

1 **MANITOBA HYDRO**
2 **COST OF SERVICE METHODOLOGY REVIEW**
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3 **MANITOBA HYDRO**
4 **COST OF SERVICE METHODOLOGY REVIEW**
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7 **1.0 OVERVIEW**
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9 Manitoba Hydro's ("the Corporation") mandate is to provide a safe and reliable
10 supply of electricity to meet the energy needs of the province and to promote
11 economy and efficiency in the supply of that power. To address the growing
12 electricity demand in the Province, Manitoba Hydro has embarked on an investment
13 plan to meet the long term energy needs of Manitobans.
14

15 In 2014, a Panel of the Public Utilities Board of Manitoba ("PUB") undertook an
16 extensive review of Manitoba's energy future in its Needs For and Alternatives To
17 ("NFAT") Review of Manitoba Hydro's Preferred Development Plan. In the Panel's
18 Final Report, it concluded that the Keeyask Project, along with new US
19 Interconnection and expanded DSM, would best support the growing Manitoba load
20 from a financial, socio-economic, environment and other non-financial benefits
21 perspective and recommended to the Government of Manitoba that Keeyask and the
22 US Interconnection proceed. By Order in Council 291/14, the Province of Manitoba
23 adopted the Panel's recommendation. With these investment decisions finalized in
24 2014, the construction of Keeyask is now fully underway as is the permitting process
25 for the new US Interconnection.
26

27 To support the revenue requirements associated with these investments and other
28 significant capital investment requirements including Bipole III and re-investment in
29 refurbishing existing infrastructure over the next decade, Manitoba Hydro is planning
30 for gradual and predictable rate increases. The increased revenue requirement relates
31 primarily to increases in finance and depreciation expense, and lower export market
32 prices and revenues compared with those experienced in the mid-2000's. In Order
33 73/15 issued July 24, 2015, the PUB approved Manitoba Hydro's rate increase and
34 determined that there was a compelling policy interest to phase in required rate
35 increases in advance of the in-service dates of major new capital projects and avoid
36 rate shock for customers.
37

1 With the NFAT recommendations issued and Manitoba Hydro's revenue requirement
2 needs through the 2015/16 & 2016/17 General Rate Application ("GRA"), having
3 been recently reviewed by the PUB, review of Cost of Service ("COS") methodology
4 is timely.

5

6 Manitoba Hydro's COS Study is a process undertaken to determine the cost
7 responsibilities of the respective customer classes that it serves, and to assist in
8 determining that domestic rates are fair and reasonable. Manitoba Hydro views it to
9 be important that respective customer interests are balanced in order to fulfill its
10 mandate to meet the energy needs of the province and to promote economy and
11 efficiency in the supply of power to Manitobans.

12

13 Manitoba Hydro's COS methodology reflects further amendments compared with
14 PCOSS13 filed with the PUB during the 2012/13 & 2013/14 GRA and the version of
15 PCOSS14 provided to participants to Manitoba Hydro's Cost of Service Stakeholder
16 Engagement. These changes have been made upon review of the Corporation's
17 business environment in which it operates, the advice of its consultant, Christensen
18 Associates ("CA"), and from discussion and the perspectives of stakeholders obtained
19 through the COS Engagement Process held in 2014. Manitoba Hydro's COS
20 methodology continues to be guided by the general principle of cost causality and
21 reasonably balances other ratemaking objectives it seeks to achieve. The Corporation
22 believes it's COS methodology results in a reasonable depiction of cost responsibility
23 for domestic customers and can be relied on for purposes of rate determination.

24

25 Amendments to the COS methodologies include:

26

1. Continue with an Export Class with cost distinction between Dependable and
27 Opportunity sales which assigns full embedded cost responsibility to
28 approximately 50% of export sales (Dependable) and incremental cost to the
29 remaining 50% of export sales (Opportunity) with the following refinements:

30

- Manitoba Hydro has aggregated its generation resources such that all
31 domestic customer classes and Dependable export sales are allocated
32 embedded cost proportionately on the basis that all resources support these
33 loads.

34

- Power Purchases have been allocated to all sales proportionately on the
35 basis that this resource supports all loads.

- 1 • Hybrid sales (longer term sales that may be supported in adverse
2 conditions by resources outside Manitoba) are treated as Dependable sales
3 in COS.
- 4 2. The Dorsey Converter facilities are functionalized 100% as Generation and
5 allocated on the basis of Weighted Energy. It is also Manitoba Hydro’s intention
6 to functionalize the upcoming Riel Converter facilities on this basis.
- 7 3. US Interconnections are functionalized as Transmission, classified as Energy, and
8 allocated on a Weighted Energy basis.
- 9 4. The Weighted Energy allocator (used in the classification and allocation of
10 generation-related cost and US Interconnections) has been modified to include the
11 value of capacity as represented by the Reference Discount used in the Curtailable
12 Rate Program (“CRP”).

13
14 This Submission includes a background discussion of COS in Sections 2 and 3, the
15 overall ratemaking goals by which determination of COS methodology stems in
16 Section 4, the COS process in Section 5, the interrelationships within the COS
17 process in Section 6, the rationale for changes made to Cost of Service methodology
18 in Sections 7 & 8, and specific responses to CA’s Supplemental COS Report are
19 attached as Appendix 1.0.

20 21 **2.0 COST OF SERVICE BACKGROUND**

22 23 **2.1 External Review of Cost of Service**

24 In 2011, Manitoba Hydro embarked on a review of its Cost of Service methodology
25 to confirm that it was consistent with best practices and to address a number of issues
26 that arose out of past PUB proceedings. Christensen Associates Energy Consulting
27 (“CA”) was engaged to conduct an external review. The advice provided to the
28 Corporation in their report entitled “Review of Cost of Service Methods of Manitoba
29 Hydro” (found at Appendix 5.0 of this Submission) , together with Manitoba Hydro’s
30 response to the recommendations contained therein, was filed with the PUB as part of
31 the 2012/13 & 2013/14 GRA. Many of CA’s recommendations were incorporated
32 into subsequent Cost of Service Studies as discussed in its response to that Report
33 (found at Appendix 4.0 of this Submission). Although these materials were put
34 before the PUB in the course of the 2012/13 & 2013/14 GRA, the PUB, in
35 Order 98/12, deferred the review of COS until a later date.

