

# **NYC Installer Workshop**

**March 18th , 2019  
Con Edison**

# Agenda

- Overview of progress to date
- Con Edison Grid 101
- ConnectDER
- Con Edison Interconnection Process
- Rates & Billing
- Key Takeaways and Resources

# 2018 Overview

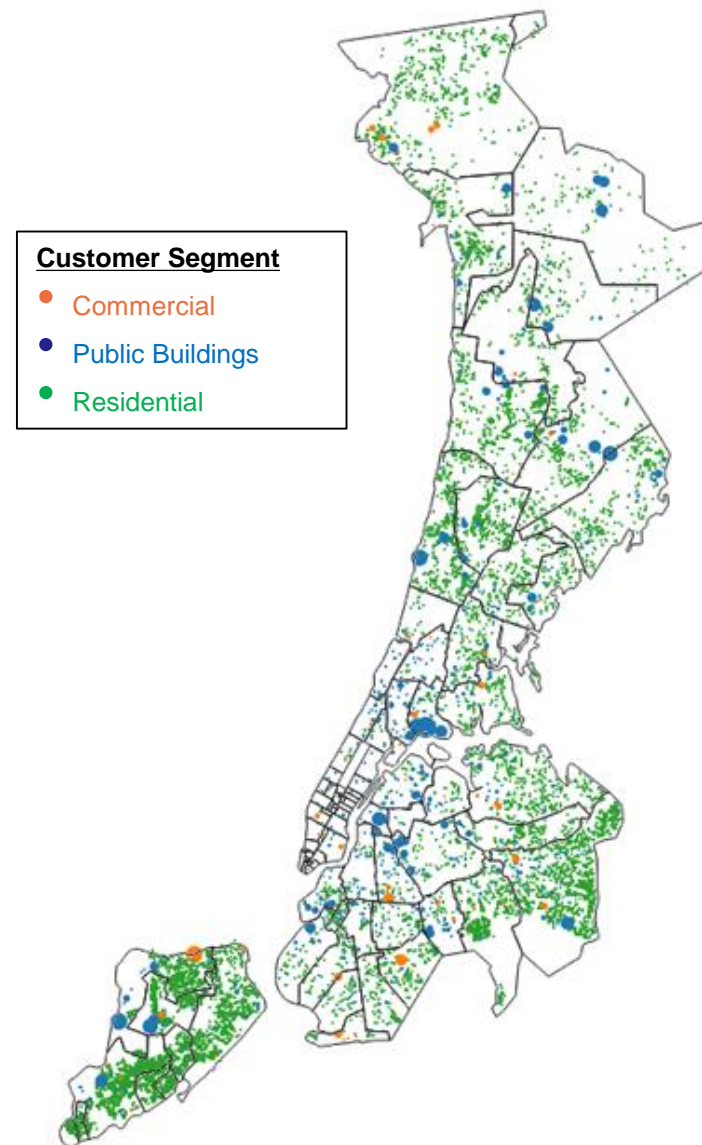
# Interconnection

## Customer Adoption

- Added 5,842 new DG installations
- Solar accounted for 98% of installs
- Uptick in RNM and CDG applications

DG Installations (as of 12/31/18)

Units: # of installs	Con Ed Territory		NYC Only	
	2018 only	Total	2018 only	Total
Battery Storage	12	30	4	19
Fuel Cells	1	31	0	24
CHP	20	301	19	271
Solar	5,809	23,588	4,900	18,110
<b>TOTAL</b>	<b>5,842</b>	<b>23,956</b>	<b>4,945</b>	<b>18,429</b>



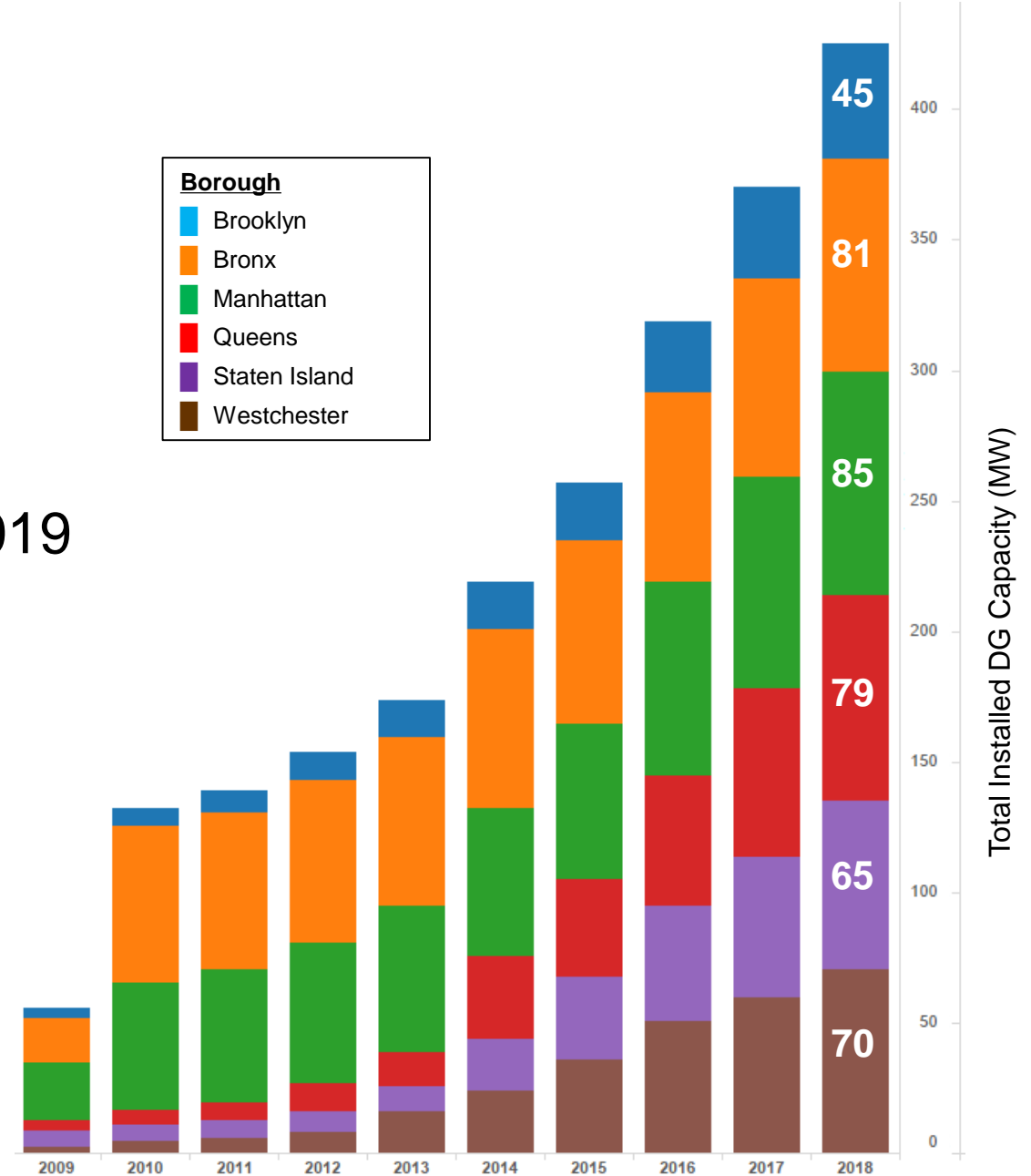
# Interconnection

## DG Capacity Additions

- Added 55 MW new capacity
- Solar accounted for 50% of capacity
- Solar capacity is coming in on forecast – 2019 projected to reach 267 MW capacity

DG Capacity Installed (as of 12/31/18)

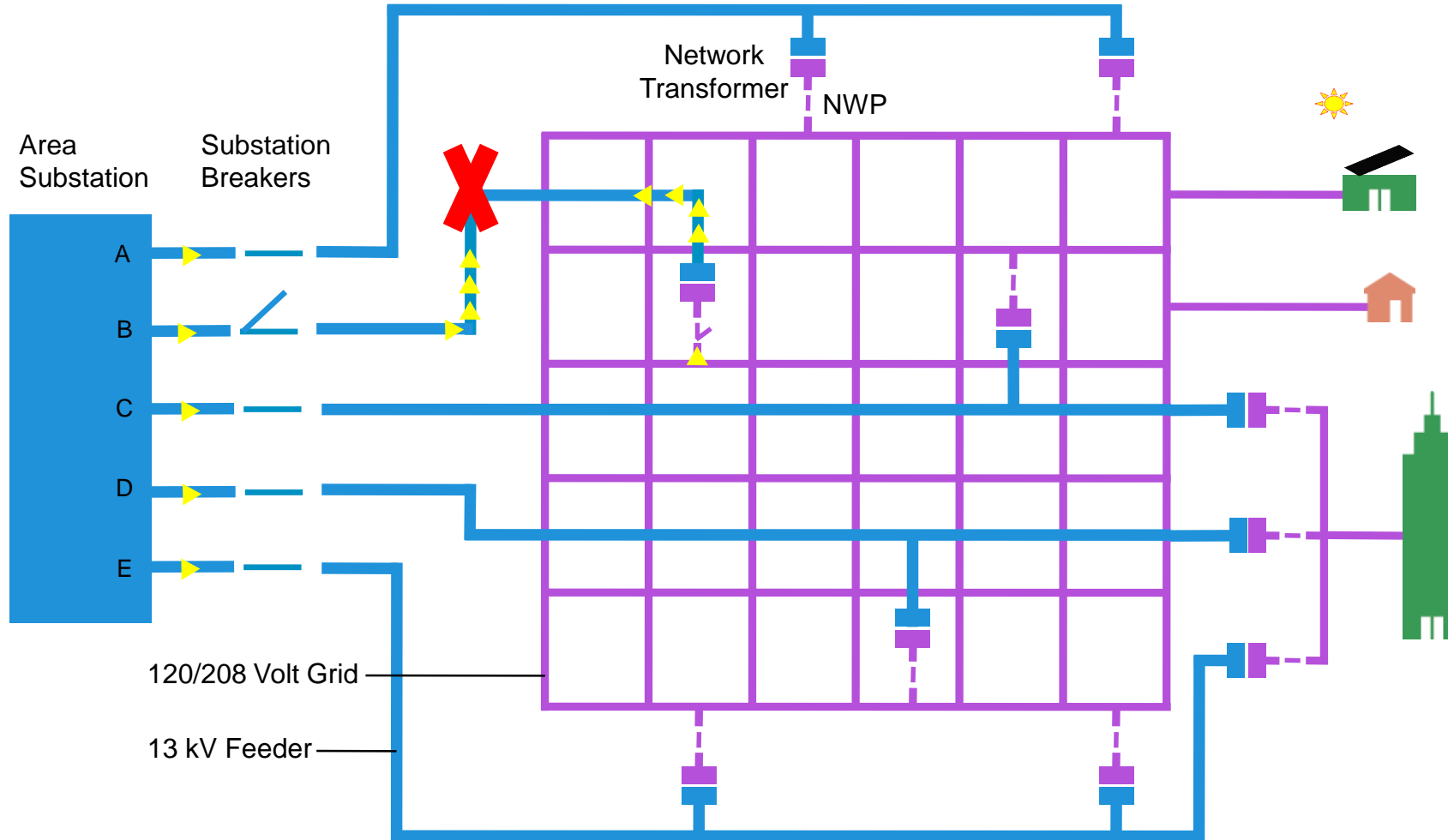
Units: MW	Con Ed Territory		NYC Only	
	2018 only	Total	2018 only	Total
Battery Storage	0.7	2.7	0.25	2.2
Fuel Cells	0.2	12.7	0	10
CHP	4.7	181	4.5	176
Solar	50	228	39.7	167
<b>TOTAL</b>	<b>55</b>	<b>425</b>	<b>45</b>	<b>355</b>



# **Integrating DERs into the Underground Network System**

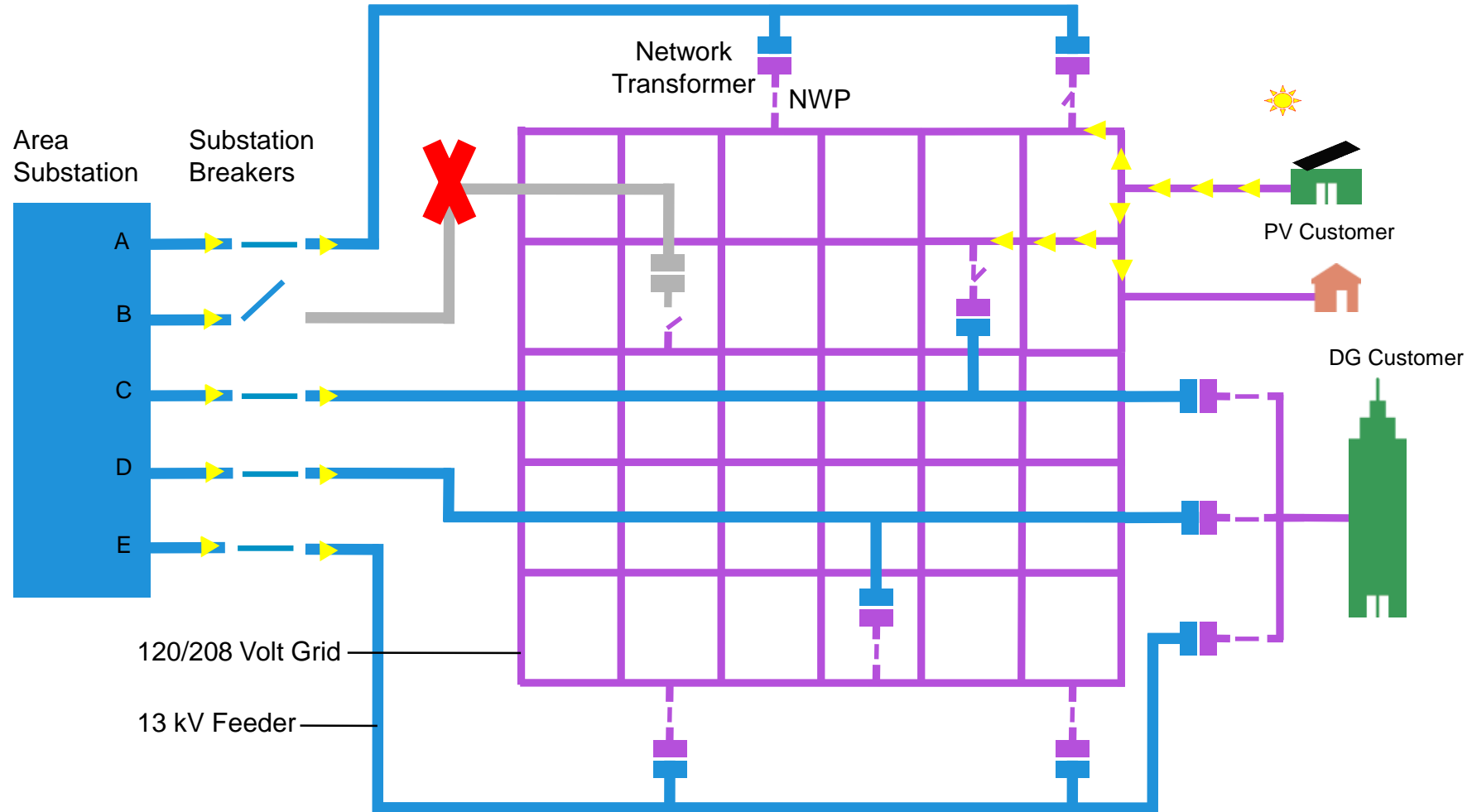
# Purpose of Network Protectors (NWP)

