CUNY 2024 Solar + Storage Installer Workshop

3/20/2024
Opening Remarks

Raghu Sudhakara
Vice President, Officers and Executive Department

sudhakarar@coned.com
# CUNY Workshop 2023 Agenda

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joana Abreu</td>
<td>Demand Response Program Overview</td>
</tr>
<tr>
<td>Marissa Castoro</td>
<td>Non-Wires Solutions Overview</td>
</tr>
<tr>
<td>Andre Douglas</td>
<td>Con Edison Cleaning NYC’s Air through Electric Vehicle Adoption</td>
</tr>
<tr>
<td>Karice Redhead</td>
<td>Low-Income DER Make Ready Program</td>
</tr>
<tr>
<td>Brian Schaitkin</td>
<td>Con Edison Energy Storage Programs Overview</td>
</tr>
<tr>
<td>Will Taylor &amp; Wassim Salloum</td>
<td>Enabling FERC 2222</td>
</tr>
<tr>
<td>Libin Mao</td>
<td>Best Practices - Interconnecting Energy Storage</td>
</tr>
<tr>
<td>Kathryn Osenni</td>
<td>Electrification Capacity Map</td>
</tr>
</tbody>
</table>
Smart Usage Rewards
ConEd’s Demand Response Programs

CUNY Solar and Storage Workshop 2024
Agenda

Opportunity

Innovation

Smart Usage Rewards
DR Opportunity
Demand Response Opportunity

Energy Efficiency Example

Hourly Demand (MW)

Baseline
Demand Curve with Energy Efficiency Implemented

Hour of Event Day

Demand Response Example

Hourly Demand (MW)

Baseline
Demand Curve with Demand Response

Hour of Event Day

EE provides sustained reduction in demand

DR provides demand relief during a targeted timeframe

conEdison
Demand Response Strategy Adequacy

Demand response strategies

- Automation
- Onsite backup generation
- Shift time and duration of internal processes
- Pre-cool or pre-heat
- Prioritize scheduled activities
- Adjust HVAC settings, dim lights, adjust speed of fans

Shifting, shaping or shimming

[Graph showing energy demand over time with labels for load shifting, peak shaving, and valley filling]
Wholesale vs. Distribution DR Programs

Wholesale Programs
- Resource adequacy
- Reliability

Distribution DR Programs
- Distribution Load Relief Program
  - Increase electric service reliability
- Commercial System Relief Program
  - Peak shaving
Innovation
Network Peak Window Map

What is a Network Peak Window?
Window of time when energy usage is the highest in a designated area

How is Network Peak different than ConEd System Peak?
System peak is the window of time where the most energy is used across the entire Con Edison service territory whereas network peak is the window of time when energy usage is the highest in a specified geographic area.
Technology and Capacity Agnostic
Democratizing the Demand Response Opportunity

Enrolling Directly with Con Edison
- Receive full DR incentives
- Better for customers more experienced with DR

Enrolling with an Aggregator
- Can help customers develop tailored DR strategies
- Often bundle DR with other energy services
- Can enroll customers in NYISO DR programs
- Takes cut of DR incentives

C&I Retail Multi-family Small Business Residential

Over 50 kW
- Can enroll directly with Con Edison

Under 50 kW
- Can enroll with Aggregator
- Can only enroll with Aggregator

- Can only enroll with Aggregator
Smart Usage Rewards
Con Edison DR Offering

Customers provide load relief by curtailment or generation pledge

System-Wide Peak Shaving (CSRP, Term-DLM)
- Day-ahead notification based on system load forecast
- Each network has 4-hour call window aligned with network peak

Network-Specific Reliability (DLRP, Auto-DLM)
- 2-hour or less notification based on network contingency
- Events are 4-6 hours long

Customers may also provide load relief through BYOT programs
Rider T Program Offerings
System Relief Program (CSRP)

Availability

• Weekdays Only (May – September)
• 4 Yearly Fixed Call Windows
  • 1100 – 1500
  • 1400 – 1800
  • 1600 – 2000
  • 1900 – 2300
• NEW: 6-hour call window for 18 networks
  • Window varies by network location

2024 Trigger

• 92%: 11,600 MW and 88% 11,300 MW
Rider T Program Offerings
Distribution Load Relief Program (DLRP)

**Activation Conditions**

- Next Contingency and Condition Yellow
- Active Voltage Reduction
- **Co-enrollment with CSRP**

**Availability**

- 0600 – 2400 (May through September Only)
- Events can extend beyond 2400 on a voluntary basis
- 7 days a week

**Call Options**

- > 2 Hours Ahead – Contingency Event
- < 2 Hours Ahead – Immediate Event
Rider AC Program Offerings
Dynamic Load Management (DLM)

