



PO Box 815 • Winnipeg, Manitoba Canada • R3C 2P4  
Street Location for DELIVERY: 22<sup>nd</sup> floor 360 Portage Ave

Telephone / N<sup>o</sup> de téléphone : (204) 360-3633 • Fax / N<sup>o</sup> de télécopieur : (204) 360-6147 • ofernandes@hydro.mb.ca

February 21, 2017

Mr. D. Christle  
Secretary and Executive Director  
Public Utilities Board  
400-330 Portage Avenue  
Winnipeg, Manitoba  
R3C 0C4

Dear Mr. Christle:

**RE: COST OF SERVICE STUDY METHODOLOGY REVIEW PROCESS  
MANITOBA HYDRO RESPONSE TO DIRECTIVES 1 & 2 - ORDER 164/16**

On December 20, 2016, the Public Utilities Board ("PUB") issued Order 164/16 related to the public review of Manitoba Hydro's Cost of Service Study Methodology ("COSS"). The PUB directed Manitoba Hydro to revise and update its COSS to reflect the PUB's findings and directions, and to provide an electronic version of the Cost of Service Model reflective of these modifications no later than 60 days from the date of the Order.

Please find attached Manitoba Hydro's responses to Directive 1, including the PCOSS14 Schedules reflecting the directed changes in methodology. In response to Directive 2, Manitoba Hydro is providing the PUB with a link to the electronic version of the PCOSS14 model by separate email.

Manitoba Hydro notes that PUB Order 26/16 specified that such electronic models are to be limited to the Cost of Service Study Methodology Review and that the model must not be disseminated to parties or individuals other than the people working on this Cost of Service Study Methodology Review. Manitoba Hydro expects that the protocol stated in Order 26/16 is to be followed with regard to the electronic model provided with this filing.

Should you have any questions with respect to the foregoing, please do not hesitate to contact the writer at 204-360-3633 or Greg Barnlund at 204-360-5243.

Yours truly,

**MANITOBA HYDRO LAW DIVISION**

Per:

A handwritten signature in blue ink, appearing to read 'Odette Fernandes', written over a horizontal line.

**ODETTE FERNANDES**

Legal Counsel

## Manitoba Hydro Response to Directives 1 and 2 in Order 164/16

As directed in Order 164/16, Manitoba Hydro has made the following adjustments to its Cost of Service Methodology:

- **Export Revenue –Directives 1(a-c)**

In accordance with Directive 1(a), Manitoba Hydro has eliminated the Export Class from its Cost of Service Study.

With respect to Directive 1(c), the costs of the Affordable Energy Fund and a pro-rata share of water rentals and variable hydraulic operating & maintenance costs are deducted from gross export revenues to determine Net Export Revenue (NER) as follows:

	(\$ millions)
Gross Export Revenue	345.2
Affordable Energy Fund	(12.8)
Variable Hydraulic O&M	(3.4)
Water Rentals	(32.9)
Net Export Revenue	296.1

In compliance with Directive 1(b), the resultant NER has been allocated to domestic classes based on each class' share of Generation and Transmission costs, including the cost of directly assigned radial taps.

- **Export Revenue - Uniform Rate Adjustment – Directive 1(d)**

Domestic revenues have not been adjusted to offset the rate reduction that resulted from Uniform Rates legislation. The adjustment for Uniform Rates, previously deducted from export revenue, is eliminated from PCOSS14 as directed in Directive 1 (d).

- **Export Revenue - Diesel Class – Directive 1(e)**

As directed in Directive 1 (e), there has been no NER allocated to the Diesel class.

- **Functionalization of Generation – Directive 1(f(i)-(v))**

In compliance with Directive 1(f), Manitoba Hydro's hydraulic and thermal generating stations, operating and maintenance, fuel, water rental costs, wind, import purchases, the Bipoles, as well as the HVDC portions of Dorsey (and future Riel) are functionalized as Generation. Furthermore, the following generation outlet transmission assets have been re-functionalized as Generation as directed by the PUB in Directive 1(f):

- Wuskwatim GS to Wuskwatim switchyard 230 kV T/L
- Bison Wind Farm - St. Leon 230 kV T/L
- St. Joseph – Letellier 230 kV T/L
- Pointe du Bois - Rover 66 kV T/L
- Slave Falls GS - Pointe du Bois GS 115 kV T/L
- Pointe du Bois switching station.

- **Functionalization of Generation – Directive 1 (f(vi)) and 1 (hh)**

Manitoba Hydro has functionalized DSM costs entirely to Generation, including the full revenue requirement of the Curtailable Rate Program as set out in Directive 1(hh). DSM costs are no longer directly assigned based on class participation, but rather treated as a Generation resource, as directed.

- **Classification and Allocation of Generation – Directives 1(g-i)**

Water rentals and variable hydraulic operating & maintenance costs not charged to exports, as discussed above, as well as wind purchases, have been classified as 100% Energy as directed under Directive 1 (g).

The remaining Generation costs, including DSM, have been classified between Energy and Demand on the basis of System load factor (SLF). The SLF has been derived on the basis of the average of eight years of historic domestic load factors as shown in the table below, consistent with the estimated class demand in the PCOSS. The result is that 62.6% of these Generation-related costs are classified as Energy, the remaining 37.4% as Demand.

Fiscal Year	Load Factor Percentage <sup>1</sup>
2004/05	61.4%
2005/06	63.6%
2006/07	63.7%
2007/08	64.0%
2008/09	61.8%
2009/10	60.8%
2010/11	63.6%
2011/12	61.7%
Average	62.6%

In addition, in accordance with the PUB's direction, Energy-related Generation costs have been allocated using un-weighted domestic energy, as directed in Directive 1 h), and is reflected in Schedule 6<sup>2</sup> attached. Demand-related Generation costs have been allocated using demand in the top 50 coincident peak hours, based on domestic load only and reflecting the average eight years of Load Research studies (2005 to 2012) as directed in Directive 1 i), and is reflected in the attached Schedule 7<sup>3</sup>.

- **Transmission- Directives 1(j-m)**

The domestic AC transmission system operating at voltages greater than 100 kV, interprovincial interconnections and U.S. interconnections have been functionalized as Transmission as per Directive 1 j). U.S. interconnections have been classified between Energy and Demand based on the SLF method in accordance with the PUB's direction under Directive 1 l). The remaining Transmission-related costs have been classified as 100% Demand as directed in Directive 1 k). The Energy and Demand allocators used for the Transmission function are the same as those used for the Generation function.

The dedicated radial taps VT-63 and BX-18/19 have been directly assigned to the GSL >100 kV class as directed in Directive 1 m).

- **Subtransmission - Directive 1(n and o)**

Subtransmission has been allocated on the basis of Coincident Peak Demand in accordance with the PUB's direction under Directive 1 o). The Coincident Peak Demand allocator

<sup>1</sup> 2012 Electric Load Forecast, page iii

<sup>2</sup> kW.h Generated Adjusted E10 column

<sup>3</sup> CP at Gen. MW column

excludes GSL >100 kV customers as per Directive 1 n), but is otherwise consistent with that used for Generation and Transmission discussed above.

- **Distribution Plant - Directives 1(p-u)**

PCOSS14 reflects the functionalization of assets that operate at voltages under 33kV as Distribution, as directed by the PUB in Directive 1 p). As per the PUB's direction, Distribution poles and wires, substations and transformers have been classified as 100% Demand and allocated on the basis of Non-Coincident peak as per Directive 1 q), r) and t). Service drops, meter investment and meter maintenance have been classified as 100 % Customer as directed in Directive 1 s).

Manitoba Hydro notes with respect to Directive 1 u), that the 30% adjustment factor used for GSL 0-30kV related to distribution secondary is consistent with the existing methodology (page 75 of Order 164/16) and remains unchanged.

- **Service Drops - Directive 1(v)**

In accordance with PUB direction under Directive 1 v), the Service Drops allocator has been adjusted to recognize that there are multiple customers that may be served by a single service. As directed, the customer count has been decreased by 103,000 prorated between Residential, GSS and GSM. The result is that customer count is reduced by 89,959 for the Residential class, 12,657 for GSS and 384 for GSM prior to applying the weighting factors.

- **Customer-related Allocators for Distribution Costs – Directive 1 (v, w, z)**

Order 164/16 directed pursuant to Directives 1 v), w), and z) that the allocator weighting factors for Service Drops, Meter Investment/Maintenance, and Customer Services costs be updated. Manitoba Hydro intends to update these factors in its preparation of PCOSS18.

- **Customer Service – General: Directive 1(x)**

Manitoba Hydro confirms that the Cost of Service Methodology reflects the PUB's direction with respect to the functionalization and classification of Customer Service costs as set out in Directive 1(x).

- **Customer Service – General: Directive 1(y)**

Manitoba Hydro's Cost of Service Methodology has been modified in accordance with Directive 1 y) to eliminate the share of costs related to the Customer Service sub-category of Customer Consultation and Information allocated to the GSL 30-100 kV and GSL>100 kV classes. Manitoba Hydro intends to review its allocation of Customer Service – General costs in its preparation of PCOSS18.

- **A Single Area and Roadway Lighting class: Directive 1 (aa)**

Manitoba Hydro confirms that the Cost of Service Methodology reflects a single Area and Roadway Lighting class, as directed under Directive 1 aa).

- **Late Payment Revenue and Customer Adjustments: Directive 1(bb)**

With respect to Directive 1 bb), Manitoba Hydro is able to identify late payment revenue attributed to the Residential class on an actual basis which has been used to allocate 81% of the forecast late payment revenue and customer adjustments to the class. Late Payment revenue attributed to the remaining customer classes is not readily available on a class by class basis (as provided in the response to MH/Coalition I-4e)), therefore Manitoba Hydro has prorated the residual 19% of forecast late payment revenues to the GSS, GSM, GSL 0-30 kV and Sentinel Lighting classes based on each class' forecast revenue. Given there is little or no late payment revenue typically associated with customers in the largest GSL classes, no late payment revenue has been allocated to these classes.

