REV Demonstration Project Implementation Plan

Commercial Battery Storage

Dated: June 15, 2017

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Executive Summary

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

The Project outline, dated January 20, 2017, was assessed by the Department of Public Service ("DPS") Staff ("Staff") to be in compliance with the Ordering Clause 4 of the Public Service 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 to be filed by Con Edison.[2] 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 based on market analysis and estimation may change over the course of the Project, requiring updates to the scope, schedule, and costs.

Con Edison, in partnership with GI Energy, will execute the Project, which is designed to examine how a distributed, front of the meter ("FTM") energy storage business model can be utilized to:

- Enable a broader array of customers and customer types to derive value from energy storage by compensating participating customers in a clear, simple way, while not affecting their current electric bills;
- Align transmission and distribution ("T&D") support needs with energy storage dispatch from FTM customer-sited energy storage;
- Minimize the cost to the Company of deploying energy storage by enabling larger project sizes and offsetting total project costs through 1) lower customer acquisition costs and 2) secondary value streams from the battery;
- Increase available market size by engaging a larger customer pool and allowing for large-scale deployment of energy storage resources, where they are needed, by removing behind the meter ("BTM") limitations on project siting; and
- Better align the interests of the Company, ratepayers, and third-party service providers by creating a dispatch agreement that allows the Company priority access to the battery during times of peak load on the grid, and allows for wholesale market participation for revenue generation during all other times.

The Project will be executed in four phases:

Phase 0: Project Planning

[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).
[2] REV Proceeding, Reforming the Energy Vision Demonstration Project Assessment Report – Con Edison: Commercial Battery Storage (filed May 18, 2017).

Phase 1: Customer Acquisition
Phase 2: Construction/Commissioning and Integration
Phase 3: Dispatch Optimization
Phase 4: Market Participation

By testing a unique FTM business model for distributed storage, the Project will be able to test the following hypotheses aimed at enabling a larger market in New York, increasing customer benefits from battery storage, and improving the value the Company receives from distributed storage. Upon completion of the Project, Con Edison, in partnership with GI Energy, will be able to use the knowledge gained from the Project to help answer some of the following questions critical to achieve these goals.

- Can FTM storage systems be easily scaled across Con Edison's service territory?
    - How does this compare to traditional BTM model scalability?
    - What is the customer price point for leasing space for the FTM model?
    - Can the Company and developer collaborate to target constrained network locations and enable grid support through site acquisition within those networks?
- Can FTM systems provide greater magnitude of distribution peak load reduction than BTM?
    - For the same customer site, does economics of a FTM system enable a larger battery system than BTM economics?
    - Do the economics for FTM battery systems promote greater peak reduction than the economics for BTM battery storage?
- How much benefit does distributed storage provide to the system during peak events?
- What are the total potential secondary market revenues for distributed battery storage?

As this Project enters into implementation, the key REV demonstration principles are:

- Partnership between utility and third-party service provider;
- Clear delineation of how generated economic value is divided between the customer, utility, and third-party service provider;
- Market for grid services should be competitive;
- Propose rules that will help create subsequently competitive markets; and
- Utilities should explore opportunities in their demonstration to work with and include various residential, commercial, institutional, and industrial customer participants.

Section 1: Demonstration Design

The Project is a four-phased demonstration. The phases are incremental and may occur in parallel or overlap. 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 FTM storage, Con Edison and GI Energy seek to leverage a new business model to increase customer, grid and wholesale value from battery storage.

Con Edison has partnered with GI Energy to develop four customer-sited, FTM battery storage sites. GI Energy, through its experience in energy development, has experienced the difficulty of implementing BTM energy solutions, including customer education, siting challenges and underutilization of assets. The FTM model was born of these frustrations and unlocks wholesale and utility value by disconnecting project economics from the customer load profile. This Project aims to test the potential of value stacking models and to animate the battery storage market.

Phase 0 will encompass implementation plan development and finalization of the Con Edison partnership with GI Energy. Phase 0 will conclude with plan approval by Staff and contract execution between Con Edison and GI Energy.

Phase 1 will focus on customer acquisition, market data collection, and analysis. GI Energy will finalize site selection, execute contracts with host sites and perform analysis on customer usage data to determine maximum potential size of energy storage asset, demand charge reduction under traditional BTM model, and load reduction benefits to grid under BTM and FTM project models. The results of these analyses will be detailed in a report to Con Edison along with lease requirements for various battery sizes and shared with Staff.

During Phase 2, GI Energy will conduct detailed engineering assessments for each site and install and commission each system. Con Edison, GI Energy and Smarter Grid Solutions (“SGS”) will work to integrate the assets into the distribution system and establish communications protocols between all three parties. During this phase, all necessary permitting activities will be completed.

Phase 3 of the project will test the technical ability of the energy storage assets to provide distribution load relief, integration with Con Edison’s control equipment, and dispatch protocols for New York Independent System Operator (“NYISO”) market participation. The dispatch protocols are essential to maximizing the value of energy storage assets. 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.

Phase 4 of the project is market participation. After proving the ability to dispatch assets for multiple use cases in Phase 3, GI Energy will enroll the batteries into NYISO markets for capacity, energy and frequency regulation services. The successful completion of this phase is dependent upon implementation of the NYISO Distributed Energy Resources ("DER") Roadmap[3] or NYISO pilot projects, which are outlined in the Roadmap as an opportunity to test integration of new technologies such as energy storage in the NYISO markets. GI Energy and Con Edison will produce a report detailing actual revenues from wholesale market participation and any lessons learned to maximize revenue while continuing to provide load relief to the network. This information should provide other developers more confidence in the future when procuring financing for additional projects duplicating this business model.

