

Alberta Electric System Operator

Electric Transmission  
Operating and Maintenance  
Cost Study

PS Technologies Inc.  
Arnie Reimer  
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## 1. Executive Summary

This study was completed to better understand the causation of electric transmission operating and maintenance costs. The study addresses an Alberta Energy and Utilities Board (AEUB) Direction in Decision 2005-096 and Decision 2007-106 (Alberta Electric System Operator – 2006 and 2007 General Tariff Applications, respectively) regarding transmission system costs. This study is a follow up of past studies, the first of which was the Alberta Transmission System: Wires Only - Cost Causation Study that was an Appendix to the AESO 2006 General Tariff Application, and the Alberta Transmission System 2006 Transmission Cost Causation Update that was an Appendix to the 2007 General Tariff Application. Both of these previous reports studied the causation of capital costs of the electric transmission system and did not study the operating and maintenance costs. For the purpose of cost studies and rate design, operating and maintenance costs were assumed to follow in step with capital costs. Capital related costs of the electric transmission system comprise approximately 70% of the annual revenue requirement and non-capital related costs comprise the remaining 30% of the annual revenue requirement.

The total revenue requirement from the four largest transmission facility owners (TFO's) was studied in order to address the AEUB's Direction. The first step in this process is to break down the total revenue requirement into capital related costs and non-capital related costs. This breakdown was completed by reviewing the nature of costs, and distinguishing which costs are related to the capital in the electric transmission system, and which costs are caused by other factors (non-capital related).

Generally, the TFO O&M costs are considered all TFO costs that are not capital related costs. However, for the purpose of this report, non-capital costs and O&M costs are not synonymous. For the purpose of this report, non-capital costs are further separated into Operating and Maintenance (O&M) and General and Administrative (G&A). The O&M costs were further studied for functionalization and classification. The functionalization and classification of O&M costs are applied to the total amount of non capital costs (both O&M and G&A) in order to complete the cost study for the entire revenue requirement.

This study was completed using traditional cost of service methods including: functionalization, classification and allocation of costs. As in previous transmission cost studies, the allocation of costs is not required because there is only one rate class to which the AESO Tariff DTS schedule applies.

The following table outlines the result of the previous cost study that considered capital costs, as well as the outcome of this report that considers non-capital costs, and the weighting of the two to arrive at a cost basis for rate design for the AESO Transmission Tariff.

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**Table 1 Summary Results**

<b>Breakdown of Capital Costs (2007 GTA)</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	34.0%	14.3%	17.6%	66.0%
Energy Related	7.7%	3.0%	0.3%	11.0%
Customer (POD)	0.0%	0.0%	23.0%	23.0%
<b>Totals</b>	<b>41.7%</b>	<b>17.4%</b>	<b>40.9%</b>	<b>100.0%</b>
<b>Breakdown of Non Capital Costs</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13.5%	25.2%	17.6%	56.2%
Energy Related	3.1%	9.0%	8.8%	20.9%
Customer (POD)	<u>0.0%</u>	<u>0.0%</u>	<u>22.9%</u>	<u>22.9%</u>
<b>Totals</b>	<b>16.5%</b>	<b>34.2%</b>	<b>49.3%</b>	<b>100.0%</b>
<b>Weighting for Capital and Non Capital Costs</b>				
Capital Costs Portion	71.4%			
Non Capital Costs Portion	28.6%			
<b>Weighted Capital and Non Capital</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	28.1%	17.4%	17.6%	63.2%
Energy Related	6.4%	4.7%	2.7%	13.9%
Customer (POD)	<u>0.0%</u>	<u>0.0%</u>	<u>23.0%</u>	<u>23.0%</u>
<b>Totals</b>	<b>34.5%</b>	<b>22.2%</b>	<b>43.3%</b>	<b>100.0%</b>

Note: Calculations include more precision than is displayed. Numbers may not add to total due to rounding.

This study also includes a review of the Prepaid O&M Charge applicable to optional facilities. The magnitude of the Prepaid O&M charge was raised in AEUB Decision 2005-096 and subsequently in the AUC Decision 2009-105. This study considered three methods of calculating the amount of Prepaid O&M associated with optional facilities. The Prepaid O&M Charge associated with optional facilities should be 14.5% of the capital cost of the optional facilities to ensure no cross subsidies between new customers with optional facilities and other customers.

## 2. Background

### 2.1. The Alberta Electric Transmission System

The Alberta Interconnected Electric System (AIES) is planned and operated by the Alberta Electric System Operator (AESO) in compliance with the North American Electric Reliability Council and the Western Electricity Coordinating Council standards.

The AIES consists of an electric transmission system connecting generation and loads in Alberta. The AIES is interconnected to BC through a 500 kV AC interconnection along with underlying 138 kV AC lines and is interconnected to Saskatchewan with an asynchronous DC link. The AIES includes transmission facilities with nominal voltages ranging from 69 kV to 500 kV AC. The AIES includes approximately 21,000 km of transmission lines and 500 substations and serves an annual peak load of 10,000 MW.

The cost of Alberta's electric transmission system includes annual costs (2008) of:

Wires	\$483.5 million
Ancillary Services	\$265.9 million
Losses	\$251.4 million
Admin and Other	<u>\$60.8 million</u>
Total	\$1061.6 million <sup>1</sup>

Prior to industry restructuring, the transmission system was part of vertically integrated electric utilities and transmission costs were generally considered to be one function, classified as demand related costs.

### 2.2. Purpose of Operating and Maintenance Cost Study

This Electric Transmission Operating and Maintenance Cost Study (Study) complies with previous directions as described below and its purpose is twofold:

- (1) As set out in section 5, to provide a better understanding of transmission system operating and maintenance (O&M) cost causation so that the findings can be reflected in subsequent rate design for the AESO Transmission Tariff; and
- (2) As set out in section 6, to provide a recommendation in respect of the AESO's existing 12% prepaid O&M charge.

The Alberta Energy and Utilities Board (AEUB) directed the AESO to study transmission wires costs, and AESO filed the first Alberta Transmission System, Wires Only Cost Causation Study with its 2006 GTA. The AEUB generally approved of the concepts developed in the study and directed upgrades to the study in Decision 2005-096. In

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<sup>1</sup> AESO 2009 Rates Update Application, March 12, 2009. Approved 2008 Costs.

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response to these directives, the AESO filed an Alberta Transmission System, 2006 Cost Causation Update with its 2007 GTA. The AEUB approved the update in Decision 2007-106<sup>2</sup> and directed further study in the area of operating and maintenance costs:

6. In the absence of more specific information, the Board is not prepared to direct the AESO to make additional adjustments to the POD cost function or the resulting POD charge component of Rate DTS for the purposes of the 2007 tariff. However, so long as it can be accomplished at a reasonable cost, the Board considers that additional study into the causation of TFO O&M costs may be of value for future AESO rate design purposes as well as for the purposes of understanding TFO O&M forecasts within the context of future TFO GTAs. Accordingly, the Board directs the AESO to indicate in its refiling application the cost and time required to prepare a further study into the causation of TFO O&M costs.....59.

Further, interveners in the AESO's 2007 GTA filed a request to review and vary the AEUB Decision 2007-106 in respect of the Prepaid O&M component of customer contributions. In Decision 2009-105<sup>3</sup>, the Alberta Utilities Commission (AUC) revised application of the Prepaid O&M component and directed that:

(3) The AESO shall file its analysis of the relationship between incremental O&M and interconnection capital costs, as originally directed by the Board in Decision 2005-096, by no later than the time of its next GTA

### **2.3. Results of Previous Transmission Cost Studies**

Since capital related costs comprise the majority of TFO costs, previous transmission cost causation studies reviewed only capital costs and assumed that O&M costs were incurred proportionally. This assumption was called into question during the AESO's 2006 and 2007 GTAs and further study was directed to better understand the incurrence of O&M costs<sup>4</sup>.

Table 2 summarizes the findings of previous studies in terms of the percent of revenue requirement functionalized as Bulk System, Local System and POD, and classified as Demand, Energy and Customer related. As shown in the table, 66% of the costs are classified as Demand related, while 11% and 23% are classified as Energy related and Customer (POD) related respectively. Also, 42% of the revenue requirement was functionalized as Bulk System while 17% and 41% were functionalized as Local System and POD respectively.

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<sup>2</sup> Decision 2007-106, Alberta Electric System Operator, 2007 General Tariff Application, December 21, 2007.

<sup>3</sup> AUC Decision 2009-105, Alberta Direct Connect Consumers Association et al, Review and Variance of Alberta Energy and Utilities Board Decision 2007-106 Second Stage, July 13, 2009.

<sup>4</sup> Decision 2007-106, Alberta Electric System Operator, 2007 General Tariff Application, December 21, 2007.

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**Table 2 Results of Previous Transmission Cost Studies Based on Capital**

Capital Related Costs	Bulk System	Local System	POD	Totals
Demand Related	34.0%	14.3%	17.6%	66.0%
Energy Related	7.7%	3.0%	0.3%	11.0%
Customer (POD)	0.0%	0.0%	23.0%	23.0%
Totals	41.7%	17.4%	40.9%	100.0%

### 3. TFO Cost Data

The basic data for this Study was compiled from the Transmission Facility Owner (TFO) General Tariff Applications (GTA), other TFO filings with the AUC and additional information provided by the TFOs. Meetings were also conducted with each TFO to better understand cost data and cost causation. As in the previous transmission cost studies, data was collected from the four largest TFOs including AltaLink, ATCO Electric, ENMAX Power and EPCOR. The costs from the remaining TFOs (Cities of Lethbridge and Red Deer, and TransAlta) account for less than 3% of the TFO wires related costs and were excluded from this Study.

TFO revenue requirement data was compiled for the years 2006 through 2009<sup>5</sup> and includes both actual and forecast data where available. The cost data for 2008 was studied in depth to develop the cost causation study for O&M costs. TFO revenue requirement data is summarized in the cost study in Schedule Sum 1.0 of Appendix A. TFO revenue requirements are summarized in Table 3. Please note that some forecast data has been replaced with actual data and therefore may not reconcile to other data filed with the AUC.

**Table 3 TFO Revenue Requirement**

Revenue Requirement		2006	2007	2008	2009
	Reference				
AltaLink	AL Sch 1.0	189,319,502	202,767,328	214,445,660	246,511,157
ATCO Electric	AT Sch 1.0	167,852,071	168,207,126	178,600,826	206,959,891
ENMAX	EN Sch 1.0	30,901,470	31,867,568	32,248,072	N.A.
EPCOR	EP Sch 1.0	41,099,490	35,231,806	45,045,806	52,843,915
Sum of Four TFO		429,172,534	438,073,828	470,340,364	506,314,964

### 4. Definition of O&M Costs

There is no universally accepted identification of costs that constitute operating and maintenance costs. Possible definitions range from the all encompassing non-capital costs to the strictly narrow cost of operating and maintaining in-service electrical

<sup>5</sup> Forecast 2009 Revenue Requirement for ENMAX is dated and is not used.

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transmission facilities. The broad definition would include costs, such as business tax, that are not directly linked to operating and maintenance activities while the narrow definition would exclude all overheads associated with operation and maintenance activities.

For the purpose of this Study, all TFO costs have been separated into capital related and non-capital related costs as described below. O&M costs, which form the basis for this Study, are further defined in Section 4.4 as a subset of non-capital related costs.

### **4.1. Capital Related Costs**

The distinction between capital and non-capital related costs is a function of which costs have lasting benefit. Each TFO has a Capitalization Policy that outlines which expenses should be capitalized. Two capitalization policies are included in Appendix B as examples. Generally, the costs of activities incurred to provide long term value are capitalized and capitalized costs include materials and labour.

Capital related costs comprise approximately 70% of the total transmission revenue requirement and include depreciation, return and income tax associated with TFO assets. For the purpose of this Study, annual structure payments, linear and property taxes, and capital related revenue offsets ( all generally included in TFO operating costs) were deemed to be capital related because such costs are proportional to the capital employed, not to labour costs, and management has little discretion in managing these costs in the short term. Revenue offsets were deemed capital related where leasing of electric transmission facilities is associated with capital investment. Revenue that offset labour costs, such as affiliate revenue, was deemed to be non-capital related.

Capital maintenance and emergency maintenance activities result in capital costs, notwithstanding the fact that the terms include the word maintenance. These activities generally increase towards the end of the useful service life of equipment and primarily result in capital related costs.

### **4.2. Non-Capital Related Costs**

Non-capital costs equal the residual revenue requirement after the capital related costs defined in section 4.1 are removed. Non-capital costs are predominately labour costs associated with the operation, maintenance and administration of the electric transmission system and business. Schedule 1.0 of Appendix A shows the summary information of the Revenue Requirement and the Non-capital Costs associated with each TFO.

Non-capital costs are further identified as either O&M costs or G&A costs. This breakdown is influenced by the TFO data and further defined by O&M costs having a

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relationship to the in-service electric transmission facilities, whereas G&A costs do not have a strong relationship to transmission facilities and are incurred to operate the business of the utility company. Based on this distinction, O&M costs are further studied to determine causation, while G&A costs are allocated on the basis of O&M costs.

Section 4.3 provides a description of non-capital cost components included in the transmission GTA filings and also defines whether such costs are included in capital/non-capital and O&M/G&A for the purposes of this Study.

### 4.3. Background Cost Review

#### 4.3.1 Fuel

Transmission fuel costs are only incurred by one TFO. ATCO Electric incurs fuel costs for isolated generating stations and telecommunications sites that serve remote communities where it is less expensive to operate isolated generating stations than it would be to construct transmission facilities to provide service to these communities. Since these isolated communities do not have large electric loads, the Bulk System would not be expanded to provide service; fuel cost avoids the need to extend the Local System and POD.

The amount of fuel used in the isolated generating plants is proportional to the energy consumption and is not directly linked to the peak demand, or number of customers being served.

As a result, fuel costs (and variable O&M costs associated with isolated generation) are considered O&M costs and are functionalized as Local and POD and classified as energy related.

The cost of fuel for the electric transmission system is shown in Table 4.

**Table 4 Fuel Costs**

<b>Fuel</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Actual	Actual	Forecast	Forecast
Total	8,394,000	8,700,000	8,200,000	9,300,000

### **4.3.2 Operating Cost**

The term operating costs is general in nature and includes many of the non-capital costs for each TFO. Operating costs are primarily non-capital salaries and include the costs of operation such as the cost of a System Control Center. Operating costs also include the cost of maintaining electric transmission lines and substations as well as the overheads of planning and scheduling this maintenance.

Annual structure payments are also included in the GTA Operating costs. Since such costs are fixed in nature and are proportional to the amount of structures in place, this Study has deemed annual structure payments to be capital costs. Annual structure payments are identified in Schedule AL 4.0 and AT 4.0 and included in capital cost Schedules AL 1.0 and AT 1.0.

The cost of linear and property taxes are also included in the Operating cost in the TFO GTA. Such costs are fixed in nature, based on assessed values, and beyond the control of management. Therefore, this Study has deemed linear and property taxes to be capital costs. The cost of linear and property taxes are identified in Schedule AL 3.0 and AT 3.0 and included in capital cost Schedules AL 1.0 and AT 1.0.

The remaining Operating costs are separated into O&M and G&A costs in the 3.0 series of Schedules in Appendix A (Schedules AL 3.0, AT 3.0, EN 3.0 and EP 3.0). O&M costs are those that relate to operations and maintenance of the electric transmission system. G&A costs are more general in nature and are not directly related to the operation and maintenance of the electric transmission system.

This Study includes the functionalization and classification of O&M costs but does not study G&A costs. The G&A costs are functionalized and classified in the same proportion as O&M costs.

### **4.3.3 Revenue Offsets**

Revenue offsets include various amounts of revenue to the TFOs that do not form part of the TFO core business. Revenue identified in Revenue offsets arises from affiliates for services, joint use (shared use of poles with other utilities) and other services to outside parties.

Revenue offsets are provided in Schedules AL 2.0 and AT 2.0 and are separated into capital costs where the revenue offset is related to a capital investment or non-capital costs where the costs are related to labour.

#### 4.3.4 Hearings, Self Insurance, Business Tax

The cost of hearings, self insurance and business tax are non-capital related costs and have, for the purpose of this Study, been defined as G&A because such costs are not directly linked to the operation and maintenance of the electric transmission system.

#### 4.4. O&M Costs

The non-capital costs are separated into O&M and G&A in Appendix A, in the 3.0 series of Schedules (Schedule AL 3.0, AT 3.0, EN 3.0 and EP 3.0) and are summarized in the summary schedule titled Sum 2.0.

In this Study, O&M costs are primarily fuel, operating labour, and relevant revenue offsets.

### 5. O&M Cost of Service

Traditional cost of service methods are based on vertically integrated electric utilities and first functionalize, then classify and finally allocate costs to the appropriate rate class. Stand alone cost of service studies on the electric transmission system are not common and transmission costs are generally considered to be one function and classified as demand related.

Electric transmission systems are capital intensive and the majority of costs of owning, operating and maintaining an electric transmission system are capital costs. As shown in the summary Table 4, non-capital costs account for approximately 30% of the annual TFO revenue requirement. The full table is shown in Appendix A Schedule Sum 1.0.

