Distributed Generation Interconnection Seminar

July 19, 2018
The Westin Waltham-Boston
70 Third Avenue
Waltham, MA 02451
Safety Moment

WATER

COMPOSES 75% OF YOUR BRAIN
HELPS CARRY NUTRIENTS AND OXYGEN TO YOUR CELLS
REGULATES YOUR BODY TEMPERATURE
MOISTENS OXYGEN FOR BREATHING
MAKES UP 83% OF YOUR BLOOD
HELPS CONVERT FOOD TO ENERGY
REMOVES WASTE
PROTECTS AND CUSHIONS YOUR VITAL ORGANS
COMPOSES 22% OF YOUR BONES
HELPS YOUR BODY ABSORB NUTRIENTS
CUSHIONS YOUR JOINTS
MAKES UP 75% OF YOUR MUSCLES
Agenda

15 min  Welcome, Opening Remarks  Will Kern
30 min  ESB 756 2018 Revision – Review of Changes  Jeannie Piekarz
45 min  Interconnection Process and DG User Interface  A. Agra, A. Markopoulos
10 min  Break
45 min  SMART Program Summary  Sam Nutter, CLEAResult®
30 min  Questions
30 min  Meet and Greet with CEI Job Owners
National Grid Requirements for Interconnection of Parallel Generation

ESB 756 2018 Revision – Review of Changes for MA Jurisdiction

Retail Connections Policy & Standards
Importance of the Interconnection Process

- Following the interconnection process is important because a DG system could present dangers to customers, utility workers and/or the public if proper equipment is not installed.

- While robust and capable of handling minor disturbances, the quality of grid power is extremely important. The interconnection process ensures the DG meets safety, reliability, & power quality requirements with regard to:
  - Islanding
  - Substation backfeed
  - Transient Voltage Conditions
  - Noise and Harmonics
  - Frequency
  - Voltage Level
  - Machine Reactive Capability

- It is essential that each DG customer receive an interconnection agreement with National Grid before installing any generation. You are proceeding at your own risk if you choose to install a system without National Grid approval.
Service Point and the codes: NESC and NEC
(See: ESB 750 Figure 2-1)

- Supply Side
  NESC Rule 011
  NEC 90.2(B)

- Premises Wiring
  NEC 90.2(A)

- includes the service lateral or service line, service entrance conductors, meter provision, service equipment, and grounding where the Electric Utility has Mutual Interest

* NESC applicable for equipment under exclusive control by utility.
### National Grid ESB 750 Series

*Each utility has their requirements pursuant to the regulations that govern them as varying from state-to-state based on the NESC.*

<table>
<thead>
<tr>
<th>ESB 750</th>
<th>Specifications for Electrical Installations</th>
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<tbody>
<tr>
<td>ESB 751</td>
<td>General Requirements Above 600-volt Service</td>
</tr>
<tr>
<td>ESB 752</td>
<td>Service above 15,000 volts</td>
</tr>
<tr>
<td>ESB 753</td>
<td>Primary Meter Pole</td>
</tr>
<tr>
<td>ESB 754</td>
<td>Outdoor Pad Mounted or Vault Enclosed Three Phase Transformer</td>
</tr>
<tr>
<td>ESB 755</td>
<td>Operation &amp; Maintenance Requirements for Service Above 600 volts</td>
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<table>
<thead>
<tr>
<th>ESB 756</th>
<th>General Requirements for Parallel Generation Connected to a National Grid Owned EPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Appendix A</td>
<td>Requirements for Parallel Generation Connected to National Grid Facilities in NY, MA, RI, NH, &amp; VT Not Applicable to State Regulatory DG Interconnection Requirements</td>
</tr>
<tr>
<td>- Appendix B</td>
<td>Distributed Generation Connected To National Grid Distribution Facilities per the NYS SIR</td>
</tr>
<tr>
<td>- Appendix C</td>
<td>Distributed Generation Connected To National Grid Distribution Facilities per the MA SIDG</td>
</tr>
<tr>
<td>- Appendix D</td>
<td>Distributed Generation Connected To National Grid Distribution Facilities per the RI SCDG</td>
</tr>
</tbody>
</table>

| ESB 757 | Network Services |
| ESB 758 | Primary Service to Metal Enclosed Gear |
| ESB 759A | Underground Residential Distribution (URD) Installation and Responsibility Guide |
| ESB 759B | Underground Commercial Distribution (UCD) Installation and Responsibility Guide |

✓ The Appendices to ESB 756 are intended for jurisdictional-specific requirements.

ESB 756 references all requirements for parallel generation connected to National Grid facilities located in Upstate New York, Massachusetts, New Hampshire, Rhode Island, and Vermont.

The purpose of this National Grid Electric System Bulletin (ESB) is to:

1. **Provide general requirements and recommendations for all generators connected in parallel with the electric power system (EPS).** Stand alone generators serving isolated load, which can never be connected in parallel with the Company EPS, are not subject to these requirements.

