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Proposed Enhancements of Manitoba Hydro's Prospective Cost of Service Study (PCOSS) Methodology

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Table of Contents

1 Introduction	1
2 Allocation of Net Export Revenue (NER)	2
3 Street and Sentinel Lighting in the Cost Allocation Methodology	5
4 Conclusions and Recommendations.....	7
Appendix A: Impact of Allocation of Net Export Revenue Options	1
Appendix B: Impact of Separate Street and Sentinel Classes.....	2
Appendix C: Combined Impact of NER Allocation Based on Total Allocated Costs and Separate Street and Sentinel Lighting Classes	3
Appendix D: Survey of Street, Sentinel and Other Lighting Classes in Major Canadian Jurisdictions	4
Appendix E: A&RL Excerpt from CA Report.....	7
Appendix F: Ratio of Direct to Total Allocated Costs by Class	9

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1 INTRODUCTION

Manitoba Hydro (“Hydro”) filed its Cost of Service Methodology Review Submission on December 4, 2015. The extensive supplementary material filed at that time has been augmented through the Minimum Filing Requirement and Information Request processes, as well as by the 3-day Workshop held on May 11-13 which included subsequent responses to Undertakings.

The City of Winnipeg (“City”) retained me¹ to review Hydro’s Cost of Service (“CoS”) methodology with a particular focus on the allocation of costs and net export revenues to the Area and Roadway Lighting (“A&RL”) class. In addition, the City asked me to monitor, and cooperation with, as appropriate, the intervention on behalf of General Service Small and Medium class customers. The City obtains electricity service for some of its facilities under the tariffs for these classes.

Based on my review of the evidence filed to date, I have identified two issues of relevance for the A&RL class. The most significant issue for the class is the methodology used by Hydro to allocate net export revenue (“NER”) to customer classes. This issue is addressed in section 2.

A secondary issue that relates to the A&RL class that merits consideration is the opportunity to allocate billing costs to street lighting and sentinel lighting sub-classes using currently available information. This issue is addressed in section 3.

This evidence does not include any issues related to the General Service Small and Medium classes. Through collaboration with London Economics International (“LEI”), the experts retained to support the intervention on behalf of those classes, it is my understanding that its evidence will address all of the issues that I have identified on behalf of the City. Nevertheless, I have reviewed those issues and will be prepared to speak to them, if requested by any party, at either the Workshop scheduled for June 21-23 and/or as part of the Concurrent Evidence session scheduled for September 7-10.

¹ John Todd, President of Elenchus Research Associate Inc., has appeared before the Manitoba Public Utilities Board on numerous occasions, including as an Independent Expert Consultant during the NFAT review of Manitoba Hydro’s Preferred Development Plan. His full curriculum vitae are available at: <http://www.elenchus.ca/show/team>

2 ALLOCATION OF NET EXPORT REVENUE (NER)

Manitoba Hydro's proposed cost of service methodology allocates net export revenue to customer classes, except Diesel, on the basis of total allocated cost minus directly allocated costs. For the Diesel class, the allocator is based on the costs directly allocated to that class. 100% of the costs of the Diesel class are directly allocated, as compared to the AR&L class for which approximately 70% of the total costs are directly allocated. All other classes, except the portion of sales under the Surplus Energy Program (SEP) which are a unique case, have directly allocated cost that amount to 4% or less of their total costs.² Clearly, the only significant impact of the exclusions of directly allocated costs from the allocator for NER is the reduced allocation to the A&RL class.

One alternate approach that could be considered would be to allocate NER to classes based on the total cost to serve each class including direct assignment.

The rationale for excluding directly allocated costs from the allocator for NER does not appear to have been thought through in any detail, which is not at all surprising since Hydro has focussed its efforts on issues that it considers to be far more significant.

The City asked Ms. Derksen about the rationale for excluding directly allocated costs from the allocator for Net Export Revenue during the Workshop on May 13.

