

1 **Q. Re: Page 4 of 85**

2 ***Hydro Plant Production Increase (Other) - \$1,665,000***

3 ***Combined normal annual production of both plants is approximately 39.0 gWh or***
4 ***approximately 9% of the total hydroelectric production of Newfoundland Power Inc.***

5 ***Increasing the capacity of La Manche Canal in the Tors Cove/Rocky Pond***

6 ***hydroelectric development (two plants, Tors Cove and Rocky Pond) will increase***
7 ***production by 5.54 gWh at a cost of 2.19¢ per kWh.***

8
9 ***Page 6 of 85***

10 ***Heart's Content Plant Refurbishment (Pooled, Multi-year) - \$5,735,000***

11 ***Normal annual production at Heart's Content is 8.3 gWh or 1.9% of the total***
12 ***hydroelectric production of Newfoundland Power Inc. Levelized cost of energy from***
13 ***the Heart's Content plant over the next 50 years, including projected capital and***
14 ***operating expenditures, is estimated to be 6.27¢ per kWh.***

15
16 **In the calculation of the levelized cost of energy please provide a description of the**
17 **source of the information in each column in the table in the Attachments and how**
18 **each is used to arrive at the levelized cost of energy.**

19
20 **A. A description of each column in the table showing the levelized cost of energy follows.**

21
22 ***Generation (Hydro 64.4 years, 8%CCA):*** This column shows the capital expenditures by
23 year that will be subject to an 8% capital cost allowance deduction for income tax
24 purposes and an average life of 64.4 years for straight line depreciation. The
25 expenditures are equal to the expenditures by year as detailed in the respective feasibility
26 analysis report and escalated using the GDP deflator for Canada as forecast by the
27 Conference Board of Canada.

28
29 ***Generation (Hydro 64.4 years, 50%CCA):*** This column shows the capital expenditures
30 by year that will be subject to a 50% capital cost allowance deduction for income tax
31 purposes and an average life of 64.4 years for straight line depreciation. The 50% capital
32 allowance deduction applies to certain generation equipment that meets certain energy
33 efficiency criteria. The expenditures are equal to the expenditures by year as detailed in
34 the respective feasibility analysis report and escalated using the GDP deflator for Canada
35 as forecast by the Conference Board of Canada.

36
37 **The sum of *Generation (Hydro 64.4 years, 8% CCA)* and *Generation (Hydro 64.4 years,***
38 ***50% CCA)* is equal to the total capital expenditure for each project.**

39
40 ***Capital Revenue Requirement:*** This column shows the estimate of the revenue required
41 to support the capital expenditures. More specifically it includes depreciation, return on
42 rate base, and income tax effects. The actual calculation of this column is based on

annual percentage revenue requirements by year for a capital expenditure with a certain depreciation rate and capital cost allowance.¹

Operating Costs: This column shows the operating costs associated with the project. For hydro plant refurbishment it includes the total operation costs for the plant as provided in the feasibility study escalated to future years. For the La Manche Canal project, the operation costs for the Tors Cove and Rocky Pond plants are not expected to change as a result of the capacity upgrade.

Operating Benefits: This column is used when required to show operating costs reductions that may occur as a result of the capital expenditures.

Net Benefits: This column is the Operating Benefits less the total of the Operating Costs and Capital Revenue Requirement.

Present Worth: This is the present worth of each year's Net Benefit based on a discount rate equal to Newfoundland Power's weighted average incremental cost of capital.

Cumulative Present Value: This column shows the cumulative Present Worth of the benefits accrued since the first year of the analysis.

Present Worth of Sunk Costs: This is the economic cost of the capital expenditures that have not yet been recovered from customer rates. It is determined by calculating the present worth of the series of Capital Revenue Requirement beyond current year. It is included in the analysis because once a capital expenditure is completed and included in rate base it becomes a sunk cost that will be recovered from future customers.

Total Present Worth: This is the total of the Cumulative Present Value and the Present Worth of Sunk Costs.

Revenue Requirement: This is the Net Benefits divided by the appropriate kWh production.

Levelized Rev Rqmt (cents/kWh) 50 years: This column shows the levelized cost of energy for the present worth analysis. It is calculated by first determining an annual payment which has the same present worth as the total Present Worth at the end of the assets' economic life. Then, take this annual payment and divide by the appropriate kWh production amount. The following illustrates this calculation for the La Manche Canal item.

¹ See page titled "Major Inputs & Assumptions" for each project, at Tab 1.3, *Hydro Production Increase – La Manche Canal*, Attachment A, and at Tab 1.2, *Heart's Content Hydro Plant Refurbishment*, Attachment C.

1 The capacity upgrade cost for the Le Manche Canal item has a total present worth of cost
2 of \$1,554,478 over the assumed 50 year life.² An equivalent annual cost that has the
3 same present worth is \$121,108. This annual cost divided by the increase in production
4 expected, 5.54 GWh, results in a levelized cost of energy of 2.19 ¢/kWh (\$121,108.00 /
5 5,540,000 kWh).

² See Tab 1.3, *Hydro production Increase – La Manche Canal*, Attachment A, Page 1. The total present worth of \$1,554,478 is shown for year 2064, 50 years after the canal upgrade in 2014.