Agenda for Today

• Con Edison Demand Response
• Advanced Meter Infrastructure
• Break
• Demand Management Program
• NYISO Demand Response
• Gas Demand Response Pilot
• Non-Wires Solutions
Con Edison Demand Response Agenda

• Program Overview

• 2017 Year in Review
  – Enrollment
  – Performance
  – Opportunity

• 2018 DR Season Information
  – Tariff Changes
  – Important Updates
Program Overview
Transmission (Wholesale) vs. Distribution

NYISO

Generating Station (electricity generated at 13.8 to 22.0 kV)

Transformers (voltage stepped up to transmission voltage)

Transmission Substation

Area Substation (voltage stepped down to distribution voltage)

Con Edison

Transmission

Distribution

Transformers (voltage stepped down to 480, 208, or 120 V)

Feeder

Network Customers (residential, commercial, industrial, hospitals, schools, and street and traffic lights)

Connection To Others

Radial Customers
Understanding Con Edison’s DR Programs

**DLRP: 2-Hour Notification Program**
- Called on a network basis for an isolated need
- For example, the image below shows a stressed Battery Park network
- DLRP could be called in Battery Park to provide at least 4 hours of load relief
- Customers receive notification 2 hours in advance of a DLRP event

**CSRP: 21-Hour Notification Program**
- Called in response to system-wide peak demand
- For example, the image below shows networks peaking across the Con Edison territory
- CSRP customers called to provide 4 hours of load relief depending on peak time of local network
- Customers receive notification at least 21 hours in advance of a CSRP event
# Incentive Rates

<table>
<thead>
<tr>
<th>Reservation Rates ($/kW-month)</th>
<th>CSRP in Westchester/Staten Island</th>
<th>DLRP Tier 1</th>
<th>DLRP Tier 2</th>
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</thead>
<tbody>
<tr>
<td>CSRP</td>
<td>$18</td>
<td>$6</td>
<td>$18</td>
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<tr>
<td>CSRP in Westchester/Staten Island</td>
<td>$18</td>
<td>$6</td>
<td>$25</td>
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<table>
<thead>
<tr>
<th>Performance Rates ($/kWh)</th>
<th>All Reservation</th>
<th>Voluntary</th>
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<tbody>
<tr>
<td>$1</td>
<td>$3</td>
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</tr>
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</table>

**Example: 100 kW Enrolled**

- **CSRP and DLRP Tier 2**: $21,500
- **CSRP and DLRP Tier 1**: $18,000
- **Staten Island (CSRP and DLRP)**: $12,000
- **Westchester (CSRP and DLRP)**: $12,000

Incentives are based on current tariff rules, 100% performance in events, and enrolling directly with Con Edison. Consult the program tariff (Rider T) for more information.
2017 Year in Review
Commercial Demand Response Programs

**DLRP**
- 12% increase in MW enrolled since 2016
- 6 events across 2 networks

**CSRP**
- 11% increase in MW enrolled since 2016
- 0 events called

Demand Response MW Enrollment

- Blue bars represent CSRP
- Yellow bars represent DLRP

<table>
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<tr>
<th>Year</th>
<th>MW Enrolled</th>
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<td>2013</td>
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<tr>
<td>2014</td>
<td>146</td>
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<td>2015</td>
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<td>2016</td>
<td>232</td>
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<tr>
<td></td>
<td>216</td>
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<tr>
<td></td>
<td>265</td>
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</table>
CSRP One Hour Test Event

11 AM Window
78 MW
91%

2 PM Window
82 MW
119%

4 PM Window
32 MW
113%

7 PM Window
42 MW
126%

Measured Load
DLRP One Hour Test Event

- 4 PM Event
  - 237 MW
  - 89%
DLRP Events
DLRP Event Performance

Williamsburg
1.39 MW
99%, 100%, & 16%

Prospect Park
0.71 MW
130%, 85%, & 125%
Snapshot of the Market
CSRP Penetration by Call Window

- **7pm-11pm**: 1.0%
- **4pm-8pm**: 0.5%
- **2pm-6pm**: 2.0%
- **11am-3pm**: 3.5%