**Table 5 Non-Capital Cost as % of Revenue Requirement**

Non Capital Costs/Rev Req	Average 2006 - 2008	2006	2007	2008	2009
AltaLink	24.3%	25.2%	23.7%	23.9%	25.6%
ATCO Electric	28.2%	26.4%	28.1%	30.1%	30.0%
ENMAX	54.0%	51.0%	56.0%	54.9%	N.A.
EPCOR	32.6%	28.7%	37.6%	31.4%	27.9%
Four TFO	28.6%	27.9%	28.9%	29.1%	27.6%

#### 5.1. Functionalization

Consistent with the Wires Cost Causation Report, operating and maintenance costs have been functionalized into one of three sub functions:

- Bulk System

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- Local System
- POD (Point of Delivery)

The Wires Cost Causation Report used three methods of functionalizing electric transmission facilities: voltage level, economics and MW-km. All three methods had advantages and disadvantages and all three produced similar results. Given that no one method was superior, the average of the three methods was used.

Since the voltage level method is easy to understand and correlates to electric transmission facilities, voltage levels were used to functionalize O&M costs in this Study. Bulk Transmission System is defined as the 240 kV and 500 kV transmission facilities, including substations that transform voltage to a lower transmission voltage (i.e. 240/138 kV substation). The Local Transmission System consists of the 138/144 kV and 69/72 kV transmission facilities and the POD includes radial transmission lines and point of delivery substations.

As described below, this Study considered the incurrence of various O&M costs in order to functionalize the costs.

**Fuel Cost Functionalization**

Fuel costs are associated with remote communities that are not interconnected to the AIES. Instead of interconnecting to the larger grid, it is less expensive to provide service with a local generator, typically diesel fired. This fuel cost is considered transmission because in its absence, the transmission system would have to be expanded to provide service thereby incurring greater electric transmission costs. Since all of these communities are small, any transmission system that would be built to interconnect would be a local system and POD. Consequently, fuel costs were functionalized as POD and Local System on the basis of the overall system capital where 40.9% of total property is POD, and 17.4% is Local System. The ATCO fuel cost functionalization is shown in the summary Table 6.

**Table 6 Fuel Cost Functionalization**

<b>Fuel</b>	<b>2006 Actuals</b>	<b>2007 Actuals</b>	<b>2008 Forecast</b>	<b>Test Period 2009</b>
Bulk	0	0	0	0
Local	2,502,409	2,593,633	2,444,574	2,772,504
POD	5,891,591	6,106,367	5,755,426	6,527,496

**Operating and Maintenance Cost Functionalization**

O&M costs were studied to determine the functionalization of these costs. The Non-capital Costs are separate into O&M and G&A costs in the 4.0 series of Schedules for each TFO (i.e. AL Sch 4.0). The nature of O&M costs were reviewed and functionalized as shown in Appendix A in the series of Schedules 5.0, 5.1, 5.2 and 5.3 for each TFO. Costs were assigned or allocated to the functions on the basis of cost causation, all of

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which are shown in Appendix A. Some examples are described below to provide an overview of the functionalization process.

**Operating – Net Salary**

Salaries are a large item in the Operating account and have been functionalized on the basis of activity, and in the case of AltaLink, on the basis of the staff complement or FTE. Appendix A AL Sch 5.0 describes each of the groups, the staff complement, and allocates the total net salary to each group based on FTE. The summarized breakdown is shown below in Table 7.

**Table 7 Allocation of Net Salary Based on FTE for AltaLink**

<b>Break Down of Net Salary and Wages</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Net Salary and Wages by Group				
Operational Services	0	1,442,890	1,954,105	2,128,851
Operations Management	678,392	1,442,890	901,895	1,146,305
EH&S	1,187,185	1,122,248	1,503,158	1,801,336
Systems Operations (SCC)	6,105,525	5,450,917	6,313,262	7,205,343
Asset Management	6,444,720	5,130,274	4,659,789	5,240,249
Field Operations	5,596,731	5,611,238	7,515,788	8,842,921
Projects	0	0	0	0
IT	1,356,783	1,442,890	1,954,105	2,783,883
Facilities	<u>169,598</u>	<u>320,642</u>	<u>450,947</u>	<u>491,273</u>
<b>Total</b>	<b>21,538,934</b>	<b>21,963,987</b>	<b>25,253,048</b>	<b>29,640,161</b>

Each group is studied to determine how costs are incurred, and then the Net Salary is functionalized where possible. For example, the System Control Center has personnel that are physically located in a centralized control Center, but staff operates switches that are located in substations. While the switches are located in the substations, the switches are used to switch transmission lines and substation equipment such as transformers. For the purpose of the System Control Center, the number of elements (lines and transformers) in service is used to functionalize costs. The voltage of each element is used to determine the function of the element. The number of elements in each function is the basis for cost functionalization of System Control Center costs as shown in Table 8 (extracted from Appendix A, AL Sch 5.0). Functionalized costs are shown in Table 9.

**Table 8 System Control Center Functionalization**

All:AL:8. Control Center (Elements)	Total	Bulk	Local	POD
Lines and Transformers	763	120	207	436
Control Center Allocator		15.7%	27.1%	57.1%

**Table 9 Functionalized Cost of System Control Center**

<b>O&amp;M Costs Applied to Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>System Operations (SCC)</b>	<b>6,105,525</b>	<b>5,450,917</b>	<b>6,313,262</b>	<b>7,205,343</b>
Allocator (All:AL:8)				
Bulk	960,240	857,287	992,911	1,133,213
Local	1,656,414	1,478,820	1,712,772	1,954,792
POD	<u>3,488,871</u>	<u>3,114,809</u>	<u>3,607,578</u>	<u>4,117,339</u>
<b>Total</b>	<b>6,105,525</b>	<b>5,450,917</b>	<b>6,313,262</b>	<b>7,205,343</b>

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It was not possible to determine cost causation for all groups. For those groups, the costs were allocated to the various functions on the basis of all other Net Salary and Wages. The following Table 10 shows the sum of Net Salaries and Wages where functionalization was possible, and then the proration to the total Net Salaries and Wages.

**Table 10 Functionalization Reconciled to Total Net Salary and Wages**

O&M Costs Applied to Allocators	2006	2007	2008	2009
<b>Total Allocated Net Salary</b>				
Bulk	3,760,041	3,988,317	4,689,750	5,358,610
Local	6,662,280	6,402,064	7,426,968	8,537,010
POD	<u>8,911,841</u>	<u>8,367,185</u>	<u>9,829,383</u>	<u>11,323,080</u>
Total	19,334,161	18,757,566	21,946,101	25,218,700
<b>Gross Up to Total Net Salary and Wages</b>				
Bulk	4,188,818	4,670,081	5,396,425	6,298,107
Local	7,422,013	7,496,434	8,546,100	10,033,759
POD	<u>9,928,103</u>	<u>9,797,473</u>	<u>11,310,523</u>	<u>13,308,295</u>
Total	21,538,934	21,963,987	25,253,048	29,640,161

### Brushing

Vegetation management occurs in various cycles from grass cutting twice per year around substations and telecommunications sites to every 10 years for base mowing. Vegetation management includes trimming, mowing, spraying and slashing and removal and all of these activities are priced in terms of area cleared. The activities, work location and dollars spent on brushing vary from year to year. Brushing costs are a function of the area cleared. Therefore, the line length (by voltage) is multiplied by the width of the right of way for brushing to determine the total amount of area where brushing may occur. The 2008 brushing costs are functionalized on the proportion of area for each function. This method removes anomalies associated with studying one year of a multiple year cycle for brushing. For example, line brushing for AltaLink was functionalized as shown in Table 11.

**Table 11 Functionalization of Line Brushing Costs by Voltage and Area**

All:AL:3. Line Brushing Allocator (Line Length X Width - Sq kM)				
Voltage	Area	Bulk	Local	POD
69 (15 m)	13		11	2
138 (20 m)	126		105	22
240 (40 m)	186	186		
500 (55 m)	18	18		
Area	342	203	115	24
AltaLink Line Brushing Allocator		59.4%	33.7%	6.9%

The cost of brushing is first split into brushing for lines and for substations. To continue the example of Line Brushing costs, the following Table 12 shows the result of the functionalization.

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**Table 12 Functionalized Costs of Brushing for Lines**

O&M Costs Applied to Allocators	2006	2007	2008	2009
<b>Brushing (Sch 4.0)</b>	3,498,671	4,332,376	5,207,673	4,757,002
Lines - Vegetation Management	3,198,671	3,932,376	4,907,673	3,857,002
Substation - Vegetation Management	300,000	400,000	300,000	900,000
Total Vegetation Management	3,498,671	4,332,376	5,207,673	4,757,002
<b>Line Brushing Allocator (All:AL:3)</b>				
Bulk	1,900,381	2,336,287	2,915,726	2,291,506
Local	1,076,393	1,323,295	1,651,494	1,297,930
POD	<u>221,896</u>	<u>272,794</u>	<u>340,452</u>	<u>267,565</u>
Total	3,198,671	3,932,376	4,907,673	3,857,002

**Cost Functionalization Summary**

The TFO functionalized O&M Cost is shown in Appendix in the series of Schedules starting 5.0. The summary of Functionalized cost for each TFO is shown in Appendix A Sum 3.0. The following Table 13 shows the summary Functionalized data for AltaLink, and the following Table 14 shows the portion of the functionalized cost, and both of these tables are extracted from Sum 3.0 of Appendix A.

**Table 13 Summary of Functionalized O&M Costs for AltaLink**

Functionalized O&M Costs	Reference	2006	2007	2008	2009
<b>AltaLink</b>					
Bulk	AL Sch 5.3	7,906,213	8,343,394	9,430,445	11,386,233
Local	AL Sch 5.3	11,124,210	10,834,002	11,941,557	15,330,299
POD	AL Sch 5.3	<u>15,684,776</u>	<u>14,571,836</u>	<u>15,677,284</u>	<u>21,625,877</u>
Total		34,715,198	33,749,232	37,049,286	48,342,408

**Table 14 Functionalized Costs for Four Largest TFO**

Functionalized O&M Costs		2006	2007	2008	2009
<b>Sum of Four TFO's</b>	Ave 2006-2008				
Bulk	16.5%	16.2%	16.6%	16.9%	19.5%
Local	34.2%	34.0%	34.5%	34.1%	33.8%
POD	<u>49.3%</u>	<u>49.8%</u>	<u>49.0%</u>	<u>49.1%</u>	<u>46.7%</u>
Total	100.0%	100.0%	100.0%	100.0%	100.0%

To determine the average functionalized portions, the years 2006 through 2008 were averaged. 2009 was not included because the data set was not complete and all 2009 costs were forecast.

**5.2. Cost Classification**

Classification of costs occur through the determination of costs as being demand related, energy related or POD (customer) related. Classification of electric transmission non-capital costs is a challenge. Capital costs are incurred to install equipment that has a rated purpose. Equipment that has a kW or kVA capacity or demand rating will likely be classified as demand related. Non-capital costs do not impact the physical rating of equipment, which provides information regarding cost classification. For example, vegetation management costs are related to the area from which vegetation will be cleared. Vegetation management costs are not related to the capacity of a transmission

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line under which the vegetation management occurs. Therefore, it is not possible to directly classify vegetation management costs. Generally, non-capital costs and their associated activities occur for the purpose of ensuring the existing transmission system continues to perform reliably and adequately in accordance with the design of the system.

Operational and maintenance activities may be scheduled by time, usage or other methods such as condition monitoring. For example, vegetation management normally occurs on a time based schedule while breaker maintenance may occur on a time based schedule or number of operations (usage based schedule). These activities are independent of demand, energy or POD count. Since O&M costs are incurred to maintain the system to provide service in accordance with its original design, this Study has used the capital cost classification for non-capital related costs other than fuel.

Fuel cost is an item that is not normally associated with transmission lines; however, there are a number of remote communities that are served with isolated generators rather than being interconnected to the AIES. Fuel cost is a variable cost that is related to the energy consumption in the communities served by remote generators. Therefore, fuel costs were classified as energy related.

In this Study, Fuel and Variable O&M costs are classified as energy related. Other O&M costs are classified on the same basis as capital costs by function. The classification is shown in Schedule Sum 3.2.

The Fuel and Variable O&M Costs are classified as energy related and functionalized as discussed in Section 5.1 as shown in the following Table 15

**Table 15 Classified Fuel and Variable O&M Costs**

<b>Classified Fuel, Var O&amp;M Costs 2008</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	<b>Totals</b>
Demand Related	0	0	0	0
Energy Related	0	3,588,484	8,311,516	11,900,000
Customer Related	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<b>Total</b>	<b>0</b>	<b>3,588,484</b>	<b>8,311,516</b>	<b>11,900,000</b>

The remainder of O&M costs is classified based on the capital cost classification as shown in the following Table 16. The first part of the table shows the classification of capital costs, and the second part shows the classified Other O&M costs.

**Table 16 Classified Other O&M Costs**

<b>Classification of Capital Costs (2007 GTA)</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	
Demand Related	81.5%	82.5%	43.1%	
Energy Related	18.5%	17.5%	0.7%	
Customer Related	<u>0.0%</u>	<u>0.0%</u>	<u>56.2%</u>	
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	
<b>Classified Other O&amp;M Costs 2008</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13,465,324	24,578,189	17,160,064	55,203,577
Energy Related	3,056,510	5,213,776	278,653	8,548,939
Customer Related	<u>0</u>	<u>0</u>	<u>22,375,843</u>	<u>22,375,843</u>
<b>Total</b>	<b>16,521,834</b>	<b>29,791,965</b>	<b>39,814,561</b>	<b>86,128,360</b>

The total classified costs, and their portions are shown in the following Table 17.

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**Table 17 Classified O&M Costs**

<b>Total Classified O&amp;M Costs 2008</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13,465,324	24,578,189	17,160,064	55,203,577
Energy Related	3,056,510	8,802,260	8,590,169	20,448,939
Customer Related	<u>0</u>	<u>0</u>	<u>22,375,843</u>	<u>22,375,843</u>
<b>Total</b>	<b>16,521,834</b>	<b>33,380,449</b>	<b>48,126,077</b>	<b>98,028,360</b>
<b>Classification of Total O&amp;M Costs</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	
Demand Related	81.5%	73.6%	35.7%	
Energy Related	18.5%	26.4%	17.8%	
Customer Related	0.0%	0.0%	46.5%	
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	

### 5.3. Cost Allocation

The last step of a traditional cost of service study – allocation of costs among rate classes - is not required in this case because there is only one rate class responsible to pay for the costs of the transmission system: load customers through the DTS Rate of the AESO Transmission Tariff.

## 5.4. Results

The summary of Functionalization is shown in Schedule Sum 3.0. Classification of the four TFO O&M costs is shown in Schedule Sum 3.2 of Appendix A.

The final step in this Study is to determine the appropriate functionalization and classification of TFO costs for use in developing the AESO Transmission Tariff DTS schedule. This is shown in Sum 4.0 of Appendix A.

The capital cost study provided the following breakdown shown in the following Table 18.

**Table 18 Breakdown of Capital Costs**

<b>Property - Transmission Cost Causation Study Update (2007 GTA)</b>				
<b>Capital Related Costs (2007 GTA)</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	119,802,000	50,568,000	62,198,000	232,568,000
Energy Related	27,194,000	10,727,000	1,010,000	38,931,000
Customer (POD)	0	0	81,103,000	81,103,000
<b>Totals</b>	<b>146,996,000</b>	<b>61,295,000</b>	<b>144,311,000</b>	<b>352,602,000</b>
<b>Functionalized and Classified Costs</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	34.0%	14.3%	17.6%	66.0%
Energy Related	7.7%	3.0%	0.3%	11.0%
Customer (POD)	0.0%	0.0%	23.0%	23.0%
<b>Totals</b>	<b>41.7%</b>	<b>17.4%</b>	<b>40.9%</b>	<b>100.0%</b>
<b>Classification of Costs by Function</b>				
Demand Related	81.5%	82.5%	43.1%	
Energy Related	18.5%	17.5%	0.7%	
Customer (POD)	0.0%	0.0%	56.2%	

The non capital costs from this Study are functionalized and classified as shown in the following Table 19.

**Table 19 Breakdown of Non Capital Costs**

<b>Breakdown of Non Capital Costs</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13.5%	25.2%	17.6%	56.2%
Energy Related	3.1%	9.0%	8.8%	20.9%
Customer (POD)	0.0%	0.0%	22.9%	22.9%
<b>Totals</b>	<b>16.5%</b>	<b>34.2%</b>	<b>49.3%</b>	<b>100.0%</b>

The weight of capital costs to non capital costs is used to provide a weighted average for the total revenue requirement.

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**Table 20 Weighted Average Results**

<b>Functionalized and Classified Costs (Weighted for Capital and Non Capital Costs)</b>				
Capital Costs Portion	71.4%			
Non Capital Costs Portion	28.6%			
<b>Weighted Capital and Non Capital</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	28.1%	17.4%	17.6%	63.2%
Energy Related	6.4%	4.7%	2.7%	13.9%
Customer (POD)	<u>0.0%</u>	<u>0.0%</u>	<u>23.0%</u>	<u>23.0%</u>
Totals	34.5%	22.2%	43.3%	100.0%

Note: Calculations include more precision than is displayed. Numbers may not add to total due to rounding.

