

04/07/14



**NTPC**

## INFORMATION TECHNOLOGY STRATEGIC PLAN

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2015 to 2017

Information Technology Department

## Corporate Strategy

NTPC's current corporate business strategy strives to achieve optimum shareholder value through a balanced focus on its defined strategic pillars of:

1. **Reliability**  
Increase reliability of our core operations using sound and cost effective practices that ensures long term sustainability.
2. **Cost Effectiveness**  
Improve efficiency in order to control costs over the long term while not exposing the Corporation to adverse risk.
3. **Meeting Commitments**  
Match or exceed performance commitments in all aspects of our operations.

These goals will be met through achievement of excellence in the core strategic elements of **Employee Excellence, Operational Excellence, Customer Service Excellence** and **Financial Excellence**.

## Corporate Strategic Elements

Key components identified as being areas of importance for achieving success within the four corporate level strategic elements are listed below. These components provide direction and justification for initiatives outlined within the IT strategy.

### **Employee Excellence**

- Safety is Top Priority
- Leadership Development
- Clear Roles, Responsibilities and Accountability
- Promote Career Development
- Empower Employees
- Positive & Healthy Team Environment
- Culture of Continuous Improvement
- Workplace Encourages Open Dialogue

### **Operational Excellence**

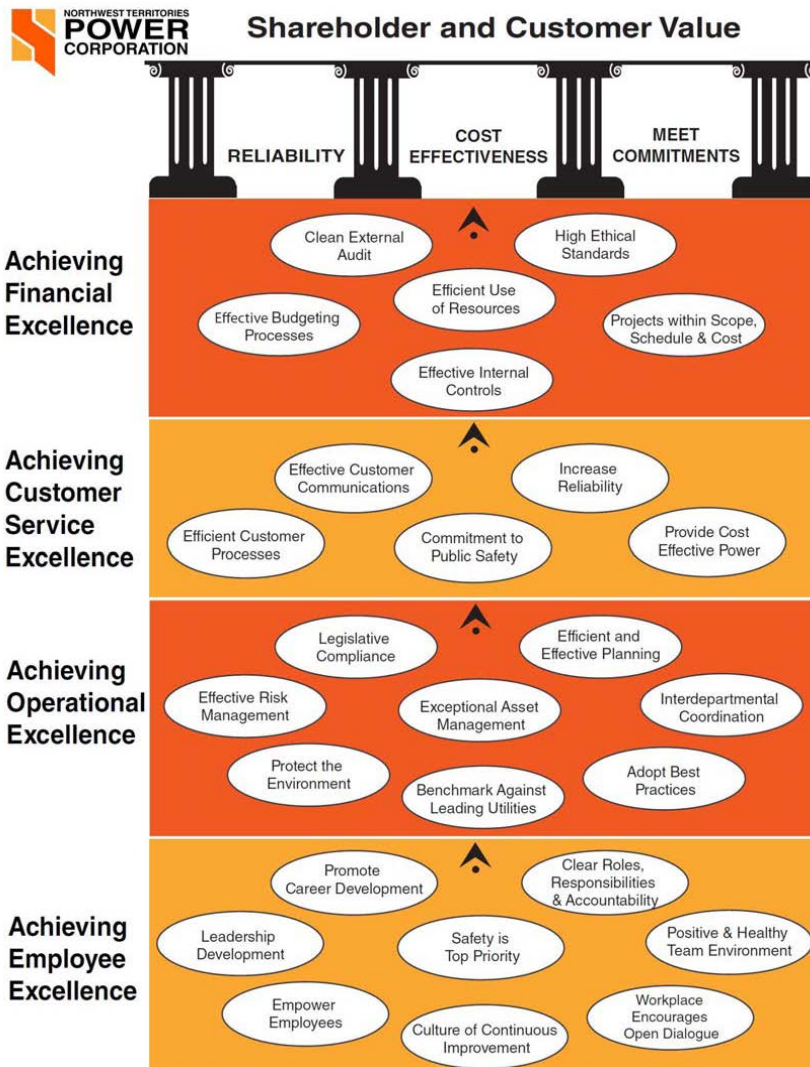
- Legislative Compliance
- Efficient and Effective Planning
- Interdepartmental Coordination
- Adopt Best Practices
- Benchmark Against Leading Utilities
- Protect the Environment
- Effective Risk Management
- Exceptional Asset Management