- **Common costs: Directives 1 (cc, dd)**

Manitoba Hydro confirms that the Cost of Service Methodology reflecting Order 164/16 is consistent with the PUB's direction under Directives 1 cc) and dd) to functionalize Building, General, Communication and Control common costs using a labour allocator.

- **Common costs: Directives 1 (dd, ee, ff, gg)**

Manitoba Hydro intends to update the functionalization of SCADA common costs as well as the treatment of common costs within each function as part of its preparation of PCOSS18 in accordance with Directives 1 dd), ee), ff) and gg).

**Cost of Service Methodology Results Reflecting Order 164/16**

The directives from Order 164/16 discussed above were incorporated into PCOSS14 and results in class Revenue-to-Cost ratios as follows:

Customer Class	PCOSS14 Amended	PCOSS14 Order 164/16	Change
Residential	99.9%	95.5%	(4.4%)
GSS – Non Demand	108.0%	108.5%	0.5%
GSS – Demand	104.5%	103.4%	(1.1%)
GSM	99.3%	100.3%	1.0%
GSL <30	91.1%	96.1%	5.0%
GSL 30-100	99.8%	108.0%	8.2%
GSL >100	98.5%	107.1%	8.6%
ARL	100.3%	99.5%	(0.8%)

The following schedules reflect the PUB's directives from Order 164/16:

- Schedule 1 - Revenue-to-Cost coverage analysis
- Schedule 2 – Comparison of PCOSS14 – Amended to PCOSS14 164/16
- Schedule 3 – Functional Breakdown
- Schedule 4 – Customer, Demand, Energy Cost Analysis
- Schedule 5 – Classified Costs by Allocation Table
- Schedule 6 – Energy Data - Prospective Peak Load Report – Using Top 50 Peak Hours
- Schedule 7 – Demand Data - Prospective Peak Load Report – Using Top 50 Peak Hours

Manitoba Hydro  
Prospective Cost Of Service Study  
March 31, 2014  
Revenue Cost Coverage Analysis  
*PCOSS14 Reflecting Order 164/16*  
**S U M M A R Y**

Customer Class	Total Cost (\$000)	Class Revenue (\$000)	Net Export Revenue (\$000)	Total Revenue (\$000)	RCC % Current Rates
Residential	713,281	569,331	112,159	681,490	95.5%
General Service - Small Non Demand	142,869	132,828	22,200	155,028	108.5%
General Service - Small Demand	157,495	135,216	27,633	162,849	103.4%
General Service - Medium	226,749	186,162	41,179	227,341	100.3%
General Service - Large 0 - 30kV	110,158	84,686	21,204	105,890	96.1%
General Service - Large 30-100kV*	67,717	57,808	15,297	73,104	108.0%
General Service - Large >100kV*	228,404	189,258	55,317	244,574	107.1%
*Includes Curtailment Customers					
SEP	973	824	-	824	84.7%
Area & Roadway Lighting	22,623	21,376	1,129	22,505	99.5%
Total General Consumers	1,670,270	1,377,487	296,119	1,673,606	100.2%
Diesel	9,948	6,612	-	6,612	66.5%
Export	49,114	345,233	(296,119)	49,114	100.0%
Total System	1,729,332	1,729,332	-	1,729,332	100.0%



**PCOSS14 Variance Analysis**  
**Comparison of PCOSS14-Amended to PCOSS14 164/16**

	Incremental Change in RCC						PCOSS14 164/16
	PCOSS14 Amended	(1) Export	(2) Gen	(3) Trans	(4) Subtrans	(5) Dist	(6) Other
Residential	99.8%	-2.9%	-3.2%	-0.8%	0.1%	2.3%	0.2%
General Service - Small Non Demand	108.0%	-1.1%	2.0%	0.4%	0.0%	-0.3%	-0.5%
General Service - Small Demand	104.5%	1.2%	1.9%	0.2%	-0.2%	-3.9%	-0.3%
General Service - Medium	99.4%	2.1%	2.6%	0.9%	-0.3%	-4.1%	-0.3%
General Service - Large 0 - 30KV	91.3%	3.4%	3.5%	1.2%	-0.1%	-2.8%	-0.4%
General Service - Large 30-100KV*	100.0%	3.0%	2.3%	0.9%	0.7%	0.0%	1.1%
General Service - Large >100KV*	98.6%	4.1%	3.5%	0.7%	0.0%	0.0%	0.2%
*Includes Curtailment Customers							
SEP	85.4%	0.0%	0.0%	0.0%	0.0%	0.3%	-1.0%
Area & Roadway Lighting	100.2%	-1.2%	-2.0%	0.0%	1.0%	1.6%	-0.1%
Total General Consumers	100.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Diesel	72.8%	-6.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Export	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total System	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

1 - PCOSS14-Amended with NER allocated on G&T, only AEF/Water Rentals/Variable O&M charged to Exports, URA eliminated from study

2 - Above with Wind/Water Rentals allocated on unweighted Energy, remainder including DSM classified on SLF to unweighted Energy and ICP Demand

3 - Above with Radial Taps directly assigned, additional Generation Outlet Transmission, US Interconnection classified on SLF, balance on ICP Demand

4 - Above with Subtransmission on ICP Demand

5 - Above with Poles & Wires classified 100% Demand, update Service Drop for multi family dwellings, corrected customer count use for Meter allocator

6 - Above with revised allocation of Late Payment revenue, exclude GSL 30-100 & >100 KV from portion of Customer Service General costs

Manitoba Hydro  
Prospective Cost Of Service Study - March 31, 2014  
Functional Breakdown  
*PCOSS14 Reflecting Order 164/16*  
**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	601,122	298,427	49.6%	48,252	8.0%	33,099	5.5%	71,082	11.8%	150,261	25.0%
General Service - Small Non Demand	120,669	60,022	49.7%	8,598	7.1%	5,878	4.9%	18,487	15.3%	27,684	22.9%
General Service - Small Demand	129,862	74,972	57.7%	10,441	8.0%	7,133	5.5%	4,789	3.7%	32,527	25.0%
General Service - Medium	185,570	112,545	60.6%	14,738	7.9%	10,048	5.4%	6,733	3.6%	41,506	22.4%
General Service - Large <30kV	88,954	58,337	65.6%	7,205	8.1%	4,903	5.5%	3,701	4.2%	14,809	16.6%
General Service - Large 30-100kV	52,421	42,550	81.2%	4,732	9.0%	3,208	6.1%	1,859	3.5%	71	0.1%
General Service - Large >100kV	173,087	153,979	89.0%	17,003	9.8%	0	0.0%	2,075	1.2%	29	0.0%
SEP	973	509	52.4%	132	13.6%	0	0.0%	317	32.6%	14	1.5%
Area & Roadway Lighting	21,494	3,195	14.9%	295	1.4%	199	0.9%	555	2.6%	17,250	80.3%
<b>Total General Consumers</b>	<b>1,374,150</b>	<b>804,537</b>	<b>58.5%</b>	<b>111,397</b>	<b>8.1%</b>	<b>64,468</b>	<b>4.7%</b>	<b>109,597</b>	<b>8.0%</b>	<b>284,151</b>	<b>20.7%</b>
Diesel	9,948	9,361	94.1%	0	0.0%	0	0.0%	0	0.0%	587	5.9%
Export	49,114	49,114	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
<b>Total System</b>	<b>1,433,213</b>	<b>863,012</b>	<b>60.2%</b>	<b>111,397</b>	<b>7.8%</b>	<b>64,468</b>	<b>4.5%</b>	<b>109,597</b>	<b>7.6%</b>	<b>284,738</b>	<b>19.9%</b>

Manitoba Hydro  
Prospective Cost Of Service Study - March 31, 2014  
Customer, Demand, Energy Cost Analysis  
PCOSS14 Reflecting Order 164/16  
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	79,928	486,987	13.68		334,976	0%	n/a	n/a	186,217	7,404,453	7.04 **
GS Small - Non Demand	20,644	53,778	31.99		59,901	0%	n/a	n/a	40,123	1,605,511	6.23 **
GS Small - Demand	7,908	12,492	52.76		71,118	38%	2,390	11.27	50,835	2,047,715	4.64
General Service - Medium	7,581	1,974	320.03		99,419	87%	7,302	11.90	78,570	3,174,662	2.87
General Service - Large <30kV	3,913	288	n/a		43,267	100%	4,042	11.67 *	41,774	1,702,481	2.45
General Service - Large 30-100kV	1,930	40	n/a		18,761	100%	2,894	7.15 *	31,729	1,327,210	2.39
General Service - Large >100kV	2,105	16	n/a		55,483	100%	8,409	6.85 *	115,499	4,903,742	2.36
SEP	331	29	951.31		132	0%	n/a	n/a	509	26,500	2.42 **
Area & Roadway Lighting	15,878	155,024	8.54		3,089	0%	n/a	n/a	2,527	100,487	5.59 **
Total General Consumers	140,219	710,628			686,147		25,038		547,784	22,292,761	
Diesel	587	755	64.79		-	0%	n/a	n/a	9,361	13,754	68.06 **
Export	n/a	n/a	n/a		-	0%	n/a	n/a	49,114	9,013,000	0.54 ***
Total System	140,806	711,383			686,147		25,038		606,259	31,319,515	

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

Prospective Cost Of Service Study  
March 31, 2014  
Classified Costs by Allocation Table  
PCOSS14 Reflecting Order 164/16