## 6. Prepaid O&M Charges

A new customer to the electric transmission system that requires optional facilities (facilities in excess of those provided for in standard service and are subject to a contribution (Facilities)) is levied a charge to ensure that existing customers do not subsidize the new customer. The charge includes two components: a Contribution in Aid of Construction to pay for the capital cost of these Facilities and a Prepaid O&M charge to pay for the future O&M costs associated with these Facilities.

These Facilities typically include additional transmission line for customers in remote areas, redundant transmission lines for these customers requiring additional reliability, redundant transformers and switchgear for those customers requiring additional reliability and operational flexibility.

The Prepaid O&M costs associated with these Facilities are variable by nature and if these Facilities become part of the system that is used by other customers, the O&M costs should become part of the system and would no longer be to the account of the original customer requiring these Facilities.

There are several issues that must be determined in order to determine an appropriate level and structure of the Prepaid O&M charge. These issues require the determination of:

- Applicable costs
- Appropriate time frame to calculate costs
- The nature of the costs and the associated structure of the charge

### 6.1. Applicable Costs

Decision 2009-105 did not provide a definition of incremental O&M costs. In order to provide more background in the process of determining Prepaid O&M costs associated with these Facilities, three options are reviewed. The incremental O&M charge could be as broad as to include all non-capital costs, as narrow as only incremental maintenance costs, or operating and maintenance costs with associated overheads (commonly referred to as O&M in this report).

The Prepaid O&M charge is in the form of a percentage that is applicable to the new cost (replacement cost new, RCN) of these Facilities. The three methods examined include:

- Non-capital Costs
- O&M Costs
- Incremental Maintenance

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The first two methods of determining Prepaid O&M are based on average costs (embedded) across the electric transmission system, while the third method is based on incremental costs of specific transmission equipment. The first two methods require an estimate of the RCN of the entire electric transmission system. The RCN of the electric transmission system is estimated by applying a multiplier to the original cost of property for all of the TFO's. The AESO developed a multiplier of 1.837 to estimate the RCN cost of the electric transmission system. On this basis, the RCN of the electric transmission system is \$7,999,759,000 for mid year 2008.

In the analysis, a 20 year period and a 6.0% discount rate is used to calculate the Prepaid O&M charge. These assumptions are reviewed in Section 6.2.

### **6.1.1 Prepaid O&M – Non-Capital Costs**

When all Non Capital costs developed in this Study are used to determine the Prepaid O&M Charge, the Non Capital costs in 2008 are \$138,992,282 and this amount is divided by the estimated RCN of \$8 billion to arrive at annual costs of 1.71%. The present value over 20 years amounts to a prepaid O&M charge of 20.2%.

A Prepaid O&M charge of 20.2% would ensure that any new customer that requires optional facilities does not receive subsidies from existing customers. The Prepaid O&M charge of 20.2% includes all general and administrative costs, and customers may argue that these costs are not incremental to new facilities and the new facilities do not cause these extra costs to be incurred.

### **6.1.2 Prepaid O&M – O&M Costs**

When the O&M (subset of Non Capital without G&A) costs are used to determine the Prepaid O&M Charge, the O&M costs in 2008 are \$98,028,000 and this amount is divided by the estimated RCN to \$8 billion to arrive at annual costs of 1.23%. The present value over 20 years amounts to a prepaid O&M charge of 14.5%.

A Prepaid O&M charge of 14.5% would ensure that any new customer that requires optional facilities pays for all of the incremental costs of operating and maintaining these facilities including the overheads associated with operations and maintenance.

### **6.1.3 Prepaid O&M – Incremental Maintenance**

The third method of calculating a Prepaid O&M charge is based on the incremental maintenance associated with these facilities on a forecast basis. The forecast of maintenance costs is based on the maintenance schedules typically used by electric transmission utility companies.

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For example, the incremental maintenance for a 138 kV transmission line includes line patrols, vegetation management, emergency patrols and non routine maintenance such as RIF or IR scans and mitigation. The average cost of this maintenance is approximately \$520 per year per kM of line, and at an estimated cost of \$250,000 per kM, this amounts to an annual cost of 0.21%, or a 20 year present value of 2.5%.

Another example is the cost of an additional substation transformer. The incremental maintenance cost for a transformer is approximately \$1660 per year, and the incremental cost of the transformer is approximately \$1,000,000. The incremental maintenance cost is 0.17% per year, or a 20 year present value of 2.0%.

The incremental maintenance cost of new transmission facilities is highly variable depending on the equipment and the technology employed. For example, a new Gas Insulated Switchgear system (GIS) may require no maintenance over the first 20 years of service life.

The Prepaid O&M charge would be in the 2.0 to 2.5% range if based on incremental maintenance costs of typical transmission facilities. If this methodology were employed, Prepaid O&M charges could be calculated on the basis of the actual Facilities that are installed for the customer.

The Prepaid O&M charge based on incremental maintenance may be comparable to the incremental costs applicable if a customer owns the facility. However, the incremental maintenance costs do not cover operations costs, nor do they cover the overheads associated with operations and maintenance. Therefore, the incremental maintenance does not reflect the total incremental O&M cost of operating electric transmission facilities.

### **6.1.4 Prepaid O&M Charge**

The Prepaid O&M charge should be based on the O&M costs developed in this Study. The Prepaid O&M charge of 14.5% will ensure that the customer pays for the incremental cost of operations and maintenance including associated overheads. This will ensure that other customers are not required to subsidize a new customer who requires optional facilities.

## **6.2. Assumptions**

The time frame over which additional costs are applicable must be determined. Electric transmission facilities have long service lives that generally average 30 years or longer. This lengthy service life is often longer than the planning horizon of electric utilities or other businesses. The electric transmission system also changes over time and some facilities that may initially be optional will be standard facilities at some point through changes in the electric transmission system.

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Business does not normally enter contracts that exceed 20 years because of the uncertainty of business over that period of time. The longest contract term for system access service with the AESO is similarly 20 years.

Given the potential changes in the electric transmission system and the difficulty in planning for and contracting for services in excess of 20 years, a maximum of 20 years should be considered the applicable time for incremental costs associated with optional facilities. In this review, 20 years is used to determine the present value of the Prepaid O&M charge.

A discount rate of 6.0% is used to determine the present value of the Prepaid O&M charge. The real discount rate fluctuates over time as inflation, debt servicing costs and return on equity vary. The current economic situation is such that inflation is low (approximately 0.1% in Alberta), and the real discount rate currently exceeds 6.0%. The discount rate calculated under Article 9.14 of the AESO Transmission Tariff is approximately 7.3%. If the existing discount rate of 7.3% were applied to the analysis, the Prepaid O&M charge calculated in Section 6.1.2 of 14.5% would be reduced to 13.1%. The 6.0% discount rate reflects a longer term view of discount rates into the future.

### **6.3. Nature of Costs**

The O&M costs associated with these Facilities are not fixed costs in the long term. If a customer requires redundant facilities and contracts for those facilities, but ceases to operate in the future, these Facilities can be taken out of service or salvaged and future O&M costs will go to zero. If these Facilities have value for other customers in the future, the Facilities can be kept in place and other customers that benefit from these Facilities will pay for their use.

The existing nature of the Prepaid O&M charge (one time charge at the start of service) may not match the incurrence of costs which occurs periodically. If a customer ceases to require these Facilities and the facilities are salvaged, then the Prepaid O&M portion of the CIAC paid by the customer (less amortization of the CIAC over the elapsed time) should be refunded to the customer.

Given the variable nature of these costs, another approach to recover these costs could be an annual charge applicable to these Facilities. The Prepaid O&M charge applied annually would be 1.23% of the new cost of these Facilities. This annual charge would match costs, and could be cancelled if the Facilities are removed or are used by other customers. The advantage of this structure is that the rate for O&M would match costs and the disadvantage is additional administration to invoice and process remittances for the 20 year period after these Facilities are installed.

## **Appendix A – O&M Cost of Service Study Schedules**

<b>Table of Contents</b>
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<b>Schedule</b>	<b>Description</b>
Sum 1.0	Summary: Revenue Requirement and Non Capital Costs
Sum 2.0	Summary: Non Capital Costs and Breakdown into O&M and G&A
Sum 3.0	Summary: Functionalization of O&M Costs
Sum 3.1	Summary: Breakdown of Functionalized O&M Costs
Sum 3.2	Summary: Classification of Functionalized O&M Costs
Sum 4.0	Summary: O&M Cost Study Results, Total Transmission Costs
AL 1.0	AltaLink Revenue Requirement, Summary Capital and Non Capital Costs
AL 2.0	AltaLink Revenue Offset, Capital and Non Capital Costs
AL 3.0	AltaLink Hearing, Ins., Other Taxes, Capital and Non Capital Costs
AL 4.0	AltaLink Non Capital Costs split into O&M and G&A
AL 5.0	AltaLink Net Salary and Wage
AL 5.1	AltaLink Development of Allocators for Functionalization
AL 5.2	AltaLink Application of Allocators for Functionalization
AL 5.3	AltaLink Application of Allocators for Functionalization and Summary
AT 1.0	ATCO Revenue Requirement, Summary Capital and Non Capital Costs
AT 2.0	ATCO Revenue Offset, Capital and Non Capital Costs
AT 3.0	ATCO Hearing, Ins., Other Taxes, Capital and Non Capital Costs
AT 4.0	ATCO Non Capital Costs split into O&M and G&A
AT 5.0	ATCO Development of Allocators for Functionalization
AT 5.1	ATCO Application of Allocators for Functionalization
AT 5.2	ATCO Application of Allocators for Functionalization and Summary
EN 1.0	ENMAX Revenue Requirement, Summary Capital and Non Capital Costs
EN 4.0	ENMAX Non Capital Costs split into O&M and G&A
EN 5.0	ENMAX Development of Allocators for Functionalization
EN 5.1	ENMAX Application of Allocators for Functionalization and Summary
EP 1.0	EPCOR Revenue Requirement, Summary Capital and Non Capital Costs
EP 2.0	EPCOR Revenue Offset, Capital and Non Capital Costs
EP 3.0	EPCOR Hearing, Ins., Other Taxes, Capital and Non Capital Costs
EP 4.0	EPCOR Non Capital Costs split into O&M and G&A
EP 5.0	EPCOR Development of Allocators for Functionalization
EP 5.1	EPCOR Application of Allocators for Functionalization
EP 5.2	EPCOR Application of Allocators for Functionalization and Summary

<b>Revenue Requirement</b>		<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Reference				
AltaLink	AL Sch 1.0	189,319,502	202,767,328	214,445,660	246,511,157
ATCO Electric	AT Sch 1.0	167,852,071	168,207,126	178,600,826	206,959,891
ENMAX	EN Sch 1.0	30,901,470	31,867,568	32,248,072	N.A.
EPCOR	EP Sch 1.0	41,099,490	35,231,806	45,045,806	52,843,915
Sum of Four TFO		429,172,534	438,073,828	470,340,364	506,314,964

<b>Non Capital Costs</b>		<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Reference				
AltaLink	AL Sch 1.0	47,672,495	48,124,444	51,354,438	63,230,001
ATCO Electric	AT Sch 1.0	44,349,900	47,200,000	53,800,000	62,000,000
ENMAX	EN Sch 1.0	15,757,662	17,859,224	17,710,624	N.A.
EPCOR	EP Sch 1.0	11,806,397	13,233,813	14,127,220	14,723,524
Sum of Four TFO		119,586,453	126,417,481	136,992,282	139,953,525

<b>Non Capital Costs/Rev Req</b>	<b>Average</b> 2006 - 2008	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
AltaLink	24.3%	25.2%	23.7%	23.9%	25.6%
ATCO Electric	28.2%	26.4%	28.1%	30.1%	30.0%
ENMAX	54.0%	51.0%	56.0%	54.9%	N.A.
EPCOR	32.6%	28.7%	37.6%	31.4%	27.9%
Four TFO	28.6%	27.9%	28.9%	29.1%	27.6%

Costs are Forecast based on GTA, and updated with Actuals where available.

<b>Non Capital Costs</b>		<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Reference				
AltaLink	AL Sch 1.0	47,672,495	48,124,444	51,354,438	63,230,001
ATCO Electric	AT Sch 1.0	44,349,900	47,200,000	53,800,000	62,000,000
ENMAX	EN Sch 1.0	15,757,662	17,859,224	17,710,624	N.A.
EPCOR	EP Sch 1.0	11,806,397	13,233,813	14,127,220	14,723,524
Total		119,586,453	126,417,481	136,992,282	139,953,525

<b>O&amp;M Costs</b>		<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Reference				
AltaLink	AL Sch 4.0	34,715,198	33,749,232	37,049,286	48,342,408
ATCO Electric	AT Sch 4.0	27,680,900	31,500,000	35,000,000	40,000,000
ENMAX	EN Sch 4.0	11,738,014	14,341,276	16,146,755	N.A.
EPCOR	EP Sch 4.0	7,618,190	9,059,922	9,832,319	10,224,645
Total		81,752,302	88,650,431	98,028,360	98,567,054

<b>G&amp;A Costs</b>		<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Reference				
AltaLink	AL Sch 4.0	12,957,296	14,375,212	14,305,152	14,887,594
ATCO Electric	AT Sch 4.0	16,669,000	15,700,000	18,800,000	22,000,000
ENMAX	EN Sch 4.0	4,019,648	3,517,948	1,563,870	N.A.
EPCOR	EP Sch 4.0	4,188,207	4,173,891	4,294,901	4,498,878
Total		37,834,151	37,767,050	38,963,923	41,386,472

<b>O&amp;M Costs / Non Cap Costs</b>	<b>Average 2006 - 2008</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
AltaLink	71.7%	72.8%	70.1%	72.1%	76.5%
ATCO Electric	64.7%	62.4%	66.7%	65.1%	64.5%
ENMAX	82.0%	74.5%	80.3%	91.2%	N.A.
EPCOR	67.5%	64.5%	68.5%	69.6%	69.4%
Total	70.0%	68.4%	70.1%	71.6%	70.4%

<b>Functionalized O&amp;M Costs</b>		<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Reference				
<b>AltaLink</b>					
Bulk	AL Sch 5.3	7,906,213	8,343,394	9,430,445	11,386,233
Local	AL Sch 5.3	11,124,210	10,834,002	11,941,557	15,330,299
POD	AL Sch 5.3	<u>15,684,776</u>	<u>14,571,836</u>	<u>15,677,284</u>	<u>21,625,877</u>
Total		34,715,198	33,749,232	37,049,286	48,342,408
<b>ATCO Electric</b>					
Bulk	AT Sch 5.2	3,719,094	4,468,357	5,031,171	6,052,711
Local	AT Sch 5.2	10,225,810	11,702,372	12,670,088	14,696,343
POD	AT Sch 5.2	<u>13,735,996</u>	<u>15,329,271</u>	<u>17,298,740</u>	<u>19,250,946</u>
Total		27,680,900	31,500,000	35,000,000	40,000,000
<b>ENMAX</b>					
Bulk	EN Sch 5.1	210,791	255,546	288,961	
Local	EN Sch 5.1	3,913,773	5,077,306	5,581,104	
POD	EN Sch 5.1	<u>7,613,450</u>	<u>9,008,424</u>	<u>10,276,689</u>	
Total		11,738,014	14,341,276	16,146,755	
<b>EPCOR</b>					
Bulk	EP Sch 5.2	1,415,528	1,622,947	1,771,256	1,820,504
Local	EP Sch 5.2	2,528,697	2,928,684	3,187,700	3,290,569
POD	EP Sch 5.2	<u>3,673,964</u>	<u>4,508,291</u>	<u>4,873,363</u>	<u>5,113,573</u>
Total		7,618,190	9,059,922	9,832,319	10,224,645
<b>Sum of Four TFO's</b>					
Bulk		13,251,626	14,690,244	16,521,834	19,259,448
Local		27,792,490	30,542,364	33,380,449	33,317,210
POD		<u>40,708,186</u>	<u>43,417,822</u>	<u>48,126,077</u>	<u>45,990,396</u>
Total		81,752,302	88,650,431	98,028,360	98,567,054
<b>AltaLink</b> Ave 2006-2008					
Bulk	24.3%	22.8%	24.7%	25.5%	23.6%
Local	32.1%	32.0%	32.1%	32.2%	31.7%
POD	43.6%	<u>45.2%</u>	<u>43.2%</u>	<u>42.3%</u>	<u>44.7%</u>
Total		100.0%	100.0%	100.0%	100.0%
<b>ATCO Electric</b> Ave 2006-2008					
Bulk	14.0%	13.4%	14.2%	14.4%	15.1%
Local	36.8%	36.9%	37.2%	36.2%	36.7%
POD	49.2%	<u>49.6%</u>	<u>48.7%</u>	<u>49.4%</u>	<u>48.1%</u>
Total		100.0%	100.0%	100.0%	100.0%
<b>ENMAX</b> Ave 2006-2008					
Bulk	1.8%	1.8%	1.8%	1.8%	
Local	34.4%	33.3%	35.4%	34.6%	
POD	63.8%	<u>64.9%</u>	<u>62.8%</u>	<u>63.6%</u>	
Total		100.0%	100.0%	100.0%	
<b>EPCOR</b> Ave 2006-2008					
Bulk	18.2%	18.6%	17.9%	18.0%	17.8%
Local	32.6%	33.2%	32.3%	32.4%	32.2%
POD	49.2%	<u>48.2%</u>	<u>49.8%</u>	<u>49.6%</u>	<u>50.0%</u>
Total		100.0%	100.0%	100.0%	100.0%
<b>Sum of Four TFO's</b> Ave 2006-2008					
Bulk	16.5%	16.2%	16.6%	16.9%	19.5%
Local	34.2%	34.0%	34.5%	34.1%	33.8%
POD	<u>49.3%</u>	<u>49.8%</u>	<u>49.0%</u>	<u>49.1%</u>	<u>46.7%</u>
Total	100.0%	100.0%	100.0%	100.0%	100.0%

