

Transmission Operating and Maintenance Cost Study

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AESO Stakeholder Meeting
Arnie Reimer P. Eng.
PS Technologies



Agenda

- Background
- Capital and Non Capital Related Costs
- Splitting Non Capital Related Costs
 - Operating and Maintenance Costs
 - General and Administration Costs
- Incremental Operating and Maintenance Costs
- Use of Study
- Questions

Background

- Cost Causation Study with 2007 GTA based on capital costs
- Operating and Maintenance costs assumed to track capital costs
- Decision 2007-106
 - 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

Background

- Results from Previous Cost Study

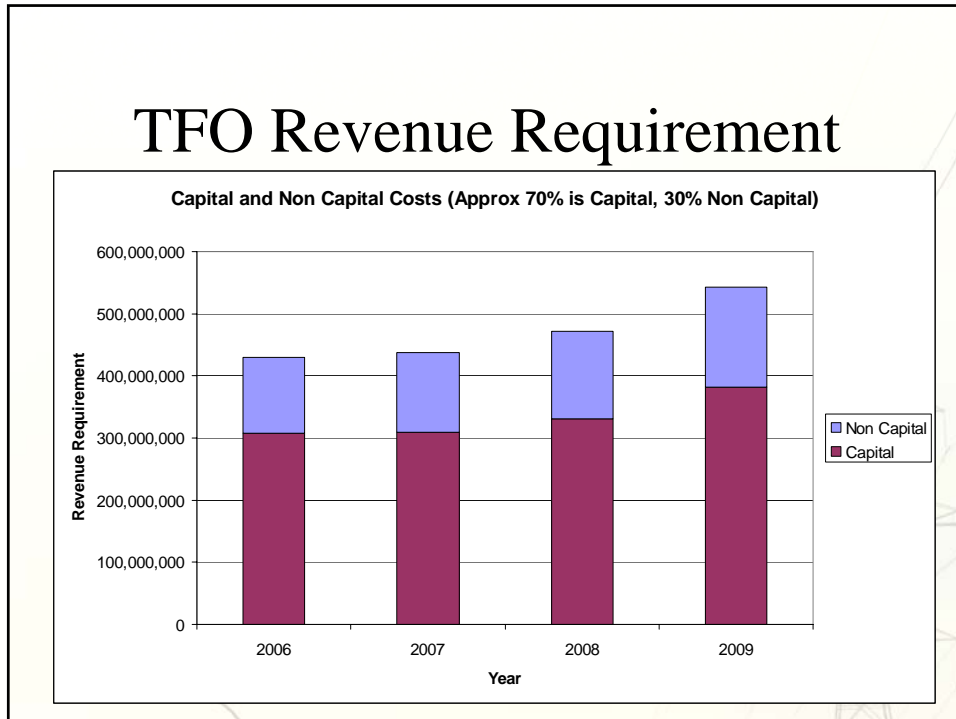
Capital Related Costs	Bulk System	Local System	POD	Totals
Demand Related	34.0%	14.3%	17.6%	66.0%
Energy Related	7.7%	3.0%	0.3%	11.0%
Customer (POD)	0.0%	0.0%	23.0%	23.0%
Totals	41.7%	17.4%	40.9%	100.0%
Classification of Costs by Function				
Demand Related	81.5%	82.5%	43.1%	
Energy Related	18.5%	17.5%	0.7%	
Customer (POD)	0.0%	0.0%	56.2%	

Capital and Non Capital Costs

- Revenue Requirement from four largest TFO's studied
- Costs first sorted as Capital or Non Capital Costs
 - Capital Costs include depreciation, debt servicing, return, and income taxes
 - Non capital costs defined as those costs not closely tied to capital investment and those where management has some discretion

