

1 Q. Please provide:

2 a) Any data used to measure and manage maintenance backlogs;

3 b) Annual budgeted and actual operating and maintenance costs and the five
4 year forecast; and

5 c) Annual budgeted and actual capital costs and the five year forecast.

6

7

8 A. a) Measurement and management of Hydro's maintenance backlog is a normal
9 part of its business through the year and trends are actively managed to address

10 them. Generally, a maintenance backlog builds during the operating season, and
11 then it is actioned and reduced during maintenance outages in off peak periods.

12 Therefore, it is expected that at any point in time there will be a maintenance backlog
13 within an area. The backlog is expected to be either reducing or stable at a low level, year

14 over year, particularly at the start of the operating season. Work not requiring an

15 outage is addressed during the operating season to help level workload and

16 demand on resources. Maintenance backlog is considered when building the

17 annual work plan and supporting budget, as well as on a weekly cycle when dealing

18 with new maintenance priorities that arise. In either cycle, annual or weekly, Hydro

19 evaluates the maintenance work, identifies priorities based on asset condition and

20 potential impact to safety, cost and reliability, then adjusts schedules and resources

21 for a balanced plan, and then executes that plan.

22

23 Maintenance backlog work order data is extracted from the JD Edwards

24 Maintenance Module database. A typical backlog report is provided in PUB-NLH-

25 156 Attachment 1. PUB-NLH-156 Attachment 2 contains samples of a backlog

26 summary trend charts. The Short Term Work Planning and Scheduling Council is

27 reviewing Hydro's current approach to backlog reporting in 2014 with the outcome

1 of sharing the identified best practices for reporting and trending for use across the
2 organization.

3
4 Maintenance backlog trends are stable in generating stations, managed to follow a
5 consistent annual trend. An increasing trend detected in the Transmission and
6 Rural Operations area has prompted action as per the process described above with
7 action as noted in Hydro's response to PUB-NLH-155, repeated here for
8 convenience:

- 9
10 1. Implement additional oversight and sign-off of annual work plans to ensure
11 a resource balanced plan, enabling continued successful execution of the
12 PM program.
- 13 2. Document PM compliance targets in performance agreements for applicable
14 managers.
- 15 3. Ensure PM backlog reviews continue to be scheduled with particular
16 emphasis on terminal stations and breakers to ensure targets are
17 consistently met.
- 18 4. Assign a senior resource to the Eastern area office to oversee execution of
19 the PM plan in that area.
- 20 5. Conduct annual PM check sheet review meetings with shop floor employees
21 to identify improvements to existing PMs.
- 22 6. Leverage and integrate the Project Execution and Technical Services
23 Planning and Scheduling resource to improve coordination with the regions
24 and plants.
- 25 7. Implement a campaign approach to execution of the annual work plan to
26 ensure required resources are available and execution is consistently
27 successful across all work streams, including PMs and backlogs. This may

1 include the increased use of contractors, pooling resources from other
2 regions and hiring additional temporary employees.

3
4 The following will continue to be focused on in 2014 to achieve improvements for
5 all areas within Hydro:

- 6
- 7 i. use of backlog management metrics with regular progress checks;
 - 8 ii. improved management via a single point of accountability for backlog
9 management in satellite areas;
 - 10 iii. planning for and providing the resources necessary to execute the recovery
11 plan; and
 - 12 iv. sharing and implementing best practices in backlog management through
13 the Short Term Work Planning and Scheduling Council.
- 14

15 b) Annual budget and actual operating and maintenance costs and the available 4-
16 year forecast are provided from 2008 to 2017 in PUB-NLH-156 Attachment 3.
17 Operating and maintenance costs budgeted compared to actual are subject to
18 variability depending on capital projects, system equipment maintenance and
19 regulatory requirements.

20

21 c) Annual budget and actual capital costs and the 5-year forecast are provided in
22 PUB-NLH-156 Attachment 4. It includes all capital expenditures and budgets for
23 regulated Hydro, not just Island Interconnected. The 5-year capital plan for 2014 to
24 2018 is from the Hydro submitted 2014 Public Utilities Board Capital Budget
25 Application. The 5-year plan includes multi-year capital project costs for the new
26 proposed combustion turbine for Holyrood and the new proposed 230 kV
27 transmission line from Bay D'Espoir to Western Avalon.