**Customer Service Excellence**

- Commitment to Public Safety
- Increase Reliability
- Provide Cost Effective Power
- Effective Customer Communications
- Efficient Customer Processes

**Financial Excellence**

- Efficient Use of Resources
- Projects within Scope, Schedule & Cost
- Clean External Audit
- High Ethical Standards
- Effective Internal Controls
- Effective Budgeting Processes



## IT Strategy and 3-Year Plan

The 2014/15 Information Technology strategy for NTPC delivers a 3 year plan of prioritized projects to be implemented to support and enable the strategic goals of the company. Specific attention has been made to the corporate strategic elements of **Employee Excellence**, **Operational Excellence**, **Customer Service Excellence** and **Financial Excellence** to form the guiding principles of the IT strategy.

The IT strategy is meant to communicate to the organization the rationale used to set the priorities for the allocation of NTPC's IT resources. The IT strategy considers and supports achievement of NTPC's current vision and organizational goals as described in the current corporate strategic plan. It also anticipates changes in technology that could present opportunities for NTPC and issues and challenges in NTPC's environment, specifically those impacting the IT department.

This plan is expected to cover the fiscal period from 2014/15 to 2016/17. As a primarily service based function, IT strategy is influenced heavily by direction of the company and the functional units within. The intention is that the strategy be realigned annually to ensure that the information technology strategy is in alignment with corporate and other functional level strategies of NTPC.

## Strategy Execution

Senior Management commitment to the IT Strategy and the three year plan is an essential pre-requisite for success. This commitment must be communicated through the management of each department and coordinated through the efforts of the IT department.

Following the acceptance of the IT Strategic Plan, appropriate business cases for the identified IT programs and projects must be prepared. This in turn will lead to the preparation of relevant project charters.

The IT department will develop a set of Key Performance Indicators (KPIs) for the meaningful tracking and reporting of the programs as they are executed.

The IT Strategy calls for building partnerships and relationships with various internal NTPC stakeholders and in some cases, external organizations including the identification of opportunities for collaboration and joint initiatives.

## Trends and Opportunities

Through development of the IT strategy, an awareness of industry trends and opportunities that are forthcoming in the IT industry as well as in the operating environment of NTPC is important. Some of these trends and opportunities identified by the IT department are described below.

### ***Telecommunications***

Telecommunications will continue to be the backbone of Information Technology for the foreseeable future. As data networks continue to grow in reach and capacity, business systems become more connected and information is presented at a faster pace. Improvements in this area will continue to revolutionize the industry and bring operational benefits to NTPC.

Recent rulings by the CRTC have opened the door for other voice and data providers in the NWT. Northwestel has traditionally operated as a monopoly for these services in the NWT. The CRTC has also mandated that NWTel invest more of its profits into data infrastructure improvements. Other CRTC rulings are expected to make it easier for other telecom providers to enter the market or be more competitive on data offerings.

The Government of the NWT is seeking to improve telecommunications in the Territory by establishing its own fibre-optic channel through the Mackenzie Valley. This will provide highspeed data communications to the communities along this circuit and increase redundancy in conjunction to existing NWTel channels. As the GNWT is the primary shareholder for NTPC, there may be an opportunity for NTPC to share usage of the Mackenzie fibre and bring an increased level of IT services to communities at a reduced expense.

New wireless technologies that provide TCP/IP services over radio waves (RF), cellular signals, and satellite technologies will provide increased options for delivering mobile and remote information systems. Cellular service coverage within the NWT is expected to double by 2017. All communities in the NWT should have cellular services by then.