2. **Ensure compliance with NERC Standard FAC-001-2 – Facility Interconnection Requirements,** effective January 1, 2016. Along with all of the Company’s Electric System Bulletins, the most current version of ESB 756 is available electronically on its National Grid USA web page at: [www.nationalgridus.com/electricalspecifications](http://www.nationalgridus.com/electricalspecifications).

3. **Ensure that the electrical reliability and security of the Company EPS and the larger power system grid is maintained following connection of the parallel generator to the utility supply.**

4. **Refer Generator-Owners or Interconnecting Customers to the applicable FERC or state-specific tariff regulations pertaining to parallel generators.**
An internal Company interim amendment process between October and March covers changes of emergency nature until the next annual revision.
National Grid ESB 756: 2018 Revision Change Highlights

Major Changes: Overall

- In full effect by September 1, 2018
- Various housekeeping items
  - General edits and tariff reference updates
  - Major changes are shown in light gray shaded text
- Includes all interim amendments issued since the 2017 edition between October 2017 and March 2018
- Incorporated Company’s latest best practices
  - IEEE 1547-2018 Voltage & Frequency Protection & Control
Major Changes: ESB 756 – *This is the main document*

- Added updated and new references to Section 1.3.14: IEEE 1453, IEEE 1547.4, IEEE 2030.2, UL 1741
- Added to Section 1.4 “The terms Customer, distributed generator (DG), distributed resource (DR), distributed energy resource (DER), interconnection customer (IC), and isolation are defined in the Company’s jurisdiction applicable tariffs.”
Major Changes: ESB 756 Appendix A

- Added to Section 1.3.2.8 “Maintenance coordination and operational issues such as abnormal frequency and voltages shall be addressed by the applicable Regional ISO.”
In Sections 4.4 and 4.5, updated NERC and ISO references.

In Section 4.4.1.5, changed the sentence "Voltage and frequency ride through and trip points for generation connected to the Company’s EPS shall meet two standards, IEEE 1547 and/or NERC PRC-024-2 depending on the size and type of the generator facility and where Regional ISO voltage and frequency requirements apply. Where a wholesale generator is proposed for a distribution system and the Regional ISO voltage and frequency requirements do not apply, the IC shall refer to the Company’s ESB 756 jurisdiction applicable Appendices B, C, or D and IEEE 1547."
Major Changes: ESB 756 Appendix A (cont’d)

- In Section 4.5.2 added sections discussing DTT and $3V_0$ requirements and included a graphic to provide clarity for Customers to be informed of these significant system needs.

--- Next up…ESB 756 Appendix C ---
Major Changes: ESB 756 Appendix C – For MA

- Added text to Section 1.3 as follows to clarify ISO-NE specific requirements as they may apply: “Note that the MA SIDG does not apply to DER facilities, or group of facilities, having specific requirements under ISO-NE Operating Procedures No. 14 and No. 18 and where wholesale DER connections are proposed.”
Major Changes: ESB 756 Appendix C (cont’d)

- In Section 4.0,
  - Removed 'mechanical' from prime mover definition and added PV example.
  - Added clarification of terms to end of Section 4 "The terms Customer, distributed generator (DG), distributed resource (DR), distributed energy resource (DER), interconnecting customer (IC), and isolation are defined in the MA SIDG."
Major Changes: ESB 756 Appendix C (cont’d)

In Section 5.1,

- As the Customer is bound to operation as described in the application documentation/study, added footnote 5 to beginning paragraph of Section 5.1: “If the Company approves an application to interconnect a DER facility to the Company’s distribution EPS, the terms and conditions of that approval will be set forth in an Interconnection Service Agreement, which is a legally binding document that can only be changed by a written document signed by both parties. See Exhibits G and I in the MA SIDG.”
Major Changes: ESB 756 Appendix C (cont’d)

- **Proof of land ownership** is added to Section 5.1.1 requirements.
- Added examples of required documentation specific to DERs that are needed in Section 5.1.1.2 for both rotating machines and inverters.
- In Section 5.1.1.4, changed “Watts/min” to “Watts/second” for ramp rate units requirements.

- Added Sections 6.2.1 and 6.2.2 discussing DTT and $3V_0$ requirements and included a graphic in Section 6.2.2 to provide clarity for Customers to be informed of these significant system needs.
Major Changes: ESB 756 Appendix C (cont’d)

- Revised Section 7.1.2 as follows: "Other than permissible single phase connections, three phase connections are required. The aggregated nameplate rating of all DER systems operating in parallel with the Company’s EPS on the premise equal to or greater than 5MW according to the MA SIDG for facilities, or group of facilities, have specific requirements under ISO-NE Operating Procedures No. 14 and No. 18. Refer to ESB 756 Appendix A for additional information in these cases and where wholesale DER connections that are proposed."
Major Changes: ESB 756 Appendix C (cont’d)

- Added #4 to section 7.1.4 regarding distribution circuits may have unbalanced loads (i.e. single phase loads) which result in neutral currents on equipment connected to multigrounded circuits and Customer to consider this when designing neutral-connected equipment where there is no transformer isolation from the Area EPS.
Major Changes: ESB 756 Appendix C (cont’d)

To describe the Company's metering requirements for paired ESS + Renewable DG DER facilities, added Section 7.2.3 with accompanying illustration.

