Meter	\$ 5.00
R-PDM-10YR	Locus - Software - Residential PV Production Monitoring 10 Years	\$300.00
R-CPLAN-LTE-PWS-1MB-10 YR	Locus - Cellular Plan - 1Mb/month from Premier Wireless - 10 Years	\$120.00
Total		\$730.00

Pricing does not include tax and shipping.

LGate120-LTEEx install guide:

<http://help.locusenergy.com/hardware/residential-hardware/lgate-120-installation-guide>

Link to get access to the entire help center. Lots of useful articles and videos here:

<http://help.locusenergy.com/>

Procedures for Locus Meter Account and Connection

Contractors will need to complete the Locus Meter Connection Form and supply ENE with a picture of the powered-on meter showing the MAC ID. Contractors that wish to have access to the meter will need to have a Locus account or will need to contact Also Energy to create an account. ENE will be the administrator on the account, will set up the account and then allow the contractor agency access.

Homeowners will be given access to the My Locus Android Google Play App, that can be access with their email address (provided on the rebate application) and the password 'welcome'.

LGate 120 -LTEEx Commissioning guide:

<https://help.locusenergy.com/hardware/residential-hardware/lgate-120-commissioning-guide>

Technical Requirements

These requirements are not intended to be all- encompassing, nor to be a substitute for engineering specifications or for safety requirements. Site-specific conditions and/or local regulations may require additional requirements not contained hereto. DOER reserves the right to withhold payment to any project that does not satisfy the Minimum Technical Requirements.

Minimum Design and Estimated Production Requirements
<p>The PV project must be designed to meet the following specifications:</p> <ul style="list-style-type: none"> • Have an azimuth between 90 and 270 degrees • Demonstrate that its expected output will be reduced by no more than 20% due to shading <p>A shading analysis is required at the time of application to ensure the system will meet the 80% of optimal output requirement outlined in Attachment C-MLP Solar Rebate Program Technical Requirements. Solmetric SunEye, Solar Pathfinder, Wiley ASSET software, Aurora software with LIDAR data available, Bright Harvest, Scanify, or other DOER approved shading analyses will be accepted. For examples of what DOER requires, please see our: Example Solmetric SunEye and Example Solar Pathfinder and Example Aurora and Example Bright Harvest and Example Scanify.</p> <p>Please contact DOER at DOER.MLPSolar@mass.gov prior to submitting a shading analysis that is not listed above.</p>
Installation Requirements
<p>The PV project electrical work must be performed by a Massachusetts licensed electrician.</p> <p>The PV project must be installed according to the manufacturer's instructions and in compliance with all applicable codes and standards including:</p> <ul style="list-style-type: none"> • Local, state, and/or federal building and electrical laws, codes and practices. • All pertinent permits and inspections must be obtained, and copies kept on file as may be required by local codes and/or state law.
Additional Solar PV Equipment Requirements
<p>The equipment and components that comprise the PV project must have the following characteristics:</p> <ul style="list-style-type: none"> • All electrical equipment funded in part or in whole under this program must be new. • Underwriters Laboratory (UL) listed and compliant with Institute of Electrical and Electronics Engineers (IEEE) standards, or other nationally recognized testing laboratory standards (e.g. CSA, ETL, TUV, etc). <ul style="list-style-type: none"> ○ All photovoltaic modules must be certified by a nationally recognized testing laboratory as meeting the requirements of the UL Standard 1703. ○ Inverters must be certified as meeting the requirements of IEEE 1547 and UL Standard 1741 SA. • Exceptions: <ul style="list-style-type: none"> ○ Reconditioned meters recertified to meet accuracy standards. ○ UL is not required, but is recommended, for PV projects operating at less than 30 volts.

Solar Loan Program

Participants in the MLP Solar Rebate program may apply for loans through Mass Solar Loan, run by MassCEC, and the Massachusetts Department of Energy Resources that connects homeowners with low-interest loans for residential solar projects.

<https://www.masssolarloan.com/>

Q&A

Q: Who is eligible for this program?

A: Customers of the participating municipal utilities that **own** the property/project site.

Q: When does the program start and end?

A: Projects must have a commercial operation date of November 27, 2018 or later. Projects that were interconnected before this date are not eligible. The Municipal Solar Rebate Program ends when available funding runs out or June 30, 2020, whichever comes sooner.

Q: What properties/sites are eligible for PV projects?

A:

1. The property/site's shading must be less than 20%.
2. It must have an azimuth between 90 and 270 degrees.

Q: What are the PV system's requirements?

A: Your system must be equal to or less than 25 kW DC. Some utilities have additional size restrictions, so make sure you check with your utility.

Q: Can the customer receive a rebate if they add on to a previous system?

Yes, as long as the addition meets all requirements and the combined size of the new and old PV does not exceed the 25-kW size limit. For example, if you have an existing 10 kW DC system, your new project must not exceed 15 kW DC, because $10 + 15 = 25$. The new system will also need to be separately metered from any existing systems to ensure appropriate reporting of the rebated system's output.

Q: How much of a rebate can a customer receive?

A: The rebate amount is \$1.20 per Watt of PV capacity of the project, not to exceed 50 % of the project's cost. Some MLPs may pay an additional incentive, so check with the local utility.

Q: Who completes the application?

A: The installer will assist the customer in completing the application. The customer will be responsible for providing the contractor with documents, securing inspections and appointments, and communicating with the town or utility to complete your application.

Q: How will the DOER communicate with the customer?

A: Program communication is electronic (email) only. No paper communications will be accepted. The customer and contractor must provide valid email addresses.

Q: Should the customer submit the application if most of the forms are completed?

A: NO. Submitting partially complete applications – anywhere in the process – will delay the application more significantly than if you waited for the outstanding documents. The application needs to be complete and correct by the time it enters the processing line. If it's not, the application gets yanked out of the line to await outstanding documents and is placed in the back of the line once those documents are received.

Q: Will the customer get a rebate if I start work on the project before the rebate reservation is secured?

A: All work completed before DOER sends the Award Reservation Letter is at the customer's own risk even if you have documentation that your project meets all listed requirements. Remember that rebate awards are affected by availability of funding. Funding is on a first-come-first-serve basis and many utilities have funding caps.

Q: When is a project considered complete?

A: Technically, when DOER reviews and accepts the Project Completion Form and accompanying documentation. The following must be complete:

- ✓ Installation and interconnection
- ✓ An invoice from the installer
- ✓ Post-install inspections required by town and/or utility
- ✓ Letter of Approval (from utility) and permission to operate
- ✓ Project is operational
- ✓ Locus meter is installed and operational

Q: Is there a deadline for approved project to be completed?

A: Yes. You have one (1) year to complete the project once DOER approves it.

Q: Are there any loans available for the part of the system that isn't rebated?

A: Residents can get loan assistance from MassCEC. <https://www.masssolarloan.com/>

Q: What are the tax benefits to having solar installed?