## Fault Isolation



# Network Protector Considerations

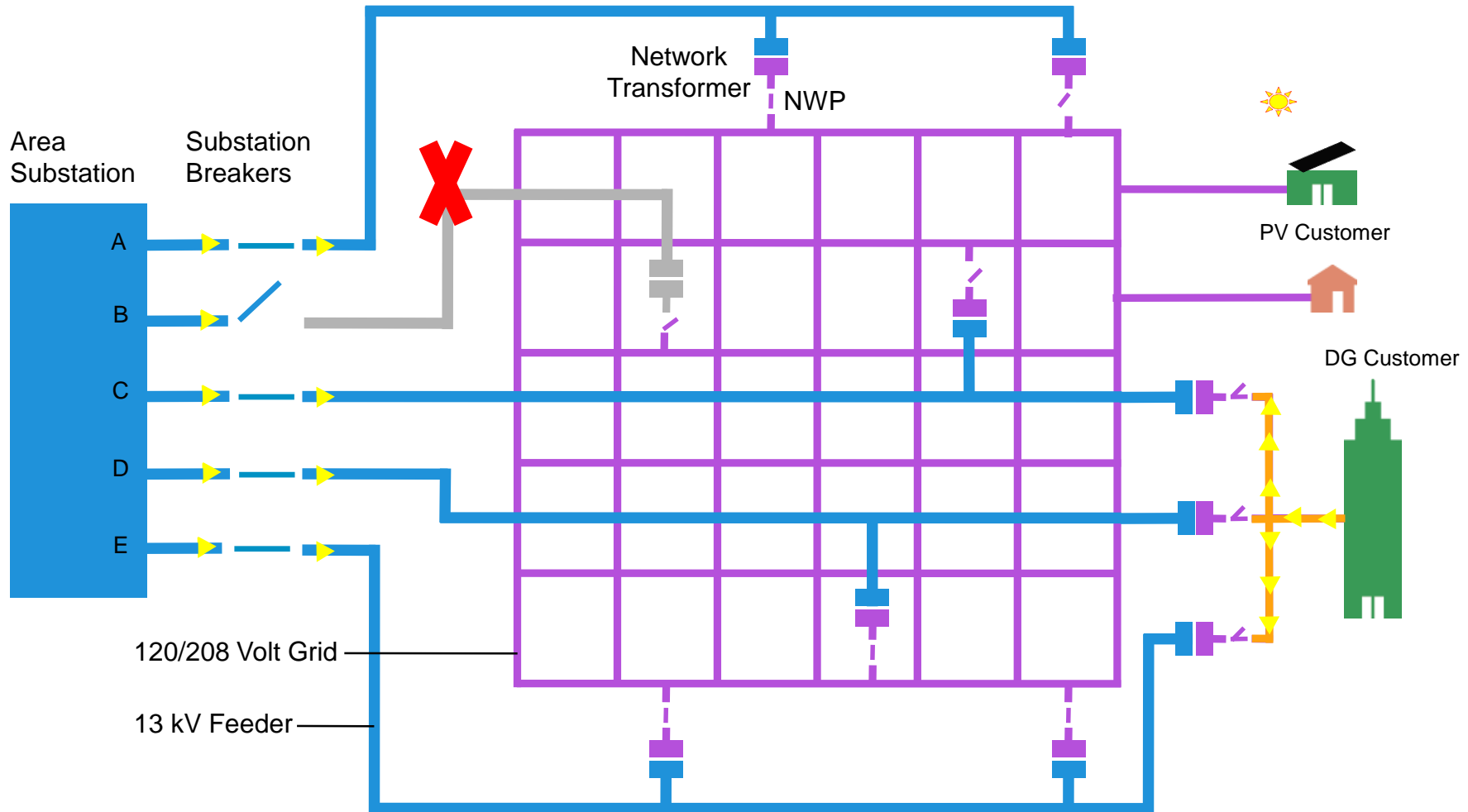
## Solar Export w/ Low Network Load





# Network Protector Considerations

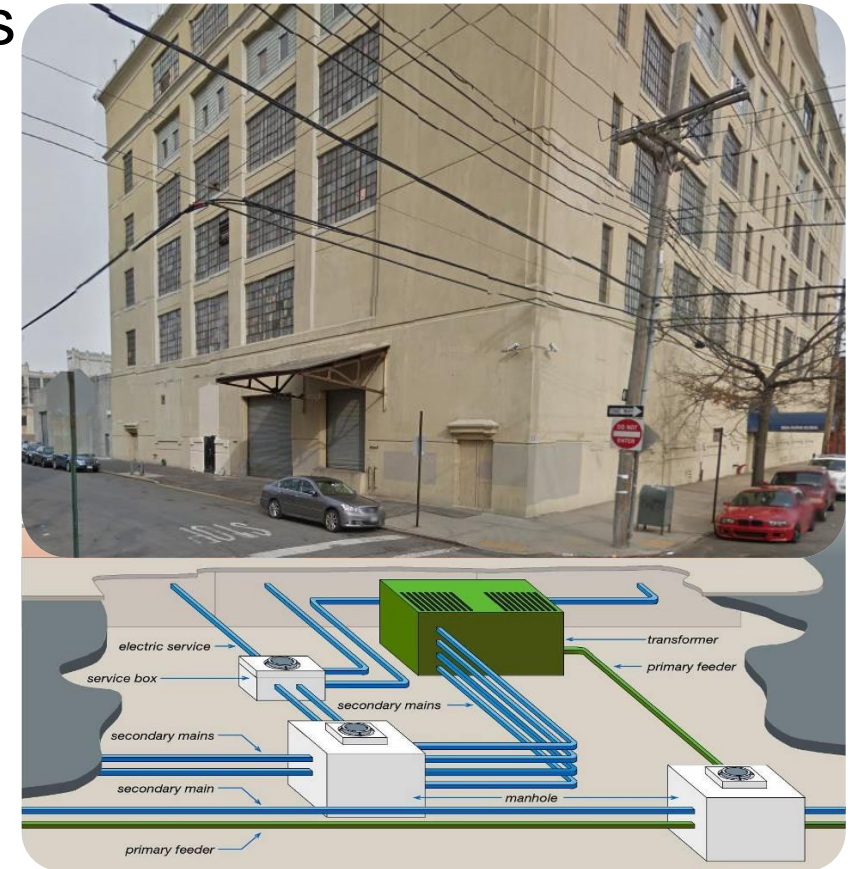
## Isolated/Spot Networks



# DG Implications

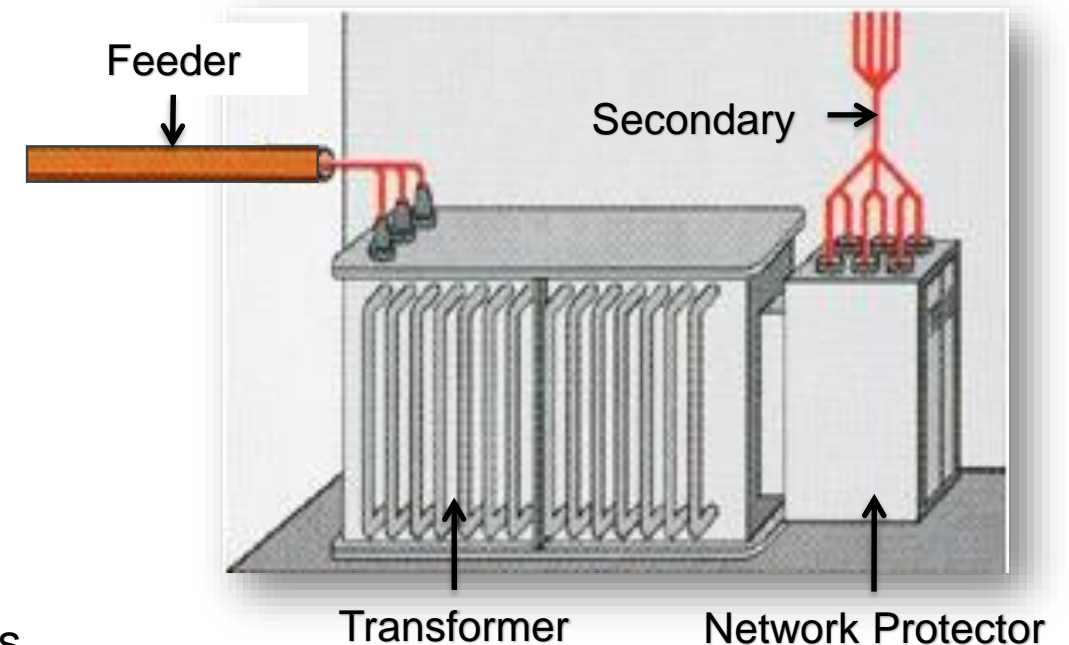
## Network Grid Service

- Export capability dependent upon multiple factors
  - PV size vs service capacity
  - Network loading
  - Nearby transformer loading
  - Network Protector operations
- Upgrades to service may require street work
  - Localized underground
  - Increased customer cost & timeline



# DG Export Solutions for Network System

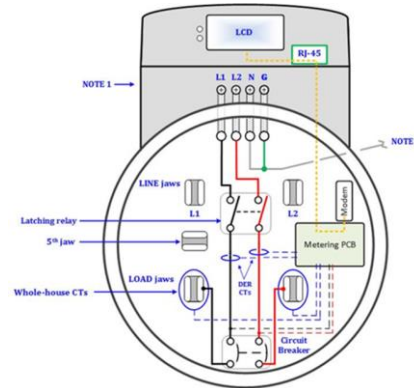
- Adaptive Trip (AT) or Insensitive (I):
  - Application: Network grid service
  - Description: Modifications to nearby network protectors to make operation more conducive to reverse power flow from solar export
  - Typical Cost: Up to \$20K
- Communications Aided Tripping (CAT):
  - Application: Isolated/Spot Network
  - Description: Modifications to impacted network protectors and communication to customer inverters.
  - Typical Cost: \$70-100K



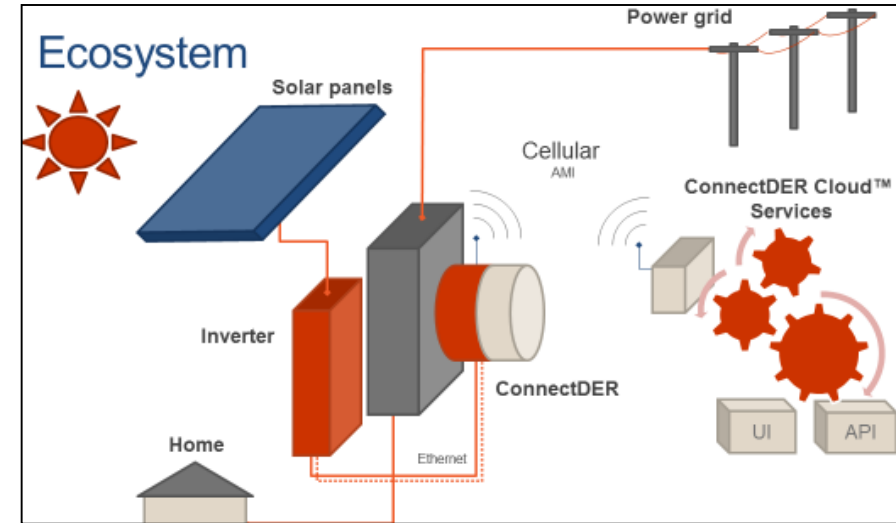
# ConnectDER

# Smart ConnectDER

## Device



## Role / Functionality



## Description

- DER meter collar for easy interconnection of all residential scale DER (<15kW)
- Integrated circuit breaker can be customized to each location – eliminates need for separate 89L
- No line side tap, no penetration into home, no panel upgrades.

## Benefits

- Reduces DER installation time & lowers balance of system cost for Customers
- Removes risk from Installers, speeds up PTO by early net meter installation.
- Utility gains data from PV production for planning/operations/billing needs
- Easy to add battery to existing PV site.
- Sized for most residential EV Chargers

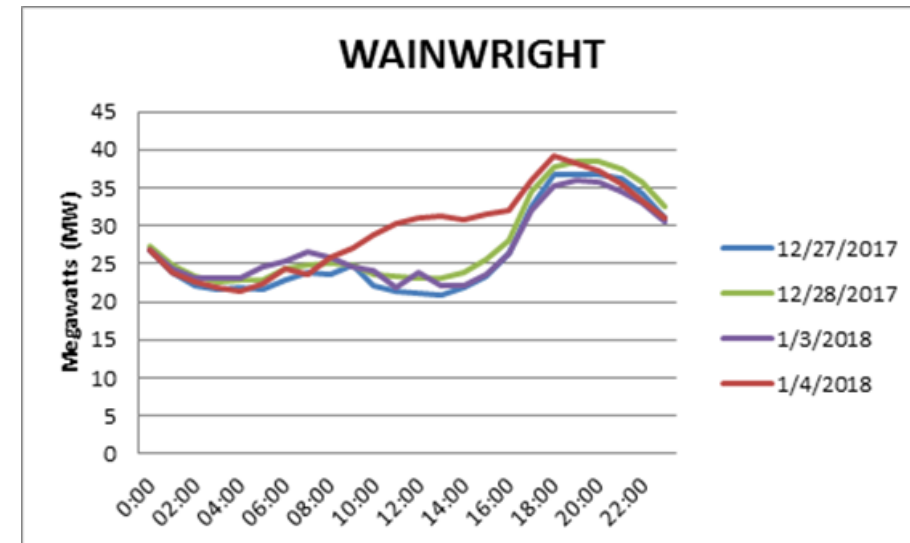
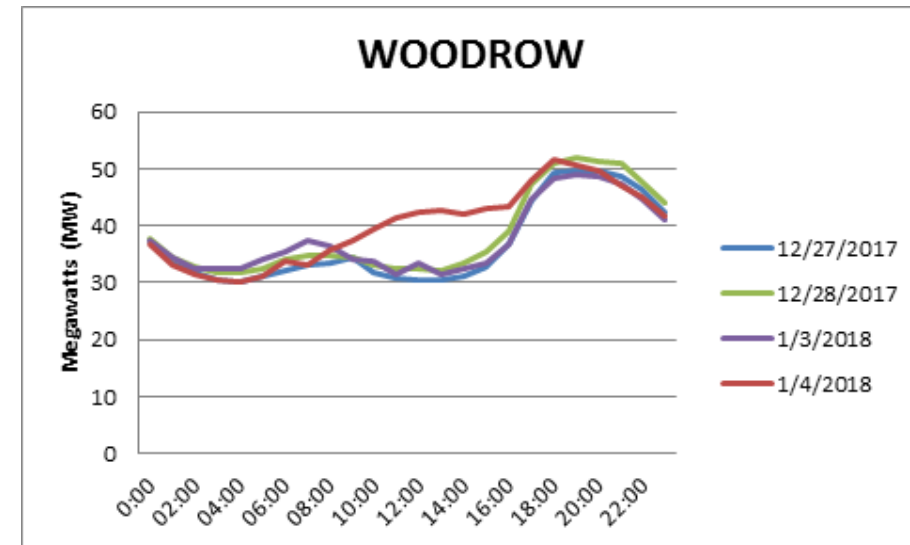
Company / Technology Description

# ConnectDER Roadmap

- Con Edison Pilot in Staten Island
  - 32 units installed by two pilot Installers
  - Installed first AMI meters in territory
  - Customers saved \$500 on average
  - Fully funded by Con Edison R&D
- NYISO Pilot Expansion
  - Install on 200 additional homes on SI
  - Started June 2018 - 59 installations so far
  - Testing residential solar effect at NYISO
  - No cost to installer/customer to participate
- ConnectDER Innovation Initiative
  - Procurement of 500 units for all boroughs
  - Launching the initiative today!
  - Looking to expand to non-PV locations
  - Continue to provide units at no cost
- Looking forward...
  - 2019 – Integrate process into PowerClerk
  - Q1/2 2019 – Rollout units across territory
  - Look for more opportunities to install units
  - Incorporate data into grid planning



