



REV Demonstration Project Implementation Plan

Storage On Demand

Date: June 23, 2017

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Executive Summary

This Project Implementation Plan for the Consolidated Edison Company of New York, Inc.'s ("Con Edison" or the "Company") Reforming the Energy Vision ("REV") Storage On Demand Demonstration Project ("Project") sets forth the Project's demonstration design, roles and responsibilities, work plan and budget, and reporting plan.

The Project outline, dated February 27, 2017, was assessed by the Department of Public Service ("DPS") Staff ("Staff") to be in compliance with the Ordering Clause 4 of the Commission's *Order Adopting Regulatory Policy Framework and Implementation Plan*.¹ On May 18, 2017, DPS Staff issued a detailed assessment of the Project outline, and included a discussion of the Project Implementation Plan for the approved Project outline. This document provides the Implementation Plan for the approved Project outline. It is a living document and may be updated during Project execution due to new discoveries. Test hypotheses, population, and scenarios, while based on market analysis and estimation, may change over the course of the demonstration, requiring updates to the scope, schedules, and costs of the Project.

The REV initiative's goals include changing the energy system to incorporate a more distributed and resilient architecture and creating new business models to enable utilities and third parties to successfully and profitably build and operate this new system. Consistent with these goals, this Project 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. The mobility of the technology solution will enable the batteries to be deployed for multiple utility needs over their lifetime, further increasing utilization and solution benefits.

Con Edison in partnership with NRG Energy, a Fortune 200 company that owns and operates over 50,000 MW of generation capacity nationwide, will execute the Project, which will provide the following benefits:

- Enhance Con Edison's ability to better manage capacity constraints on its distribution system through transportable batteries that can meet a variety of needs;
- Provide empirical data to support future integration of grid-scale energy storage in New York Independent System Operator ("NYISO") markets;
- Benefit the distribution system by clipping peak demands and lowering energy distribution costs; and
- Offset transportable battery solution costs with revenues earned from wholesale market participation.

The Project will be executed in three phases:

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

- Phase 0: Project Planning
- Phase 1: Design and Construction
- Phase 2: Market Participation
- Phase 3: Distribution Support

As this Project goes into implementation, the key REV Demonstration principles examined are:

- Identifying a market solution to a utility-identified problem;
- Creating a partnership between utility and third-party service providers;
- Creating a competitive and open market for grid services;
- Deploying advanced distribution systems; and
- Delineating the economic value split among stakeholders.

Section 1: Demonstration Design

The Project is a three-phased demonstration. The phases are incremental and may occur sequentially or in parallel. This section will detail the hypotheses for evaluation, the populations targeted, and the scenarios for evaluation. Checkpoints, detailed in Section 1D, will be utilized to monitor and inform progress. Throughout the phases and scenarios, the benefits of energy storage to provide distribution grid benefits and wholesale market services will be continuously evaluated to inform future storage business models, rate design, and development of the DSP.

Through implementation of the mobile storage project, Con Edison and NRG Energy seek to leverage a new business model to increase grid and wholesale value from battery storage.

Con Edison has partnered with NRG Energy to design and construct three mobile battery storage units that can be operated independently or collectively. Through the Project, Con Edison seeks to demonstrate: the ability of energy storage to participate in wholesale markets; practical and equitable agreements to share market revenues between the partners; and the ability of mobile storage to meet distribution grid needs. In doing so, the Storage On Demand Project is intended to demonstrate the value and benefits of a MW-scale mobile/deployable energy storage system to i) generate market revenues from the NYISO wholesale markets and ii) provide Con Edison with a readily-available resource to deploy in response to short-term contingencies and to defer longer-term system upgrade needs.

Phase 0 will encompass implementation plan development, finalization of the partnership with NRG Energy and preliminary design activities to support permitting approvals. Phase 0 will conclude with plan approval by Staff and contract finalization between Con Edison and NRG Energy.

Phase 1 will focus on the design, construction and commissioning of the mobile units. Con Edison and NRG Energy will work together to integrate the assets into the distribution system and establish communications protocols between the parties. The Storage On Demand solution design has been updated to provide greater flexibility. The previous design consisted of three trailers, two containing the battery cells and the third housing the electrical interconnection equipment to connect into the 4 kV or 13 kV systems. Under this design, the 1 MW/4MWh system had to be deployed with all three trailers each time. The current modular design consists of three (3) 500kW / 1.34 MWh trailers, each of which can provide support on both 120V and 480V secondary distribution systems. The modified design enables deployment of the trailers to provide a collective 1.5 MW/4 MWh at a single location or as individual units to support more emergent issues, e.g. emergency support for low voltage conditions during winter months. Enabling interconnection at the secondary distribution level also increases the number of locations the assets can be deployed to virtually anywhere on the Con Edison system. Con Edison believes that while this will delay the Commercial Operations Date (“COD”), the advanced flexibility and additional use cases increases the total value proposition offered by the mobile solution. Phase 1 has also been updated to sequence obtaining the Fire

Department of New York (“FDNY”) Letter of No Objection approval before purchase of the batteries. These items were originally scheduled in parallel but have become sequential based on lessons learned from other Con Edison lithium-ion permitting experiences. The trailer redesign and permitting change have moved the projected COD from summer 2018 to December 2018.

Phase 2 of the project will test the technical ability of the energy storage assets to participate in NYISO wholesale markets while located at the Astoria site, potentially providing capacity, energy and frequency regulation services. Participation in the wholesale markets will allow for increased utilization of the energy storage assets and will help maximize the overall value of the Project. The operational knowledge and lessons produced from this phase are crucial to animating the battery storage market, through learnings related to multi-use energy storage dispatch and realizable wholesale market revenue streams. This Phase will continue in parallel with Phase 3.

