

**Final Report on  
A Management and Operations Audit of  
The Customer Service and Accounting  
Functions of Liberty Utilities**

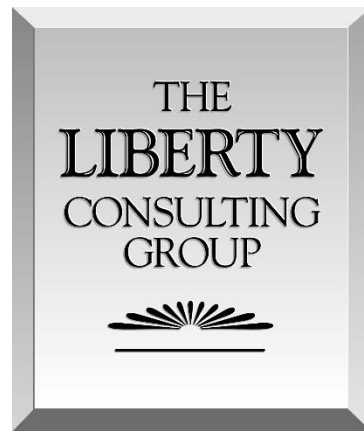
**Public Version**  
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**Presented to:**

*New Hampshire Public Commission  
Service Commission*

**Presented by:**

*The Liberty Consulting Group*



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## *Table of Contents*

I. Introduction .....	I-1
A. Corporate Overview .....	I-1
B. Support Service Organizations .....	I-1
C. This Examination .....	I-2
II. Customer Service .....	II-1
A. Background .....	II-1
B. Findings.....	II-3
1. Customer Service Organization & Staffing.....	II-4
2. Customer Service Staffing Levels .....	II-6
3. Employee Performance & Development.....	II-8
4. New CSR Training .....	II-9
5. CSR Refresher Training .....	II-9
6. New Services .....	II-10
7. Existing Services .....	II-11
8. Meter Data Management .....	II-11
9. Cycle Billing.....	II-12
10. Payments & Credit and Collections .....	II-13
11. Payment Processing.....	II-14
12. Contact Center & Retail Office Operations .....	II-16
C. Conclusions.....	II-18
D. Recommendations.....	II-36
III. Planning and Budgeting .....	III-1
A. Background .....	III-1
1. APUC's Overarching Strategy .....	III-1
2. U.S. Distribution Utility Territorial Breadth .....	III-2
B. Findings.....	III-4
1. Strategic Planning.....	III-4
2. Five-Year Forecasts.....	III-7
3. Budgeting .....	III-10
C. Conclusions.....	III-22
D. Recommendations.....	III-29
IV. Information Technology .....	IV-1
A. Background .....	IV-1
B. Findings.....	IV-1
1. Information Technology Approach and Strategy .....	IV-1
2. Information Technology Organization and Staffing .....	IV-2
3. IT Software and Vendor Services .....	IV-3
4. IT Support Processes .....	IV-6
C. Conclusions.....	IV-10

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D. Recommendations .....	IV-18
V. Accounting .....	V-1
A. Background .....	V-1
B. Findings .....	V-1
1. Accounting and Finance Organizations and Staffing .....	V-1
2. Accounting Systems and Data Collection .....	V-3
3. Accounting Policies and Procedures .....	V-8
4. Internal and External Controls .....	V-13
C. Conclusions .....	V-14
D. Recommendations .....	V-21
VI. APUC at a Crossroads .....	VI-1
A. Background .....	VI-1
B. Findings .....	VI-1
C. Conclusions .....	VI-2
D. Recommendations .....	VI-3

## I. Introduction

### A. Corporate Overview

In two, short, remarkable decades, the Canadian business that started as Algonquin Power Income Fund has grown into an enterprise (Algonquin Power & Utilities Corp., or APUC) that has ownership interests in more than 30 generating facilities totaling over 1,000MW and water, electric, and gas utility operations that serve more than 500,000 customer connections. APUC's generation operations operate under a separate subsidiary, Algonquin Power Company (APCo), whose assets extend from the Canadian Maritimes to Alberta and include some in the U.S. All of the APUC utility businesses operate in the U.S., stretching from New Hampshire in the east to California in the west, and from Montana in the north to Texas in the south. Another separate subsidiary, Liberty Utilities (LU) operates the U.S. utility businesses. APUC also announced the formation of a Transmission group in 2014 to invest in electric transmission and natural gas pipeline facilities.

APUC's remarkable growth has focused on a strategy that has concentrated on acquisitions of small utility distribution and generation operations across the United States and Canada. Such growth remains at the core of APUC's strategy which, recognizing the lack of material opportunity for acquiring distribution systems in Canada, looks to the U.S. for opportunity there. Pending now is a major acquisition (Empire District Electric) which will increase LU's utility customer base by more than 200,000 and introduce it to two more U.S. states.

LU initially acquired water and waste water utility operations, beginning with a purchase of an Arizona water utility in 2001. The first energy utility acquisition came with the purchase of a California electric utility in 2011. Acquisition of Atmos natural gas distribution operations in a number of states followed in 2012. APUC/LU purchased the New Hampshire (LU-NH) Utilities, Granite State Electric and EnergyNorth Natural Gas, in 2012.

The utilities in the LU fold generally have small individual customer bases. Pending the Empire District Electric acquisition, LU serves about 560,000 customer connections in 11 states (Arizona, Arkansas, California, Georgia, Illinois, Iowa, Massachusetts, Missouri, Montana, New Hampshire and Texas). LU's 26 water distribution and wastewater treatment operations serve some 175,000 customer connections. Two electricity distribution operations serve some 92,000 customer connections. Six natural gas distribution operations serve some 293,000 connections.

### B. Support Service Organizations

Several corporate groups located in Oakville, ON, provide support services to LU and its subsidiary utilities, including the two LU-NH utilities. These groups also support the generation business of APCo. The Oakville headquarters groups provide corporate services that include governance, strategic management, administration, and financing. Additionally, some departments within Liberty Utilities (Canada) Corp. provide shared services both to APCo and LU and its utilities. These Liberty Utilities Canada shared services departments are collectively known as Liberty-Algonquin Business Services (LABS). The LABS services include accounting, finance, human resources (HR), information technology (IT), facilities management, environment, health

and safety, security, procurement, risk management, legal, treasury, internal auditing, and communications.

Some LABS departments report directly to the LABS Senior Vice-President. These departments include HR, IT, procurement, and security, environment, health, and safety (SHE&S). The remainder report to other corporate officers, such as the Chief Financial Officer and Chief Legal Counsel. These other LABS organizations have a dotted line reporting relationship to the LABS Senior Vice President, in order to provide unified leadership of the shared services organizations. This Senior Vice President holds team meetings with these other organizations on such matters as budget planning and score card reporting in what he refers to as a “co-parenting” relationship.

Some departments within the LU head office in Oakville and reporting to the LU President also provide shared services but only to the LU utilities. These LU-exclusive services include utility administration, regulatory affairs, customer service support, utility planning, and operations management. In some of the documentation the Company provided during this audit, these LU head office departments are also referred to as being part of LABS.

The largest amount of corporate support to the utilities comes from LABS. The services from LABS and other affiliates to the LU-NH utilities are governed by standard Affiliate Service Agreements between the legal entities.

### **C. This Examination**

The Commission’s June 26, 2015 Order Approving Settlement Agreement and Permanent Rates, observed that a consultant should review the “effectiveness and efficiency” of Liberty Utilities NH’s business processes, including: account creation and management; meter data management; billing; payments and collections; the call center; vendor relationships; corporate services/IT support and service; staffing; accounting; business planning; and property records. That order permitted a broadening of audit scope to related areas, should the consultant deem it appropriate.

The primary objectives of this audit were to identify those areas where LU-NH is performing effectively and efficiently, and to determine what improvements, if any, can be made in the management and operation of the LU-NH’s customer service and related functions. The ultimate purpose of this audit is to ensure that ratepayers are receiving efficient and effective provision of service consistent with industry best practices. The field work for this audit took place largely during the first quarter of 2016. Liberty categorized its review into four areas: Customer Service, Information Technology, Accounting, and Planning and Budgeting. The elements of each category are summarized below:

#### **Customer Service**

Liberty organized this study area’s customer service review into six categories:

1. Customer Service Organization and Staffing
2. Account Creation & Management
3. Meter Data Management (including Gas & Electric Meter Reading)
4. Customer Billing
5. Payments & Collection Processes

## 6. Call Center & Retail Office Operations

Liberty Utilities New Hampshire (LU-NH) provides customer service through phone, field, and face-to-face services. LU-NH serves 43,000 electric customers in 21 communities (Granite State Electric) and 87,000 natural gas customers in 30 communities (EnergyNorth). Residential customers comprise 88 percent of the total, and generate 68 percent of total revenues. LU-NH's customers account annually for more than 400,000 million customer calls, 1.6 million bills issued, and close to one million customer payments.

### Information Technology

An Information Technology (IT) organization's overriding goal should be to improve a company's efficiency and effectiveness through automated information processing and electronic communications. In so doing, the organization must ensure that information systems operate reliably. The IT organization must effectively interface with the other organizations within the company that it supports, so that the systems continue to allow them to provide high-quality, reliable service to the customers by introducing appropriate changes and updates to system structure and operations. Modern IT organizations also ensure security of customer data, and provide efficient data communications and other telecommunications links. Liberty reviewed the extent to which Algonquin's IT resources adequately support the Liberty Utilities (LU) New Hampshire utility operations through providing such services.

### Accounting

Liberty reviewed four aspects of the accounting and finance functions of Algonquin Power & Utilities Corporation (APUC) and the New Hampshire Utilities, EnergyNorth Gas and Granite State Electric:

- Organizations and personnel
- Accounting systems
- Policies and procedures
- Controls.

Given the intent and scope of this audit, our analysis focused on how these accounting functions support the customer service processes and functions. Effective organization and staffing are crucial to the performance of finance and accounting activities and responsibilities. Good communication between corporate and subsidiary personnel is one of the most important aspects of performance. Accounting systems provide a central capability to collect data, create transactions, store the transaction data, and access the data for analysis and reporting; these systems need to be robust, have seamless interface capabilities, and have the ability to expand their functionality through planned system upgrades and add-on features. A company's accounting policies and procedures provide the guidelines and structure to record transactions and report financial results; documentation of the accounting policies and procedures is an integral part of ensuring that employees adhere to the U.S. Generally Accepted Accounting Principles (GAAP) and comply with regulatory reporting requirements. Effective controls require active engagement and strong oversight from the board of directors, exercised in major part through the efforts of its audit committee; Internal Auditing (IA) forms a primary source of ensuring the effectiveness of controls.

### **Planning and Budgeting**

Liberty Utilities and LU-NH face operational performance challenges while also meeting the aggressive financial growth expectations of its holding company parent. Meeting these challenges requires that the board of directors and senior executive leadership articulate a consistent vision, establish a mission, define objectives and goals, set priorities, develop strategic plans, allocate resources, develop financing plans, and implement and measure performance against these plans. The challenge is not simply to define management's vision and strategic plans in a comprehensive and specific way, but to bring them to fruition in a far-flung organization. The extent to which Liberty Utilities and LU-NH are successful in developing and implementing their strategic and intermediate-term plans is a key determinant of their management's effectiveness.

The effectiveness of the corporate processes of budgeting for capital expenditures and for operating expenses is crucial in executing plans and strategies. The LU-NH processes must effectively provide for gas and electric system reliability through capital investments, while balancing the maintenance of corporate financial health. Specific plans for funding the utility capital requirements and allocation of capital is a crucial responsibility of the holding company that should be present in planning and budgeting.

O&M budgets are built from the bottom-up by each major organization. Activity-based budgeting is a standard that will minimize costs with proper application. Management reporting systems provide monitoring and cost-control mechanisms for both capital and O&M budgets.

## II. Customer Service

### A. Background

Liberty Utilities New Hampshire (LU-NH) provides customer service through phone, field, and face-to-face services. LU-NH serves 43,000 electric customers in 21 communities (Granite State Electric) and 87,000 natural gas customers in 30 communities (EnergyNorth). Residential customers comprise 88 percent of the total, and generate 68 percent of total revenues. LU-NH's customers account annually for more than 400,000 customer calls, 1.6 million bills issued, and close to one million customer payments.

Liberty Utilities has an expressed mission to deliver safe and reliable utility service, serviced locally, by employees who live in the community, expressing that mission as shown below.

## Local and Responsive. We Care.

Liberty Utilities lives in and supports the communities we serve. We deliver safe and reliable service with care and integrity.

Prior to the 2012 acquisition by APUC from National Grid, customer service fell under a highly centralized National Grid customer service organization that maintained no customer service employees or customer service facilities in New Hampshire. Consequently, Liberty Utilities had to build a New Hampshire-based Customer Service organization from the ground-up before it could begin to service customer needs in the state. Its baseline development activities included:

- Creating and staffing a contact center to handle incoming customer inquiries.
- Creating and staffing four office locations to serve customers wanting to do business in person.
- Configuring and deploying the Cogsdale Customer Information System (CIS) to support Energy North (gas) and Granite State (electric) customer service delivery.
- Creating and staffing other customer service groups to prepare bills, process payments, and collect past due payments.
- Developing policies and procedures to support the delivery of service to customers.
- Deploying other systems, technologies, and telecommunications to support customer service.

A core team of six customer service employees began in 2012 simultaneously to define the customer service organization, policies, and procedures and to design and configure the Energy North version of Liberty Utilities' incumbent customer information system (Cogsdale).

Liberty Utilities faced other significant development needs as well. Within the same 18- to 24-month period, management undertook six consecutive CIS implementations in six different



utilities (including Energy North and Granite State Electric). These multiple projects created an aggressive and challenging CIS implementation schedule.

By New Hampshire's September 3, 2013 "go-live" date for the gas version of Cogsdale, in-state customer service staffing had expanded to 21 employees, 15 of them customer service representatives (CSRs) operating primarily through placements from temporary agencies. Some of the management team had prior utility experience; however, most of the resources in the customer service organization were new to company and largely unfamiliar with gas and electric distribution operations, and in particular, New Hampshire regulations.

LU-NH experienced difficulties producing accurate and timely bills for many gas customers. The difficulties included delayed or missing, duplicate, and incorrect bills. The problems arose from a mixture of issues related to the Cogsdale implementation. Problems communicating and coordinating bill presentation (printed and paperless) at LU's third-party vendor (FISERV) also contributed. Billing issues exceeded staffing capabilities, and backlogs grew, creating increasing call volumes and customer complaint numbers. Many of these issues began at go-live, but LU-NH continued to experience issues for a year and a half following go-live at Energy North and for six months following go-live at Granite States Electric.

An inexperienced and understaffed customer service organization compounded the difficulties in addressing these problems, as did an unclear escalation path and problem resolution process between Liberty Utilities NH, Oakville's Liberty Utilities LAB (Information Technology) group, and the vendor's Cogsdale support team. Consequently, customer service response suffered and customer dissatisfaction grew. Customers experienced difficulty escalating concerns to supervisors and complaints referred to the New Hampshire Commission took longer to resolve.

Significant gaps in functionality existed between the newly implemented Cogsdale CIS system and the prior National Grid CIS, as documented in design specifications. Management addressed these gaps largely through manual work-arounds, not automation. That approach increased demands on an already taxed group of resources, resulting in a greater need for resources to produce bills and respond to customer inquiries.

A minimally-featured website contributed to high levels of customer confusion. Other barriers included an inability to communicate special payment arrangements and budget billing details on the bill, delays in posting payments, and incomplete account information on the website. Management also experienced significant difficulty in applying fuel assistance and in placing customers on discounted billing rates.

Over the last year, New Hampshire and Oakville resources have together undertaken a number of projects to improve Customer Service processes and policies. They include:

- IT break/fix Escalation Process (Kace System)
- Supervisor Escalation Process
- Liberty Utilities Customer Website Update
- Meter Multiplier Task Team
- Non-Registering Meters Task Team
- Direct hire of permanent CSRs

- ZoHo CRM to support “new service” process
- Weekly code fixes to Cogsdale
- Cogsdale and Great Plains systems upgrade (underway).

Despite these efforts, a number of significant challenges remain going forward in more clearly defining the Customer Service organization, policies, procedures, and in developing employees to deliver “fast, friendly, and accurate” customer service. Those challenges include:

- Increasing employee turnover and poor employee engagement in 2015
- Payment Card Industry Data Security Standard (PCI DSS) non-compliance
- Inconsistent call quality and delivery of services
- Poorly designed web-service options
- Inconsistent payment processing
- Underdeveloped Customer Care business continuity and storm response plans.

## **B. Findings**

The Commission’s June 26, 2015 Order Approving Settlement Agreement and Permanent Rates, observed that a consultant should review the “effectiveness and efficiency” of Liberty Utilities NH’s business processes, including: account creation and management; meter data management; billing; payments and collections; the call center; vendor relationships; corporate services/IT support and service; staffing; accounting; business planning; and property records. That order permitted a broadening of audit scope to related areas, should the consultant deem it appropriate.

The primary objectives of this audit are to identify those areas where LU-NH is performing effectively and efficiently, and to determine what improvements, if any, can be made in the management and operation of the LU-NH’s customer service and related functions. The ultimate purpose of this audit is to ensure that ratepayers are receiving efficient and effective provision of service consistent with industry best practices.

Liberty organized this study area’s customer service review into six categories:

1. Customer Service Organization and Staffing
2. Account Creation & Management
3. Meter Data Management (including Gas & Electric Meter Reading)
4. Customer Billing
5. Payments & Collection Processes
6. Call Center & Retail Office Operations

Well-managed utilities place particular emphasis on providing responsive customer service through the whole chain of contact. That chain extends from setting up an account initially through the closing of an account. Effective performance includes answering telephones after normal working hours, situating business offices in convenient locations, ensuring that customer service representatives are well-trained and supported by advanced systems so that accurate information can be retrieved quickly, and providing policies and procedures that enable representatives readily to solve customers' problems. Sufficient numbers of experienced supervisory personnel must be available to manage customer-service centers, and these personnel have to be able to deal with more difficult customer problems.

The major ongoing costs in customer service involve the labor of customer-service representatives. Controlling their costs while providing the service that customers expect can only happen through the employment of systems and equipment that ensure the high utilization of personnel.

Effective customer service organizations have quantitative objectives to track performance in meeting goals for improving service delivery. Additionally, management should monitor performance and progress on achieving the goals and assess whether the organization has the required resources necessary to achieve the goals.

Accurate and timely customer accounting comprises a fundamental element of the utility/customer relationship. Timeliness plays an important role in minimizing the billing and payment cycle and in supporting systems of communication with and about customers. A focus on efficiency is critical to handling billing-support functions cost-effectively, recognizing the advances that technological improvements have made possible. Accuracy promotes full and proper revenue collections, while minimizing customer disputes and their associated time, cost, and customer-confidence impacts.

Utility credit, billing, and collections practices typically form subjects of statutory and regulatory requirements. LU-NH is bound by the New Hampshire Code of Administrative Rules and the rate schedules on file with the New Hampshire Public Utility Commission. Whether credit and collection practices are employed effectively becomes a major area of focus. Management must assure compliance with administrative rules in its day-to-day operations. Credit and collections activities are also important to financial performance.

Customer inquiries should also be answered quickly and in a competent and courteous manner. Business offices should be located conveniently and meet customers' needs without causing excess costs to be incurred (and ultimately borne by others), and lastly it is important that the company keeps up with other utilities and companies in other industries in adapting innovative approaches to serving customers better.

## **1. Customer Service Organization & Staffing**

The Vice President (VP) of Customer Care leads LU-NH's Customer Care organization. This group has responsibility for the majority of customer-facing functions. Responsibilities include: load data services, the customer contact center and walk-in locations, billing and collections, energy efficiency and customer programs, and communications and media relations. The next chart shows the organization of these functions under the VP of Customer Care.



Customer Service Representatives (CSRs) initiate service, update customer accounts, handle customer inquiries, create and issue customer energy usage bills, receive customer payments, and collect delinquent customer payments. Management employs a number of metrics to assess the performance of this team of representatives. Those metrics include and extend beyond to service levels targets defined by the Commission.

The Contact Center & Load Data Services Manager oversees key customer-facing groups, including the Customer Contact Center located in Londonderry, and four walk-in business offices located in Salem, Londonderry, Tilton, and Lebanon. Additional responsibilities include oversight of the load data management services group, which provides monitoring and reporting of electric and gas usage for customer billing, energy procurement, load forecasting, regulatory reporting, revenue requirements, and load reporting to the ISO-New England.

The Manager of Billing & Collections oversees customer billing and collections, and coordinates response to NHPUC customer complaints.

The Manager of Energy Efficiency and Customer programs coordinates all LU-NH energy efficiency initiatives and LU-NH's participation in NHSaves. This stakeholder group comprises a collaboration of New Hampshire's electric and natural gas utilities working with the Commission and other interested parties to provide NH customers with information, incentives, and support designed to save energy, reduce costs, and protect the environment statewide.

The Program Manager of Communications & Media Relations manages LU-NH customer and employee communications, including social media (Facebook, Twitter and YouTube), newsletters, video, bill inserts, and advertising.

LU-NH's Customer Care organization relies on several third-parties to provide services to customers. These outside providers serve remittance processing (Fiserv, Western Union), bill printing and mailing (Fiserv), debt collection (Allied Account Services), telephony (Century Link and Dimension Data), eBill and recurring and one time payments (Fiserv) needs.

Meter reading lies outside the responsibility of the LU-NH Customer Service organization. LU-NH Gas and Electric Distribution Operations groups provide meter reading and other meter-related field support services.

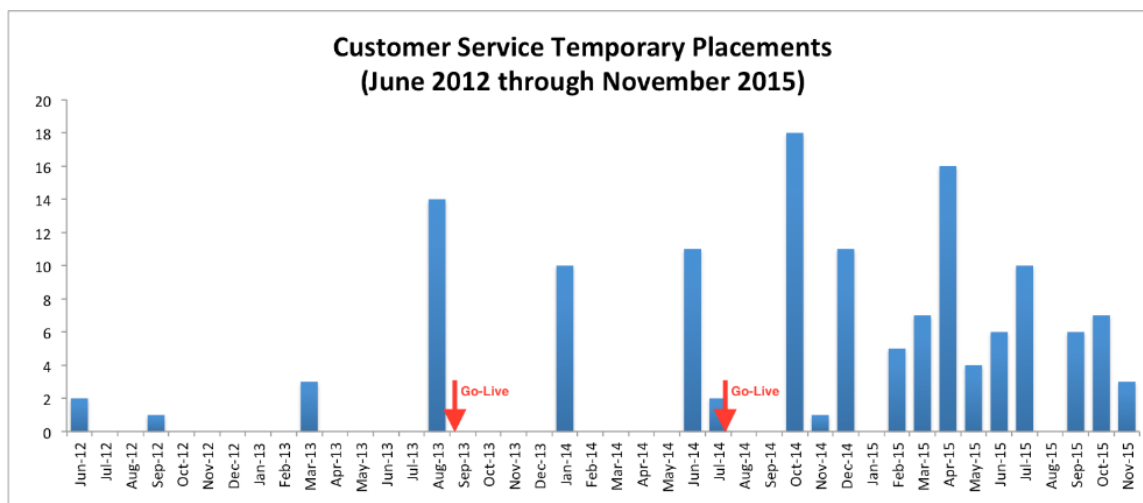
LU-NH receives support from the Oakville-based Liberty Utilities Customer Experience Operations and Customer Experience Strategy groups. The services that come from these Canadian-based organizations include: long-term customer service planning and strategy, business IT liaison (requirements, user testing, break/fix issue coordination), standards and procedures, website design, customer satisfaction measurement, and third-party vendor management.

## 2. Customer Service Staffing Levels

Management tasked the small, six-person organization of 2012 with: (a) defining the customer service organization, policies and procedures needed to provide customer service to Liberty Utilities New Hampshire gas and electric customers, and (b) designing and configuring the Cogsdale customer information system. Customer staffing had expanded to 21 by the September 3, 2013 “go-live” date for the gas version of Cogsdale. Most of them (15) operated as customer service representatives secured primarily through temporary agency placements.

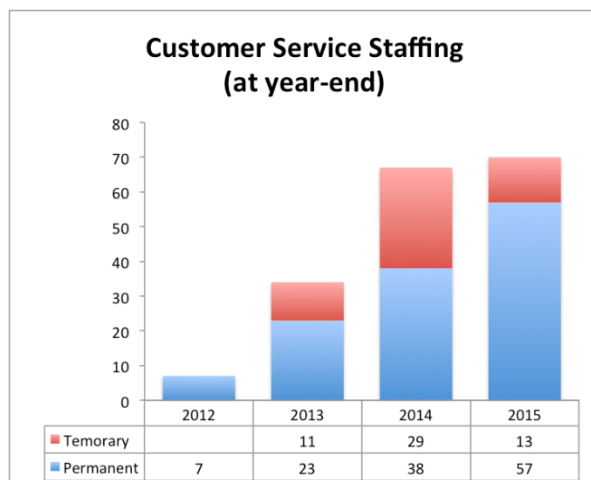
Management brought in another 22 temporary employees during the lead up to deployment of the electric version of Cogsdale (July 27, 2014). They comprised a mixture of CSRs and Collections Representatives. These additions brought total staffing to 53 at go-live. By year end 2014, Customer Staffing had increased to 75, with half operating as temporary employees. The following chart details the monthly placement for temporary Customer Service employees, predominately front-line CSRs or Collection Representatives (Cogsdale go-live dates show in red).

LU-NH added 17 CSRs (temporary placements) on August 12, 2013, in preparation for go-live and the kickoff of LU-NH’s Contact Center. The new CSRs were provided three weeks of training, and began taking calls on Tuesday, September 2<sup>nd</sup>.

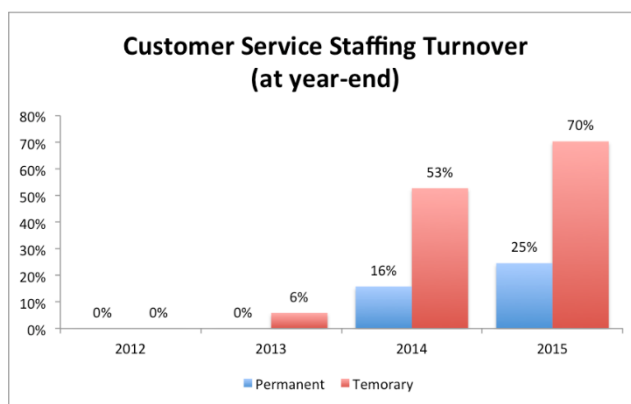


Ten more CSRs came in January 2014, however six of them remained employed by July. LU-NH added another 11 CSRs in mid-June, ahead of the planned early July go-live of the LU-NH Electric version of Cogsdale. Management ultimately postponed that date to July 26 – 27, due to Post-Tropical Storm Arthur.

By the end of 2015, total staffing had reached 70, and reflected a significantly increased ratio of permanent versus temporary employees (82/18 percent).



The LU-NH Customer Service organization has grown substantially since the transition from National Grid in 2013. However, so too has customer service employee turnover. The following chart details the percentage of turnover within the Contact Center organization for the past four years. Contact Center employee turnover has increased from 16 percent to 25 percent in the past two years for permanent employees. Turnover runs much higher for temporary employees (as would be expected, because LU-NH has been filling permanent positions with temporary employees, where it makes sense).



The frontline customer service organization traditionally serves as a feeder position for many organizations in utilities, with high turnover presenting the challenge of continually recruiting, hiring, training, and developing staff. Prior to late 2015, Liberty Utilities staffed its frontline customer service organization through temporary agency placements. Beginning in early 2015, LU-NH began offering qualified temporary employees permanent positions with the company. In late 2015, management revised its recruitment and hiring practices to staff through direct hire and in response to growing turnover in the frontline. LU-NH has also negotiated a five-week extension to the new employee probation period. Direct hiring and the probation period extension should assist in addressing turnover going forward.

### 3. Employee Performance & Development

LU recently enhanced its annual performance review process, seeking to put more focus on “having the conversation and not filling out the form.” The Company terms the revised employee review process “It’s All About the Conversation!”. Late 2015 training workshops introduced it to management. LU changed the program in response to feedback from a recent Employee Engagement Survey. In addition to focusing on more conversation, the program also adds an informal mid-year performance conversation to supplement the annual review discussion. Management also simplified the review form and overall performance rating scale.

Bonus programs cover eligible LU regular full and regular part time employees:

- Shared Bonus Pool for bargaining unit employees covers eligible workers during the period of the collective bargaining agreement (CSRs became unionized in 2014).
- Shared Bonus Pool for other non-management regular full and part time employees.
- Short Term Incentive Plan (STIP) for regular full and part time management employees

LU’s employee bonus programs seek to align compensation with corporate targets and results, and to reward personal achievements linked directly to overall corporate performance. For employees eligible for STIP participation, overall company performance provides the primary driver of the bonus payout. The LU-NH Balanced Scorecard sets those corporate performance metrics. Depending upon management level, personal performance achievement can produce an additional reward component. The next table summarizes the operation of this reward mechanism for typical representatives of three management employee classes.

**STIP Levels**

<b>Achievement of:</b>	<b>Manager</b>	<b>Director</b>	<b>VP Level</b>
Balance Scorecard	80%	85%	90%
Individual Performance	20%	15%	10%

The Balanced Scorecard measures company performance in four areas: Operations, Efficiency, Customer, and Employee. The table below lists specific customer service-related metrics. LU-NH’s Balanced Scorecard metrics match most of the metrics required monthly by the Commission (see below), however the Balanced Scorecard (BS) does not track the Commission’s required billing metrics. LU-NH BS uses a Billing Timeliness metric to track the percent of on-time bills and the percent of bills on hold.

<b>Metric</b>	<b>LU-NH Goal</b>	<b>PUC?</b>	<b>BS</b>
Customer Satisfaction	80%		
Call Answering	20 seconds: 80% (E) 30 seconds: 80% (G)		
Billing Timeliness	95% on time		
Estimated Bills	2.41%		
Billing Exceptions	1.93%		
Bill Accuracy	98.55 percent		
Bad Debt % of Gross Revenue	1.09% (G) 0.89% (E)		

Bad Debt versus Budget	479,275		
Bad Debt vs. PUC allowance	479,275		
Regulatory Complaints	38 per month		
Cost per Customer	\$36.10		

#### 4. New CSR Training

New CSRs receive three weeks of training, which includes classroom instruction and job shadowing in the Contact Center. Topics covered include: policies, procedures, regulations/tariff, soft skills, conflict management, phone system, Cogsdale CIS, meter reading, service orders, escalation process, high bills, outage management, emergency procedures, energy efficiency, state low-income assistance programs, quality monitoring, and performance. Management expects CSRs to serve all customers (both electric and gas), which has led to training in the fundamentals of gas and electric distribution.

Management supplements training with discussions from subject matter experts, who provide insight into the work of other departments. Testing of candidates occurs after specific training modules and at the completion of the material. Upon graduation, management assigns new CSRs to the Contact Center or to one of the satellite offices, where they begin handling customer calls.

#### 5. CSR Refresher Training

LU-NH's CSRs have daily, monthly and yearly refresher training opportunities. Daily coaching takes place as CSRs question particular processes, procedures, and activities. Daily coaching also addresses matters arising from feedback from by other departments (*e.g.*, an error or misunderstanding by the CSR). Coaching is also delivered monthly as part of the call quality monitoring process

The Contact Center Trainer publishes a weekly "Tips" newsletter. Topic-specific training is delivered as needed to address individual or group needs. Management brings all CSRs from all locations together, on one Saturday each month, for a full day of in-depth training on a particular topic. All employees must attend an annual Safety Symposium. Management also conducts these annual sessions on a Saturday, to ensure that all CSRs, Supervisors, and Managers can attend.

In 2016, LU-NH developed a yearly training calendar for the delivery of refresher training to all employees in the contact center, satellite offices, back office, and collections. Topics addressed each month include:

- January - Gas and Electric Sales
- February - Energy Efficiency
- March - Collections
- April - Finance
- May - Business Development
- June - Meter Reading
- July - Open / Make-up sessions
- August - Customer Assistance Programs
- September - Safety



- October – Rates
- November - Bill Components
- December - Helping Customers Understand Their Usage.

Liberty Utilities has also been developing a Soft Skills training program planned for roll out to all Customer Service employees in 2016.

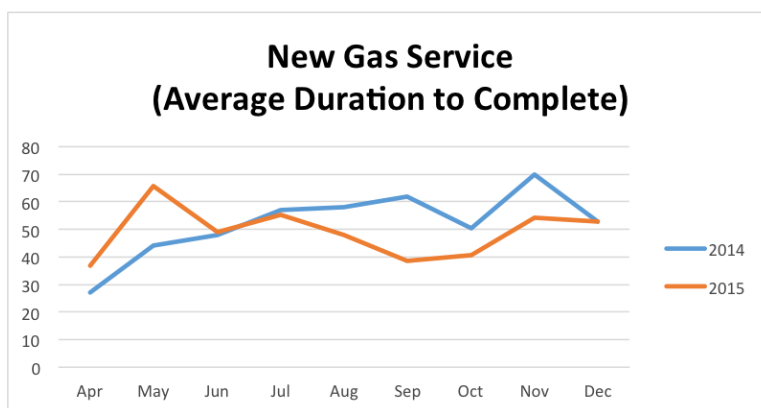
## 6. New Services

The Sales and Marketing group handles new services. These services include locations without gas service or without a meter, or locations whose meter has been inactive for at least 12 months. The Company directs such customers to the Sales and Marketing organization, either through the phone menu or through routing by CSRs.

New customers deal with assigned Commercial/Industrial or Residential Sales Representatives, who work to determine the services needed at the location. In some cases, this process requires coordination with the engineering organization to design and price main or service extensions needed to enable service. A sales work order (SLA) process documents new service plans, and provides for obtaining customer commitment. Sales representatives coordinate with: (a) Customer Service to create the customer's location and account in the Cogsdale Customer Information System, and (b) Construction to begin any required main and service installation work.

A Sales Coordinator works with the customer through completion of any required construction and permitting needed to make the site ready for a meter set. At that point, the Sales Coordinator e-mails Customer Service to request a meter set. A CSR generates a meter set service order, and e-mails the service order number to the Sales Coordinator for tracking purposes. This process leads to dispatch of field personnel to set the meter and activate the new service.

The process from end-to-end generally takes 4 - 6 weeks, depending upon the construction, permitting, and customer coordination required. The following chart details LU-NH's average installation times for new gas service during 2014 and 2015, measured in days, from customer contract received through new service installation completion.



Management succeeded in reducing average time to install a new service slightly from 2014 to 2015, largely through better project tracking and coordination with the field. A newly installed Sales & Marketing CRM system in 2015 facilitates new service tracking and management. Marketing and Sales has also improved communication and coordination with the field forces, and secured additional construction crews to perform installation work.

## **7. Existing Services**

Customers moving into locations with existing gas or electric service begin the service initiation process with the Customer Service organization. CSRs in the Contact Center or satellite offices process these requests for service, and set up customer's accounts in the Billing system.

New Hampshire Code of Administrative Rules, permit LU-NH to require a deposit, a written guarantee, or a direct debit account to secure a residential account, as a condition of service, in the following circumstances:

- Customers have prior unpaid balances at LU-NH (within the last 3 years).
- LU-NH has obtained a successful judgment for non-payment of a delinquent account (within the last 2 years).
- Service has been disconnected due to tampering or diversion.
- Customers cannot provide evidence that they will remain at the same location for the next 12 months (as evidenced by a deed, lease, or letter from a landlord) or cannot provide evidence of satisfactory payment history at another utility in the past 6 months (as evidenced by a letter of credit or an oral/written statement by a utility representative).

Identity verification for customers new to LU-NH's service territory comes through Equifax (PosID). This service confirms that the identity provided matches the social security number provided, and also provides current and prior addresses. LU does not use Equifax's credit scoring services to waive deposits for New Hampshire customers.

LU-NH does not require a deposit for residential customers who can provide evidence of financial hardship or secure a third-party guarantee (irrevocable written guarantee of a responsible party). LU-NH requires a security deposit for all non-residential customers. It will accept an irrevocable written guarantee from a responsible party or a direct debit account in lieu of a deposit. Deposits limits are no less than \$10 and no more than two high-usage bills (excluding the highest). Deposits accrue simple annual interest at a rate equal to the prime rate. Customers can pay the deposit in installments.

## **8. Meter Data Management**

The responsibility for meter reading falls within Gas Operations (CMS & Meter Shop) and Electric Operations (Meter Maintenance). Gas Operations relies on Meter Service Representatives to obtain meter readings, and to perform any required collection activities in the field. Electric Operations assigns Meter Workers and Meter Worker Associates as needed to perform collection duties that include collecting, disconnecting for non-payment, and reconnecting.

LU-NH has approximately 91,600 gas and 43,500 electric meters in service. Approximately 99.8 percent of the gas meters and 92.8 percent of the electric meters are read through Itron's Automated Meter Reading (AMR) drive-by application and the Itron Field Collection System (FCS). About 160 gas meters and 3,100 electric meters are read manually.

Meters are read on a monthly basis. Each meter has an assigned meter reading route and each route has an assigned revenue cycle. Management uses 20 billing cycles each for gas and electricity.

LU-NH's Meter Reading Schedule determines read dates for cycle, providing a three-day window to obtain readings. Any not read during this window get assigned to a special route for reads by field service workers on their next trip into the area.

The Load Data Services (LDS) group manages the meter data collection process, and identifies, investigates, and resolves meter data exceptions, in order to provide a smooth flow of data from the meter reading to the billing system.

Completed meter reading routes are uploaded to Cogsdale at the end of Day 2 of the meter reading schedule. Any identified meter reading exceptions (high, low, and negative readings) are addressed by the end of Day 3, which permits initiation of pre-calculation routines such as the LPC (Late Payment Charge), posting miscellaneous charges and preparing any rate changes ahead of the cycle billing process.

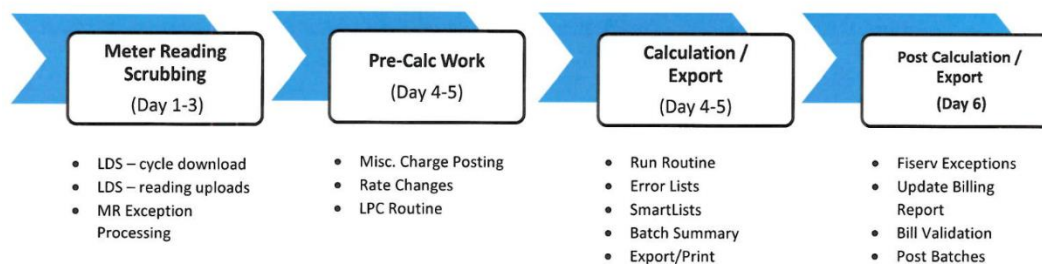
## **9. Cycle Billing**

The Billing group performs its daily functions based on the 2016 Meter Reading Schedule with Bill Date. Upon completion of the meter reading scrubbing and pre-calculation work, the cycle is ready bill calculation. On average it takes approximately two hours per commodity.