36

1 Since the preparation of those reports, there have been changes in the business
2 environment in which Manitoba Hydro operates. The required approvals for
3 investment in new Generation and Transmission including Keeyask, US
4 Interconnection and the Bipole III Reliability Project have been obtained.
5 Construction of Keeyask and Bipole III are well underway with approximately
6 \$3 billion having been invested as of September 30, 2015. Although the market value
7 of electricity has declined from the very high levels experienced during the mid-2000
8 period, export revenue still represents approximately 20% of revenue today.
9

10 **2.2 Cost of Service Stakeholder Engagement**

11
12 By way of letter dated November 6, 2012, the PUB encouraged Manitoba Hydro and
13 Interveners to engage in discussions to provide for a more efficient eventual public
14 process for COS matters. During the fall of 2014 Manitoba Hydro undertook to meet
15 with its stakeholders and intervener representatives. The purpose of the stakeholder
16 engagement process was to facilitate the sharing of views of COS methodology in an
17 informal, non-adversarial collaborative environment, and to identify possible
18 alternative treatments. The process provided parties who had not engaged in a COS
19 review since 2008 an opportunity to refresh themselves on the Corporation's COS
20 principles, review the differences in perspectives between the various parties on COS
21 assumptions flowing from Order 116/08 as well as the changing environment in
22 which Manitoba Hydro is operating.
23

24 Manitoba Hydro undertook two workshop sessions attended by stakeholder
25 representatives and their expert COS consultants, PUB staff and its engineering
26 technical advisor and Manitoba Hydro's consultant, CA.
27

28 The main topics of discussion in the workshop sessions were:

- 29 • Allocation of costs to the export class;
- 30 • Treatment of Net Export Revenues;
- 31 • Allocation of Demand Side Managements costs;
- 32 • Functionalization, classification and allocation of Generation costs; and,
- 33 • Functionalization, classification and allocation of AC Transmission costs.
34

35 The workshops served to provide stakeholders, PUB staff and advisors with a
36 common understanding of COS matters and presented parties with the then current
37 state of Manitoba Hydro's COS (PCOSS14 – Appendix 3.1). Through the course of

1 each workshop, Manitoba Hydro was able to obtain comments and perspectives from
2 stakeholders on various COS assumptions and alternative treatments.

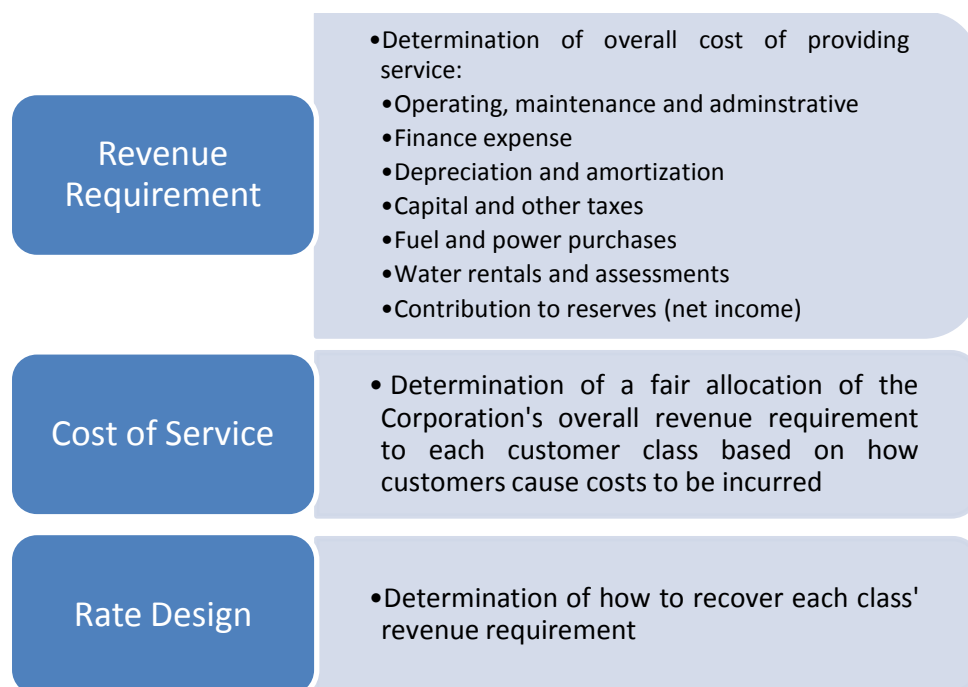
3
4 As part of that process, Manitoba Hydro committed to have its Consultant prepare a
5 supplemental COS report to consider new issues in light of the Corporation's business
6 environment and also the perspectives provided by Stakeholders. In the summer of
7 2015, a supplemental report was prepared for Manitoba Hydro (found at Appendix
8 2.0 in this Submission).

9
10 The Corporation has continued with examination of its COS and this Submission
11 reflects the culmination of that work with focus on embedded Cost of Service areas of
12 greatest materiality including the treatment of Export revenue and cost, and
13 Generation and Transmission ("G&T").

14 15 **3.0 PURPOSE OF A COST OF SERVICE STUDY**

16
17 The COS determines each customer class' share of the Corporation's overall revenue
18 requirement, the primary objective of which is to determine fair and realistic cost
19 recognition for domestic customers used in the determination of rates.

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21 The development of utility rates follows three sequential steps:
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Manitoba Hydro’s COS Study is an embedded cost study in that it is based on forecast financial costs for a single test year period from the Integrated Financial Forecast. Manitoba Hydro utilizes plant investment (original investment cost plus plant additions net of accumulated depreciation and contributions) for the purpose of allocating revenue requirement items such as finance expense, depreciation and amortization, capital and other taxes, and the required contributions to financial reserves. OM&A is forecast by facility or service so it can then be allocated amongst the customer classes.

The results of the study indicate the degree to which each rate class’ allocated costs are being recovered through revenues collected from the class. The ratio of class revenues and costs is referred to as Revenue Cost Coverage (“RCC”). Although the study has the appearance of exactness, it provides a reasonable estimate of the costs to serve each class as discussed in Section 5.0. To recognize this Manitoba Hydro, similar to other utilities in Canada, uses a Zone of Reasonableness in rate setting. In Manitoba, to the extent that a customer class’ RCC falls in a range of 95% to 105%, it is accepted that its revenues are recovering its allocated cost.