So my question is: Given that, number 1, what you've said is it's distributed to people based on total costs, period, not total costs minus direct costs, and second, that this is -- the concept is fairness, which is why distribution is included at all, why is it appropriate to deduct direct costs from the total to come up with the allocator for net export revenue? (Tr. 756, lines 8-15)

The relevant part of Ms. Derksen's response was:

That said, I understand that there could be an argument made that net export revenue after you've made some attempt to reasonably assign costs to the export class is really this pool of -- of revenue that we said is -- is surplus to embedded costs. So it - it really can be used for -- in a number of different ways.

The -- the demarcation point that Manitoba Hydro has elected is to say, Well, we think it's most reasonable that we cut it off at the metre(sic) because we don't afford a residential customer the treatment of including, you know, the cost of their fridge and stove.

So, I mean, that's the basis on which we have made that judgment call. It's not more scientific than that. It's a judgment call. You could make the argument that dedicated end-use facilities which are significant to the customers that you represent be

² See Appendix F: Ratio of Direct to Total Allocated Costs by Class.

assigned some net export revenue. But, like I said, you -- it depen -- it all depends on how you allocate cost as to what you have left over. (Tr. Page 757, lines 5-25).

In essence, the rationale appears to be that the costs that are directly allocated to the customer classes are equivalent to residential fridges and stoves. This analogy oversimplifies the issue. The Direct Costs tab in the PCOSS14 (Amended) model shows that in total the costs that are directly allocated are \$97,025,000. Only 16% of this total is allocated to the A&RL class. Roughly 6%, 7%, 10% and 11% of the total are directly allocated to the GSM, Residential, GSL and GSM classes, respectively. Over 38% is directly allocated to the Export class.

Section 7.1.5 of the Hydro Submission contains Hydro's discussion of the Allocation of Net Export Revenue. It does not elucidate the reasoning behind Hydro's approach. Hydro's commentary is as follows.

7.1.5 Allocation of Net Export Revenue

Manitoba Hydro agrees with CA that the allocation of Net Export Revenue on the basis of each class' total cost to serve is a reasonable perspective of fairness and will continue with this allocation approach for the following reasons:

- Weight is also given to fairness and efficiency objectives. The allocation of Net Export Revenue on the basis of total cost to serve results in an improvement in the equitable sharing of export revenue between customer classes. The export benefit provided to residential customers increases to 70% of that received by the GSL>100 class compared with 62% of that received by the GSL >100 class under the past approach.*
- The allocation of Net Export Revenue on total cost is consistent with COS treatment of net income. As shown in the figure below, export revenues are integral to the determination of net income. Net income is allocated across all functions in COS based on total investment. Given the high correlation between net income and extraprovincial revenues, the allocation of net export revenue consistent with the allocation of net income is logical.*

The reference to CA in the first line of this discussion is to the "advice provided to the Corporation in their [Christensen Associates Energy Consulting] report entitled "Review of Cost of Service Methods of Manitoba Hydro"³ The discussion of NER in the CA Report appears at pages 10-11.⁴ The opening paragraph states:

³ Manitoba Hydro, Cost of Service Methodology Review, December 4, 2017, page 3, lines 26-31.

⁴ The section of the CA Report discussing the methodology used for the Allocation to Area and Roadway Lighting is included as Appendix E for easy reference.

2) *NER Allocation to Domestic Classes. The current approach to allocating NER involves allocation to domestic classes according to the total cost to serve each class **not including direct assignments**. In effect, higher-cost customers receive a larger share of revenues per kWh than do lower-cost customers. This may satisfy one view of fairness but it may be worthwhile for MH to explore alternative allocation schemes.⁹ Reasonable alternative methods can be considered by MH. These methods could consider: 1) using existing allocators, such as those used to assign capital-related G&T costs; 2) allocators that recognize the differential risk absorbed by customer classes as NER oscillates over time; or 3) allocators based on some fairness-based criterion. (emphasis in original as italicized text)*

In my opinion, the discussion contained in the CA Report is a weak endorsement of Hydro's current methodology for allocating NER, at best. It clearly invites consideration of alternatives.

The subsequent discussion in the CA Report addresses a number of interesting issues related to the allocation of NER to the domestic classes that concludes with the following recommendation.

