Public Service
of New Hampshire

The Northeast Utilities System

PUBLIC SERVICE OF NEW HAMPSHIRE

DISTRIBUTION
GEOGRAPHIC INFORMATION SYSTEM
JULY- DECEMBER 2011 PROGRESS REPORT

December 29, 2011

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1. Summary

The Settlement Agreement approved by the Commission in PSNH's distribution rate case (Docket No. DE 09-035) required the implementation of a Geographic Information System (GIS) in order to support an outage management system (OMS). Section 6.3 of the Settlement Agreement stated:

> 6.3 Upon approval of the Settlement Agreement, PSNH will initiate and complete a High Level Design for the GIS project by July 1, 2011. The High Level Design will include project management details sufficient to establish milestones, base schedules, budget expenditures, and the vendor selection. PSNH commits to install and have operational those elements identified in accordance with the schedule established in the High Level Design by December 31, 2014. On a semi-annual calendar year basis commencing on July 1, 2011, PSNH will provide a progress report to the Settling Parties detailing project milestones and achievements for the prior 6-month project period. Additionally, the semi-annual reports shall include key project dates for the remainder of the project, comparison of capital and O&M expenditures to planned REP II budget amounts and a detailed definition of tasks for the upcoming 6-month and 12-month periods. The High Level Design will also incorporate design of a GIS-based Outage Management System (OMS), including an implementation schedule. Prior to the implementation of a GIS-based OMS, PSNH will continue to implement enhancements to its existing OMS that will provide improved outage restoration information to customers, state officials and the general public.

In support of this provision of the Settlement, a multi-phase GIS project was identified. Figure 1 represents the deployment schedule as presented to the NHPUC in the High Level Design submitted in June 2011.

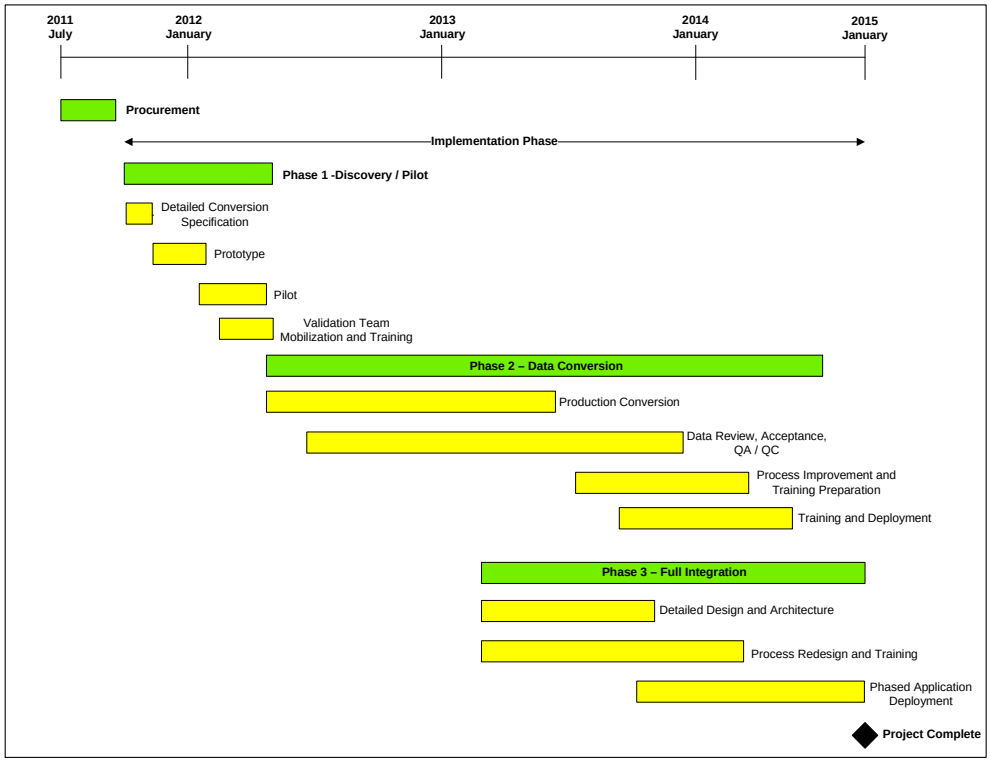

Figure 1 – PSNH GIS Project Schedule and Milestones

The multi-year project continues to track to the schedule identified in Figure 1 and expenditures are within expectations for the early stages of the project.

