Manitoba Hydro 2017/18 & 2018/19 Electric General Rate Application

December 6, 2017

Revenue Requirement Panel

Revenue Requirement Panel

- Jamie McCallum, Chief Finance and Strategy Officer
- Liz Carriere, Manager Strategic and Financial Planning
- Susan Stephen, Treasurer
- Sandy Bauerlein, Corporate Controller
- Lois Morrison, Director Marketing and Sales
- David Cormie, Director Wholesale Power and Operations
- Joel Wortley, Director Strategic Business Integration
- Gerald Neufeld, Director Transmission Planning and Design
- David Swatek, Manager System Planning
- Hal Turner, Director Generation Asset Management
- Chuck Steele, Director Engineering and Construction

Revenue Requirement Panel Presentation Summary

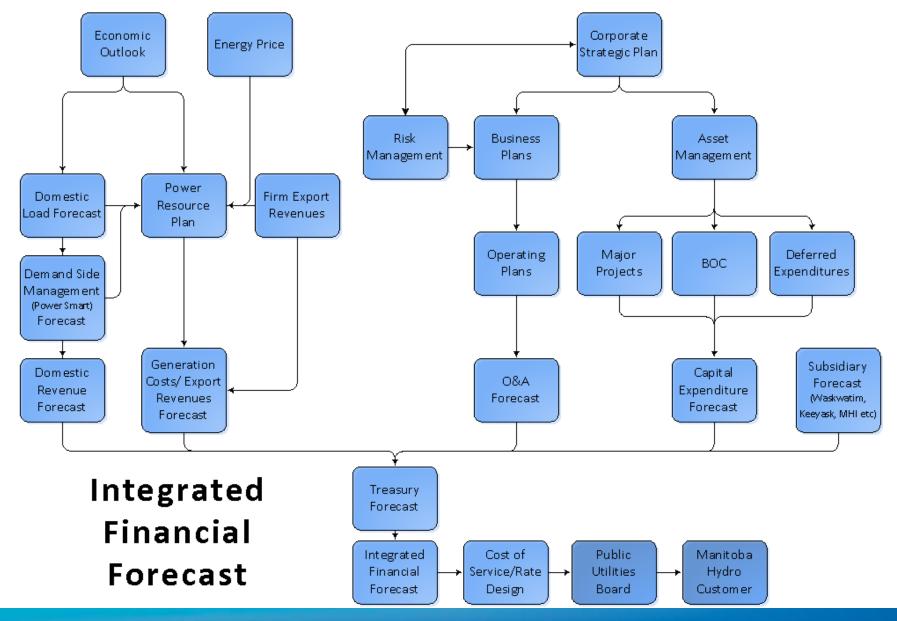
- I. Introduction
- II. Economic Outlook (L. Carriere)
- III. Electric Load Forecast and DSM (L. Morrison)
- IV. Water Conditions, Energy Prices and Export Market (D. Cormie)
- V. Long-Term Energy Prices and Export Revenues (L. Carriere)
- VI. O&A Costs and Regulatory Deferrals (S. Bauerlein)
- VII. Capital Expenditure Forecast & Asset Management (J. Wortley)
- VIII. Debt Management Strategy (S. Stephen)
- IX. Previous Rate Plans (L. Carriere)
- X. Summary (L. Carriere)



I. Introduction Liz Carriere



Manitoba Hydro



December 6, 2017

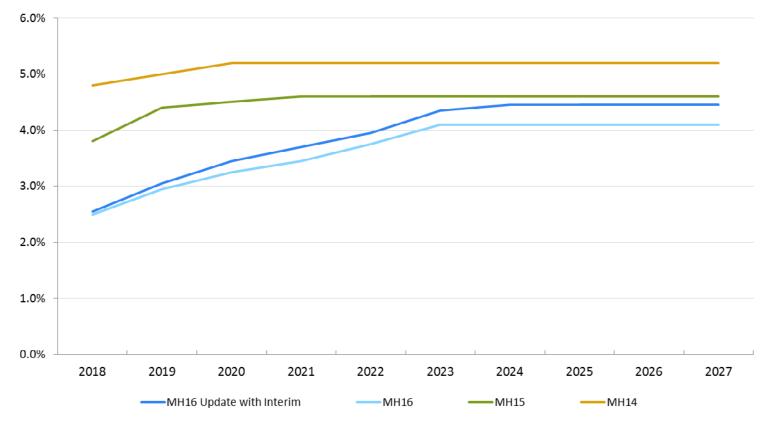
Manitoba Hydro

II. Economic Outlook Liz Carriere





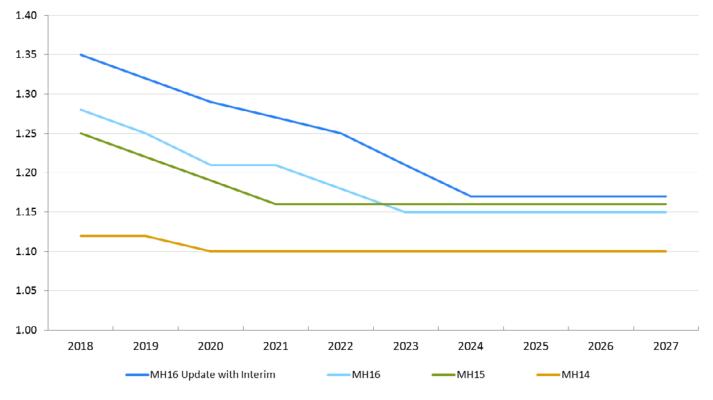
MH New Long-Term Canadian Interest Rate



Note: excludes the 1% Provincial Guarantee Fee



MH U.S. Exchange (c\$/U.S.\$)

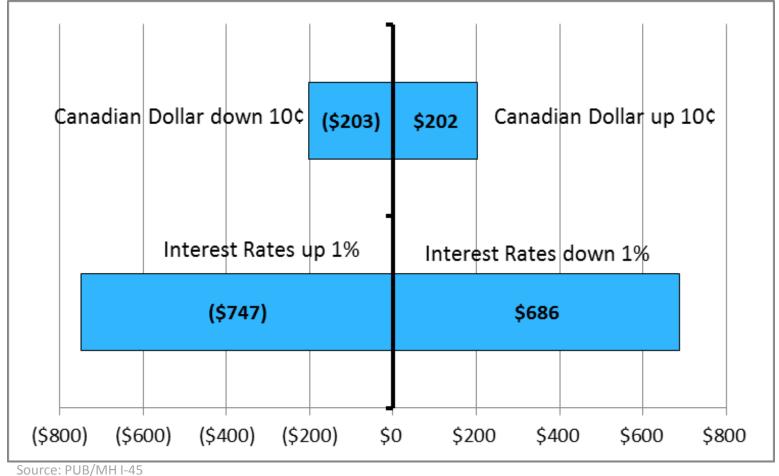


Note: excludes the 1% Provincial Guarantee Fee



Key Sensitivities

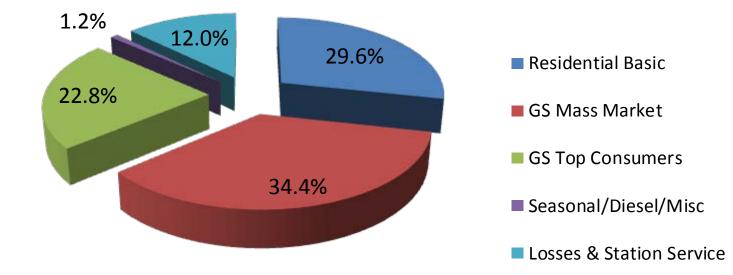
8 Year Retained Earnings Impact (\$ Millions)