Recommendations. *At present, we cannot recommend that MH select one specific allocator. Because the issue is how to deal with substantial margins derived from competitive markets, there is no one cost-based allocation technique that will suffice to provide a stable and "fair" allocation. Therefore, we recommend that MH investigate allocators of interest and estimate the ramifications on individual customers before selecting an alternative allocator.*

The essence of the discussion and recommendation contained in the CA Report appears to suggest that the allocator should be whatever is determined to be fair. The final arbiter of a fair allocation of export revenue must be the Board, not Hydro.

The Electricity Utility Cost Allocation Manual published by the National Association of Regulatory Utility Commissioners in January 1992 continues to be the foundation for generally accepted cost allocation methodologies. It contains the following discussion of directly allocated costs.

After costs are functionalized into the primary functions, some can be identified as logically incurred to serve a particular customer or customer classes. For example, a radial distribution line that serves only a particular customer may be assigned directly to that customer. Similarly, all the investment and expense associated with luminaires and poles installed for street and private area lights are directly assigned to the lighting class(es). (NARUC Manual, p. 20)

While it may be arguable that luminaires are equivalent to stoves, fridges and light bulbs in a home or commercial business, it seems to be stretching the point to suggest that the directly allocated costs of poles and wiring, which are recognized as electricity assets in

the NARUC Manual are not an integral part of the electricity infrastructure. Furthermore, it is not at all clear why the 85% of directly allocated costs that are not directly assigned to the A&RL class should be treated as if they are equivalent to fridges and stoves.

At most, Hydro's rationale would justify removing the luminaires from the allocator. However, for the sake of simplicity, it would be far easier to avoid the effort that would be needed to remove this small portion of directly allocated costs that are attributable to luminaires in determining the NER allocator.

The impact of allocating net export revenue on the basis of total allocated costs including directly allocated costs is shown in Appendix A. That appendix compares the allocated costs, allocated revenue and revenue-to-cost (R/C) ratios for the Reference Model and a revised model that allocates Net Export Revenues (NER) to rate classes on the basis of total allocated costs including directly allocated costs. The only classes that have an R/C ratio impact in excess of 0.1% are:

- Area & Roadway Lighting increases from 100.3% to 104.4%
- Diesel decreases from 72.6% to 72.4%

3 STREET AND SENTINEL LIGHTING IN THE COST ALLOCATION METHODOLOGY

The Area and Roadway Lighting class is comprised of seven sub-categories, each having different rates:

- Outdoor Lighting Rate – Tariff No. 2016-80
- Flood Lighting Rate – Tariff No. 2016-81
- Seasonal Rate – Tariff No. 2016-82
- Sentinel Lighting Rate – Tariff No. 2016-83
- Festoon Lighting – Tariff No. 2016-84
- Decorative Lighting – Tariff No. 2016-85
- Christmas Lighting – Tariff No. 2016-86

The practices of other Canadian electric utilities with respect to setting tariffs for the various types of lighting customers is quite diverse. This observation is supported by the survey that appears as Appendix D: Survey of Street, Sentinel and Other Lighting Classes in Other Canadian Jurisdictions to this evidence.

With respect to the treatment of the A&RL sub-classes in Hydro's cost allocation methodology, while it is evident that the approach currently used by Hydro is not inconsistent with the approaches taken in other jurisdictions, it is also evident that some utilities consider it to be appropriate to include street lighting and sentinel lighting as separate classes in their cost allocation methodology.

Hydro's response to COW/MH-I-3a-c includes as page 3 of 3 a table that provides information that pertains to the cost drivers for customer billing costs. As this table shows, in 2014 the A&RL class accounted for 26,759 of the 587,420 total number of services (i.e., 4.6%). PCOSS14 uses class-specific weighting factor to derive the allocator that is used for Hydro's customer billing costs. In deriving the allocator used for billing costs, Hydro applies the weighting factor to unadjusted number of customers (155,024 for the A&RL class). The number of "customers" used by the model to allocate costs is almost four times number of services.⁵ The customer account appears to reflect the number of connections, not the number of separately billed customers.

