



---

REV Demonstration Project:  
Storage On Demand

2019 4Q Quarterly Progress Report

---

**Dated: January 31st, 2020**

## Table of Contents

<b>1.0</b>	<b>Executive Summary .....</b>	<b>2</b>
1.1	Program Achievements.....	2
1.2	Cybersecurity and Personally-Identifiable Information Protection.....	2
1.3	Accounting Procedure Established.....	2
1.4	Costs, Benefits, and Operational Savings.....	3
1.5	Storage On Demand.....	3
<b>2.0</b>	<b>Storage On Demand – Quarterly Progress .....</b>	<b>4</b>
2.1	Demonstration Highlights .....	4
2.1.1	Since Previous Quarter - Major Task Completion .....	4
2.1.2	Activities Overview.....	4
2.1.3	Key Metrics.....	4
2.1.4	Next Quarter Forecast.....	5
2.1.5	Checkpoints/Milestone Progress .....	5
2.1.6	Planned Activities.....	5
2.1.6.1	Storage On Demand Design .....	5
2.1.6.2	Commercial Operations Date .....	6
2.1.6.3	Market Participation .....	6
2.1.6.4	Distribution Support.....	6
2.1.6.5	Emergency Response.....	6
2.2	Changes to the Project Design.....	7
2.3	Work Plan & Budget Review .....	7
2.3.1	Phase Review.....	7
2.3.1.1	Phase Progress .....	7
2.3.2	Work Plan.....	7
2.3.3	Updated Budget.....	8
2.4	Conclusion.....	8
2.4.1	Lessons Learned .....	8
2.4.2	Recommendations .....	8
2.5	Included Appendices.....	8

---

## 1.0 EXECUTIVE SUMMARY

---

Consolidated Edison Company of New York, Inc. (“Con Edison” or the “Company”) submits this 4<sup>th</sup> quarterly report for 2019 on the progress of the Storage On Demand REV Demonstration Project (the “Project”) it is implementing as part of the Reforming the Energy Vision (“REV”) proceeding, as required by the *Order Adopting Regulatory Policy Framework and Implementation Plan*, issued by the New York State Public Service Commission (“Commission”) on February 26, 2015.<sup>1</sup>

### 1.1 PROGRAM ACHIEVEMENTS

On February 27, 2017, Con Edison submitted the Project for approval by Department of Public Service Staff (“DPS Staff”). On May 18, 2017, DPS Staff approved the Project. Con Edison filed an implementation plan for the Project with the Commission on June 23, 2017. In Q4 2019, the Company focused on the implementation of the Project, specifically contract execution, design, permitting and interconnection applications.

### 1.2 CYBERSECURITY AND PERSONALLY-IDENTIFIABLE INFORMATION PROTECTION

Consistent with corporate instructions and Commission policy related to cybersecurity and the protection of personally-identifiable information (“PII”), each partner agreement executed for the implementation of the Project includes specific protections related to cybersecurity and PII. Assurance of this protection is critical in encouraging customers to sign up with new and innovative services offered by utilities.

### 1.3 ACCOUNTING PROCEDURE ESTABLISHED

On February 16, 2016, in Case 15-E-0229, Con Edison filed an accounting procedure for the accounting and recovery of all Reforming the Energy Vision (“REV”) demonstration project costs.<sup>2</sup> This accounting procedure establishes a standardized framework that will govern how the Company categorizes and allocates

---

<sup>1</sup> Case 14-M-0101, *Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision*, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015).

<sup>2</sup> Case 15-E-0299, *Petition of Consolidated Edison Company of New York, Inc. for Implementation of Projects and Programs that Support Reforming the Energy Vision*, General Accounting Procedure.

the costs of the REV demonstration projects, and will facilitate analyzing each project to determine the overall financial benefits of the program to customers.

#### **1.4 COSTS, BENEFITS, AND OPERATIONAL SAVINGS**

Budget information for all of the Company's REV demonstration projects is being filed confidentially with the Commission, concurrently with the filing of this document. All costs filed are incremental costs needed to implement the projects. To date, no tax credits or grants have been available to reduce the net costs of the projects, but Con Edison will take advantage of such offsetting benefits when they are available. Due to the early stage of implementation for the Project, there are no operational savings to report at this time.