Allocation Table	Function		Interest	Depreciation	Operating	Misc. Rev	Total
E12	Generation - Energy Share		212,939	153,797	354,664	-	721,399
E13	TBD					-	-
E14	TBD					-	-
D12	Generation - Demand Share		127,219	91,885	123,647	-	342,751
			340,158	245,681	478,310	-	1,064,150
E15	Transmission - Energy Share		1,625	802	505	-	2,932
D13	Transmission - Demand Share		971	479	302	-	1,752
D14	Transmission - Demand		52,696	35,910	53,761	-	142,367
			55,292	37,190	54,568	-	147,051
D21	Subtrans		21,462	20,089	22,917	-	64,468
E16	Dist. Plant	TBD	-	-	-	-	-
D32	Dist. Plant	Stn	21,797	26,736	36,424		84,956
D36	Dist. Plant	Lines	59,647	43,271	38,276		141,195
D37	Dist. Plant	TBD					-
D40	Dist. Plant	S/E	11,280	11,974	4,125		27,378
			92,724	81,980	78,825	-	253,529
C23	Dist. Plant	Lines	-	-	-		-
C27	Dist. Plant	Services	3,155	2,153	1,904		7,212
C28	Dist. Plant	TBD	-	-	-	-	-
C40	Dist. Plant	Meter Investment	1,702	4,197			5,899
C41	Dist. Plant	Meter Mtce.			2,188		2,188
			4,857	6,350	4,092	-	15,299
C10	Dist Serv	Cust Service - General	2,371	5,570	39,861	-	47,802
C11	Dist Serv	Cust Acct - Billings	1,436	2,607	24,147		28,191
C12	Dist Serv	Cust Acct - Collections	944	1,413	15,873		18,230
C13	Dist Serv	Marketing - R & D	41	53	690		784
C14	Dist Serv	Inspection	184	546	3,092		3,822
C15	Dist Serv	Meter Read	623	879	10,467		11,968
			5,600	11,068	94,129	-	110,797
	Total Allocated Costs		520,093	402,359	732,841	-	1,655,293

Prospective Cost Of Service Study  
March 31, 2014  
Classified Costs by Allocation Table  
*PCOSS14 Reflecting Order 164/16*

Allocation Table	Function		Interest	Depreciation	Operating	Misc. Rev	Total
<b>DIRECTS</b>							
C02	Generation	Diesel	991	1,566	6,804		9,361
E01	Generation	Export	-	12,800	36,314		49,114
			-	12,800	36,314	-	49,114
E01	Generation	SEP - GSM	183	116	171		470
E01	Generation	SEP - GSL 0-30kV	15	10	14		39
E01	Generation	Residential					-
E01	Generation	GSS ND					-
E01	Generation	GSS Demand					-
E01	Generation	GSM					-
E01	Generation	GSL 0-30kV					-
E01	Generation	GSL 30-100kV excl Curt.					-
E01	Generation	GSL >100kV excl Curt.					-
E01	Generation	Street Lights					-
E01	Generation	Curtailement (GSL 30-100)					-
E01	Generation	Curtailement (GSL > 100)					-
			198	126	185	-	509
D04	Transmission	Export	-	-	-		-
D04	Transmission	GSL>100 Radial Taps	147	64			211
D04	Transmission	SEP - GSM	42	38	42		122
D04	Transmission	SEP - GSL 0-30kV	4	3	3		10
			192	106	45	-	343
C01	Distribution	Lighting	3,547	3,926	7,850		15,324
C01	Distribution	Diesel	58	85	444		587
			3,606	4,011	8,294	-	15,911
C02	Dist Serv	GSL 30-100kV excl Curt.			(585)		(585)
C02	Dist Serv	GSL >100kV excl Curt.			(205)		(205)
C02	Dist Serv	Curtailement (GSL 30-100)			(205)		(205)
C02	Dist Serv	Curtailement (GSL > 100)			(205)		(205)
			-	-	(1,200)	-	(1,200)
Total Directs			4,987	18,609	50,443	-	74,039
Total			525,080	420,968	783,284	-	1,729,332
Generation			341,347	260,174	521,614	-	1,123,134
Transmission			55,485	37,296	54,613	-	147,394
Subtransmission			21,462	20,089	22,917	-	64,468
Distribution Plant			101,187	92,341	91,211	-	284,738
Distribution Services			5,600	11,068	92,929	-	109,597
			525,080	420,968	783,284	-	1,729,332
Energy			214,763	167,524	391,668	-	773,955
Demand			295,265	230,448	279,496	-	805,209
Customer			15,053	22,995	112,119	-	150,167
			525,080	420,968	783,284	-	1,729,332

**2014 Prospective Cost of Service Study**  
**Prospective Peak Load Report**  
**Using Top 50 Peak Hours**  
**Reflecting Order 164/16**

**Energy Data**

	Forecast # Cust. <b>C90</b>	Forecast Total KW.h Sales Before DSM	Forecast DSM KW.h Savings	Total KW.h Sales After DSM <b>E20</b>	Distribution Losses	Common Bus Losses	KW.h Generated Adjusted <b>E10</b>
Residential							
Residential	462,217	7,344,419,997	(41,215,066)	7,303,204,931	494,889,258	743,085,646	8,541,179,836
Seasonal	20,888	87,392,769	-	87,392,769	5,922,022	8,892,029	102,206,821
Water Heating	3,882	13,855,623	-	13,855,623	938,903	1,409,780	16,204,306
Total Residential	486,987	7,445,668,389	(41,215,066)	7,404,453,323	501,750,184	753,387,456	8,659,590,963
GS Small - Single Phase							
Non-Demand	41,074	970,700,754	(10,137,996)	960,562,758	65,090,901	97,735,228	1,123,388,887
Demand	4,221	395,919,368	(5,362,385)	390,556,983	26,465,430	39,738,347	456,760,760
Subtotal	45,295	1,366,620,122	(15,500,381)	1,351,119,741	91,556,331	137,473,574	1,580,149,646
Seasonal	859	4,880,000	-	4,880,000	330,685	496,530	5,707,215
Water Heating	380	4,753,000	-	4,753,000	322,079	483,608	5,558,687
Total Single Phase	46,534	1,376,253,122	(15,500,381)	1,360,752,741	92,209,095	138,453,712	1,591,415,548
GS Small - Three Phase							
Non-Demand	11,465	642,020,523	(6,705,261)	635,315,262	32,250,699	63,612,810	731,178,771
Demand	8,271	1,679,910,515	(22,752,931)	1,657,157,584	84,122,786	165,927,779	1,907,208,148
Total Three Phase	19,736	2,321,931,038	(29,458,192)	2,292,472,846	116,373,484	229,540,589	2,638,386,919
Total G.S.Small							
Non-Demand	52,539	1,612,721,277	(16,843,257)	1,595,878,020	97,341,600	161,348,038	1,854,567,658
Demand	12,492	2,075,829,883	(28,115,316)	2,047,714,567	110,588,215	205,666,126	2,363,968,908
Sub-Total G.S. Small	65,031	3,688,551,160	(44,958,573)	3,643,592,587	207,929,815	367,014,163	4,218,536,565
Seasonal	859	4,880,000	-	4,880,000	330,685	496,530	5,707,215
Water Heating	380	4,753,000	-	4,753,000	322,079	483,608	5,558,687
Total GS Small	66,270	3,698,184,160	(44,958,573)	3,653,225,587	208,582,579	367,994,301	4,229,802,467
General Service - Medium	1,974	3,203,094,420	(28,432,707)	3,174,661,713	161,156,301	317,872,345	3,653,690,359
General Service - Large							
0 - 30 Kv	288	1,716,337,934	(13,856,728)	1,702,481,206	71,101,231	169,005,865	1,942,588,302
30 - 100 kV	39	1,108,570,000	(5,286,871)	1,103,283,129	16,549,247	106,709,581	1,226,541,957
30 - 100 kV - Curtailment Cust's	1	225,000,000	(1,073,046)	223,926,954	3,358,904	21,658,223	248,944,081
Over 100 Kv	14	2,850,479,000	(9,696,069)	2,840,782,931	-	270,700,118	3,111,483,050
Over 100 Kv - Curtailment Cust's	2	2,070,000,000	(7,041,224)	2,062,958,776	-	196,580,731	2,259,539,507
Total G.S.- Large	344	7,970,386,934	(36,953,938)	7,933,432,996	91,009,383	764,654,518	8,789,096,897
SEP							
GSM	24	24,500,000		24,500,000	1,243,701	2,453,135	28,196,835
GSL 0 - 30 Kv	5	2,000,000		2,000,000	83,527	198,541	2,282,067
Total SEP	29	26,500,000	-	26,500,000	1,327,227	2,651,675	30,478,903
Street Lighting	129,050	88,794,199	-	88,794,199	6,016,988	9,034,622	103,845,809
Sentinel Lighting	25,974	11,692,889	-	11,692,889	792,349	1,189,727	13,674,964
Total - Lighting	155,024	100,487,088	-	100,487,088	6,809,337	10,224,349	117,520,773
Total - General Consumers	710,628	22,444,320,991	(151,560,284)	22,292,760,707	970,635,010	2,216,784,643	25,480,180,361
Extra Provincial		-	-	-		-	-
Man Hydro - Construction		88,000,000		88,000,000	4,467,170	8,811,259	101,278,429
Integrated System	710,628	22,532,320,991	(151,560,284)	22,380,760,707	975,102,181	2,225,595,902	25,581,458,790

**2014 Prospective Cost of Service Study**  
**Prospective Peak Load Report**  
**Using Top 50 Peak Hours**  
**Reflecting Order 164/16**