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 aggregated FTM, customer-sited energy storage. Con Edison, in partnership with GI Energy, will demonstrate the market potential and test related hypotheses, as defined in Table 1-A-1. The hypotheses are based on estimates and analyses and are expected to prove-out by completion of the Project.

Hypotheses 1a and 1b will focus on determining the market for FTM, customer-sited storage testing both customer appetite for the lease payment model and the price point. These hypotheses will compare FTM and BTM storage with respect to customer interest, customer eligibility, and potential system size. GI Energy has observed through combined heat and power ("CHP") development in New York that BTM economics significantly restrict the eligibility of customers to participate in traditional BTM models, thereby constraining the market. Con Edison and GI Energy hypothesize that customers will choose to maximize the value of free space through lease payments compared to potential demand charge and installed capacity ("ICAP") tag reductions. This Project is designed to examine if customers are interested in a FTM model and if this model expands customer eligibility and market size.

Hypotheses 2a and 2b will focus on determining the potential magnitude of FTM system benefits compared to potential BTM benefits for same system size and location. Con Edison and GI Energy believe that BTM economics restrict benefit to the grid as the batteries must be primarily dispatched to reduce customer demand and ICAP tag charges. Therefore the BTM model reduces availability for peak shaving on the system, particularly if customer peak demand does not align with the network or system peak. The Project is designed to disconnect customer demand needs from the business model so that batteries can be primarily dispatched for distribution benefit during times of greatest need while still providing financial benefit to the customer.

[3] Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets- A Report by the New York Independent System Operator (published January 2017).

Hypotheses 3a and 3b will assess the availability and performance of batteries during operation. This Project is designed for the batteries to always be available for Con Edison priority dispatch, with some advanced notice. These hypotheses will determine not only availability rating but also efficacy of aggregated, customer-sited, FTM storage as a tool for distribution infrastructure deferral.

Finally, hypotheses 4a, 4b, 4c, and 4d will assess the ability of the battery system to participate in wholesale markets while still providing distribution support. The Project intends to enroll the batteries in NYISO markets to participate directly, potentially through a pilot program. If this is not possible within the demonstration period, the Project will shadow the market to determine the extent of revenue that could be generated in the capacity, energy and/or frequency response markets.

Table 1-A-1: Implementation Hypotheses

Test Statement	Hypothesis
We believe…FTM Systems are more easily scalable across Con Edison's territory, can more easily be targeted in constrained network locations, and can be concentrated into larger battery systems per site	**If…** data is collected on the suitability of FTM and BTM battery systems on actual customer sites… **Then…** it will be shown that the average FTM battery system size would be significantly larger than the average BTM system size (1a) **Then…** it will be shown that many sites would not be able to economically site a BTM system, due to sub-optimal load profile or other reasons, but that these sites can host a FTM battery system (1b)
We believe…FTM systems can provide a greater magnitude of distribution system peak load reduction than equivalently sized BTM systems	**If…** customer interval data is collected in order to model predicted BTM battery system dispatch…. **Then…** the load reduction attributable to a BTM battery system at times of distribution system peak load will be less than the load reduction attributable to an equivalently sized FTM battery system (2a) **Then…** it will be found that some BTM battery systems would provide negligible benefits to the distribution system (2b)
We believe…A 4 MW/4 MWh aggregated battery system can be deployed in such a way as to provide substantial benefits to the grid through deferral of distribution infrastructure.	**If…** Con Edison receives priority dispatch rights to the battery systems, as proposed … **Then…** Con Edison will be able to count on the batteries to be dispatched according to Con Edison instructions (3a) **Then…** the availability rating derived from operational data will be sufficiently high as to make energy storage a viable tool for distribution infrastructure deferral purposes (3b)

Test Statement	Hypothesis
We believe…A 4 MW/4MWh aggregated system will be able to receive additional revenue from secondary usage, in addition to providing deferral of distribution infrastructure.	**If…** dispatch agreements with Con Edison are structured in such a way as to allow third-party control when not needed by Con Edison… **Then…** the battery will be able to be enrolled in NYISO's energy, capacity and frequency response markets (4a) **Then…** the battery will be able to be dispatched to bid into these markets, without influencing the battery's primary purpose, or being detrimental to Con Edison's grid in any way (4b) **Then…** the proceeds generated from these markets will be able to be quantified and predicted, as a function of NYISO and wholesale energy market prices (4c) **Then…** the distinct value of each revenue stream and storage as a service will be determined (4d)

B) Test Population

The Project will focus on all customers, regardless of type, within networks that can benefit from distribution level load relief, as determined by Con Edison. This includes, but is not limited to, multi-family residences, low-income housing, customers with low electric demand, and customers with limited credit and/or up-front capital. The only limit on participation under this Project is available space for battery storage and location with respect to grid need. Customers will opt-in to participate.

Phase 1- Customer Acquisition, GI Energy will reach out to potential customers for data collection. The team will collect interval data for BTM comparison, total area of leasable space, and lease payment price point. GI Energy will work with all interested leads to determine host site suitability. Selection criteria include, but are not limited to, sites:

- Within target network areas;
- Which meet building and zoning requirements for battery-storage technology, including but not limited to, setback, fire code, non-disturbance of existing utility infrastructure, preservation of parking, and visual impact;
- That have sufficient space to host an energy storage asset of the size proposed; and
- Where lease payments are competitively priced compared to other viable sites.