Capital and Non Capital Costs

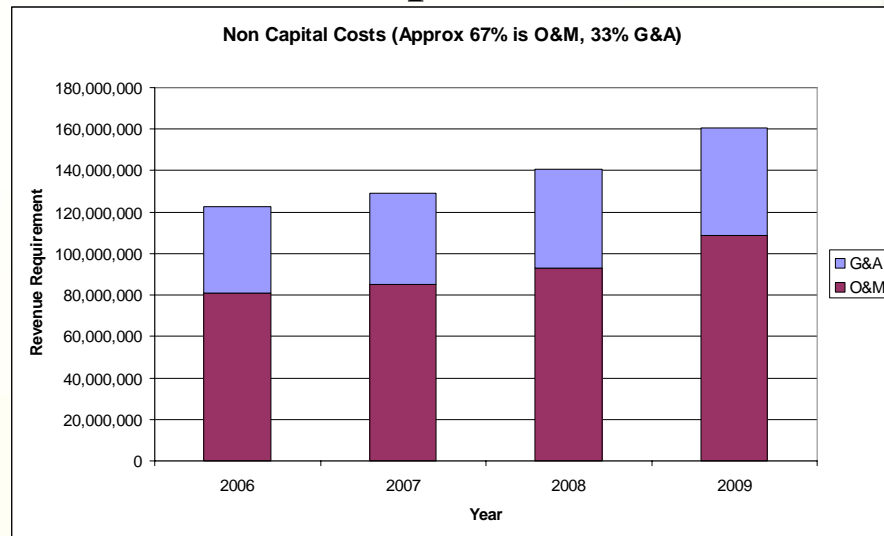
- A review of costs show that some costs considered non capital exhibit the characteristics of capital related costs
 - Linear taxes (Taxes other than Income)
 - Structure Payments
 - Capital Related Revenue Offsets



Non Capital Costs

- Non Capital Costs sorted as:
 - Operating and Maintenance (O&M)
 - O&M costs linked to operation and maintenance of the electric transmission system
 - General and Administration (G&A)
 - G&A costs linked to running the business

Non Capital Costs



Functionalization of O&M

- Three Transmission Functions from previous study
 - Bulk
 - Local
 - Point of Delivery
- Distinction on the basis of Voltage Level

Functionalization Example

- Example of Brushing for ATCO

1. Line Length Allocator					
Voltage	kM	Bulk	Local	POD	
72	1,329		1,320		9
144	5,129		5,013		116
240	2,738	2,738			
500	0	0			
Line Length	9,197	2,738	6,333		125
Line Length Allocator		29.8%	68.9%		1.4%

3. Line Brushing Allocator (Line Length X Width)					
Voltage	Area (Sq kM)	Bulk	Local	POD	
72 (15 m)	20		20		0.1
144 (20 m)	103		100		2
240 (40 m)	110	110			
500	0	0			
Area	232	110	120		2
Line Brushing Allocator		47.2%	51.7%		1.1%

O&M Costs Applied to Allocators	2006	2007	2008	2009
Vegetation Management (3)				
Bulk	802,430	1,038,439	1,368,852	1,746,466
Local	879,585	1,138,286	1,500,468	1,914,391
POD	17,985	23,274	30,680	39,143
Total	1,700,000	2,200,000	2,900,000	3,700,000

Functionalization Example

- Example of Control Centre AltaLink

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

System Operations (SCC) (All:AL:8)	2006	2007	2008	2009
Bulk	863,363	770,797	892,738	1,018,885
Local	2,545,813	2,272,862	2,632,433	3,004,403
POD	2,696,348	2,407,258	2,788,090	3,182,055
Total	6,105,525	5,450,917	6,313,262	7,205,343

Functionalization – Summary

Summary of Functionalized Costs		2006	2007	2008	2009
	Reference	Actual	Actual	Forecast	Forecast
AltaLink					
Bulk	AL Sch 5.2	8,288,743	8,729,728	9,823,505	11,248,965
Local	AL Sch 5.2	12,777,270	12,363,121	13,602,533	16,531,480
POD	AL Sch 5.2	15,791,165	14,615,718	15,604,909	20,538,155
Total		36,857,178	35,708,566	39,030,947	48,318,600
ATCO Electric					
Bulk	AT Sch 5.2	3,765,618	4,507,615	5,026,709	6,023,264
Local	AT Sch 5.2	10,881,160	12,443,907	13,406,655	15,685,694
POD	AT Sch 5.2	12,442,222	13,748,478	15,566,636	17,491,041
Total		27,089,000	30,700,000	34,000,000	39,200,000
ENMAX					
Bulk	EN Sch 5.1	1,800,413	1,902,542	2,013,179	2,129,813
Local	EN Sch 5.1	2,596,123	2,743,388	2,902,923	3,071,105
POD	EN Sch 5.1	4,889,876	5,167,256	5,467,744	5,784,520
Total		9,286,411	9,813,186	10,383,845	10,985,438
EPCOR					
Bulk	EP Sch 5.2	1,978,249	2,281,047	2,482,879	2,584,508
Local	EP Sch 5.2	866,229	1,006,571	1,088,137	1,127,718
POD	EP Sch 5.2	4,793,114	5,745,961	6,208,314	6,529,299
Total		7,637,592	9,033,579	9,779,330	10,241,525
Sum of Four TFO's					
Bulk		15,833,023	17,420,932	19,346,272	21,986,551
Local		27,120,781	28,556,987	31,000,248	36,415,997
POD		37,916,377	39,277,413	42,847,603	50,343,015
Total		80,870,182	85,255,332	93,194,123	108,745,563
Sum of Four TFO's					
	Ave Percent				
Bulk		20.2%	20.4%	20.8%	20.2%
Local		33.4%	33.5%	33.3%	33.5%
POD		46.3%	46.9%	46.0%	46.3%
Total		100.0%	100.0%	100.0%	100.0%