The COS study is a specialized tool designed to inform and support the rate setting process. The applicability of the COS study for purposes apart from rate setting is limited and should be regarded with caution. The COS study is not a tool to be used to test export profitability, nor is it a tool to be used to re-examine past investment decisions. The COS focuses on the allocation of annual financial costs to be incurred in the forecast test year. The appropriate test for whether export sales are beneficial is the evaluation of incremental benefits versus incremental costs. Furthermore, investment decisions driven by the need to serve Manitoba load also consider economic, environmental and other non-financial benefits that do not form part of an embedded cost of service study.

4.0 COST OF SERVICE GOALS

In order to provide guidance in the determination of cost of service methodology, it is necessary to begin by understanding overall rate making goals. Within this established ratemaking framework, the general principle of cost causation is the primary driver of COS. Cost causation refers to the allocation of overall revenue requirement to each customer class on the basis of what or who is causing the costs to

1 be incurred, to the extent practical. The objective is to select a method which best
2 represents operating characteristics, reasons for investment, and business practices of
3 the utility and which also support its ratemaking objectives. Overall ratemaking goals
4 provide guidance as to how cost causation is viewed and is particularly necessary for
5 COS as there may be a number of cost causal methodologies that may be applied and
6 therefore, there can be a range of methodologies that are considered to be reasonably
7 cost causal. COS methodology can then be established and measured in terms of how
8 they aid in attaining the desired objectives.

9

10 Manitoba Hydro's ratemaking goals are discussed below.

11

12 **4.1 Recovery of Revenue Requirement**

13 The first goal of ratemaking is to provide the utility the opportunity to fully recover
14 its allowed revenue requirement.

15

16 All costs that form part of Manitoba Hydro's Integrated Financial Forecast in the test
17 year, including Contribution to Reserves, are incorporated into COS for purposes of
18 determining each class' cost responsibility.

19

20 **4.2 Fairness and Equity**

21 It is well accepted that the general principle of cost causation should drive COS
22 methodology. Arguably, the equitable sharing of cost is achieved when significant
23 weight is given to cost causation. Cost causation is complex and debate tends to
24 focus on whether considerations of use or intent of investment better reflects cost
25 causation than a methodology which considers only design parameters and associated
26 cost. Additionally, cost causation may not be the only consideration in the
27 determination of fair and reasonable rates or allocated costs. While these are
28 considerations for all utilities because the nature of cost of service is to allocate costs
29 that are largely common/joint, it is particularly important for Manitoba Hydro with
30 significant export revenue generated in a competitive market reflected in an
31 embedded COS Study.

32

33 **4.3 Rate Stability and Gradualism**

34 Manitoba Hydro's Integrated Financial Forecast methodology has been established
35 with consideration extended beyond the current test year period to ensure the need to
36 make investments to maintain safe and reliable service is balanced with providing rate

1 stability and predictability for customers. It is a reasonable COS objective, therefore,
2 that COS methodology changes do not have an adverse affect on rate stability.

3

4 **4.4 Efficiency**

5 Efficiency in rate design is aimed at sending appropriate price signals regarding the
6 cost of energy.

7

8 The achievement of this rate design goal can call for the use of a COS methodology
9 that considers marginal costs. Manitoba Hydro's Weighted Energy allocator, used
10 over the past decade, which classifies and allocates generation-related costs to
11 customer classes based on the marginal value of electricity in 12 different periods,
12 supports this objective.

13

14 Additionally, the appropriate treatment of export revenues, which can be significant
15 in magnitude and variability, is critical to the achievement of this objective.

16

17 **4.5 Competitiveness of Rates**

18 Manitoba Hydro's Corporate Strategic Plan identifies the provision of predictable,
19 fair and affordable rates for all Manitobans as a key area of focus. This is also
20 reflected in its ratemaking objectives to maintain its competitive position with respect
21 to rates charged by other Canadian utilities for all rate classes.

22

23 COS is ultimately about setting just and reasonable rates and should support this
24 objective. Monthly bill comparisons provided in Manitoba Hydro's "2015 Survey of
25 Canadian Electrical Bills" illustrate that domestic electric rates are affordable and
26 competitive and that Manitoba Hydro offers amongst the lowest average bill for all
27 the sizes of Residential, Commercial and Industrial customers. The availability of
28 significant historic hydraulic resources allows Manitobans to enjoy a distinct
29 advantage with respect to their average monthly bills, and a well founded COS
30 methodology provides for a fair distribution of these benefits as evidenced by the
31 consistent ranking across all customer classes. Less balanced COS methodologies can
32 undermine this objective.

33

34 **4.6 Simplicity**

35 An important aspect of COS is that it should be simple enough to be understood and
36 fairly easily executed. The methodology chosen should consider its complexity,
37 relative benefits, and resultant cost.

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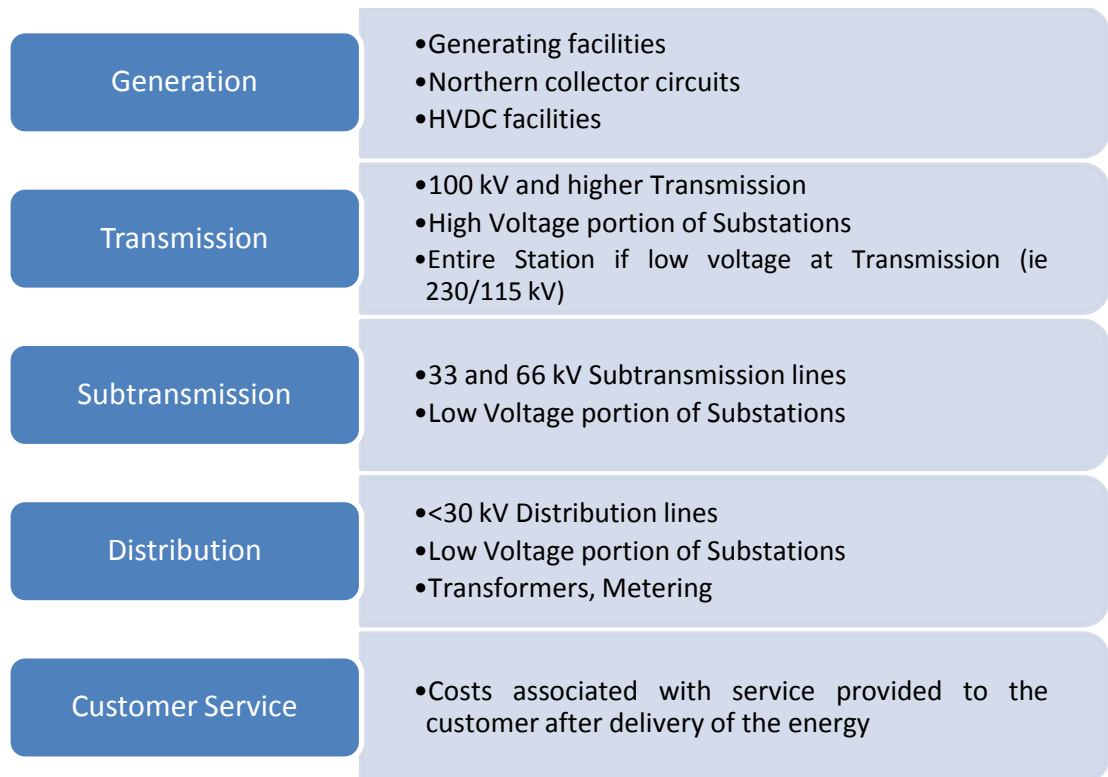
5.0 COST OF SERVICE PROCESS