2017 CSRP Call Window Impact (Percent of Call Window Peak)
Availability Above 500 kW Peak (~3,900 MW)
Availability Between 301 kW – 500 kW (~860 MW)
Availability Between 50 kW – 300 kW (~2,600 MW)

Available: 99%
Enrolled: 1%

 MW

- Small Office
- Government
- Large Retail
- Industrial
- Large Multi-Family - Res
- Restaurants
- Miscellaneous/Entertainment
- Large Multi-Family - Common Area
- Small Retail

DR Accounts
Not Enrolled

conEdison, inc.
Pending Program Changes
Pending Program Changes

- Test Duration Time
- Minimum Performance Factor of 0.26
- Tier 2 Network Selection
- First Reservation Payment After First Program-Wide Event
- Future CBL Options
- Near Real Time Data For AMI Meters
- May 1 Effective Date
Practical Next Steps
Practical Next Steps

• DR Website
• Aggregator Registration / Selection
• DR Portal
• Upcoming Training Webinars
• Important Dates
  – Metering Deadlines
During peak hours of the summer, we'll pay you to reduce your energy use temporarily through Smart Usage Rewards. By curbing your electric usage during high-demand periods, you'll help maintain system reliability in your community.
DR Website – www.coned.com/dr
DR Website – www.coned.com/dr

Rebates and Incentives

Whether you’re a business owner or a homeowner, our energy efficiency experts can provide the resources and incentives to help you make energy efficiency a way of life.

For Renters and Homeowners
Make this your year to be more energy efficient with rebates from Con Edison.
START SAVING

For Multifamily Buildings
Choose from a variety of energy-saving measures for common areas.
SEE REBATES

For Business Customers
Find energy efficiency programs that can benefit your business.
SEE PROGRAMS
DR Website – www.coned.com/dr

Rebates and Incentives for Business Customers

Make your buildings more profitable and sustainable through energy efficiency upgrades and smart usage rewards.
During peak hours of the summer, we’ll pay you to reduce your energy use temporarily through Smart Usage Rewards. By curbing your electric usage during high-demand periods, you’ll help maintain system reliability in your community.
Eligibility Requirements

- In order to participate, you must have a communicating interval meter. **Upgrade to a Billing Interval Meter**
- We require interval data to calculate your customer baseline.

Calculating Customer Baseline

- You can find technical details in the Rider T Tariff

Rider T Tariff

Program Guidelines

Aggregators must have systems and processes to:

- Respond to Smart Usage Rewards (Demand Response) events pursuant to notification through Con Edison's prescribed notification system.
- Ensure that enrolled customers respond to Demand Response events within Demand Response program-specific required time periods.
- Electronically submit enrollments to Con Edison using the enrollment system established by Con Edison.
# Billing Interval Meters

<table>
<thead>
<tr>
<th>Meter Functionality Requested*</th>
<th>Estimated Price**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billing Interval Metering Without Pulse Output</td>
<td>$1,499.46</td>
</tr>
<tr>
<td>Billing Interval Metering With Pulse Output</td>
<td>$1,621.08</td>
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<tr>
<td>Billing Interval Meter With Digital Cellular Without Pulse Output (Wireless)</td>
<td>$1,911.38</td>
</tr>
<tr>
<td>Billing Interval Meter With Digital Cellular With Pulse Output (Wireless)</td>
<td>$2,222.54</td>
</tr>
</tbody>
</table>
Eligibility Requirements

- In order to participate, you must have a communicating interval meter.

**Upgrade to a Billing Interval Meter**

- We require interval data to calculate your customer baseline.

**Calculating Customer Baseline**

- You can find technical details in the Rider T Tariff

**Rider T Tariff**

**Program Guidelines**

Aggregators must have systems and processes to:

- Respond to Smart Usage Rewards (Demand Response) events pursuant to notification through Con Edison’s prescribed notification system.

- Ensure that enrolled customers respond to Demand Response events within Demand Response program-specific required time periods.