- These metering requirements will apply to such facilities that enroll in the net metering program or in the upcoming MA SMART program.
Major Changes: ESB 756 Appendix C (cont’d)

In Section 7.6,

- added the following to the 3rd paragraph: “The Company may specify values within the allowable ranges of IEEE 1547 subject to the limitations on voltage and frequency trip settings specified by the regional reliability coordinator that consider bulk power system impacts of affected aggregate DER capacity. Where Regional ISO voltage and frequency requirements apply, the IC shall refer to the Company’s ESB 756 Appendix A for specific requirements related to North American Electric Reliability Corporation (NERC) Protection and Control (PRC) standards.” The MA SIDG only covers distribution, which requires IEEE 1547 compliance and IEEE 1547-2018 Section 1.4 states it is not intended for networked subtransmission and transmission systems.
Major Changes: ESB 756 Appendix C (cont’d)

- added new last paragraph to Section 7.6 with: "For the purpose of fault current, short circuit protection, and relay settings, current values are based on the full Volt-Ampere (VA) nameplate rating of the equipment, which may be greater than the kW rating of the equipment." to clarify where projects are between a < 500 kW size and a > 500 kVA rating requirement regarding protection thresholds.

- also, added text about discussing kVA ratings for protection reviews of ESS projects that include sum of the nameplate kVA ratings.
Major Changes: ESB 756 Appendix C (cont’d)

- Clarified Section 7.6.3 that “If two utility grade relays are used to provide the required functions for sufficient redundancy, the failure of both relays, being out of service shall trip the interrupting device.”

- In Section 7.6.3.1, made reference to Section 7.8 for further inverter function requirements where advanced functions may be used that impact protection.
Major Changes: ESB 756 Appendix C (cont’d)

- In Sections 7.6.3.1 and 7.6.11, incorporated IEEE 1547-2018 widening of trip settings for voltage and frequency and require Cat II inverters for consistency in Company practice.

- In Sections 7.6.3.1.2 and 7.6.3.2, added reference to Section 7.6.3 discussing number of relays required or for redundancy.
Major Changes: ESB 756 Appendix C (cont’d)

- In Section 7.8, incorporated IEEE 1547-2018 for voltage & frequency ride through trip requirements complying with ISO-NE’s SRD document.

- Added new section “7.8.3 Return to Service” and accompanying table to specify “The DER shall not connect or return to service following a trip (including any ground fault current sources) until detecting 5 minutes of healthy utility voltage and frequency. “Healthy Utility Voltage and Frequency” is defined by Table 7.8.3-1, in accordance with the Enter Service Criteria in IEEE 1547 section 4.10: …”
Major Changes: ESB 756 Appendix C (cont’d)

- In Section 10.3, replaced the overvoltage figure with text referring to Figure 3 of IEEE 1547-2018 section 7.4.2 for load rejection/transient overvoltages. Also, text is added that standard testing needs to satisfactorily confirm meeting the requirement.
Major Changes: ESB 756 Appendix C (cont’d)

- Added sentence in Exhibit 4, item #10: “*Indicate which interrupting device(s) are tripped by the relay(s) used.*”

- Added text and sentence to Exhibit 4, item #11: “*Show connections, winding configuration, and ratings of power transformers windings for any to be used. Show the transformer impedance and X/R ratio.*”

- Added item #12 to Exhibit 4: “*Indicate the connections, winding configuration and ratings of grounding transformers if any are to be used. Show the impedance and X/R ratio.*”
What we covered:

- Importance of the Interconnection Process
- Service Point and the codes: NESC and NEC
- ESB 750 Series Electric Service Requirements
- ESB 756 Update Process
- ESB 756 2018 Revision Change Highlights for the Main document and Appendices A and C as applicable to the MA Jurisdiction
Interconnection Process in the Portal for Expedited, Standard and Complex Cases
How to Determine Case Status

- Cases have a Status, Step, and sometimes a Sub-Step
- A case’s status can be found at the top of the Case in the Portal
- Sub-Steps are not visible on the Portal
Major Statuses in the Interconnection Process

- Preapplication
- Application
- Screening
- Supplemental Review
- Study
- Conditional Approval
- Design
- Construction
- Completion Documents
- Meter Install
- Connected
- Pending Withdraw
Preapplication

The Application will be on the same Case; no longer a separate process

You can upload reports that pre-date the Portal

Tariff timeline: 10 business days

Required for all Applications 500kW or greater, optional below 500kW
All required Forms must be completed in the Portal.

- Uploaded Exhibit Cs are not enough. Please fill out the Form provided in the Portal.

- Do not send offline payment without an Invoice. The Payment Form can generate one. Checks without invoices cannot be properly processed.

- Tariff timeline: 10 Business Days

- If the status of the Case is “Application – Draft”, the Application has not been submitted and no Case Owner has been assigned.

