

Prospective Cost of Service Study

*For Fiscal Year Ending
March 31, 2014 - Amended*



**MANITOBA HYDRO
PROSPECTIVE COST OF SERVICE STUDY-AMENDED
FOR FISCAL YEAR ENDING
MARCH 31, 2014**

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EXECUTIVE SUMMARY

A Cost of Service Study (“COSS”) is a method of allocating a utility’s cost to the various classes of customers that it serves. Its purpose is to determine a fair sharing of the utility’s Revenue Requirement among the customer classes. While there are many allocation methods, the central aim is always to allocate costs to the customer classes on the basis of known customer characteristics. The cost study conducted at Manitoba Hydro is an average embedded cost study in that the unit costs represent the average to serve all customers in a rate class or subclass based upon funds historically invested in plant in service.

Manitoba Hydro’s COSS is a Prospective Study. That is, while historic investment has a significant role in determining the costs, the study utilizes forecast costs for the next fiscal year. This provides a basis for testing rates that are proposed for the next fiscal year. It also normalizes for water conditions which could have a significant impact on the results if based on current conditions.

The results of the study indicate the degree to which the rate class/subclass revenue recovers allocated costs. Although the study has the appearance of exactness, it only provides an approximation of the actual cost of serving a particular customer or group of customers within a customer class. This is because there are many judgements involved in the process of classifying and allocating costs, particularly those costs related to capital investment. There is no right or wrong way of allocation, as each utility’s operating characteristics and reasons for capital investment are not necessarily the same. The objective for the utility is to select a method which best represents cost causation and the equitable sharing of costs among the customer rate classes. Because of the inexactness of a Cost of Service Study, a Zone of Reasonableness (“ZOR”) is usually established within which Revenue to Cost Coverage (“RCC”) ratios are targeted. At Manitoba Hydro the target Zone of Reasonableness is for RCC’s to be within the range of 95 to 105 percent.

PCOSS14-AMENDED METHODOLOGY CHANGES

In 2011 Manitoba Hydro retained Christensen Associates Energy Consulting (“CA”) to conduct a review of its Cost of Service methodologies to confirm they were consistent with best practices and to address a number of issues that arose out of previous PUB proceedings including the treatment of Export Revenues and the role of Marginal Costs. That report and Manitoba Hydro’s response to it were filed with the PUB in July 2012 in conjunction with the Corporation’s 2012/13 & 2013/14 General Rate Application. The PUB, in Order 98/12, deferred the review of COS until a later date.

In late 2014, MH undertook to meet with Stakeholders and Intervenor representatives to facilitate the sharing of views regarding cost of service methodology. PCOSS14, which reflected many of the recommendations provided by CA in their report, was distributed to participants at that time. As part of that process Manitoba Hydro agreed to commission CA to prepare a supplemental COS report to evaluate Manitoba Hydro’s COS methodology with consideration of its robustness in light of Manitoba Hydro’s current business environment, to address new COS issues arising from the finalization of investment decisions, and taking into account the discussion and perspectives shared through the Stakeholder Engagement process.

Manitoba Hydro has considered the advice and recommendations of CA. In some cases, evaluation of supplemental recommendations, along with current perspectives of Stakeholders shared through the meetings held in 2014, has caused Manitoba Hydro to reconsider prior COS perspectives as reflected in its response to the CA Report prepared in 2012. Additional COS methodology changes have been incorporated in PCOSS14-Amended as described below:

1. Continue with an Export Class with cost distinction between Dependable and Opportunity sales which assigns full embedded cost responsibility to approximately 50% of export sales (Dependable) and incremental cost to the remaining 50% of export sales (Opportunity) with the following refinements:
 - Manitoba Hydro has aggregated its generation resources such that all domestic customer classes and Dependable export sales are allocated embedded cost proportionately on the basis that all resources support these loads.
 - Power Purchases have been allocated to all sales proportionately on the basis that this resource supports all loads.
 - Hybrid sales (longer term sales that may be supported in adverse conditions by resources outside Manitoba) are treated as Dependable sales in COS.

2. The Dorsey Converter facilities are functionalized 100% as Generation and allocated on the basis of Weighted Energy. It is also Manitoba Hydro's intention to functionalize the upcoming Riel Converter facilities on this basis.
3. US Interconnections are functionalized as Transmission, classified as Energy, and allocated on a Weighted Energy basis.
4. The Weighted Energy allocator (used in the classification and allocation of generation-related cost and US Interconnections) has been modified to include the value of capacity as represented by the Reference Discount used in the Curtailable Rate Program.

