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Manitoba Hydro Cost of Service Methodology Review Hearing Presentation

Prepared for GSS/GSM customer class

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Agenda

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Introduction

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Key Issues

A

Treatment of export costs

B

Treatment of net export revenue

C

Treatment of generation and transmission assets

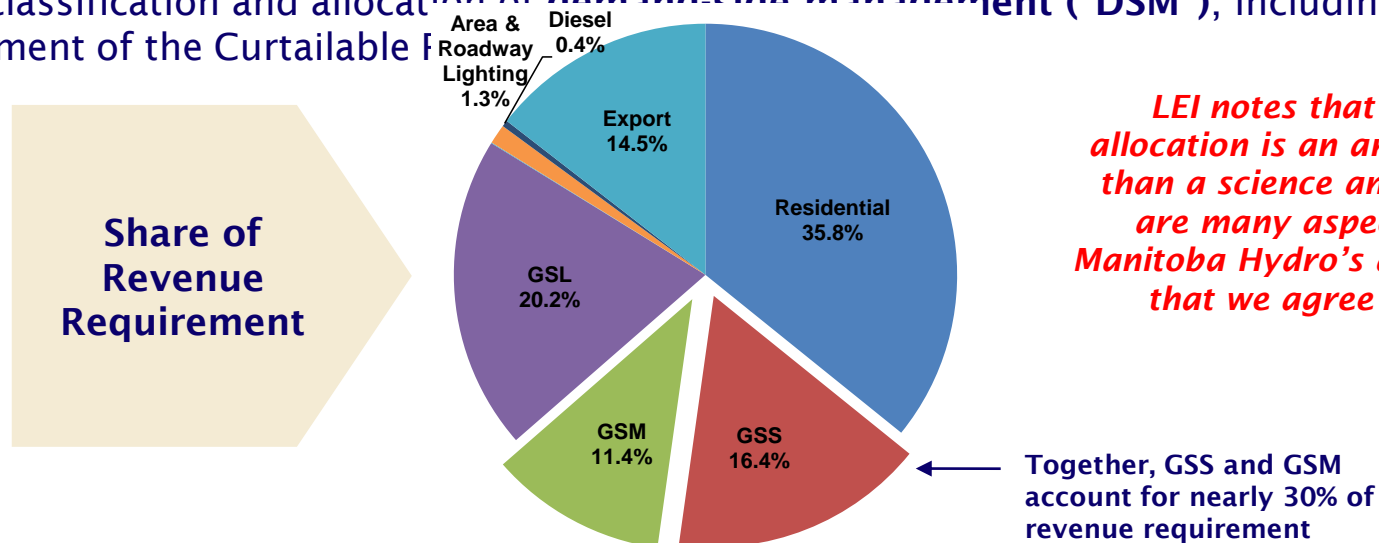
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The classification and allocation of DSM

LEI was retained to represent the interests of Manitoba Hydro's general service small and medium non-residential customers

▶ Following Order No. 84/16 and the PUB letter of August 31st, LEI has summarized its perspectives on the following key issues for this oral hearing

- The treatment of export costs, including the number of export classes and the allocation of fixed and variable costs to such classes;
- The treatment of net export revenue (“NER”) and the allocation thereof, including the treatment of the Uniform Rate Adjustment and the Affordable Energy Fund;
- The functionalization, classification and allocation of generation and transmission assets, including the HVDC system and the US interconnection, but excluding wind and coal assets;
- The classification and allocation of demand-side management (“DSM”), including the treatment of the Curtailable F



LEI notes that cost allocation is an art rather than a science and there are many aspects of Manitoba Hydro's approach that we agree with

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LEI has summarized its perspective on the four key issues identified by the PUB

#	Issue	Manitoba Hydro	LEI Recommendation
1	Allocation of fixed costs to export sales	Assigned only to dependable export sales (50% of total exports)	Assign to 63.8% of export sales
2	Allocation of NER	Based on share of allocated costs	Base on share of total costs (allocated and direct)
3	Treatment of generation and transmission assets	Classified as energy and allocated via the weighted energy allocator including a capacity adder	LEI supports the use of the weighted energy allocator but use of the capacity adder requires further study
4	Treatment of DSM costs	Directly allocated to participating classes	Classify as demand and allocate using the D14 average of winter and summer peaks (2CP) allocator, adjusted for losses