A: You can find information about the federal tax credits for solar PV installations here: http://www.energystar.gov/index.cfm?c=tax_credits.tx_index#c3 and state tax credits here: <http://programs.dsireusa.org/system/program/detail/144>.
Or consult a tax professional.

Q: Will the customer receive Solar Renewable Energy Certificates (RECs)?

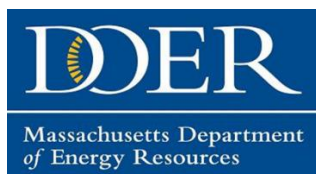
A: No, in order to receive the rebate, system owners must agree to sign over their Solar REC's to their local utility. The Renewable Energy Certificate Assignment and Aggregation Form provides the authorization to do so.

Q: What if I have questions during the process?

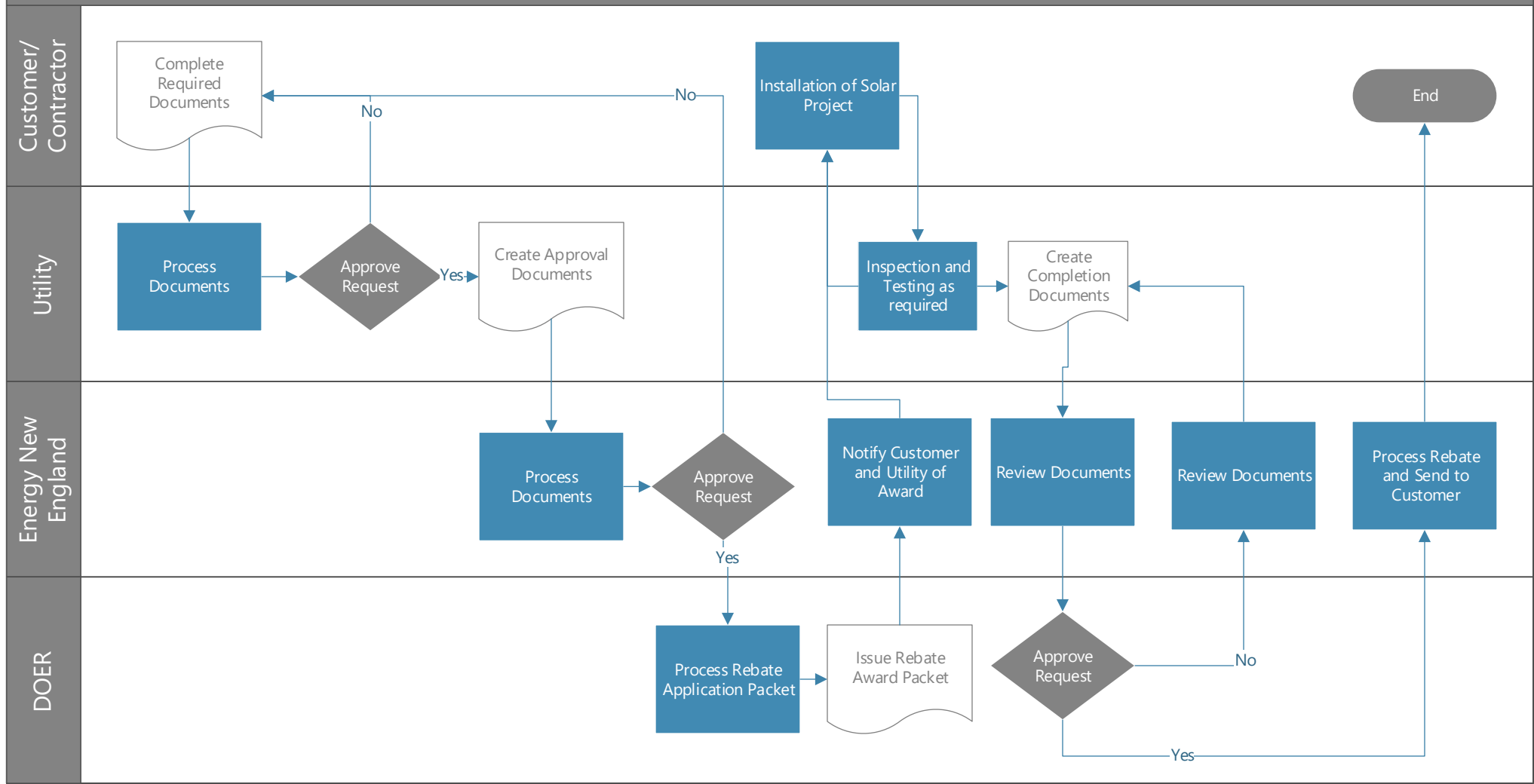
A: You can contact ENE at solar@ene.org or call 888-772-4242.



To contact DOER, email MLPsolar@mass.gov



Municipal Solar Program Workflow



Required Documents:

- Residential Solar Application and utility required documents
- Rebate Application
- Participants Agreement
- Proof of Ownership
- Homeowner/Contractor Agreement
- Shading Analysis

Approval Documents:

- Approval to Construct Notification
- Signed Interconnection Service Agreement

Rebate Award Packet:

- Award Reserve Letter
- Project Completion Form
- Change Request Form (if applicable)

Completion Documents:

- Certificate of Completion
- Project Completion Form - Signed
- Change Request Form (if applicable)
- Permission to Operate
- Locus Meter Evidence Form
- Invoice



MLP Solar Program Rebate Application



Application Directions

Massachusetts Department of Energy Resources (DOER) will award rebate money on a first come, first served basis. Incomplete or inaccurate applications will be returned to applicants for correction. Only completed applications will be processed.

Methods of completing and submitting the application:

All applications and accompanying documents must be submitted to your (Municipal Light Plant) MLP for approval. There are two options to complete the application: (1) download the .pdf and enter information into the form fields, or (2) print it, handwrite the information, and scan the completed form to submit via email. If you choose to fill it in by hand, print clearly. If you do not have access to a computer, you may designate another person to receive communications for you.

Form Field Information and Directions

Section A: Customer Information

MLP name:

Select the MLP where your system will be installed. If you do not see your MLP's name on the drop-down list, check with your MLP. Your MLP's name is located on your electric bill.

Name & address information:

This section is for the applicant's contact information. Section C asks for system location information. Homeowners installing a system in a secondary home or investment property will show differing address information between Sections A & C.

City/town information:

Participating towns are displayed in the drop-down menu. If your town isn't listed, simply type it in the subject field.

State & zip code information:

The state is already entered. Use your five digit zip code. The subject field will not accept more digits.

Email:

Do not leave this field blank. This program is digital-only. If we do not have your email, we cannot communicate with you. Additionally, add us (solar@ene.org) to your email contacts to ensure that our emails arrive in your inbox and not in spam or junk mail folders.

