



REV Demonstration Project:
Storage On Demand

2019 2Q Quarterly Progress Report

Dated: July 31, 2019

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1.0 Executive Summary

Consolidated Edison Company of New York, Inc. (“Con Edison” or the “Company”) submits this report for the second quarter of 2019 on the progress of the Storage on Demand Demonstration Project (the “Project”) it is implementing as part of the Reforming the Energy Vision (“REV”) initiative¹. In the *Order Adopting Regulatory Policy Framework and Implementation Plan* (the “Order”), issued by the New York State Public Service Commission (“Commission”) on February 26, 2015², the Commission directed the Company to develop and file REV demonstration projects, consistent with the guidelines adopted by the Order. The Company’s REV Demonstration Project proposal dated February 27, 2017, provided an outline and overview of the Project and was assessed by the Department of Public Service Staff (“DPS Staff”). On May 18, 2017, DPS Staff approved the Project and provided a discussion of the Project implementation plan to be filed by the Company. Con Edison filed an implementation plan for the Project with the Commission on June 23, 2017.

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 seek to demonstrate the ability of storage to participate in and earn revenues from New York Independent System Operator (“NYISO”) wholesale markets. Con Edison has been implementing the Project with its partner NRG Energy (“NRG”) since inception.

In Q2 2019, the Company continued to advance the implementation of the Project, specifically contract execution, design, permitting and interconnection applications. Con Edison and NRG continued the development of the final contract agreements and interconnection studies with NYISO. 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”). Personnel from across the Company collaborated to help advance the Project.

¹ REV is a set of multi-year regulatory proceedings and policy initiatives launched in New York State in April 2014.

²Case 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 and effective February 26, 2015).

1.1. 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 the Company .

1.2. 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 REV demonstration project costs.³ This accounting procedure establishes a standardized framework that will govern how the Company categorizes and allocates the costs of the REV demonstration projects, and facilitates analyzing each project to determine the overall financial benefits of the program to customers.

1.3. Costs, Benefits, and Operational Savings

Budget information, including costs incurred and projected to be incurred, 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.

³ 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.

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 contract agreements including the engineering, procurement and construction, operations and maintenance, energy manager, and site lease agreements.
- Design and Construction: Equipment procurement, updated docking station design to adhere to FDNY LONO requirements
- Market Participation: Continued activities to support the impact study with NYISO to advance interconnection application and enrollment

2.1.2 Activities Overview

Phase 0, Demonstration Planning: Based on permitting uncertainty, the Project team executed a Limited Notice to Proceed to cover all design and permitting criteria activities required for FDNY approval. This Limited Notice to Proceed allows the Project team more time to complete the Phase 0 final contract agreements while working on Phase 1 and Phase 2 activities in parallel. Contract agreement discussions progressed during Q2 2019. The team expects to execute contract agreements and conclude Phase 0 in Q3 2019.

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 Q2, 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.

Phase 2, Market Participation: The Project team continues to engage in activities to support the system impact study with NYISO, a key milestone in achieving Energy Resource Interconnection Service (“ERIS”).

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 contract agreements in Q3 2019. Once the contract agreements are complete, it is expected that 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 also plans to continue conversations with NYISO and cooperate on the system impact study to 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
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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; complete system design 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 Department of Buildings to incorporate any design changes required by these agencies necessary to achieving permitting. If permits are not determined to be reasonably obtainable, 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 to address delays that may develop, 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 distributed energy resource ("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 plans to 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: Expect to deploy assets 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 Q2 2019.

2.3. Work Plan & Budget Review

2.3.1 Phase Review

2.3.1.1 Phase Progress

As described above, 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 execution of all of the project agreements in Q3 2019.

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

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



Storage on Demand REV Demo Project – Q2 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
Q2 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:

- *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 deposit with NYISO, a key milestone in achieving Energy Resource Interconnection Service (“ERIS”)*

Upcoming Milestones/Targets:

- *The team expects to execute contract agreements and conclude Phase 0 in Q3 2019*
- *The team expects to continue equipment procurement, and begin trailer fabrication and docking station construction during Q3 2019.*