# ConnectDER will help us understand SI duck curves

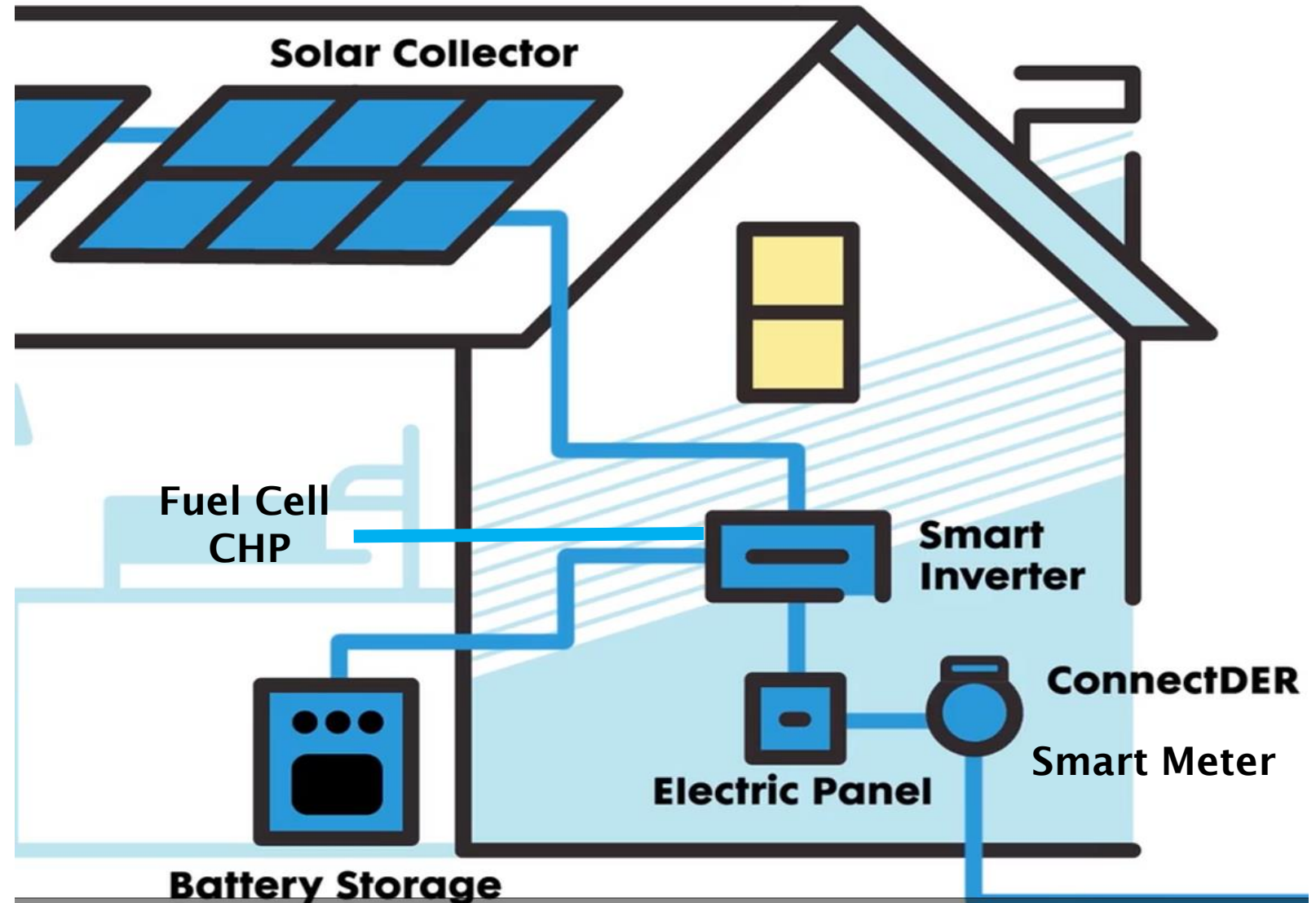


# Interconnection Process



# Interconnection “Trailer”

<https://bcove.video/2yzYBbr>



# Prior to First Interconnection Request

- [Read the New York State Standard Interconnection Requirements \(SIR\)](#)
  - Application Process and Timelines
  - Technical and Operating Requirements
  - Required Contracts and Forms
- [Read Rider R](#)
  - Net Metering and Value Stack Tariff
- Register with Power Clerk
  - How you submit applications
- Contact us with any questions – [dgexpert@coned.com](mailto:dgexpert@coned.com)



# How You Submit: PowerClerk

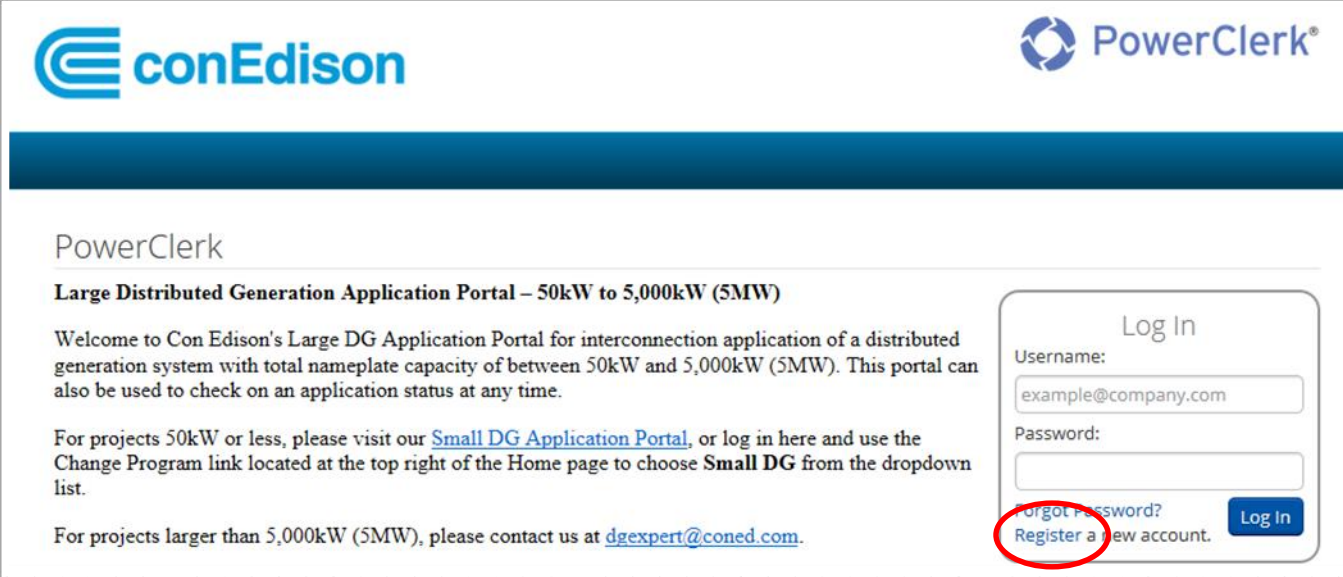
Register for Small DG and/or Large DG program(s)

Projects up to 50 kW

[conedsmalldg.powerclerk.com](https://conedsmalldg.powerclerk.com)

Projects 50 kW to 5 MW

[conedlargedg.powerclerk.com](https://conedlargedg.powerclerk.com)



The screenshot shows the PowerClerk interface for Con Edison. At the top, the Con Edison logo is on the left and the PowerClerk logo is on the right. Below the logos is a dark blue horizontal bar. The main content area is titled "PowerClerk" and contains the following text:

**Large Distributed Generation Application Portal – 50kW to 5,000kW (5MW)**

Welcome to Con Edison's Large DG Application Portal for interconnection application of a distributed generation system with total nameplate capacity of between 50kW and 5,000kW (5MW). This portal can also be used to check on an application status at any time.

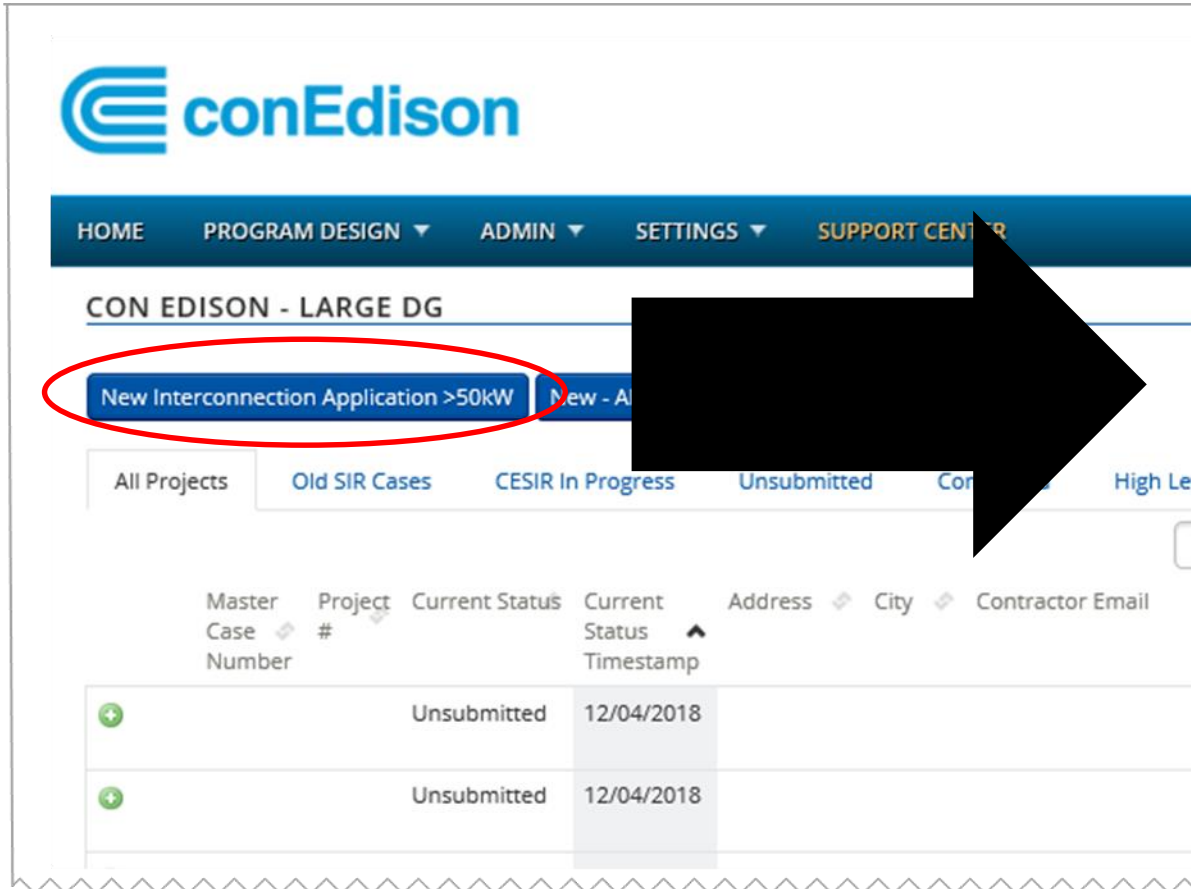
For projects 50kW or less, please visit our [Small DG Application Portal](#), or log in here and use the Change Program link located at the top right of the Home page to choose **Small DG** from the dropdown list.

For projects larger than 5,000kW (5MW), please contact us at [dgexpert@coned.com](mailto:dgexpert@coned.com).

On the right side, there is a "Log In" box with the following fields:

- Username:
- Password:
- Log In button
- Forgot Password? link
- Register a new account. link (circled in red)

# Beginning an Application



conEdison

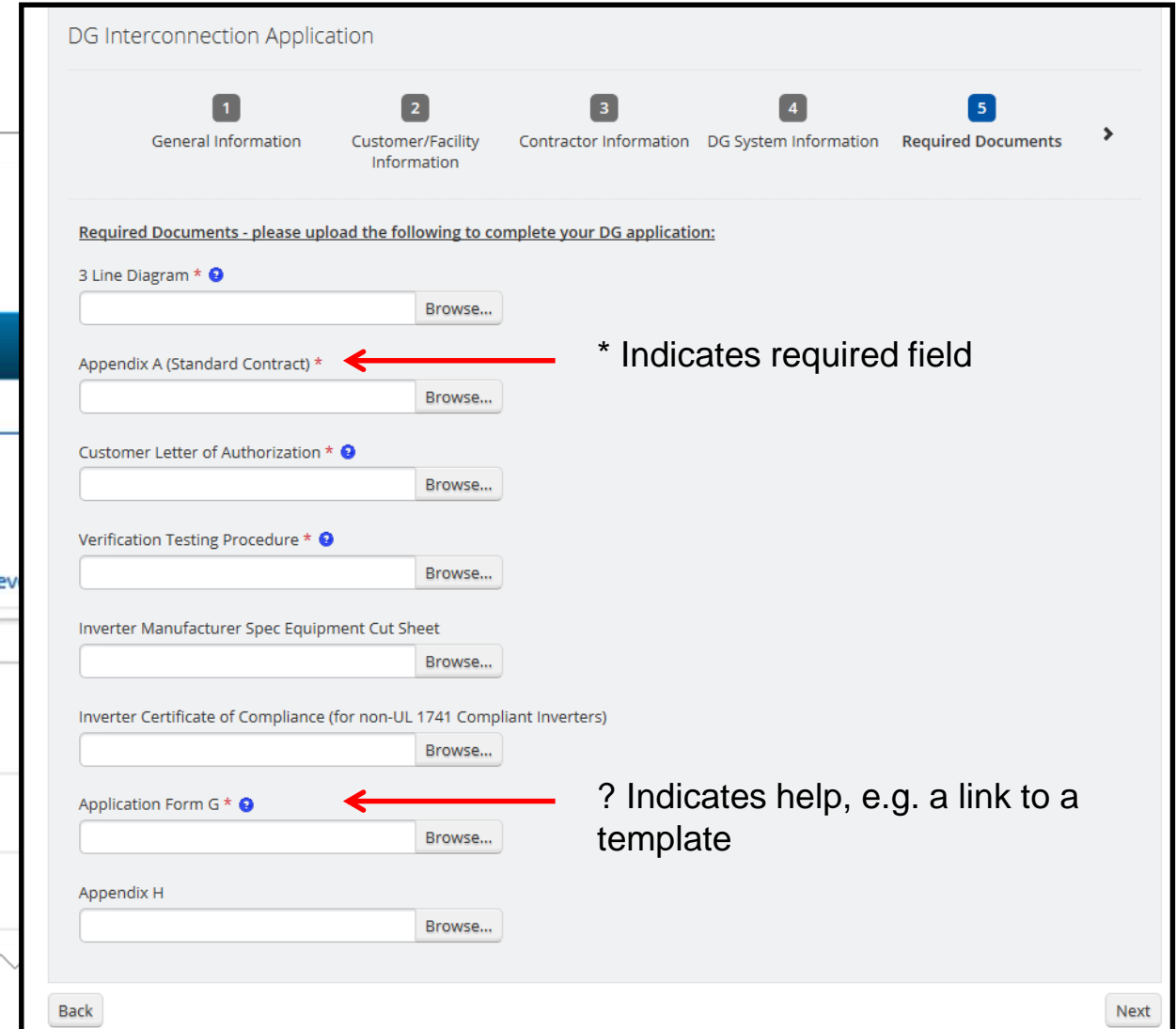
HOME PROGRAM DESIGN ▾ ADMIN ▾ SETTINGS ▾ SUPPORT CENTER

CON EDISON - LARGE DG

**New Interconnection Application >50kW** New - A

All Projects Old SIR Cases CESIR In Progress Unsubmitted Con High Lev

Master Case #	Project #	Current Status	Current Status Timestamp	Address	City	Contractor Email
+		Unsubmitted	12/04/2018			
+		Unsubmitted	12/04/2018			



DG Interconnection Application

1 General Information 2 Customer/Facility Information 3 Contractor Information 4 DG System Information 5 Required Documents >

Required Documents - please upload the following to complete your DG application:

3 Line Diagram \* ⓘ  Browse...

Appendix A (Standard Contract) \* ⓘ  Browse...

Customer Letter of Authorization \* ⓘ  Browse...

Verification Testing Procedure \* ⓘ  Browse...

Inverter Manufacturer Spec Equipment Cut Sheet  Browse...

Inverter Certificate of Compliance (for non-UL 1741 Compliant Inverters)  Browse...

Application Form G \* ⓘ  Browse...

Appendix H  Browse...