Phone:

We do not anticipate using the phone as a method of communication. We use it as an additional identifier for your application. No dashes needed.



Form Field Information and Directions

Section B: Installer Information

Name & address information:

Make sure that your installer fills out this information completely, including the town, state and zip code. Companies with corporate headquarters outside of Massachusetts are permitted, but the installing electrician must hold a MA license.

Installing electrician:

Enter the electrician's name exactly as it appears on their MA electrician's license.

Company contact person:

This should be a person who will respond quickly to questions or issues about your application. If they do not have a phone extension, leave it blank.

Section C: System Location Information

Street Address, unit #, city/town, & zip code:

If installing the system at a dwelling other than your primary residence, Section C's info should differ from that of Section A.

Facility Type:

If you are a homeowner, living in either a detached house or a residence with 1-3 residential units, the default selection for this field is correct - *Residential (three or fewer units per building)*.

Sections D, E, & F:

Your installer will complete sections D, E & F.

Section G: Massachusetts State Employee Question

Massachusetts state employees must consult the state's ethics commission before participating in this program.

Section H: Signature Page

You and your installer must print and sign your names and date the application.



MLP Solar Program Rebate Application



A. Property Owner Information

Utility Name: _____

(Select your utility from the drop-down menu.)

First Name: _____ Last Name: _____

Street Address: _____ Unit#: _____

City/Town: _____ State: _____ Zip code: _____

Email: _____ Phone: _____

The MLP Solar program is digital only. Applications with blank email field will be returned.

Unique identifier: _____
(electric account #)

B. Installer Information

Company Name: _____

Street address: _____ Unit #: _____

City/town: _____ State: _____ Zip code: _____

Installing Electrician's Name: _____

MA electrician license #:

Solar Application Contact Person

First Name: _____ Last Name: _____

Email: _____

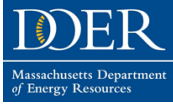
Phone: _____ Extension: _____

C. System Location Information (if different from property owner information)

Street address: _____ Unit #: _____

City/town: _____ State: MA Zip code: _____
(Type directly or select from drop-down.)

Facility Type: _____
(Select from drop-down if needed. Residents dwellings with three (3) or fewer units use default selection.)



MLP Solar Program Rebate Application



D. System Equipment Information

PV Module

Manufacturer:

PV Module Model:

Number of PV Modules:

Inverter Manufacturer:

Inverter Model:

Number of Inverters:

E. System Performance

PV Panel Orientation Type: _____ System Azimuth (degrees): _____

System Inclination (degrees): _____ Percent of System Shaded (%): _____

F. Additional System Details

System Capacity (kW DC): _____ Total Installed Costs for Project: _____

Roof or Ground Mounted (choose one): _____

G. Massachusetts State Employee Question

Is the Generation Unit Owner (system owner) an employee of the Commonwealth of Massachusetts?

H. Signature

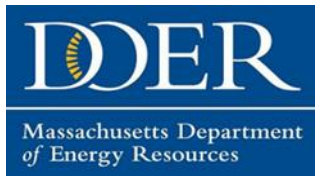
By signing below, I certify that all information is true and correct to the best of my knowledge.

Property Owner (Print Name): _____

Signature: _____ Date: _____

Installer (Print Name): _____

Signature: _____ Date: _____



Locus Meter Connection Form

Rebate Reservation # _____ Unique ID #: _____

Homeowner Information

Name: _____ Email address: _____

Address: _____

Installer Information

Installer: _____ Contact Phone: _____

Company: _____ Email: _____

Do you have a Locus account # Y/N:

☐ Yes, I do. The account # is: _____

☐ No, I do not. Would you like set up an account and have access to customer production data
(ENE will be the administrator on the account and then allow the contractor agency access.)

☐ Yes, I would like an account

☐ No, I wouldn't like an account

Production Start Date: _____ PTO Date: _____

PV Model: _____ Energy Expectations: _____

MAC ID#: _____

Submit a digital picture/scan of a picture of the powered-on meter showing the MAC ID.



RESIDENTIAL SOLAR MONITORING SOLUTION

LGate 120

The LGate 120 is a single-phase electronic watt-hour meter for the remote monitoring of solar photovoltaic systems. It features a smart communications module to automatically transmit meter data over cellular or Ethernet networks, allowing system owners and operators to easily manage distributed solar assets.



The LGate 120 combines a revenue-grade, solid-state power meter with an advanced communications gateway. These components work in conjunction to remotely monitor the performance of residential solar energy installations regardless of panel or inverter type. The LGate 120 is a one-piece meter completely encased in a NEMA 3R-rated housing, which installs easily using a standard socket base. Performance data is uploaded in near-real-time to the Locus Energy SolarNOC™ monitoring platform, which provides a suite of tools and analytics for asset managers.

DATA COLLECTION

AC energy data is collected by the meter and passed to the communications module. Additional system performance data can be collected directly from meteorological sensors and supported inverters via available RS-485 or Zigbee interfaces. All data is stored in non-volatile memory and then automatically uploaded to the SolarNOC platform.

NETWORK CONNECTIVITY

The communications gateway inside the LGate 120 supports plug-and-play connectivity through a cellular or available Ethernet network connection. Once the unit is installed and powered on, it will immediately begin transmitting data via the cellular network without any configuration. The communications gateway can be alternatively configured to bypass the cellular mode so that it automatically routes uploads using wired connections.

KEY FEATURES:

- ANSI C12.20 power meter
- RS-485 and Zigbee interfaces
- UL 2735 listing available
- 3G GSM, 4G LTE, or Ethernet connectivity
- Over the air firmware updates
- Easy, low-cost installation
- Doesn't require entrance into the building
- Plug-and-play activation
- LCD display

► Learn more about the LGate 120 at www.locusenergy.com



DATALOGGER

Processor	ARM9 embedded CPU
OS	Linux-based
Memory	128 MB RAM
Display	LCD screen

POWER

Accuracy	ANSI 12.20 (Class 0.2%)
Voltage Inputs	120-480 VAC
Maximum Current Input	200A
Service Type	Single phase, 60 Hz
Socket Type	2S (4 terminals)

PHYSICAL

Enclosure	NEMA 3R type
Weight	8 oz
Dimensions	6.95" x 6.5" x 7.3"
Environment	-20 to 60C, all-weather
Warranty	5-year limited warranty