	CP Load Factor	Demand Data					CP @ Meter Reconciled MW	Distrib Losses MW	Common Bus Losses MW	CP @ Gen. MW	Class Coinc. Factor	Class Demand NCP MW @ Meter	Class Demand NCP MW @ Gen.
		CP @ Meter Before DSM Non-Recon MW	Forecast DSM MW Savings	CP @ Meter After DSM Non-Recon. MW	Adjust %age	Adjust To Recon.						D50	D20
Residential													
Residential	50.5%	1,660.2	(8.5)	1,651.7	80.9%	(64.3)	1,587.4	124.4	150.7	1,862.6	90.2%	1,759.9	2,064.9
Seasonal	157.8%	6.3		6.3	-	-	6.3	0.5	0.6	7.4	8.0%	79.0	92.7
Water Heating	67.9%	2.3		2.3	-	-	2.3	0.2	0.2	2.7	80.0%	2.9	3.4
Total Residential	50.9%	1,668.9	(8.5)	1,660.3	80.9%	(64.3)	1,596.1	125.1	151.5	1,872.7	86.7%	1,841.9	2,161.1
GS Small - Single Phase													
Non-Demand	62.0%	178.7	(2.7)	176.0	6.0%	(4.8)	171.2	13.4	16.3	200.9	86.3%	198.4	232.8
Demand	66.0%	68.5	(1.3)	67.2	0.7%	(0.5)	66.6	5.2	6.3	78.2	89.8%	74.2	87.0
Subtotal	63.1%	247.2	(4.0)	243.2	6.7%	(5.3)	237.9	18.6	22.6	279.1	87.3%	272.6	319.9
Seasonal	162.5%	0.3		0.3	-	-	0.3	0.0	0.0	0.4	8.0%	4.3	5.0
Water Heating	72.1%	0.8		0.8	-	-	0.8	0.1	0.1	0.9	75.0%	1.0	1.2
Total Single Phase	63.3%	248.3	(4.0)	244.3	6.7%	(5.3)	239.0	18.7	22.7	280.4	86.0%	277.9	326.1
GS Small - Three Phase													
Non-Demand	62.0%	118.2	(1.8)	116.4	4.0%	(3.2)	113.3	6.6	10.5	130.4	86.3%	131.2	151.1
Demand	66.0%	290.6	(5.6)	285.0	2.9%	(2.3)	282.7	16.4	26.3	325.4	89.8%	314.8	362.4
Total Three Phase	64.8%	408.8	(7.4)	401.4	6.9%	(5.4)	395.9	23.0	36.9	455.8	88.8%	446.0	513.4
Total G.S.Small													
Non-Demand	61.4%	296.9	(4.5)	292.4	10.0%	(7.9)	284.5	20.0	26.8	331.3	86.3%	329.7	383.9
Demand	65.1%	359.0	(6.9)	352.1	3.6%	(2.8)	349.3	21.6	32.7	403.6	89.8%	389.0	449.4
Sub-Total G.S. Small	64.2%	656.0	(11.4)	644.5	13.5%	(10.7)	633.8	41.6	59.5	734.9	88.2%	718.6	833.3
Seasonal	162.4%	0.3	-	0.3	0.0%	-	0.3	0.0	0.0	0.4	8.0%	4.3	5.0
Water Heating	72.1%	0.8	-	0.8	0.0%	-	0.8	0.1	0.1	0.9	75.0%	1.0	1.2
Total GS Small	64.2%	657.1	(11.4)	645.6	13.5%	(10.7)	634.9	41.7	59.6	736.1	87.7%	723.9	839.5
General Service - Medium	72.4%	505.0	(6.8)	498.3	5.5%	(4.4)	493.9	28.6	46.0	568.5	91.5%	539.8	621.3
General Service - Large													
0 - 30 Kv	79.6%	246.1	(2.7)	243.5	0.0%	-	243.5	11.5	22.4	277.4	89.3%	272.6	310.6
30 - 100 kV	91.0%	139.1	(1.0)	138.1	-	-	138.1	2.5	12.4	153.0	74.0%	186.6	206.7
30 - 100 kV - Curtailment Cust's	98.9%	26.0	(0.2)	25.8	-	-	25.8	0.5	2.3 †	28.6	93.6%	27.6	30.5
Over 100 Kv	91.0%	357.6	(1.3)	356.3	-	-	356.3	-	31.4	387.7	87.4%	407.7	443.6
Over 100 Kv - Curtailment Cust's	99.3%	238.0	(0.8)	237.1	-	-	237.1	-	20.9 †	258.0	81.2%	292.0	317.7
Total G.S.- Large	90.4%	1,006.7	(6.0)	1,000.8	0.0%	-	1,000.8	14.4	89.4	1,104.6	84.3%	1,186.5	1,309.1
SEP													
GSM	46.9%	6.0		6.0	-	-	6.0	0.3	0.6	6.9	81.0%	7.4	8.5
GSL 0 - 30 Kv	116.3%	0.2		0.2	-	-	0.2	0.0	0.0	0.2	14.3%	1.4	1.6
Total SEP	49.1%	6.2	-	6.2	-	-	6.2	0.4	0.6	7.1	70.5%	8.7	10.0
Street Lighting	119.7%	8.5	-	8.5	-	-	8.5	0.7	0.8	9.9	38.2%	22.2	26.0
Sentinel Lighting	119.7%	1.1	-	1.1	-	-	1.1	0.1	0.1	1.3	38.2%	2.9	3.4
Total - Lighting	119.7%	9.6	-	9.6	0.0%	-	9.6	0.8	0.9	11.2	38.2%	25.1	29.4
Total - General Consumers	66.5%	3,853.4	(32.7)	3,820.8	100.0%	(79.4)	3,741.4	211.0	348.0	4,300.3	86.5%	4,325.9	4,970.5
Extra Provincial	0.0%	0.0		0.0	-	-	-	-	-	0.0			
Man Hydro - Construction	72.4%	13.9		13.9	-	-	13.9	0.8	1.3	16.0			
Integrated System	66.5%	3,867.3	(32.7)	3,834.6	100.0%	(79.4)	3,755.2	211.8	349.3	4,316.3			

April 3, 2017

To Manitoba Hydro and Interveners from COSS Methodology Review

**Re: Re: MH Compliance Filing as required in Order 164/16**

All Parties to the Manitoba Hydro Cost of Service Study Methodology Review Hearing, which resulted in Order 164/16, are advised that Manitoba Hydro provided its Compliance Filing to the Board on February 21, 2017 (attached). The Board has reviewed the Compliance Filing and has identified some issues related to low-cost items that Manitoba Hydro is requested to address in the filing of its next PCOSS expected to be filed in Manitoba Hydro's next General Rate Application:

**1. Functionalization of MISO Fees**

Mid-Continent Independent System Operator (MISO) fees amounted to \$4 million in operating expenses in PCOSS14 Amended. The Board ordered these costs be functionalized as Generation, which is a change from Manitoba Hydro's original methodology which had functionalized them as Transmission. MH left these costs functionalized as Transmission in the model submitted with the compliance filing. Manitoba Hydro is to correct this item in its next PCOSS. The Board recognizes that not all of the \$4 million is directly attributable to MISO and therefore some of these costs may remain functionalized as Transmission;

**2. Allocation of Common Costs**

The Board made five Directives regarding common costs in its Order 184/16. Three of the Directives require additional review by Manitoba Hydro in its next PCOSS:

- a. Directive 1 (ee): The electronic model provided with Manitoba Hydro's compliance filing continues to reflect the 36%/28%/36% generation/transmission/subtransmission functionalization used in PCOSS14 Amended for the SCADA allocator. Manitoba Hydro is to review this matter further and report its findings in its next PCOSS;



- b. Directives 1 (ff) and (gg): The common costs in each Function are not allocated based on a cost-weighted average of all allocators in the compliance filing model, so Manitoba Hydro is not yet in compliance with this directive. Manitoba Hydro is to provide an update regarding common cost allocation in its next PCOSS.

### **3. Allocation of Customer Services – General (Allocator C10)**

In directive 1(y), the Board ordered changes to the allocation of some customer services costs—namely those costs allocated with MH's C10 allocator—ordering a reduction of costs allocated to large General Service customers of approximately \$1.2 million.

MH has complied with this directive in the compliance filing COS model, but only indirectly. It has added \$1.2 million to the costs allocated by the C10 allocator and then subtracted the same amount of costs from GSL class through a direct assignment. While very similar, this is not mathematically identical to adjusting the C10 allocator to directly reduce the costs allocated to the GSL classes. Manitoba Hydro is to update its next PCOSS to address this matter.

### **4. Allocation of Late Payment Revenue**

The Board ordered late payment revenue and other revenue adjustments to be allocated based on actual late payment revenue received by class. As explained in its compliance filing, due to a lack of data, Manitoba Hydro allocated these revenues between General Service classes based on total revenues except for the largest General Service classes, which were allocated no late payment revenue.

Manitoba Hydro's revenue allocation, compared to that presented by Mr. Harper on behalf of the Coalition shows there are some small differences in the total revenue allocation, but the allocation to each class is within \$50,000.

### **5. Other Allocator Updates**

The Board ordered several allocators be reviewed and updated that had not been updated in some time. According to MH's compliance filing, it is reviewing the following allocators and will report back on their findings in PCOSS18:

- All Customer Service allocators, including allocator C10 discussed above
- Service Drops
- Meter Investment
- Meter Maintenance

## **6. Diesel Class and Distribution Costs:**

MH changed the classification of distribution costs directly assigned to the diesel class. This does not change the costs allocated to the other classes or the RCC ratios. Manitoba Hydro is to confirm with its next PCOSS that its proposed treatment would not impact diesel rate design as there is a separate cost of service model for that purpose.

## **7. Next Steps:**

The Board invites comments from the Parties to the Manitoba Hydro Cost of Service Study Methodology Review to any of the foregoing and/or Manitoba Hydro's attached Compliance Filing.

Should any Intervener's Consultant who previously had access to Manitoba Hydro's electronic COSS model during the hearing require access to the model submitted by Manitoba Hydro with its Compliance Filing, please contact Manitoba Hydro for such access and to confirm that access to the model will be restricted to parties or individuals working on the Cost of Service Study Methodology Review in accordance to Order 26/16.

Please file any comments with the Board, and provide copies to all other Parties, on or before April 28, 2017.

Yours truly,

"Original Signed By:"

Kurt Simonsen  
Associate Secretary  
Encl.

