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# Chapter 1

## Introductory Comments

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# Introductory Comments

## **Volume II Reports on two 2014 Performance Reports**

### ***Point Lepreau Generation Station Refurbishment – Phase II***

### ***Data Center Power Interruption***

### ***Follow-up work on past AG recommendations***

### ***More 2014 Reports to be tabled in the months ahead***

**1.1** In this volume of our 2014 Report, we report on the following performance reports:

- Point Lepreau Generating Station Refurbishment-Phase II: Our objective was to assess the reasonableness of key project costs of the \$2.4 billion refurbishment project. This report follows our 2013 Phase I report where we focused on the planning and execution of the refurbishment and provided summary level financial information.
- The June 2014 Marysville Data Center Power Interruption: Our objective was to review various aspects surrounding the power outage, the impact on key government services and most importantly make recommendations to address weaknesses in government's corporate IT business continuity planning; and
- Follow-up work on recommendations from past value-for-money/performance reports.

**1.2** I would also like to inform the Public Accounts Committee (PAC) of my intention to table additional performance audit reports carried out during 2014 in the months ahead. This staggered reporting practice is a result of stakeholder feedback carried out while updating our Strategic Plan. It is my intent that by breaking up the annual report it facilitates the work of the Public Accounts and Crown Corporations Committees. It is common practice among other Canadian Auditors General to release reports more than once a year. The PAC may choose to focus in more detail on the content of each report as they are released.

**1.3** The remaining 2014 performance audits to be tabled include:

*Response to Legislative Assembly on Financial Assistance to Atcon Holdings Inc. and Industry*

- Financial Assistance to Atcon Holdings Inc. and Industry: This audit is in response to the unanimous motion of the Legislative Assembly in June 2013 requesting the Auditor General conduct an audit of financial assistance given by the Province to Robert Tozer and the Atcon group of companies. We were also asked to include recommendations on how to improve the performance of the Department of Economic Development, formerly known as Business New Brunswick.
- Two reports regarding the Department of Natural Resources: Silviculture and Private Wood Supply
- Report on Patient Safety: Infection Prevention and Control in Hospitals

*Silviculture and Private Wood Supply*

*Infection Control*

**Update on AG recommendation regarding Comprehensive Long-Term Infrastructure Sustainability Plan**

**1.4** In the 2012 Auditor General Report, I made a recommendation to the Department of Transportation and Infrastructure regarding the Province's need for a comprehensive long-term infrastructure plan that will ensure the sustainability and safety of highways, hospitals, schools, bridges and other essential provincial infrastructure while respecting the fiscal challenges faced by the Province.

**1.5** This recommendation followed past Auditor General Reports of various capital assets. In particular regarding deferred maintenance on roads and highways (2012), schools (2011, 2005) and provincial bridges (2013).

**1.6** I would like to take the opportunity to once again restate this significant recommendation. *“Our Province needs a comprehensive long-term infrastructure plan that will ensure the sustainability and safety of all essential infrastructure, including highways, hospitals, schools, bridges, etc. while respecting the fiscal challenges faced by the Province.”*

**1.7** Key elements of the plan should include:

1. the rationalization of assets (i.e. if not considered essential, remove from service and dispose in an appropriate manner);
2. a long term approach to budgeting which includes life cycle maintenance of capital assets;
3. a protected stream of a base level of funding determined necessary to adequately maintain assets in service;
4. a 20 year planning horizon;
5. a process whereby new assets are constructed only when there is a business case to support the need. This should include redirecting savings from rationalized assets to the new asset life cycle maintenance costs;
6. apply the current DTI strategy and asset management system to all essential assets. This would result in a corporate approach which applies the least cost lifecycle prioritization to all essential assets;
7. provide annual public performance reporting, which includes the actual physical condition of our essential assets versus pre-established targets, explaining the reason for any significant variances; and
8. a process or mechanism that ensures fiscal discipline is adhered to over the long –term (such as legislative change, statutory, funding, contractual arrangements).”

**Department of Transportation and Infrastructure reports progress in certain areas of the long term infrastructure sustainability plan**

**1.8** The Department of Transportation and Infrastructure (DTI) provided an update regarding recent progress on the eight part plan. It is detailed in Exhibit 1.1. In summary, the Department reports progress in certain aspects, however, much work remains. For example:

- 1) With respect to rationalization of assets, DTI indicated the Asset Management Model can accommodate such decisions however; it is not clear as to the extent to which it is used.

- 2) DTI's response indicated that the Asset Management Model to date only includes roads, bridges and culverts. Other major asset groups such as buildings (schools, hospitals) have not been added. As a result, a corporate approach to prioritizing assets most in need of repair is not used.
- 3) Although DTI has identified the minimum funding required for optimizing the lifecycle of roads, bridges and culverts a protected stream of funding has not been obtained.
- 4) DTI considers a 10 year horizon to be appropriate for capital planning but only a three year strategic capital plan was presented to government in 2014.

**1.9** I would encourage members of the Public Accounts Committee (PAC) to pursue this important issue with DTI officials when they appear before the committee.

## Exhibit 1.1 – Summary of Recommendations

Recommendations	Department's Response
<p>We recommend the Department of Transportation and Infrastructure develop and implement a comprehensive long-term infrastructure plan that will ensure the sustainability and safety of highways, hospitals, schools, bridges, and other essential provincial infrastructure while respecting the fiscal challenges faced by the Province.</p> <p>Key elements of the plan should include:</p>	
<p>1. the rationalization of assets (i.e. if not considered essential, remove from service and dispose in an appropriate manner);</p>	<p>DTI's Strategic Capital Plan is developed through the use of its Asset Management Decision Framework which utilizes two methodologies. The Asset Management Model for existing assets identifies the optimal rehabilitation schedules for existing assets over their lifecycle. The Multi-Criteria Analysis Matrix, which also encompasses benefit-cost analysis, evaluates and prioritizes new build and divestiture candidates. Divestitures rationalize the asset inventory and reduce long term liabilities associated with ongoing maintenance and rehabilitation.</p> <p>The Asset Management Model for road surfaces also encompasses a proposed road surface policy which identifies the most cost effective road surface given considerations such as the class of highway, traffic count, truck traffic, etc.</p>
<p>2. a long term approach to budgeting which includes life cycle maintenance of capital assets;</p>	<p>DTI has developed a 3-year Strategic Capital Plan (and is developing a 10-year plan for 2015) that includes the asset management liabilities for its existing roads, bridges and culverts. The Strategic Capital Plan will also identify the consequences i.e., added infrastructure liability, percentage of roads in poor condition, etc. of not fully funding asset management. A governance model has been developed for the capital planning process.</p>
<p>3. a protected stream of a base level of funding determined necessary to adequately maintain assets in service;</p>	<p>Through Asset Management models, DTI has identified the minimum funding required for optimizing the lifecycle of its existing roads, bridges and culverts. The model for buildings is developed and is being refined.</p>

*Exhibit 1.1 – Summary of Recommendations (continued)*

Recommendations	Department's Response
4. a 20 year planning horizon;	DTI considers a 10-year horizon more appropriate given the uncertainty surrounding a 20 year horizon. This time horizon is consistent with capital planning periods used by other jurisdictions, including Quebec.
5. a process whereby new assets are constructed only when there is a business case to support the need. This should include redirecting savings from rationalized assets to the new asset life cycle maintenance costs;	DTI's Multi-Criteria Analysis Matrix considers economic, social, environmental, and cultural indicators when evaluating adding or deleting capacity from its asset inventory. The weights of each category of indicators may vary depending on the asset. A benefit-cost analysis provides a further ROI assessment. DTI's Governance model helps ensure appropriate due-diligence is followed in identifying all capital projects.
6. apply the current DTI strategy and asset management system to all essential assets. This would result in a corporate approach which applies the least cost lifecycle prioritization to all essential assets;	DTI has developed Asset Management Models for its roads, bridges and culverts and is refining the buildings model and has consulted with other departments, including EECD [Education and Early Childhood Development], who is interested in adopting this approach.
7. provide annual public performance reporting, which includes the actual physical condition of our essential assets versus pre-established targets, explaining the reason for any significant variances; and	DTI includes several performance metrics, including % of poor roads, Bridge Condition Index, and adherence to Asset Management for capital expenditures for road surfaces on its Balanced Scorecard which are reproduced in its Annual Report.
8. a process or mechanism that ensures fiscal discipline is adhered to over the long-term (such as legislative change, statutory funding, contractual arrangements).	DTI has presented a 3-year Strategic Capital Plan to Government in 2014 and intends to submit a 10-Year Plan in 2015. Government endorsement of these plans will encourage fiscal discipline.

**Follow-up on recommendations from past value-for-money/performance work**

**1.10** This volume of our Report contains follow-up work on department and Crown agency progress in implementing our recommendations. New this year we have added a chart on our website at [www.agnb-vgnb.ca](http://www.agnb-vgnb.ca) which highlights progress on implementation of our past reports. We hope members of the Public Accounts and Crown Corporations Committees will find the information presented useful during committee deliberations.

**1.11** Also included in this volume are:

- Appendix A which contains a “Summary of Significant Projects Conducted in Departments and Crown Agencies over the Past Ten Years”
- Appendix B, a “Detailed Status Report of Recommendations Since 2010”
- Appendix C, a Glossary referencing Report sections relevant to each department or Crown agency. This is intended to make it easier for committee members to find all department or Crown specific Report comments as they appear before the committee(s).

**Acknowledgements**

**1.12** Staff of the Office has worked very hard in carrying out the work contained in this volume of our Report. This Report is a reflection of their level of commitment, professionalism and diligence. I would like to express my appreciation to each one for their contribution and continuing dedication to fulfilling the mandate of the Office of the Auditor General.



Kim MacPherson, CPA, CA  
Auditor General

# Chapter 2

## Point Lepreau Generating Station Refurbishment – Phase II

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# Point Lepreau Generating Station Refurbishment – Phase II

- Introduction**     **2.1** As indicated in Chapter 6, Volume 2 of the 2013 Auditor General of New Brunswick (AGNB) Report, we approached the examination of the Point Lepreau Generating Station (PLGS) refurbishment in two phases. In the Phase I, we:
- described key aspects of NB Power’s planning and execution of the Point Lepreau refurbishment; and
  - reported summary-level financial information of amounts making up the \$1.4 billion capital asset account and the \$1.0 billion deferral account related to the refurbishment, as shown in Exhibit 2.1.

*Exhibit 2.1 - Summary Financial Information of PLGS*

<b>Components of Capitalized PLGS (in \$ millions)</b>	
Phase I Project Planning	\$ 90.2
Phase II Engineering, Procurement, and Construction:	
Contracted or Professional Services	780.3
Capitalized Interest	292.9
NB Power internal costs	260.5
<b>Sub total</b>	<b>\$1,423.9</b>
<b>Components of Deferred Costs (in \$ millions)</b>	
Nuclearco Period Costs	\$ 839.8
Genco Replacement Power Costs	1,032.9
Costs Recovered Through Current Rates	(957.1)
Interest Assigned to Deferral	112.0
<b>Sub total</b>	<b>\$1,027.6</b>
<b>Grand total</b>	<b>\$2,451.5</b>

*Source: Created by AGNB with data obtained from NB Power (unaudited)*

**2.2** The refurbishment of PLGS was the first time a CANDU 6 reactor had ever been refurbished. Given the magnitude and uniqueness of this capital project and the likelihood that NB Power will undertake future large capital projects, we believe this chapter should be of considerable interest to the Legislative Assembly as well as the New Brunswick public, most of whom are also NB Power rate payers.

## **Audit Objective**

**2.3** The objective of our Phase II work was:

*To assess the reasonableness of key project costs of Point Lepreau Generating Station Refurbishment Project.*

**2.4** First, we analyzed the summary financial information from Phase I in more detail to determine which areas would be our focus. Our analysis is shown in Appendix I. Pursuant to our analysis we decided to focus on the following six areas during our Phase II work:

- procurement and contract management;
- key services contracts;
- major component costs;
- overtime charges;
- overhead allocation; and
- operations maintenance and administration (OMA) costs of PLGS.

**2.5** In total, we examined on a test basis \$1.7 billion of the \$2.5 billion costs associated with the refurbishment.

## **Conclusion**

**2.6** We concluded that key project costs of the Point Lepreau Generating Station Refurbishment Project were generally reasonable. As a result of our testing and expert consultation, however, we believe NB Power can make improvements in areas such as:

- procurement;
- contract management; and
- active risk management of key contractors.

**2.7** We have made 10 recommendations to improve how NB Power carries out future large capital projects. The recommendations and the responses from NB Power are summarized in Exhibit 2.2.

- Results In Brief** 2.8 The PLGS refurbishment was completed by November 2012. The refurbishment took 37 months longer and cost \$1 billion more than anticipated.
- Procurement and Contract Management** 2.9 NB Power manages significant capital projects on a regular basis. Sound procurement and contract management is critical to the success of those projects. NB Power generally followed competitive tendering practices for PLGS refurbishment-related contracts.
- Without obtaining competitive bids, NB Power may have lost cost saving opportunities* 2.10 However, four of the 11 contracts we tested were exempted from public tendering, three for engineering and consulting services valued at \$46.6 million and one for specific skills valued at \$15 million. Sole source exemptions applied were in compliance with the requirements in the *Public Purchasing Act and Regulation*. However, there is no evidence that NB Power solicited quotations from other engineering firms for engineering services. Given the significant dollar values of those services, without obtaining competitive bids, NB Power may have lost cost saving opportunities.
- Majority parts of contract administration well handled* 2.11 NB Power has established processes to administer contracts, including monitoring contractor performance, quality controls, and managing contract changes. In general, these processes were properly followed.
- Contract structure needs improvement in some cases* 2.12 Three contracts signed with two vendors appeared to lack uniformity in how they were structured. Specifically the Sunny Corner (\$30.8 million) and O'Brien contracts (\$9.8 million) appeared to lag behind industry standards. For contracts of such size and scope, we recommended NB Power adopt industry standard modern contract forms, for example based on standardized contract templates offered by the International Federation of Consulting Engineers.
- Lack of post contract review* 2.13 Post contract review is critical to proper contract management. It involves an organizational assessment of the benefits or losses from carrying out the procurement and lessons learned. There was no evidence that NB Power performed and properly documented post contract reviews for 9 of 11 contracts in our sample.

**Analysis of Individual Significant Contracts**

*Siemens contract restructuring was prudent*

**2.14** We selected 11 high dollar value contracts from nine vendors who worked on the PLGS refurbishment, along with their applicable change orders to examine. We identified three significant issues in contracts with four of the nine vendors.

**2.15** Siemens was under contract with NB Power to provide new turbines, new generators and to provide turbine auxiliary system work during the refurbishment outage. The contract with Siemens had originally been a part of the large fixed price contract with Atomic Energy of Canada, Ltd. (AECL).

**2.16** Separating the Siemens contract from the AECL contract was prudent. It is important to contract directly with vendors providing major components or equipment during a large capital project.

**2.17** During their transportation from Saint John to PLGS, two turbines fell into the Saint John harbour. The turbines were damaged. Siemens refurbished and installed them at its cost. Siemens also delivered two new turbines. The new ones are stored at PLGS awaiting installation during a planned outage in 2016 which is currently expected to last 40 days. Siemens will be responsible for all aspects of the installation, labor, material, supervision, and engineering. NB Power will be responsible for costs related to oversight of Siemens. As long as the turbines can be replaced within the planned outage, there will likely be no further cost impact to NB Power due to the transportation accident.

*More active NB Power risk management needed*

**2.18** This event probably could have been avoided with better planning, more active risk assessment, and subcontractor oversight by NB Power. Historical precedent shows transportation of critical components by rail or barge has resulted in similar events to the one that occurred during the PLGS refurbishment.

*Insufficient preparatory work on Castle Rock contract*

**2.19** Castle Rock was hired to both build a new office building for NB Power and to refurbish an existing office building. NB Power did not adequately define the contract scope and perform sufficient preparatory work to avoid emergent design changes for the construction of an administration building on-site at PLGS. The proposed costs (\$6.3 million) were exceeded (\$7.2 million actual).

**2.20** As per NB Power's analysis, the impact of the scheduling delay would have been one consideration in the decision not to wait for a detailed design. NB Power stated the building was needed for refurbishment activities and needed to be completed on schedule. The cost of a month's delay in the outage and subsequent return to power would far outweigh the cost of design changes, as estimated by NB Power.

***Premium rates paid for Acres-Sargent & Lundy (ASL) and Hatch Sargent & Lundy (HSL) services***

**2.21** Acres-Sargent & Lundy (ASL), a joint venture consulting firm based in Oakville and Chicago with significant nuclear engineering and project management experience, was hired to periodically update the NB Power Board of Directors regarding the status and execution of the refurbishment project. Hatch-Sargent & Lundy (HSL) transitioned to providing engineering and technical services during the PLGS restart. ASL had been acquired by HSL by the time this agreement was made. NB Power paid \$6.2 million for the services.

**2.22** It is unclear what level of success these contracts have achieved, given the numerous challenges encountered during the refurbishment.

**2.23** As a consequence of the direct project knowledge gained by HSL's team of experts NB Power retained their services beyond the original oversight mandate. NB Power paid premium rates for their engineering services and associated administrative support. These rates were 25-35% higher than any other engineering firm hired by NB Power during the refurbishment.

**Component Cost Analysis**

**2.24** The budgeted capital project cost was \$1,022 million in 2005. The final capital project cost was \$1,424 million at November 2012, an additional 39% increase from the 2005 budget.

**2.25** When the cost overruns were broken down into financial components, the two largest ones were:

- labour and contracted services; and
- capitalized interest.

**2.26** Labour and contracted services are typically the largest financial components associated with an outage. Many of these contracted services are directly related to the extended duration of the project. These costs are often hard to mitigate during a difficult outage.

**Overtime Charged to Project**

**2.27** A total of \$41.2 million in overtime cost was charged to the refurbishment project. NB Power attributed a significant portion of the overtime used to unexpected additional work that resulted from an outage of an extended duration. According to NB Power, a key driver of unexpected work was that the level of system and component deterioration was greater than anticipated.

**2.28** It took seven months to start up the plant rather than the four months originally planned. A significant amount of overtime was required during these seven months to avoid further extending the outage.

**2.29** It is reasonable for NB Power to attribute the majority of the overtime usage to system deterioration, but the fact that systems deteriorated worse than initially anticipated during the extended outage should have been accounted for while planning for the restart.

**2.30** As part of the overtime charge testing, we selected ten NB Power employees with the most overtime pay during the refurbishment to test.

**2.31** These ten employees worked on the refurbishment project, while performing their regular duties. Therefore, only part of their compensation was charged to the project. On average, the overtime pay charged to the project was 57% of the regular pay. The overtime hours charged to the project were 34% of the regular hours. The average percentage for these ten employees was reasonable, given the fact that working more hours of overtime during a challenging refurbishment outage is not unusual.

**Overhead Allocation Analysis**

**2.32** NB Power allocated corporate overhead costs to the project on a percentage basis. For that reason, growth in project costs due to the longer outage duration resulted in corresponding growth of the amount of the corporate overhead allocation.

**2.33** In general, overhead cost allocated to the PLGS refurbishment appeared reasonable given the corporate oversight, managerial, and legal activities required to support the refurbishment project.

**Operating,  
Maintenance and  
Administration  
(OMA) Cost  
Analysis**

**2.34** NB Power advised that approximately 70% of the systems within PLGS remained operational during the refurbishment. This estimated level of operating systems usage during an outage is typical for a CANDU nuclear plant, according to the expert we consulted.

**2.35** NB Power applied standard nuclear industry practices in managing their OMA costs during the refurbishment. Although slightly higher than adjusted US industry costs, the variance is explainable and NB Power's costs appear to have been reasonable.

Exhibit 2.2 - Summary of Recommendations

Recommendation	Entity's response	Target date for implementation
<p><b>2.51 We recommend NB Power obtain competitive bids for all significant engineering services, even if not required by legislation to do so.</b></p>	<p><i>NB Power is in agreement that competitive bids or comparative proposal evaluation is appropriate for the procurement of general engineering services.</i></p> <p><i>Where specific engineering skills are required, NB Power will seek to find multiple sources for comparative assessment of proposals. In these cases, price would be one factor in determining the preferred vendor along with experience, reputation, innovation and schedule delivery experience. In some circumstances, where the engineering work involves design-sensitive components and NB Power does not own the blueprints then the original firm will need to be engaged.</i></p>	<p><i>Immediate</i></p>
<p><b>2.60 We recommend NB Power use industry standardized formats for all external contracts. The International Federation of Consulting Engineers offers standardized contract templates which can be used as a model.</b></p>	<p><i>NB Power is currently updating contract templates to align with best practice and also reduce the number of contract templates being used by the Corporation. This effort will result in consistency of terms and conditions employed.</i></p>	<p><i>12 months</i></p>
<p><b>2.61 We recommend NB Power use a consistent approach to perform post contract reviews and document any areas for improvement.</b></p>	<p><i>NB Power will use a standardized approach for post-contract reviews.</i></p> <p><i>NB Power is currently enhancing its project processes including those related to project close-out activities, which will increase consistency in completion of post-contract and project lessons learned reviews.</i></p>	<p><i>12 months</i></p>

Exhibit 2.2 - Summary of Recommendations (continued)

Recommendation	Entity's response	Target date for implementation
<p><b>2.77 We recommend NB Power:</b></p> <ul style="list-style-type: none"> <li>• <b>contract directly with vendors providing major components or equipment;</b></li> <li>• <b>require the contractors and subcontractors demonstrate that they have appropriate safety and risk mitigation procedures in place;</b></li> <li>• <b>include provisions in contracts which provide sufficient liability protection based on NB Power's assessment of risks; and</b></li> <li>• <b>increase oversight on the transportation of major equipment with the contractor and transportation vendor.</b></li> </ul>	<p><i>NB Power agrees that contracting directly with major component vendors and contractors provides the greatest degree of control and oversight on vendor and contractor performance, safety and risk mitigation strategies including manufacture, transportation and construction.</i></p> <p><i>NB Power is currently modifying contract templates to contain provisions for addressing liability protection and conducting training of staff to increase awareness of the need to balance risk and liability protection with contract costs.</i></p>	<p><i>Immediate</i></p>
<p><b>2.82 We recommend for future building construction contracts NB Power perform sufficient due diligence and preparatory work prior to proceeding to the procurement process to avoid cost overruns.</b></p>	<p><i>NB Power understands that successful project execution for all projects, including building construction, hinges on comprehensive project scoping, estimating and planning. NB Power is currently enhancing its overall project execution framework to increase success in major project delivery.</i></p>	<p><i>Immediate</i></p>
<p><b>2.95 We recommend NB Power conduct an annual review of all major ongoing time and materials contracts. This review should assess the level of success achieved by the vendor over the past year based on set criteria including results achieved and value for money. During an annual review NB Power should conduct interviews with key vendor personnel and perform internal assessments by NB Power staff responsible for interaction with that vendor.</b></p>	<p><i>NB Power will develop a standardized template for an annual review of major ongoing time and material contracts, which will be provided to all contract owners.</i></p>	<p><i>12 months</i></p>

Exhibit 2.2 - Summary of Recommendations (continued)

Recommendation	Entity's response	Target date for implementation
<p><b>2.96</b> We recommend NB Power benchmark market rates for similar services and retain this support with procurement documentation to support the contractor choice.</p>	<p><i>NB Power will ensure that documentation regarding the evaluation of supply alternatives is maintained in the procurement files.</i></p>	<p><i>Immediate</i></p>
<p><b>2.106</b> We recommend NB Power assess its project cost management methodology for large projects. Earned Value Management System, which is an industry best practice, could be used as a model.</p>	<p><i>NB Power is developing a new corporate project management framework to enhance project governance, planning and execution. As part of this work, NB Power is exploring alternative project cost management methodologies in recognition of different project approaches including fixed costs vs. variable cost project strategies.</i></p>	<p><i>June 2015</i></p>
<p><b>2.121</b> We recommend NB Power develop contingency plans to manage overtime during project delays, including:</p> <ul style="list-style-type: none"> <li>• periodically reevaluating during the project to account for major changes in project timelines;</li> <li>• sufficiently analyzing the new circumstances and revise the plan as necessary, when a major unanticipated event impacts a project; and</li> <li>• carrying out sufficient equipment testing to address any equipment challenges resulting from extended delays.</li> </ul>	<p><i>NB Power develops project contingency plans as part of its project risk management processes. NB Power will enhance these processes by ensuring proper documentation reflects the reviews conducted and action plans developed, including the use of overtime where appropriate, to address project changes.</i></p>	<p><i>Immediate</i></p>
<p><b>2.136</b> We recommend NB Power prepare a staffing plan for each major project and revise when it is determined that major project changes have occurred.</p>	<p><i>NB Power prepares staffing plans for major projects. NB Power will enhance its processes to ensure documentation is updated to reflect changes to staffing needs when required.</i></p>	<p><i>Implemented for next major project</i></p>

**Audit scope**

- 2.36** Our audit work included:
- conducting interviews with various NB Power and PLGS representatives;
  - reviewing NB Power’s corporate procurement policies and procedures;
  - testing procurement and contract management documents related to the sample contracts we selected; and
  - analyzing overtime pay of sample PLGS employees.
- 2.37** During our audit, we engaged an independent nuclear consulting firm to assist us to:
- evaluate a sample of 11 contracts and associated amendments, determining if the contract provisions were structured in line with industry best practice and contained sufficient and appropriate provisions to mitigate risks and protect the best interests of NB Power;
  - analyze major component costs and supporting documentation to assess and identify any unreasonable costs based on industry best practice;
  - assess the reasonableness of NB Power practices regarding the nature and level of overtime charges compared to industry best practice;
  - assess the reasonableness of the overhead allocation rate used by NB Power compared to industry best practice; and
  - review operating, maintenance and administration (OMA) costs of Nuclearco during refurbishment, including the reasonableness of the OMA costs incurred.
- 2.38** The expert compared the Point Lepreau refurbishment with other nuclear projects. The purpose of these comparisons was to gain insight in terms of how NB Power performed in relation to industry best practice.
- 2.39** We provided in Appendix II the definitions for the key terms we used in this chapter, considering the technical nature of this subject.
- 2.40** Our audit was performed in accordance with standards for assurance engagements, encompassing value-for-money and compliance, established by the Chartered Professional Accountants of Canada, and accordingly included such tests

and other procedures as we considered necessary in the circumstances.

**2.41** Certain financial and statistical information presented in this chapter was compiled from information provided by NB Power. It has not been audited or otherwise verified. Readers are cautioned that this financial and statistical information may not be appropriate for their purposes.