After the system has finished bill calculation, a Bill Error Report identifies any billing errors prohibiting an account from billing. Personnel review errors and seek to resolve them by fixing the account or placing the bill on hold if it cannot be resolved same day. Other routines are run to identify short bills (< 10 days) and long bills (>59 days), both of which are resolved before bill export. The bill export file is then sent to Fiserv, the third-party bill print vendor, for processing. Fiserv notifies LU-NH of any rejected bills, which have to be addressed in Cogsdale then re-exported to Fiserv for processing and print.

The following chart depicts the LU-NH cycle billing process.

## CYCLE BILLING



Billing also performs a full bill validation on the first cycle billed after a rate change and on first cycle billed after the weekly Cogsdale code fixes are placed into production (Wednesday evenings).

## 10. Payments & Credit and Collections

The New Hampshire Code of Administrative Rules and the rate schedules on file with the New Hampshire Public Utility Commission address the timing and specifics of credit and collections policy and actions. We examined whether and how LU-NH employs effective credit and collection practices in order to abide by established requirements and to support effective financial performance as well.

Customer bills are due for payment within 28 calendar days from the date of issuance. Failing full payment by the due date, LU-NH assesses a late payment charge of 1.5 percent on the current month's charges (except for hardship customers). At seven days after the due date, if during non-winter moratorium months, LU-NH mails a disconnect notice to all accounts having more than \$50 past due on the current invoice. The notice advises the customer that the account will be "subject to termination" in 10 days if a payment is not received.

In order to provide a reminder, LU-NH initiates an automated phone call 14 days after the due date. The call advises customers of the need to contact the Company concerning overdue balances. Another automated phone call goes to past due accounts 22 days after the due date, advising customers to contact the Company. A disconnect order is generated 27 days after the due date.

Following proper notification, accounts are selected for discontinuation of service based on the outstanding balance. LU-NH will not disconnect service if a customer agrees to and complies with the terms of a special payment arrangement to pay off the arrearage. LU-NH does not disconnect customers with medical conditions that would pose risk absent service continuation.

During the winter moratorium (November 1<sup>st</sup> through March 31<sup>st</sup>), LU-NH's collection treatment must comply with the "Winter Rules":

- Arrearages must exceed \$450 (for heating customers), \$125 (gas non-heating) and \$225 (electric non-heating) before they are eligible for disconnection.
- In addition to the required written disconnection notice 14 days prior to the proposed disconnection, LU-NH must notify an adult occupying the residence in person or by

telephone 2 to 8 days prior to the disconnection; or seek PUC approval for the disconnection.

- PUC approval must be obtained to disconnect residential customers older than 65.

LU-NH offers Special Payment Arrangements (SPAs) to customers unable to pay the total balance due. Generally, the Company asks customers to pay a portion of the arrearage, and then agree to pay the balance in installments, along with their current and future bills. At the conclusion of every payment arrangement negotiation the CSR must advise the customer of the ability to contact the Commission's Consumer Affairs division for review of the reasonableness of the arrangement. All payment arrangements must be confirmed in writing, and provided to the customer within 5 days.

During the winter period (November 15<sup>th</sup> to March 31<sup>st</sup>), payment arrangements permit repayment of the arrearage in equal installments over the winter period and the 6 months following. Financial hardship customers need only pay 10 percent of the balance due for the duration of the winter period. At the end of the winter period, customers having arrearages must have the opportunity to make payment arrangements of the arrearage in equal installments over six months following the winter period, in addition to paying their current bill each month.

Accounts disconnected get moved to "final" status. Accounts (> \$100) are generally turned over to an outside collection agency after 90 days for final collections and written off. Any subsequent payments received are credited back to the write-off.

LU-NH also has a Low-Income Agency Portal, making it easier for agencies to pledge assistance and reconcile payments and account activity.

For existing residential customers, LU-NH may require a deposit or a written guarantee or a direct debit account in the following circumstances:

- A LU-NH customer receives 4 disconnect notices within 12 months
- Service has been disconnected due to non-payment
- Service has been disconnected due to tampering or diversion
- The customer has filed for (and been accepted) bankruptcy and listed LU-NH as a creditor.

LU-NH is not currently assessing deposits on existing customers. However, LU-NH has plans to begin this process at some point in 2016.

## 11. Payment Processing

Customers can walk-in to any of four full-service Customer Service Offices, located in Salem, Londonderry, Lebanon, and Tilton, to conduct business in person. Customers can also pay bills at any of nearly 100 third-party (Fiserv and Western Union) pay station locations located across New Hampshire.

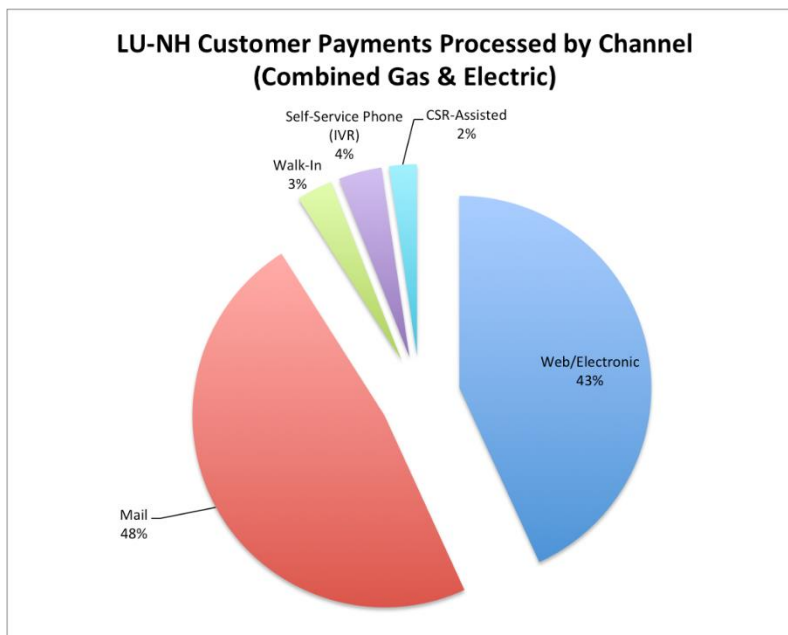
LU-NH customers can pay in cash, by check, with a credit or debit card, or through a check draft (ACH payment). Payments may be made by mail, by phone, by Internet, or in-person. Customers may pay by credit or debit card by phone or web (with a \$3.75 convenience fee) through a third-party (Fiserv BillMatrix). The following table from LU's website summarizes payment options:

PAYMENT CHANNEL	PAYMENT METHOD	PAYMENT PROCESSING TIME	SERVICE FEE*	MINIMUM TRANSACTION AMOUNT	MAXIMUM TRANSACTION AMOUNT	ADDITIONAL INFORMATION
Pay On Line	Credit, ATM Debit, Checking Account**	2 Business Days	\$3.75	\$5.00	\$1,200.00	<p>Your service may be discontinued if payment is not received by the date indicated on your disconnection notice.</p> <p>Payments may take up to 2 business days to post to your account. If you are making a payment within less than 2 days of this date please contact our Customer Care department and provide your confirmation number. Best efforts will be made to cancel the disconnection order.</p>
Pay by Phone	Credit, ATM Debit, Checking Account**	2 Business Days	\$3.75	\$5.00	\$1,200.00	
Pay In Person at Liberty Utilities	Credit, ATM Debit, Check**, Money Order, Cash (no service fee for cash)	2 Business Days (Cash – Same Day)	\$3.75	\$5.00	\$1,200.00	
Pay at an Authorized Payment Center	Cash	2 Business Days	-----	-----	-----	
Pay by Mail	Check**, Money Order	7-10 Business Days	-----	-----	-----	<p>Please return the lower portion of your statement, along with a check or money order in the envelope provided with your bill. The remittance address must show through the envelope window. If you do not have a return envelope, please mail your payment to:</p> <p>Liberty Utilities New Hampshire, 75 Remittance Drive, Suite 1032, Chicago, IL, 60675-1032</p>

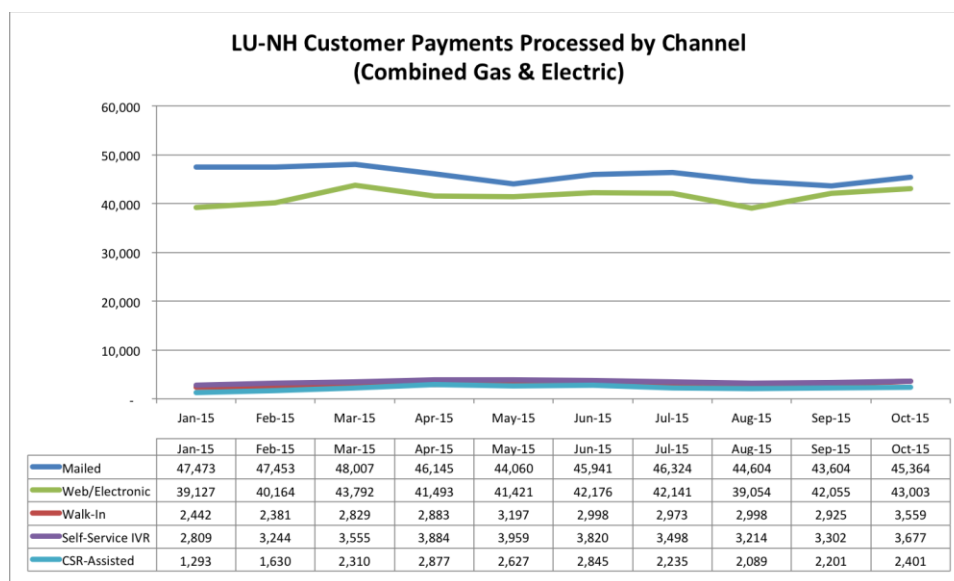
\*Service Fee is an administration fee that is collected by the payment service provider. Liberty Utilities does not profit from this fee

\*\*Checks returned as NSF (non-sufficient funds) may incur a fee

In 2015, about half of customer payments (48 percent) came by mail, processed through LU-NH's lockbox (operated by Fiserv). Another 43 percent came electronically (web payments, ACH, AutoPay, EFT, and through Bank Bill Pay). Relatively few payments came at the satellite offices (about 3,000 per month). Similarly, only 4 percent of payments came through the IVR (and processed by Fiserv BillMatrix).



The following chart details payments received by channel from January through October 2015.



In the case of check payments, LU-NH relies on an Image Cash Letter deposit process that results in sending images (rather than physical) of checks electronically from Fiserv to LU-NH's depository bank. Checks that Fiserv cannot process can be reviewed and resolved online for 72 hours, after which any unresolved payments (unbankables) are printed and sent to LU-NH's Londonderry office at the end of the week. Unbankables include invalid account numbers, payments that cannot be linked to customers' accounts, and unbalanced multi-account payments.

## 12. Contact Center & Retail Office Operations

Customers can call LU-NH's Contact Center between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday. After hours and on weekends, emergency calls are routed to LU-NH's Dispatch Center. Additionally, LU-NH's IVR and web are available at all hours. Customers call the Contact Center for issues related to new-service connections, service disconnection, gas leaks, electric outages, billing-related issues, credit or collection related issues, or general customer-relations questions.

LU-NH relies on a Cisco ACD (Automatic Call Distributor) and IVR (Integrated Voice Response) technology to route customer calls from the public telephone network. A call is presented to the Customer Voice Portal and handled through ACD, IVR or presented to a Call Center agent queue. Calls are distributed by priority, call type, availability, and agent skill.

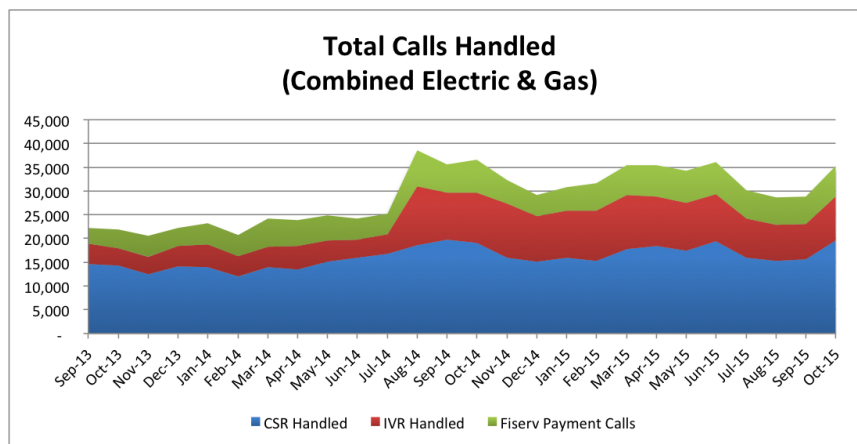
The Londonderry Contact Center is designed as a



Callers have the option to self-serve within the IVR for any of the following:

- Access Account Information
  - Current Balance/Due Date
  - Last Payment Amount/Date
  - Payment history
  - Bill history
  - Meter reading history
- Re-direct callers to Fiserv/BillMatrix to make payments
- Report a meter reading
- Report an electric outage (by voice mail)
- Listen to current electric outage reports

Management trains all CSRs in all locations to handle gas and electric customer service and emergency calls. Gas and electric emergencies, and customers reporting hazardous conditions, such as a wire down, get the highest priority, with routing to the first available representative. Emergency calls route to the NH Dispatch Center if a CSR is not available to answer (including after regular business hours). Outage/emergency calls are handled 24/7, but customer service calls only from 7 am to 5 pm Monday through Friday. Customers trying to reach a CSR for any other call type outside customer service business hours, hear a message advising that the office is currently closed.



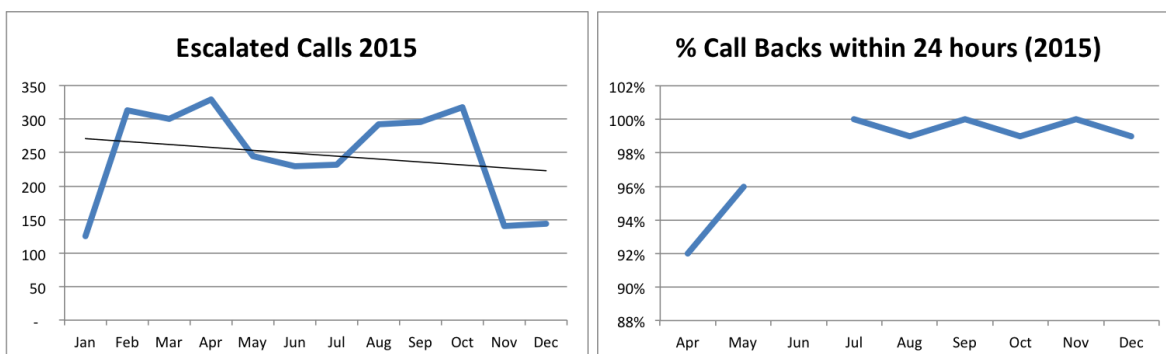
Approximately 37 percent of calls require no agent assistance. LU-NH's IVR or the third-party phone payment vendor (Fiserv) handle them. The percentage of phone-based self-service has increased slightly since 2013, with the percentage of IVR handled calls increasing after Cogsdale went live (July 2014) for LU-NH electric customers.

Management has set an overall goal, conforming to a Commission metric, of answering 80 percent of gas-related calls within 30 seconds and 80 percent of electricity-related calls within 20 seconds.

Customers having complaints about a bill, payment arrangement, collection treatment, or other service-related issues contact customer-service representatives at the phone center or one of the walk-in locations. If a CSR cannot resolve a complaint, the call escalates to a Lead CSR or a Supervisor, or a service order is created to facilitate a callback.



Management's goal is to follow-up on all escalated calls within 24 hours. It has met that goal since July 2015. The next chart plot 2015 escalated call volume and accompanying callback performance:

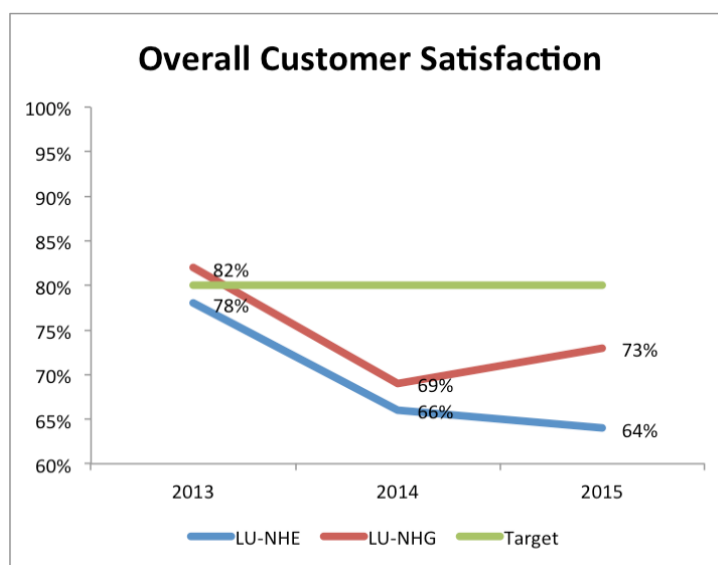


## C. Conclusions

### 1. LU-NH's overall customer satisfaction levels have been declining and unsatisfactory. (*All Recommendations*)

Satisfaction levels have declined since 2013, and have failed to meet NHPUC baseline targets. LU-NH measures and reports Customer Satisfaction performance to the NHPUC annually. This survey measures common service characteristics, such as service reliability, pricing, billing, and payment services, communications, and corporate responsibility. A third party administers the surveys, with interviews conducted by phone and online.

LU-NH's customer satisfaction baseline target is 80 percent. Should LU-NH fail to meet the baseline target, it must file a Customer Satisfaction Action Plan to address root causes of customers' dissatisfaction. LU-NHG overall customer satisfaction performance dropped 13 points from 2013 to 2014, but appeared to be improving in 2015. LU-NHE's overall customer satisfaction has steadily declined since 2013, reaching a low in 2015, 16 points below baseline target.

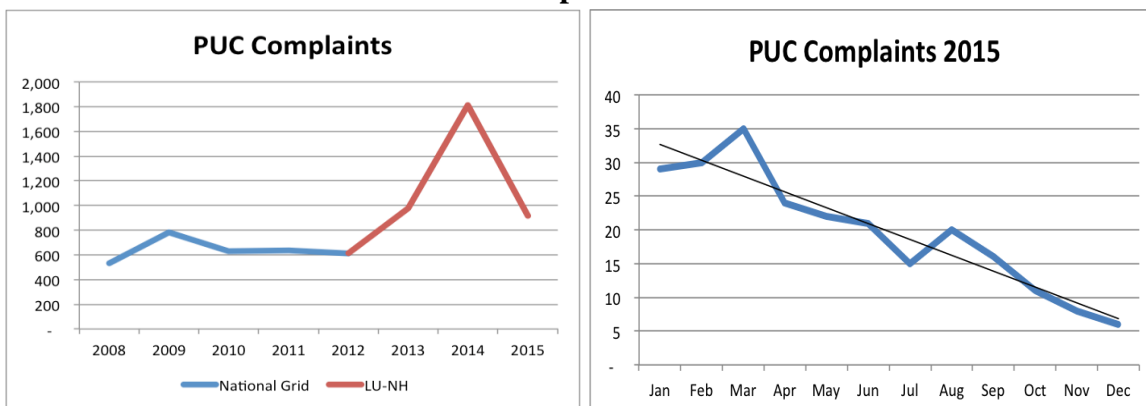


Below-target performance for both operations in 2014 and 2015 led to the submission of Customer Satisfaction Action Plans in 2015 and 2016, as required by a settlement agreement.

**2. Customer complaint levels peaked in 2014 and appear to be on the decline. (All Recommendations)**

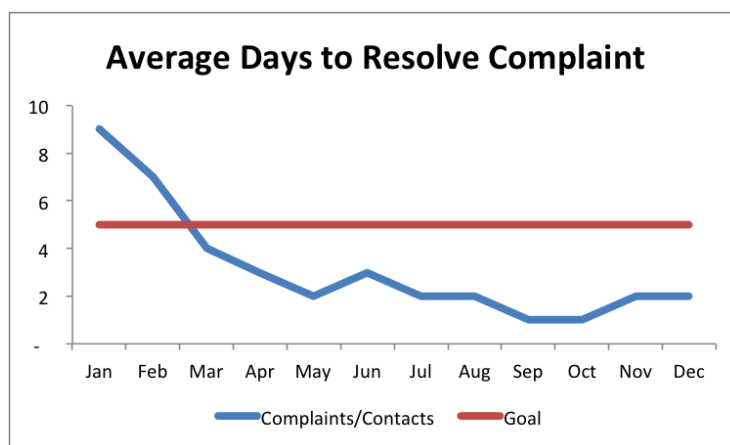
LU-NH Customer Service receives complaints or inquiries from the Commission. Customer complaints increased following the Cogsdale implementation in 2013, reaching a peak in 2014. Complaints have dropped significantly in 2015, as the following charts demonstrate.

**Customer Complaints 2008 - 2015**



**3. Customer complaint response times improved significantly in 2015.**

Customer Care has responsibility for receiving and responding to complaints or inquiries from the Commission. Complaints and inquiries are emailed to a dedicated mailbox. LU-NH has goals to acknowledge receipt on the day of receipt and resolve complaints within five business days. The following chart depicts LU-NH's 2015 complaint response performance versus the resolution time goal. Response time improved to well below goal starting in March and has remained at a roughly two-day level for the second half of the year.



The PUC Contacts spreadsheet logs and categorizes all incoming complaints. Support analysts

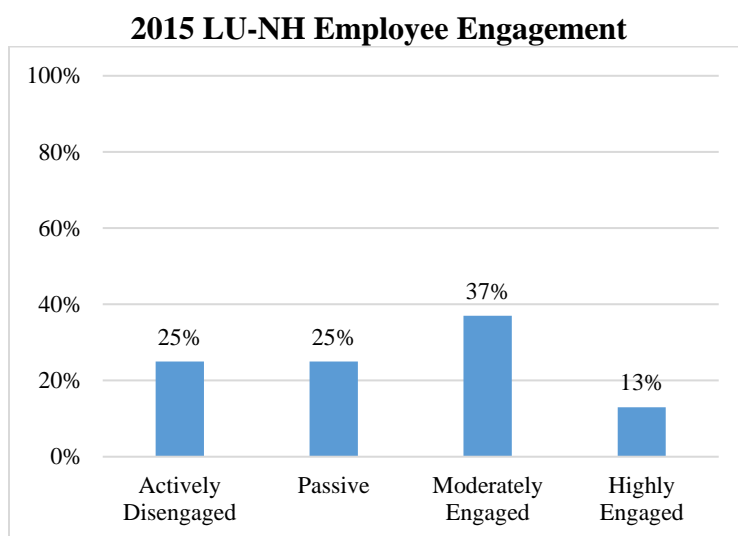
within Customer Care handle receipt, resolution, customer follow-up, and formal response to the Commission. They accumulate and report complaint data to management on a monthly basis.

The Customer Care support analysts, however, do not log or address written or verbal complaints to senior management. Their resolution lies with the department receiving the complaint.

LU-NH also conducts weekly meetings to discuss complaint volumes and statuses. Similar conversations take place by phone with Commission staff.

#### **4. Employee feedback surveys reveal opportunities to improve employee satisfaction and engagement. (Recommendation 4)**

LU has conducted annual employee satisfaction research for the past three years. The most recent, an Employee Engagement Survey occurred in 2015, conducted by Aon. The survey defined “engagement” as “a measure of an employee’s intellectual and emotional commitment to an organization.” Company-wide, LU-NH employee engagement in 2015 ranked in the bottom quartile of Aon’s panel, with only 50 percent of employees engaged, as the study chart shows. Employee engagement within the Customer Care organization was higher (at 62 percent).



Company-wide, LU-NH employee participants in the study ranked 66 of 113 statements intended to gauge engagement at or below 50 percent. The five-lowest ranked statements in the survey were:

- The tools and resources provided by this organization help me to be as productive as possible (29 percent).
- Our processes and procedures make it easier to achieve our organization's goals (28 percent).
- This organization has an excellent reputation in our local community (28 percent).
- We have the people resources available to get our work done (27 percent).
- Career opportunities always go to the most qualified person (26 percent).

A 2014 Employee Satisfaction Survey conducted by Aon asked all employees, “What could the company do to improve your work? Please share up to 3 ideas.” The top 5 suggestions were:

- Systems
- Hire
- Tools/Technology
- Communicate
- Train.

Gathering feedback from employees is an important step in promoting customer service efficiency and effectiveness. LU has consistently surveyed its employees over the past three years, and appears to be addressing some of the issues identified by employees (*e.g.*, through a recently enhanced performance review program).

5. [REDACTED]

LU-NH renovated existing work-reporting locations to provide these walk-in locations. Space limitations constrain the ability to accommodate cash handling. [REDACTED]

The offices at Tilton and Lebanon remain open to the public only on Tuesdays and Thursdays, from 9 a.m. to 4 p.m. However, CSRs report to these locations daily to answer customer calls and perform other desk duties. CSRs answer phone calls while sitting at the payment counter. This situation likely causes confusion and frustration for customers visiting the office on Mondays, Wednesdays, or Fridays to do business with LU-NH. They find the office “closed” at the same time they can see employees inside working.

**6. Offering agent-assisted credit/debit card processing in the Contact Center and walk-in locations increases PCI compliance and employee fraud risks. (*Recommendation 3*)**

PCI DSS 3.3 describes two means for risk mitigation: (a) requiring segmentation of call center operations to minimize the number of agents with access to customer payment card data, and (b) suggesting the consideration of solutions under which the agent need not enter card information into the system. LU-NH has not segmented its call center operations in this manner. LU-NH also asks its CSRs at walk-in locations to accept credit/debit card payments through the same payment entry portal as the call center.

VISA prohibits charging convenience fees to utility customers wishing to use a VISA credit/debit cards at a walk-in location. Representatives should not be charging a convenience fee for in-person check and debit/credit card payments. Walk-ins are not considered an “alternate channel” for utilities. LU-NH currently charges \$3.75 convenience fee to customers paying with a credit/debit card at LU-NH walk-in locations.

Management records all LU-NH customer calls, for quality monitoring purposes, including customer payment calls (CSR-assisted). PCI security guidelines seek to avoid recording/storing card validation codes in all cases, and strongly discourages storing card numbers and expiration dates. LU-NH's practices do not conform to PCI DSS security requirements.

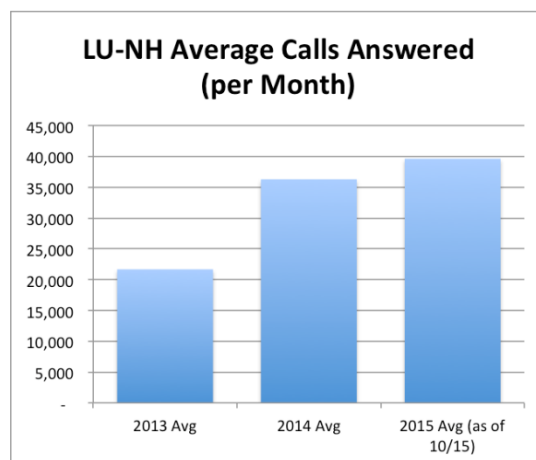
Moreover, CSR-assisted credit/debit card payments comprise the costliest payments to process and the riskiest in terms of employee fraud. PCI DSS requirements and the need to encourage customers to use more cost-effective payment channels has led the utility industry in the direction of exclusive use of self-service credit/debit card payment processing, through the web and IVR.

As a Level 3 Merchant (processing 20,000 to 1 million card payments annually), LU must perform an annual self-assessment and quarterly PCI DSS scans of its data network. LU conducted its first self-assessment in September 2015, but had yet to conduct a quarterly scan of its data network. The self-assessment revealed that the following LU payment channels lack PCI DSS controls, are non-compliant, and thus could be compromised by those seeking to steal payment card data:

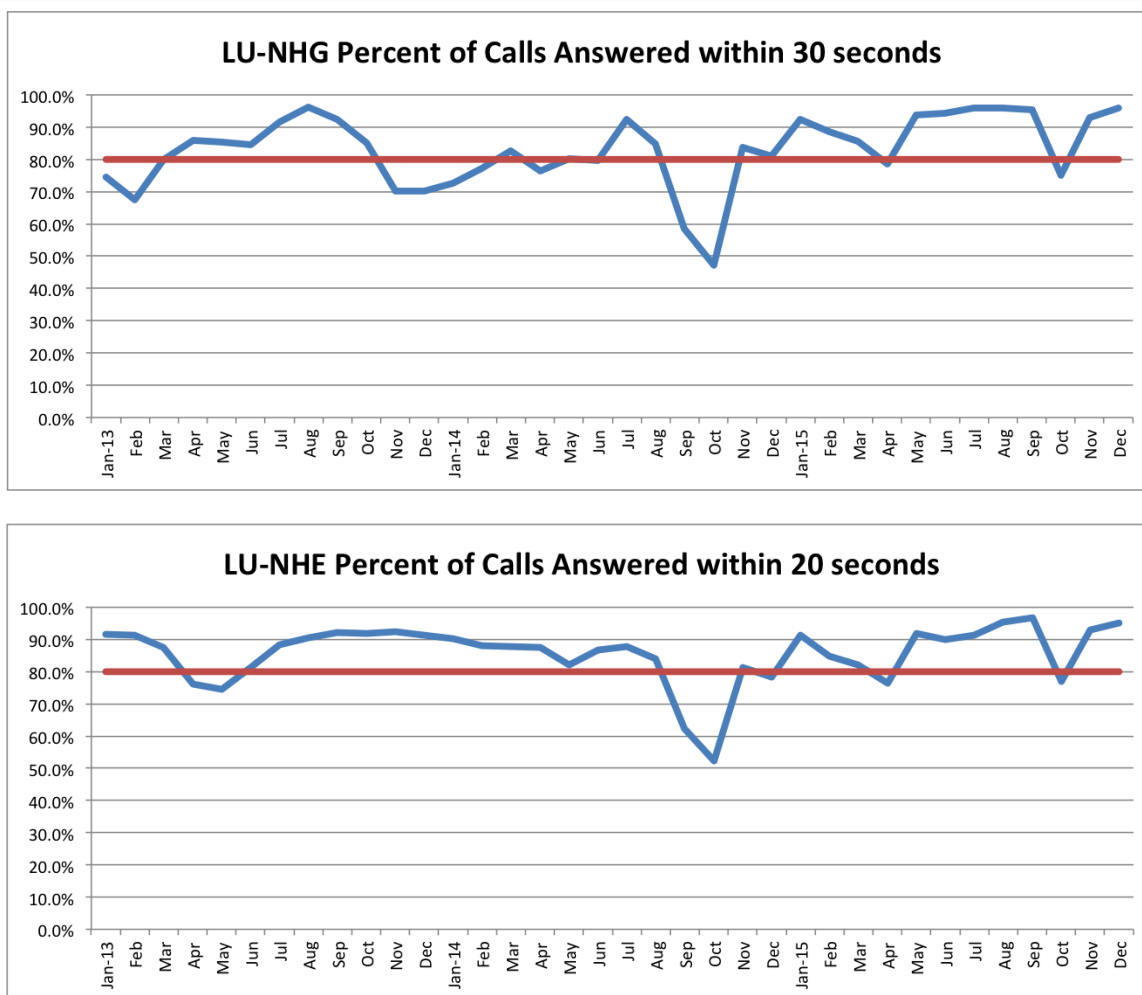
- Liberty Utilities Website
- Cogsdale Web2
- CSR workstations used to process phone and walk-in payments
- IVR telephony used to redirect customer calls to BillMatrix

## 7. Staffing additions have increased call center performance.

LU-NH increased Contact Center staffing in 2015 to handle increased call volumes encountered since the Cogsdale Implementation. Service Level performance improved as a result of the staffing additions. Average calls answered per month nearly doubled since 2013, as the following chart indicates.



During 2014, the Contact Center staffing was insufficient to meet the service level goals of answering 80 percent of calls within 30 seconds (gas) and 80 percent of calls within 20 seconds (electric). The service level call center metric links closely with required staffing. Management increased staffing during 2015 and service level performance improved. The following charts detail Contact Center service level performance for gas and electric service from 2013 to 2015.



**8. Call handling quality has not been measured consistently or comprehensively and sampling that has occurred has evidenced a breadth of problems. (Recommendation 5)**

LU-NH established a call quality monitoring program in 2015. On average, only four observations per CSR were monitored for the year. Typically, companies measure call quality much more frequently (at least weekly), especially for newer, less experienced employees. Customary practice also includes participation by all supervisors and managers to the call quality monitoring process, with periodic scoring calibration. Only one Contact Center supervisor was responsible for monitoring quality of CSR call handling in 2015 and LU-NH has not conducted any recent call quality calibration sessions.

Additionally, LU-NH's call quality monitoring form does not appropriately weight non-compliance with Commission administrative rules created to simplify, standardize, and ensure equal application of the administrative processes used to serve customers and to increase the level of information and protection provided. The rules specifically address service establishment, billing, payment processing, and collections. Call sampling from January, April, June, and November 2015 revealed non-compliance with administrative rules and inconsistency in call handling. Sampling found:

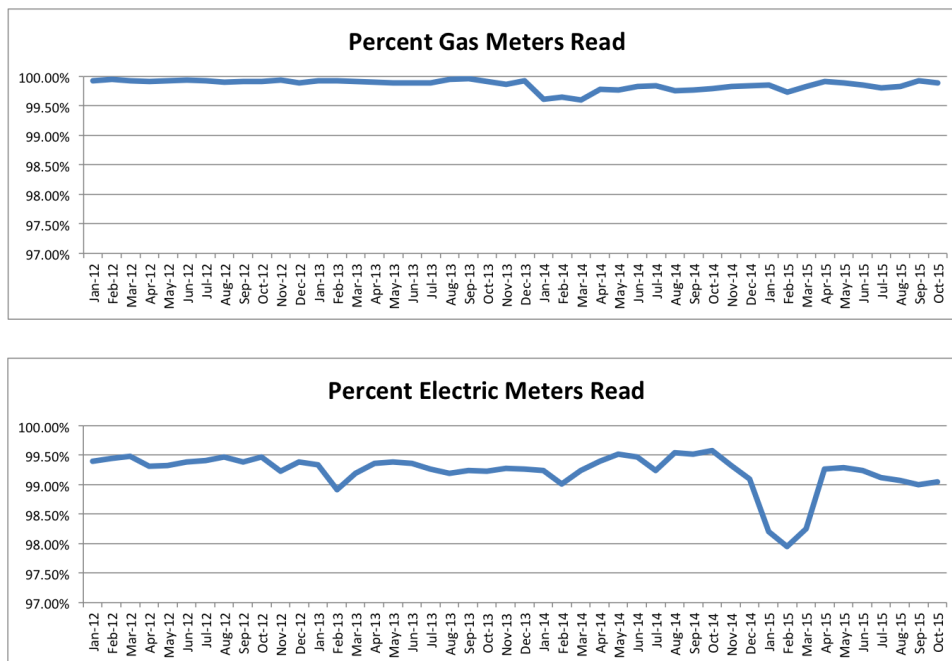
- Customers not offered the appropriate terms on special payment arrangements (SPAs)

- Customers negotiating payment arrangements not informed they could contact the PUC staff for review of the reasonableness of the arrangement offered.
- Disconnected hardship customer not offered the appropriate SPAs terms for reconnection of service.
- Customers not made aware of all the options that could waive a security deposit (third-party guarantee option was most often omitted).
- Deposit amounts not quoted.
- CSRs not consistently referring payment-challenged customers to 2-1-1 or fuel assistance agencies.
- CSRs not effectively discussing high bills.
- Actions taken during the call not summarized at the end of the call.

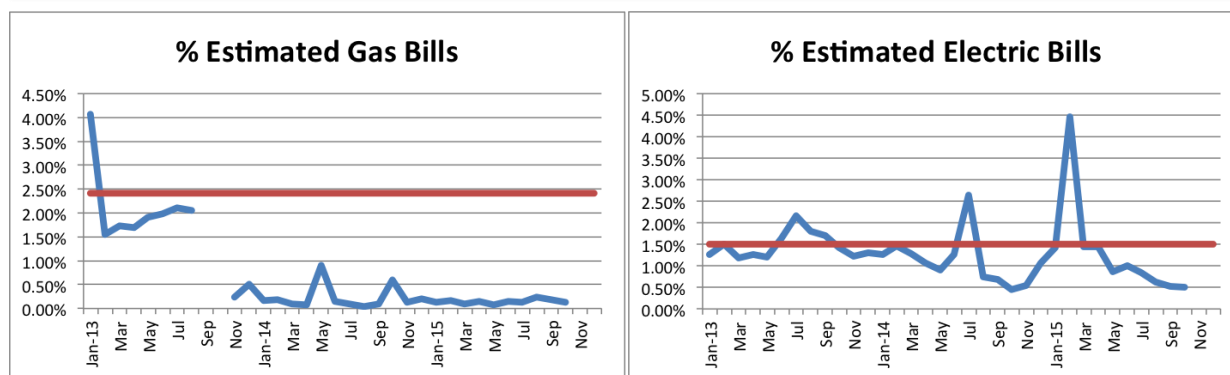
In addition, call handling performance varied widely in calls observed during the audit.

## 9. Meter Reading performance appears adequate as evidenced by a high read rate and a low percentage of estimated bills.

Meter Reading read rate has been generally good, with the exception of some challenges getting electric service readings during the winter of 2015 due to storms and bad weather.



Percentages of estimated gas and electric bills have remained low since the transition. The following charts detail the percent of estimated meter readings each month from January 2013 through November 2015.