Manitoba Hydro’s COS Study follows three sequential steps: functionalization, classification and allocation as discussed below.

5.1 Functionalization

Functionalization is the preliminary arrangement of costs according to functions performed by the electric system. The primary purpose of the functionalization process is to allocate to each customer class only those functions used in providing service. Manitoba Hydro’s framework has been developed with reference to general industry practice as well as the design and operating characteristics of its electric system. While some facilities are relatively straightforward to functionalize, certain facilities cross the boundaries of traditional roles which makes the process more complex. For example, transmission lines that connect remote generators to the grid are considered generation-related and are thus functionalized as generation.

Manitoba Hydro has defined its functional levels as follows:

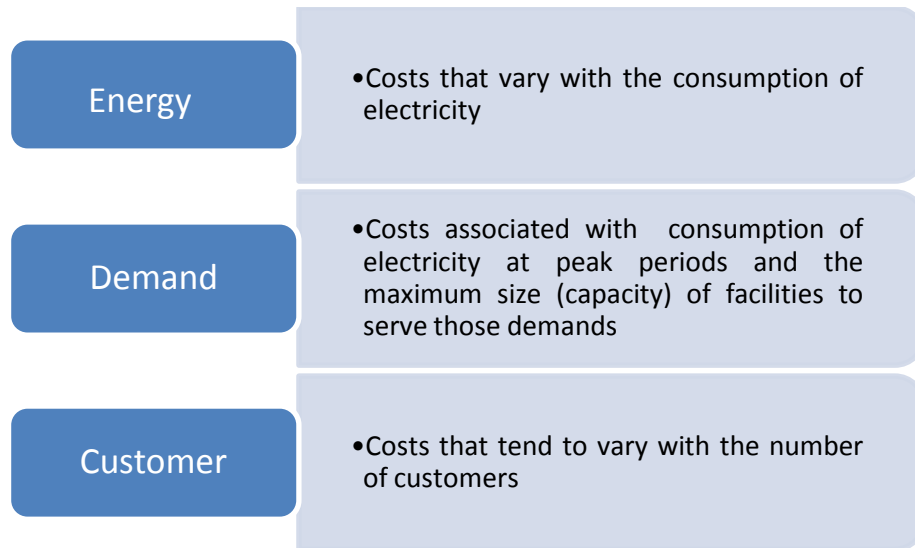


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5.2 Classification

Once costs are functionalized, they are classified according to system design and operating characteristics that cause the costs to be incurred. These classifications are based on measurable billing determinants (cost drivers); Energy, Demand and Customers:



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The method for classifying embedded costs requires informed judgment, and is based on a number of factors. Factors that can influence classification decisions include the reason for investment, the type and role of the generation station, system load patterns, planning and operating constraints, the use of a facility, the significance of export sales, and ratemaking objectives. For example, Manitoba Hydro's hydro facilities, although very costly to build, have relatively low operating costs and therefore are run most of the time, depending on water. Because these facilities produce power in most hours of the year and because they were built to meet energy requirements, the classification choice should be related more to energy than demand (capacity).

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5.3 Allocation

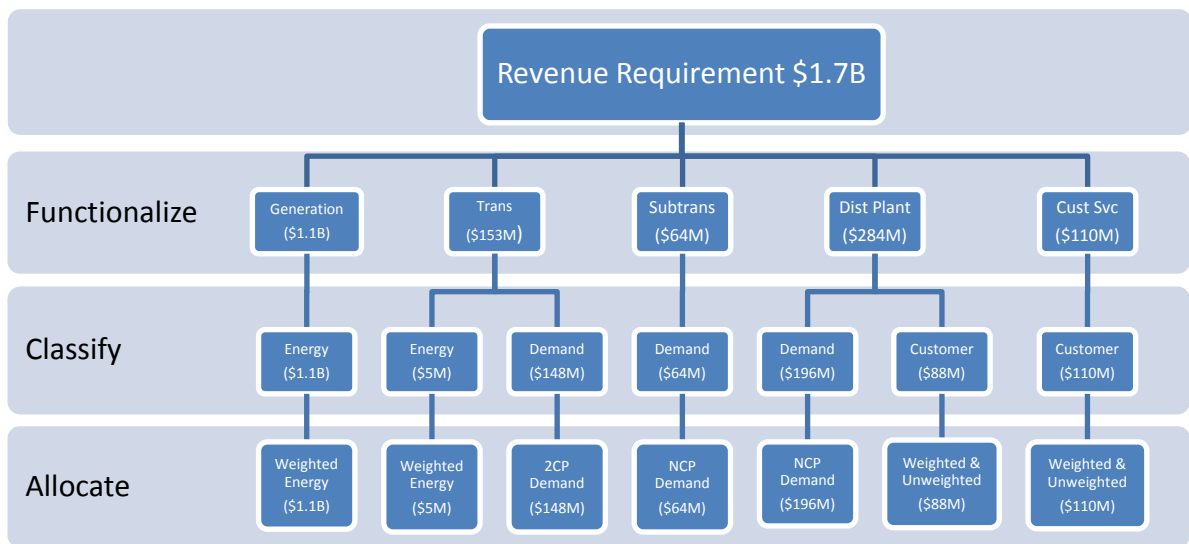
Costs that have been functionalized and classified by cost component are then allocated to customer rate classes on the basis of demand, amount of energy and number of customers.

