Q. Labrador City Terminal Stations: Please: (a) describe the approach Hydro used to manage this project, (b) show the project management organization, positions of responsibility and accountably, (c) identify progress reporting procedures, (d) provide examples of project reports used, (e) describe the nature of, timing of, and response to the principal cost and schedule affecting issues, (f) explain any changes in Hydro's project management methods occurring during and after this project, and (g) describe any project management "lessons learned" actions taken after from this project.

A. (a) Hydro's approach to managing this project included the creation of a project team in mid-2009. The project team was responsible for the execution and management of the project.

(b) The project team established in mid-2009 consisted of the following:

- A project manager;
- A station design electrical engineer;
- A telecommunications design telecontrol engineer;
- A protection and control design engineer;
- A system operations electrical engineer;
- A distribution planning electrical engineer;
- A properties coordination and procurement representative;
- A customer services representative;
- A customer communications representative;
- A representative from operations responsible for Labrador West; and
- A representative from Operations in Churchill Falls.

All team members provided input under the direction of the project manager. The project manager reported to the Electrical Engineering Manager.

In January of 2011, there was an internal restructuring of the Engineering Services division into Project Execution and Technical Services. The project manager then reported to the Program Manager for Regulated Projects.

(c) Progress on the project was reported internally within Hydro and to the Board.

i. ***Internal progress reporting.*** Monthly reports were provided in a summary fashion by the project manager to the Electrical Engineering Manager. Following the internal restructuring in January 2011, these reports were provided to the Program Manager for Regulated Projects.

ii. ***Regulatory reporting.*** Hydro provided summary reporting to the Board on the status of the project schedule and budget as part of the Capital Budget application process (generally filed in August of each year) and through the filing of a Capital Expenditure and Carryover Report, filed at the beginning of March of each year. On the overages experienced in this project, Hydro reported the following to the Board:

- **2012 Capital Budget Application (August 2, 2011).** On August 3, 2011, as part of its 2012 Capital Budget application, Hydro advised that the project had been renamed "Upgrade Terminal Station to 25 kV – Labrador City" and had been extended into 2012. At the point of that filing, no revision to the budget was filed for the project. However, in its application, Hydro advised: "[w]hile there has been no confirmed change to the project schedule or budget, project tenders are currently coming in above budget, and there is some difficulty obtaining any

tenders for certain pieces of work."[1]

- **2012 Capital Budget Application (October 12, 2011).** On October 12, 2011, Hydro filed a revision to its 2012 Capital Budget Application advising that the project budget had grown to $12,650,000 (a difference of $2,660,000 from the original budget). Under Order No. P.U. 2(2012), the Board approved the revised budget of $12,650,000 for the project.

- **2013 Capital Budget Application (August 8, 2012).** As part of part of its 2013 Capital Budget Application (filed August 8, 2012), Hydro reported on expenditures (forecast) on the project of $12,650,000.

- **2012 Capital Expenditure and Carryover Report (March 1, 2013).** In its *Capital Expenditures and Carryover Report*, *December 31, 2012*, filed with the Board on March 1, 2013, Hydro reported that as of December 31, 2012, the project was $2,454,800 over the amount approved per Order No. P.U. 2(2012), with final project costs totaling $15,104,800. Hydro also noted that that the project schedule had been extended into 2013. Hydro indicated that the overages were due to the following:

  > This project was estimated in 2008 based on market conditions at the time and using standard escalation indices for future year expenditures. The market conditions realized in Labrador West during the project execution phase have been a-typical, driven by strong economic activity in the area. The outcome is an escalation beyond Hydro's anticipation in construction contracts, materials and labour.
  >
  > An additional $2.4 million is required to complete this project as a result of contract pricing increases above estimated amounts for contracts to project completion, use of consultants for design review, commissioning cost estimates which were low compared to the

[1] *Newfoundland and Labrador Hydro 2012 Capital Budget Application*, Pages E-9 and E-10.

> actual cost to commission the specific type and size of stations involved, and additional material costs. All contracts have now been awarded and construction is complete. One of the two terminal stations is in service as of December 2012, and commissioning of the remaining station is ongoing.
>
> This project has been carried over into 2013 as a result of delays in building delivery which have resulted in a delay in completion of the station commissioning work.[2]

- **2014 Capital Budget Application (August 5, 2013).** As part of its 2014 Capital Budget Application (submitted on August 5, 2013), Hydro filed a Capital Expenditures by Year, in which it reported requiring additional funds to complete the project. In that report, Hydro noted:

> An additional $3.1 million was required to complete this project as a result of contract pricing increase above estimated amounts for contracts, use of consultants for design review, commissioning cost estimates which were low compared to the actual cost to commission the specific type and size of stations involved, and additional material costs. Additional commissioning costs and interest also contributed to the variance. Both terminal stations are now in service.

- **2013 Capital Expenditure and Carryover Report (December 31, 2013).** In its *Capital Expenditures and Carryover Report*, *December 31, 2013*, filed on March 3, 2014, Hydro reported that the project was now $4,190,000 over the amount approved per Order No. P.U. 2(2012), with final project costs totaling $16,844,000.[3]

(d) Examples of internal reporting are provided as PR-PUB-NLH-040 Attachments 1 and 2. Regulatory reporting was provided in the form noted above.