The point is that the same weighting factor is used for both street lighting and sentinel lighting although each street lighting bill correspond to many connected street lights while most sentinel light bills correspond to a single connected sentinel light.

It would be feasible to treat street and sentinel lighting as separate sub-classes in the PCOSS with the full amount of billing costs currently being allocated to the A&RL class being divided between the Street and Sentinel sub-classes in proportion to the number of separate bills (or services) in each class. This refinement to Hydro's cost of service methodology is consistent with the fundamental principle of cost allocation. As the NARUC Manual states:

The cost principle applies not only to the overall level of rates, but to the rates set for individual services, classes of customers, and segments of the utility's business. Cost studies are therefore used by regulators for the following purposes:

- *To attribute costs to different categories of customers based on how those customers cause costs to be incurred.*

Refining Hydro's PCOSS to reflect difference in the number of lighting connections as reflected in the C90 Number of Customers – Unadjusted allocator between Street and Sentinel lighting is consistent with this principle. A single bill is issued for a large number of Street Lighting connections, while each bill for sentinel lighting is issued for a very small number (usually 1) sentinel light.

Appendix B shows the result of allocating the A&RL costs to the subclasses in this way, without changing the overall allocation of billing costs to A&RL and the other classes. The resulting R/C ratio for the Street Lighting subclass increases to 101.5% and the R/C ratio for the Sentinel Lighting sub-class declines to 93.8%.

⁵ See allocator C11 Weighted Ratio – Customer Accounting (Billings Only) in tab C Tables. A weighting of 0.0006 is used for the A&RL class as compared to a weighting of 0.0176 for Residential – Standard and All Electric. This weighting factor is multiplied by the number of customers appearing in the allocator C90 Number of Customers – Unadjusted.

4 CONCLUSIONS AND RECOMMENDATIONS

The rationale provided by Hydro for excluding directly allocated costs from the Net Export Revenue allocator (the stove & fridge analogy) can logically be applied to only a small portion of the costs that are directly allocated in accordance with Hydro's CoS methodology. A more equitable allocation would be based on the total of indirectly and directly allocated costs. In essence, this approach to allocating net export revenue would have the effect of providing a dividend, or discount, to all customers that is proportionate the costs that are incurred on their behalf by Hydro. Put differently, the dividend/discount would correspond to the amount they would be billed by Hydro, assuming rates were set a level that would result in R/C ratios of 100% for all classes.

It is therefore recommended that the allocator for NER be revised to be total allocated costs including directly allocated costs.

Separating Street and Sentinel Lighting into separate sub-classes for cost allocation purposes and allocating the A&RL billing-related cost to those sub-classes in proportion to the number of bills issued would result in a cost allocation that is more consistent with cost causality.

It is therefore recommended that Street and Sentinel Lighting sub-classes be introduced into Hydro's CoS methodology and built into the final PCOSS model.

The combined impact of these recommendations on the R/C ratios of all classes is shown in Appendix C. That appendix compares the allocated costs and revenue, and revenue-to-cost (R/C) ratios for the Reference Model and a revised model that allocates Net Export Revenues (NER) to rate classes on the basis of total allocated costs including directly allocated costs and replaces the Area & Roadway class with separate Street Lighting and Sentinel Lighting classes. The only classes that have an R/C ratio impact in excess of 0.1% are:

- The new Street Lighting class that has a R/C ratio of 105.6 as compared to the Area & Roadway Lighting class R/C ratio of 100.3%
- The new Sentinel Lighting class that has a R/C ratio of 98.0 as compared to the Area & Roadway Lighting class R/C ratio of 100.3%
- Diesel decreases from 72.6% to 72.4%

Appendix A: Impact of Allocation of Net Export Revenue Options

The table below compares the allocated costs, allocated revenue and revenue-to-cost (R/C) ratios for the Reference Model and a revised model that allocates Net Export Revenues (NER) to rate classes on the basis of total allocated costs including directly allocated costs. The only classes that have an R/C ratio impact in excess of 0.1% are:

- Area & Roadway Lighting increases from 100.3% to 104.4%
- Diesel decreases from 72.6% to 72.4%