Back Next

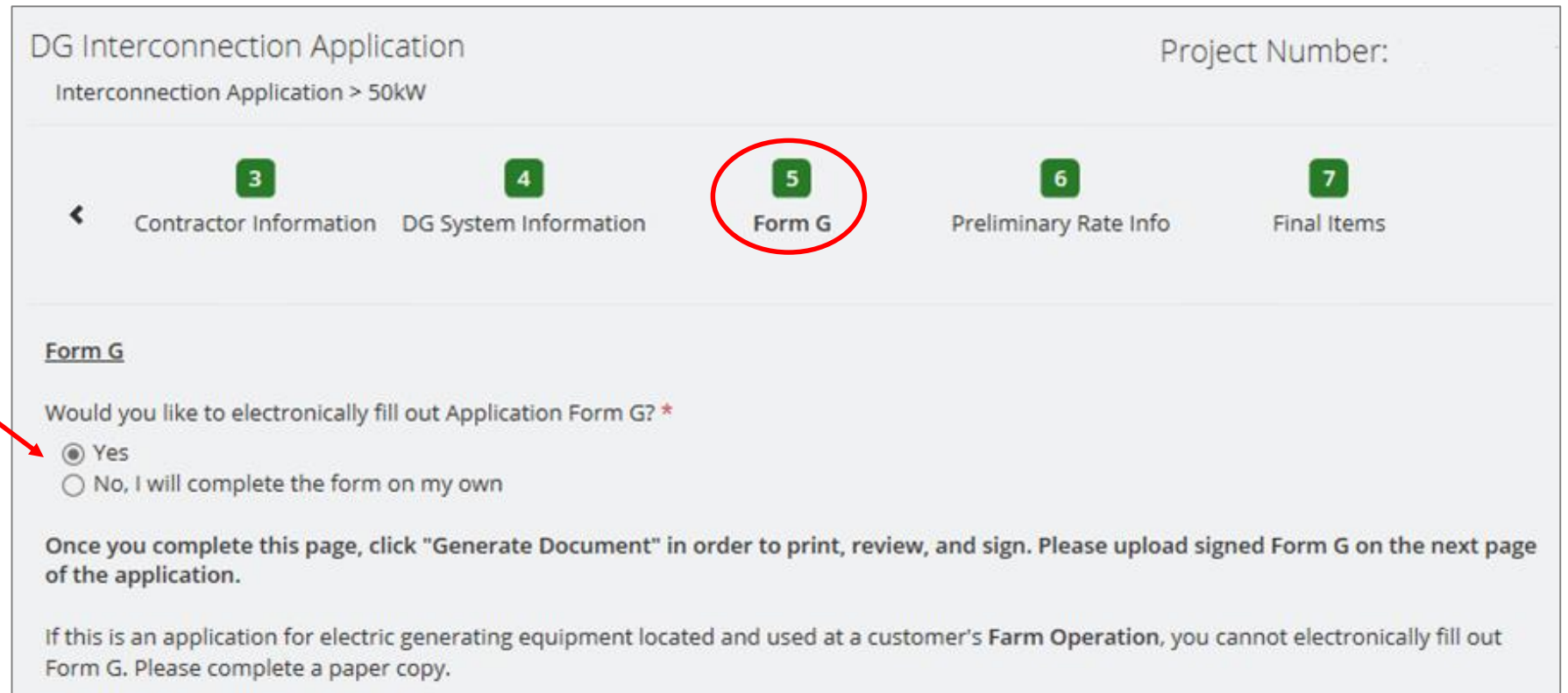
\* Indicates required field

? Indicates help, e.g. a link to a template

# Application Form G: Rider R or Standby Service

- Latest version available in Con Ed [Electric Tariff, Leaf 382](#)
- Enhancement: **electronically complete Form G** to avoid errors that may result in delays in the interconnection process or billing

Select "Yes" to fill out Form G electronically



DG Interconnection Application  
Interconnection Application > 50kW

Project Number: \_\_\_\_\_

3 Contractor Information   4 DG System Information   **5 Form G**   6 Preliminary Rate Info   7 Final Items

Form G

Would you like to electronically fill out Application Form G? \*

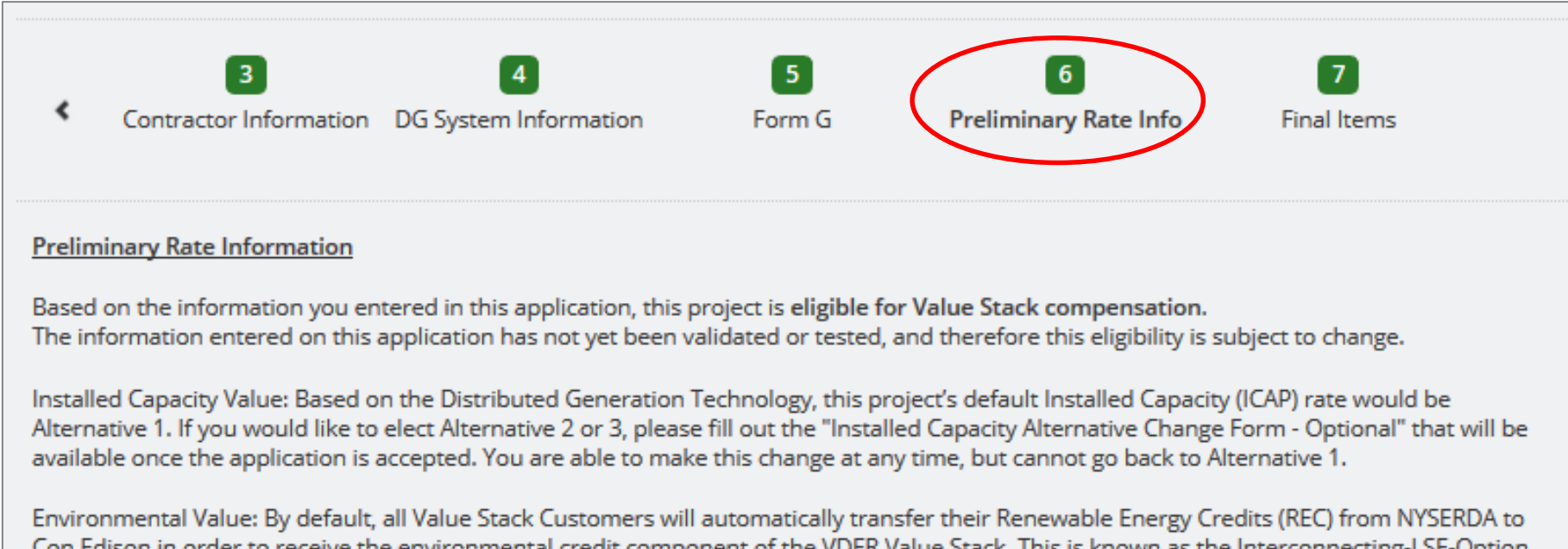
☒ Yes  
☐ No, I will complete the form on my own

Once you complete this page, click "Generate Document" in order to print, review, and sign. Please upload signed Form G on the next page of the application.

If this is an application for electric generating equipment located and used at a customer's Farm Operation, you cannot electronically fill out Form G. Please complete a paper copy.

# Enhancement: Rate Determination

- Based on the information entered, you will be able to view **Preliminary Rate Information** before submitting the application
- Once the Design has been approved for Value Stack projects, the applicant will receive a Final Value Stack Summary document from Con Edison



The screenshot displays a horizontal navigation bar with five steps, each represented by a green square with a white number. Step 6, 'Preliminary Rate Info', is circled in red. Below the navigation bar, the 'Preliminary Rate Information' section is visible, containing a disclaimer and details about capacity and environmental values.

3 Contractor Information 4 DG System Information 5 Form G 6 Preliminary Rate Info 7 Final Items

Preliminary Rate Information

Based on the information you entered in this application, this project is **eligible for Value Stack compensation**.  
The information entered on this application has not yet been validated or tested, and therefore this eligibility is subject to change.

Installed Capacity Value: Based on the Distributed Generation Technology, this project's default Installed Capacity (ICAP) rate would be Alternative 1. If you would like to elect Alternative 2 or 3, please fill out the "Installed Capacity Alternative Change Form - Optional" that will be available once the application is accepted. You are able to make this change at any time, but cannot go back to Alternative 1.

Environmental Value: By default, all Value Stack Customers will automatically transfer their Renewable Energy Credits (REC) from NYSERDA to Con Edison in order to receive the environmental credit component of the VDER Value Stack. This is known as the Interconnecting LSE Option.

# Process for Energy Storage Systems (ESS)

Technology	Application
PV + Storage as Back-up (not grid parallel)	Emergency Back-up generator application in Project Center + Solar application in PowerClerk
Stand-Alone Storage in Parallel with Grid	Battery Energy Storage application
Hybrid System with ESS: DG + ESS	1 Hybrid Application combining DG and Energy Storage
Hybrid Systems without ESS: DG + DG	2 separate DG applications

## Where to start in PowerClerk

The first screenshot shows two buttons: 'New Interconnection Application >50kW' (circled in red) and 'New - All Other Requests, click here!'.

The second screenshot shows two buttons: 'New Interconnection Application >50kW' (circled in red) and 'New - All Other Requests, click here!'.

The third screenshot shows two buttons: 'New Interconnection Application >50kW' (circled in red) and 'X2 Other Requests, click here!'.



# Application Forms for Energy Storage Systems (ESS): Form G

“Application for Rider R or Standby Service and/or Buy-Back Service”

- Request one type of service and compensation:

Choices for Storage  
(Standalone or Hybrid)

Section 3. Type of Service Requested		
Please check one of the following services that you are requesting:		
<input type="checkbox"/> Grand Fathered Net Metering (Rider R)	<input type="checkbox"/> Phase One Net Metering (Rider R)	<input type="checkbox"/> Value Stack (Rider R)
<input type="checkbox"/> Standby Service	<input type="checkbox"/> Standby Service for Station Use	
<input type="checkbox"/> Buy-back Service (SC 11) with Payment for Energy		
<input type="checkbox"/> Buy-back Service (SC 11) with Value Stack compensation under Rider R		
<input type="checkbox"/> Standby Service and Buy-back Service (SC 11) with Payment for Energy		
<input type="checkbox"/> Standby Service and Buy-back Service (SC 11) with Value Stack compensation under Rider R		

- Enter key information related to Standby and Buy-Back provisions
- Complete electronically\* and then sign and attach in PowerClerk as part of initial application submittal



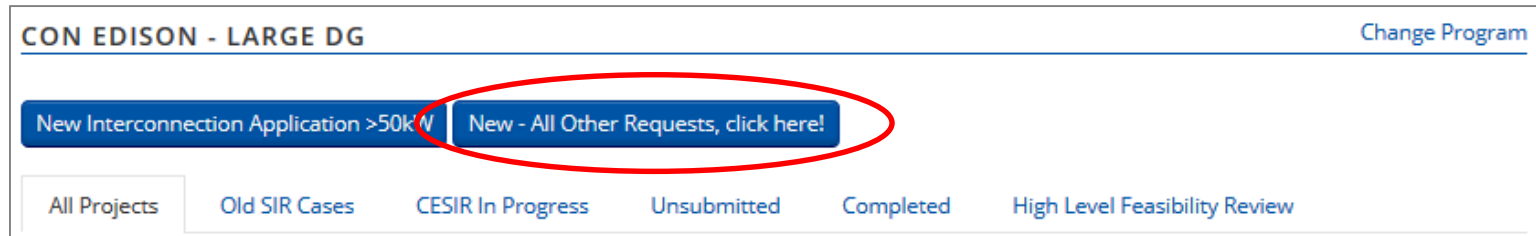
# Application Forms for Energy Storage Systems (ESS): SIR Appendix K

“Energy Storage System (ESS) Application Requirements / System Operating Characteristics / Market Participation” ([link](#))

- Enter all details on specs and planned operating parameters, for example:
  - How and when will it charge and discharge?
  - What is the Protection & Control scheme?
  - Will the system be compensated by the NYISO or a utility tariff?
- Complete electronically in PowerClerk as part of initial application submittal

# Beginning a Hybrid DG + ESS Application

1. From the Home Screen, select “New – All Other Requests, click here!”

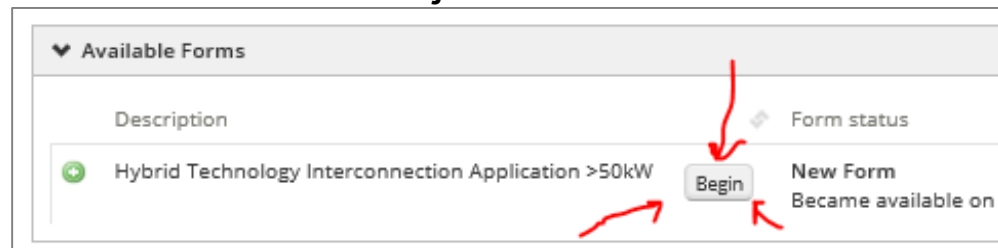


CON EDISON - LARGE DG [Change Program](#)

[New Interconnection Application >50kW](#) [New - All Other Requests, click here!](#)

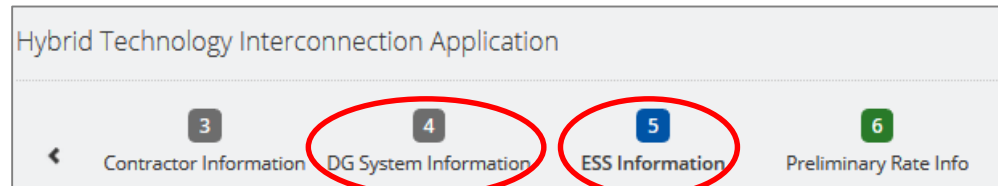
[All Projects](#) [Old SIR Cases](#) [CESIR In Progress](#) [Unsubmitted](#) [Completed](#) [High Level Feasibility Review](#)

2. Select “Apply to interconnect a Hybrid System, i.e. a DG system that includes an Energy Storage System (ESS)” and click Submit. You will see new ‘LDG-#####’
3. Back on the Home screen, search LDG-##### and click “View/Edit Project”
4. In the Available Forms section of the project screen, click Begin on the “Hybrid Technology Interconnection Application >50kW”
5. Complete this form, entering DG system info and ESS info on separate pages



Available Forms

Description	Form status
<a href="#">Hybrid Technology Interconnection Application &gt;50kW</a>	<a href="#">Begin</a> New Form Became available on



Hybrid Technology Interconnection Application

3 Contractor Information 4 DG System Information 5 ESS Information 6 Preliminary Rate Info

# Configuration Options for Hybrid Applications (DG+ESS)

A

## ESS Exclusively Charged by DG

- ESS exclusively charged by eligible DG
- All export considered renewable
- No netting out of “brown” electrons

B

## ESS Cannot Export to Grid

- ESS can charge from DG or from grid
- All export considered renewable because ESS cannot export to grid, only serves on-site load
- System controls or minimum import relay required
- No netting out of “brown” electrons

C D

## Any Charging and Exporting Configuration with Netting

- ESS can charge from DG or from grid
- Net out “brown” electrons
- C

• Import to charge ESS is netted out from overall export to determine renewable export
- D

• Import to account overall is netted out from overall export to determine renewable export – intended for Hybrid Systems without load (e.g. CDG)

*Note: Options A-D are defined by the NYS PSC in the 12/13/2018 “Order Implementing Hybrid Energy Storage Systems” ([link](#)), with effective date 2/1/2019*

# Applicant Chooses Option on Appendix K

Hybrid Technology Interconnection Application

3 Contractor Information 4 DG System Information 5 ESS Information 6 Preliminary Rate Info 7 Documentation & Submittal

APPENDIX K: Energy Storage System (ESS) Application Requirements / System Operating Characteristics / Market Participation

READ: Please enter info for the ESS on this page. DG system information should be entered on the previous page. If equipment such as the inverter is for both the DG and the ESS, please enter that information on the previous page.