GI Energy will use this information to assess the range of customers' price thresholds for hosting an energy storage solution, maximum size of energy storage asset that could be hosted (if above Project's 1 MW/1MWh), battery size and potential demand charge and ICAP tag

reduction if BTM model was employed, and average load reduction for local peak for FTM and BTM configuration.

Phases 2-4 are focused on construction and commissioning activities and operation of the assets. Population testing will conclude in Phase 1 and the customers selected during this process will remain involved through the entirety of the demonstration project.

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.

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
Customer interest and acquisition costs (Phase 1)	Determine customer's willingness to accept an energy asset hosted on its site by assessing the percent of customers who are initially contacted about the opportunity that agree to free energy audit to test site suitability. • GI Energy will approach 100+ customers to request access to interval data for a free energy storage evaluation. The percent of customers that agree to provide interval data will serve as an indicator of interest in the FTM model, as well as the price that customers require to host a battery on their site. • From the 100+ leads that agree to evaluation, GI Energy will schedule a site visit to further assess customer interest and inform Project site selection. • GI Energy will use the information collected during the site visit, in conjunction with interconnection costs and lease price point to provide Con Edison with thirty viable sites. From these 30, Con Edison will consider all of these factors and system need to determine final four project locations.

Scenario	Description
FTM vs. BTM market size and benefit (Phase 1)	Evaluate market size for customer-sited, FTM batteries compared with BTM batteries. • In Phase 1, GI Energy will generate 100+ leads for project sites. • Of these initial leads, GI Energy will use site visits and customer interview to select the top 30 Viable Sites for more comprehensive customer engagement. • The percent of leads eligible for final selection under the Project's FTM model will indicate market size expansion when compared with the sites which would be eligible for BTM sites. Evaluate grid benefit for FTM vs. BTM models based on maximum economic battery size, availability and location for locations where customer interval data is available to perform this analysis. For those customers who agree to participate in the free energy storage evaluation, GI Energy will determine the following. • Average size of asset in MWh that could be hosted by each customer • Average load reduction that could be obtained during local peak periods for BTM and FTM systems of same size • Number of viable sites within highest priority networks that would have been uneconomic under BTM model
Grid Benefit (Phases 3 & 4)	Evaluate availability of batteries as needed and impact of discharge to the system. • 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. Demonstrate system control through communications protocols.
Market Revenue (Phase 4)	Assess potential of bidding energy storage systems into established wholesale markets under NYISO rules. Determine magnitude of wholesale market revenues, based on a variety of dispatch methodologies. • If market participation is unavailable, the Project will continue to dispatch according to optimization protocols and shadow market revenues. Determine optimal dispatch protocol for batteries to stack value to grid and wholesale services. • Data will be collected and analyzed to measure whether the dispatch algorithms captured the optimal amount of revenue available while prioritizing grid benefit.

D) Checkpoints

This Project is a new and innovative demonstration that will be managed by Con Edison in partnership with GI Energy. The two companies will establish a Project management team and governance structure (see Section 2B) to review and monitor Project implementation. Key checkpoints, listed in Table 1-D-1, will identify points at which the Project team will evaluate implementation execution and determine the need for implementation strategy adjustments. Each checkpoint has associated key metrics; when implementation execution as measured at checkpoints do not meet expected targets, they will undergo further analysis to ascertain impacts on the Project and identify root causes. Through the quarterly report submission, as detailed in Section 4, 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 metrics may adjust up or down based on customer and market partner reaction to the marketplace, and operational and financial risk. These risks can include changing economic dynamics, NYISO DER roadmap implementation and the outcomes of REV and related proceedings.

Table 1-D-1: Checkpoints

Checkpoint	Description
Customer Acquisition (Phase 1)	**Measure:** Final site selection completed, customer interval data analyzed **When:** Phase 1: Midpoint and Completion **How:** GI Energy will provide a confidential monthly status report to Con Edison quantifying customers approached, customer pricing data received, interval data received and sites finalized. Phase 1 completion report will also report on this measure. **Expected Target:** Phase 1 Beginning: Identification of networks where relief is needed, identification of no less than 100 customer leads Phase 1 Midpoint: Identification of 30 viable customer sites and minimum of 20 sites for BTM vs. FTM analysis Phase 1 End: Selection of final four project sites **Impact:** Failure to acquire target customer numbers will delay Phase 2; may also demonstrate hypotheses 1a, 1b, 2a and 2b do not hold true **Solutions/Strategies if Results Below Expectations:** GI Energy will continually evaluate progress and utilize the Sales and Marketing function's expertise, and approach additional real estate professionals, energy partners, property owners, associations and intermediaries if adequate sites are not identified. If necessary, Con Edison and GI will consider adjusting number of sites and lease payment cap.