- Case Owners are assigned after the Application has reached “Application – Submitted” status.
Screening

- Screening Type dictated by Application Track.
  - Expedited: Screening Review
    - Tariff timeline: 25 business days
  - Standard: Initial Review
    - Tariff timeline: 20 business days

- Determines how much further study will be required based on system modification requirements
  - Supplemental Review
  - System Impact Study
  - Conditional Approval (ISA)

Screens are listed in the Tariff starting with Figure 1, Sheet 34
Supplemental Review

- Additional engineering study to evaluate the potential impact of the Facility on the Company EPS so as to determine any requirements for processing the application through the Expedited Process
- Tariff timeline: 20 business days

- If the review exceeds 30 hours of Engineering time or if the Supplemental Review indicates the need, the project becomes a Standard Project and a full Impact Study will be required
- Customers may elect to skip and go to a full Impact Study
Impact Study tariff timeline: 55 business days

- If substation modifications required, the Project is Complex and National Grid has 60 business days to complete the Impact Study

A Detailed Study may be conducted to determine substantial System Modifications. If a Detailed Study is needed, an early ISA can be requested via the Portal

- Detailed Study tariff timeline: 30 business days or by mutual agreement

- A status of “Study – Draft” means National Grid is awaiting Payment for the Study and/or a signed Impact Study Agreement. Same for Detailed Study. No Study begins without both.
Conditional Approval

Any document updates needed post Study
ISA draft being reviewed
ISA Executed, Completion Document Forms Generated
For projects that require Construction

Tariff timeline: 15 business days to deliver ISA after Impact Study or Detailed Study is completed
Design and Construction timeline is provided in the Interconnection Service Agreement (ISA)
Witness Test

- Appears as a separate Case in the Portal because it happens concurrently with other Statuses.
- Tariff timeline: Once witness test procedures approved, National Grid must complete witness test within 10 business days or by mutual agreement.
Completion Documents

Completion Documents must be submitted as a complete set.

There are Forms for all required documents

Completion Document Checklist:
- If Witness test is waived:
  - Certificate of Completion
  - Commissioning Memo
- Pictures of Installed Equipment
  - All Generation Inverters
  - Utility Revenue Meter
  - AC Utility Disconnect Switch
  - Current limiting Device(s)
  - Customer Owned Production Meter
  - Customer-owned Transformer
  - Service Equipment
  - Point of Common Coupling
- As Built Diagram
- Evidence of Insurance (<60kW)

- Wireless Test Form
- Wireless Meter Payment
- If Incentive = Net Metering
  - Net Meter Cap Allocation
  - Complete Schedule Z
- If Incentive = QF
  - Prate/Schedule A
  - FERC 556 (if ≥1 MW)
  - LMP Agreement
  - SAP Vendor Number
    - W-9
    - Payment Credit Transfer Form
    - ACH Form
Meter Installation and Connected

- All Completion Documentation must be approved

- Asset Registration is for Cases over 60kW

- Steps are built into the Construction Schedule
Other Statuses

- **Change Review**
  - Can trigger when the Customer updates major information
  - Alerts Case Owner that a change has been made to the Application Information

- **Pending Withdraw**
  - Triggers by customer milestone expiration
  - Still in queue until moved to Withdrawn Status by National Grid
Holds

- Process Holds
  - Stops the clock on Time Frames
  - The process cannot continue due to needed action on the part of the customer or third party outside of the customer’s control.
  - Document revisions, additional technical information, governmental action, legal extensions

- Force Majeure
  - Stops the clock on Time Frames
  - All projects in all Statuses are placed On Hold.
  - Includes storms, strikes, work stoppages, and labor disputes
### Timeline Overview - Expedited

<table>
<thead>
<tr>
<th>Category</th>
<th>Expedited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible Facilities</td>
<td>Listed Inverter DG</td>
</tr>
<tr>
<td>Acknowledge Receipt of Application</td>
<td>(3 days)</td>
</tr>
<tr>
<td>Review Application for Completeness</td>
<td>10 days</td>
</tr>
<tr>
<td>Complete Review of All Screens</td>
<td>25 days</td>
</tr>
<tr>
<td>Complete Supplemental Review (if needed)</td>
<td>20 days or Standard Process</td>
</tr>
<tr>
<td>Send Executable Agreement</td>
<td>10 days</td>
</tr>
<tr>
<td>Total Maximum Days</td>
<td>45/65 days</td>
</tr>
<tr>
<td>Construction Schedule</td>
<td>By Mutual Agreement</td>
</tr>
<tr>
<td>Notice/ Witness Test</td>
<td>Within 10 days of receiving CoC or by mutual agreement</td>
</tr>
</tbody>
</table>

For more information, see Table 2 and the following explanatory notes starting on Sheet 44 of the Distributed Generation Interconnection tariff.
## Timeline Overview – Standard/Complex