Classification

- Operations and Maintenance can not be reliably classified
 - Operations and Maintenance work is completed on facilities to ensure that they operate reliably and efficiently to meet their original design specifications
- Operations and Maintenance is classified on the same basis as capital
- One exception being fuel cost within transmission which is classified as energy.

Classification

Classification of Capital Costs	Bulk	Local	POD
Demand Related	81.5%	82.5%	43.1%
Energy Related	18.5%	17.5%	0.7%
Customer Related	0.0%	0.0%	56.2%
Total	100.0%	100.0%	100.0%
Classified O&M Costs (Non Fuel and Variable O&M) - 2008	Bulk	Local	POD
Demand Related	15,767,246	22,067,222	14,222,777
Energy Related	3,579,026	4,681,124	230,956
Customer Related	0	0	18,545,772
Total	19,346,272	26,748,346	32,999,505
Classified Costs (O&M Inc Fuel, Var O&M) 2008	Bulk	Local	POD
Demand Related	15,767,246	22,067,222	14,222,777
Energy Related	3,579,026	8,933,026	10,079,054
Customer Related	0	0	18,545,772
Total	19,346,272	31,000,248	42,847,603
Classification of O&M Costs	Bulk	Local	POD
Demand Related	81.5%	71.2%	33.2%
Energy Related	18.5%	28.8%	23.5%
Customer Related	0.0%	0.0%	43.3%
Total	100.0%	100.0%	100.0%

Results – Weighting of Capital and O&M

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%
Non Capital Costs	Bulk System	Local System	POD	Totals
Functionalized Costs	20.2%	33.4%	46.3%	100.0%
Classification of Non Capital Costs				
Demand Related	16.5%	23.8%	15.4%	55.7%
Energy Related	3.7%	9.6%	10.9%	24.3%
Customer (POD)	0.0%	0.0%	20.0%	20.0%
Totals	20.2%	33.4%	46.3%	100.0%
Aggregate Table of Functionalized and Classified Costs (Weighted for Capital and Non Capital Costs)				
Capital Costs Portion	70.7%			
Non Capital Costs Portion	29.3%			
Weighted	Bulk System	Local System	POD	Totals
Demand Related	28.8%	17.1%	17.0%	62.9%
Energy Related	6.5%	5.0%	3.4%	14.9%
Customer (POD)	0.0%	0.0%	22.1%	22.1%
Totals	35.4%	22.1%	42.5%	100.0%

Summary

- Non Capital Costs account for 30% of the Revenue Requirement
- O&M costs account for 2/3 of the Non Capital Costs
- Functionalized Non Capital Costs have increased weight on POD and Local functions with reduced weight on Bulk.

Prepaid O&M

- To minimize any subsidies between new customers and existing customers
- New customers that interconnect must pay for Optional Facilities in the form of CIAC
- New customers must also pay for the incremental O&M associated with Optional Facilities on a prepaid basis
- Existing rate is 12% of RCN

Incremental O&M

- Three options for Prepaid O&M charge at time of construction
 - Based on all Non Capital costs
 - Based on all O&M Costs
 - Based on incremental maintenance cost (wrench time)
- Calculated by Cost/RCN

Prepaid O&M

- Based on Non Capital Costs/RCN
 - Approximately 21%
- Based on O&M Costs/RCN
 - Approximately 14%
- Based on Incremental Maintenance/RCN
 - Approximately 2%
- PV over 20 years

Questions and Comments?

- Still a work in progress, updating some actual costs
- Open to suggestions to improve methodology
- Have Study complete by end of November for filing with AESO Application.
- 403.560.0376