This document provides a semi-annual update for the period July to December 2011, in accordance with the Settlement Agreement. This report includes a six-month update on status and budget, and identifies tasks on the six- and twelve-month horizons.

2. Progress (July- December 2011)

After issuance of a Request for Proposal (RFP) seeking a highly-qualified vendor to provide GIS conversion and programming, PSNH selected Ramtech as the GIS project vendor for data conversion and GIS application development services. Ramtech, in conjunction with internal Northeast Utilities Information Technology (NU IT) resources, will build the GIS platform that meets the functional requirements of the High Level Design submitted to the Commission on June 24, 2011. Based on the work performed to date, the GIS will serve not only as a reliable foundation for an Outage Management System (OMS) but also as an engineering and reliability analysis tool. Although the implementation project is only in its early stage, PSNH continues to anticipate completion by December 31, 2014.

The following key milestones were achieved during the six-month reporting period:

1. Selection of Ramtech as the prime conversion vendor - The Ramtech team brought forth demonstrable expertise on recent projects at utilities including Vectren and Southern California Edison.

2. Phase 1 Discovery / Pilot Kick-Off – With contracts formalized with Ramtech, the implementation phase of the project was initiated. This involved procuring necessary third party licenses and preparing PSNH source material.

3. Detailed Conversion Specification Completed - A detailed Conversion Specification Document was finalized. This includes rules to govern the translation of PSNH data into the new GIS. The specification defines how to transfer every type of equipment (such as transformers, switches and all other distribution system devices) from paper sources, into an electrically connected GIS model.

4. Conversion of Prototype Data Delivery and Review - The “prototype”, a GIS representation of a variety of PSNH infrastructure (substation, overhead, underground), density (rural, urban), terrain (lines by road and lines in right of way), and data sources (circuit maps, pole records, transformer records, customer information system), was created. The purpose of the “prototype” is for the vendor (Ramtech) to demonstrate understanding of PSNH infrastructure and data conversion requirements. The “prototype” is currently being analyzed by PSNH to identify potential improvements in preparation for the forthcoming pilot.

5. Detailed Pilot Project Planning - A pilot project covering a service area of three substations and ten circuits in Laconia, NH was identified. The pilot provides a larger scale demonstration of the vendor’s capabilities. Data sources for the pilot conversion include: overhead and underground circuit maps, circuits in Rights of Way, substation configuration, pole records, transformer records, and customer location information.

6. Initiation of Business Process Improvement Activities - Business process change to incorporate GIS into PSNH’s current business process has begun. A Facility Design / Build / Close out team has been formed with representatives from Customer Operations, Energy Delivery, and GIS. The goal is to determine and maintain desired

data accuracy and timeliness going forward. This team will identify how distribution facilities in GIS will be designed moving forward and how the GIS will be maintained up to date.

7. Designed and Constructed the GIS Hardware and Software - The design of the GIS infrastructure was finalized. The hardware and software were procured, configured and installed for development and testing. These components consist of servers, software and databases for Oracle Spatial, Esri desktop, web portal, and the GE Smallworld to Oracle Spatial Synchronization.

8. Designed and Constructed Base Esri Functionality - The detailed design and construction of the base functionality for an end-user interface, both viewing and editing capability. This initial development will enable PSNH users to perform data acceptance in the target end-user environment, and to ensure that the software is consistent with the modified business processes.