The allocation process uses class characteristics that comport with the classification of the cost:

- Energy-related costs are allocated based on consumption by each class. Manitoba Hydro uses a weighted energy allocator that recognizes a time-differentiated value of energy as well as customer usage patterns;
- Demand-related costs are allocated based on some measure of demand including the hourly consumption of each class measured at the time of the system peak (coincident peak) or each class' maximum hourly consumption regardless of when that occurs (non-coincident peak). Manitoba Hydro's measure of demand for Transmission investment is further refined to include the average of the winter and summer peaks (2CP) to recognize the dominant winter domestic peak and summer export-related peak; and
- Customer-related costs are allocated based on the number of customers in each class which can be weighted or un-weighted, depending on the cost category.

The allocation process also considers the use of facility by the rate class. For example, large industrial customers receiving service at the Transmission level do not use Subtransmission and Distribution facilities and therefore are not allocated a share of those costs.

Figure 5.0 below depicts how the overall Corporate Revenue Requirement flows through the COS process based on PCOSS14-Amended (IFF12) that reflects methodology changes as discussed in this Submission:



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6.0 COS IS A COMPLEX TASK DUE TO INTER-RELATEDNESS

Developing a COS methodology is a complex undertaking due to the interrelationships of assumptions within the cost allocation process and the study's relationship with load, revenue requirement and rates.

Cost allocation is viewed as a three step process consisting of functionalization, classification and allocation. However, these steps are not necessarily distinct, and cannot be considered in isolation. For example, Manitoba Hydro notionally classifies generation as entirely energy related, but employs an allocator that inherently includes a demand component through the use of marginal weightings across time periods. This choice of allocator effectively shifts the classification process into the allocation phase.

Generation costs form the largest functional cost component of Manitoba Hydro's Revenue Requirement, of approximately \$1.1 billion or nearly 70% of Revenue Requirement as shown in Figure 5.0 above. Generation cost is prominent in each class' allocation of Revenue Requirement. Methods that classify costs more greatly as Demand-related tend to assign less cost to the largest industrial customers and therefore assign more cost to residential customers. Similarly, costs classified more as Energy-related tend to favour residential customers, and therefore assign more cost to the largest industrial customers.

Similarly, in some cases transmission is considered an extension of generation, when it is connecting remote generation placed near sources of low-cost water power to the grid. On this basis, Manitoba Hydro functionalizes its Bipole facilities as generation. Because a large proportion of Manitoba Hydro's transmission cost is functionalized as Generation, classified as Energy-related, the allocation choice of the remaining AC transmission grid that explicitly recognize energy (or demand allocators accumulated over time which look a lot like energy) needs to be carefully examined in order to avoid the over recognition of energy in cost allocation.

The inclusion of an Export Class means that costs attributed to exports effectively relieve domestic customers of their G&T cost responsibility. An over-allocation of cost to the Export Class serves to unwind Manitoba Hydro's original rationale for adopting the Export Class and represents a return to an allocation of Net Export

1 Revenue on the basis of G&T costs. For example, the assignment of G&T expenses to
2 the Export Class such that export revenues are completely offset (and therefore forces
3 Net Export Revenue to zero) shifts the appearance of the allocation but effectively
4 results in an allocation of export revenue on the basis of G&T. The approach for the
5 treatment of Net Export Revenue in COS can have significant effects on each class'
6 allocation of revenue requirement.

7

8 These are a few examples of the complex inter-relatedness of allocation choice in
9 COS. In addition to evaluating specific methodology approaches on their own merits,
10 a broader view of the cost allocation process is required in order to avoid any
11 unintended consequences on class revenue requirements and also to determine a
12 balance of cost treatments which support Manitoba Hydro's ratemaking objectives.

13

14 **7.0 CURRENT COS METHODOLOGY PERSPECTIVES**

15

16 Manitoba Hydro has given further consideration of its COS methodology, in some
17 cases developed under significantly different business circumstances. Manitoba
18 Hydro accepts many of the recommendations provided by CA in their Supplemental
19 Report. Additionally, Manitoba Hydro has reconsidered several methodological
20 changes it adopted flowing from CA's initial July 2012 Cost of Service Report. It has
21 done so with consideration also of the business environment in which it is operating,
22 perspectives shared through the Stakeholder Engagement Process as well as past
23 significant public review and PUB direction.

24

25 The 2014 PCOSS has been amended to reflect the changes as discussed below
26 (PCOSS14-Amended) and attached as Appendix 3.0. Manitoba Hydro's COS
27 methodology continues to be significantly guided by the general principle of cost
28 causality that considers also the intent and use of an asset. It also reasonably balances
29 other ratemaking objectives it seeks to achieve in order to arrive at a fair allocation of
30 cost and revenues among customer classes. Manitoba Hydro believes it's COS
31 methodology results in a reasonable depiction of cost responsibility for domestic
32 customers that can be relied on for purposes of rate determination and can be re-
33 incorporated into the Corporation's General Rate Applications.

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7.1 Treatment of Export Revenues and Cost

7.1.1 The Use of an Export Class

The primary objective of COS is to determine fair and realistic cost recognition for domestic customers used as a guide in the setting of rates. Export revenues generated in a competitive market are applied to offset embedded cost responsibility for domestic customers.

Prior to 2005, Manitoba Hydro's COS treatment offset only G&T cost responsibility with incremental export revenue. This resulted in those customer classes for whom G&T represented a greater portion of their costs benefiting to a much greater degree than others. As export revenue grew significantly, this treatment led to distorted RCCs and an unfair allocation of costs. To address this fairness issue, Manitoba Hydro adopted an Export Class.

While export revenue has declined in recent years, Manitoba Hydro agrees with CA's recommendation to continue with an Export Class concept for the following reasons:

- As long as the determination of fair and reasonable rates are to be set based on domestic costs net of export revenue, export prices and revenue can have a significant impact on domestic cost responsibility and rates;
- Assignment of cost above incremental cost to an Export Class recognizes the significance of exports to Manitoba Hydro's operations and investment plans;
- Once a reasonable assignment of embedded cost is made, the residual export revenue may be re-distributed to domestic customer classes in a manner that is more equitable, objective and transparent; and
- An Export Class concept has achieved a degree of acceptance by stakeholders.

The use of an Export Class returns the export revenues to domestic customers in two ways:

- As costs are assigned to the Export Class, it shifts those costs away from domestic customers; and
- The residual Net Export Revenue is returned to domestic classes and offsets a portion of their share of the overall revenue requirement.