**Term- and Auto-DLM**

- 3 – 5 Year Long term Contracts
- RFPs submitted and approved on a network basis
- Customers will only be enrolled in RFP-approved networks

**Term-DLM** can be called simultaneously with CSRP

- 4-hour call windows 5-days per week
- Load forecast trigger offers **option to call at 88 percent of peak (11,300 MW) and obligation at 92 percent (11,600 MW)**
- Customers can be co-enrolled in DLRP

**Auto-DLM** can be called simultaneously with DLRP

- Contingency calls with as little as ten minutes notice, 7-days per week
- Also called for Term-DLM events
- No options for co-enrollment
Rider L Program Offering
Bring Your Own Thermostat (BYOT)

- Residential Program
  - Direct Load Control
  - Must have Central HVAC system
  - Smart Thermostats
    - Nest
    - Honeywell
    - Emerson
    - Amazon
  - Called in conjunction with CSRP or DLRP
  - Can not co-enroll in Rider T or AC
  - In 2023 BYOT provided 35 MW of load relief
Impact

**Total Enrollments:** 65K

**Peak Shaving:** 21

**Network Reliability:** 63%

**Total Events Called:** 27

**Average Event Performance:** 928

**Total MW Pledged:** 2.2x

**Total MW Pledged 2023:** 1.2x

**Number of Enrollments**

- 2019: 2,878
- 2020: 3,875
- 2021: 12,721
- 2022: 29,032
- 2023: 65,094
Thank You

conEdison
Introduction

Marissa Castoro
Non-Wires Solutions
Agenda

• Non-Wires Solutions Overview
• Portfolios and Program Structure
• Future NWS Opportunities
Non-Wires Solution (NWS) Overview

An NWS Project is a portfolio of non-traditional solutions that seek to defer or eliminate traditional infrastructure projects for the benefit of the distribution system.

NWS provides benefits by:

- Working with customers to implement cost-effective solutions that benefit communities
- Implementing portfolios that provide a net benefit to society
- Incentivizing innovative technologies
- Accelerating adoption of EE technologies
Summary of NWS Portfolios

Brooklyn Queens Demand Management (BQDM) Program
- Designed to defer new Gateway Substation
- Launched in 2014 and extended in 2017
- Released Prescriptive ESS program in 2022

Newtown
- Designed to defer load transfer from Newtown to North Queens
- Released RFP in 2019 for deferral from 2021 to 2025

Jamaica
- Designed to eliminate equipment upgrades at Jamaica Substation
- Released RFP in 2023 to seek load relief through 2027

Water Street (Closed)
- Successfully eliminated equipment upgrades at Water Street, Plymouth Street, and Farragut Supply Stations
- Commenced in 2018 for reductions needed for 2019 through 2021
Case Study - Barclays Center Energy Storage System (500kW)

- Part of Water Street NWS Portfolio
- Behind-the-Meter battery operated by Enel X
- 50% installation incentive upon commercial operation date, 50% annual performance incentive
- Installed in 2021, performance contracted through summer of 2030
- Contracted for summer dispatch to provide 500 kW load reduction (total capacity is 750 kW)
- Multiple value streams for customer
General Program Structure and Requirements

Applicant commits to:

- Limit projects to 5 MW of load reduction
- Follow NYS Standardized Interconnection Requirements (SIR)
- Use BESS technology approved for use in NYC
- Choose service connection that meets local reliability standard (e.g. N-2)
- Provide first-right-of-dispatch during the Summer Performance Period (May 1st – September 30th)
- Min. of 4 consecutive hours guaranteed load reduction
- Not participate in competing programs/markets
- Comply with Measurement & Verification plan

Con Ed commits to:

- Pay 50% of incentive upon approved operationality
- Pay up to 50% over 10-year contract term based on performance
- Provide 21-hour notification of NWS Events

Battery Energy Storage System in Woodside, Queens
Future NWS Opportunities

• For the latest program info check out:
  – [NWS RFP page](#), view past opportunities
  – [Brooklyn/Queens Energy Storage Incentive](#)
• To make sure you don’t miss announcements please reach out to us to be added to our distribution list at [DSM@coned.com](mailto:DSM@coned.com)
• Interested developers, email us to set up an introduction meeting

• What do we look for in strong proposals?
  – Permitting and interconnection considerations
  – Detailed project timeline
  – Detailed evaluation of project risks
  – Clear scope of work description
Brooklyn-Queens Energy Storage Incentive (BQDM)

Program Cap Achieved

Open through April 30, 2024

Grid Connected
(Front-of-meter; requires distribution circuit level upgrades)

$2,500 / kW

Load Following
(Behind-the-meter; does not require distribution circuit level upgrades)

$3,000 / kW

• First operational summer begins May 1, 2025, projects not operational by May 1, 2026 will not be eligible for incentives
• Projects operational on or before May 1, 2025 eligible for 10% bonus on operational payment
• Remaining 50% performance payments paid over 10 summer terms based on system performance

To apply:
• Complete interconnection application through Power Clerk web portal
• Pay 25% of interconnection costs per completed CESIR study
• Submit NWS Application, available on our website, to DSM@coned.com
Thank you!