Checkpoint	Description
Construction/ Commissioning and Integration (Phase 2)	**Measure:** Installed and commissioned storage assets in compliance with all required permitting **When:** Phase 2: Midpoint and Completion **How:** GI Energy will provide a monthly commissioning report confidentially to Con Edison **Expected Target:** 4.2 MW/4.4MWh installed storage across 4 sites at Phase 2 completion **Impact:** Failure to install and commission target capacity will delay Phase 3 **Solutions/Strategies if Results Below Expectations:** GI Energy will work with Con Edison to proactively manage any permitting restrictions which might delay construction and commissioning of project sites. GI Energy will also continually evaluate progress and adjust to back-up project sites (one of the 30 not selected for final) if there is a site-specific issue.
Dispatch Optimization (Phase 3)	**Measure:** Ability to dispatch energy storage assets individually or in aggregate by Con Edison or GI Energy in a cyber secure, safe and reliable manner **When:** Phase 2: Completion Phase 3: Midpoint and Completion **How:** System Integration and Dispatch performance metrics **Expected Target:** Phase 2 end: GI Energy and SGS demonstrates aggregation and dispatchability of storage capacity Phase 3 Midpoint: GI Energy demonstrates reliable control of the system with appropriate cybersecurity protocols in place, actual load relief events completed in coordination with Con Edison grid requirements Phase 3 Completion: GI Energy and Con Edison demonstrate ability to control and dispatch assets in accordance to Con Edison requirements in addition to shadowing dispatch in wholesale markets **Impact:** An unreliable, sub-performing dispatch of aggregated storage capacity may disprove hypotheses 3a, 3b and 4b and/or delay Phase 4 **Solutions/Strategies if Results Below Expectations:** In-line with root-cause analysis, actions may include systems upgrades, modified systems integration, and/or process review.

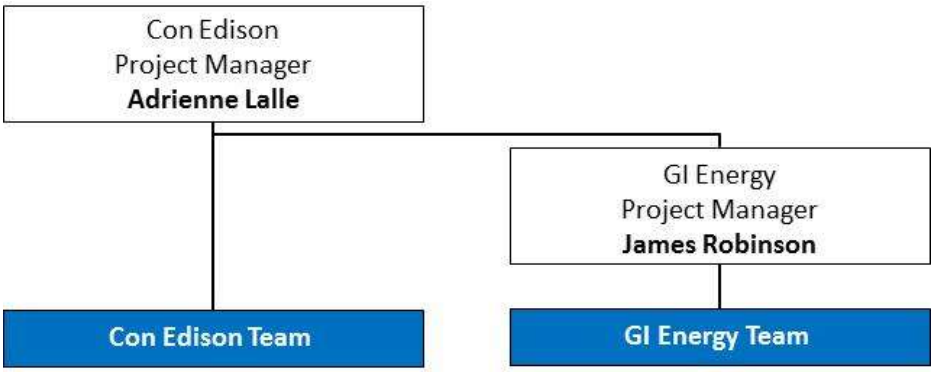
Checkpoint	Description
Market Participation (Phase 4)	**Measure:** Ability of energy storage assets to access wholesale markets and actual revenues realized **When:** Phase 4: After one quarter, every quarter until project end **How:** System Integration and Dispatch performance metrics, quarterly report **Expected Target:** Phase 3 Completion: enrollment of batteries, either individually or in aggregate into NYISO wholesale markets Phase 4 Completion: ability to dispatch assets in accordance with wholesale market rules while still meeting grid reliability requirements **Impact:** An inability to enroll batteries in NYISO will indicate 4a is not valid during demonstration timeline; an inability to dispatch assets to meet both wholesale market and grid needs may indicate hypothesis 4b is untrue under current market conditions, an inability to demonstrate NYISO revenue potential would indicate hypotheses 4c and 4d cannot be tested within demonstration timeframe and hinder market animation **Solutions/Strategies if Results Below Expectations:** Con Edison and GI Energy will work with NYISO and other relevant stakeholders to identify alternative forms of battery participation such as pilot projects. If no other suitable means exist, assets will continue to be dispatched to shadow NYISO markets and demonstrate the potential for revenues.

Section 2: Project Structure and Governance

A) Project Team

The Project is a partnership between Con Edison and GI Energy. In addition, SGS and NEC will serve as key knowledge and product partners in the respective roles as system integrator and battery manufacturer. Each partner will provide key skillsets and be responsible for certain Project functions in order to execute a successful demonstration project. Con Edison will maintain overall responsibility for Project execution; GI Energy is a contributing partner that will manage SGS and NEC. 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 facilitate interaction through its existing commercial customers and market partners and apply the skillsets of its team (Table 2-A-1) aligned with its roles and knowledgebase as a utility. Con Edison's 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 the demonstration.

Table 2-A-1: Utility and Partner Skillsets

Con Edison Team Key Skillsets	GI Energy Team Key Skillsets
• Program Management • Marketing • Distributed Resources • Information Resources • Community Engagement • Legal • Customer Support • Distribution Grid Planning	• Sales and Marketing • Project Management • Engineering and Construction • Storage Technology • Project Finance • Contracting/Financing • Storage Operations & Maintenance • Storage Integration/Communications (**SGS**) • Storage Dispatch (**SGS**) • Distributed Resources M&V

GI Energy has extensive experience in customer acquisition, due diligence, project development, construction, and operation of energy assets in New York. GI Energy has more than a decade of experience developing DER projects. Highlights include more than 10 MW of cogeneration in Con Edison territory, in addition to a multitude of cogeneration and geothermal heating and cooling projects across the country. GI Energy will maintain overall responsibility for siting, constructing, and managing the energy storage assets, as well as collecting and analyzing data comparing the dispatch of energy storage assets under differing interconnection configurations and business models.

B) Project Staffing

Con Edison has created a REV demonstration program team within its Distributed Resource Integration and Planning 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 & Commercial Battery Storage Demonstration Projects	REV Project Management
Jamie Brennan	Director, Demonstration Projects	Project Governance
Alex Trautner	Program Manager, Demonstration Projects	Project Oversight (REV Demonstration Program)
Sontra Williams	Manager, Distributed Resource Integration ("DRI") Project Management Office ("PMO")	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.