- Electronically submit enrollments to Con Edison using the enrollment system established by Con Edison.
# Aggregator Registration / Selection

## Smart Usage Rewards (Demand Response) Aggregator List

<table>
<thead>
<tr>
<th>Aggregator</th>
<th>Contact Person</th>
<th>Contact Information</th>
<th>Participated in 2017</th>
<th>Consumption Monitoring</th>
<th>Sub-metered</th>
<th>Automatic Controls</th>
<th>NYISO Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aegis Energy</td>
<td>Sarah Florek</td>
<td>413-536-1156</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><a href="http://www.aegischp.com">www.aegischp.com</a></td>
<td><a href="mailto:sflorek@aegischp.com">sflorek@aegischp.com</a></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calm Energy Inc</td>
<td>John Johnson</td>
<td>347 712 2285</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td><a href="http://www.calmenergydev.com">www.calmenergydev.com</a></td>
<td><a href="mailto:johnson@calmenergyinc.com">johnson@calmenergyinc.com</a></td>
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</tr>
<tr>
<td>CPOWER</td>
<td>Joanna Watkins</td>
<td>646-779-1787</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><a href="http://www.cpowerenergymanagement.com">www.cpowerenergymanagement.com</a></td>
<td><a href="mailto:joanna.watkins@cpowerenergymanagement.com">joanna.watkins@cpowerenergymanagement.com</a></td>
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<td></td>
</tr>
<tr>
<td>Direct Energy Business</td>
<td>Craig Markham</td>
<td>732-516-7530</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td><a href="http://www.business.directenergy.com">www.business.directenergy.com</a></td>
<td><a href="mailto:demanderesponse@directenergy.com">demanderesponse@directenergy.com</a></td>
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<tr>
<td>Enbala Power Networks (USA) Inc.</td>
<td>Mark Mosher</td>
<td>604-998-8905</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><a href="http://www.enbala.com">www.enbala.com</a></td>
<td><a href="mailto:mmosher@enbala.com">mmosher@enbala.com</a></td>
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<tr>
<td>Energy Spectrum, Inc</td>
<td>Cristina Villegas</td>
<td>718-677-9077</td>
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<td>✓</td>
<td>✓</td>
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<tr>
<td>Energy Technology Savings, LLC</td>
<td>Abhay Ambati</td>
<td>908-517-3733</td>
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<tr>
<td>EnerNOC, Inc.</td>
<td>Yanis Chibani</td>
<td>617-531-7680</td>
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<tr>
<td>iES Corp</td>
<td>Chris Ziccardi</td>
<td>973-464-2345</td>
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<tr>
<td>INF Associates LLC</td>
<td>Karl Weiss</td>
<td>646-300-1986</td>
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<tr>
<td>Innovari Market Solutions LLC</td>
<td>Kyle Thomas</td>
<td>920-492-1075</td>
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<td><a href="mailto:kthomas@innovari.com">kthomas@innovari.com</a></td>
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</table>
Welcome to the Demand Response Participant Portal

Program Information

Provides a link to Con Edison’s Demand Response Enrollment File and displays links to other helpful information such as: Program Tariff, Meter Upgrade Manual, Customer Baseline Load Procedure, DLRP Tier, CSRP Call Windows and Environmental Justice Zones.

Network Lookup

Allows the aggregator to lookup CSRP start/end time and network for an account or multiple accounts. Please use the Firefox browser for this function and see Network Lookup page for detailed upload instructions.

Manage Event Contacts

Allows Demand Response Aggregators and Direct Enroll Customers to set up and maintain their DR event notification contact information. Customers who are enrolled through a Demand Response Aggregator do not have access to this page.

Enrollment

Allows Demand Response Aggregators and Direct Enroll Customers to upload their Enrollments. Customers who are enrolled through a Demand Response Aggregator do not have access to the enrollment upload feature. This page also displays account details, enrollment status, performance during an event, and post-event settlement information.

Event

Displays scheduled and historical DR event information, within the current capability period. Customers who are enrolled through a Demand Response Aggregator do not have access to this page.