For questions, or to be added to our RFP distribution list for future program offerings email DSM@coned.com

[Link to NWS RFP page](#)
Brooklyn/Queens Energy Storage Incentive
Con Edison
Cleaning NYC’s Air through Electric Vehicle Adoption
CUNY Summit

March 20th, 2024
Con Edison
Clean Energy Commitment

Build the Grid of the Future
Build a resilient, 22nd century electric grid that delivers 100% clean energy by 2040.

Empower our customers to meet their climate goals
Accelerate energy efficiency with deep retrofits, aim to electrify most building heating systems by 2050, and all-in on electric vehicles.

Reimagine the gas system
Decarbonize and reduce the utilization of fossil natural gas, and explore new ways to use our existing, resilient gas infrastructure to serve our customers’ future needs.

Lead by reducing our company’s carbon footprint
Aim for net-zero emissions (Scope 1) by 2040, focusing on decarbonizing our steam system and other company operations.

Partner with our stakeholders
Enhance our collaboration with our customers and stakeholders to improve the quality of life of the neighborhoods we serve and live in, focusing on disadvantaged communities.

Sustainable Energy for Generations to Come
Con Edison is Enabling the EV Future

- **1 Million** Chargers in NYC and Westchester by 2050
- **100%** of Con Edison's light duty fleet electrified
- **25,000** Charging plugs installed by end of 2025
- **400K** Chargers in NYC and Westchester by 2035
Transportation electrification is essential to reach ambitious New York clean energy goals.

NY State carbon reduction goals [MMT of CO₂]

- Transportation sector accounted for nearly 50% of all carbon emissions in NYS in 2017
- State climate goals can only be achieved through aggressive transportation electrification
Increasing availability of EV charging is a vital solution to address barriers to EV adoption

% of drivers who consider factor to be a purchase barrier

<table>
<thead>
<tr>
<th>&quot;Range anxiety&quot;</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Running out of power</td>
<td>58%</td>
</tr>
<tr>
<td>Low availability of charging stations</td>
<td>49%</td>
</tr>
<tr>
<td>Initial vehicle costs</td>
<td>47%</td>
</tr>
<tr>
<td>Cost to service and repair the engine</td>
<td>37%</td>
</tr>
<tr>
<td>Not enough variety in models</td>
<td>22%</td>
</tr>
<tr>
<td>Not enough performance capability</td>
<td>20%</td>
</tr>
<tr>
<td>Risk of overwhelming electric grid</td>
<td>14%</td>
</tr>
</tbody>
</table>
Con Edison
E-Mobility Programs & Initiatives Overview

- Innovation
- EV Infrastructure Incentives
- Managed Charging Incentives
- Customer Education and Support
Innovation
NYC Curbside EV Charging Demo

118 curbside charging plugs installed in NYC

66% System Utilization
99.9% System uptime
49,250 Charging Sessions
School Bus Vehicle-to-Grid Demo

Electric school buses as a dual-use asset providing transportation and grid services

Testing technology solutions and impact on vehicle batteries
EV Infrastructure Incentives
**Light-Duty PowerReady Program**

**Program Overview**

**Program Description**
Provides incentives to offset customer and utility-side infrastructure costs associated with installing light-duty EV chargers

**Funding**
$613M

**Program Dates**
Start: July 2020
End: December 2025

**Program Goals**
L2 Plugs: 21,371
DCFC Plugs: 3,157

**Resources**
Website Email

---

### Incentive Overview

<table>
<thead>
<tr>
<th></th>
<th>Level 2 Plugs (&lt; 50 kW)</th>
<th>DCFC Plugs (&gt;= 50 kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to Sites</strong></td>
<td>Non-Public</td>
<td>Public</td>
</tr>
<tr>
<td><strong>Non-Proprietary Plugs</strong></td>
<td>Up to 50%, $5-7.5k per plug cap*</td>
<td>Up to 90%, $9-13.5k per plug cap*</td>
</tr>
<tr>
<td><strong>Proprietary Plugs</strong> (ex. CHAdeMo, Tesla)</td>
<td>Up to 50%, $5-7.5k per plug cap*</td>
<td>Up to 50%, $5-7.5k per plug cap*</td>
</tr>
</tbody>
</table>