December 6, 2017

III. Electric Load Forecast and DSM Lois Morrison

2017 Forecast – Sector Analysis 2016/17 FIRM ENERGY

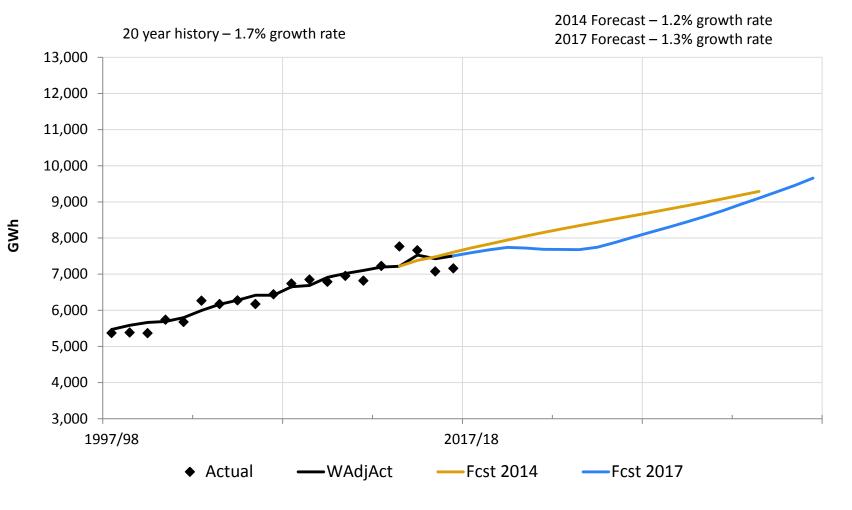


Comparison – 2014 versus 2017

December 6, 2017

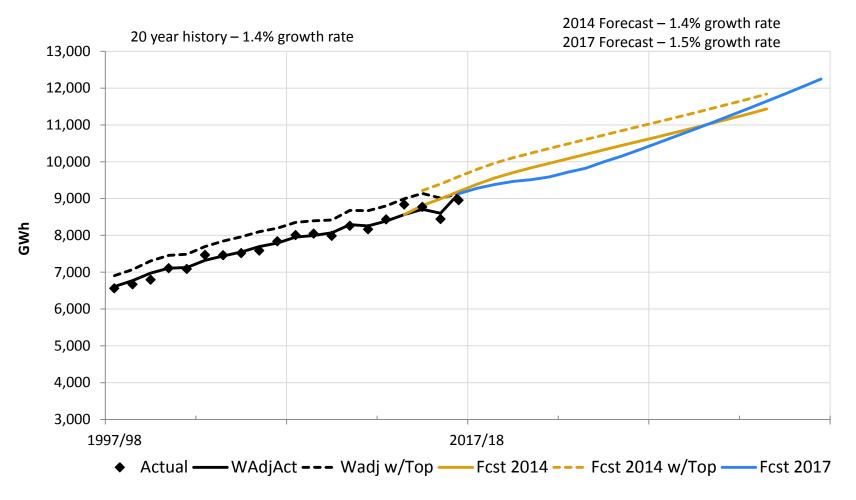
Manitoba Hydro

Residential Basic

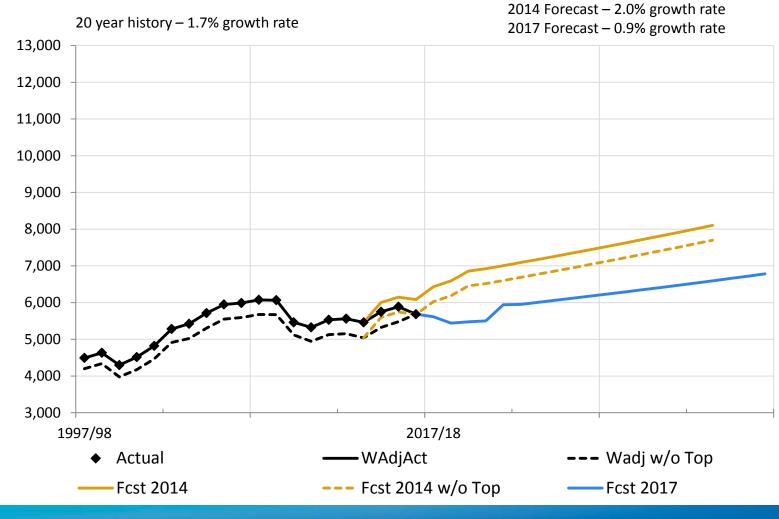


Manitoba Hydro

General Service Mass Market

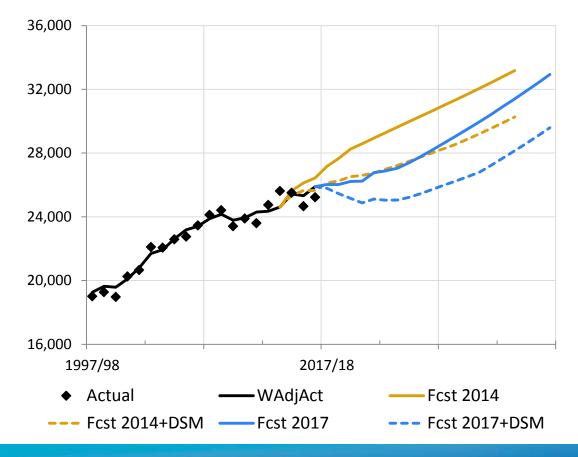


General Service Top Consumers



Manitoba Hydro

Gross Firm Energy NET of DSM Programming (GW.h)



HISTORIC:

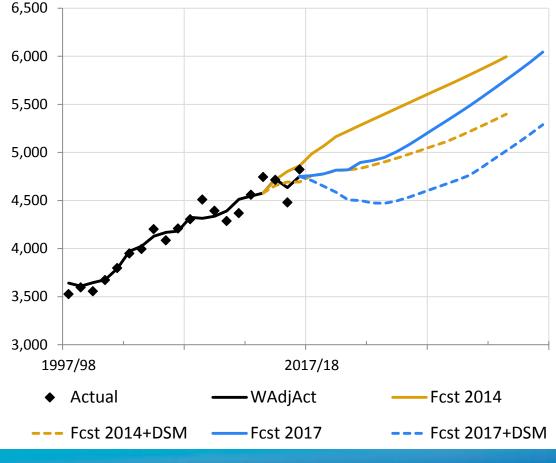
- Gross Firm Energy has grown by 349 GW.h or 1.6% per year over last 20 years.
- Removing DSM programming, growth would have been 1.9%

FORECAST:

- Forecast to grow at a rate of
 352 GW.h or 1.2% per year over
 the next 20 years.
- Forecast to grow at a rate of 185 GW.h or 0.7% per year over the next 20 years after DSM programming is considered.

December 6, 2017

Total Peak Forecast NET of DSM Programming (MW)



HISTORIC:

- Gross Total Peak has grown
 by 58 MW or 1.4% per year
 over last 20 years.
- Removing DSM programming, growth would have been 2.0%

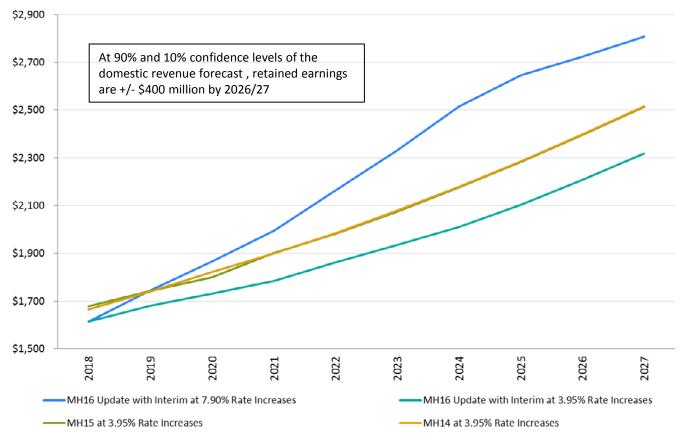
FORECAST:

- Forecast to grow at a rate of
 65 MW or 1.2% per year over
 next 20 years.
- Forecast to grow at a rate of 27 MW or 0.5% per year over the next 20 years after DSM programming is considered.