Payment Details

Allows Demand Response Aggregators and Direct Enroll Customers to download monthly payment files. This includes, but is not limited to, a payment summary, network-level performance and account performance information. Customers who are enrolled through a Demand Response Aggregator do not have access to this page.
Metering Deadlines

- Con Edison communicating interval meter required
- Non-MHP customers are responsible for their own metering

<table>
<thead>
<tr>
<th>Enrollment Deadline</th>
<th>Meter Installation</th>
<th>Comm. Deadline</th>
<th>Program Start Date</th>
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<tr>
<td>April 2</td>
<td>April 1</td>
<td>April 30</td>
<td>May 1</td>
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<td>May 1</td>
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</tr>
<tr>
<td>May 1</td>
<td>June 1</td>
<td>June 30</td>
<td>July 1</td>
</tr>
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</table>
Other Key Points

• All customers need communicating interval meter – (AMI Customers Eligible)
• Allowed to enroll in CSRP, DLRP and NYISO SCR concurrently
• CSRP: Expect an average of 3 events per summer
• Aggregator/Direct Participant minimum load relief portfolio requirement is 50 kW
• Voluntary customers can enroll at any point during the summer
Next Steps

• New Participants
  – Review program rules
  – Ensure meters are qualified for participation in DR
  – Research aggregators and select a service provider
  – Determine curtailable load and DR strategy
  – Provide all necessary enrollment info and permits to aggregator

• Aggregators / Direct Enroll
  – Sign up for enrollment training webinar
  – Update contact information for 2018 season
  – Ensure meters are installed and communicating
  – Enroll all customers into the respective programs
  – Submit all required DEC Permits / PE Letters
Thank You!

For more information:

www.coned.com/dr

DR@coned.com
Demand Response Forum

Advanced Metering Infrastructure (AMI)

Jude Del Percio

February 27th, 2018
Agenda

• AMI Project Overview

• Demand Response Deployment

• Complex Billing Scope/Timeline
AMI Project Overview

- There are two major parts to AMI
  - Field Communication Network (design/build)
  - Deployment of AMI meters and modules (commercial/residential)
  - Together this forms a “mesh” network

- Full scale AMI implementation
  - 4.8 Million meters (endpoints) (3.6 M electric, 1.2 M gas);
  - Estimated cost of project - $1.285 B

Project phases:

2015
Implementation Planning Effort
- Business case
- Technology/Vendor selection
- Project planning

2016
Communications and IT Work
- IT platform implementation
- Communication system design and planning

2017 – 2022
Implementation
- Rollout of AMI communication system and smart meters
AMI Deployment Plan

<table>
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<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
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<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
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</tbody>
</table>

Legend
- Green: Communication System Rollout
- Blue: Meter rollout
Progress To Date

<table>
<thead>
<tr>
<th>Communications Network</th>
<th>% Installs Complete</th>
</tr>
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<tbody>
<tr>
<td>Staten Island</td>
<td>100%</td>
</tr>
<tr>
<td>Brooklyn</td>
<td>50%</td>
</tr>
<tr>
<td>Westchester</td>
<td>100%</td>
</tr>
<tr>
<td>Bronx</td>
<td>4%</td>
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**CECONY Meter/Module Deployment**

- **ELECTRIC SMART METER**: 185,371
- **SMART GAS MODULE**: 8,375
Demand Response Deployment

• Scope: Over 1,240 DR customer accounts participating across our service territory

• Implement an appointment based installation plan to deploy AMI meters to DR customers starting in Q2 2019
  – Go back into boroughs where AMI is already deployed
  – Go forward in sync with network deployments (Bk, M, Bx, Q)

• Dependencies/pre-requisites
  – Complex billing implementation

• Program is designed and planned to minimize the impact on current customers
  – Once the AMI meter is installed - DR customers will continue to participate in DR events the same way
Complex Billing Scope/Timeline

• Complex billing for AMI customers is not yet implemented
  – Work scope touches many rates, systems and interfaces
    • E.g. Mandatory Hourly Pricing, kVAR billing, Large Time of Day
  – Includes current customers receiving 15 minute interval data
  – Data from meters in the field is communicated to MDMS and DRMS

• Targeting December 2018 (end of the year) to have the complex billing solution for AMI in place
  – Planning parallel operation for up to six months to validate the AMI complex billing solution against the current complex billing
  – Q2 2019 for production cutover
    • Trigger installation of AMI meters for DR customers
  – The scope and schedule are fixed
Questions?