KS/aw

**MANITOBA HYDRO**  
**Cost of Service Study Review**  
**LIST OF REGISTERED INTERVENERS**

***Consumers Association of Canada  
(Manitoba) and Winnipeg Harvest  
(Consumer Coalition)***

Mr. Byron Williams  
Public Interest Law Centre  
200-393 Portage Avenue  
Winnipeg, MB R3B 3H6  
[bywil@pilc.mb.ca](mailto:bywil@pilc.mb.ca)

[sukno@pilc.mb.ca](mailto:sukno@pilc.mb.ca)  
[alnis@pilc.mb.ca](mailto:alnis@pilc.mb.ca)  
[William.harper5@sympatcio.ca](mailto:William.harper5@sympatcio.ca)

***City of Winnipeg (CoW)***

c/o Legal Services Division  
3<sup>rd</sup> floor, 185 King Street  
Winnipeg, MB R3B 1J1

Ms. Denise Pambrun  
[dpambrun@winnipeg.ca](mailto:dpambrun@winnipeg.ca)

Mr. Bruce Chin  
[bchin@winnipeg.ca](mailto:bchin@winnipeg.ca)

Mr. John Todd  
[jtodd@elenchus.ca](mailto:jtodd@elenchus.ca)

***Green Action Centre (GAC)***

William Gange  
c/o Gange Goodman & French  
760 – 444 St. Mary Avenue  
Winnipeg, MB R3C 3T1  
[wsg@gangegoodmanfrench.ca](mailto:wsg@gangegoodmanfrench.ca)

Mr. Peter Denton  
[phdenton@shaw.ca](mailto:phdenton@shaw.ca)

Mr. Peter Miller  
1101 Riverwood Avenue  
Winnipeg, MB R3T 1L5  
[p.miller@mymts.net](mailto:p.miller@mymts.net)

Mr. Paul Chernick  
[pchernick@resourceinsight.com](mailto:pchernick@resourceinsight.com)

Ms. Susan Geller  
[sgeller@resourceinsight.com](mailto:sgeller@resourceinsight.com)

***General Service Small and General  
Service Medium Representative***

c/o Hill Sokalski Walsh Olson  
2670 – 360 Main Street  
Winnipeg, MB R3C 3Z3

Christian Monnin  
[cmonnin@hillco.mb.ca](mailto:cmonnin@hillco.mb.ca)

Michael Weinstein  
[mweinstein@hillco.mb.ca](mailto:mweinstein@hillco.mb.ca)

***Manitoba Industrial Power Users' Group  
(MIPUG)***

Mr. Antoine F. Hacault  
Thompson, Dorfman Sweatman LLP  
2200-201 Portage Avenue  
Winnipeg Manitoba R3B 3L3  
[afh@tdslaw.com](mailto:afh@tdslaw.com)

Mr. Patrick Bowman  
c/o InterGroup Consultants Ltd.  
500 – 280 Smith Street  
Winnipeg, MB R3C 1K2  
[pbowman@intergroup.ca](mailto:pbowman@intergroup.ca)

Ms. Melissa Davies  
c/o InterGroup Consultants Ltd.  
500 – 280 Smith Street  
Winnipeg, MB R3C 1K2  
[mdavies@intergroup.ca](mailto:mdavies@intergroup.ca)

***Manitoba Keewatinowi Okimakanak Inc.***

Mr. George Orle  
Wood Orle Litigation Lawyers  
3 - 430 River Avenue  
Winnipeg, MB R3L 0C6  
[gorle@odgb.mb.ca](mailto:gorle@odgb.mb.ca)

Mr. Michael Anderson  
Manitoba Keewatinowi Okimakanak, Inc.  
6<sup>th</sup> Floor, 338 Broadway  
Winnipeg, MB R3C 0T2  
[manderson@mkonorth.com](mailto:manderson@mkonorth.com)  
[michaelanderson@mts.net](mailto:michaelanderson@mts.net)

***Manitoba Metis Federation (MMF)***

c/o D'Arcy & Deacon LLP  
2200 – One Lombard Place  
Winnipeg, MB R3B 0X7

Ms. Jessica Saunders  
[jsaunders@darcydeacon.com](mailto:jsaunders@darcydeacon.com)

Mr. Terence Delaronde  
[tdelaronde@darcydeacon.com](mailto:tdelaronde@darcydeacon.com)

Ms. Pamela Heinrichs  
[pheinrichs@darcydeacon.com](mailto:pheinrichs@darcydeacon.com)



PO Box 815 • Winnipeg, Manitoba Canada • R3C 2P4  
Street Location for DELIVERY: 22<sup>nd</sup> floor 360 Portage Ave  
Telephone / N<sup>o</sup> de téléphone : (204) 360-3633 • Fax / N<sup>o</sup> de télécopieur : (204) 360-6147 • ofernandes@hydro.mb.ca

February 21, 2017

Mr. D. Christle  
Secretary and Executive Director  
Public Utilities Board  
400-330 Portage Avenue  
Winnipeg, Manitoba  
R3C 0C4

Dear Mr. Christle:

**RE: COST OF SERVICE STUDY METHODOLOGY REVIEW PROCESS  
MANITOBA HYDRO RESPONSE TO DIRECTIVES 1 & 2 - ORDER 164/16**

On December 20, 2016, the Public Utilities Board ("PUB") issued Order 164/16 related to the public review of Manitoba Hydro's Cost of Service Study Methodology ("COSS"). The PUB directed Manitoba Hydro to revise and update its COSS to reflect the PUB's findings and directions, and to provide an electronic version of the Cost of Service Model reflective of these modifications no later than 60 days from the date of the Order.

Please find attached Manitoba Hydro's responses to Directive 1, including the PCOSS14 Schedules reflecting the directed changes in methodology. In response to Directive 2, Manitoba Hydro is providing the PUB with a link to the electronic version of the PCOSS14 model by separate email.

Manitoba Hydro notes that PUB Order 26/16 specified that such electronic models are to be limited to the Cost of Service Study Methodology Review and that the model must not be disseminated to parties or individuals other than the people working on this Cost of Service Study Methodology Review. Manitoba Hydro expects that the protocol stated in Order 26/16 is to be followed with regard to the electronic model provided with this filing.

Should you have any questions with respect to the forgoing, please do not hesitate to contact the writer at 204-360-3633 or Greg Barnlund at 204-360-5243.

Yours truly,

**MANITOBA HYDRO LAW DIVISION**

Per:

A handwritten signature in blue ink, appearing to read 'Odette Fernandes', written over a horizontal line.

**ODETTE FERNANDES**

Legal Counsel

## Manitoba Hydro Response to Directives 1 and 2 in Order 164/16

As directed in Order 164/16, Manitoba Hydro has made the following adjustments to its Cost of Service Methodology:

- **Export Revenue –Directives 1(a-c)**

In accordance with Directive 1(a), Manitoba Hydro has eliminated the Export Class from its Cost of Service Study.

With respect to Directive 1(c), the costs of the Affordable Energy Fund and a pro-rata share of water rentals and variable hydraulic operating & maintenance costs are deducted from gross export revenues to determine Net Export Revenue (NER) as follows:

	(\$ millions)
Gross Export Revenue	345.2
Affordable Energy Fund	(12.8)
Variable Hydraulic O&M	(3.4)
Water Rentals	(32.9)
Net Export Revenue	296.1

In compliance with Directive 1(b), the resultant NER has been allocated to domestic classes based on each class' share of Generation and Transmission costs, including the cost of directly assigned radial taps.

- **Export Revenue - Uniform Rate Adjustment – Directive 1(d)**

Domestic revenues have not been adjusted to offset the rate reduction that resulted from Uniform Rates legislation. The adjustment for Uniform Rates, previously deducted from export revenue, is eliminated from PCOSS14 as directed in Directive 1 (d).

- **Export Revenue - Diesel Class – Directive 1(e)**

As directed in Directive 1 (e), there has been no NER allocated to the Diesel class.

- **Functionalization of Generation – Directive 1(f(i)-(v))**

In compliance with Directive 1(f), Manitoba Hydro's hydraulic and thermal generating stations, operating and maintenance, fuel, water rental costs, wind, import purchases, the Bipoles, as well as the HVDC portions of Dorsey (and future Riel) are functionalized as Generation. Furthermore, the following generation outlet transmission assets have been re-functionalized as Generation as directed by the PUB in Directive 1(f):

- Wuskwatim GS to Wuskwatim switchyard 230 kV T/L
- Bison Wind Farm - St. Leon 230 kV T/L
- St. Joseph – Letellier 230 kV T/L
- Pointe du Bois - Rover 66 kV T/L
- Slave Falls GS - Pointe du Bois GS 115 kV T/L
- Pointe du Bois switching station.

- **Functionalization of Generation – Directive 1 (f(vi)) and 1 (hh)**

Manitoba Hydro has functionalized DSM costs entirely to Generation, including the full revenue requirement of the Curtailable Rate Program as set out in Directive 1(hh). DSM costs are no longer directly assigned based on class participation, but rather treated as a Generation resource, as directed.

- **Classification and Allocation of Generation – Directives 1(g-i)**

Water rentals and variable hydraulic operating & maintenance costs not charged to exports, as discussed above, as well as wind purchases, have been classified as 100% Energy as directed under Directive 1 (g).

The remaining Generation costs, including DSM, have been classified between Energy and Demand on the basis of System load factor (SLF). The SLF has been derived on the basis of the average of eight years of historic domestic load factors as shown in the table below, consistent with the estimated class demand in the PCOSS. The result is that 62.6% of these Generation-related costs are classified as Energy, the remaining 37.4% as Demand.