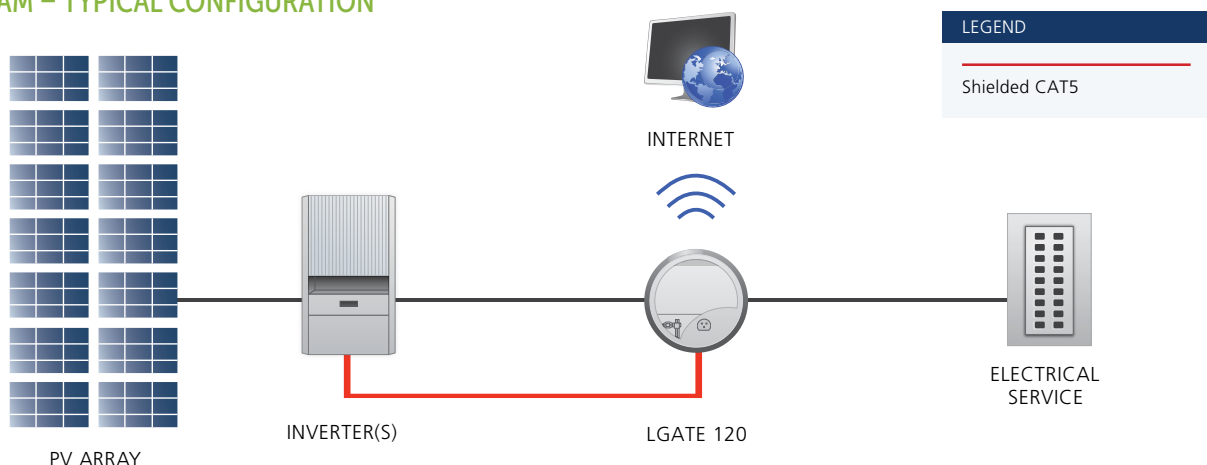
COMPLIANCE

	ANSI 12.20 class 0.2%	FCC Part 15B	PTCRB	AT&T Carrier	Verizon Carrier	UL 2735
LGate 120-3Gx	✓	✓	✓	✓		
LGate 120-3Gy	✓	✓	✓	✓		
LGate 120-3Gx UL	✓	✓	✓	✓		✓
LGate 120-LTEx	✓	✓			✓	✓

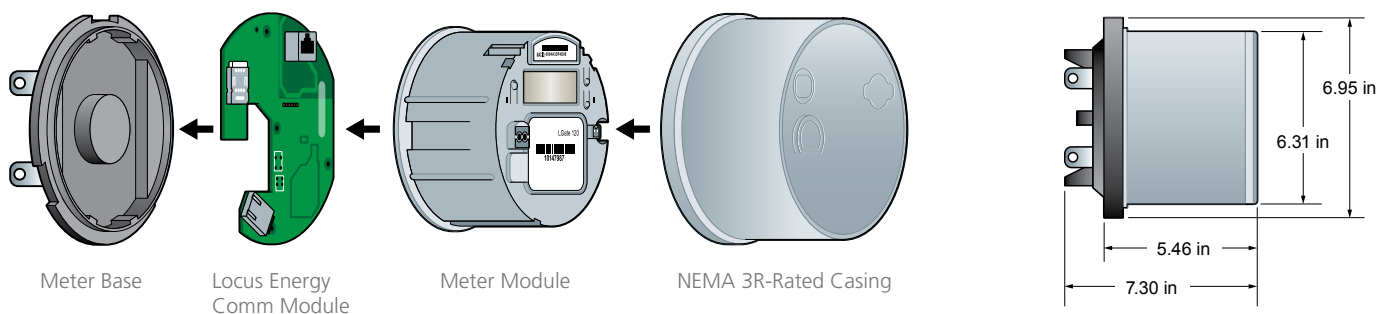
COMMUNICATION INTERFACE OPTIONS

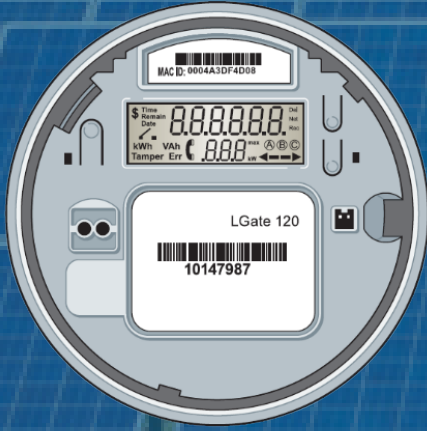
	4G-LTE	3G	Ethernet	RS-485
LGate 120-3Gx		✓		
LGate 120-3Gy		✓	✓	✓
LGate 120-3Gx UL		✓		
LGate 120-LTEx	✓			

DIAGRAM – TYPICAL CONFIGURATION



DIMENSIONS





LGATE 120 BASIC INSTALLATION GUIDE

Residential Solar Monitoring Solution

TABLE OF CONTENTS

IMPORTANT PRODUCT INFORMATION	Page 2	ENABLING THE ETHERNET CONNECTION	Page 6
DIAGRAM	Page 3	NETWORK SETTINGS	Page 7
REVENUE GRADE MONITORING	Page 3	VERIFYING INSTALLATION	Page 8
INSTALLING THE METER	Page 4	LGATE120 FAQ	Page 10
CONNECTING TO THE NETWORK	Page 5		

LGATE 120 MODELS

Model	Communication Features
LGate 120-3Gx	Cellular only, no Ethernet or RS485 wires, and uses AT&T Network
LGate 120-3Gy	Cellular, RS485, Ethernet, and uses AT&T Network
LGate 120-LTE	Cellular, no Ethernet or RS485 wires, and uses Verizon Network



IMPORTANT PRODUCT INFORMATION



DANGER – Electrical shock hazard



All installation and servicing on the LGate 120 and accompanying products should only be performed by qualified personnel and only within the scope of these installation instructions



Disconnect the LGate 120 from the power source (both the breaker to the LGate and the AC disconnect) when servicing the product



The LGate is not intended for use in life-support applications

Warranty: The following actions will void the limited warranty:

Removing or disassembling any part of the LGate 120

Breaking the tamper seal on the LGate 120

Joining the RS485 or Ethernet cables to another conductor inside the meter socket

Installing or operating the LGate 120 in any way not specified in this installation guide

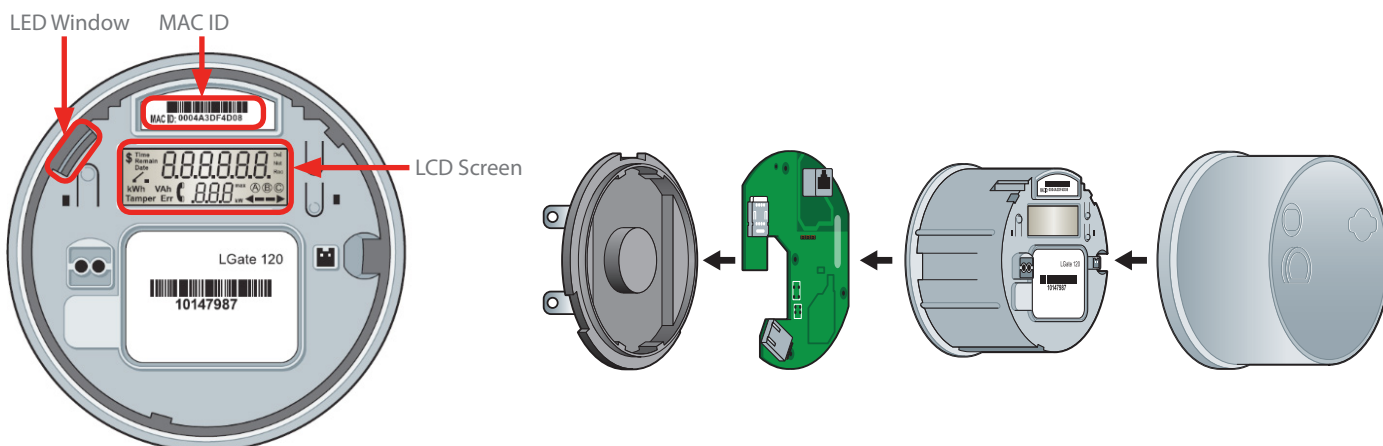
To obtain a copy of the Locus Energy Hardware Product Limited Warranty, contact your Locus Energy Account Manager