### ***Mobile Computing***

Technology advancements that facilitate the use of mobile technology continue to revolutionize IT and business environments. Mobile devices will continue to become more powerful and capable of performing an increased number of business and IT functions. A growing number of applications will need to be programmed to optimize presentation and functionality on these mobile devices. Networks must be designed to handle the increased demand for wireless connectivity while considering the associated increased security risks associated with the flexibility.

### ***Infrastructure***

With developing telecommunications, server, and storage facilities and technologies, internet based "Cloud" services and Software as a Service (SaaS) are becoming attractive options for businesses looking to improve business continuity, time-to-deployment, and scalability while achieving cost reductions. It is expected that an increase in acceptance and use of Cloud services will occur and onsite physical servers, data and application could be reduced.

While not a new technology, server virtualization and server consolidation will continue to be a trend into the future and corporations will continue to push the utilization of physical servers with

more virtual servers and consolidated servers. Improvements in virtualization technology will continue to increase the financial return on server space.

Desktop virtualization which serves to move desktop processing to servers and transform the desktop to a “thin-client” platform, has the potential to drastically reduce the TCO of desktop computing. Hardware, maintenance and other associated costs can be reduced substantially. Again while not a new technology, improvements in related offerings will increase the potential for successful adoption for NTPC. Platform independency for Operating Systems and devices (Apple, Windows, Android, Blackberry, etc.) is a reality through desktop virtualization therefore increases flexibility and ease of deployment to mixed platforms.

### ***Business Systems***

Social media has established itself as a new electronic medium for information presentment. While initially social medial channels were dominated by personal usage, penetration into the business world in the new reality. With millions of people using social media such as Facebook, Twitter and YouTube daily, businesses are no longer recognizing a strategic advantage by adopting into their operations; instead, use of social media for branding, customer engagement, and recruitment is a new requirement.

Email proliferation has become a daunting challenge for both users and IT departments to effectively manage. There are some beliefs that email usage will start to decrease with more predicted usage of text and chat based conversations. While it's difficult to anticipate a decrease in email usage, IT and business will see an increase in text, video and chat communications and should consider how to effectively manage an additional communication type.

Collaboration based productivity applications are becoming increasingly popular due to advancements in application design and shared storage mechanisms like the Cloud. Along with this there is an increasing amount of integration between productivity applications like Outlook and Sharepoint. With these changes comes a heightened importance of systems thinking within IT departments and increased attention to the systems development lifecycle. Systems developers must demand well defined business processes through application development in order for the systems to provide a positive return on investment.

### ***Service Demand***

The combination of increased mobile computing, increased SCADA developments and dependence of off-hour maintenance of IT systems (data replication; backups; updates), has put pressures on increased system availability and IT support. In addition to this, IT creep is a reality for NTPC as more service requests for new applications and automation will occur.

### ***Data and Information Management***

Growing demand for more storage, and digital content management will continue into the future as more types of digital information is created. Managing and discovery of relevant information in the exponentially growing amount of electronic data will be crucial for businesses. Robust records management policies and systems that are intune with the proliferation of electronic data are required in order to meet the storage, access and processing demand. Protecting corporate information and intellectual property increases in importance and strategies that support this should be identified.

## Issues and Challenges

NTPC and the IT function within must consider issues and challenges that have potential to limit the achievements of IT headed programs and projects and negatively impact the strategic goals of NTPC. A number of key issues and challenges are readily apparent:

1. Bandwidth and data rates in the NWT are known to be amongst some of the highest priced in the world partially because of the monopolized private ownership; partially because of the distributed, challenging and rural environment of the NWT which reduces opportunity for profitable telecommunication development. In addition to cost, access to larger bandwidth or throughput is limited and backbone redundancy does not exist in some cases. Combined, this will continue to limit the North's ability to access emerging technologies that depend on fast, robust and cost effective communication networks unless NWT communication providers can further develop their network and control prices.
2. Consideration of alternative service delivery with a particular emphasis on potential outsourcing of some of the IT functions needs to occur. Currently NTPC's IT department performs almost all IT functions internally. As demand continues to increase for IT services both in quantity and type, external options can present benefits more easily achieved than through in house provision.
3. NTPC needs to continue to pay attention to the issue of attracting and retaining technology skills to ensure strategic targets are met. While the turnover rate within the IT department is comparatively low, there has been difficulty in recruiting recently vacant positions. During the term of this plan, at least one retirement for a critical position will occur; normal turnover is also expected.
4. Internal Service Level Agreements (SLAs) and an agreed upon service catalogue need to be established between IT and the internal business units to help manage and plan programs to match business unit requirements. Currently NTPC's IT department can only provide what they feel is required and stakeholders just as often have difficulty defining their service requirements. IT can facilitate these agreements with management approval on expectations and budget.
5. There is a lack of documented IT processes and policies for employees within the IT department who are supporting the business applications of NTPC and for employees who use these services. This makes it difficult for staff as there is no clear direction on expectations for providing or using services. The lack of documented processes increases IT operational risk especially that associated with turnover.
6. NTPC's server and data management services have changed significantly through recent virtualization developments. This has contributed to delays in refreshing server hosts and fluctuations in data management and protection processes. Aging servers and applications are increasing risk and costs associated with information systems provision and continuity at NTPC.
7. Security and intrusion risks continue to grow in the computing industry. Robust security design and attention to threats is required for essential service utilities like NTPC. Increased attention to protection of NTPC's data and systems is required in order to reduce organizational risk.

8. Internal IT customer satisfaction survey's have indicated a decline with performance and satisfaction of desktop computing hardware provided. NTPC has been operating with a 5 year refreshment plan which may be too long and now impacting productivity. Desktop protection policies may also be too lenient and could be attributing to decreased integrity of users' computing infrastructure.
9. NTPC's IT department needs to maintain a comprehensive asset and change management framework and the appropriate management tools for IT infrastructure and application assets. While NTPC's IT department does have a developed asset tracking system, some enhancements need to be made including adding integrated change management and maintenance components.
10. One of the biggest challenges NTPC faces with adoption of potential cost saving and productivity enhancing IT initiatives is that the workforce has historically had low or slow adoption rates. Efforts to improve corporate aptitude in this area requires a multifaceted approach to staff engagement and development.

## Prioritized Programs / Projects

In consideration of NTPC's current corporate strategic plan, trends and opportunities, and issues and challenges facing NTPC and the IT department, several strategic outcomes were identified in developing the 2015-17 IT strategic plan.

The IT programs and projects that are predicted to have the biggest positive impact towards NTPC obtaining its IT and corporate strategic goals have been filtered out of a longer list of potential IT projects. This condensed list is categorized into identified IT strategic outcomes and the four corporate strategic elements. Detailed business cases will be created prior to undertakings to ensure the best return for the investment and to match budgetary resources.

Strategic Outcome	Element	IT Program / Project
<b>Improve IT Skillset and Direction</b>	Employee	<ul style="list-style-type: none"> <li>▪ Employee Development Plans</li> <li>▪ IT Governance Model Development (ITIL)</li> <li>▪ Process &amp; Policy Development</li> </ul>
<b>Support Enhancement of Corporate Safety Culture</b>	Employee	<ul style="list-style-type: none"> <li>• Deployment of Lone Worker / Man Down System</li> </ul>
<b>Promote Engaged Workforce</b>	Employee	<ul style="list-style-type: none"> <li>• Implement Employee Suggestion Process</li> </ul>
<b>Advancement of Value Chain Processes</b>	Operational	<ul style="list-style-type: none"> <li>• Video Conferencing Development</li> <li>• Introduce Unified Communications</li> <li>• AMR Through Wireless Communications</li> <li>• Outage Reporting Application &amp; Database</li> <li>• Develop and Implement a Computerized Maintenance Management System</li> <li>• Implement Electronic Workflow Approvals and Document Management</li> </ul>
<b>Implement Secure and Reliable IT Infrastructure</b>	Operational	<ul style="list-style-type: none"> <li>▪ Upgrade WAN Infrastructure</li> <li>▪ Integrated Asset and Systems Management System</li> <li>▪ Establish IT Preventative Maintenance Program</li> <li>▪ Install Network Accessible Wifi in Plants</li> <li>▪ Improve IT Security Processes and Responsibilities</li> <li>▪ ERP Improvements</li> <li>▪ Dynamics 2013 Upgrade</li> <li>▪ Upgrade Email System</li> </ul>
<b>Development of a Customer Focused Culture</b>	Customer	<ul style="list-style-type: none"> <li>▪ SLA Establishment</li> </ul>
<b>Empower Knowledge Workers</b>	Customer	<ul style="list-style-type: none"> <li>▪ Mobile Computing Development</li> <li>▪ iManage Improvements</li> <li>▪ Launch Dynamic Intranet Site</li> </ul>
<b>Cost Reduction Initiatives</b>	Financial	<ul style="list-style-type: none"> <li>▪ Server Virtualization And Consolidation</li> <li>▪ Desktop Virtualization</li> <li>▪ Voice Over Internet Protocol Integration</li> <li>▪ Electronic Work Permits</li> <li>▪ Resource Sharing and Collaboration with GNWT</li> <li>▪ Financial and BI Report Developments</li> </ul>