Phase 3 of the project will test different use cases for distribution support. During this phase, Con Edison will work with its Regional System Planning and Distribution Engineering organizations to identify areas of system constraint that could benefit from one or more of the mobile battery trailers. Initially, these network needs will be known in advance, which will provide Con Edison with the time to proactively engage the community surrounding the location where the assets will be deployed. As Phase 3 progresses, Con Edison and NRG will work together to apply operational learning to shorten deployment lead time and utilize the assets for emergency needs. Throughout Phase 3 Con Edison will continue to explore additional use cases for the mobile assets, such as temporary service requirements (e.g. construction) to further increase the value of mobile battery storage.

A) Test Statements

The Project Implementation Plan is designed to demonstrate the value of energy storage to both the distribution grid and wholesale markets through mobile storage systems and address the underutilization that characterizes many traditional battery systems. Con Edison, in partnership with NRG Energy, will demonstrate the market potential and test related hypotheses, as defined in Table 1-A-1. The hypotheses are based on estimates and analysis and are expected to be proved-out by Project completion.

Hypotheses 1a and 1b will focus on determining the potential ability of MW-scale energy storage systems, in particular Li-Ion battery systems, to participate and earn revenues in the NYISO wholesale markets. Con Edison and NRG anticipate that the system will be able to participate while stationed at Astoria (1a) but recognize there are still some challenges to market participation while the assets are deployed onto the grid (1b). This increased revenue will help offset costs of the system without impacting their primary transmission and distribution (“T&D”) deferral function. While the NYISO tariff currently contains limited provisions for energy storage participation in the markets, these rules have not been widely

used to date. NYISO is currently leading a stakeholder process to evaluate and refine these rules, and the project team intends to engage closely with NYISO with the goal of fully realizing and monetizing the particular characteristics and capabilities of the Storage On Demand project in the NYISO markets. NRG has a long-standing capability and expertise in managing generation and demand response assets in the NYISO markets, as well as in other RTO and utility territories, and will leverage that experience to maximize the Project’s market revenues.

Hypotheses 2a, 2b and 2c will focus on determining whether mobile MW-scale energy storage can be valuable in enabling utility T&D deferrals and in utility contingency response. The mobility of the Project enables the system to solve multiple short-term problems over the course of the batteries’ operating lives, with the increased T&D benefits offsetting the incremental cost of mobile solutions compared to a stationary battery installation. Over the course of the demonstration, Con Edison will identify summer peak and other grid needs where one or more of the mobile trailers can be deployed for reliability. Hypotheses 2a, 2b, and 2c measure the efficacy and benefits of a battery application over traditional wires or generator solution for events in which the Company has advanced knowledge.

Hypotheses 3a and 3b will be tested later in the Project, after both Con Edison and NRG have processed operational lessons learned to plan for, permit and deploy mobile storage with shorter lead times. These hypotheses will evaluate the extent to which mobile units can be capable of deployment within emergency operational timeframes. Con Edison and NRG anticipate that the mobile units can currently be moved from the Astoria site to a Con Edison location with a maximum 2.5 day lead time. Con Edison and NRG intend to reduce this lead time using learnings from Project operations, to enable emergency use of the assets in the future and potentially displace other emergency response alternatives.

Table 1-A-1: Implementation Hypothesis

Test Statement	Hypothesis
<p>We believe... MW-scale batteries can be valuable in generating revenues in NYISO wholesale markets.</p>	<p>If... MW-scale batteries are docked in between deployment at a third party location, Then... their value in operations and market revenues can be maximized. (1a)</p> <p>If... MW-scale batteries can be temporarily re-deployed to other sites in response to grid needs, and NYISO tariff structures can be sufficiently flexible Then... market revenues can be realized under a variety of use cases. (1b)</p>

Test Statement	Hypothesis
<p>We believe... mobile/deployable MW-scale batteries can be valuable in enabling utility T&D deferrals and in utility contingency response.</p>	<p>If... a MW-scale battery can be deployed safely and cost-effectively in response to a T&D overload situation, Then... the host utilities can realize significant savings as a result of having a low-cost first option to bridge the gap while evaluating longer-term wires and non-wires solutions, (2a) Then... the host utility can improve contingency response to major distribution facility equipment outages , and (2b) Then... utilities and communities can avoid the expense and air quality impacts of mobile diesel generation (2c)</p>
<p>We believe... mobile units can be capable of deployment within emergency operational timeframes.</p>	<p>If... cost and technical advancements can be implemented to make mobile/deployable batteries widely feasible, Then... the host utility can improve contingency response to major distribution facility equipment outages and (3a) Then... there is a substantial opportunity for Con Edison to avoid the expense and air quality impacts of other emergency response alternatives. (3b)</p>

B) Test Population

The Storage On Demand assets will be deployed based on locational grid needs and not address a specific test population. However, the Project will enable operational and reliability improvements and cost savings that will positively affect all of Con Edison’s customers. Customers will benefit when Con Edison deploys the mobile units at multiple locations in its system for T&D upgrade deferral or temporary local network support. It is important for the Company to be proactive in addressing community concerns in the successful deployment of the mobile battery assets. As Con Edison begins to identify potential networks for distribution support, the Company will incorporate information about the mobile storage system into communications with the local community boards. When the Company identifies the specific location in the months prior to summer peak planning, Con Edison will present to the local community board and provide community notifications to the neighboring businesses and residents. The Company will also reach out to local stakeholders including chambers of commerce, business improvement districts, and local development corporations. The communication medium and frequency will depend on communities impacted and may include outreach via website or email notifications. The Company will respond to community concerns and work collaboratively to find a suitable deployment solution for the affected communities that is as unobtrusive as possible.