Fiscal Year	Load Factor Percentage <sup>1</sup>
2004/05	61.4%
2005/06	63.6%
2006/07	63.7%
2007/08	64.0%
2008/09	61.8%
2009/10	60.8%
2010/11	63.6%
2011/12	61.7%
Average	62.6%

In addition, in accordance with the PUB's direction, Energy-related Generation costs have been allocated using un-weighted domestic energy, as directed in Directive 1 h), and is reflected in Schedule 6<sup>2</sup> attached. Demand-related Generation costs have been allocated using demand in the top 50 coincident peak hours, based on domestic load only and reflecting the average eight years of Load Research studies (2005 to 2012) as directed in Directive 1 i), and is reflected in the attached Schedule 7<sup>3</sup>.

- **Transmission- Directives 1(j-m)**

The domestic AC transmission system operating at voltages greater than 100 kV, interprovincial interconnections and U.S. interconnections have been functionalized as Transmission as per Directive 1 j). U.S. interconnections have been classified between Energy and Demand based on the SLF method in accordance with the PUB's direction under Directive 1 l). The remaining Transmission-related costs have been classified as 100% Demand as directed in Directive 1 k). The Energy and Demand allocators used for the Transmission function are the same as those used for the Generation function.

The dedicated radial taps VT-63 and BX-18/19 have been directly assigned to the GSL >100 kV class as directed in Directive 1 m).

- **Subtransmission - Directive 1(n and o)**

Subtransmission has been allocated on the basis of Coincident Peak Demand in accordance with the PUB's direction under Directive 1 o). The Coincident Peak Demand allocator

<sup>1</sup> 2012 Electric Load Forecast, page iii

<sup>2</sup> kW.h Generated Adjusted E10 column

<sup>3</sup> CP at Gen. MW column

excludes GSL >100 kV customers as per Directive 1 n), but is otherwise consistent with that used for Generation and Transmission discussed above.

- **Distribution Plant - Directives 1(p-u)**

PCOSS14 reflects the functionalization of assets that operate at voltages under 33kV as Distribution, as directed by the PUB in Directive 1 p). As per the PUB's direction, Distribution poles and wires, substations and transformers have been classified as 100% Demand and allocated on the basis of Non-Coincident peak as per Directive 1 q), r) and t). Service drops, meter investment and meter maintenance have been classified as 100 % Customer as directed in Directive 1 s).

Manitoba Hydro notes with respect to Directive 1 u), that the 30% adjustment factor used for GSL 0-30kV related to distribution secondary is consistent with the existing methodology (page 75 of Order 164/16) and remains unchanged.

- **Service Drops - Directive 1(v)**

In accordance with PUB direction under Directive 1 v), the Service Drops allocator has been adjusted to recognize that there are multiple customers that may be served by a single service. As directed, the customer count has been decreased by 103,000 prorated between Residential, GSS and GSM. The result is that customer count is reduced by 89,959 for the Residential class, 12,657 for GSS and 384 for GSM prior to applying the weighting factors.

- **Customer-related Allocators for Distribution Costs – Directive 1 (v, w, z)**

Order 164/16 directed pursuant to Directives 1 v), w), and z) that the allocator weighting factors for Service Drops, Meter Investment/Maintenance, and Customer Services costs be updated. Manitoba Hydro intends to update these factors in its preparation of PCOSS18.

- **Customer Service – General: Directive 1(x)**

Manitoba Hydro confirms that the Cost of Service Methodology reflects the PUB's direction with respect to the functionalization and classification of Customer Service costs as set out in Directive 1(x).



- **Customer Service – General: Directive 1(y)**

Manitoba Hydro's Cost of Service Methodology has been modified in accordance with Directive 1 y) to eliminate the share of costs related to the Customer Service sub-category of Customer Consultation and Information allocated to the GSL 30-100 kV and GSL>100 kV classes. Manitoba Hydro intends to review its allocation of Customer Service – General costs in its preparation of PCOSS18.

- **A Single Area and Roadway Lighting class: Directive 1 (aa)**

Manitoba Hydro confirms that the Cost of Service Methodology reflects a single Area and Roadway Lighting class, as directed under Directive 1 aa).

- **Late Payment Revenue and Customer Adjustments: Directive 1(bb)**

With respect to Directive 1 bb), Manitoba Hydro is able to identify late payment revenue attributed to the Residential class on an actual basis which has been used to allocate 81% of the forecast late payment revenue and customer adjustments to the class. Late Payment revenue attributed to the remaining customer classes is not readily available on a class by class basis (as provided in the response to MH/Coalition I-4e)), therefore Manitoba Hydro has prorated the residual 19% of forecast late payment revenues to the GSS, GSM, GSL 0-30 kV and Sentinel Lighting classes based on each class' forecast revenue. Given there is little or no late payment revenue typically associated with customers in the largest GSL classes, no late payment revenue has been allocated to these classes.

- **Common costs: Directives 1 (cc, dd)**

Manitoba Hydro confirms that the Cost of Service Methodology reflecting Order 164/16 is consistent with the PUB's direction under Directives 1 cc) and dd) to functionalize Building, General, Communication and Control common costs using a labour allocator.

- **Common costs: Directives 1 (dd, ee, ff, gg)**

Manitoba Hydro intends to update the functionalization of SCADA common costs as well as the treatment of common costs within each function as part of its preparation of PCOSS18 in accordance with Directives 1 dd), ee), ff) and gg).

**Cost of Service Methodology Results Reflecting Order 164/16**

The directives from Order 164/16 discussed above were incorporated into PCOSS14 and results in class Revenue-to-Cost ratios as follows:

Customer Class	PCOSS14 Amended	PCOSS14 Order 164/16	Change
Residential	99.9%	95.5%	(4.4%)
GSS – Non Demand	108.0%	108.5%	0.5%
GSS – Demand	104.5%	103.4%	(1.1%)
GSM	99.3%	100.3%	1.0%
GSL <30	91.1%	96.1%	5.0%
GSL 30-100	99.8%	108.0%	8.2%
GSL >100	98.5%	107.1%	8.6%
ARL	100.3%	99.5%	(0.8%)

The following schedules reflect the PUB's directives from Order 164/16:

- Schedule 1 - Revenue-to-Cost coverage analysis
- Schedule 2 – Comparison of PCOSS14 – Amended to PCOSS14 164/16
- Schedule 3 – Functional Breakdown
- Schedule 4 – Customer, Demand, Energy Cost Analysis
- Schedule 5 – Classified Costs by Allocation Table
- Schedule 6 – Energy Data - Prospective Peak Load Report – Using Top 50 Peak Hours
- Schedule 7 – Demand Data - Prospective Peak Load Report – Using Top 50 Peak Hours

Manitoba Hydro  
Prospective Cost Of Service Study  
March 31, 2014  
Revenue Cost Coverage Analysis  
*PCOSS14 Reflecting Order 164/16*  
**S U M M A R Y**

Customer Class	Total Cost (\$000)	Class Revenue (\$000)	Net Export Revenue (\$000)	Total Revenue (\$000)	RCC % Current Rates
Residential	713,281	569,331	112,159	681,490	95.5%
General Service - Small Non Demand	142,869	132,828	22,200	155,028	108.5%
General Service - Small Demand	157,495	135,216	27,633	162,849	103.4%
General Service - Medium	226,749	186,162	41,179	227,341	100.3%
General Service - Large 0 - 30kV	110,158	84,686	21,204	105,890	96.1%
General Service - Large 30-100kV*	67,717	57,808	15,297	73,104	108.0%
General Service - Large >100kV*	228,404	189,258	55,317	244,574	107.1%
*Includes Curtailment Customers					
SEP	973	824	-	824	84.7%
Area & Roadway Lighting	22,623	21,376	1,129	22,505	99.5%
Total General Consumers	1,670,270	1,377,487	296,119	1,673,606	100.2%
Diesel	9,948	6,612	-	6,612	66.5%
Export	49,114	345,233	(296,119)	49,114	100.0%
Total System	1,729,332	1,729,332	-	1,729,332	100.0%

**PCOSS14 Variance Analysis**  
**Comparison of PCOSS14-Amended to PCOSS14 164/16**

	Incremental Change in RCC						PCOSS14 164/16	
	(1) Export	(2) Gen	(3) Trans	(4) Subtrans	(5) Dist	(6) Other		
Residential	99.8%	-2.9%	-3.2%	-0.8%	0.1%	2.3%	0.2%	95.5%
General Service - Small Non Demand	108.0%	-1.1%	2.0%	0.4%	0.0%	-0.3%	-0.5%	108.5%
General Service - Small Demand	104.5%	1.2%	1.9%	0.2%	-0.2%	-3.9%	-0.3%	103.4%
General Service - Medium	99.4%	2.1%	2.6%	0.9%	-0.3%	-4.1%	-0.3%	100.3%
General Service - Large 0 - 30kV	91.3%	3.4%	3.5%	1.2%	-0.1%	-2.8%	-0.4%	96.1%
General Service - Large 30-100kV*	100.0%	3.0%	2.3%	0.9%	0.7%	0.0%	1.1%	108.0%
General Service - Large >100kV*	98.6%	4.1%	3.5%	0.7%	0.0%	0.0%	0.2%	107.1%
* Includes Curtailment Customers								
SEP	85.4%	0.0%	0.0%	0.0%	0.0%	0.3%	-1.0%	84.7%
Area & Roadway Lighting	100.2%	-1.2%	-2.0%	0.0%	1.0%	1.6%	-0.1%	99.5%
Total General Consumers	100.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.2%
Diesel	72.8%	-6.3%	0.0%	0.0%	0.0%	0.0%	0.0%	66.5%
Export	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Total System	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

1 - PCOSS14-Amended with NER allocated on G&T, only AEF/Water Rentals/Variable O&M charged to Exports, URA eliminated from study

2 - Above with Wind/Water Rentals allocated on unweighted Energy, remainder including DSM classified on SLF to unweighted Energy and ICP Demand

3 - Above with Radial Taps directly assigned, additional Generation Outlet Transmission, US Interconnection classified on SLF, balance on ICP Demand

4 - Above with Subtransmission on ICP Demand

5 - Above with Poles & Wires classified 100% Demand, update Service Drop for multi family dwellings, corrected customer count use for Meter allocator

