

# Muskrat Falls Project Update

June 23, 2017

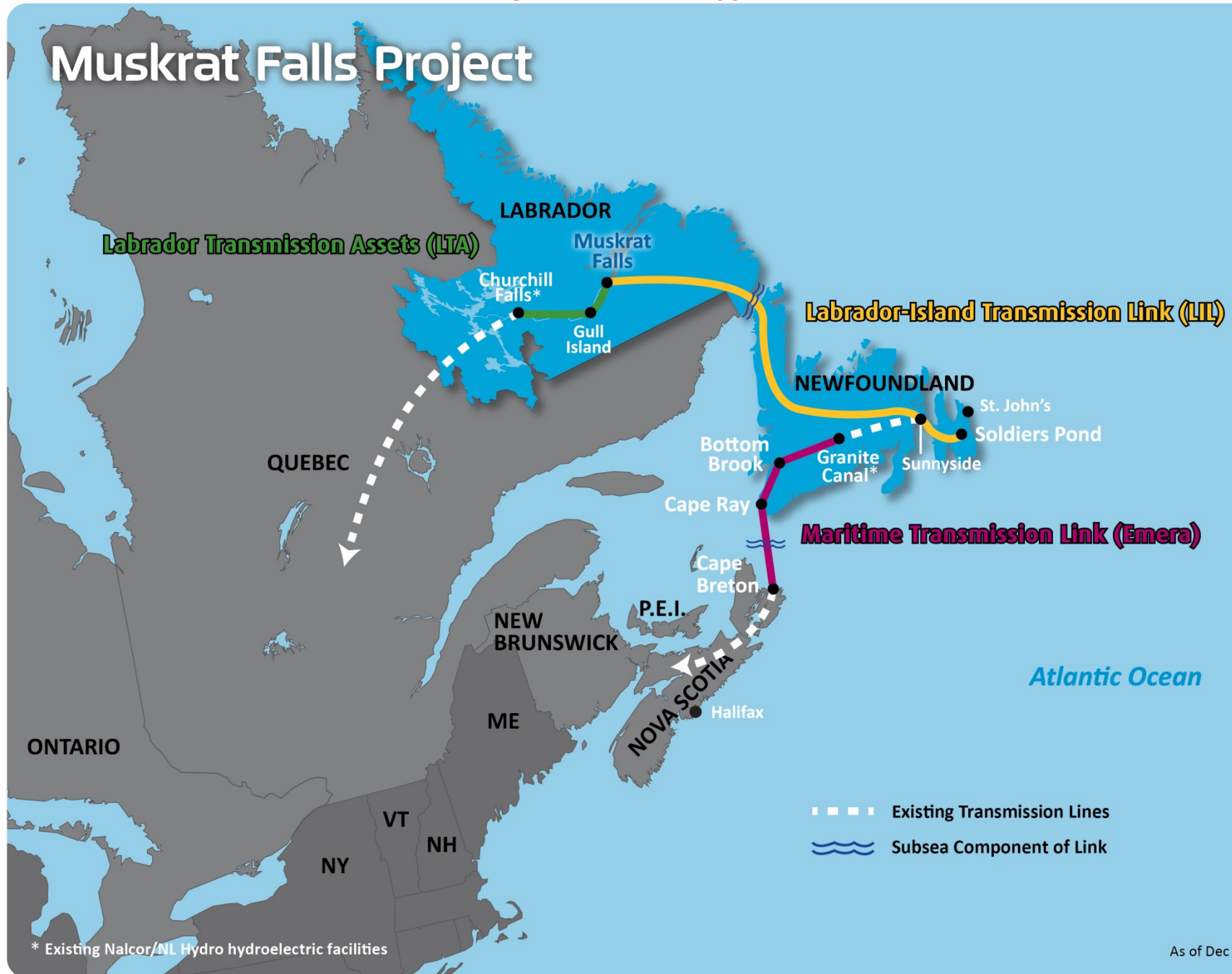
Boundless Energy



# Agenda

- Achievements
- Construction Progress
- Muskrat Falls Projected Costs
  - Projected Capital costs
  - Operating and Maintenance costs
  - Unit energy cost projections for Muskrat Falls production
  - Muskrat Falls unit energy costs projections for NL Hydro
- Updated Customer Rates Impact
  - Updated Island Interconnected load forecast
  - Domestic electricity rate projections
  - Electricity rate comparison
  - Mitigation Measures
- Equity Requirements