The degree of cost assignment to exports does not change the level of revenue received from export sales nor the remaining revenue requirement to be collected

1 from domestic customers. In PCOSS14 Manitoba Hydro's total revenue requirement
2 of \$1.75 billion is partially offset by \$350 million of export revenue. The remaining
3 revenue requirement of \$1.4 billion is recoverable from all domestic customers,
4 regardless of cost assignment to the Export Class. It is only the distribution of the
5 \$1.4 billion revenue requirement between domestic classes that changes based on the
6 amount of cost assigned to the Export Class.

7
8 The past return of export revenue to domestic classes based only on allocated G&T
9 costs tended to favour large customers over smaller customers. Similarly,
10 methodologies that result in a greater assignment of G&T costs to the Export Class
11 will also tend to favour large customers over smaller customers.

12 13 **7.1.2 Cost Assignment to Dependable and Opportunity Export Sales**

14 Manitoba Hydro agrees with CA that it is reasonable to distinguish between
15 Dependable and Opportunity export sales. The nature of a hydraulic system built to
16 serve Manitoba load at least cost, results in energy surplus to the needs of domestic
17 customers that is either borrowed by exports until needed domestically or exists by
18 virtue of having built to support domestic energy needs in lowest flow conditions.
19 Cost distinction for COS is drawn between these export sales types to recognize that:

- 20 • There are varying degrees of firmness of export sales and it is reasonable to
21 conclude they impose different costs to the system;
- 22 • Manitoba Hydro intends to supply Dependable sales under most conditions;
- 23 • Dependable sales may alter investment development sequence and timing; and
- 24 • Opportunity sales are only made as short term surpluses allow and Manitoba
25 Hydro does not put in place firm resources to serve these sales.

26
27 For COS purposes, Manitoba Hydro continues to assign full embedded G&T cost
28 responsibility to Dependable sales for these reasons even though these sales are not
29 provided the same level of service or firmness as Domestic customers. Opportunity
30 sales are assigned incremental cost.

31
32 In its Supplemental Report, CA uses the term "hybrid" to represent that some export
33 sales while long term and firm are firmed by external resources. CA concludes
34 therefore that hybrid sales do not influence embedded G&T cost and should only
35 attract variable costs consistent with the costing treatment of Opportunity sales.

36

1 Manitoba Hydro agrees with CA that hybrid sales can be firmed if necessary by
2 resources outside of Manitoba and do not alter Manitoba Hydro's development plans
3 in that no new energy and/or capacity is needed to be built to serve the sale.
4 Manitoba Hydro recognizes the reasonableness of CA's rationale for assigning only
5 incremental cost against these sales.

6
7 However, Manitoba Hydro also recognizes that while the specific characteristics of
8 hybrid sales may suggest a lower reliance on Manitoba Hydro generation resources,
9 Manitoba Hydro intends to support these sales under low flow conditions although
10 the means of supplying these sales may not exclusively consist of Manitoba Hydro
11 resources. As such, Manitoba Hydro believes it reasonable to treat these sales as
12 Dependable and assign fully embedded cost responsibility. For COS purposes,
13 Manitoba Hydro will continue to reflect a five-year forecasted average split between
14 Dependable and Opportunity sales based on energy available under dependable water
15 flows compared to average water flows for years 3 to 8 of the IFF. The result is that
16 approximately 50% of export sales are considered Dependable and 50% are
17 considered Opportunity sales as determined on an energy basis.

18
19 While this approach to hybrid sales likely results in an over-assignment of embedded
20 cost responsibility to Dependable sales, Manitoba Hydro accepts that in low-water
21 conditions additional cost incurred to support these sales may not be sufficiently
22 reflected in the median flow conditions that underpin revenue requirement and COS.
23 From a longer-term cost responsibility perspective, this is a conservative approach to
24 determining Net Export Revenue. Avoiding special treatment for hybrid sales is
25 consistent with the goal of simplicity, as it avoids the complexities associated with the
26 classification of specific export sales.

27 28 **7.1.3 Generation Resource Cost Allocation to Exports**

29 Manitoba Hydro has also further considered past treatments of its generation
30 resources including natural gas, coal and wind for purposes of export cost
31 responsibility. On the basis that these resources support Domestic and Dependable
32 export loads under some conditions and from a long term cost responsibility
33 perspective, Manitoba Hydro intends to aggregate these costs to be allocated to
34 Domestic and Dependable loads. Past extensive and complex reviews of the use of
35 each of these resources in median flow conditions that underpins revenue requirement
36 and COS has prompted a change to this simpler yet reasonably cost causative
37 methodology.

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Similarly, power purchases, trading desk and MISO fees support all load under some conditions and Manitoba Hydro intends to assign these costs proportionately to all load.

The chart below provides a simplified view of the allocation of generation costs:

			Dependable	Opportunity
		Domestic	Export	Export
Generation Pool 1	Hydraulic Generation	✓	✓	✗
	Wind	✓	✓	✗
	Natural Gas Thermal	✓	✓	✗
	Coal Thermal	✓	✓	✗
Generation Pool 2	Power Purchases & Transmission Fees	✓	✓	✓
	Water Rental & Variable Hydraulic O&M	✓	✓	✓
	Trading Desk	✓	✓	✓

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7.1.4 Importance of a Reasonable Assignment of Cost to the Export Class