## **Procurement and Contract Management**

**2.42** NB Power manages significant capital projects on a regular basis. Sound procurement and contract management is critical to the success of those projects.

**2.43** We selected 11 contracts from nine vendors who worked on the PLGS refurbishment, along with their applicable change orders to examine. We did not include the contract with Atomic Energy of Canada Limited (AECL), as NB Power paid only the fixed price specified in the AECL contract of \$580 million.

### ***Criteria used to assess NB Power's procurement practices***

**2.44** We used the following criteria to assess NB Power's procurement practices:

- Services should be acquired in accordance with government's legislation, regulations and related corporate policies; and
- Competitive selection processes should be used, or the reasons for not doing so should be supported and properly documented.

**2.45** We summarized our testing in Exhibit 2.3:

Exhibit 2.3 - Summary of Procurement Testing – Sample of 11 Contracts

Company	Main services provided	Contract value (millions \$)	Method of procurement	Justification for not publicly tendering	Does exemption comply with Act and Regulation?
Acres-Sargent & Lundy and Hatch Sargent & Lundy (2 contracts)	Consulting and project management services	6.2	Sole sourced	under exemption 27.0	Yes
Areva Np Canada Ltd.	Containment filtered venting system	15	Sole sourced	under exemption 27.1	Yes
Atlantic Nuclear Service Inc.	Engineering services	34.6	Sole sourced	under exemption 27.0	Yes
Castle Rock Construction (2 contracts)	Construction of office building and building interior fit-up	7.2	Competitive tenders	N/A	N/A
Stantec Consulting Ltd. (formerly Neill & Gunter)	Engineering services	5.8	Sole sourced	under exemption 27.0	Yes
O'Brien Electric Co Ltd. (2 contracts)	Maintenance services	9.8	Competitive tenders	N/A	N/A
Siemens Power Generation	New turbines, new generators and turbine auxiliary system	28.6	AECL competitively bid	N/A	N/A
Sunny Corner Enterprises Inc.	Planning, packaging, fabrication and installation of project work	30.8	Competitive tenders	N/A	N/A

Source: Created by AGNB

**Background**

**2.46** The *Public Purchasing Act*<sup>1</sup> applies to NB Power as a government funded body, according to New Brunswick Regulation 94-157 under the Act.

***Public Purchasing Act applies to NB Power***

**2.47** Section 27 of the Regulation lists services exempted from the application of the Act, including:

- services that may be provided by certain professionals such as engineers;
- where supplies or services are required in the event of an emergency or urgent situation; and
- where there is an absence of competition for technical reasons and the supplies or services can be supplied only by a particular vendor and no alternative or substitute exists (i.e. sole source of supply).

**2.48** We also reviewed NB Power's internal procurement policy, which states:

*“The Supply Chain Strategy & Management department is responsible for the acquisition of NB Power's materials and services in accordance with the respective Public Purchasing Act or the Crown Construction Contracts Act and the laws of competitive bidding. Effective purchasing and management of materials and services is imperative to ensure the best value for the dollar is achieved.”<sup>2</sup>*

*“The Supply Chain Strategy & Management department is responsible to ensure the process of evaluating, negotiating and selecting successful candidates is conducted in accordance with this policy and all relevant legislation, such as the Public Purchasing Act.*

*It is imperative that all tenders are evaluated properly and fairly based on the pre-existing evaluation criteria as stated in the tender document.”<sup>3</sup>*

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<sup>1</sup> The *Public Purchasing Act* was replaced by the *Procurement Act*. The *Procurement Act* was proclaimed and came into force October 15, 2014.

<sup>2</sup> Corporate Policies number SC-01: Purchasing

<sup>3</sup> Corporate Policies number SC-18: Evaluation Process

<b>What We Found</b>	<p><b>2.49</b> NB Power’s internal documents describe in detail the procedures for purchasing items and services, evaluating vendors, and administering contracts. The procedures listed are complete, reasonable and in compliance with the relevant government Acts and Regulation.</p>
<i>NB Power generally followed the competitive tendering process</i>	<p><b>2.50</b> NB Power generally followed a competitive tendering process. Four of the 11 contracts we tested were exempt from public tendering, three for engineering and consulting services valued at \$46.6 million and one for specific skills valued at \$15 million. Sole source exemptions applied were in compliance with the requirements listed in the Regulation. We were not provided with evidence that NB Power solicited quotations from other engineering firms for the engineering services. However, given the significant dollar value of those services, NB Power may have lost cost saving opportunities by not obtaining competitive bids.</p>
<i>Without obtaining competitive bids for engineering services, NB Power may have lost cost saving opportunities</i>	
<i>Recommendation</i>	<p><b>2.51</b> <b>We recommend NB Power obtain competitive bids for all significant engineering services, even if not required by legislation to do so.</b></p>
<b>Contract management</b>	<p><b>2.52</b> Effective contract management requires an organization to establish a process to systematically and efficiently manage contract creation, execution and analysis for maximizing operational and financial performance and minimizing risks.</p> <p><b>2.53</b> It not only improves financial and operational performance, but also mitigates the risks due to increases in complexity and number of contracts.</p>
<i>Criteria used to assess contract management</i>	<p><b>2.54</b> We used the following criteria to assess NB Power’s contract management practices:</p> <ul style="list-style-type: none"> <li>• a business case should be prepared to set out the contract objectives, the outcome(s), the risks, identification of any contingent needs, and timescale;</li> <li>• deliverables should be clearly and accurately specified in the contracts;</li> <li>• the contract provisions should be structured consistent with industry best practice and contain sufficient and appropriate provisions to mitigate risks and protect the best interests of NB Power;</li> <li>• contract extensions and amendments should comply with government and corporate policies and be</li> </ul>

adequately supported; and

- a post-contract review should be performed to assess the benefits or losses from carrying out the procurement and gather any lessons that can be learned.

**2.55** We summarized our testing in Exhibit 2.4.

Exhibit 2.4 - Summary of Contract Management Testing

Company	Was a business case prepared?	Were deliverables clearly and accurately specified in the contract?	Were contract provisions structured consistent with industry best practice?	Were contract extensions and amendments properly supported and approved?	Was post-contract review performed and documented?
Acres-Sargent & Lundy and Hatch Sargent & Lundy (2 contracts)	The business case was prepared for the refurbishment project as a whole rather than at each contract level.	Yes	Yes	Yes	No
Areva Np Canada Ltd.		Yes	Yes	Yes	No
Atlantic Nuclear Service Inc.	The justification for PLGS refurbishment and risk assessment were completed and presented to the EUB. In addressing the improvements recommended by Dr. Robin Jeffery on behalf of the government, the risk mitigation measures were further tightened.	Yes	Yes	Yes	No
Castle Rock Construction (2 contracts)		Yes	No, the standard contract provisions used were outdated compared to industry best practice.	Yes	No
Stantec Consulting Ltd. (formerly Neill & Gunter)	A risk register was utilized throughout refurbishment and a risk mitigation strategy was implemented for each identified risk by the project team and for which highlights of key risks were included in monthly executive reporting.	Yes	Yes	Yes	No
O'Brien Electric Co Ltd. (2 contracts)		Yes	No, the standard contract provisions used were outdated compared to industry best practice.	Yes	No
Siemens Power Generation		Yes	Yes	Yes	Yes
Sunny Corner Enterprises Inc.		Yes	Yes	Yes	Yes

Source: Created by AGNB

- What We Found**      **2.56** NB Power’s internal contract management process requires:
- the ongoing evaluation and monitoring of vendor performance; and
  - proper approval of contract changes.
- 2.57** NB Power has established a process to administer contracts, including monitoring contractor performance, quality controls, and managing contract changes. In general, procedures were properly followed for PLGS contracts we tested.
- 2.58** NB Power representatives indicated they have established a process at PLGS called Problem Identification and Corrective Action (PICA) to document lessons learned, recommend corrective actions, and track the implementation of the recommendations. PICA is focused on the problem to be corrected rather than a specific contract or contractor. NB Power was able to provide evidence that post contract reviews were performed through PICA for Siemens and Sunny Corner contracts. No formal post contract review was documented for the other nine contracts in our sample.
- Lack of uniformity in contract structure**      **2.59** In reviewing the contracts there appeared to be a lack of uniformity in contract structure. Specifically, the Sunny Corner Enterprises Inc. and O’Brien Electric Co Ltd. contracts appeared to lag behind industry standards for contracts of their size and scope. Typically large utilities utilize a standard contract format to promote efficiency in developing contracts and to ensure that all key elements have been included.
- Recommendations**      **2.60** **We recommend NB Power use industry standardized formats for all external contracts. The International Federation of Consulting Engineers offers standardized contract templates which can be used as a model.**
- 2.61** **We recommend NB Power use a consistent approach to perform post contract reviews and document any areas for improvement.**
- Contract Analysis**      **2.62** We used the same 11 contracts as noted in Exhibits 2.3 and 2.4 to complete our contract analysis work. We applied a uniform review process and criteria to all 11 contracts. A summary of the factors considered is shown in Exhibit 2.5.

Exhibit 2.5 - Contract Analysis factors considered

Contract Summary	Performance Requirements	Review Of Key Terms	Observations	Recommendations
<ul style="list-style-type: none"> <li>• Costs Incurred</li> <li>• Payment conditions</li> <li>• Scope</li> <li>• Known difficulties</li> </ul>	<ul style="list-style-type: none"> <li>• Time</li> <li>• Cost</li> <li>• Major Performance Parameters</li> <li>• Defects</li> </ul>	<ul style="list-style-type: none"> <li>• Procedure for change requests</li> <li>• Permission for subcontracting</li> <li>• Force majeure</li> <li>• Provision for damages</li> <li>• Bonding</li> <li>• Insurance</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriateness of contractor selected</li> <li>• Protection of the project organization</li> <li>• Soundness of contracting provisions</li> <li>• Superseding or intervening clauses noted</li> </ul>	<ul style="list-style-type: none"> <li>• Our experts provided lessons learned and recommendations for the future based on the review of a given contract</li> </ul>

Source: Created by AGNB

**2.63** We identified three significant issues in contracts with four of the nine vendors. These findings are discussed in the sections that follow.

**Siemens Contract Review**  
*Background*

**2.64** Siemens was under contract with NB Power to provide new turbines, new generators and to provide turbine auxiliary system work during the refurbishment outage. It had manufactured the original equipment in place at PLGS prior to the refurbishment. The contract with Siemens had originally been part of the large fixed price contract with Atomic Energy of Canada, Ltd. (AECL). Siemens’ portion of the work was later carved out of the AECL contract, and assigned directly to NB Power. The Siemens contract was a fixed-price contract, which was awarded based on a tendered low bid. In total \$28.6 million was paid to Siemens for the generators and \$46 million for the turbines.

**Siemens labour rates 25-30% higher**

**2.65** Based on the labour rate table provided in the contract, we estimate that Siemens labour rates were 25-30% higher than the base rates found in NB Power’s collective-bargaining agreements (CBAs). NB Power was purchasing specialized skills from Siemens not covered by NB Power’s collective agreement. Therefore, some premium would be expected in this situation. The premium was only paid for specialty engineering and technical labour skills not available from local building trades or local engineering providers.

Exhibit 2.6 - Turbines on barge



Source: NB Power

### What we found

**2.66** It is typical for a nuclear plant to contract directly with a vendor who will be providing and installing major components such as turbines (see Exhibit 2.6) or generators. As these components are of critical importance to a nuclear plant, a great deal of time, effort and energy is typically involved with negotiations and subsequent oversight of vendors providing such components.

### *There was a transportation accident involving the turbines*

**2.67** However, a transportation accident occurred (i.e. the turbines fell into the Saint John harbour) which damaged the turbines. Turbines are very expensive and include specialized components that are not easily replaced. Siemens refurbished the turbines that fell into the harbour, and installed them at Siemens cost.

**2.68** The estimated life for the refurbished turbines is six years, rather than 30 years for new turbines. Accordingly, Siemens went beyond their liquidated damages obligation and in addition to completing the repairs to the damaged turbines, Siemens supplied two replacement turbines at its cost. Siemens will be responsible for all aspects of the installation,

labour, material, supervision, and engineering. NB Power will be responsible for costs related to oversight of Siemens. The new turbines have been delivered and are stored at PLGS awaiting installation during a planned outage in 2016 which is currently expected to last 40 days. As long as the turbines can be replaced within the planned outage, there will likely be no further cost impact to NB Power due to the transportation accident.

*If the calandria tube delay had not occurred, the turbine delivery accident could have extended the outage on its own*

**2.69** At the time of this transportation accident, AECL was already beginning to experience delays in removing old reactor components and preparing the reactor for the installation of new calandria tubes. Had the calandria tube difficulty and related delay not occurred, the damage to the turbines alone could have extended the outage.

**2.70** NB Power had a contingency plan to return PLGS to commercial operation using the existing turbines and to replace them during a future scheduled outage. However, had that not been possible, and if the project had not already been delayed, the cost of an extended outage could have been incurred as a result of the transportation accident.

*More active risk assessment needed for critical equipment*

**2.71** Historical precedent shows that transportation of critical components by rail or barge has resulted in similar events to the one discussed here. This event probably could have been avoided with better planning, more active risk assessment, and subcontractor oversight.

**2.72** A great deal of planning and oversight goes into transporting major components such as turbines. The financial liability and loss of revenue in the event of failure to perform/deliver would be so significant, that it is a common practice to require a limit on liability of no less than 100% of the contract value.

**2.73** Siemens' limit on liability was 20% of the contract value. The amount of liquidated damages is a negotiated item, with every percentage increase in liquidated damages resulting in a higher cost in the contract. The liquidated damages negotiated in this contract represented the best available balance of risk and cost, according to NB Power.

**2.74** NB Power's risk mitigation plan for this activity included retaining their old turbines, storing and protecting them in the event the turbines needed to be put back in service to address

unforeseen short-term problems.

**2.75** However, NB Power's risk assessment was not sufficiently documented to support its decision to limit the liquidated damages to 20%. Based on our expert consultation, this plan was appropriate in the circumstances, but did not reduce the need for adequate liability limitation language within the contract.

***Separating the Siemens contract from the AECL contract was prudent***

**2.76** Separating the Siemens contract from the AECL contract was prudent. It is advisable to have a direct contractual relationship with a vendor providing important components like turbines or generators. The additional administrative layer that would have existed if AECL was involved probably would have made the challenges encountered with the turbines even more difficult for NB Power.

***Recommendations***

**2.77** We recommend NB Power:

- **contract directly with vendors providing major components or equipment;**
- **require the contractors and subcontractors demonstrate that they have appropriate safety and risk mitigation procedures in place;**
- **include provisions in contracts which provide sufficient liability protection based on NB Power's assessment of risks; and**
- **increase oversight on the transportation of major equipment with the contractor and transportation vendor.**

**Castle Rock Contract Review Background**

**2.78** Castle Rock was hired to both build a new office building for NB Power (see Exhibit 2.7) and to refurbish an existing office building at PLGS. Castle Rock performed these services during the refurbishment at PLGS on a fixed-price basis.

**2.79** It is typical for the owner of a nuclear site to utilize a contractor to build and outfit office space when it is needed. Ideally, such a contractor would be rigorously evaluated and required to perform on time and on budget, as change orders to construction contracts are typically more expensive than work negotiated ahead of time.

*Exhibit 2.7 - PLGS Office Building*

Source: NB Power

**What we found**

**2.80** The proposed costs (\$6.3 million) were exceeded by \$900,000 (\$7.2 million actual). NB Power had not noted a new design requirement at the time it signed the contracts, nor had it adequately defined the contract scope. Late design and scope changes resulted in \$900,000 of cost overruns for the office building work.

**2.81** NB Power representatives indicated scheduling demands required the office building be made available for refurbishment activities. The impact of scheduling delays would have been one consideration in the decision not to wait for a detailed design. NB Power indicated the cost of a month's delay in the outage and subsequent return to power would far outweigh the cost of design changes.

**Recommendation**

**2.82** **We recommend for future building construction contracts NB Power perform sufficient due diligence and preparatory work prior to proceeding to the procurement process to avoid cost overruns.**

**Acres-Sargent & Lundy and Hatch-Sargent & Lundy Contracts Review**

**2.83** Acres-Sargent & Lundy (ASL) was hired to periodically update the NB Power Board of Directors regarding the status and execution of the refurbishment project. This was a sole sourced time and materials contract that lasted about six years from November 2005 to February 2012 and cost \$6.2 million.

**Background**

**2.84** Hatch-Sargent & Lundy (HSL) provided engineering and technical services during the PLGS restart. ASL had been acquired by HSL by the time this agreement was made. This contract was with individuals already familiar with the circumstances surrounding the refurbishment. Several members of HSL’s team had been affiliated with ASL in the past and had therefore been involved with the refurbishment for a long period of time. They also had experience on other refurbishment projects. NB Power believed utilizing HSL was more efficient and saved time by not having to bring new contractors up to speed.

**What we found**

**2.85** A contract which provides technical expertise to a Board or an executive team is not unusual during a large project. Under ideal circumstances, such a contract would enhance the Board’s understanding of the project and allow them to make more informed decisions. It also provides a third party evaluation and perspective on the work being performed by key employees.

**2.86** It is important the Board have a detailed understanding of the status of the project including any technical challenges encountered along the way.

**2.87** We reviewed the ASL and HSL contracts. Scopes of work per the contracts were clearly defined. We also reviewed the quarterly reports from ASL to the Board. Systemic issues and risks during the refurbishment were identified by ASL and reported to the Board on a quarterly basis. Issues and risks were colour coded based on the severity of the issues.

**2.88** A nuclear plant becomes a very hectic place as an outage comes to a close, and preparations to restart the plant are underway. This type of “pressure cooker” environment can sometimes necessitate hiring relatively expensive outside experts with unique capabilities to support the completion of critical tasks within stipulated timeframes. Such experts can also be more efficient than less experienced counterparts. In an ideal scenario an owner would endeavor to not become overly dependent on a given expert or group of experts, and would utilize all possible avenues of leverage to negotiate the best possible contract terms with those experts when and if they are needed.

*Services provided by ASL did not fully mitigate the numerous challenges encountered*

**2.89** While it is recognized as necessary and valuable to have independent oversight in support of the Board's governance role, this effort did not fully mitigate the numerous challenges encountered during the refurbishment including a major transportation incident with the turbines and the physical damage to the calandria tube sheet bores in preparation for the calandria tube installation in the reactor.

**2.90** As a consequence of the direct project knowledge gained by HSL's team of experts NB Power retained their services beyond the original oversight mandate. NB Power paid premium rates of 25% to 35% higher than any other engineering firm hired by NB Power during the refurbishment. NB Power also paid higher than market rates for associated administrative support. For example, HSL's rates include \$75 per hour for administrative support services from their corporate office in Chicago as compared to an average of \$45 per hour for administrative services from other firms retained by NB Power.

*NB Power paid a premium for HSL's expertise*

**2.91** The reliance and high rates paid for their services were seemingly, at least in part, due to the intense pressure surrounding the restart of the plant. That pressure created an environment that made it difficult for NB Power to utilize its leverage in the negotiation process with HSL.

**2.92** Before the completion of the refurbishment, NB Power evaluated their contract with HSL and prudently determined that it was time to discontinue use of their services by February 2012.

**2.93** In general, the more knowledge NB Power acquires about rates charged by service providers, the more pressure NB Power can bring during the negotiation process. Ideally this will allow more favorable rate and contract terms to be negotiated even where unique expertise exists.

**2.94** Further, limiting reliance on a single vendor by distributing work among multiple suppliers before an outage would help NB Power avoid becoming overly reliant on a single service provider.

**Recommendations**      **2.95**    We recommend NB Power conduct an annual review of all major ongoing time and materials contracts. This review should assess the level of success achieved by the vendor over the past year based on set criteria including results achieved and value for money. During an annual review NB Power should conduct interviews with key vendor personnel and perform internal assessments by NB Power staff responsible for interaction with that vendor.

**2.96**    We recommend NB Power benchmark market rates for similar services and retain this support with procurement documentation to support the contractor choice.

## **Component Cost Analysis**

### **Background**

**2.97**    As we mentioned in our Phase I report, the total capital costs of PLGS refurbishment were \$1.4 billion, consisting of four major components:

- project planning \$90.2 million;
- contracted services \$780.3 million;
- capitalized interest \$292.9 million; and
- NB Power internal cost \$260.5 million.

**2.98**    The refurbishment project at PLGS was originally planned for 18 months. The actual duration was nearly five years. The extended duration was due mostly to the previously noted issues with the calandria tubes. While a significant amount of time, effort, and resources go into planning for outages at nuclear plants, cost and duration overruns do occur. However, an outage originally planned for 18 months that lasts nearly five years is unusual.

**2.99**    Between NB Power's original project estimate in January 2004 and the budget approved in July 2005, several of the refurbishment contracts were renegotiated from fixed price with escalation to fixed price. NB Power implemented these and other actions in response to New Brunswick government consultant Dr. Robin Jeffrey's recommendations in April 2004<sup>4</sup>, as discussed in our 2013 Report.

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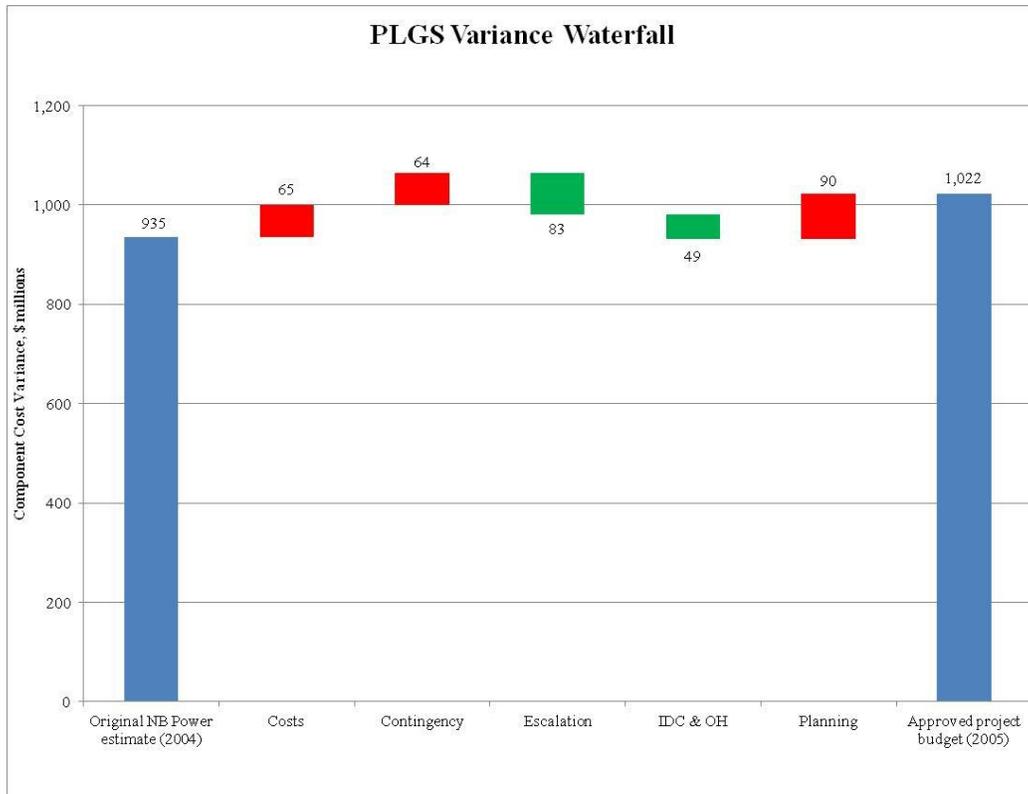
<sup>4</sup> (Jeffrey's Study, page 7, Recommendation #2)

**Estimated capital project cost increased about 9.3% from \$935 million (original from 2004) to \$1,022 million (revised in 2005)**

**2.100** These renegotiations were based on a project start date of August 2005 and an outage start date of April 2008. These renegotiated fixed price contracts with AECL accounted for approximately 2/3 of the contracted service of \$935 million. As shown in Exhibit 2.8.1, this resulted in an increase in costs and contingency of \$65 million and \$64 million, respectively. Estimated escalation and interest during construction and overhead (IDC & OH) were reduced by \$83 million and 49 million, respectively. While not a complete offset, this renegotiation allowed NB Power to transfer much of the scheduling risk for the contracted scope to AECL.

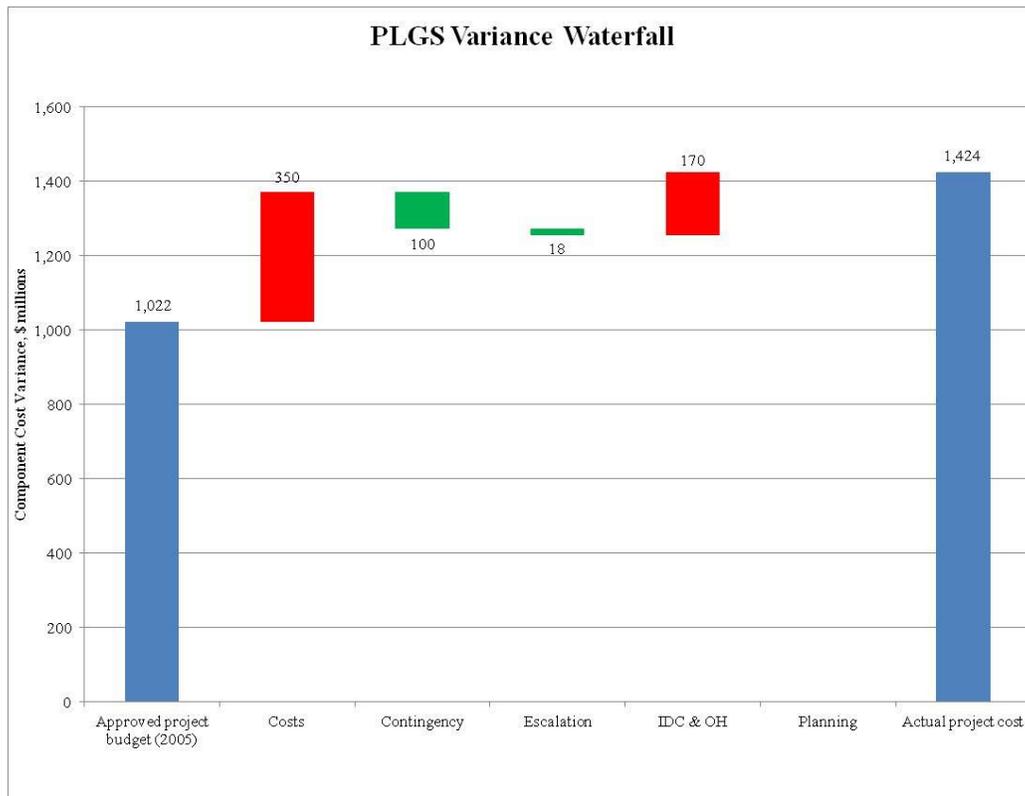
**2.101** NB Power also incorporated project planning costs of \$90 million into the approved project budget as a separate category. \$70 million was estimated for planning costs in the original project estimates. It was not listed as a separate item but built into the original project estimates of \$935 million. As a result, the estimated capital project cost increased about 9.3% from \$935 million to \$1,022 million.