Customer Class	Reference Model			Net Export Revenue Allocated by Total Costs		
	Allocated Costs (\$000)	Allocated Revenue (\$000)	R/C Ratio	Allocated Costs (\$000)	Allocated Revenue (\$000)	R/C Ratio
Residential	627,343	626,942	99.9%	627,343	626,078	99.8%
General Service - Small Non Demand	132,321	142,889	108.0%	132,321	142,933	108.0%
General Service - Small Demand	138,038	144,262	104.5%	138,038	144,320	104.6%
General Service - Medium	200,189	198,756	99.3%	200,189	198,747	99.3%
General Service - Large 0 - 30kV	99,834	90,906	91.1%	99,834	90,916	91.1%
General Service - Large 30-100kV*	61,642	61,543	99.8%	61,642	61,487	99.7%
General Service - Large >100kV*	204,685	201,541	98.5%	204,685	201,476	98.4%
SEP	968	826	85.4%	968	826	85.4%
Area & Roadway Lighting	21,964	22,039	100.3%	21,964	22,941	104.4%
Total General Consumers	1,486,982	1,489,704	100.2%	1,486,982	1,489,725	100.2%
Diesel	9,948	7,226	72.6%	9,948	7,206	72.4%
Export	255,934	255,934	100.0%	255,934	255,934	100.0%
Total System	1,752,864	1,752,864	100.0%	1,752,864	1,752,864	100.0%

Note: The “Reference Model” is the model run labelled “Weighting Correction” in the Daymark model.

Note: The model used to derive this table has been submitted to Daymark for review.

Appendix B: Impact of Separate Street and Sentinel Classes

The table below compares the allocated costs, allocated revenue and revenue-to-cost (R/C) ratios for the Reference Model and a revised model that replaces the Area & Roadway class with separate Street Lighting and Sentinel Lighting classes. This change has no effect on allocated costs, allocated revenues or R/C ratios of the other customer classes.

The resulting R/C ratio for the Street Lighting subclass increases to 101.5% and the R/C ratio for the Sentinel Lighting sub-class declines to 93.8%.

Customer Class	Reference Model			Lighting Class Split		
	Allocated Costs (\$000)	Allocated Revenue (\$000)	R/C Ratio	Allocated Costs (\$000)	Allocated Revenue (\$000)	R/C Ratio
Residential	627,343	626,942	99.9%	627,343	626,942	99.9%
General Service - Small Non Demand	132,321	142,889	108.0%	132,321	142,889	108.0%
General Service - Small Demand	138,038	144,262	104.5%	138,038	144,262	104.5%
General Service - Medium	200,189	198,756	99.3%	200,189	198,756	99.3%
General Service - Large 0 - 30kV	99,834	90,906	91.1%	99,834	90,906	91.1%
General Service - Large 30-100kV*	61,642	61,543	99.8%	61,642	61,543	99.8%
General Service - Large >100kV*	204,685	201,541	98.5%	204,685	201,541	98.5%
SEP	968	826	85.4%	968	826	85.4%
Area & Roadway Lighting	21,964	22,039	100.3%	-	-	-
Street Lighting	-	-	-	18,661	18,939	101.5%
Sentinel Lighting	-	-	-	3,303	3,100	93.8%
Total General Consumers	1,486,982	1,489,704	100.2%	1,486,982	1,489,704	100.2%
Diesel	9,948	7,226	72.6%	9,948	7,226	72.6%
Export	255,934	255,934	100.0%	255,934	255,934	100.0%
Total System	1,752,864	1,752,864	100.0%	1,752,864	1,752,864	100.0%

Note: The “Reference Model” is the model run labelled “Weighting Correction” in the Daymark model.

Note: The model used to derive this table has been submitted to Daymark for review.