# Muskrat Falls Project



# ACHIEVEMENTS

# Achievements

- 75% construction completion
  - Up from 48% construction completion last May
- Astaldi contract finalization in December 2016
  - Settled this outstanding risk with largest contractor on generation portion of project
  - Finalized performance-based agreements and settled all prior claims
  - Performing above plan in 2017

# Achievements

- Raised \$2.9 billion with Federal Loan Guarantee
  - Reduces required equity from Province by \$2.7B
  - Reduces domestic electricity rates by 1.5 cents per kwh
- Power from Labrador by mid-2018
  - On track to deliver power from Churchill Falls for domestic use in 2018 and reduce Holyrood usage

# CONSTRUCTION PROGRESS

# Construction Progress

## *Transmission*



*LTA - 95% complete (May 2017)*

*LIL – 81% complete (May 2017)*

- Completed marine cable installation
- Completed road construction & access clearing
- 75% of all transmission towers across the province have been installed (3,384 of 4,507)
- All transmission construction in Labrador nearing completion



# Construction Progress

## *Muskrat Falls*

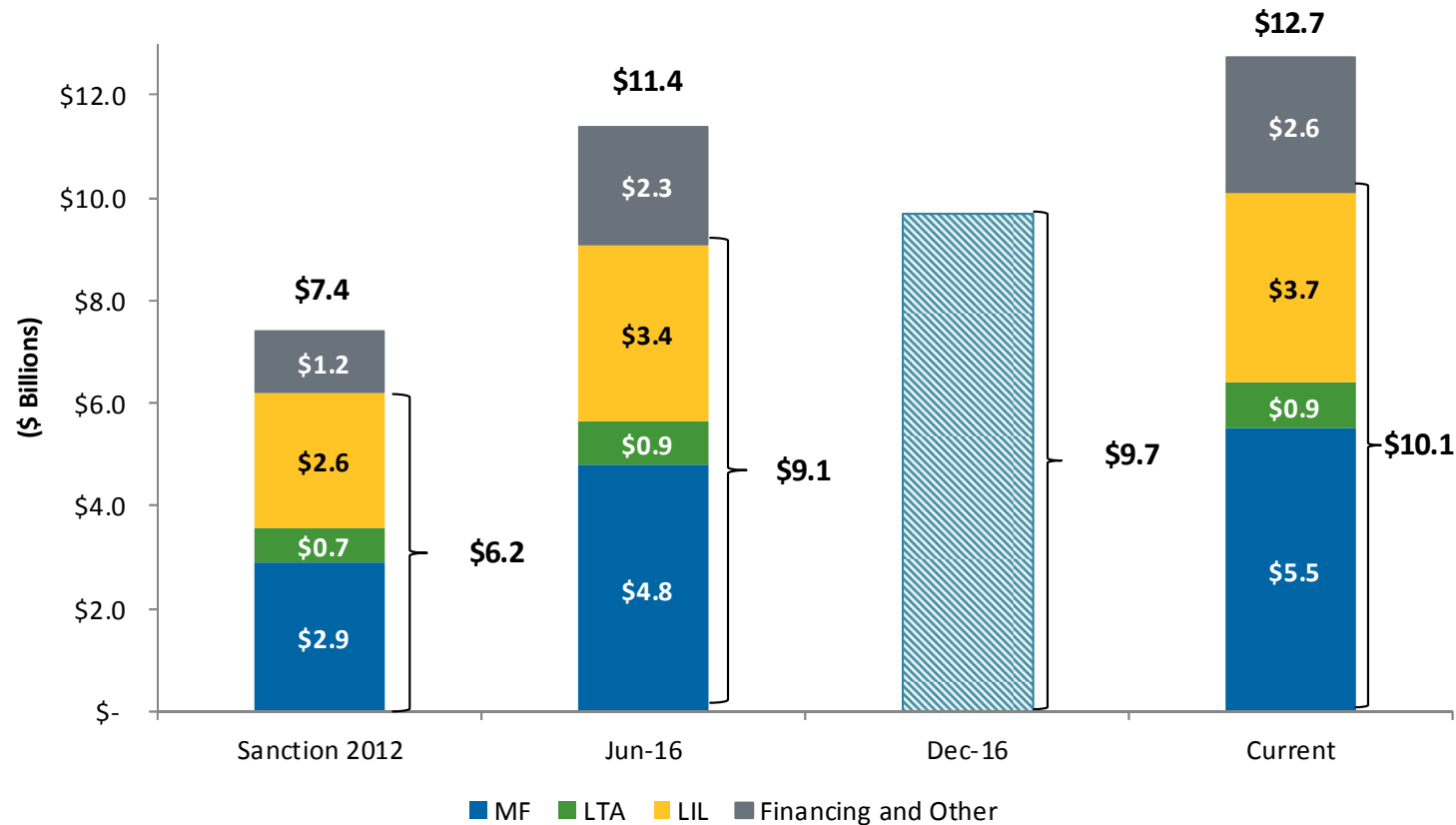


- Spillway operational, river diverted, cofferdam complete
- North Spur stabilization work complete
- Astaldi placed 73% of required concrete
- North Dam work started

