

# **New York State Electric & Gas Corporation**

## **Revised 2013 Five-Year Plan Electric Research and Development Report**

### **Pursuant to State of New York Public Service Commission Orders Related to the Reporting of Research and Development Activities**

**May 31, 2013**

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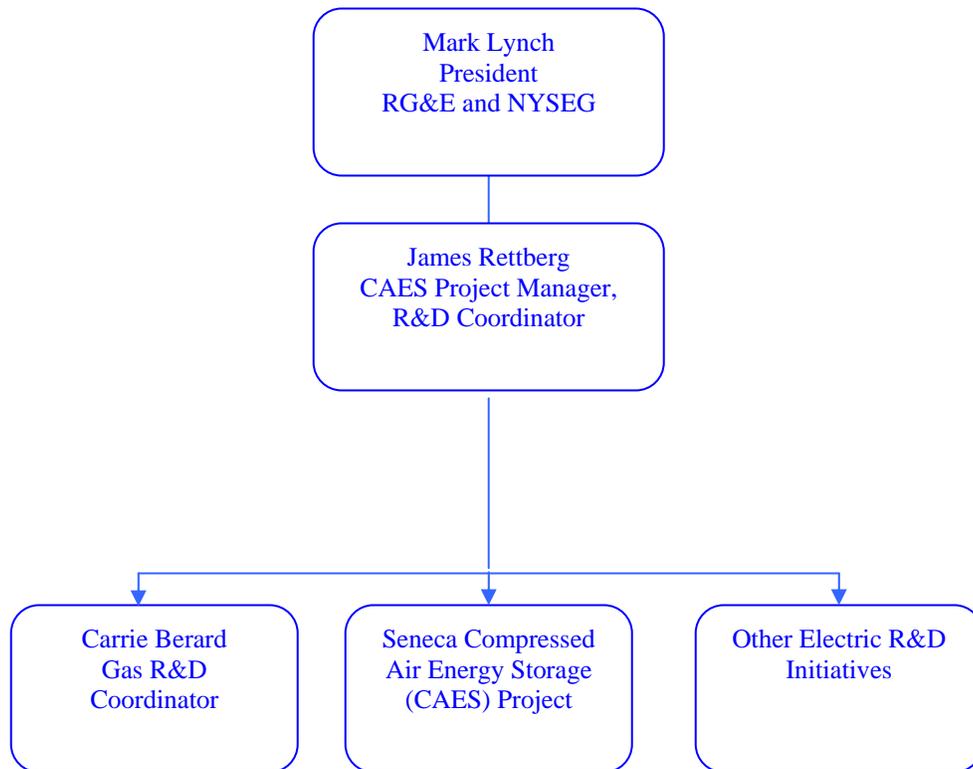
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## ORGANIZATION CHART



## Introduction

Beginning in 2004, the R&D function at NYSEG and RG&E has been administered by a combined staff in the Energy Technology Group. NYSEG's staff will continue to maintain an electric R&D function through a staff primarily focused on Gas R&D supplemented by project specific support from staff at both NYSEG and RG&E; however, future electric R&D projects will be funded by the respective Business Areas.

## Goals and Objectives

R&D activities are focused on preparing for the future by providing technology that:

- Increases system operational performance
- Improves restoration time
- Reduces outage incidence
- Lowers operating cost
- Improves customer satisfaction
- Assists in meeting emerging regulatory requirements
- Provides growth opportunities
- Improves system efficiency
- Improves safety

As areas of interest are identified the value and need for research projects are evaluated for each company. Projects of mutual benefit to NYSEG and RG&E are coordinated, sharing costs on a proportioned basis to accomplish increased benefits at a reduced cost to both companies.