GI Energy is a committed partner for the Project. The Project will be managed out of GI Energy's New York office, with close oversight and coordination from GI Energy's Chicago headquarters.

GI Energy and its partner, Smarter Grid Solutions, will provide Con Edison with functional expertise to execute demonstration tasks and activities. The different phases of the project will be performed by GIE personnel and SGS personnel with expertise in the functional areas pertinent to each phase. Table 2-B-2 is a list of key individuals from GI Energy and Smarter Grid Solutions who will support this demonstration.

Table 2-B-2: GI Energy/Smarter Grid Solutions Project Team

Team Member	Title	Functional Area
James Robinson	Associate Director, Analytics	Overall Project Coordination
Tim Banach	Vice President, Development	Project Oversight
Amir Yanni	Senior Vice President, Construction & Engineering	System Design, Engineering, and Construction
Estelle Mangeney (SGS)	Senior Project Manager	Overall Project Coordination (SGS Component)
Graham Ault (SGS)	Development Director	Technical Design Component (SGS Component)
Ryan Sims (SGS)	Smart Grid Engineer	Technical Lead (SGS Component)

C) Roles and Responsibilities

The Project implementation 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 Project will be focused on obtaining implementation approval from Staff and finalizing the agreements between Con Edison and GI Energy.

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

Lead Responsibilities	Con Edison	GI Energy
Partnership Agreement		
Con Edison will enter into an agreement with GI Energy to delineate roles and responsibilities with respect to the Project execution.	**X**	

Phase 1- Customer Acquisition

GI Energy will be responsible for customer acquisition, installation, and commissioning of the 4.2 MW/ 4.4 MWh of total energy storage capacity across four customer sites. To this end, GI Energy will generate customer leads, conduct customer outreach and negotiate final lease terms during Phase 1. During the Customer Acquisition phase, GI Energy will be responsible for conducting the analysis outlined in the 'FTM vs. BTM market size and benefits' test scenario. Phase 1 will be complete upon successful execution of customer leases for four customer sites.

Lead Responsibilities	Con Edison	GI Energy
Customer Acquisition		
Con Edison will provide target network locations to GI Energy, provide critical input into vetting of customers, and determine final project sites. **GI Energy** will generate customer leads, conduct one-on-one education with customers, and negotiate final lease terms.	**X**	**X**
Lease Development		
GI Energy will develop customer leases through acquisition process. **Con Edison** will support this activity and approve final lease.	**X**	**X**
Load Profile Analysis		
GI Energy will collect the customer interval data and perform relevant FTM vs. BTM market size and benefits analyses. These will be reported to Con Edison.		**X**
Supply Chain Management		
GI Energy will conduct supply chain planning to meet the Project's execution timeline.		**X**

Phase 2- Construction/ Commissioning and Integration

In Phase 2, GI Energy will conduct the primary engineering, construction, integration, and commissioning activities. Con Edison will support these activities as needed. Phase 2 will be complete when GI Energy and SGS demonstrate the assets can be dispatched individually and in aggregate.

Lead Responsibilities	Con Edison	GI Energy
Engineering and Design		
GI Energy will lead the site and battery storage solution design and ensure the capability to establish a link to storage capacity. **Con Edison** will support this activity as needed, to include providing system and interconnection requirements.	**X**	**X**
Installation and Commission		
GI Energy will deliver 4.2 MW of inverter storage capability to Con Edison at the completion of Phase 2. **Con Edison** will support the interconnection of the systems.	**X**	**X**

Lead Responsibilities	Con Edison	GI Energy
Cybersecurity		
Con Edison will define the requirements.	X	
GI Energy with its partner Smarter Grid Solutions will adhere to Con Edison's requirements.		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	
GI Energy and SGS will design and build a control system to interface with Con Edison's control center.		X
Dispatch Testing		
GI Energy is responsible for interoperability with storage batteries.		X
Con Edison is responsible for integration with GI Energy and executing testing to demonstrate dispatchability.	X	

Phase 3- Dispatch Optimization

In Phase 3, GI Energy will work with Con Edison and SGS to test the technical ability of the energy storage assets to provide distribution level load relief to local networks in coordination with NYISO capacity, energy and/or frequency regulation markets to validate secondary revenue streams. GI Energy will assess the results of the dispatch and continue to improve protocols to maximize secondary revenue while maintaining grid benefit.

Lead Responsibilities	Con Edison	GI Energy
Dispatch Optimization		
GI Energy will demonstrate reliable control of the assets in response to load relief events while shadowing wholesale market participation to maximize asset utilization and potential wholesale revenue.		X
Con Edison will provide timely signals of load relief needs.	X	
NYISO Application		
GI Energy will lead application for assets to enter wholesale markets.		X

Phase 4- Market Participation

In Phase 4, GI Energy and Con Edison will expand and iterate on dispatch optimization. GI Energy will enroll the assets in NYISO wholesale markets after successfully demonstrating dispatch capability in Phase 3. Phase 4 will demonstrate the asset capacity to access wholesale markets and measure actual potential revenues.