Application Requirements

a. & b. have been completed based on your previous entries

Where will the ESS be located? \*

☐ Indoor  
☐ Outdoor

c. Indicate the type of Energy Storage (ES) technology to be used \*

Select... ▼

d. Indicate how the ESS will be charged and/or act as a load \*

☐ Charging from DG only  
☐ Charging from electrical grid only  
☐ Unrestricted charging from Electrical Grid and/or DG system  
☐ Restricted charging from Electrical Grid and/or DG systems

Please select your Hybrid configuration Option \* ⓘ

☐ Hybrid Option A - ESS is charged exclusively by the DG  
☐ Hybrid Option B - ESS will not export to the grid, only DG will.  
☐ Hybrid Option C - ESS may charge/discharge unrestricted, but grid consumption by ESS is netted out of grid exports  
☐ Hybrid Option D - ESS may charge/discharge unrestricted, but any consumption on the account is netted out of grid exports  
☐ N/A - not Value Stack

# RNM and Community DG Conditions


	Condition	Remote Net Metered (RNM)	Community Distributed Generation (CDG)
Host Rules	Customer Type / Service Class	Any except residential (SC1)	
	DER Technology	Farm waste, PV, wind, micro-hydro, fuel cell	All Tier 1-eligible technologies
Satellite Rules	Customer Type / Service Class	Any	Larger satellites, $\geq 25$ kW demand, can only take $\leq 40\%$ of output (unless SC8)
	Account Ownership	Accounts owned in the same name as Host	N/A
	Geographic and NYISO zone	Any NYISO zone served by the same utility as the Host	
	Minimum number of satellites	1	10 (unless all on same premise or SC8)
	Minimum yearly offtake	N/A	1,000 kWh per satellite
	Can a satellite also be a host?	No	
	Can a satellite have multiple hosts?	Yes	No
	Can a satellite also be a net-metered customer-generator?	Yes, but not on Buy-back (SC11)	No
Forms	Application Forms	Form G	CDG Appendix A, B, and C

# Community DG: Process

- Read the [Community DG Procedural Requirements for Value Stack](#) before starting an application
- Follow the SIR process facilitated by PowerClerk
  - Select “Community DG”
  - If new account for export only, apply for New Service via Project Center
  - Submit CDG Appendix A and B with interconnection application, instead of Form G
  - Submit CDG Appendix C spreadsheet “Initial Allocation Request” through PowerClerk (preferred) or via email to [cdgdevelopers@coned.com](mailto:cdgdevelopers@coned.com):
    - At least 60 calendar days before commencing CDG program
    - If email, include case number (MC-XXXXXX) in subject line

What type of metering is being used on this project? \*

Select...
Net Metering
Remote Net Metering
<b>Community DG</b>
Non Net Metered



# Recent Improvement: Payment Summary Form

- Payment Summary form becomes available in the “Available Forms” section once a CESIR payment is made

▼ Available Forms		
Description		Form status
+ Master Conditional Form	<a href="#">Edit</a> <a href="#">View</a>	<b>Submitted</b> Last submitted on 11/29/2018 at 8:52 AM
+ REC: Customer Retention Option - Optional	<a href="#">Begin</a>	<b>New form</b> Became available on 11/29/2018 at 8:52 AM
+ Installed Capacity Alternative Change Form - Optional	<a href="#">Begin</a>	<b>New form</b> Became available on 11/29/2018 at 8:52 AM
+ <b>Payment Summary</b>	<a href="#">Begin</a>	<b>New form</b> Became available on 11/29/2018 at 8:52 AM

- Displays payments made and payments due for the CESIR study and interconnection upgrade costs

### Summary of Payments

Below find information on payment made and payment due for CESIR study and Upgrades (if applicable)

#### CESIR Payments

CESIR Amount Paid

**CESIR Payment Status: PAID IN FULL**

CESIR Portion of Total Paid (%)

CESIR Payment Date

#### Upgrade Payments (if applicable)

Amount Paid

Portion of Total Paid (%)

# Best Practices for Applications

- ✓ Have your Customer's Account Number and Meter Number
  - Con Edison Meter Number is 7-digits; Account Number is 14 digits
  - For Remote Net Metered/CDG cases, use Host Account
  - For New Service, enter MC number for Project Center Service case
- ✓ Select the appropriate type of metering, e.g. "Net Metering" = Rider R (NEM or Value Stack)
- ✓ Complete forms electronically in PowerClerk whenever possible (Form G, Appendix K)
- ✓ Find the latest versions of forms in the Con Ed [Electric Tariff](#)
- ✓ Submit the proper application for combinations of different technologies on same premise:
  - One Hybrid Interconnection case for Hybrid projects with DG and ESS
  - Separate cases for non-ESS projects (DG + DG)



# What Happens After You Submit Your Interconnection Application

- Customer and contractor receive acknowledgment letters and a case number: MC-xxxxxx
- Case is assigned to a Customer Project Manager (CPM) in Energy Services
- Up to 50kW solar projects will follow expedited process (no engineering review, self-certification)
- 50kW - 5MW solar projects will follow SIR process including preliminary screens and engineering reviews

# Energy Services Contacts

- You can reach Energy Services from 7 a.m. to 3:30 p.m. Mon- Fri
- If no response from your CPM within 2 business days, contact their Manager:

Employee	Manager	Phone	Email
Chris Mattina	Rob Klopf	212-460-3223	<a href="mailto:klopfr@coned.com">klopfr@coned.com</a>
Shashi Ramjattan			
Kevin Dekeris			
Mike Brown	Richard Vitolo	914-925-6962	<a href="mailto:vitolor@coned.com">vitolor@coned.com</a>
Mike Tucci			
Seretse Henry			
Gerald Thompson			
Jack Chen	Zhen Shao	212-460-4230	<a href="mailto:shaoz@coned.com">shaoz@coned.com</a>
Antoine Adams			
Peter Aufdemorte			
Phyllis DelRe	Tracy Downing	646-341-2906	<a href="mailto:downingt@coned.com">downingt@coned.com</a>

If still no response within 2 business days, contact the Department Manager Directly:

Tom McAndrews  
[mcandrewst@coned.com](mailto:mcandrewst@coned.com)  
212-460-4490

- For emails, include the Job Number (MC-xxxxxx) in the subject and the project address, your CPM's name, and your contact information in the email body

*Note: All this information is also available on our [website](#)*

# **Rates & Billing**

# Common Service Classifications

Mass Market	SC 1: Residential/ Religious	<ul style="list-style-type: none"><li>• Energy only (kWh)</li></ul>
	SC 2: General – Small	<ul style="list-style-type: none"><li>• Energy and Fixed Demand Charge (kWh)</li><li>• Only for customers with demand &lt; 10kW</li></ul>
Demand Billed	SC 8: Multiple Dwelling – Redistribution	<ul style="list-style-type: none"><li>• Energy and Demand Charges (kWh &amp; kW)</li><li>• Highest 30 minutes of demand sets demand charge for entire month</li></ul>
	SC 9: General – Large	

[https://www.coned.com/\\_external/cerates/documents/elecPSC10/electric-tariff.pdf](https://www.coned.com/_external/cerates/documents/elecPSC10/electric-tariff.pdf)

# Compensation for DERs: Outcome of Value of DER Order

<div>Mass Market*</div> <div>Demand Billed</div>	Systems in operation as of March 9, 2017	Traditional <b>NEM</b> for life of system (no change) Can opt-in to <b>Value Stack</b>
	New residential & small commercial systems installed through sooner of January 1, 2020 or Phase 2 Order	<b>Phase One NEM</b> for 20 years
	New Remote Net Metering (RNM) installations	<b>Value Stack</b> without transition credit for 25 years
	New Community DG (CDG) projects	Tranche 1-3: <b>Value Stack</b> for 25 years with transition credit (MTC) for mass market subscribers (declines by tranche) (Tranche 0: <b>Phase One NEM</b> for 20 years)
	New large commercial and industrial installations	<b>Value Stack</b> without transition credit for 25 years

\* SC 1 accounts cannot be RNM or CDG hosts

# VDER Value Stack Project Interconnection Milestones

Initial Application

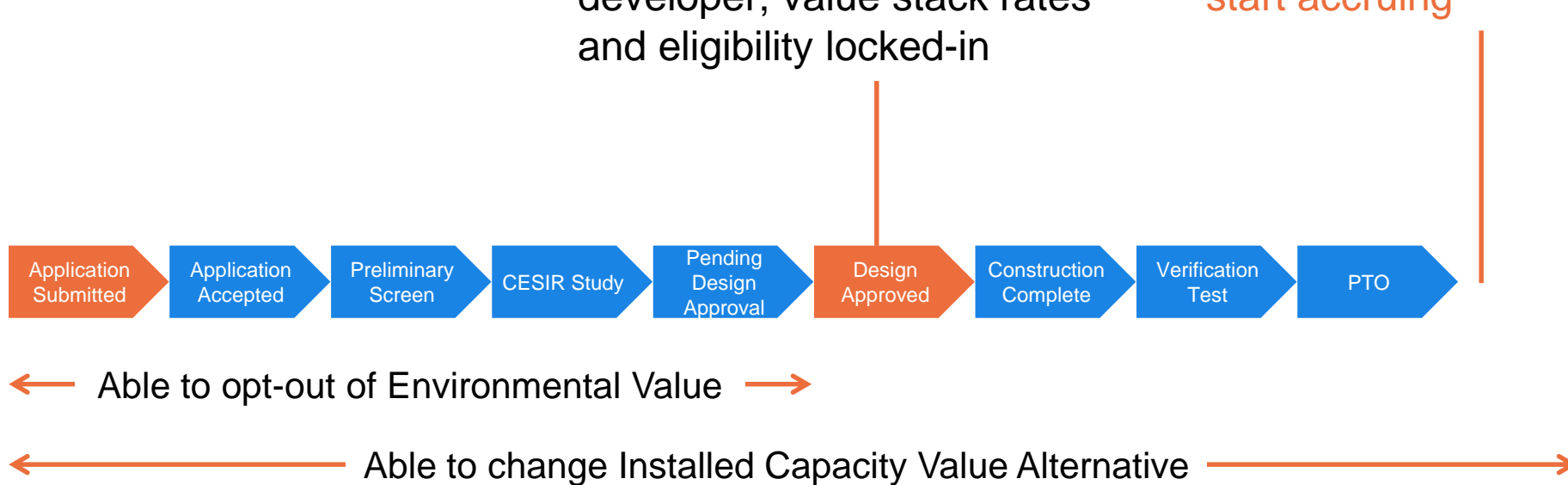
**Preliminary Rate Information** displayed in PowerClerk

Design Approved – Pending Construction \*

**Final Value Stack Summary** communication sent to developer; value stack rates and eligibility locked-in


Start of first billing cycle following

Final Acceptance  
**Value Stack credits start accruing**



\* Occurs once 25% of interconnection upgrade costs are paid or SIR contract is executed if no payment is required

# Demand Customer Value Stack Bill



## Monthly Bill

**Your account number:** [REDACTED]

**Service delivered to:** [REDACTED]

**Your electric rate:** EL9 General Large

**Next billing date:** Wednesday, March 20, 2018

**Your billing summary as of Feb 20, 2018**

<b>Remaining balance</b>	<b>None</b>
<b>Your new charges - details start on page 2</b>	
Billing period: Nov 17, 2017 to Dec 20, 2017	
Electricity charges - for 33 days	\$475.04
Adjustments	-\$365.37
<b>Total new charges</b>	<b>\$109.67</b>
<b>Total amount due</b>	<b>\$109.67</b>

Payment is due upon receipt of this bill. To avoid a late payment charge of 1.5%, please pay the total amount due by **Mar 13, 2018**.

## VDER Statement

Illustrative

Customer Name	[REDACTED]		
Account Number	[REDACTED]		
Billing Period State Date	[REDACTED]		
Billing Period End Date	[REDACTED]		
Billed consumption	kWh		1602
Total Injections from DER	kWh		-1483.5
<b>Value Stack Components</b>			
Energy Component	\$/kWh	\$	0.03
Capacity Component	\$/kWh	\$	0.01
Environmental Component	\$/kWh	\$	0.02
Subtotal Credit per kWh	\$/kWh	\$	0.07
Demand Reduction Value (monthly lump sum)	\$/kW-month		(\$168.33)
Locational System Relief Value (LSRV) (monthly lump sum)	\$/kW-month	\$	-
Total credit per-kWh elements			(\$197.04)
Total credit from DRV + LSRV			(\$168.33)
Total Dollar Credit from DER this Billing Period			(\$365.37)
<b>Credit Applied to Customer Bill</b>			
Total Delivery Charges			320.77
Total Supply Charges			115.55
Total Miscellaneous Charges			38.72
Total Charges	\$		475.04
DER Credit			(\$365.37)
Remit to Utility	\$		109.67
Dollar Credits Carried Over from Previous Billing Period (if any)	\$		-
Excess Dollar Credits Carrying Over to Next Billing Period	\$		-

# Value Stack for Stand-Alone Storage

- Modified Value Stack

Energy (LBMP)	Eligible
Capacity (ICAP)	Eligible for Alternative 3
Environmental (REC)	Not Eligible
Demand Reduction Value (DRV)	Eligible
Market Transition Credit (MTC)	Not Eligible
Locational System Relief Value (LSRV)	Eligibility based on location

- Mandatory Hourly Pricing (MHP): to be eligible for Value Stack accounts must go on MHP for import (unless storage capacity < 115% of demand)



# Standby Service & Standby Rates

- Standby Service is provided to backup and/or supplement the energy ordinarily generated by a generating facility on customer premises
- Customers receiving Standby Service are billed under Standby Service Rates unless exempt
- If exempt under Designated Technology or Targeted Exemptions, customers are billed under their corresponding standard rate
- As of 2017, Standby Service customers are eligible for Rider Q (Standby Pilot Rate)

## **Standby Rate Components:**

- Contract Demand: based on the customer's maximum potential demand on Con Edison's system
- As-Used Demand charges: based on the customer's maximum actual demand for each weekday from 8am-10pm.
- Other misc. charges: Customer charges, metering charges, associated MACs, SBC, and taxes

# Electric Buy-Back (SC-11)

- Customer pays a customer charge and a contract demand charge based the generating facility's ability to deliver energy to the grid
- As an alternative to Value Stack, customers may sell energy to Con Edison:
  - The payment rate for energy will be based on the applicable wholesale rate, which is the Locational Based Marginal Price (LBMP) set by the New York Independent System Operator (NYISO)
  - Customers delivering energy at the secondary distribution level will have the LBMP increased by a factor of 1.066 to account for line losses

# Key Takeaways

# Key Takeaways

- Con Edison is actively innovating to improve interconnection
  - Engineering solutions to allow export on a network grid
  - ConnectDER
  - Software enhancements: PowerClerk, Hosting Capacity Maps
- Follow the Best Practices for interconnection on Slide 32
- Review Energy Storage VDER compensation and Standby charges
- Review Hybrid options and compensation

# Con Edison Resources

- Con Edison DG website: [www.coned.com/dg](http://www.coned.com/dg)
- Con Edison solar website: [www.coned.com/solar](http://www.coned.com/solar)
- Con Edison Guides: [www.coned.com/privategenerationguides](http://www.coned.com/privategenerationguides)
- Con Edison [Electric Tariff](#)
- Billing questions
  - Residential customers: [netmetering@coned.com](mailto:netmetering@coned.com) or 212-780-6600
  - Large/commercial customers: [dl-CCGNet-metering@coned.com](mailto:dl-CCGNet-metering@coned.com)
- Technical, process, or rate questions: [dgexpert@coned.com](mailto:dgexpert@coned.com)

# Open Discussion

Thank you!

[dgexpert@coned.com](mailto:dgexpert@coned.com)

# APPENDIX

# **Navigating Resources on Con Edison website**



# Using Private Generation Energy Sources

[www.coned.com/dg](http://www.coned.com/dg)



## Solar Energy

What you need to know about installing a home solar energy system.

[GET STARTED](#)



## Local Generation and Synchronous

Learn about private generation configurations and availability in your area.