#### **1.5 STORAGE ON DEMAND**

The Project is designed to demonstrate how mobile storage assets can increase their useful value to the distribution system under multiple use cases such as transmission and distribution ("T&D") deferral, low voltage support, and temporary load needs in multiple locations. The Project will also demonstrate the ability of storage to participate in and earn revenues from New York Independent System Operator ("NYISO") wholesale markets. Con Edison is implementing the Project with its partner NRG Energy ("NRG").

In Q4 2019, Con Edison and NRG continued the development of the final contract agreements and interconnection studies with NYISO as planned. The Project team continued to work with the Fire Department of New York ("FDNY") to clarify the conditions in the Letter of No Objection ("LONO"). Stakeholders from across the Company collaborated to help advance the Project.

---

## **2.0 STORAGE ON DEMAND – QUARTERLY PROGRESS**

---

### **2.1 DEMONSTRATION HIGHLIGHTS**

#### **2.1.1 Since Previous Quarter - Major Task Completion**

- Demonstration Planning: Significantly advanced final transaction agreements
- Design and Construction: Equipment procurement, updated docking station design to adhere to FDNY LONO requirements
- Market Participation: System Impact study was submitted to the NYISO
- Negotiations for the EPC Agreement was completed and the remaining commercial agreements between NRG and Con Edison are advancing and work continues under a Limited Notice to Proceed (“LNTP”).

#### **2.1.2 Activities Overview**

Phase 0, Demonstration Planning: Based on permitting uncertainty, the Project team executed a LNTP to cover all design and permitting criteria activities required for FDNY approval. This LNTP allows the Project team more time to complete the Phase 0 final transaction agreements while working on Phase 1 and Phase 2 activities in parallel. Transaction agreement discussions progressed during Q4 2019. The team expects to execute transaction agreements and conclude Phase 0 in Q1 2020.

Phase 1, Design and Construction: The Project team has finalized the three-trailer modular design and received the LONO as expected and has begun equipment procurement. During Q4, the Project team continued to work with the FDNY to clarify the conditions of the LONO and work on an emergency response plan for when the assets are deployed. The Project team also updated the docking station design to adhere to the FDNY LONO requirements. A second fire and explosion analysis was performed using UL 9540A data, which will be shared with FDNY to review the existing requirements.

Phase 2, Market Participation: The system impact study was submitted to the NYISO, a key milestone in achieving Energy Resource Interconnection Service (“ERIS”). A status meeting took place with the NYISO.

#### **2.1.3 Key Metrics**

Con Edison will begin reporting measurements of key outcomes after the midpoint of Phase 1.

## 2.1.4 Next Quarter Forecast

The Project team plans to complete the transaction agreements in Q1 2020. Once the transaction agreements are complete, NRG will move forward on the mobile unit and docking station manufacturing. The Project team will also continue discussions with FDNY on the conditions of the LONO, including some updated modeling, as well as emergency response plan for the assets when deployed. The Project team will also continue conversations with NYISO and cooperate on the system impact study for purposes of initial synchronization before estimated Commercial Operations Date (“COD”).

## 2.1.5 Checkpoints/Milestone Progress

Checkpoint/Milestone	Timing*	Status
Storage On Demand Design	Phase 0 End/ Phase 1 Midpoint	
Commercial Operation Date	Phase 1 End	
Market Participation	Phase 1 End/ Phase 2 Midpoint	
Distribution Support	Phase 3 Start	
Emergency Response	Phase 3 Completion	

\*Detailed descriptions of the Phases can be found in the Appendices.

### Legend

On Schedule	Delayed w/out Major Impact	Delayed or Stopped – Project Goals Impacted
-------------	----------------------------	---

## 2.1.6 Planned Activities

### 2.1.6.1 Storage On Demand Design

**Status:** Yellow

**Expected Target by Phase 1 Midpoint:** Obtain New York City Office of Technical Certification and Research (“OTCR”) approval; system design complete six months after approval

**Actual by Phase 1 Midpoint:** N/A

**Solutions/strategies in case of results below expectations:** The Project team will continually evaluate progress and engage the FDNY and DOB to incorporate any design changes required by these agencies necessary to achieve permitting. If permitting is unsuccessful, Con Edison will terminate the Project.