For example, the Company has identified the 4 MW Williamsburg non-wires solution (“NWS”) as a potential deployment location for Storage On Demand. The network overload is expected in summer of 2020. To properly engage the community, Con Edison would begin outreach to relevant Williamsburg residents, businesses and other community members in the third and fourth quarters of 2019.

C) Test Scenarios

The Project implementation will evaluate multiple test scenarios (see Table 1-C-1) across each of the implementation phases. Each phase will address unique REV demonstration principles.

Phase 2 and Phase 3 will occur in parallel, therefore the test scenarios may overlap. Phase 2 scenarios focus on assessing the wholesale market revenue potential for mobile assets. NRG and Con Edison will collaborate to enroll the Project in the market interconnection process and answer any NYISO questions related to the mobility and availability of the assets. Throughout Phase 2, NRG and Con Edison will review the dispatch data from NRG's operations and assess potential for further maximizing market revenues.

Phase 3 test scenarios will assess the ability of the mobile assets to serve grid support needs, both in an advance planning scenario as well as in response to emergency dispatch needs. Con Edison will assess efficacy of battery assets to serve various use cases over the course of Phase 3 and adjust deployment strategy. As the Company scales the Storage On Demand solution, the mobile battery assets will become an integral part of the NWS planning process. Per the current process, Distributed Resource Integration ("DRI") Distribution Planning will identify NWS opportunities within the Con Edison territory based on established suitability criteria and pass the project to the Energy Efficiency and Demand Response group (Figure 2-D-2). The Storage On Demand assets will be considered as a temporary solution while the team issues an RFP and compiles the best possible portfolio of customer-sited solutions from the RFP responses. The team requires ample time to run the RFP process and assemble a portfolio, in the case where the system need occurs before a portfolio of customer-sited solutions can be developed, the Storage On Demand assets can serve as a bridge to delay the need. . In these cases, the Distribution Planning team will consider the cost of using the batteries to delay immediate needs and buy time for alternate solutions to be developed in the total project portfolio benefit cost analysis. The assets will also be considered as a part of the total NWS portfolio, based on other system needs and available customer-sited solutions. This process will continue to evolve as Con Edison develops additional NWS opportunities and gains operational insight and confidence with the reliability of storage assets.

Due to the dynamic energy environment and policy advances scheduled for the coming years, variance and adjustments in the scenarios are expected. Changes will be highlighted and reported to the Commission during the quarterly reporting process, per Section 4.

Table 1-C-1: Test Scenarios

Scenario	Description
Market Participation (Phase 2)	<p>Develop technical provisions among Con Edison, NRG and NYISO for the interconnection of the Storage On Demand Battery facilities at NRG’s Astoria Station.</p> <p>Assess potential of bidding energy storage systems into established wholesale markets under NYISO rules.</p> <ul style="list-style-type: none"> • NRG will lead the NYISO application process in each wholesale market and utilize feedback to assess market restrictions and rule changes required for participation. <p>Determine magnitude of wholesale market revenues, based on a variety of dispatch methodologies (day ahead and real time markets, frequency regulation, operating reserves).</p> <ul style="list-style-type: none"> • If market participation is unavailable, the Project will continue to dispatch according to optimization protocols and shadow market revenues.
Grid Support (Phase 3)	<p>Determine optimal protocol (both operational and market participation) for deployment of energy storage assets and efficient interconnection at Con Edison distribution system sites.</p> <p>Evaluate availability of batteries as needed and impact of discharge to the system.</p> <ul style="list-style-type: none"> • Con Edison will collect data on the storage system’s availability and performance on days when local distribution grid support is required to determine availability rating. • Evaluate performance for various use cases, including, but not limited to low voltage events and peak shaving needs. • Assess potential for additional use cases for mobile storage assets. <p>Demonstrate system control through communications protocols.</p> <p>Test ability to generate additional market revenue through participation in NYISO wholesale markets while assets are deployed remotely.</p>
Emergency Response (Phase 3)	<p>Develop detailed protocols and secure necessary cooperation and approvals from relevant authorities regarding the transport and deployment of Li-Ion batteries for emergency response scenarios. Test all of the scenarios through deployment at a distribution system location.</p>

D) Checkpoints

This Project is a new and innovative demonstration that will be managed by Con Edison in partnership with NRG Energy. Con Edison and NRG Energy will establish a Project management team and governance structure (see Section 2B) to review and monitor the Project. Key checkpoints, listed in Table 1-D-1, will highlight milestones for the governance structure to

evaluate Project execution and the need for implementation strategy adjustments. Each checkpoint has key metrics tied to it; checkpoints that do not meet expected targets will undergo further analysis to ascertain impacts on the Project and identify root causes. Through the quarterly reports submission, as detailed in Section 4 below, the implementation team will detail checkpoint status, applicable remedies, and strategy modifications. At times, due to the dynamic nature of the demonstration and the intent to test varying hypotheses (see Table 1-A-1), checkpoint targets may occur earlier or later within phases and checkpoint criteria may adjust up or down based on market dynamics and operational risk. Operational risk can include changing economic dynamics and the outcomes of REV proceedings.