- Project caps can be increased based on specific criteria and characteristics
- Additional incentives are available to projects located within DACs (Disadvantaged Communities)

### Eligibility and Requirements

**Con Edison**
Receive, or plan to receive, service from Con Edison

**Plugs**
L2: Minimum of 2 plugs
DCFC: 6MW cap for 30+ plugs

**Contractor**
Customer-side work must be completed by approved contractor

**Reporting**
5-year reporting requirement pulled on a quarterly basis

**Technical Standards**
Hardware: ISO 15118 Part 2 and 20 + OCPP 2.0.1 by 11/16/24
Software: ISO 15118 Part 2 and 20 by 11/16/24
Medium- and Heavy-Duty Vehicles Pilot

Program Overview

Program Description
Provides incentives to offset customer and utility-side infrastructure costs associated with installing medium- and heavy-duty EV chargers for qualifying commercial sites.

Funding
$21M

Program Dates
Start: 2024

Resources
Website  Email

Incentive Overview

<table>
<thead>
<tr>
<th>Located within a Disadvantaged Community*</th>
<th>Non-Publicly Accessible</th>
<th>Publicly Accessible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Up to 90% of utility-side costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up to 50% of customer-side costs</td>
<td>Up to 90% of utility-side costs</td>
</tr>
<tr>
<td>No</td>
<td>Up to 90% of utility-side costs</td>
<td></td>
</tr>
</tbody>
</table>

*Disadvantaged communities (DAC) are defined as communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socioeconomic criteria, or comprise high concentrations of low- and moderate-income households. [See map](#) to determine if your site is in a DAC zone.

Eligibility and Requirements

- **MHDV**
  - For charging MHDV over 10,000 lbs gross vehicle weight

- **Chargers**
  - L2, DCFC, or mixed

- **Non-Publicly Accessible Sites**
  - Must be participating in one of the following voucher programs:
    - NYSERDA Truck Voucher Incentive Program
    - NYC DOT NYC Clean Trucks Program
    - EPA Clean School Bus Program
    - NYSERDA NY School Bus Incentive Program
Managed Charging Incentives
# Program Overview

## Description

The program offers a predictable cash incentive revenue stream for charging during off-peak periods and overnight.

## Funding

$227M

## Program Dates

Start: January 2024

## Resources

Website | Email

---

# Charging Incentive Overview

The more you shift to overnight and off network peak, the more you earn

<table>
<thead>
<tr>
<th></th>
<th>L2 Charger</th>
<th>DCFC Charger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off Peak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earn incentives</td>
<td>$0.03 per kWh earned while charging from 12 AM – 8 AM</td>
<td></td>
</tr>
<tr>
<td>all days, year-round</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for charging overnight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Avoidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earn incentives</td>
<td>Private</td>
<td>Public</td>
</tr>
<tr>
<td>during 4-hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>network peak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>window with every</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kW avoided</td>
<td></td>
<td></td>
</tr>
<tr>
<td>relative to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nameplate capacity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Requirements

**Con Edison**

Receive, or plan to receive, service from Con Edison

**Charger Ownership**

Show proof of ownership/operating agreement of chargers or provide an application and data management authorization letter

**Rate**

Must be on commercial rate

**Charger Data**

Provide 15-minute interval data

## Eligible Stations

- Public station
- Workplace
- Light-duty, medium-duty, heavy-duty fleets
- Multifamily housing
- Industrial locations
Program Overview

The program offers cash incentives to EV drivers for charging their EVs at off-peak times, which reduces stress on the energy grid.

Funding $100M

Program Dates Start: January 2023  End: December 2025

Resources Website  Email

Charging Incentive Overview

**Off-Peak Charging Incentive** (Year-round, baseline)
- $0.10 per kW incentive for off-peak charging:
  All days, year-round, between 12 - 8 AM

**Summer Peak Avoidance Incentives** (June – September)
- $35 per month Avoided Summer Peak Incentive:
  Earn per vehicle or charging station for avoiding charging weekdays 2-6PM (June – September)
- $35 Avoided Summer Peak Bonus Incentive:
  Earn an additional $35 for avoiding peak charging during entire summer

Eligibility and Requirements

- **Con Edison**: Charge in the Con Edison service area
- **Rate**: Must be on standard rate (not Time-of-Use rate)
- **Connection**: Must have compatible EV telematics or charger to participate
- **Charging Data**: Must be able to provide location and energy use data
- **Eligible Models**: Currently 60 models, 3 chargers. See FAQ for latest list
Customer Education & Support
Con Edison Advisory Services

Con Edison’s EV Advisory Service helps you understand the grid capacity where you operate, how to plan for any upgrades, and what electric rates may be best for you. You should engage with advisory services if you are:

- A Light, Medium, Heavy Duty Fleet Operator
- A Developer unsure of where to site your next project
- Interested in installing a charging hub
- Unsure of where to start on your EV charging journey!
## Program Resources

<table>
<thead>
<tr>
<th>Resource</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ConEdison PowerReady Website</strong></td>
<td>Incentive website including program information and resources.</td>
</tr>
<tr>
<td><strong>PowerReady FAQs</strong></td>
<td>Program Frequently Asked Questions.</td>
</tr>
<tr>
<td><strong>Capacity Map/DAC Map</strong></td>
<td>Look up your address on Con Edison capacity map.</td>
</tr>
<tr>
<td><strong>Register – PowerReady Program Portal</strong></td>
<td>Register for the PowerReady Program Portal.</td>
</tr>
<tr>
<td><strong>Apply Now – PowerReady Program Portal</strong></td>
<td>Apply for the PowerReady Program Portal.</td>
</tr>
<tr>
<td><strong>PowerReady Program Portal Directions</strong></td>
<td>Step by step directions to apply to the program.</td>
</tr>
<tr>
<td><strong>Approved Contractor List</strong></td>
<td>List of charger installers approved to participate in PowerReady.</td>
</tr>
<tr>
<td><strong>Participant Guide</strong></td>
<td>Includes program specifics, such as eligibility criteria and requirements.</td>
</tr>
<tr>
<td><strong>EV Charging Cost Calculator</strong></td>
<td>EV Charging cost calculator to determine bill impacts of charging.</td>
</tr>
<tr>
<td><strong>EV Rates Webinar Replay</strong></td>
<td>Video reviewing rate options for EV developers and customers.</td>
</tr>
<tr>
<td><strong><a href="mailto:EVMRP@coned.com">EVMRP@coned.com</a></strong></td>
<td>Reach out with any program questions or to start your project.</td>
</tr>
</tbody>
</table>

### Lead the Charge!

- **Forecasts indicate EVs will be responsible for 1/3rd of all car sales by 2025**
- **EV Drivers save over $500 and 72 lbs of CO2 on average a year vs. gas drivers**
- **Studies have shown EV charging stations at commercial sites increased average EV driver dwell time by 50 minutes**
Con Edison
Cleaning NYC’s Air through Electric Vehicle Adoption
CUNY Summit

Contact us at evmrp@coned.com
LOW-INCOME DER MAKE READY PROGRAM

March, 2024
Low-Income DER Make Ready Program

AGENDA

BACKGROUND
PROGRAM OVERVIEW
PROGRAM BENEFITS
PROGRAM CRITERIA
CONTACT
Low-Income DER Make Ready Program

BACKGROUND

Con Edison proposed a program to support interconnection of solar and/or storage for low-income customers via utility interconnection costs.

During the rate case, Con Edison met with stakeholders to review program requirements and develop framework.

Required program follow-ups completed post rate case settlement for launch in 2024.
The Program seeks to support qualified projects by providing incentive support to cover all or a portion of utility upgrade costs as a credit for the installation of solar and/or storage distributed energy resources ("DER") that benefit low-income customers.
Low-Income DER Make Ready Program

BACKGROUND

**Capital Support**

The Low-Income DER Make Ready Program support will be credited to project post-CESIR and scaled to the capacity of the DER being developed but capped at maximum dollar amount in three categories as listed in the table below.

<table>
<thead>
<tr>
<th>Size</th>
<th>AC Nameplate Capacity</th>
<th>Maximum Capital Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>51 kW – 499 kW</td>
<td>$150,000</td>
</tr>
<tr>
<td>Medium</td>
<td>500 kW – 999 kW</td>
<td>$300,000</td>
</tr>
<tr>
<td>Large</td>
<td>1 MW – 5 MW</td>
<td>$750,000</td>
</tr>
</tbody>
</table>

*Costs above the capital maximum are to be paid by the developer

Program funded at $22.95M through 2025

**Additional Support**

Upon approval for participation in the Low-Income DER Make Ready Program, the building will be referred to the following Programs where they may be eligible for additional support/incentive opportunities:

- **Con Edison Energy Efficiency teams**
  Offers incentives for the installation of energy-efficient equipment and technology to reduce overall energy use and maintenance costs while increasing operating efficiencies and improving tenant comfort.

- **NYSERDA’s Affordable Solar and Storage Predevelopment Technical Assistance Program**
  Provides funding to address resource gaps and solve market barriers preventing the development of solar and energy storage installations benefiting low-to-moderate income (LMI) households.