1 Over the period from 2008 to 2013, the actual expenditures were generally lower
2 than budgeted. The primary reason for these variances is projects which are
3 rescheduled or delayed during the year. The reasons for delay or rescheduling
4 projects vary from year to year, but include:

- 5
- 6 • System constraints which may be precipitated by changes in hydrology,
7 equipment failures, or emergency events which eliminate or reduce planned
8 equipment outages;
 - 9 • Market pressures which result in higher than anticipated bid pricing, or no
10 bids being received resulting in multiple tenders and thus project delays;
 - 11 • Infant mortality of new components or increased commissioning effort for
12 new equipment;
 - 13 • Changes in market conditions from the time a project is proposed to the
14 time of implementation can impact the expected delivery time for major
15 equipment and thus delay project completion; and
 - 16 • Problems with vendor supply as a result of unforeseen events such as fires,
17 equipment breakdowns, strikes, etc.

18

19 Projects may also be completed under budget due to:

- 20
- 21 • Favourable tender pricing as a result of market pressures or packaging of
22 similar work or work in the same location;
 - 23 • Lower than estimated costs of materials due to changes in market
24 conditions;
 - 25 • Efficiencies gained during project execution which were not anticipated
26 during estimate preparation; and
 - 27 • Changes in currency exchange rates.

1 Hydro continues to implement changes in its project management practices to
2 continuously improve annual capital program completion with demonstrated
3 improvement in recent years. These changes include:

4

- 5 • Increasing the number of multi-year projects to accommodate lead time on
6 major equipment and to allow flexibility in timing of construction;
- 7 • Increased project and resource planning effort; and
- 8 • Use of program approach for multi-year repeat projects to allow cost
9 certainty, obtain preferential pricing, and reduce engineering and project
10 management costs.

48201 Backlog WO (WO Print w/o Est) _ □ X

Tools Help

ORACLE JD Edwards World URL Document Email World Resources Support

Field Sensitive Help

Display Error Message

Display Functions

Display Alternate Panel

Exit Program

More Details

Update with Redisplay

Unscheduled Maintenance

Toggle Start Date and V

Work Order Summary V

Equipment Workbench

Summary Capacity Mes

Estimated and Actual A

Toggle Start Date/Com

Category Code Analysis

Clear Screen

WO Activity Rules

Backlog WO (WO Print w/o Est)