*Exhibit 2.8.1 - Cost Overages from Original Estimate to Approved Project Budget*



Source: Created by AGNB with data obtained from NB Power (unaudited)

Exhibit 2.8.2- Cost Overages from Approved Project Budget to Actual Project Cost



Source: Created by AGNB with data obtained from NB Power (unaudited)

**Actual project cost of \$1,424 million, a 39% increase from \$1,022 million approved budget in 2005**

**2.102** As the outage continued beyond the originally scheduled restart date of September 2009, interest during construction continued to accrue at an estimated rate of 5.8% per annum for approximately three years. This resulted in an unfavorable variance from the approved estimate of \$170 million in IDC and OH. Additionally, the other construction costs such as contracted services, NB Power labour, and fees over these three years added \$350 million to the project, due to the extended outage. The unfavorable components were partially offset by the escalation and contingency estimate included in the approved estimate of about \$118 million. Taken together, these variances resulted in a final project cost of approximately \$1,424 million at November 2012, a 39% increase from the approved project budget of \$1,022 million, as shown in Exhibit 2.8.2.

**2.103** When the overage costs are broken down into financial components, the two largest ones were:

- contracted services \$153.3 million; and
- capitalized interest \$156.8 million

**2.104** Labour and contracted services are typically the largest financial components associated with an outage. Many of these contracted services are directly related to the extended duration of the project. Therefore, they would have been difficult for NB Power to reduce.

***Improvement  
needed in project  
financial data***

**2.105** In order to compare to other similar nuclear plant projects, we tried to assign the component costs directly to specific parts of the plant. However, we were unable to accomplish this task, as NB Power maintained PLGS financial data in a corporate accounting system mainly for financial accounting purposes. Current industry best practice for project cost management is the Earned Value Management System (EVMS)<sup>5</sup>. The key components of EVMS include:

- work package, budget, and change control management;
- progress measurement; and
- expenditure and schedule integration.

***Recommendation***

**2.106** We recommend NB Power assess its project cost management methodology for large projects. Earned Value Management System, which is an industry best practice, could be used as a model.

**Overtime  
Charge  
Analysis**

***Background***

**2.107** The total of overtime charged to the refurbishment was \$41.2 million. We assessed the reasonableness of NB Power's practices regarding the nature and level of overtime charges compared to industry best practice.

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<sup>5</sup> The EVMS is codified in ANSI/EIA 748-C, which contains EVMS Guideline, Common Terminology, Process Discussion, System Documentation, and System Evaluation sections – See American National Standards Institute ([ansi.org](http://ansi.org)).

***Best Practice in Overtime Usage***

**2.108** Careful planning of overtime usage is a best practice in project management across the nuclear industry. Keeping to the original plan for overtime allocation often requires significant discipline from project managers facing significant job completion pressure. External pressures often result in an increase in overtime usage towards the end of an outage.

**2.109** Experienced project managers indicate that it is often more efficient to complete a task through overtime, than to stop and restart that task again on regular time. Some common reasons cited for the use of overtime are emergency work, a strong desire to complete the project, and the fact that it is typically easier to use employees rather than bring contractors up to speed. Retaining contractors on short notice presents other challenges as well such as long procurement lead times, time-consuming administrative processing, and training requirements.

***A key driver of unexpected work was that the level of system and component deterioration was greater than anticipated***

**2.110** NB Power attributed a significant portion of the overtime used to unexpected additional work that resulted from an outage of an extended duration. A key driver of unexpected work was that the level of system and component deterioration was greater than anticipated. Systems not in use deteriorate over time. That deterioration can become more severe the longer the equipment is not in use. If an outage lasts much longer than anticipated, this can create more work during startup than originally planned for.

**2.111** However, there are systems tests that can be conducted as well as industry precedents that can be reviewed to help prepare for the system-related impacts of an extended outage.

***What we found***

**2.112** It took seven months to start up the plant rather than the four months originally planned. Although NB Power tried to revise their startup plan to fully account for the work that would be necessary to restart the plant, their plans do not appear to have addressed the deterioration issues which were greater than anticipated. A significant amount of overtime was required during these seven months to avoid further extending the outage.

***Analysis of Overtime Charge by Individual Employees***

**2.113** As part of the overtime charge testing, we also selected ten NB Power employees with the most overtime pay during the refurbishment to test. We focused on the eligibility and reasonableness of overtime charged in relation to regular pay.

**2.114** All these employees worked through the full refurbishment period of 7.3 years from 1 August 2005 to 23

November 2012<sup>6</sup>. They all belong to the same union “Local 37-The International Brotherhood of Electrical Workers”. Based on the collective bargaining agreement, these employees were eligible to receive overtime pay. All positions in the sample we examined are technical and operational.

**2.115** The number of overtime hours worked by each individual is key in determining whether the overtime they received was reasonable. Assuming the overtime rate they are paid averages 1.5 times the base pay, and assuming the average overtime hours are 50% of a regular work week, overtime will average 40-50% of base pay. Obviously the more hours worked under this arrangement, the higher the ratio of overtime to base pay would be.

**2.116** We reviewed their full regular and overtime pay over the 7.3 year full refurbishment period. Overtime pay was 48% of regular pay. Overtime hours were 27% of regular hours. The details are presented in Exhibit 2.9.1.

**2.117** We also reviewed their regular and overtime pay charged to the refurbishment project. These ten employees worked on the refurbishment project, while performing their regular duties. Therefore, only part of their full compensation was charged to the project.

**2.118** On average, the overtime pay charged to the project was 57% of the regular pay. The overtime hours charged to the project were 34% of the regular hours. The details are shown in Exhibit 2.9.2.

**2.119** The average percentage for these ten employees was reasonable, given the fact that working more hours of overtime during a challenging refurbishment outage is not unusual.

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<sup>6</sup> Includes planning, engineering, procurement and construction of the refurbishment project

Exhibit 2.9.1 - Analysis of Refurbishment Overtime Pay of Top 10 Employees – Total Compensation During Full Refurbishment Period

Title/Position	Total compensation during the full refurbishment period *		Full gross pay				Full overtime pay				% of overtime vs. regular	
	Total pay (\$)	Annualized total pay (\$)	Regular pay (\$)	Annualized regular pay (\$)	Regular hours	Annualized regular hours	Overtime pay (\$)	Annualized overtime pay (\$)	Overtime hours	Annualized overtime hours	Pay	Hours
Nuclear Fuel Handling	1,364,304	186,126	871,999	118,963	15,204	2,074	492,305	67,163	5,082	693	56	33
Electrical Instrumentation and Controls	1,135,874	154,963	718,903	98,077	15,760	2,150	416,971	56,886	4,913	670	58	31
Nuclear Fuel Handling	1,209,937	165,103	812,582	110,894	15,284	2,085	397,355	54,209	4,301	587	49	28
Operations	1,230,787	167,911	841,371	114,785	15,250	2,080	389,416	53,126	3,643	497	46	24
Operations/ Nuclear Fuel Handling	1,072,517	146,319	702,943	95,900	15,187	2,072	369,574	50,419	4,660	636	53	31
Nuclear Radiation Control	1,146,061	156,352	788,689	107,597	15,639	2,133	357,372	48,755	4,321	589	45	28
Operations/ Nuclear Fuel Handling	1,009,204	137,681	691,132	94,288	15,379	2,098	318,072	43,393	4,135	564	46	27
Operations/ Nuclear Fuel Handling	1,009,301	137,694	700,963	95,629	14,920	2,035	308,338	42,065	3,768	514	44	25
Commissioning	1,043,567	142,375	738,858	100,799	15,335	2,092	304,709	41,576	3,460	472	41	23
Project Lead	943,039	128,655	661,540	90,251	14,877	2,030	281,499	38,404	3,410	465	43	23
<b>Total</b>	<b>11,164,900</b>		<b>7,529,250</b>		<b>152,835</b>		<b>3,635,650</b>		<b>41,693</b>		<b>48</b>	<b>27</b>

Source: Created by AGNB with data obtained from NB Power (unaudited)

\* The full refurbishment period of 7.3 years started from 1 August 2005 to 23 November 2012. Compensation amounts do not include employer share of employee benefits.

Exhibit 2.9.2- Analysis of Refurbishment Overtime Pay of Top 10 Employees – Portion of Compensation Charged to Refurbishment Project

Title/Position	Portion compensation charged to the refurbishment project *		Regular pay and hours charged to refurbishment project				Overtime pay and hours charged to refurbishment project				% of overtime vs. regular	
	Refurbishment related pay (\$)	Annualized Refurbishment related pay (\$)	Regular pay (\$)	Annualized regular pay (\$)	Regular hours	Annualized regular hours	Overtime pay (\$)	Annualized overtime pay (\$)	Overtime hours	Annualized overtime hours	Pay	Hours
Nuclear Fuel Handling	959,230	130,863	584,284	79,711	9,421	1,285	374,946	51,152	3,757	513	64	40
Electrical Instrumentation and Controls	578,958	78,984	289,545	39,501	6,182	843	289,413	39,483	3,315	452	100	54
Nuclear Fuel Handling	806,424	110,017	515,301	70,300	8,796	1,200	291,123	39,717	3,023	412	56	34
Operations	720,283	98,264	498,691	68,033	8,241	1,124	221,592	30,231	2,039	278	44	25
Operations/ Nuclear Fuel Handling	743,570	101,442	455,284	62,112	8,258	1,127	288,286	39,330	3,360	458	63	41
Nuclear Radiation Control	828,214	112,989	553,572	75,521	9,511	1,298	274,642	37,468	3,140	428	50	33
Operations/ Nuclear Fuel Handling	565,846	77,196	337,809	46,086	6,514	889	228,037	31,110	2,776	379	68	43
Operations/ Nuclear Fuel Handling	720,679	98,319	483,226	65,924	8,967	1,223	237,453	32,395	2,690	367	49	30
Commissioning	693,638	94,630	471,107	64,271	9,426	1,286	222,531	30,359	2,452	335	47	26
Project Lead	777,422	106,060	530,495	72,373	11,573	1,579	246,927	33,687	2,977	406	47	26
<b>Total</b>	<b>7,394,264</b>		<b>4,719,314</b>		<b>86,889</b>		<b>2,674,950</b>		<b>29,529</b>		<b>57</b>	<b>34</b>

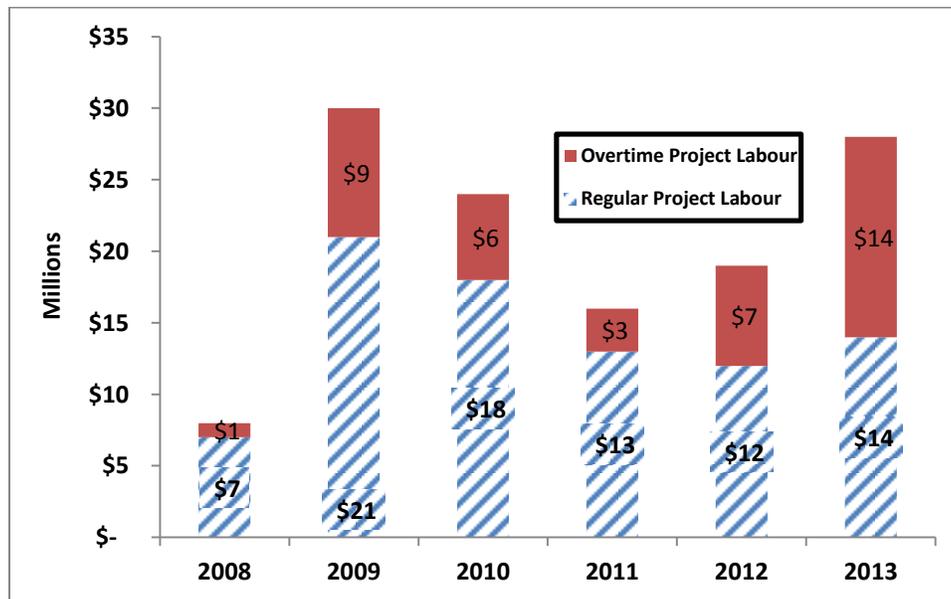
Source: Created by AGNB with data obtained from NB Power (unaudited)

\* The full refurbishment period of 7.3 years started from 1 August 2005 to 23 November 2012. Compensation amounts do not include employer share of employee benefits.

***It took NB Power seven months to prepare the plant for restart, three months longer than planned***

**2.120** Originally NB Power planned to use three months to prepare the plant for restart at the end of the outage. When a project changes significantly in scope or duration, it is common practice to reevaluate the original plan and make adjustments as needed. NB Power's reevaluation resulted in a change in the duration of the restart plan from three months to four. It ultimately took seven months to restart the plant. A significant amount of overtime was used during the restart period. Exhibit 2.10 lists the amounts of regular labour and overtime costs by fiscal year over the duration of the refurbishment.

*Exhibit 2.10 - NB Power Regular and Overtime Labour Cost Data (Unadjusted)*



*Source: Created by AGNB with data obtained from NB Power (unaudited)*

***Recommendation***

**2.121** We recommend NB Power develop contingency plans to manage overtime during project delays, including:

- periodically reevaluating during the project to account for major changes in project timelines;
- sufficiently analyzing the new circumstances and revise the plan as necessary, when a major unanticipated event impacts a project; and
- carrying out sufficient equipment testing to address any equipment challenges resulting from extended delays.

## Overhead Allocation Analysis

### Background

**2.122** We assessed the reasonableness of the overhead allocation rate used by NB Power, including comparing it to industry best practice.

**2.123** Like most nuclear plant owners, NB Power has a corporate allocation rate in place to support ongoing baseline capital projects at PLGS. The majority of these allocated overhead costs typically support labour-related activities provided by the corporate organization such as management, IT, oversight, and accounting. NB Power typically uses an overhead allocation of approximately 10% on \$30-40 million in annual capital. This \$3-4 million allocation covers corporate support of these ongoing capital projects at PLGS.

### What we found

*NB Power used 0.2% as the overhead allocation rate*

**2.124** NB Power determined the size and scope of the refurbishment project warranted a different overhead rate than the 10% rate it normally applies to capital projects. NB Power initially estimated 0.3% of the total project capital costs should be allocated to corporate support. NB Power's estimate was revised to 0.2% in 2008 before the project began. The application of a special corporate overhead allocation rate for a project of unusual size or scope is common in the nuclear industry.

*The method NB Power used to develop the overhead allocation rate was assessed by an accounting firm and found to be reasonable*

**2.125** Because NB Power estimated corporate overhead costs on a percentage basis, growth in project costs due to the longer outage duration resulted in a growth to the amount of the corporate overhead allocation. When the allocation rate is applied to the original estimated costs, it produces an overhead allocation of \$2 million (0.2% x \$1.0 billion = \$2 million). NB Power's project rate produces an estimated \$2.8 million of corporate overhead costs allocated to the refurbishment when applying the actual costs of the project (0.2% x \$1.4 billion = \$2.8 million). The methodology NB Power used to develop this rate was assessed by an accounting firm and found to be reasonable. NB Power representatives indicated that the corporate support requirements grew as the project experienced challenges and setbacks. When a severe setback on a major project occurs, it is common across the nuclear industry to see an increase in corporate support provided.

**2.126** Overhead cost allocated to the PLGS refurbishment appeared reasonable given the corporate oversight, managerial, and legal activities required to support the

refurbishment project.

**Operating,  
Maintenance  
and  
Administration  
Cost Analysis**

**2.127** We reviewed operating, maintenance and administration (OMA) costs of Nuclearco during refurbishment to assess the reasonableness of the costs charged to the refurbishment.

**Background**

**2.128** Nuclear plants require a significant amount of attention even when they are not operating. The many activities that continue during an outage are labour-intensive. These are shown in Exhibit 2.11.

*Exhibit 2.11 - Description of Ongoing Activities at a Nuclear Generation Facility*

<p><b>Operations</b></p> <ul style="list-style-type: none"> <li>•Individuals who are qualified to operate the plant must remain on site to operate the systems that are still active and retain their training qualifications</li> </ul>	<p><b>Maintenance</b></p> <ul style="list-style-type: none"> <li>•Qualified maintenance technicians must remain on site to maintain the equipment still in operation</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>•Engineers familiar with the operating equipment must still be available to support ongoing activities as well as support to emergent issues</li> </ul>
<p><b>Security</b></p> <ul style="list-style-type: none"> <li>•Because nuclear material is still found at the site, security must be maintained</li> </ul>	<p><b>Radiation Protection</b></p> <ul style="list-style-type: none"> <li>•Qualified Radiation protection workers must be available to support ongoing maintenance activities and ensure contractor safety for those on the project</li> </ul>	<p><b>Environmental Protection</b></p> <ul style="list-style-type: none"> <li>•Environmental Protection workers must continue to regularly monitoring the site as stipulated by the regulator</li> </ul>
<p><b>Training</b></p> <ul style="list-style-type: none"> <li>•Nuclear operators and maintenance workers are highly trained and training must continue even during an outage period; training for some contractor staff is also required</li> </ul>	<p><b>Outage Workers</b></p> <ul style="list-style-type: none"> <li>•Even if contractors are performing a majority of the outage work, plant employees still must perform oversight duties during an outage</li> </ul>	<p><b>Regulatory Support</b></p> <ul style="list-style-type: none"> <li>•Interface with regulators requires monitoring and reporting by dedicated personnel, these requirements remain in place during an outage</li> </ul>

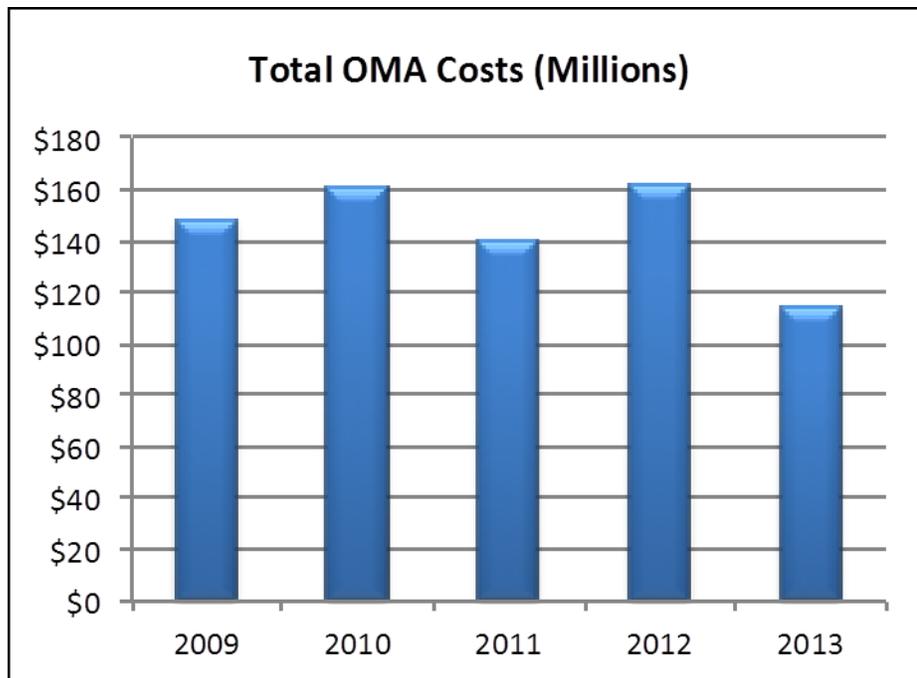
Exhibit 2.12 - PLGS control room



Source: NB Power

**What we found**      **2.129** NB Power OMA costs were relatively steady during the refurbishment project, as shown in Exhibit 2.13. Compensation increased as the outage ended in 2012, which is partially due to increased overtime discussed earlier in this report.

Exhibit 2.13 - Total OMA Costs



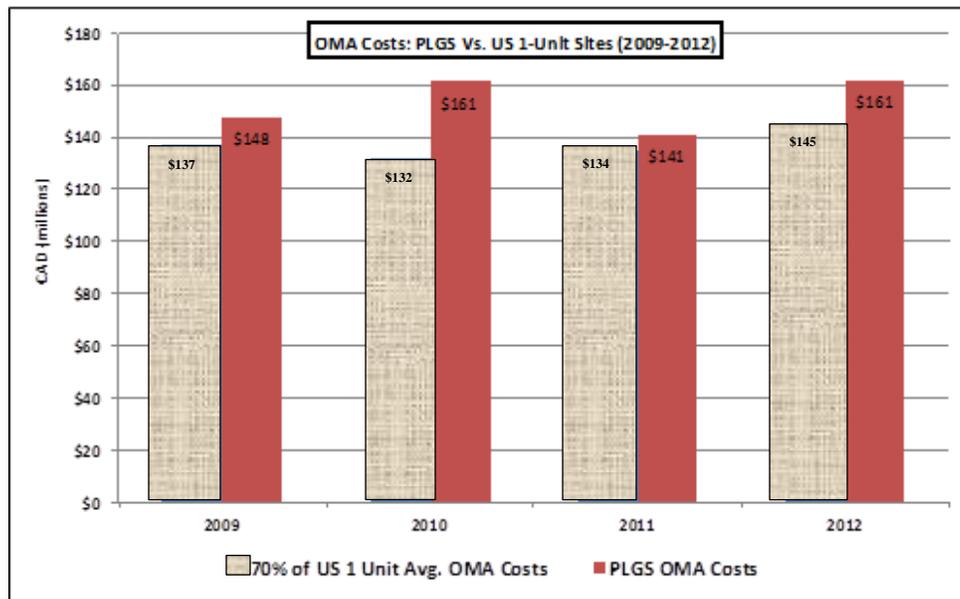
Source: Created by AGNB with data obtained from NB Power (unaudited)

***NB Power advised that approximately 70% of the systems within PLGS remained operational during the refurbishment***

**2.130** NB Power advised that approximately 70% of the systems within PLGS remained operational during the refurbishment. This estimated level of operating systems usage during an outage is typical for a CANDU nuclear plant.

**2.131** PLGS OMA costs during the refurbishment were higher than the United States average, as shown in Exhibit 2.14. Although higher than US costs, they appear to be reasonable. The US numbers may be somewhat lower because many of the stand-alone sites in the US are managed by a parent utility company that provides significant cost savings through economies of scale (sometimes as much as 20%) versus stand-alone sites like PLGS.

Exhibit 2.14 - Comparison between OMA Costs PLGS vs. US Sites



Source: Created by AGNB with data obtained from NB Power and other sources (unaudited)

***NB Power applied standard nuclear industry practices in managing their OMA costs during the refurbishment***

**2.132** NB Power applied standard nuclear industry practices in managing their OMA costs during the refurbishment. Although slightly higher than adjusted US industry costs, the variance is explainable and NB Power’s costs appear reasonable.

**2.133** A number of NB Power employees were working in direct support of the refurbishment project. Some NB Power employees were retained to operate and conduct surveillance on active systems operating during the project. Others were retained to ensure their availability after the outage, regardless of the extent to which they were required at the plant during the outage.

**2.134** Nuclear plant owners rarely release staff going into an outage situation. This is largely because they invest a significant amount of resources in training these individuals. The licensing process for each nuclear plant is unique, requiring a ramp-up training period for new workers irrespective of their level of experience in nuclear power. Terminating staff prior to refurbishment and then sourcing replacements of these individuals after the outage would be extremely difficult and costly. Further, significant loss of staff would create the risk of loss of the generating station operating license.

*A staffing plan with cost benefit analysis of each alternative is needed*

**2.135** In the case of the PLGS refurbishment, however, a staffing plan with a cost benefit analysis for each alternative should have been prepared, given the size and complexity of the project and given the extended outage lasted significantly beyond originally anticipated timelines. There is no evidence that NB Power prepared such a plan before the refurbishment.

*Recommendation*

**2.136** We recommend NB Power prepare a staffing plan for each major project and revise when it is determined that major project changes have occurred.