Table 1-D-1: Checkpoints

Checkpoint	Description
Storage On Demand Design (Phase 0 & 1)	<p>Measure: Permitting approvals from city and regulatory agencies, successful design of the mobile battery storage unit</p> <p>When: Phase 0 completion: obtain Office of Technical Certification and Research (“OTCR”) approval Phase 1 Midpoint: Complete engineering and design of mobile unit</p> <p>How: NRG Energy will provide a monthly commissioning report confidentially to Con Edison; NRG Energy and Con Edison will have monthly meetings to discuss design, construction and commissioning until the Storage On Demand unit achieves commercial operation</p> <p>Expected Target: OTCR approval expected 6 months after submission of Implementation Plan Design complete 6 months from Phase 0 Completion</p> <p>Impact: Any extension in permitting or design timeline will delay completion of Phase 1 and initiation of Phase 2 and 3; may impact availability of data to test any hypotheses</p> <p>Solutions/Strategies in case results are below expectations: NRG Energy will continually evaluate progress; if needed, move to weekly update meetings. NRG and Con Edison will frequently engage the FDNY and New York City Department of Buildings (“DOB”) to incorporate desired changes necessary to obtain permitting approval. If permitting is unsuccessful, Con Edison will terminate the Project.</p>
Commercial Operation Date (Phase 1)	<p>Measure: Achieve commercial operations by December 2018.</p> <p>When: Phase 1 Completion</p> <p>How: Real time dispatch at NRG Energy’s Astoria site, System Integration and Dispatch performance metrics</p> <p>Expected Target: 1 MW/ 4MWh dispatchable energy storage at Phase 1 Completion</p> <p>Impact: Lag in COD will delay Phase 2 and 3; may impact availability of data to test hypotheses.</p> <p>Solutions/Strategies in case results are below expectations: NRG Energy will continually evaluate construction progress. Con Edison will develop construction schedule mitigation plan with NRG Energy.</p>

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Checkpoint	Description
Market Participation (Phase 2)	<p>Measure: Revenues earned while Storage On Demand unit is located at Astoria site and while deployed</p> <p>When: 6 months after start of Phase 2, 12 months after start of Phase 2; concurrent with Phase 3</p> <p>How: Commercial operations data available from NRG Energy’s distributed generation commercial desk</p> <p>Expected Target: Phase 1 end: Enrollment in applicable NYISO markets Phase 2 Midpoint: Ability to dispatch Project in accordance with various competitive market participation requirements</p> <p>Impact: Ability to earn market revenues is key to the Project demonstration; otherwise, this may demonstrate that hypothesis 1.a may not hold true</p> <p>Solutions/Strategies in case results are below expectations: Engage in discussions with NRG Energy’s commercial operations team. If market participation is denied, NRG and Con Edison will apply for NYISO Pilot Programs for DER integration. If this participation is also rejected, NRG will dispatch assets to shadow the market and determine potential realizable revenues.</p>
Distribution Support (Phase 3)	<p>Measure: Ability to deploy mobile units for resiliency and reliability and estimate economic benefit</p> <p>When: Midpoint of Phase 3</p> <p>How: Dispatch performance metrics to be reported in quarterly Commission report</p> <p>Expected Target: Phase 1 end: As part of the standard summer prep system planning process, Con Edison will begin identifying potential locations for mobile asset deployment and begin customer outreach in potential locations Phase 3 start: Con Edison will finalize deployment locations and notify impacted communities Phase 3 Midpoint: Con Edison has successfully deployed mobile units to support planned grid needs Phase 3 Completion: Con Edison continues to deploy the mobile units as needed, not less than once a year and incorporate lessons learned to improve deployment efficiency.</p> <p>Impact: Deferred T&D investment is key to this Project. Otherwise, hypothesis 2a-2c may not hold true</p> <p>Solutions/Strategies in case results are below expectations: Additional deployment of Storage On Demand unit to create additional measurement points.</p>

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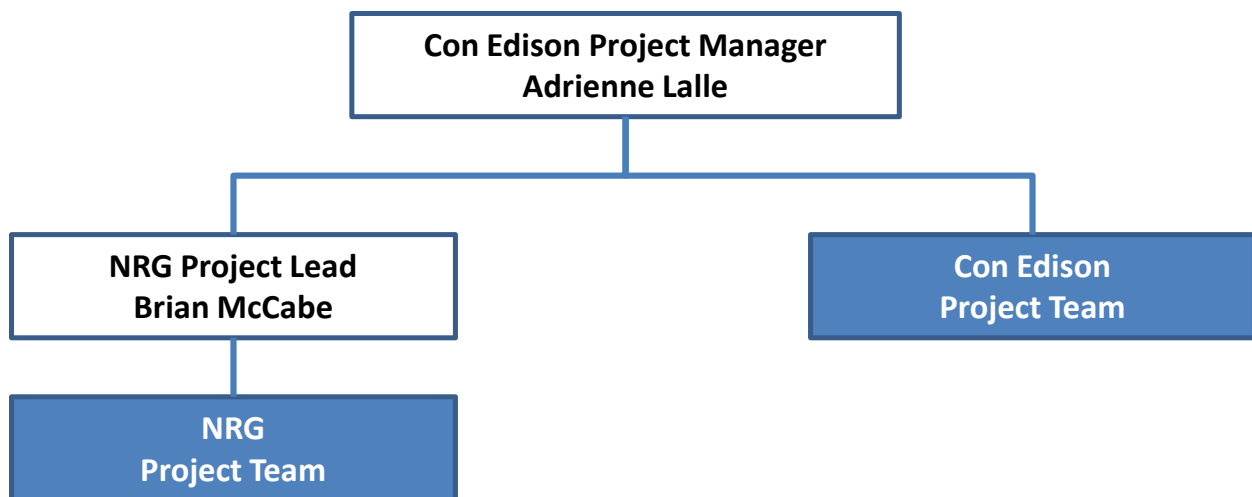
Checkpoint	Description
Emergency Response (Phase 3)	<p>Measure: Ability to deploy units within acceptable emergency operational timeframes to address system contingency needs</p> <p>When: Phase 3 Completion</p> <p>How: Dispatch units to address emergent system conditions</p> <p>Expected Target: Con Edison will utilize the Storage On Demand assets to address a system contingency in an acceptable operational emergency timeframe by the completion of Phase 3.</p> <p>Impact: Inability to reduce deployment times would make use case invalid and prove hypothesis 3 to be untrue.</p> <p>Solutions/Strategies in case results are below expectations: Continually evaluate deployment times and identify key drivers and root causes of lags in deployment</p>

Section 2: Project Structure and Governance

A) Project Team

The Project is a partnership between Con Edison and NRG Energy, Inc. In addition, Greensmith and LG Chem will serve as key knowledge and product partners. Each partner will provide key skillsets and be responsible for certain Project functions in order to achieve a successful demonstration project. Con Edison will maintain overall responsibility for Project execution; NRG is a key contributing partner. The high-level Project team makeup and alignment are depicted in Figure 2-A-1.