December 6, 2017



Domestic Revenues (\$ Millions)



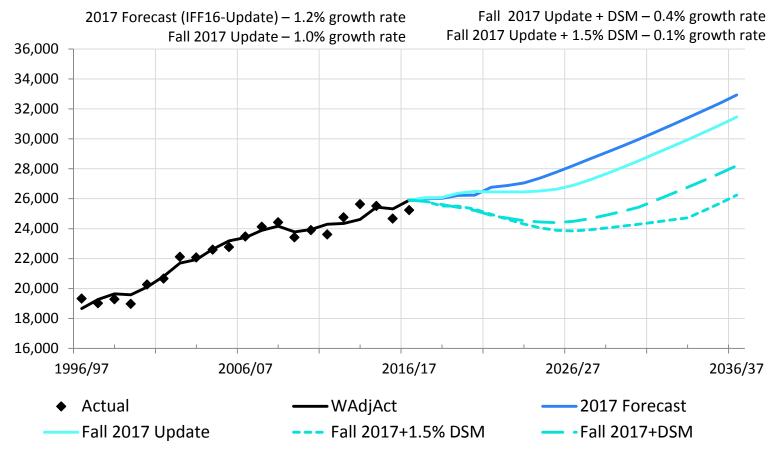
Note: excludes non-cash amortization of Bipole III Reserve Account

Status of Efficiency Manitoba

• The Efficiency Manitoba Act received Royal Assent June 2, 2017.

 Manitoba Hydro – "Business as Usual" for DSM programming until transition.

Preliminary Indications for 2018 Load Forecast







Manitoba Hydro Forecast Approach is Reasonable

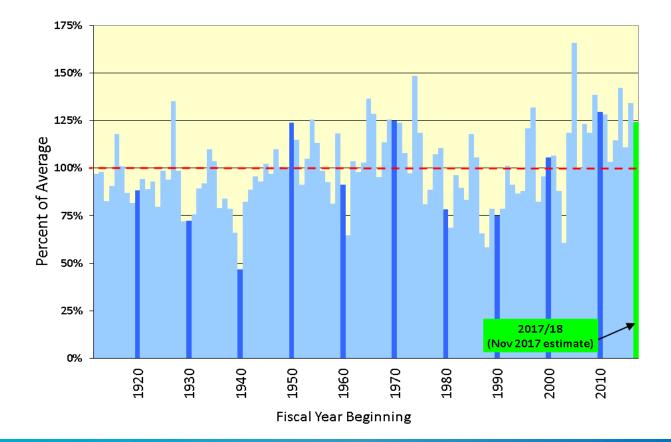
- Price Elasticity values are within Industry range.
- Manitoba Population Forecast created by a consensus forecast.
- Fuel Substitution is considered in the Forecast.
- Weather Normalization approach is justified.
- Top Consumers long term forecast approach is reasonable.

IV. Water Conditions, Energy Prices, and Export Market David Cormie





14 Consecutive Years of Average to Above Average Water

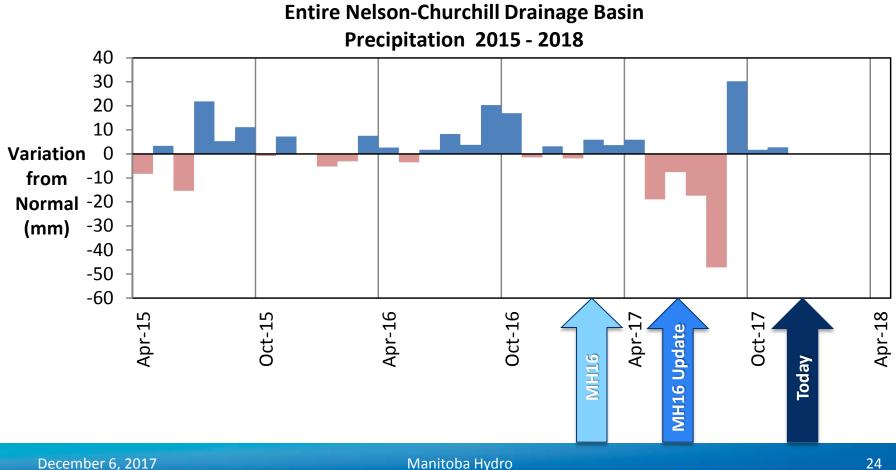


December 6, 2017

Manitoba Hydro



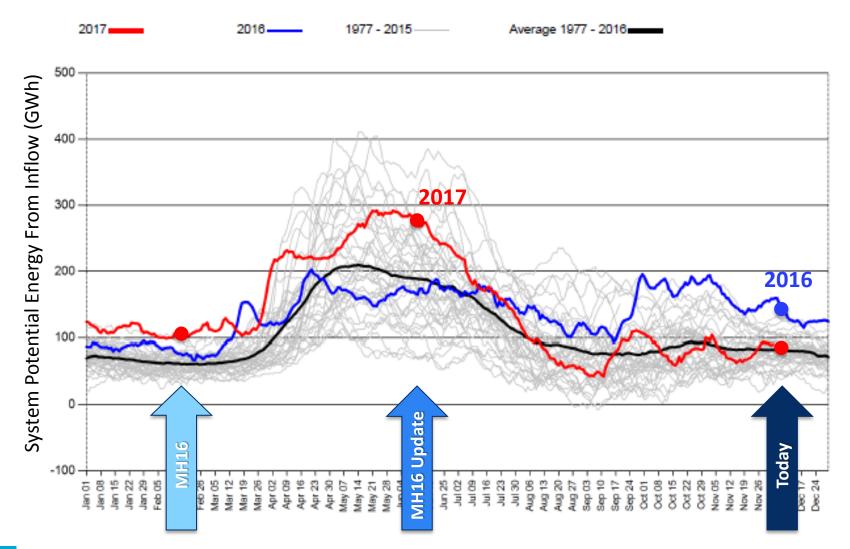
September Recovery Followed a Very Dry Summer



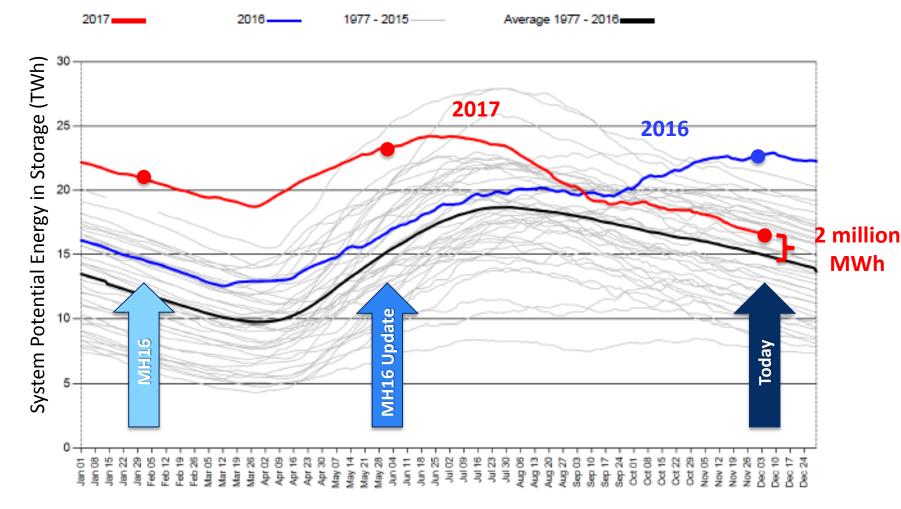
Water Flows are Average Well Below This Time Last Year

Manitoba

Hydro



Storage is Now Close to Average Well Below Record Highs of 2016



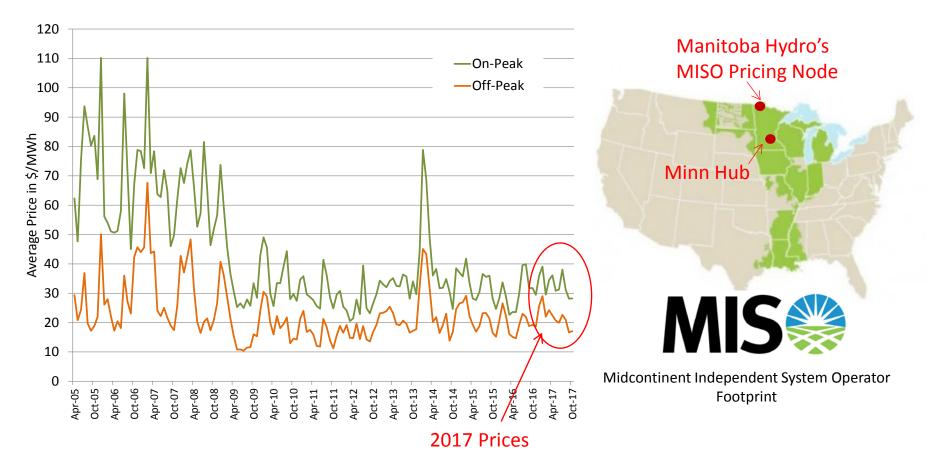


Export Prices Remain Soft

- Low gas prices
- Increasing wind generation
- Ongoing US subsidies for solar and wind
- No new major export contracts in the near term
 MH is sold out prior to Keeyask
- Ongoing export discussions with several long term customers
 - Any new long term sales at least 5-8 years away