PCOSS14-Amended Results

PCOSS14-Amended has been prepared on the basis of the 2013/14 financial forecast from IFF12, which incorporates median water flows. PCOSS14 includes revenues based on May 1, 2013 rates as approved in Order 43/13.

The table below depicts the RCC ratios by class with the modifications to COS methodology incorporated in PCOSS14-Amended, compared with the previous PCOSS14 methodology.

Customer Class	PCOSS14 RCC%	PCOSS14-Amended RCC%
Residential	98.6%	99.8%
General Service - Small Non Demand	107.7%	108.0%
General Service - Small Demand	104.9%	104.5%
General Service - Medium	100.0%	99.4%
General Service - Large 0 - 30kV	91.9%	91.3%
General Service - Large 30-100kV	101.7%	100.0%
General Service - Large >100kV	101.0%	98.6%
Area & Roadway Lighting	99.7%	100.2%

Net Export Revenue

PCOSS14-Amended results in net export revenue of \$91 million to be allocated to domestic customers. A summary of the costs assigned or allocated to the Export class is shown in the table below.

	PCOSS14 (\$ millions)	PCOSS14- Amended (\$ millions)
Gross Export Revenue	345	345
Less:		
Generation (Hydro, Thermal, Wind)	120	134
Generation (Purchased Power, Water Rental, Variable O&M)	123	61
Transmission	31	21
NEB Costs	1	1
Policy Related Charges (AEF & URA)	36	36
Net Export Revenue	34	91

The primary tables presented below are based on PCOSS14-Amended methodology. These tables summarize the results of the updated methodology.

1. Revenue Cost Coverage Table (Schedule B1-Amended) - This ratio compares revenues of each class to its allocated costs. The RCC ratio provides the relative performance of each rate class over a base of 100%.
2. Customer, Demand and Energy Costs (Schedule B2-Amended) - In this table the components are converted to unit costs using billing determinants, i.e., number of customers, billable demand and kWh sales. The information in Schedule B2 is intended to provide a comparison of allocated unit costs with the corresponding price in the appropriate rate schedule.
3. Functional Breakdown (Schedule B3-Amended) - This table identifies the cost of providing each level of service to each customer class.
4. Classified Costs by Allocation (Schedule E1-Amended) - This table summarizes the classified costs by allocation table.

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Revenue Cost Coverage Analysis

SUMMARY

Customer Class	Total Cost (\$000)	Class Revenue (\$000)	Net Export Revenue (\$000)	Total Revenue (\$000)	RCC % Current Rates
Residential	629,213	588,630	39,179	627,809	99.8%
General Service - Small Non Demand	132,465	135,035	8,017	143,052	108.0%
General Service - Small Demand	138,205	136,080	8,352	144,432	104.5%
General Service - Medium	200,142	186,797	12,190	198,987	99.4%
General Service - Large 0 - 30kV	99,706	84,956	6,058	91,014	91.3%
General Service - Large 30-100kV*	61,612	57,808	3,807	61,614	100.0%
General Service - Large >100kV*	204,538	189,258	12,514	201,772	98.6%
*Includes Curtailment Customers					
SEP	968	826	-	826	85.4%
Area & Roadway Lighting	21,997	21,630	419	22,049	100.2%
Total General Consumers	1,488,846	1,401,019	90,537	1,491,556	100.2%
Diesel	9,948	6,612	626	7,238	72.8%
Export	254,070	345,233	(91,163)	254,070	100.0%
Total System	1,752,864	1,752,864	-	1,752,864	100.0%

**SCHEDULE B1-Amended
Revenue Cost Coverage Analysis**

SCHEDULE B2-Amended Customer, Demand, Energy Cost Analysis

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Customer, Demand, Energy Cost Analysis