Figure 2-A-1: Team Leadership/Organization



Con Edison will apply skillsets (Table 2-A-1), staff, and expertise to the Project aligned with its roles and knowledge base as a utility. The Con Edison project manager will have overall responsibility for the success of the Project and will plan, coordinate, and manage activities for the scope and duration of demonstration. Similarly, Con Edison's partner, NRG Energy will apply key skillsets (Table 2-A-1) that are unique to its focus and product set and aligned to its roles and responsibilities.

Table 2-A-1: Utility and Partner Skillsets

Con Edison Team Key Skillsets	NRG Energy Team Key Skillsets
<ul style="list-style-type: none"> • Program Management • Regulatory • T&D Operations & Maintenance • Information Resources (IR) • Customer Outreach and Community Engagement • Distributed Resources • Distribution Grid Planning • Legal 	<ul style="list-style-type: none"> • Project Management • Engineering • Storage Operations & Maintenance • Dispatch / Commercial Operations • Legal and Regulatory • Storage Technology (LG CChem) • Energy Management Software (Greensmith) • Results Measurement and Reporting (Greensmith)

NRG Energy is a Fortune 200 energy supply company headquartered in Princeton, New Jersey. NRG owns and operates one of the industry's most diverse wholesale generation portfolios (including gas, energy storage, wind and solar power) that provide approximately 50,000 megawatts of electric generating capacity. NRG has deep experience in the NYISO market with four generating facilities, including two in the New York City Zone J market. NRG's team lead will have overall responsibility to coordinate and align its efforts within this implementation plan and coordinate with third parties, including LG Chem (battery supplier) and Greensmith (energy management software provider).

B) Project Staffing

Con Edison has created a REV demonstration program team within its DRI department dedicated to identifying, developing, and implementing new projects related to REV. From this team, a project manager has been identified to lead the Project. In addition, Con Edison will provide the necessary internal and external resources in key areas (*e.g.*, marketing, information resources, legal, procurement, and engineering) to augment and support demonstration activities and objectives. Con Edison's team members are listed in Table 2-B-1 along with their functional areas and current duty titles.

Table 2-B-1: Con Edison's Project Team

Team Member	Title	Functional Area
Adrienne Lalle*	Project Manager, Storage On Demand	REV Project Management
Jamie Brennan	Director, Demonstration Projects	Project Governance
Alex Trautner	Program Manager, Demonstration Projects	Project Oversight (REV Demonstration Program)
Sontra Williams	Manager, DRI Project Management Office	Project Controls

* Project Leader

As part of one of the largest residential utility providers in the country, Con Edison’s Project team has access to more than 13,000 employees, representing a full complement of skills necessary to run the day-to-day operations of the Company. Additional Project team members will be identified and recruited as necessary during the course of Project execution.

NRG Energy is a committed partner for the Project. NRG Energy’s Director of Business Development will lead NRG Energy’s management and integration of NRG Energy’s activities into the overall Project scope and plan. In addition, NRG Energy and its partners, Greensmith and LG Chem, will provide the Company with functional expertise (e.g., engineering and design, operations and maintenance, and measurement/testing) to execute demonstration tasks and activities. Table 2-B-2 is a list of key individuals from NRG Energy and its partners, Greensmith and LG Chem, who, along with their respective teams, will support this demonstration.

Table 2-B-2: NRG Energy’s Project Team

Team Member	Title	Functional Area
Brian McCabe*	Director, Business Development	Business and Relationship
Michael Herfurth	Director, Emerging Technology Projects	Project Management
Kevin Fok (LG Chem)	Senior Project Manager	Project Management
Jeff Silvan (Greensmith)	Director of Project Management	Project Management
* Team Leader		

C) Roles and Responsibilities

The Project team has developed a work plan (Table 3-A-1) with specific tasks and activities aligned to the Project timeline and overall success. The breakdown of roles and responsibilities is provided in this section.

Phase 0 – Demonstration Planning

The initial stages of the demonstration will be focused on obtaining implementation approval from Staff and finalizing the agreements between Con Edison and NRG Energy.

Table 2-C-1: Phase 0 – Roles and Responsibilities

Lead Responsibilities	Con Edison	NRG Energy
Partnership Agreement		
Con Edison will enter into an agreement with NRG Energy to delineate roles and responsibilities with respect to the Project execution.	X	
Permitting		
Con Edison will lead all permitting efforts with FDNY, DOB, and New York City Department of Transportation (“DOT”). NRG Energy will support permitting activities, particularly with respect to trailer design.	X	X

Phase 1 – Design and Construction

In Phase 1, NRG Energy will be responsible for the engineering, construction, and commissioning activities. Con Edison will support these activities as needed. Phase 1 will be complete when NRG Energy demonstrates that the mobile units can participate in the wholesale markets from the Astoria site.