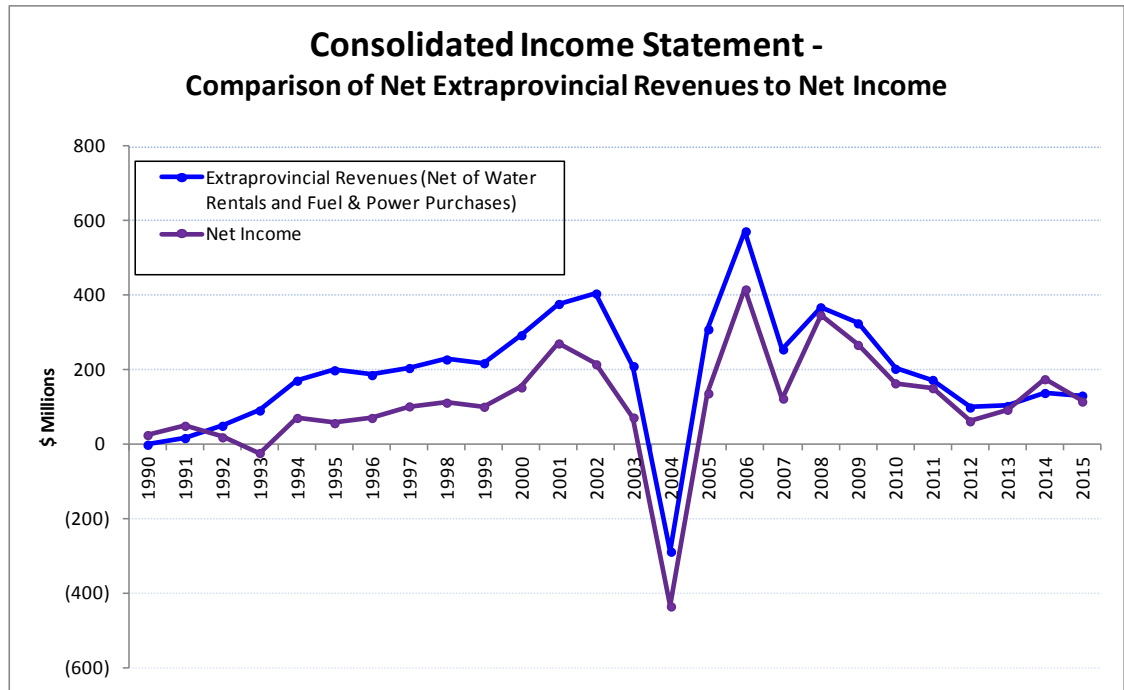
The objective of an Export Class in COS is to ensure fair cost responsibility for domestic customers. An over-assignment of cost to exports may:

- Equate to an under recognition of cost responsibility to some domestic customers,
- Result in the unit cost of exports to exceed that of GSL>100 kV (the most comparable Domestic class),
- Result in negative Net Export Revenue; and
- Effectively mute or unwind Manitoba Hydro’s original rationale for adopting the Export Class, effectively returning to an allocation of export revenue on the basis of G&T costs.

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.



Note: The net extraprovincial revenue shown in the figure above is determined as the gross export revenue net of all flow related costs (water rentals and fuel & power purchases). Net extraprovincial revenues are calculated in this manner for financial reporting purposes. Net Export Revenue reflected in the COS is the amount of extraprovincial revenue remaining after the allocation of embedded and variable costs to the Export Class.

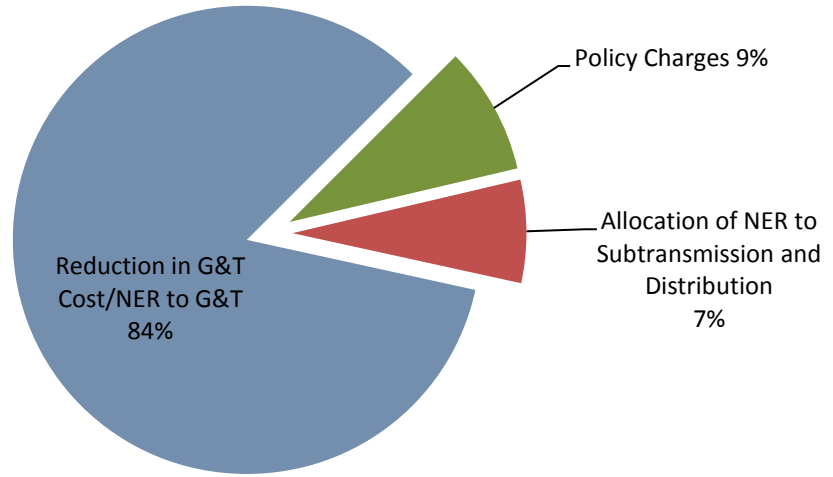
7.1.6 Manitoba Hydro Cost of Service Approach to Export Revenue is Reasonable and Balanced

Manitoba Hydro views its COS treatment of export revenue by way of allocation of cost to the Export Class and the corresponding allocation of the resulting Net Export Revenue back to domestic customer classes, as reasonable and balanced:

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- The approach provides a balanced view between a fully incremental costing approach (the basis by which export sales business decisions are determined) and one that assigns embedded cost responsibility to all exports (which can result in export cost responsibility at or in excess of Domestic customer cost responsibility of which the system is built to serve);
- It addresses cost distinction between Dependable exports and Opportunity sales;
- Export revenue is largely used to reduce G&T expense of domestic customers as shown in the chart below:

Application of Export Revenue to Functions



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1 **7.2 Generation and Transmission**

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3 **7.2.1 HVDC**

4 Manitoba Hydro agrees with CA’s recommendation that the primary role of the
5 HVDC facilities situated at Dorsey, and upcoming HVDC facilities situated at Riel,
6 are dedicated to the Bipole facilities for the interconnection of generation and to
7 inject power to the transmission system. As discussed further in Manitoba Hydro’s
8 Response to the CA Supplemental Report, Manitoba Hydro has amended the
9 functionalization of these HVDC facilities situated at Dorsey (and Riel), which allow
10 the use of the Bipoles, to Generation and allocated the associated costs on the basis of
11 Weighted Energy.

12
13 The existing Bipole facilities are functionalized as Generation and allocated on
14 Weighted Energy on account of their role in transporting power from northern
15 generators to southern load centers. Bipole III’s role in the Manitoba Hydro system is
16 identical to Bipoles I and II which is to move energy from the northern generating
17 stations to the southern load centers and is thus appropriately functionalized as
18 Generation and allocated on Weighted Energy.

19
20 **7.2.2 Weighted Energy Generation Allocator**

21 Manitoba Hydro notionally classifies all Generation costs as Energy-related, with
22 costs allocated on the basis of energy consumption weighted by the relative market
23 value of energy in each of twelve time periods to reflect Demand. Due to changes in
24 market conditions, the capacity component of energy supply may no longer be
25 adequately reflected in the differential between on peak and off peak energy prices.
26 CA recommends that Manitoba Hydro explicitly incorporate capacity costs, as well as
27 operating reserves, in its marginal cost-weighting factors.

28
29 Manitoba Hydro accepts the advice provided by CA and has incorporated an
30 additional capacity component in the Weighted Energy allocator utilizing the value of
31 capacity as represented by the Reference Discount used in the CRP. Manitoba Hydro
32 does not intend to include MISO operating reserve values into its energy weightings
33 due to its negligible impact and the CRP reference discount applied to the on peak
34 energy weightings being well in excess of current market prices for capacity.