**10. The lack of a meter data management system produces inefficiency. (Recommendation 10)**

LU-NH does not have a system to archive and manage meter reading data. Management stores meter reads for each route and cycle on a flat-file before uploading to Cogsdale, but does not archive the data in a manner that facilitates retrieval or data mining. The October 2015 Meter to Cash Internal Audit Report by LU Internal Audit identified non-archived meter data as one of the opportunities LU has to improve its controls and efficiencies over the meter-to-cash process. Management's response to the finding acknowledged the ability to retrieve the data, but noted that the process is cumbersome and time consuming.

Meter data management systems are becoming a standard in the industry, especially for utilities with automated meter reading technology. They facilitate meter data-mining efforts to produce better load and demand forecasting data, assist in detecting energy diversion and theft, and provide a single repository for processing and managing meter and meter operations data and meter readings.

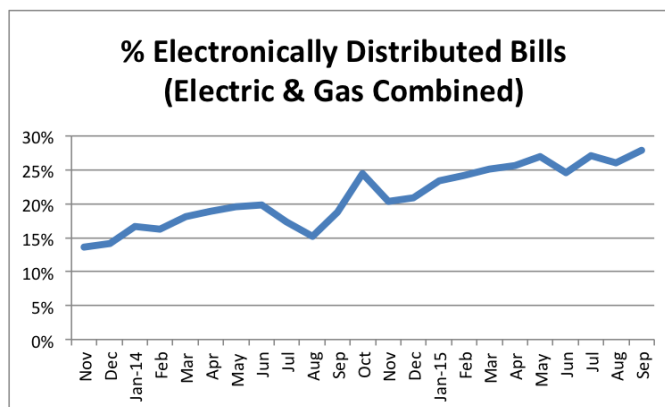
**11. Procedures for addressing theft of service and unaccounted for usage are not sufficient. (Recommendation 11)**

LU-NH has not formalized procedures to investigate meter tampering, theft of service or other unaccounted for usage. In 2015, LU-NH created two special back office teams to address zero usage/stopped meters and incorrect meter multipliers. However, no formal organization exists to optimize revenue assurance. No policies and procedures exist to guide efforts to investigate suspected theft of service, meter tampering, or other unaccounted for usage.

**12. Since 2013, LU-NH has appropriately acted to increase E-Bill presentation (electronic bill presentation).**

The percentage of bills distributed electronically to customers, as depicted in the following chart, has nearly doubled since November 2013.

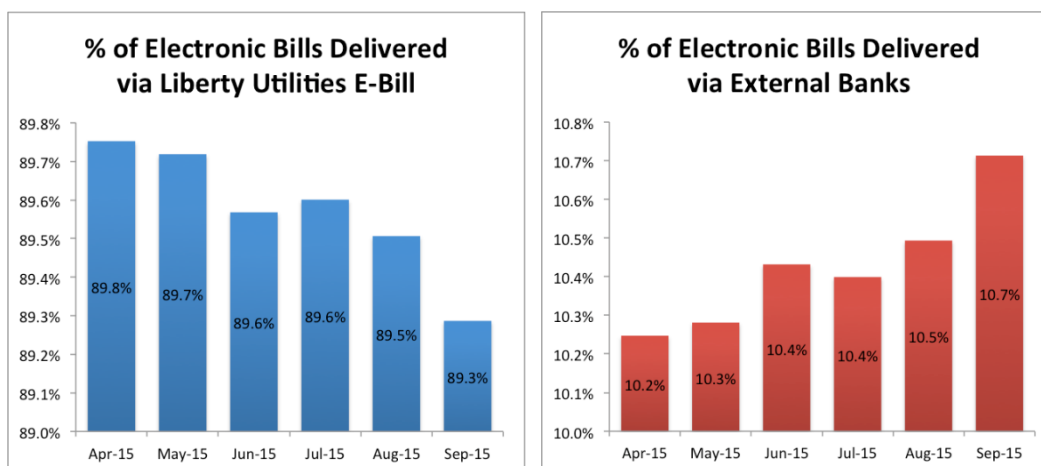




Customer bills are distributed electronically through Fiserv, LU-NH's third-party vendor, in one of two ways:

- Customers sign up for the Liberty Utilities' E-Bill program on the website.
- Customers receive an electronic copy of the bill through their banking institution.

From April 2015 to September 2015, participation in E-Bill declined slightly, while more customers enrolled in electronic bill delivery through their own banking institutions, as seen in the following charts:



### 13. Customer dissatisfaction with website services has resulted from insufficient attention by management. *(Recommendation 8)*

LU-NH has struggled to provide complete and current customer billing and payment information on its website. Customer dissatisfaction with website services has been significant. Until very recently, enrolling in E-Bill was the only way for a customer to view their current balance and bills. However, upon enrollment, customers were required to opt out of receiving a paper bill by mail. Any customer wanting a paper bill would have to discontinue E-Bill participation, as shown below:

*"Now that you're enrolled in eBill you will no longer receive a paper bill in the mail. You'll receive an email message when your next bill is available to view. Simply log back in to view your bill and schedule payment"*

On the next scheduled billing date, enrolled E-Bill customers receive an email notifying them that their current bill is ready for viewing online. Copies of each monthly bill, from that point forward, will accrue on the E-Bill account (up to 13 months of bills). For instance, if a customer has participated for two months, the current and prior bill will be available to view online (and nothing more). Participation does not provide ready access to the past 13 months of billing information, but only to bills that have accrued since enrollment.

We found this an outlying approach to offering online bill and payment services. Customers generally can opt out of paper bills, but not as a condition of viewing online account information. Most utilities offer customers an online account management portal, primarily to provide a self-service way for customers to view and pay bills online and to gain access to payment and billing history. Companies typically roll other services into these portals as well (e.g., outage reporting and restoration status, sign up for budget billing or auto-payments, customer notification preferences, and service requests to start and stop service).

Liberty Utilities' enhanced its website on April 7, 2016. Prior to that enhancement, Liberty Utilities did not offer the online account portal typical of utilities. Liberty Utilities offered only the option to participate in the E-Bill program. E-Bill provides only the current account balance, a list of payments received online through E-Bill, and the ability to pay one-time or schedule recurring payments. Payments received through other channels (mail, walk-in, call center, IVR, or bank bill pay) were not posted in the payment history. Additionally, nightly updates can run until well into morning, making customers accessing account detail before 10 a.m. (for instance) unable to see the result of amounts processed and posted the day before.

The most recent web enhancement included the creation of a "My Account" section on the website. That section now provides more payment history (all payments received in the last two months). Customers can choose to enroll in E-Bill and/or "My Account." They must, however enroll in each program individually, as explained in this excerpt from the website:

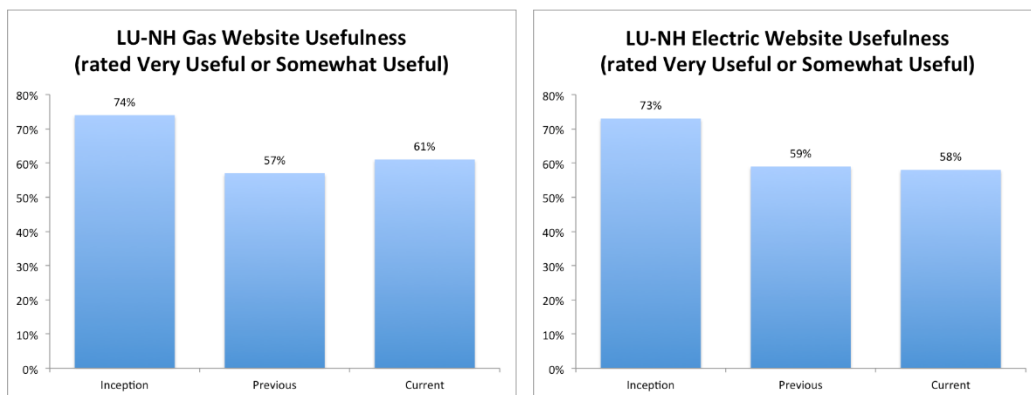
*Already using Paperless Billing (formerly E-bill)? You can continue to sign in directly to your Paperless account and make a payment. Registering with My Account gives you the added benefit of viewing all payments made within the past 60 days, and ensures you will be able to access new website features as they are rolled out.*

LU-NH's "My Account" expands recent payment information (past 60 days) available to customers online. However, My Account does not provide access to the most recent bill, or prior bills. Customers must enroll in E-Bill to view an electronic copy of current bills, and any accrued bills since they joined.

Customers very frequently visit a website to make a payment, which requires knowledge of the current and prior balances due. Most expect to be able to view prior bills and payment history, so that they can verify receipt of a payment before they make another. LU-NH has added more features, but customers must sign up for two different services to obtain both billing and payment information. Again, by signing up for billing information, they also agree to discontinue receiving a paper bill.

LU-NH's 2015 Customer Satisfaction Tracking New Hampshire Gas revealed that only 50 percent of customers visiting the website were satisfied or somewhat satisfied with the website. The survey also found that "Customers were less likely to visit the website for customer service in 2015 than in 2014."

Additionally, customer's ratings of website usefulness have dropped substantially for LU-NH gas and electric customers, as shown in the following charts from the 2015 Customer Satisfaction survey.

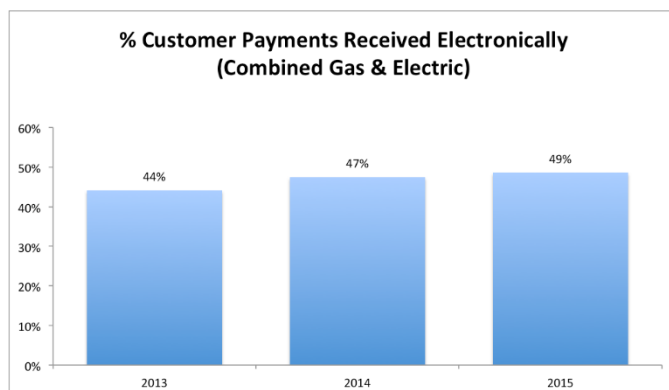


The percentage of LU-NHG customers rating the website as "not useful" nearly tripled, from nine percent in 2012 to 25 percent in 2015 for electric customers, while the level of "not useful" ratings doubled for electric customers, rising from 10 percent in 2012 to 20 percent in 2015.

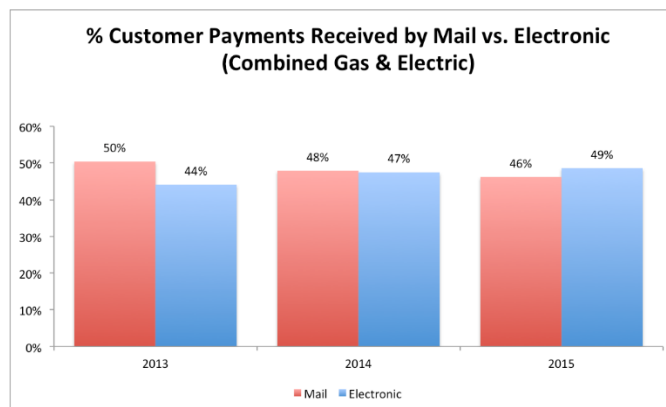
#### **14. Electronic receipt and processing of customer payments has appropriately been increasing.**

Customer payments received and processed electronically has increased since 2013. Approximately half of payments received by LU-NH now get received and processed electronically, as seen in the chart below. Electronic payments include:

- One-time payments on Liberty Utilities website
- Self-service payments through Liberty Utilities' IVR (phone)
- E-Bill web payments
- Other ePayments through banks/credit unions
- Direct ACH and EFT payments



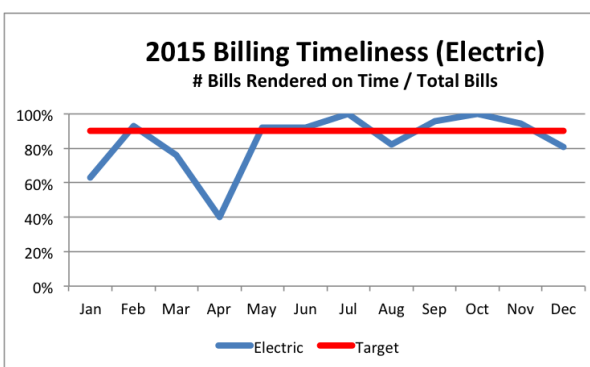
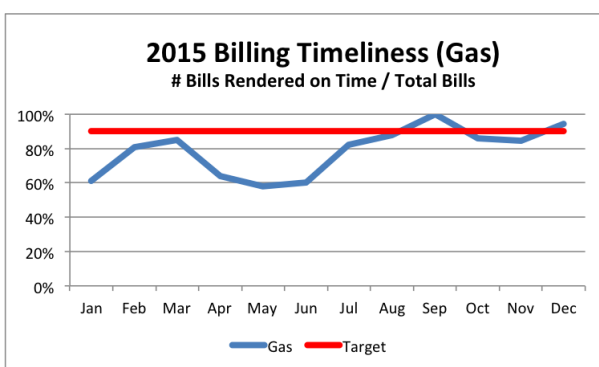
Since September 2015, electronic payments began outpacing mailed payments, as the following chart shows.



These numbers compare well to industry data. Most utilities have seen a significant increase in the percentage of payments received electronically, as companies offer more electronic payment channels to customers. Increasingly, customers are moving away from paper check payment for most non-cash purchases, as detailed in the 2013 Federal Reserve Payment Study.

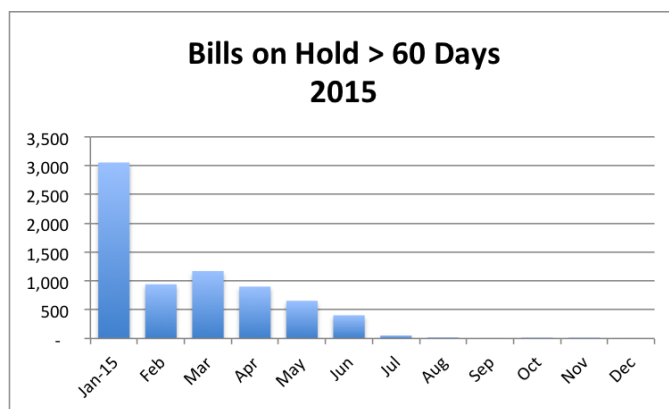
#### 15. LU-NH's billing performance has returned to target levels.

Performance fell below target until late 2015. LU-NH struggled with billing issues following the two Cogsdale implementations in 2013 and 2014. Most utilities implementing new customer information systems experience billing issues post-implementation. The back-to-back deployments impacted billing timeliness performance (defined as the percent of bills rendered on time) until late 2015, as evidenced by the following charts.



Initially, LU-NH struggled to work through issues with the bill print vendor (Fiserv), and to deal with bill print exceptions and rejects. LU has since developed better vendor interface processes to improve bill presentation timeliness.

LU-NH doubled staffing in the billing department in 2015 and increased supervision. Management took these actions to deal with growing special billing backlogs. Within six months, LU-NH's bills on hold backlog dropped significantly, as the next chart shows.



Limited functionality in the Cogsdale system has challenged and increased workload for LU-NH's billing group. For instance, Cogsdale routines can be used to auto-estimate electric or gas usage, if the account has more than 12 months read history (reading from same month last year). LU-NH has a process to review and correct auto-estimated bills manually. In the event that usage appears to have changed over time, billing representatives must manually estimate these accounts. Additionally, LU-NH's manual and system estimation routines do not factor in degree-day impact, a practice standard within the industry. Until a Cogsdale enhancement in mid-2014, back billing over several months required a manually intensive process. These issues and numerous more have been identified and addressed (or are being addressed) through data fixes, code fixes, or program enhancements. From January 2015 to January 2016, LU-NH reported more than 700 Cogsdale issues to IT.

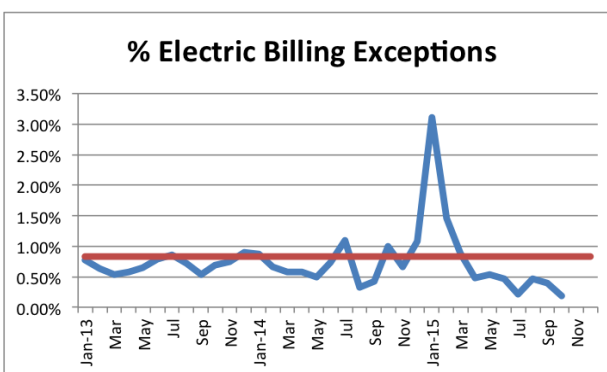
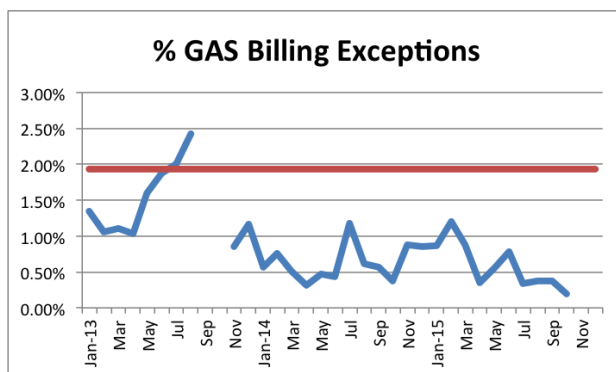
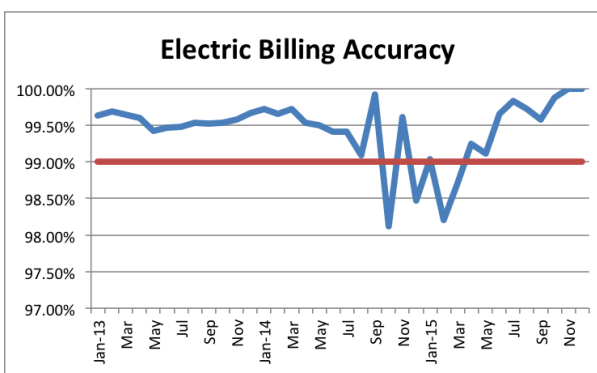
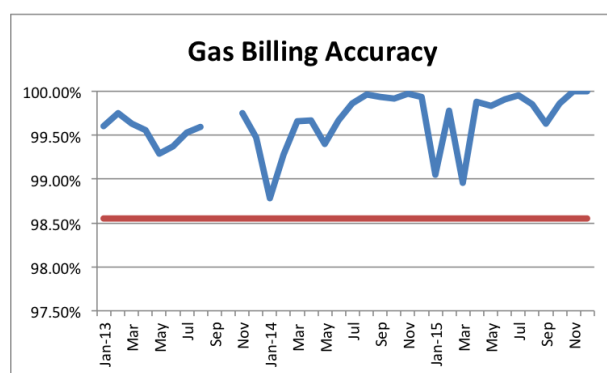
LU-NH reports Billing Accuracy and Billing Exceptions monthly to the Commission. The following charts detail performance on each metric since January 2013. These metrics came into being prior to APUC's New Hampshire acquisition. Billing Accuracy seeks to measure the percentage of total bills corrected. Billing Exceptions measures the percentage of billing exceptions resolved prior to billing.

Cogsdale presents difficulty in measurement. Its billing engine works differently from most other billing systems. It does not explicitly identify billing exceptions, but rather produces bills (correctly or incorrectly) that require LU-NH billing personnel to identify and remove any incorrect or incomplete bills from those sent to the third party (Fiserv) for printing and mailing.

Management holds bills until the data can be obtained/corrected and then re-calculated and released to be printed. This activity generally occurs during an off-cycle billing run (delayed past the normal billing cycle).

As a result, LU-NH's definition of Billing Accuracy and Billing Exceptions differs from what was reported historically. LU-NH defines Billing Accuracy as the percentage of off-cycle bills, under the assumption that if a bill is not produced on-cycle (*i.e.*, is held), then it is inaccurate. The traditional definition of Billing Accuracy is the number of corrected bills (as defined by the number of cancel/rebills).

LU-NH defines Billing Exceptions as the percentage of bills on hold. Billing Exceptions provide a measure of the completeness and quality of billing data, before a bill gets issued. In LU-NH's case, the bill is issued and has to be held until the issue is resolved.



**16. LU-NH's Balanced Scorecard does not measure the same billing metrics as reported to the Commission. (Recommendation 6)**

LU-NH's Balanced Scorecard metrics match most of the metrics required monthly by the Commission, but fail to track a number of Commission-required billing metrics. The three missing from the Balanced Scorecard are Estimated Bills, Billing Exceptions, and Bill Accuracy, as defined and reported to the NHPUC.

**17. The lack of a Contact Center specific emergency/storm plan creates risk that planning can mitigate. (Recommendation 7)**

LU-NH does not have a Contact Center specific emergency/storm plan in place. The Contact Center's role and response during a large outage or storm is minimally defined in LU's Electric Emergency Response Plan (Appendix N). The level of detail provided in the four-page appendix is insufficient to guide Contact Center management and staff during a large outage or storm.

**18. Business Continuity Plan for Customer Care is not sufficiently complete.**  
(Recommendation 7)

The 2015 Customer Care Business Continuity Plan provided during the audit period was incomplete, and remained under development. Company-wide, Business Continuity Plans have been under review and development since 2015. LU projects a completion date of April 30, 2016 for Customer Care.

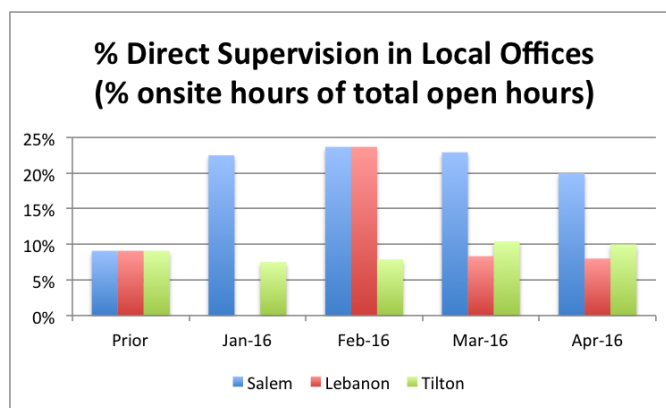
**19. Supervision at satellite offices and call monitoring have not been sufficient to support optimization of performance.** (Recommendations 9)

LU operates three satellite offices staffed with CSRs who serve walk-in customers, answer incoming customer calls, and perform other desk duties in between customers. Providing local offices for customers is a key customer service strategy for Liberty Utilities. Insufficient supervision has led to issues in quality and employee misconduct in the satellite offices.

Since opening four offices in New Hampshire, LU has been forced to close two of the four offices at different points to address employee misconduct. Management closed the Lebanon office from September 2015 through mid-February 2016, releasing the majority of Customer Service employees reporting to that location and rehiring and training replacements. The Tilton Office experienced similar issues.

Management staffed each of the satellite offices with three or four employees working full time from 9 a.m. to 5 p.m., Monday through Friday. Staffing generally included one lead CSR and two or three CSRs. A manager or supervisor visits the offices periodically. In 2015, these supervisory visits generally occurred once a week, lasting about four hours at each office.

In January 2016, LU-NH formalized a visitation calendar to provide more supervisory coverage in the offices. This approach has increased the amount of time spent at each office, as the following chart shows. Nevertheless, employees still operate without onsite supervision or management for 80 to 90 percent of the work hours each week.



Note: onsite time is calculated based on 4 hours for each visit

Call quality monitoring poses another problem. LU-NH has not fully developed a call quality monitoring program. On average, CSRs were only monitored four times in 2015. The lack of onsite supervision and minimal call monitoring results in very limited management visibility into CSR performance at these satellite locations.

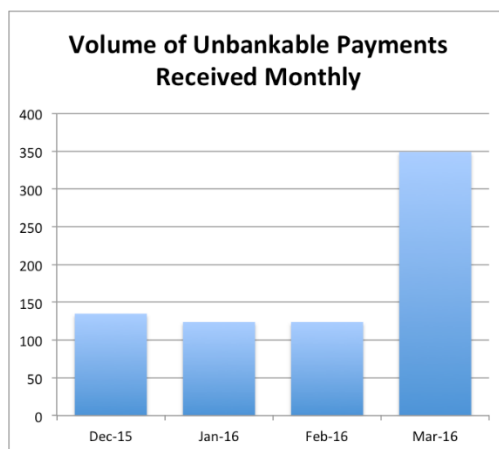
**20. Management does not process customer payments consistently or timely.**  
*(Recommendation 2)*

Check payments received in LU-NH's walk-in locations and at the Londonderry HQ get held for up to a week awaiting bank courier pickup. Payments get credited to customer accounts at the time of receipt, but check deposit is delayed.

Due to delays in processing payments for customers with multiple accounts (paying with one check), many of these customers have been instructed to send payments directly to the Londonderry office for processing, bypassing the lockbox, requiring manual scanning by LU-NH Finance personnel to process them.

Customers paying through third-party vendors (BillMatrix/Fiserv, Western Union, Checkfree/Fiserv) do not receive credit for their payment until LU-NH posts the payment files. Many customers have complained about lengthy delays in processing payments, especially customers paying electronically through local banks or credit unions bill pay services. Banks not part of Fiserv's electronic banking network print and send paper checks in place of an electronic payment. This step slows down the payment receipt process.

Any payments that cannot be processed by LU's third-party vendors, whether by physical check or through an online portal, are returned to LU as unbankable payments, Liberty Utilities did not begin tracking the volume of unbankable payments received until December 2015. The following chart details the volume of unbankable payments received from December 2015 to March 2016.



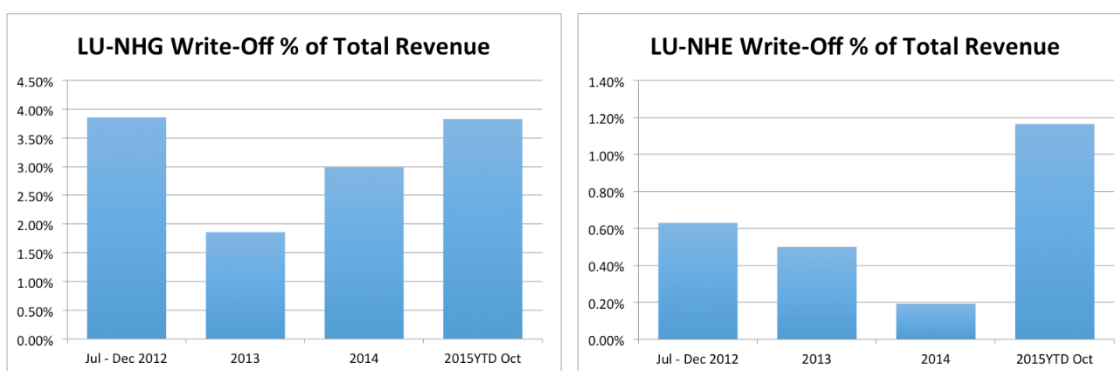
The numbers appear relatively low, but each represents a payment submitted to Liberty Utilities to be applied to a customer balance. Until these unbankables are researched and resolved, payment processing is delayed. Depending upon the month of receipt, delay in the processing could result in some customers being disconnected for non-payment.



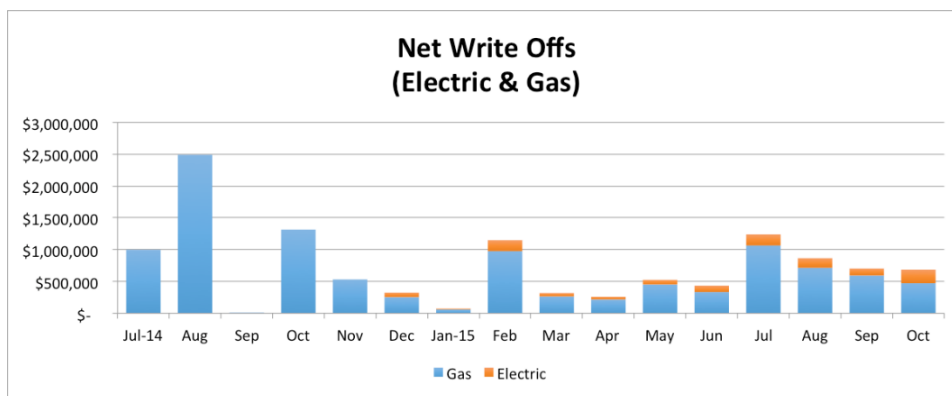
**21. The Cogsdale implementation impaired collections performance in 2014 and 2015, through a suspension of collection treatment, however, LU-NH has appropriately resourced an inside collections group to address delinquent receivables.**

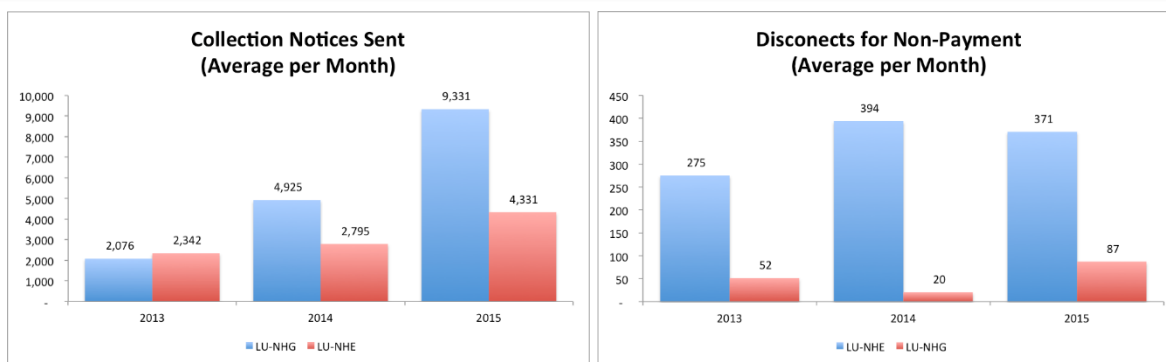
LU-NH suspended field collection activity for several months following each Cogsdale implementation. As a result, past due receivables grew. A four-to-six month suspension of collection action is typical following the implementation of a new Customer Information System within the utility industry. During post-go-live, the focus is on producing accurate and timely bills and being responsive to customer inquiries and concerns. Collection treatment usually resumes once the system has stabilized. In LU-NHG's case, collections resumed in the late spring and early summer of 2014, while LU-NHE's collections resumed in spring of 2015.

Due to the suspension of collection activities, LU-NHG did not write off accounts from September 2013 through August 2014 and LU-NHE did not write off accounts from July 2014 through January 2015.



The next chart shows significant LU-NH monthly write-offs following the suspension of collections activities prior to the Cogsdale implementation.

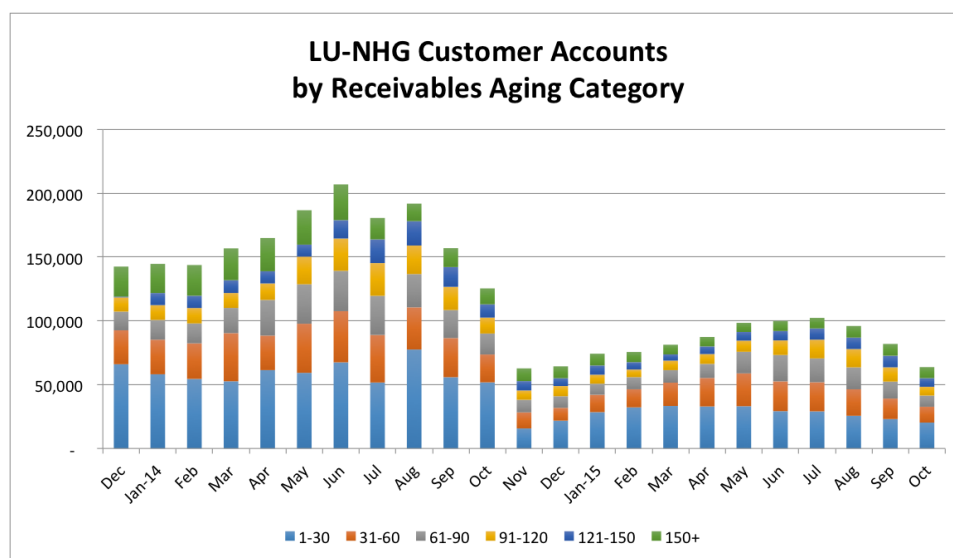


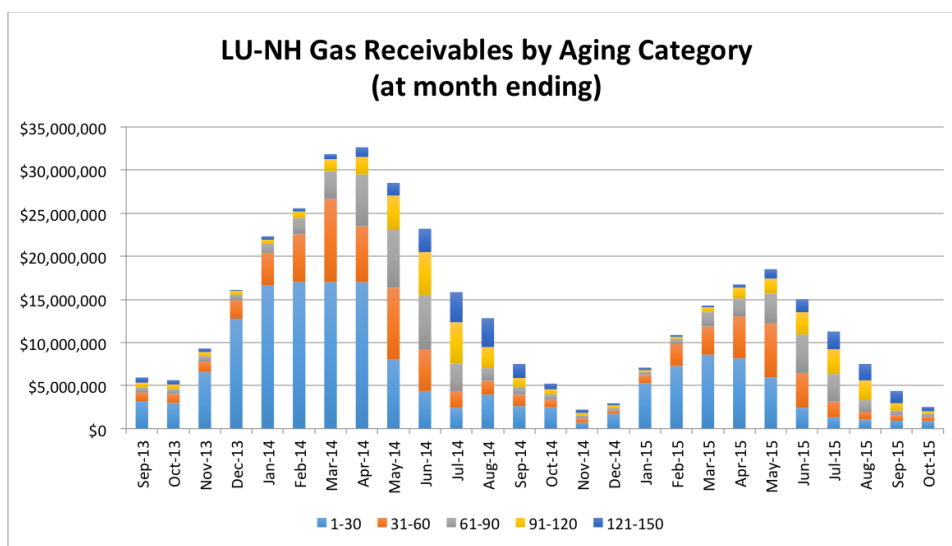


In 2015, LU-NH sent out nearly twice as many collection notices as it did in 2014, and increased non-payment disconnect activity.

LU-NH has established a small inside collections team to focus on active collections. In 2015, the group began making personal calls to larger commercial accounts, landlords, and property management companies. The group has also conducted outreach to elderly customers prior to the end of the winter moratorium to help set up special payment arrangements.

LU-NHG efforts in 2015 have had a positive impact on receivables, as the following charts show.





LU-NH relies on an outside collection agency to collect inactive receivables. Upon write-off, uncollected balances are transferred to collectors to handle. However, the interface between LU-NH and the outside collector has been problematic. Customers who have requested reinstatement of service following account write-off are told to call the collector directly. Payments sent to LU-NH following write-off (instead of the outside collector) have not always been applied correctly or communicated to the collector, creating confusion and customer dissatisfaction.

LU-NH revised its policy in November 2015, and will now recall the written-off balance with a payment or payment arrangement to re-establish service, instead of relying on the vendor to negotiate payment arrangement terms. Fuel Assistance and hardship customers are recalled and service is re-established without a payment.

## **22. Cogsdale's limited functionality has increased staffing requirements for the Customer Service organization** (*See Information Technology*).

Significant gaps in functionality existed between the Cogsdale CIS system and the prior National Grid CIS, as documented in system design specifications. Management addressed these gaps largely through manual work-arounds, not automation. As a result, more Customer Service resources were required to produce bills and resolve customer inquiries.

LU-NH's billing group doubled in staffing from 2013 to 2015 to address a growing backlog of bills on hold and perform a variety of manual daily routines that support the billing process (refer to Conclusion 15). Call Center staffing has doubled as well to address increased call volumes (refer to Conclusion 7). While many of the system defects encountered following implementation have been or are being resolved, the gaps in functionality still remain.

## **D. Recommendations**

1. [REDACTED]

**2. Streamline payment processing to reduce delays and properly credit accounts.**  
*(Conclusion 20)*

LU-NH should conduct root cause analysis of payment-processing times by channel, and identify ways to improve the time between payment receipt and payment posting, especially with payments processed by third-party vendors. Performance metrics should be established to track payment processing times by channel and to provide insight into vendor processing performance.

LU-NH should streamline payment acceptance at LU-NH facilities to reduce delays in presenting checks to depository banks, possibly through local depository banks or remote deposit.

Unbankable payments should be processed with priority through the online vendor portals to expedite resolution. Root cause analysis should be conducted on unbankables to identify and address any systemic issues. LU-NH should pursue the addition of local banks and credit unions to the Fiserv electronic banking network.

Additionally, LU-NH should properly post customer payments received from third-party vendors to reflect the date the payment was presented to the third-party rather than the date it was posted by LU.

LU-NH should investigate

**3. Cease phone recordings of credit/debit card payments calls and cease accepting rep-assisted payments or at a minimum, limit payment acceptance to a select group of representatives to minimize risk.** *(Conclusion 6)*

Call recordings are storing card member data without encrypting the data. LU-NH should cease phone recordings immediately of all credit/debit card payment calls. LU-NH has plans for a new call recording system that appears to address this issue, once it has been implemented.

LU-NH CSRs within the Contact Center, Collections, and the four satellite offices are processing credit and debit card payments for customers. This increases risk of fraud. Minimizing the risk of breach and fraud will be much easier with a more limited group of representatives accepting credit/debit card payments. Ultimately, LU-NH should shift exclusively to self-service credit/debit card payments.

Additionally, LU-NH should conduct the required quarterly scans of its network and address any inadequacies to become compliant with PCI DSS.

**4. Continue to improve customer service hiring practices and working environments to facilitate higher retention and employee engagement.** *(Conclusion 4)*

Increasing turnover and poor employee engagement present new challenges for LU-NH. The shift to direct hire should enable better candidate selection. Further efforts are required to help LU-NH identify the right candidates for hire as well as create a working environment in which agents will strive to excel and develop. LU-NH should continue to improve its new-hire practices to positively impact agent retention and ultimately customer satisfaction:

Assembling the right mix of resources to ensure high-quality, cost-effective customer care is a constantly evolving challenge. With labor representing 80 to 90 percent of a customer service budget, retention is critical. The key to higher retention is not only finding individuals that can do the job, but also finding individuals that want to do the job and will fit into a company.

Pre-hire testing can save substantial time and money, significantly cutting the time to hire by narrowing the applicant pool to those who demonstrate specific skills. Simulation and role-play can further qualify job applicants prior to interview—giving candidates a chance to experience the job prior to hiring. Behavioral testing takes it one step further, identifying applicants who are more likely to like the job and want to do well.