<b>Breakdown of O&amp;M Costs to Classify</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Reference				
<b>Sum of Four TFO's</b>				
Bulk	13,251,626	14,690,244	16,521,834	19,259,448
Local	27,792,490	30,542,364	33,380,449	33,317,210
POD	<u>40,708,186</u>	<u>43,417,822</u>	<u>48,126,077</u>	<u>45,990,396</u>
Total	81,752,302	88,650,431	98,028,360	98,567,054
<b>Separation of O&amp;M Costs into Fuel/Variable and Other</b>				
<b>Fuel and Variable O&amp;M</b>				
Bulk	0	0	0	0
Local	3,345,432	3,558,329	3,588,484	3,950,348
POD	<u>7,748,568</u>	<u>8,241,671</u>	<u>8,311,516</u>	<u>9,149,652</u>
Total	11,094,000	11,800,000	11,900,000	13,100,000
<b>Other O&amp;M Costs</b>				
Bulk	13,251,626	14,690,244	16,521,834	19,259,448
Local	24,447,058	26,984,035	29,791,965	29,366,862
POD	<u>32,959,618</u>	<u>35,176,151</u>	<u>39,814,561</u>	<u>36,840,744</u>
Total	70,658,302	76,850,431	86,128,360	85,467,054

<b>Classified O&amp;M Costs</b>				
<b>Classification of Capital Costs (2007 GTA)</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	
Demand Related	81.5%	82.5%	43.1%	
Energy Related	18.5%	17.5%	0.7%	
Customer Related	<u>0.0%</u>	<u>0.0%</u>	<u>56.2%</u>	
Total	100.0%	100.0%	100.0%	
<b>Classified Other O&amp;M Costs 2008</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13,465,324	24,578,189	17,160,064	55,203,577
Energy Related	3,056,510	5,213,776	278,653	8,548,939
Customer Related	<u>0</u>	<u>0</u>	<u>22,375,843</u>	<u>22,375,843</u>
Total	16,521,834	29,791,965	39,814,561	86,128,360
<b>Classified Fuel, Var O&amp;M Costs 2008</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	<b>Totals</b>
Demand Related	0	0	0	0
Energy Related	0	3,588,484	8,311,516	11,900,000
Customer Related	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	0	3,588,484	8,311,516	11,900,000
<b>Total Classified O&amp;M Costs 2008</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13,465,324	24,578,189	17,160,064	55,203,577
Energy Related	3,056,510	8,802,260	8,590,169	20,448,939
Customer Related	<u>0</u>	<u>0</u>	<u>22,375,843</u>	<u>22,375,843</u>
Total	16,521,834	33,380,449	48,126,077	98,028,360
<b>Classification of Total O&amp;M Costs</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>	
Demand Related	81.5%	73.6%	35.7%	
Energy Related	18.5%	26.4%	17.8%	
Customer Related	0.0%	0.0%	46.5%	
Total	100.0%	100.0%	100.0%	

**Property - Transmission Cost Causation Study Update (2007 GTA)**

<b>Capital Related Costs (2007 GTA)</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	119,802,000	50,568,000	62,198,000	232,568,000
Energy Related	27,194,000	10,727,000	1,010,000	38,931,000
Customer (POD)	0	0	81,103,000	81,103,000
<b>Totals</b>	<b>146,996,000</b>	<b>61,295,000</b>	<b>144,311,000</b>	<b>352,602,000</b>

<b>Breakdown of Capital Costs (2007 GTA)</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	34.0%	14.3%	17.6%	66.0%
Energy Related	7.7%	3.0%	0.3%	11.0%
Customer (POD)	0.0%	0.0%	23.0%	23.0%
<b>Totals</b>	<b>41.7%</b>	<b>17.4%</b>	<b>40.9%</b>	<b>100.0%</b>

**Classification of Costs by Function**

Demand Related	81.5%	82.5%	43.1%
Energy Related	18.5%	17.5%	0.7%
Customer (POD)	0.0%	0.0%	56.2%

<b>Functionalized Non Capital Costs</b>	Ref	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Functionalized Costs	Sum 3.0	16.5%	34.2%	49.3%	100.0%

<b>Classification of Total O&amp;M Costs</b>	Ref	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
Demand Related	Sum 3.2	81.5%	73.6%	35.7%
Energy Related	Sum 3.2	18.5%	26.4%	17.8%
Customer Related	Sum 3.2	<u>0.0%</u>	<u>0.0%</u>	<u>46.5%</u>
<b>Total</b>		<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

**O&M Classification is used for All Non Capital Costs**

<b>Breakdown of Non Capital Costs</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	13.5%	25.2%	17.6%	56.2%
Energy Related	3.1%	9.0%	8.8%	20.9%
Customer (POD)	<u>0.0%</u>	<u>0.0%</u>	<u>22.9%</u>	<u>22.9%</u>
<b>Totals</b>	<b>16.5%</b>	<b>34.2%</b>	<b>49.3%</b>	<b>100.0%</b>

**Weighting for Capital and Non Capital Costs**

Capital Costs Portion	71.4%
Non Capital Costs Portion	28.6%

<b>Weighted Capital and Non Capital</b>	<b>Bulk System</b>	<b>Local System</b>	<b>POD</b>	<b>Totals</b>
Demand Related	28.1%	17.4%	17.6%	63.2%
Energy Related	6.4%	4.7%	2.7%	13.9%
Customer (POD)	<u>0.0%</u>	<u>0.0%</u>	<u>23.0%</u>	<u>23.0%</u>
<b>Totals</b>	<b>34.5%</b>	<b>22.2%</b>	<b>43.3%</b>	<b>100.0%</b>

Note: Calculations include more precision than is displayed. Numbers may not add to total due to rounding.

<b>TFO Cost Data</b>				
All Values in \$				
<b>AltaLink</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Fuel	0	0	0	0
Operating Costs	49,807,854	50,806,899	54,891,958	65,971,924
Depreciation	64,826,350	68,519,547	74,462,618	78,041,499
Return on Rate Base	56,357,854	63,523,052	64,422,450	74,739,024
Income Tax Expense	12,356,943	11,709,535	10,437,500	13,000,633
Revenue Offsets	-9,862,478	-9,534,866	-8,655,559	-6,271,699
Hearings, Self Ins, Other Taxes	<u>15,832,979</u>	<u>17,743,162</u>	<u>18,886,693</u>	<u>21,029,776</u>
Revenue Requirement	189,319,502	202,767,328	214,445,660	246,511,157

<b>Capital Related Costs</b>				
Depreciation	64,826,350	68,519,547	74,462,618	78,041,499
Return on Rate Base	56,357,854	63,523,052	64,422,450	74,739,024
Income Tax Expense	12,356,943	11,709,535	10,437,500	13,000,633
Adjustments				
Revenue Offsets (Sch 2.0)	-6,800,000	-6,400,000	-5,300,000	-5,300,000
Hearings, Self Ins, Other Tax (Sch 3.0)	13,300,000	15,200,000	16,100,000	17,200,000
Annual Structure Payments (Sch 4.0)	<u>1,605,861</u>	<u>2,090,751</u>	<u>2,968,654</u>	<u>5,600,000</u>
Total Capital Related	141,647,008	154,642,885	163,091,222	183,281,156
<b>Capital Related/Revenue Requirement</b>	74.8%	76.3%	76.1%	74.4%

<b>Non Capital Costs</b>				
Fuel	0	0	0	0
Operating Costs	49,807,854	50,806,899	54,891,958	65,971,924
Revenue Offsets	-9,862,478	-9,534,866	-8,655,559	-6,271,699
Hearings, Self Ins, Other Taxes	15,832,979	17,743,162	18,886,693	21,029,776
Adjustments				
Revenue Offsets (Sch 2.0)	6,800,000	6,400,000	5,300,000	5,300,000
Hearings, Self Ins, Other Tax (Sch 3.0)	-13,300,000	-15,200,000	-16,100,000	-17,200,000
Annual Structure Payments (Sch 4.0)	<u>-1,605,861</u>	<u>-2,090,751</u>	<u>-2,968,654</u>	<u>-5,600,000</u>
Total Non Capital Related	47,672,495	48,124,444	51,354,438	63,230,001
<b>Non Capital Related/Revenue Requirement</b>	25.2%	23.7%	23.9%	25.6%

<b>TFO Cost Data</b>					
All Values in \$					
	<b>AltaLink</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Revenue Offsets</b>					
Fortis Agreement		4,036,135	4,177,735	3,864,000	3,864,000
TransAlta Agreement Transmission		2,842,929	2,879,929	3,190,417	749,495
TransAlta Agreement General Business		376,995	354,151	486,700	355,400
Services to Affiliate		158,451	282,154	302,643	302,643
Other Revenue		1,654,546	1,053,786	159,774	160,000
Lease Revenue (Land and Com Towers)		793,422	787,111	700,000	840,161
<b>Total Miscellaneous Revenue</b>		<b>9,862,478</b>	<b>9,534,866</b>	<b>8,703,534</b>	<b>6,271,699</b>

<b>Fortis</b>					
Telecommunications		800,000	700,000	700,000	700,000
Joint Use		3,000,000	3,100,000	3,100,000	3,100,000
Miscellaneous		<u>200,000</u>	<u>400,000</u>	<u>100,000</u>	<u>100,000</u>
Fortis Sub Total		4,000,000	4,200,000	3,900,000	3,900,000
<b>TransAlta</b>					
System Control Centre		200,000	200,000	200,000	200,000
Meter Data		0	0	0	0
Telecommunications		100,000	100,000	100,000	100,000
Maintenance & Technical Services		<u>0</u>	<u>0</u>	<u>100,000</u>	<u>0</u>
Sub Total TransAlta Service Agreements		300,000	300,000	400,000	300,000
<b>First Nations</b>		<u>500,000</u>	<u>600,000</u>	<u>600,000</u>	<u>700,000</u>
Sub Total TransAlta Service Agreements		500,000	600,000	600,000	700,000
<b>AltaLink</b>		<u>200,000</u>	<u>300,000</u>	<u>300,000</u>	<u>300,000</u>
Sub Total AltaLink		200,000	300,000	300,000	300,000
<b>Other Parties</b>					
Land Lease		200,000	300,000	300,000	300,000
Tower Lease		600,000	500,000	600,000	600,000
Other		<u>1,700,000</u>	<u>1,100,000</u>	<u>200,000</u>	<u>200,000</u>
Sub Total Other Parties		2,500,000	1,900,000	1,100,000	1,100,000
<b>Total</b>		<b>7,500,000</b>	<b>7,300,000</b>	<b>6,300,000</b>	<b>6,300,000</b>

<b>Capital Related (All except TransAlta Maint &amp; Tech Services, First Nations, AltaLink)</b>					
Capital Related		6,800,000	6,400,000	5,300,000	5,300,000

<b>TFO Cost Data</b>				
All Values in \$				
<b>AltaLink</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Hearings, Self Ins and Other Taxes	15,832,979	17,743,162	18,886,693	21,029,776
Taxes Other Than Income Tax				
Transmission Lines	6,800,000	7,600,000	7,700,000	7,900,000
Substations	5,400,000	6,200,000	7,000,000	7,900,000
Telecontrol	500,000	600,000	600,000	600,000
Buildings/Structures	200,000	200,000	200,000	200,000
Land	400,000	600,000	600,000	600,000
Business Tax	100,000	100,000	100,000	100,000
Sub Total	13,400,000	15,300,000	16,200,000	17,300,000

<b>Capital Related (All Other Taxes except Business Tax)</b>				
Capital Related - Taxes Other than Income	13,300,000	15,200,000	16,100,000	17,200,000

<b>Separation of Non Capital Costs into O&amp;M and G&amp;A</b>				
All Values in \$				
<b>AltaLink</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Non Capital Costs</b>				
Fuel	0	0	0	0
Operating Costs	49,807,854	50,806,899	54,891,958	65,971,924
Revenue Offsets	-9,862,478	-9,534,866	-8,655,559	-6,271,699
Hearings, Self Ins, Other Taxes Adjustments	15,832,979	17,743,162	18,886,693	21,029,776
Revenue Offsets (Sch 2.0)	6,800,000	6,400,000	5,300,000	5,300,000
Hearings, Self Ins, Other Tax (Sch 3.0)	-13,300,000	-15,200,000	-16,100,000	-17,200,000
Annual Structure Payments (Sch 4.0)	<u>-1,605,861</u>	<u>-2,090,751</u>	<u>-2,968,654</u>	<u>-5,600,000</u>
<b>Total Non Capital Related Costs</b>	<b>47,672,495</b>	<b>48,124,444</b>	<b>51,354,438</b>	<b>63,230,001</b>
<b>Operating Costs</b>				
Net Salaries & Wages	21,538,934	21,963,987	25,253,048	29,640,161
Brushing	3,498,671	4,332,376	5,207,673	4,757,002
Other Contracted Manpower	<u>12,740,071</u>	<u>10,587,734</u>	<u>9,944,125</u>	<u>14,916,945</u>
<b>Total Labour</b>	<b>37,777,676</b>	<b>36,884,098</b>	<b>40,404,845</b>	<b>49,314,108</b>
Materials & Supplies	1,739,207	2,731,944	1,214,063	1,469,645
Office Expenses	1,231,486	1,198,479	1,130,801	1,676,932
Staff Expenses	2,276,531	2,013,855	2,266,471	2,893,828
Vehicles	881,359	872,417	1,325,160	1,188,148
Community Relations, Training & Other Expens	2,730,114	2,656,168	3,983,587	5,030,020
Non-Labour - Indirect	-4,618,161	-4,879,561	-5,159,082	-3,987,652
Non-Labour - Direct	0	0	0	-4,519,318
Buildings	3,938,058	4,984,765	4,643,449	5,376,818
Telecom	<u>2,245,723</u>	<u>2,253,984</u>	<u>2,114,009</u>	<u>1,929,396</u>
<b>General Operating Expense</b>	<b>10,424,317</b>	<b>11,832,050</b>	<b>11,518,459</b>	<b>11,057,817</b>
Annual Structure Payments *	<u>1,605,861</u>	<u>2,090,751</u>	<u>2,968,654</u>	<u>5,600,000</u>
<b>Operating Expense</b>	<b>49,807,854</b>	<b>50,806,899</b>	<b>54,891,958</b>	<b>65,971,925</b>
Net Revenue Offsets	-3,062,478	-3,134,866	-3,355,559	-971,699
Net Hearings, Self Ins, Other Taxes	2,532,979	2,543,162	2,786,693	3,829,776
Annual Structure Payments *	<u>-1,605,861</u>	<u>-2,090,751</u>	<u>-2,968,654</u>	<u>-5,600,000</u>
<b>Total Non Capital Costs</b>	<b>47,672,495</b>	<b>48,124,444</b>	<b>51,354,438</b>	<b>63,230,002</b>
* Considered Capital for this Study				
<b>O&amp;M</b>				
Total Labour	37,777,676	36,884,098	40,404,845	49,314,108
Net Revenue Offsets	<u>-3,062,478</u>	<u>-3,134,866</u>	<u>-3,355,559</u>	<u>-971,699</u>
<b>Sub Total</b>	<b>34,715,198</b>	<b>33,749,232</b>	<b>37,049,286</b>	<b>48,342,408</b>
<b>G&amp;A</b>				
General Operating Expense	10,424,317	11,832,050	11,518,459	11,057,817
Hearings, Self Ins, Other Taxes	<u>2,532,979</u>	<u>2,543,162</u>	<u>2,786,693</u>	<u>3,829,776</u>
<b>Sub Total</b>	<b>12,957,296</b>	<b>14,375,212</b>	<b>14,305,152</b>	<b>14,887,594</b>
<b>Total Non Capital Related Costs</b>	<b>47,672,495</b>	<b>48,124,444</b>	<b>51,354,438</b>	<b>63,230,002</b>