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
</tr>
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<tbody>
<tr>
<td>Eligible Facilities</td>
<td>Any DG</td>
</tr>
<tr>
<td>Acknowledge Receipt of Application</td>
<td>(3 days)</td>
</tr>
<tr>
<td>Review Application for Completeness</td>
<td>10 days</td>
</tr>
<tr>
<td>Complete Standard Process Initial Review</td>
<td>20 days</td>
</tr>
<tr>
<td>Send Impact Study Agreement</td>
<td>5 days</td>
</tr>
<tr>
<td>Complete Impact Study</td>
<td>55 days or 60 Days Complex</td>
</tr>
<tr>
<td>Complete Detailed Study (if needed)</td>
<td>30 days or by mutual agreement</td>
</tr>
<tr>
<td>Send Executable Agreement (ISA)</td>
<td>15 days</td>
</tr>
<tr>
<td>Total Maximum Days</td>
<td>135/160 days (200 days for Standard Complex)</td>
</tr>
<tr>
<td>Construction Schedule</td>
<td>By Mutual Agreement</td>
</tr>
<tr>
<td>Witness Test</td>
<td>10 days or by mutual agreement</td>
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</table>

For more information, see Tables 3 and 4 with the following explanatory notes starting on Sheet 47 of the Distributed Generation Interconnection tariff.
Utilizing the National Grid Customer Application Portal

If you need assistance, please use the "Help" Tab above or contact National Grid by using the "Contact Us" button on either the Help or Home Tab.

WELCOME TO THE CUSTOMER APPLICATION PORTAL

** FEATURED **

- PREPARING TO APPLY
- YOUR APPLICATION/PROJECT
- POST PROJECT

** To find proposed and connected distributed generation on a specific feeder, put the district and feeder number in the search bar, select the feeder, click on the "related" tab and select view all in feeder list for a feeder-specific report. **
Help Page

nCAP System Updates
- January 2018 New Features
- April 2018 New Features

Portal Navigation & Registration
- Portal Navigation - Helpful documentation on navigating the nCAP portal
- nCAP Registration - Instructions for Developers on Portal Registration and Logging In
- nCAP Portal Terminology - Common terms that users will encounter when using the nCAP Portal
- Application Roles - Brief explanation on the Application Roles you will see in the DG Application process
- Viewing Form Attachments - How to view attachments that are uploaded to forms
- Posting Messages Using Chatter - How to contact your application representative using the Chatter functionality

Application Process Guides & Helpful Documentation
- Simple Application Process - How-to guide for submitting Simple Applications via the nCAP Portal
- Submitting a Pre-Application - Instructions for submitting a Pre-Application using the nCAP portal
- Applications "On-Hold" - Instructions for addressing Applications when they are put "On Hold"
- Completion Documents - Instructions for completing and submitting the Application Completion Documents
- Interconnection Documents for Massachusetts - Instructions and explanations on Forms related to the MA DG process
- Interconnection Documents for Rhode Island - Instructions and explanations on Forms related to the RI DG process

Contact Us

nCAP Training Webinars

New York
- Application Process For NY - Live demo of submitting applications via the portal for the New York Application Process
- Useful Links for DG Projects in Upstate New York - Webinars given during the New York Implementation as well as useful links for the Application Process

Massachusetts
- Application Process for MA - Live demo of submitting applications via the portal for the Massachusetts Application Process
- Developer Webinar for MA/RI - Live demo of submitting applications via the portal for the Massachusetts Application Process

Rhode Island
- Application Process for RI - Live demo of submitting applications via the portal for the Rhode Island Application Process
- ReGrowth Applications RI - Live webinar of the process for submitting Rhode Island ReGrowth Applications
List of Statuses where Required Forms are Generated

- Pre-Application Draft
  - Pre Application
- Application Draft
  - Application, Application Payment, Line Diagram, Tech Sheet & Site Plan
- Supplemental Review Draft
  - Supplemental Review Agreement
  - Supplemental Payment
- Study Draft
  - Study Agreement
  - Study Payment
  - Detailed Study Draft
    - Detailed Study Agreement
    - Detailed Study Payment
  - Conditional Approval- Install Generator
    - All Close Out Package Forms
    - CIAC Payment (if needed)
Required Forms

During specific statuses of the application, National Grid will supply required forms to the case that will need an action taken on them. These forms are shown with a checkbox under “Required”.

<table>
<thead>
<tr>
<th>Status</th>
<th>Signature Status</th>
<th>Form Name</th>
<th>Required</th>
<th>Prep</th>
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<th>Upload</th>
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<tr>
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List of Statuses with “Finalize Submission” Option

- Pre-Application Draft
- Application Draft
- Supplemental Review Draft
- Study Draft
- Detailed Study Draft
- Completion Documents Draft
- Any status where the Application is on hold
Three Types of Forms

- Upload Only
- Signature & Portal Made
- Payment
Upload Only Forms (1 of 3)
Upload Only Forms (2 of 3)

1) Click on the “upload” icon

<table>
<thead>
<tr>
<th>FORMS</th>
<th>ACTIVE MILESTONES</th>
<th>ALL MILESTONES</th>
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2) “Choose File” to select the document from your computer

3) Press “Save”
4) After successfully uploading a form, the form status will change from “New” to “Draft”

**Before**

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**After**

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<td><img src="/image" alt="Upload" /></td>
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</tbody>
</table>
Application Form:

1) Select the “Prep” icon and “Equipment Selector”
2) Add the “manufacturer” or “product model” of the pieces of equipment associated to the project

3) Add the product and fill out any required fields. Select “Add Asset”
4) If you cannot locate your piece of equipment, select “Add Unlisted Generator Product” and fill out any required fields. Select Add Asset when completed.

