

Reforming the Energy Vision

Demonstration Project Q4 2018 Report

Integrated Electric Vehicle Charging & Battery Storage System



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1.0 Executive Summary

Rochester Gas and Electric Corporation (RG&E or the Company) submits this quarterly report on the progress of the Integrated Electric Vehicle (EV) Charging and Battery Storage System Demonstration Project (Integrated EV & BSS Project). The Integrated EV & BSS Project is demonstrating how battery storage can improve the economics of EV adoption and minimize its impact to the electric grid. The Integrated EV & BSS Project is demonstrating how battery storage can be integrated with DC fast and level 2 EV chargers in order to manage cost impacts while optimizing the value of the battery system. The Integrated EV and BSS is located at the RG&E Operations Center at 1300 Scottsville Road in Rochester, New York. The system consists of two DC fast chargers, five level 2 chargers, and a 150kW and 600kWh stationary battery with a Battery Management System (“BMS”) to optimize all resources, including building demand.

The Integrated EV & BSS Project consists of two phases, including: (Phase 1) Integrated System Installation, and (Phase 2) Hypothesis Validation and Reporting. The entire project is anticipated to take approximately thirty-two months which includes site preparation, construction, and commissioning of the EV chargers and battery system as well as the validation and testing of the hypothesis, use case functionality and final analysis.

During Q4 2018, the project focus has been on completing Civil and Electrical Construction, battery storage installation, acceptance testing and commissioning. The 150 kW/600 kWh battery, one DC Fast charger, and five Level 2 EV chargers have been deployed and placed into service at RG&E’s Scottsville Road facility in Rochester.

Plans for Q1 2019 include:

- Installation of the second DC fast charger
- Development of use case process and procedures
- Data collection on the battery performance at the site
- Finalization of charging station contracts

The following report provides a progress update on the tasks, milestones, checkpoints, and lessons learned to date.

2.0 Demonstration Highlights since the Previous Quarter

2.1 Activity Overview

Activity completed and results for Q4, 2018 included:

- Completion of site construction
- Delivery and installation of the battery
- Delivery and installation of the Level 2 and one of the DC Fast chargers
- Testing and Commissioning of all associated site equipment

2.1.1 Completion of site construction

The pads to be used for the EV chargers were poured on October 23rd and the pad for the battery was poured on October 26th. Installation of bollards to protect the EV chargers was also completed on October 26th. Completion of the wiring to EV chargers was completed on November 1st. Switchgear installation was completed on November 30th.

2.1.2 Delivery and installation of the battery

The 150 kW / 600 kWh lithium-ion battery system was provided by Powin Energy. Factory acceptance testing was completed at the Powin facility in British Columbia, Canada on November 19th. The battery system was delivered to the project site and installed on November 28th.

2.1.3 Delivery and installation of five Level 2 and one DC Fast chargers

The five level 2 chargers and one of the two DC fast chargers were delivered on September 15th and were installed on November 7th. The second DC fast charger, which is ChargePoint's next generation "Express Plus" charger will be delivered and installed Q1 2019.

2.1.4 Testing and Commissioning of all associated site equipment

Testing and commissioning of the integrated EV and battery storage system included testing the following components: AC panel, DC cabinet including disconnect switch, battery stack, PCS and battery enclosure (HVAC, lighting, fire suppression system). Commissioning also included demonstration of communications between the array controller, advanced meter controller, Powin software, and the inverter as well as a successful completion of the anti-islanding functionality. Commissioning of the EV chargers included demonstrations and confirmation of expected performance. Charger commissioning was completed on December 10th and battery system commissioning was completed on December 31st.