## Appendix I – Components of Refurbishment Costs

Component	Component Cost (millions)		Covered in our detailed examination?	Rationale	
Project planning	\$90.2		Yes	Our work focused on procurement and contract management. Financial statement audits provided assurance on the reasonableness of capitalizing the expenditures.	
Contracted services	\$780.3		Yes	Our work focused on procurement and contract management	
Capitalized interest	\$292.9		No	Audit of financial statements provided assurance on the accuracy and reasonableness of the interest expenses	
NB Power internal costs	\$260.5	NB Power Labour	\$ 149.6	Yes	Our work focused on labour costs: overtime and overhead allocation
		Fees (Regulatory, Environmental, Training, Insurance etc.)	\$52.8	No	<ul style="list-style-type: none"> <li>• less significant amounts</li> <li>• less risky areas in terms of reasonableness</li> <li>• extensive coverage by financial statements audit</li> </ul>
		NB Power Materials	\$29.0	No	
		Properties (Heating, Lighting etc.)	\$18.6	No	
		Inter-Company Services	\$9.3	No	
		Operational – Various	\$1.2	No	
<b>Total capital costs: \$1,423.9 million</b> <b>Total costs covered in our detailed examination: \$1,020.1 million(shaded)</b>					

## Appendix I – Components of Refurbishment Costs (continued)

Component	Component Cost (millions)		Covered in our detailed examination?	Rationale	
Nuclearco period costs	\$892.3	OM&A	\$725.9	Yes	The OM&A remained roughly the same before and after plant shut down. Our work focused on whether it was reasonable to incur the same amount of OM&A during shut down.
		Fuel & Transmission Expenses	\$9.1	No	Financial statement audit provided assurance on this amount.
		Amortization & Decommissioning	\$171.0	No	
		Property Taxes	\$27.7	No	
		Finance Charges	\$(41.4)	No	
Replacement power minus costs recovered through current rates	\$75.8		No	Financial statement audit provided assurance on this amount.  Amount of replacement power was calculated based on a model approved by regulator	
Interest assigned to deferral	\$112.0		No	Financial statement audit provided assurance on the accuracy and reasonableness of the interest expenses.	
<b>Total deferral costs: \$1,080.1 million</b> <b>Total costs covered in our detailed examination: \$725.9 million (shaded)</b>					

Source: Created by AGNB with data obtained from NB Power (unaudited)

## Appendix II: Glossary of Key Terms

American National Standards Institute (ANSI)	A private non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems, and personnel in the United States and abroad.
Auxiliary (Turbine)	Support systems to help steam turbine-driven generators to work efficiently and safely.
CANDU	A nuclear reactor of a Canadian design in which the fuel is unenriched uranium oxide clad in zircaloy and the coolant and moderator is heavy water.
Change Order/ Requests / Contract Change Requests (CCRs)	A component of the change management process whereby changes in the Scope of Work agreed to by the Owner, Contractor and Architect/Engineer are implemented.
Collective Bargaining Agreement (CBA)	Contract(s) resulting from a process of negotiations between employers and a group of employees aimed at reaching agreements to regulate working conditions. The interests of the employees are commonly presented by representatives of a trade union to which the employees belong.
Earned Value Management System (EVMS)	Project planning and control designed around the integration of technical scope, schedule, and budget.
Generator	A device that converts mechanical energy to electrical energy.
Liquidated Damages (LDs)	An amount of money agreed upon by both parties to a contract which one will pay to the other upon breaching (breaking or backing out of) the agreement or if a lawsuit arises due to the breach. Sometimes the liquidated damages are the amount of a deposit or a down payment, or are based on a formula (such as 10% of the contract amount).
Outage	A period when a power supply or other service is not available or when equipment is closed down.
Risk Register	A Risk Management tool commonly used in Project Management and organizational risk assessments. It acts as a central repository for all risks identified by the project or organization and, for each risk, includes information such as risk probability, impact, counter-measures, and risk owner and so on.
Subcontractor	One that enters into a subcontract and assumes some of the obligations of the primary contractor.
Surveillance	Confirmation of compliance, usually via remote detection, with operational limits and conditions of equipment and to detect and correct any abnormal condition before it can give rise to significant consequences for safety.
Turbine	A turbo machine with at least one moving part called a rotor assembly, which is a shaft or drum with blades attached. Moving fluid acts on the blades so that they move and impart rotational energy to the rotor. Early turbine examples are windmills and waterwheels.

# Chapter 3

## Data Centre Power Interruption

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# Data Centre Power Interruption

## Main Points

### Background

**The 9 June 2014 loss of system access had significant adverse effects on the delivery of government programs and services**

**3.1** The New Brunswick government's wide area network and supporting network infrastructure play an essential role in delivering programs and services to the people of New Brunswick. Any interruptions in availability of this network can place severe restrictions on the delivery of critical government programs.

**3.2** Following a power outage on 9 June 2014, a failure of one of the Province's electrical backup power systems caused a mainframe and multiple server failure in the Marysville Data Centre. This led to a major loss of system access within government for that day and caused rippling effects over the following two weeks. The loss of system access had significant adverse effects on the delivery of government programs and services.

**3.3** In September through November 2014, the Auditor General of New Brunswick (AGNB) completed a review of the events and circumstances around the interruption in information technology (IT) services.

**Scope of our work**

**3.4** Our work focused on reviewing the Marysville Data Centre and its exposure to risks related to utility power outages. The objectives of our review were:

- i. to examine the details of the June 9 outage including the causes of service interruption and recovery efforts by the New Brunswick Internal Services Agency (NBISA);
- ii. to examine examples of impacts to the delivery of government programs and services;
- iii. to determine what risks had previously been identified and the extent of effort to mitigate those risks prior to the outage;
- iv. to review the current state of IT risks, specific to the outage of June 9, and determine what improvements have been made or are planned; and
- v. to determine whether the NBISA had business continuity and disaster recovery planning documented, tested and in place for the Marysville Data Centre.

**Nature of the outage**

**3.5** The main components of the Marysville Data Centre backup power system are the Uninterruptible Power Supply (UPS), Automatic Transfer Switch (ATS), and standby power generator. In the event of a power outage, the UPS acts as an electrical storage device, providing instant temporary power. Meanwhile, the ATS changes the source of power for the building from the electrical grid to the standby power generator.

**All three of the main components of the data centre backup power failed on 9 June 2014**

**3.6** All three of the UPS, ATS and standby power generator each suffered failures on 9 June 2014. Based on the evidence we reviewed, the failures appear to be independent of each other.

**3.7** We consider the pervasive failure of the backup power system components highly unlikely to occur, given the multiple simultaneous failures. However, any single failure described above would threaten the provision of IT services to government.

**Summary of Main Findings and Recommendations****Inadequate business continuity and disaster recovery planning at the corporate level*****Failure to implement complete mitigation strategy***

- 3.8** We noted the impact to government services was pervasive and affected all government departments, as noted in Appendix I. Government programs and services were severely restricted during the outage and during the subsequent recovery. We did not measure the loss of productivity impact to government. However, after the outage, direct costs of just under \$1 million were incurred to address various aspects of the outage. These costs include replacement of critical equipment.
- 3.9** While we found some business continuity planning is in place at the department level, it is not sufficient to safeguard against disasters that may affect the delivery of critical government services. The exposure of government-wide IT infrastructure to risk is not captured in the current fragmented departmental plans.
- 3.10** We received some feedback from departments indicating crisis management was considered to have been effectively deployed. However, government response to the system failure was highly reactive. We found no evidence a formal disaster recovery plan, which would provide a planned approach for addressing these failures and prioritizing the restoration of government services from a corporate perspective, was in place prior to the outage.
- 3.11** Prior risk assessments were performed by third parties and did identify the backup power system as a vulnerability prior to the outage. However, despite a directive from government to the Department of Supply and Services (DSS) in 2009 to return with a plan for the ongoing operation of the Marysville Data Centre, we found efforts by the NBISA to mitigate risk were insufficient. Discussions with senior management at the NBISA indicated they made various attempts to return to the government, but various circumstances existed to prevent this. The DSS/NBISA did not implement recommendations for risk mitigation, such as replacing the aged UPS or adding additional backup equipment.

**3.12** It is unclear where central authority lies to implement government-wide upgrades to IT systems and equipment. Prescribed authority appears to be disbursed throughout government departments, but apparently there is no consensus on the appropriate strategic direction of corporate level IT.

***Additional safeguards have not been implemented by the NBISA***

**3.13** New equipment was installed, as part of the June 9 recovery, which will improve the reliability of backup power system at the Marysville Data Centre. This reduces the likelihood of a future outage. In addition, some server redundancy has been implemented between the primary and secondary data centre locations. However, additional safeguards have been recommended by industry experts, which have not been implemented by the NBISA, such as adding additional backup power system equipment and increasing server redundancy between the two physical locations.

***Risk of system failure remains***

**3.14** The risk of system failure posed by a power outage in the backup power system remains. While steps have been taken since June 9 to increase system reliability, further action is needed to guard against future system failures. The continued operation of critical provincial government information systems could be at risk in the event of future power interruptions. Recommendations from our work are presented in Exhibit 3.1.

Exhibit 3.1 - Summary of Recommendations

Recommendations	Department's Response	Target Date for Implementation
<b>Implement refresh program for critical infrastructure components</b>		
<p><b>3.71</b> We recommend the NBISA identify critical infrastructure components and establish replacement plans. We also recommend the NBISA develop and implement a refresh program for such equipment.</p>	<p>For critical infrastructure components at Marysville Data Centre, NBISA will take the following approach:</p> <ol style="list-style-type: none"> <li>1) Work with Bell Aliant and the Department of Transportation and Infrastructure to establish an inventory of critical infrastructure components and the replacement schedule for each.</li> <li>2) Work with Government Services Corporate Services unit to establish an on-going budget program for the refresh of this equipment. A 2015-16 capital plan for Marysville Data Centre will be developed for consideration by the Agency's Board of Directors by March 31, 2015. A multi-year capital plan will be developed for Q3 2015-16.</li> </ol>	<p>The target implementation date is 4th quarter fiscal 2014/15 with the exception of the multi-year capital plan which will follow in 3rd quarter of fiscal 2015/16.</p>

## Exhibit 3.1 - Summary of Recommendations (continued)

Recommendations	Department's Response	Target Date for Implementation
<b>Define corporate IT strategy roles and responsibilities and improve strategic alignment</b>		
<p><b>3.72</b> We recommend the Office of the Chief Information Officer (OCIO) define roles and responsibilities related to development of corporate IT strategic development for all departments and take recommendations to cabinet that clarify corporate IT roles and responsibilities and ensure strategic goals of the OCIO, the NBISA and the departments are aligned.</p>	<p>We agree with the finding and OCIO will support the clarification of IT roles and responsibilities, and the alignment of strategic goals, within the ECO IT Consolidation project.</p>	<p>To be completed by the end of quarter 4, fiscal year 2016-2017.</p>
<b>Prepare threat risk assessments</b>		
<p><b>3.81</b> We recommend the NBISA prepare threat risk assessments, as part of its corporate IT continuity planning, and take recommendations to cabinet to further mitigate risk of failure of IT services.</p>	<p>For Marysville Data Centre NBISA will do the following:</p> <ol style="list-style-type: none"> <li>1) Prepare a Statement of Work for an independent 3rd party security assessment for Marysville Data Centre based on the Trust Services and Principles.</li> <li>2) Have the assessment conducted for the Marysville Data Centre.</li> <li>3) Take the assessment recommendations to NBISA's Board of Directors to further mitigate risk of failure of IT services</li> </ol>	<p>Target implementation date is 3rd quarter 2015/16.</p>

Exhibit 3.1 - Summary of Recommendations (continued)

Recommendations	Department's Response	Target Date for Implementation
<b>Develop a strategy to meet industry standards for data centre availability</b>		
<p><b>3.82</b> We recommend the NBISA develop a data centre availability strategy to provide a level of service congruent with industry standards. We also recommend NBISA develop a monitoring process to ensure strategies are implemented to achieve the strategic vision.</p>	<p>NBISA will work with the OCIO to:</p> <ol style="list-style-type: none"> <li>1) Align with the strategic vision resulting from the OCIO Integrated Telecom and Data Centre Strategy project</li> <li>2) Use project management best practices for implementation of the strategy. May also require a formal governance process to oversee and monitor this implementation.</li> </ol>	<p>Target timeline is dependent on the OCIO Integrated Telecom and Data Centre Strategy implementation.</p>
<b>Develop enterprise business continuity and IT continuity plan</b>		
<p><b>3.92</b> We recommend the OCIO, in consultation with departments, develop a government-wide IT continuity plan, which considers all aspects of government programs, services and operations. This plan should be tested annually to ensure its adequacy.</p>	<p>OCIO will develop a proposal to request required people, process and technology to develop a government-wide IT continuity plan, which will consider all aspects of government programs, services and operations.</p> <p>In addition, OCIO already has established a working group to govern IT Risk and will also draft a general awareness communication to obtain business support for this initiative.</p>	<p>Proposal to be developed by the end of quarter 4 2014-2015.</p> <p>Awareness Memo to departments by the second week of February 2014-15.</p> <p>IT Risk working group ongoing.</p>

Exhibit 3.1 - Summary of Recommendations (continued)

Recommendations	Department's Response	Target Date for Implementation
<b>Prioritize critical services in government</b>		
<b>3.93</b> We recommend the OCIO, as part of IT continuity planning, obtain an assessment of services from each department to identify and prioritize critical systems, which require uninterrupted IT continuity.	Addressed as part of the proposal for finding 3.92.	Proposal to be developed by the end of the quarter 4 2014-2015.
<b>Develop enterprise disaster recovery plan</b>		
<b>3.94</b> We recommend the NBISA, in consultation with departments, develop a disaster recovery plan, which prioritizes the restoration of government IT systems.	For Marysville Data Centre,NBISA will:  1) Work with departments to create a current inventory of GNB applications in the Marysville Data Centre.  2) Have departments identify departmental criticality ratings for all GNB applications in the Marysville Data Centre.  3) Seek departmental senior management input on the identification of GNB wide criticality of applications in Marysville Data Centre.	Target implementation date for #1-#4 is 2nd quarter 2015/16  Target for #5 is dependent on the OCIO Integrated Telecom and Data Centre Strategy implementation.

*Exhibit 3.1 - Summary of Recommendations (continued)*

Recommendations	Department's Response	Target Date for Implementation
	<ul style="list-style-type: none"><li data-bbox="947 391 1402 488">4) Create and document a process for ensuring this information is kept current and accurate.</li> <li data-bbox="947 526 1451 686">5) Address overall disaster recovery for Marysville Data Centre in conjunction with the implementation of the OCIO Integrated Telecom and Data Centre Strategy project.</li></ul>	

## Background

***The 9 June 2014 loss of system access had significant adverse effects on the delivery of government programs and services***

**3.15** The New Brunswick government's wide area network and supporting network infrastructure play an essential role in delivering programs and services to the people of New Brunswick. Any interruptions in availability of this network can place severe restrictions on the delivery of critical government programs.

**3.16** Following a power outage on 9 June 2014, a failure of one of the Province's electrical backup power systems caused a mainframe and multiple server failure in the Marysville Data Centre. This led to a loss of system access within government for that day and caused rippling effects over the following two weeks. The loss of system access had significant adverse effects on the delivery of government programs and services.

**3.17** The Province owns the building facilities, IT infrastructure, and most assets at the data centre. The damage to network hardware was extensive and resulted in a lengthy recovery process. A number of critical systems were unavailable during the outage and essential data required restoration from backup after having been corrupted. The duration of the outage impact varied between departments, ranging from one to five days.

**3.18** The New Brunswick Internal Services Agency (NBISA) was established on 1 May 2010 following the proclamation of the *New Brunswick Internal Services Agency Act*. The NBISA was created to provide shared services to government departments, including most IT operations and help desk services. Previously, the Department of Supply and Services (DSS) delivered corporate IT services to departments.

**3.19** Network administration for the government of New Brunswick is provided by the NBISA and includes multiple service level agreements with third-party vendors. One such vendor manages the Marysville Data Centre, including maintenance of the backup power system. The Department of Transportation and Infrastructure (DTI) is responsible for facilities management of provincially owned buildings, which includes the Marysville Data Centre's backup power generator and automatic transfer switch.

## Scope of our work

**3.20** In September 2014, we completed a review of the events and circumstances around the interruption in information technology (IT) services within government.

**3.21** We examined the management practices of the NBISA and its role in providing corporate IT services via the Marysville Data Centre. We focused on relevant details culminating in and following the June 9 outage. This involved interviewing government employees from the NBISA and DTI who were involved in the recovery process, as well as employees from the third-party contractor charged with managing the facilities and included a tour of the Marysville Data Centre. Additional interviews were performed with various departmental staff to determine the impact on government services. We examined chronology reports from the incident, service reports and invoices. We also examined prior maintenance records for equipment and risk assessments for the facility.

**3.22** We did not carry out a detailed review of global IT governance or operations of the New Brunswick government. This chapter focuses on the singular power outage event. Given the technical nature of the content of this chapter, we have prepared a glossary of terms (Appendix III).

### *Our work focused on reviewing the Marysville Data Centre and its exposure to risks related to utility power outages*

**3.23** Our work focused on reviewing the Marysville Data Centre and its exposure to risks related to utility power outages. The objectives of our review were:

- i. to examine the details of the June 9 outage including the causes of service interruption and recovery efforts by the NBISA;
- ii. to examine examples of impacts to the delivery of government programs and services;
- iii. to determine what risks had previously been identified and the extent of effort to mitigate those risks prior to the outage;
- iv. to review the current state of IT risks, specific to the outage of June 9, and determine what improvements have been made or are planned; and
- v. to determine whether the NBISA had business continuity and disaster recovery planning documented, tested and in place for the Marysville Data Centre.

## Objective 1 - Details of the power outage

### Our Approach

**3.24** We conducted several interviews and reviewed chronology reports to gain an understanding of the causes of the service interruption. We also reviewed maintenance and inspection reports to determine the status of equipment prior to the outage. We did not conduct an in depth root cause analysis to determine the specific points of failure for each system component. We relied on the technician reports and other supporting documentation provided by the NBISA.

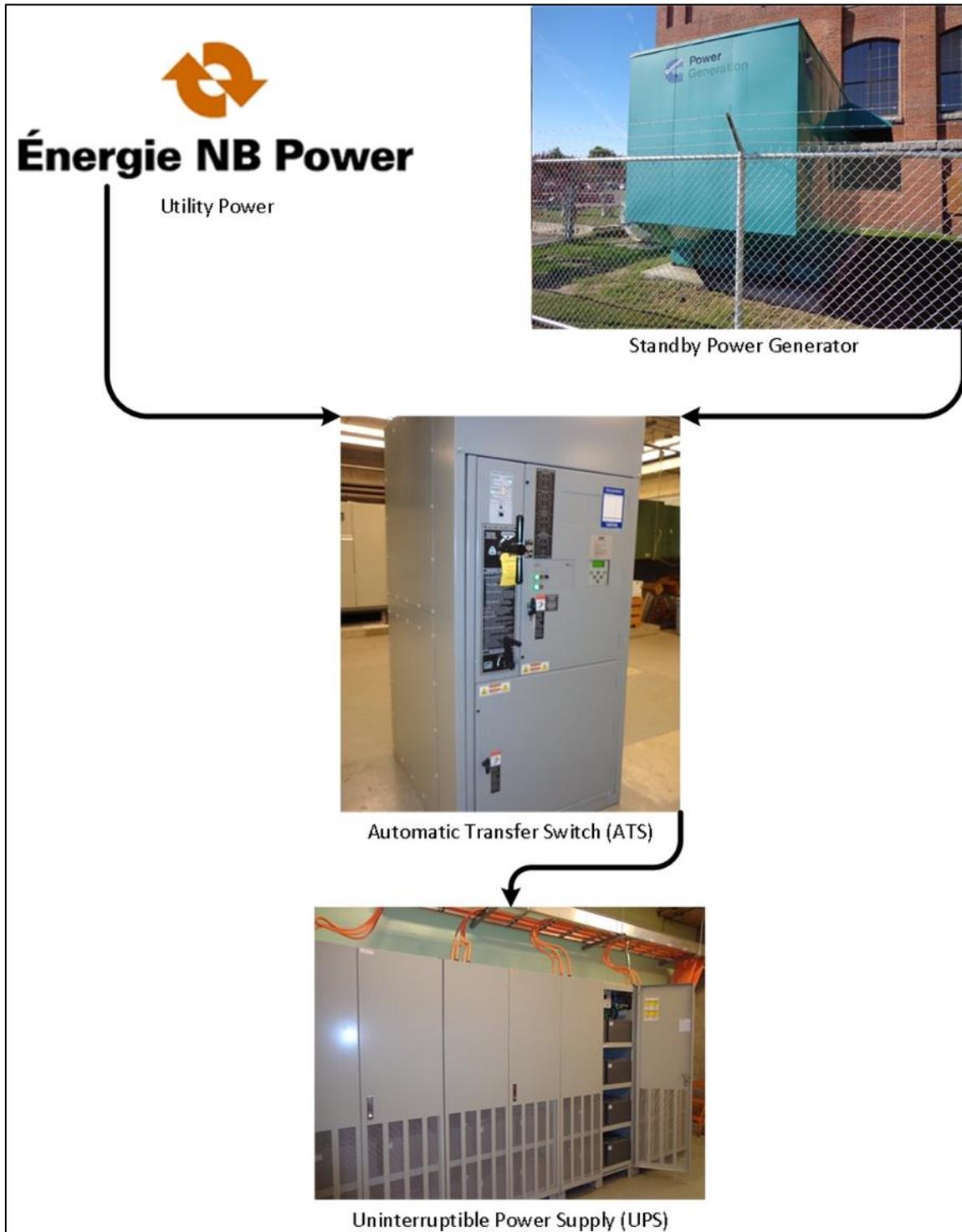
### Our Findings

#### *On 9 June 2014 the backup power system failed*

**3.25** On 9 June 2014, there was a power interruption in the public utility lines. At the Marysville Data Centre, a backup power system is in place to ensure continuity of service to the public when power interruptions occur. However, this backup power system failed and caused an interruption to government computing services.

**3.26** The main components of the Marysville Data Centre backup power system are the Uninterruptible Power Supply (UPS), Automatic Transfer Switch (ATS), and standby power generator. In the event of a power outage, the UPS acts as an electrical storage device, providing instant temporary power. Meanwhile, the ATS transitions the source of power for the building from the electrical grid to the standby power generator. The configuration of the backup power system is shown in Exhibit 3.2.

Exhibit 3.2 - Configuration of Backup Power System



Source: Chart prepared by AGNB

***Main backup components had been serviced prior to the 9 June 2014 outage***

**3.27** We found that, prior to the outage, the backup power system equipment was regularly inspected and maintained by contracted service technicians. The ATS had most recently been tested by a service technician on 27 May 2014 and had a mechanical failure. This issue was repaired on May 29 and two simulation tests were successfully performed. The unit was functioning normally. The generator was also inspected and tested on May 27 and was functioning normally.

***Inspection report noted aging UPS component***

**3.28** The UPS had most recently been inspected in November 2013. The inspection report indicates the equipment status met all manufacturing specifications for operation. The inspection report had no recommended action for maintenance. The report did note that “UPS is + 22 years old and should be replaced if load continues to increase”, however, we saw evidence the load had decreased over the previous year.

***Backup power system worked seamlessly during 5 June 2014 power outage***

**3.29** We found that on 5 June 2014 during two power interruptions at the Marysville Data Centre, the backup power system worked seamlessly in both instances and no computing service interruptions had occurred.

**3.30** As part of routine maintenance, the UPS battery banks were in the process of being replaced on June 9. A technician was onsite at the time of the incident. One new battery bank had been added and was fully charged, one older battery bank was in the process of being changed, and one older battery bank remained installed.

***UPS power is depleted and causes a hard crash of government servers***

**3.31** During the utility power interruption of June 9, a mechanical failure in the ATS prevented the standby generator from supplying backup power to the data centre. As a result, the UPS reserve power was depleted and the unit shut down. Bell Aliant<sup>1</sup> made an effort to shut down the government’s mainframe, however, the UPS failure caused a hard crash of several government servers dependent on the Marysville Data Centre.

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<sup>1</sup> Bell Aliant is the third party service provider contracted to operate the Marysville Data Centre

***UPS was found to have been irreparably damaged***

**3.32** A service technician manually bypassed the ATS, and brought generator power into the Marysville Data Centre. Technicians attempted to bring the UPS back online and found it to be irreparably damaged.

**3.33** The UPS is a critical component in the data centre electrical infrastructure. It serves as storage of instant power during an outage, but also to condition grid power by providing protection to data centre equipment against electrical fluctuations. The UPS delivers correct and accurate voltage and electrical frequency to sensitive equipment.

***Without an operable UPS, restoring grid power would leave the data centre highly vulnerable to power interruptions or electrical instability***

**3.34** Without an operable UPS, restoring grid power would leave the data centre highly vulnerable to power interruptions or electrical instability. Unconditioned grid power can cause performance issues and damage to sophisticated data centre equipment. Any interruption in power without a UPS will cause systems to experience a hard crash and immediately shut down despite having a backup generator. An immediate shut down of data centre systems can cause data loss or corruption.

**3.35** As a result of the vulnerability posed by the damaged UPS, the decision was made by the crisis management team to operate the Marysville Data Centre facility solely on generator power. However, as Marysville Data Centre systems were brought back online, it was determined that a mechanical issue with the primary standby generator was preventing sufficient power to be supplied to the Marysville Data Centre.

***The crisis management team implemented temporary measures***

**3.36** Temporary measures were implemented to restore full system functionality. Temporary, portable generators were rented to supplement the standby backup generator. The Marysville Data Centre was operated solely on generated power using rented equipment for 13 days.

***Provincial departments and agencies experienced multiple system interruptions and corrupt data from June 9 through June 24***

**3.37** Subsequently, portable UPS and ATS units were rented in order to restore utility power. These components remained in place until replacement units could be installed. On August 17, replacement UPS and ATS were installed and all rental equipment was returned.

**3.38** During the recovery period and following the outage, provincial departments and agencies experienced multiple unplanned and planned system interruptions through ongoing recovery efforts. Corrupt data caused issues to varying degrees from June 9 through June 24. This affected service delivery to the public, as well as the productivity of government

employees.

**3.39** Additional recovery efforts were required to restore data, which was damaged or lost as a result of hard crash events experienced during the outage. A full restoration of critical government files was a gradual process lasting approximately 15 days due to the transfer speed capabilities of the storage media used and the volume of data. Exhibit 3.3 shows a timeline of events.