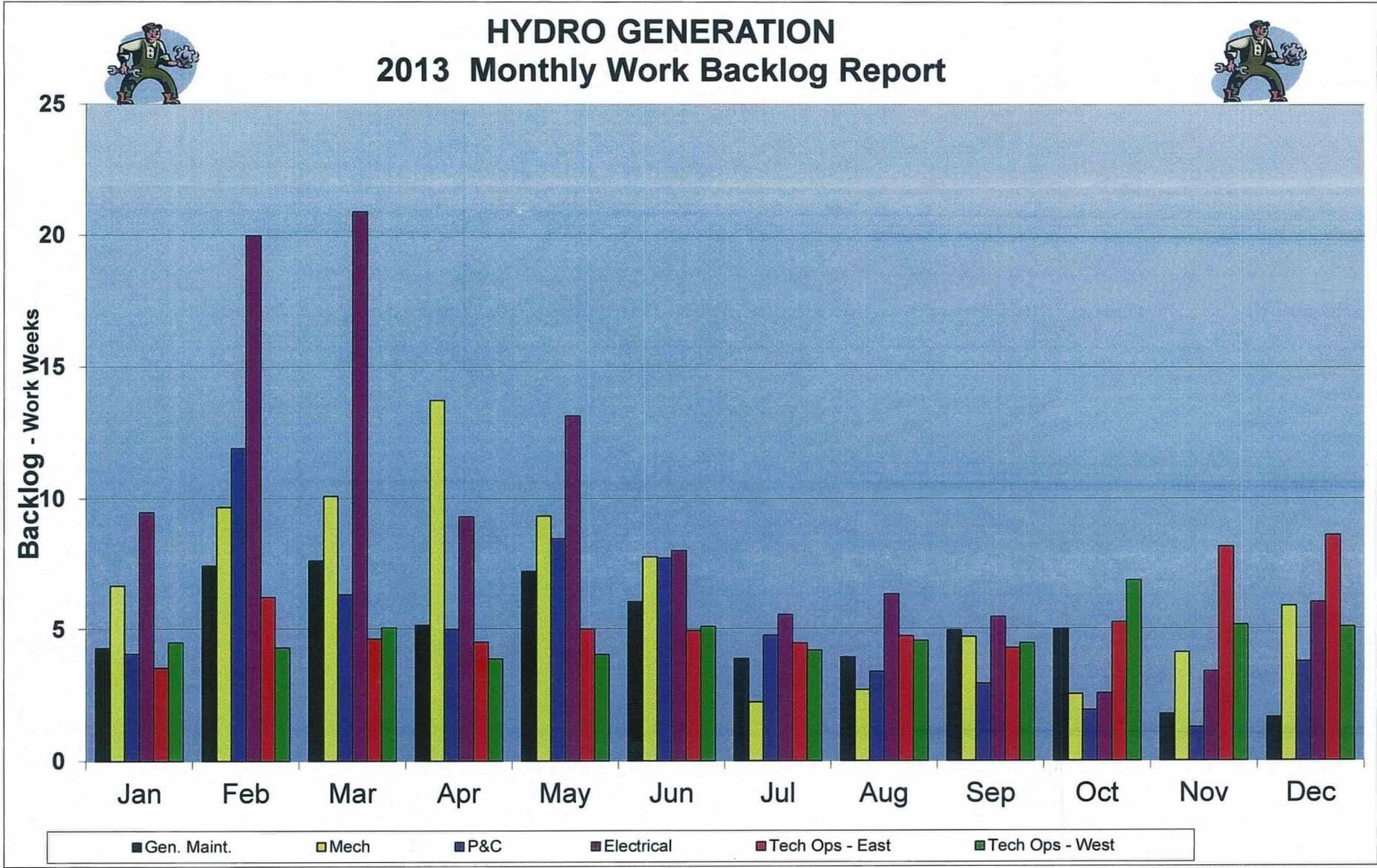
| | | | | | |
|----------------|--|--------------|---------------------------------|--------|--------------------------------|
| 48201 | | From | 44 | Thru | 44 |
| Action Code | <input type="text" value="I"/> | Status | <input type="text" value="44"/> | | |
| Business Unit | <input type="text"/> | Start Date | <input type="text"/> | | |
| Parent W.O. No | <input type="text"/> | Cpl. Date. | <input type="text"/> | | |
| Employee | <input type="text"/> | Est Hours. | <input type="text"/> | | |
| Originator | <input type="text"/> | Duration | <input type="text"/> | | |
| Customer | <input type="text"/> | % Compl | <input type="text"/> | | |
| Planner | <input type="text"/> | Asset Number | <input type="text"/> | | |
| Section | <input type="text" value="51953"/> | Cost Code | <input type="text"/> | Child. | <input type="text" value="N"/> |
| Search X-Ref | <input type="text"/> | Order Type | <input type="text"/> | Craft. | <input type="text"/> |
| Category Codes | PHS. <input type="checkbox"/> FAI. <input type="checkbox"/> SUB. <input type="checkbox"/> PCR. <input type="checkbox"/> MAJ. <input type="checkbox"/> MIN. <input type="checkbox"/> RAT. <input type="checkbox"/> SYS. <input type="checkbox"/> RCM. <input type="checkbox"/> CTR. <input type="checkbox"/> POS. <input type="checkbox"/> | | | Model. | <input type="text" value="Y"/> |
| | | | | Type | <input type="text"/> |