2.2 Metrics and Checkpoints

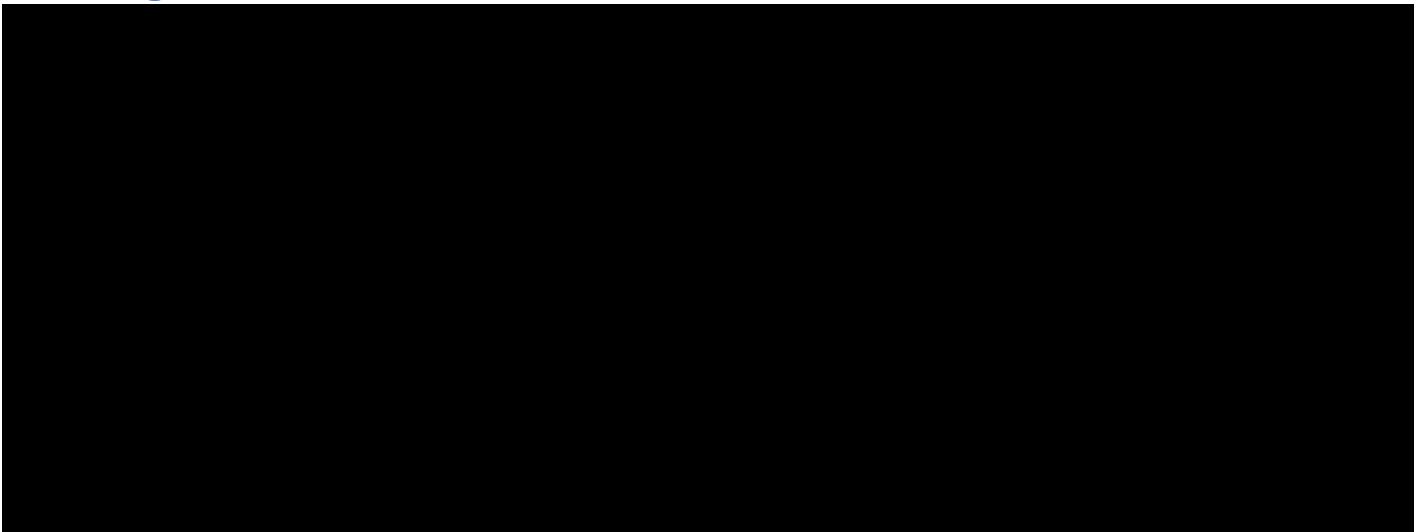
The demonstration project has completed all the milestones up to “Phase 1 – Execute” and milestones “Phase 2- Initiate” and “Phase 2 – Plan” portion of the project as defined in the Implementation Plan, therefore, no metrics or checkpoints are being captured at this time. Metrics and Checkpoints will be captured as part of the “Phase 2 – Execute” portion of the project.

2.3 Issues

No issues were experienced during the 4th Quarter reporting period.

3.0 Work Plan

3.1 Budget Review



3.2 Updated Work Plan

Milestone	Description	Date
Phase 1 - Initiate	Vendors Selected and Kick Off Meeting	Complete
Phase 1 - Plan	Engineering and Procuring Equipment	Complete
Phase 1 - Execute	Construction and Testing	Complete
Phase 1 - Closeout	Commissioning and Turnover	January 2019
Phase 2 - Initiate	Review Metrics and Information Gathering	Complete
Phase 2 - Plan	Develop Test Plan and Determine Roles & Responsibility	Complete
Phase 2 - Execute	Hypothesis Validation and Data Collection	January 2019 – December 2020
Phase 2 -Closeout	Results and Report Creation, Scalability Analysis, Demonstration Project Completion	October 2020 - December 2020

The work plan shown above as developed as part of the Implementation Plan has no changes as the project is currently on track to meet all milestones. Milestones “Phase 1 – Initiate, Plan, and Execute” as well as “Phase 2 – Initiate and Plan” are all complete.

3.3 Next Quarter Planned Activities

In Q1, 2019 the project team aims to complete the following tasks:

- Completion of Phase 1 Activity Including:
 - Installation of the second DC fast charger
- Initiation of Phase 2 Activity Including
 - Development of use case process and procedures
 - Begin data collection on the battery performance at the site
 - Finalization of charging station contracts

4.0 Conclusion / Lessons Learned

Completion of construction and commissioning in Q4 helped to build our knowledge of and experience with developing complex battery storage systems. Construction schedules for battery systems can sometimes be challenging given the unique nature of this type of project. For example, municipalities do not always have experience and defined procedures for battery storage systems and therefore, robust and proactive communications with municipal partners is key to ensuring timely permits. Additionally, battery system import logistics can be a timely endeavor and can contribute to the long lead times of battery systems.