MISO Market Prices 2005 - 2017

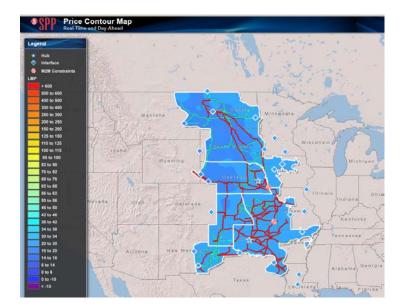




MH Gains New US Market Access

Southwest Power Pool

- Dec 1, 2016
- 50,600 MW peak load
- Access through Saskatchewan
- \$1.9 M in sales to date

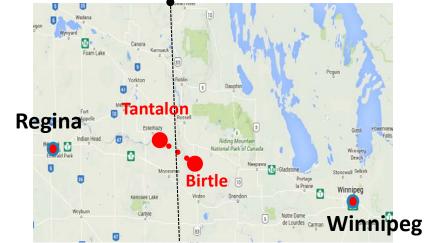






Saskatchewan/Western Canada

- Saskatchewan 2020-2040 System Power Sale
 - 100 MW
 - New 230 kV Birtle Tantalon Transmission Line
- MH and SaskPower continue to explore other opportunities
- MH involvement in Regional Electricity Cooperation and Strategic Infrastructure Initiative (RECSI) study
 - Federal government study
 - Additional MB-Sask major transmission options
 - SaskPower would gain increased access to MH's large surplus of non-emitting energy





Connecting Manitoba and Minnesota



V. Long-Term Energy Prices and Export Revenues Liz Carriere

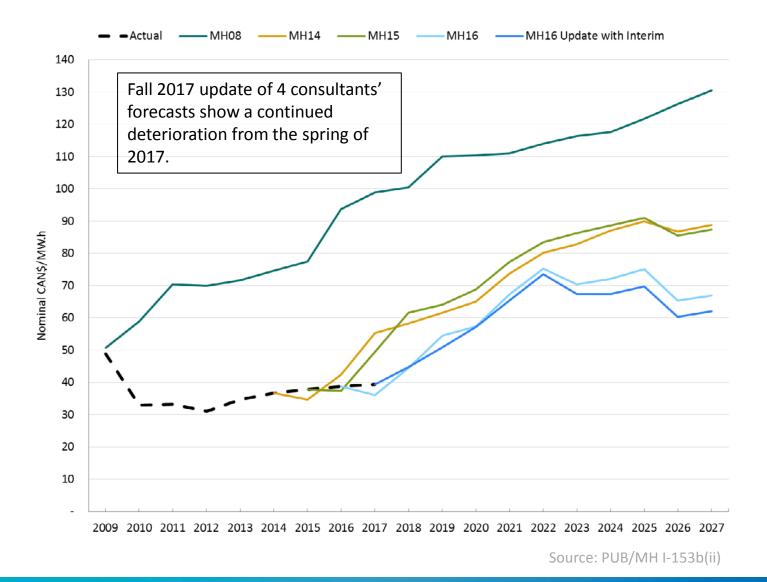




Long-Term Energy Price Forecast Methodology

- For the 2017 forecast, the Energy Price Outlook which forecasts thermal fuel prices was consolidated with the Electricity Export Price Forecast and renamed the "Energy Price Forecast"
- Consensus forecast of 4 consultant forecasts
- Maintain consistency by using same consultants from forecast to forecast
- "Off-the-shelf"
- Simple average with no adjustments or weighting provided by external forecasting services
- Best practice
- Long-term dependable product
 - Comprised of opportunity and capacity components for pricing surplus uncommitted firm sales
 - Premium removed in 2016 Electricity Export Price Forecast
 - Discontinued in 2017 Energy Price Forecast

Average Unit Revenue from Export Sales

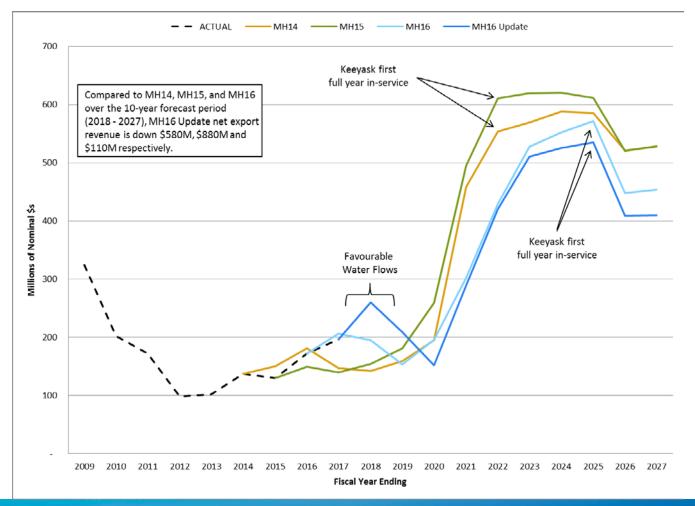


Manitoba Hydro



Extraprovincial Revenues

Net of Water Rentals and Fuel and Power Purchases

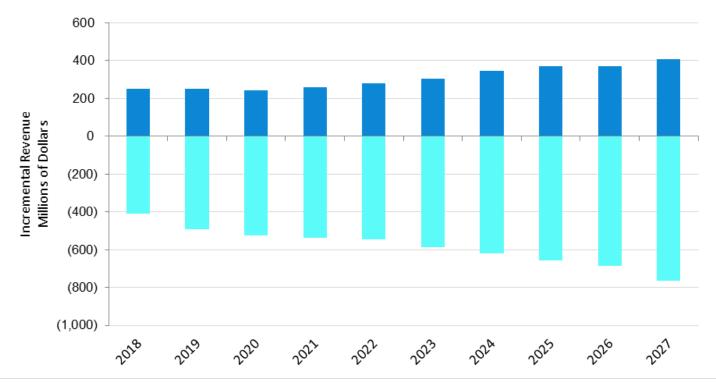


December 6, 2017

Manitoba Hydro



Variability in Net Flow Related Revenues and Costs Compared to Average Revenue for All Flow Conditions



Low Flow High Flow

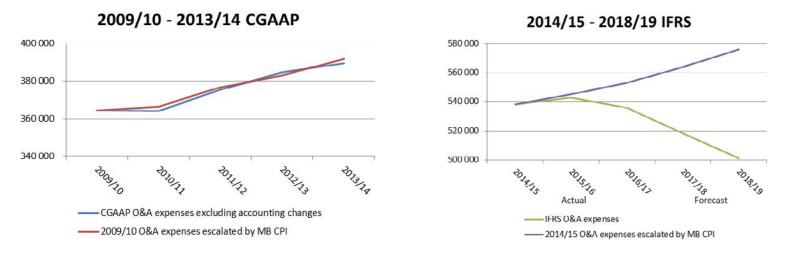
Source: Appendix 3.1, p. 47

VI. O&A and Regulatory Deferrals Sandy Bauerlein



O&A Costs At or Below Inflation

 From 2014/15 to 2018/19, the Corporation will achieve a 5 year average annual <u>decrease</u> in O&A costs of 1.8% compared to a 1.7% <u>increase</u> in Manitoba CPI



Accomplished through effective cost reduction measures and an accelerated cost reduction plan



