

1 Q. Provide an electronic copy of the cost of service study (Exhibit JAB-1 with
2 formulas included and user documentation).

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4 A. The electronic copy of the cost of service study, Exhibit JAB-1, is provided on
5 the enclosed diskette in the file labeled NP120.COS2002P.zip. The user
6 documentation is also included on the diskette in the file labeled NP-120
7 COS User Guide.doc.

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9 A hard copy of the user documentation is also attached.

**NEWFOUNDLAND AND LABRADOR HYDRO
Cost of Service (COS) Model – User Documentation**

The COS Model is comprised of four files as follows:

1. COS.xls (Main model)
2. Load2002Proposed.xls (Load data, along with rural revenue data)
3. Oam2002Proposed.xls (Revenue requirement components)
4. Plant2002Proposed.xls (Plant Original Cost, Net Book Value and Depreciation data)

The COS.xls file contains the calculations relevant to the production of the COS schedules filed in this proceeding. The remaining files contain the requisite input data.

General Flow of the COS Model

Newfoundland and Labrador Hydro maintains its accounting data by business unit, or cost center. Plant data are, for the most part, identified by system and function. At the point the accounting and plant data enter the COS model they have been compiled and identified, to the extent possible, by appropriate system, function and sub-function. If the system and/or function are not readily identifiable, the cost of service model allocates the appropriate amounts. Load allocation data are provided for each rate class.

Cost of Service amounts are compiled by system, and identified in the model as such. Costs by system are functionalized and classified within the system sheets, into demand, energy, and customer amounts, for the production, transmission and distribution functions.

The revenue requirement, before return on rate base, is then calculated for each system. Return on rate base is comprised of both a return on equity and a return on debt. Rural rate base is excluded from the calculation of the return on equity component. Return on debt is calculated on total rate base. Total revenue requirement, after return on rate base, is then allocated to classes of customers in the following manner:

System	Allocation Basis
Island Interconnected	
Production Demand	Coincident Peak (2CP)
Production Energy	MWh at production
Transmission Demand	Coincident Peak (1CP)
Rural Transmission Demand	Coincident Peak (1CP)
Distribution Demand	Coincident Peak (1CP)
Distribution Customers	Customers, weighted customers

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Other Systems

Production Demand	Coincident Peak (1CP)
Production Energy	MWh at production
Transmission Demand	Coincident Peak (1CP)
Distribution Demand	Coincident Peak (1CP)
Distribution Customers	Customers, weighted customers

Following the allocation of total revenue requirement to rate classes, the total demand, energy and customer costs for each rate class are determined. Unit costs are then calculated as follows:

Demand costs - Demand	\$ per kW
Demand costs - Non-demand	\$ per kWh
Energy costs	\$ per kWh
Non-demand Demand and Energy	\$ per kWh
Customer costs	\$ per bill

The rural deficit is allocated to the following customers:

Newfoundland Power
Rural Labrador Interconnected
CFB – Goose Bay

After the Rural deficit allocation, the amounts of the Island Industrial Non-firm Revenue Credit and the CFB-Goose Base Secondary Revenue Credit are calculated and allocated to firm customers within each applicable system.

COS.xls

Worksheet Contents

Several of the worksheets, e.g. Revisions, Balance and Index, are designed to check the results of the calculations or aid the user. This document describes those sheets relevant to the production of the filed COS schedules only.

1. Run Options

This worksheet identifies the input files linked to the model (automated by the print macro) and permits the user to set certain run options. Specifically, there are three calculation switches defined on this worksheet:

- a) Test Year Switch: This switch provides the capability to run the model on a test year basis, or on a fallout year basis. When the value of the switch changes, the calculations are automated with a macro. The model differences between a test year and a fallout year are as follows:

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Test Year (Value of 1): Return on equity is an input percentage. The return on equity for Hydro's non-regulated industrial customer (IOCC) is derived from this percentage, and is used to calculate IOCC's revenue requirement.

Fallout Year (Value of 0): Return on equity is a calculated value derived from regulated revenues minus expenses minus return on debt. The portion of regulated revenues related to IOCC is determined through an iteration process which matches the calculated return on equity percent with the return on equity percent used for IOCC's revenue requirement.

- b) Rural Island Interconnected Margin Switch: Determines whether or not the return on equity is applicable to the entire Island Interconnected rate base or just a portion thereof.
- c) Labrador Interconnected / Isolated System CP/AED Switch: Allows the user to determine whether production demand costs are allocated to customers in all systems other than Island Interconnected by CP or AED.

This worksheet also allows the user to enter a name for the particular COS version being worked on. This name appears as part of the title of each schedule.