#### **2.1.6.2 Commercial Operations Date**

**Status:** Yellow

**Expected Target by Phase 1 End:** 1.5 MW/4 MWh dispatchable energy storage

**Actual by Phase 1 Midpoint:** N/A

**Solutions/strategies in case of results below expectations:** The Project team will continually evaluate the construction progress and develop a construction schedule mitigation plan, if necessary.

#### **2.1.6.3 Market Participation**

**Status:** Green

**Expected Target by Phase 1 End:** Enrollment in Applicable NYISO markets

**Actual by Phase 1 End:** N/A

**Solutions/strategies in case of results below expectations:** Engage in discussions with NRG's commercial operations team. If market participation is denied, the Project team will apply for a NYISO Pilot Program for DER integration. If this participation is also rejected, NRG will dispatch assets to shadow the market and determine the potential realizable revenues.

#### **2.1.6.4 Distribution Support**

**Status:** Green

**Expected Target by Phase 3 Start:** Con Edison will finalize deployment locations and notify impacted communities.

**Actual by Phase 3 Start:** N/A

**Solutions/strategies in case of results below expectations:** Additional deployment of Storage On Demand units to create additional measurement points.

#### **2.1.6.5 Emergency Response**

Status: Green

**Expected Target by Phase 3 End:** The assets will be deployed to address a system contingency in an acceptable operational emergency timeframe.

**Actual by Phase 3 End:** N/A

**Solutions/strategies in case of results below expectations:** Continually evaluate deployment times and identify key drivers and root causes of lags in deployment.

## 2.2 CHANGES TO THE PROJECT DESIGN

There were no changes to the project in Q4 2019.

## 2.3 WORK PLAN & BUDGET REVIEW

### 2.3.1 Phase Review

#### 2.3.1.1 Phase Progress

The Project team has made progress on Phase 0 (Demonstration Planning), Phase 1 (Project Execution) and Phase 2 (Market Participation). The Project team anticipates that Phase 0 will conclude with contract execution in Q1 2020.

### 2.3.2 Work Plan

Act no	Activity Description	Lead	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4																
1	Phase 0: Demonstration Planning	ConEdison																				
1.1	Obtain Commission Approval	ConEdison																				
1.2	Limited Notice to Proceed	ConEdison																				
1.2.1	Design Basis and Permitting Engineering	NRG																				
1.2.2	Permitting	NRG																				
1.2.2.1	FDNY Letter of No Objection Process	NRG																				
1.2.2.2	DOB Permit Process	NRG																				
1.3	Negotiate NRG Contract	ConEdison																				
1.4	Negotiate O&M Agreement	ConEdison																				
2	Phase 1: Project Execution	NRG																				
2.1	Detailed Engineering	NRG																				
2.2	Equipment Procurement	NRG																				
2.3	Trailer Fabrication	NRG																				
2.4	Docking Station Construction	NRG																				
2.5	Commissioning	NRG																				
3	Phase 2: Wholesale Market Participation	NRG																				
3.1	Enroll Batteries in NYISO Markets																					
3.2	Frequency Response Participation	NRG																				
3.3	Energy Market Participation	NRG																				
4	Phase 3: ConEdison Deployment	ConEdison																				
4.1	Deploy Mobile Solution	ConEdison																				
4.2	Distribution Deferral Deployment	ConEdison																				
4.3	Wholesale Market Participation	ConEdison																				

Note: Red box indicates completion of key phase milestone.

### **2.3.3 Updated Budget**

Budget information is being filed confidentially with the Commission.

## **2.4 CONCLUSION**

### **2.4.1 Lessons Learned**

There are no significant lessons learned at this early phase of the Project.

### **2.4.2 Recommendations**

The Company recommends maintaining focus on transaction agreement execution, discussions with the FDNY and NYISO for purposes of timely synchronization and deployment.