Appendix C: Combined Impact of NER Allocation Based on Total Allocated Costs and Separate Street and Sentinel Lighting Classes

The table below compares the allocated costs and revenue, and revenue-to-cost (R/C) ratios for the Reference Model and a revised model that allocates Net Export Revenues (NER) to rate classes on the basis of total allocated costs including directly allocated costs and replaces the Area & Roadway class with separate Street Lighting and Sentinel Lighting classes. The only classes that have an R/C ratio impact in excess of 0.1% are:

- The new Street Lighting class that has a R/C ratio of 105.6 as compared to the Area & Roadway Lighting class R/C ratio of 100.3%
- The new Sentinel Lighting class that has a R/C ratio of 98.0 as compared to the Area & Roadway Lighting class R/C ratio of 100.3%
- Diesel decreases from 72.6% to 72.4%

Customer Class	Reference Model			Combined Changes		
	Allocated Costs (\$000)	Allocated Revenue (\$000)	R/C Ratio	Allocated Costs (\$000)	Allocated Revenue (\$000)	R/C Ratio
Residential	627,343	626,942	99.9%	627,343	626,078	99.8%
General Service - Small Non Demand	132,321	142,889	108.0%	132,321	142,933	108.0%
General Service - Small Demand	138,038	144,262	104.5%	138,038	144,320	104.6%
General Service - Medium	200,189	198,756	99.3%	200,189	198,747	99.3%
General Service - Large 0 - 30kV	99,834	90,906	91.1%	99,834	90,916	91.1%
General Service - Large 30-100kV*	61,642	61,543	99.8%	61,642	61,487	99.7%
General Service - Large >100kV*	204,685	201,541	98.5%	204,685	201,476	98.4%
SEP	968	826	85.4%	968	826	85.4%
Area & Roadway Lighting	21,964	22,039	100.3%	-	-	-
Street Lighting	-	-	-	18,661	19,705	105.6%
Sentinel Lighting	-	-	-	3,303	3,235	98.0%
Total General Consumers	1,486,982	1,489,704	100.2%	1,486,982	1,489,725	100.2%
Diesel	9,948	7,226	72.6%	9,948	7,206	72.4%
Export	255,934	255,934	100.0%	255,934	255,934	100.0%
Total System	1,752,864	1,752,864	100.0%	1,752,864	1,752,864	100.0%

Note: The “Reference Model” is the model run labelled “Weighting Correction” in the Daymark model.

Note: The model used to derive this table has been submitted to Daymark for review.

Appendix D: Survey of Street, Sentinel and Other Lighting Classes in Major Canadian Jurisdictions

The table below provides a summary of the structure of classes that are comparable to Manitoba Hydro's Area and Roadway Lighting classes.

Province	Utility	Class	Allocated Separately	Separate Rates	Note
British Columbia	FortisBC	Lighting	□		<ul style="list-style-type: none"> - Three subclasses: <ul style="list-style-type: none"> "Type 1" - Customer-Owned and Customer-Maintained "Type 2" - Customer-Owned and Company-Maintained "Type 3" - Company-Owned, Company-Installed and Maintained - Same rates for each type - Type 3 pays an additional fixed fee (~\$12.65/m)
	BC Hydro	Street Lighting	□	✓	<ul style="list-style-type: none"> - Class to be divided into 2 classes: Customer-owned and Company-owned fixtures - "Overhead Street Lighting" subclass for company-owned fixtures and uses a rate schedule - "Street Lighting" subclass for customer-owned fixtures and uses a deemed rate - Traffic control equipment currently included in Street Lighting
Alberta	Fortis Alberta	Exterior Lighting	□	□	<ul style="list-style-type: none"> - "Investment Option" subclass has a higher fixture fee (~\$13.60/m higher than No Investment) - "No Investment Option" subclass is no longer available for new installations - "Yard Lighting" subclass is for company owned & maintained fixtures. There is a lower fixed fee compared to the Invest. Option (~\$7.05)
			□		
			□		
	ATCO	Street Lighting	✓	✓	<ul style="list-style-type: none"> - "Street Lighting" and "Sentinel Lighting" classes are separately listed for rate design purposes but often grouped together as "Lighting Service"
		Sentinel Lighting			
	EPCOR	Street Lighting	✓	✓	<ul style="list-style-type: none"> - All EPCOR unmetered service available only to City of Edmonton and communication utility companies
		Traffic Lights			
		Security Lights			
Saskatchewan	SaskPower	Streetlight	□	□	<ul style="list-style-type: none"> - Class includes traffic signs, roadway lighting and lane rental lighting