5) After adding all of the equipment, select the “Submit Asset” button.
6) After adding your asset, select the “Edit” icon and “View/ Edit Form”. Forms that are created inside the portal will all have the same “View/Edit Form” button.
7) After selecting “View/ Edit forms,” the form will open in your browser.

8) Fill out any required fields. These will be marked with an asterisks (*).

9) If it is a signature form (Application, Study, Detailed Study, Supplemental Review) you will need to select whether you want to sign it through “Adobe sign” (eSignature) or “offline sign” (wet signature and upload).
10) If a form has a Signature Status of “Signature Needed,” select “Offline Sign” or “eSign”

11) If you select “Offline Sign,” upload the wet signature using the “Upload” button.
On payment forms, you will have the ability to download an invoice from the portal or make a payment through JP Morgan. The JP Morgan Payment is preferred because it expedites the payment process.

1) Select the “Prep” icon and select “Online Payment”
This will launch the login page. If this is your first time logging in, you will need to create a username and copy the temporary password before moving forward.

2) Select “Continue” to Pay Connexion – you will be leaving the National Grid website to make the payment.
3) Enter your User ID and Web Password. If you forget your username and password you must contact JPMC to reset it.

4) You will then see the invoice information. If everything looks good, select the checkbox to agree to the Debit.
After paying on JP Morgan, the form status will change from “New” to “Draft”.

5) If you do not want to pay through JP Morgan, please select the “Prep” icon and then the “Generate Invoice” selection and print off the invoice.

6) Upload a picture of the check to the form and mail the check to the inbox.

National Grid
P.O. Box 29805
New York, NY 10087-29805

In both scenarios, the status changes from “New” to “Draft”
After all required forms are in the status of “Draft” and all of the signature statuses are either “eSignature Chosen” or “Offline Sign,” the “Finalize Submission” button will be highlighted green.

7) Select “Finalize Submission” to send all the forms to National Grid for review.
Finalizing the Submission

Success!

The application has been finalized.

Go to Case
We are planning on launching a live Help Bar at the beginning of August.

It will be located at the Sustainability Hub in Worcester, MA.

If you have any questions about submitting your application, please feel free to stop on by for in-person assistance.

Our first release will be Application Submittal only- but we look to expand to all aspects of the project.

More communications will be sent out to everyone who has attended this meeting with details about the Help Bar.
New Addendum to the Schedule Z

- There is now an Excel spreadsheet called “Schedule Z Allocation Template” that will required to be submitted with a Schedule Z.
- The Schedule Z form is not changing and must also be submitted.
- Excel spreadsheet required for new and revised Schedule Z beginning August 1, 2018
  - May not be available on the site until Aug 1, 2018
National Grid is firmly committed to protecting our customers' privacy. National Grid’s Privacy Policy, which applies to this Portal and to any means by which customers provide their information to National Grid, can be found here:

https://www.nationalgridus.com/Our-Company/Privacy-Policy
Massachusetts SMART Program
National Grid Interconnection Seminar
July 19, 2018
We help utilities, businesses and individuals make smart energy decisions every day.
Disclaimer

The following presentation summarizes the best available information known by the presenter and is based upon the electric distribution companies’ proposed terms and conditions for the SMART program and tariffs, which have not yet been ruled on by the DPU as of the date of this presentation. Given the pendency of a final decision, if any person relies on any of the content of this presentation to make decisions, he or she is doing so at his or her own risk. The DPU may approve, modify, or reject any aspect of the SMART program and tariffs that are summarized here. It is the responsibility of readers and viewers of this presentation to inform themselves of the final outcome(s) of the SMART proceeding, and any eventual difference(s) from the content provided here.
SREC to SMART Transition Process

SMART Tariff Approval and Launch Date

• DPU will issue an order on the SMART Tariff, perhaps in late July
• SMART Program will officially take effect approximately 30 days from initial order
• DOER will announce the official launch date for the SMART program

SREC II Qualification

• Projects > 25 kW DC must demonstrate it is “mechanically complete” within two weeks after the SMART Program Effective Date
• Projects ≤ 25 kW DC will need to submit an application to DOER by 11/15/18.
  • Application will be required to demonstrate the facility’s authorization to interconnect was granted before the SMART Program Effective Date
Massachusetts SMART Program

Important Participation Notes:

• Sign contracts & ISA for Large projects *before* applying

• Apply *online* via PowerClerk portal

• Receive Preliminary & Final SoQs *from DOER* (via PowerClerk)

• Electric Distribution Co. is responsible for SMART payments
The timing of SMART launch is dependent on the MA Department of Public Utilities (DPU) SMART Tariff proceedings.