Recommended Install Equipment

Laptop	Ammeter / clamp meter
Power drill	Shielded twisted pair wire (for inverter-direct monitoring only)
Wire stripper	Gel-filled crimps (for inverter-direct monitoring only)
Mounting screws	Junction box (for inverter-direct monitoring only)
Form Factor 2S (4 jaw) 200A meter socket	Network cable crimper
Volt meter	RJ45 heads (for Ethernet connection only)
CAT5 tester (for Ethernet connection only)	Additional CAT5 cable (for Ethernet connection only)



DIAGRAM



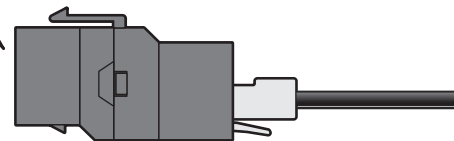
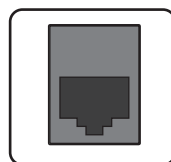
Cable Attachments (Only available on the 3Gy and model)



RS485/Modbus



RS485 Cable as Shipped



Ethernet Port

REVENUE GRADE MONITORING

This section covers the installation of the LGate 120 revenue-grade core monitoring system. This type of monitoring works with single-phase inverters and power sources up to 200A.

IMPORTANT: The LGate 120 does not ship with a meter socket included. For proper installation, the LGate 120 meter must be mounted in an installer-supplied meter socket that meets the following specifications:

- Form Factor 2S (4 jaw)
- Current rating of 200A
- Voltage rating of 600 VAC
- All-weather rating (for outdoor installations)

NOTE: Before leaving the site, confirm that the LGate 120 has been installed correctly and up to code.

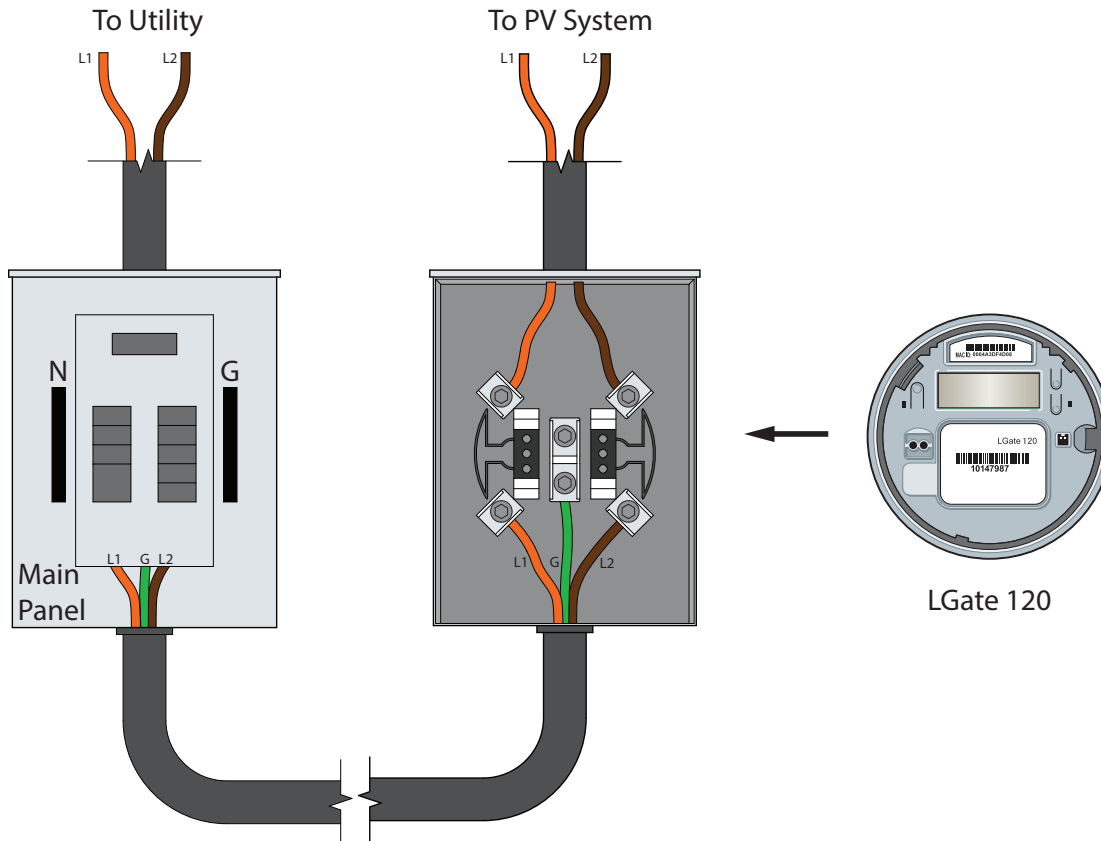
IMPORTANT: Do not install meter in direct sunlight. Locus is not responsible to screen degradation due to sun damage.

NOTE: Please reference appendices for RS 485- related instructions.