<b>Break Down of Net Salary and Wages</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	21,538,934	21,963,987	25,253,048	29,640,161
Net Salary and Wages breakdown by Group Based on FTE				
Operational Services	0	9	13	13
Operations Management	4	9	6	7
EH&S	7	7	10	11
Systems Operations (SCC)	36	34	42	44
Asset Management	38	32	31	32
Field Operations	33	35	50	54
Projects	0	0	0	0
IT	8	9	13	17
Facilities	<u>1</u>	<u>2</u>	<u>3</u>	<u>3</u>
Total	127	137	168	181
Proportion of Net Salary and Wages on basis of FTE				
Operational Services	0.0%	6.6%	7.7%	7.2%
Operations Management	3.1%	6.6%	3.6%	3.9%
EH&S	5.5%	5.1%	6.0%	6.1%
Systems Operations (SCC)	28.3%	24.8%	25.0%	24.3%
Asset Management	29.9%	23.4%	18.5%	17.7%
Field Operations	26.0%	25.5%	29.8%	29.8%
Projects	0.0%	0.0%	0.0%	0.0%
IT	6.3%	6.6%	7.7%	9.4%
Facilities	<u>0.8%</u>	<u>1.5%</u>	<u>1.8%</u>	<u>1.7%</u>
Total	100.0%	100.0%	100.0%	100.0%
Net Salary and Wages by Group				
Operational Services	0	1,442,890	1,954,105	2,128,851
Operations Management	678,392	1,442,890	901,895	1,146,305
EH&S	1,187,185	1,122,248	1,503,158	1,801,336
Systems Operations (SCC)	6,105,525	5,450,917	6,313,262	7,205,343
Asset Management	6,444,720	5,130,274	4,659,789	5,240,249
Field Operations	5,596,731	5,611,238	7,515,788	8,842,921
Projects	0	0	0	0
IT	1,356,783	1,442,890	1,954,105	2,783,883
Facilities	<u>169,598</u>	<u>320,642</u>	<u>450,947</u>	<u>491,273</u>
Total	21,538,934	21,963,987	25,253,048	29,640,161
2008 FTE Roles				
Operational Services	Land 50%, Purchasing 25%, Inventory 25%			
Operations Management	Office of COO - Not Allocated			
EH&S	Environment 11%, Safety 56%, Grounding 33%			
Systems Operations (SCC)	Allocate on the basis of System Elements			
Asset Management	Lines 45%, Subs 22%, P&C 33%			
Field Operations	Lines 28%, Subs 33%, Telecom 39%			
Projects	Projects - Not O&M Related			
IT	Information Technology - Not Allocated			
Facilities	Facilities - Not Allocated			

<b>Development of Allocators</b>				
All:AL:1. Line Length Allocator				
Voltage	<b>kM</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
69	847		702	145
138	6,309		5,230	1,078
240	4,643	4,643		
500	319	319		
Line Length	12,118	4,962	5,933	1,223
AltaLink Line Length Allocator		41.0%	49.0%	10.1%

All:AL:2. Land Owner Allocator (1 for each 1/2 mile of line, 1 for each substation)				
Voltage	<b>Land Owners</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
69	1,053		873	180
138	7,842		6,501	1,340
240	5,772	5,772		
500	397	397		
Substations	290	43	44	203
Land Owners	15,353	6,211	7,418	1,723
AltaLink Land Owner Allocator		40.5%	48.3%	11.2%

All:AL:3. Line Brushing Allocator (Line Length X Width - Sq kM)				
Voltage	<b>Area</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
69 (15 m)	13		11	2
138 (20 m)	126		105	22
240 (40 m)	186	186		
500 (55 m)	18	18		
Area	342	203	115	24
AltaLink Line Brushing Allocator		59.4%	33.7%	6.9%

All:AL:4. Substation Brushing Allocator (Substation Count)				
Substations	290	43	44	203
AltaLink Substation Brushing Allocator		14.8%	15.2%	70.0%

All:AL:5. Inventory (Property)				
Property	651,310	317,819	100,565	232,926
AltaLink Inventory Allocator		48.8%	15.4%	35.8%

All:AL:6. Contracted Manpower Allocator (Contracts)				
Internal Assessment	100.0%	19.4%	28.0%	52.7%
Contracted Manpower Allocator		19.4%	28.0%	52.7%

All:AL:7. EH&S (Assessment by Role)				
Assessment	100.0%	22.2%	32.0%	45.7%
EH&S Allocator		22.2%	32.0%	45.7%

All:AL:8. Control Center (Elements)				
Lines and Transformers	763	120	207	436
Control Center Allocator		15.7%	27.1%	57.1%

All:AL:9. Asset Management (Assessment by Role)				
Assessment	100.0%	22.9%	40.1%	37.0%
Asset Management Allocator		22.9%	40.1%	37.0%

All:AL:10. Field Operations (Assessment by Role)				
Assessment	100.0%	18.9%	36.5%	44.6%
Field Operations Allocator		18.9%	36.5%	44.6%

<b>O&amp;M Costs Applied to Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Allocate Net Salaries and Wages</b>				
<b>Operational Services</b>	0	1,442,890	1,954,105	2,128,851
Allocator (All:AL:11)				
Bulk	0	643,919	872,059	950,044
Local	0	459,988	622,961	678,670
POD	<u>0</u>	<u>338,983</u>	<u>459,084</u>	<u>500,138</u>
Total	0	1,442,890	1,954,105	2,128,851
<b>EH&amp;S</b>	1,187,185	1,122,248	1,503,158	1,801,336
Allocator (All:AL:7)				
Bulk	263,808	249,378	334,021	400,281
Local	380,401	359,593	481,645	577,188
POD	<u>542,976</u>	<u>513,276</u>	<u>687,491</u>	<u>823,867</u>
Total	1,187,185	1,122,248	1,503,158	1,801,336
<b>System Operations (SCC)</b>	6,105,525	5,450,917	6,313,262	7,205,343
Allocator (All:AL:8)				
Bulk	960,240	857,287	992,911	1,133,213
Local	1,656,414	1,478,820	1,712,772	1,954,792
POD	<u>3,488,871</u>	<u>3,114,809</u>	<u>3,607,578</u>	<u>4,117,339</u>
Total	6,105,525	5,450,917	6,313,262	7,205,343
<b>Asset Management</b>	6,444,720	5,130,274	4,659,789	5,240,249
Allocator (All:AL:9)				
Bulk	1,475,841	1,174,833	1,067,092	1,200,017
Local	2,584,333	2,057,240	1,868,575	2,101,340
POD	<u>2,384,547</u>	<u>1,898,202</u>	<u>1,724,122</u>	<u>1,938,892</u>
Total	6,444,720	5,130,274	4,659,789	5,240,249
<b>Field Operations</b>	5,596,731	5,611,238	7,515,788	8,842,921
Allocator (All:AL:10)				
Bulk	1,060,152	1,062,900	1,423,666	1,675,057
Local	2,041,132	2,046,423	2,741,014	3,225,020
POD	<u>2,495,447</u>	<u>2,501,915</u>	<u>3,351,108</u>	<u>3,942,844</u>
Total	5,596,731	5,611,238	7,515,788	8,842,921
<b>Total Allocated Net Salary</b>				
Bulk	3,760,041	3,988,317	4,689,750	5,358,610
Local	6,662,280	6,402,064	7,426,968	8,537,010
POD	<u>8,911,841</u>	<u>8,367,185</u>	<u>9,829,383</u>	<u>11,323,080</u>
Total	19,334,161	18,757,566	21,946,101	25,218,700
<b>Gross Up to Total Net Salary and Wages</b>	21,538,934	21,963,987	25,253,048	29,640,161
Bulk	4,188,818	4,670,081	5,396,425	6,298,107
Local	7,422,013	7,496,434	8,546,100	10,033,759
POD	<u>9,928,103</u>	<u>9,797,473</u>	<u>11,310,523</u>	<u>13,308,295</u>
Total	21,538,934	21,963,987	25,253,048	29,640,161

<b>O&amp;M Costs Applied to Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Brushing (Sch 4.0)</b>	3,498,671	4,332,376	5,207,673	4,757,002
Lines - Vegetation Management	3,198,671	3,932,376	4,907,673	3,857,002
Substation - Vegetation Management	300,000	400,000	300,000	900,000
Total Vegetation Management	3,498,671	4,332,376	5,207,673	4,757,002
<b>Line Brushing Allocator (All:AL:3)</b>				
Bulk	1,900,381	2,336,287	2,915,726	2,291,506
Local	1,076,393	1,323,295	1,651,494	1,297,930
POD	<u>221,896</u>	<u>272,794</u>	<u>340,452</u>	<u>267,565</u>
Total	3,198,671	3,932,376	4,907,673	3,857,002
<b>Substation Brushing Allocator (All:AL:4)</b>				
Bulk	44,483	59,310	44,483	133,448
Local	45,517	60,690	45,517	136,552
POD	<u>210,000</u>	<u>280,000</u>	<u>210,000</u>	<u>630,000</u>
Total	300,000	400,000	300,000	900,000
<b>Contracted Manpower</b>	12,740,071	10,587,734	9,944,125	14,916,945
Allocator (All:AL:6)				
Bulk	2,469,995	2,052,708	1,927,928	2,892,038
Local	3,561,633	2,959,922	2,779,994	4,170,203
POD	<u>6,708,444</u>	<u>5,575,104</u>	<u>5,236,203</u>	<u>7,854,704</u>
Total	12,740,071	10,587,734	9,944,125	14,916,945
<b>Total Labour (Salary and Wages, Brushing and Contracted Manpower)</b>				
Bulk	8,603,677	9,118,387	10,284,562	11,615,100
Local	12,105,557	11,840,341	13,023,106	15,638,443
POD	<u>17,068,443</u>	<u>15,925,371</u>	<u>17,097,178</u>	<u>22,060,564</u>
Total	37,777,676	36,884,098	40,404,845	49,314,108
<b>Revenue Offsets</b>	-3,062,478	-3,134,866	-3,355,559	-971,699
Revenue Offsets (Allocated Proportional to Total Labour)				
Bulk	-697,464	-774,993	-854,117	-228,867
Local	-981,347	-1,006,338	-1,081,548	-308,144
POD	<u>-1,383,667</u>	<u>-1,353,535</u>	<u>-1,419,894</u>	<u>-434,688</u>
Total	-3,062,478	-3,134,866	-3,355,559	-971,699
<b>Total AltaLink O&amp;M Costs Functionalized</b>				
Bulk	7,906,213	8,343,394	9,430,445	11,386,233
Local	11,124,210	10,834,002	11,941,557	15,330,299
POD	<u>15,684,776</u>	<u>14,571,836</u>	<u>15,677,284</u>	<u>21,625,877</u>
Total	34,715,198	33,749,232	37,049,286	48,342,408

<b>TFO Cost Data</b>				
All Values in \$				
<b>ATCO Electric</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Fuel	8,394,000	8,700,000	8,200,000	9,300,000
Operating Costs	51,671,900	55,800,000	66,500,000	77,100,000
Depreciation	38,600,000	38,500,000	41,600,000	47,000,000
Return on Rate Base	61,200,000	60,800,000	61,230,000	72,518,378
Income Tax Expense	12,008,171	8,507,126	3,670,826	3,641,514
Revenue Offsets	-4,022,000	-4,100,000	-2,600,000	-2,600,000
Deferral & Reserve Accounts	0	0	0	0
<b>Revenue Requirement</b>	<b>167,852,071</b>	<b>168,207,126</b>	<b>178,600,826</b>	<b>206,959,891</b>

<b>Capital Related Costs</b>				
Depreciation	38,600,000	38,500,000	41,600,000	47,000,000
Return on Rate Base	61,200,000	60,800,000	61,230,000	72,518,378
Income Tax Expense	12,008,171	8,507,126	3,670,826	3,641,514
Adjustments				
Revenue Offsets (Sch 2.0)	-1,117,000	-1,100,000	-1,100,000	-1,100,000
Operating Costs (Sch 3.0)	11,511,000	12,900,000	16,900,000	19,700,000
Operating Costs - R of W Payment (Sch 4.0)	<u>1,300,000</u>	<u>1,400,000</u>	<u>2,500,000</u>	<u>3,200,000</u>
<b>Total Capital Related</b>	<b>123,502,171</b>	<b>121,007,126</b>	<b>124,800,826</b>	<b>144,959,891</b>
<b>Capital Related/Revenue Requirement</b>	<b>73.6%</b>	<b>71.9%</b>	<b>69.9%</b>	<b>70.0%</b>

<b>Non Capital Related Costs</b>				
Fuel	8,394,000	8,700,000	8,200,000	9,300,000
Operating Costs	51,671,900	55,800,000	66,500,000	77,100,000
Revenue Offsets	-4,022,000	-4,100,000	-2,600,000	-2,600,000
Adjustments				
Revenue Offsets (Sch 2.0)	1,117,000	1,100,000	1,100,000	1,100,000
Operating Costs (Sch 3.0)	-11,511,000	-12,900,000	-16,900,000	-19,700,000
Operating Costs - R of W Payment (Sch 4.0)	<u>-1,300,000</u>	<u>-1,400,000</u>	<u>-2,500,000</u>	<u>-3,200,000</u>
<b>Total Non Capital Related</b>	<b>44,349,900</b>	<b>47,200,000</b>	<b>53,800,000</b>	<b>62,000,000</b>
<b>Non Capital Related/Revenue Requirement</b>	<b>26.4%</b>	<b>28.1%</b>	<b>30.1%</b>	<b>30.0%</b>

<b>TFO Cost Data</b>				
All Values in \$				
<b>ATCO Electric</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Actual	Actual	Forecast	Forecast
<b>Revenue Offsets</b>				
Facility Charges	804,000	800,000	800,000	800,000
Affiliate Revenue				
ATCO Gas	100,000	100,000	100,000	100,000
ATCO Energy Services	1,300,000	1,300,000	100,000	100,000
ATCO Power	200,000	200,000	200,000	200,000
ATCO I-Tek	0	0	0	0
Alberta Power (2000)	100,000	100,000	0	0
ATCO Electric Distribution	400,000	500,000	500,000	500,000
Northland Utilities (Yellowknife)	100,000	300,000	100,000	100,000
Northland Utilities (NWT)	100,000	100,000	100,000	100,000
YECL	100,000	100,000	100,000	100,000
Other				
Service to Other Party Revenue	505,000	300,000	300,000	300,000
Other Revenue	313,000	300,000	300,000	300,000
<b>Total Revenue Offsets</b>	<b>4,022,000</b>	<b>4,100,000</b>	<b>2,600,000</b>	<b>2,600,000</b>
<b>Capital Related Offsets</b>				
Facility Charges	804,000	800,000	800,000	800,000
Other Revenue	<u>313,000</u>	<u>300,000</u>	<u>300,000</u>	<u>300,000</u>
<b>Capital Related Offsets</b>	<b>1,117,000</b>	<b>1,100,000</b>	<b>1,100,000</b>	<b>1,100,000</b>

<b>TFO Cost Data</b>				
All Values in \$				
<b>ATCO Electric</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Actual	Actual	Forecast	Forecast
<b>Operating Costs</b>				
Operating Costs (Without Other Taxes)	39,991,900	42,700,000	49,300,000	57,100,000
Other Taxes				
Main Transmission Lines	6,192,000	7,000,000	9,800,000	11,200,000
Main Trans Substations	4,550,000	5,000,000	6,100,000	7,300,000
Communications	700,000	800,000	900,000	900,000
General	169,000	200,000	300,000	300,000
Isolated Generating Plants	69,000	100,000	100,000	300,000
Sub Total Taxes Other than Income	11,680,000	13,100,000	17,200,000	20,000,000
Operating Costs	51,671,900	55,800,000	66,500,000	77,100,000

<b>Capital Related (All Other Taxes except General Tax)</b>				
Capital Costs included in Operating				
Main Transmission Lines	6,192,000	7,000,000	9,800,000	11,200,000
Main Trans Substations	4,550,000	5,000,000	6,100,000	7,300,000
Communications	700,000	800,000	900,000	900,000
Isolated Generating Plants	<u>69,000</u>	<u>100,000</u>	<u>100,000</u>	<u>300,000</u>
Sub Total Capital Costs	11,511,000	12,900,000	16,900,000	19,700,000