- 2. Summaries: The worksheets in this section of the model present summary COS results.
 - a) Revenue Requirement: This worksheet contains Schedule 1.1, page 1, Total System Revenue Requirement. It presents the detailed revenue requirement for each of the 5 systems being analyzed as well as the system as a whole.
 - b) Rate Base: This worksheet contains Schedule 1.1, page 2, Total Rate Base by System.
 - c) Revenue to Cost: Schedule 1.2, Comparison of Revenue and Allocated Revenue Requirement compares revenue and allocated revenue requirement by rate class for the total system as well as each of the 5 systems being analyzed.

Schedule 1.2.1, Rural Deficit Allocation, details the rural deficit allocation.

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d) Unit Costs

Schedule 1.3, Unit Demand, Energy and Customer Amounts, presents the unit demand, energy and customer amounts by rate class for each of the 5 systems. The results are presented both before and after the deficit allocation.

Schedule 1.3.1, Total Demand, Energy and Customer Amounts, presents the total demand, energy and customer amounts by rate class for each of the 5 systems. As with Schedule 1.3, the results are presented both before and after the deficit allocation.

Schedule 1.3.2, Demands, Sales and Number of Bills, shows billing demands, sales and number of bills by rate class for each of the 5 systems.

Schedule 1.4 is the Calculation of Firming Up Charge for the Island Interconnected System.

Schedule 1.5 is the Calculation of Transmission Wheeling Charge for the Island Interconnected System.

3. Functional Classification and Allocation Schedules: There is a separate worksheet for each system containing the functionalization, classification and allocation schedules as follows:

Schedule 2.1 – Functional Classification of Revenue Requirement

Schedule 2.2 – Functional Classification of Plant in Service for the Allocation of O&M Expense

Schedule 2.3 – Functional Classification of Net Book Value

Schedule 2.4 – Functional Classification of Operating & Maintenance Expense

Schedule 2.5 – Functional Classification of Depreciation Expense

Schedule 2.6 – Functional Classification of Rate Base

Schedule 3.1 – Basis of Allocation to Classes of Service

Schedule 3.2 – Allocation of Functionalized Amounts to Classes of Service

Schedule 3.3 – Allocation of Specifically Assigned Amounts to Classes of Service (Island Interconnected only)

Schedules 2.1, 2.2, 2.4 and 2.6 have a corresponding documentation schedule detailing the basis of the functional classification. The documentation schedules are located to the right of the main schedule.

4. Other Schedules: This group of worksheets contain additional COS calculations.

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- a) Schedule 4.1: This worksheet contains Schedule 4.1, Functionalization and Classification Ratios.
 - b) Schedule 4.2,4.3,4.4: Three schedules are presented on this worksheet. They are Schedule 4.2, System Load Factors, Schedule 4.3, Holyrood Capacity Factor and Schedule 4.4, Total System Power Purchases.
5. Backup Schedules: The worksheets in this section of the model contain supporting calculations, but the schedules are not part of the published COS.
- a) AED: Two schedules, Calculation of the Generation AED Factors, and Calculation of Transmission AED Factors, are presented for each of the five systems. These calculations are retained to support the Run Option to switch production demand allocators for systems other than Island Interconnected.
 - b) AllocPlt, AllocNBV, AllocDEP and AllocMisc: These worksheets contain additional allocation factors, derived from data on other COS worksheets, to allocate O&M data.

In addition, the AllocNBV sheet includes the calculation of allocated interest and margin.
 - c) Average Costs: Average costs per kWh are shown for the total system as well as for each of the 5 systems.
 - d) Coverage: This worksheet calculates regulated gross interest coverage.
 - e) Customers: This worksheet contains calculations for weighted customers.
 - f) DistnDetails: This worksheet calculates the functionalization ratios for distribution plant by system.
 - g) O&M Summary: The final allocations of the O&M data are made on this worksheet prior to inclusion in the COS system schedules, e.g. IslIntCos.
 - h) SPLT Details, SNBV Details and SDEP Details: These worksheets are used to functionalize some items of the plant data prior to use on the COS sheets, e.g. IslIntCos.
 - i) SpecAssFuel: This worksheet details the amount of specifically assigned fuel for Island Interconnected. For the test year, this schedule is not used.
 - j) SystemizedPlant: Two schedules are presented containing supplemental plant allocations for meters and computer software.

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Printing the COS Schedules

A print routine is included on the COS.xls file. The schedules may be printed from any location in the workbook by pressing CTRL-T. A print menu allows the user to choose from the following options:

- (1) Print the full cost of service, or
- (2) Print one or more of the following:
 - (i) Summaries
 - (ii) Island Interconnected
 - (iii) Island Isolated
 - (iv) Labrador Isolated
 - (v) L'Anse au Loup
 - (vi) Labrador Interconnected
 - (vii) Other
 - (viii) Backup Schedules

Each printed sheet includes the date and number of pages. An optional run label can be entered by the user and appears in the lower right-hand corner of each output sheet.