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1 **7.2.3 US Interconnections**

2 Manitoba Hydro previously classified its four US transmission interconnections as
3 Demand-related to serving peak load. However, the role of these interconnections is
4 primarily related to exporting and importing energy, since it is really the transfer of
5 energy over longer periods that provides the greatest benefit to Manitoba Hydro and
6 drives the investment in these facilities. Interconnections provide an important source
7 of supply during off-peak hours when there is ample excess capacity in the
8 neighbouring market; such off-peak purchases allow water to be stored in Manitoba
9 to meet loads in future higher valued periods. As such, Manitoba Hydro has amended
10 its COS methodology to classify its US interconnections as Energy.

11
12 As recommended by CA in the Supplemental Report, Manitoba Hydro agrees that it's
13 important to consider the intent and use of this investment as opposed to what the
14 physical asset is and will allocate the existing US interconnections, as well as the
15 future Manitoba-Minnesota Transmission Project/Great Northern Transmission Line
16 (MMTP/GNTL) interconnection, using the Weighed Energy allocator. Manitoba
17 Hydro intends to continue to functionalize the US interconnections as Transmission,
18 and include the costs in its Open Access Transmission Tariff, consistent with current
19 practice.

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21 **8.0 COST OF SERVICE METHODOLOGY REVIEW RESULTS**

22
23 Manitoba Hydro's COS determines each class's total allocated costs which when
24 compared with revenues received from each class (including their allocated share of
25 Net Export Revenue) results in a Revenue to Cost Coverage ratio. RCC's are used to
26 aid in the evaluation of rate levels, and are an indicator of whether a class is
27 reasonably paying its full share of costs. Manitoba Hydro's Zone of Reasonableness
28 for RCC's is 95 to 105 percent. A ratio outside of the ZOR is one factor to be
29 considered in the possible differentiation of rate increases.

30
31 PCOSS14, prepared in June 2013, reflected many of the recommendations provided
32 by CA in their 2012 Report and was distributed at the Stakeholder Engagement
33 Process in 2014. Since that time, PCOSS14-Amended has been prepared to reflect
34 methodology changes as discussed in this Submission. As a result of these changes in
35 methodology Net Export Revenue has changed from \$34 million in PCOSS14 to
36 \$91 million in PCOSS14-Amended. The table below depicts the RCC impacts by

1 class due to the modifications to COS methodology incorporated in PCOSS14-
 2 Amended compared with the previous methodology:

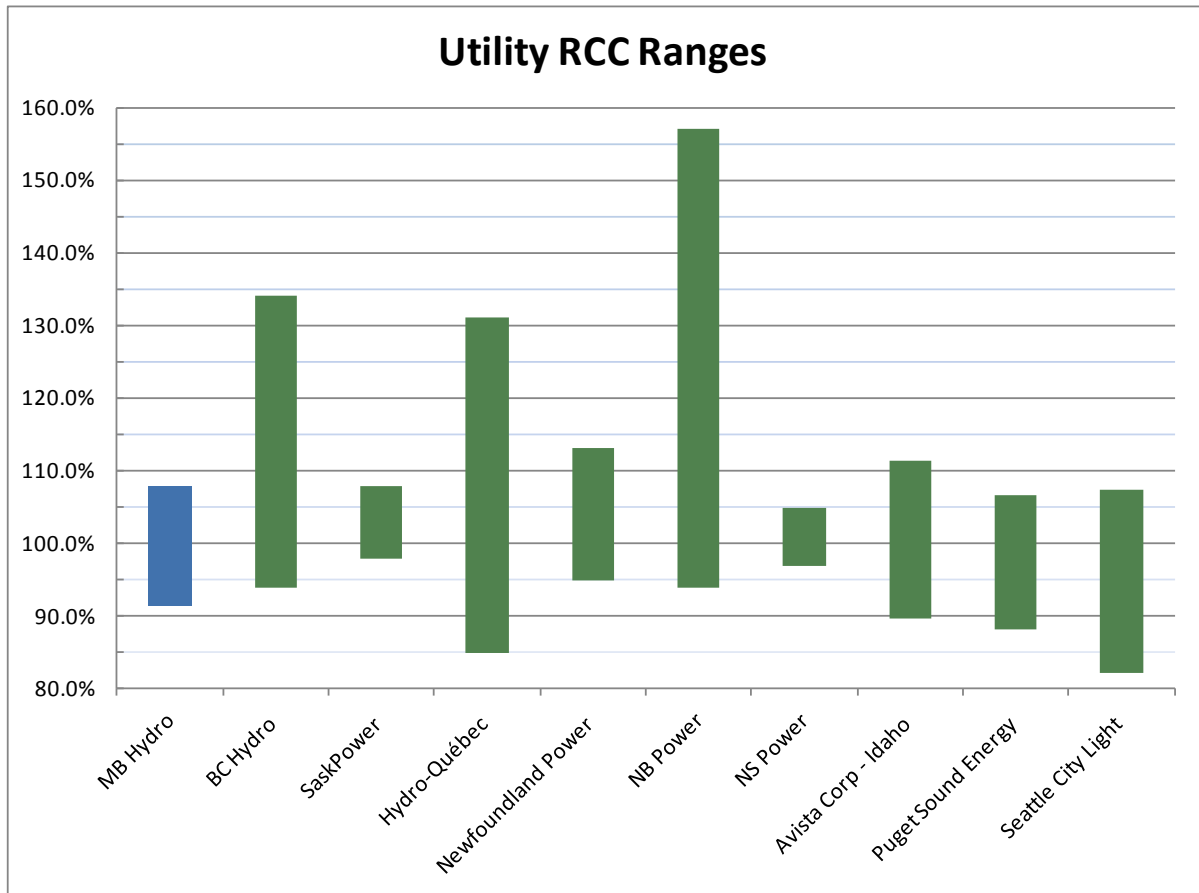
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RCC Comparison

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

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The results of the current COS methodology is that most RCC's fall fairly tightly
 within the Zone of Reasonableness.



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Sources: SaskPower, Hydro-Québec, NB Power, Nova Scotia Power and BC Hydro

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A comparison of RCC's from electric utilities in various jurisdictions is provided in the figure above. As shown, Manitoba Hydro's COS indicates a relatively tight range of class RCC's around unity in comparison with those found at several other electric utilities. Manitoba Hydro is of the view that this reflects well on Manitoba Hydro's COS methodology and that previous across-the-board rate changes continue to produce RCC outcomes that are reasonable on a class-by-class basis.