<b>Separation of Non Capital Costs into O&amp;M and G&amp;A</b>				
All Values in \$				
<b>ATCO Electric</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Non Capital Costs</b>				
Fuel	8,394,000	8,700,000	8,200,000	9,300,000
Operating Costs	51,671,900	55,800,000	66,500,000	77,100,000
Revenue Offsets	-4,022,000	-4,100,000	-2,600,000	-2,600,000
Adjustments				
Revenue Offsets (Sch 2.0)	1,117,000	1,100,000	1,100,000	1,100,000
Operating Costs (Sch 3.0)	-11,511,000	-12,900,000	-16,900,000	-19,700,000
Operating Costs - R of W Payment (Sch 4.0)	<u>-1,300,000</u>	<u>-1,400,000</u>	<u>-2,500,000</u>	<u>-3,200,000</u>
<b>Total Non Capital Related</b>	<b>44,349,900</b>	<b>47,200,000</b>	<b>53,800,000</b>	<b>62,000,000</b>
<b>Operating Costs</b>				
Fuel	8,394,000	8,700,000	8,200,000	9,300,000
Supervision and Engineering	1,700,000	1,900,000	2,200,000	2,500,000
Control Centre Operations	1,500,000	1,500,000	1,900,000	2,300,000
Station Equipment Expenses	4,100,000	4,900,000	5,600,000	6,200,000
Overhead Lines Expenses & Operation Mainte	2,800,000	3,300,000	2,900,000	3,200,000
Miscellaneous Transmission Expense	4,400,000	5,100,000	4,800,000	5,900,000
Right of Way Payments *	1,300,000	1,400,000	2,500,000	3,200,000
Vegetation Management	1,700,000	2,200,000	2,900,000	3,700,000
IT Support	1,200,000	1,300,000	1,200,000	1,200,000
Earnings Based Variable Pay Program (VPP)	0	0	-100,000	-100,000
Isolated Generation Operation and Maintenanc	4,200,000	4,800,000	5,900,000	6,500,000
Allocated Share of General Operation and Mair	2,700,000	3,100,000	3,700,000	3,800,000
Allocated Share of Common Operations	1,700,000	1,900,000	2,700,000	3,600,000
Allocated Administrative & General	12,100,000	10,500,000	12,100,000	14,300,000
Taxes Other Than Income	11,680,000	13,100,000	17,200,000	20,000,000
Farms, Irrigation Transmission Operating Costs	<u>700,000</u>	<u>800,000</u>	<u>1,000,000</u>	<u>800,000</u>
Total Transmission Operating Costs	51,671,900	55,800,000	66,500,000	77,100,000
* Considered Capital for this Study				
<b>O&amp;M</b>				
Fuel	8,394,000	8,700,000	8,200,000	9,300,000
Operating Costs (net of R of W Payments)	50,371,900	54,400,000	64,000,000	73,900,000
Less Operating Allocated Costs (G&A)	-16,500,000	-15,500,000	-18,500,000	-21,700,000
Less Taxes other than Income (Capital)	-11,680,000	-13,100,000	-17,200,000	-20,000,000
Net Revenue Offsets	<u>-2,905,000</u>	<u>-3,000,000</u>	<u>-1,500,000</u>	<u>-1,500,000</u>
<b>Sub Total</b>	<b>27,680,900</b>	<b>31,500,000</b>	<b>35,000,000</b>	<b>40,000,000</b>
<b>G&amp;A</b>				
Operating (Allocated Costs)	16,500,000	15,500,000	18,500,000	21,700,000
Net Taxes Other than Income	<u>169,000</u>	<u>200,000</u>	<u>300,000</u>	<u>300,000</u>
<b>Sub Total</b>	<b>16,669,000</b>	<b>15,700,000</b>	<b>18,800,000</b>	<b>22,000,000</b>
<b>Total Non Capital Related Costs</b>	<b>44,349,900</b>	<b>47,200,000</b>	<b>53,800,000</b>	<b>62,000,000</b>

<b>Development of Allocators</b>				
<b>All:AT:1. Line Length Allocator</b>				
Voltage	<b>kM</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
72	1,329		1,222	107
144	5,129		4,266	863
240	2,738	2,738		
500	0	0		
Line Length	9,197	2,738	5,488	970
Line Length Allocator		29.8%	59.7%	10.6%
<b>All:AT:2 Line Brushing Allocator (Line Length X Width)</b>				
Voltage	<b>Area (Sq kM)</b>	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
72 (15 m)	20		18	1.6
144 (20 m)	103		85	17
240 (40 m)	110	110		
500	0	0		
Total Area	232	110	104	19
Line Brushing Allocator		47.2%	44.7%	8.1%
<b>All:AT:3 Substation Expense (Transformer Count)</b>				
Transformer Count	165	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
Substation Allocator		11	19	135
		6.7%	11.5%	81.8%
<b>All:AT:4 Fuel (Displacement of Local and POD)</b>				
Property	333,491	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
Fuel Allocator		0	100,565	232,926
		0.0%	30.2%	69.8%
<b>All:AT:5 Control Center (Elements - Lines and Transformers)</b>				
Elements	356	<b>Bulk</b>	<b>Local</b>	<b>POD</b>
Control Center Allocator		52	138	166
		14.6%	38.8%	46.6%

<b>O&amp;M Costs Applied to Allocators</b>				
All Values in \$				
<b>O&amp;M Costs Applied to Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Allocation of Each Item</b>				
<b>Fuel</b>	8,394,000	8,700,000	8,200,000	9,300,000
Allocator (All:AT:4)				
Bulk	0	0	0	0
Local	2,531,238	2,623,514	2,472,737	2,804,446
POD	<u>5,862,762</u>	<u>6,076,486</u>	<u>5,727,263</u>	<u>6,495,554</u>
Total	8,394,000	8,700,000	8,200,000	9,300,000
<b>Control Centre Operations</b>	1,500,000	1,500,000	1,900,000	2,300,000
Allocator (All:AT:5)				
Bulk	219,101	219,101	277,528	335,955
Local	581,461	581,461	736,517	891,573
POD	<u>699,438</u>	<u>699,438</u>	<u>885,955</u>	<u>1,072,472</u>
Total	1,500,000	1,500,000	1,900,000	2,300,000
<b>Station Equipment Expenses</b>	4,100,000	4,900,000	5,600,000	6,200,000
Allocator (All:AT:3)				
Bulk	273,333	326,667	373,333	413,333
Local	472,121	564,242	644,848	713,939
POD	<u>3,354,545</u>	<u>4,009,091</u>	<u>4,581,818</u>	<u>5,072,727</u>
Total	4,100,000	4,900,000	5,600,000	6,200,000
<b>Overhead Lines Expenses &amp; Operation Mair</b>	2,800,000	3,300,000	2,900,000	3,200,000
Allocator (All:AT:1)				
Bulk	833,716	982,594	863,492	952,818
Local	1,670,872	1,969,243	1,730,546	1,909,569
POD	<u>295,411</u>	<u>348,163</u>	<u>305,962</u>	<u>337,613</u>
Total	2,800,000	3,300,000	2,900,000	3,200,000
<b>Miscellaneous Transmission Expense</b>	4,400,000	5,100,000	4,800,000	5,900,000
Allocator (All:AT:1)				
Bulk	1,310,125	1,518,554	1,429,228	1,756,759
Local	2,625,657	3,043,375	2,864,353	3,520,767
POD	<u>464,218</u>	<u>538,071</u>	<u>506,420</u>	<u>622,474</u>
Total	4,400,000	5,100,000	4,800,000	5,900,000
<b>Vegetation Management</b>	1,700,000	2,200,000	2,900,000	3,700,000
Allocator (All:AT:2)				
Bulk	802,430	1,038,439	1,368,852	1,746,466
Local	759,330	982,662	1,295,327	1,652,658
POD	<u>138,240</u>	<u>178,899</u>	<u>235,821</u>	<u>300,875</u>
Total	1,700,000	2,200,000	2,900,000	3,700,000
<b>Isolated Generation O&amp;M</b>	2,700,000	3,100,000	3,700,000	3,800,000
Allocator (All:AT:4)				
Bulk	0	0	0	0
Local	814,194	934,815	1,115,747	1,145,903
POD	<u>1,885,806</u>	<u>2,165,185</u>	<u>2,584,253</u>	<u>2,654,097</u>
Total	2,700,000	3,100,000	3,700,000	3,800,000

<b>Application of Allocators</b>				
All Values in \$				
<b>O&amp;M Costs Applied to Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Total of Allocated Amounts</b>				
Bulk	3,438,706	4,085,355	4,312,433	5,205,332
Local	9,454,873	10,699,311	10,860,076	12,638,855
POD	<u>12,700,421</u>	<u>14,015,333</u>	<u>14,827,492</u>	<u>16,555,814</u>
Total	25,594,000	28,800,000	30,000,000	34,400,000
<b>Residual - Unallocated Amounts</b>				
	2,086,900	2,700,000	5,000,000	5,600,000
<b>Total ATCO O&amp;M Costs Functionalized</b>				
	27,680,900	31,500,000	35,000,000	40,000,000
Bulk	3,719,094	4,468,357	5,031,171	6,052,711
Local	10,225,810	11,702,372	12,670,088	14,696,343
POD	<u>13,735,996</u>	<u>15,329,271</u>	<u>17,298,740</u>	<u>19,250,946</u>
Total	27,680,900	31,500,000	35,000,000	40,000,000

<b>TFO Cost Data</b>					
All Values in \$					
<b>ENMAX</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	
Fuel	0	0	0	0	0
Operating Costs *	16,363,652	18,451,893	18,321,073		0
Depreciation	6,911,024	6,538,419	7,088,576		0
Return on Rate Base	7,784,785	7,114,536	7,093,483		0
Income Tax Expense	0	0	0		0
Revenue Offsets	-605,990	-592,669	-610,449		0
Deferral & Reserve Accounts	448,000	355,389	355,389		0
Revenue Requirement	30,901,470	31,867,568	32,248,072		0

\* Actual based on Rule 005 Report to 2008

<b>Capital Related Costs</b>					
Depreciation	6,911,024	6,538,419	7,088,576		0
Return on Rate Base	7,784,785	7,114,536	7,093,483		0
Income Tax Expense	0	0	0		0
Deferral & Reserve Accounts	<u>448,000</u>	<u>355,389</u>	<u>355,389</u>		<u>0</u>
Total Capital Related	15,143,808	14,008,344	14,537,448		0
<b>Capital Related/Revenue Requirement</b>	49.0%	44.0%	45.1%		N.A.

<b>Non Capital Related Costs</b>					
Fuel	0	0	0		0
Operating Costs *	16,363,652	18,451,893	18,321,073		0
Revenue Offsets	<u>-605,990</u>	<u>-592,669</u>	<u>-610,449</u>		<u>0</u>
Total Non Capital Related	15,757,662	17,859,224	17,710,624		0
<b>Non Capital Related/Revenue Requirement</b>	51.0%	56.0%	54.9%		N.A.

<b>Separation of Non Capital Costs into O&amp;M and G&amp;A</b>				
All Values in \$				
<b>ENMAX</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Non Capital Costs</b>				
Fuel	0	0	0	0
Operating Costs *	16,363,652	18,451,893	18,321,073	0
Revenue Offsets	<u>-605,990</u>	<u>-592,669</u>	<u>-610,449</u>	0
<b>Total Non Capital Related Costs</b>	15,757,662	17,859,224	17,710,624	0
* Actual based on Rule 005 Report to 2008				
Human Resources & Safety	236,185	324,048	164,966	
Transmission	2,881,193	3,864,872	4,249,066	
Control Centre	1,211,624	1,437,394	1,885,074	
Legal, Regulatory, Public Affairs	42,298	441,955	435,565	
Finance	19,718	39,011	36,241	
Information Technology	1,157,369	711,133	616,012	
Substation	<u>6,795,618</u>	<u>8,115,532</u>	<u>9,370,280</u>	
Total Operating and Maintenance	12,344,004	14,933,945	16,757,203	
Administration	<u>4,019,648</u>	<u>3,517,948</u>	<u>1,563,870</u>	
Total	16,363,652	18,451,893	18,321,073	
<b>O&amp;M</b>				
Total Operating and Maintenance	12,344,004	14,933,945	16,757,203	
Revenue Offsets	<u>-605,990</u>	<u>-592,669</u>	<u>-610,449</u>	
<b>Sub Total</b>	11,738,014	14,341,276	16,146,755	
<b>G&amp;A</b>				
Administration	<u>4,019,648</u>	<u>3,517,948</u>	<u>1,563,870</u>	
<b>Sub Total</b>	4,019,648	3,517,948	1,563,870	
<b>Total Non Capital Related Costs</b>	15,757,662	17,859,224	17,710,624	

**Development of Allocators****Development of Allocators**

## All.EN.1 Line Length Allocator

Voltage	kM	Bulk	Local	POD
69	49		49	
138	259		259	
240	4	4		
500	0	0		
Line Length	312	4	308	0
Line Length Allocator		1.4%	98.6%	0.0%

## All.EN.2 ENMAX Transformer Count

Transformer Count	Substation	Bulk	Local	POD
	102	2	5	95
		2.0%	4.9%	93.1%

## All.En.3 Control Center

Number of Lines and Transformers	Maintenance Activity Allocator	Bulk	Local	POD
	157	3	59	95
		1.9%	37.6%	60.5%

<b>O&amp;M Costs Applied to Allocators</b>				
All Values in \$				
<b>O&amp;M Costs Applied to Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Allocation of Each Item</b>				
<b>Transmission</b>	2,881,193	3,864,872	4,249,066	
Allocator (All:EN:1)				
Bulk	39,135	52,496	57,715	
Local	2,842,058	3,812,376	4,191,351	
POD	<u>0</u>	<u>0</u>	<u>0</u>	
Total	2,881,193	3,864,872	4,249,066	
<b>System Control Centre</b>	1,211,624	1,437,394	1,885,074	
Allocator (All:EN:3)				
Bulk	23,152	27,466	36,021	
Local	455,324	540,167	708,404	
POD	<u>733,148</u>	<u>869,761</u>	<u>1,140,650</u>	
Total	1,211,624	1,437,394	1,885,074	
<b>Substation</b>	6,795,618	8,115,532	9,370,280	
Allocator (All:EN:2)				
Bulk	133,247	159,128	183,731	
Local	333,119	397,820	459,327	
POD	<u>6,329,252</u>	<u>7,558,584</u>	<u>8,727,222</u>	
Total	6,795,618	8,115,532	9,370,280	
<b>Sum of Allocated Costs</b>				
Bulk	195,534	239,090	277,466	
Local	3,630,500	4,750,363	5,359,082	
POD	<u>7,062,401</u>	<u>8,428,345</u>	<u>9,867,872</u>	
Total	10,888,435	13,417,799	15,504,420	
<b>Total O&amp;M Costs</b>	11,738,014	14,341,276	16,146,755	
Prorated to Total from Allocated Costs				
Bulk	210,791	255,546	288,961	
Local	3,913,773	5,077,306	5,581,104	
POD	<u>7,613,450</u>	<u>9,008,424</u>	<u>10,276,689</u>	
Total	11,738,014	14,341,276	16,146,755	

<b>TFO Cost Data</b>				
All Values in \$				
<b>EPCOR</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Actual	Actual	Forecast	Forecast
Fuel	0	0	0	0
Operating Costs	16,951,374	16,951,167	19,441,209	21,189,552
Depreciation	6,472,134	7,838,549	9,496,610	11,124,184
Return on Rate Base	17,176,873	12,001,008	16,611,562	21,153,662
Income Tax Expense	0	0	0	0
Revenue Offsets	-2,538,928	-654,086	-647,342	-767,249
Deferral & Reserve Accounts	3,038,037	-904,833	143,767	143,767
Revenue Requirement	41,099,490	35,231,806	45,045,806	52,843,915

<b>Capital Costs</b>				
Depreciation	6,472,134	7,838,549	9,496,610	11,124,184
Return on Rate Base	17,176,873	12,001,008	16,611,562	21,153,662
Income Tax Expense	0	0	0	0
Deferral & Reserve Accounts	3,038,037	-904,833	143,767	143,767
Adjustments				
Revenue Offsets (Capital Related, Sch 2.0)	-197,499	-77,223	-129,415	-136,507
Operating Costs (Capital Related, Sch 3.0)	2,803,549	3,140,491	4,796,063	5,835,286
Total Capital Related	29,293,093	21,997,993	30,918,586	38,120,391
<b>Capital/Revenue Requirement</b>	71.3%	62.4%	68.6%	72.1%

<b>Non Capital Costs</b>				
Fuel	0	0	0	0
Operating Costs	16,951,374	16,951,167	19,441,209	21,189,552
Revenue Offsets	-2,538,928	-654,086	-647,342	-767,249
Adjustments				
Revenue Offsets (Capital Related, Sch 2.0)	197,499	77,223	129,415	136,507
Operating Costs (Capital Related, Sch 3.0)	-2,803,549	-3,140,491	-4,796,063	-5,835,286
Total Non Capital Related	11,806,397	13,233,813	14,127,220	14,723,524
<b>Non Capital/Revenue Requirement</b>	28.7%	37.6%	31.4%	27.9%

<b>TFO Cost Data</b>					
All Values in \$					
	<b>EPCOR</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Revenue Offsets</b>					
Revenue - Affiliates & Inter-Affiliates		-2,341,429	-576,863	-517,927	-630,742
Miscellaneous Revenue		<u>-197,499</u>	<u>-77,223</u>	<u>-129,415</u>	<u>-136,507</u>
Total Revenue Offsets		-2,538,928	-654,086	-647,342	-767,249
<b>Capital Related Offsets</b>					
Miscellaneous Revenue		<u>-197,499</u>	<u>-77,223</u>	<u>-129,415</u>	<u>-136,507</u>
Capital Related Offsets		-197,499	-77,223	-129,415	-136,507
<b>Non Capital Related Revenue Offsets</b>					
Revenue - Affiliates & Inter-Affiliates		<u>-2,341,429</u>	<u>-576,863</u>	<u>-517,927</u>	<u>-630,742</u>
Sub Total - Non Capital Related		-2,341,429	-576,863	-517,927	-630,742

<b>TFO Cost Data</b>				
All Values in \$				
<b>EPCOR</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
	Actual	Actual	Forecast	Forecast
<b>Operating Costs</b>				
Operating Costs (Without Other Taxes)	14,122,296	13,779,062	14,621,953	15,338,568
Other Taxes				
Linear Tax	2,413,783	2,723,778	4,300,781	5,252,130
Business Tax	25,530	31,614	23,193	15,697
Property Tax	<u>389,766</u>	<u>416,713</u>	<u>495,282</u>	<u>583,156</u>
Sub Total Taxes Other than Income	2,829,079	3,172,105	4,819,256	5,850,983
Operating Costs With Taxes other than Inc.	16,951,374	16,951,167	19,441,209	21,189,552