Visit us at coned.com/smartmeters
Demand Management Program Updates

DemandManagement@coned.com
Goal – reduce system-wide peak demand on hottest weekdays from 2-6pm on NYISO or CSRP demand response days

Increasing MW Goals

<table>
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<tr>
<th>Program Year</th>
<th>Budget</th>
<th>Minimum MW Goal</th>
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<tbody>
<tr>
<td>2018</td>
<td>$24 Million</td>
<td>16 MW</td>
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<tr>
<td>2019</td>
<td>$32 Million</td>
<td>22 MW</td>
</tr>
</tbody>
</table>

Money must be spent in the year allocated – use it or lose it
Eligibility Requirements

• Requirements:
  – Active Con Edison electric account number
    • NYPA customers are eligible
  – Each project must offer at least 50 kW of reduction
    • Aggregation is not allowed
  – Installation has not yet occurred
    • Existing equipment still present and operational
  – Must meet technical data requirements
  – Strict application and project completion deadlines
  – Functional for 10 year term
Eligibility Requirements (cont’)

• Requirements:
  – Projects can’t receive incentives from other programs, but allowed to participate in demand response
  – DR Enablement projects must participate in the NYISO DR programs. Only incremental kW to the kW enrolled in NYISO DR programs is eligible.

• Company can claw back the incentives if requirements are not met

• **Note**: SBC not required
# 2018 Eligible Measures and Incentives

<table>
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<tr>
<th>Measure Type</th>
<th>OLD Ceiling Incentive Levels</th>
<th>NEW Ceiling Incentive Levels</th>
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<tbody>
<tr>
<td>Thermal Storage</td>
<td>$1,500/kW</td>
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<tr>
<td>Battery Storage</td>
<td>$1,500/kW</td>
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<tr>
<td>HVAC / High Efficiency Electric Chiller</td>
<td>$1,000/kW</td>
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<td>BMS / Controls*</td>
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<td>DR Enablement Generators</td>
<td>$650/kW</td>
<td>$650/kW</td>
</tr>
<tr>
<td>DR Enablement Controls*</td>
<td>$650/kW</td>
<td>$1,350/kW</td>
</tr>
<tr>
<td>Steam Turbine Chiller, Double Stage Absorption Chiller and Gas Driven Chiller</td>
<td>$1,000/kW</td>
<td>$1,350/kW</td>
</tr>
<tr>
<td>Single Stage Absorption Chiller</td>
<td>$600/kW</td>
<td>$600/kW</td>
</tr>
<tr>
<td>Steam Turbine Chiller Control Panel *</td>
<td>$500/kW</td>
<td>$600/kW</td>
</tr>
</tbody>
</table>

* NEW: Incentives for these measures can offset 70% of the project cost. Incentives for all other measures offset 50% of project cost.
Participation Process Overview

1. Determine Eligibility
2. Submit Application Package
3. Receive Preliminary Incentive Offer Letter/M&V Plan

   ↓

4. Pre-Inspection/M&V
5. Notice to Proceed
6. Submit Completion Documentation

   ↓

7. Post-Inspection/M&V
8. Final Incentive
# Installation Deadlines

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Project Completion Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC, BMS/Controls, DR Enablement – Controls</td>
<td>August 1, 2018</td>
</tr>
<tr>
<td>High Efficiency Electric Chiller, Lighting Controls, Thermal Storage, Battery</td>
<td>September 14, 2018</td>
</tr>
<tr>
<td>Non-Electric Chiller, DR Enablement – Generator, Steam Turbine Chiller Control Panel</td>
<td>October 15, 2018</td>
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</tbody>
</table>
## DMP 2019 Incentives and Timelines

<table>
<thead>
<tr>
<th>Project Type</th>
<th>2019 Ceiling Incentive Levels</th>
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<tbody>
<tr>
<td>Thermal Storage</td>
<td>$1,700/kW</td>
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<tr>
<td>Battery Storage</td>
<td>$1,350/kW</td>
</tr>
<tr>
<td>High Efficiency Electric Chiller/HVAC/BMS/Controls</td>
<td>$1,000/kW</td>
</tr>
<tr>
<td>DR Enablement Generators</td>
<td>$500/kW</td>
</tr>
<tr>
<td>DR Enablement Controls</td>
<td>$1,000/kW</td>
</tr>
<tr>
<td>Steam Turbine Chiller, Double Stage Absorption Chiller, and Gas Fired Chiller*</td>
<td>$1,000/kW</td>
</tr>
<tr>
<td>Single Stage Absorption Chiller*</td>
<td>$600/kW</td>
</tr>
<tr>
<td>Steam Turbine Chiller Control Panel for Improved Efficiency*</td>
<td>$500/kW</td>
</tr>
</tbody>
</table>