*66% complete (May 2017)*

# MUSKRAT FALLS PROJECTED CAPITAL COST

# Muskrat Falls Projected In-service Capital Cost



Dec- 2016 interim estimate includes Astaldi agreement, indicative costs related to on-site October interruptions and problems with cofferdam and conductor on HVDC line.

# Project Capital Costs: Overall

Description		\$ Billion
June 2016		\$ 9.10
Astaldi	0.27	
Overland Transmission Settlement	0.14	
		\$ 9.51
Unplanned work	0.09	
Direct Cost, 3 month delay	0.05	
Balance of plant (above estimate)	0.06	
		\$ 9.71
Increase estimate to settle claims for delays & changes	0.40	
Updated estimate		\$ 10.11

# Project Capital Costs: Transmission

June 2016 Estimate			Updated Estimate	
	\$ Billion			\$ Billion
Labrador-Island Link	3.44		Labrador-Island Link	3.73
Labrador Transmission Assets	0.88		Labrador Transmission Assets	0.89
	\$ 4.32			\$ 4.62

					\$ Billion
Conductor Issue					0.05
Overland Transmission Settlements					0.14
Camp costs allocation					0.05
Changes & delays estimate					0.07
					\$0.30

# Project Capital Costs: Generation

Description		\$ Billion
June 2016 Estimate		\$ 4.80
Astaldi Agreement	0.27	
Identified changes *	0.10	
Other changes and delays (estimate)	0.33	
Updated estimate		\$ 5.50

							\$ Billion
* Revised estimate, balance of plant							0.060
Nalcor Direct costs, 3 month delay							0.045
Additional work (Cofferdams)							0.028
Camp expansion							0.011
							0.144
Less camp costs allocated to Transmission							0.045
							0.099

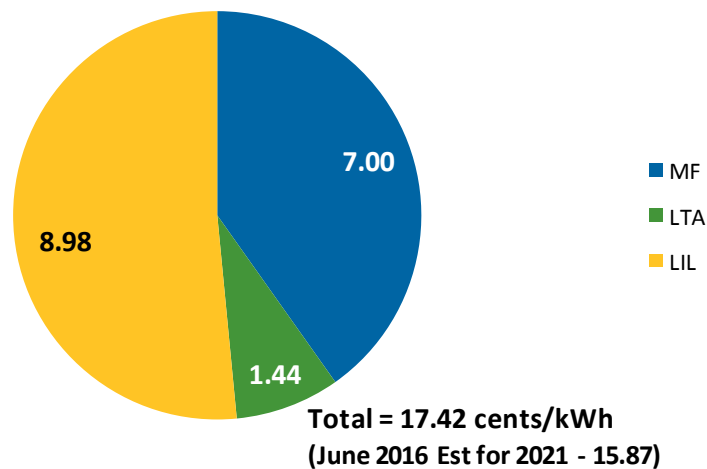
# Base Operating and Maintenance (O&M) Costs

- O&M costs estimated in 2012 @ \$34 million annually and starting in 2018
- O&M costs estimated in 2017 @ \$109 million annually and starting in 2020
  - Updated annual base O&M costs to be consistent with industry standard = \$100 million
  - 2017 update includes \$9 million for environmental monitoring