CSRs are a direct point of contact for customers about their utility service. Because issues related to utility service can be complex topics to customers, it is imperative to have skilled agents. Recognizing it takes considerable time to learn the extensive subject matter required of an agent, the recruitment and retention of qualified agents for this important front-line position is a high priority.

- Enhance the recruiting, hiring and on-boarding process of new CSRs:
  - Implement behavior-based assessment tools and interviewing techniques
  - Institute the use of job shadowing, peer interviews and call simulations to better convey job expectations to candidates
  - Survey new hires to better understand how to continually refine the process and minimize new-hire surprise.
  - Promote employee referrals as a source of eligible candidates. By tapping into them as a source for open positions, organizations achieve greater loyalty, lower turnover, improved productivity and profits.
- Enhance retention of employees by further defining career progression paths and providing additional training opportunities.
- Continue to fund on-going reward and recognition activities for staff.
- Design and implement “real-time coaching” training for call center supervisors and management staff.
- Fully commit to a call quality monitoring program to identify employee development opportunities and encourage more consistent call handling.
- Formalize the refresher training program to further develop call-handling skills.

## **5. Improve the quality of service provided to customers. (Conclusion 8)**

Corporate customer service decision-making and execution must include a focus on quality and therefore the company must consider the customer needs before, during and after each contact to ensure a high level of quality service.

LU-NH began a call quality monitoring program in 2015. However, it has not been fully developed or implemented. While this is an important step in helping employees and management recognize the importance of the “customer experience”, more should be done to further develop the program and emphasize the importance of service quality.

- Revise call evaluation criteria to include components that monitor compliance with PUC administrative rules.
- Monitor inbound customer care calls as well as manual outbound dunning calls.
- Commit the resources to adequately monitor, evaluate, and discuss results. Effective call monitoring is all about commitment of resources.
- Implement coaching training to ensure that supervisors, trainers, and managers are equipped to provide constructive coaching feedback and developmental guidance.
- Develop and evaluate coaching performance (observe and coach).
- Introduce performance measures to track team progress and performance and hold coaches and supervisors accountable for team’s improvement.

**6. Review and revise billing performance metrics to be more reflective of operational performance and track billing performance consistently between the Balanced Scorecard and the metrics reported to the NHPUC. (Conclusion 16)**

LU-NH tracks different billing performance metrics in the Balanced Scorecard than are reported to the NHPUC. Discussions should be held with PUC staff to establish billing metrics that are reflective of the current system and process used by LU-NH to issue and print bills. The metrics should also be tracked in the corporate Balanced Scorecard.

**7. Update Contact Center business continuity plans and create a Call Center-specific storm plan to mitigate risk. (Conclusion 17 and 18)**

LU-NH has not updated its Contact Center Disaster Recovery plans. They do not reflect the current options for continuity. LU-LABS has established options for contact center continuity in the case of inoperability at any of its contact centers, but LU-NH has not appropriately updated the Contact Center operational section of its disaster recovery plans. LU-NH should update its formal Contact Center Disaster Recovery plans to reflect established options for contact center continuity in the event of inoperability within the Contact Center or any of the four satellite offices.

**8. Improve web-based billing and payment self-services. (Conclusion 13)**

Customers generally visit a website to make a payment, which requires knowledge of the current and prior balances due. Most expect to be able to view prior bills and payment history, so they can verify that a payment was received before they make another. While LU-NH has added more features, customers must sign up for two different services to obtain both billing and payment information, and by signing up for billing information, willingly discontinue receiving a paper bill. LU needs further improvement to its website to make it easier for customers to view billing and payment history and to make one-time and recurring payments.

**9. Increase the level of supervisory coverage in the satellite offices. (Conclusion 19)**

The lack of onsite supervision and minimal call monitoring results in very limited management visibility into CSR performance at LU-NH’s satellite locations. LU-NH should dedicate additional supervisory resources to provide fulltime supervisory coverage in the satellite offices.

**10. Secure a system to manage meter reading data. (*Conclusion 10*)**

LU-NH does not have a system in place to capture and retain meter (usage) readings. The lack of a meter data management system makes it difficult to develop load profiles, optimize meter reading routes, and analyze meter reading history and performance. It also makes it more difficult to identify and investigate abnormal usage.

**11. Dedicate appropriate resources to create a revenue assurance group. (*Conclusion 11*)**

LU-NH should develop policy and procedures and a dedicated focus on revenue assurance. This includes policies to encourage the identification and reporting of suspected tampering or theft, both in the field and in the office.

The work processes created to address issues and backlogs in zero usage meters and incorrect meter multipliers should be folded into this organization, as well as data mining and analysis to identify conditions that could indicate lost revenue due to tampering, bypass, and theft of service.

### III. Planning and Budgeting

#### A. Background

##### 1. APUC's Overarching Strategy

APUC's business model focuses on growth, has depended on high rates of growth since its 1997 inception, and appears destined to continue to depend on acquisitions of small utility distribution and generation operations across the United States and Canada.

The parent's web-site describes this strategy clearly, focusing very strongly on APUC's process of "becoming." The following statement, with emphasis added, introduces searchers to the holding company's self-description:

*Algonquin Power & Utilities Corp. is a **growing** renewable energy and regulated utility company with **assets across North America**. The Corporation **actively invests** in hydroelectric, wind, thermal and solar power facilities, and sustainable utility distribution businesses (water, electricity and natural gas).*

*Algonquin Power & Utilities Corp. is focused on delivering reliable earnings, cash flow and dividend growth through **strategic acquisitions** and operational excellence. The Corporation is a member of the S&P/TSX Composite Index and trades on the Toronto Stock Exchange under the symbol AQN.*

*The Corporation is recognized for **developing and acquiring** long lived sustainable assets that are built for the long term, and has grown to over 66 power generation facilities and utilities in Canada and the United States. The company has approximately 1,450 skilled and motivated employees contributing to the success and growth of the business.*

Our Business	OUR BUSINESS
About Us	Algonquin Power & Utilities Corp. is a growing renewable energy and regulated utility company with assets across North America. The Corporation acquires and operates green and clean energy assets including hydroelectric, wind, thermal, and solar power facilities, as well as sustainable utility distribution businesses (water, electricity and natural gas) through its two operating subsidiaries: Algonquin Power Company and Liberty Utilities.
Acquisition Criteria	

The strength of focus on acquisitions shows in the three "buttons" on the web page describing the business: "Our Business," "About Us," and, notably, "Acquisition Criteria." The last offers, to say the least, a rare point of emphasis in a utility holding company's succinct message to stakeholders describing its business.

The two New Hampshire utilities that APUC owns are fairly small ones. That status particularly means that operation in the APUC family presents both opportunity and risk. Opportunity comes from the leverage (size) that other family members contribute to producing. That leverage should enable investment in organizations, systems, tools, and people that two, small, stand-alone companies simply could not justify on their own.

Risk arises from two principal sources. The first arises from the great financial needs that growth through acquisition requires. While striving to retain the financial ability to make acquisitions,



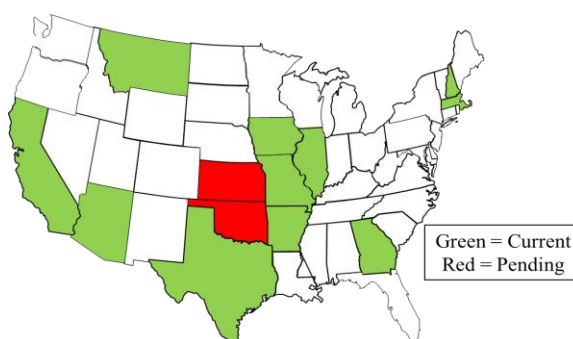
which requires flexibility to act when opportunities arise, parent company leadership must ensure that sufficient focus remains on meeting utility capital and operating needs. Second, from the perspective of New Hampshire interests (or those of any other state, for that matter), retaining top-level focus on two utility distribution businesses operating among many small, far-flung, trans-national businesses takes structure and focus. That the parent's operations split largely between generation and distribution sectors (moreover with relatively few individual operations combining them materially) complicates things. That the parent's roots lie in developing generation also complicates matters. Moreover, and perhaps most significantly, its culture, physical location, and corporate-level resources are not, at least on the surface, well grounded in U.S. energy distribution utility experience. For example, all of its distribution utilities operate within the United States. However, all of its corporate support structure and personnel operate from Ontario.

Factors like these that lie on the surface of the APUC strategy and structure make it appropriate to examine the degree to which APUC can move and has moved from an "acquisition" to and "operation" mentality, or, more precisely, given the continued focus on acquisition, how well it can support the maturation of an operations emphasis within the context of the acquisition and growth philosophy that has defined it since its origins.

Certainly, there is acknowledgement of and commitment to operational excellence in public statements and in what management told us during our field work. Just as certainly, there have been problems in integrating New Hampshire operations into the Liberty Utilities family. As our examinations in the areas addressed by the other chapters of this report demonstrate, significant improvement opportunities remain. It also appears that they may have to be captured at the same time that APUC digests yet another acquisition. Its pending acquisition of Empire District Electric would bring another 217,000 customers (in four states) to an existing base of 560,000 (a nearly 40 percent increase) across in 11 states. In microcosm, this pending acquisition captures the tension between APUC's priority on "becoming" (through growth) and its need for a focus on "being" (establishing a strong and sustainable operations model and focus).

## 2. U.S. Distribution Utility Territorial Breadth

The map shows the vast dispersion of Liberty Utilities operations. All distribution utilities operate in the U.S. The generation business (operated by APUC subsidiary Algonquin Power Company) owns all or portions of 33 generating facilities (1,100 megawatts). The 24 Canadian generators extend from the Maritimes to Alberta in Canada and the nine in the U.S. extend from three in New England to one in California. While predominantly Canadian, they too exhibit an extremely large territorial dispersion.



As determined by customer connections, natural gas distribution comprises the largest Liberty Utilities segment, with six U.S. operators providing service to some 293,000 customer connections. New Hampshire represents 30 percent of them. The second largest segment, water distribution and wastewater treatment includes 26 operations serving over 175,000 customer

connections. Electricity, the smallest segment by this measure includes two operations serving over 92,000 customer connections. New Hampshire represents close to half of them. APUC has a very short history in the electric utility distribution business. Its first entry came with acquisition of a 47,000 Lake Tahoe area electric company. At the time utility operations were limited to 70,000 water and waste water treatment customers.

The dispersion of both the utility and generation segments heightens the challenges of planning for optimization of operations and in developing budgets and managing expenditures to execute those plans.

The company is also pursuing growth in natural gas with pipelines delivering shale natural gas to markets.

Liberty Utilities, and in turn LU-NH, face significant operational performance challenges, while also meeting the aggressive financial growth expectations of its holding company parent. Meeting these challenges requires well designed and effectively executed budgeting and cost management. Budgeting and cost management begin with board of directors and senior executive leadership, which must articulate a consistent vision, establish a clear mission for meeting public service responsibilities, define objectives and goals, set priorities, develop strategic plans, allocate resources, develop financing plans, and implement and measure performance against these plans. The challenge is not simply to define management's vision and strategic plans in a comprehensive and specific way, but to bring them to fruition in a far-flung organization and in a way that responds generally to public service responsibilities and specifically to the requirements and expectations of regulators and stakeholders in New Hampshire.

The corporate processes for budgeting of capital expenditures and of operating expenses must be effective for good planning and strategies execution. The LU-NH processes must effectively provide for gas and electric system reliability through investments and operations and maintenance activities, while maintaining corporate financial health. Specific plans for funding utility capital requirements and allocation of capital are ultimately the responsibility of the holding company, whose leadership should play a strong planning and budgeting role, and recognize the need to give appropriate priority to utility needs when allocating resources.

Good practice builds O&M budgets from the bottom-up by management within each major organization. The use of activity-based budgeting has become a standard for optimizing costs, when properly applied. Once set, budgets require ongoing attention and revision where appropriate. This need has particular relevance for Liberty Utilities, which must not only sustain optimum operations at existing units, but has had to address the challenges and uncertainties of incorporating new operations in new regions on a recurring basis. Management reporting systems need to provide comprehensive, detailed monitoring and cost-control mechanisms for capital and O&M budgets at the Liberty Utilities level and at the New Hampshire levels for both electric and gas operations.

## B. Findings

### 1. Strategic Planning

#### a. Vision/Mission

Liberty Utilities operates under an established vision statement that we found appropriately communicated to employees. Specifically, Liberty Utilities seeks to be:

*The utility company most admired by customers, communities  
and investors for our people, passion and performance.*

Liberty Utilities has also set a high-level mission statement that calls for it to “*Deliver stable and predictable earnings*” and that establishes the investment thesis that, “*Maximum shareholder value is created by minimizing the risk associated with earning the permitted rate of return.*”

The Company has identified a number of attributes needed to attain its mission:

- Constructive Regulatory Relationships
- Caring Customer Experience
- Standardized Processes and Technologies
- High Level of Employee Engagement
- Earnings and Cash Flow through continued rate-base investments and expansion through utility acquisitions.

Liberty Utilities stresses a series of “Organizational Values,” which consist of family, community, quality, commitment, care, and efficiency.

Liberty Utilities prepared formal strategic plans in 2013 and 2014. Each covered the immediately following five-year planning period. Leadership decided that it was not necessary to prepare a 2015 version, placing priority on continuing to execute on existing initiatives.

#### b. Planning Process - 2013

The strategic planning processes in 2013 (and again in 2014) began with a “SWOT analysis” (strengths, weaknesses, opportunities and threats) prepared by the Liberty Utilities state presidents and the top 10 Oakville officers at the Liberty Utilities level. Leadership undertook this analysis to drive the focus of strategic planning for the next five years. Each of the four SWOT categories included ten areas for examination. We highlight some of them below:

- Strengths
  - Meeting investor expectations
  - Strong access to capital
  - Employee quality
  - Ability to execute transactions
- Weaknesses
  - Lack of business development around organic growth
  - Capital constraints
  - Key personnel stretched thin
  - Specialized knowledge stretched thin
- Opportunities

- Accelerated infrastructure recovery
- On-main build outs
- Credit rating improvements
- Threats
  - Capital required exceeds Liberty Utilities' access
  - ROEs lowered
  - Access to capital markets closed.

These examples tend to underscore Liberty Utilities' strength in acquisitions, and weaknesses in delivery (thin staffing and knowledge), and a view of opportunities and threats focusing on acquisitions versus operations.

Following the SWOT analysis, the Oakville strategic planning group developed a strategic plan. The plan finally approved set forth strategies and initiatives divided into four major groups.

The first group consisted of "Driving Maximum Returns." It included three notable initiatives:

- *Enhance Regulatory Relationships*
- *Drive Local, Responsive, and Caring Customer Relations*
- *Focus on organic growth and diversified investments.*

The regulatory relationships initiative reflected recent circumstances in New Hampshire, following the transfer from National Grid. Management observed that National Grid did not have extensive contact with New Hampshire regulators. There had been long periods between rate cases. Management added a local regulatory position in New Hampshire and one in Oakville.

The customer relations initiative included planned customer surveys for all utilities in late 2014, using in-depth focus groups organized and conducted by a third-party contractor. One change resulting from this initiative was the introduction of walk-in customer service centers.

The 2013 strategic plan's second group of initiatives focused on "Acquisition Growth." The first of its two initiatives sought to introduce methods to support more discipline in assessing acquisitions and ensuring their financial contribution. The second of these acquisition-related initiatives sought to identify and seek out the "orphans" of large holding companies (*i.e.*, operations too small to attract the attention of other acquirers operating in the industry).

"Operations and Integration" formed the third group of strategic initiatives. Its first element sought to "*Evolve the Transition Management Office*" in order to strengthen the ability to integrate newly acquired operations. Two other initiatives sought to bring commonality to dispersed operations by documenting "*the 'Liberty Way'*" and managing employee cultural transitions.

The fourth area addressed "Business Infrastructure Strategies," including a series of system initiatives. These system initiatives included IT infrastructure, a new nationwide Cogsdale CIS upgrade, and improving the capability of the HRIS, or Human Resources Information System, to support talent management. The other initiatives in this area took a process focus, seeking to:

- Improve human resources processes across the board
- Formalize risk management

- Increase the focus on strategic planning.

**c. 2014 Strategic Plan**

The 2014 strategic plan, which remains the most recent produced, provided significantly greater detail than did the 2013 version. No change occurred in “business thesis”, including the vision, mission and investment thesis and the organizational values. The plan also included for the first time a summarized five-year forecast that set forth specific financial metrics for gauging success over the planning horizon.

The 2014 strategic plan included sections treating: (a) human resource strategies; (b) operating strategies; (c) operations initiatives; (d) growth strategies; and (e) the five-year forecast. Each category is summarized in the following discussion.

*i. Human resource strategies*

The plan set forth a three-year roadmap of human resources “strategic objectives” that addressed (a) building a more efficient human resources organization, (b) developing talent and leadership, and (c) developing a “motivated” workforce.

The plan described a reorganization of Liberty Utilities groups that would produce two new business areas:

- Distribution and generation: all utility distribution and generation, as well as California solar operations
- Pipelines and transmission: a new organization to identify and seek investments in natural gas pipelines and electric transmission
- Energy solutions: a new group to house natural gas solutions and home services; management would terminate this group after a single year of operation
- Business development: to manage acquisition growth and to develop a Liberty planning team.

*ii. Operating strategies*

Operating strategies included the Liberty Way; centralization of commodity procurement; decentralization and driving toward local operations; managing regulatory relationships; managing New Hampshire regulatory reporting; filing quad-annual rate cases; and enhancing regulatory returns.

*iii. Operating initiatives*

The 2014 strategic plan’s operating initiatives included:

- Managing cultural integration
- Improving customer billing and collections
- Continuing to improve the customer experience
- Enhancing safety, environmental, health and security
- Implementing an enterprise risk management processes
- Evolving the IT platform: including Enterprise Asset Management, the Cogsdale CIS, and the Great Plains system
- Executing growth approaches, including organic, acquisition, and new lines of business

*iv. Growth Strategies*

The 2014 plan enumerated and discussed at length growth strategies falling into more than 10 categories:

- Organic capital investments: dual-fuel vehicles, smart AMR, solar, specific initiatives within existing utility systems
- Customer expansions
- Tuck-in acquisitions: small utilities that can be managed by existing local operations, such as the Keene propane system
- Large acquisition growth: acting as a “disciplined buyer” to make deals accretive to earnings
- Pipelines and transmission investments: forecasting significant growth in investments
- Gas transmission opportunities: pipeline investments and acquisitions
- Electric transmission opportunities
- Natural gas-specific opportunities: LNG plants, satellite LDCs on pipelines
- Solar and home services: the plan anticipated significant investment, but business area was dropped after one year
- Solar portfolio securitization
- Rooftop solar metering
- Renewables
- Partnership opportunities (since terminated).

## **2. Five-Year Forecasts**

### **a. Five-Year Forecast Process**

Liberty Utilities constructs a “Five-year Forecast” as part of the strategic planning process. The forecasting process begins in March, and becomes final following presentation to and review by the parent board of directors in June or July. The Five-year Forecast provides detailed financial projections that capture expected results of the strategic plan. The key drivers of the forecast are: (a) goals for specific financial metrics determined before the supporting forecasting process begins, (b) the Liberty Utilities five-year capital expenditure plan, (c) regulatory treatments and assumptions that define cost recovery, and (d) operating expenses over the five-year horizon.

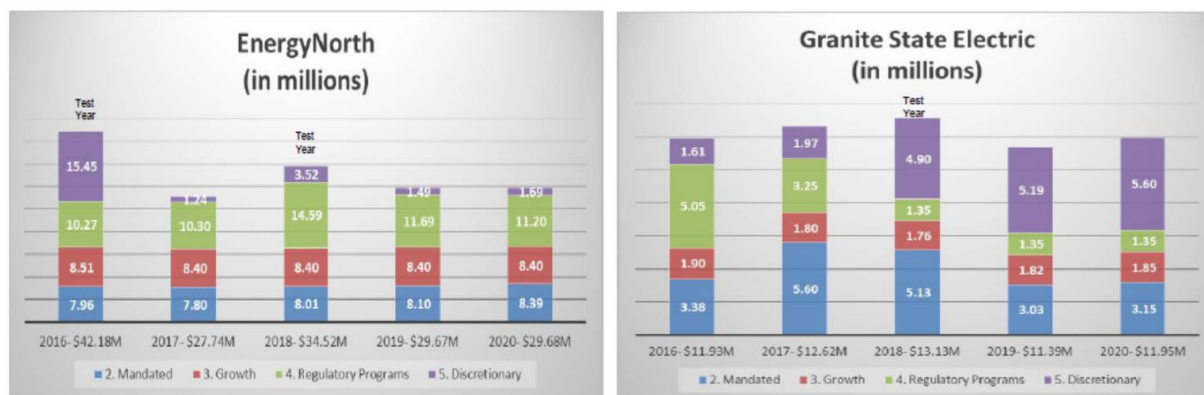
Oakville headquarters begins the process with a PowerPoint presentation in March. The presentation provides timelines, a scope of deliverables, roles and responsibilities, and key priorities. Oakville provides the templates and reports for the forecast, leaving the regions to provide their assumptions and inputs, revenue forecasts, operating expenses, and capital expenditures. The process seeks to produce a five-year forecast at a less granular level than the budget cycle for the first year, which immediately ensues.

The forecasting process limits operating expenses to those authorized in rates, unless an existing rate mechanism permits adjustments between base rate cases. The process also anticipates iteration between the regions and Oakville to establish capital expenditure “envelopes.” These envelopes seek to satisfy equity return levels. Oakville also produces an extension of the Five Year Forecast, covering future years six through 20. Those extended views are not used at the regional level.

New Hampshire inputs to the process begin in May, using templates of financial information for EnergyNorth and for Granite State. The New Hampshire financial staff provides operating expenses for five years. The manager of engineering constructs a forecast of capital expenditures and projects. That forecast employs a five-year rolling average of New Hampshire SAIDI and SAIFI requirements as a guide for capital forecasting. Internal New Hampshire review and analysis of this preliminary information occur in May and June. Following New Hampshire state President approval of state input, a review by the Oakville Vice President of Finance and staff takes place. The parent board of directors receives a Five-Year Forecast presentation in June or July of each year.

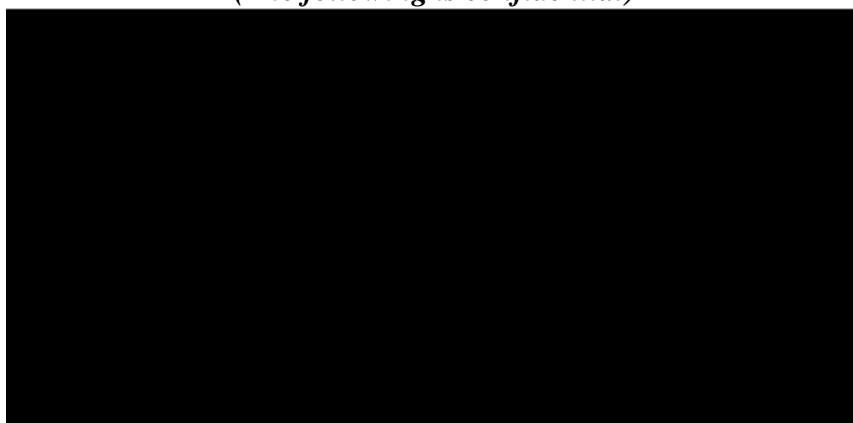
The next table summarizes the most recent Five-Year Forecast's capital expenditures for Energy North and Granite State.

### Latest Five-Year Forecast Information for New Hampshire



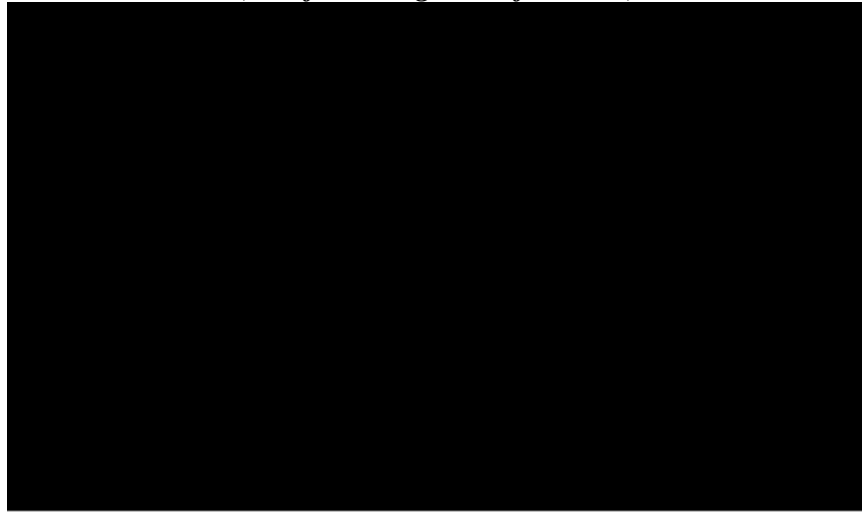
The next illustration shows operating expense forecasts for New Hampshire for 2016-2020.

*(The following is confidential)*



The financial metrics for New Hampshire (shown in the illustration below) form a key product of the forecast process.

*(The following is confidential)*



**b. Earlier Five-Year Forecasts**

The 2013, 2014 and 2015 Five-Year Forecasts included what management terms “Baseline” and “Directional” forecasts. The 2013 Baseline forecasts included currently operated Liberty Utilities utility businesses. The Directional forecast in 2013 consolidated this baseline component with projections that considered five acquisition opportunities not in the fold, but considered to be in the business development pipeline. A key financial metric objective in the 2013 forecast was the EBITDA compound growth rate. The EBITDA compound growth rate for the Directional forecasts was almost three times that of the Baseline forecast.

The Directional forecast included an assumed acquisition of a 50,000-customer utility in each year of the forecast. The addition of an acquisition in each year caused the increase in EBITDA compound growth rate. The forecast also included assumed rate increases in New Hampshire of 24 percent for Energy North and 26 percent for Granite State, both in 2014.

Management built the 2014 five-year forecast (for 2015 through 2019) around defined target financial metrics:

- Double EBITDA in five years
- Grow EBITDA in every year
- Grow EBITDA on existing assets in every year
- Maintain a BBB credit rating.

The 2014 forecast version presented three scenarios. As in 2013, the Baseline addressed existing businesses, but added three changes: (a) smart meters, (b) a California business, and (c) an electric transmission line. The 2014 version then added a “Market” scenario; which included the Baseline plus projects that had been announced to the capital markets. The Directional scenario included the Baseline plus Market plus two hypothetical acquisitions in 2018 and 2019.

The Market and Directional scenarios included target financial metrics equal to those of the Baseline, plus an EBITDA interest coverage minimum, a total debt to capital maximum level and an FFO/Debt metric of 13 percent for utility operations. The acquisition of Park Water in 2016 and



investments in LNG in 2015 through 2017 were added. Hypothetical acquisitions were assumed for 2018 and 2019. The results of the Directional forecast were to double EBITDA from 2015 to 2019, as was targeted in the process.

The 2015 forecast for 2016 - 2020 included less aggressive target financial metrics. The financial metrics evolved to the following:

- Achieve allowed ROEs for the regulated businesses
- Grow EBITDA in each year
- Grow EBITDA existing assets in each year
- Invest approximately \$2 billion dollars over five years
- Maintain a BBB credit rating.

The acquisition of Empire Electric was announced by the company in February 2016. It was not included in this forecast. The Baseline scenario included the “as is” utility businesses plus Park Water, and gas and water acquisitions that were certain. The Market scenario included all announced acquisitions that are not yet implemented. In this forecast version, the Market and Baseline scenarios are the same. The Directional scenario included the Baseline plus hypothetical acquisitions in pipeline investments. The Directional forecast also assumed one larger acquisition per year of 150,000 customers in each of 2018, 2019 and 2020.

Targeted financial metrics for this forecast did not include a doubling of EBITDA, but results of the Directional forecast actually did show a doubling in five years. The forecast also included major New Hampshire capital investments for main replacements, new services for residential and commercial customers, and new gas main related to growth.

### **3. Budgeting**

#### **a. Overall Budgeting Processes**

For both capital expenditures and operating expenses, the finance leads in each Liberty Utility region work with local operations to develop annual budgets. The finance leads (the Vice President-Finance in New Hampshire) serve as the primary points of contact with Oakville during the budget cycle.

At the New Hampshire level, the budget process begins in August under the senior manager of finance, who oversees the preparation of the operating expense budget. Oakville begins budget work in August as well under the finance executive, who provides assumptions, spending templates, an HR template, and other inputs.

All budget inputs get rolled up to region levels and compared to the first year of the Five-Year forecast. The results then go to the state presidents for initial comments. Several budget iterations may then occur between state department heads and the state president prior to the latter's approval. The proposed New Hampshire budget then goes to the Oakville finance group. Phone calls in October and November discuss various portions of the New Hampshire budget, leading to approval by Oakville finance in November. A budget presentation is prepared for the Algonquin Board of Directors, to be reviewed and approved in early December.

Oakville supplements the annual budgeting process with an “Emergent Program Process,” in order to provide for the addition to the approved capital budget of new capital items as they “emerge” during the budget year. Addition of new capital projects or programs require justification through an approved business case. One emerging program secured approval in 2014, after which the number skyrocketed to 32 in 2015. The pace during 2016 (13 in the first few months) shows continuation of the 2015 experience.

### **b. Capital Budgeting**

The New Hampshire Director of Engineering prepares the local capital expenditures budget. The manager meets with operations managers throughout the year to discuss the capital needs of the various departments, primarily focusing on smaller capital elements. The manager of engineering meets with the director of gas operations, the director of electric operations and engineering personnel to identify capital work required in the coming year.

The target metrics for SAIDI and SAIFI serve as drivers in developing the local capital budget. The manager of engineering relies on two planning engineers (one in gas and one in electric) to identify mandatory and non-mandatory capital projects.

Management prepares capital expenditure estimates for numerous “blanket” programs conducted routinely on an annual basis, determining their costs on line item basis. Year-to-year reviews are performed on both the gas and electric sides. For gas, inside meters, services, and main replacements are estimated based on a 10-year plan. The gas capital budget is about 90 percent related to compliance. Growth capital projects must have a business case with an analysis for approval. Business cases are also required for discretionary capital projects. For the 2015 budget year, business cases were performed for all line items in both the gas and electric capital budgets. Both the gas and electric businesses use the Synergy model for capital expenditures.

### **c. 2014 Budgeted versus Capital Actual Expenses**

Variances between budgeted and actual capital expenditures in 2014 proved unusually large in magnitude and in the number and nature of their sources. The next table summarizes 2014 capital budget performance for both LU-NHG and LU-NHE. Combined, those variances reached the extreme level of 71.7 percent.

**2014 LU – NH Capital Budget and Variances**

Company	Budget	Actual	Variance	
			Dollars	Percent
Energy North	\$26.701	\$46.544	\$19.843	74.7%
Granite State	\$18.303	30.736	\$12.433	67.9%
Total LU-NH	\$45.004	\$77.280	\$32.276	71.7%

Dollars are in millions

Examining 2014 capital budgets line-by-line discloses a large number of significant, some extremely large, variances. Most line items showed large variances. Moreover, the underlying reasons reported by management were numerous and varied in nature. We review a number of the significant 2014 variances below. We did not try to reconcile all 2014 capital variances, but the next portions of this chapter illustrate how significant they were.

First we listed projects that experienced particularly large over-runs. The next chart shows that actual costs for these 10 projects in total ran over-budget cumulatively by about 3.5 times.

### Large 2014 Capital Over-Runs

Co.	Projects	Budget	Actual	Variance	Explanation
Electric	7	\$2.978	\$10.076	\$7.098	various
Gas	3	\$0.825	\$2.938	\$2.113	“more complex than estimated”
Total	10	\$3.803	\$13.014	\$9.211	

Dollars are in millions

Next we show budget to actual performance for Information Technology, Software, Equipment, and Infrastructure Capital Charged to New Hampshire. This work overran budget by 18 times.

### IT 2014 Capital Charged to New Hampshire

Co.	Budget	Actual	Variance	LU Explanation
Electric	\$0.302	\$5.099	\$4.797	“Charged to LABS Corporate”
Gas	\$0.283	\$5.797	\$5.514	“Charged to LABS Corporate”
Total	\$0.585	\$10.896	\$10.311	

Dollars are in millions

A “Finance Project” that had not been included in the approved budget at all drove a further, very large capital budget overrun of over \$10 million. Not a “project” per se, this item represented a collection of accruals related to the budget’s other line items. The next table summarizes the amounts involved.

### Unbudgeted 2014 “Financial Project” Capital Costs

Co.	Budget	Actual	Variance	Explanation
Electric	0	\$7.167	\$7.167	“Finance Project”
Gas	0	\$3.125	\$3.125	
Total LU-NH	0	\$10.292	\$10.292	

Dollars are in millions

Three other, miscellaneous categories contributed another \$12 million in capital cost variances for New Hampshire in 2014. The next table depicts these overruns, which arose from a number of notable sources. First, management explained an approximately \$4.8 million variance for growth projects as “additional growth jobs identified and released in support of growth strategy.” However, growth projects did not appear in approved 2014 Emergent Projects. This category reflects what should exist as a result of the process for approving projects emerging after approval of the base annual capital budget. It thus appears that board approval was not obtained for these major increases.

- A carryover of 2013 work into 2014, described as “unplanned carryover costs from 2013 to 2014” also showed unusual variances, with five projects more than doubling in cost.
- Mischarges arose under four gas projects, with the errors explained as “charges made to blanket accounts instead of other projects.”

**Other Sources of 2014 Capital Overruns**

Co.	Budget	Actual	Variance	Explanation
Gas	\$5.083	\$9.874	\$4.791	Growth Jobs
Electric	\$2.250	\$5.237	\$2.987	2013 Carryover
Gas	\$0.939	\$5.503	\$4.564	Mischarged
Total LU-NH	\$8.272	\$20.614	\$12.342	

Dollars are in millions

While the net effect of budget variances produced large added costs for New Hampshire, large variances ran in the other direction as well. The next chart shows substantial budgeted costs not expended due to delays.

**2014 Capital Under-Runs Due to Delay**

Co.	Budget	Actual	Variance	Explanation
Electric	\$4.399	\$1.116	\$(3.283)	3 projects "delayed to 2015 or later"
Gas	\$3.900	\$0.098	\$(3.802)	4 projects: "permitting did not allow for construction initiation"
Total LU-NH	\$8.299	\$1.214	\$(7.085)	

Dollars are in millions

**d. 2015 Budgeted versus Actual Capital Expenses**

Capital budget variances for 2015 improved as measured on a total basis, but still generated numerous and large variances. The total variance for LU-NHG was a nominal two percent. The LU-NHE variances, however, remained disturbingly high. Actual costs exceeded those budgeted by 15 percent. The next table summarizes overall 2015 capital budget variances at the top level.

**2015 LU-NH Capital Variances**

Co.	Budget	Actual	Variance	
			Dollars	Percent
Gas	\$32.268	\$32.875	\$0.617	1.9%
Electric	\$10.012	\$11.522	\$1.510	15.1%
Total LU-NH	\$42.280	\$44.397	\$2.117	5.0%

Despite the lessening of the total variance from budget, a review of 2015 line items continued to show very large individual variances. We summarize some of the larger ones below.

Beginning with 2015's very large over-runs, the next table shows that they were substantial.

**Large 2015 Capital Over-Runs**

Co.	Projects	Budget	Actual	Variance	Explanation
Gas	7	\$6.570	\$12.012	\$5.442	various
Electric	3	\$1.372	\$5.389	\$4.017	"more complex than estimated"
Total	10	\$7.942	\$17.401	\$9.459	

Dollars are in millions

The explanations provided for the over-runs were:

- Electric: work proved greater than anticipated at budget preparation
- Gas: work exceeded budgeted amounts; the budget was significantly lower than the historical average.

The “Finance Project” accounted for a very large underrun, for two primary reasons: (a) reversal of an accrual and re-allocation to individual projects, and (b) an unbudgeted project cost under-run. The next table summarizes these effects.

#### Large 2015 Finance Project Capital Variance

Co.	Budget	Actual	Variance	Explanation
Gas	\$1.512	\$(7.818)	\$(9.333)	Accounting reversal
Electric	0	\$(3.295)	\$(3.295)	Project under-run
Total	\$1.512	\$(11.113)	\$(12.625)	

Dollars are in millions

Unbudgeted 2015 IT capital costs charged out from Oakville caused another 2015 capital cost variance. The next table summarized the increased cost to New Hampshire of about \$1.5 million.

#### Unbudgeted 2015 IT Costs

Co.	Budget	Actual	Variance	Explanation
Gas	\$0	\$0.954	\$0.954	Oakville “IT and Systems allocation”
Electric	\$0	\$0.506	\$0.506	“Corporate IT Charged out”
Total LU-NH	\$0	\$1.460	\$1.460	

Dollars are in millions

As was true for 2014, growth projects also grew well beyond expectations, increasing New Hampshire 2015 capital costs by \$7.5 million. Management explained the increase as “Additional Growth Jobs Identified and Released in Support of Growth Strategy.” Again, however, 2015 Growth projects did not appear among the significant number of Emergent Projects listed as approved.

#### Under-Budgeted 2015 Growth Project Costs

Co.	Budget	Actual	Variance	Explanation
Gas	\$7.830	\$13.601	\$5.771	“Growth Total less INAT Gas”
Electric	\$1.350	\$3.110	\$1.760	“Commercial and Residential Blankets”
Total LU-NH	\$9.180	\$16.711	\$7.531	

Dollars are in millions

Unplanned carryover of prior year budgeted costs and incorrect allocations also produced a significant variance in 2015, as they had in 2014. The next table summarizes them.

**Carryover and Misallocation Driven 2015 Capital Overruns**

Co.	Budget	Actual	Variance	Explanation
Gas	0	\$1.706	\$1.706	2 projects - "Carryover from 2014 Work"
Electric	\$1.500	\$4.225	\$2.725	14 projects - "Carryover work from 2014"
Gas	\$1.200	\$1.798	\$0.598	"Overhead disproportionately charged to project"
Electric	0	\$0.150	\$0.150	"Expense Project"
LU-NH Total	\$2.700	\$7.879	\$5.179	

Dollars are in millions

Other significant over- and under-runs occurred in 2015 as well. The next table summarizes them.