* Use .55kW/ton factor to convert to $/ton

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Project Completion Deadline</th>
</tr>
</thead>
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<tr>
<td>HVAC, BMS/Controls, DR Enablement – Controls</td>
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</tr>
<tr>
<td>Non-Electric Chiller, DR Enablement – Generator</td>
<td>October 15, 2019</td>
</tr>
</tbody>
</table>
**Tips and Highlights**

- Make sure all required documents are complete and accurate
- Be sure to use proper naming conventions when submitting
- Be responsive/timely during correspondence
- Proactively communicate project status and any potential delays
  - Projects not completed by deadlines will lose the incentive
- Attend Con Edison site visits
Path Forward

• 2018:
  – Funding Still Available - first come first serve basis

• 2019:
  – Auction B application deadline is 3/1/18
  – Plans for any remaining funding will be announced by April, 2018
For More Information...

- Read the rules in the Application and Technical Data Requirements
- [www.coned.com/commercial](http://www.coned.com/commercial), click Demand Management Incentives for program literature
- Email us at [DemandManagement@coned.com](mailto:DemandManagement@coned.com) with any questions

Thank you!
Overview of NYISO Demand Response Programs

Steven Gill
Distributed Resources Operations
New York Independent System Operator

Con Edison Demand Response Forum
February 27, 2018
Two Categories of Demand Response Programs

- Reliability-Based Programs – NYISO activation based on need
  - Purpose: Provide load reductions in response to NYISO Operations instructions for a discrete period of time, to supplement generation when Operating Reserves are forecast to be short or when there is an actual Operating Reserve Deficiency or other system emergency

- Emergency Demand Response Program (EDRP) - voluntary program
- ICAP-Special Case Resources (SCR) - capacity market program
- Targeted Demand Response Program (TDRP) - voluntary program
Two Categories of Demand Response Programs (cont.)

- Economic-Based Programs – Resource determines when to participate (through supply offers)
  - Purpose: Load reduction, competing with generation, is scheduled by NYISO based upon economic offers

- Day-Ahead Demand Response Program (DADRP) - energy only
- Demand-Side Ancillary Service Program (DSASP) - ancillary services only
Emergency Demand Response Program (EDRP) – Reliability

Summer 2017 EDRP Enrollment: 17.8 MW

- **Participation:**
  - Load reduction through interruptible loads or loads with a qualified behind-the-meter Local Generator
  - Minimum of 100 kW reduction
  - Load reduction during a reliability event is voluntary
  - Event notification: 2-hour in-day notice

- **Payment:**
  - Paid for reducing energy consumption when called upon by the NYISO
  - Energy Market Settlement: Based on measured energy reduction during an event, with a minimum rate of $500/MWh or the actual zonal LBMP, if higher
EDRP Enrollment – Summer 2017

EDRP MW by NYISO Load Zone

Total Enrolled: 17.8 MW

As reported in NYISO’s annual report to FERC (1/12/2018: Docket # ER01-3001-000).
ICAP-Special Case Resources (SCR) – Reliability

Summer 2017 SCR Enrollment: 1,219.1 MW

**Participation:**
- Load reduction through interruptible loads or loads with a qualified behind-the-meter Local Generator
- Minimum of 100 kW reduction, in aggregate by Load Zone
- Mandatory response during reliability events for a minimum of four hours
- Event notification: 21-hour (24-hours if after 3 pm) day-ahead advisory and 2-hour in-day notice
- Demonstrate maximum capacity obligation (typically through one-hour test) once in each Capability Period
- Offer capacity into Installed Capacity (ICAP) auctions

**Payment:**
- Capacity Market Settlement: Based on sales made through ICAP auctions or bilateral contracts
- Energy Market Settlement: Based on performance in events & tests; zonal LBMP with daily guarantee of strike price recovery of up to $500/MWh

Draft—For Discussion Purposes Only
As reported in NYISO’s annual report to FERC (1/12/2018: Docket # ER01-3001-000).