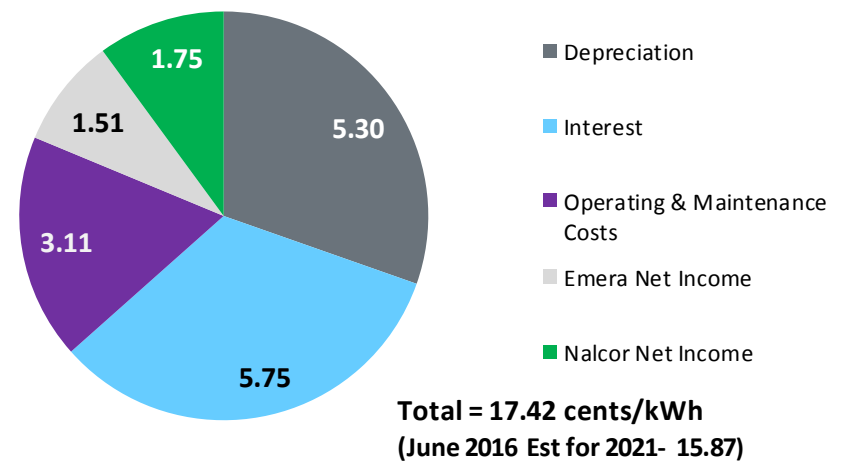
# Unit Cost Projections

(For power delivered at Soldiers Pond)