*Exhibit 3.3 - Timeline of events*

Date/time	Description
March 2009	<p>Department of Supply and Services receives third-party report on Strategy for Provision of Computing Facilities, including the following key findings:</p> <ul style="list-style-type: none"> <li>• <i>Current computing facilities are highly decentralized and independently managed</i></li> <li>• <i>Aliant, Corporate Information Management Services (CIMS) and each department limit the delivery of IT solutions (and benefits) to the business ("silo" mentality)</i></li> <li>• <i>Business Continuity Plans (BCP) and Disaster Recovery (DR) capabilities at Department Server Rooms are poor or non-existent.</i></li> <li>• <i>There is no consensus on critical applications, and therefore variable expectations for data centre capabilities and failover requirements.</i></li> <li>• <i>Stakeholders not aligned on objectives for computing facility strategy.</i></li> </ul> <p>The report also included the following key recommendations:</p> <ol style="list-style-type: none"> <li>1. <i>Adopt a dual data centre strategy to replace inefficient server room "sprawl"</i> <ol style="list-style-type: none"> <li>a) <i>Upgrade Marysville Data Centre</i> <ul style="list-style-type: none"> <li>• <i>Replace the legacy UPS with two modular UPS's to provide 100% redundancy</i></li> <li>• <i>Renovate the floor to provide hot/cold aisle cooling</i></li> <li>• <i>Consider updating wet sprinkler with dry charge</i></li> <li>• <i>Migrate to a support model that minimizes personnel activities within the data centre</i></li> </ul> </li> <li>b) <i>Build or acquire a new data centre outside the floodplain</i></li> <li>c) <i>Manage both data centres as a one logical operation</i></li> </ol> </li> <li>2. <i>Consolidate &amp; virtualize servers and storage</i> <ol style="list-style-type: none"> <li>a) <i>Consolidate department server room systems into 2 centralized data centres</i></li> <li>b) <i>Apply virtualization to load balance applications on shared hardware.</i></li> <li>c) <i>Use savings to fund Marysville Data Centre improvements and transformed, higher-availability facility infrastructure.</i></li> </ol> </li> </ol>

Exhibit 3.3 - Timeline of events (continued)

Date/time	Description
July 2009	Government directed the Department of Supply and Service to implement more efficient, secure and sustainable delivery of computing facilities: <ul style="list-style-type: none"> <li>• Consolidate facilities</li> <li>• Acquire second data centre</li> <li>• Evaluate options for ongoing operation of the Marysville Data Centre at the end of third-party managed services agreement (March 2010) and return to government by December 2009 with a recommendation for ongoing operation of facility</li> <li>• Maximize opportunities for server virtualization and consolidation</li> </ul>
March 2010	Bell Aliant report on Marysville Data Centre Inspection and Capacity Assessment. Bell Aliant recommended upgrades to Marysville Data Centre, including replacement of UPS and addition of a second redundant UPS.
April 2010	Managed Service Agreement extended with Bell Aliant.
May 2010	The New Brunswick Internal Services Agency is established. The IT operations of Corporate Information Management Services transferred from Department of Supply and Services to the NBISA.
July 2010	Government authorizes the installation of dark fiber network infrastructure.
March 2011	March 2011 presentation from Bell Aliant highlights end-of-life data centre components, along with possible replacement costs, steps to achieve a desired end-state, value case for establishing a data centre enhancement fund.
February 2012	Government approves, in principle, the transfer of operation and management of the government's server, storage and switch infrastructure from departments to the NBISA.
April 2012	Secondary data centre is constructed.
May 2012	Mandate for the Office of the Chief Information Officer is approved by the government.
December 2013	Managed Service Agreement Infrastructure Status Report prepared by Bell Aliant is provided to the NBISA which identifies the UPS as passed end of life and assesses level of business risk associated with this component as critical.
27 May 2014	As part of testing during routine monthly inspection, the ATS experienced mechanical failure. This was discovered late in the day on May 27 <sup>th</sup> , and efforts were made to have it corrected as soon as possible.
28 May 2014	The contractors dispatched staff from Ontario and Montreal to assist in the repair and a new mechanism was ordered to correct the mechanical issue with the ATS.
29 May 2014	Technicians worked on ATS and repaired the problem.
5 June 2014	Two power interruptions occurred, and in both cases, the backup power systems worked as expected. The first interruption was at 5:53 AM and lasted for 43 minutes, and the second power interruption was at 8:15 AM, lasting for an hour.
6 June 2014	Diesel tank was filled.

Exhibit 3.3 - Timeline of events (continued)

Date/time	Description
9 June 2014 – before/during power interruption	UPS service contractor in process of replacing batteries in UPS, which was recommended by the service contractor in its semi-annual preventative maintenance report when power outage occurred.
9 June 2014 – 9:17	Utility power fails. The ATS fails to switch input power source to the back-up generator. UPS continues to carry the load.
9 June 2014 – 9:30	On-site technicians proceeded to shut down the Mainframe with the UPS back-up still taking load.
9 June 2014 – 9:35	UPS battery plant is depleted and the UPS shuts down causing a hard crash of servers.
9 June 2014 – 9:44	Utility power restored and UPS failure occurs.
9 June 2014 – 10:30	After a situational assessment including an emergency meeting, the ATS is manually locked to generator power. The mainframe and servers remain offline.
9 June 2014 – 11:39	There is a brief interruption in power to the Data Centre attributed to troubleshooting of the ATS by the technician. Power is immediately restored to the data centre.
9 June 2014 – 13:45	As the devices in the Data Centre are restored, the electrical load increases. The diesel generator is unable to provide sufficiently stable power to the Data Centre.
9 June 2014 – 14:00	The decision is executed to shut down power to the Data Centre. Mainframe and servers are shut down gracefully.
9 June 2014 – 16:00	Power restored to the Data Centre from utility power with no back-up UPS or generator. Mainframe and servers are brought back online.
9 June 2014 – 22:00	A portable diesel generator was brought onsite. The Data Centre took an emergency outage to switch to the portable diesel generator. Servers are shut down gracefully.
9 June 2014 – 23:30	Power restored to the Data Centre from the portable diesel generator. Mainframe and servers are brought back online.
15 June 2014	A planned outage is taken to perform an oil change on the portable diesel generator. The Data Centre is de-energized at 07:00 and re-energized at 14:35. During this time the facility diesel generator is repaired and tested. The Data Centre is once again powered by the portable diesel generator.
20 June 2014 – 7:20	The portable diesel generator fails due to a clogged fuel filter. This causes another hard crash to mainframe and servers in the data centre.
20 June 2014 – 8:30	Power is restored to the Data Centre from utility power with no back-up UPS or generator. Mainframe and servers are brought back online.
20 June 2014 – 22:00	Another portable diesel generator was brought onsite. The Data Centre took an emergency outage to switch to the diesel generator. The switch was completed at 23:30.
22 June 2014 – 7:00	The Data Centre is powered down for a cut-over to the temporary power stream. The temporary power stream includes all infrastructure elements of the permanent power stream but with rented/leased components (ATS, UPS, and generator).
22 June 2014 – 17:00	Utility power is restored to the Data Centre with the temporary power stream in place and operational.

Exhibit 3.3 - Timeline of events (continued)

Date/time	Description
24 Jun 2014	As a result of the June 9 crash, ongoing full restoration of data file storage containing corrupt files is completed. Files are now fully recovered.
17 August 2014 – 7:00	The Data Centre is powered down for a cut-over to the permanent power stream. New replacement ATS and UPS are installed.
17 August 2014 – 11:30	Power is restored to the Data Centre with the permanent power stream in place and operational.

Source: Exhibit prepared by AGNB

Shaded information provided by Bell Aliant. Times are approximate.

**Quantitative costs**      **3.40**      The NBISA provided a report of incremental direct costs associated with the disaster recovery effort. The report includes costs of employee overtime, repairs, rentals and purchased equipment. Exhibit 4.4 shows a breakdown of direct recovery costs associated with the outage totaling \$967,000.

Exhibit 3.4 - Direct Outage related costs (000`s) as of 6 October 2014

Direct Employee Costs	\$	19
Repairs		193
Incidentals: UPS, ATS and generator rentals, etc.		291
Purchase price of new UPS		200
Purchase price of new ATS		68
Purchase price of new transformer for utility entrance		64
Other: includes cost of “post mortem” analysis performed by third party		133
<b>Total</b>	<b>\$</b>	<b>967</b>

Source: New Brunswick Internal Services Agency (unaudited). The report does not include allocations of fixed government costs related to the outage or estimations of implicit costs due to lost productivity or other affects to government.

**Conclusion**

- 3.41** All three of the UPS, ATS and standby power generator each suffered failures on 9 June 2014. Based on the evidence we reviewed, the failures appear to be independent of each other.
- 3.42** We consider the pervasive failure of the backup power system highly unlikely to occur, given the multiple simultaneous failures. However, any single failure described above would threaten the provision of IT services to government.
- 3.43** We received some feedback from departments indicating crisis management was considered to have been effectively deployed. However, government response to the system failure was highly reactive. We found no evidence a formal disaster recovery plan, which would provide a planned approach for addressing these failures and prioritizing the restoration of government services, from a corporate perspective, was in place prior to the outage.

## Objective 2 - Impact on government services

- Our Approach**
- 3.44** We surveyed various provincial departments and agencies in order to provide an account of some of the impacts to delivery of government programs and services during or related to the system outage of June 9.
- 3.45** We did not attempt to quantify costs related to lost productivity or revenue, however, some departments provided this information in their survey responses. We included this information in Appendix II. The intent of this objective is to illustrate the scope of impact through providing examples of service interruptions. The actual duration of these interruptions varied by department. Some specific impacts of the loss of system access, as identified by departments, are described in the paragraphs that follow. A complete list of the information provided by departments is in Appendix I.
- Our Findings**
- Department of Justice**
- 3.46** Interruptions in system access to the Department of Justice affected the weekend remand court. Data corruption issues were noted with a number of applications. Employees were unable to access the applications required to perform their daily duties.
- Department of Health**
- 3.47** The Department of Health Client Service Delivery System was unavailable and affected the 24-hour service provided by the mobile crisis and detox unit. As well, vaccination information was inaccessible for public health immunization programs and the Department of Health Medicare application was unavailable.
- Department of Finance**
- 3.48** Department of Finance accounting systems were offline, which affected transaction and payment processing and financial reporting capabilities.
- Service New Brunswick**
- 3.49** Service New Brunswick service centres were unable to serve the public due to the unavailable systems, and online services experienced a general outage. The registries branch was unable to accept or fulfill registry applications electronically and motor vehicle online registration was down, which affected automotive dealers' ability to deliver registered vehicles.
- Department of Public Safety**
- 3.50** The Department of Public Safety lost access to systems which provide reporting on victim impact statements, case management information for probation officers, victim notification services reporting, information on admissions to

and releases from corrections facilities as well as information on those in custody. Access was also not available for the NB 911 civic addressing system, which delayed civic address assignment, however, this did not impact emergency 911 services.

***Department of  
Social Development***

**3.51** The Department of Social Development safety and security alerts were not available for social workers, putting them at increased risk when performing client follow-up. Additionally, the Department of Social Development's online invoice submission was unavailable to service providers.

***New Brunswick  
Liquor Corporation***

**3.52** The New Brunswick Liquor Corporation point of sale system was unavailable. Credit, debit and gift cards could not be used by customers. Additionally, warehouse management applications were unavailable.

***Government-wide***

**3.53** Microsoft Exchange (government e-mail) went down and prevented government employees from accessing e-mails and calendars, which affected productivity of government employees who rely on these tools to schedule and perform their duties on a daily basis.

**3.54** BlackBerry services were down, affecting senior government employees who rely on the devices to coordinate and perform their work.

**3.55** These examples were compiled from responses received from various departments' representatives in government and represent highlights from what we found. This is not an exhaustive list of all impacts to government services.

**Conclusion**

**3.56** The impact to government services was pervasive and affected all government departments. Government programs and services were severely restricted during the outage and during the subsequent recovery.

## Objective 3 - Risk mitigation efforts

### Our Approach

**3.57** We conducted interviews and reviewed documentation to determine what risk analyses had been performed on the Marysville Data Centre and whether the backup power system was identified as vulnerable.

**3.58** We inquired to determine what actions were planned and the status of implementation of efforts to mitigate IT continuity risks. We reviewed third-party reports and recommendations for the ongoing operation of the Marysville Data Centre, specifically with respect to the backup power system. The components of the backup power system were the focus of our work and therefore we did not investigate other recommendations by third parties.

### Our Findings

*In 2009, a third party was contracted by the DSS to conceptualize a data centre vision in a report called strategy for the provision of computing facilities.*

**3.59** In 2009, a third party was contracted by Department of Supply and Services (DSS) to conceptualize a data centre vision in a report called *Strategy for the Provision of Computing Facilities*. This report followed extensive flooding along the Saint John river in 2008. The vision was to distribute computer networking between the two locations, operated as one logical data centre. This vision would realize network server load balancing and complimentary disaster recovery across both data centres. Among the actions recommended at the time were the following items:

- update the aged infrastructure at the Marysville Data Centre, including replacement of the UPS and the addition of a secondary redundant UPS;
- upgrades to fire suppression and cooling facilities; and
- acquire a secondary data centre and implement distributed network services between the two locations.

*The DSS submitted, to the government, recommendations including making improvements to the aged infrastructure at the Marysville Data Centre*

**3.60** On 19 June 2009, the DSS submitted, to the government, recommendations for improvements to overall delivery of computer networking services. The recommendations included making improvements to the aged infrastructure at the Marysville Data Centre and other recommendations proposed in the third-party report.

***Government directed DSS to return, by December 2009, with a plan for the continued operation of the Marysville data centre***

**3.61** On 9 July 2009, government directed DSS to return, by December 2009, with a plan for the continued operation of the Marysville Data Centre, however, there is no evidence that this directive was carried out. Discussions with senior management at the NBISA indicated they made various attempts to return to the government, but various circumstances existed to prevent this.

***A 2010 inspection and capacity assessment recommended the UPS for replacement***

**3.62** Bell Aliant, in a 2010 data centre inspection and capacity assessment, also recommended the UPS for replacement, as well as the addition of a secondary redundant backup UPS. The UPS was identified in the inspection report as a single point of failure and a significant risk to IT continuity. Bell Aliant also recommended redundant backup power systems. In a more recent report, Bell Aliant stated: *If the UPS should fail then all government systems would lose power until the completion of the transition to diesel generator power, which is expected to occur in ten seconds or more. All affected systems would incur a “hard” power off and an immediate loss of service.*<sup>2</sup>

***The UPS was identified as a single point of failure and a significant risk to IT continuity***

***Redundancy between two data centres not yet achieved***

**3.63** From our work, we noted the secondary data centre was constructed in April 2012 and high transfer rate cabling was installed between the two locations. We noted additional equipment is required, however, in order to implement the proposed logical redundancy between the two locations. Prior implementation of this feature may have reduced the impact of the 9 June 2014 outage.

***No replacement plans were developed for the UPS prior to the incident***

**3.64** We found no evidence replacement plans were developed for the UPS prior to the incident. Moreover, despite the warnings and recommendations by third parties, we found no action was taken by DSS/NBISA to replace this critical component at the Marysville Data Centre. In discussions with various stakeholders, we received conflicting reasons for the inaction. We noted that it is unclear where central authority lies to implement government-wide upgrades to IT systems and equipment.

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<sup>2</sup> Bell Aliant managed Service Agreement Infrastructure Status Report - 2013

*It is unclear where central authority lies to implement government-wide upgrades to IT systems and equipment*

**3.65** As a result of this finding, we performed a limited review of the governance structure for corporate IT services. Our expectation was that the Office of the Chief Information Officer (OCIO) has governing authority of the strategic direction of corporate IT in government. However, we found that the OCIO does not have prescribed authority to direct departments to align with overarching, corporate level, strategic goals.

*Prescribed authority appears to be disbursed throughout government departments, but there is no consensus on the appropriate strategic direction of corporate level IT*

**3.66** We found that alignment is promoted through an executive steering committee, with representation from various departments. Prescribed authority appears to be disbursed throughout government departments, but there is no consensus on the appropriate strategic direction of corporate level IT.

**3.67** The result is that significant changes to shared infrastructure, such as improvements to the Marysville Data Centre, encounter resistance due to conflicting strategies of individual departments. The NBISA, as a shared service organization, has little authority to implement significant change to the corporate level IT infrastructure. Evidence suggests that, without an explicit directive from government, significant changes to IT infrastructure may not be possible.

## **Conclusion**

**3.68** Existing risk assessments did identify the backup power system as a vulnerability prior to the outage. Although directed by government in July 2009, DSS did not return to government with a plan for ongoing operation of the Marysville Data Centre and recommendations for risk mitigation were not implemented.

**3.69** Efforts to mitigate risk associated with the single point of failure or lack of redundancy in the backup power system in the Marysville Data Centre were clearly insufficient.

**3.70** It is unclear where central authority lies to implement government-wide upgrades to IT systems and equipment. Prescribed authority appears to be disbursed throughout government departments, but apparently there is no consensus on the appropriate strategic direction of corporate level IT.

- Recommendations**
- 3.71 We recommend the NBISA identify critical infrastructure components and establish replacement plans. We also recommend the NBISA develop and implement a refresh program for such equipment.**
- 3.72 We recommend the Office of the Chief Information Officer (OCIO) define roles and responsibilities related to development of corporate IT strategic development for all departments and take recommendations to cabinet that clarify corporate IT roles and responsibilities and ensure strategic goals of the OCIO, the NBISA and the departments are aligned.**

## Objective 4 - Review of current state of risk

### Our Approach

**3.73** We conducted a review of the current state of risks, specific to the June 9 outage, to identify improvements made as a result of the disaster response. Our focus was on the backup power system and strategies for IT continuity. We did not consider additional risks, which have been previously identified by third-party reports, within the scope of this review.

### Our Findings

**3.74** The UPS has since been replaced with a new unit, at a cost of approximately \$200,000. This equipment is essential in preventing a system failure in the event of a power outage. The previous equipment, installed in 1992, was previously considered a risk due to its age.

**3.75** The ATS has since been replaced with a new unit, at a cost of \$68,000. The previous equipment, installed in 2003, was an uncommon model and the maintenance service provider found it difficult to find technicians to perform repairs.

*The overall configuration of the backup power system remains the same, which, given our review of data centre site infrastructure tier standards, is not suitable for critical systems*

**3.76** The overall configuration of the backup power system remains the same, which, given our review of data centre site infrastructure tier standards, is not suitable for critical systems. Prior recommendations indicated additional redundant backup power systems and additional server redundancy would lower the threat risk posed by an outage. The continued operation of critical provincial government information systems could be at risk in the event of future outages.

*The NBISA has implemented server redundancy between the primary and secondary data centres for government e-mail*

**3.77** The NBISA management indicated they have implemented server redundancy between the primary and secondary data centres for Microsoft Exchange (e-mail). Leveraging the infrastructure available at the newer secondary data centre, this configuration will allow e-mail services to continue in the event of down time at either location. Additional server redundancy is possible; however, this functionality is pending upgrades to equipment at the Marysville Data Centre. The redundancy made possible with these upgrades can be implemented for some critical systems. The concept for this redundancy was included in the 2009 *Strategy for Provision of Computing Facilities* report to DSS.

*The NBISA is implementing improved backup process to reduce recovery times*

**3.78** The NBISA is in the process of implementing an improved backup media technology with a faster transfer rate. If recovery of backup data is required in the future, the new technology should reduce the time required to restore access to critical data.

**Conclusion**

**3.79** The installation of new equipment since June 9 will improve the integrity and reliability of backup power system at the Marysville Data Centre. This reduces the likelihood of a future outage. However, industry experts contracted by the DSS have recommended additional safeguards, such as additional backup power system equipment and additional server redundancy.

*Risk of IT service failure remains*

**3.80** The threat risk posed by a power outage due to the single point of failure or lack of redundancy in the backup power system remains. The continued operation of provincial government information systems could be at risk in the event of another power outage.

**Recommendations**

**3.81** We recommend the NBISA prepare threat risk assessments, as part of its corporate IT continuity planning, and take recommendations to cabinet to further mitigate risk of failure of IT services.

**3.82** We recommend the NBISA develop a data centre availability strategy to provide a level of service congruent with industry standards. We also recommend the NBISA develop a monitoring process to ensure strategies are implemented to achieve the strategic vision.

## Objective 5 - Business continuity and disaster recovery planning

### Our Approach

**3.83** We held discussions with the NBISA as well as various other government organizations to determine the extent of business continuity planning in government.

### Our Findings

**3.84** In general, business continuity planning is a proactive planning process that ensures critical services are available without interruption. Critical services are those that must be available to ensure survival, avoid causing injury, and meet legal and other obligations of an organization. IT continuity and disaster recovery planning is captured within the business continuity plan.

**3.85** IT continuity planning endeavors to ensure that operations are maintained for critical systems, which rely on IT infrastructure.

**3.86** Disaster recovery planning describes how to resume business after a disruption and deals with recovering IT assets in the wake of a disaster.

*Recovery of department systems and data in the event of a system outage depends on the availability of services rendered via the Marysville Data Centre*

**3.87** Business continuity planning for government, as it exists today, is done separately within each department. Recovery of department systems and data in the event of a system outage often depends on the availability of services rendered via the Marysville Data Centre. Continuity planning largely consists of manual processes to supplement the lack of IT services. As a result, critical government systems, which rely on IT infrastructure, remain vulnerable.

*There is no documented continuity plan for IT systems should the Marysville Data Centre fail*

**3.88** IT continuity at the Marysville Data Centre relies on the backup power system in the event of a power outage. This does not provide for a failure of the backup power system. We found there is no documented continuity plan for IT systems should the Marysville Data Centre fail.

*No documented disaster recovery plan is in place*

**3.89** Currently no documented disaster recovery plan is in place to prioritize the order in which critical systems should be resumed in the event of an interruption in services.

*Infrastructure risks were accepted by the NBISA*

**3.90** Bell Aliant had identified risks related to the Marysville Data Centre's backup power system as recently as 2013 in their infrastructure status report. The list of risks was accepted by the NBISA with no documentation of a planned response related to their severity and probability of occurrence.

**Conclusion**

**3.91** While some business continuity planning is in place today, it is not sufficient to safeguard against disasters, which may affect the delivery of critical government programs and services. The exposure of government-wide IT infrastructure to risk is not captured in the current fragmented department plans.

**Recommendations**

**3.92** We recommend the OCIO, in consultation with departments, develop a government-wide IT continuity plan, which considers all aspects of government programs, services and operations. This plan should be tested annually to ensure its adequacy.

**3.93** We recommend the OCIO, as part of IT continuity planning, obtain an assessment of services from each department to identify and prioritize critical systems, which require uninterrupted IT continuity.

**3.94** We recommend the NBISA, in consultation with departments, develop a disaster recovery plan, which prioritizes the restoration of government IT systems.

## Appendix I - Summary of systems impacted by the outage

We requested, from departments, a brief description of any impact/ interruption to service delivery of government programs or internal government processes as a result of the June 9 outage. The table below has been compiled using feedback provided by departments and has not been audited nor have we ensured the completeness of the responses.

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
Legislative Assembly	MS Exchange	Email service	<ul style="list-style-type: none"> <li>Most services were not interrupted since department hosts own servers</li> </ul>
	Oracle Financials Application	Financial	
Tourism, Heritage and Culture	MS Exchange	Email service	<ul style="list-style-type: none"> <li>Lost productivity</li> </ul>
	Share drive	Data Management	
	Internet		
Social Development	MS Exchange	Email services	<ul style="list-style-type: none"> <li>Vendor payments were delayed</li> <li>Safety and Security alerts were not available from NBFamilies, posing risk to workers and outside service providers</li> <li>VEIS not available to vendors and/or would freeze or operate very slowly</li> <li>Significant time and costs spent on recovery efforts</li> <li>Client files could not be accessed, imposing potential risks to staff, lack of client service and backlog of data entry</li> </ul>
	Internet		
	Shared and Personal Drives	Data management	
	NBON (New Brunswick Opportunities Network)	Procurement	
	Payroll	Payment	
	MS SharePoint	Intranet site	

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
	VEIS (Vendor Electronic Invoicing System)	Invoicing Web Portal	<ul style="list-style-type: none"> <li>• After hours Emergency Social Services (AHES) staff were unable to access their On-Call Workers report used for staff scheduling purposes</li> <li>• Inefficiencies and loss of productivity as a result of lack of access to various applications</li> <li>• Significant manual backlogs accumulated in every regional and central office that need to be entered, potentially through overtime hours</li> <li>• Oracle outage caused several hours of re-work for internal staff and external consultants</li> <li>• Various invoices were found to be corrupted resulting in inefficient re-work</li> <li>• Calendars containing details on meetings were unavailable – individuals did not know what was in their daily schedule, nor could they access any documents for those meetings, affecting entire department's productivity.</li> </ul>
	AHES (After hours Emergency Social Services)	Scheduling	
	EIS (Executive Information System)	Internal performance reporting	
	FOS (Financial Operating System)	Departmental budgeting system	
	NBClient	Client registry	
	Oracle Financials	Financial	
	OCS (Office Communication Server)	Communication	
	Blackberry services	Communication	

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
			<ul style="list-style-type: none"> <li>• Current, historical and pending documents/reports/presentations/spreadsheets in progress or needed to take to meetings were unavailable</li> <li>• OCS has been failing intermittently since outage and certain outstanding issues still remain – this represents a serious degradation in efficiency</li> <li>• Delays and increased expenses for projects underdevelopment</li> <li>• Increased calls to Help Desk to report issues</li> <li>• Many senior staff rely on Blackberry devices on a daily basis</li> </ul>
Human Resources	PIBA (Pensions and Insured Benefits Application)  MS Exchange  File SAN (Storage Area Network)	Expenditure  Email service  Data storage	<ul style="list-style-type: none"> <li>• Staff members were severely restricted in their ability to deliver services to active members, employers, pensioners and dependents on June 9, 2014. Intermittent connectivity issues affected staff to varying degrees until Friday, June 13, 2014.</li> </ul>

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
	POLS (Pensions and Insured Benefits Application On-Line Services)	Web Portal	
	ESS (Employee Self Service) & Human Resources Corporate Website	Human resources	
	Corporate Enterprise Backup services	Data recovery service	
Justice	File SAN	Data Management	<ul style="list-style-type: none"> <li>• Extensive. Many applications are deployed using ClickOnce, and the ClickOnce manifests are on the SAN.</li> <li>• Systems had to be restored to 5:30AM June 9, the latest reliable backup prior to the power outage</li> <li>• One server that housed applications could not be brought back online successfully so it had to be restored to the latest reliable backup prior to the power outage which was 7:00PM June 7</li> </ul>
	ClickOnce	Data Management	
	JISNB (Justice Information System)	Financial	
	AEGIS (Legal Aid)	Financial	
	FSOS (Family Support Order System)	Financial	
	NOTA (Court of Queen's Bench)	Case Management	

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
			<ul style="list-style-type: none"> <li>• Employees had to re-enter/enter data from the period June 7th – June 13th into the appropriate applications</li> <li>• Outages required for repair work impacted the weekend remand court</li> </ul>
Health	MS Exchange Internet Shared Drives MS SharePoint CSDS (Client Service Delivery System) Electronic Health Record Medicare Application High Speed Teletransmission On Line Application	Email services Data Management Intranet site Payment Claims entry	<ul style="list-style-type: none"> <li>• No access to critical information</li> <li>• Public Health workers could not determine which vaccines had previously been administered</li> <li>• Mobile Crisis and Detox workers were affected</li> </ul>

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
Transportation and Infrastructure	MS Exchange	Email services	<ul style="list-style-type: none"> <li>• Intermittent loss</li> </ul>
	Internet		
	File server access	Data Management	
Post-Secondary Education, Training and Labour	MS Exchange	Email services	<ul style="list-style-type: none"> <li>• IT developers unable to perform duties (June 9).</li> <li>• Duplication of work – some work could be performed on paper while systems were down, but needed to be entered into applications once systems were back on line.</li> </ul>
	Internet		
	File server access	Data Management	
Economic Development	MS Exchange	Email services	<ul style="list-style-type: none"> <li>• Unable to process claims and applications; reduced communication with companies. No financial loss and disruption was limited to loss of productivity.</li> </ul>
	Files	Data Management	
Finance	FIS (Financial Information System)	Financial	<ul style="list-style-type: none"> <li>• Financial information systems down</li> </ul>
	File SAN (Storage Area Network)	Data Storage	
	Share drive	Data Management	
Service New Brunswick	GeoNB/Online		<ul style="list-style-type: none"> <li>• Registries Branch unable to provide fulfillment of submissions received and registry clients were unable to present new submissions electronically.</li> </ul>
	Website		