Total Enrolled: 1,219.1 MW
Targeted Demand Response Program (TDRP)

Con Edison requests NYISO to activate DR for local reliability issues

- **Participation:**
  - SCR and EDRP resources in specific locations in Load Zone J (NYC)
  - Voluntary for both SCR and EDRP
  - Response to a TDRP event will not be used to measure performance for either the SCR or the RIP

- **Payment:**
  - Energy Settlement: Based on the payment calculation of the program in which the resource is enrolled
  - Cannot set real-time market price
  - TDRP costs are recovered from Con Edison
Demand Side Ancillary Service Program (DSASP) – Economic

Summer 2017 DSASP Enrollment: 116.5 MW

- **Participation:**
  - Participate in Ancillary Service Market to provide
    - Operating Reserves and/or
    - Regulation Service and Frequency Response
  - Economic evaluation and price setting capabilities identical to generation
  - Requires 6-second telemetry
  - Minimum Reduction: 1 MW, in aggregate by Load Zone
  - Minimum Energy Offer: $75/MWh

- **Payment:**
  - Paid marginal clearing prices for Ancillary Service product scheduled (not paid for energy reductions)
Day-Ahead Demand Response Program (DADRP) – Economic

Summer 2017 DADRP Enrollment: 0 MW (no bidding activity since 2010)

- Participation:
  - Offer to curtail load (energy) in the Day-Ahead Market
  - Economic evaluation and price setting capabilities identical to generation
  - Minimum Reduction: 1 MW, in aggregate by Load Serving Entity and Load Zone
  - $75/MWh Offer Floor

- Payment:
  - Incentive payment (product of Day-Ahead LBMP and the lesser of actual or Day-Ahead scheduled load reduction)
  - If applicable, paid Curtailment Initiation Cost on a daily basis

Draft—For Discussion Purposes Only
Distributed Energy Resources (DER)

DER participation model is currently being developed as part of the DER Roadmap effort.

The goal of the effort is to:

- Develop a Dispatchable DER Participation Model for the NYISO-administered wholesale markets
- DER can consist of:
  - dispatchable load
  - power generation
  - energy storage
- Track the Distributed Energy Resources Participation Model efforts at:

Draft—For Discussion Purposes Only
DER Participation Model Timeline

- **2017 Market Design Concept Proposal**
- **2018 Market Design Complete**
- **2019 Software Requirements**
- **2020 Software Development**
- **2021 Implement Dispatchable DER Rules**
Additional Information

- **NYISO Distributed Energy Resources (DER) web page**

- **NYISO Demand Response Programs – A list of Frequently Asked Questions (FAQs) for Prospective Resources**

- **Installed Capacity (ICAP) Working Group**

- **New York Market Orientation Course (NYMOC) – Demand Response**

- **NYISO Stakeholder Services**
  - [stakeholder_services@nyiso.com](mailto:stakeholder_services@nyiso.com)
  - 518-356-6060
The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system

www.nyiso.com
GAS DEMAND RESPONSE

Peak load has grown 30% since 2011

Con Edison Peak Day Natural Gas Consumption

(weather normalized)
GAS DEMAND RESPONSE

Peak forecasted to grow additional 20% by 2037
GAS DEMAND RESPONSE
Strategy & Approach for Gas Pipeline Need

• Proposed Multi-Solution Non-Traditional Portfolio
  1. Expanded gas energy efficiency program
  2. Gas innovation program
  3. Marketplace RFP for non-pipeline resources
  4. New gas demand response program

• Con Edison filed a petition with the PSC in September 2017 proposing multi-solution portfolio
GAS DEMAND RESPONSE
Program Overview

• Standard Gas Demand Response Program
  – Incentivize firm customers to reduce natural gas demand during the coldest days of the winter
  – Customer actions must result in a net reduction across a 24-hour period
  – Customers will have the choice of participating by:
    • Fuel switching to electric during DR event; or
    • Curtailing gas consumption for all or a portion of the event day
  – Customers will be able to enroll for the 2018/2019 winter season