Table 2-C-2: Phase 1 – Roles and Responsibilities

Lead Responsibilities	Con Edison	NRG Energy
Engineering, Procurement & Construction		
NRG Energy will design, procure, and build the Project under an Engineering, Procurement, and Construction (“EPC”) contract.		X
Con Edison will support this activity.	X	
Cybersecurity		
Con Edison will define the requirements.	X	
NRG Energy with the energy management software provider, Greensmith, will adhere to Con Edison’s requirements.		X
Commissioning		
NRG Energy will deliver 1.4MW/4 MWh of inverter capacity across three tractor trailers at the end of Phase 1.	X	
Con Edison will support the interconnection of the systems.		X
System Engineering		
Con Edison will lead the integration of the distribution control centers to GI Energy’s and Smarter Grid Solutions’ operation systems.	X	
NRG Energy and Greensmith will design and build a control system to interface with Con Edison’s control center.		X
Dispatch Testing		
NRG Energy is responsible for interoperability with storage batteries.		X
Con Edison is responsible for integration with NRG and executing testing to demonstrate dispatchability.	X	

Phase 2 – Market Participation

In Phase 2, NRG Energy will test the technical ability of the energy storage assets to participate in the NYISO wholesale markets while located at NRG’s Astoria facility. The energy storage assets will provide one or more of the following services to the NYISO wholesale market:

- Day ahead and real time markets;
- Frequency regulation; or
- Operating reserves.

NRG Energy will assess the results of the dispatch and continue to improve protocols to maximize wholesale market revenues.

Table 2-C-3: Phase 2 – Roles and Responsibilities

Lead Responsibilities	Con Edison	NRG Energy
Dispatch Optimization		
NRG Energy will demonstrate reliable control of the assets and wholesale market participation to maximize asset utilization and potential wholesale revenue.		X
NYISO Application		
NRG Energy will lead application for the mobile storage assets to enter the NYISO wholesale markets.		X
Con Edison will support this activity.	X	

Phase 3 – Distribution Support

In Phase 3, Con Edison will deploy one or more of the units to test the technical ability of the energy storage assets to provide distribution level load relief to a local network. Con Edison also plans to test the ability of the mobile assets to manage emergency contingency needs.

Table 2-C-4: Phase 3 – Roles and Responsibilities

Lead Responsibilities	Con Edison	NRG Energy
Distribution Relief		
Con Edison will lead identification of distribution needs, disconnect activities from Astoria site, transportation of assets, and interconnection at remote location.	X	
NRG Energy will support efforts related to battery dispatch.		X
Emergency Contingency		
Con Edison will lead exploration of opportunities for Storage On Demand to manage emergency contingency needs.	X	
NRG Energy will support efforts relating to battery dispatch.		X