INSTALLING THE METER

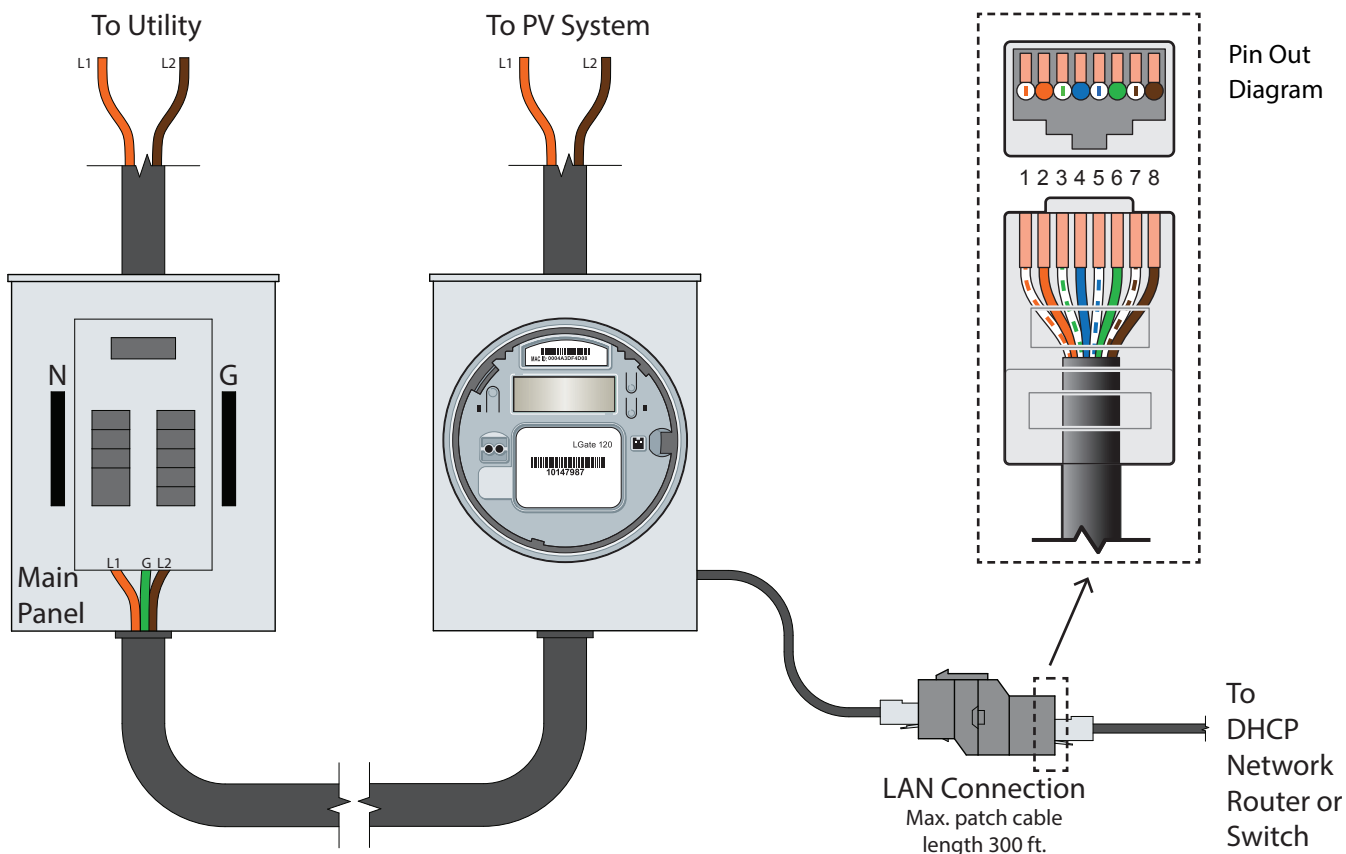
1. Mount the meter socket (purchased separately) between the PV system and the electrical panel
2. Run the AC lines from the combined inverter output to the top of the meter socket (line side). Wire the bottom of the meter socket (load side) to a dedicated PV breaker on the electrical panel
3. Ground the meter socket to the ground in the main panel
4. Attach the LGate 120 to the meter socket



NOTE: If using a solar-dedicated subpanel, label the panel with "PV Loads Only" signage.



CONNECTING TO THE NETWORK



The LGate 120 requires a network connection to communicate. The cell modem is the primary method of communication. If cellular reception is weak or inconsistent, then communication via Ethernet cable may be used as a secondary option on the 3Gy models.

Primary connection method: cell modem

- The LGate 120 comes installed with a cell modem, and no additional configuration is necessary for this method

NOTE: Store the unused Ethernet cable inside the meter box with the coupler left on

- If this is your method of connection skip to the **VERIFYING INSTALLATION** Section



ENABLING THE ETHERNET CONNECTION (3Gy)

When using the Ethernet connection, some additional configuration is required.

1. Power down the LGate 120 by turning off the AC disconnect and breaker to the LGate for 30 seconds
2. Connect the LGate 120 directly to a laptop using the LGate's Ethernet cable. Ensure wireless internet is disabled on the laptop
3. Turn AC disconnect or breaker back on
4. In a web browser, enter 169.254.12.13 in the address bar and select Enter (see below)
5. Use the password networkconfig and select the Login button to enter the password-protected menu (see below)
6. Using the drop down menu, change Internet Connection Type in Network Settings to "Ethernet"
7. Change "Packets per Compressed Send" to 1, from 24
8. Click "SaveConfiguration"
9. Connect the LGate to a DHCP router with a CAT5 Ethernet cable, as shown in the section above ([CONNECTING TO THE NETWORK](#))

- Make sure this connection is continuous (i.e. the router is not regularly turned off)
- If after five minutes, the Blue LED is not solid, powercycle the modem and LGate sequentially

NOTE: Run the ethernet cable in a separate conduit from power conductors, at least 1 inch away

- The LGate can hold upwards of 1.5 months of data without an internet connection. Please ensure that the unit does not lose an internet connection for longer than 1.5 months to prevent data loss

Once logged into the LGate 120, you can view the following information:

- Basic information about the LGate: IP address, firmware type, and MAC ID (see below)
- All devices sending data and their instantaneous data readings (see below)
- Network settings: cell modem status, static IP address, proxy server, and compression configuration options (see below)

Locus ENERGY
LGate 120
IP: 169.254.012.013 WEB CONFIG: v2.0 APP: v1.05G_EM3
MAC: D8:80:39:99:A7:FF
Password: Login
©2012 Locus Energy
Copyrighted open source projects used

Locus ENERGY
LGate 120
IP: 169.254.012.013 WEB CONFIG: v2.0 APP: v1.05H_EM3
MAC: D8:80:39:99:A7:FF

Device ID	Parameter	Value
1	Configuration	VisionMeter3Phase
	Errors	0
	Comm Status	1
	Lifetime Exported	0

Parameter	Configuration
Static IP	192.168.0.100
Gateway	192.168.0.1
Net Mask	255.255.255.0
DNS	8.8.8.8
Proxy Address	
Proxy Username	
Proxy Password	
Packets per Compressed Send	1
Max Packets per Compressed Send	200
Internet Connection Type	Ethernet

More Data Refresh SaveConfiguration Reset to FactoryD Cancel
©2016 Locus Energy
Copyrighted open source projects used



NETWORK SETTINGS (3Gy)

- The LGate 120's default Network Setting utilizes a dynamic (DHCP) IP address, which allows the router to assign the LGate an IP address automatically. If using DHCP, ensure that DHCP mode is "Enabled". No additional configuration is needed for the meter to communicate in DHCP mode.
- A static IP address is a set IP address, used primarily for secured networks (only available for LAN connections). To configure the static IP address:
 1. Select "Disabled" in the DHCP Mode drop-down list and "Ethernet" in the Internet Connection Type dropdown list in the Network Settings section (see below)