## Special Projects:

### ***Seneca Compressed Air Energy Storage Project***

The Seneca Advanced CAES R&D project proposal submitted to the DOE was for a 150 (+/-) MW plant to be built adjacent to the former NYSEG Seneca Gas Storage Facility. The budget level cost estimate for the project was \$125-million, and in February, 2010 the DOE awarded NYSEG a \$29.6-million Smart Grid Demonstration Grant. NYSERDA also agreed to provide funding to the project up to \$250,000 for Phase 1 related activities. The CAES

Project development was proposed in three phases:

The objective of Phase 1 is to perform front end engineering design including evaluation of two technologies, capital cost estimates, updated energy market revenue forecasts, characterization and plans for development of underground salt caverns in which to store compressed air for on-peak release and electric energy generation. The budgeted cost for Phase 1 was \$2.5 million and time to complete was approximately 12 months. Phase 1 was started in November 2010 and is winding down currently.

Phase 2 would have included the plant construction, and Phase 3 would have consists of two years of commercial demonstration; testing and performance reporting to the US DOE and NYSERDA.

**Status:** NYSEG has completed its Phase 1 engineering and financial evaluations for the above-referenced project. NYSEG will not be proceeding into Phase 2 project development because our analysis does not demonstrate that the project results in a sustained, positive ratepayer benefit over the project lifetime. NYSEG has submitted a formal project report detailing the results of the Phase 1 studies to management, and has submitted the final technical report to US DOE and NYSERDA in September 2012.

## Internal Research

NYSEG internal electric research projects are categorized into the main process areas of

- Distribution
- Distributed Resources

## Distribution

Our Electric Distribution Program investigates a variety of technologies, focused on:

- Reducing operating costs and future expenditures for capital equipment;
- Improving and optimizing reliability of the distribution system;
- Improving and enhancing electric service for our customers.

*Projects: None budgeted*

## **Distributed Resources**

NYSEG's Distributed Resources Program would include energy generation, energy storage, and the use of waste heat where the resource(s) are typically located close to the user. The primary objective would be to study small modular sources of electric generation and storage distributed around the electric distribution system to provide NYSEG with supply and T&D alternatives, and our customers with credible information. Success in this program area in particular requires close cooperation with the Coordinator of the gas R&D program and the resources available both inside and outside of the company.

*Projects: None currently budgeted*

## **Transmission**

Projects within NYSEG's Electric Transmission Program would investigate a variety of technologies to:

- Reduce operating and maintenance costs, as well as future capital equipment costs.
- Increase operational flexibility enabling the strategic and competitive operation of the transmission system.
- Minimize and control environmental health and safety impacts.

Electric transmission research involves work relevant to overhead and underground transmission lines, substation equipment and protective relaying, controls, and monitoring systems. The program's primary objective is to increase availability, reliability, and performance of this equipment.

*Projects: None currently budgeted*

**NEW YORK STATE ELECTRIC & GAS RESEARCH, DEVELOPMENT, AND DEMONSTRATION  
PROGRAM EXPENDITURES  
(\$000)**

| PROJECT TITLE  |  | ACTUAL COST  | ANTICIPATED EXPENDITURES |              |              |              |
|--|--|--------------|--------------------------|--------------|--------------|--------------|
|  |  | 2012         | 2013                     | 2014         | 2015         | 2016         |
| <b>Administration</b>  |  |              |                          |              |              |              |
| Research & Development (Salaries)  |  | 0            | 0                        | 0            | 0            | 0            |
| <b>Total Administration</b>  |  | <b>0</b>     | <b>0</b>                 | <b>0</b>     | <b>0</b>     | <b>0</b>     |
| <b>Projects</b>  |  |              |                          |              |              |              |
| Seneca CAES  |  | 92           | 0                        | 0            | 0            | 0            |
| <b>Company contributions to industry research and development programs</b> |  |              |                          |              |              |              |
| NYSERDA  |  | 1,025        | 1,025                    | 1,025        | 1,025        | 1,025        |
| <b>TOTAL</b>   |  | <b>1,117</b> | <b>1,025</b>             | <b>1,025</b> | <b>1,025</b> | <b>1,025</b> |

# ABBREVIATIONS

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|         |  |
|---------|--|
| DOE     | US Department of Energy                              |
| NYSEG   | New York State Electric & Gas                        |
| NYSERDA | New York State Energy Research Development Authority |
| RG&E    | Rochester Gas and Electric                           |
| SBC     | Systems Benefit Charge                               |
| T&D     | Transmission and Distribution                        |