6 - Above with revised allocation of Late Payment revenue, exclude GSL 30-100 & >100 KV from portion of Customer Service General costs

Manitoba Hydro  
Prospective Cost Of Service Study - March 31, 2014  
Functional Breakdown  
*PCOSS14 Reflecting Order 164/16*  
**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	601,122	298,427	49.6%	48,252	8.0%	33,099	5.5%	71,082	11.8%	150,261	25.0%
General Service - Small Non Demand	120,669	60,022	49.7%	8,598	7.1%	5,878	4.9%	18,487	15.3%	27,684	22.9%
General Service - Small Demand	129,862	74,972	57.7%	10,441	8.0%	7,133	5.5%	4,789	3.7%	32,527	25.0%
General Service - Medium	185,570	112,545	60.6%	14,738	7.9%	10,048	5.4%	6,733	3.6%	41,506	22.4%
General Service - Large <30kV	88,954	58,337	65.6%	7,205	8.1%	4,903	5.5%	3,701	4.2%	14,809	16.6%
General Service - Large 30-100kV	52,421	42,550	81.2%	4,732	9.0%	3,208	6.1%	1,859	3.5%	71	0.1%
General Service - Large >100kV	173,087	153,979	89.0%	17,003	9.8%	0	0.0%	2,075	1.2%	29	0.0%
SEP	973	509	52.4%	132	13.6%	0	0.0%	317	32.6%	14	1.5%
Area & Roadway Lighting	21,494	3,195	14.9%	295	1.4%	199	0.9%	555	2.6%	17,250	80.3%
<b>Total General Consumers</b>	<b>1,374,150</b>	<b>804,537</b>	<b>58.5%</b>	<b>111,397</b>	<b>8.1%</b>	<b>64,468</b>	<b>4.7%</b>	<b>109,597</b>	<b>8.0%</b>	<b>284,151</b>	<b>20.7%</b>
Diesel	9,948	9,361	94.1%	0	0.0%	0	0.0%	0	0.0%	587	5.9%
Export	49,114	49,114	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
<b>Total System</b>	<b>1,433,213</b>	<b>863,012</b>	<b>60.2%</b>	<b>111,397</b>	<b>7.8%</b>	<b>64,468</b>	<b>4.5%</b>	<b>109,597</b>	<b>7.6%</b>	<b>284,738</b>	<b>19.9%</b>

Manitoba Hydro  
Prospective Cost Of Service Study - March 31, 2014  
Customer, Demand, Energy Cost Analysis  
*PCOSS14 Reflecting Order 164/16*  
**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	79,928	486,987	13.68	334,976	0%	n/a	n/a	186,217	7,404,453	7.04 **
GS Small - Non Demand	20,644	53,778	31.99	59,901	0%	n/a	n/a	40,123	1,605,511	6.23 **
GS Small - Demand	7,908	12,492	52.76	71,118	38%	2,390	11.27	50,835	2,047,715	4.64
General Service - Medium	7,581	1,974	320.03	99,419	87%	7,302	11.90	78,570	3,174,662	2.87
General Service - Large <30kV	3,913	288	n/a	43,267	100%	4,042	11.67 *	41,774	1,702,481	2.45
General Service - Large 30-100kV	1,930	40	n/a	18,761	100%	2,894	7.15 *	31,729	1,327,210	2.39
General Service - Large >100kV	2,105	16	n/a	55,483	100%	8,409	6.85 *	115,499	4,903,742	2.36
SEP	331	29	951.31	132	0%	n/a	n/a	509	26,500	2.42 **
Area & Roadway Lighting	15,878	155,024	8.54	3,089	0%	n/a	n/a	2,527	100,487	5.59 **
Total General Consumers	140,219	710,628		686,147		25,038		547,784	22,292,761	
Diesel	587	755	64.79	-	0%	n/a	n/a	9,361	13,754	68.06 **
Export	n/a	n/a	n/a	-	0%	n/a	n/a	49,114	9,013,000	0.54 ***
Total System	140,806	711,383		686,147		25,038		606,259	31,319,515	

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

Prospective Cost Of Service Study  
March 31, 2014  
Classified Costs by Allocation Table  
*PCOSS14 Reflecting Order 164/16*

Allocation Table	Function		Interest	Depreciation	Operating	Misc. Rev	Total
E12	Generation - Energy Share		212,939	153,797	354,664	-	721,399
E13	TBD					-	-
E14	TBD					-	-
D12	Generation - Demand Share		127,219	91,885	123,647	-	342,751
			340,158	245,681	478,310	-	1,064,150
E15	Transmission - Energy Share		1,625	802	505	-	2,932
D13	Transmission - Demand Share		971	479	302	-	1,752
D14	Transmission - Demand		52,696	35,910	53,761	-	142,367
			55,292	37,190	54,568	-	147,051
D21	Subtrans		21,462	20,089	22,917	-	64,468
E16	Dist. Plant	TBD	-	-	-	-	-
D32	Dist. Plant	Stn	21,797	26,736	36,424		84,956
D36	Dist. Plant	Lines	59,647	43,271	38,276		141,195
D37	Dist. Plant	TBD					-
D40	Dist. Plant	S/E	11,280	11,974	4,125		27,378
			92,724	81,980	78,825	-	253,529
C23	Dist. Plant	Lines	-	-	-		-
C27	Dist. Plant	Services	3,155	2,153	1,904		7,212
C28	Dist. Plant	TBD	-	-	-	-	-
C40	Dist. Plant	Meter Investment	1,702	4,197			5,899
C41	Dist. Plant	Meter Mtce.			2,188		2,188
			4,857	6,350	4,092	-	15,299
C10	Dist Serv	Cust Service - General	2,371	5,570	39,861	-	47,802
C11	Dist Serv	Cust Acct - Billings	1,436	2,607	24,147		28,191
C12	Dist Serv	Cust Acct - Collections	944	1,413	15,873		18,230
C13	Dist Serv	Marketing - R & D	41	53	690		784
C14	Dist Serv	Inspection	184	546	3,092		3,822
C15	Dist Serv	Meter Read	623	879	10,467		11,968
			5,600	11,068	94,129	-	110,797
	Total Allocated Costs		520,093	402,359	732,841	-	1,655,293

Prospective Cost Of Service Study  
March 31, 2014  
Classified Costs by Allocation Table  
*PCOSS14 Reflecting Order 164/16*

Allocation Table	Function		Interest	Depreciation	Operating	Misc. Rev	Total
<b>DIRECTS</b>							
C02	Generation	Diesel	991	1,566	6,804		9,361
E01	Generation	Export	-	12,800	36,314		49,114
			-	12,800	36,314	-	49,114
E01	Generation	SEP - GSM	183	116	171		470
E01	Generation	SEP - GSL 0-30kV	15	10	14		39
E01	Generation	Residential					-
E01	Generation	GSS ND					-
E01	Generation	GSS Demand					-
E01	Generation	GSM					-
E01	Generation	GSL 0-30kV					-
E01	Generation	GSL 30-100kV excl Curt.					-
E01	Generation	GSL >100kV excl Curt.					-
E01	Generation	Street Lights					-
E01	Generation	Curtaiment (GSL 30-100)					-
E01	Generation	Curtaiment (GSL > 100)					-
			198	126	185	-	509
D04	Transmission	Export	-	-	-		-
D04	Transmission	GSL>100 Radial Taps	147	64			211
D04	Transmission	SEP - GSM	42	38	42		122
D04	Transmission	SEP - GSL 0-30kV	4	3	3		10
			192	106	45	-	343
C01	Distribution	Lighting	3,547	3,926	7,850		15,324
C01	Distribution	Diesel	58	85	444		587
			3,606	4,011	8,294	-	15,911
C02	Dist Serv	GSL 30-100kV excl Curt.			(585)		(585)
C02	Dist Serv	GSL >100kV excl Curt.			(205)		(205)
C02	Dist Serv	Curtaiment (GSL 30-100)			(205)		(205)
C02	Dist Serv	Curtaiment (GSL > 100)			(205)		(205)
			-	-	(1,200)	-	(1,200)
Total Directs			4,987	18,609	50,443	-	74,039
Total			525,080	420,968	783,284	-	1,729,332
Generation			341,347	260,174	521,614	-	1,123,134
Transmission			55,485	37,296	54,613	-	147,394
Subtransmission			21,462	20,089	22,917	-	64,468
Distribution Plant			101,187	92,341	91,211	-	284,738
Distribution Services			5,600	11,068	92,929	-	109,597
			525,080	420,968	783,284	-	1,729,332
Energy			214,763	167,524	391,668	-	773,955
Demand			295,265	230,448	279,496	-	805,209
Customer			15,053	22,995	112,119	-	150,167
			525,080	420,968	783,284	-	1,729,332



**2014 Prospective Cost of Service Study**  
**Prospective Peak Load Report**  
**Using Top 50 Peak Hours**  
**Reflecting Order 164/16**