- **NYC Accelerator Program**
  Provides resources, training, and one-on-one expert guidance to help building owners and industry professionals improve energy efficiency and reduce carbon emissions from buildings in NYC.
A project is eligible for incentive support under the Program if it meets the following criteria:

- Non-community distributed generation (CDG) projects
- Project is installing solar and/or energy storage system
- Project must attain permission to operate (PTO) by 2026
- Meets Affordable Multifamily Energy Efficiency Eligibility Criteria
## Low-Income DER Make Ready Program

**PROGRAM CRITERIA**

The New York State Affordable Multifamily Energy Efficiency Program (AMEEP) is a combined effort of the Joint Utilities of New York and the New York State Energy Research and Development Authority (NYSERDA) to offer incentives for the installation of energy efficient equipment and technology to affordable multifamily buildings with five or more units.

Interested parties can email DERMakeReady@ConEd.com with proof of participation in one of the following AMEEP eligible programs to qualify for the Low-Income DER Make Ready Program.

<table>
<thead>
<tr>
<th>US HUD, USDA-RD</th>
<th>DHCR</th>
<th>Low Income Housing Tax Credits</th>
<th>NYCHPD</th>
<th>SONYMA Mortgage Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• &amp; other Federally Regulated Affordable Housing</td>
<td>• Regulated Affordable Housing</td>
<td>• Regulated Affordable Housing (or other local housing agency)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HFA 80/20 Program</th>
<th>NYCHDC 80/20</th>
<th>Mitchell-Lama Buildings</th>
<th>Weatherization Assistance Program</th>
<th>Rent Roll</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mixed Income Programs</td>
<td></td>
<td></td>
<td></td>
<td>• Applies to affordable housing projects that do not meet the proxy requirements - properties must have a rent roll.</td>
</tr>
</tbody>
</table>
Low-Income DER Make Ready Program

CONTACT

- For more information, please email **DERMakeReady@ConEd.com** for more information
  - You may also reach out to Karice Redhead, Low-Income DER Make Ready Program Manager, at redheadk@coned.com
Storage
Con Edison Energy Storage Programs
A holistic approach to grid readiness

- Supports T&D Reliability
- Bridge Solution to Enable Electrification
- Supports Competitive 3rd Party Market Participation
Storage Utility Owned Program
**Con Edison Utility Owned Storage**

**Energy Storage Projects - Overview**

<table>
<thead>
<tr>
<th>Project</th>
<th>Size</th>
<th>In Service Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone Park</td>
<td>2.0 MW / 12.0 MWh</td>
<td>6/1/2018</td>
<td>Complete</td>
</tr>
<tr>
<td>Fox Hills Substation</td>
<td>7.5 MW / 30.0 MWh</td>
<td>8/27/2023</td>
<td>Complete</td>
</tr>
<tr>
<td>Brownsville Substation</td>
<td>5.8 MW / 23.2 MWh</td>
<td>6/2025</td>
<td>Execution</td>
</tr>
<tr>
<td>Fresh Kills Substation</td>
<td>11.6 MW / 46.4 MWh</td>
<td>2025 - 2026</td>
<td>Planning</td>
</tr>
<tr>
<td>Glendale Substation</td>
<td>5.8 MW / 23.2 MWh</td>
<td>2025 - 2026</td>
<td>Planning</td>
</tr>
<tr>
<td>Cedar St. Substation</td>
<td>4.0 MW / 16.0 MWh</td>
<td>TBD</td>
<td>Concept</td>
</tr>
</tbody>
</table>
Con Edison Utility Owned Storage

Fox Hills Distribution Substation

Benefits/Use Case
• Substation peak load capacity addition
• Ramp Support
• Market Opportunities

System Design
• 7.5 MW / 30 MWh
• HT Switchgear Design
• Tesla Mega Pack Storage
• Augmentation Ready

Fire Protection Systems
• First Line: Tesla integrated package
• Second line: Dry Type Deluge
• Advanced Technology: Thermal Mitigation System
• M&C: 24/7 Manned & Redundant
## Con Edison Utility Owned Storage

### Pole Top Mounted ESS - Pilot Overview

<table>
<thead>
<tr>
<th>Project</th>
<th>Size</th>
<th>On-line Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed Pole Mounted ESS Yonkers, NY</td>
<td>(3) 30kW /165 kWh</td>
<td>2025-2026</td>
</tr>
</tbody>
</table>
Con Edison Utility Owned Storage
Pole Mounted ESS - Pilot Overview

Benefits/Use Case:
• Grid stabilization
• Voltage support
• Resiliency
• Market Opportunities

Project scope:
• 3 CECONY locations
• Test use cases

Installation Timeline:
• 2025: 1 Unit at R&D Lab
• 2025 - 2026: 3 Units in Yonkers
Storage
Bridge To Wires
Con Edison Bridge to Wires*

Provides a temporary solution to enable electrification

Use Cases Enabled:

• Fleet electrification
• EV managed charging
• Building heat electrification

Benefits:

• Energy Storage System acts as bridge until long lead grid infrastructure can be built
• Energy Storage System moves to support other use cases after wires are built
• Wholesale market response reduces customer bill

*Program Pending Regulator Approval
Basic Bridge to Wires Framework
Example: Transmission or Distribution Capacity constraint

Use case transition:

• Energy Storage System acts as bridge until long lead grid infrastructure can be built
• Energy Storage System moves to next use case: support hosting capacity, peak shaving, market participation
• Wholesale market response reduces customer bill impact
Storage
Bulk 3rd Party
The procurement buys the rights to dispatch storage systems.
CUNY Workshop: Enabling FERC 2222

William Taylor / Wassim Salloum
Distributed Resource Integration

March 20th, 2024
**Description**

The Federal Energy Regulatory Commission (FERC or Commission) main goal is to better enable distributed energy resources (DERs) to participate in the electricity markets run by regional grid operators.

**Website:** FERC ORDER 2222

---

**Issued September 17th, 2020**

**ROI**

Retail customers can now sell into the ISO wholesale electricity market.

**DER Types**

Electric battery storage systems, rooftop solar panels, combined heat and power, energy efficiency measures, thermal energy storage systems such as or electric vehicles and their charging equipment.

**Size**

Individual DERs 10kW and above can aggregate together to participate in the market.

NYISO has set its minimum aggregation size to 100 kW.

**Location**

All DER in aggregation can be heterogenous and reside in the same Transmission Zone.
Roadmap to FERC 2222

New York Independent System Operator (NYISO)

2018
• FERC Order 841 – enabled ESR to participate in the wholesale market

2020
• FERC Approved NYISO’s DER Aggregation Participation Model

2023
• NYISO Aggregator registration opened in April for 2020 approved model
• Enrollment scheduled to commence on April 16th
• Aggregator’s earliest participation to occur in July

2024
• NYISO is scheduled to be fully compliant with FERC Order 2222 by 12/31
NYISO DER Participation Model - Aggregator Registration and DER/Aggregation Enrollment Timeline

1. **NYISO Customer Registration & Aggregator Registration (Up TO 60 Days)**

2. **Distribution Utility registration/ pre-enrollment data exchange (Anytime prior to step 4)**

3. **Distribution Utility Review (Up to 60 Days)**
   - Submission of DER/Aggregation enrollment data to the NYISO (Anytime after Step 1)

4. **NYISO workflow review of DER/Aggregations (~15-25 days; Starts upon completion of Step 4)**
   - Calendar month leading up to first day of participation

5. **Market Participation (Starts first calendar day of month)**
   - n + up to 60 days
   - NYISO shares DER/Aggregation enrollment data with applicable DU

---

**Registration**
- NYISO shares DER/Aggregation enrollment data with applicable DU

**Enrollment**
- NYISO shares DER/Aggregation enrollment data with applicable DU

---

NYISO Registration / Enrollment Timeline
Overview

Description
To Enroll in NYISO Aggregator Participation Model

Start Date
Start: April 16th 2024

Resources
Website Email

Eligibility and Requirements

Meter
AMI or MV 90 - Interval meter (installed)
If a new meter is req., it has a lead time of 20 – 62 weeks based upon supply chain constraints

Agreement
Each DER in the aggregation must already have an SIR / IA (Demand Response customers excluded)

Transmission Node
Aggregator must submit the correct T-node for their aggregations

Telemetry
Telemetry must be already established
Aggregator should be able to successfully receive and transmit telemetry to the applicable TO over their required protocols e.g., DNP, ICCP, SD-WAN, etc.

Discovery in the enrollment queue of any of these activities as unfulfilled, will trigger an immediate Attestation of Rejection (w/o proceeding through the rest of the enrollment checklist)
DERMS MVP Features

Technology developed to assist aggregators to register/enroll in wholesale market

**Landing Page**
- View and download info on program participation
- View list of existing Aggregators
- Access Frequently Asked Questions

**External Portal**
- Validate account status
- View Tariff information and Transmission Node
- View DER Asset information: Nameplate capacity, address, type, etc.

**Internal Portal**
- Con Ed employees will manage communication with aggregators and NYISO to ensure they meet all the necessary requirements to participate in the Wholesale Market
Compete in the Wholesale Market With Private Generation

Partner with an aggregator to be reimbursed for the power you create through the wholesale market.

LOG INTO THE DISTRIBUTED ENERGY RESOURCE PORTAL

REGISTER AS AN AGGREGATOR
Telemetry Requirements

Direct Communication via DNP-3 over SDWAN

Six-second telemetry is required for each Aggregation

Aggregators are responsible for measuring four streams (channels) of telemetry data

The NYISO will send Aggregation its Base Point Signals
Documents to be collected by the aggregator and provided to utility

Description
An aggregator is responsible to receive authorization from DER customer to alter tariff and electric billing rate.