<b>Capital Related (Taxes other than Income in Operating)</b>				
Capital Costs included in Operating				
Linear Tax	2,413,783	2,723,778	4,300,781	5,252,130
Property Tax	<u>389,766</u>	<u>416,713</u>	<u>495,282</u>	<u>583,156</u>
Sub Total Capital Costs	2,803,549	3,140,491	4,796,063	5,835,286

<b>Non Capital (Operating Costs)</b>				
Non Capital Costs in Operating				
Operating Costs	14,122,296	13,779,062	14,621,953	15,338,568
Business Tax	<u>25,530</u>	<u>31,614</u>	<u>23,193</u>	<u>15,697</u>
Non Capital Costs	14,147,826	13,810,676	14,645,147	15,354,266

<b>Separation of Non Capital Costs into O&amp;M and G&amp;A</b>				
All Values in \$				
<b>EPCOR</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Non Capital Costs</b>				
Fuel	0	0	0	0
Operating Costs	16,951,374	16,951,167	19,441,209	21,189,552
Revenue Offsets	-2,538,928	-654,086	-647,342	-767,249
Adjustments				
Revenue Offsets (Capital Related, Sch 2.0)	197,499	77,223	129,415	136,507
Operating Costs (Capital Related, Sch 3.0)	<u>-2,803,549</u>	<u>-3,140,491</u>	<u>-4,796,063</u>	<u>-5,835,286</u>
<b>Non Capital Costs</b>	<b>11,806,397</b>	<b>13,233,813</b>	<b>14,127,220</b>	<b>14,723,524</b>
<b>Operating Costs</b>				
Supervision and Engineering	3,280,490	3,370,133	3,703,709	3,786,833
Control Centre Operations	806,774	497,067	562,840	591,893
Station Equipment Expenses	2,825,394	3,248,143	3,410,118	3,660,129
Overhead Lines Expenses	341,527	393,963	412,474	430,528
Underground Line Expenses	359,045	370,939	390,022	408,352
Miscellaneous Transmission Expenses	1,131,092	1,110,212	1,192,486	1,218,522
IT Support	169,189	270,275	305,585	308,383
Operation & Maintenance Customer Installator	<u>1,046,108</u>	<u>376,053</u>	<u>373,012</u>	<u>450,747</u>
<b>Total Direct Operations &amp; Maintenance</b>	<b>9,959,619</b>	<b>9,636,785</b>	<b>10,350,246</b>	<b>10,855,387</b>
Isolated Generation Operation and Maintenance -	-	-	-	-
General Operation and Maintenance By Accou	687,275	637,075	659,537	679,173
G&A and Common Operations Net of Disallow:	<u>1,250,168</u>	<u>760,432</u>	<u>777,187</u>	<u>886,689</u>
<b>Total Administrative &amp; General Expenses</b>	<b>1,937,443</b>	<b>1,397,507</b>	<b>1,436,724</b>	<b>1,565,862</b>
Allocated Corporate G&A Net of Disallowances	2,225,234	2,744,770	2,834,984	2,917,319
Property Taxes	2,829,079	3,172,105	4,819,256	5,850,983
<b>Total Transmission Operating Costs</b>	<b>16,951,374</b>	<b>16,951,167</b>	<b>19,441,209</b>	<b>21,189,552</b>
<b>O&amp;M</b>				
Total Direct Operations & Maintenance	9,959,619	9,636,785	10,350,246	10,855,387
Net Revenue Offsets	<u>-2,341,429</u>	<u>-576,863</u>	<u>-517,927</u>	<u>-630,742</u>
<b>Sub Total</b>	<b>7,618,190</b>	<b>9,059,922</b>	<b>9,832,319</b>	<b>10,224,645</b>
<b>G&amp;A</b>				
Total Administrative & General Expenses	1,937,443	1,397,507	1,436,724	1,565,862
Allocated Corporate G&A Net of Disallowances	2,225,234	2,744,770	2,834,984	2,917,319
Property and Business Taxes	2,829,079	3,172,105	4,819,256	5,850,983
Less Capital Related Property Taxes	<u>-2,803,549</u>	<u>-3,140,491</u>	<u>-4,796,063</u>	<u>-5,835,286</u>
<b>Sub Total</b>	<b>4,188,207</b>	<b>4,173,891</b>	<b>4,294,901</b>	<b>4,498,878</b>
<b>Total</b>	<b>11,806,397</b>	<b>13,233,813</b>	<b>14,127,220</b>	<b>14,723,524</b>

**Development of Allocators**

Development of Allocators					
1. Line Length Allocator					
	Voltage	kM	Bulk	Local	POD
	72 OH	19		19	
	138 OH	18		18	
	240 OH	52	52		
	500 OH	8	8		
	72 U/G	87		87	
	240 U/G	20	20		
All:EP:1 Overhead Lines Allocator			Bulk	Local	POD
	OH Line Length	88	52	37	0
	OH Line Allocator		58.3%	41.7%	0.0%
All:EP:2 Underground Lines Allocator			Bulk	Local	POD
	UG Line Length	106	20	87	0
	UG Line Allocator		18.4%	81.6%	0.0%
All:EP:3 Transmission Lines Allocator			Bulk	Local	POD
	Total Line Length	203	79	124	0
	Total Line Length Allocator		39.1%	60.9%	0.0%

All:EP:4 Control Center Allocator					
			Bulk	Local	POD
	Number of Lines	55	24	31	0
	Number of Transformers	59	2	9	48
	Number of Elements	114	26	40	48
	Control Center Allocator		22.8%	35.1%	42.1%

All:EP:5 Substation Costs					
			Bulk	Local	POD
	Number of Transformers	59	2	9	48
	Substation Cost Allocator		3.4%	15.3%	81.4%

All:EP:6 Supervision and Engineering Allocator					
Transmission Substation Engineering, System Planning and Asset Management				<b>2008</b>	
Transmission Substation Operations Supervision and Non-Wrench Time				2,030,000	
Transmission Line and Cable Operations Supervision and Engineering				900,000	
Transmission Substation Engineering, System Planning and Asset Management (MOP)				310,000	
Forecast Total Supervision and Engineering				<u>460,000</u>	
				3,700,000	
Blending of Allocators Weighted by Forecast Cost			Bulk	Local	POD
	Trans Sub Eng, Planning and Asset Management	All:EP:4	462,982	712,281	854,737
	Trans Sub Ops Supervision and Non Wrench Time	ALL:EP:5	30,508	137,288	732,203
	Trans Line and Cable Ops Supervision and Eng	All:EP:3	121,133	188,867	0
	Trans Sub Eng Planning and Asset Management (MOP)	All:EP:4	104,912	161,404	193,684
	Costs	3,700,000	719,536	1,199,840	1,780,624
	Supervision and Engineering Allocator		19.4%	32.4%	48.1%

<b>O&amp;M Costs Applied to Allocators</b>				
All Values in \$				
<b>Application of Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>O&amp;M Costs</b>				
Total Direct Operations & Maintenance	9,959,619	9,636,785	10,350,246	10,855,387
Revenue Offsets	<u>-2,341,429</u>	<u>-576,863</u>	<u>-517,927</u>	<u>-630,742</u>
<b>Total O&amp;M Costs</b>	7,618,190	9,059,922	9,832,319	10,224,645

#### Allocation of Each Line

<b>Supervision and Engineering</b>	3,280,490	3,370,133	3,703,709	3,786,833
Allocator (All:EP:6)				
Bulk	637,954	655,387	720,257	736,422
Local	1,063,801	1,092,870	1,201,042	1,227,998
POD	<u>1,578,735</u>	<u>1,621,876</u>	<u>1,782,409</u>	<u>1,822,413</u>
Total	3,280,490	3,370,133	3,703,709	3,786,833

<b>Control Center Operations</b>	806,774	497,067	562,840	591,893
Allocator (All:EP:4)				
Bulk	184,001	113,366	128,367	134,993
Local	283,079	174,409	197,488	207,682
POD	<u>339,694</u>	<u>209,291</u>	<u>236,985</u>	<u>249,218</u>
Total	806,774	497,067	562,840	591,893

<b>Station Equipment Expenses</b>	2,825,394	3,248,143	3,410,118	3,660,129
Allocator (All:EP:5)				
Bulk	95,776	110,107	115,597	124,072
Local	430,992	495,479	520,187	558,325
POD	<u>2,298,626</u>	<u>2,642,557</u>	<u>2,774,333</u>	<u>2,977,732</u>
Total	2,825,394	3,248,143	3,410,118	3,660,129

<b>Overhead Lines Expenses</b>	341,527	393,963	412,474	430,528
Allocator (All:EP:1)				
Bulk	199,154	229,731	240,525	251,053
Local	142,373	164,232	171,949	179,475
POD	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	341,527	393,963	412,474	430,528

<b>Underground Line Expenses</b>	359,045	370,939	390,022	408,352
Allocator (All:EP:2)				
Bulk	65,914	68,097	71,601	74,966
Local	293,131	302,842	318,421	333,386
POD	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	359,045	370,939	390,022	408,352

<b>Miscellaneous Transmission Expenses</b>	1,131,092	1,110,212	1,192,486	1,218,522
Allocator (All:EP:3)				
Bulk	441,975	433,816	465,965	476,138
Local	689,117	676,396	726,521	742,384
POD	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1,131,092	1,110,212	1,192,486	1,218,522

<b>O&amp;M Costs Applied to Allocators Application of Allocators</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Sum of Allocated Amounts</b>				
Bulk	1,624,774	1,610,504	1,742,312	1,797,644
Local	2,902,493	2,906,229	3,135,609	3,249,250
POD	<u>4,217,055</u>	<u>4,473,724</u>	<u>4,793,728</u>	<u>5,049,363</u>
Total	8,744,322	8,990,457	9,671,649	10,096,257
<b>Residual - Unallocated O&amp;M, Rev Offsets</b>	-1,126,132	69,465	160,670	128,388
<b>Total EPCOR O&amp;M Costs Functionalized</b>	7,618,190	9,059,922	9,832,319	10,224,645
Prorate Residual to Total				
Bulk	1,415,528	1,622,947	1,771,256	1,820,504
Local	2,528,697	2,928,684	3,187,700	3,290,569
POD	<u>3,673,964</u>	<u>4,508,291</u>	<u>4,873,363</u>	<u>5,113,573</u>
Total	7,618,190	9,059,922	9,832,319	10,224,645

## **Appendix B – Capitalization Policies**

## **Appendix I: Revised AltaLink Capitalization Policy**

Expenditures are capitalized according to Canadian generally accepted accounting principles.

Capital assets are carried at cost, which includes direct internal labour and allocated overheads less depreciation. An allowance for funds used during construction (AFUDC) which represents the cost of debt and equity financing incurred during construction is also capitalized. AFUDC is a non-cash item that will be recovered in rates charged to customers over the service life of the assets, commencing with the asset's inclusion in the rate base.

Certain assets may be acquired or constructed with financial assistance in the form of non-refundable contributions from customers. These contributions are recorded in separate general ledger accounts. The amortization of the customer contributions results in a decrease to depreciation expense and accumulated depreciation.

Capital assets are depreciated on a straight-line basis with various rates determined by periodic depreciation studies and approved by the AEUB. Changes to depreciation rates are approved by the AEUB and are accounted for on a prospective basis. This includes an amount representing the life to date correction to the depreciation which is recognized over a future period prescribed by the regulator. Depreciation rates reflect estimated service lives.

Retirements are done on an asset by asset basis in accordance with generally accepted group depreciation procedures with no gain or loss recorded on individual asset retirements. Any difference between the cost of the asset and the accumulated depreciation is charged to the accumulated depreciation account for that asset. In addition the accumulated depreciation is also increased or decreased by the net proceeds from the retirement or disposal of the asset. Net proceeds represent the proceeds from the retirement or disposal of an asset less the costs to retire or dispose of the asset.

When transfers between assets occurs the cost and the associated accumulated depreciation is transferred between the assets.

### Capitalization Criteria

Expenditures should be capitalized if they equal or exceed \$3,000\*\* and:

1. relate to the acquisition or construction of assets for which benefits will extend beyond the current fiscal year;
2. extend the estimated useful life of an asset; or
3. increase the capacity of an asset, the quality of output and/or may reduce operating costs beyond the current fiscal year.

Expenditures should be expensed if they:

1. are less than \$3,000\*\*;
2. relate to the acquisition of property for which the benefits do not extend beyond one year;
3. do not extend an asset's estimated useful life;
4. do not increase the capacity of an asset or the quality of output; or
5. form part of a regular maintenance program and such program does not extend the life of the asset.

## **Appendix I: Revised AltaLink Capitalization Policy**

**p. 2**

\*\*The \$3,000 threshold applies to all property, plant and equipment . This is due to the fact that capital programs are intended to, overall, enhance value, extend asset life, and /or improve efficiency, quality of output, or reduction of operating costs beyond the current fiscal year. The individual components of a capital program may not necessarily achieve this end, but, taken as a whole, the total components of the capital program would. Therefore, the individual components of a capital program cannot be treated or viewed individually.

<b>ATCO ELECTRIC LIMITED ACCOUNTING POLICY MANUAL</b>	<i>Capitalization</i>	
	<b>Date:</b> 94-07-04	<b>Number:</b> D.1.a
<b>PREPARED BY:</b> D.R. MacIver	<b>APPROVED BY:</b> David Freedman	
	<b>UPDATED:</b> April 25, 2005	

This policy is intended to describe the accounting treatment involved in the capitalization of fixed assets. Immediately following this policy, additional policies can be found which cover more specific topics.

### **Fixed Asset**

A unit of property which can be physically identified and has a useful life in excess of one year. The value of the asset should include any non-recurring costs which are relative to each project. Included in the cost of a fixed asset would be materials, direct and indirect labour, expenses, fringe benefits, appropriate proportion of administrative overhead and an allowance for funds used during construction. The total cost of the asset is significant, relative to the total capital cost of the particular asset. In the case of new assets, the cost must exceed \$300. There are numerous items (e.g. office furniture, loose tools, etc.) that are too small to capture in individual projects therefore blanket projects are utilized to capture these costs.

### **Capital versus O&M Expenditures**

#### **1) Capital**

An expenditure is capital in nature if it involves: constructing or purchasing a new asset or upgrading, rehabilitating or replacing an existing asset.

- a. Constructing or purchasing a new asset
  - i. Outright purchase of fixed assets, such as land, a building, a vehicle, machinery, standby equipment, office furniture, etc.
  - ii. The entire cost of constructing new additions to physical assets such as transmission lines, distribution facilities, substations, etc.
  - iii. All start up and commissioning costs
- b. Upgrade existing assets
  - i. An enlargement of existing structures or facilities
  - ii. To increase the capacity of an existing asset
  - iii. A substantial improvement in the facility affecting quality of output or reduces operating costs
- c. Rehabilitate existing assets
  - i. As a general guideline, to determine if a cost falls into this category, one must consider if the expenditures were planned to be incurred at the time of purchasing the asset.
    1. If these expenditures were planned at time of purchase to occur in the future, they will be expensed to O&M when they are incurred.
    2. When extraordinary, material unplanned items are incurred in the future, they will be considered capital
  - ii. To insure achievement of life of an asset
  - iii. To extend the life of an asset beyond its normal service life
- d. Replace existing assets
  - i. The substitution of new for existing facilities that are worn out, irreparably damaged, or have been become inadequate in service.
  - ii. The substitution having substantially no greater capacity than the facility for which it is substituted.

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**2) Operation and Maintenance**

- a. Operational Expense
  - i. The cost of labour, expense and consumable materials used to start up or turn on a system and monitor its operations.
- b. Maintenance Expense
  - i. The cost of labour, materials and expense to keep all parts of the system in a safe operating condition.

**Specific Accounting Treatment**

Following is the accounting treatment of some of the more common capital versus O&M questions which are encountered.

- 1) **Transformers - Capital**  
All transformers are purchased under inventory and charged to fixed assets when installed and if replaced, returned to inventory and credited to fixed assets.
- 2) **Refurbishing & Installing Vehicle Service Bodies - Capital**  
This expenditure is eligible because it extends the service life of the asset.
- 3) **First Time Painting of Street Lights - Capital**  
Considered a cost of installing a street light.
- 4) **Switch Number Plates & Installation - Capital**  
Required for the safe operation of transmission facilities.
- 5) **5 KV Underground Replacement - Capital**  
Considered as a distribution rebuild.
- 6) **Brushing - Capital**  
Capitalize if brushing at time of construction, first time spraying to kill remaining root systems, line widening (i.e. the removal of entire trees) along right of ways for trees not previously cleared at time of construction or hazard tree removal for trees either on an existing right of way which has not been previously cleared or those trees outside the existing right of way
- 7) **Brushing - O&M**  
Mowing the regrowth of trees which were previously cleared and also the second and subsequent sprayings are O&M.
- 8) **Moving Expense - Capital / O&M**  
The individual's moving expenses should be allocated to capital or O&M, or a combination of both, based on the type of work the individual is doing.
- 9) **Underground Splice Replacements - O&M**  
There is no increase in capacity or life extension of the primary asset.
- 10) **Loose Tools and Office Furniture - Capital / O&M**  
The key determinant is the \$300 minimum cost which will decide if an item should be capitalized or expensed.