**Energy Data**

	Forecast # Cust. <b>C90</b>	Forecast Total KW.h Sales Before DSM	Forecast DSM KW.h Savings	Total KW.h Sales After DSM <b>E20</b>	Distribution Losses	Common Bus Losses	KW.h Generated Adjusted <b>E10</b>
Residential							
Residential	462,217	7,344,419,997	(41,215,066)	7,303,204,931	494,889,258	743,085,646	8,541,179,836
Seasonal	20,888	87,392,769	-	87,392,769	5,922,022	8,892,029	102,206,821
Water Heating	3,882	13,855,623	-	13,855,623	938,903	1,409,780	16,204,306
Total Residential	486,987	7,445,668,389	(41,215,066)	7,404,453,323	501,750,184	753,387,456	8,659,590,963
GS Small - Single Phase							
Non-Demand	41,074	970,700,754	(10,137,996)	960,562,758	65,090,901	97,735,228	1,123,388,887
Demand	4,221	395,919,368	(5,362,385)	390,556,983	26,465,430	39,738,347	456,760,760
Subtotal	45,295	1,366,620,122	(15,500,381)	1,351,119,741	91,556,331	137,473,574	1,580,149,646
Seasonal	859	4,880,000	-	4,880,000	330,685	496,530	5,707,215
Water Heating	380	4,753,000	-	4,753,000	322,079	483,608	5,558,687
Total Single Phase	46,534	1,376,253,122	(15,500,381)	1,360,752,741	92,209,095	138,453,712	1,591,415,548
GS Small - Three Phase							
Non-Demand	11,465	642,020,523	(6,705,261)	635,315,262	32,250,699	63,612,810	731,178,771
Demand	8,271	1,679,910,515	(22,752,931)	1,657,157,584	84,122,786	165,927,779	1,907,208,148
Total Three Phase	19,736	2,321,931,038	(29,458,192)	2,292,472,846	116,373,484	229,540,589	2,638,386,919
Total G.S.Small							
Non-Demand	52,539	1,612,721,277	(16,843,257)	1,595,878,020	97,341,600	161,348,038	1,854,567,658
Demand	12,492	2,075,829,883	(28,115,316)	2,047,714,567	110,588,215	205,666,126	2,363,968,908
Sub-Total G.S. Small	65,031	3,688,551,160	(44,958,573)	3,643,592,587	207,929,815	367,014,163	4,218,536,565
Seasonal	859	4,880,000	-	4,880,000	330,685	496,530	5,707,215
Water Heating	380	4,753,000	-	4,753,000	322,079	483,608	5,558,687
Total GS Small	66,270	3,698,184,160	(44,958,573)	3,653,225,587	208,582,579	367,994,301	4,229,802,467
General Service - Medium	1,974	3,203,094,420	(28,432,707)	3,174,661,713	161,156,301	317,872,345	3,653,690,359
General Service - Large							
0 - 30 Kv	288	1,716,337,934	(13,856,728)	1,702,481,206	71,101,231	169,005,865	1,942,588,302
30 - 100 kV	39	1,108,570,000	(5,286,871)	1,103,283,129	16,549,247	106,709,581	1,226,541,957
30 - 100 kV - Curtailment Cust's	1	225,000,000	(1,073,046)	223,926,954	3,358,904	21,658,223	248,944,081
Over 100 Kv	14	2,850,479,000	(9,696,069)	2,840,782,931	-	270,700,118	3,111,483,050
Over 100 Kv - Curtailment Cust's	2	2,070,000,000	(7,041,224)	2,062,958,776	-	196,580,731	2,259,539,507
Total G.S.- Large	344	7,970,386,934	(36,953,938)	7,933,432,996	91,009,383	764,654,518	8,789,096,897
SEP							
GSM	24	24,500,000		24,500,000	1,243,701	2,453,135	28,196,835
GSL 0 - 30 Kv	5	2,000,000		2,000,000	83,527	198,541	2,282,067
Total SEP	29	26,500,000	-	26,500,000	1,327,227	2,651,675	30,478,903
Street Lighting	129,050	88,794,199	-	88,794,199	6,016,988	9,034,622	103,845,809
Sentinel Lighting	25,974	11,692,889	-	11,692,889	792,349	1,189,727	13,674,964
Total - Lighting	155,024	100,487,088	-	100,487,088	6,809,337	10,224,349	117,520,773
Total - General Consumers	710,628	22,444,320,991	(151,560,284)	22,292,760,707	970,635,010	2,216,784,643	25,480,180,361
Extra Provincial		-	-	-		-	-
Man Hydro - Construction		88,000,000		88,000,000	4,467,170	8,811,259	101,278,429
Integrated System	710,628	22,532,320,991	(151,560,284)	22,380,760,707	975,102,181	2,225,595,902	25,581,458,790

**2014 Prospective Cost of Service Study**  
**Prospective Peak Load Report**  
**Using Top 50 Peak Hours**  
**Reflecting Order 164/16**

	CP Load Factor	Demand Data					CP @ Meter Reconciled MW	Distrib Losses MW	Common Bus Losses MW	CP @ Gen. MW	Class Coinc. Factor	Class Demand NCP MW @ Meter D50	Class Demand NCP MW @ Gen. D20
		CP @ Meter Before DSM Non-Recon MW	Forecast DSM MW Savings	CP @ Meter After DSM Non-Recon. MW	Adjust %age	Adjust To Recon.							
Residential													
Residential	50.5%	1,660.2	(8.5)	1,651.7	80.9%	(64.3)	1,587.4	124.4	150.7	1,862.6	90.2%	1,759.9	2,064.9
Seasonal	157.8%	6.3		6.3	-	-	6.3	0.5	0.6	7.4	8.0%	79.0	92.7
Water Heating	67.9%	2.3		2.3	-	-	2.3	0.2	0.2	2.7	80.0%	2.9	3.4
Total Residential	50.9%	1,668.9	(8.5)	1,660.3	80.9%	(64.3)	1,596.1	125.1	151.5	1,872.7	86.7%	1,841.9	2,161.1
GS Small - Single Phase													
Non-Demand	62.0%	178.7	(2.7)	176.0	6.0%	(4.8)	171.2	13.4	16.3	200.9	86.3%	198.4	232.8
Demand	66.0%	68.5	(1.3)	67.2	0.7%	(0.5)	66.6	5.2	6.3	78.2	89.8%	74.2	87.0
Subtotal	63.1%	247.2	(4.0)	243.2	6.7%	(5.3)	237.9	18.6	22.6	279.1	87.3%	272.6	319.9
Seasonal	162.5%	0.3		0.3			0.3	0.0	0.0	0.4	8.0%	4.3	5.0
Water Heating	72.1%	0.8		0.8			0.8	0.1	0.1	0.9	75.0%	1.0	1.2
Total Single Phase	63.3%	248.3	(4.0)	244.3	6.7%	(5.3)	239.0	18.7	22.7	280.4	86.0%	277.9	326.1
GS Small - Three Phase													
Non-Demand	62.0%	118.2	(1.8)	116.4	4.0%	(3.2)	113.3	6.6	10.5	130.4	86.3%	131.2	151.1
Demand	66.0%	290.6	(5.6)	285.0	2.9%	(2.3)	282.7	16.4	26.3	325.4	89.8%	314.8	362.4
Total Three Phase	64.8%	408.8	(7.4)	401.4	6.9%	(5.4)	395.9	23.0	36.9	455.8	88.8%	446.0	513.4
Total G.S.Small													
Non-Demand	61.4%	296.9	(4.5)	292.4	10.0%	(7.9)	284.5	20.0	26.8	331.3	86.3%	329.7	383.9
Demand	65.1%	359.0	(6.9)	352.1	3.6%	(2.8)	349.3	21.6	32.7	403.6	89.8%	389.0	449.4
Sub-Total G.S. Small	64.2%	656.0	(11.4)	644.5	13.5%	(10.7)	633.8	41.6	59.5	734.9	88.2%	718.6	833.3
Seasonal	162.4%	0.3	-	0.3	0.0%	-	0.3	0.0	0.0	0.4	8.0%	4.3	5.0
Water Heating	72.1%	0.8	-	0.8	0.0%	-	0.8	0.1	0.1	0.9	75.0%	1.0	1.2
Total GS Small	64.2%	657.1	(11.4)	645.6	13.5%	(10.7)	634.9	41.7	59.6	736.1	87.7%	723.9	839.5
General Service - Medium	72.4%	505.0	(6.8)	498.3	5.5%	(4.4)	493.9	28.6	46.0	568.5	91.5%	539.8	621.3
General Service - Large													
0 - 30 Kv	79.6%	246.1	(2.7)	243.5	0.0%	-	243.5	11.5	22.4	277.4	89.3%	272.6	310.6
30 - 100 kV	91.0%	139.1	(1.0)	138.1		-	138.1	2.5	12.4	153.0	74.0%	186.6	206.7
30 - 100 kV - Curtailment Cust's	98.9%	26.0	(0.2)	25.8		-	25.8	0.5	2.3 †	28.6	93.6%	27.6	30.5
Over 100 Kv	91.0%	357.6	(1.3)	356.3		-	356.3	-	31.4	387.7	87.4%	407.7	443.6
Over 100 Kv - Curtailment Cust's	99.3%	238.0	(0.8)	237.1		-	237.1	-	20.9 †	258.0	81.2%	292.0	317.7
Total G.S.- Large	90.4%	1,006.7	(6.0)	1,000.8	0.0%	-	1,000.8	14.4	89.4	1,104.6	84.3%	1,186.5	1,309.1
SEP													
GSM	46.9%	6.0		6.0		-	6.0	0.3	0.6	6.9	81.0%	7.4	8.5
GSL 0 - 30 Kv	116.3%	0.2		0.2		-	0.2	0.0	0.0	0.2	14.3%	1.4	1.6
Total SEP	49.1%	6.2	-	6.2		-	6.2	0.4	0.6	7.1	70.5%	8.7	10.0
Street Lighting	119.7%	8.5	-	8.5		-	8.5	0.7	0.8	9.9	38.2%	22.2	26.0
Sentinel Lighting	119.7%	1.1	-	1.1		-	1.1	0.1	0.1	1.3	38.2%	2.9	3.4
Total - Lighting	119.7%	9.6	-	9.6	0.0%	-	9.6	0.8	0.9	11.2	38.2%	25.1	29.4
Total - General Consumers	66.5%	3,853.4	(32.7)	3,820.8	100.0%	(79.4)	3,741.4	211.0	348.0	4,300.3	86.5%	4,325.9	4,970.5
Extra Provincial	0.0%	0.0		0.0		-	-	-	-	0.0			
Man Hydro - Construction	72.4%	13.9		13.9		-	13.9	0.8	1.3	16.0			
Integrated System	66.5%	3,867.3	(32.7)	3,834.6	100.0%	(79.4)	3,755.2	211.8	349.3	4,316.3			