Workforce Reduction Plan

Staffing reductions since 2014/15 account for the majority of overall cost saving measures

	Achieved	Current Committed	Total
	2014/15 - 2016/17	Reductions	Reductions
President & CEO	4	1	5
General Counsel & Corporate Secretary	2	5	7
Human Resources & Corporate Services	77	147	224
Indigenous Relations	10	9	19
Finance & Strategy	13	33	46
Generation & Wholesale	105	157	262
Transmission	115	198	313
Marketing & Customer Service	103	267	370
Subsidiaries	-	4	4
Total	429	821	1 250

Supply Chain Management Savings

- Cost containment measures include \$8.3 million savings associated with Supply Chain Management Initiatives since 2014/15
- Anticipated cumulative savings of \$155 million by 2021
- Approximately 30% will be attributable to O&A

		alized Savir Sausands of d	-	Estimated Savings (in thousands of dollars)				
FY	2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021-2027
\$	475	2,700	5,100	20,000	20,000	5,000	5,000	
			\$ 8,275	20,000	40,000	45,000	50,000	300,000
							155,000	455,000

Maintaining Service and Reliability

- Reductions must be made without unduly impacting service levels and reliability
- Debt levels are the issue and cannot be solved through further operational reductions
- Rate request is not meaningfully impacted by further reductions to O&A expense
 - For illustrative purposes a further reduction of 500 operational staff would equate to rate increases of 7.41% compared to 7.9% over the 6 year period
 - Further reductions to staffing levels would increase the risk to service and reliability

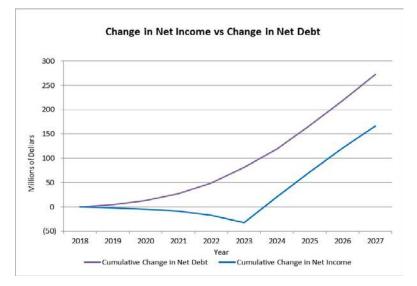


Regulatory Deferrals

- Regulatory deferrals represent timing differences between the recognition of revenue or costs for rate setting purposes (as directed by the regulator) as compared to the recognition of these items for financial reporting purposes
- Regulatory deferrals include DSM expenditures, differences in depreciation methodology (ASL/ELG), gain/losses on disposal of assets, capitalized overhead, site restoration costs and regulatory costs
- Manitoba Hydro is requesting the following:
 - Endorsement of the proposed deferral of costs with respect to the Conawapa Generating Station project - approx. \$380 M amortized over 30 year period;
 - Endorsement of the proposed amortization for disposition of regulatory deferrals for differences in depreciation methodology and capitalized overhead – amortized over a 20 year period

Amortization of Regulatory Deferrals

- Accounting changes cannot avoid the need for a 7.9% rate increase
- Extension of amortization periods for overhead & depreciation methodology (ASL/ELG) deferrals has minimal impact on rates (7.64% vs 7.9%)
- Results in higher cumulative net income, however, the increase to the net debt position is greater



Amortization of Regulatory Deferrals

- Extending the amortization periods while increasing net income will not result in a corresponding improvement to the corporation's cash flow position
 - Results in a slight decrease in the cash flow position of approx. \$7 million through to 2027

(In millions of dollars)

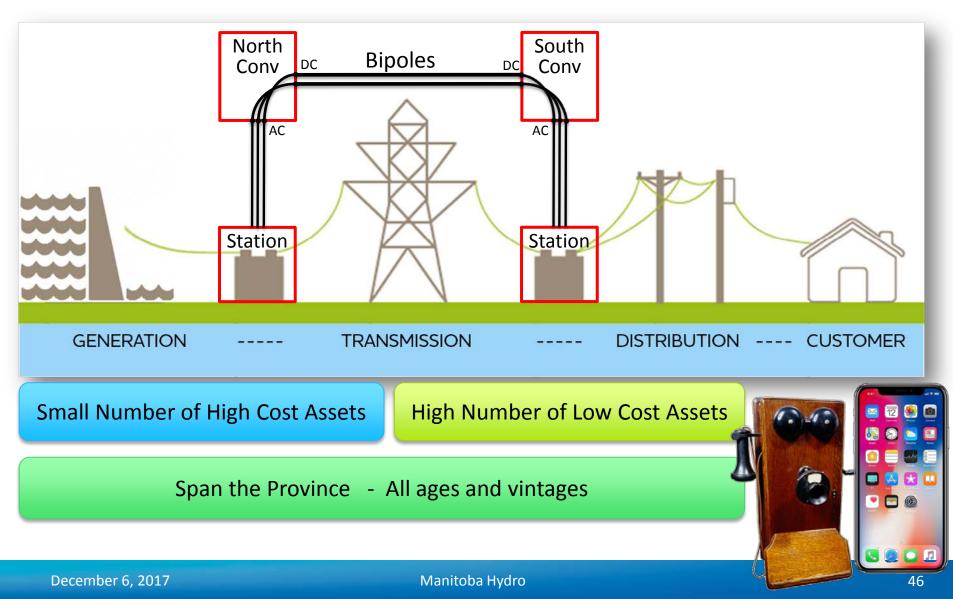
For the year ended March 31	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
7.9% - Extended Amortization	(226)	(324)	(326)	(152)	234	644	1 188	1 822	2 411	3 079
7.9% - 20 year Amortization	(226)	(324)	(326)	(152)	235	645	1 189	1 825	2 416	3 086
Cumulative Difference	(0)	(0)	(0)	(0)	(0)	(1)	(1)	(3)	(4)	(7)