Co.	Budget	Actual	Variance	Explanation
Gas	\$0.500	\$2.791	\$2.291	Scope expansion added paving, main extension, engineering
Gas	\$3.600	\$0.109	\$(3.491)	"Placeholder" for NH Gas acquisition
Electric	\$5.380	\$0.337	\$(5.043)	"Projects Delayed Until 2016"
Gas	\$12.511	\$6.990	\$(5.521)	"Used main replacement budget for fitting replacement"

Dollars are in millions

LU-NHE added 14 Emergent Projects during 2015, with a budgeted amount of about \$415,000. We observed capital spending of about \$225,000 on three of these projects. LU-NHG added 21 Emergent Projects in 2015 for a budgeted amount of about \$836,000. We observed expenditures of \$138,000 on three of the projects. We found spending of \$596,000 on a fourth, for which only \$15,000 had been requested.

**e. 2016 Capital Budgets**

The next table shows the 2016 capital budgets for LU-NHG and for LU-NHE. The capital budgets are prepared by line item and are grouped by five capital categories: safety, growth, mandated, regulatory programs and discretionary.

### NLU-NHG 2016 Capital Budget

Priority	Project #	Project_Description	EN 2016 Capital Budget
3. Growth	8840-C18806	INAT Gas	160,000
	8840-ENI101C	Growth Customer Contribution Budget Placeholder	-200,000
	8840-ENI101	Growth New Main	1,900,000
	8840-ENI102	New Reinforcement Main for Growth	1,700,000
	8840-ENI158	Marketing & Sales	150,000
	8840-ENI161	Growth Fitting	300,000
	8840-PCN150	New Service Residential	3,500,000
	8840-PCN152	New Service Comm/Industrial	1,000,000
	8840-PCN153	Reserve for Unidentified Growth	4,750,000
<b>3. Growth Total</b>			<b>13,260,000</b>
2. Mandated	8840-C18750	Install Security Equipment - EN Facilities	50,000
	8840-ENI005	Inactive Service Program	160,000
	8840-ENI006	Cathodic Protection Program	750,000
	8840-ENI007	Replacement Services Random (Non Leaks)	425,000
	8840-ENI077	Replacement Services Random (Due to Leaks)	250,000
	8840-ENI100	Meter Work Project (Changes)	200,000
	8840-ENI100P	Meter Work Project (Meter Purchases)	1,300,000
	8840-ENI103	Main Replacement City/State Construction	4,500,000
	8840-ENI137	Service Replacement City/State Construction	600,000
	8840-ENI163	Service Replacement Fitting City/State Construction	60,000
	8840-REL108	LNG/LPG Capital Improvements	165,000
	8840-REL110	Valve Installation/Replacement	100,000
	8840-ENI160	Corrosion & Miscellaneous Fitting	100,000
	8840-ENI002	Meter Protection Program	50,000
<b>2. Mandated Total</b>			<b>8,710,000</b>
4. Regulatory Programs	8840-ENI107	Main Replacement LPP	9,000,000
	8840-ENI117	Service Replacement LPP	1,100,000
	8840-ENI162	Main Replacement Fitting LPP	180,000
<b>4. Regulatory Programs Total</b>			<b>10,280,000</b>
5. Discretionary	8840-C18800	Upgrade Hi Line - Concord to Tilton	12,000,000
	8840-C18801	K Meter Replacement Program	50,000
	8840-C18802	Install Main Daniel Webster Highway Merrimack	500,000
	8840-ENI164	Main Replacement Reactive	250,000
	8840-OTH-111	Dispatch and Control Center	10,000
	8840-OTH-112	Purchase Misc Capital Equipment & Tools	150,000
	8840-OTH-113	Facility Improvements & Additions - Various	300,000
	8840-OTH-114	Transportation Fleet and Equipment Purchases	1,200,000
	8840-OTH-115	IT - Software, Equipment & Infrastructure	230,000
	8840-REL105	Gas System Planning & Reliability	500,000
	8840-REL106	Gas System Control & Regulation	300,000
	8840-REL109	SCADA Capital Improvements	10,000
	8840-C18817	Install Solar Panels - EN Buildings	150,000
	8840-C18823	Pre-Code Stee Pipe Protection Program	100,000
	8840-C18824	Aldyl-A Replacement Program	50,000
<b>5. Discretionary Total</b>			<b>15,800,000</b>
<b>Grand Total</b>			<b>48,050,000</b>

Priority 1 = Safety - there are no safety priority projects in 2016

### NLU-NHE 2016 Capital Budget

Priority	Project #	Project Description	GSE 2016 Capital Budget
3. Growth	8830-CD0291	Sky View URD - Salem, NH	10,000
	8830-CNN010	GSE-Dist-New Bus-Resid Blanket	1,050,000
	8830-CNN011	GSE-Dist-New Bus-Comm Blanket	1,200,000
	8830-CRSRVNBC_C	Reserve for New Business Residential	50,000
	8830-CRSRVNBC_C	Reserve for New Business Commercial Unident specific & SC	100,000
<b>3. Growth Total</b>			<b>2,410,000</b>
2. Mandated	8830-C14646	IE-NN UG Structures and Equipment	5,000
	8830-C18750	Security Conversion GSE	25,000
	8830-C21595	01663 GS Storm Program Proj	50,000
	8830-C26263	NN D-Line Work Found by Insp.	50,000
	8830-C36433	Distribution Feeder Power Factor Correction	25,000
	8830-C36435	Lebanon Area Low Voltage Mitigation	50,000
	8830-CN4104	01659 Granite St Meter Purchases	250,000
	8830-CN4120	01660 Granite St Transformer Purchases	350,000
	8830-CNN002	01737 GSE-Dist-Subs Blanket	50,000
	8830-CNN004	GSE-Dist-Meter Blanket	20,000
	8830-CNN007	GSE-Dist-Water Heater Blanket	121,000
	8830-CNN009	GSE-Dist-Land/Land Rights Blanket	10,000
	8830-CNN012	GSE-Dist-St Light Blanket	225,000
	8830-CNN013	GSE-Dist-Public Require Blanket	400,000
	8830-CNN014	Dist-Damage&Failure Blanket	800,000
	8830-CNN015	GSE-Dist-Reliability Blanket	400,000
	8830-CNN016	GSE-Dist-Load Relief Blanket	75,000
	8830-CNN017	GSE-Dist-Asset Replace Blanket	400,000
	8830-CNN020	Dist-Transf/Capac Install Blanket	10,000
	8830-CNN021	GSE-Dist-Telecomm Blanket	10,000
	8830-CNN022	GSE-Dist-3rd Party Attach Blanket	110,000
	8830-CNN023	GSE Distributed Generation Blanket	75,000
<b>2. Mandated Total</b>			<b>3,511,000</b>
4. Regulatory Programs	8830-C18603	Bare Conductor Replacement Program	1,200,000
	8830-C20473	IE - NN Recloser Installations	250,000
	8830-C36423	Mt Support Sub- New LP Fdr Pos	3,700,000
	8830-C36424	Mt Support-New 16L3 Feeder	1,550,000
	8830-C36425	Mt Support-New 16L5 Feeder	100,000
<b>4. Regulatory Programs Total</b>			<b>6,800,000</b>
5. Discretionary	8830-C13968	PS&I Activity - New Hampshire	10,000
	8830-C18620	Charlestown 32 Dline	5,000
	8830-C18630	Charlestown DSub	15,000
	8830-C21093	IE-NN Dist Transformer upgrades	25,000
	8830-C22214	NN ERR/Pockets of Poor Perf	50,000
	8830-C26061	NH ARP Relay & related	5,000
	8830-C31402	IE-NN URD Cable Replacement	100,000
	8830-C33766	NEN-NH Electric Fence FY10	25,000
	8830-C36427	Feeder Getaway Cable Replacement	100,000
	8830-C36430	Pelham Sub-Add 2nd Xfmr and Fdr Pos	600,000
	8830-C36431	Pelham-New 14L4 Fdr	350,000
	8830-C42901	Underperforming Feeder Program	50,000
	8830-C42851	Enhanced Bare Conductor Replacement	500,000
	8830-C42852	Pelham-New 14L5 Fdr	150,000
	8830-CNN006	GSE-Dist-Genl Equip Blanket	50,000
	8830-CNN025	IT Systems & Equipment Blanket	25,000
	8830-CNN026	Misc Capital Imprvmnts GSE Facilities Blanket	100,000
	8830-CNN027	Transportation Fleet & Equip. Blanket	250,000
	8830-CRSRVARS_C	Reserve for Sub Asset Repl Specifics	25,000
	8830-CRSRVDF_01	Reserve for Damage/Failure Unidentified Specifics &	75,000
	8830-CRSRVLRL_0	Reserve for Load Relief Unidentified Specifics	25,000
	8830-CRSRVPR_01	Reserve for Public Requirements Unidentified Specifics	50,000
	8830-CRSRVRL_01	Reserve for Reliability Unidentified Specifics	100,000
<b>5. Discretionary Total</b>			<b>2,685,000</b>
<b>Grand Total</b>			<b>15,406,000</b>

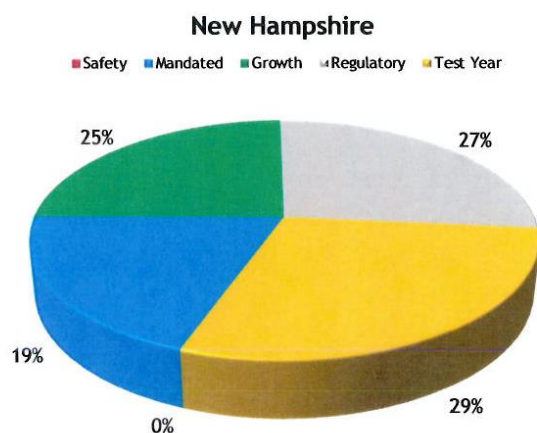
Priority 1 = Safety - there are no safety priority projects in 2016



The annual capital expenditure budget presented to the parent board of directors each December simplifies the underlying details, presenting expenditures in “replenishment”, “improvement” and “growth” categories. It measures the net increase in property, plant and equipment assets (rate base) that results. That budget shows the top five projects for LU-NHG and for LU-NHE. The next illustration depicts a page from the 2016 capital budget for New Hampshire, as presented to the parent board of directors on December 3, 2015.

### New Hampshire

New Hampshire’s capital expenditure budget is expected to be \$43.3M million higher than depreciation expense in 2016. The following is a table and chart summarizing New Hampshire’s capital expenditures along with the net increase in PPE.



New Hampshire		2016
Replenishment		18,547
Improvement		29,545
Growth		15,710
<b>Total Capital Expenditure</b>		<b>63,802</b>
Depreciation		20,459
<b>Net Increase in PPE</b>		<b>43,343</b>

Granite State (Top 5 Projects)		2016
Mt Support Sub- New LP Fdr Pos		3,700
Mt Support-New 16L3 Feeder		1,550
Bare Conductor Replacement Program		1,200
GSE-Dist-New Bus-Comm Blanket		1,200
GSE-Dist-New Bus-Resid Blanket		1,050
<b>Top 5 Projects</b>		<b>8,700</b>
All Other		(8,700)
<b>Total</b>		

EnergyNorth (Top 5 Projects)		2015
Upgrade Hi Line - Concord to Tilton		12,000
Main Replacement LPP		9,000
Growth		4,750
Main Replacement City/State Construction		4,500
New Service Residential		3,500
<b>Top 5 Projects</b>		<b>33,750</b>
All Other		(1,492)
<b>Total</b>		<b>32,258</b>

### f. O&M Budgeting

The New Hampshire finance department serves as “coordinator and consolidator” for the annual budget process. The group uses business planning templates to support this effort. The process

begins in August for the O&M budget. The senior manager of finance in New Hampshire issues a memo to department managers describing the budget process, and providing detailed instructions and schedules for budget reviews. The key input for department managers is employees added or reduced for the budget year.

The senior manager finance provides planning guidelines and assumptions. Each budgeting department uses the same input template for operating expenses. Each cost center has responsibility for its own budgets. The functional managers with budget responsibility develop operating expense budgets, using a bottom-up approach.

Human resource information and assumptions are provided by Oakville for use by the cost centers. The departments input salaries, office supplies, facilities costs, vehicles and other direct costs into their operating expense budgets. The operating expense budgeting process schedule includes time allowances for budget iterations. Each cost center builds a one-year budget only.

The Company first focuses on refining the first year of the five-year forecast. Each responsible budget area begins with a dollar target that management expects the budgets to approximate. The dollar amount of operating expenses approved in the last rate order drives that target. Management expects first budget iterations to approximate the target, absent specific new initiatives or explanations supporting exceptions.

The development of revenue for the budget is prepared under the direction of the Vice President of engineering and procurement. Oakville provides a “push-down” of the headquarters business services costs and corporate allocations to New Hampshire.

#### **g. Budget Performance Management**

Local management for New Hampshire uses a monthly financial reporting process to manage performance to and variances from the annual budget. The accounting books close monthly on about the seventh business day of each month. The senior manager of finance provides a “flash report” on about the fifth business day of the month. It provides a heads up on performance before the books close. The company prepares actual-to-budget-comparisons after the close of the accounting books (on the 8<sup>th</sup> or 9<sup>th</sup> business day), termed the President’s Report.

Budget reporting to Oakville (and budget variance management) takes place in an “operations call” that occurs in the third week of each month. A PowerPoint presentation is prepared for the Oakville finance group. The call participants discuss it. The New Hampshire state president, vice president-finance, and senior manager finance present the financial results summarized in the PowerPoint presentation. The monthly presentation uses a consistent format that covers the same results and financial metrics for each month and for the year after the books close in January.

Financial analysis charts are prepared for New Hampshire as a whole and for electric and gas separately. The next illustration depicts the financial analysis format.

## Financial Analysis – NH

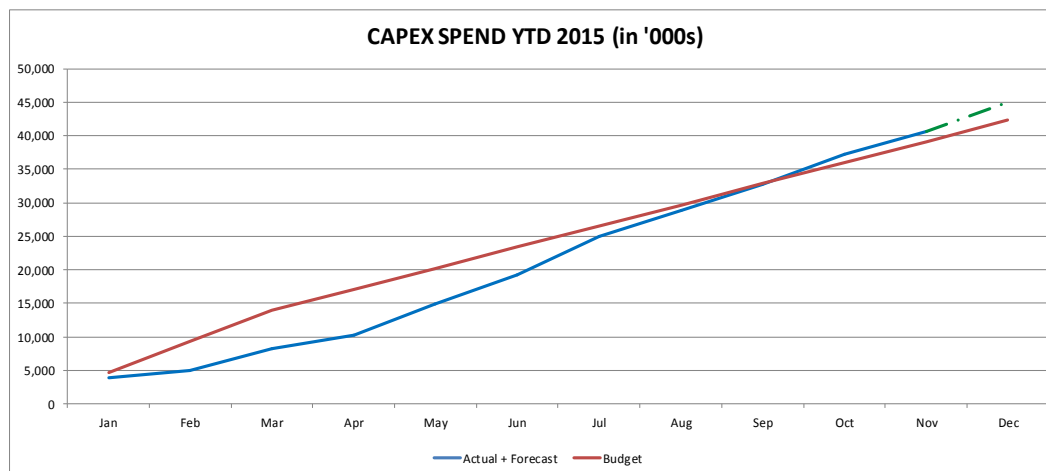
Net Revenue - Nov 2015		Fav / (Unfav)	Operating Profit - Nov 2015		Fav / (Unfav)
<b>Budget</b>		<b>\$9,044</b>	<b>Budget</b>		<b>\$4,389</b>
Customer Count		(100)	Revenue variances		(961)
Volume		(612)	Operating Expense variance		1,053
Price		(45)			
Keene		119			
All Other		(323)	All Other		(40)
<b>Actual</b>		<b>\$8,083</b>	<b>Actual</b>		<b>\$4,440</b>
<b>Variance \$ - Fav / (Unfav)</b>		<b>(961)</b>	<b>Variance \$ - Fav / (Unfav)</b>		<b>51</b>
<b>Variance % - Fav / (Unfav)</b>		<b>(11%)</b>	<b>Variance % - Fav / (Unfav)</b>		<b>1%</b>
Operating Expense - Nov 201		Fav / (Unfav)			
<b>Budget</b>		<b>\$4,747</b>			
Labor		256			
Operating Expense		14			
Bad Debt Expense		529			
Administrative Expense		254			
All Other		( )			
<b>Actual</b>		<b>\$3,694</b>			
<b>Variance \$ - Fav / (Unfav)</b>		<b>1,053</b>			
<b>Variance % - Fav / (Unfav)</b>		<b>22%</b>			

3



Net revenue variances by customer class are also analyzed, as is a breakdown of the components of earnings before taxes (EBIT). The EBIT budget number is shown graphically, and variances in net revenue, operating expenses, business services, corporate services, depreciation and amortization and other income are shown, to arrive at the actual result for the month, quarter, or the year depending on the period being examined. A scorecard is next shown. It includes red and yellow issues (versus green for positive performance). Scorecards are tied to annual goals. Depictions show scorecard measurables whose results are “in jeopardy,” and need attention. The December 2015 presentation included monthly, quarterly and year-to-date performance measurements. The big issues in this particular month were OSHA recordable injuries, vehicle accidents (MVAs), accurate and timely billing, customer satisfaction survey for electric, net income, bad debt expense, and the outreach program.

Capital spending for the year to date is showing on a single chart (illustrated below), showing total New Hampshire CAPEX performance. A chart detailing customer service level trends by month is shown next. Finally, the December 2015 report had three slides at the end related to customer expansion projects and sales on those projects.



The Vice President-finance notes that the presentation for the operating call is in the same general format for every month.

The manager of engineering has a “separate budget meeting” with the heads of electric and gas engineering, project managers, engineers, and New Hampshire finance managers. A monthly report on capital spending and variances is sent to project managers, who then enter the expected forward spend for each project for the quarter, and through the end of the year. Two project managers, one for gas and one for electric, report to the manager of engineering, and on a monthly basis provide updates for all projects. The project managers also provide updates for spending on the “blanket programs”, which are routine categories that are budgeted on an annual basis. The project managers have capital planners on their teams who support capital reporting.

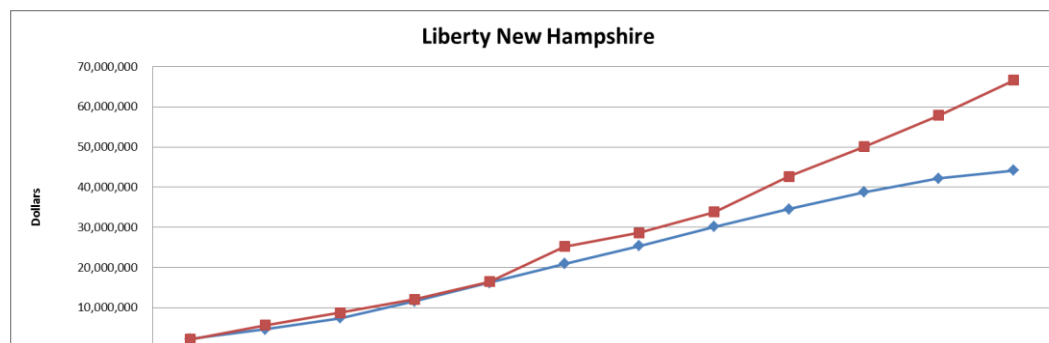
The project managers are responsible for project spending, performance and variances. The project managers are instructed to identify variances before they actually happen to plan mitigation. If capital spending above the project budget is expected, a re-authorization request for additional capital is prepared and sent to Oakville finance. At the end of the year, the manager of engineering prepares a report that explains the CAPEX variances and lessons learned. A memorandum on 2014 capital expenditures variances dated November 1, 2014 addresses these particular issues:

*In accordance with the Liberty Utilities Project Expenditures Policy and Procedure, the local management team is responsible to close out the capital year spend through the Overage/Underage process. For all projects, over-budget variances exceeding 10% (Minimum \$50,000) of the approved budget requires approval by the local management team (Local Director of Engineering and State President). Under budget variances will be reviewed in the project close out report and will be reviewed at the local level....*

*The Liberty Utilities capital budget team has agreed to conduct the budget overage/underage reconciliation at the end of the fiscal year.*

The New Hampshire finance group prepares a year-end financial results recap in the form of a PowerPoint presentation. The topics covered in the presentation are an “Efficiency Scorecard” that

includes financial returns, an EBITDA analysis for New Hampshire, an operating cost analysis for New Hampshire, net revenue analyses for both electric and gas, a brief “Efficiency Analysis” and the New Hampshire total capital spending chart by month, as shown below. These presentations were prepared for 2014 and 2015 and were provided for review. The chart below purports to show capital spending for Liberty New Hampshire for 2014; capital expenditures exceeded the approved budget by about 22.5 million, or approximately a 50 percent overspend. Note that these results are not consistent with company reconciliations performed at a later date.



## C. Conclusions

### 1. Liberty Utilities’ strategic plans, as complemented by five-year forecasts, are well organized and thorough, presenting a clear vision, mission and strategies.

Liberty Utilities has a clearly stated vision, mission, investment thesis and values that are communicated through the strategic plan. The vision and mission set the tone and direction for planning and operating the company. Liberty Utilities prepared formal strategic plans in 2013 and 2014; each covered the immediately following five-year planning period. A strategic plan was not prepared in 2015, but a five-year forecast was prepared and utilized.

The strategic planning processes in 2013 and 2014 each began with a “SWOT analysis” prepared by the Liberty Utilities state presidents and the top 10 officers of Liberty Utilities. The SWOT analysis is intended to drive the focus of strategic planning for the next five years. The New Hampshire state president has input on the direction and focus of strategic planning on the front end as a result. The formal strategic plan is prepared by Oakville planners and executives, which is appropriate for high-level planning.

The New Hampshire utilities also have input to the strategic plan through the development of a five-year capital plan that is included in the five-year forecast. This input is the opportunity to place New Hampshire’s future capital needs into the strategic planning process for consideration.

### 2. Strategic plans and five-year forecasts focus on acquisitions and organic growth initiatives to meet aggressive financial metric targets.

The Liberty Utilities five-year forecast includes specific targeted financial metrics around which the forecast is constructed. The scenarios developed for the forecast include at least one “Directional scenario” that will meet all of the financial goals for five years. For instance, the 2014 strategic plan and financial forecast included the following target financial metrics:

- Double EBITDA in five years
- Grow EBITDA in every year
- Grow EBITDA on existing assets in every year
- Maintain a triple-B credit rating.

The Directional scenario was constructed to meet all of these five-year financial objectives. In addition, the Directional scenario included the target financial metrics, plus an EBITDA interest coverage minimum, a total debt to capital maximum level and an FFO/Debt metric of 13 percent for the regulated utilities. The acquisition of Park Water in 2016 and investments in LNG in 2015 through 2017 were added to the Baseline. Hypothetical acquisitions were planned in 2018 and 2019. The result of the Directional forecast was to double EBITDA from 2015 to 2019, as was targeted in the process. The Directional scenario in this five-year plan is clearly built to show the type of growth projects and growth levels that would be required to meet the five-year financial objectives.

**3. Strategic plans have strategies and initiatives for operations, human resources and customer service, but specific goals and target metrics are not evident. (Recommendation 1)**

Operating strategies and initiatives had a clear and prominent place in the 2013 and 2014 strategic plans and related five-year forecasts. Strategies included human resources initiatives and operations initiatives related to customer service. However, we observed no target metrics for measurements for human resources, customer service, or operations and reliability set forth in the strategic plans or the five-year forecasts.

Specific and measurable metrics for these functional operations are needed in strategic planning to set specific goals and target levels that are “bought into” at the executive and Oakville levels, while also being understood by local employees. Target operational metrics will also allow the Oakville headquarters to monitor performance against operational metrics, which is required for effective operational control over the New Hampshire operations.

In contrast, the five-year forecasts include very specific financial metrics around which the forecasts are built. Such target metrics should also exist for important operations and service levels.

**4. Capital expenditure envelopes allocated by the Oakville headquarters have not been restrictive for New Hampshire operations.**

An important outcome of strategic planning and five-year forecasts is the allocation of capital at the holding company level, and its adequacy for New Hampshire utility operations. The process for determining the level of capital expenditures for New Hampshire operations that are included in the five-year forecast is shown in the kick off instructions, “Scope of Deliverables” prepared by Oakville finance:

*Oakville to work with regions to establish envelope of CapEx that satisfies ROE% requirements... Oakville will have one-on-one discussions with regions early next week (March)*

As noted by this passage, Oakville finance and New Hampshire executives discuss capital expenditure levels for the five-year forecast. New Hampshire supplies a proposed five-year capital expenditure plan that local management believes should meet operational needs. Oakville finance seeks to ensure that long-term financial goals are met, which is a function of assumptions regarding capital expenditures and cost recovery thereon. The two parties work to determine an “envelope”, or range of capital expenditures for each forecast year. This envelope represents a “soft cap” on capital expenditures based on financial metrics.

The total New Hampshire levels for capital expenditures included in the 2015 five-term forecast for the years 2016 through 2020 was \$54 million for 2016, and between \$40 million and \$48 million in each the following four years. We believe that these levels represent sufficient allocations of capital expenditure dollars for New Hampshire operations, based on past capital budget levels.

We also note that the company has an Emergent Program Process to add capital projects or programs to the approved capital budget that “emerge” during the budget year. This process should provide additional flexibility for the New Hampshire operations to obtain the capital required to fund effective utility operations.

#### **5. Strategic planning and the five-year plan are effectively linked to the budgeting processes.**

The Liberty Utilities strategic plan and the five-year forecast are developed in an annual planning process that begins in March and ends in July with a presentation to the Algonquin Board of Directors. Both the strategic plan and five-year forecast include a five-year capital plan that is a key component in building the plan.

The board presentation provides a forum for executive and board of directors’ questions and comments regarding the plans. Following the presentation and board comments and any adjustments required, the plans are “finalized” (but not approved by the board), and the Liberty Utilities budgeting processes begin. Using the first year of information in the five-year forecast as a template, budgets are developed from the bottom-up that refine the first year of information.

Budgets are the execution plan for the first year of the strategic plan, including approvals for one year of capital expenditures and operating expenses. The strategic plan, five-year forecast and the budget are closely linked by this process. The budget execution plan should show substantive progress in the first year of the strategic plan toward meeting its five-year goals and objectives.

#### **6. Budgeting processes for operating expenses, revenue and earnings are generally well organized, timely and effective.**

The New Hampshire budgeting process for operating expenses, revenue and earnings are effective and efficient in both their construction and results.

The first focus in the operating budget process is to review and refine the first year of the five-year forecast. Each responsible budget area begins with a dollar target that management expects the budgets to approximate. The dollar amount of operating expenses approved in the last rate order drives that target. Management expects first budget iterations to approximate the target, absent specific new initiatives or explanations supporting exceptions.

The management reporting process to Oakville and budget variance management takes place in an “operations call” that occurs in the third week of each month. A PowerPoint presentation is prepared for the Oakville finance group that is presented and discussed on the operations call. The monthly presentation is in a consistent format that covers the same results and financial metrics for each month and quarter.

The New Hampshire finance group also prepares a year-end financial results recap in the form of a PowerPoint presentation. The topics covered in the presentation are an “Efficiency Scorecard” that includes financial returns, an EBITDA analysis for New Hampshire, an operating cost analysis for New Hampshire, net revenue analyses for both electric and gas, a brief “Efficiency Analysis” and the New Hampshire total capital spending chart by month. The 2014 EBITDA for LU-NH was \$43.8 million, or \$2.9 million greater than the budget, a 7 percent favorable variance. Actual operating expenses were about \$2.5 million over budgeted amounts, or a negative variance of about 4.5 percent.

In 2015, earnings before taxes were about \$3.3 million, or about 14.8 percent below budget. The negative variance was caused primarily by depreciation and amortization expenses that were \$5.4 million greater than budget, despite positive performance in net revenue and operating expenses of about \$3.3 million.

**7. The CapEx budgeting process does not provide required analysis, business cases and detailed cost estimate packages prior to budget presentation to and approval by the local management, Oakville senior management, or the parent board of directors.**  
*(Recommendation 2)*

Liberty Utilities – New Hampshire has significant timing issues in providing capital expenditure analysis and business case packages for review and approval at executive levels. The CapEx budgeting process is one of the most crucial in effectively operating capital-intensive utility companies, making insufficiencies in this area a significant management issue.

The budgeting processes for the 2016 budget cycle specified that completed budgets, including the capital budget, were to be submitted to New Hampshire finance by September 3, 2015. The budgets were consolidated and submitted to the state president for first review by September 11<sup>th</sup>. Several budget iterations then occurred between department heads and the state president prior to his approval. The budget is then sent to the Oakville finance group. During October and November, the New Hampshire budget is discussed between the state president and Oakville, prior to approval by Oakville finance in November. A budget presentation is prepared for the parent board of directors, to be reviewed and approved in early December.

All analysis, business cases, capital expenditure applications and detailed cost estimates should be completed, packaged and presented to the New Hampshire state president for review and approval before the middle of September. When the capital expenditure packages are sent to Oakville, its management should also review the entire capital expenditure packages before approving the New Hampshire budget in November.



Our review of the capital budget packages for the budget years of 2014, 2015 and 2016 found that the packages were dated and approved by New Hampshire during the budget year -- not prior to budget review by the state president in September of the previous year. In fact, the capital packages were not approved until May 1, June 1 and March 31 of the budget year in 2014-2016, respectively. Thus many projects were well underway before they had been analyzed and approved by managers. Since this information was not prepared until several months later, the state president, Oakville finance and the parent board were approving capital budgets of 80 plus line items that appeared not to have been:

- Fully analyzed
- Subjected to consideration of alternatives
- Supported by business case and capital expenditure applications
- Subjected to detailed cost estimates.

The table below is a recap of the timing of the capital budget packages for the 2014, 2015 and 2016 capital budgets. The packages generally included an abbreviated 1-page business case and a 2-page Capital Project Expenditure Application.

	Date	Approved by Manager	Board Budget Approval Year	Projects Start	Projects End
2014 Projects	5/1/2014	5/1/2014	2014	1/1/2014	12/31/2014
2015 Projects	6/1/2015	6/1/2015	2015	1/1/2015	12/31/2015
2016 Projects	1/1/2016	3/31/2016	2016	1/1/2016	12/31/2016

**8. The New Hampshire capital budget packages do not provide detailed business case analysis for the growth, discretionary and regulatory supported projects as specified in the applicable Capital Expenditure Policy. (Recommendation 2)**

Liberty Utilities has a Capital Expenditures Planning and Management Policy and Procedure document (Version 2.1 dated September 21, 2015). However, the New Hampshire operations are not following the policy requirements, especially the requirement that business cases be fully prepared for certain types of expenditures.

Under Section 8.1 of the policy, specifications for the requirement of business case preparation are presented:

**8.1 Business Case**

*The following types of projects require a business case to be approved:*

- Growth, Regulatory Supported and Discretionary projects, or portfolios, over \$50,000
- Unplanned projects over \$50,000, outside of safety where an expenditure application should be used

The policy provides a business case example that shows the type of categories and information and analysis to be provided. These business case categories are: recommendation, objective,

background, alternatives/options, financial assessment, risk assessment/qualitative evaluation, and implementation/action plan.

With regard to at least three of the categories, management has not prepared the types of analysis required for its business cases for each of the budget years 2014 to 2016. Management did not provide the types of analysis prescribed for growth, discretionary and regulatory supported projects regarding alternatives/options, financial assessment and qualitative evaluation. The capital expenditure policy for business cases is specific in the type of analysis expected. In particular, we did not find alternatives identified and analyzed, and net present value or internal rate of return analysis was not prepared (as required in the Policy) in the business cases that we reviewed.

**9. Recent capital expense variances demonstrate a lack of effective control of capital expenditures. (*Recommendation 3*)**

Combined, the electric and gas businesses in New Hampshire experienced capital budget over runs of over 70 percent in 2014. Not only was the total variance large, but the individual variances that comprised it were many and in some cases extremely large. The causes were multiple, and the effects hit both the gas and electric businesses in New Hampshire. We observed:

- Extremely large overruns on individual projects
- An overrun of close to 20 times the corporate IT charges budgeted to be assigned to New Hampshire
- A \$10 million charge to New Hampshire for a “finance project” (similar to that described earlier) that had not been in the capital budget at all
- An increase of \$12 million in New Hampshire capital costs for unbudgeted growth projects, carryover of work from 2013, and mischarged costs
- Over \$10 million in under-runs due to project delays.

The number, size, and nature of the variances is extraordinary, and present a picture much more of opportunistic than well-planned capital spending. Our review evidenced widespread capital planning problems and capital budget execution. APUC’s circumstances heighten the concern further in that utility operations must compete for capital with other demands imposed by a company with an unusually aggressive growth strategy, particularly one that involves acquisitions as a central element. Also discomfiting is the repeated emphasis that planning documents show for investments that drive returns, as compared with less detail and emphasis on utility operating metrics.

Capital expenditure performance in 2014 did not give confidence that the details underlying capital plans (see the preceding conclusion) or attention in managing to those plans is effective.

The total New Hampshire capital budget variance dropped remarkably in 2015, but that drop should not mask what remains a striking number, size, and breadth of variances at the detailed level. The continuation of these variances confirms the concerns about details underlying capital plans (see the preceding conclusion) and whether or not the attention in managing to those plans is effective.

The variance for LU-NHG was low (about two percent). The LU-NHE variance remained high enough to be of concern (costs exceeded budget by 15.1 percent). The continuing large number

and magnitude of capital budget variances at the line item level, and the many and varied reasons for the variances continue to evidence a lack of effective capital planning and capital budget execution.

Major variances were recorded on almost every line of the electric and gas 2015 capital budgets. Gas budget “over-runs” totaled about \$16.7 million, but were more than offset by about \$18.3 million of “under-budgets”. In other words, \$35.0 million of variances were recognized, on a budget of only \$32.3 million. The problem with these huge variances on individual projects and programs is that the capital budgets prepared for and approved by New Hampshire management, Oakville management and the parent board of directors simply are simply not being followed. Dollars are not spent on the capital categories represented in the approved budget.

**10. New Hampshire and Oakville management did not effectively monitor and control problems with capital budget timing or 2014 and 2015 capital expenditure performance.**  
*(Recommendation 4)*

Conclusion 7 above reports that important analysis, formal applications and project estimating work on capital budgets occurred well after senior management and Board of Directors approvals of the capital budget for each the 2014, 2015 and 2016 budget years. New Hampshire executive management and Oakville executive management approved each of these capital budgets without important analytical and estimating work having yet been performed or reviewed. The capital expenditure approvals were based on insufficient evaluations and assessments performed by senior management as a result. The capital budget processes violate the company’s own capital expenditure policies as well as that of good utility business practice.

The monitoring and control of capital expenditures also shows little attention paid to this area as compared with greater focus on earnings, revenue and operating expenses. New Hampshire’s monthly reports to Oakville include a single chart measuring capital expenditure spend to budget in total, and does not include any analysis. Year-end reports by the New Hampshire utilities to Oakville include analysis on EBITDA, operating costs, net revenue, funds from operations and organic growth. Again, the one-page capital expenditure chart with no analysis is presented.

Also included in the 2014 year-end presentation was an “Efficiency Scorecard” that reports Capital Budget Efficiency scores are “100%” for actual expenditures with a target of 100%. This scorecard misleadingly indicates excellent performance on the capital budget. In the same document, however, capital expenditure actuals are shown at \$66.6 million and the budget at \$44.1 million. We also note that the actual capital spend was inaccurate, as capital expenditures were later reported as \$77.3 million for 2014. The lack of accurate information in the year-end reports also does not indicate effective monitoring or control of the capital budget.

**11. New Hampshire executive management and Oakville executive management did not take action to mitigate problems with capital budget process timing and reconciliations of 2014 capital expenditure performance.** *(Recommendation 4)*

Senior management at the New Hampshire and Oakville levels has apparently not taken effective action to change the timing of the capital expenditure processes noted in previous conclusions. The capital analysis packages for the 2016 budget were prepared well after senior management and Board approvals of the capital budget, as was also the case in 2015 and in 2014.

The New Hampshire engineering department prepared a variance reconciliation and explanation on a line-by-line basis for the 2014 capital budget. This reconciliation and analysis was reportedly prepared in July 2015. The 2015 capital variance analysis was prepared in early May 2016. We believe that such an important management tool for the capital expenditure budget should be prepared as soon as possible after the books close for the year in January. The lack of timely analysis causes Liberty to conclude that appropriate management action to fix problems with the capital expenditure budget have not yet been implemented.

New top New Hampshire leadership was not present during 2014. We understand leadership's view as not being aware of any 2014 capital budget problems and as focusing on actual levels of capital spend as compared to budget late in 2015, focusing on conforming to the total dollar budget. Under the circumstances, a more granular view appears necessary to bringing meaning to capital planning for New Hampshire.

## **D. Recommendations**

### **1. Incorporate into the Liberty Utilities' strategic plans and five-year forecasts specific operational metrics as objectives for the planning process. (Conclusion 3)**

Liberty Utilities' five-year forecasts are driven by targeted financial metrics that are clearly defined. Liberty believes that operational metrics should be included in the five-year forecast that also drive the planning process, and allow increased monitoring and management of operational issues by Liberty Utilities, Oakville and the holding company.

### **2. Redesign and rigorously apply the capital budgeting process so as to ensure the provision of full project business cases and program capital expenditure applications by September for the following budget year. (Conclusions 7 and 8)**

Business cases for growth, discretionary and regulatory support should also be performed according to the company's capital expenditure policy, which includes NPV analysis for these projects. The budget process should result in capital packages that are finalized and approved by (sequentially) the state president, Oakville finance and by the parent board of directors in December.