**Muskrat Falls Unit Cost Projection by Project Component**  
(2021 - cents/kWh)



**Muskrat Falls Unit Cost Projection by Cost Category**  
(2021 - cents/kWh)



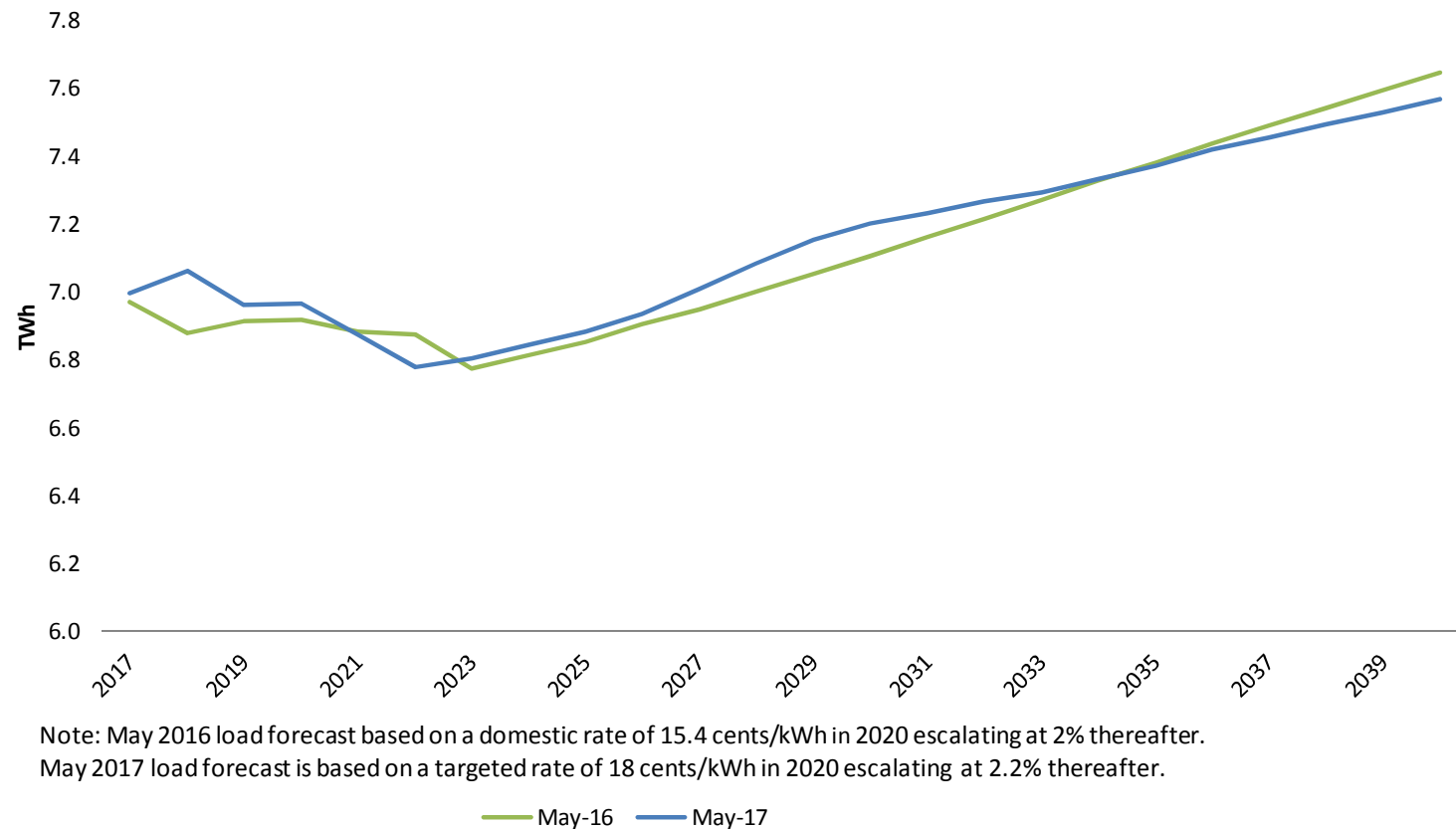


# UPDATED CUSTOMER IMPACTS

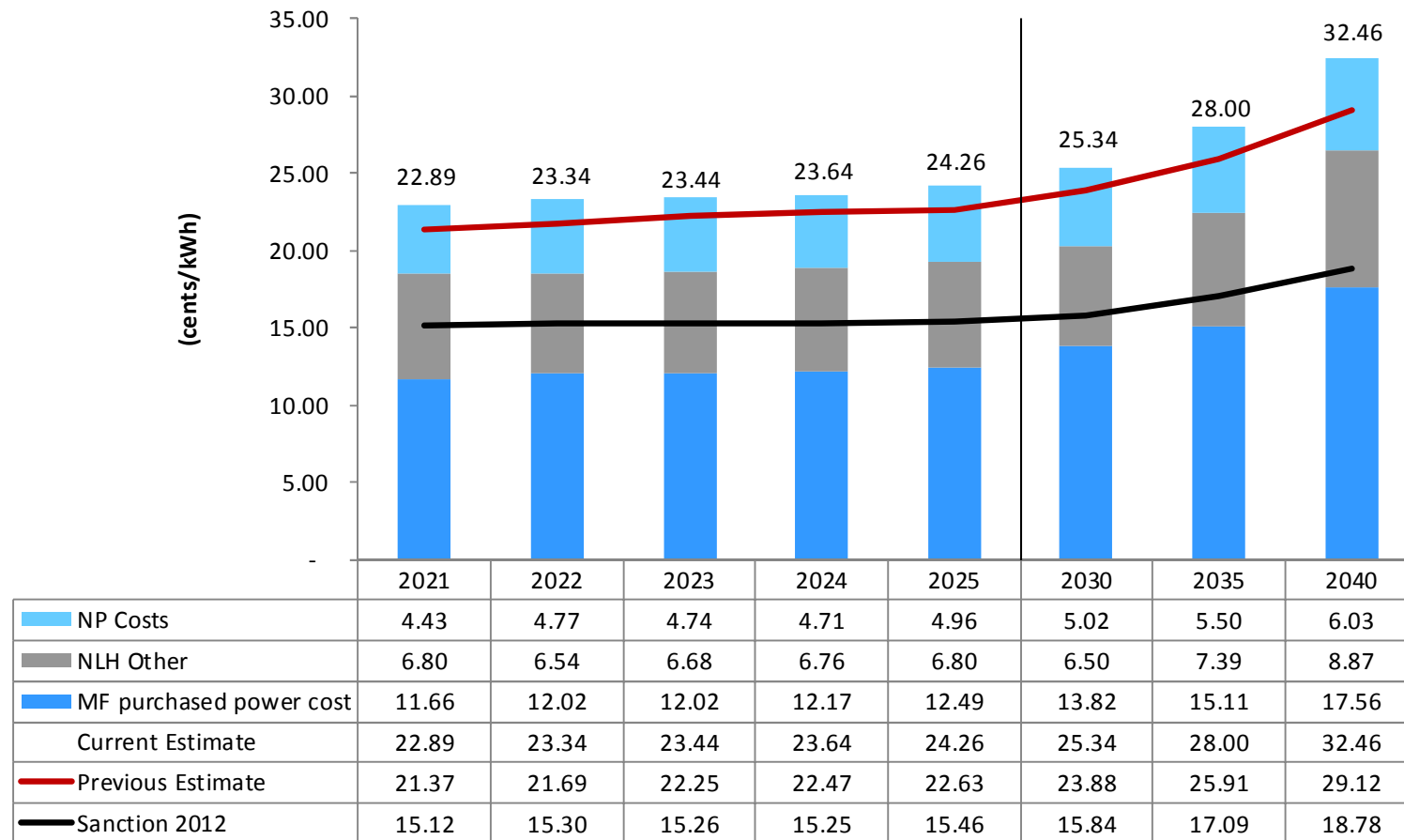
# Overall Factors Impacting Rates

1. Forecast of Load and Changes in Regulated Rates Not Related to Muskrat Falls
2. Updated Capital costs
3. Updated Operating & Maintenance Costs
4. Updated Financing Costs