| OP | Number | Description | Asset Number | Start Dt | St | Est Hrs | T | P |
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| <input type="checkbox"/> | 762338 | WHR, REPAIR LEAKY ROOF ON DIE | 60233 | 10/02/09 | 44 | 16.00 | 1 | 3 |
| <input type="checkbox"/> | 913805 | NOB, 584 VIBRATION SIGNATURE | 342011 | 12/05/07 | 44 | 4.00 | 1 | 3 |
| <input type="checkbox"/> | 913806 | NOB, 581 VIBRATION SIGNATURE | 342009 | 12/05/07 | 44 | 4.00 | 1 | 3 |
| <input type="checkbox"/> | 913807 | NOB, 583 VIBRATION SIGNATURE | 342010 | 12/05/07 | 44 | 4.00 | 1 | 3 |
| <input type="checkbox"/> | 913809 | SLE, 2015 VIBRATION SIGNATURE | 106266 | 12/05/07 | 44 | 4.00 | 1 | 3 |
| <input type="checkbox"/> | 913810 | SLE, 2080 VIBRATION SIGNATURE | 303235 | 12/05/07 | 44 | 4.00 | 1 | 3 |
| <input type="checkbox"/> | 913811 | WHR, 580 VIBRATION SIGNATURE | 323963 | 12/05/07 | 44 | 8.00 | 1 | 3 |
| <input type="checkbox"/> | 913812 | WHR, 2075 VIBRATION SIGNATURE | 299240 | 12/05/07 | 44 | 4.00 | 1 | 3 |

Opt: 1=WO Entry 4=Return w/Number F4=Detail F10=Eq. Workbench F24=More

HOLYROOD BACKLOG Management Net Difference between Work Orders Generated vs. Completed





PUB-NLH-156, Attachment 3
Page 1 of 1, Isl Int Sys Power Outages

Newfoundland and Labrador Hydro - Regulated
Operating and Maintenance Expenses by Functional Area
2008 - 2017

PUB-NLH-156, part b)

| | 000's | | | (1) | | | (1) | | | (1) | | | (2) | | | (2) | | (2) | | (2) | | |
|--|----------------|----------------|--------------------|----------------|----------------|--------------------|----------------|----------------|--------------------|----------------|----------------|--------------------|----------------|----------------|--------------------|----------------|----------------|--------------------|------------------|------------------|------------------|------------------|
| | Actual 2008 | Budget 2008 | Budget - Actual | Actual 2009 | Budget 2009 | Budget - Actual | Actual 2010 | Budget 2010 | Budget - Actual | Actual 2011 | Budget 2011 | Budget - Actual | Actual 2012 | Budget 2012 | Budget - Actual | Actual 2013 | Budget 2013 | Budget - Actual | Proposed 2014 | Proposed 2015 | Proposed 2016 | Proposed 2017 |
| Operations | | | | | | | | | | | | | | | | | | | | | | |
| Thermal Generation | 22,444 | 20,621 | (1,823) | 21,182 | 20,731 | (451) | 20,774 | 23,486 | 2,712 | 22,077 | 22,607 | 530 | 20,538 | 21,828 | 1,290 | 21,220 | 21,855 | 635 | 23,084 | 23,729 | 24,436 | 25,107 |
| Hydro Generation | 8,843 | 8,635 | (208) | 9,447 | 9,606 | 159 | 10,223 | 10,298 | 75 | 10,949 | 11,209 | 260 | 11,498 | 11,081 | (417) | 10,959 | 11,509 | 550 | 11,757 | 12,094 | 12,454 | 12,796 |
| Generation | 31,287 | 29,256 | (2,031) | 30,629 | 30,337 | (292) | 30,997 | 33,784 | 2,787 | 33,026 | 33,816 | 790 | 32,036 | 32,909 | 873 | 32,179 | 33,364 | 1,185 | 34,841 | 35,823 | 36,890 | 37,904 |
| Transmission & Rural Operations | 36,067 | 34,838 | (1,229) | 35,165 | 36,069 | 904 | 38,054 | 37,742 | (312) | 40,342 | 41,207 | 865 | 43,415 | 42,330 | (1,085) | 48,209 | 44,179 | (4,030) | 45,993 | 47,296 | 48,704 | 50,043 |
| Total Operations | 67,354 | 64,094 | (3,260) | 65,794 | 66,406 | 612 | 69,051 | 71,526 | 2,475 | 73,368 | 75,023 | 1,655 | 75,451 | 75,239 | (212) | 80,388 | 77,543 | (2,845) | 80,834 | 83,119 | 85,594 | 87,947 |
| Total Corporate Services | 29,340 | 34,542 | 5,202 | 34,070 | 35,564 | 1,494 | 27,925 | 34,753 | 6,828 | 31,196 | 32,998 | 1,802 | 31,017 | 33,049 | 2,032 | 31,424 | 34,379 | 2,955 | 35,922 | 37,004 | 38,106 | 39,153 |
| Asset Writedown | - | - | - | 505 | 0 | (505) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Operating Expenses | 96,694 | 98,636 | 1,942 | 100,369 | 101,970 | 1,601 | 96,976 | 106,279 | 9,303 | 104,564 | 108,021 | 3,457 | 106,468 | 108,288 | 1,820 | 111,812 | 111,922 | 110 | 116,756 | 120,123 | 123,700 | 127,100 |