SUMMARY

Class	CUSTOMER				DEMAND				ENERGY		
	Cost (\$000)	Number of Customers	Unit Cost \$/Month	Cost (\$000)	% Recovery	Billable Demand MVA	Unit Cost \$/KVA	Cost (\$000)	Metered Energy mWh	Unit Cost ¢/kWh	
Residential	120,783	486,987	20.67	178,878	0%	n/a	n/a	290,373	7,404,453	6.34 **	
GS Small - Non Demand	24,054	53,778	37.27	33,785	0%	n/a	n/a	66,608	1,605,511	6.25 **	
GS Small - Demand	8,173	12,492	54.52	39,210	38%	2,390	6.22	82,469	2,047,715	5.22	
General Service - Medium	7,148	1,974	301.74	55,956	87%	7,302	6.70	124,849	3,174,662	4.15	
General Service - Large <30kV	3,596	288	n/a	24,176	100%	4,042	6.87 *	65,877	1,702,481	3.87	
General Service - Large 30-100kV	2,485	40	n/a	9,030	100%	2,894	3.98 *	46,290	1,327,210	3.49	
General Service - Large >100kV	2,296	16	n/a	19,704	100%	8,409	2.62 *	170,023	4,903,742	3.47	
SEP	326	29	935.95	132	0%	n/a	n/a	509	26,500	2.42 **	
Area & Roadway Lighting	16,571	155,024	8.91	2,113	0%	n/a	n/a	2,893	100,487	4.98 **	
Total General Consumers	185,432	710,628		362,986		25,038		849,892	22,292,761		
Diesel	220	755	24.28	330	0%	n/a	n/a	8,772	13,754	66.18 **	
Export	n/a	n/a	n/a	21,172	0%	n/a	n/a	232,898	9,013,000	2.82 ***	
Total System	185,652	711,383		384,488		25,038		1,091,561	31,319,515		

* - includes recovery of customer costs
 ** - includes recovery of demand costs
 *** - includes recovery of customer and demand costs

**SCHEDULE B3-Amended
Functional Breakdown**

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Functional Breakdown

S U M M A R Y

Class	Total Cost (\$000)	Generation Cost (\$000)	%	Transmission Cost (\$000)	%	Subtransmission Cost (\$000)	%	Distribution Cust Service Cost (\$000)	%	Distribution Plant Cost (\$000)	%
Residential	590,034	289,091	49.0%	46,667	7.9%	31,007	5.3%	66,676	11.3%	156,593	26.5%
General Service - Small Non Demand	124,448	66,330	53.3%	9,967	8.0%	5,597	4.5%	16,944	13.6%	25,610	20.6%
General Service - Small Demand	129,853	82,121	63.2%	11,798	9.1%	6,448	5.0%	4,049	3.1%	25,436	19.6%
General Service - Medium	187,952	124,313	66.1%	18,110	9.6%	8,915	4.7%	6,162	3.3%	30,451	16.2%
General Service - Large <30kV	93,649	65,595	70.0%	9,361	10.0%	4,457	4.8%	3,380	3.6%	10,855	11.6%
General Service - Large 30-100kV	57,805	46,085	79.7%	5,831	10.1%	3,403	5.9%	2,419	4.2%	67	0.1%
General Service - Large >100kV	192,023	169,280	88.2%	20,447	10.6%	0	0.0%	2,268	1.2%	28	0.0%
SEP	968	509	52.6%	132	13.7%	0	0.0%	309	31.9%	17	1.7%
Area & Roadway Lighting	21,577	3,014	14.0%	322	1.5%	442	2.0%	537	2.5%	17,262	80.0%
Total General Consumers	1,398,309	846,340	60.5%	122,637	8.8%	60,270	4.3%	102,744	7.3%	266,319	19.0%
Diesel	9,322	8,772	94.1%	0	0.0%	0	0.0%	0	0.0%	550	5.9%
Export	254,070	232,148	91.4%	21,922	8.6%	0	0.0%	0	0.0%	0	0.0%
Total System	1,661,701	1,087,259	65.4%	144,559	8.7%	60,270	3.6%	102,744	6.2%	266,869	16.1%

SCHEDULE E1-Amended
Classified Costs by Allocation Table
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 Classified Costs by Allocation Table