• Residential Smart Thermostat Program
**Gas Demand Response**

**Standard Program Design Underway**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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</thead>
<tbody>
<tr>
<td>1. Who?</td>
<td>Firm Customers</td>
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<tr>
<td>2. Direct Participants and Aggregators?</td>
<td>Yes</td>
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<td>3. Capability Period</td>
<td>November - March</td>
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<td>4. Minimum Pledge Value</td>
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<td>5. Reduction Data</td>
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<td>6. Baseline?</td>
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<td>8. Trigger</td>
<td>18 degree average daily temperature</td>
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<td>9. Payment Structure</td>
<td>Reservation + Performance</td>
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<td>10. Notification</td>
<td>Day Ahead</td>
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GAS DEMAND RESPONSE
Program Development Timeline

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<tr>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
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<td>Detailed Program Design</td>
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<td>• Vendor requirements</td>
<td>• Incentives strategy</td>
<td>• Strategies to minimize snapback</td>
<td>• Marketing and outreach strategy</td>
<td>• Standards for M&amp;V</td>
<td>• Annual budget</td>
<td>• Implementation plan</td>
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<td>Design Business Rules for Implementation</td>
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<tr>
<td>• System requirements</td>
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<tr>
<td>• Communication plan</td>
<td>• Stakeholder outreach</td>
<td>• Regulatory plan</td>
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<td>Program launch for 2018/19 season</td>
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<td>Supplemental filing submitted to the DPS, Q2 2018</td>
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</tbody>
</table>
Non-Wires Solutions

Damei Jack
Targeted Demand Management
Energy Efficiency & Demand Management
Non-Wires Solutions Overview

Planning Process and Sourcing Overview

- Identify System Need & Capital Plan
- NWS Suitability Criteria
- NWS Opportunity Identification
- NWS Sourcing Development
- NWS Solicitation Process
- Traditional Solution
- NWS Opportunity Notification
- NWS RFP Notification
Con Edison’s Distribution System Non-Wires Project Types

Non-wire projects currently identified include needs that impact the system differently.

**Large Projects**
- **Example:** Sub transmission Feeder impacting a network (BQDM)
- 1:1 load reduction
- 10kW reduced will reduce the need by 10kW
- Any load reduced by a customer directly affects the need

**Small Projects**
- **Example:** Primary feeder within a network (Williamsburg)
- Not a 1:1 load reduction
- Needs are more localized
- 10 kW reduced at the network may mean 0.1 kW at the impacted feeder
- Unique to mesh network system
Promoting Non-Wires Solutions to the Market

Non-Wires Solutions

Related Information

- RFP CLASSIFICATION QUESTIONS (PDF)
- NON-WIRES ALTERNATIVES PROGRAM AGREEMENT (PDF)
- NON-WIRES ALTERNATIVES PROGRAM AGREEMENT ADDENDUM 1 (XLSX)
- NON-WIRES SOLUTIONS WEBINAR (PDF)
- SUPPLIER ENABLEMENT Template (XLSX)
- EQ 2022 SPECIFICATION (PDF)

- [www.coned.com/nonwires](http://www.coned.com/nonwires)
- REV Connect
- REV & Con Edison Rate Case Proceedings
## Active Non-Wires Solution Projects

<table>
<thead>
<tr>
<th>BQDM Extension Auction</th>
<th>W42 St RFP</th>
<th>Flushing Primary Feeder RFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Application Review Due March 1</td>
<td>• RFP Responses Due March 16</td>
<td>• RFP Response Due March 16</td>
</tr>
<tr>
<td>• Final Application &amp; Security Due April 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Customers & Market Partners can submit viable solutions for consideration.
- Go to [www.coned.com/nonwires](http://www.coned.com/nonwires) for more information.
- Additional opportunities are being evaluated.
Helpful NWS Information

Join our mailing list by emailing dsm@coned.com

To find latest information on NWS projects, please go to www.coned.com/nonwires

Other places to find information on NWS

- Joint Utilities of New York central data portal (http://jointutilitiesofny.org/utility-specific-pages/nwa-opportunities/);
- REV Connect (https://nyrevconnect.com/non-wires-alternatives/)
- Filed with the Commission under the generic REV proceeding (Case No. 14-M-0101) and Con Edison’s latest rate case proceeding (Case No. 16-E-0060)