Network Settings	
please refer to installation collateral for information on these configuration settings	
Parameter	Configuration
DHCP Mode	Disabled

Network Settings	
please refer to installation collateral for information on these configuration settings	
Parameter	Configuration
Proxy Username	
Proxy Password	
Packets per Compressed Send	1
Max Packets per Compressed Send	200
Internet Connection Type	Ethernet
Carrier	Locus AT&T
Serial Modem Type	Sierra Wireless AirPrime SL8081
PPP Connection Type	Always On
PPP Connection port	/dev/modem

2. Set the static address parameters: Static IP, Gateway, Net Mask, and DNS (see right)
3. If necessary, set the proxy parameters: Proxy Address, Proxy Username, and Proxy Password (see right)
4. Click "SaveConfiguration"
5. Connect the LGate to the LAN
6. If after five minutes, the Blue LED is not solid, verify that the static address information is correct

Network Settings	
please refer to installation collateral for information on these configuration settings	
Parameter	Configuration
DHCP Mode	Disabled
Static IP	192.168.0.100
Gateway	192.168.0.1
Net Mask	255.255.255.0
DNS	8.8.8.8
Proxy Address	
Proxy Username	
Proxy Password	
Packets per Compressed Send	1
Max Packets per Compressed Send	200
Internet	

Record the static IP address of the LGate 120 for future reference

To re-enable cell communication:

1. Select "Enabled" in the DHCP Mode drop-down
2. Select "3G GSM" in the Internet Connection Type drop down
3. Confirm the "Packets per Compressed Send" is set to 24



VERIFYING INSTALLATION

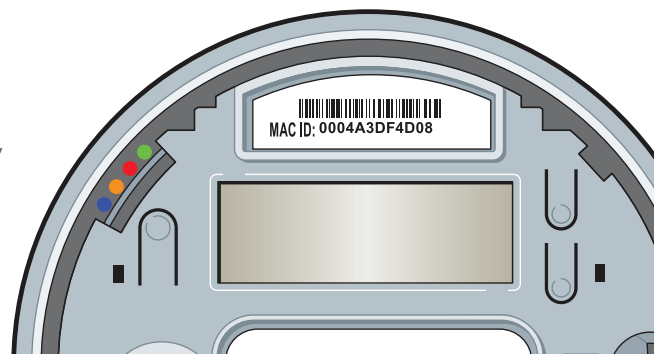
Network Connection

Solid blue LED: The last data packet was sent successfully

Blinking blue LED (only applicable in cellular mode; in Ethernet mode, phone icon will be solid or off):

- Blinking quickly: The last data packet was not sent successfully, but the cellular signal strength is strong
- Blinking slowly: The last data packet was not sent successfully, and the cellular signal strength is weak

No blue LED: The LGate 120 is not connected to the network and the last data packet was not successfully sent. For an Ethernet cable connection, double check the pin-out on the Ethernet cable (**CONNECTING TO THE NETWORK**). For a cell modem connection, contact technical support to troubleshoot



LED Lights from top to bottom:

Green= activity; Red= error; Amber= external devices; Blue= connectivity

NOTE: Within 30 minutes of last power cycle, the phone icon on the LCD screen will mirror the behavior of the blue LED and can be used as a secondary indicator to assess connectivity. After 30 minutes of last power cycle, please reference the blue LED, or cycle power to the LGate.



RS485 / Modbus Check (Only applies to 3Gy and LTEy models)

Solid amber LED: One or all external devices are configured and communicating properly

Blinking amber LED: Some, but not all external devices are communicating properly

No amber LED: The LGate 120 is not configured for external devices. Contact technical support to configure the LGate remotely

NOTE: Within 30 minutes of last power cycle, the switch icon on the LCD screen will mirror the behavior of the amber LED and can be used as a secondary indicator to assess external device communication. After 30 minutes of last power cycle, please reference the amber LED, or cycle power to the LGate.



The switch icon indicates if any RS485 / Modbus devices are connected. If unsure whether inverter direct monitoring has been purchased for this project, contact your company, lease provider, or program admin.



Meter Placement Check

The arrow on the bottom right-hand side of the LED screen indicates the direction of energy flow through the meter socket.



Arrow pointing toward the left: If the PV system is on and generating energy, the meter socket was installed backward. Verify that the inverter wires running through the meter socket go from line side to load side (top to bottom).



The arrow on the bottom right-hand side of the screen indicates the direction of energy flow through the meter socket.

Reading Verification

- The bottom number on the LCD screen will always represent instantaneous power (kW).
- The top number will cycle through kWh (energy), V (volts) and A (current)

kWh - lifetime meter production

V - instantaneous voltage (should be approximately 240v)

A - instantaneous amperage / current

If power readings are negative, the meter socket was installed backwards. Verify that the inverter wires running through the meter socket go from line side to load side (top to bottom)

NOTE: Verify that power (kW), energy (kWh), and current (A) readings on the meter LCD screen match inverter output.

Installation Confirmation



Current (A) 37.0
Instantaneous Power (kW) 249



Total Energy (kWh) 680221
Instantaneous Power (kW) 218

- Contact your office, program administrator, or lease provider to confirm that the system is connected



LGATE 120 FAQ

1. WHAT IS REVENUE-GRADE ACCURACY?

The LGate 120 has been ANSI C12.20 certified (accurate to 0.2%) only when installed as specified below:

- Only one wire runs through each leg of the meter socket
- Only PV loads are being measured; i.e. no loads, back-up system, batteries, etc.

2. HOW DO I TEST CELLULAR STRENGTH?

The LGate 120 3G cell modem uses the AT&T cellular network to communicate. There are two methods of testing the strength of the cellular signal at the installation site:

- Using an AT&T cell phone, check the 3G reception at the site: in general, one bar typically indicates sufficient signal strength, but more bars are preferable to establish the initial connection
- Visit AT&T's website to view the cellular reception in the region of the site (select "Data" in the Domestic section and "3G" in the View Coverage by Device Type section for the best results)

The LGate 120 LTE cell modem uses the Verizon cellular network to communicate. There are two methods of testing the strength of the cellular signal at the installation site:

- Using an Verizon cell phone, check the LTE reception at the site: in general, one bar typically indicates sufficient signal strength, but more bars are preferable to establish the initial connection. Please make sure your phone says LTE. The LTE meter does not support Verizon 3G, only Verizon LTE
- Visit Verizon's website to view the cellular reception in the region of the site

NOTE: This tool gives a high-level view of the cellular reception in the region. The signal strength may be lower in an enclosed space or in a basement.

3. HOW DO I CONNECT RS-485 DEVICES TO THE LGATE 120?

These devices are supported in separate documents specific to each integration. Please contact support@locusenergy.com if you have trouble locating the proper documentation.