Allocation			Interest	Depreciation	Operating	Misc. Rev	Total
Table	Function						
E12	Generation - Domestic & Dependable Export		329,047	212,596	291,523	5,766	838,932
E13	Generation - Domestic & Export		-	1,228	221,093	-	222,321
			<u>329,047</u>	<u>213,824</u>	<u>512,616</u>	<u>5,766</u>	<u>1,061,253</u>
E15	Transmission - Weighted Energy		2,597	1,281	807	-	4,684
D13	Transmission - 2CP Domestic & Export			-	4,071		4,071
D14	Transmission - 2CP Domestic & Dependable		55,735	37,901	50,247	-	143,883
			<u>58,331</u>	<u>39,182</u>	<u>55,125</u>	<u>-</u>	<u>152,638</u>
D21	Subtrans		2,106	20,004	22,838		44,948
D22	Subtrans	Stations	9,825	-			9,825
D23	Subtrans	Line	9,523	-			9,523
			<u>21,455</u>	<u>20,004</u>	<u>22,838</u>	<u>-</u>	<u>64,296</u>
D32	Dist. Plant	Stn	21,797	26,313	36,101		84,211
D36	Dist. Plant	Lines	35,772	25,885	22,897		84,553
D40	Dist. Plant	S/E	11,280	11,974	4,125		27,378
			<u>68,849</u>	<u>64,171</u>	<u>63,123</u>	<u>-</u>	<u>196,142</u>
C23	Dist. Plant	Lines	23,848	17,256	15,265		56,369
C27	Dist. Plant	Services	3,155	2,283	2,019		7,456
C40	Dist. Plant	Meter Investment	1,702	4,197			5,899
C41	Dist. Plant	Meter Mtce.			2,188		2,188
			<u>28,705</u>	<u>23,736</u>	<u>19,471</u>	<u>-</u>	<u>71,912</u>
C10	Dist Serv	Cust Service - General	2,330	5,570	38,661	-	46,561
C11	Dist Serv	Cust Acct - Billings	1,455	2,607	24,147		28,210
C12	Dist Serv	Cust Acct - Collections	956	1,413	15,873		18,242
C13	Dist Serv	Marketing - R & D	42	53	690		784
C14	Dist Serv	Inspection	186	546	3,092		3,824
C15	Dist Serv	Meter Read	631	879	10,467		11,976
			<u>5,600</u>	<u>11,068</u>	<u>92,929</u>	<u>-</u>	<u>109,597</u>
	Total Allocated Costs		511,986	371,984	766,102	5,766	1,655,839

SCHEDULE E1-Amended
Classified Costs by Allocation Table
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DIRECTS

C02	Generation	Diesel	991	1,566	6,804		9,361
E01	Generation	Export	23,532	12,800	964		37,297
			<u>23,532</u>	<u>12,800</u>	<u>964</u>	<u>-</u>	<u>37,297</u>
E01	Generation	SEP - GSM	183	116	171		470
E01	Generation	SEP - GSL 0-30kV	15	10	14		39
E01	Generation	DSM Direct Assignment - Energy					
E01	Generation	Residential	1,454	4,851	310		6,615
E01	Generation	GSS ND	1,041	3,953	67		5,060
E01	Generation	GSS Demand	1,099	4,294	84		5,477
E01	Generation	GSM	1,333	4,968	128		6,429
E01	Generation	GSL 0-30kV	742	2,630	68		3,439
E01	Generation	GSL 30-100kV excl Curt.	155	535	41		732
E01	Generation	GSL >100kV excl Curt.	418	1,293	105		1,815
E01	Generation	Street Lights	1	3	3		8
E01	Generation	Curtaiment (GSL 30-100)	196	785	8	(604)	386
E01	Generation	Curtaiment (GSL > 100)	1,813	7,128	75	(5,162)	3,854
			<u>8,451</u>	<u>30,565</u>	<u>1,074</u>	<u>(5,766)</u>	<u>34,325</u>
D04	Transmission	Export	-	-	-		-
D04	Transmission	SEP - GSM	42	38	42		122
D04	Transmission	SEP - GSL 0-30kV	4	3	3		10
			<u>46</u>	<u>41</u>	<u>45</u>	<u>-</u>	<u>132</u>
C01	Distribution	Lighting	3,547	3,926	7,850		15,324
C01	Distribution	Diesel	58	85	444		587
			<u>3,606</u>	<u>4,011</u>	<u>8,294</u>	<u>-</u>	<u>15,911</u>
	Total Directs		36,626	48,984	17,182	(5,766)	97,025
	Total		<u>548,612</u>	<u>420,968</u>	<u>783,284</u>	<u>-</u>	<u>1,752,864</u>
	Generation		362,021	258,755	521,458	-	1,142,235
	Transmission		58,377	39,223	55,170	-	152,770
	Subtransmission		21,455	20,004	22,838	-	64,296
	Distribution Plant		101,160	91,918	90,888	-	283,965
	Distribution Services		5,600	11,068	92,929	-	109,597
			<u>548,612</u>	<u>420,968</u>	<u>783,284</u>	<u>-</u>	<u>1,752,864</u>
	Energy		361,031	257,189	514,654	-	1,137,558
	Demand		146,084	122,117	140,324	-	408,525
	Customer		38,901	40,381	127,499	-	206,781
			<u>546,015.53</u>	<u>419,687.46</u>	<u>782,477.06</u>	<u>-</u>	<u>1,752,864</u>