### **3. Manage the capital budgets to annual variance tolerances of plus or minus 5 percent for total expenditures and plus or minus 20 percent for individual projects and line items. (Conclusions 9)**

Liberty Utilities New Hampshire should establish and use variance tolerances for capital expenditure budget performance that are specific and provide measurements for performance levels. For instance, "good performance" tolerances should be 5 percent or less, moderate be 5 to 10 percent, and unacceptable for 10 percent or more of the total budget. Tolerances should also be established for individual projects and line items, to emphasize and ensure that capital budget management produces the spending on the priorities and specific needs that are addressed in the Approved Capital Budget.

**4. Change monthly and year-end management reporting processes to include monitoring and detailed analysis of capital expenditure spending and variances. (Conclusions 10 and 11)**

Monthly management reports and meetings at the New Hampshire level should start to include capital budget reporting, variance analysis and variance mitigation on a line-item basis. Management of the capital budget must become a greater focus for the state president and vice president – finance.

**5. Replace the monthly “operating call” presentations and year-end management reporting processes with Oakville with a more structured, documented monitoring and detailed analysis of capital expenditure spending and variances. (Conclusions 9 through 11))**

Oakville should begin to monitor and manage line item performance of the capital budget on monthly, quarterly and annual bases.

## IV. Information Technology

### A. Background

An Information Technology (IT) organization's overriding goal should be to improve a company's efficiency and effectiveness through automated information processing and electronic communications. In so doing, the organization must ensure that information systems operate reliably. The IT organization must effectively interface with the other organizations within the company that it supports, so that the systems continue to allow them to provide high-quality, reliable service to the customers by introducing appropriate changes and updates to system structure and operations. Modern IT organizations also ensure security of customer data, and provide efficient data communications and other telecommunications links. Liberty reviewed the extent to which Algonquin's IT resources adequately support the Liberty Utilities (LU) New Hampshire utility operations through providing such services.

### B. Findings

#### 1. Information Technology Approach and Strategy

A documented list of 22 guiding principles describes Algonquin's stated IT approach and strategy. Key components of the guiding principles existing in 2015 that address approach and strategy include:

- Use of one organization and one set of applications, infrastructure, and standards to support all Algonquin Power & Utilities Corp. (APUC) operations.
- Plan the IT applications and infrastructure to support an assumed 15 percent APUC growth rate.
- Compliance with regulatory and other external requirements, including by the end of 2015:
  - IT General Controls to support Sarbanes-Oxley compliance
  - Applicable NERC CIP v5 requirements
  - ISO 27001 compliance required by the Settlement Agreement for the New Hampshire acquisitions
  - Cybersecurity requirements in New Hampshire and emerging in Massachusetts.
- Use of commercial off-the-shelf (COTS) software rather than internal development, purchasing from vendors who have long-term viability, which includes:
  - Maintenance and support agreements with vendors for all applications and technologies prior to placement in production
  - Upgrades to remain on vendor-supported versions of applications and technologies, absent compelling reasons otherwise and with approval by all affected business units
  - Minimizing application modifications to meet business needs, and where not possible, weighing modifications against the long-term maintenance and support cost and preferentially using vendor-provided modifications with commitment to support modifications.
- Use of Microsoft technologies for devices, operating systems, servers, and databases and Cisco for network equipment, minimizing the use of alternatives.

## 2. Information Technology Organization and Staffing

APUC provides IT support for the New Hampshire utilities almost entirely through the Transition Management and IT organization located in Oakville, Ontario. This organization resides within the Liberty Utilities (Canada) Corp. shared services department, also known as Liberty-Algonquin Business Services (LABS). A small, three-person New Hampshire-based group reporting to the LU-NH Finance Department provides some additional local support in New Hampshire. Consistent with the APUC IT philosophy, the Oakville centralized Transition Management and IT organization (“LABS IT Organization”) supports the LU utilities in all regions. It does so, with a few exceptions, using a single platform and network and a single set of COTS applications for corporate systems. The software developed by the IT team is primarily restricted to web-based reports and queries.

A vice-president reporting to the LABS Senior Vice-President leads the corporate Transition Management and IT organization that provides shared IT services to the APUC operating organizations (including the New Hampshire utilities). This organization has grown since 2012 with APUC acquisitions and growth in the customer base. As of early 2016, the Transition Management and IT organization included the following personnel under the overall direction of the vice president:

- An IT Director, whose organization includes five managers:
  - Two application support managers, one supporting enterprise resource planning (ERP) applications (these include the customer service and finance applications, among others) and one supporting engineering and operations (E&O) applications
  - An IT Information Systems manager, responsible for all infrastructure: data centers, services, and telecom
  - An end-user services manager, supporting the help desk and the quality assurance (QA) process
  - An IT security manager
- A Senior Manager, IT Programs and Transitions.

Four of the five managers reporting to the IT Director supervise small teams of IT employees. The Company supplements these employees with a few contractors for force augmentation and specialized knowledge. Contractors have been used for such work as quality assurance testing of software changes, infrastructure support, and contract management.

The Program and Transitions Senior Manager also supervises a small team, which oversees: (a) the IT process associated with transitions after LU acquisitions, and (b) the IT capital projects process. This team originally focused mainly on the transitions associated with the LU acquisitions of several utilities, including the LU-NH utilities, in the 2012 to 2014 period. It now operates mainly as a project management organization (PMO) for various types of projects, whether or not related to acquisitions.

The three LU-NH IT employees provide local desktop and laptop support. They also service hardware located in New Hampshire, and assist the Oakville group in installing New Hampshire equipment. Additionally, they provide some assistance to the Oakville group in managing IT trouble tickets.

The IT employees establish individual goals with their managers, as part of the annual review process. These goals can include those associated with specific initiatives at the department or team level in addition to corporate goals established in an annual scorecard.

The following table shows how the numbers of corporate IT employees changed from 2012 to 2016:

Transition Management and IT Organization	Corporate IT Employees				
	Year				
	2012	2013	2014	2015	2016
Vice-President	0	1	1	1	1
IT Director	1	1	1	1	1
Enterprise App Support	0	4	5	7	7
E&O App Support	0	4	4	5	4
Infrastructure/Info Systems	4	8	8	8	11
End-User Services	4	9	8	8	7
IT Security	0	0	0	1	1
IT Programs and Transitions	2	2	2	3	4
<b>TOTAL</b>	<b>11</b>	<b>29</b>	<b>29</b>	<b>34</b>	<b>36</b>

The Transition Management and IT organization used 12 to 14 contractors during 2015. Sixty percent of those contractors performed quality assurance work and 10 to 15 percent conducted project management activities. Management explained the resource growth as largely driven by the 2012 through 2014 U.S. utility acquisitions. Those acquisitions increased the total customer base across all regions from 70,000 water customers in 2011 to 490,000 electric, gas, and water customers by the end of 2015.

### 3. IT Software and Vendor Services

With a few exceptions, all LU utilities use a standard set of IT applications running on a standard infrastructure. The Company purchases the software and services to provide its IT support through a range of vendors. The table below displays the Company-provided list of major software applications and vendor services used to support New Hampshire utility operations. In addition to the applications shown in this list, we found that the Company also uses a sales-support application provided by Zoho and an intercompany transaction module provided by Nolan Business Solutions.

Liberty Utilities IT Software and Services				
Product/Service	Description	Vendor	NH Utility	Comments
Customer Service Module (CSM)	Customer information system (CIS) and related modules	Cogsdale Corporation (Harris Utilities division)	GSE & EN	COTS with vendor-provided configuration and enhancement



Microsoft Dynamics Great Plains	Financial applications	BDO Solutions	GSE & EN	COTS with vendor- provided configuration and enhancement
Wennsoft (now Key2Act)	Service order management	BDO Solutions	GSE & EN	COTS with vendor- provided configuration and enhancement
Paramount	Purchase requisitioning	BDO Solutions	GSE & EN	COTS with vendor- provided configuration and enhancement
Encore	Bank reconciliation	BDO Solutions	GSE & EN	COTS with vendor- provided configuration and enhancement
Mekorma	Check printing	BDO Solutions	GSE & EN	COTS with vendor- provided configuration and enhancement
FCS	Meter reading (conventional meters)	Itron	GSE & EN	COTS
MV30	Meter reading (internal meters)	Itron	GSE & EN	COTS
Clarity	Budgeting and forecasting	IBM	GSE & EN	COTS
Data Center Management	Management of the two data centers	CenturyLink	GSE & EN	
Telecommunications	Telecommunications services among LU offices and data centers	CenturyLink	GSE & EN	
Cisco PCCE	Packaged Contact Center Enterprise (PCCE) telephony software	Dimension Data	GSE & EN	COTS
OASyS SCADA	SCADA software	Schneider Electric	GSE & EN	COTS with vendor- provided configuration and enhancement
ArcFM GIS	GIS software	Schneider Electric	GSE & EN	COTS with vendor- provided configuration and enhancement

Responder	Electric outage management	Schneider Electric	GSE	COTS with vendor-provided configuration and enhancement
Designer	Electric distribution system design	Schneider Electric	GSE	COTS with vendor-provided configuration and enhancement
ESRI GIS	GIS software	ESRI	GSE & EN	COTS
Quadra	Construction capital work estimating	ERTH	GSE	COTS with vendor-provided configuration and enhancement
Fortis	Document management software	Docu/Wave	GSE & EN	COTS

Pursuant to the principal objectives of this audit, we have concentrated in the IT review mainly on the Company's relationship with IT vendors that LU uses for enterprise applications and services, specifically those providing customer service and financial support. The principal such enterprise application and service vendors include:

- Cogsdale
- BDO Solutions
- CenturyLink
- Dimension Data.

BDO Solutions resells Microsoft Dynamics software products, which provide ERP and customer relationship management (CRM) solutions designed primarily to support small and medium businesses. The Microsoft Dynamics applications are designed to be integrated with each other "out of the box." The key Microsoft Dynamics product is the Great Plains (GP) financial system, for which LU purchases licenses and support from BDO. BDO resells to LU other products configured to work with GP, such as Wennsoft (now Key2Act), which is used for service order management and dispatch. BDO performs some customization for LU of these applications and their interfaces with other applications.

The Cogsdale CIS system is also designed to work with GP, although LU obtains this software directly from Cogsdale rather than through BDO Solutions. Cogsdale has worked with LU to configure and enhance its application to meet LU's specific requirements. Cogsdale also continues to provide ongoing support of the CIS application.

LU leases data center space and services from CenturyLink at two locations. Dimension Data provides and supports telephony equipment and software for LU's operations.

## 4. IT Support Processes

### a. Work Establishment

The work of the LABS IT Organization comes from three principal sources:

- Incidents and defects, reported and logged in a trouble ticket system.
- A work intake process for small enhancements, additions, and changes, some of which are identified as part of the trouble tickets resolution process.
- Major projects arising through the capital budgeting and project planning process.

Assignment of the work to the various LABS IT groups depends on the nature of the issues involved. The End User Services group handles desk top support, and manages the help desk and trouble ticket system. This group also performs the initial analysis and attempt to resolve troubles and is involved with the testing of software changes. The two application support groups perform the more extensive work related to applications; one group handles the ERP applications (such as Cogsdale, Wennsoft/Key2Act, and Great Plains) and the other the engineering and operations applications (such as SCADA, GIS, and Itron). The Information Systems (Infrastructure) group handles issues with networking, servers, data centers, and databases. The Security manager handles cybersecurity issues.

A Change Advisory Board (CAB), consisting of key senior business and IT managers, meets weekly. It reviews and approves, denies, or defers most change requests. The IT Programs and Transitions group oversees the IT capital projects, and provides program managers and coordinators for the major projects. LU's use of a standard set of IT applications (with a few exceptions) across all its utilities, means that management generally identifies and executes IT projects based on the collective needs of all the utilities, rather than based on any specific utility or region individually. As appropriate, the IT groups involve the vendors in issue resolution, and typically include the relevant vendors in the major projects.

### b. Trouble Tickets

IT work to address incidents and defects begins with a trouble ticket. When end users encounter an IT problem, they can initiate trouble tickets through a web front end. Urgent issues can be submitted by email or phone. LU uses a Dell product, KACE, to manage and track these tickets. The Oakville-based helpdesk team performs initial triage of the tickets, obtaining more information about the trouble from the end users and either resolving it themselves or assigning it to the appropriate application support team or the infrastructure support team, depending on the nature of the trouble. The infrastructure support team handles hardware failures or outages. The E&O applications support group manages the resolution of engineering and operations tickets, such as those associated with the meter reading applications. The ERP applications support group manages the resolution of enterprise application tickets, such as those associated with the Cogsdale CIS, Wennsoft/Key2Act service order management, or GP financial applications.

The Oakville-based support groups analyze the troubles assigned to them to determine which of three resolution paths they should follow, assigning ownership of the trouble resolution to: (a) the IT support group, (b) the relevant vendor, or (c) the business unit (for example, if the issue is user training). When investigation of a trouble ticket indicates that resolution of the trouble requires an

application change, the process for resolving the trouble follows the structured application enhancement process described below.

The Enterprise Application support group manages any issues identified by the regions occurring within the ERP applications, primarily Cogsdale. Depending on the severity of the issue, the regional customer service groups can escalate it to the Oakville customer experience group before it goes to IT. The Enterprise Application support group uses a defect-replication template it has developed as part of its analysis of the tickets assigned to it. If the group cannot address the defect internally, it escalates the issue to the relevant vendor. Whether the vendor or the Enterprise Application support group has addressed the defect, the fix goes through a testing phase, first by the core IT group, and then through user acceptance testing (UAT). If the fix is approved in accordance with the Company's change management process, release management follows. The Enterprise Application group meets weekly with the customer experience group to determine which tickets should be assigned priority status, which the Enterprise Application group works with the vendor to resolve.

Most ERP applications troubles across all the LU regions have arisen with the Cogsdale CIS application. The next table shows the October 2015 through January 2016 breakdown of the average number of open ERP application trouble tickets:

**Open ERP Trouble Tickets (All LU Regions)**

Source	Oct-15	Nov-15	Dec-15	Jan-16	Average	Share
Cogsdale	368	339	373	364	361	65%
GP	40	45	47	38	42.5	8%
Paramount	49	14	41	57	40.25	7%
Wennsoft	46	35	39	36	39	7%
Other	73	70	78	73	73.5	13%
<b>Total</b>	<b>576</b>	<b>503</b>	<b>578</b>	<b>568</b>	<b>556.25</b>	<b>100%</b>

For the period from March 2015 through January 2016, on average, 46 percent of the Cogsdale CIS trouble tickets were assigned for resolution to the vendor, 31 percent were assigned to the Oakville IT department, and 23 percent were assigned to the business unit team.

### **c. Application Development and Enhancement**

The Company uses the following process for developing and enhancing applications:

- Requirements – the relevant business unit needing and requesting the application development generates the requirements, with assistance from IT business analysts.
- Design – the vendor of the relevant application is primarily responsible for the design of its own solution, with input/validation/recommendations from Oakville's IT department. The vendor then has responsibility for, identifying the necessary enhancements, modifications, and configurations to meet requirements.
- Enhancement and Configuration – the vendor provides the fix/enhancement identified in the design to Oakville IT with release/deployment documentation, and then Oakville IT deploys/installs the fix/enhancement across various test environments, and ultimately in production.

- Testing – the vendor usually tests the application changes and delivers them to the LABS IT team to perform Quality Assurance (QA) testing, according to a suite of defined test scripts, which test the changes delivered as well as regression-test the application. A UAT phase follows the QA testing. The relevant business personnel perform the UAT. The Company follows a specified change management process described below, which requires formal sign-off of the UAT before formal approval to deploy the changes. Regression testing is a required component of the testing suite; for example, testing of the GP upgrade currently in progress will include regression testing with the billing system. Infrastructure-related projects include stress testing.
- Training – the business unit organizations, with assistance from IT as necessary, train the users affected by the changes in parallel with the testing.
- Implementation – this process typically includes: (a) a cutover or deployment step during which the changes are deployed into production, (b) a post-production monitoring phase in which the project team monitors the performance of the changes in production, and handles any defects, and (c) hand-over of the application to the relevant production support team.

#### **d. Change Management**

The Company applies a documented change management process to “any installation, alteration or modification of hardware, system software, firmware, applications, networks, environmental facilities, voice, procedures and policies related to the delivery of the existing service(s) and the implementation of new IT services.” Authorized changes begin with a formal change request. The change management documentation defines several roles in the process, including, among others, the CAB and a change manager. After implementing the changes in a development environment, the process requires a testing phase. The CAB and business owner of the systems involved must approve the final implementation in the production environment. The change manager must also perform a post-implementation review, document the findings of the review, and bring them to the CAB if required.

#### **e. Project Management**

The LABS IT Organization uses a project management process, which became more formalized in 2015, although components existed previously. The IT Programs and Transitions group provides the leadership of and support for this process. For IT capital projects, which can include application upgrades, the Programs and Transitions group works with the initial process, identifying and gathering a team, documenting requirements and designs, reporting to stakeholders, maintaining and reporting on the capital project financials, overseeing the project closure, and identifying the lessons learned. For transitions associated with acquisitions, the specifics of this process depend on the transition but involve defining the scope, formulating the team, defining the work, tracking the progress, overseeing the process to transition and closure. In this work the IT Programs and Transitions group interfaces with the LU team involved in the transition as well as the acquired organization and the company from which it was acquired.

Each project has a designated project manager, responsible for helping the business to formulate the project objectives, managing the project to completion, and monitoring risks and the interests of the business. The project manager generally comes from the IT organization that is most associated with the nature of the project; *e.g.*, Enterprise Application Support for an ERP application project, E&O Application Support for an E&O application project, or Information

Systems for an infrastructure project. The IT Programs and Transitions group also contains a dedicated project manager, who can act in that capacity as necessary. This group also contains:

- A Project Coordinator, who supports the project managers, keeping the minutes of meetings, managing reporting to groups outside the project, making sure there are status reports and submission of financials
- A Meter-to-Cash Category Manager, who can also act as a project manager for meter-to-cash projects but also has the additional responsibilities of a category manager for meter-to-cash applications: acting as the liaison between the business and IT to make certain that the requests from the business are in line with IT best practices. This person also maintains close relationships with the vendors. Unlike the dedicated project manager, this person looks at the whole portfolio of projects (in this case, all those associated with the meter-to-cash applications).

The Senior Manager, IT Programs and Transitions holds weekly cross-functional/cross-departmental work intake meetings. At these meetings, the Senior Manager works to continually ensure correct prioritization among the projects and to understand possible internal dependencies. In projects of large size, there are committee meetings with representatives from the areas of the business that might be impacted. Test plans are created and signed off by the business to assure, for example, that regression testing is not omitted. The documentation of the projects is through the project plan, which includes steps for sign off, business review of test plans, etc. If there is a need to change the scope, timing, or budget of a project, a change request must be issued and any change must go through a review and sign-off process. The project plan includes documented acceptance criteria, although a project can be completed and software deployed without all acceptance criteria complete if the business unit agrees to this.

#### **f. Quality Assurance**

Given the APUC/LU approach to IT, most significant hardware system and software changes and enhancements involve a vendor. The Company relies on the vendor to perform unit testing of these changes. After the vendor completes this testing, the APUC/LU IT Quality Assurance (QA) team implements the changes in a test environment. The work of the QA team usually involves testing vendor-provided fixes and changes, but the team also performs some testing of changes made entirely in house (for example, creation of reporting software).

The QA activities fall into two main categories, projects (large impact changes and upgrades) and minor enhancements (bug fixes and other small impact changes). For projects, the QA team creates a test plan that must be approved by the key business users, writes test scripts, and sets acceptance criteria. The testing regime involves regression testing to ensure other systems are not affected by the change. The QA team tracks and documents the testing process, including evidence that the testing has been successfully completed and accepted. If tests of the vendor changes fail, the QA team contacts the vendor to fix the problem. After the acceptance criteria have been met, the QA team meets with the business partners to determine whether they agree that the tests have been passed. If so, QA process ends and user acceptance testing begins. The QA team documents the testing process, including evidence that the testing has been successfully completed and accepted. The QA procedure for minor enhancements uses less detailed procedures, without steps to create and obtain approval of a formal test plan.

## C. Conclusions

### 1. Growth has strained the capability of APUC's model for providing IT support to continue supporting New Hampshire needs. (*Recommendation 1*)

The approach taken so far to meet LU-NH IT needs is not out of keeping with what other relatively small utility holding companies have found successful. What needs to be considered for New Hampshire, however, are the consequences of continued APUC growth. The current approach creates risks to the quality of IT support, and it is not clear that it is readily scalable if APUC continues its aggressive acquisition strategy.

APUC provides IT support to LU-NH almost entirely through a small corporate IT organization within LABS from Oakville, Ontario. A three-person group largely dedicated to providing first-level technical support for desktop and mobile hardware and software comprises the only New Hampshire-based IT resources. It is common among public utility holding companies (PUHCs) in the United States to assign most IT responsibilities to a corporate organization. The APUC LABS IT organization is, however, considerably smaller than we have generally found in the United States, even accounting for total company size. APUC has been able to accomplish this largely through the combination of internal resources and third-party managed services.

It is common today for PUHCs owning U.S. utilities to depend largely on commercial off-the-shelf (COTS) software rather than the traditional internally developed systems to provide the automated operations support necessary to support utility functions, whether operations and engineering or customer support and billing, financial operations, and other so-called enterprise functions. It is also increasingly common for such PUHCs to provide as much as possible a common set of support systems across all its subsidiary utilities and to use vendors, particularly third-party integrators, for software customization, initial installation, and major upgrades. The LABS IT Organization also relies almost entirely on COTS software for the LU utility support systems. What is more unusual is LABS IT's heavy reliance on software and hardware vendors to supply many of the day-to-day IT functions, such as software trouble shooting and fixes, and, to a more moderate extent, data center operations. Furthermore, the LABS IT Organization also tends to use smaller, less expensive, and largely Canadian-based firms, particularly for software. It is also unusual for a relatively small holding company like APUC to own such a wide variety of kinds of utilities (electric, gas, and water) and in such dispersed regions across the U.S. while applying, for the most part, the same support applications to all.

APUC's IT approach has been advantageous from a cost minimization perspective. However, such heavy reliance on external resources and smaller vendors has potential drawbacks for the quality of IT support provided to the LU-NH and other LU utilities. The Company has indicated that using smaller vendors improves flexibility and responsiveness to application customization and repair over larger firms. This position is reasonable, assuming the software provided meets the utilities' needs. However, software applications from smaller vendors generally provide more limited capabilities and can be less robust. Additionally, applications from smaller vendors may not be sufficiently robust and flexible to continue to support the diverse needs of APUC's current portfolio of utilities to say nothing of the increasing size and variety of utilities as APUC's acquisition strategy proceeds.

Heavy reliance on vendors for day-to-day trouble shooting, as the LABS IT Organization does with Cogsdale, can also increase the time to resolve troubles, given the necessary intercompany coordination required. This can be particularly true for smaller vendors with fewer resources. Use of vendors for key operations can also complicate and potentially impair cybersecurity, although we have found that the Company is aware of this concern and has taken some steps to address it, such as imposing additional cybersecurity requirements in its vendor contracts.

Issues raised in some of the additional conclusions below indicate that the limits of the Company's current IT strategy may already be approaching if not already evident in current operations. These issues include:

- Problems with the customer service and accounting applications (Conclusion #2)
- Uncertainty about whether current IT staffing is sufficient (Conclusion #3)
- A continuing backlog of aging Cogsdale helpdesk tickets (Conclusion #7) at the time of our field work.

APUC's aggressive utility acquisition strategy could easily exacerbate these problems both because of contention for the limited internal IT and vendor resources as more utilities are added and uncertainty as to whether the current applications are sufficiently robust and flexible to meet the needs of an even larger and potentially more diverse portfolio of utilities.

## **2. Limitations in some software applications have impaired the quality of some of the LU-NH utilities' operations. (Recommendation 2)**

Our analysis of the LU-NH utilities' customer service operations, described in the Customer Service chapter of this report, has led us to conclude that the Cogsdale CIS system has limited functionality compared to the National Grid CIS system these utilities used before their acquisition by APUC. This limited functionality created the need for many manual tasks to execute functions that had been handled automatically in the prior CIS system. There are also some issues with the system design, such as inadequate configuration for the New Hampshire regulatory environment. The original design also provided inadequate control on user access, which was identified in the internal meter-to-cash audit and subsequently remedied. These issues have stretched the limited IT and vendor resources during the close succession of CIS implementations in multiple LU utilities since 2013. Our analysis of the systems described in the Accounting chapter of this report indicates some problems also with the GP financial application.

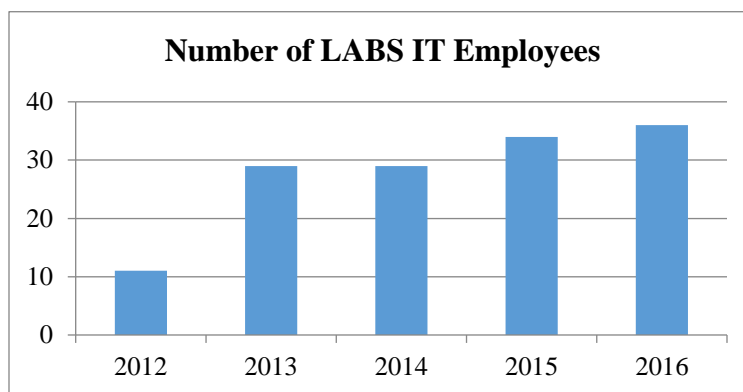
The Company indicates that it is addressing many of these problems in major Cogsdale and GP upgrades, both scheduled to be completed during May 2016. However, particularly in light of the APUC's continued utility acquisitions and the strategy of using the same application as much as possible for all the utilities, it appears to be time to engage in a reevaluation of whether the current applications are adequate and sufficiently scalable to meet the needs of such a diverse and growing set of utilities while continuing to maintain and preferably improve the support of the existing utilities, including the LU-NH utilities.

## **3. Despite significant resource increases, the sufficiency of IT resources remains questionable. (Recommendation 3)**

APUC has significantly increased the size of the IT organization since 2012. The IT organization has also recently improved its management and organizational structure. These changes have been



positive, but it remains unclear whether current IT resources are adequate to support LU-NH. The chart below shows that the LABS Transition Management and IT Organization, which provides most of the IT support to the LU-NH utilities has more than tripled in size since 2012. It increased from 11 employees in 2012 to 36 employees in 2016. The most significant increase occurred between 2012 and 2013 before the close of the LU-NH utility acquisition. Still, however, there has been a 24 percent increase in the size of this organization since 2014.



As the IT organization has grown, it has also reorganized and added new managers. Key changes include separation of the application support employees into two groups, one focused on ERP applications and the other on E&O applications. Another key change came with the significant increase in the number of employees supporting the ERP applications, which include the customer service and financial support systems. Another important change was the addition of a manager focusing exclusively on cybersecurity issues. Our interviews of the current IT management employees indicate that the managers and executives in this group are competent professionals with long-term and relevant IT experience, in general. There is also evidence of a good working relationship between the Oakville group and the small New Hampshire-based IT group.

It remains to be seen, however, whether the current level of the internal IT resources is sufficient to provide high-quality long-term support of the LU utilities, including the NH-LU utilities. Such rapid relative growth suggests an organization that is rapidly maturing and may still need to grow further to reach optimum size and structure. Some of the structural changes noted above are quite recent, dating largely from 2015. One measure of how well the current IT organization is supporting the LU utilities is the status of helpdesk tickets, which Conclusion #7 below addresses. The number of tickets that are open for less than 30 days decreased during 2015, which may be due in part to increased resources and improved processes. However, the total number of open tickets has remained about the same and the fraction of tickets unresolved after 91 days has continued to increase. APUC's aggressive acquisition strategy further complicates the determination of the right size of the organization, because of the risks that it will divert existing IT resources from providing the current level of support to existing LU utilities to addressing IT transitions for additional utilities.

**4. The vendor management process lacks sufficient systemization and formal documentation.** *(Recommendation 4)*

Given the Company's heavy reliance on software and service vendors, it is very important for it to have a well-defined and rigorous vendor management process. LU does not have a unified centralized vendor management function. Instead, the organization that is the primary recipient of the vendor's services generally handles the management of the vendor relationships. The LABS IT organization is primarily responsible for the management of those vendors providing software applications, software support, and IT services. The Customer Experience Operations group in Oakville is responsible for managing vendors that primarily provide customer service functions, such as Fiserv, which provides bill printing, electronic billing, and bill payment channels.

Within the LABS IT organization, the Infrastructure (Information Systems) group is principally responsible for the daily relationship with the infrastructure-related vendors, such as CenturyLink and Dimension Data. The relationship with software vendors, such as Cogsdale and BDO Solutions, is more of a shared function within IT. Management of production support falls under the Enterprise Application Support Manager, while engagement on larger initiatives falls to the Meter-to-Cash Category Manager in the IT Programs and Transitions group together with a relevant person in the business organization (Customer Experience Operations).

The IT organization has introduced some important vendor management tools, particularly for the very important relationship with Cogsdale. IT introduced monthly tracking reports of Cogsdale performance and commitments during 2015, relying both on internal data from the helpdesk ticket management system (KACE) and reports received from Cogsdale. IT managers also meet frequently with Cogsdale to discuss performance and additional needs.

Nevertheless, the vendor management process appears to be largely informal. The Company provided no documentation of a vendor management process that applies to major software and service vendors, only a high-level description. The only documented vendor management processes provided apply to purchases of general goods and services at the local level.

As noted, the management of some vendors appears to be a shared responsibility with a lack of clarity as to who is the ultimate owner of the vendor relationship. It appears that ultimate ownership of IT-related vendors lies with the IT vice president, with day-to-day interactions at the manager level. We did not find clarity on this matter, however, from examining the documentation and other information provided in data request responses and descriptions of the vendor process during the interviews of the IT managers.

Vendor review (excepting Cogsdale) meetings appear to be relatively infrequent. They occur quarterly in some cases, but often only annually, or "as required." The IT organization has detailed tracking data on Cogsdale performance, and receives weekly status reports from Century Link. Such tracking, however, appears to be largely lacking for other vendors. Even the tracking of the Cogsdale meetings and commitments is informal, relying principally on spreadsheets, and regular meetings with Cogsdale began only in mid-2015.

**5. Despite progress made in improving and systemizing support processes, some gaps remain, and documentation is incomplete and inconsistent. (Recommendation 5)**

The LABS IT organization uses a number of processes to support the LU utilities. These include:

- A work intake process

- A helpdesk ticket intake and resolution process
- A change management process
- A quality assurance process for reviewing and testing changes
- An application development and enhancement process
- A project management process.

There are, however, gaps and inconsistencies in some of these processes or in their documentation. Several examples illustrate them.

First, procedures for entering helpdesk tickets are fairly well defined. However, the procedures for management and resolving the tickets are provided only in flowcharts and PowerPoint slides. It is unclear from these documents who is the ultimate owner of the end-to-end management and resolution process. Instead, there appears to be a hand-off of responsibility among various groups within the IT organization and the vendors. It is important that ownership of the end-to-end process be well defined in order to ensure that tickets are appropriately and expeditiously resolved.

Second, the only documentation of the quality assurance and project management processes, aside from the brief work intake process document, appear to be PowerPoint presentations.

Third, there appears to be no formal documentation of the process for application development and enhancement. The matter is addressed to some extent in the change management and work intake process documentation.

Fourth, there is inconsistency in the terminology and stated procedures between the work intake and change management process documentation. For example, the work intake process documentation references the roles of the PMO Coordinator and Category Manager and does not address the role of the Change Advisory Board, which is a key decision maker in the Change Management documentation. The Change Management documentation references such roles as “requester,” “change manager,” and “change owner,” which have no clear relationship to the named players in the work intake process.

The LABS IT Organization is a small but rapidly growing and evolving organization. Lack of clear process definition and documentation is not surprising in such an environment. However, as the organization has begun to mature and takes on a wider variety of tasks as the utility client base grows, it is important to ensure the efficiency and effectiveness of the organization support of the utilities. This will require more rigor, consistency, and completeness in the process definition and documentation. For example, the issue with aging Cogsdale tickets noted in Conclusion #7 below may be evidence of the need to improve the ticket resolution process.

## **6. IT group performance measurements, despite recent additions, remain more narrow than appropriate. (Recommendation 6)**

The LABS IT group has recently added some useful measurements of the IT group and vendor performance. Additional measurements would help to more precisely track and improve performance. Accurate and detailed measurement of performance is an essential component in the processes of monitoring and improving that performance. The IT group tracks some measurements of service performance, both as they apply to the internal group and some vendors, in a monthly status report (IT Flash Report) provided to the IT Director and the Vice President of the Transition

Management and IT organization. This report was initiated in early 2015 and the number and range of the reported measurements has grown since its introduction. Each of the managers reporting to the IT Director contributes to this report. Originally the report was provided in email format but is now in a spreadsheet. Some key measurements in the IT Flash Report include:

- Overall helpdesk ticket counts and closure rates
- Ticket counts and backlogs for the major software applications
- Major infrastructure component availability and uptime
- Capacity of major infrastructure elements, such as storage
- Highlights of cybersecurity events, projects, and remediation activities.

Additionally, the Enterprise Applications Manager has provided a separate monthly report on Cogsdale CIS performance since March 2015, which provides more detail than that reported in the IT Flash Report. The Cogsdale report includes such items as:

- Total open helpdesk tickets related to Cogsdale across all regions
- New tickets by region
- Counts of new tickets assigned to Cogsdale
- Counts of open tickets determined to be critical
- Backlogs and aging of open tickets
- Number of tickets assigned to Cogsdale, the internal IT group, or the business partners
- Information on the nature of the issues causing the tickets and actions taken to address major causes.

Recently the Cogsdale report has also included information on the number of open tickets for other ERP applications besides Cogsdale.

The principal measurement of the performance on projects and transitions is whether they are on time and on budget. The project managers and Senior Manager, IT Programs and Transitions are accountable to ensure that the variance in project cost is no more than five percent, absent changes in project scope, timeline, and budget properly approved through a change request process.

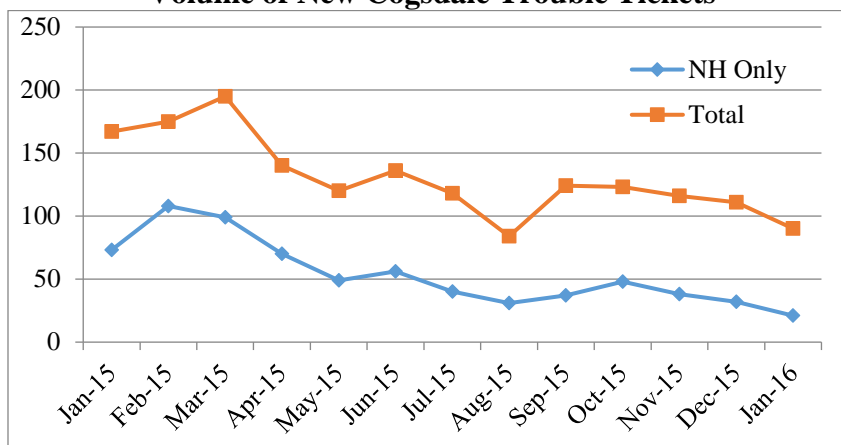
This set of measurements represents a good start to developing a suite of measurements for systematic tracking of internal IT and vendor performance. However, systematic performance tracking appears to have begun only in 2015. The LABS IT Organization and the LU utilities, which are its clients, would benefit from further measurements and enhancements in the existing measurements. For example, there is not much detail on applications besides Cogsdale, and the detailed tracking and analysis of tickets is difficult because of the rudimentary nature of the KACE ticket management system. There also appear to be no benchmarking measurements or measurements against service levels set with internal clients.

**7. Trends in Cogsdale-related trouble tickets indicate some stabilization of the Cogsdale CIS system but raise concerns about the trouble ticket resolution process.**  
*(Recommendations 3 and 5)*

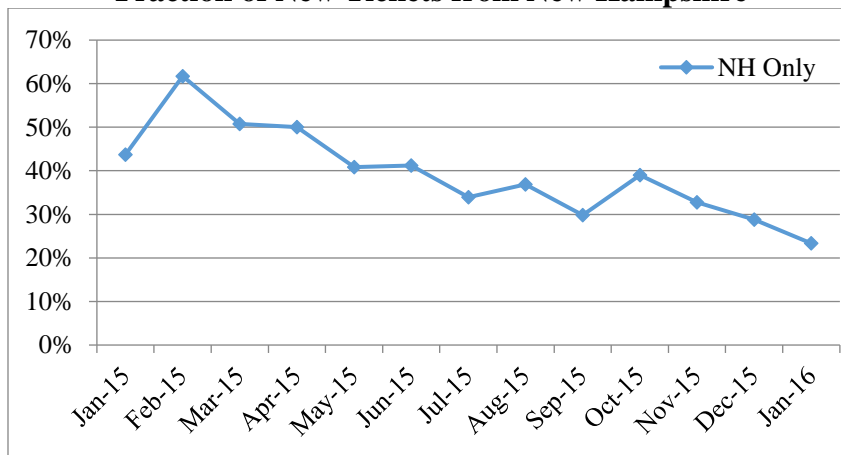
New IT trouble tickets associated with the Cogsdale CIS system and the fraction of those tickets from the New Hampshire utilities have decreased, which indicates that the Cogsdale CIS system may be stabilizing. The number of open tickets, however, has remained fairly constant and the fraction of aged tickets has increased. The LABS IT Organization's data on the Cogsdale trouble

tickets since early 2015 provide some indication of a recent decrease in new problems with the Cogsdale application. As shown in the next two charts below, the volume of new Cogsdale trouble tickets across all LU regions has decreased significantly since the spring of 2015. The number dropped from 195 in March 2015 to 90 in January 2016. Additionally, the fraction of those tickets entered by the NH-LU utilities has dropped from 62 percent in February 2015 to 23 percent in January 2016.