Manitoba	Manitoba Hydro	Area Roadway & Lighting		✓	<ul style="list-style-type: none"> - “Outdoor Lighting” applies to lighting installed for public authorities Fee schedule based on type of luminaire & whether pole is shared - “Flood Lighting”: Rate schedule - Different fees whether the pole is shared - “Sentinel Lighting”: Fee schedule - can be metered or unmetered
Ontario	OEB Guidelines	Street Lights	✓	✓	- Standard for all Ontario LDCs
		Sentinel Light			
Quebec	Hydro Quebec	Public Lighting	✓	✓	
		Sentinel Lighting			
Nova Scotia	NS Power	Miscellaneous	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Class includes non-lighting service - “Street and Area Lighting” subclass uses a monthly fee schedule based on type of luminaire - “Miscellaneous Lighting and Small Loads” uses an estimated deemed load - “Outdoor Recreational Light” is metered and seasonal
New Brunswick	NB Power	Streetlights and Unmetered	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Class includes non-lighting service - “Dusk to Dawn Lighting” and “Floodlights” subclasses - Lighting rates are based on a rate schedule
PEI	Maritime Electric	Street and Area Lighting	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - “Street Lights” and “Yard Lights” subclasses have the same rates - “Customer-Owned Recreational Lighting” subclass is a seasonal deemed rate
Newfoundland	Newfoundland Power	Street and Area Lighting	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Combined “Sentinel/Standard” rate schedule - Same rates for both types

Ontario and Quebec, as well as ATCO and EPCOR in Alberta, consider street lighting and sentinel lighting separate rate classes for the purposes of cost allocation. BC Hydro is in the process of dividing its Street Lighting class into two rate classes. One rate class will be for BC Hydro-owned lighting and the other for customer-owned sentinel lighting. BC Hydro cites “significant differences in Revenue to Cost (R/C) ratios” between utility-owned street lighting and sentinel lighting as the reason for the rate class division. BC Hydro currently and Manitoba Hydro allocate costs using a single street lighting class but have separate rates for each type. As costs for standard street lighting and sentinel lighting are not determined separately it is unclear how the rates are set. FortisBC, Saskatchewan, PEI, Newfoundland, as well as FortisAlberta and ENMAX in Alberta, have single lighting rate classes and do not distinguish between sentinel lights and standard

street lights. There is typically an investment option, or pole rental fee, with an additional fixed fee but the energy costs remain the same. Nova Scotia and New Brunswick include lighting in broader rate classes that include other unmetered services, such as cable television boosters and phone booths. Other unmetered services are usually classified in a separate class, like Ontario's Unmetered Scattered Load, or in a subgroup of general service. Traffic lights are often classified as separate unmetered service but may be included in the street light class, or in the case of EPCOR, as its own rate class. Fees for unmetered lighting are based on either a rate schedule or an estimated deemed load. A utility may post fees for various types of lighting they provide into a monthly rate schedule. In absence of a rate schedule the utility will estimate the amount of energy used charge the customer based on the deemed monthly load.

Appendix E: A&RL Excerpt from CA Report

This appendix reproduces for easy reference the section of the CA Report that discusses the Allocation to Area and Roadway Lighting.

4.6.4 Allocation to Area and Roadway Lighting

MH identifies three allocators in which Area and Roadway Lighting (ARL) weighting is a current concern: Collections and Billings, Distribution poles and wires, and Marketing R&D. Additionally, there is some degree of concern about the use of load research data for ARL. We discuss each of these concerns below and provide recommendations.