[2] *Newfoundland and Labrador Hydro Capital* Expenditure *and Carryover Report December 31, 2012*, Pages 24.
[3] *Newfoundland and Labrador Hydro Capital* Expenditure *and Carryover Report December 31, 2013*, Page 26.

(e) As issues arose during the execution of the project, the Program Manager of Regulated Projects was informed of the details. If the issues warranted a project change order, the necessary forms and background information were provided for review and approvals. In addition and as noted, issues regarding schedule and budget where reported to the Board through the capital budget and annual expenditure reporting processes.

(f) Following commencement of this project, internal restructuring took place within Hydro in 2011. The 2011 organizational changes established the positions of full time project managers. Prior to this time, it was common for design engineers to also function as project managers. This organizational change fostered a more consistent approach to the management of projects within the Project Execution and Technical Services team. Since 2011, the overall resourcing requirements for project managers, partly through the use of consultants, has been adjusted which has allowed the number of projects for each project manager to be decreased.

There is currently a greater alignment within the Project Execution and Technical Services groups with the industry standards and guidelines for project management, including those issued by the Project Management Institute (e.g., the *Project Management Body of Knowledge* (PMBOK)). The Project Execution and Technical Service group are continually improving their project management and execution practices and processes by bench marking against standard PMBOK practices and processes.

(g) The project management processes within Hydro are constantly being reviewed and updated as opportunities are recognized. Please see also Hydro's response to PR-PUB-NLH-041.

## 2011 Capital Project Status Dashboard - Terminals (Regulated TRO)

| Project Identification | | | | 2011 Cost | | | | | 2011 Schedule | | | | | | | | | | | | Other Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Plan No. | Priority A/B/C | Business Unit Number | Project Title | Approved Total Budget | Approved 2011 Budget | Estimated Cost | Cost Risk (g/y/r) | Cost Risk Factors | Approved Start Month | Approved End Month | Planned Start Month | Planned End Month | Sched. Risk (g/y/r) | Project Phase | | | Schedule Risk Factors | Outage Equipment | Planned Outage Dates | Other Schedule Constraints | |
| | | | | | | | | | | | | | | Phase 1 | Phase 2 | Phase 3 | | | | | |
| **Last Update: 13-April-2011** | | | | | | | | | | | | | | | | | | | | | |
| | A | 1396 0904 | Upgrade Terminal Stations to 25 kV - Labrador City | 9,990,600 | 3,500,000 | 3,500,000 | | Contractor prices so far have been high / significant amount of contract work planned for 2011 | Jun-09 | Dec-12 | Jan-11 | Jun-12 | | complete | ongoing | | Telecontrol Eng resource secured | | | | Transformers and breakers ordered / tender for building and switchgear complete / telecontrol work has begun / civil contract spec ongoing / elec const contract spec ongoing |
| **Subtotal - Terminals** | | | | $9,990,600 | $3,500,000 | $3,500,000 | | | | | | | | | | | | | | | |

**Legend:** Project

Phase 1: Open/Design Transmittal/Schedule & Cash Flow
Phase 2: Design/Procurement
Phase 3: Implementation/Construction/Commissioning/Close out

| Colour | Cost | Schedule |
|---|---|---|
| Green | expected cost at completion is +/-10% of the revised capital budget (i.e. original budget plus approved change orders) | expected project in-service date is on or before original project completion date |
| Yellow | expected cost at completion is between -10% and -20% or 10% and 20% of the revised capital budget (i.e. original budget plus approved change orders) | expected project in-service date is within 3 months of the original project completion date |
| Red | expected cost at completion is less than -20% or more than 20% of the revised capital budget (i.e. original budget plus approved change orders) | expected project in-service date is greater than 3 months from the original project completion date |

**2011 Capital Project Status Dashboard - Terminals (Regulated TRO)**

| Project Identification | | | | 2011 Cost | | | | | 2011 Schedule | | | | | | | | | | | | Other Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Project Phase | | | | | | | |
| Project Plan No. | Priority A/B/C | Business Unit Number | Project Title | Approved Total Budget | Approved 2011 Budget | Final Forecast Cost | Cost Risk (g/y/r) | Cost Risk Factors | Approved Start Month | Approved End Month | Planned Start Month | Planned End Month | Sched. Risk (g/y/r) | Phase 1 | Phase 2 | Phase 3 | Schedule Risk Factors | Outage Equipment | Planned Outage Dates | Other Schedule Constraints | |
| **Updated: 29-Aug-2011** | | | | | | | | | | | | | | | | | | | | | |
| 80 | A | 1396 0904 | Upgrade Terminal Stations to 25 kV - Labrador City | 9,990,600 | 3,500,000 | 12,875,830 | | Change order required / Contract and material costs exceed estimates / significant amount of contract work planned for 2011 | Jun-09 | Dec-12 | Jan-11 | Dec-12 | | complete | ongoing | | Telecontrol Eng resource secured for fiberoptic link / resource(s) required for telecontrol design and commissioning | | | | Transformers and breakers ordered / tender for building and switchgear awaiting change order / fibreoptic link tender ready for award / civil contract ready for award / elec const contract ready for award / Planned end month changed to Dec 2012 |
| **Subtotal - Terminals** | | | | $9,990,600 | $3,500,000 | $12,875,830 | | | | | | | | | | | | | | | |
| **Project Status Summary** | | | | | | | | | | | | | | | | | | | | | |