IMPORTANT PRODUCT INFORMATION

This guide is designed to assist in commissioning an LGate 320 for operation. It is assumed that the user has already installed the LGate 320 meter according to the instructions in the Installation Guide.

LGATE 320 ONSITE CHECKS

To verify the LGate 320 was properly installed, please confirm the following:

Confirm meter is receiving proper voltage. If the LGate 320 is energized you can check the voltage reading on the LCD Display. Alternatively, you may use a multimeter to check voltage between L1 and N on the Line (top) side of the meter pan.

Solid Blue LED & solid phone icon: The last data packet was sent successfully.



Solid Amber LED & switch icon: One or more external devices are configured and communicating properly.



Current arrow pointing toward the right: The PV system is generating energy and the meter is measuring the flow of current accurately. If the arrow is pointing to the left, the AC lines were landed backwards. Verify that the AC lines run through the meter socket LINE to LOAD (inverter at the top, PV breaker/MSP on the bottom).



READING VERIFICATION

The bottom number on the LCD screen will always represent instantaneous power (kW). The top number will cycle through kWh (energy), V (volts), and A (current) for A, B, and C phases respectively, as represented by the icons on the bottom right of the screen. Match these readings with inverter output. If power readings are negative, the meter socket was installed backwards. Verify that the inverter wires running through the meter socket go from line side to load side (top to bottom).



When the meter displays “kwh” and “net”. This represents the lifetime energy measured.



When the meter displays a “V”. This represents the current voltage of the system. The image above displays 240V on phase C.



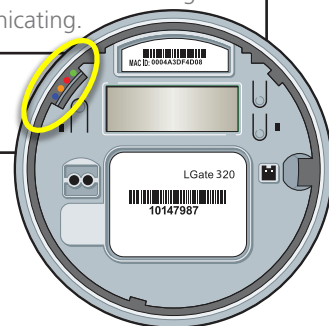
When the meter displays an “A”. This represents the system amperage output. The image above displays 37 amps on phase C.



READING THE LGATE 320 LED LIGHTS

Use the following table to interpret the lights on the LGate 320 (location circled in yellow in the image below).

LED Light	Solid	Flashing	Off
Green	—	Normal	LGate is not powered on OR LGate board is not functioning.
Blue	Last communication was successful.	Last attempt to communicate was unsuccessful OR no attempt to communicate has been made * Frequency of flashes indicates cell strength in both cases.	Last attempt to communicate was unsuccessful and there is currently no cell signal.
Amber	All external devices are communicating.	External devices are configured, but all are not communicating.	No external devices are configured or communicating.
Red	LGate has an error that is preventing it from functioning normally.	—	



READING THE LGATE PHONE ICON

The phone icon on the LCD screen will behave differently immediately after bootup vs. during normal operation:

First 5 Minutes	5-35 Minutes After Reboot	30 + Minutes After Reboot
OFF	ON : If LGate successfully communicates on all necessary channels. OFF : If no cell signal is detected in the first 5 minutes. BLINKING : If no successful communication was recorded. Blink frequency corresponds with cell strength.	ON : If the last communication attempt succeeded. OFF : If the last communication attempt failed (not necessarily indicative of poor signal strength). Refer to Blue LED or power cycle the unit and watch for this icon to determine signal strength.

TESTING SIGNAL STRENGTH

1. Using an AT&T cell phone, check the reception at the site: in general, one bar indicates sufficient signal strength, but more bars are preferable to establish the initial connection.

NOTE: Phone reception is not a guarantee of connectivity since broadband and capabilities of phone may differ from the LGate.

2. Visit AT&T's website to view the cellular reception in the area (select "Data" in the Domestic section and "3G" in the View Coverage by Device Type section for the best results).


NOTE: This tool gives a high-level view of the cellular reception in the area. The signal strength may be lower in an enclosed space or basement.




SOLARNOC CONFIRMATION

The SolarNOC monitoring platform allows users to verify meter operation and communication remotely. If you do not have access to the SolarNOC platform, please contact your office, program administrator, or lease provider.

1. Log into SolarNOC from your smart phone, laptop or desktop computer.
2. Enter the MAC ID in the search box:












Mostly Cloudy
56.0 °F (13.3 °C)

Welcome, Locus Energy
Updated: March 22, 2017 3:33 PM
[Back to Admin](#) | [Help](#) | [Log Out](#)

[Dashboard](#) | [Fleet](#) | [Reports & Analytics](#) | [Alerts](#) | [Settings](#) | [Support](#) |

3. To access additional information, click the plus sign to the left of the customer name.

Note: If the MAC ID is not found, the meter has not been registered on the SolarNOC platform. Please contact your office to coordinate.

Sort by	Name	<input checked="" type="radio"/> Ascending <input type="radio"/> Descending								
			Energy		EER		GEER			
NAME		ALERTS	DC CAPACITY	TODAY	LIFETIME	LAST MONTH	THIS MONTH	LAST MONTH	THIS MONTH	
 Site, Solar - Site Name Hoboken, NJ			2.2 kW	3 kWh	9 MWh	 67%	 98%	 66%	 87%	
Showing 1 to 1 of 1 entries										
First Previous 1 Next Last										

4. Select the "Load Latest Data" Button, and verify that the "Last Connected" date is within the last two hours.

NOTE: If the LGate onsite checks are confirmed, you may need to wait 15 to 20 minutes for data to populate on SolarNOC. If the meter has been disconnected, it will upload the stored historical data first.

Sort by <div>Name</div> <div><div><div></div></div>Ascending</div> <div><div></div></div> Descending											
				Energy		EER		GEER			
NAME				ALERTS	DC CAPACITY	TODAY	LIFETIME	LAST MONTH	THIS MONTH	LAST MONTH	THIS MONTH
<div><div></div> Site, Solar - Site Name</div> <div>Hoboken, NJ</div>			<div><div></div></div>	<div><div></div></div>	2.2 kW	3 kWh	9 MWh	<div><div></div> 67%</div>	<div><div></div> 98%</div>	<div><div></div> 66%</div>	<div><div></div> 87%</div>
Site Address				Install Date		PTO Date		Startup Date			
2 Hudson Place, Locus Energy 6th Floor				--		--		--		478717	
Hoboken, NJ, 07030											
Components		<div>Load Latest Data</div>	Last Connected	Latest Reading	Energy Today	Equipment	Node ID				
Inverter #1		<div><div></div></div>	3/22/17 14:28	1.08 kW	4 kWh	Power-One	00:04:A3:A1:08:70.5 478717				
PV System		<div><div></div></div>	3/22/17 14:28	1.11 kW	3.44 kWh	Locus Energy, LGate 101E	00:04:A3:A1:08:70.1 478717				
<div>Showing 1 to 1 of 1 entries</div>											
<div>First Previous 1 Next Last</div>											