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Fixed costs are currently only assigned to dependable exports which account for 50% of total export sales

- ▶ **Manitoba Hydro assigns full embedded generation and transmission (“G&T”) costs to dependable exports, while opportunity exports only pay variable costs**
 - MH has stated that new capacity is built for domestic load and advanced if firm contracts for dependable exports can be negotiated
- ▶ **Current COS methodology defines the opportunity to dependable export sales split as 50:50 based on forecasted dependable and average water flows**
- ▶ **Sustained opportunity exports play a role in advancing generation investments**
 - *“because you’re building it a little earlier you’re attracting a long-term firm sale, and you’re attracting then some additional revenues from the opportunity market for the surplus that that plant might provide.”*
 - Needs For and Alternatives To (“NFAT”) Manitoba Hydro’s Preferred Development Plan Manitoba Hydro assumes that all surplus electricity can be sold either as long-term firm energy or as on-peak and off-peak opportunity sales

Manitoba Public Utilities Board. *Re: Manitoba Hydro COSS Workshops. May 11, 2016. p.264*

Public Utilities Board. *Report on the Needs For and Alternatives To (NFAT) – Review of Manitoba Hydro’s Preferred Development Plan. June 2014.*

Manitoba Hydro has advanced generation in the past for the purpose of profiting from opportunity export sales

- ▶ In Undertaking 34, LEI identified Limestone and Wuskwatim as two operating facilities where opportunity exports played a role their advancement

Limestone - *“Although according to MH the firm export sale could be made with only a one-year advancement of the Limestone station, the Applicant plans a two-year advancement because it believes the **extra year of advancement would allow the profitable sale of additional interruptible energy.**”*

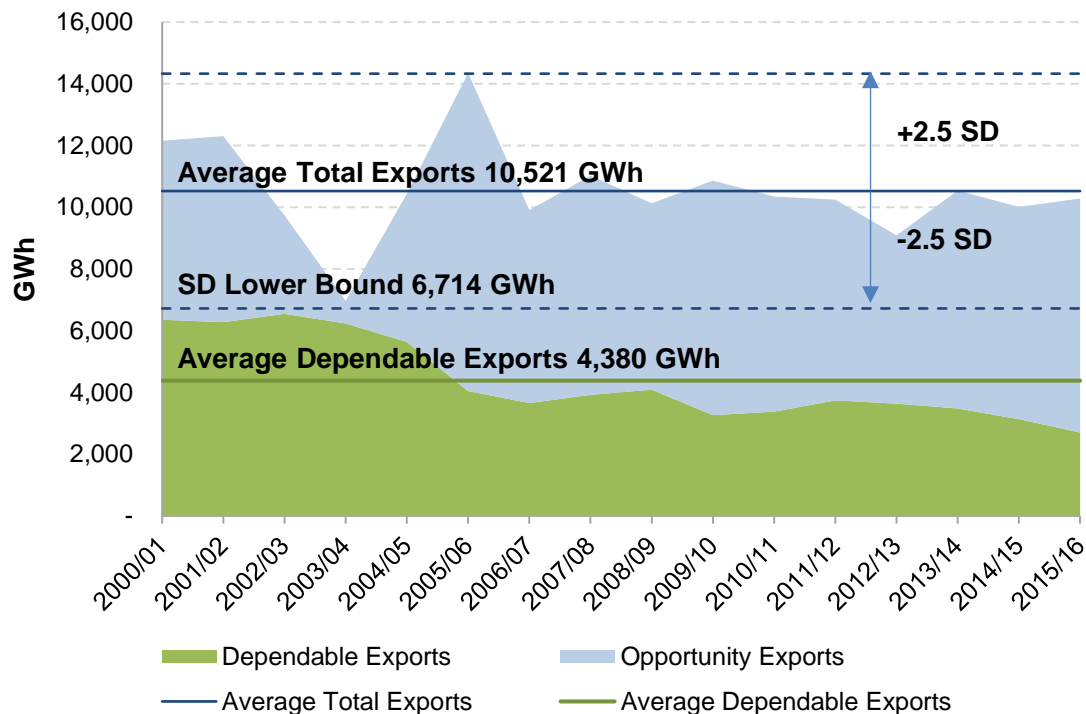
Source: National Energy Board. Reasons for Decision – The Manitoba Hydro-Electric Board EH-6-84. February 1985.