Two SMART Program website types under development:

- **www.MASmartSolar.com**
  - General program information & updates
  - Frequently Asked Questions
  - “How To” guides & checklists
  - Links to regulations & electric distribution company (EDC) websites

- **https://MASmartSolar.PowerClerk.com**
  - Online, secure application portals
  - Access is limited by username & password
  - Each user has their own account
  - Can grant access on a project by project basis so employees at same company can share
  - All communication & documentation via portal!
MA SMART Program Statement of Qualification Application and Incentive Claim Requirements Checklist – Small Systems (DRAFT)

<table>
<thead>
<tr>
<th>Documentation</th>
<th>Required Submission Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copy of executed contract between installer and customer</td>
<td>✓</td>
</tr>
<tr>
<td>Customer Disclosure Form</td>
<td>✓</td>
</tr>
<tr>
<td>Copy of customer electric utility bill</td>
<td>✓</td>
</tr>
<tr>
<td>Application fee (payable online via credit card)</td>
<td>✓</td>
</tr>
<tr>
<td>Certification form regarding terms &amp; conditions (this will be electronically signed online)</td>
<td>✓</td>
</tr>
<tr>
<td>If applicable, copy of executed Power Purchase Agreement / Lease if the system is third-party owned</td>
<td>✓</td>
</tr>
<tr>
<td>If applicable, documentation of low-income residential utility rate (requirement can be met through submission of utility bill showing customer is on relevant low-income rate)</td>
<td>✓</td>
</tr>
<tr>
<td>If applicable, documentation/specifications on Energy Storage Adder</td>
<td>✓</td>
</tr>
<tr>
<td>If applicable, Schedule Z (Net Metering Service Form)</td>
<td>✓</td>
</tr>
<tr>
<td>Payment Credit Form, including, if applicable, Payment Credit Transfer Form list of desired allocatees</td>
<td>✓</td>
</tr>
<tr>
<td>Renewable Energy Certificate Assignment and Aggregation Form</td>
<td>✓</td>
</tr>
<tr>
<td>If applicable, ACH electronic payment authorization form</td>
<td>✓</td>
</tr>
<tr>
<td>Signed W-9</td>
<td>✓</td>
</tr>
<tr>
<td>Evidence of utility authorization to interconnect</td>
<td>✓</td>
</tr>
<tr>
<td>If applicable (i.e. for BTM systems), evidence of EDC installation of generation meter</td>
<td>✓</td>
</tr>
</tbody>
</table>
### MA SMART Program Requirements Checklist – Large Systems (DRAFT)

<table>
<thead>
<tr>
<th>Documentation</th>
<th>Required Submission Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application fee (payable online via credit card)</td>
<td>With Incentive Application Submission</td>
</tr>
<tr>
<td>Copy of valid, executed, in-force Interconnection Services Agreement</td>
<td>✓</td>
</tr>
<tr>
<td>Evidence of site control</td>
<td>✓</td>
</tr>
</tbody>
</table>
| All non-ministerial permits that may be applicable. These may include but are not limited to the following:  
  ___ ZBA rulings, Conservation Commission votes, etc.  
  ___ Landfill or Brownfield permits or certifications  
  ___ MA Dept. of Environmental Protection, MA Fish & Game, MA Dept. of Agricultural, etc. | ✓                          | ✓                                     |
| Any Solar Tariff Generation Unit (STGU) seeking an Adder will be required to provide supporting documentation  
  ___ Plans and/or specifications documenting Canal, Canopy, Building Mount, etc.  
  ___ Energy Storage plans & specifications  
  ___ Solar Tracker plans & specifications  
  ___ Off-taker based adder documentation | ✓                          | ✓                                     |
| If applicable, PURPA Requirements indicating FERC QF filing                  | ✓                          | ✓                                     |
| Land use documentation for ground mounted projects > 500 kW  
  ___ If required, evidence of local zoning regulation for large ground mounted systems  
  ___ If required, evidence supporting prior development claims, if applicable | ✓                          | ✓                                     |
| Certification form regarding terms & conditions (this will be electronically signed online) | ✓                          | ✓                                     |
| Land use documentation for ground mounted projects > 500 kW                  | ✓                          | ✓                                     |
| Professional Engineer stamped performance standards compliance               |                           | ✓                                     |
| Either Renewable Energy Certificate Assignment and Aggregation Form (if applicable) or evidence of LMP authorization or Forward Certificate transfer to appropriate EDC | ✓                          | ✓                                     |
| If applicable, Schedule Z (Net Metering Service Form)                       |                           | ✓                                     |
| Payment Credit Form, including, if applicable, Payment Credit Transfer Form list of desired allocatees |                           | ✓                                     |
| If applicable, ACH electronic payment authorization form                     |                           | ✓                                     |
| Signed W-9                                                                   |                           | ✓                                     |
| Evidence of utility authorization to interconnect                            |                           | ✓                                     |
| If applicable (i.e. for BTM systems), evidence of EDC installation of generation meter |                           | ✓                                     |
| Customer disclosure forms signed by all enrolled off-takers for AOBC or CSS systems |                           | ✓                                     |
### SMART Solar Block Status Update