9. Accommodate PSNH Data Needs – NU Enterprise GIS was updated to include PSNH-specific facilities and assets. These updates were completed within the prototype data conversion.

10. Two key positions have been filled with full time focus on the PSNH GIS project: 1) GIS Business Process Coordinator and 2) Team Leader – GIS Conversion. Additional resources will be added to support the conversion phase of the project.

3. Performance to Budget

As of December 31, 2011, PSNH will have collected from customers approximately $3M in support of capital investment and approximately $300k in support of O&M under the Settlement. Table 1 provides a comparison of budgeted amounts to actual expenditures as well as a forecast for the remainder of the project. The total cost of the GIS project is heavily weighted towards Phase 2, production data conversion (both to the vendor and internal acceptance and data cleanup activities). During 2012, PSNH expects that the pace of expenditures will greatly increase as staffing and vendor production increases. PSNH will convert over 4,500 paper "one line diagrams" of PSNH's distribution overhead and underground system to electronic format in order to be incorporated into the GIS.

	Budget	Total Actuals All Years	2011 YTD Actuals to Oct 31	2012-2014 Budget
Capital	$10M	$1.1M	$1.01M	$8.9M
O&M	$1M	$21,000	$19,000	$979,000
TOTAL	$11M	$1.121M	$1.029M	$9.879M

Table 1

4. Upcoming Activities

Over the course of the next six months (January- June 2012), PSNH will undertake the following activities:

1. Pilot Area Conversion – PSNH will convert a larger geographic distribution area in order to further refine the conversion specifications and validate the production conversion and

acceptance processes. The pilot area will include a subset of the City of Laconia served from PSNH's Tilton Area Work Center.

2. Mobilization of the Production Team – PSNH will develop and train a team to perform quality review for acceptance of the Area Work Centers' data deliveries.

3. Key Interface Development – PSNH will develop an interface between the GIS and an electrical engineering analysis application. This will allow PSNH to validate that data is useable in an outage management system.

4. Business Process Improvement – Continuation of the business process improvement activities will include completion of "to-be" processes (i.e. moving from manual to automated processes), and development of an organizational change management communications plan (i.e. introduce GIS to PSNH employees, etc.).

5. Data Conversion – Conversion and acceptance of the distribution system infrastructure for two area work centers out of eighteen. Appropriate resources will be hired and trained.

6. Acceptance of GIS Infrastructure – Hardware and software components will be tested by PSNH end-user employees for functionality and performance.

7. Continue Refining User Interface – PSNH will review, refine and update the configuration of the Esri user interface. In order to facilitate the maintenance of accurate information, a tool will be developed allowing equipment characteristic editing and circuit configuration changes by the PSNH user.

8. Continue to Refine Cartographic Standards – The team will update configuration files that define all aspects of the look and feel of the displayed maps.

During the second half of 2012, PSNH will undertake the following major activities:

1. Data Conversion – Conversion and acceptance of the distribution system infrastructure for five additional area work centers out of eighteen.

2. Integration – PSNH will develop and test interfaces to existing software applications to enable process automation and reduce duplicate data entry. These systems include a graphical design tool, customer information system, trouble reporting system, and engineering analysis tools.

3. Employee Outreach – PSNH will act upon the organizational change management and communications plan to educate, inform and train employees of the new tools, data access, and processes.

5. Conclusion

During this reporting period, PSNH completed the conversion of a prototype data set. The prototype demonstrated that the vendor understood the scope of the conversion, validated that the conversion process will yield sufficient data to support the future implementation of an Outage Management System, and allowed PSNH employees to better understand mapping standards. PSNH has also initiated business process improvement activities to ensure the GIS data are maintained in a timely and accurate manner, and that PSNH is best organized to take advantage of the GIS and its benefits. In summary, the project continues to track to the schedule and budget previously reported to the Commission, with an anticipated project completion date prior to December 31, 2014.