Wuskwatim - *“the reason stated for advancing the in-service date of the Project from 2020 to 2009 would be primarily to allow Manitoba Hydro and the Nisichawayasihk Cree Nation (“NCN”) to **obtain additional export revenues and profits.**”*

Source: Fisheries and Oceans Canada. Canadian Environmental Assessment Act – Comprehensive Study Report: Wuskwatim Generation Project. October 2005.

LEI believes that a 63.8% share of exports can be viewed as relatively predictable and should therefore attract full embedded G&T costs

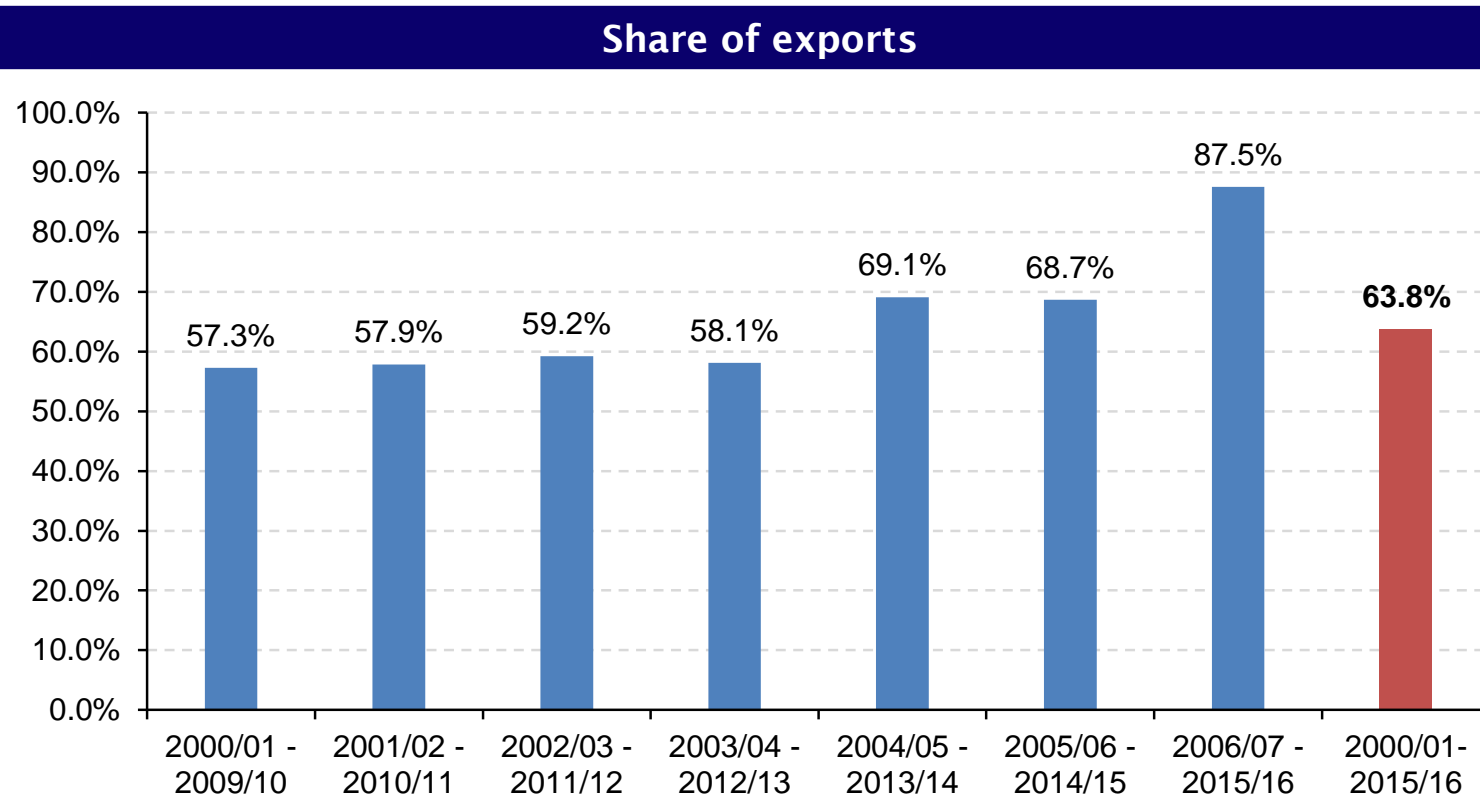
- ▶ In GSS/GSM Undertaking #35, LEI updated its analysis of historical export volumes extending the timeframe from 2000/01 to 2015/16
- ▶ LEI calculates the average total exports for the period as 10,521 GWh and the 2.5 standard deviation lower bound as 6,714 GWh. This 2.5 SD lower bound represents 63.8% of the average total exports over the sixteen year period