**Volume of New Cogsdale Trouble Tickets**

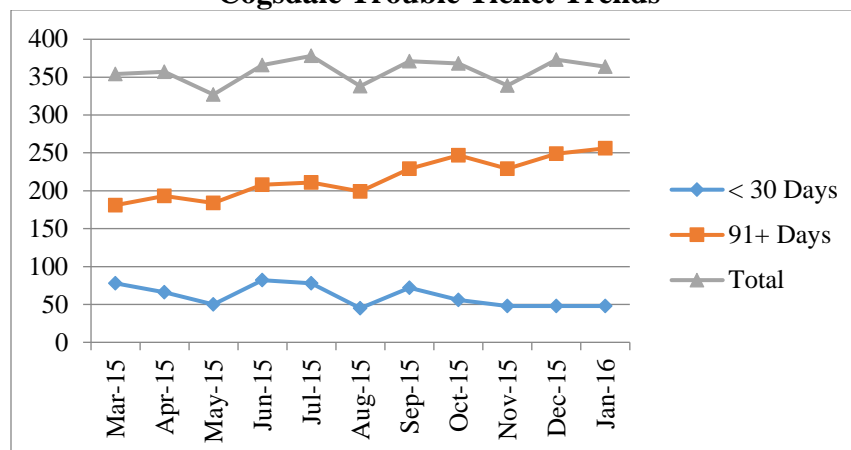


**Fraction of New Tickets from New Hampshire**



During the same time, however, the number of open tickets has remained relatively constant, with a significant increase in the number and proportion of tickets open for more than 91 days. The next chart shows the trends. The number of tickets open less than 30 days has generally trended downward, providing some evidence of improvements in handling new tickets, but the overall aging of the tickets is concerning.

Cogsdale Trouble Ticket Trends



When questioned about the aging Cogsdale trouble tickets, the LABS IT Organization suggested that the aging trend may reverse after completion of the new Cogsdale upgrade (Release 36) due to be completed in May 2016. Management should carefully monitor the trend in trouble tickets after completion of the Cogsdale upgrade, to ensure that the implantation of this release has resolved the aging ticket problem. If not, the Company should consider introducing improvements in the ticket resolution process or increases in the IT staff.

**8. The Company has developed disaster recovery procedures and has performed initial testing of these after their implementation, but has no regular testing process.**  
(Recommendation 7)

LU has disaster recovery plans for its critical systems of SCADA, voice, GP, Cogsdale, and metering. CenturyLink manages two separate data centers for LU. The duplication provides redundancy in case of failure and the ability to execute a failover procedure (*i.e.*, switch operations to the redundant center). The recovery procedures are defined at the application level. The Company configures its critical systems for disaster recovery in either an active-active mode (where the redundant system is kept fully synchronized at all times and processing is automatically switched to the redundant system with no loss of data when the primary system fails) or an active-passive mode (where the redundant system receives periodic data updates only and processing is switched to the redundant system but data loss may occur, depending on the last recovery point when the primary system fails). SCADA and the control room are examples of systems configured in active-active mode; the customer service, financial, and administrative systems are configured in active-passive mode.

The critical systems are backed up nightly to disk and then weekly to tape for offsite recovery. LU replicates any changes in the Cogsdale and voice systems between the two data centers and ships logs to back up the systems. LU and its vendors tested the disaster discovery process when the systems were implemented, and performs infrastructure testing for major projects to upgrade systems.

However, there are some open issues in the LU disaster recovery plans. Currently, there is no unified overall plan; the plans are at the system or application level. Additionally, the Company does not execute any regular disaster recovery testing routines.

**9. LU has improved its approach to cybersecurity but needs to continue to focus on this matter. (Recommendation 8)**

In the current environment, effective cybersecurity of the systems supporting utilities is an essential ingredient of good utility management. LU has improved its cybersecurity procedures since the LU-NH acquisition. The LABS IT Organization has hired a manager with a good background in cybersecurity measures. Management has dedicated this manager to addressing cybersecurity issues. The Company has a corporate cybersecurity policy, published on its intranet portal. It is reviewed annually, now by the new cybersecurity manager, the last time in early 2016. The Company uses a managed security services vendor, Herjavec. This vendor monitors the Company's network, systems, and data on a 24-hour/7-day-per-week basis for cybersecurity threats. Given the number of IT vendors it interfaces with, the Company has developed a cybersecurity addendum that vendors must incorporate in their contracts. Physical security matters are handled outside of the IT organization by the LABS Environment, Health, and Safety Department.

The Company engaged a third-party auditor, CGI, to conduct an ISO 27001 compliance audit in response to concerns raised during the NH PUC proceedings on LU's purchase of the New Hampshire utilities (DG 11-040). CGI released the audit report in February 2015. The cybersecurity manager is leading the process of remediating issues raised in this audit, which appears to be nearing completion. Once this is complete, a continued focus on cybersecurity is essential.

## **D. Recommendations**

**1. Re-evaluate the current IT strategy. (Conclusion 1)**

Given LU's rapid recent growth and projected future growth with APUC's aggressive acquisition strategy, it is time for the Company to re-evaluate its current IT strategy. It is unclear that LU can provide effective support for its utilities, including the LU-NH utilities, using a small centralized IT department and such heavy reliance on vendors, most of which are relatively small themselves. There appears to be recognition within the LABS IT department that the adequacy of this approach may be reaching its limits as the LU customer base and complexity of operations grows with increasing acquisitions.

Our investigation of the customer service problems at the LU-NH utilities described in the Customer Services Chapter of this report, indicates a significant decline in customer satisfaction since the LU acquisition of these utilities. It is important not to risk exacerbating this problem through a failure of the current strategy to provide adequate IT support of the CIS and other critical systems as the LU utility portfolio continues to grow.

**2. Re-evaluate the adequacy and robustness of the current software applications. (Conclusion 2)**

The problems we have noted with some of the applications LU uses to support the utilities, such as Cogsdale and GP, suggest it is necessary now to evaluate whether these are sufficiently robust and can support the additional features necessary to eliminate such issues as the large number of manual processes required in the customer service operations. There are obvious, difficult choices

involved in this evaluation. The LU-NH utilities have already suffered from the trauma of a difficult transition to the existing systems. The prospect of yet another transition to a set of replacement systems is therefore not appealing. Ideally, fixing the problems with the existing systems would be a more satisfactory alternative. However, it is not clear that they are sufficiently robust and scalable to meet LU's future needs. Therefore, it would be advisable to obtain an objective evaluation from a third party that is an expert on the available alternatives and has extensive experience with these kinds of transitions.

**3. Ensure that the importance of maintaining sufficient IT resources to support all the LU utilities including those in New Hampshire is a key part of APUC's strategic plans and annual budget process. (Conclusion 3 and 7)**

Given the rapid recent growth in the LABS IT Organization and the recent experience of a large number of systems transitions along with the prospect of more in the future, it is not possible to ensure that the current size of this organization is adequate. The importance of good support systems for the utilities makes this an issue that needs to be a continuing high priority in the Company's strategic plans and budgeting.

**4. Develop and document a management process to apply to all key vendors. (Conclusion 4)**

Although the analysis reported in this chapter focused on vendor management by the LABS IT Organization, the Company should develop a rigorous and effective management process for all major vendors. This process should be well documented and enforced. It should clarify and specify such matters as:

- Required components of vendor contracts, including such matters as performance commitments and cybersecurity procedures
- Definition of overall ownership of the vendor relationship
- Definition of other roles and responsibilities in the vendor relationship
- How vendor performance should be rigorously monitored and tracked
- Nature and frequency of the review of vendor expenditures
- The frequency of vendor review meetings
- The documentation of vendor contracts and performance against commitments.

**5. Improve the definition and documentation of IT processes. (Conclusion 5 and 7)**

The LABS IT Organization should re-examine the existing IT processes to identify their ambiguities and gaps, including those noted in Conclusion #5. After fixing these problems, the organization should develop complete documentation of the process in sufficient detail that they can be easily understood.

**6. Increase the number and detail of the IT and vendor performance measurements. (Conclusion 6)**

The LABS IT Organization should continue to add new performance measurements. Examples of new measurements and measurement enhancements to consider include:

- Tracking measurements of the performance of vendors besides Cogsdale
- Tracking trouble tickets associated with other applications besides the Cogsdale CIS systems



- Adding more detail to the tracking of trouble tickets that might help identify such issues as why there is a current problem with Cogsdale ticket aging (Conclusion #7)
- Adding measurements to benchmark against IT performance in other utilities
- Establishing and tracking service performance levels with internal clients.

If the KACE trouble ticketing systems is unable to support more detailed tracking of tickets, IT should consider replacing it with a more robust system.

**7. Develop a unified disaster recovery plan, and develop and execute plans for regular testing of the disaster recovery procedures. (Conclusion 8)**

The LABS IT Organization should combine the various disaster recovery procedures into a unified plan that can be easily understood and accessed by key personnel. Like the IT groups in many other utilities, the organization should develop plans for testing the disaster recovery processes on a regular basis (quarterly, semi-annually, or annually as appropriate).

**8. Conduct a new cybersecurity audit once the current remediation efforts are complete. (Conclusion 9)**

After the current work to complete the remediation of the issues identified in the ISO 27001 compliance audit, the Company should conduct a new comprehensive third-party evaluation of its cybersecurity procedures and status.

## V. Accounting

### A. Background

Liberty reviewed four aspects of the accounting and finance functions of Algonquin Power & Utilities Corporation (APUC) and the New Hampshire Utilities, Energy North Gas and Granite State Electric:

- Organizations and personnel
- Accounting systems
- Policies and procedures
- Controls.

Given the intent and scope of this audit, our analysis focused on how these accounting functions support the customer service processes and functions. Effective organization and staffing are crucial to the performance of finance and accounting activities and responsibilities. Good communication between corporate and subsidiary personnel is one of the most important aspects of performance. Accounting systems provide a central capability to collect data, create transactions, store the transaction data, and access the data for analysis and reporting; these systems need to be robust, have seamless interface capabilities, and have the ability to expand their functionality through planned system upgrades and add-on features. A company's accounting policies and procedures provide the guidelines and structure to record transactions and report financial results; documentation of the accounting policies and procedures is an integral part of ensuring that employees adhere to the U.S. Generally Accepted Accounting Principles (GAAP) and comply with regulatory reporting requirements. Effective controls require active engagement and strong oversight from the board of directors, exercised in major part through the efforts of its audit committee; Internal Auditing (IA) forms a primary source of ensuring the effectiveness of controls.

### B. Findings

#### 1. Accounting and Finance Organizations and Staffing

##### a. New Hampshire Accounting and Finance

The New Hampshire Finance Department has responsibility for accounting and finance for Energy North Gas and Granite State Electric. The New Hampshire Vice President of Finance, who reports to the President of Liberty New Hampshire and has a dotted line reporting relationship with the LU/LABS Vice President of Finance located in Oakville, ON, heads the department. Six positions report to him:

- Senior Manager, Finance
- Manager, Accounting
- Manager, Procurement
- Manager, Information Systems
- Supervisor, Accounts Payable
- Senior Financial Regulatory Analyst.

The Finance group has responsibility for budgeting, forecasting, and billing and revenue accounting, including reconciliation of customer billings to the general ledger accounts. The Accounting group performs the month-end closing of the Company books, processes and analyzes intercompany affiliate transactions, analyzes general ledger transactions, performs local treasury and cash management, coordinates internal and external (including regulatory reporting) performs financial statement reporting, and reconciles general ledger accounts. The Finance group dedicates:

- Two accountants to Energy North and one accountant and one accounting assistant to Granite State Electric for general accounting duties
- One revenue account to Energy North and one to Granite State Electric for revenue and account receivable duties
- One plant accountant to Energy North and one to Granite State Electric for plant accounting duties
- Two treasury accountants to Treasury accounting duties.

The Accounts Payable group processes invoices resulting from purchases of fixed assets and materials, including non-purchase order purchases. Accounts Payable also processes the intercompany affiliate transactions.

The Procurement group processes purchases, handles receipt of material, and conducts storage and inventory of the Company assets and materials. Procurement works closely with the accounts payable department to ensure proper payment of the purchased inventory and other assets. The financial regulatory analyst has responsibility for regulatory accounting issues, financial trend analysis and reporting and rate case preparation.

The small New Hampshire Information Systems group reports for convenience to the Finance Vice President. The Information Technology chapter of this report discusses its functions and relationship to the headquarters Information Technology organization in Oakville, ON.\

*i. Corporate Accounting and Finance*

APUC provides corporate accounting and finance functions based in Oakville, ON as part of LABS. The organizations providing these functions report to APUC's Chief Financial Officer. They have responsibility for APUC-wide accounting policies and procedures and primary responsibility for the accounting and finance functions of the APUC generation business. They also provide guidance and support for the LU utilities, including Energy North Gas and Granite State Electric. Corporate accounting and finance services include support and guidance for accounting pronouncements, tax calculations and compliance, internal audit and specific complex accounting issues. The corporate accounting group also provides financial systems support and controls and guides the accounting close of the Company's books. The group consolidates subsidiary and corporate financial results for internal and external reporting requirements. The U.S. utilities, such as Energy North Gas and Granite State Electric, perform their own internal accounting and finance functions at the subsidiary level.

The Vice President-Finance of Liberty Utilities (Canada) Corp., who reports to the Chief Financial Officer, has a staff of 12, which includes four direct reports:

- Senior Manager-Corporate Tax

- Performs tax calculations for all APUC companies, including the New Hampshire utilities, filing tax returns, and providing tax compliance guidance
- Director-Financial Reporting
  - External financial reporting, accounting policies and standards and complex accounting issues
- Controller
  - Performs month-end close process, APUC consolidation process, and allocation of corporate services
- Director-Financial Reporting and Systems.
  - Provides financial systems support, financial system trouble shooting and external reporting and special projects.

*ii. Internal Audit*

The Internal Audit Department (IA) has gone through significant changes since the acquisition of Energy North Gas and Granite State Electric by APUC. At the time of the acquisition a three-member Internal Controls team had responsibility for ensuring the adequacy of internal controls, but this team did not perform full-scale financial or business-process audits until 2015. The Company hired a Director–Internal Audit in November 2013. The Manager and Senior Analyst of the Internal Controls team continued thereafter to support Sarbanes-Oxley (SOX) review responsibilities. By the end of 2015, the Internal Audit department had grown to six employees. The Director reports to the Chief Financial Officer in an administrative capacity, while reporting directly to the Board of Directors Audit Committee in a functional role.

A Senior Manager and a Manager report directly to the Director–Internal Audit. Three senior auditors report directly to the Manager and one senior auditor reports to the Senior Manager. Operational and compliance auditing throughout the organization comprise the majority of the Senior Manager’s work. The Manager’s primary responsibilities subsume those of the former Internal Control team: performing SOX compliance testing associated with financial and business processes. SOX compliance testing falls under Internal Audit, but control and responsibility for SOX-governed processes reside within the subsidiaries, such as Energy North Gas and Granite State Electric.

## **2. Accounting Systems and Data Collection**

### **a. Major Accounting Systems**

*i. The Great Plains Accounting System*

Microsoft describes the Great Plains system (now Microsoft Dynamics GP) as a financial accounting system for small to mid-sized businesses. Great Plains (GP) provides the Company’s accounting and finance system. GP is one of the Company’s primary enterprise resource planning (ERP) applications. It has modules that interface with other third party products, such as the Cogsdale Customer Information System (CIS), Key2Act (the work management system formerly known as Wennsoft), and Ceridian (payroll processing). GP includes and integrates financial management and accounting functions, such as inventory management and operations, sales and services, business intelligence and reporting, and human resources and payroll modules and applications. The GP system’s use in this industry is generally among small-to-medium sized

utility and energy companies. The Company does not use all of the GP modules and processes, relying instead on third-party vendors to provide the available functions.

Given the focus of this audit, we focused on the effectiveness of the interfaces between the Cogsdale CIS and the GP system. We specifically reviewed the interface with the GP General Ledger module for proper transaction recording and posting to the final General Ledger accounts for customer billings. The General Ledger collects data, processes journal entries, records and posts those journal entries in general ledger account categories, and stores data for reporting financial results. The General Ledger includes processes for journal entries, chart of accounts, general ledger reconciliations, allocation of costs based on a fixed and variable basis, financial statement reporting such as the income statement and balance sheet, budgeting and forecasting, multicurrency transactions, clearing accounts, and account queries.

The General Ledger system provides for structurally separate utility and non-utility sets of books and records. The Company uses one general ledger chart of accounts within the General Ledger system. Each legal entity, however, has its own and separate company code for capturing its transactions specific to its assets, liabilities and activities. System and manually generated journal entries record transactions to the General Ledger. Journal entries include accounting codes that identify the company, the General Ledger account numbers, and other pertinent accounting identifiers necessary to properly record the transactions to utility and non-utility books. New Hampshire keeps each company (Granite State Electric and Energy North Gas) structurally separate, and records its transactions by use of the legal entity company code assigned to it. This approach produces a separate general ledger for each company, capturing and recording revenue, expense, asset, and liability transactions. Indicating the company code in the General Ledger journal entry supports this separation. Accounting personnel can generate or gain access to financial or Smartlist reports for each company by identifying the legal entity company code when making report queries.

The General Ledger interfaces with other accounting and financial systems, records and processes transactions, and stores financial data for analysis and reporting purposes. The Company was in the process of upgrading the current version of GP2010 to GP2015 with a projected “go- live” cutover date during May 2016. In conjunction with the GP2015 upgrade, the Company was also upgrading two other key systems:

- Its Customer Information System (CIS) moving from Cogsdale-supplied versions B31 to B36
- Its construction (Project) and field management system provided by Key2Act (formerly known as Wennsoft) from a 2010 version to a 2015 release.

These upgrades seek to:

- Resolve design flaws that cause locking and blocking of Key2Act tables
- Incorporate Dynamics GP, a project accounting module that tracks and provides reporting capability for costs by project
- Provide for access to longer user support from vendors on a main-stream basis
- Take advantage of new technologies (Microsoft SQL Server and MS Office Suite).

ii. The Cogsdale CIS Billing Interface

We reviewed three key interfaces between the Cogsdale CIS and other systems (NOLAN, electronic meter reading, and bill printing/cash remittance). A third party, Nolan Business Solutions, provides a means that permits the Cogsdale CIS to interface with the GP General Ledger. Nolan supplies an accounts receivable and intercompany transaction module (NOLAN). Another third party (FISERV) provides bill printing and cash remittance systems. The Cogsdale interface with the General Ledger enables recording of customer billing transactions, customer cash receipts, and payments (*e.g.*, customer refunds, deposits, rate changes and other types of customer billing adjustments).

Journal entries created in the Cogsdale CIS as result of the customer billing process get recorded and posted directly to General Ledger final accounts. This routing occurs by directing billing transactions to an interface with NOLAN, which then interfaces with the General Ledger. Customer billing transactions affect both the balance sheet and income statement (including customer accounts receivables and sales revenues). The cash remittance is a Cogsdale function and applies cash receipts from customer payments to customer accounts, with recording to balance sheet accounts. The billing process affects sales revenues, bad debt expense and other customer related revenue and expense income statement accounts.

The transition from National Grid systems produced billing issues and control problems in Granite State Electric meter-to-cash process. Management reported that it had, by the second quarter of 2016, remediated all issues arising from its internal meter-to-cash audit. Management also reported that it has remedied documented cases of billing and posting transactions errors from the Cogsdale CIS to the General Ledger. Examples include:

- Incorrect customer account billing transactions created in the Cogsdale system and mapped to a specific General Ledger account (chart of account mapping table issue).
- Incorrect General Ledger accounting codes in the chart of accounts are incorrect (NOLAN chart of accounts updating required).
- Inappropriate billing cycle batch support detail to create journal entries.

iii. NOLAN

NOLAN provides the Companies the functionality of recording billing transactions from the Cogsdale CIS to the GP General Ledger. NOLAN also records and posts affiliate intercompany transactions to the GP General Ledger. NOLAN records transactions to the general ledger. For example, when billing an Energy North Gas customer for gas usage, a customer billing transaction is created in the Cogsdale CIS. The transaction includes the customer's accounts receivable and the sales revenues to be realized from the customer billing. Energy North Gas and Granite State Electric each use 20 billing cycles per month. When the Cogsdale CIS generates a customer billing during a billing cycle, the cycle billings are batched (accumulated), and then submitted to NOLAN for recording to the General Ledger. Batch creation occurs daily on a cycle basis. When a customer billing transaction is created in the Cogsdale CIS, it is simultaneously posted to the General Ledger.

The accounting code provides the company number, currency (U.S./Canadian), site (department), internal and regulated (FERC) general ledger accounts.

NOLAN also processes affiliate intercompany transactions based on the Company's Cost Allocation Manual and the supporting service level agreements between affiliates.

*iv. Key2Act*

The Key2Act system is the Company's workforce management system. Key2Act's functionality includes job costing, whose outputs interface with the GP General Ledger. Field employee time reporting and management (service management) and equipment management are included. The system enables managing and tracking the progress of projects and other budget-related information using a single data repository.

*v. FISERV*

The FISERV system provides the electronic billing (e-bill), bill printing and cash remittance processing. The integration documents identify the process flow of data between the Cogsdale CIS and Key2Act and between the Cogsdale CIS and FISERV. For example, the documentation describes the path of service orders and type of work activity from Key2Act to Cogsdale and vice versa. The Cogsdale-to-FISERV flow of data are batched cycle billing files sent to FISERV for bill printing and cash receipts and payments applied to the customer's account. The process flows have key internal control points to identify potential errors, where in the process flow the errors occurred, and steps on how to re-process the data.

**b. Reporting Systems**

Financial reporting depends on reporting systems to support internal management reporting and external financial reporting requirements. Management employs a number of reporting and data retrieval systems, which include the Management Reporter (MR), Clarity, SQL Server Reporting and Analysis Services, and Smartlist modules. The reporting and data retrieval modules interface directly with the GP General Ledger. The Management Reporter tool accesses and retrieves New Hampshire utility specific financial data. Management also uses it to consolidate all internal financial data for external financial reporting. The consolidated financial data then drives external financial reporting.

The Clarity budget and forecasting reporting tool supports monthly internal management reporting. Clarity enables access to actual and budgeted data. Clarity can retrieve New Hampshire utility-specific financial and consolidated data for actual to budget comparative purposes. Following data retrieval from the General Ledger, management can run monthly, quarterly and annual actual to budget reports for analytical purposes.

The SQL Server Reporting Services and Smartlist modules interface with the General Ledger and with the Cogsdale CIS. This interface allows for retrieval of detail customer billing data and *ad hoc* reporting based on user-specified data and reporting criteria. Smartlist functionality comes through as an add-on function within the GP system. Smartlist also has a direct interface to the Key2Act module for *ad hoc* reporting purposes.

The Ontario-based corporate Financial Business Manager and his staff have responsibility for supporting financial systems across APUC. The New Hampshire finance team communicates with the Financial Business Manager and staff to discuss reporting needs, address issues, or help to create non-standard, complex reports. The Financial Business Manager provides the New Hampshire finance staff system links to modules that store data required for access and reporting.

One example is accessing the Key2Act job cost information. New Hampshire management cannot readily access such information, because Key2Act does not interface with and is not directly linked to the general ledger. For complex reporting, the Financial Business Manager or his staff run reports needed by New Hampshire personnel.

**c. Other Systems**

*i. Accounts Payable*

The Accounts Payable (AP) module processes invoices received, primarily from vendors. It posts expenditures to the General Ledger account, as coded on the invoice. The Accounts Payable module also supports the cash disbursement function. The payment function provides for issuing checks and for generating check registers for periodic reconciliation of amounts invoiced and paid. The procurement department's purchase order process generates the majority of invoices. A control procedure seeks to ensure agreement on amounts ordered and received, and conformity of the vendor invoice. This "three way matching" of the purchase order, material receipts and invoice permit reconciliation and remedy of any variances. The accounts payable function also processes and disburses customer refunds.

Company accounting personnel in New Hampshire review purchase orders and invoices to ensure proper expenditure coding to correct expense or capital General Ledger account (*e.g.*, job order number is used for capitalized charges). The Schedule of Authorization provides a control to ensure proper approval of expenditure levels. Production of the accounts payable register identifies cash disbursements to vendors and other payees during a reporting period. The accounts payable distribution report shows the distribution of cash payments to the final general ledger accounts. The Company stated that it does not have a standard month-end accounts payable distribution report. Rather, management runs a Smartlist *ad hoc* report to query for cash payments distributed to the general ledger accounts.

The Service Company processes all accounts payable using its cash account, but with debit transactions as direct charges to the EnergyNorth and Granite State Electric general ledger. Treasury in Oakville initiate transfers from EnergyNorth and Granite State Electric to the Service Company to cover AP payments. The Service Company process intercompany accounts payable similarly. Following recording of all intercompany invoices at month, intercompany balances are confirmed. No cash payments or checks go to the affiliate companies. The intercompany transactions settle through Treasury's ACH system, which eliminates the use of cash to settle the intercompany accounts among affiliates. APUC does not use a money pool fund for use in affiliate transaction settlements.

*ii. Payroll and Time Reporting*

The Company uses Ceridian to process time sheets and the related labor costs are recorded in Great Plains using a journal entry. The time-reporting process begins with a nightly upload of New Hampshire's work orders, which contain labor activity entered into the People Power system. The nightly upload occurs from People Power into the Great Plains system. Employees complete timesheets weekly for automatic submission to supervisors for approval. All employees use positive time reporting; the system does not set preset hours general ledger accounts. Payroll processing occurs weekly and biweekly.



The Oakville corporate payroll department processes time reported by New Hampshire employees. A New Hampshire payroll employee communicates and works with the corporate payroll department to help process the employee's timesheets with Ceridian. The Great Plains system generates a Smartlist report to capture pay codes and other payroll data within People Power. It then converts the data into Ceridian pay codes for processing in the Ceridian system. All payroll time entered into HRIS is sent to Ceridian for payroll purposes. After completion of a payroll, a file uploaded to Great Plans includes all labor accounting work orders charged.

The system provides reports used by corporate payroll to create New Hampshire payroll journal entries. The payroll journal entries are sent to New Hampshire and reconciled by accounting personnel before posting the journal entries to the General Ledger. The Company produces a payroll register and a payroll distribution report. The payroll register includes the amount paid to the employees. The payroll distribution report includes payroll paid, recorded and posted to the General Ledger accounts. These reports are reconciled to ensure that what has been paid is recorded and posted to the correct General Ledger accounts.

#### **d. Data Collection**

The Chart of Accounts (COA) and the account coding string accomplish data collection within the financial systems by including the accounting code string in a transaction document or journal entry. The purpose of the chart of accounts and journal entries is to have a mechanism to collect and record all company transactions incurred and then posted to the Company's regulated and non-regulated General Ledger.

### **3. Accounting Policies and Procedures**

We reviewed accounting and finance policies and procedures, with added emphasis on those associated with customer revenue and billing. The accounting policies and procedures apply to Energy North Gas and Granite State Electric. Our review included the following:

- a. Accounting policy and procedures documentation
- b. Revenue and billing accounting
- c. Intercompany transactions
- d. Internal and external reporting
- e. Corporate and New Hampshire month-end closing
- f. Tax accounting and allocation.

#### **a. Policies and Procedures Documentation**

Accounting procedures and narratives address various accounting approaches and activities. During our fieldwork, the Oakville Financial Reporting group was in the process of completing an accounting manual for use in guiding those involved in preparing financial information with respect to the application of U.S. GAAP. The Director of Financial Reporting maintains the completed sections of the manual and controls updates to them, which occur annually when the Financial Accounting Standards Board (FASB) issues applicable guidance. The manual's 31 sections address various accounting policies. Examples include trade receivables, property, plant and equipment, revenues, and income taxes. Work remained on 14 of those sections. The manual is not intended to cover all matters. For complex, unusual or material transactions, accounting personnel should involve APUC's Financial Reporting group to address the issues involved.

## **b. Revenue and Billing Accounting**

### ***i. Customer billed sales revenues***

The Customer Service chapter of this report describes billing procedures. The billing group performs various control activities within the Cogsdale CIS system. These activities include consumption analysis from meter readings, dollar value reviews (very high, low, or zero bill values), and the analysis of customer bills greater than \$700. The system creates a batch summary file of the billed data, following resolution of billing errors and exceptions. The batch file consists of an accumulation of customer billing data across a defined period of time. The batch files are then uploaded to the server, and shared with FISERV for bill printing. After FISERV verifies uploading of the final batch, the billing department posts it in the Cogsdale CIS. The systems automatically and simultaneously generate a journal entry for the billed sales revenue information in the Cogsdale CIS and the Great Plains system. The finance department reviews the information before posting it to General Ledger.

The billed sales revenues from the Cogsdale CIS are recorded to the general ledger as billed and unbilled revenues. The billed revenues include services provided and earned within the reporting month. Unbilled revenues have been earned in the month but, have yet to be billed to the customer.

### ***ii. Customer Cash Receipts and Billing Adjustments***

Other entries affect the customer accounts receivable and revenues recorded to the general ledger.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

With respect to refunds, the billing group generates a final bill refund report listing all customer bill refunds. The billing supervisor reviews the report, verifying that refunds tie to supporting documentation. The supervisor provides an approval signature after verification. The Accounting Department then processes and records the data to the general ledger based on the approved

customer refund report. The customer refund payments processed and determined to be valid get uploaded daily to the Cogsdale CIS. The Finance Department receives reconciliation reports with supporting documentation for its review and approval.

*iii. Write-Off of Accounts Receivables*

Revenue accounting personnel within the New Hampshire Finance Department have responsibility for the monthly accounting process of writing off accounts deemed uncollectible. The Customer Care collection, billing and customer service teams manage system generated customer write off batches for processing and recording by revenue accounting personnel. The revenue accounting personnel review and post the journal entry batches in the GP General Ledger system. The general ledger accounts posted for the write off of accounts receivables are Accumulated Provision – Uncollectible, Customer Deposits, and Customer Accounts Receivable. The accounting department records bad debt expense monthly, based on the level of written off accounts and other criteria.

**c. Internal and External Reporting**

Energy North Gas and Granite State Electric do not have a separate system module to support their internal and external reporting requirements. Stand-alone financial data for all utilities resides in the GP General Ledger. New Hampshire utility management access financial data for internal and external reporting through the General Ledger, using the Management Reporter (MR) for external reporting and Clarity budget reporting modules for internal management reporting. The MR reporting tool provides access to General Ledger data. Clarity provides the ability to conduct monthly internal management analysis and reporting. The reports generated by Clarity support monthly, quarterly and annual comparisons of actual to budget financial data, for all Liberty Utility and Canadian companies.

No internal and external reporting of New Hampshire financial data occurs until the local New Hampshire and corporate Finance Departments have completed recording all journal entries and the closing of month-end accounting. Corporate Finance prepares consolidated financial reports on a quarterly and annual basis. Energy North Gas and Granite State Electric are included in the consolidated reports along with other Liberty Utilities and the Canadian operations. The consolidated information is then used for APUC's external financial reporting.

Internal reporting consists of internal financial statements for the utilities, including, for example, the Income Statement, Balance Sheet and other financial reports that make up a monthly financial package. The financial data resides in the GP General Ledger, from which management runs financial reports monthly, quarterly or annually. Energy North Gas prepares its own internal financial statements. It need not prepare audited financial statements, because it does not have debt covenant requirements. Granite State Electric must prepare audited financial statements, because of a debt covenant that requires audited financial statements. The New Hampshire finance personnel produce and prepare a monthly financial package. This package includes financial reports with supporting revenue and expense variance analyses, for use in internal month-end review sessions. The package also includes a summary of data for such non-financial matters as employees, operations, and regulatory compliance. New Hampshire personnel present and discuss the data with Liberty Utilities corporate management during monthly meetings. The Company controller requests that New Hampshire financial data be sent to corporate accounting for

consolidation purposes quarterly for use in preparing the internal and external consolidated financial statements and notes.

For external regulatory reporting, Energy North Gas prepares and files a New Hampshire Annual Report with the Public Utilities Commission. Granite State Electric prepares an annual Form 1 and quarterly Form 3-Q reports. Management files these reports with the Federal Energy Regulatory Commission. The New Hampshire utilities file a number of other external reports with the NHPUC. The New Hampshire finance and regulatory groups prepare these regulatory filings.

#### **d. Corporate and New Hampshire Closing Process**

Two month-end and quarter-end closing processes occur, one at the corporate and the other at the subsidiary level.

##### *i. Corporate Closing Process*

The corporate Finance Department controls the month- and quarter-end closing process for all the APUC companies. Corporate Finance begins the process by emailing monthly finance close schedules (calendars) to all of the Liberty Utilities regions, including the New Hampshire utilities. Corporate Finance also prepares a finance checklist. The finance checklist identifies and documents the month-end activities and steps to be completed during the close process. The checklist provides a guide to events that need be completed by the corporate and region finance groups. The Company's internal audit department and its outside accountants, Ernst & Young, review the checklists as part of internal and external control testing.

##### *ii. New Hampshire Closing Process*

The closing process managed by the New Hampshire utilities' Accounting Department starts at the beginning of the month following the month to be closed. It generally takes five to seven days to complete the closing process. There is no formal accounting and operations meeting to discuss month-end deadlines and issues with operating personnel. Management believes that the departments know the closing process well enough to make formal meeting unnecessary. An internal Company memo to the operations and other Company departments addresses invoices that need to be accrued for services provided or material received, but not yet billed by the vendor. The New Hampshire process uses two checklists for the closing process. First is a general accounting checklist for both month- and quarter-end closing; second is a plant accounting checklist for quarter-end closing. The New Hampshire checklists have greater detail than the corporate checklist.

Prior to the final close, the New Hampshire finance personnel review all intercompany invoices; reconcile all bank and cash accounts, and energy procurement transactions; and ensure review of all general ledger journal entries and posting to the trial balance. The finance personnel also review important general ledger accounts (such as accounts receivables and sales revenues accounts), and analyze all balance sheet accounts. They communicate any material issues to the Corporate Controller and the Vice President of Finance of Liberty Utilities (Canada) Corp.

The quarter-end close process and schedule also includes review and analysis of the income tax journal entries, comparative analysis of the balance sheet and income statement general ledger accounts to prior periods and budget data, cash flow analysis, margin analysis, and revenue analysis from customer billings. The New Hampshire executives and finance personnel present the

financial results on the third Wednesday following the quarter end close to the corporate finance department. The Company reviews SOX controls, including analysis of the income statement and balance sheet accounts, before closing of the final books. The Company performs a variance analysis by general ledger account and investigating any identified and making adjustments.

**e. Tax Accounting and Allocation**

*i. Tax Accounting*

The corporate tax department calculates a consolidated tax provision quarterly for the New Hampshire utilities and the other APUC subsidiaries after the pre-tax quarter-end close. The tax provision records the tax expense and current and deferred tax liabilities for Energy North Gas, Granite State Electric, and other subsidiaries. Management has used this process since 2012. Prior to December 2014, the corporate tax department provided the tax journal entries to the New Hampshire finance group. This group would then record and post the journal entries to its trial balance to produce final statements. The New Hampshire finance group manually recorded the journal entries to the trial balance. The group did not record the journal entries to the general ledger final accounts per GAAP and regulatory reporting requirements.

This approach caused a tax reconciling issue between the trial balance and the general ledger. Beginning in December 2014, the corporate tax department has continued to provide the tax provision calculation and supporting work papers to the New Hampshire Finance Department. However, the tax journal entries are now posted directly to the GP General Ledger by the corporate tax department. The financial statements are produced, using the Management Reporter, which includes the recorded tax journal entries. The New Hampshire Finance Department reviews the tax entries with the corporate tax department before consolidation to ensure they are appropriate and reflect Energy North Gas's and Granite State Electric's tax provision. The Company's external accountants also review tax and accounting issues with corporate finance personnel.

The corporate tax provision calculation operates manually, using Microsoft Excel worksheets. No module exists to calculate it automatically. In addition to the tax provision calculation, the corporate tax department provides guidance for tax compliance issues. KPMG, which has provided tax compliance and other consulting work for the Company for the past 18 years, assists. The Company relies on KPMG because APUC corporate has no employees with Canadian and U.S. tax compliance expertise. KPMG files the consolidated tax returns after its review for IRS and regulatory accounting compliance issues.

*ii. Tax allocation*

The Company's Federal and State Tax Sharing Agreement dated January 14, 2014 details the procedures for the federal and state income tax liabilities and benefits to be allocated among the member companies. The group members file a consolidated federal income tax return, with federal income tax liabilities and benefits allocated among the members of the group based on the guidelines in the Tax Sharing Agreement.

Each APUC company pays the parent company an amount equal to the tax liability that would apply had it filed a federal tax return separately. The tax filing process therefore begins with the preparation of the pro-forma tax return for each legal entity. The parent company makes a payment to the member company when a net operating loss is incurred, or tax credit exists, and reduces the

consolidated federal tax liability of the group below the amount that would have applied before the net operating loss or tax credit.

#### **4. Internal and External Controls**

We examined Internal Audit's audit policies and procedures manual, which include its mission statement, charter, scope and objectives. We also reviewed and described its internal key process controls, external controls by independent auditors and the quarterly reports to the Audit Committee of the Board of Directors

##### **a. Internal Audit Policies and Procedures Manual**

Internal Audit operates under a fairly typical charter, setting forth its authority and responsibilities, and addressing its independence. The group's mission is to provide the Company's Audit Committee and management with independent, objective assurances regarding the integrity and adequacy of internal controls, risk management, and corporate governance processes. Internal Audit applies a systematic approach to evaluating and improving the effectiveness of operations, risk management, control, and the governance process.

APUC established an Internal Audit in the fourth quarter of 2013. Prior to department creation, the Internal Controls team of the Corporate Financial Reporting and Internal Controls department performed SOX reviews. Those reviews encompassed procurement, fixed assets, revenues, and the financial close process. Formal audit activity outside of the department's SOX internal control responsibilities did not begin until late 2014.

An Internal Audit Policies and Procedures Manual came into existence in December 2014. No formal audit manual existed previously. The audit manual specifically addresses the following subjects.

- Department Mission and Charter
- Organization structure and staffing
- Professional standards and Code of Ethics
- Board Audit Committee Role
- Audit cycle, planning and reporting
- Budgeting and expense planning.

##### **b. Quarterly Audit Reports to the Audit Committee**

We reviewed the 2013, 2014 and 2015 quarterly reports to the Audit Committee of the Board of Directors. Internal Audit completed only the New Hampshire Meter-to-Cash Audit (begun in 2014 and completed in 2015). We observed no formal audit of customer care operations and processes or any other matter specific to the New Hampshire utilities in 2016.