VII. Capital Expenditure Forecast & Asset Management Joel Wortley



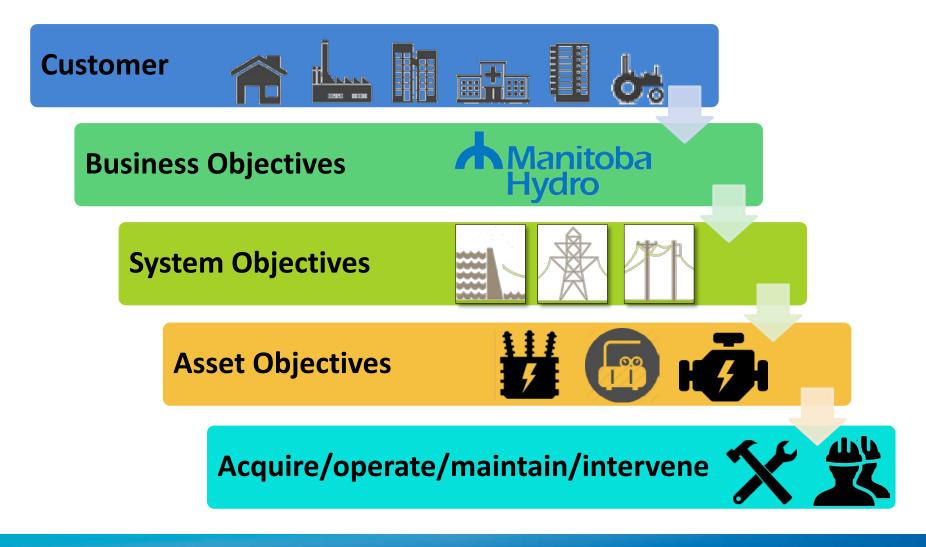


Supply Chain





Asset Management



Manitoba Hydro



Customer Expectation

OUR MISSION

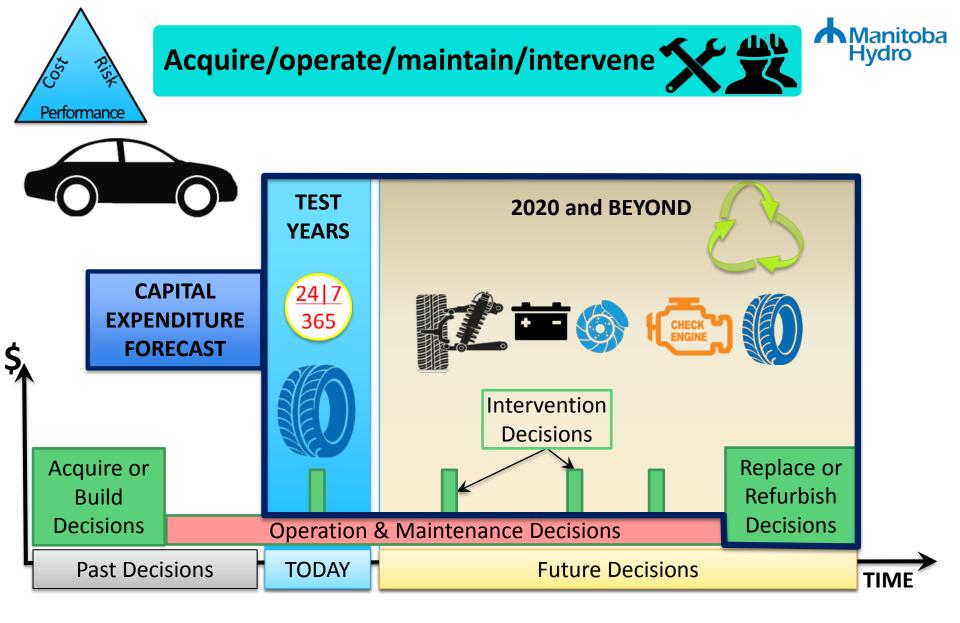
We create value for Manitobans by meeting our customers' expectations for the delivery of safe, reliable energy services at a fair price

Electricity Essential for Public Safety

Everywhere and Enduring

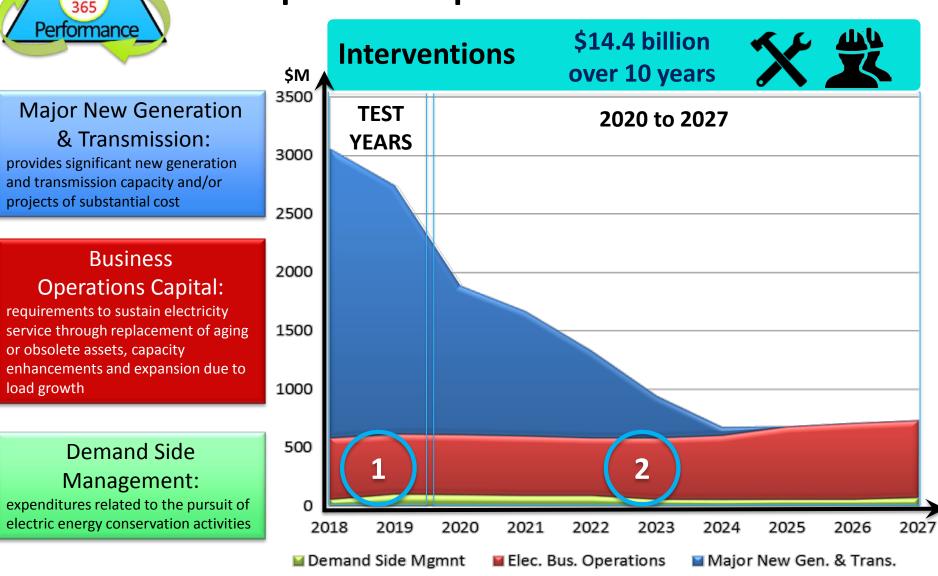
Trends in Environment, Safety, Reliability Regulation

<u>Performance</u>



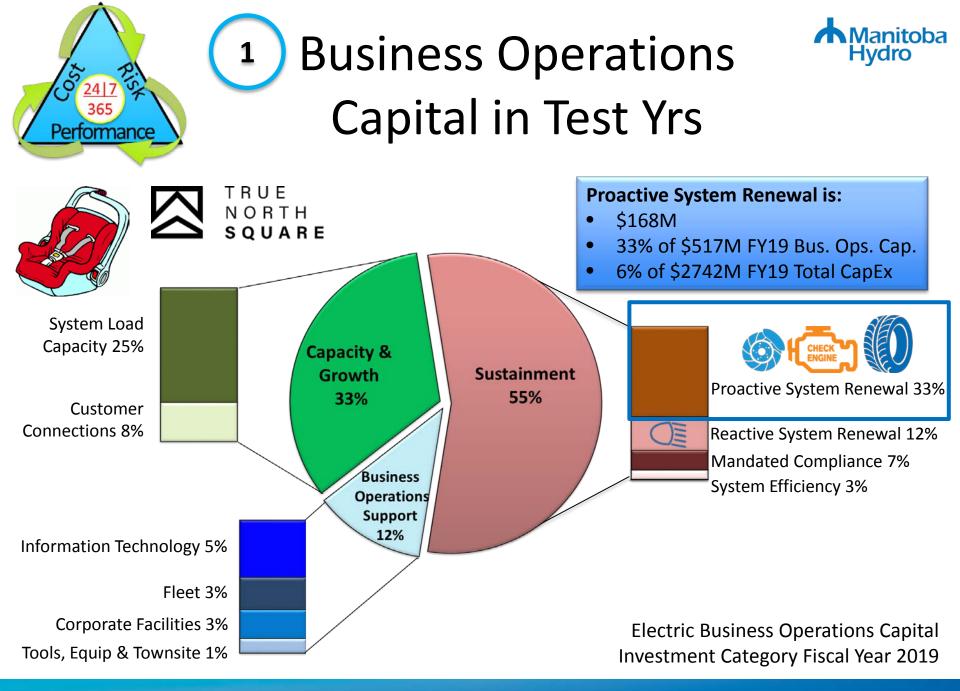


Capital Expenditures



December 6, 2017

Manitoba Hvdro



December 6, 2017

Manitoba Hydro



System Renewal – Test Years 🛠 🏶

Asset condition and performance is monitored

Risk is assessed by experienced experts

Assets degrading - A question of when, not if

Intervention if required for safe reliable ops.

Reviewed and approved by line management

High level of confidence

Manitoba

Hvdro



2 Bus. Ops. Capital Forecast



 Forecast of intervention beyond the test years

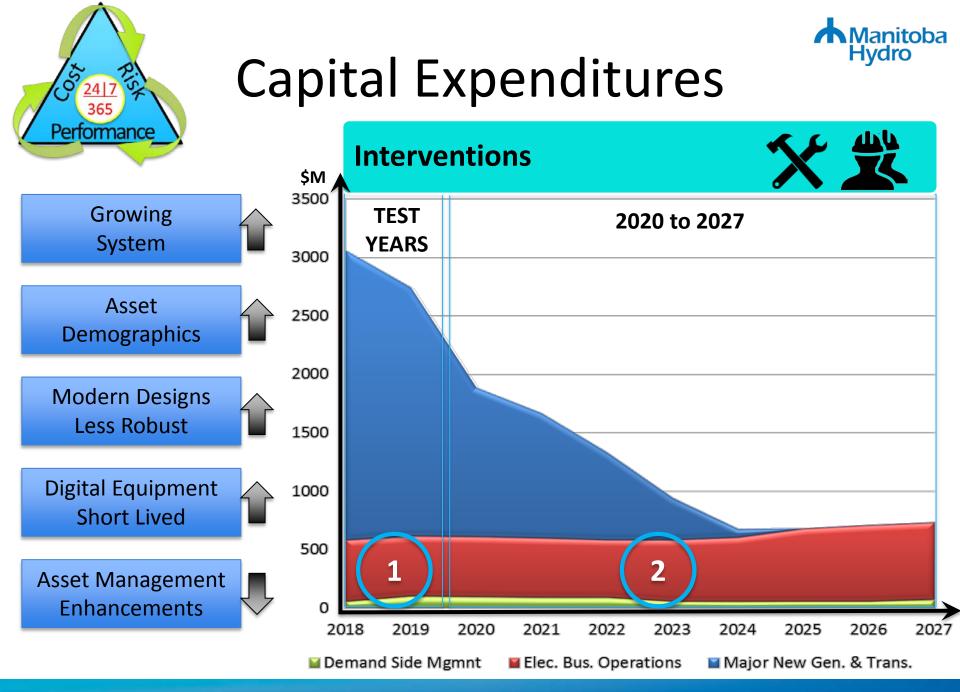
 System Renewal not an end-of-life forecast, yet

 Currently anchored in past intervention trends

 Shaped by best available information

 Reviewed annually

Forecast includes modest upward trend



December 6, 2017





Asset Management

Manitoba Hydro Asset Management Maturity Many gaps when compared to best practice Compares favourably to NA industry

Asset Management Enhancements

Confident and transparent planning for sustainability Targeting of desired balance of performance, cost and risk Proceeding purposely, but cautiously

Several Improvement Initiatives Underway Corporate Asset Management Capital Portfolio Management Program Corporate Value Framework





Conclusions

Test year interventions required for safe and reliable operations; for the customer

> Proactive System Renewal is small subset of capital expenditures

> > Forecasts of future expenditures will be tested in future General Rate Applications

Asset management practices are being enhanced

VIII. Debt Management Strategy Susan Stephen





Debt Management Strategy Objective

Manitoba Hydro's fundamental debt management objective is to provide **low cost, stable funding** to meet the financial obligations and liquidity needs of the Corporation while **maintaining risk at prudent levels** and reserving sufficient **flexibility to adapt to changing circumstances**.