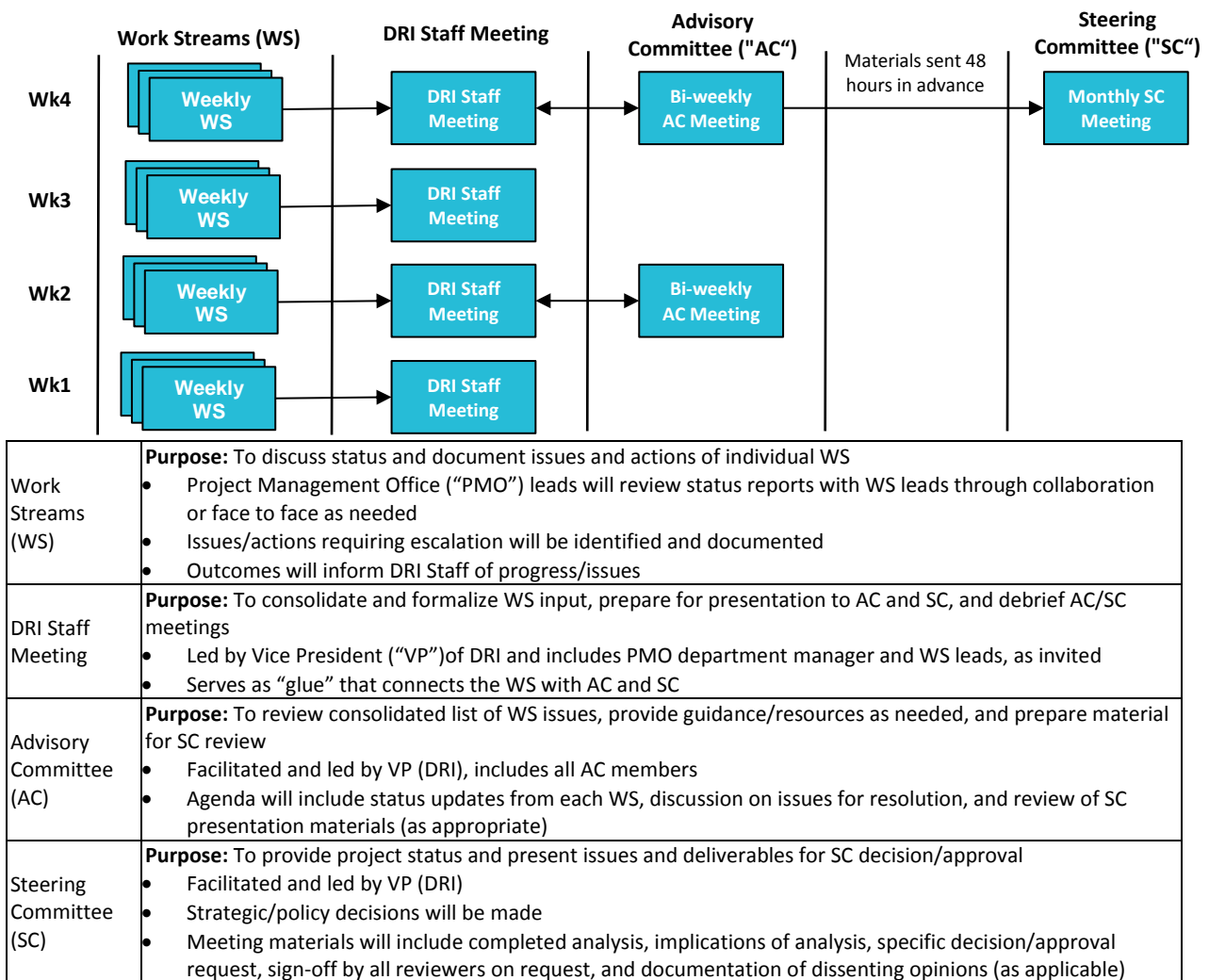
D) Governance

Con Edison will have overall responsibility for execution of the Project. It has put in place a governance structure detailed in the section below. The governance structure will encompass the Project management team, detailed in Sections 2A and 2B and depicted in Figure 2-A-1. The management team will have day-to-day execution responsibility for managing the Project, coordinating tasks and activities, and conducting overall Project management. The team will continuously coordinate activities throughout the Project. Team meetings will be held in-person, via conference calls, WebEx, or other communication means. The Project team will be responsible for coordination and execution of quarterly reports.

Utility Governance Structure

The Con Edison governance structure will consist of its dedicated Demonstration Projects department with REV initiative oversight, a cross-functional advisory committee, and a senior executive leadership steering committee. The governance structure will ensure senior leadership is fully engaged, appropriate internal stakeholders are engaged, and outcomes and Project executions are tracked. Con Edison will manage the process as depicted in Figure 2-D-1.

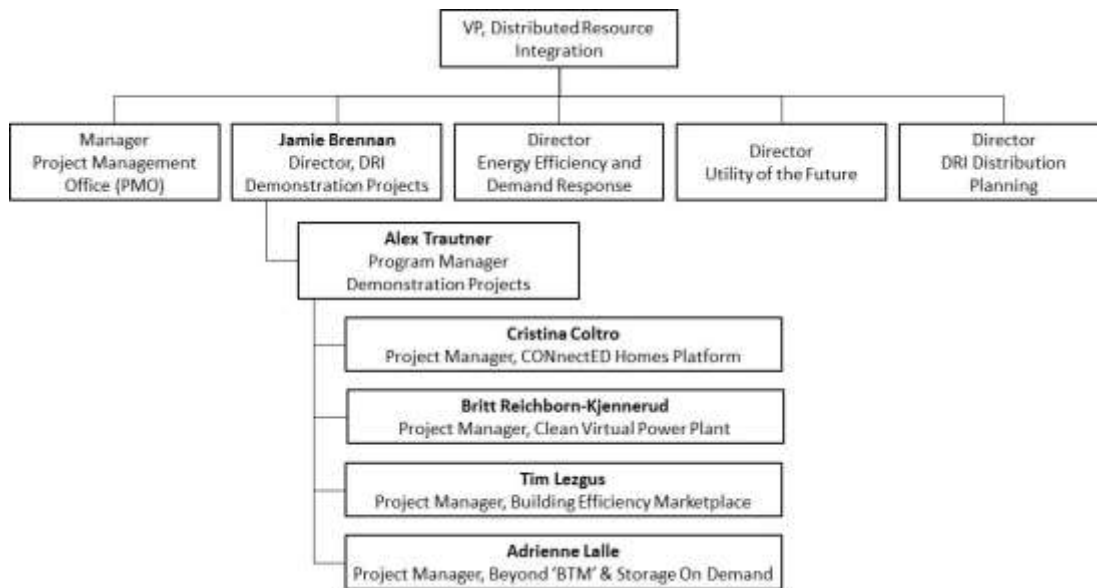
Figure 2-D-1: Con Edison’s REV Demonstration Governance Process



The Project manager is under the Director, Demonstration Projects, who reports to Con Edison’s VP for DRI. The DRI organization (Figure 2-D-2), formed in May 2015, is a proactive response to the evolving energy distribution markets in New York. This new department is deemed critical by Con Edison to address customers’ needs, move forward on REV, and adapt to the changing energy environment. DRI integrates infrastructure planning, innovative

technical options, energy efficiency, and creative solutions to ensure continued reliability while serving customers in the future. All the elements of Con Edison’s REV initiatives report to the VP of DRI—the Utility of the Future and Energy Efficiency/Demand Response, Resource Planning, Distributed Generation, and Demonstration Project teams.

Figure 2-D-2: Con Edison’s Distributed Resource Integration and Planning Department



The director of DRI Demonstration Projects will hold weekly staff meetings to review the progress of each REV-related work stream in order to provide oversight and resolve critical issues as they arise. All teams with REV-related initiatives, including each demonstration project team, will provide weekly updates, highlighting progress made and escalating issues that require support from the organization, to address resource needs, changes in scope, or externalities that might impact the projects, including the Project.

The Advisory Committee is made up of leaders from Con Edison’s functional areas— Information Resources, Corporate Accounting, Corporate Strategy, Corporate Communications, Engineering and Planning, Energy Policy and Regulatory Affairs, Government Relations, and Customer Operations. These areas will be impacted by, or will need to provide resources to support, REV initiatives. This committee will provide guidance and input on strategic priorities, policy, and decisions; review REV project schedules and deliverables to ensure alignment of business unit priorities; secure resources to support REV work streams; resolve cross-functional issues with peers; serve as a champion for REV priorities within the respective business unit; and make decisions as delegated by the Steering Committee.

The Steering Committee consists of key members from Con Edison’s senior executive leadership team. The role of the Steering Committee is to set strategic priorities for Con Edison with respect to REV, make critical policy and strategic decisions, set the standard for REV-

related deliverables, and approve overall resourcing of the effort. Con Edison's senior leaders will have full visibility on REV demonstrations.

Partner Governance Structure

NRG Energy, as a partner to Con Edison, will enter into a contractual arrangement with Con Edison to provide services to execute the Project. The director of business development for NRG Energy is NRG Energy's Project team lead. The governance structure follows NRG Energy's internal project management oversight model.