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
			<ul style="list-style-type: none"> <li>• Impact on customer care at all 39 Service Centers and TeleServices.</li> <li>• Access to auto dealers via online application not available and access to motor vehicle registration was very intermittent.</li> <li>• Limited impact on specific assessment business</li> </ul>
New Brunswick Liquor Corporation	Network  Active Directory  Warehouse management system  VPN (Virtual Private Network)  MS Exchange  Blackberry	   Inventory control  Remote access  Email services  Communications	<ul style="list-style-type: none"> <li>• Point Of Sale – card tendering and gift card functionality impacted</li> <li>• Unable to perform basic logons, impacting all services</li> <li>• No remote work was possible</li> <li>• Store communications were hampered</li> <li>• Legacy Blackberry were affected – inconvenience (severity dependent on particular customer)</li> <li>• Lost productivity at head office and 44 stores</li> </ul>

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
Agriculture, Aquaculture and Fisheries	MS Exchange	Email services	<ul style="list-style-type: none"> <li>Unable to correspond with other users and outside clients</li> </ul>
	Network Folders	Data Management	<ul style="list-style-type: none"> <li>Unable to access files and folders on shared drives</li> </ul>
	DALS (Dairy Lab Systems)	Data Management	<ul style="list-style-type: none"> <li>Unable to enter quality data from prior week testing and generate reports within normal time frame – agri-food services inspectors did not receive results until later in the week. These results determine payments to producers.</li> </ul>
	Fish Health Database	Data Management	<ul style="list-style-type: none"> <li>No specific effect identified</li> </ul>
	Correspondence Tracking	Data Management	<ul style="list-style-type: none"> <li>No specific effect identified</li> </ul>
Public Safety	CIS (Client Information System)	Client Information System	<ul style="list-style-type: none"> <li>Lost or corrupted data requiring long hours to restore</li> <li>Client case management information was unavailable</li> <li>Information used to determine a client's level of risk was not available</li> <li>Manual collection of information and follow up to ensure all information is entered into CIS is duplication in work effort</li> </ul>

### Appendix I - Summary of systems impacted by the outage (continued)

Department	System/Service Affected	Type of System/Service	Impact as reported by Department
	AMANDA	Licensing and permitting system for Technical Inspection Services and Motor vehicle services licensing	<ul style="list-style-type: none"> <li>Information on clients due to be released from custody was not available requiring going through manual files</li> <li>Manual calculations of sentence were required for all clients admitted to a Provincial institution</li> <li>Information on clients scheduled for court appearances was not available</li> <li>Information on clients requiring telephone monitoring was not available; therefore some clients did not receive the required monitoring</li> <li>No access to the Victim Notification information to inform victims of offenders activities as described in the program</li> <li>Licenses could not be issued</li> <li>Diminished communication</li> <li>No access to information from Justice for probation/conditional sentence orders</li> <li>Inability to host meetings online</li> </ul>
	Subsystems linked to Motor Vehicle system (Morpho and IRE/CCMTA)	Vendor's Driver's license issuance system	
		Interprovincial Records Exchange	
	CDIS (Coroner Death Investigation System)	Coroner Death Investigation System	
	MS Exchange	Email services	
	JIS (Justice Information System)	Revenue/Expenditure	
	OCS	Communications	



## Appendix III - Glossary of Terms

Term	Definition
Automatic transfer switch (ATS)	The automatic transfer switch transitions the source of power for the building from the electrical grid to the standby power generator.
Backup power system	Backup power systems use local generation at the facility site to provide power when the utility is not available. The backup power system may or may not be interconnected with the utility grid. <sup>1</sup>
Business continuity plan (BCP)	A business continuity plan enables critical services or products to be continually delivered to clients. Instead of focusing on resuming a business after critical operations have ceased, or recovering after a disaster, a business continuity plan endeavors to ensure that critical operations continue to be available. <sup>4</sup>
Backup Media	Refers to different types of data storage options used to backup systems.
Crisis management team	Formed to protect an organization against the adverse effects of crisis. Crisis management team prepares an organization for inevitable threats. <sup>3</sup>
Critical services/systems	Critical services or products are those that must be delivered to ensure survival, avoid causing injury, and meet legal or other obligations of an organization. <sup>4</sup>
Data centre	A facility housing computer systems and related components.
Disaster recovery plan	Applies to major, usually catastrophic, events that deny access to the normal facility for an extended period. <sup>2</sup> A Disaster recovery plan deals with recovering information technology (IT) assets after a disastrous interruption. <sup>4</sup>
Failover	Failover is the constant capability to automatically and seamlessly switch to a highly reliable backup. This can be operated in a redundant manner or in a standby operational mode upon the failure of a primary server, application, system or other primary system component. The main purpose of failover is to eliminate, or at least reduce, the impact on users when a system failure occurs. <sup>6</sup>
Hard crash	When a program stops running completely and unexpectedly, often due to external events. <sup>8</sup>
Standby power generator	Machine that converts mechanical energy to electricity for transmission and distribution
Grid	A network of electrical wires and equipment that supplies electricity to a large area. <sup>5</sup>

### Appendix III - Glossary of Terms (continued)

Term	Definition
IT continuity plan	Addresses the IT exposures and solutions based on the priorities and framework of the business continuity plan. <sup>2</sup>
Redundancy	Refers to duplicate devices that are used for backup purposes. The goal of redundancy is to prevent or recover from the failure of a specific component or system. <sup>7</sup>
Single point of failure	A single point of failure (SPOF) is a critical system component with the ability to cease system operations during failover. SPOFs are undesirable to systems requiring reliability and availability, such as software applications, networks or supply chains. <sup>6</sup>
Threat risk assessment	Refers to the process of defining and analyzing the dangers to government organizations posed by potential natural or human-caused adverse events. An assessment of overall risk is a function of severity and likelihood of occurrence and indicates whether a mitigation response is warranted.
Uninterruptable Power Supply (UPS)	A type of power supply that uses battery backup to maintain power during unexpected power outages. In mission critical data centers, UPS systems are used for just a few minutes until electrical generators take over. The online UPS is continuously providing clean power from the battery, and the computer equipment is never receiving power directly from the AC outlet. <sup>7</sup>
Utility	A service (such as a supply of electricity or water) that is provided to the public. <sup>6</sup>

## Appendix III - Glossary of Terms (continued)

Sources:

- <sup>1</sup> National Electrical Manufacturers Association. (2014). *Backup power systems*. Retrieved October 24, 2014, from <http://www.nema.org/Storm-Disaster-Recovery/Backup-Generation/Pages/Backup-Power-Systems.aspx>
- <sup>2</sup> Office of the Auditor General of British Columbia. (2010). *IT continuity planning in government*. Retrieved September 2014, from [www.bcauditor.com](http://www.bcauditor.com)
- <sup>3</sup> Management Study Guide. (2014). *Crisis management*. Retrieved October 24, 2014, from <http://www.managementstudyguide.com/crisis-management-team.htm>
- <sup>4</sup> Government of Canada. (2014). *A guide to business continuity planning*. Retrieved September 22, 2014, from <http://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/bsnss-cntnt-plnng/index-eng.aspx>
- <sup>5</sup> Janalta Interactive Inc. (2010-2014). *Techopedia*. Retrieved October 24, 2014, from <http://www.techopedia.com/>
- <sup>6</sup> Merriam-Webster, Incorporated. (2014). *M-w.com*. Retrieved October 24, 2014, from <http://www.merriam-webster.com/dictionary>
- <sup>7</sup> TechTerms.com. (2014). Retrieved October 24, 2014, from <http://www.techterms.com/definition>
- <sup>8</sup> Dictionary.com, LLC (2014) Retrieved December 10, 2014, from <http://dictionary.reference.com/>

# Chapter 4

## Follow-up on Recommendations from Prior Years' Performance Audit Chapters

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# Follow-up on Recommendations from Prior Years' Performance Audit Chapters

## Background

- 4.1** This follow-up chapter promotes accountability by giving the Legislative Assembly, and the general public, information about how responsive government has been to our performance audit recommendations. We think it is important that both MLAs and taxpayers be provided with sufficient information to assess the progress government is making in implementing these recommendations.
- 4.2** Note that recommendations made to departments and Crown agencies pursuant to our financial audit work are followed up annually as part of our financial audit process, and are not discussed in this chapter. For a complete list of Performance Audit reports over the last ten years, please see Appendix A.
- 4.3** We continue to have a strategic goal that departments and agencies accept and implement our performance audit recommendations. Consequently, in this chapter we report on the updates as provided to us by departments and Crown agencies for performance audit recommendations made in our 2010, 2011, and 2012 Reports. Even though we do not have the resources to review the accuracy of all responses annually, we reviewed the responses received related to our 2010 recommendations for accuracy, and gathered and summarized the information submitted by departments for 2011 and 2012. (See Chapter 1 for follow up on 2012 recommendation regarding long term infrastructure sustainability plan and see Appendix B for detailed status report of recommendations since 2010).

## Summary

**4.4** Our overall results show departments and agencies report they had implemented about 69% (64 of 93) of our performance audit recommendations from the 2010, 2011 and 2012 Reports of the Auditor General.

**4.5** The percentage of performance audit recommendations implemented from 2010 was 62%. It appears, based on self-reporting by the Departments responsible for responding to recommendations in our 2011 and 2012 reports, that four-year percentages may ultimately be at a comparable level or better for 2011 and 2012.

## Scope and Objectives

**4.6** Our practice is to track the status of our performance audit recommendations for four years after they first appear in the Report of the Auditor General, starting in the second year after the original Report. In other words, in this 2014 Report, we are tracking progress on performance audit recommendations from 2010, 2011 and 2012. Our objective is to determine the degree of progress departments and agencies have made in implementing our recommendations. We have assessed their progress as fully implemented, not implemented, disagreed with, or no longer applicable.

**4.7** To prepare this chapter, we request written updates on progress from the respective departments and Crown agencies. They are asked to provide their assessment of the status of each performance audit recommendation. In addition, departments and agencies also add any explanatory comments they believe necessary to explain the rationale for their assessment.

**4.8** We received all updates requested.

**4.9** In the past year we followed up on all performance audit recommendations made in our 2010 Report. Areas covered included:

- Financial Assistance to Industry;
- Immigration with the Provincial Nominee Program;
- New Brunswick Art Bank; and

- New Brunswick Liquor Agency Stores.

## Detailed Findings

**4.10** This section provides details on how well departments and Crown agencies have done in implementing performance audit recommendations we made in the years 2010, 2011 and 2012. Exhibit 4.1 gives an overview of the status of recommendations by department and agency. Exhibit 4.2 shows the results summarized by year.

**4.11** Exhibit 4.2 shows departments and agencies reported to us that they had implemented 41 of 56 (73%) of our performance audit recommendations from 2011 and 2012 Reports of the Auditor General. For 2010, based upon departmental and agency reporting, and our own review of their assessments, we have concluded that 23 of 37 (62%) of our recommendations have been implemented, excluding 7 additional recommendations that are no longer applicable. Of the remaining 14 recommendations, 11 have been agreed with but not yet implemented and three have been disagreed with. Consistent with our established process, this is the last year that our 2010 performance audit recommendations will be subject to our formal follow up process. However, project areas covered in 2010 may be considered for future performance audit reports.

Exhibit 4.1 - Status of Performance Audit Recommendations as Reported by Departments/Agencies

Department / Agency	Audit area	Year	Performance Audit Recommendations					% Implemented
			Total	Disagreed	Implemented	Agreed/Not implemented	No longer applicable	
Economic Development	Financial Assistance to Industry	2010	7	3	2	2	0	29
Tourism, Heritage and Culture	New Brunswick Art Bank	2010	7	0	7	0	0	100
Environment and Local Government	Solid Waste Commission	2012	13	0	11	2	0	85
	Wastewater Commission	2011	7	0	6	1	0	86
Executive Council/ Legislative Assembly	Constituency Office Costs for MLAs and Executive Council	2011	5	0	3	2	0	60
Finance / Transportation and Infrastructure	Public Private Partnerships	2011	10	0	10	0	0	100
Health	EHealth – Procurement and Conflict of Interest	2012	6	0	5	1	0	83
	Medicare – Payments to Doctors	2012	3	0	1	2	0	33
New Brunswick Liquor Corporation	Agency Stores	2010	10	0	3	0	7	100*
Post-Secondary Education, Training and Labour	Immigration with the Provincial Nominee Program	2010	20	0	11	9	0	55
Social Development	CMHC Social Housing Agreement	2011	2	0	0	2	0	0
Transportation and Infrastructure	Capital Maintenance of Highways	2012	10	0	5	5	0	50
<b>Totals</b>			<b>100</b>	<b>3</b>	<b>64</b>	<b>26</b>	<b>7</b>	<b>69</b>

\*100% implemented rate excludes those recommendations that are no longer applicable.

Exhibit 4.2 - Summary Status of Recommendations by Year as Reported by Departments/Agency

Year	Recommendations					% Implemented *
	Total	No longer applicable	Implemented	Agreed/Not implemented	Disagreed	
2012	32	0	22	10	0	69
2011	24	0	19	5	0	79
2010	44	7	23	11	3	62
Total	100	7	64	26	3	69

\* excludes those no longer applicable

### Comments on recommendations from 2010

**4.12** Exhibit 4.3 provides a full listing of our 2010 performance audit recommendations that are still not implemented.

**4.13** Our 2010 performance audit recommendations have reached the end of the four year follow-up cycle. Projects included in the 2010 Report included:

- Financial Assistance to Industry;
- Immigration with the Provincial Nominee Program;
- New Brunswick Art Bank; and
- New Brunswick Liquor Agency Stores.

**4.14** Immediately following Exhibit 4.3, we provide additional commentary on some of the performance audit recommendations from these four 2010 projects.

**4.15** We encourage Members of the Legislative Assembly to look at the 2010 performance audit recommendations which the government has not implemented. Upcoming meetings of the Public Accounts Committee and the Crown Corporations Committee provide an opportunity for Members to pursue the status of these recommendations with the involved departments and Crown agencies.

Exhibit 4.3 - Summary Status of 2010 Performance Audit Recommendations Not Implemented

Department / Agency	Chapter Name	Year	Volume	Chapter	Paragraph	Recommendation	Status
Economic Development	Financial Assistance to Industry	2010	2	2	31	We recommended the Department establish additional measurable targets for FAIP [Financial Assistance to Industry] Program to allow it to evaluate FAIP from different perspectives.	Not Implemented
		2010	2	2	53	We recommended the Department establish policies and procedures with respect to verifying clients' financial information other than their audited financial statements.	Disagreed With
		2010	2	2	75	We recommended BNB establish policies and procedures regarding which types of financial analysis should be performed to identify risk of potential loss and which types of mitigation steps should be taken based on the risks identified.	Disagreed With
		2010	2	2	94	We recommended the Department report to the Legislative Assembly on the success of FAIP in achieving the Department's targets.	Not Implemented
		2010	2	2	105	We recommended BNB put in place a monitoring process that directly assesses each forgivable loan recipient's progress compared to the original payback calculation. This assessment should look at each of the three components of the original payback calculation: the risk factor, the estimated amount of incremental payroll and the income tax rate.	Disagreed With
Post-Secondary Education, Training and Labour	Immigration with the Provincial Nominee Program	2010	2	3	67	The Secretariat should develop and implement appropriate monitoring procedures for the Provincial Nominee Program.	Not Implemented
		2010	2	3	78	The Secretariat should ensure the Provincial Nominee Program is adequately supported with documented policies and procedures.	Not Implemented
		2010	2	3	104	The Secretariat should ensure the Provincial Nominee Program operates in compliance with the Canada-New Brunswick Agreement.	Not Implemented
		2010	2	3	105	The Secretariat should develop and implement an evaluation plan which allows it to measure performance of the Provincial Nominee Program and determine if the program meets its objective "to increase the economic benefits of immigration to New Brunswick". Corrective action should be taken to address deficiencies identified by the evaluation.	Not Implemented

Exhibit 4.3 - Summary Status of 2010 Performance Audit Recommendations Not Implemented (continued)

Department / Agency	Chapter Name	Year	Volume	Chapter	Paragraph	Recommendation	Status
Post-Secondary Education, Training and Labour	Immigration with the Provincial Nominee Program	2010	2	3	108	The Secretariat should establish program goals, performance indicators and monitoring procedures for evaluating performance of the Provincial Nominee Program.	Not Implemented
		2010	2	3	111	The Secretariat should develop and implement an approach to regularly measure performance of the Provincial Nominee Program and compare performance to the objectives and targets stated in the "Population Growth Strategy".	Not Implemented
		2010	2	3	118	The Secretariat should review the objectives and targets relating to immigration stated in the Strategy and establish a specific action plan for achieving their objectives and targets.	Not Implemented
		2010	2	3	119	The Division should develop annual operational plans to be used in day-to-day work, which would result in the achievement of the annual targets shown in the Population Growth Strategy.	Not Implemented
		2010	2	3	123	To provide better accountability to the Legislative Assembly and the public, the Secretariat should report on the performance of the Provincial Nominee Program both on its website and in the Department's Annual Report.	Not Implemented

## Economic Development

### Financial Assistance to Industry

#### Two of seven recommendations have been fully implemented

**4.16** In this project our objective was to assess whether the Department had adequate procedures in place to measure and report on the effectiveness of the financial assistance it provides to industry.

**4.17** We concluded in 2010 that the Department had made improvements in the areas of setting objectives and targeted results for Financial Assistance to Industry Program (FAIP) as well as capturing data and documenting its monitoring activities. However, we found the level of monitoring performed by the Department was not sufficient and clearly documented policies and procedures either did not exist or were not consistently applied. We also found the Department needed to improve the reporting of information about the effectiveness of the FAIP in its annual reports.

**4.18** We are disappointed to report that of our seven original recommendations to the Department, only two have been fully implemented. The Department disagreed with three of our recommendations and two others have not been fully implemented.

**4.19** In 2010 we recommended:

*“The Department establish additional measurable targets for FAIP to allow it to evaluate FAIP from different perspectives.”*

**4.20** In their 2014 response, the Department indicated it *“will be implementing during 2014-2015 additional measurable targets of its programs during the Balanced Scorecard exercise.”*

**4.21** We also recommended that:

*“The Department report to the Legislative Assembly on the success of FAIP in achieving the Department’s targets.”*

**4.22** In their 2014 response, the Department stated that *“Balanced Scorecard data to be presented in 2014-2015 Annual Report. FAIP data is material to 2 key departmental performance measures and is the source of another performance measure being “Rate of*

*recovery on loan portfolio.”*

**4.23** The Department continues to work towards the implementation of these two recommendations for the evaluation and reporting on the performance of the Financial Assistance to Industry Program. As activities are planned for 2014-15, they have not been fully implemented at the time of our review.

**4.24** The Department disagreed with the following three recommendations made in 2010:

- *“We recommended the Department establish policies and procedures with respect to verifying clients’ financial information other than their audited financial statements.”*
- *“We recommended BNB [Economic Development] establish policies and procedures regarding which types of financial analysis should be performed to identify risk of potential loss and which types of mitigation steps should be taken based on the risks identified.”*
- *“We recommended BNB [Economic Development] put in place a monitoring process that directly assesses each forgivable loan recipient’s progress compared to the original payback calculation. This assessment should look at each of the three components of the original payback calculation: the risk factor, the estimated amount of incremental payroll and the income tax rate.”*

**4.25** For the first recommendation, the Department responded that it *“did not fully implement this recommendation due to the multitude of information requiring policies or procedures to be developed. The Department continues to rely upon the experience and professional qualifications of its Project Executives to undertake the appropriate “tests” of accuracy of information. Management has stressed the need to document methods and actions undertaken to validate information on individual files and endeavor to follow up with staff where concerns may exist.”*

**4.26** For the second recommendation, the Department responded that it *“continues to feel that the need for policies to provide procedural guidance, to project*

*executives, detailing the type and method of analysis to be undertaken is not required given the officers' level of experience and professional certification.*

*Furthermore, in instances where serious risk of loss is identified measures are developed in consultation with line managers including senior management with further advisement by the Office of the Attorney General officials as required. Often, due to our subordinate position on security, negotiations may include private sector lenders as well. In short, each case is different and it would be most difficult to develop policies and procedures for each possible circumstance."*

**4.27** For the third recommendation, the Department responded "*The comments in the report and above recommendation implies that such a monitoring process is not in place, whereas it actually is in place and is the responsibility of the assigned project executives.*" We would note that the process in place at Economic Development is not the one proposed in our recommendation, and the Department does not intend to change the process described in its response.

## Post-Secondary Education, Training and Labour

### Immigration with the Provincial Nominee Program

**4.28** In this project, we wanted to determine whether the Population Growth Secretariat:

- has identified and documented significant planning measures for New Brunswick's Provincial Nominee Program;
- has adequate processes and controls for delivering the Provincial Nominee Program in New Brunswick and to determine if they support the program in achieving its objective "to increase the economic benefits of immigration to New Brunswick"; and
- measures performance for the Provincial Nominee Program and to determine if it publicly reports the program's performance.

**Eleven of our twenty recommendations have been implemented**

**4.29** Our 2010 report concluded that the key element missing from New Brunswick's Provincial Nominee Program (PNP) is monitoring. Without monitoring, the PNP was:

- unable to measure its success and report on its performance;
- subject to increased risk of program abuse as immigrants use the program as a gateway to Canada because of its shorter processing time;
- not complying with the Canada-New Brunswick Agreement on Provincial Nominees; and
- unable to identify the benefits of PNP as the number of nominees that settle and contribute economically in New Brunswick was not measured.

**4.30** As a result of our findings, we made 20 recommendations. We found the Department has fully implemented 11 of these recommendations, while implementation of the other nine continues as discussed in the paragraphs that follow.

**4.31** We recommended the Secretariat "*develop and implement appropriate monitoring procedures for the*

*Provincial Nominee Program.”*

**4.32** In their 2014 response, the Department stated that the implementation of this recommendation is in-progress, adding:

*“Effective monitoring and tracking of provincial nominees continues to be an issue for all territorial and Provincial Nominee Programs. The following initiatives have been introduced by PGD [Population Growth Division] to enhance monitoring and tracking:*

- 1. Following the restructuring in 2013, PGD established a new committee to develop a plan for tracking and monitoring landed nominees. The plan will be implemented over the next 12 months.*
- 2. PGD continues to identify gaps in reporting and presented another scope of work for PETL IT Division to capture the activities of landed nominees for two years post-landing. (Two years is consistent with CIC Annual Report on Provincial Nominees).*
- 3. PGD is working with the Privacy Engagement Review Committee and the Research Data Centre at UNB to find efficient ways to track landed nominees.*
- 4. PGD is assisting the Research Data Centre at UNB in its effort to obtain access to the Longitudinal Immigration Database (IMDB). This database links immigration and taxation records and will allow PGD to track landed nominees.”*

**4.33** We also recommended the Secretariat *“ensure the Provincial Nominee Program is adequately supported with documented policies and procedures.”*

**4.34** In their 2014 response, the Department indicated this recommendation is in progress:

*“PGD has engaged a third party to develop a program policy framework to prescribe the procedures for attracting, processing, selecting the best possible candidates for immigration to NB by describing all provincial actions required to meet the requirements of the provincial-federal agreement. The process should be finalized by fall 2014.”*

- 4.35** We further recommended the Division “*ensure the Provincial Nominee Program operates in compliance with the Canada-New Brunswick Agreement.*”
- 4.36** The Department responded in 2014 that implementation is in progress, adding “*PGD is moving toward compliance with the Canada-New Brunswick agreement, paragraph 7.1 as it relates to program evaluation and information exchange.*”
- 4.37** The Department has indicated the implementation of five of our recommendations, pertaining to performance measurement and evaluation, will be completed once a new population growth strategy is in place, as described in the following paragraphs.
- 4.38** We recommended the Division “*develop and implement an evaluation plan which allows it to measure performance of the Provincial Nominee Program and determine if the program meets its objective to “increase the economic benefits of immigration to New Brunswick.” Corrective action should be taken to address deficiencies identified by the evaluation.*”
- 4.39** The Department noted this recommendation is in progress, responding in 2014 “*due to federal immigration caps imposed upon the Provincial Nominee Program the current objectives and targets are unattainable. PGD is currently developing a revised population growth strategy that will be implemented in 2014. An evaluation plan will be developed in concert with the strategy.*”
- 4.40** We also recommended the Division “*establish program goals, performance indicators and monitoring procedures for evaluating performance of the Provincial Nominee Program.*”
- 4.41** The Department reported the implementation of this recommendation is in progress in its 2014 response: “*PGD is currently developing a new population growth strategy that will be implemented in 2014. Program goals, performance indicators and monitoring procedures for evaluating performance will be developed.*”
- 4.42** We also recommended the Division “*develop and implement an approach to regularly measure performance of the Provincial Nominee Program and*

*compare performance to the objectives and targets stated in the Population Growth Strategy.”*

**4.43** The Department responded that the implementation of this recommendation is in progress in their 2014 response: *“PGD is currently developing a new population growth strategy that will be implemented in 2014. Performance will be regularly measured and compared to the objectives and targets.”*

**4.44** We also recommended the Division *“review the objectives and targets relating to immigration stated in the Strategy and establish a specific action plan for achieving their objectives and targets.”*

**4.45** The Department responded that the implementation of this recommendation is in progress in their 2014 response: *“PGD is currently developing a new population growth strategy that will be implemented in 2014. New objectives and targets will be developed.”*

**4.46** We further recommended the Division *“develop annual operational plans to be used in day-to-day work, which would result in the achievement of the annual targets shown in the Population Growth Strategy.”*

**4.47** The Department responded that the implementation of this recommendation is in progress in their 2014 response: *“PGD is currently developing a new population growth strategy that will be implemented in 2014. Operational plans will be developed and aligned to annual targets.”*

**4.48** Our final recommendation addressed annual performance reporting. In 2010, we recommended the following: *“To provide better accountability to the Legislative Assembly and the public, the Division should report on the performance of the Provincial Nominee Program both on its website and in the Department’s Annual Report.”*

**4.49** The Department responded in 2014 that the *“Division adheres to the Provincial Annual Report Policy.”* We note this policy does not require website reporting.

**4.50** We also reviewed the Department’s most recent annual report (2012-2013) and found that the information provided was insufficient to assess the performance of the Provincial Nominee Program. As a

result, we find this recommendation has not been implemented.