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- 11) **Ground Rod Testing and Replacement - Capital / O&M**  
Testing would be charged to O&M unless it leads to an immediate major site specific replacement which would qualify the costs as a capital item. Replacement costs would be capitalized if the work is for a major replacement done at a specific site.
- 12) **Pole Inspection or Testing - O&M**  
The work involved in inspecting or testing a pole to see if treatment is required
- 13) **Pole Treating – Capital / O&M**  
Any major pole treating program involving 50 poles or more would be considered capital. Programs of less than 50 poles will be charged to O&M.
- 14) **Temporary Generation - Capital**  
The cost of renting a temporary generating station to supply load in an isolated fashion to allow a line to be rebuilt would be capital.
- 15) **Gang Switch Maintenance - O&M**  
Since the refurbishing of gang switches involves only the replacement of insulators in the gang switch assembly, this item should be charged to O&M. The intent is to keep the switch in operating condition.
- 16) **Substation Regravelling - O&M**  
The costs should be charged to O&M as the substation life is not extended, nor is the asset value increased.
- 17) **URD Elbow & Insert Replacement O&M**  
Costs should go to O&M as essentially the underground system is being maintained in operating condition.
- 18) **Pedestal Replacement - Capital**  
  
The associated costs should be capitalized and the pedestal being replaced retired.
- 19) **Accreditation Manuals - Capital / O&M**  
The costs to initially set up the manuals should be capitalized. However any revision to the manual should be expensed. - *What CEAR.*
- 20) **Panel Upgrades - Capital**  
Due to capacity increases, these costs would be eligible for capital.
- 21) **Street Light Bulk Replacement - Capital**  
The cost of the replacement bulb can be capitalized and the old bulb should be retired.
- 22) **Pole Replacement - Capital / O&M**  
All poles replaced on a pre-planned basis due to decay should be charged to capital and the old pole and labour to install them should be retired. Poles replaced on an emergency basis due to mechanical damage by vehicles or during storms should be expensed whether or not there is evidence of some wood decay.
- 23) **Pole Stubbing - Capital / O&M**

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Stubbing on transmission lines on a pre-planned basis should be charged to capital as the intent is to increase the service life of the poles. Unplanned pole stubbing would be expensed.

- 24) **Conductor Replacement - Capital / O&M**  
Replacement of conductor on a transmission or sub transmission line would be charged to capital if the length of line is one mile or greater (three miles for a 3 phase line) regardless of the size of the conductor being replaced. Replacement of conductors on distribution lines will be charged to capital if the new conductor is of a larger size or insulation rating compared to the one being replaced. This applies to underground, aerial spaced and overhead conductors.
- 25) **Research Expense - Capital / O&M**  
Research expense associated with the design and construction of a specific asset is capitalized, otherwise it is expensed.
- 26) **System Spares - Capital / Inventory**  
The cost of spares that are designated to support specific fixed assets are initially capitalized and depreciated. If the spare part turns over on a regular basis, consideration would be given to setting it up in inventory.
- 27) **Leasehold Improvements - Capital**  
Leasehold improvements are capitalized where a lease agreement is in place. It is amortized using the straight-line method over the life of the lease plus one renewal period.
- 28) **Postponed Projects - WIP**  
Costs incurred to date would remain in work-in-progress and reviewed periodically for appropriateness.
- 29) **Cancelled Projects - WIP**  
Costs incurred to date would either be charged to ES&G or current operations or capitalized. Each circumstance would have to be analyzed individually.
- 30) **Properties Removed From Service (i.e. awaiting disposal)**  
Original cost would remain with assets in service and depreciated until disposed of.
- 31) **Leases - Capital**  
Will be capitalized depending on the terms and conditions of the lease, particularly the issue of transfer of ownership at the conclusion of the lease. The lease obligation is included with long-term debt and the original cost is included in fixed assets.

<b>ATCO ELECTRIC LIMITED ACCOUNTING POLICY MANUAL</b>	<i>Depreciation of Fixed Assets</i>
	<b>Date:</b> _____ <b>Number:</b> C.5
<b>PREPARED BY:</b> Doug Baer	<b>APPROVED BY:</b> David Freedman
	<b>UPDATED:</b> April 2005

**Depreciation Objective:**

ATCO Electric's depreciation objective is to allocate 100%, no more no less, of the depreciable portion of each fixed asset's capital cost to operating expense as evenly as possible; that is, on a straight line basis over the expected useful life of each fixed asset. The depreciable portion of the capitalized cost is the capitalized cost less gross salvage plus cost of retirement.

**Depreciation Studies:**

ATCO Electric conducts depreciation studies every three to five years to review and determine the appropriate depreciation parameters (service life and net salvage) to use in calculating depreciation rates, expense and accumulated depreciation. The recommended depreciation rates along with the supporting depreciation study are submitted to the Alberta Energy and Utilities Board ("AEUB") as a component of General Tariff Applications.

**Depreciation Rates:**

ATCO Electric's annual depreciation rates are calculated using AEUB approved service lives (average service lives and Iowa curves) and net salvage percentages. The approved depreciation parameters are applied to account vintage surviving dollars as at the previous year-end. The Equal Life Group Method of calculating depreciation is used to determine the depreciation rate.

**Depreciation Expense:**

Depreciation expense for an account is calculated on a monthly basis by multiplying the previous month closing account plant balance by the depreciation rate. Depreciation expense is calculated in two components: life and net salvage.

**Accumulated Depreciation:**

Account Accumulated Depreciation Life is determined by adding monthly account depreciation expense - life to the previous month closing balance, subtracting account retirements and adding any adjustments recorded during the month. Similarly, Account Accumulated Depreciation - Net Salvage is determined by adding monthly account depreciation - net salvage to the previous month closing balance, adding account gross salvage, subtracting account cost of retirement and adding any adjustments recorded during the month.

**Amortization of Differences:**

Amortization of Account Accumulated Depreciation Differences is used as a correction process to adjust accumulated depreciation for the relationship between calculated account accumulated depreciation (calculated using AEUB approved depreciation parameters) and the book accumulated depreciation. Differences arise when depreciation parameters are changed. Amortization on an account basis, for each of life and net salvage accumulated depreciation, occurs only when the difference between the calculated and book accumulated depreciation exceeds a  $\pm 5\%$  tolerance level. Differences outside the tolerance level are amortized over the remaining life of the account.

Amortization of differences is calculated for each General Tariff Application and frozen between rate cases. Accounts may move in or out of tolerance and therefore would require or not require

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	<b>UPDATED:</b> April 2005

amortization if calculated on an annual basis. The factors comprising the calculation are difficult to forecast.

**Contribution in Aid of Construction:**

Contributions are amortized using the composite Transmission life depreciation rate for Transmission contributions and the composite Distribution life depreciation rate for Distribution contributions.

When property, plant and equipment is retired at a location a pro rata share of the contributions at the location are also retired. That is the proportion of dollars of plant retired to dollars surviving at the location results in the same proportion of contributions retired.

EPCOR Utilities Inc. Finance and Accounting Policy and Procedures			
Topic	<b>Capitalization</b>	Number	FA-004
Category	Property, Plant and Equipment Other Intangible Assets	Revision Number	1
Issued by	EPCOR Accounting Standards Committee	Issued and Effective	23-Sep-04
Approved by	Stuart Lee, Corporate Controller	Revised	13-Apr-07

## 1. Purpose and Scope

- 1.1 The capitalization policy functions as a guide in respect of what should be recognized as a tangible asset or intangible asset other than goodwill. The intent is to ensure that the fixed assets on the balance sheet are properly reported in accordance to the Generally Accepted Accounting Principles (GAAP).
- 1.2 This policy refers to capitalization of rate-regulated and non rate-regulated tangible assets and intangible assets other than goodwill, primarily software. Related policies include Customer Acquisition Costs, Project Development Costs and Amortization and Depreciation.

## 2. Definitions and Background

- 2.1 **Asset** - "economic resources controlled by an entity as a result of past transactions or events and from which future economic benefits may be obtained".<sup>1</sup>
- 2.2 **Property, Plant and Equipment (PPE)** - "identifiable tangible assets that meet all of the following criteria:
  - (a) are held for use in the production or supply of goods and services, for rental to others, for administrative purposes, or for the development, construction, maintenance or repair of other property, plant and equipment;
  - (b) have been acquired, constructed or developed with the intention of being used on a continuing basis; and
  - (c) are not intended for sale in the ordinary course of business."<sup>2</sup> (Also refer to Project Development Policy)."
- 2.3 **Rate-regulated property, plant and equipment** - "items of property, plant and equipment held for use in operations meeting all of the following criteria:
  - (a) the rates for regulated services or products provided to customers are established by or are subject to approval by a regulator or a governing body empowered by statute or contract to establish rates to be charged for services or products;
  - (b) the regulated rates are designed to recover the cost of providing the services or products; and it is reasonable to assume that rates set at levels that will recover the cost can be charged to and collected from customers in view of the demand for services or products and the level of direct and indirect competition. This criterion

<sup>1</sup> Source: CICA Handbook, Section 1000.29

<sup>2</sup> Source: CICA Handbook, Section 3061.04

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requires consideration of expected changes in levels of demand or competition during the recovery period for any.”<sup>3</sup>

- 2.4 **Alberta Energy and Utilities Board (AEUB)** – “an independent, quasi-judicial agency of the Government of Alberta”<sup>4</sup> with a mission “to ensure that the discovery, development, and delivery of Alberta's energy resources and utilities services takes place in a manner that is fair, responsible, and in the public interest.”<sup>5</sup>
- 2.5 **Allowance for Funds Used during Construction (AFUDC)** – AFUDC is the amount that a rate-regulated enterprise is allowed to earn to recover its cost of financing assets under construction. It is equal to the average cost of the capital-work-in-progress, times a financing rate, which is usually equal to the enterprise’s cost of capital rate. AFUDC is included in the cost of the related assets and recovered in future periods through the depreciation charge. AFUDC is similar to “Interest during construction” for non-rate-regulated enterprises, except that the cost of equity is taken into account in the enterprise’s cost of capital rate.
- 2.6 **Betterment** – “the cost incurred to enhance the service potential of an item of property, plant and equipment. Service potential may be enhanced when there is an increase in the previously assessed physical output or service capacity, associated operating costs are lowered, the life of useful life is extended, or the quality of output is improved.”<sup>6</sup>
- 2.7 **Capital Asset Contributions** – Contributions toward a capital asset owned by EPCOR which are received from an unrelated party or from another EPCOR legal entity, either in the form of cash or a non-monetary transfer of an asset. These contributions are recorded in a contra account as an offsetting credit to the related asset cost on the balance sheet.
- 2.8 **Capital Spares** – critical and non-critical parts that are not in service but are a type of PPE that due to their significant lead-time are held for use in the event of a component failure. These items will be capitalized and depreciated like other capital assets and not expensed.
- 2.9 **Capitalized Interest** – all interest attributable to a non rate-regulated capital project prior to the point in time when the capital asset is substantially complete and ready for productive use.

<sup>3</sup> Source: CICA Handbook, Section 3061.10

<sup>4</sup> Source: <http://www.eub.gov.ab.ca> February 22, 2007 (Accessed April 10, 2007)

<sup>5</sup> Source: <http://www.eub.gov.ab.ca> February 22, 2007 (Accessed April 10, 2007)

<sup>6</sup> Source: CICA Handbook, Section 3061.26

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- 2.10 **Cost** - "the amount of consideration given up to acquire, construct, develop, or better an item of property, plant and equipment. This incorporates all costs directly attributable to the acquisition, construction, development or betterment of the asset including installing it at the location and in the condition necessary for its intended use."<sup>7</sup> For electricity distribution capital assets, the regulator has directed that the cost of the asset should include the costs to remove the previous asset, net of any salvage proceeds.
- 2.11 **Capital Work-in-Progress (CWIP)** – an account that includes all costs of capital projects that are incomplete or not yet in service at year-end. AFUDC or capitalized interest, if any, is included in CWIP.
- 2.12 **Property Unit Catalogue (PUC)** – a list of rate-regulated assets with detailed definitions that have been approved by, or are in the process of being approved by, the regulator. The PUC is the capitalization criteria document used by EPCOR companies that are regulated by the AEUB.
- 2.13 **Useful life** - "the period over which an asset, singly or in combination with other assets, is expected to contribute directly or indirectly to the future cash flows of the enterprise."<sup>8</sup> The useful life can be either physical or economic. For example, the end of physical life will generally be reached when the asset is no longer capable of performing its intended function because of physical wear. The end of the economic life of an asset is generally reached when a replacement asset is more economical to use than the current asset in place.
- 2.14 **Service Potential** - "the output or service capacity of an item of property, plant and equipment and is normally determined by reference to attributes such as physical output capacity, associated operating costs, useful life and quality of output."<sup>9</sup>

### 3. General Capitalization Criteria

An expenditure should be capitalized if:

- (a) It is identified as a rate-regulated asset in the PUC or
- (b) it meets the Capitalized Dollar Threshold in section 5.1 of this policy; and
  - (i) results in a tangible asset with a useful life in excess of one year; and/or
  - (ii) extends the original life of an existing asset; and/or

<sup>7</sup> Source: CICA Handbook, Section 3061.05

<sup>8</sup> Source: CICA Handbook, Section 3061.15

<sup>9</sup> Source: CICA Handbook, Section 3061.14

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(iii) enhances the service potential of an existing asset.

#### **4. Detailed Capitalization Criteria for Non-rate-regulated Business Units**

- 4.1 An asset comes into existence when the expenditure results in a tangible item with a useful life greater than one year.
- 4.2 An expenditure that results in extending the original life of an existing asset should be capitalized.
- 4.3 A cost incurred to ensure that an asset reaches its projected life (i.e. normal O&M) will not be capitalized. Such a cost is an expense of the period.
- 4.4 An expenditure should be capitalized if it enhances the capacity or efficiency of an existing asset.
- 4.5 Related components purchased simultaneously with the intention of connecting them for use (e.g. computers) will be capitalized as a single asset if the combined cost exceeds the capitalization dollar threshold. Unrelated projects should not be grouped together so as to meet or exceed the threshold outlined in section 5.1.

#### **5. Capitalized Dollar Threshold**

- 5.1 In non rate-regulated business units, all projects meeting the capitalization criteria should be capitalized if the cost exceeds \$5,000 with the following exception:
- 5.2 Land – no minimum value
- 5.3 In rate-regulated business units, there is no capitalized dollar threshold since an asset is capitalized if it is included in the PUC.

#### **6. Capital Spares**

- 6.1 In non-rate-regulated business units capital spares must:
  - (a) meet the capitalized dollar threshold in section 5.1 of this policy; and
  - (b) have a high risk of material loss associated with component failure; and
  - (c) have a non-acceptable lead time; and
  - (d) have a low probability of usage. If the equipment is likely to fail on a frequent basis, the replacement parts should be treated as routine maintenance and the stocked spares should be treated as a current asset (inventory).

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Approved by	Stuart Lee, Corporate Controller	Revised	13-Apr-07

6.2 In rate-regulated business units a component is considered to be a capital spare if it is approved by the regulator.

## 7. **Capital Work in Progress (CWIP)**

An asset is transferred to PPE when it moves into service.

## 8. **Capitalized Interest**

8.1 Capitalized interest is calculated for non rate-regulated business units only.

8.2 Capitalized interest is added to the value of the asset.

8.3 Capitalized interest is only computed for projects with an expected value equal to or exceeding \$500,000 and should be calculated on a periodic basis as determined by the respective business unit controller's professional judgement.

8.4 Capitalization of interest ceases when an item of property, plant and equipment is substantially complete and ready for productive use.

## 9. **Allowance for Funds Used During Construction (AFUDC)**

9.1 AFUDC is calculated for rate-regulated business units only.

9.2 AFUDC reflects the carrying costs attributable to funds expended for capital projects. AFUDC is determined based on a financing rate equivalent to the business unit's weighted average cost of capital rate (as approved by the regulator) applied to the CWIP balance at year-end.

9.3 AFUDC is added to the cost of the asset and recovered in future periods through the depreciation charge.

## 10. **Capital Asset Contributions**

Capital asset contributions are recorded in the accounts as a "credit contra account" included in the determination of PPE. The amounts are subsequently amortized by a charge to accumulated depreciation and a credit to depreciation expense, calculated using the same life span as that used for the amortization of the related property, plant and equipment asset.

## 11. **References**

**CICA Handbook Section 1000** – Financial Statement Concepts

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**CICA Handbook Section 3061** – Property, Plant and Equipment

**CICA Handbook Section 3062** – Goodwill and Other Intangible Assets

**AICPA Proposed Statement of Position** – Accounting for Certain Costs and Activities Related to Property, Plant and Equipment

**12. Related Policies, Procedures and Guidelines**

- EPCOR’s Regular Capital Budgeting Policy
- EPCOR’s Project Development Costs Policy FA-005
- EPCOR’s Amortization and Depreciation Policy FA-007
- EPCOR’s Capital Asset Contributions Policy FA-008
- Property Unit Catalogues (as applicable)