(1) Hydro completed its 2010 fiscal year with a positive Operating Expense variance of \$9.3M mainly attributable to higher capitalization of labor costs \$3.8M, lower professional fees due to regulatory filings and consultants \$2.1M, adjustment for a bad debt \$0.8M, favorable inspection by contractor resulted in reduction in operational spend on system equipment maintenance \$1.9M and other favorable net variance of \$0.7M.

(2) Proposed year 2014 is budget and 2015 to 2017 were escalated off prior years operating costs.

NEWFOUNDLAND & LABRADOR HYDRO

Capital Expenditures/Budgets 2008 - 2018
(\$000)

| | Budget | Actuals | Budget | Actuals | 2014 Five Year Capital Plan | | | | |
|-----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|-----------------------------|----------------|----------------|----------------|----------------|
| | 2008 | 2008 | 2009 | 2009 | 2010 | 2010 | 2011 | 2011 | 2012 | 2012 | 2013 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| GENERATION | 13,927 | 13,491 | 12,122 | 9,592 | 21,944 | 16,337 | 17,404 | 13,131 | 42,863 | 24,297 | 64,557 | 42,629 | 73,388 | 72,321 | 23,711 | 14,411 | 13,173 |
| TRANSMISSION | 10,108 | 9,146 | 11,505 | 10,802 | 11,314 | 10,654 | 14,889 | 15,516 | 17,542 | 18,649 | 15,354 | 10,348 | 37,309 | 90,840 | 88,371 | 90,267 | 95,183 |
| RURAL OPERATIONS | 17,575 | 14,847 | 22,572 | 21,514 | 17,210 | 17,496 | 24,250 | 23,734 | 24,365 | 25,682 | 27,299 | 24,998 | 33,109 | 36,001 | 39,968 | 26,783 | 23,504 |
| GENERAL PROPERTIES | 10,969 | 7,829 | 14,345 | 11,572 | 11,135 | 10,215 | 9,911 | 8,734 | 8,069 | 7,250 | 8,163 | 5,935 | 6,643 | 8,847 | 11,152 | 12,093 | 7,581 |
| CONTINGENCY FUND | 1,000 | 933 | 1,000 | 672 | 1,694 | 851 | 1,000 | 2,001 | 1,000 | 1,374 | 1,000 | 846 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| TOTAL CAPITAL EXPENDITURES | 53,579 | 46,246 | 61,544 | 54,152 | 63,297 | 55,553 | 67,454 | 63,116 | 93,840 | 77,252 | 116,373 | 84,755 | 151,449 | 209,008 | 164,201 | 144,555 | 140,441 |

1) Hydro files with the Board of Commissioners of the Public Utilities Board in March each year a Capital Expenditures and Carryover report for the previous fiscal year. A section of the report provides commentary (projects greater than \$100K and 10% variance from budget) on capital project variances budget to actual.

2) The 2014 Five Year Capital Plan includes multi-year project costs for the new proposed combustion turbine for Holyrood and the new proposed 230kV transmission line Bay D'Espoir to Western Avalon.

3) Generation variance in 2010 was primarily the result of schedule shift and cost savings on Units 1-4 Rewind Project at Bay d'Espoir.

4) Generation variance in 2011 was primarily the result of schedule shift on Exciter Replacement Project at Bay d'Espoir and Hydrogen System Upgrade Project at Holyrood.

5) Generation variance in 2012 was primarily the result of schedule shift and cost savings related to Exciter Replacement Project, Units 1-4 Rewind Project and Cat Arm Dam Project at Bay d'Espoir

6) Generation variance in 2013 was primarily the result of cost savings on multiple projects.