## Employee Excellence

### • **Improve IT Skillset and Direction**

- A philosophy of continual development and professional aptitude should be embraced by the IT department and supported by management through skill development, clear direction, and empowerment.
- A structured operating environment that clearly outlines expectations, processes, responsibilities and accountabilities for a top quartile performing IT department.
- IT performance measurements shall be spread across all four strategic elements and guide employees as well as management in the important aspects of IT operations.
- Performance measurements will not only modify behaviours within the department towards that of accountability and achievement but will also help to align and focus resources where needed.

#### *How to accomplish:*

- **Employee Development Plans**
  - Formulation of individual employee development plans to help promote employee accomplishment of career development and department objectives
  - Target completion: March 2015
- **IT Governance Model Development**
  - Identification of a industry accepted and applicable governance model that will provide a framework for IT accountability, process and strategy at NTPC
  - Target completion: December 2014
- **Process and Policy Development**
  - Identification and generation of core IT policies that provide direction to IT staff and NTPC employees on IT related expectations
  - Process mapping and documentation of core IT procedures that will provide direction and standardization to IT staff in completing tasks.
  - Target completion: June 2014

### • **Support Enhancement of Corporate Safety Culture**

- NTPC has made a commitment to putting safety as its first priority. Identification of technology that can cost effectively improve the wellbeing and safety of our employees must be a consideration for IT

#### *How to Accomplish:*

- **Deployment of Lone Worker / Man Down System**
  - Determination of safety and operational requirements for lone worker system
  - Solution identification and development
  - Target completion: October 2014

- **Promote Engaged Workforce**

- NTPC recognizes that its human capital drives the success of the organization. Introducing mediums for improved bottom-up communication promotes increased realization of opportunities for operational and cultural improvement within the organization.

*How to Accomplish:*

- **Implement Employee Suggestion Process**

- *Develop electronic tools and a forum for employees to formally submit suggestions for operational and cultural improvement*
- Target completion: September 2014

## **Operational Excellence**

- **Advancement of Value Chain Processes**

- Integrate processes, people and technology to increase productivity, improve quality of work, and add extra value to operations of NTPC.
- Reduce current time and cost overheads associated with operational and administrative functions.
- Address identified reporting and usage deficiencies of ERP to ensure information produced is timely and accurate and thus allows for improved decisions regarding the financial well-being of the Corporation
- A well-developed and integrated equipment maintenance program will improve asset reliability as well as reduce the lifecycle costs of corporate assets.
- Integrate business workflow and document management into ERP processes and further automate manual processes.