Given that 50% of exports are dependable, the incremental 13.8% would come from opportunity exports

LEI tested the 2000/01 to 2015/16 export data in seven 10-year increments to gauge the sensitivity of results obtained

- ▶ The average share of exports to be assigned fixed costs was calculated at 65.4% and ranged from 57.3% to 87.5% across the seven 10-year increments
- ▶ LEI's recommended 63.8% for the 2000/01 to 2015/16 period falls within the range of results obtained from the analysis of successive 10-year periods



LEI questions the relevance of data preceding Manitoba Hydro's entry into export markets in determining the allocation of fixed costs to export sales

- ▶ **Manitoba Hydro considers “LEI’s statistical approach to define this split remains too narrow to be relied upon” however more data is not necessarily better data as hydrological patterns may have shifted over the past 100 years**
 - Manitoba Hydro’s development of US interconnections development started in 1970 culminating in 7 major projects to date
 - New hydro came online in 1974 (Kettle 1,220 MW), 1979 (Jenpeg 115 MW and Long Spruce 980 MW), 1990 (Limestone 1,350 MW) and 2012 (Wuskwatim 211 MW) totaling 3,876 MW
 - LEI used the data Manitoba Hydro provided; should data from prior years become available, LEI’s analysis can be extended
- ▶ **LEI believes that an analysis of historical export volumes to determine the fixed costs to be assigned to the export classes is more appropriate**
- ▶ **While Manitoba Hydro disputes the approach in determining the proportion of Opportunity Exports that should carry fixed costs, its July 29th, 2016 rebuttal evidence does not refute the underlying rationale of LEI’s recommendation**
- ▶ **Manitoba Hydro has not provided replicable detail in this proceeding on its methodology on determining the dependable/opportunity export split**

Manitoba Hydro methodology:

- Dependable/opportunity split based on the Integrated Financial Forecast (“IFF”) 5-year forecast of dependable and average water flows
- Forecast simulates system operation using the entire long term hydraulic flow record of over 100 years, supply mix and 5-year load forecast of the IFF

There is a difference between dependable from a reliability perspective as compared to the probability of realization

In terms of *reliability*:

- ▶ Manitoba Hydro intends to supply dependable exports sales under most conditions and allocates embedded cost to these sales on the basis that all resources support these loads
- ▶ Under this view opportunity exports are not supported and are assigned only variable costs
- ▶ Terms should not be confused: “reliability” in an engineering context refers to how “firm” capacity is, whereas what LEI is discussing is the probability that exports of some sort will occur and garner revenues

With respect to the *probability of realization*:

- ▶ An evaluation of the volume of opportunity exports that are not speculative, but have a high probability of realization, suggests that this percentage of opportunity exports that should be considered “dependable” and attributed fixed costs in addition to variable costs
- ▶ This view accepts the consideration of opportunity export revenues in the planning of generation investment

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Exclusion of direct costs from the allocation of net export revenue is not consistent with the principle of fairness and should be replaced by a more holistic measure of total costs

- ▶ **NER are distributed to each customer class based on allocated costs, not total costs**
 - The introduction of the export class and current allocation of NER aimed to address the fairness issue related to export revenue offsetting generation and transmission costs prior to 2005

- ▶ **Net export revenue should be allocated on the basis of total costs, which includes direct costs, due to the principles of fairness, objectivity and equity**
 - Costs such as DSM provide system benefits to all customers

- ▶ **LEI notes that the Uniform Rate Adjustment and Affordable Energy funds are rate related policy decisions and are not caused by the export class**
 - These cost adjustments are more appropriate for the rate design stage

The Uniform Rate Adjustment equalizes rates for power supply for customers across all zones within a customer class to match the rates in Winnipeg. Passed into law through Bill 21 in 2001, the URA resulted in a rate reduction for customers in rural and lower density zones

The Affordable Energy Fund was established by the Winter Heating Cost Control Act of 2006. The AEF required Manitoba Hydro to set aside 5.5% of 2006/07 export revenues in order support energy efficiency and conservation initiatives, encourage alternative energy sources and facilitate associated research and development. Under legislation, AEF programs must be equally accessible to rural and northern Manitoba customers, including those with low incomes and seniors

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LEI agrees with Manitoba Hydro's treatment of its generation, generation-related transmission and the US Interconnection excluding the use of the capacity adder

- ▶ The weighted energy allocator uses an opportunity cost approach to classify and allocate generation, GRTA and US Interconnection costs
- ▶ As the weighted energy allocator considers the seasonal peak, shoulder and off-peak prices, it incorporates the demand-influenced value of energy
- ▶ LEI questions whether the use of a capacity adder is appropriate at this time, and believes that when such adders are not market-based

Manitoba Hydro's weighted energy allocator multiplies forecasted energy consumption by Surplus Energy Program price weights to capture the relative market value of energy in the peak, shoulder and off-peak periods of spring, summer, fall and winter. Manitoba Hydro's proposes a capacity adder for peak periods based on MISO's capacity market clearing price

MISO capacity market

- ▶ The MISO's current **Planning Resource Adequacy framework ("PRA")** was created in 2013 with the ambition to correct most shortcomings associated with MISO's previous market construct, i.e. the **voluntary capacity auctions ("VCAs")**
- ▶ The VCAs were operated by MISO at the regional level, with no price separation at the zonal level - one of the key design shortcomings
- ▶ The MISO market is separated into nine LRZs and **Manitoba Hydro's capacity is currently deliverable into LRZ 1**
- ▶ Auction clearing price with the CAD\$3.16/kW-Mth proposed capacity adder

Planning Year	LZ1 Auction Clearing Price (US \$/kW-Mth)
2013/14	\$0.032
2014/15	\$0.100
2015/16	\$0.106

It is important to note that the current capacity market design is likely to change further

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DSM costs should be allocated to customers that contribute to peak demand

- ▶ **Currently, costs of DSM programs are directly attributed to individual participating customer classes**
- ▶ **Peak demand is the primary driver of the need and therefore costs to manage peak demand using DSM**
- ▶ **System-wide benefits from DSM are produced from a reduction in system peak demand costs**
 - *“Reductions in domestic demand have contributed to electricity surpluses, which have been sold on the export market to support lower domestic rates for Manitoba consumers, reduce greenhouse gas emissions, and defer the need for new Manitoba resources.”*
- ▶ **The direct assignment of DSM costs penalizes participating customer classes for providing a system service**
 - Allocation by demand strengthens rather than weakens incentives for DSM
- ▶ **The need for DSM is driven by peak-demand consumption and therefore the costs to provide DSM should be allocated to the set of customers that consume at the peak**
 - Allocate using the existing D14 2CP for Domestic and Dependable Export table