The forms must be submitted to the utility prior to participating in the wholesale market.

Website: Compete in the Wholesale Market
Settlement Process

The Meter Authority analysts review the data before submitting to NYISO:

- Compare Aggregation data with Telemetry and NYISO PTS data
- Investigate and troubleshoot any discrepancies with relevant parties (Meter Shop, Control Centers, Aggregators, NYISO, etc.)
- Switch to alternate data source (e.g., telemetry) if necessary
- Submit best-available data to NYISO for previous day’s market. Make open-period and monthly corrections for other days as needed

Align with existing process for Generators submissions as much as possible:

- Stick to 11:00 deadline --> May require overnight / automated workflow.
- Use the same vendor platform for all MA submissions, via new NYISO API
Best Practices - Interconnecting Energy Storage
Appendix K Information

Increase communication and enhance alignment between developers and Con Edison

Addressing Common Themes

- Describe operating windows for charge/discharge of the energy storage system
- Include battery ESS round-trip efficiency
- Provide the system auxiliary load
- Understand the technical consideration behind the Hybrid A through D configuration
Critical Components in Appendix K
Scope of Work

- Input in Engineering CESIR technical analysis
- Critical components of the form
  - Scope of work
  - System auxiliary loads
  - Operational Characteristics
  - Hybrid Configuration - option A through D

Applicant Enters:
- HT or LT
- Export Rate
- BESS Capacity (RTE Included)
- Contingency Design
- DER technology type and nameplate
- System Configuration
Critical Components in Appendix K

System Auxiliary Loads

- Input in Engineering CESIR technical analysis
- Critical components of the form
  - Scope of work
  - System auxiliary loads
  - Operational Characteristics
  - Hybrid Configuration - option A through D

Applicant Enters:
- System Auxiliary Loads Description
- Size in kVA
- HVAC, alarms, lighting, communication equipment and etc.
Critical Components in Appendix K

Operational Characteristics

- Input in Engineering CESIR technical analysis
- Critical components of the form
  - Scope of work
  - System auxiliary loads
    - Operational Characteristics
  - Hybrid Configuration - option A through D

Applicant fills:
- Requested charging window
- Requested discharging window
- Making sure windows matching with the enrolled program(s) if any
Critical Components in Appendix K

Hybrid Configuration

- Input in Engineering CESIR technical analysis
- Critical components of the form
  - Scope of work
  - System auxiliary loads
  - Operational Characteristics
  - Hybrid Configuration - Option A through D

Applicant selects:

- Option A through D
- Note that the customer needs to prove the ESS is being charged by DG exclusively if Hybrid Option A is chosen. The system cannot be charged by the grid.
- Example: this is a Hybrid ESS proposal under Hybrid Option D (stand-alone system with no customer load).
CESIR Study
Contingent Design and Design Options

• To reduce interconnection costs, Con Ed will provide N-1 service design in a N-2 area.

• Any additional requested solution(s) will require additional 40-business-day extension to the CESIR.
Con Edison’s Hosting Capacity Maps

**Hosting capacity** of a distribution system refers to the amount of Distributed Energy Resources (DER) that can be accommodated without adversely impacting power quality or reliability under existing control configurations and without requiring infrastructure upgrades.

**Main objectives** of the hosting capacity maps:
- Provide increased transparency as to where Con Edison has hosting capacity.
- Provide developers, contractors, and customers visibility into potential DER locations and sites for private generation.
- To understand how and where DER installation impacts the distribution system.

These maps can be accessed through the Con Edison Hosting Capacity Web Application.
Con Edison has renamed their Electric Vehicle Charging Capacity map to the Electrification Capacity map to account for the visualization of available hosting capacity for heat electrification, in addition to the visualization of available hosting capacity for potential electric vehicle charging sites.

This map shows transformer capacity data for Con Edison’s underground network electrical system and feeder-level capacity data for Con Edison’s non-network (overhead) system.
Methodology

This map displays both transformer and feeder level electrification capacity in both winter and summer.

**Summer** ratings are appropriate for use in estimating available capacity for electric vehicle charging.

**Winter** ratings can be used in combination with summer ratings to determine available capacity for building electrification.
Methodology

Seasonal hosting capacity varies based on equipment ratings, which increase in colder months, and based on seasonal peak load.

Transformers on this map are listed by available capacity and voltage. Two types of transformers are displayed:
1. 208 volts (shown as circles)
2. 460 volts (shown as squares)

The map shows four levels of transformer capacity, by color.
The map shows three levels of feeder capacity, by color.
Thank You!

dgexpert@coned.com