<table>
<thead>
<tr>
<th>Electric Distribution Company (EDC)</th>
<th>Size Group</th>
<th>Current Block</th>
<th>Block/Size Group (MW)</th>
<th>Allocated Capacity (MW)</th>
<th>Pending Capacity (MW)</th>
<th>Accepting Applications for Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eversource MA East</td>
<td>Small</td>
<td>1 of 8</td>
<td>18.303</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Eversource MA East</td>
<td>Large</td>
<td>1 of 8</td>
<td>73.211</td>
<td>2.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Eversource MA West</td>
<td>Small</td>
<td>1 of 8</td>
<td>3.147</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Eversource MA West</td>
<td>Large</td>
<td>1 of 8</td>
<td>12.588</td>
<td>7.700</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>National Grid (Mass. Electric)</td>
<td>Small</td>
<td>1 of 8</td>
<td>18.004</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>National Grid (Mass. Electric)</td>
<td>Large</td>
<td>1 of 8</td>
<td>72.018</td>
<td>43.573</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>National Grid (Nantucket)</td>
<td>Small</td>
<td>1 of 2</td>
<td>0.604</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>National Grid (Nantucket)</td>
<td>Large</td>
<td>1 of 2</td>
<td>2.417</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Unitil</td>
<td>Small</td>
<td>1 of 4</td>
<td>0.789</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
<tr>
<td>Unitil</td>
<td>Large</td>
<td>1 of 4</td>
<td>3.158</td>
<td>0.000</td>
<td>0.000</td>
<td>1</td>
</tr>
</tbody>
</table>

**NOTE 1:** The Block/Size Group MW values are estimated using the minimum Small Block set-aside percentage (20%) of the Total Capacity Available for each block, per DOER regulations. Note that up to 35% can be allocated to Small systems in any given block. Therefore, depending upon demand, these values may be adjusted as the Blocks fill independently of each other.

**NOTE 2:** Allocated Capacity (MW) is the total of Applicants that have been issued a Statement of Qualification.

**NOTE 3:** Pending Capacity (MW) is the total Applications submitted but not yet approved or assigned to a Block. Note that some of this capacity may be moved to the next Block as the current Block fills.

**NOTE 4:** Assuming that all the Pending Capacity is approved, this is the estimated Block where new applications will be assigned.
Block Management Process

As Blocks fill: immediately transition to next Block
- The 5 EDC territories fill and transition independently
- Small and Large fill and transition independently

80 MW Tranches for Adders; Independent of Blocks

Special Rules for “Week One”:
- Portal will open Day 1 during normal business hours (EST)
- No timestamps on Week One (1st five business days)
- Only complete, eligible projects will be in the queue
- Large projects: to be ordered by ISA execution date
- Small projects: ordered by contract execution date
- Tiebreaker rules will be applied if necessary
- Program portal will be primary means of communication

There is No Need to Rush on Week One!

Process after “Week One”:
- Portal will remain open 24/7 and all will be time stamped
- Status reports to be posted on PowerClerk homepages
How SMART Calculates Capacity

- SMART capacity is based on the inverter(s) tested maximum output at unity (AC).
- PowerClerk will be the SMART Program application portal & uses the CEC ratings
  - http://www.gosolarcalifornia.ca.gov/equipment/inverters.php
- PowerClerk rounds off to two decimal places but CEC sometimes goes to three.
- PowerClerk lists by tested rating but CEC usually uses manufacturers published sizes.
- Most CEC tested ratings are ≤ published sizes; HOWEVER, a few are **LARGER** than the manufacturer’s published ratings.
SMART Program

Project Segmentation Rules:

225 CMR 20.05(5)(f): No more than one Building Mounted Generation Unit on a single building, or one ground-mounted Solar Tariff Generation Unit on a single parcel or contiguous parcels of land, shall be eligible to receive a Statement of Qualification as a Solar Tariff Generation Unit.

Notwithstanding the above, there are exceptions:

- ≤ 25 kW; property not sub-divided due to SMART
- ≤ 25 kW, or Canopy, or Building Mounted on same parcel as another STGU if on separate buildings and separately metered
- Separately metered and serving different end-users
- Applied 12 months after the original (1st) unit
- Located across multiple parcels but with one point of interconnection and single production meter
- Can demonstrate required documentation was obtained prior to 6/5/17
- Good cause exceptions approved by DOER
Land Use Categories & Greenfield Subtractor

- All systems are categorized according to land use
  - Category 1: No Greenfield Subtractor
  - Category 2: Greenfield Subtractor of $0.0005/acre impacted
  - Category 3: Greenfield Subtractor of $0.001/acre impacted
- Area impacted determined by the area of the PV panels
- Category is determined based on multiple factors such as, but not necessarily limited to the following:
  - Is the system located on Land in Agricultural Use?
  - What is the size of the system?
  - Is the system ground mounted?
  - What is the existing condition of the land?
  - What is the zoning of the land?
- More information can be found in DOER’s *Guideline on Land Use and Siting*, which can be downloaded at:
  
Solar Program Administrator information:

- 888-989-7752
- masmartsolar@clearesult.com
- Sam Nutter, Program Director
- Dana Robert Beale, Program Manager

Thank You
Questions?