## **2.5 INCLUDED APPENDICES**

The following appendices are included at the end of this Quarterly Progress Report:

Appendix A: Storage On Demand Description of Phases

Appendix B: Storage on Demand Summary

## Appendix A: Storage On Demand Description of Phases

Phase	0. Demonstration Planning	1. Design and Construction	2. Market Participation	3. Distribution support
<b>Milestone (Stage Gate to Next Phase)</b>	<i>Negotiations to be Completed</i> <ul style="list-style-type: none"> <li>DPS approval</li> <li>Partner contracts signed</li> <li>OTCR approval</li> </ul>	<i>Construct and Commission 1.5 MW/ 4 MWh mobile storage</i> <ul style="list-style-type: none"> <li>Commissioning</li> </ul>	<i>Participation in Wholesale Market</i> <ul style="list-style-type: none"> <li>Earn wholesale market revenues</li> </ul>	<i>Dispatch for load relief</i> <ul style="list-style-type: none"> <li>Support summer peak distribution needs</li> <li>Respond to emergency need</li> </ul>
<b>Key Elements</b>	<ul style="list-style-type: none"> <li>Letter of No Objection</li> <li>Subcontractors identified and engaged to begin Phase 1</li> </ul>	<ul style="list-style-type: none"> <li>Detailed engineering</li> <li>Equipment procurement</li> <li>Trailer fabrication</li> <li>Docking Station construction</li> <li>Cyber-secure communication architecture</li> </ul>	<ul style="list-style-type: none"> <li>Complete interconnection application and all relevant NYISO participation studies</li> <li>Enroll assets in all available market products</li> <li>Earn revenues from wholesale markets</li> </ul>	<ul style="list-style-type: none"> <li>Assets are deployed to address known distribution peak need</li> <li>Assets respond to emergency distribution need</li> <li>Wholesale market participation while deployed</li> </ul>
<b>DER Categories</b>	N/A	<ul style="list-style-type: none"> <li>Mobile battery storage</li> </ul>	<ul style="list-style-type: none"> <li>Mobile battery storage</li> <li>DER aggregation</li> </ul>	<ul style="list-style-type: none"> <li>Mobile battery storage</li> <li>DER aggregation</li> </ul>



## Storage on Demand REV Demo Project – Q4 2019

This Project partnership with NRG tests a technology solution and business model that provides the opportunity for two parties to utilize transportable batteries at a higher rate by sharing deployment of the batteries for different purposes at different times throughout the year. Hypotheses include: (i) MW-scale batteries may be valuable in generating revenues in New York Independent System Operator (“NYISO”) wholesale markets; (ii) mobile/deployable MW-scale batteries may be valuable in enabling utility transmission and distribution deferrals and in utility contingency response; and (iii) mobile units can be capable of deployment within emergency operational timeframes.

Project Start: 1/1/2017  
Project End: 12/31/2021  
Status: Active  
Budget: \$10.4 M  
Q4 2019 Spend: Filed Confidentially  
Cumulative Spend: Filed confidentially  
(on budget)



**Lessons learned:** *There are no significant lessons learned at this early phase of the Project.*

**Application of lessons learned:** *N/A*

**Issues Identified:**

- *Contracting for a unique business model is complex and requires significant time to develop*
- *FDNY permitting impacts project timeline, and requirements can have an effect on system design and budget*
- *NYISO market participation rules are currently evolving and uncertain for this first-of-its-kind mobile asset*

**Solutions Identified:**

- *Early engagement followed by regular meetings with FDNY is critical. The Company will continue to work with the FDNY to develop standard permitting requirements to minimize ambiguity.*
- *Regular engagement with the NYISO on market rule impact on customer and utility projects partially addresses the impact of evolving market rules.*

**Recent Milestones/Targets Met:**

- *The EPC Contract was finalized*
- *Received the Letter of No Objection (“LONO”) from the FDNY; LONO requirements have been clarified with FDNY and equipment designs have been updated based on the requirements.*
- *Finalized storage system design and equipment procurement has begun*
- *The Project team released the system impact study and submitted with NYISO, a key milestone in achieving Energy Resource Interconnection Service (“ERIS”)*

**Upcoming Milestones/Targets:**

- *The team expects to execute transaction agreements and conclude Phase 0 in Q1 2020*
- *The team expects to continue equipment procurement, and begin trailer fabrication and docking station construction during Q1 2020.*