Lead Responsibilities	Con Edison	GI Energy
Battery Enrollment		
GI Energy will enroll the Project assets in NYISO markets.		X
Con Edison will support this activity as needed.	X	
GI Energy will review dispatch data, analyze realized revenue in comparison with maximum revenue potential, and adjust dispatch to optimize.		X

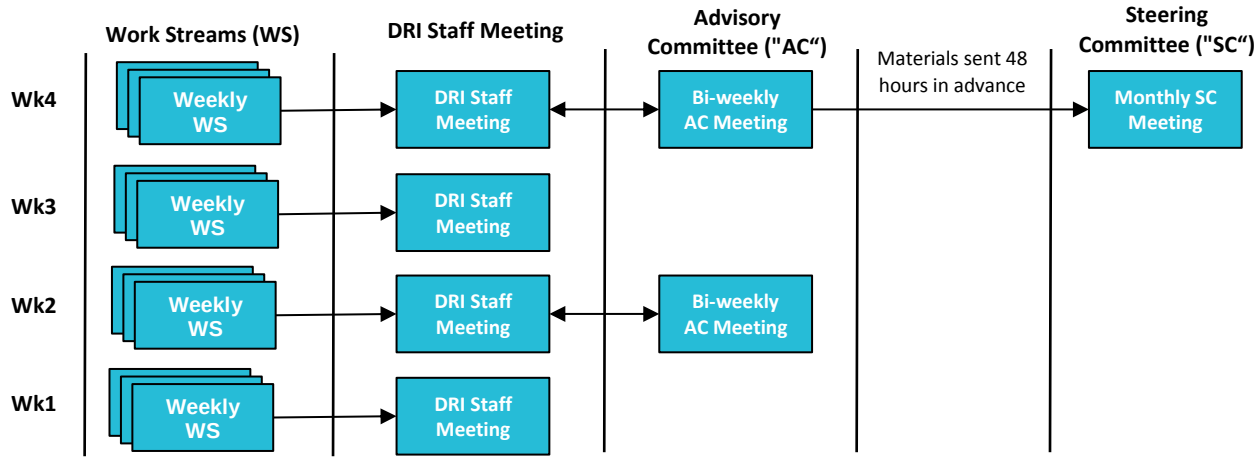
D) Governance

Con Edison will have overall responsibility for execution of the Project. The Company has put in place a governance structure detailed in the section below. The governance structure encompasses 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 implementation execution. 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 through a cross-functional advisory committee and a senior executive leadership steering committee. The governance structure will enable senior leadership and appropriate internal stakeholders to be fully engaged and allow outcomes and Project execution to be effectively tracked. Con Edison will manage the process as depicted in Figure 2-D-1.

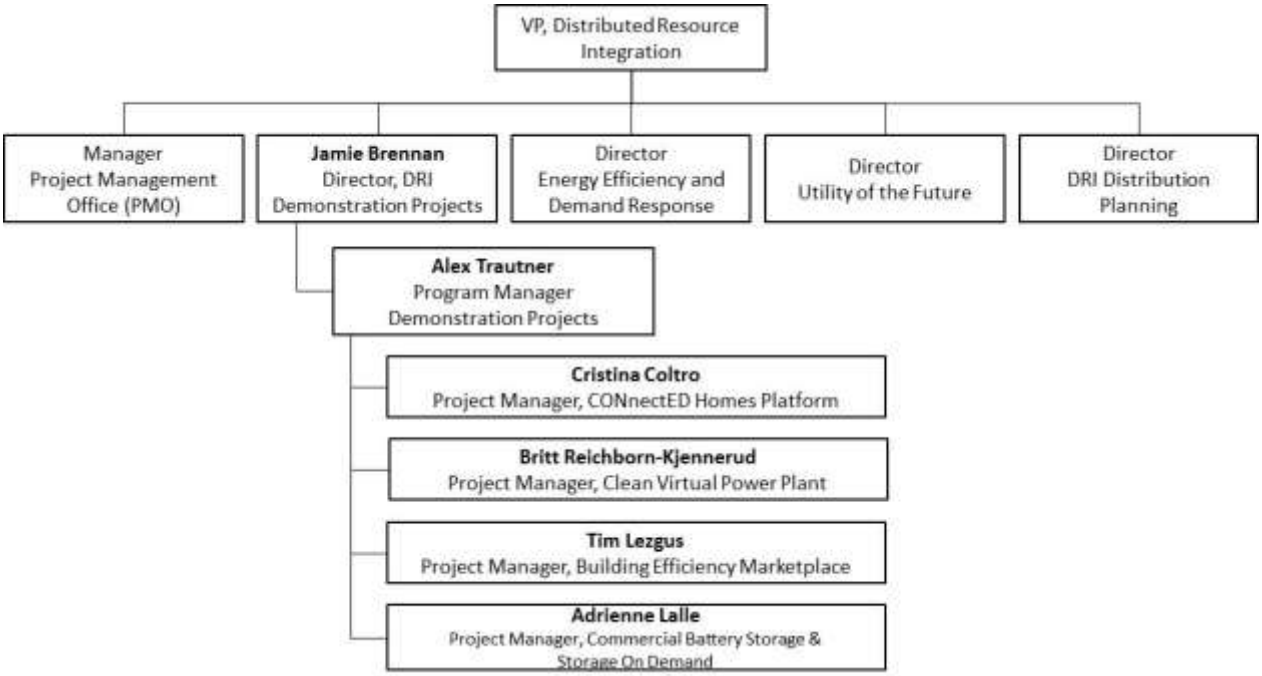
Figure 2-D-1: Con Edison's REV Demonstration Governance Process