*How to Accomplish:*

- **Video Conferencing Deployment**

- Determine video conferencing requirements of NTPC and develop solution that provides strongest business case
- Consideration of network implications, cost, performance and industry trends needs to be made.
- Target completion: July 2014

- **Introduce Unified Communications**

- Develop solution that will integrate the real-time communication channels currently used and could be used for operational benefit (VOIP, cell, instant messaging, video, conferencing, etc.) with non-real-time communication types (voicemail, email, etc.).
- Target completion: December 2014

- **Automated Meter Reads (AMR) Through Wireless Communications**

- Determine feasibility of use of wireless, Ethernet based revenue meters and communication channels for obtaining meter reads and disconnects.
- Options of establishing wireless infrastructure and third party provision.
- Joint project with T&D department
- Target completion: March 2017

- **Outage Reporting Application and Database**
  - Investigate feasibility of development of an outage reporting application that allows for submission, approval and automated reporting to stakeholders.
  - Target completion: April 2017
- **Dynamics 2013 Upgrade**
  - Upgrade of existing Dynamics software to version 2013.
  - Communicate openly with stakeholders on system changes and deployment options including training.
  - Target Initiation: January 2015
  - Target Completion: September 2015
- **ERP Improvements**
  - Meet specific targets set by FSIP project team.
  - Target completion: March 2016
- **Develop and Implement a Computerized Maintenance Management System**
  - Develop a preventative maintenance program that is specific down to the distribution switch, breaker, motor and pump level outlining what maintenance shall be performed to ensure that equipment will operate reliably and at a minimum life cycle cost. The system will be computer based and integrated with the corporate financial system ensuring that other corporate assets are effectively leveraged.
  - Target completion March 2016.
- **Implement Electronic Workflow Approvals and Document Management**
  - In cooperation with business units, identify and develop electronic workflow and approval solutions within Dynamics for benefits of process control and efficiency.
  - Integration of iManage records management system with Dynamics transactions.
  - Target completion: March 2015
- **Implement Secure and Reliable IT Infrastructure**
  - Ensuring robust, reliable and secure IT infrastructure that is able to match the demand of NTPC's business systems and the employees and customers that use them is essential for the IT department's success.
  - Optimized LAN and WAN infrastructure with the ability to prioritize (QoS) and segment (VLANs) traffic types needs to be further developed.
  - A developing importance for use of internet channels as potential for providing public based business services (SaaS, Cloud) needs to be considered when designing future network design.

*How to Accomplish:*

- **Upgrade WAN Infrastructure**
  - Upgrade existing MPLS to DSL circuits at all Plants
  - Consideration of application delivery methods and design as well as current and future networking demand needs to be made.
  - Meet internal customer SLA requirements for network availability and throughput.
  - Target completion: April 2014

- **Establish IT Preventative Maintenance Program**
  - Analysis of maintenance versus replace program by device type and/or physical location.
  - Develop preventative maintenance schedule based on results of maintenance analysis.
  - Target completion: August 2014
- **Integrated Asset and Systems Management System**
  - Configuration and deployment of MS Systems Center suite to provide an integrated tools set for system monitoring, application deployment, work order management and other systems management.
  - Target completion: May 2015
- **Upgrade Email System**
  - Design and develop email system that leverages updated email management and collaboration techniques
  - Consideration of records management requirements in design is required. Updates to records management policies may be required.
  - Target completion: May 2015
- **Improve IT Security Processes and Responsibilities**
  - Analyze gaps between NTPC and best practice systems security processes.
  - Assign responsibilities for systems and process development, administration and monitoring of physical and electronic security.
  - Target completion: August 2014

## **Customer Excellence**

- **Development of a Customer Focused Culture**
  - Improve IT related communication to and from internal customers for goals of achieving a customer driven service culture.
  - Heighten the IT department's delivery of customer service excellence.
  - Enhanced communication with stakeholders to determine IT requirements and to help identify solutions that meet their requirements.

### *How to Accomplish:*

- **SLA Establishment**
  - Establishment of core IT service metrics with internal customer groups (ie. network availability)
  - Will help clarify expectations of delivery for both customer and IT provider
  - Target completion: December 2014

- **Empower Knowledge Workers**
  - Match growing demands of knowledge workers to stay “connected” outside of the traditional physical office through the supply of applications and information through public and mobile mediums.
  - Simplify commonly used business applications.
  - Increase access to information techniques.