**4.51** We encourage the Department to continue to move forward with its ongoing initiatives and the implementation of our outstanding recommendations.

**Wellness, Culture and Sport****New Brunswick Art Bank**

**4.52** Our objective in this audit was:

*“To ensure that all art works acquired for the provincial Art Bank can be accounted for and are being adequately protected, maintained and conserved.”*

**4.53** We concluded that all artworks in the collection can be accounted for and are being adequately protected. However, as a working collection which is on display at all times, artworks in the collection are not being adequately maintained and conserved due to a lack of funding available to complete needed work. As a result, the overall condition of the collection is lower than should be expected of a permanent collection.

**All recommendations  
have been fully  
implemented**

**4.54** We made seven recommendations to the Department of Wellness, Culture and Sport, now the Department of Tourism and Heritage. We are very pleased to report that all recommendations have been fully implemented.

## New Brunswick Liquor

### Agency Stores

**4.55** Our objective for this audit was:

*“To determine whether the New Brunswick Liquor Corporation has appropriate control procedures for its agency store program.”*

**4.56** Our 2010 report found that NB Liquor had strategic direction for the agency store program. We also found that contracts with agency stores adequately reflected ANBL'S [Alcool NB Liquor] expectations as outlined in the agency store policy, and ANBL had appropriate control procedures to monitor agency stores' compliance with contract agreements. Finally, we found that ANBL had management and operating procedures in place for its agency store program; however, by not fully assessing the sale potential of the assets involved, it was missing a significant control.

**Three of our ten recommendations have been implemented**

**4.57** As a result of our findings, we made ten recommendations to NB Liquor. Three of the recommendations have been fully implemented. The remaining seven recommendations are no longer considered applicable, specifically:

- Two of the recommendations related to the process to be followed in future reviews of the ANBL retail network. Such a review has not been completed since our audit;
- Two of the recommendations were directed towards the operations of the ANBL Agency Stores Committee. That committee no longer exists; and
- Three of the recommendations related to the process to be followed by ANBL in future sales of existing ANBL- owned stores. Such a transaction has not occurred since our audit.

## General Comments on the Implementation of our Recommendations

**4.58** As noted earlier, we encourage the Public Accounts and Crown Corporations Committees to use this chapter to hold government accountable for implementing our performance audit recommendations. Exhibit 4.4 reports government's progress, in implementing our performance audit recommendations since 1999.

*Exhibit 4.4 - Implementation of Performance Audit Recommendations*

Year	Number of Recommendations	Recommendations Implemented Within		
		Two years	Three years	Four years
1999	99	35%	42%	42%
2000	90	26%	41%	49%
2001	187	53%	64%	72%
2002	147	39%	58%	63%
2003	124	31%	36%	42%
2004	110	31%	38%	49%
2005	89	27%	38%	49%
2006	65	22%	38%	N/A*
2007	47	19%	N/A*	45%**
2008	48	N/A*	60%**	57%****
2009	49	73%**	73%***	74%****
2010	44	64%***	70%***	62%****
2011	24	71%***	79%***	-
2012	32	69%***	-	-
* N/A as no follow-up performed in 2010 ** As self-reported by departments and agencies with confirmation by our Office in the Department of Justice and Consumer Affairs *** As self-reported by departments and agencies **** As self-reported by departments and agencies and reviewed for accuracy by our Office.				

**4.59** We are encouraged that the percentage of performance audit recommendations implemented continues to gradually increase over time. It appears, based on self-reporting by the departments and agencies responsible for responding to recommendations in our 2011 and 2012 reports, that four-year percentages may be at a comparable level or better in the next two years.

**4.60** We are committed to continuing to work with departments and Crown agencies to develop sound, practical recommendations in all our performance audit reports. Also, we will continue to use our follow-up process as a means of providing encouragement and support for departments and Crown agencies to fully implement, on a timely basis, as many of our performance audit recommendations as possible.

# Appendix A

## Summary of Significant Projects Conducted in Departments and Crown Agencies over the Past Ten Years

The following is a list of value-for-money projects reported in a separate chapter of our annual Reports over the last ten years, organized by department and agency. The year of reporting is in brackets following the subject of the projects. The list is organized using the current name of the department or agency, even though in some cases the project was conducted prior to government reorganization.

### **Department of Economic Development**

#### **Financial Assistance to Industry (2010)**

This chapter assesses whether the Department has adequate procedures in place to measure and report on the effectiveness of the financial assistance it provides to industry.

#### **New Brunswick Innovation Foundation (2009)**

This chapter examines whether governance structures and practices established by the Department in connection with the delivery of innovation funding through the New Brunswick Innovation Foundation ensure accountability and protection of the public interest.

### **Department of Education and Early Childhood Development**

#### **Provincial Testing of Students – Anglophone Sector (2009)**

This chapter assesses the Department's strategic direction for its provincial testing of students in the Anglophone sector. It also assesses the Department's process of administering its provincial testing of students in the Anglophone sector.

#### **Facilities Maintenance (2005)**

This chapter examines whether the Department has adequate systems and practices in place to ensure that school facilities are appropriately maintained.

## **Department of Environment and Local Government**

### **Solid Waste Commissions (2012)**

This chapter examines the governance, accountability and financial management of the twelve provincial solid waste commissions. It also addresses the Province's involvement in reducing the impacts of solid waste on the environment.

### **Wastewater Commissions (2011)**

This chapter examines the governance, accountability and financial practices of the three largest wastewater commissions: the Greater Moncton Sewerage Commission, the Greater Shediac Sewerage Commission and the Fredericton Area Pollution Control Commission. The report addresses concerns with respect to board governance, accountability and questionable financial practices of the Greater Moncton Sewerage Commission.

### **Environmental Trust Fund (2009)**

This chapter examines whether the purpose of the Environmental Trust Fund is clearly established, and whether the Fund is measuring and reporting the achievement of its goals and objectives. It also examines whether the Fund is operating as intended with respect to grants.

### **Environmental Impact Assessment (2008)**

This chapter examines whether the Department is carrying out its key roles and responsibilities under the NB Environmental Impact Assessment (EIA) Regulation and related Departmental guidelines with due regard for economy, efficiency and effectiveness. It also identifies key risks associated with the provincial EIA process and determines the extent to which those risks are being managed.

## **Executive Council Office**

### **Constituency Office Costs for Members of the Legislative Assembly and Executive Council (2011)**

This chapter reports observations, findings and recommendations regarding Members' constituency office costs with respect to the authority and management by both the Office of the Clerk of the Legislative Assembly and departments. It identifies positive features, as well as issues that need improvement to ensure proper stewardship and accountability.

## **Department of Finance**

### **Collection of Accounts Receivable (2013)**

This chapter provides information on provincial policies and initiatives currently underway to improve the collection of accounts receivable, and our comments relating to those policies and initiatives.

## **Department of Government Services**

### **Procurement of Goods and Services – Phase 1 (2013)**

This chapter examines whether public purchasing practices used by the Department comply with key components of the regulatory framework and best practices, and if it publicly reports on the effectiveness of the procurement function.

## **Department of Health**

### **Medicare - Payments to Doctors (2012)**

This chapter examines whether the Department of Health is maximizing its recovery of incorrect Medicare payments to doctors, through the practitioner audit function. It also highlights unusual items that warrant further investigation by the Department.

### **EHealth – Procurement and Conflict of Interest (2012)**

This chapter examines the government procurement policy for purchases of services related to the E-Health initiative. It also examines whether a conflict of interest exists in the use of consultants.

### **Program Evaluation (2007)**

This chapter examines whether adequate systems and practices have been established to regularly evaluate programs funded by the Department of Health.

### **Health Levy (2006)**

This chapter explains what the health levy is for, and summarizes the issues we identified related to the health levy process.

### **Prescription Drug Program (2005)**

This chapter examines whether the Department has adequate procedures in place to manage the performance of the Prescription Drug Program, and whether there is adequate reporting on the Prescription Drug Program's performance. It also examines whether the Department has adequate procedures in place to ensure that the drug assessment process for formulary listing and the amount paid for drugs and pharmacy services are managed with due regard for cost effectiveness.

## **Legislative Assembly**

### **Constituency Office Costs for Members of the Legislative Assembly and Executive Council (2011)**

This chapter reports observations, findings and recommendations regarding Members' constituency office costs with respect to the authority and management by both the Office of the Clerk of the Legislative Assembly and departments. It identifies positive features, as well as issues that need improvement to ensure proper stewardship and accountability.

## **Department of Justice and Attorney General**

### **Superintendent of Credit Unions (2008)**

This chapter examines whether the Superintendent of Credit Unions is fulfilling his duties and responsibilities to oversee the financial stability and solvency of credit unions and caisses populaires for the protection of New Brunswick depositors.

### **New Brunswick Credit Union Deposit Insurance Corporation (2007)**

This chapter examines whether the New Brunswick Credit Union Deposit Insurance Corporation has adequate structures, processes and procedures in place to fulfill its obligation to protect the deposits of members of credit unions and caisses populaires in New Brunswick.

### **Pension Benefits Act (2006)**

This chapter examines the protections offered by the *Pension Benefits Act* to active and former pension plan members, and the nature of the operations of the Office of the Superintendent of Pensions.

### **Health Levy (2006)**

This chapter explains what the health levy is for, and summarizes the issues we identified related to the health levy process.

## **Department of Natural Resources**

### **Timber Royalties (2008)**

This chapter describes timber royalties and the processes and requirements surrounding them. It also examines whether the Department is complying with its legislated requirements.

### **Wildlife Trust Fund (2007)**

This chapter reports the results of an audit of a sample of grants issued by the fund and our testing of the conservation revenue fee.

### **Tracking System for Wood Harvested from Private Woodlots (2006)**

This chapter examines whether the Department maintains appropriate processes to ensure the tracking system for primary forest products harvested from private woodlots is operating as required by the *Transportation of Primary Forest Products Act*. It also examines whether the Department uses the information provided by the wood tracking system in assessing and reporting publicly on the sustainability of the private wood supply in New Brunswick.

## **Department of Post-Secondary Education, Training and Labour**

### **Immigration with the Provincial Nominee Program (2010)**

This chapter examines whether the Population Growth Secretariat has identified and documented significant planning measures for New Brunswick's Provincial Nominee Program. It also examines whether the Secretariat has adequate processes and controls for delivering the Provincial Nominee Program in New Brunswick, and if it supports the program in achieving its objective "to increase the economic benefits of immigration to New Brunswick." Finally, it examines whether the Secretariat measures performance for the Provincial Nominee Program and if it publicly reports the program's performance.

### **Adult Literacy Services (2008)**

This chapter examines the Department's strategic direction, control procedures, and performance measurement and reporting for its adult literacy support.

### **Private Occupational Training Act (2007)**

This chapter examines whether the Department, and the New Brunswick Private Occupational Training Corporation, are fulfilling their mandate to provide effective consumer protection to students of private occupational training organizations in New Brunswick.

## **Department of Social Development**

### **Foster Homes (2013)**

This chapter examines whether the Department complies with its documented foster home standards, and if it publicly reports on the effectiveness of its Children's Residential Services program.

### **CMHC Social Housing Agreement (2011)**

This chapter examines the future of the financial impact to the Province due to the decline of funding under the CMHC Social Housing Agreement; and assesses whether the Department managed and administered the programs in accordance with four key agreement requirements.

### **Review of Nursing Home Contract with Shannex Inc. (2009)**

This chapter examines various questions surrounding the contract with Shannex Inc. to supply nursing home beds.

### **Special Care Homes and Community Residences (2005)**

This chapter examines whether the Department has appropriate practices to ensure compliance with the Province's legislation and standards for special care homes and community residences.

## **Department of Transportation and Infrastructure**

### **Provincial Bridges (2013)**

This chapter examines whether the Department performs bridge inspections in accordance with accepted professional standards and used the inspection results to identify and prioritize necessary capital maintenance and other remedial measures. The chapter also examines whether the Department maintains the service level of its bridge inventory based on a long term least life cycle cost approach, and whether it publicly reports on the condition of designated Provincial bridges and the effectiveness of its bridge inspection activities.

### **Premixed Asphalt Procurement (2013)**

This chapter discusses our planned project to determine if the Department's exempt purchases of pre-mixed asphalt are being made with due regard of economy and transparency, and the reasons why we chose to temporarily defer this project.

### **Capital Maintenance of Highways (2012)**

This chapter examines whether capital road repairs, identified as necessary by the Department, are made on a timely basis.

### **Public-Private Partnership: Eleanor W. Graham Middle School and Moncton North School (2011)**

This chapter examines the process for identifying the two school project as potential P3 agreements and evaluates the value for money assessment on which the Department's decision to recommend the P3 approach for the two school project was based.

### **Review of Nursing Home Contract with Shannex Inc. (2009)**

This chapter examines various questions surrounding the contract with Shannex Inc. to supply nursing home beds.

## **Department of Tourism, Heritage and Culture**

### **New Brunswick Art Bank (2010)**

Our objective for this project was to ensure that all art works acquired for the provincial Art Bank can be accounted for and are being adequately protected, maintained and conserved.

## **Government-wide projects**

### **Review of Departmental Annual Reports (2008)**

Our primary objective for this project was to determine the degree to which departmental annual reports and our government's reporting on performance could be improved by applying state-of-the-art principles. Our secondary objective was to determine what enhancements might be recommended for the Province's annual report policy.

### **Office of the Chief Information Officer Data Centre Power Interruption (2014)**

This chapter examines the events and circumstances surrounding the data centre outage of 9 June 2014. It reports findings on the impact to government operations and the level of emergency preparedness of IT operations. It provides recommendations on improvements to business continuity and disaster recovery planning as well as defining roles and responsibilities of those involved in providing IT services.

## **Crown Agency Projects**

### **New Brunswick Internal Services Agency Data Centre Power Interruption (2014)**

This chapter examines the events and circumstances surrounding the data centre outage of 9 June 2014. It reports findings on the impact to government operations and the level of emergency preparedness of IT operations. It provides recommendations on improvements to business continuity and disaster recovery planning as well as defining roles and responsibilities of those involved in providing IT services.

### **New Brunswick Investment Management Corporation Investment Performance and Cost Analysis (2008)**

This chapter looks at some indicators of the New Brunswick Investment Management Corporation's investment performance, and provides an analysis of the costs of the organization.

### **New Brunswick Investment Management Corporation Governance (2006)**

This chapter examines whether current governance structures and processes established for the New Brunswick Investment Management Corporation set a framework for effective governance.

### **New Brunswick Liquor Corporation Agency stores (2010)**

This chapter examines whether the New Brunswick Liquor Corporation has appropriate control procedures for its agency store program.

## **NB Power**

### **Point Lepreau Generating Station Refurbishment – Phase II (2014)**

This chapter assesses the reasonableness of key project costs of **the** Point Lepreau Generating Station Refurbishment Project.

### **Point Lepreau Generating Station Refurbishment – Phase I (2013)**

This chapter describes key aspects of NB Power’s planning and execution of the Point Lepreau refurbishment, and presents summaries of amounts making up the \$1.4 billion asset account and the \$1.0 billion deferral account related to the refurbishment.

### **Governance (2005)**

This chapter examines whether the current governance structures and processes established for NB Power set a framework for effective governance.

## **Service New Brunswick**

### **Property Assessment for Taxation Purposes (2005)**

This chapter examines whether Service New Brunswick complies with the *Assessment Act* by assessing real property at “real and true value”.

**Appendix B**  
**Detailed Status Report of**  
**Recommendations**  
**Since 2010**

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Financial Assistance to Industry	Economic Development	2010	2	2	31	We recommended the Department establish additional measurable targets for FAIP to allow it to evaluate FAIP from different perspectives.	Not Implemented
Financial Assistance to Industry	Economic Development	2010	2	2	43	We recommended the Department investigate why required documents are not being submitted on a timely basis and seek alternative ways to obtain timely information from its clients.	Implemented
Financial Assistance to Industry	Economic Development	2010	2	2	53	We recommended the Department establish policies and procedures with respect to verifying clients' financial information other than their audited financial statements.	Disagree
Financial Assistance to Industry	Economic Development	2010	2	2	62	We recommended the Department establish policies and procedures on how to verify information provided by assistance clients prior to forgiving loans.	Implemented
Financial Assistance to Industry	Economic Development	2010	2	2	75	We recommended [Economic Development] establish policies and procedures regarding which types of financial analysis should be performed to identify risk of potential loss and which types of mitigation steps should be taken based on the risks identified.	Disagree
Financial Assistance to Industry	Economic Development	2010	2	2	94	We recommended the Department report to the Legislative Assembly on the success of FAIP in achieving the Department's targets.	Not Implemented
Financial Assistance to Industry	Economic Development	2010	2	2	105	We recommended [Economic Development] put in place a monitoring process that directly assesses each forgivable loan recipient's progress compared to the original payback calculation. This assessment should look at each of the three components of the original payback calculation; the risk factor, the estimated amount of incremental payroll and the income tax rate	Disagree

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	45	The Secretariat should make information concerning immigration representatives widely available, including what an applicant should expect in their arrangements with an immigration representative.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	46	The Secretariat should consider providing their website information on the Provincial Nominee Program in the languages of the countries of the program's target markets.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	67	The Secretariat should develop and implement appropriate monitoring procedures for the Provincial Nominee Program.	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	68	The Secretariat should ensure that the revised business applicant category is supported with documented policies and procedures, forms and records relating to the \$75,000 conditionally refundable deposit, and appropriate controls over the receipt and disbursement of the deposits.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	69	Roles and responsibilities for monitoring the landed nominees' business activities should be clearly assigned to staff members. Staff members involved with the new conditionally refundable deposits (receiving, recording, monitoring, refunding, etc.) should be properly trained.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	70	The Secretariat should ensure the \$75,000 conditionally refundable deposits, which are required from business nominees, are properly recorded in a separate account and reconciled on a regular basis to the status of the program's business nominees.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	71	The Secretariat should obtain additional resources needed to adequately monitor the business activities of landed nominees.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	77	The Secretariat should ensure all staff members are fully aware of the policy on conflict of interest and have a clear understanding of how it applies to their work and the Provincial Nominee Program.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	78	The Secretariat should ensure the Provincial Nominee Program is adequately supported with documented policies and procedures.	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	84	The Secretariat should ensure that a pilot project is properly planned and documented before it is implemented.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	85	The Secretariat should obtain written agreements with parties involved in delivering pilot projects, which clearly state their responsibilities and provides a reporting framework or communication plan for proper accountability.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	86	The Secretariat should ensure each pilot project is evaluated.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	90	The Secretariat should examine its organizational structure and consider re-positioning the settlement and multiculturalism branch so that it operates under the same direction as the PNP, within the immigration division.	Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	104	The Secretariat should ensure the Provincial Nominee Program operates in compliance with the <i>Canada-New Brunswick Agreement</i> .	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	105	The Secretariat should develop and implement an evaluation plan which allows it to measure performance of the Provincial Nominee Program and determine if the program meets its objective "to increase the economic benefits of immigration to New Brunswick". Corrective action should be taken to address deficiencies identified by the evaluation.	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	108	The Secretariat should establish program goals, performance indicators and monitoring procedures for evaluating performance of the Provincial Nominee Program.	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	111	The Secretariat should develop and implement an approach to regularly measure performance of the Provincial Nominee Program and compare performance to the objectives and targets stated in the <i>"Population Growth Strategy"</i> .	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	118	The Secretariat should review the objectives and targets relating to immigration stated in the Strategy and establish a specific action plan for achieving their objectives and targets.	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	119	The Secretariat should develop annual operational plans to be used in day-to-day work, which would result in the achievement of the annual targets shown in the <i>Population Growth Strategy</i> .	Not Implemented
Immigration with the Provincial Nominee Program	Post-Secondary Education, Training and Labour	2010	2	3	123	To provide better accountability to the Legislative Assembly and the public, the Secretariat should report on the performance of the Provincial Nominee Program both on its website and in the Department's Annual Report.	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	37	We recommended risks associated with the security of the Art Bank database be addressed.	Implemented
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	38	We recommended [Tourism, Heritage and Culture] take steps to eliminate the risk associated with the lack of division of duties identified above. One option might be for someone other than the Art Bank Coordinator to be given responsibility for entering information into the Art Bank database.	Implemented
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	39	We recommended Art Bank staff provide regular reporting on the status of the Art Bank collection to [Tourism, Heritage and Culture] senior management.	Implemented
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	49	We recommended Art Bank staff ensure that storage space at Kings Landing is adequate and that all artworks are appropriately protected while in storage there.	Implemented
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	63	We recommended the Department determine if the current program objective of accumulating and maintaining a permanent collection of the work of New Brunswick visual artists continues to be an achievable goal, or whether it should be altered in recognition of the limited resources available to the Art Bank. If the goal is still considered appropriate, [Tourism, Heritage and Culture] should allocate adequate funding to the Art Bank to allow all artworks to be maintained in good condition on an ongoing basis	Implemented
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	75	We recommended Art Bank staff consider and, where feasible, implement other options for increasing the public exposure of the collection.	Implemented
New Brunswick Art Bank	Tourism, Heritage and Culture	2010	2	4	79	We recommended [Tourism, Heritage and Culture] present performance information for the Art Bank in its annual report.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	36	We recommended future reviews of ANBL's retail network include an assessment of all service delivery methods, and not be limited to the current retail network structure.	No longer applicable
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	42	We recommended ANBL document any full store reviews it conducts. This process should contain the necessary information to support any retail network decisions.	No longer applicable
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	51	We recommended ANBL establish terms of reference for the Agency Stores Committee.	No longer applicable
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	55	ANBL should ensure that a criminal record check is performed before awarding an agency store.	Implemented
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	58	We recommended any changes made to the recommendation report by the Agency Stores Committee be approved and recorded in the minutes of the committee.	No longer applicable
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	61	We recommended the Applicant Visit Checklist be completed, in every case. If a section of the checklist is not applicable for an applicant, it should be so noted with an explanation of the reason.	Implemented
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	73	We recommended ANBL comply with their Disposal of Assets Policy. In particular ANBL should determine and document the value of all assets involved in the potential purchase of an existing store property.	No longer applicable
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	75	ANBL should make changes to the Agency Store Program to requiring ANBL to provide a detailed list of assets to be disposed in circumstances involving the purchase of an existing liquor store property.	No longer applicable