Work Streams (WS)	**Purpose:** To discuss status and document issues and actions of individual WS • PMO leads will review status reports with WS leads through collaboration or face to face as needed • Issues/actions requiring escalation will be identified and documented • Outcomes will inform DRI Staff of progress/issues
DRI Staff Meeting	**Purpose:** To consolidate and formalize WS input, prepare for presentation to AC and SC, and debrief AC/SC meetings • Led by Vice President ("VP") (DRI) and includes PMO department manager and WS leads, as invited • Serves as "glue" that connects the WS with AC and SC
Advisory Committee (AC)	**Purpose:** To review consolidated list of WS issues, provide guidance/resources as needed, and prepare material for SC review • Facilitated and led by VP (DRI), includes all AC members • Agenda will include status updates from each WS, discussion on issues for resolution, and review of SC presentation materials (as appropriate)
Steering Committee (SC)	**Purpose:** To provide project status and present issues and deliverables for SC decision/approval • Facilitated and led by VP (DRI) • Strategic/policy decisions will be made • Meeting materials will include completed analysis, implications of analysis, specific decision/approval request, sign-off by all reviewers on request, and documentation of dissenting opinions (as applicable)

The Project manager is under the Director, Demonstration Projects, who reports to Con Edison's VP for DRI. DRI (Figure 2-D-2), formed in May 2015, is a proactive response to the evolving energy distribution markets in New York. This department is deemed critical by Con Edison to address customers' needs, move forward on REV initiatives, and adapt to the changing energy environment. DRI integrates infrastructure planning, innovative technical options, energy efficiency, and creative solutions to ensure continued reliability while service 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 that highlight progress made and escalate issues that require support from the organization to address resource needs, changes in scope, or externalities that might impact the Project.

The Advisory Committee is comprised 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 Advisory Committee will: provide guidance and input on strategic

priorities and policy; 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 into REV demonstrations.

Partner Governance Structure

GI Energy, as a partner to Con Edison, will enter into a contractual arrangement to provide the services needed to execute the Project Implementation Plan. GI Energy's New York office will convene weekly team meetings focusing on this demonstration project, during which project progress will be reported to Tim Banach, GIE's Vice President of Development. These meetings will occur in person at GIE's New York City Offices, with some participants participating remotely if necessary.

Tim Banach, GIE's VP of Development, will keep GIE's senior management team in Chicago updated through bi-weekly management phone calls. Final decisions on GIE's portion of the project will be made by GIE's senior management, in close coordination with the project leads in New York City.

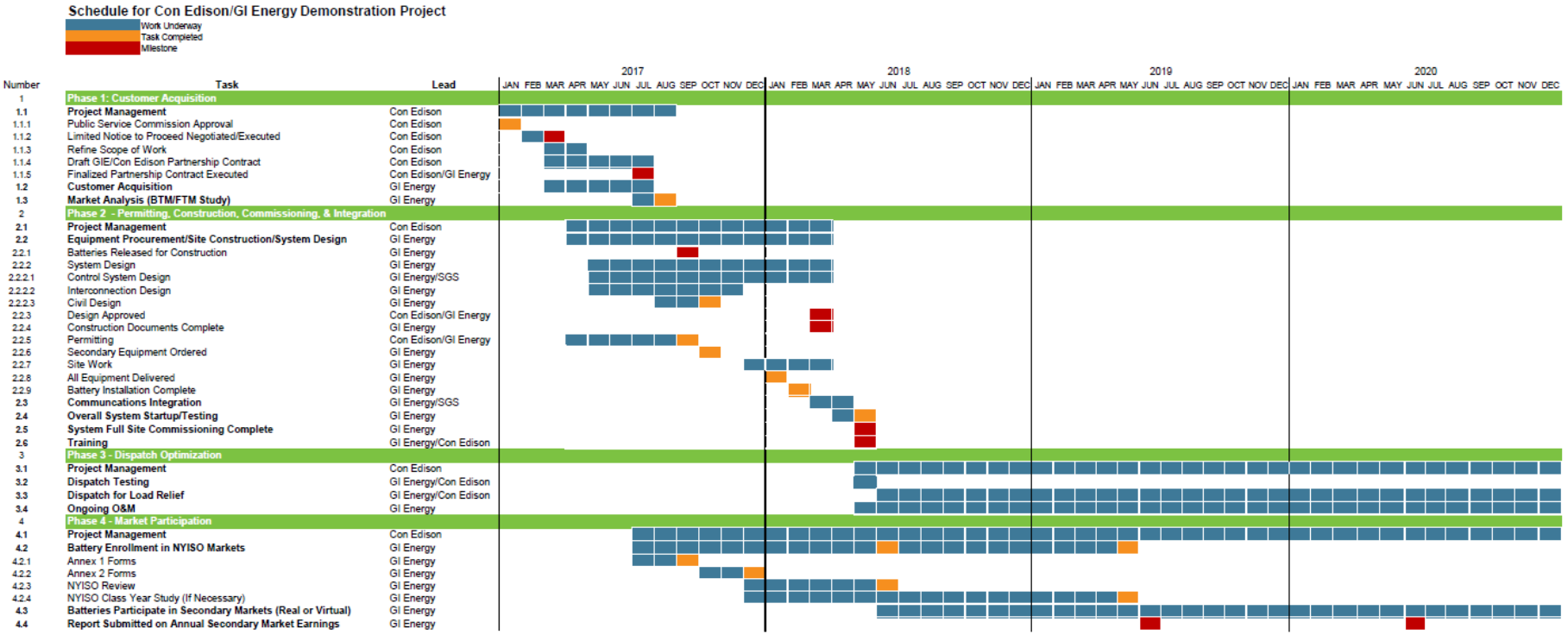
Section 3: Work Plan and Budget

A) Project Plan

Con Edison, in partnership with GI Energy, will implement the Project in four phases, as defined in the work plan and budget (Table 3-A-1). The plan details the phases, tasks, associated activities, and first level of sub-activities along with an overall budget estimate. The 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 participation, system integration, permitting, and wholesale market participation. 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 table. Con Edison, together with GI Energy, will monitor progress and milestones through various checkpoints, as discussed in Section 1, Demonstration Design, and 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-B-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. GI Energy's costs are commercially sensitive, competitive information and will be provided to the DPS confidentially.