##### **c. Internal Controls**

We reviewed the internal controls targeted to customer service impact, including those associated with the following:

- SOX compliance and auditing
- Account reconciliations
- The Cogsdale CIS and GP General Ledger

- Customer accounts receivable: aged trial balance reconciliation
- Sales revenue reconciliation
- Cash receipts reconciliation
- Gas storage reconciliation
- Financial close process
- Security access
- Other billing controls.

#### **d. External Controls**

The Company's independent and external accountants perform audits quarterly and at year-end. These audits take place under Canadian generally accepted auditing standards and the standards of the Public Company Accounting Oversight Board (United States). The auditors test the General Ledger for accuracy and functionality. They also review IA's work on internal controls at the local; *e.g.*, New Hampshire utility, level.

Internal Audit has chosen an additional external consultant, Deloitte Consulting, LLP to perform audits where it does not have the internal expertise or resources required.

### **C. Conclusions**

#### **1. Accounting procedures and documentation are generally sufficient, but a formal accounting policy and procedures manual remains to be completed. (Recommendation 1)**

We found documentation of accounting procedures generally sufficient. Documented procedures provide guidance on performing the functions they address and generally link to policies. Instruction sheets or process steps for performing the covered accounting functions are generally sound as well. The documentation we reviewed addresses at a reasonably detailed level the operation of linkages among systems and processes. The documentation identifies key internal and external process controls. Management provided documented procedures for ensuring that utilities have standalone financial data in the General Ledger accounting system, sufficient to support a structurally separate reporting system for Energy North Gas and Granite State Electric.

Reporting process documentation was an exception. Management has documented the internal reporting systems with written narratives. We observed explanations addressing how to access financial data, how management overall and at the operating entity level uses data for internal and external reporting purposes through use of the Management Reporter and Clarity reporting modules. However, management does not employ formal reporting processes or procedures.

The accounting policy and procedural manual was another exception. It remains incomplete. Management has completed 17 of the Accounting Manual's 31 sections. Our review of a sample of those completed found them adequate. However, the completed sections we reviewed only contain accounting policies. They did not include or reference the specific accounting procedures that support the described policies. For example, a completed trade receivables policy describes how to account for the "Write Off of Receivables." There also exists a formal accounting procedure that supports the Write Off of Receivables policy, but the manual neither referenced nor included it.

More significantly, the 14 policy sections remaining for completion include a number of critical ones. Those of high importance include treatment of revenues, changes in accounting estimates and policies, balance sheet classifications, and income. The revenue policy has first priority, given its importance in ensuring accurate accounting for customer sales revenue transactions in compliance with GAAP and FERC requirements. The balance sheet classifications policy comprises another high-importance policy yet to be completed. Such a policy needs to address classification of customer receivables in the general ledger.

The Company has completed an accounting policy for trade accounts receivable and recording customer billings, but does not have a completed accounting policy for revenue recognition and recording of those revenues. Upon customer billings through the billing system, management records the customer accounts receivable and revenues simultaneously to the general ledger. Management needs to complement its accounting policy for accounts receivable with one for the associated revenues to support accurate customer sales revenue accounting and reporting.

**2. Management's use of manual and third-party supplied capabilities does not appear to make optimal use of the capabilities and features of its GP accounting system.**  
*(Recommendation 2)*

Management's use of manual processes and additional third-party systems instead of those internal to GP can lead to errors and complicate trouble shooting. The GP system operates as the backbone supporting accounting and finance functions. The system has accounting applications and process modules that the Company does not use. Management stated that it does not outsource any financial systems to third-party vendors, but it uses, as the next paragraphs describe, a number of third-party vendors to provide important elements of accounting processes. The Company has used a number of these third parties in similar roles (for example, Mekorma and Nolan) for fifteen years or more. We described earlier how these third-party vendor applications interface with GP General Ledger.

The third-party-provided NOLAN module supports the intercompany transaction process, and provides the interface between the customer billing system and the General Ledger. Management believes that using the NOLAN module for intercompany transactions provides better capabilities than the available GP module, by offering multiple templates or variations for processing intercompany transactions among company affiliates.

Third-party Mekorma supports the accounts payable check printing function. Management prefers the Mekorma services because the GP accounts payable check printing function prints banking information only on pre-printed (but not blank) checks. Mekorma also prints signatures on checks for payment below a certain set dollar level, increasing security.

Third-party-provided Encore Bank Reconciliation supports bank reconciliations. The Encore bank reconciliation module captures all transactions recorded to the cash accounts. By contrast, the GP bank reconciliation module captures cash receipts and payments, but it does not address journal entries in performing the bank reconciliation process.

A third-party application from Ceridian (Dayforce) provides timekeeping and payroll processing services.



In addition to third parties, a number of manual processes also displace functionality of the Great Plains system. For example, management calculates allowances for funds used during construction (AFUDC) manually, although the Great Plains system offers a Fixed Asset Auto Creator (FAAC).

Management reports ongoing efforts to review manual processes for automation. For example, it has scheduled a demonstration of FAAC functionality for this year. Management has tested the FAAC process at the Arizona utility operations, finding it is functional. Setting an implementation date for New Hampshire utilities will follow an evaluation by in-state finance personnel. The interface between Key2Act and the inventory function of FAAC is not currently functional, but is planned for inclusion in the GP2015 and Key2Act2015 system upgrade (discussed earlier) scheduled to “go live” in May 2016. The AFUDC function is to be automated and in place by the end of June 2016.

### **3. Gaps exist in documentation of the financial system.** *(Recommendations 3 and 4)*

Management has not documented the key integration and data flows that exist between the Cogsdale CIS and the GP General Ledger. There is documentation of the Cogsdale-to-Key2Act and Cogsdale-to-FISERV integration and data flows. Management stated that it does not have a formal document process flow diagram or decision tree to describe or document the data flow process from the Cogsdale CIS to NOLAN and then to the GP General Ledger accounts.

Accurate and complete documentation of the CIS/General Ledger interactions is needed to minimize errors and facilitate trouble shooting. This interface must operate fluidly and correctly to support customer service effectively. The interface determines how customer accounts receivables and sales revenues get recorded to the General Ledger accounts. The CIS uses NOLAN to interface with the GP General Ledger. The interface between the Cogsdale CIS and the GP General Ledger is functional. Nevertheless, management cited instances of incorrect mapping of customer billing transactions to General Ledger accounts.

These instances occurred for three reasons: (a) a failure to update the chart of account mapping table within, (b) incorrect General Ledger accounting codes in the chart of accounts, and (c) an incident in which billing cycle batches did not have appropriate support detail to create journal entries in the General Ledger. Management believes that it has successfully addressed the causes underlying these instances. The 2014 and 2015 Internal Control Log for New Hampshire did indicate that the billing errors identified in the control log have been remediated, with none outstanding.

The financial system flow chart document illustrates how the various financial systems, platforms, databases, and modules interface, process and store data for accounting, reporting and analysis. The chart depicts some of the flow of data to and from systems and databases, but we found it difficult to follow the data flow. No straightforward path or guide shows the flow from beginning to end (*e.g.*, from system to system or from system to database). The diagram also shows some modules that are not functional. The diagram also depicts some interfaces that do not exist (*e.g.*, the AFUDC and FAAC processes are manual, not modules that interface with Key2Act system).

### **4. The financial reporting systems are adequate.**

Management uses a number of reporting methods for internal and external financial reporting. The internal reporting process provides management with financial and statistical data used to manage operations. The external reporting process provides financial and statistical data for compliance reporting to external companies and agencies *e.g.*, NHPUC, FERC, SEC), and banking institutions. Smartlists (*ad hoc* reports) created by users to meet individual work-group needs, criteria and parameters issue on as needed basis, and to support month-end analysis and support documentation.

**5. The lack of a separate financial data repository to support management analysis and reporting purposes is inefficient. (*Recommendation 5*)**

The GP General Ledger provides the only avenue for access to financial data for analysis and reporting. No separate data warehouse or repository exists to store financial data for employee access and retrieval. Requiring managers to access the General Ledger for their reporting needs is not optimal. Undue burden, increased processing time and reduced efficiency of the General Ledger can result when such requests must compete with General Ledger processing of transactions. Processing time becomes especially critical during the month-end closing of the books. Particularly at this time, employees may require analyses and reports.

**6. There has not been sufficient internal auditing of matters affecting New Hampshire operations. (*Recommendation 6*)**

Internal Audit's only work directly applicable to New Hampshire utility operations under APUC was the Meter-to-Cash audit of both EnergyNorth and Granite State. Moreover, the 2016 audit plans showed no audits planned for the New Hampshire utilities in 2016.

Internal Audit has not completed any audit work focused on New Hampshire operations since the Meter-to-Cash audit was completed in 2015. A formal Internal Audit department under APUC did not exist until November 2013, but a functional Internal Controls department performing SOX reviews did exist before that time. The internal controls personnel reported within the Corporate Financial Reporting and Internal Controls department. Formal audit activity outside of the department's SOX internal control responsibilities did not begin until late 2014. The Director-Internal Audit has made strides in developing the department and in assigning audit work based on control issues, but clearly, further development awaits.

Retaining sufficient expertise to perform a suitably wide range of audits relevant to utility operations is challenging even for larger companies. The relative newness of Internal Audit at APUC heightens the challenge. Internal Audit recently chose a leading outside firm (Deloitte Consulting) to be a co-sourcing partner for procedures where Internal Audit lacks expertise or resource numbers. This retention reflects a positive response to the need to keep Internal Audit in a strong position to test and enhance performance.

**7. Internal and external controls and supporting documentation are adequate.**

Adequate internal controls are necessary for effectively recording and posting the customer accounts receivables and revenues to the general ledger and for subsequently reporting the results. Process deficiencies occur due to system issues and human error in failing to act in accord with procedures. Internal controls mitigate the risk of errors.

We found that internal and external controls exist to provide for examination and testing to verify the adequacy of systems, transactions and business processes. The Internal Audit group and external sources perform these activities. The internal auditors work primarily to examine the effectiveness of internal controls. Examples of the internal controls include billing error reports, customer cash and other general ledger reconciliations, approval authorization of invoices, segregation of duties, and employee security access. Ernst & Young, the independent accountants, independently report on SOX controls. The external work focuses more on the processes involved in the preparation of financial information. The independent accountants perform quarterly and annual independent reviews and required formal annual audits.

Our review of the internal and external control documentation demonstrated that the Company has adequate SOX documentation. We observed process flows and key controls for various business processes. We examined those applicable to some business processes (*e.g.*, the billing processes and systems for customer billing and recording of sales revenue to the General Ledger, month-end closing, and variance analysis).

**8. Management states that the Company reports successful completion of efforts to address findings resulting from the audit of its last rate case test year.**

Work addressing the audit findings in the FINAL Audit Report - DG 14-180 PUC has been completed. The August 1, 2014 request for an increase in permanent rates for Energy North Gas eventually led to a commission financial audit of the books and records for the test year. That audit produced 34 findings. We reviewed at a high level the results of Company work to verify substantial action to address those findings. The Company provided a report including evidence that it had taken action to address six of the 34 findings. The evidence included General Ledger screenshots showing corrective journal entries posted to the correct General Ledger accounts. We requested evidence for the remaining 28 issues. The Company responded that most of these remaining audit issues “were one-time items that were corrected, were taken into account as part of the settlement process of the revenue requirement, or did not involve significant changes to personnel and accounting systems.”

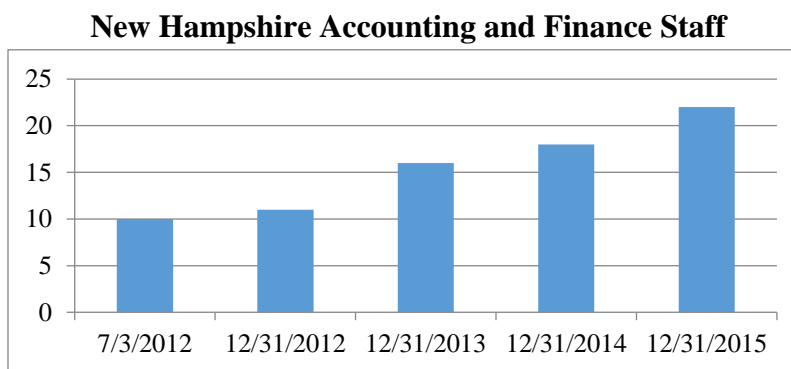
The Company provided us Internal Audit’s Internal Control Deficiency Log for New Hampshire. The log addresses internal controls deemed deficient, describes the reasons, and provides the status of remediation activities. The deficiency log shows 14 deficiencies for Energy North Gas and Granite State Electric. The log identifies whether the deficiency lies in system design or in an operations process. All but two of the deficiencies were completed and closed in 2014 and 2015. The two deficiencies remaining concern inventory control design issues. Both deficiencies comprised annual controls remediated for the 2015 calendar year close. No internal control deficiencies existed at December 31, 2015. Our review of the deficiency log showed that it included none of 34 audit issues identified by the commission audit. None appear therefore to require further remediation. However, in the absence of documented evidence for audit issues #1, #2, #9, #10, #17, and #33, we cannot fully verify that those audit issues have been fully addressed.

We further examined audit issues #1, #9, and #10. These issues involved tax journal entries determined to be “off book.” Management did not record these entries in Energy North Gas’s general ledger, but recorded them at the consolidated. Management at the corporate tax level and

the New Hampshire finance level explained that the tax calculation occurred at the corporate level prior to December 2014. Journal entries remained at the corporate level through that time; they were not recorded directly to the New Hampshire utility general ledger. Under that old method, New Hampshire finance personnel would manually record journal entries to the trial balance, but not to the general ledger final accounts. This action caused a reconciling item between the trial balance, the general ledger and the financial documents filed during the rate case process. Following a change in December 2014 the corporate tax department has continued to provide the tax provision calculation and supporting work papers to the New Hampshire finance department. However, since the change, management provides for posting of the entries directly to the General Ledger. The corporate tax department accomplishes this posting through the Management Reporter application. The New Hampshire finance group reviews the tax entries with the corporate tax department. Managers with whom we discussed the issue stated that they failed to understand that, for regulatory purposes, company financial statements must show all journal entries at the reporting entity's general ledger level.

#### **9. Adequate resources are in place to perform New Hampshire accounting and finance activities.**

APUC's U.S. utility business units, such as Energy North Gas and Granite State Electric, perform accounting and finance functions at the subsidiary level. The New Hampshire Finance Department had 10 employees at the time of acquisition from National Grid. The chart below shows that the department more than doubled its staff by the end of 2015, adding 12 employees to provide accounting and finance resources and support for the newly acquired companies.



The six functional groups of the New Hampshire finance department provide general accounting, accounts payable, procurement, budgeting and forecasting (finance), information services support and regulatory reporting and analysis. The establishment of these functionally aligned work groups supports a more efficient organization structure, and specialization and accountability in work performance. We found employee locations and responsibilities aligned with individual skills. Some finance and accounting employees possess accounting certification and graduate level degrees. The Vice President of Finance, the Senior Manager of Finance, the Manager of Accounting, and the Senior Financial Regulatory Analyst have regulatory accounting and utility work experience. The Company stated that it is difficult to hire employees with utility industry experience. New employees undergo training in regulatory and utility accounting "on the job." Formal regulatory and utility accounting training programs are not available in-house.

Separate and distinct functional reporting lines to the Vice President-Finance exist. Nevertheless, department personnel in procurement, budgeting and forecasting, and accounts payable interact and communicate with each other on an as needed basis, if not daily, to accomplish the goal of the finance department to properly record transactions and support accurate internal and external reporting of financial results.

Management stated that the 2015 acquisition of Keene Gas (operating as a division of Energy North Gas) did not overload accounting and finance department resources. We do not have an objective basis for clear disagreement. However, our review of the resources causes us to observe that management must diligently monitor workload and future plans, including acquisitions, rate filings, system changes and upgrades. Any significant increase or decrease in demands of the finance department personnel would necessitate adding or reducing the current resources to maintain their competency and ability to produce and report accurate financial results.

**10. Corporate accounting and finance resources support the New Hampshire utilities' work levels, but are lacking in robust expertise in U.S. regulatory accounting. (Recommendation 7)**

The Oakville corporate finance department has responsibility for providing accounting and finance support to the APUC Canadian and U.S. entities. All of those utilities operate in the U.S., under regulation by states spread across the country. The Oakville corporate finance department's primary responsibility involves setting and administering the accounting policies and procedures for all of them, including the New Hampshire utilities. Examples of the accounting and finance services provided by the corporate finance department are support and guidance for accounting pronouncements, tax calculations and compliance, legal, internal audit, and addressing specific complex accounting issues. The corporate accounting group also provides financial systems support, controls and guides the close of the Company's books, and consolidates subsidiaries and corporate financial results for internal and external reporting needs and requirements. The New Hampshire finance and corporate finance staff work closely and on a daily basis communicate with the corporate accounting personnel on tax and accounting issues.

The Company acknowledged that the Canadian corporate accounting and finance personnel do not have expertise in U.S. regulatory accounting requirements, reporting, and rate case preparation. They rely on the regional personnel, such as the New Hampshire accounting and finance department, to manage the regulatory environment and regulatory reporting requirements. Management reports the existence of ongoing efforts to train the Canadian-based accounting and finance staff in regulatory accounting and reporting. The emphasis is to increase the knowledge level in regulatory accounting and compliance requirements of U.S. utilities.

Moving beyond this general statement, however, we observed for the Canadian staff no formal training or knowledge-transfer programs (taking advantage of the body of U.S. resources that exist at the operating utility level). Such programs would provide a stronger foundation for assessing needs that exist at the top level and for integrating approaches, methods, and work products between Canadian and New Hampshire organizations. Management reported that some informal sessions occur among rate case "experts" across the U.S. and with Canadian leadership. We hear similar reports of management's encouragement to corporate finance employees to obtain U.S. accounting certification and to acquire their Canadian charter designation and advance degrees.

How robust those efforts are and how successful they have been needs to be considered and should probably largely depend on the views of Commission staff. Their views on how well communications, written and verbal, reflect a mature and representative view of what regulators need to do their job are informed by their direct interaction with company personnel. Those views are also informed by comparing that interaction with what typifies other utilities operating in New Hampshire, who deal regularly with management. We express our views for what they are worth, in a later chapter of this report. To summarize them (as relevant to finance and accounting personnel) here, our interaction with Canadian-based personnel does not give confidence that they offer knowledge and experience as robust as we typically see among U.S. utility operations, whether they operate on a stand-alone basis, as part of a holding company with multiple U.S. operations, or as part of an international holding company with a U.S. presence.

## **D. Recommendations**

### **1. Complete and keep current a formal accounting manual that includes supporting accounting procedures. (Conclusion 1)**

A formal accounting manual provides a single source of documentation and guidance for accounting policies and procedures. The manual should contain policies that reflect the requirements and expectations of accounting, regulatory and tax agencies (*e.g.*, FASB pronouncements, the Internal Revenue Service code, FERC rules and regulations, and, most particularly, the requirements and expectations of the New Hampshire Public Utilities Commission). Effective policies provide comprehensive, clear, and up-to-date guidance on accounting, tax and regulatory compliance and reporting issues. Following policy creation, supporting procedure and process development should occur. Full and regular compliance with those procedures should become an integral part of financial operations, and in so doing, provide a sound basis for confidence that adequate control and accurate reporting continue.

The accounting manual must include the accounting procedures that support accounting policies. Without the step-by-step road map that procedures provide, ensuring implementation of and adherence to accounting policies becomes much more difficult.

The New Hampshire utilities and corporate accounting policies need to describe the intent, scope, and results contemplated by particular accounting pronouncements, rules, or regulations. Where they differ for New Hampshire, what is required locally must be addressed. Accounting procedures should lay out, step-by-step, processes and activities necessary for effectively and fully completing accounting tasks that support a policy. Examples include policies for trade receivables and revenue recognition, and regulatory policies and guidelines for rate case filings. Rate case filings require responses to interrogatories and filing of rate case accounting exhibits. The Company's regulatory accounting guidelines should be based on New Hampshire's rules and regulations for rate making purposes. Moreover, they need go beyond requirements, addressing expectations as well.

Accounting procedures should be developed, for example, to describe how to respond to interrogatories and develop accounting exhibits. Changes to policies and procedures are a normal part of the accounting and finance environment. When the changes occur, updates to the policy and procedures should be reviewed and communicated to the stakeholders that are affected by the

change, such as accounting and finance operations personnel. The policies and procedures must describe the change made and the date it was made in order to track the changes and identify which is the current version the employees should use.

A formal accounting manual that includes the supporting accounting procedures will provide employees with background information, responsibilities, and step-by-step processes for completing work activities. Management should structure the accounting manual to include standard operating procedures as the appropriate method of performing tasks. This approach will promote a consistent outcome, ensure quality, and implement best practices. For example, a consistent outcome may be recording accurate and timely month-end journal entries, and producing accurate monthly financial statements.

Another benefit of a formal accounting manual lies in its use for training new employees in the application of accounting policies and procedures. It can educate employees with no industry knowledge, such as employees new to the regulated utility and regulatory accounting environment, about accounting procedures peculiar to the industry. This is especially true in the utility industry. Here, GAAP accounting sets forth one, but not the only set of accounting rules and regulations necessary to understand and implement. State and Federal agencies prescribe regulatory accounting and reporting requirements that do not exist for non-regulated entities.

The Company already has some procedures documentation. Where written narratives were provided as procedures the Company should develop more formal documentation, including such features as decision tree charts. Written narratives can still be used to support and help explain the step-by-step process, but should not displace detailed instruction.

## **2. Perform a structured evaluation of the use of more core GP modules to minimize manual processes and the use of third-party applications. (Conclusion 2)**

Management was upgrading the GP accounting system in conjunction with a similar effort for its Cogsdale CIS. The schedule for the upgrades to “go live” is imminent. The efforts to upgrade the two systems are appropriate and necessary. The two systems comprise integral, critical parts of billing and recording customer transactions efficiently and accurately to the General Ledger. Completing the upgrade process should allow management to use the enhanced features of the new versions of the systems.

Management should determine which of the current, outsourced accounting modules can be eliminated and replaced with the modules provided by the upgraded version of the GP 2015 system. If the system upgrade does not allow full use of the embedded GP modules or if these modules are inadequate, the Company should investigate changing over the longer term to those more robust accounting and financial reporting systems that exist in the marketplace. That longer term consideration needs also to take account of expansion plans, which continue to form a central element of APUC’s business strategy. The “leverage” it has had to spread the costs of major system development have been increasing with each acquisition, giving management a greater range of “affordable” options. Movement to an enterprise level system would also provide for a separate financial data repository and statistics for analysis and reporting purposes. Another benefit of minimizing the use of third-party vendors is to eliminate the potential for those errors that tend to

multiply when a collection of systems of varying maturities, supported by their providers at different levels, need to work together continually.

Similarly, management needs to continue to actively address its ability to eliminate manual processes currently required.

**3. Develop a data process flow document that charts the integration of billing transactions created in the Cogsdale CIS and recorded to the GP General Ledger accounts.**  
*(Conclusion 3)*

Management should review the current Cogsdale CIS and GP documentation with emphasis on creating a decision tree of data flows with respect to the interface between the CIS Cogsdale and the GP General Ledger system. Doing so will produce a clearer “road map” that shows the paths taken by data. Management does not employ a detailed system process flow chart to document the process of a billing cycle batch created in the Cogsdale CIS to recording the transaction in the GP General Ledger accounts. The process flows have key internal control points to identify potential errors, where in the process flow the errors may occur, and steps to re-process the data.

The current billing system provides for direct interface to the general ledger for recording customer accounts receivables and billed and unbilled revenues. The completion and implementation of the Cogsdale CIS and GP upgrade should provide for a seamless interface from the billing system to the general ledger to minimize potential errors between the systems. The Company should examine how to document the direct flow and interface of billing data to the general ledger, including appropriate internal controls, system edits and data validations. The benefits derived from the system interface documentation will minimize the likelihood of errors in generating, for example, customer billing batches created in the Cogsdale CIS and to be posted to general ledger. Documentation of interfaces between systems and modules provides for an efficient way to describe how information flows from one system to another. More importantly, it enhances the ability to identify where the problem occurred, how to fix the problem and prevent future ones to occur.

**4. Develop an updated enhanced platform/system document that shows the accounting systems, data bases and platforms and how they interface with each other in a clear manner.** *(Conclusion 3)*

The Company should review the current system interface document with emphasis on updating the charted documentation of data flows and the interfaces between and among accounting systems, databases, and platforms. Doing so will produce a clearer path of how the data residing in one system or data base interfaces or sends the data to another. For example, the AFUDC and FAAC modules are listed as part of GP, but calculations for AFUDC and FAAC are manual processes and do not functionally interface with the Key2Act job costing system. The Company stated that the functions are in the process of being automated; however, the document should be updated with current working applications and interfaces.

We also recommend that management develop a document that relates the month-end closing process and timeline to the enhanced system interface document. The benefit will come from documenting the process flow of the month-end close process, overlaid with the accounting systems and data bases it uses during month end close. This document will provide the Company



a clear view of the flow of data from one system to another within the month-end closing timeline. It will also show potential resource needs and requirements at specific points in the month-end close timeline, and identify where possible bottlenecks may occur within system processes.

The beneficiaries of the enhanced systems documentation will be the accounting owners responsible for the systems and processes during the month end closing, new employees in the accounting and IT departments, and the internal and external auditors. The auditors will have a document that is user friendly, illustrates how the systems interface with each other, and at what point in the month-end close process the interfaces occur. The efficiencies resulting from the enhanced document would be a clearer and better understanding for accounting and IT personnel of how the systems interface with other systems and at what point in time during the month end close process the interface occurs. In addition, it would identify where potential resource needs are required and identify where bottlenecks of processing data may occur. The document can be used as a training tool for new accounting and IT employees. This would provide the new employees a basic foundation of what are the accounting and financial systems, their functions and how they interface with each other.

#### **5. Develop a financial data repository separate from the General Ledger. (*Conclusion5*)**

Management needs to develop a separate data repository to store and access financial data. A General Ledger is not meant to offer the single source of processing and storing financial data for reporting and analysis. The main function of the General Ledger is to collect, process and record financial transactions for the Company. The data repository will interface with the SQL servers which store tables for financial and statistical data.

The benefits of having a data repository separate from the General Ledger arise from minimizing the General Ledger's system processing time for processing and recording transactions. That minimization can prevent processing bottlenecks and potentially reduce system down time. Other benefits will result from enhancing the report writing capabilities for the accounting and finance team at the corporate and local levels. Currently, the New Hampshire report users are not able directly to access non-accounting systems such as Key2Act, the Company's work management system. Storing Key2Act job costing data in the data repository will permit direct user access of the data without system support help, as is the current case. The New Hampshire accounting personnel responsible for reconciling cash create a Smartlist query to retrieve cash payments distributed to the general ledger accounts. They must follow this approach because the Company does not have a standard recurring accounts payable distribution report for reconciling cash. Creating the data repository will enable creation of a standard recurring accounts payable distribution report, which would enhance the cash reconciliation process and report writing functions.

Management acknowledges this issue, and stated that it is addressing it as part of the planned GP system upgrade. The proposed data base will interface with SQL servers where tables for financial and statistical data will reside. The Company has established a finance task force consisting of regional and corporate finance personnel. Management notes, however, that its work has been delayed due to rate cases, external audits, Company acquisitions, and staff constraints. Management should promptly assign dedicated individuals to the task force to expedite the development of the data repository.

**6. Address the risk exposure and assessment processes that routinely fail to identify high-priority New Hampshire utility work for Internal Audit. (Conclusion 6)**

We recommend that Internal Audit be formally involved in all new system implementations, business process changes and system upgrades and other operational risk-based activities. Internal Audit needs to ensure that its discussions with Company operations stakeholders about business processes and concerns lead to appropriate assessments of risk. Such discussions will help to determine work is required based on the operations' risk exposures, assessments and rankings of those risks. Formally requiring Internal Audit involvement in system changes and upgrades provides the opportunity to be on the ground floor of the system changes, upgrades, and operation business risks, and to help identify and determine the current systems strengths and weaknesses and the benefits of the new system or upgrade.

Internal Audit should be a strong participant in the early stages of planning for system upgrades, understand the system change impacts, and review such items as the functionality assessments and user acceptance testing. The group's involvement will provide an opportunity to enhance and ensure the adequacy of the system and process controls. Sarbanes-Oxley Act Section 404 mandates that all publicly-traded companies must establish internal controls and procedures for financial reporting and must document, test and maintain those controls and procedures to ensure their effectiveness.

Because of the Cogsdale, Key2Act and GP system upgrades, we recommend a review of the New Hampshire utilities business and operational risks, which do not appear to be included in the 2015 or 2016 planned audit activities.

The Research Foundation of the Institute of Internal Auditors (IIA) has issued a guide for assisting the development, as required by IIA standard 1300, of "a quality assurance and improvement program that covers all aspects of the internal audit activity." This *Quality Assessment Manual for the Internal Audit Activity* provides overall guidance and detailed modules for developing such a quality assurance program. We feel that this is an additional support document for IA as this guide is specific to the U.S. internal audit development activities.

**7. The corporate finance department should make working knowledge of the U.S. regulatory accounting and rate case filing process a primary criterion for recruiting, securing, and retaining talent. (Conclusion 10)**

The corporate finance department has an adequate reporting structure, but not what we would consider a sufficiently robust internal knowledge, understanding, and feel for U.S. regulated accounting, reporting and rate case processes. There are several avenues to acquire the regulatory accounting knowledge and expertise. One example is to dedicate one or two corporate finance individuals as a temporary assignment to work with the subsidiaries during a rate case filing. The knowledge to be acquired will range from understanding rate case filing requirements, preparation of accounting exhibits, the preparation of responses to Commission interrogatories and the preparation of expert accounting testimony.

The benefits derived from the focused training and hands on experience are increased regulatory accounting depth and knowledge to the corporate finance team, increased career opportunities and

transfers for personnel with regulatory experience to the utilities, and knowledgeable personnel to lend support to the utilities when needed. An additional benefit is the understanding of what it takes to complete a rate case filing from a time, resource and support perspective.

## VI. APUC at a Crossroads

### A. Background

Two elements that appear rooted in APUC's history have produced an organization and an approach that has planning and budgeting implications for the New Hampshire utilities. Given the issues we have identified in our reviews of customer service, accounting, and IT, those implications appear to have particular significance in three areas of principal concern to the Commission with respect to this focused management audit.

APUC's early years as a Canadian-based, financial development and acquisition driven enterprise, focusing on electricity generation brought high growth and great success. Its first moves into water (including waste-water treatment) utility operations did the same. That success laid a strong foundation for its entry into the electric and gas utility businesses, but much more recently. While owning a small California electric utility earlier, it took the 2012 acquisition of Atmos natural gas utilities in a number of states (bringing about 200,000 customers) to establish a strong energy utility foothold. APUC thus, from an historical and cultural perspective, remains a comparative neophyte in energy distribution, having less than a decade of experience. Its small base of operations in energy distribution remain small, even after New England acquisition (including New Hampshire) roughly doubled that base in terms of customer numbers.

### B. Findings

The independent generation business and the water utility businesses pose, for different reasons, very different needs and challenges from those of the energy utility distribution businesses. The central question therefore becomes not how APUC can "continue" what it has done very well in its history, but how well it can achieve the transition needed to meet the unique challenges of operating two distinct lines of business:

- An independent generating business, based principally in Canada
- A far flung utility business entirely located in the U.S., and combining an initial, core base of water utilities with a very new, growing, and expected to continue growing electricity and natural gas segment.

Our review has identified a number of areas of concern with respect to where that transition appears to have left New Hampshire to date.

First, with respect to **Planning and Budgeting**, capital spending, as this chapter of the report discusses, has conformed poorly to plans. The capital budgeting and execution problems shown in the last two years would be troubling in a stable environment. It is more concerning given that the growth strategy exposes APUC to unpredictable and very large outlays of capital.

Second, with respect to **Customer Service**, we discuss in the chapter addressing that topic and in the Chapter addressing **IT**, how reliance on a system (Cogsdale) far better suited to the small water utilities that formed the initial core of APUC's utility operations, continues to limit and to require extensive manual intervention to support customer service in New Hampshire. System issues also exist in **Accounting**. **IT** management acknowledges that systems that have served in the past

maybe reaching the limits of their scalability. Despite that, reviewing the multi-year plans and forecasts underlying budgets at the corporate and New Hampshire levels reveal no clear plan or schedule for undertaking structured evaluations of longer-term needs in these areas. Management spends a great deal of time forecasting the income and other financial metrics and effects of acquisitions, but does not appear to accompany that viewpoint with a corresponding focus on the corporate and system infrastructure needed to support the introduction of new operations necessary to make that financial growth a reality.

With respect generally to Customer Service, to Accounting, and to IT (the last primarily a function of how it supports the first two) there is a growing corporate support structure for Liberty Utilities, all of whose operations are in the U.S. That support structure operates from Ontario. Its leadership does not have substantial U.S. utility regulatory experience. Coincidentally or not, under APUC stewardship, lingering problems have affected customer service and accounting (particularly with respect to meeting regulatory needs and expectations). Our work also generated observations that the approach to regulatory matters also fell outside the range of experience we have gained across three decades of work in virtually every U.S. jurisdiction and for regulators in more than two-thirds of them. We complement the perspective from this broad and lengthy background with experience in a number of Canadian jurisdictions (some of it also extensive and of long duration). Management's views about this audit were problematic regarding the information needs it created. We found resistance to the view that our work received going beyond trusting management representations (*i.e.*, those views were not in keeping with our experience at a very large number of other U.S. utilities. In other words, management's "cultural" perspective on regulatory interaction also appears not to be sensitive to (or perhaps not to accept) what we view as norms in the U.S. utility industry.

## C. Conclusions

### **1. APUC can no longer rely on a continuation of its corporate structure as the optimum means for providing New Hampshire with optimum planning and budgeting, customer service, and IT. (*Recommendation 1*)**

We find much that is impressive about what APUC has done in developing a utility business over what is a very short period of time. We also do not question the propriety, should development continue in a well-planned way, to continue to build a base of utility operations through acquisitions. That said, our work has identified significant issues affecting the planning and budgeting, customer service, accounting, and (to a lesser extent) IT issues within our scope.

We cannot say to what extent the Oakville structure has contributed to the concerns addressed here. It has changed significantly, and appears to continue to remain in flux as circumstances and operations change. That historical contribution in any event misses the material point. What matters from the point of view of our work scope is whether continuing to apply and grow a non-U.S. based organization, without a strong core of U.S. utility experience will ensure that Liberty Utilities brings effective planning and budgeting, customer service, and accounting to bear in serving New Hampshire customers.

Compounding the challenge in the immediate term (while also presenting coincident opportunities) is the imminently pending acquisition of Empire District Electric. Its addition of another 200

thousand plus customers reflects a quantum leap forward. “Digesting” that acquisition will surely consume a great deal of leadership and management attention, should it come to fruition. At the same time, this new operation adds two things that may well bring opportunity. First is greatly expanded leverage to support investment in support organizations, staffing at the corporate level, and systems better designed to meet customer service and accounting needs (and probably others as well). Second, and likely to be as or more important is the more than 100-year history and correspondingly much deeper and U.S. rooted experience that the new company would bring in electric and gas utility operations.

This acquisition would differ significantly from the one that brought EnergyNorth and Granite State Electric to APUC. First, it is larger. Second, and more importantly, it represents a transfer of a whole enterprise, rather than divestiture (from National Grid’s point of view) of a state operations level business, leaving the corporate support structure, resources, and systems with the seller. Access to leadership and management that has “grown up” in the Empire District Electric environment would appear to make a rich source of experience and perspective available.

## D. Recommendations

### 1. Conduct a formal, structured examination of organizational, staffing, and system needs for providing support to New Hampshire operations. (*Conclusion 1*)

Planning and budgeting, customer service, accounting, and IT all do and should derive substantial support from Liberty Utilities and parent-level organizations. Those organizations served well in making APUC a substantial force in the U.S. utility business in the space of less than a decade. This remarkable level of success, however, creates opportunities and risks going forward. Competition for financial resources will remain challenging, given the need to exploit acquisition opportunities as they arise (on the one hand), while continuing to optimize substantial levels of utility spending (on the other hand). Opportunities exist as a growing customer population increases leverage by providing a much larger base over which to spread the costs of systems that enhance service capabilities (*e.g.*, in customer service), but that can prove expensive. At the same time, continuing to expand the historical approach to overseeing U.S. utility operations, from the governance through the service company levels, needs to keep pace with the changing size and distribution of APUC operations.

Top APUC leadership and the board need to expand existing planning activities (more specifically the five-year forecasting process) to consider how best to optimize performance in the areas we studied. While outside our scope, it is also reasonable to believe that such a review will have benefit in other operational areas as well. Specifically, APUC leadership and the board should undertake a comprehensive examination (supported by outside expertise with broad experience in U.S. energy utility management and operation) of how it supports U.S. utility operations above the state (New Hampshire in the case of interest here) level. The subjects that this examination should include (to address those relevant to planning and budgeting, customer service, accounting, and IT) at least the following, for review and action by top APUC leadership and the board:

- Ways to incorporate into the top-level APUC processes for planning, budgeting, and measurement of performance against them (including resulting service-level impacts) and more insight into operations needs (*e.g.*, metrics).

- The optimum location, structure, staffing, and perspective/experience requirements of corporate support organizations existing primarily to serve a community of utility operations located entirely in the U.S.
- A thorough, candid assessment of where current systems and tools fall short in meeting customer and regulatory expectations, what manual intercession and costs are required to make them operate, what new capabilities can be provided by transitioning to new systems and at what cost (including those avoided by elimination of manual intercession).
- How to link utility business expansion assumptions, plans, and actions with a correspondingly robust view of how, when, and where to move from systems and tools more appropriate for smaller, simpler utility operations.
- Whether the current board structure (a single, outside-director dominated board) or multiple boards (as some holding companies with multi-industry or trans-national operations use) best serves the need to optimize performance.
- How to encourage (at the service-company level, where it appears the need exists) a more typical view of what “transparency” in regulatory matters (such as this audit) involves.