*How to Accomplish:*

- **Mobile Computing Development**
  - Introduce technologies that allow for an increased ability for knowledge workers to work remotely and offline such as cached Outlook (laptops), ShoreTel SoftPhone, and Citrix application presentment.
  - Target completion: December 2015
- **Install network accessible wifi in all Plants and Offices**
  - Target completion: March 2015
- **iManage Improvements**
  - Continue to develop features to enhance ease of use for end users to increase adoption and productivity.
  - Target completion: September 2014
- **Intranet Redesign**
  - Redesign and updating of “Powerbox” intranet site to allow for improved access to organizational information.
  - Assurance of low maintenance requirements would be a target of new design.
  - Target completion: March 2016

## Financial Excellence

- **Cost Reduction Initiatives**
  - Reduce Total Cost of Ownership associated with core IT infrastructure.
  - Introduce technologies to business units that reduce the current cost associated with operational processes.
  - Create strategic partnerships with external organizations and vendors to reduce the costs associated with IT operations.
  - Improve financial reporting and analysis mechanisms

*How to Accomplish:*

- **Server Virtualization And Consolidation**
  - Implement server virtualization techniques to reduce the number of physical servers and related capital and operational expenditures associated with server purchase, maintenance, and deployment.
    - Target deployment March 2012; Target completion: June 2016
- **Desktop Virtualization**
  - Design and implement desktop virtualization to reduce the total cost of ownership associated with desktop computing requirements. Reduction in capital hardware expenses, software licensing and operational maintenance and deployment will be realized.
  - Target deployment March 2012; Target completion: September 2015

- ***Voice Over Internet Protocol (VOIP) Integration***
  - Integrate Area Office and Hydro Plant Voice Over Internet Protocol phone systems to realize cost savings benefits associated with interoffice long distance phone calls.
  - Target completion July 2015.
- ***Electronic Work Permits***
  - Reduce costs associated with the work protection permitting process by introducing electronic processing and approval techniques.
  - Target completion: Sept 2015
- ***Resource Sharing and Collaboration with GNWT***
  - Investigate options for cost sharing collaboration initiatives with the GNWT and specifically IT service provision.
  - Possibilities include: transportation sharing, remote location maintenance partnerships, offsite data storage, infrastructure provision (private cloud).
  - Target completion: August 2015
- ***Financial and BI Report Developments***
  - Identify financial and business intelligence reporting gaps
  - Develop reports using standardized reporting tools and processes that improve productivity and analysis.
  - Target completion: August 2015

Program / Project	Element	2014/15	2015/16	2016/17
Lone Worker / Man Down System (CSP)	Employee	■		
IT Governance Model (CSP)	Employee	■		
IT Process and Policy Development (CSP)	Employee	■		
Develop Employee Suggestion Process (CSP)	Employee	■		
IT Employee Development Plans	Employee	■		
ERP Improvements (CSP)	Operational	■	■	
Dynamics 2013 Upgrade	Operational	■	■	
CMMS Implementation (CSP)	Operational	■	■	
Electronic Workflow / Doc Mgmt.	Operational	■		
Video Conferencing Deployment (CSP)	Operational	■		
Unified Communications (CSP)	Operational	■		
AMR Through Wireless Communications	Operational		■	■
Outage Reporting Application	Operational		■	■
Upgrade WAN Infrastructure (CSP)	Operational	■		
Establish IT Preventative Mtnc. Program	Operational	■		
Integrated Asset and Systems Mgmt.	Operational		■	
Electronic Work Permitting	Operational		■	
Email System Upgrade	Operational		■	
iManage Improvements	Operational	■		
Improve Security Processes and Responsibilities	Operational	■		
Intranet Redesign	Operational		■	
Install network accessible wifi at plants	Customer	■		
SLAs Establishment (CSP)	Customer	■		
Mobile Computing Development	Customer	■	■	
Server Virtualization and Consolidation	Financial	■	■	
Financial and BI Report Developments	Financial	■	■	
Desktop Virtualization (CSP)	Financial	■	■	
VOIP Integration (CSP)	Financial	■	■	
Resource Sharing with GNWT	Financial	■	■	