Table 3-A-1: Work Plan



Number	Task	Lead
1	**Phase 1: Customer Acquisition**	
1.1	**Project Management**	Con Edison
1.1.1	Public Service Commission Approval	Con Edison
1.1.2	Limited Notice to Proceed Negotiated/Executed	Con Edison
1.1.3	Refine Scope of Work	Con Edison
1.1.4	Draft GIE/Con Edison Partnership Contract	Con Edison
1.1.5	Finalized Partnership Contract Executed	Con Edison/GI Energy
1.2	**Customer Acquisition**	GI Energy
1.3	**Market Analysis (BTM/FTM Study)**	GI Energy
2	**Phase 2 - Permitting, Construction, Commissioning, & Integration**	
2.1	**Project Management**	Con Edison
2.2	**Equipment Procurement/Site Construction/System Design**	GI Energy
2.2.1	Batteries Released for Construction	GI Energy
2.2.2	System Design	GI Energy
2.2.2.1	Control System Design	GI Energy/SGS
2.2.2.2	Interconnection Design	GI Energy
2.2.2.3	Civil Design	GI Energy
2.2.3	Design Approved	Con Edison/GI Energy
2.2.4	Construction Documents Complete	GI Energy
2.2.5	Permitting	Con Edison/GI Energy
2.2.6	Secondary Equipment Ordered	GI Energy
2.2.7	Site Work	GI Energy
2.2.8	All Equipment Delivered	GI Energy
2.2.9	Battery Installation Complete	GI Energy
2.3	**Communcations Integration**	GI Energy/SGS
2.4	**Overall System Startup/Testing**	GI Energy
2.5	**System Full Site Commissioning Complete**	GI Energy
2.6	**Training**	GI Energy/Con Edison
3	**Phase 3 - Dispatch Optimization**	
3.1	**Project Management**	Con Edison
3.2	**Dispatch Testing**	GI Energy/Con Edison
3.3	**Dispatch for Load Relief**	GI Energy/Con Edison
3.4	**Ongoing O&M**	GI Energy
4	**Phase 4 - Market Participation**	
4.1	**Project Management**	Con Edison
4.2	**Battery Enrollment in NYISO Markets**	GI Energy
4.2.1	Annex 1 Forms	GI Energy
4.2.2	Annex 2 Forms	GI Energy
4.2.3	NYISO Review	GI Energy
4.2.4	NYISO Class Year Study (If Necessary)	GI Energy
4.3	**Batteries Participate in Secondary Markets (Real or Virtual)**	GI Energy
4.4	**Report Submitted on Annual Secondary Market Earnings**	GI Energy

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 in Section 3A. GI Energy will provide updates to the Project manager for inclusion in the quarterly report and program management.

Project implementation costs will include the energy storage systems, customer lease payments, developer project management fees, installation, associated operations and maintenance services, operation and dispatch of the assets, financing costs, initial investment and integration of the energy storage assets into Con Edison's communication and control systems. GI Energy will be the asset owner during and after the demonstration period ends.

This demonstration will examine two main potential revenue sources: generation of system benefits and wholesale market revenues. Actual wholesale revenue realization is dependent upon several policy and regulatory changes that are a part of this demonstration. 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. System benefits are expected in phase 3 of the Project while wholesale market revenues are expected in phase 4. Table 3-B-1 does not include T&D system benefit estimates as this Project will be used to quantify this value. Changes in Project scope, outcomes of the REV proceeding, and implementation of NYISO DER Roadmap may impact revenue estimations. In response to any of these changes, Con Edison will provide an update to this Project Implementation Plan in the quarterly report updates to the Commission.

Table 3-B-1: Commercial Battery Storage Budget

	2017	2018	2019	2020	2021	2022
Expected Cash-Out:	$0.6 M	$2.4M	$2.4M	$2.4M	$2.4M	$2.4M
Expected Cash-In:	$0	$0	$0.12M	$0.19M	$0.19M	$0.19

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 Tables 3-A-1 and 3-B-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, use case results, and market learnings as well as other observed project benefits. The quarterly report 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
    - Progress Assessment
    - Issues
    - 3.1.1.1 Sub-Activity 1.2
      - 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

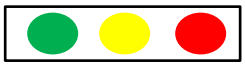
4.0 Conclusion
- 4.1 Lessons Learned
- 4.2 Recommendations

The quarterly report will focus on the phase(s) occurring within the previous quarter or scheduled to occur within the next two quarters. This will ensure the report is focused on the current progress, while providing the Commission insight into the near future. The governance structure and Project management team will maintain oversight over all Project progress and

include in Section 2.3 a discussion of any impacts on the Project execution beyond the report's timeline.

Checkpoint, milestone, and activity progress will provide detailed status information 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.

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

Checkpoint: Installed and commissioned storage assets in compliance with all required permitting
Target: 4.2 MW/4.4MWh installed storage across 4 sites (Phase 2 completion)
Progress Status: 

Budget Impact: (Yes/On-Target/No Impact)
Incremental Cost Incurred:

Previous Quarter Updates:

Future Quarter Impacts:

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