[SEE DETAILS](#)



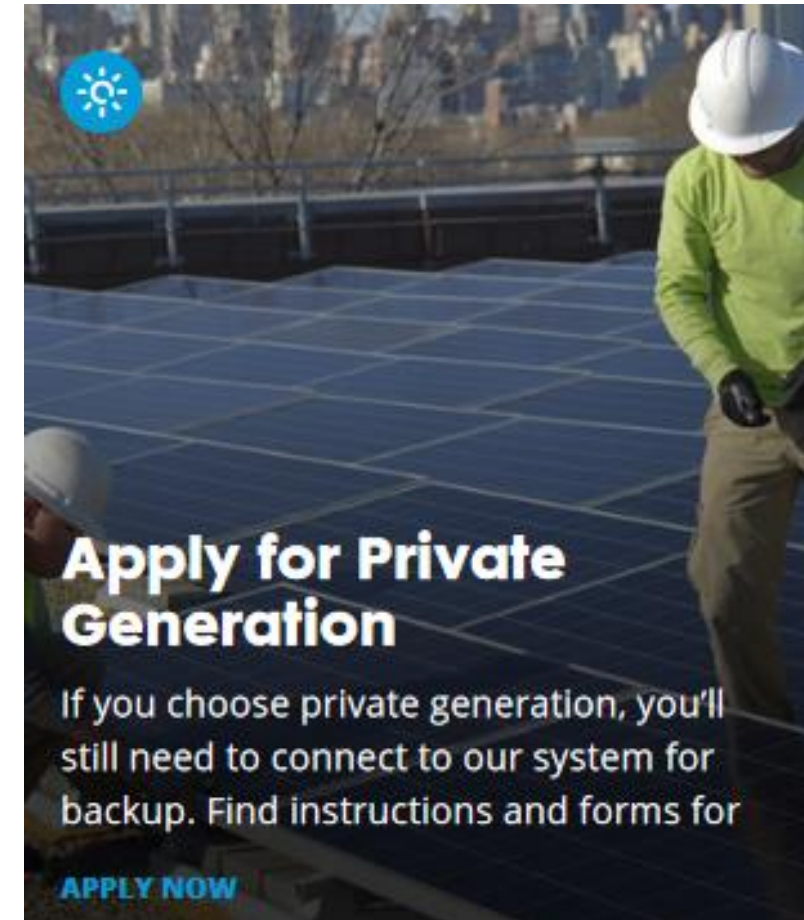
## Apply for Private Generation

If you choose private generation, you'll still need to connect to our system for backup. Find instructions and forms for

[APPLY NOW](#)

# Applying for Private Generation

- Interconnection Forms and Documentation
  - SIR Appendix F forms
  - Power Clerk web portal links
  - Customer Authorization
  - Contractor Certification for Verification Test
- Service and Rate Application Forms
  - Form G
  - CDG Procedural Requirements
  - Rider H





# Guides and Specifications for Private Generation

General Guides

Specifications

Community Distributed Generation Projects

[www.coned.com/privategenerationguides](http://www.coned.com/privategenerationguides)

## General Guides

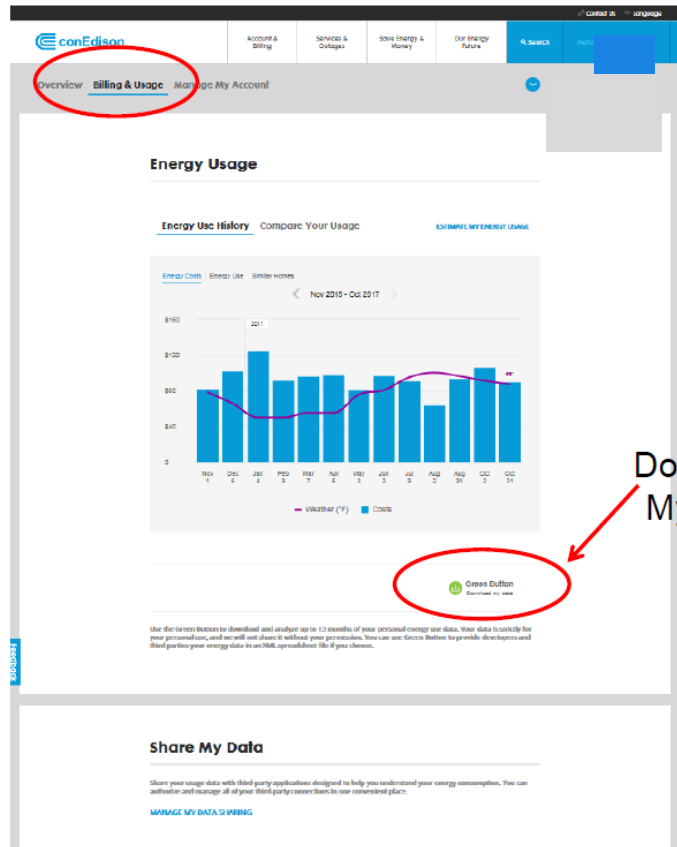
**Energy Storage Guide:** For customers considering installing or upgrading an Energy Storage System up to 5 MW.

**Fuel Cell Guide** for customers interconnecting fuel cell less than 5MW.

**Solar Photovoltaics Guide:** For customers who are considering installing or upgrading photovoltaic (solar) power generators less than 5 MW.

# Green Button Download My Data

Customer tool to download energy use into a spreadsheet



Download  
My Data



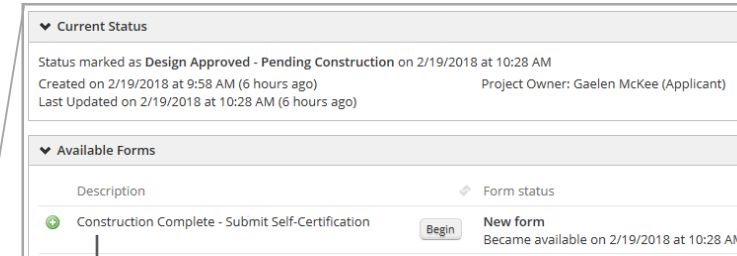
Name	[Name]					
Address	["Address, NY XXXXX"]					
Account Number						
Service	Service 1					
TYPE	DATE	START TIME	END TIME	USAGE	UNITS	NOTES
Electric usage	7/22/2017	0:00	0:14	0.42	kWh	
Electric usage	7/22/2017	0:15	0:29	0.4	kWh	
Electric usage	7/22/2017	0:30	0:44	0.16	kWh	
Electric usage	7/22/2017	0:45	0:59	0.4	kWh	
Electric usage	7/22/2017	1:00	1:14	0.57	kWh	
Electric usage	7/22/2017	1:15	1:29	0.53	kWh	
Electric usage	7/22/2017	1:30	1:44	0.15	kWh	
Electric usage	7/22/2017	1:45	1:59	0.39	kWh	
Electric usage	7/22/2017	2:00	2:14	0.43	kWh	
Electric usage	7/22/2017	2:15	2:29	0.17	kWh	
Electric usage	7/22/2017	2:30	2:44	0.31	kWh	
Electric usage	7/22/2017	2:45	2:59	0.38	kWh	
Electric usage	7/22/2017	3:00	3:14	0.27	kWh	
Electric usage	7/22/2017	3:15	3:29	0.2	kWh	
Electric usage	7/22/2017	3:30	3:44	0.62	kWh	
Electric usage	7/22/2017	3:45	3:59	0.19	kWh	
Electric usage	7/22/2017	4:00	4:14	0.26	kWh	
Electric usage	7/22/2017	4:15	4:29	0.3	kWh	
Electric usage	7/22/2017	4:30	4:44	0.1	kWh	
Electric usage	7/22/2017	4:45	4:59	0.34	kWh	
Electric usage	7/22/2017	5:00	5:14	0.09	kWh	
Electric usage	7/22/2017	5:15	5:29	0.33	kWh	
Electric usage	7/22/2017	5:30	5:44	0.09	kWh	
Electric usage	7/22/2017	5:45	5:59	0.31	kWh	
Electric usage	7/22/2017	6:00	6:14	0.23	kWh	
Electric usage	7/22/2017	6:15	6:29	0.09	kWh	
Electric usage	7/22/2017	6:30	6:44	0.35	kWh	
Electric usage	7/22/2017	6:45	6:59	0.15	kWh	
Electric usage	7/22/2017	7:00	7:14	0.35	kWh	
Electric usage	7/22/2017	7:15	7:29	0.09	kWh	
Electric usage	7/22/2017	7:30	7:44	0.35	kWh	
Electric usage	7/22/2017	7:45	7:59	0.15	kWh	
....						

Link: [www.coned.com/en/save-money/estimate-your-energy-usage/make-better-energychoices-with-green-button](http://www.coned.com/en/save-money/estimate-your-energy-usage/make-better-energychoices-with-green-button)

# Interconnection Process

# Under 50kW: Project Review

- Submit application via PowerClerk
- Con Ed reviews and approves design
  - Fast Track: automatic approval for projects <25 kW for most developers
- Complete your construction
- Test inverter
- Submit self-certification form via PowerClerk
  - Available on our [website](#)
  - Signals to CPM that ready for final review and net meter order
- Con Ed issues formal letter of Final Acceptance

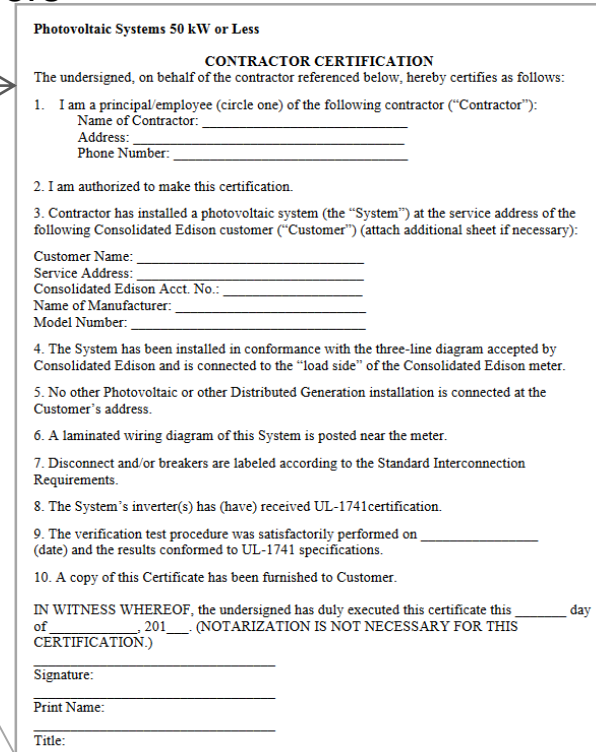


▼ Current Status

Status marked as Design Approved - Pending Construction on 2/19/2018 at 10:28 AM  
Created on 2/19/2018 at 9:58 AM (6 hours ago) Project Owner: Gaelen McKee (Applicant)  
Last Updated on 2/19/2018 at 10:28 AM (6 hours ago)

▼ Available Forms

Description	Form status
Construction Complete - Submit Self-Certification	<a href="#">Begin</a> New form Became available on 2/19/2018 at 10:28 AM



Photovoltaic Systems 50 kW or Less

**CONTRACTOR CERTIFICATION**

The undersigned, on behalf of the contractor referenced below, hereby certifies as follows:

- I am a principal/employee (circle one) of the following contractor ("Contractor"):  
Name of Contractor: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone Number: \_\_\_\_\_
- I am authorized to make this certification.
- Contractor has installed a photovoltaic system (the "System") at the service address of the following Consolidated Edison customer ("Customer") (attach additional sheet if necessary):  
Customer Name: \_\_\_\_\_  
Service Address: \_\_\_\_\_  
Consolidated Edison Acct. No.: \_\_\_\_\_  
Name of Manufacturer: \_\_\_\_\_  
Model Number: \_\_\_\_\_
- The System has been installed in conformance with the three-line diagram accepted by Consolidated Edison and is connected to the "load side" of the Consolidated Edison meter.
- No other Photovoltaic or other Distributed Generation installation is connected at the Customer's address.
- A laminated wiring diagram of this System is posted near the meter.
- Disconnect and/or breakers are labeled according to the Standard Interconnection Requirements.
- The System's inverter(s) has (have) received UL-1741 certification.
- The verification test procedure was satisfactorily performed on \_\_\_\_\_ (date) and the results conformed to UL-1741 specifications.
- A copy of this Certificate has been furnished to Customer.

IN WITNESS WHEREOF, the undersigned has duly executed this certificate this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_\_\_. (NOTARIZATION IS NOT NECESSARY FOR THIS CERTIFICATION.)

Signature: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**Direct Application**

The process begins with a **Pre-Application Report Request (optional)**, which leads to the **Developer submits request for Pre-Application Report**. This is followed by the **Utility Returns Report within 10 Business Days**, and then the **Applicant Enters DG Job in PowerClerk**.

The main process starts with **Application Review – 10 Days**, where all documents are received, reviewed, and the customer is notified if the application is complete as per Appendix F. This leads to **Preliminary Screens – 15 Days**, which includes:

- A. PCC on Network?
- B. Certified Equipment?
- C. EPS Ratings Exceeded?
- D. Line & Grounding Configuration?
- E. Simplified Penetration Test?
- F. Feeder/Substation Capacity?

If **Pass All Screens**, the process moves to **Screening Analysis Review Meeting**. If **Fail Any Screen**, the process moves to **Applicant Options – 30 Days**.

The **Screening Analysis Review Meeting** includes:

- If changes found and agreed upon have no costs, proceed to build.
- If changes found and agreed upon require upgrade costs, utility has 15 Days to provide cost estimate.
- If changes not found or not agreed to, further study required (Supplemental Review or CESIR) or withdraw.

From the meeting, the process can lead to **Supplemental Review – 20 Days** (if changes require upgrade costs), **Coordinated Electric System Interconnection Review (CESIR)** (if further study is required), or **Construction Milestones** (if changes have no costs).

The **Supplemental Review – 20 Days** includes:

- G. Supplemental Penetration Test
- H. Voltage Flicker Test
- I. Operating Limits, Protection Adequacy and Coordination Evaluation

From the supplemental review, the process can lead to **Construction Milestones** (if **Pass All Screens**), **Coordinated Electric System Interconnection Review (CESIR)** (if **Applicant choice or as required by analysis**), or **Applicant Options – 30 Days** (if **Fail Any Screen**).

The **Coordinated Electric System Interconnection Review (CESIR)** includes:

- Cost estimate for study within 5 Days, Customer has 30 Days to respond.
- Complete within 60 Business Days, extend an additional 40 Days if agreed upon by Applicant and other applications unaffected.
- Cost with contingencies +/- 25% max.

From CESIR, the process can lead to **Construction Milestones** (if **Pass All Screens**), **Upgrade Costs > \$10k** (if **Applicant choice or as required by analysis**), or **Applicant Options – 30 Days** (if **Fail Any Screen**).

The **Applicant Options – 30 Days** includes:

1. Preliminary Screening Analysis Results Meeting
2. Proceed to Supplemental Screening Analysis
3. Proceed to Full CESIR
4. Withdraw Application (Cancellation for inactivity at 30 days)

The **Construction Milestones** include:

- Confirm Compensation Rate – 15 Days
- Project Schedule – 30 Days

From the construction milestones, the process can lead to **Upgrade Costs > \$10k** (if **Upgrade Costs > \$10k**) or **Upgrade Costs < \$10k** (if **Upgrade Costs < \$10k**).

The **Upgrade Costs > \$10k** includes:

- Full Payment, 120 Days from 25% Payment date.

The **Upgrade Costs < \$10k** includes:

- Full Payment within 90 Business Days.

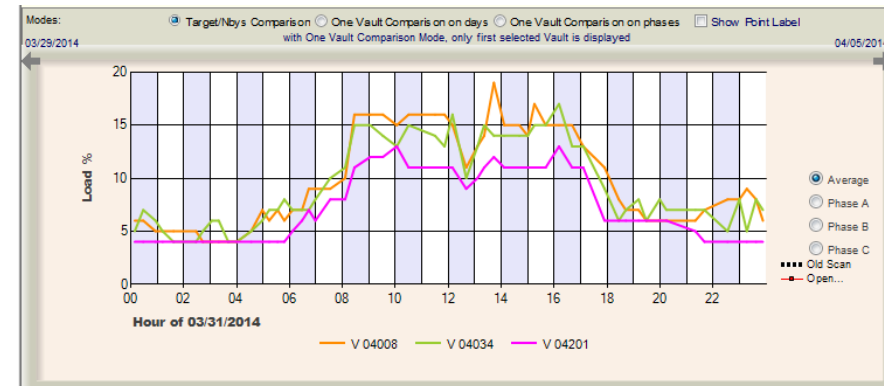
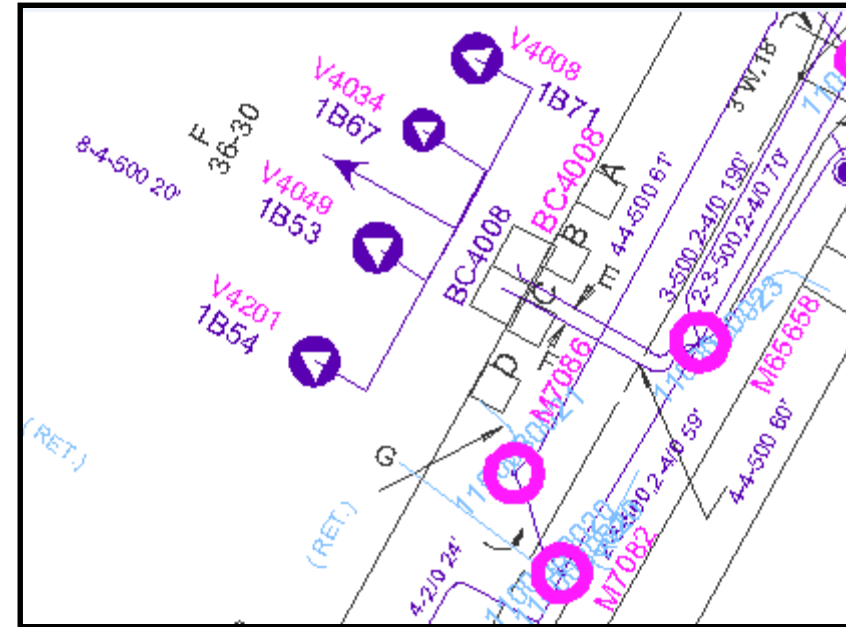
The process concludes with **Utility to Procure Material and Begin Upgrades (if applicable)**.

