

Advanced Sodium-Sulfur (NaS)
Battery Energy Storage System Project
at MTA Long Island Bus

Monthly Report

June 23 – July 24, 2006

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Contract/Agreement/Project Identification

EPRI Project ID 61892, Agreement Nos. CF-009315-12191 and EP-P19391/C9574
NYSERDA Agreement No. 8718

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1. Project Description

Install and demonstrate an advanced Sodium Sulfur Battery Energy Storage System (NaS BESS) at the Metropolitan Transportation Authority Long Island Bus facility located at 700 Commercial Avenue, Garden City, New York.

The BESS shifts the electrical demand of the facility's natural gas bus refueling compressor station from peak utility periods to off-peak periods. The BESS is comprised of a sodium sulfur battery system manufactured by NGK Insulators, Inc. (NGK) with a nominal rating of 1MW and 6.5MW-hrs, a Power Conditioning System (PCS) manufactured by ABB and system performance monitoring. ABB is responsible for the BESS installation, start-up and commissioning.

System performance will be monitored for a period of 18 months following commissioning of the BESS. Monitoring is provided by EnerNex under a US DOE/Sandia National Laboratories contract.

2. Project Funders

Metropolitan Transportation Authority Long Island Bus (LIB) (customer)

American Public Power Association (APPA)
CEA Technologies, Inc. (CEATI)
Electric Power Research Institute (EPRI)
New York Independent System Operator (NYISO)
New York State Energy Research and Development Authority (NYSERDA)
United States Department of Energy (US DOE)

Consolidated Edison, Inc. (Con Ed)
FirstEnergy Corp.
Hydro One
Hydro-Québec
Long Island Power Authority (LIPA)
New York Power Authority (NYPA) (project developer)
Public Service Electric and Gas Company (PSE&G)
San Diego Gas & Electric (SDG&E)
Southern Company
Tennessee Valley Authority (TVA)

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3. Accomplishments/Milestones During Reporting Period

- Nassau County Department of Health has classified the sodium sulfur batteries as bulk chemical storage due to the volume of sodium present. A permit is required and is expected to be issued the week of 7/23.
- The site layout was approved by the Nassau County Department of Public Works (the property owner).
- A package containing all of the documents required to support the Interconnection Agreement between the MTA LIB and LIPA was submitted to LIPA on July 19. This package consisted of one-line and three-line diagrams, breaker speed curves, and materials related to the protection and control scheme. In total, this package exceeded 300 pages.
- All design parameters requested for the grounding transformer were supplied by LIPA. One solution for the grounding transformer, utilizing a zig-zag design, was submitted to LIPA in the package above. A second solution, utilizing three, single-phase transformers, will be submitted for evaluation the week of 7/23, to assist in locating an appropriately sized transformer with the best availability.
- Battery modules arrived in New York and are currently storage awaiting installation of battery enclosures.
- The 4160/480V transformer has been delivered.
- Manufacturing of the PCS units is complete.
- The NGK control cabinet has been manufactured and is in transit to the site.
- Manufacturing of the battery enclosures is complete; delivery will be July 25.
- Conduit installation completed and concrete pads were poured on 7/11.
- NYPA will perform witness testing of the ABB PCS units on August 2nd and 3rd in New Berlin, WI.
- Verizon confirmed that positron equipment for high voltage protection of the lease lines is not required to terminate the DTT lease lines. The proximity of the railroad tracks creates an infinite ground mat that significantly violates the 300V perimeter boundary of the positron equipment and renders it useless.

4. Issues/Solutions

- Batteries heaters will need power during outages to prevent battery solidification if the state of charge is less than 100%. / This is a resistive load and does not require the NaS batteries to be connected. The heaters and heater controllers will be powered as soon as they are installed.
- LIPA interconnect approval could impact the project schedule. The major concerns are the lead-times of grounding transformers and the DTT lease line.