Section 3: Work Plan and Budget

A) Project Plan

Con Edison in partnership with NRG Energy will implement the Project in three phases. Within each Phase are associated tasks and activities, which will be tracked and managed by the Project management team and reported on to the Commission and Staff. Table 3-A-1 details the phases, tasks, associated activity, and first level of sub-activity with an overall budget estimate. The Implementation Plan's work plan and budget are part of this living document. Start and end periods and budget estimates of each task and activity may occur earlier or later in the schedule due to various inputs and risks which include, but are not limited to, customer feedback, customer participation, and systems integration. The key milestones for this Project align with the completion of each phase, meeting the checkpoints within the stage and demonstrating Phase success. Milestones are noted in red in Table 3-A-1 and defined within the definition table, Table 3-A-1. Con Edison, together with NRG Energy, will monitor progress and milestones through various checkpoints, as discussed in Section 1, Demonstration Design and will report to the Commission quarterly. Reporting will conform with the Commission's direction and with Section 4-A of this document, Reporting Expectations.

The budget estimates provided in Table 3-A-1 represent calculated estimates over the course of the Project and are not adjusted for inflation. Changing budget estimates will be reflected in the quarterly reports to the Commission. NRG Energy's costs are commercially sensitive, competitive information and will be provided to the DPS confidentially.

Table 3-A-1: Work Plan

Act no	Activity Description	Lead	2017				2018				2019				2020				2021			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	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																				

B) Project Budget

Con Edison’s project manager will be responsible for managing and tracking the Project’s costs and overall budget. The quarterly report to the Commission will provide budget updates and align with the work plan and budget in Section 3A. NRG Energy will provide updates to the project manager for inclusion in the quarterly report.

Project implementation costs will include the energy storage system, balance of system components, installation and associated operations and maintenance services, fees for development, mobility costs, and operation and maintenance of the energy storage unit.

Budget estimates provided in Table 3-B-1 represent calculated estimates over the course of the implementation demonstration, and do not account for inflation. Changing budget estimates will be reflected in the quarterly reports to the Commission.

This Project will examine two main potential revenue sources: generation of system benefits and wholesale market revenues. Actual wholesale revenue realization is dependent upon admittance to NYISO markets and not guaranteed. If market participation is not possible during the demonstration period, the assets will be dispatched to shadow the market, and the data will be collected, analyzed and published to model revenue potential to inform future projects. Phases 2 and 3, which produce system benefits and market revenues, will occur in parallel. Changes in Project scope, outcomes of REV proceedings, and implementation of NYISO DER Roadmap may impact revenue estimations. Table 3-B-1 does not include T&D system benefit estimates as this Project will be used to quantify this value. In the event of a change, Con Edison will provide an update to this Project Implementation Plan in the quarterly report updates to the Commission.

Table 3-B-1: Storage On Demand Budget

	2017	2018	2019	2020	2021
Expected Cash-Out:	\$7.73M	\$0.84M	\$0.84M	\$0.84M	\$0.16M
Expected Cash-In:	\$0M	\$0M	\$0.45M	\$0.45M	\$0.45M

Section 4: Reporting Structure

A) Reporting Expectations

Quarterly reports will be provided to the Commission during the Project. The reports will provide an update on implementation progress according to the work plan and budget (see Table 3-A-1), detailing deviations, and noting task and activity progress. In addition, each quarterly report will capture, to the extent available, key project information, such as in-service dates, incremental costs incurred, operating results, rate design use case results, and market learnings as well as other observed project benefits. The quarterly report template will be as follows:

Figure 4-A-1: Quarterly Report Outline


1.0	Executive Summary
2.0	Demonstration Highlights
2.1	Since Previous Quarter
2.1.1	Major Tasks Completion
2.1.2	Activities Overview
2.1.3	Sub-Activities Overview
2.2	Next Quarter Forecast
2.2.1	Checkpoints/Milestone Progress
2.2.2	Planned Activities
2.2.3	Expected Changes
2.3	Issues
3.0	Work Plan and Budget Review
3.1	Phase Review
3.1.1	Activity 1.0
	<ul style="list-style-type: none"> • Progress Assessment • Issues
3.1.1.1	Sub-Activity 1.2
	<ul style="list-style-type: none"> • Progress Assessment • Issues
3.1.1.2	Sub-Activity 1.3
3.2	Work Plan
	Table 3.2.A – Updated Work Plan
	Table 3.2.B – Updated Budget
4.0	Conclusion
4.1	Lessons Learned
4.2	Recommendations

The quarterly report will focus on the phase(s) occurring within the previous quarter or scheduled to occur within the next two quarters, providing a focus on current progress while providing Staff insight into the near future. The governance structure and program

management team will maintain oversight over all Project progress and include in Section 2.3, any impacts on the implementation execution that may extend beyond the report's timeline.

Checkpoint, milestone, and activity progress will provide detailed status information to inform the Commission of implementation progress and highlight issues, such as changes in scope, incremental cost, or shifts in the timeline. A stoplight chart will be used to detail progress for activities in the quarterly reports. Con Edison will provide narrative information to support the progress report. NRG Energy-related data will be provided confidentially to Staff.

Figure 4-A-2: Checkpoint/Milestone/Activity Progress Example

<p>Checkpoint: Installed and commissioned inverter storage capacity</p> <p>Target: 1.5 MW / 4 MWh mobile project (Phase 1 completion)</p> <p>Progress Status: </p> <p>Budget Impact: (Yes/On-Target/No Impact)</p> <p>Incremental Cost Incurred:</p> <p>Previous Quarter Updates:</p> <p>Future Quarter Impacts:</p>

The Project management team will maintain frequent contact with Staff to review the quarterly report and respond to follow-up questions.