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	77	ANBL should revise the Agency Store Program to require potential applicants to specifically list the assets their offer covers when the offer contains a commitment to purchase the existing liquor store property.	No longer applicable
Agency Stores	New Brunswick Liquor Corporation	2010	2	5	108	We recommended ANBL review their approach to monitoring agency store compliance to ensure the methods and procedures used are cost effective and efficient taking into consideration the risk areas of concern to ANBL.	Implemented
Wastewater Commissions	Environment and Local Government	2011	1	1	44	<p>We recommend the Department of Environment [and Local Government] establish additional legislative requirements geared to strengthening governance and accountability of provincial wastewater commissions. In this regard, the Department should develop a regulation that:</p> <ul style="list-style-type: none"> <li>attaches specific term limits to all appointments to wastewater commission boards. Longest-serving members of provincial boards (i.e. those having served 20 years or more) should be replaced immediately, and other members in place for longer than maximum legislated term limits should be replaced as soon as practical on a case by case basis;</li> <li>prescribes any local or provincial requirements for the appointment of regional or other representative board members (i.e. by and/or from particular municipalities, aboriginal reserves, etc.);</li> <li>prescribes the roles, responsibilities, and accountabilities of government, board members, municipalities and key stakeholders;</li> </ul>	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Wastewater Commissions	Environment and Local Government	2011	1	1	44	<ul style="list-style-type: none"> <li>sets annual reporting requirements for wastewater commissions as well as procedures for annual budget and business plan approvals;</li> <li>establishes the requirement for all executive members of the board, including the Chair, to be elected from among appointed members;</li> <li>requires all commissions delivering service to one or more municipalities to set up a technical steering committee that, where possible, involves engineering staff from those municipalities to ensure that commission plans for capital projects are acceptable and as a source of technical advice; and</li> <li>establishes other terms and conditions as considered appropriate in the circumstances.</li> </ul>	Implemented
Wastewater Commissions	Environment and Local Government	2011	1	1	45	We also recommend Executive Council Office amend the provincial policy document, "An Appointment Policy for New Brunswick Agencies, Boards and Commissions" to require term limits be placed on all government appointments to agencies, boards, and commissions.	Not Implemented
Wastewater Commissions	Environment and Local Government	2011	1	1	46	We recommend the Department of Environment [and Local Government] ensure that board vacancies at wastewater commissions are filled on a timely basis.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Wastewater Commissions	Environment and Local Government	2011	1	1	47	<p>We recommend the Department of Environment [and Local Government] ensure that all wastewater commission boards in the Province are provided with ongoing guidance in the areas of governance and accountability. This guidance could include, but not be limited to, such areas as:</p> <ul style="list-style-type: none"> <li>• How to prepare board member position profiles and other selection criteria for reference by appointing bodies;</li> <li>• The roles and responsibilities of commission board members;</li> <li>• How to hold management accountable for performance;</li> <li>• Committees of the board;</li> <li>• Commission board members' accountability obligation to commission stakeholders; and</li> <li>• Steps to take when a commission wants to involve itself in areas outside its legislated mandate.</li> </ul>	Implemented
Wastewater Commissions	Environment and Local Government	2011	1	1	59	<p>We recommend necessary steps be taken, by the Department of Environment [and Local Government] to ensure wastewater commissions comply with the <i>Public Purchasing Act</i>.</p>	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Wastewater Commissions	Environment and Local Government	2011	1	1	127	We recommend, the Department of Environment [and Local Government], in consultation and agreement with the City of Moncton, the City of Dieppe and the Town of Riverview, evaluate the existing GMSC Board member composition in light of our findings regarding questionable governance, accountability and financial management practices. Emphasis should be placed on ensuring GMSC operates under a modern governance framework and that it is well positioned to serve ratepayers of Moncton, Riverview and Dieppe within the legislated mandate.	Implemented
Wastewater Commissions	Environment and Local Government	2011	1	1	128	Once the Board of GMSC has been determined, the Department of Environment [and Local Government], in cooperation with the Greater Moncton Sewerage Commission, the City of Moncton, the City of Dieppe, and the Town of Riverview, should develop a plan specifically geared to improve: <ul style="list-style-type: none"> <li>• governance processes;</li> <li>• financial management;</li> <li>• monitoring and oversight;</li> <li>• accountability; and</li> <li>• compliance with provincial legislation at the Greater Moncton Sewerage Commission.</li> </ul>	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	26	The Department of [Transportation and Infrastructure] should conduct a preliminary assessment to identify the best procurement approach prior to a Cabinet decision on how to proceed (P3 or traditional approach).	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	31	The Department of Finance should have the government obtain approval of the Legislative Assembly, during the budget process, for future year P3 funding commitments in advance of entering into such contracts.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	71	The Department of [Transportation and Infrastructure] should document the development of significant assumptions for VFM analysis, especially the assessment of their reasonableness.	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	72	The Department of [Transportation and Infrastructure] should review assumptions made by its VFM consultant. Reviews and important discussions should be properly documented.	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	73	The Department of [Transportation and Infrastructure] should obtain the discounted cash flow model from its consultant as part of the arrangement for future P3 projects.	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	96	The Department of [Transportation and Infrastructure] should perform a sensitivity analysis which includes all key variables in the project cost estimate process.	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	97	The Department of [Transportation and Infrastructure] should inform the public of key information in the P3 process.	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	103	The Department of [Transportation and Infrastructure] should perform an independent due diligence review of the value for money assessment for each proposed P3 project.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	111	<p>To ensure provincially owned schools are properly maintained over their useful lives, the Department of [Transportation and Infrastructure] in cooperation with the Departments of Finance and Education should:</p> <ol style="list-style-type: none"> <li>1) develop and implement an asset management system that provides for and prioritizes multi-year maintenance and capital repair needs of the schools; and</li> <li>2) implement budgeting measures to protect the long-term funding stream required for sufficient ongoing maintenance of the schools.</li> </ol>	Implemented
Eleanor W. Graham Middle School and Moncton North School	Transportation and Infrastructure - Public-Private Partnership	2011	3	2	117	The Department of [Transportation and Infrastructure] should tender or solicit multiple fee estimates when engaging advisors for P3 projects, given the significant cost of these services.	Implemented
Constituency Office Costs for Members of the Legislative Assembly and Executive Council	Legislative Assembly and Executive Council Office	2011	3	3	50	We recommended all constituency office costs should be authorized, paid, recorded, monitored and reported through the Office of the Clerk of the Legislative Assembly. Appropriate revisions should be made by the Legislative Assembly and the Executive Council Office to existing guidelines to facilitate this change.	Not Implemented
Constituency Office Costs for Members of the Legislative Assembly and Executive Council	Legislative Assembly and Executive Council Office	2011	3	3	62	To provide better accountability, the Legislative Assembly should publicly report total constituency office costs claimed by each Member, whether paid by the Clerk or a department.	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Constituency Office Costs for Members of the Legislative Assembly and Executive Council	Legislative Assembly and Executive Council Office	2011	3	3	74	The Legislative Administration Committee should establish additional guidelines for constituency office assets to ensure purchases by Members are reasonable (e.g. timing, individual cost and/or frequency of asset purchases).	Implemented
Constituency Office Costs for Members of the Legislative Assembly and Executive Council	Legislative Assembly and Executive Council Office	2011	3	3	83	The Legislative Administration Committee should consider whether current guidelines covering the disposal of constituency office assets upon the departure of Members provide the most favorable financial result for the Province. If not, it should give the Office of the Clerk authority to recommend a revised asset disposal policy. A revised policy, for example, could give primary consideration to reusing assets within government (e.g. by transferring information technology assets to the Computers for Schools program run by the Department of Education, and furniture and fixtures to incoming Members or a government department), rather than first offering these assets to departing Members at discount prices.	Implemented
Constituency Office Costs for Members of the Legislative Assembly and Executive Council	Legislative Assembly and Executive Council Office	2011	3	3	89	The Legislative Administration Committee should develop an inventory control policy for assets purchased for constituency offices which includes controls similar to those in the Government's policies AD-1703 and AD-1704.	Implemented
CMHC Social Housing Agreement	Social Development	2011	3	4	60	We recommended the Department develop a comprehensive long-term plan to ensure the Province can continue to provide and maintain social housing. The plan should include an effective funding and financing strategy to address the declining condition of housing stock.	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
CMHC Social Housing Agreement	Social Development	2011	3	4	74	Given the hardship the programs could face in the future due to declining funding, the expiration of the CMHC Social Housing Agreement in 2034, the declining condition of housing stock and the remaining need for social housing, we recommended program evaluations be carried out in order to develop a strategy to address these issues and to comply with the Agreement.	Not Implemented
Medicare Payments to Doctors	Health	2012	2	2	42	We recommend the Department develop an action plan, with specific steps and timelines, to address the deficiencies identified by our work. The action plan is to include, but not be limited to, the following:	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Medicare Payments to Doctors	Health	2012	2	2	42	<ul style="list-style-type: none"> <li>Improving the monitoring of doctor remuneration, including all methods of remuneration (Fee-For-Service, salary, sessional), total payments, and the cap and the “on-call group account” for salaried doctors</li> <li>Improving the audit function by: expanding the audit coverage to include all Medicare payments; using a risk-based audit approach; ensuring the audit unit has the skill set and information needed; documenting procedures for authorizing, processing, recording and reviewing the reversal / repayment of recoveries; publicly reporting the actual performance of its audit function in comparison with targeted recoveries and providing a rationale for any variances; expanding the use of the Professional Review Committee, etc.</li> <li>Improving the Department’s enforcement of doctor compliance with legislation and departmental policies by establishing an enforcement policy and implementing ramifications for doctors who do not comply, such as those who over-charge, double bill for services relating to workplace injuries and those who do not shadow-bill</li> <li>Ensuring claims submitted for radiology services comply with legislation and payments for those services are subject to the same payment controls, monitoring and auditing as other Fee-For-Service payments</li> <li>Improving and automating the process of recovering Medicare payments relating to WorkSafeNB claims.</li> </ul>	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Medicare Payments to Doctors	Health	2012	2	2	43	Similar to other government reporting of employee compensation and vendor payments, and to provide better accountability, we recommend the Department publicly report total remuneration for each doctor, regardless of whether the doctor is paid via Fee-For-Service, salary, sessional or alternative payment arrangements.	Not Implemented
Medicare Payments to Doctors	Health	2012	2	2	44	To provide better accountability, we recommend the Department publicly report annually summary-level information on doctor remuneration, such as: total payments for each remuneration method (Fee-For-Service, salary, sessional, other), doctor remuneration by dollar range, doctor remuneration by specialty, etc.	Implemented
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	50	<p>The findings in the OoC's report are consistent with ours. Recommendations regarding the procurement process from the OoC's report are applicable to our findings as well. The OoC's recommendations included:</p> <ul style="list-style-type: none"> <li>• Contract managers should ensure that the requirements of the <i>Public Purchasing Act</i> are followed. Documentation should be maintained supporting Minister's exemptions particularly when the exemption for Specific Skills or Sole Source of supply is used. .</li> <li>• A purchase order should be obtained prior to the payment of any amounts and the value of the purchase order should not be exceeded.</li> <li>• A signed statement of work should always be obtained prior to the commencement of the project.</li> <li>• When contracts are negotiated and signed with vendors, only contracts drafted by PNB should be utilized. Vendor contracts should not be used.</li> </ul>	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	51	<p>In addition to the recommendations made by the OoC, we recommend:</p> <ul style="list-style-type: none"> <li>To avoid frequent contract amendments, the Department of Health adequately plan and define the scope, deliverables, timelines and costs for each IT contract and complete all required documentation before signing contracts or allowing work to commence; and</li> <li>In the event contract amendments are required, the Department of Health properly prepare and approve change requests and amendments to original contract agreements.</li> </ul>	Implemented
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	69	<p>In general, the findings in the OoC's report were consistent with ours. The OoC's recommendations related to conflict of interest are applicable to our findings in this area as well. The OoC's recommendations included:</p> <ul style="list-style-type: none"> <li>Employees and contractors should sign off as having read and understood AD-2915 (Conflict of Interest) on an annual basis. For employees, this could be incorporated as part of their annual performance review. As stated in AD-2915 employees must advise the Senior Executive Officer of any conflict of interest situation in which they find themselves. Documentation should be maintained.</li> <li>Managers and directors should familiarize themselves with the meaning and definition of an "apparent conflict of interest ". A suggested reading could be the document on this topic published by the Treasury Board of Canada Secretariat</li> </ul>	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	69	<ul style="list-style-type: none"> <li>Contractors should not occupy management positions within the department. Where the situation is unavoidable, the contractor should be strictly limited to the financial information which they can access particularly with respect to competitor’s information.</li> <li>Where contractors are members of project steering committees, they should not take part in any discussions surrounding the contracting/outsourcing of any work for the project.</li> <li>Contractors should be required to disclose business relationships with other contractors working in the department when a partnership or joint venture type relationship exists.</li> <li>If a Project Manager or member of a Steering Committee is a contractor and also a partner or principal of a consulting firm, the department should refrain from hiring other contractors from the same company on the project</li> </ul>	Implemented
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	70	We recommend the Department of Health develop and implement a plan to eliminate reliance on consultants serving as project managers and prohibit consultants from serving as members of RFP evaluation committees or project steering committees.	Implemented
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	81	We recommend the Department of Health develop and implement a plan to in-source all IT operation and maintenance functions over the next two years.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
EHealth – Procurement and Conflict of Interest	Health	2012	2	3	85	<p>We recommend the Office of the Chief Information Officer develop and monitor compliance with a government-wide policy relating to the procurement, contracting and management of IT consultants. That policy should address and mitigate risks regarding procurement and conflict of interest of consultants, and clearly state when the use of internal IT resources is more appropriate. As a minimum, the policy should require that:</p> <ul style="list-style-type: none"> <li>the primary role of IT consultants be to provide specialized expertise to government, typically for development initiatives;</li> <li>IT operations and maintenance work be in-sourced, with allowances made for knowledge transfer from private sector experts in the shorter term;</li> <li>a competitive bidding process, in compliance with all pertinent government legislation, be followed for the selection of consultants;</li> <li>any exemption from the competitive bidding process be properly authorized and made for sound business reasons defensible to the public;</li> <li>there is sufficient in house government expertise to effectively oversee and manage the work of consultants before a project is started;</li> <li>the opportunity for real or perceived conflict of interest on the part of contracted consultants is mitigated, in part by requiring that project managers, and members of key project committees be staffed exclusively with in-house resources; and</li> <li>provincial remuneration levels for IT staff not act as a barrier to the ability of government to hire and retain needed internal IT resources on a permanent basis.</li> </ul>	Not Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Solid Waste Commissions	Environment and Local Government	2012	2	4	49	We recommend the Department of Environment and Local Government include a dispute resolution mechanism in the planned Solid Waste Commissions Regulation under the <i>Regional Service Delivery Act</i> to address situations where a commission board has been unable to obtain the two-thirds majority needed to approve an annual budget, commission borrowing, or the election of board officers.	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	51	We recommend the Province, through the Minister of Environment and Local Government, ensure future appointments of local service district representatives to the new Regional Delivery Commission boards are made within three months of a vacancy occurring.	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	58	We recommend each new Regional Delivery Commission adopt the following good governance practices: <ul style="list-style-type: none"> <li>• document the roles and responsibilities of their board, individual board members, and board executive members;</li> <li>• document and approve terms of reference for each of their board committees;</li> <li>• provide all new board members with orientation sessions;</li> <li>• document a code of conduct for board, management and staff; and</li> <li>• create a governance committee of the board to oversee the development and implementation of good governance practices.</li> </ul>	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Solid Waste Commissions	Environment and Local Government	2012	2	4	65	<p>We recommend all commissions provide up-to-date accountability information on their websites including, as a minimum, the following:</p> <ul style="list-style-type: none"> <li>• audited financial statements;</li> <li>• annual reports;</li> <li>• current commission tipping fees; and</li> <li>• the names of board members indicating which local government they represent.</li> </ul>	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	79	<p>We recommend commissions negotiating solid waste transfer agreements in future consider:</p> <ul style="list-style-type: none"> <li>• what direct and administrative costs are being incurred by landfill commissions in providing service to transfer station commissions; and</li> <li>• how these costs may be most fairly allocated in establishing landfill tipping fees under the agreement.</li> </ul>	Not Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	80	<p>We recommend Transfer Station Commissions investigate the potential for cost savings by shipping their solid waste to alternative provincial landfills, prior to renewing their existing transfer agreements.</p>	Not Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	99	<p>We recommend the Department finalize and request government approval for additions to the Designated Materials Regulation covering used oil, glycol, and e-waste.</p>	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	100	<p>We also recommend the Department design and implement additional extended producer responsibility programs to further reduce the volume of solid waste going to New Brunswick landfills.</p>	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Solid Waste Commissions	Environment and Local Government	2012	2	4	122	We recommend the Department ensure challenging diversion goals are set for regional commissions. The Department should also monitor commission performance and ensure the degree of success by individual commissions in achieving their diversion goals is publicly reported. One option may be for commissions to report their diversion performance on their websites.	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	123	We also recommend the Department support the delivery of enhanced diversion programs by regional solid waste commissions to help them meet their diversion goals.	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	135	Given the environmental risks and financial costs associated with illegal dumping, we recommend the Department develop a standardized compliance and enforcement approach to better manage illegal dumping in the Province.	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	139	We recommend the Department ensure all construction and demolition debris disposal sites in the Province are physically inspected periodically to ensure they are accepting only materials specified in their Departmental certificate of approval to operate and identify and address other environmental concerns. Frequency of inspections of individual sites should be based upon a Departmental evaluation of the risk of non-compliance at individual disposal sites.	Implemented
Solid Waste Commissions	Environment and Local Government	2012	2	4	145	We recommend the Department develop and implement a plan, in agreement with individual commissions, covering ongoing government involvement in educating the public about solid waste matters. That involvement should focus on areas of province-wide concern.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	78	We recommend, in order to optimize decisions and reduce long term costs from asset management, the Department prioritize the addition of all significant asset categories not currently modeled in the system with timelines for their inclusion.	Not Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	83	We recommend the Department report on roads that are in very poor condition and develop optimization targets specific to that category of roads within the Asset Management System.	Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	89	We recommend the Department further enhance the Asset Management System to incorporate non-road condition based factors such as traffic counts, safety indicators, and environmental concerns that significantly impact project selection.	Not Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	114	We recommend the Department establish guidelines to govern projects selected outside the Asset Management System and document the rationale and benefits of these projects against the Asset Management System optimization criteria.	Not Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	115	We recommend the Department, in its annual report, communicate the implications of selecting and completing projects that do not meet Asset Management System optimization criteria.	Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	118	We recommend the Department provide sufficient training for additional staff to be competent in utilizing the Asset Management System. Training should include, but not be limited to, knowledge of optimization process rules.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	126	We recommend the Department complete the Road Surface policy (a policy that will guide decisions regarding the most appropriate and economical road surface given particular circumstances (i.e. chip seal versus asphalt)). Once complete, we recommend the Department incorporate the road surface selection process into the Asset Management System optimization model.	Not Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	130	In order to ensure sustainability of the Province's highway network at the most economical cost, we recommend the Department include total lifecycle costs in all new road construction decisions. We also recommend the Department obtain statutory funding when the decision is made to add new roads (similar to Public-Private Partnership highway projects).	Not Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	179	We recommend the Department develop effective program performance measures for its stated goals and objectives that include specific, relevant targets against which performance can be measured.	Implemented
Capital Maintenance of Highways	Transportation and Infrastructure	2012	2	5	180	We recommend the Department's annual report clearly state the overall highway network condition by kilometer in each condition category the Department uses, (currently very good, good, fair, and poor), with the intent of highlighting the short, medium, and long term impacts of not following Asset Management System projected funding recommendations. We further recommend the Department report the level of infrastructure debt caused by deferred capital maintenance in order to present a complete picture of the highway network status and the risk to safety and sustainability.	Implemented

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Foster Homes	Social Development	2013	2	2	57	We recommend the Department of Social Development establish standards for contracting with foster families.	*
Foster Homes	Social Development	2013	2	2	58	We recommend the Department of Social Development amend its standards to provide comprehensive and consistent direction for approving and monitoring provisional (foster) homes.	*
Foster Homes	Social Development	2013	2	2	72	We recommend the Department of Social Development comply with its documented foster home standards for providing a safe and secure environment for children who have to be separated from their families.	*
Foster Homes	Social Development	2013	2	2	86	<p>We recommend the Department of Social Development implement regular monitoring procedures for both regional and central office to ensure compliance with its standards. The procedures could include, but not necessarily be limited to, the following:</p> <ul style="list-style-type: none"> <li>• a periodic review of a sample of files to determine compliance with standards; and</li> <li>• a regular review of “expired approval dates” recorded in the electronic information system, with follow-up to ensure the foster family’s annual review is completed on time.</li> </ul>	*
Foster Homes	Social Development	2013	2	2	107	We recommend the Department of Social Development develop a long-term strategy to ensure sufficient appropriate foster homes are available to meet regional needs and to help meet, “The Children’s Residential Services program primary goal ... to ensure consistent, high quality residential services to children who are in the temporary or permanent care of the Minister.”	*

*\*Our practice is to track the status of our value for money recommendations starting in the second year after the original Report is released. Follow up work on this chapter will be conducted as part of our 2015 work plan.*

Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Foster Homes	Social Development	2013	2	2	122	We recommend the Department of Social Development review all rates and funding relating to foster homes and propose changes to Government as appropriate to eliminate any disincentive to current or prospective foster parents. This should be completed within twelve months of the release of our report.	*
Foster Homes	Social Development	2013	2	2	123	We recommend the Department of Social Development review rates and funding relating to foster homes on a regular and ongoing basis.	*
Foster Homes	Social Development	2013	2	2	124	We recommend the Department of Social Development take steps to increase the awareness of costs available for reimbursement to foster families.	*
Foster Homes	Social Development	2013	2	2	125	We recommend the Department of Social Development be consistent in the amounts reimbursed to foster families.	*
Foster Homes	Social Development	2013	2	2	129	We recommend the Department of Social Development reconcile its foster family information (statistics, data, names) with each of the regions on a regular basis to ensure information used by central office for program planning is complete and accurate.	*
Foster Homes	Social Development	2013	2	2	134	We recommend the Department of Social Development publicly report on the effectiveness of its Children's Residential Services program. Such performance information should be included in the Department's annual report and on its website.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Provincial Bridges	Transportation and Infrastructure	2013	2	3	46	We recommend the Department document its bridge inspection processes in a single comprehensive manual.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	47	We recommend the Department have readily accessible to all staff the most current and complete copy of any manual or other documentation referenced in the inspection process.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	62	We recommend the Department follow the Ontario Structures Inspection Manual guidelines for reporting bridge component deterioration and record the quantitative information such as the width and extent of cracks in the inspection reports. The recording of actual quantities of the defects leads to a better estimation of rehabilitation needs.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	63	We recommend the Department include suggested completion dates within the maintenance recommendations in the inspection reports. This will provide additional detailed information for use by senior department officials and members of the Legislative Assembly, inventory data analysis and performance reporting.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	69	We recommend the Department add a severity rating component to their material rating process similar to the Ontario Structures Inspection Manual. Standardized material ratings should be used.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	75	We recommend the Department standardize the use of priority codes within the inspection reporting process.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Provincial Bridges	Transportation and Infrastructure	2013	2	3	79	<p>We recommend the Department implement and document a formal quality control and assurance procedure for inspections and reporting. In conjunction with this, the Department should formalize supervision of the inspection team by a qualified structural engineer. This could include, but not be limited to:</p> <ul style="list-style-type: none"> <li>documented review by a professional engineer of a random sample of completed bridge inspection reports and photo files;</li> <li>direct observation; and</li> <li>re-performance of field inspections.</li> </ul>	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	88	We recommend the Department establish guidelines for bridge repair and replacement project selection and document the rationale for the projects selected.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	104	We recommend the Department clearly define the least life cycle cost for a bridge and adopt this approach in prioritizing all capital bridge work, as stated in the Department's Bridges and Culverts Asset Management Plan.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	115	We recommend the Department publicly report the Bridge Condition Index of all designated Provincial bridges on an annual basis.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	116	We recommend the Department have measurable objectives relating to the condition of Provincial bridges. Such objectives might include setting a target Bridge Condition Index.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Provincial Bridges	Transportation and Infrastructure	2013	2	3	124	We recommend the Department set targets for its bridge inspection program and publicly report the targets, actual results and the rationale for variances in its annual report.	*
Provincial Bridges	Transportation and Infrastructure	2013	2	3	136	The Department should develop and implement a long term plan to address current and expected future funding shortfalls in ordinary and capital bridge maintenance. This plan should be communicated annually during the capital budget process in order to appropriately inform senior officials and Cabinet Ministers.	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	58	We recommend the DGS (Department of Government Services) ensure that provincial regulation, policies and practices are internally consistent, and are consistent with trade agreements signed by the Province.	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	71	We recommend the DGS (Department of Government Services) require the use of the NBON system by client departments or implement a mechanism to accurately capture contract of supply draw down information and changes to purchase orders.	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	72	We recommend the DGS (Department of Government Services) establish a plan to undertake periodic reviews of significant contracts to ensure all of the benefits such as discounted pricing of the contract are received by government entities and vendors meet their contracted obligations.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	79	We recommend the DGS (Department of Government Services) modernize and update the procurement policy and procedural framework used by government to include the establishment of a policy defining the roles and responsibilities of the entities involved in critical procurement functions, particularly between DGS as the central agency and client departments.	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	85	We recommend the DGS (Department of Government Services) develop an exemption approval policy that balances procurement risk and value against timeframe considerations to better meet client department and DGS approval requirements.	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	118	We recommend the DGS (Department of Government Services): <ul style="list-style-type: none"> <li>design criteria effective in determining when significant procurements should fall under the Public Purchasing Act, adhere to the criteria, and establish procedures to ensure this decision is supported and documented;</li> <li>design an effective review process to ensure that no single individual can complete the evaluation of a procurement project and award a purchase order; and</li> <li>enforce compliant procurement practices and ensure adequate file documentation is maintained to demonstrate compliance with the Act, regulations, and policy.</li> </ul>	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	129	We recommend the DGS (Department of Government Services) ensure all of the required information is included with exemption requests to provide sufficient support for their approval.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	163	<p>We recommend the DGS create best practice policies and procedural guidelines including but not limited to:</p> <ul style="list-style-type: none"> <li>enhancing the role of the procurement specialist to include the level of involvement in critical functions such as mandatory site visits and membership on Request for Proposal (RFP) evaluation committees;</li> <li>improving records management practices to ensure consistency, completeness, and adequate decision support for vendor debriefing sessions, final contracts, and RFP bid evaluations to address issues such as:</li> <li>missing and incomplete evaluation documents;</li> <li>potential conflict of interest situations; and</li> <li>enhancing continuous improvement processes to improve forward planning by including practices such as soliciting vendor and client department feedback, completing procurement summaries and vendor performance reports, and undertaking periodic file reviews.</li> </ul>	*
Procurement of Goods and Services – Phase I	Government Services	2013	2	4	171	We recommend the DGS publicly report on the goals, objectives, performance targets and actual results achieved by the Strategic Procurement business unit with explanations for any variances between actual results and targets.	*
Collection of Accounts Receivable	Finance	2013	2	5	49	We recommend departments identify those accounts at risk of becoming statute-barred and implement collection procedures in order to maximize their collection prior to the expiry of the May 2016 standstill provision.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Collection of Accounts Receivable	Finance	2013	2	5	61	We recommend departments share debtor contact information, where legislation permits (for example, the <i>Family Income Security Act</i> or <i>Right to Information and Protection of Privacy Act</i> ), for the purpose of collecting accounts receivable.	*
Collection of Accounts Receivable	Finance	2013	2	5	77	Given the recent rapid growth in the student loans Return to Government portfolio and the limited resources of the Portfolio Debt Management group, we recommend the Department of Post-Secondary Education Training and Labour continue to develop, in conjunction with the central collection unit, a collection strategy for the Return to Government portfolio including establishing collection targets and active monitoring of targets.	*
Collection of Accounts Receivable	Finance	2013	2	5	81	We recommend the Department of Post-Secondary Education, Training and Labour register employment program overpayments with the Canada Revenue Agency Refund Set-off Program.	*
Collection of Accounts Receivable	Finance	2013	2	5	88	To improve the recovery of loans receivable from businesses, we recommend that independent expertise in collection of business accounts be engaged to assist either the Department of Economic Development or the central collection unit. The expert engagement should include the development of an action plan to address the historic high delinquency rate of economic development loans to businesses.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Collection of Accounts Receivable	Finance	2013	2	5	99	We recommend a matching process be undertaken to identify provincial employees with past due accounts for veterinary services or with any other amounts in arrears. Payment arrangements should be established or payroll set-off applied. In the future, departments should collect a “unique identifier” from individuals in order to facilitate recovery (through matching) should default occur.	*
Collection of Accounts Receivable	Finance	2013	2	5	105	We recommend the Department of Finance complete its work to routinely register overdue property tax receivable accounts with the Canada Revenue Agency Refund Set-off Program.	*
Collection of Accounts Receivable	Finance	2013	2	5	124	Given the current five year Enhanced Agreements with First Nations are ending in 2013, we recommend the Aboriginal Affairs Secretariat and the Department of Education and Early Childhood Development establish payment arrangements for all arrears owing prior to the signing of new Enhanced Agreements. Reinvestment of provincial funds (under the new Agreements) should not take place until payment arrangements have been negotiated.	*
Collection of Accounts Receivable	Finance	2013	2	5	129	We recommend the Department of Finance establish collection guidelines to ensure equitable treatment of debtors.	*

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Chapter Name	Department/ Agency	Year	Volume	Chapter	Par.	Recommendation	Self Reported Status
Point Lepreau Generating Station Refurbishment – Phase I	NB Power	2013	2	6	29	<p>Based upon our observations relating to the decision-making process for the Point Lepreau Generating Station refurbishment, we recommend for future major capital projects undertaken by NB Power:</p> <ul style="list-style-type: none"> <li>the decision-making process be clearly documented, including identifying the roles and responsibilities of key players (i.e. NB Power, the Province, external contractors, regulators such as the Energy and Utilities Board, etc.) before significant amounts are expended;</li> <li>a planned decision-making timeline be developed and agreed upon by key players;</li> <li>all feasible options be identified and fully investigated as early in the process as possible;</li> <li>pre-decision spending be limited to that needed to adequately evaluate and mitigate risks associated with options under consideration prior to selecting a preferred option;</li> <li>an independent, third-party expert be contracted to guide the process of selecting the best option, identifying and developing mitigation strategies for all significant risks, identifying a preferred proponent, and ensuring that the corporation gets the best possible outcome for provincial ratepayers; and</li> <li>the process be transparent and the public made aware of the criteria to be used for decision making, progress towards making a decision and key reasons for the selection of a preferred alternative.</li> </ul>	*

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