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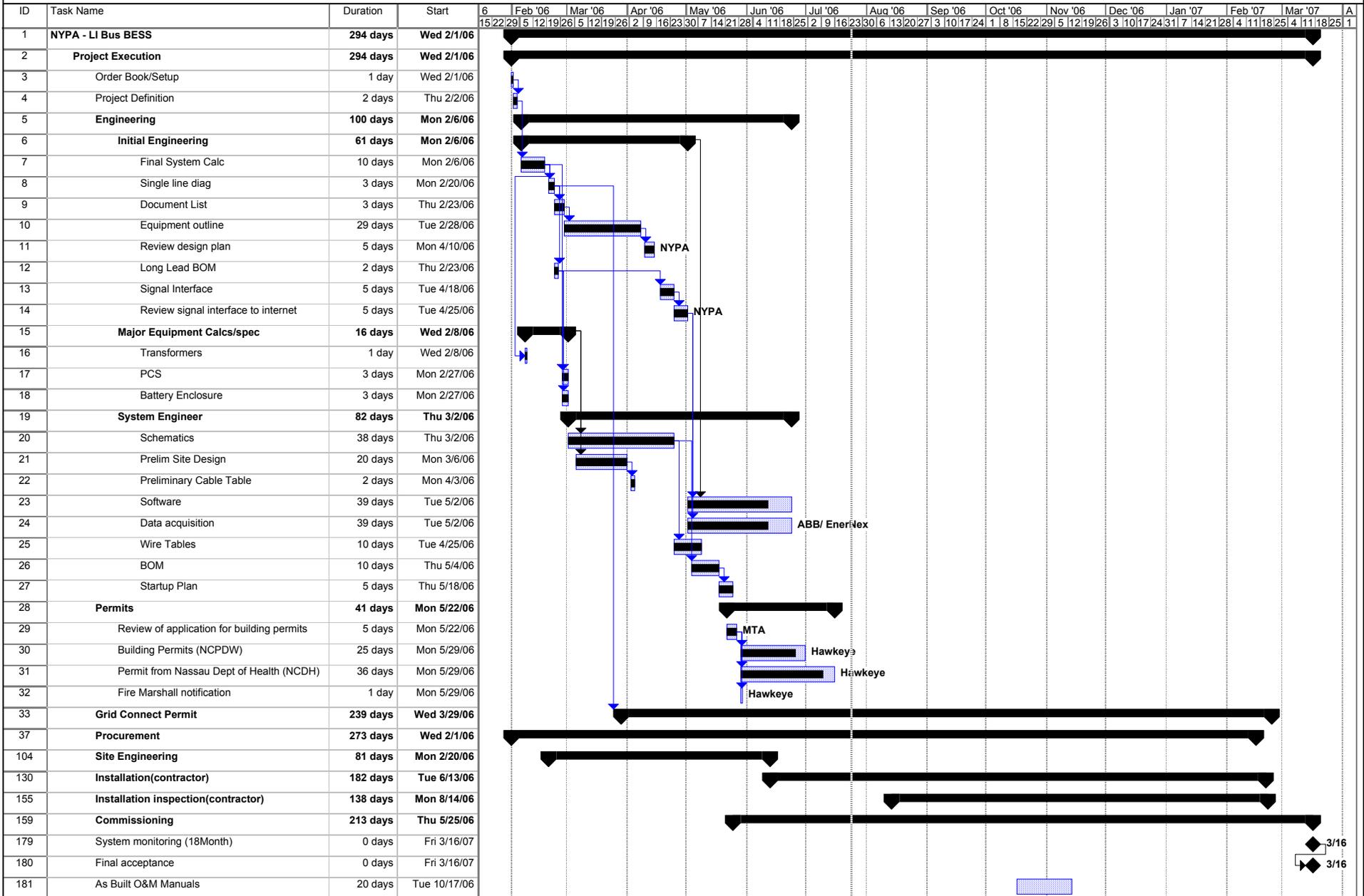
5. Comments

- NaS battery modules are shipped in protective packaging to prevent exposure to water and humidity. Once the modules are removed from this packaging, required for installation into the battery enclosures, the battery heaters and their controllers must be energized within three to four weeks.
- LIPA suggested that it may be feasible to bypass the direct transfer trip signal when the system is in charging mode. Modifications were made to the system design to allow for this, and were submitted as part of the interconnections requirements package.
- The feasibility of implementing an interconnection to a secondary feeder in order to minimize islanding of the BESS was explored. Due to the nature of LIPA's radial grid and the field switching performed by LIPA to reroute power in the field, it was determined that interconnection to a secondary feeder was not feasible.

6. Schedule

The project schedule is attached. NYPA and ABB are working to reduce the lead time of the grounding transformer.

NYPA
LI BUS BESS
Project Schedule



Project: LI Bus Project Schedule BL Re
Date: Mon 7/24/06

Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

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