New Forecast Assumptions

- Potential cash stemming from cost reductions and rate increases can be used to **permanently retire debt**.
- Creating debt retirement opportunities allows for reductions in finance expense and the recovery of Manitoba Hydro's financial ratios.
- Modeled various debt issuance scenarios with the goals:
 - Matching expected surplus cash flows with maturing debt
 - Keeping interest rate risk within guidelines
 - Decreasing cost of borrowing



Debt Terming & Interest Rate Forecast

- Historically, Manitoba Hydro's interest rate forecast for Canadian borrowing has been the average of 10 & 30 year Manitoba cost of borrowing (10 Yr+ rate.)
- MH16 incorporates:
 - reduction of term to maturity **from 20 to 12 years**
 - repositioned approx. \$3 billion of debt to mature in 2023 to 2027
 - provided for approx. \$3 billion of surplus cash flows in 2023 to 2027
- Matching expected surplus cash flows with maturing debt avoids refinancing risk by permanently reducing debt.



Debt Terming & Interest Rate Forecast

- Capture interest rate savings recognizing 5 year debt typically less costly than 30 year debt
- MH16 modeled approx. \$500 million interest savings to 2027 based on new debt issuance terming assumption
- If all forecast assumptions including forecast rate increases hold, interest rate risk will be maintained at a manageable level

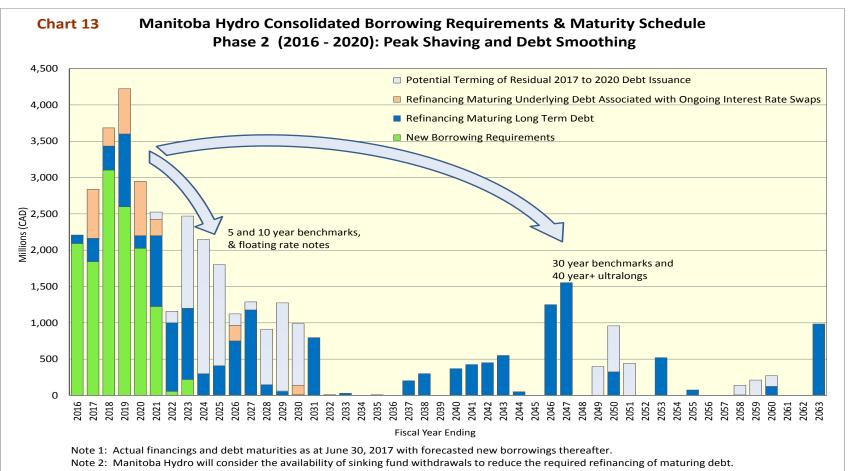


Refinancing Risk

In Billions of Dollars		16U 3.95% Yr WATM
2018-2022 Borrowing	\$ 13.5	\$ 14.1
2023-2027 Borrowing	\$ 8.8	\$ 9.7
2023-2027 Cash Surplus Available		
for Debt Retirement	\$ (3.1)	\$ (0.4)
Total 10 Year Borrowing	\$ 19.2	\$ 23.4

- 2023-2027 higher cash flows from the 7.9% rate path limit new borrowing requirements and create surplus cash that can be used to pay down debt.
- Removing \$4 billion of debt reduces interest rate exposure on 7.9% rate path compared to a 3.95% rate path.
- There is virtually **no debt retirement under a 3.95% rate path**. This exposes the Corporation to greater refinancing risk.

Refinancing Risk

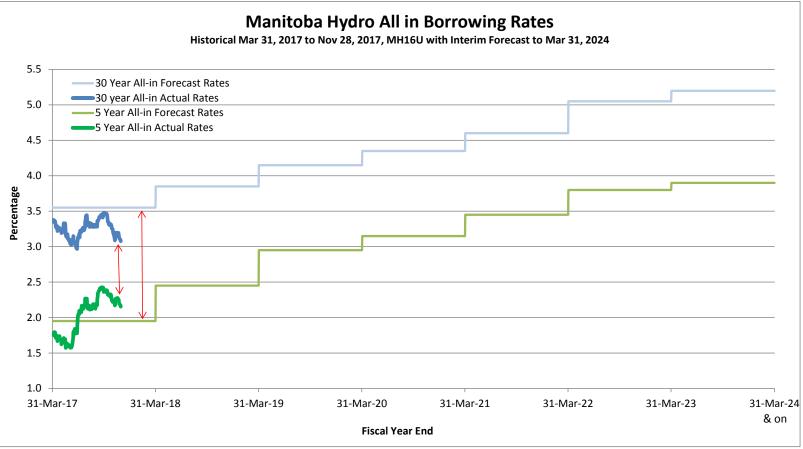


 Without expectation of cash flow to retire debt, this strategy which allocates 80% of debt issuance in terms 10 years and under would produce too much refinancing risk.

anitoba

Interest Rate Risk

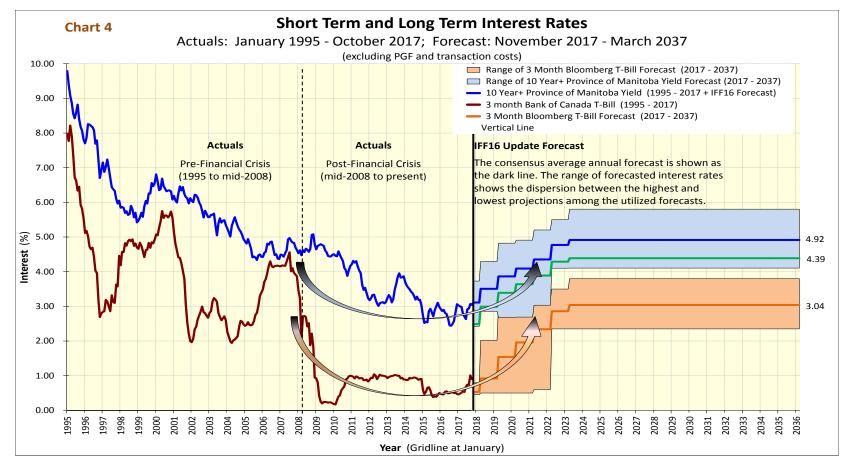




- Currently, there is approximately 0.9% differential between all-in borrowing cost for 5 and 30 year Manitoba Hydro debt.
- Forecast of \$500 million benefit from adjusted WATM reduced to under \$250 million as a result of changes to the yield curve.

Interest Rate Risk





- Currently, we are still at historically low interest rate levels and Manitoba Hydro's peak borrowing years are forecast at these low levels.
- Each 1% move upward in interest rates, depending on timing, could cost Manitoba Hydro upwards of \$200 million per year by 2027.

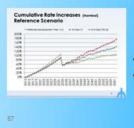
IX. Previous Plans Liz Carriere



NFAT Rate Projections

NFAT Rate Projections are not Applicable for GRA Purposes

- Rate increase projections challenging for 50 year study horizon
- Cost of service regulation
- Simplifying methodology with fixed parameters
- Increase comparability between plans and scenarios to analyze rate differences between NFAT plans



NRT Chepter 11 - 11.2 Financial Evaluation Results – Customer Rates "It is important to recognize that the projected rates are provided for the purpose of comparative rate analysis and are not intended to convey the specific revenue requirements in future General Rate Applications before the Public Utilities Board."