Collections. *Collections costs are determined for the COS study and allocated to rate classes based on a weighted customer allocator referred to as C12 in the COS study. The class weights are based on a 1991 study that determined the total collection costs attributable to each class. ARL's customer weight is based on estimated fixtures per customer.*

Billings. *Billing costs are determined for the COS study and allocated to rate classes based upon a weighted customer allocator referred to as C11 in the COS study. The ARL component of C11 is constructed in the same manner as that of C12, above.*

Distribution Poles and Wires (P&W). *Distribution P&W costs are partly directly assigned to ARL and partly allocated based on the class's share of customer and demand allocators. ARL is assigned a full share of demand-related secondary costs even though some fixtures do not use common secondary circuits. As an offset, ARL is not assigned any portion of customer-related secondary costs even though some fixtures do in fact use common secondary circuits. The net impact of these rules is unknown as MH does not currently have an estimate of the extent to which ARL fixtures use common secondary circuits.*

Marketing R&D. *Marketing R&D costs are the responsibility of ARL based on the weights calculated for allocator C13. The cost captured in MH's COS study for Marketing R&D are related to enhancing business development in Manitoba, developing the corporation marketing plan, conducting customer surveys, coding, and information data bases. Given these types of costs, a question arises as to the extent to which Marketing R&D touches on ARL accounts.*

Load research for ARL. *MH has conducted load research to investigate lighting's contribution to peak demand and total energy consumption. This research was undertaken over a decade ago, in 1997-1999. Lighting consumption is fairly stable over time and can be followed by keeping track of the number of poles, fixtures and bulbs. However, load research enables periodic confirmation of actual consumption.*

Recommendations.

Collection and Billings Allocation. *The method used by MH to create the ARL contribution to allocators C11 and C12 appears to be appropriate, although the studies that support those*

contributions are somewhat dated. We recommend that MH update its estimated number of fixtures per customer. We recommend that MH consider removing ARL from the allocator for Collections, because it is not likely that ARL presents a collections issue.

P&W Customer Allocation. *To determine ARL's customer weight, MH divides lighting into two categories: less than and greater than 250 watts. MH assumes that customers with lights of less than 250 watts have ten fixtures per customer and customers with lights of greater than 250 watts have six fixtures per customer. MH periodically updates lamp counts, but may need to review its demarcation boundary on occasion. We recommend that MH review whether this division into less than 250 watts and greater than 250 watts is still appropriate.*

We further recommend that MH review whether the manner in which ARL assets are connected to the underground system differs from the way that they are connected to the overhead system. This review may reveal whether there are some common secondary costs used by ARL fixtures that should be allocated to ARL in addition to the current cost assignment at secondary to ARL.

Marketing R&D Allocation. *We recommend that MH not allocate any Marketing R&D costs to ARL. If MH retains this allocation, the Company should update the estimated relationship between number of fixtures and number of customers.*

Load Research for ARL. *We recommend that MH update its sampling to support ARL. This updating includes the seasonal CP LF, the annual CP LF, and the kWh sample by month and time period. We also recommend that MH consider a multiple sample year approach to minimize the chances of aberrant results in a single year resulting in inappropriate cost allocation for a number of years.*

Appendix F: Ratio of Direct to Total Allocated Costs by Class

Total Direct Costs: Total		Curtailable Class	Class	Total	Ratio of Direct to Allocated Costs
Residential	Standard & All Electric		6,615	6,615	0.01
	Seasonal		-	-	
	Water Heating		-	-	
	Subtotal		6,615	6,615	
GSS	Non-Demand		5,060	5,060	0.04
	Demand		5,477	5,477	0.04
	Seasonal		-	-	
	Water Heating		-	-	
	Subtotal		10,538	10,538	
SEP	GSM		592	592	0.69
	GSL		49	49	0.46
			642	642	
Gsm			6,429	6,429	0.03
Gsl	0-30KV		3,439	3,439	0.03
	30-100KV	386	732	1,117	0.01
	>100KV	3,854	1,815	5,669	0.01
	Subtotal	4,240	5,986	10,226	
Area & Roadway Lighting			15,331	15,331	0.70
Diesel			9,948	9,948	1.00
Export			37,297	37,297	0.03
Total		4,240	92,785	97,025	

This table reproduces the Total Direct Costs that appear in the Direct Costs tab of PCOSS14 (Amended), with the addition of the column that calculates the ratio of direct to total allocated costs by class (highlighted column).