**Con Edison provides signed and executed Appendix A to Applicant within 15 Days, Applicant returns signed Appendix A to Con Edison within 30 Days.**

**Available on [website](#)**

## 50 kW to 5 MW: CESIR study

- Upon customer choice and payment for study
- Distribution Engineering
  - Technical review of application
  - Three-line in-depth review
  - Review of PV output vs. load
  - Historical Usage
  - Transformer loading
  - Meets/does not meet NYS SIR
  - 60 business days (up to 2MW)
  - 80 business days (2MW – 5MW)



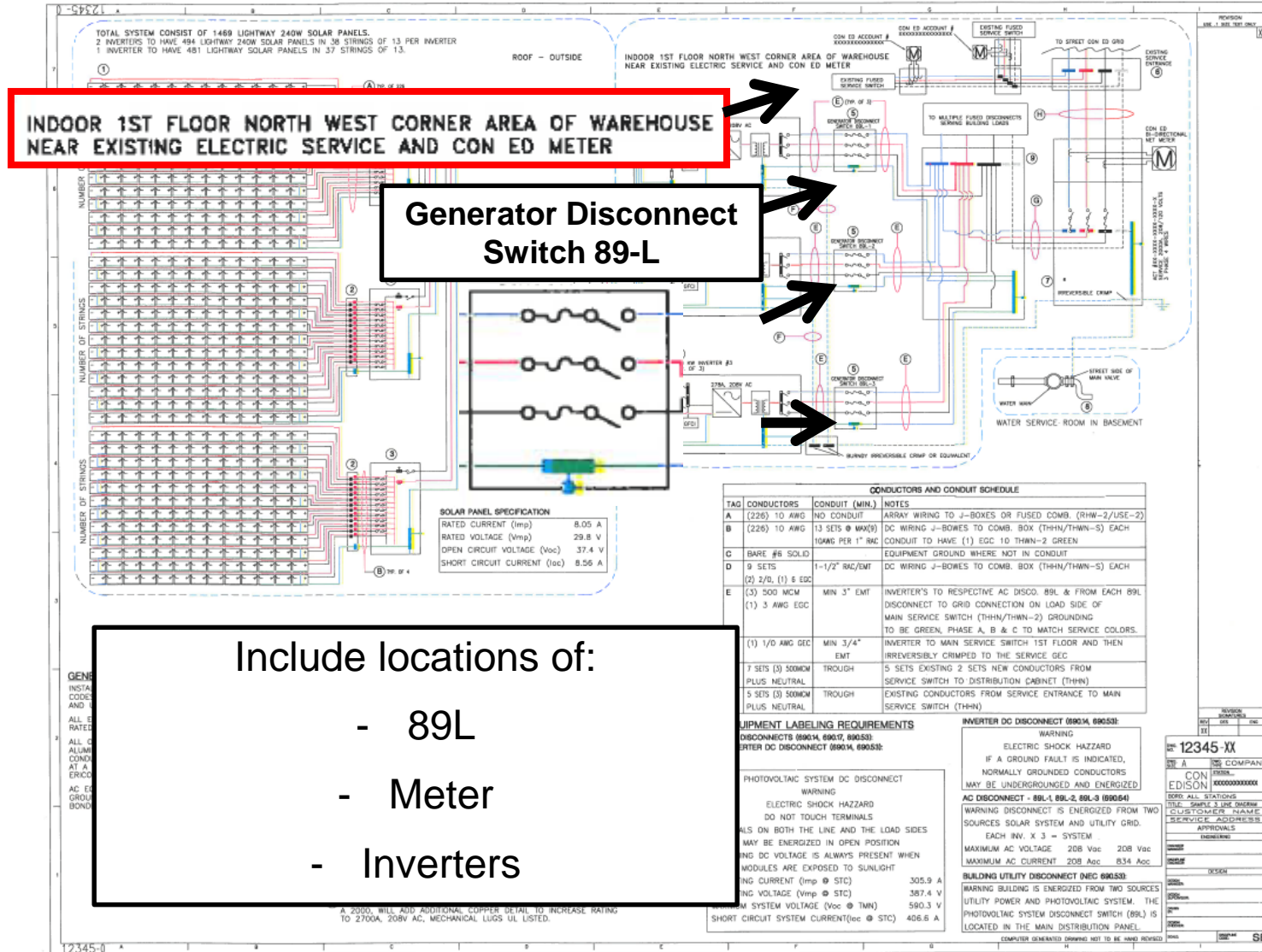


# Key Components of Three Line Drawing

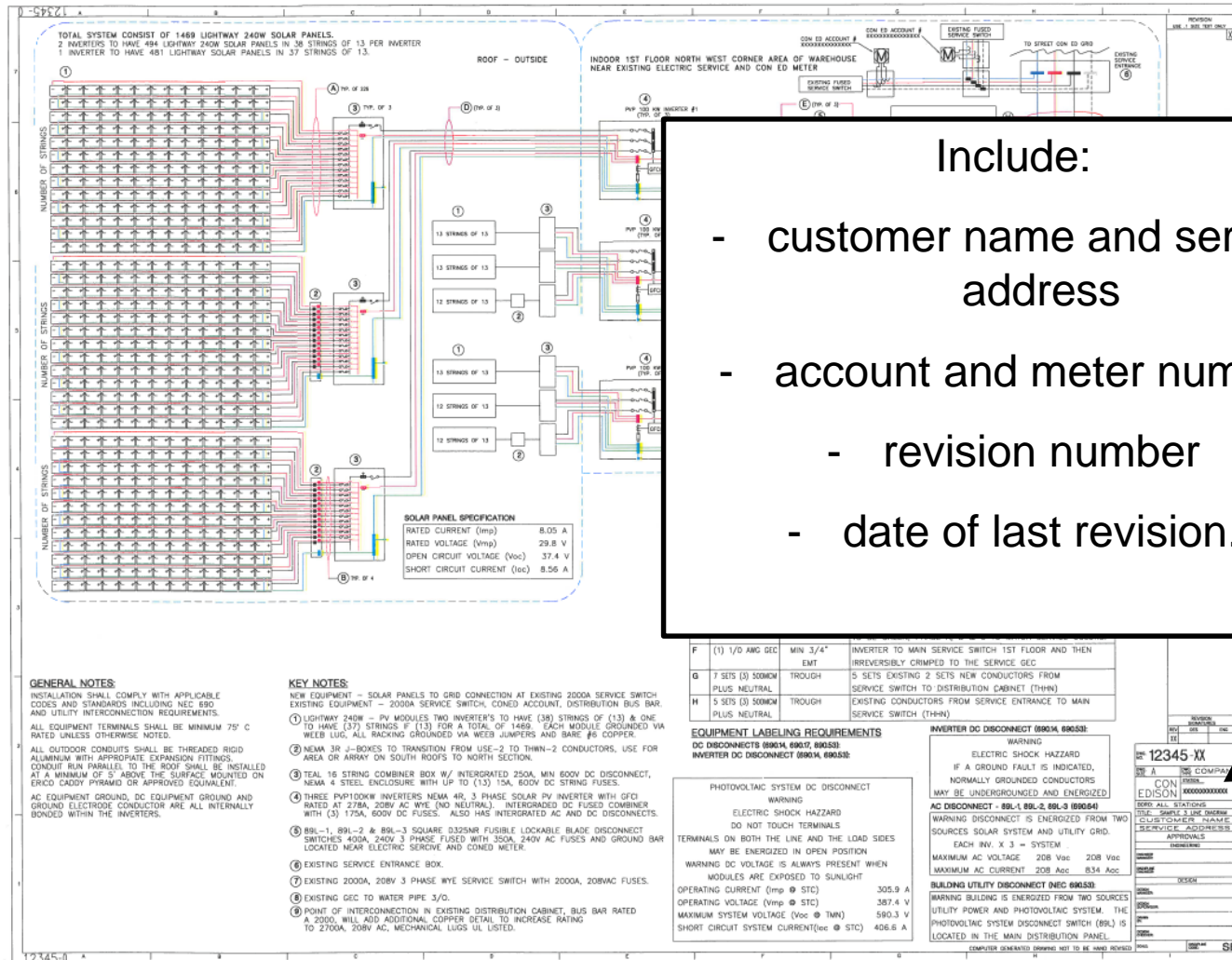
- Equipment Locations
- Service Characteristic Drawing Details
- Include any existing DG on the site

Con Edison has a [System Diagram checklist](#) for baseline requirements for the majority of cases.

# Equipment Locations and Labeling



# Title Block

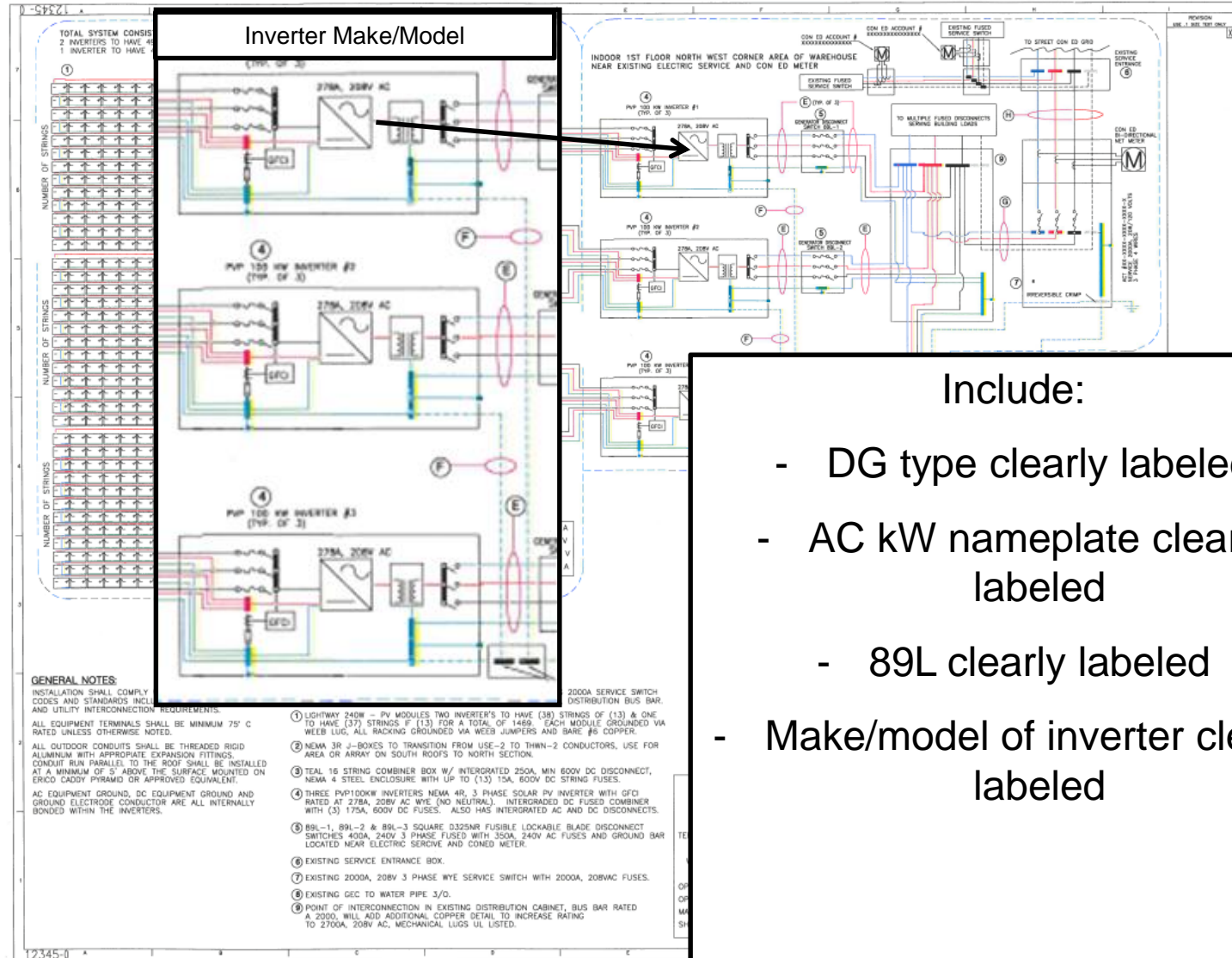


Include:

- customer name and service address
- account and meter number
- revision number
- date of last revision.

12345-XX	
CON EDISON	COMPANY
BOARD ALL STATIONS	
TITLE: SAMPLE 3 LINE DRAWING	
CUSTOMER NAME	
SERVICE ADDRESS	
APPROVALS	
(SIGNATURE)	
DATE	
SCALE	
SE	

# DG System Drawing Details

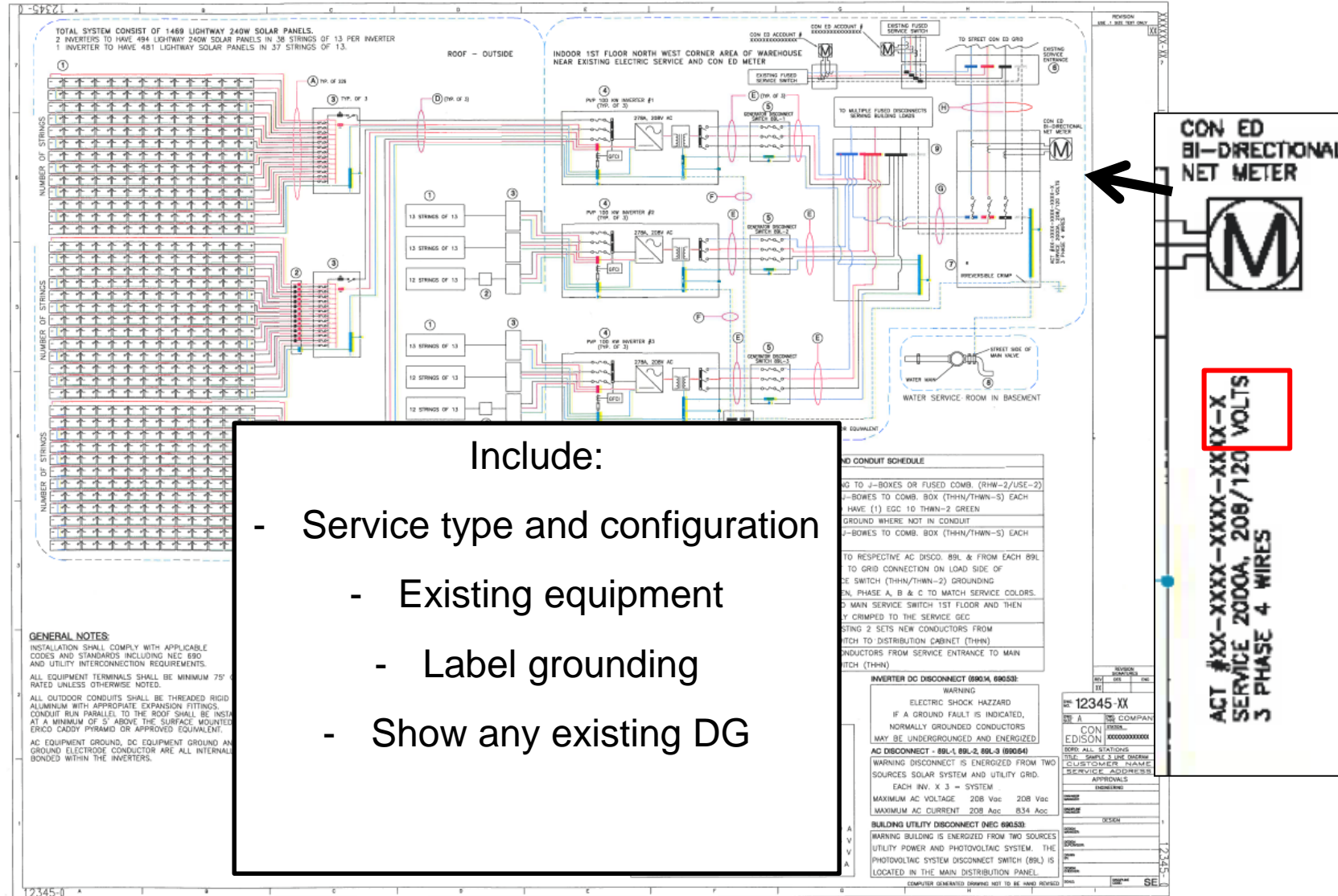


Include:

- DG type clearly labeled
- AC kW nameplate clearly labeled
- 89L clearly labeled
- Make/model of inverter clearly labeled



# Service Characteristics



# Post-CESIR Steps

- DE will present options to customer for interconnection with cost
- Customer chooses one option and pays for upgrades (if necessary)
- Con Edison issues Appendix A
  - Project advances to Design Approved – Pending Construction
  - Developer receives Value Stack Summary document with all locked-in Value Stack eligibility and rates
- Construction



# NEM and VDER Value Stack

# Tariff updates

Tariff	Update
Rider R (NEM & Value Stack)	<ul style="list-style-type: none"> <li>• Interzonal crediting</li> <li>• CDG any tech-type host</li> <li>• Tier-1 technologies</li> <li>• Standalone Storage (including MHP requirements)</li> <li>• Standby</li> </ul>
Rider T (CSRP/DLRP)	<ul style="list-style-type: none"> <li>• No DR reservation or performance credit for Value Stack customers</li> </ul>
Rider M (Hourly pricing)	<ul style="list-style-type: none"> <li>• Include provisions for storage customers size &gt;115% demand</li> <li>• Include application of MHP to SC 1 &amp; 2 w/Storage</li> </ul>
GR25 Form G	<ul style="list-style-type: none"> <li>• Expanded technologies</li> <li>• Remove customer-type &amp; tech-type limits for Value Stack</li> <li>• Standby</li> </ul>
SC 11	<ul style="list-style-type: none"> <li>• Tier-1 technologies &amp; standalone storage</li> </ul>
GR 20 Standby	




# Grandfathered NEM and Phase One NEM: Residential energy-only (SC1)

- [Rider R](#) – Section G
- When Export > Import for the month:
  - Monthly energy (kwh) charges are zero.
  - Customer pays Basic Service Charge only.
  - Excess energy (kwh) is rolled over to the next month.
- Annual Reconciliation – Grandfathered NEM only
  - Customer can choose which month they want
  - Unused energy credited kwh are converted to \$ at a rate based on Con Edison's avoided cost.
  - If < \$100, credit is applied to the bill
  - If ≥ \$100, Con Edison will issue a check
- Phase One NEM has 20-year term from in-service date, then transition to the current structure in place at that time
- Customer will always get a bill


# **Grandfathered NEM and Phase One NEM: Small commercial energy-only (SC2)**

- When Export > Import for the month:
  - Monthly energy (kwh) charges are zero
  - Customer pays Basic Service Charge only
  - Excess energy (kwh) is rolled over to the next month
- No Annual Reconciliation for SC2
  - Excess energy (kwh) credits are applied to future usage
- Phase One NEM has 20-year term from in-service date, then transition to the current structure in place at that time
- SC2 accounts qualify for Remote Net Metering host sites
  - Receive Value Stack credits if RNM

# SC-1 Net Metering Bills



**conEdison**



Working for you 24/7.


**Your account number:** [REDACTED]


**Service delivered to:** [REDACTED]

**Your electric rate:** EL1 Residential or Religious - Net Metering

**Next meter reading date:** Monday, Mar 21, 2016

**Message Center**

 **BILL INFORMATION FOR THE YEAR** Last year, Con Edison issued Electric bills for your account totaling \$531.05.

 **VISIT MY ENERGY CALCULATOR** Visit [www.coned.com/customercentral](http://www.coned.com/customercentral) and select My Energy Calculator. Then, use the calculators to estimate your savings when you "go green" and conserve energy.

**Your billing summary** as of Feb 22, 2016

**Your previous charges and payments**


Total charges from your last bill	\$145.07
Payments through Feb 18, thank you	-\$145.07
<b>Remaining balance</b>	<b>None</b>


**Your new charges** - details start on page 2  
Billing period: Jan 20, 2016 to Feb 19, 2016


Electricity charges - for 30 days	\$18.62
<b>Total new charges</b>	<b>\$18.62</b>
<b>Total amount due</b>	<b>\$18.62</b>


**Direct Payment Plan** - The amount of \$18.62 will be automatically deducted from your bank on Mar 3, 2016.

**Contact us** 24 hours a day, 7 days a week

 To report a service problem, call 1-800-75-CONED (1-800-752-6633) or visit [conEd.com](http://conEd.com)

 Visit [conEd.com](http://conEd.com)  
For payments, visit [conEd.com](http://conEd.com) or call 1-888-925-5016

 Con Edison  
Cooper Station  
P.O. Box 138  
New York, NY 10276-0138

 For other information, call 1-212-780-6600 or email [netmetering@coned.com](mailto:netmetering@coned.com)

# SC-1 Net Metering Bills

## Your electricity charges

These charges are for the electricity you used (supply) and getting that electricity to you (delivery). Rates are based on a 30 day period. When your billing period is more or less than 30 days, we prorate your bill accordingly.

<b>Electricity you used during this 30 day billing period</b>	
<b>from Jan 20, 2016 to Feb 19, 2016</b>	
<b>Rate:</b> EL1 Residential or Religious - Net Metering	<b>Meter#</b> [REDACTED]
We measure your electricity by how many kilowatt hours (kWh) you use. One kWh will light a 100 watt bulb for 10 hours.	
Feb 19, 16 actual reading	3993
Jan 20, 16 actual reading	<u>-4057</u>
<b>Your electricity use</b>	<b>-64 kWh</b>
<b>kWh Billed</b>	<b>0 kWh</b>
For details, see Your Net Meter Summary in this bill.	

Customers will see actual meter readings



# SC-1 Net Metering Bills

► Your Net Meter Summary

Billing period	Your electricity use	Cumulative net meter energy credit	kWh billed
JAN 20, 2016 - FEB 19, 2016	-64	-64	0

**Credit Carried Forward to Next Period** -64

**Your electricity use** -64 kWh  
The electricity supplied to you by Con Edison or the electricity you generated back into the grid during this period. A negative number indicates a net meter energy credit for the period.

**Cumulative net meter energy credit** -64 kWh  
The sum of your net meter energy credit(s) you earned in the current billing period and any credits from prior billing periods.

**kWh billed** 0 kWh  
The amount of kWh you were billed for in this billing period. If you generated more electricity than you consumed in this current period and/or have a cumulative net meter energy credit from prior period(s), that credit has been applied towards your kWh Billed.

For more information on Net Metering please visit us at:  
[www.coned.com/dg/Net\\_Metering\\_Billing\\_FAQ.asp](http://www.coned.com/dg/Net_Metering_Billing_FAQ.asp)

Automated net  
metering summary  
page

Where customers  
will see information  
on annual cash out

# Historical per-kWh net metering rates

	ZONE J					ZONE H & I				
	SC1	SC2	SC8	SC9	SC12	SC1	SC2	SC8	SC9	SC12
Feb-18	\$0.2251	\$0.2288	\$0.1099	\$0.1098	\$0.0997	\$0.2217	\$0.2264	\$0.1290	\$0.1282	\$0.1186
Jan-18	\$0.1723	\$0.1732	\$0.0673	\$0.0677	\$0.0625	\$0.1780	\$0.1796	\$0.0845	\$0.0881	\$0.0802
Dec-17	\$0.1974	\$0.1965	\$0.0949	\$0.0954	\$0.0888	\$0.1974	\$0.1983	\$0.1068	\$0.1093	\$0.1011
Nov-17	\$0.1918	\$0.1939	\$0.0922	\$0.0926	\$0.0860	\$0.1963	\$0.1935	\$0.1104	\$0.1111	\$0.1041
Oct-17	\$0.2021	\$0.1977	\$0.0973	\$0.0982	\$0.0906	\$0.2077	\$0.2077	\$0.1180	\$0.1210	\$0.1125
Sep-17	\$0.2057	\$0.2243	\$0.1114	\$0.1128	\$0.1050	\$0.2054	\$0.2249	\$0.1183	\$0.1196	\$0.1108
Aug-17	\$0.2033	\$0.2252	\$0.1029	\$0.1040	\$0.0966	\$0.1991	\$0.2180	\$0.1127	\$0.1147	\$0.1061
July-17	\$0.2063	\$0.2165	\$0.1030	\$0.1065	\$0.1151	\$0.2076	\$0.2230	\$0.1220	\$0.1271	\$0.1341
June-17	\$0.2111	\$0.2267	\$0.1109	\$0.1151	\$0.1179	\$0.2115	\$0.2233	\$0.0589	\$0.1292	\$0.1330
May-17	\$0.2174	\$0.2268	\$0.1085	\$0.1130	\$0.1164	\$0.2223	\$0.2155	\$0.1358	\$0.1402	\$0.1434
Apr-17	\$0.1930	\$0.1910	\$0.0953	\$0.1098	\$0.0997	\$0.1987	\$0.1931	\$0.1139	\$0.1282	\$0.1186
Mar-17	\$0.2038	\$0.2011	\$0.1055	\$0.0677	\$0.0625	\$0.2123	\$0.2091	\$0.1153	\$0.0881	\$0.0870
12-Mo Avg	\$0.2025	\$0.2085	\$0.0999	\$0.0994	\$0.0951	\$0.2048	\$0.2094	\$0.1105	\$0.1171	\$0.1119

# What is the VDER Value Stack?

Component	Description	Eligibility
Energy Value	Volumetric credit based on Day Ahead Hourly LBMP	All projects
Installed Capacity Value	Volumetric credit applied to production in all hours with option for higher credit in summer on-peak periods	All projects, solar gets Alternative 1
Environmental Value	Volumetric credit valued at NYSERDA REC or cost of carbon	Renewable technologies
Distribution Relief Value (DRV)	Monetary credit for performance during 10 peak distribution hours of previous year valued at Marginal Cost of Service (MCOS)	Applicable to customers not eligible for MTC (already built in to MTC)
Market Transition Credit (MTC)	Volumetric credit for mass market accounts to bring compensation close to NEM Declines for new projects as tranches fill	For mass market subscribers (SC1 & SC2) to CDG projects with solar, micro- hydro, wind, and fuel cell
Locational System Relief Value (LSRV)	Additional incentive for DERs in high value areas Monetary credit determined same way as DRV	Customers in high value areas, until cap is reached

## Value Stack component

Supply	Energy
	Generating Capacity
	Renewable Energy Credit
Distribution	Demand Reduction Value
	Market Transition Credit
	Locational System Relief Value

## Rate Design

*hourly pricing*

*flat kWh, monthly per kW,  
or summer-incentive kWh*

*per kWh*

*per kW coincident with  
distribution peak*

*Per kWh allocated to  
mass market subscribers*

*per kW coincident with  
distribution peak*



# Value Stack: Demand Customers (SC8 & SC9)

- When solar is producing but not exporting to grid
  - Reduce energy usage, reduce bill (at retail rate)
- Whenever solar energy is exporting to the grid
  - Excess, grid exported kWh are valued at Value Stack rates
  - Value Stack credits can offset entire Electric bill, not just energy charges
  - If bill is completely offset, remaining credits carry over to the next month
- If eligible for DRV and/or LSRV, account receives the monthly credit regardless of kWh exported that month
- No Annual Reconciliation
- SC8 and SC9 accounts qualify for Remote Net Metering host sites

*Note: The installation of solar does not always reduce a customer's demand level.*

# Removal of Size Limits Based on Customer Type

- “Removal of Customer-Type Based Technology and Size Limits”
  - Any type of customer – any Service Class – can install any technology from PSL 66-j or 66-l up to 5 MW
- 
- VDER Value Stack: no size limitations for residential customers; SC1/EL1 can solar install >25 kW
  - Phase One NEM: size limits remain at  $\leq 25$  kW for solar, wind, and hydro, and at  $\leq 10$  kW for fuel cells

# **Additional Standby Service Information**

# Standby Exemptions

## Customers exempt from Standby Service Rates will be billed under standard rates:

- Customers with on-site generation equipment of a total nameplate rating  $\leq 15\%$  of the Customer's maximum potential demand
- SC 1, SC 2, or the energy-only rate of SC 12 Customers
- Customers with a Contract Demand  $< 50$  kW

Designated  
Technologies  
Exemption:

Fuel cells, wind, solar thermal, photovoltaics, sustainably-managed biomass, tidal, geothermal, and/or methane waste that commences operation between July 29, 2003 and May 31, 2019

billed under Standard  
rates

Uses Electric Energy Storage with maximum capability up to and including 1 MW

# Standby Exemptions

## Targeted Exemptions – Battery Storage Conditions

Targeted  
Exemption:  
billed under  
Standard rates

New installs of battery storage no less than 50 kW on or after January 1, 2017

Submits a completed application for interconnection by December 31, 2019, and commences operation by December 31, 2021

Exempt from Standby Service rates for ten years from the date the battery storage project commences operation\*

Total exemption limit of 25 MW of new battery energy storage projects across all customers

**\*Shadow billing will be provided, for informational purposes, at rates under Rider Q - Option B during the term of such rates, and at the then-effective Standby Service rates thereafter**

# Standby Exemptions

## Additional Metering Requirements

- Customers with Targeted Exemptions must comply with these additional metering requirements:
  - The charging/discharge of the battery storage must be separately metered using an Output Meter that the customer arranges to be furnished and installed at their expense.
    - The Output Meter must consist of PSC-approved revenue grade metering equipment that can communicate with Con Edison metering data system and its associated IT infrastructure.
  - The customer, at its expense, must provide and maintain the communications service for the Output Meter

# Standby Pilot Rate Program (Rider Q)

- Pilot rate program allows options for Standby Service customers to:
  - Option A: Choose their own contract demand with penalties
  - Option B: Select a different As-Used demand period\*
  - Option C: Receive credits for consistent export of power via the buy-back (SC-11) rate

**\* Customers under Option B will also receive shadow billing, for informational purposes, at the applicable Standby Service rates**

# Process for Energy Storage Projects

- Residential PV + Storage as a Back-up (not grid parallel)
  - Select “SOLAR (Photovoltaic)” for Distributed Generation Type
  - The emergency back-up generator application (lead-acid, lithium ion, etc.) should be submitted in Project Center
  - Separate application for battery in Project Center as back-up generator
- Energy Storage in Parallel with Grid
  - Select “BATTERY ENERGY STORAGE” for Distributed Generation Type
  - Depending upon charging level, upgrades may be required
  - Inverter-based energy storage systems can export to the grid and receive compensation under buy-back service (SC11) or Value Stack



# Process for Hybrid Energy Storage Projects (aka Paired Storage)

Hybrid systems – mix of technologies all parallel with grid

1. One installation of combined DG + Battery Energy Storage
  - Single hybrid application
  - Start this application by choosing “New – All Other Requests, click here!” from the PowerClerk home screen
  - A single combined system diagram will likely be required to enable engineering evaluation
2. Battery Energy Storage installation for customer with existing DG
  - One application only
  - Application should refer to the other (MC#) in the “Please Provide Project Overview” field and also highlight to your project manager
3. DG installation for customer with existing Battery Energy Storage: follow process from #2 except new DG application