- Inapplicable for GRA purposes
- Alternate methodologies 1 & 2 demonstrating rate-setting which more closely simulates practice

Manitoba
 Hydro

- Rate projection methodology to facilitate unbiased comparisons between development plans
- Some development plans produced lower rate projections but resulted in significant financial losses – impractical
- Not for rate-setting purposes
- Minimum rate increases were necessary under all plans

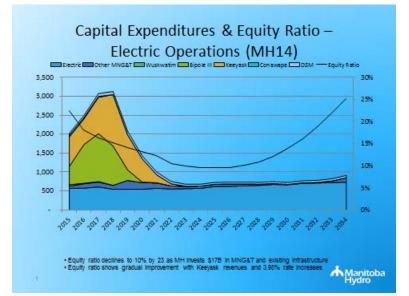
Source: 2014/2015 & 2015/16 Electric General Rate Application, MH Exhibit 52, p.67

2015 GRA Financial Ratios

2015 GRA Transcript p.2059-2062:

MR. BOB PETERS: "What steps can Manitoba Hydro take so that that interest coverage ratio stays above one point zero (1.0)?"

MR. MANNY SCHULZ: "...one (1) is sort of the sustaining baseline. And the one point two (1.2) gives us that extra cushion that gets us there... at the end of the day, I need to have cash...if there's a shortfall in cash, droughts, or in situations as you might be seeing here with the net income dec -- decreasing in those years, the likely scenario would be we -- we'd undertake debt financing to bridge through that period of time. The consequence of that, though, is that it's not only more debt, but that you'd likely have to borrow money to pay the incremental interest payments. And so there's a bit of a compounding that occurs during that period of time...that's why we earnestly believe that this is -- the three point nine- five (3.95) is the minimum, because it takes us on that journey towards a fairly low level on the equity ratio. And I think it's been stated here that if we wanted to have an equity ratio of 15 percent, and -and Ms. Carriere spoke yesterday, I think she said that it would be something that would be more comfortable for our Corporation and -- and I would agree with that, then we would need to have rate increases of 5 and 6 percent. But we recognize customer sensitivity, which is why we're going to 3.95 percent. And that's why we say that's the minimum." [Emphasis added]



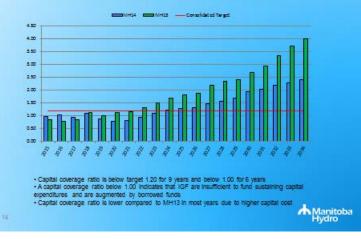
Interest Coverage Ratio – Electric Operations (MH14)



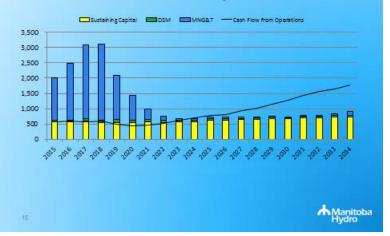
Source: 2014/2015 & 2015/16 Electric General Rate Application, MH Exhibit 52, p.11-12

Manitoba Hydro

Capital Coverage Ratio – Electric Operations (MH14)



Electricity Capital Expenditures & Cash Flow from Operations



2015 GRA Financial Ratios

2015 GRA Transcript p.1714 & 1715:

MS. MARILYN KAPITANY: "Ms. Carriere, you said that you would have to borrow to the extent of \$400 million at some point on this graph?"

MS. LIZ CARRIERE: "That's the shortfall of -- of cashflow from operations over that period of time where there's insufficient cashflow from operations to cover the sustaining capital. So it's a cumulative amount...and that includes the 3.95 percent rate increases. So what we're saying is -- is that the rate increases are not sufficient to provide revenue to pay for those and we could actually be asking for higher rate increases in that period of time to cover -- to cover those expenditures."

Source: 2014/2015 & 2015/16 Electric General Rate Application, MH Exhibit 52, p.14-15

2015 GRA Financial Ratios

2015 GRA Transcript p.2066 & 2067:

"...these are abysmal levels of interest coverage. Let's face it, this is not a happy circumstance where we should, you know, do the happy dance. Our board is concerned about this. They understand the impacts on Manitobans of 3.95 percent rate increases. It certainly a financial case for asking for more. We are taking some risk on this already. But, I mean, I -- I can't sit here and -- and say well, let's -- let's jump up and down about a point eight-five (.85) interest coverage ratio no matter how it's -- it's measured. These are very low financial targets. I don't -- I wouldn't want the Board to take away that our board is looking at these and going, Oh, I guess this is a great circumstance. No, we're -- we're taking a high degree of risk at three-nine-five (3.95) as it is."

2015 GRA Alternate Rate Scenarios

2015 GRA Transcript p. 1809 & 1810:

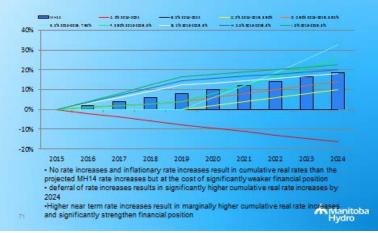
"... the 'G', 'H', and 'I' analysis are the rates that we really require to improve our financial position and truly protect customers, but we recognize that -- that those are -- are not going to be accepted by customers very easily. And we've made the balance to reduce those -those, you know, 5 to 6 percent rate increases to three-nine-five (3.95). And these are in Appendix 3.5, the -- the discussion of the alternate rate scenarios that we looked at."

MH Considered Other Rate Options

Appendix 3.5 – Alternative Rate Scenarios

Projected Rate Increases	Retained Earnings (SBillions)	Debt to Equity Ratio	Interest Coverage Ratio	Capital Concesso Ratio
MH14- 3.95% 2016-2024	\$2.0	90:10	0.91	1.22
A. 0.00% -2016-2024	(\$1.5)	104:(4)	0.39	(0.20)
B. 2.00% -2016-2024	\$0.2	98:2	0.62	0.47
C. 2.00% -2016-2019, 3.95% thereafter	\$0.7	95:5	0.76	0.84
D. 2.95% -2016-2019, 3.95% thereafter	\$1.3	93:7	0.83	1.02
E. 2.00% -2016-2019, 7.94% thereafter	\$2.0	90:10	1.09	1.66
F. 2.95% -2016-2019, 6.00% thereafter	\$2.0	90:10	1.00	1.45
G. 5.00% -2016-2019, 3.00% thereafter	\$2.4	89-11	0.92	1.24
H. 5.50% -2016-2019, 3.00% thereafter	\$2.7	88-12	0.96	1.35
L 6.00% -2016-2019, 3.00% thereafter	\$3.1	86:14	1.00	1.45

App. 3.5 - Alternate Rate Scenarios – Cumulative Real Rate Increases



Source: 2014/2015 & 2015/16 Electric General Rate Application, MH Exhibit 52, p.68 & 71

Manitoba Hydro

X. Summary





Summary

- Deterioration in the financial outlook of MH
 - Higher capital costs for Bipole III and Keeyask
 - Continued soft market export prices and lower energy price forecast
 - Lower Manitoba customer consumption = lower base over which to spread rising costs
- Pressure on future costs and revenues
 - Imminent in-service of Bipole III
 - Increasing pressure to invest more in existing infrastructure and MH is make in-roads to making more informed capital decisions through its Asset management initiatives
 - Variability in earnings due to rapidly changing water flow conditions
 - Lower interest rates a happy circumstance, <u>BUT</u> risk of higher interest rates is significant and very real
- 2015 GRA indicated 5.5% to 6% would be required to maintain stronger ratios
- No additional capacity for 3.95% to cover increases in net cost seen since 2009 or 2012
- Higher upfront rate increase is necessary to fix Manitoba Hydro's cash flow challenge
 - Return to inflationary rate increases sooner than the past 3.95% plans
 - Lower rates for customers in the long run
 - Reduces the risk of rate shock for customers