# NL Hydro Island Interconnected Sales



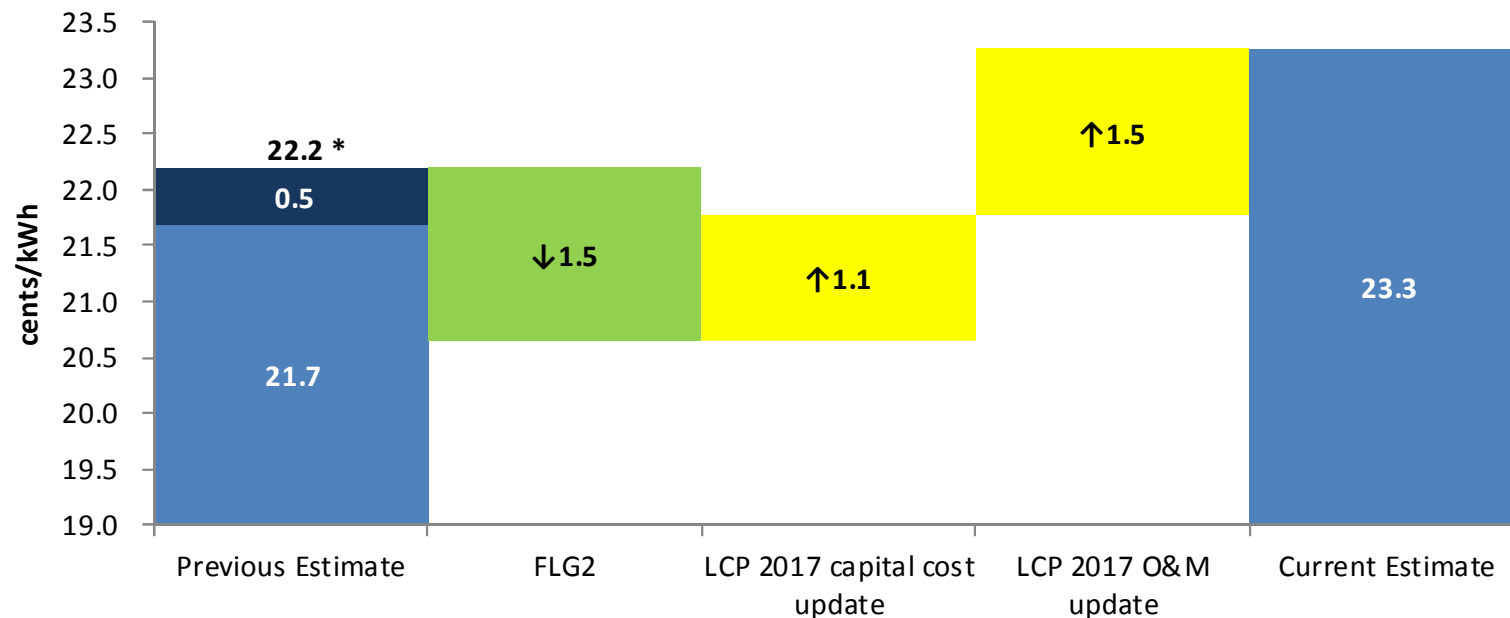
# Island Interconnected Domestic Rate Projections



Current wholesale and domestic rates are 7.5 cents/kWh and 11.7 cents/kWh (excluding HST), respectively.

# Island Interconnected Domestic Rate Projections

## Domestic Rate Impacts - 2022



\* Previous estimate has been adjusted to reflect all non- MF related changes.

# Electricity Rate Comparison (cents/kWh)

Forecast Electricity Rates Pre-Tax				
<u>Province</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Nova Scotia	15.8	16.0	16.2	17.2
Prince Edward Island	15.2	15.6	16.0	NA
New Brunswick	12.2	12.5	12.8	13.2
Ontario	16.4	16.8	17.1	17.5
Manitoba	9.1	9.7	10.1	10.5
British Columbia	9.4	9.7	9.9	NA
<b>Average</b>	<b>13.0</b>	<b>13.4</b>	<b>13.7</b>	<b>14.6</b>

**Notes:**

Assuming average use of 1,517 kWh per month

'NA' means that forecast rate information not available in 2020

Ontario rates include recent rate mitigation measures

Rate effective July 1, 2017 for NL Island Interconnected Domestic rates is 11.7 cents/kWh

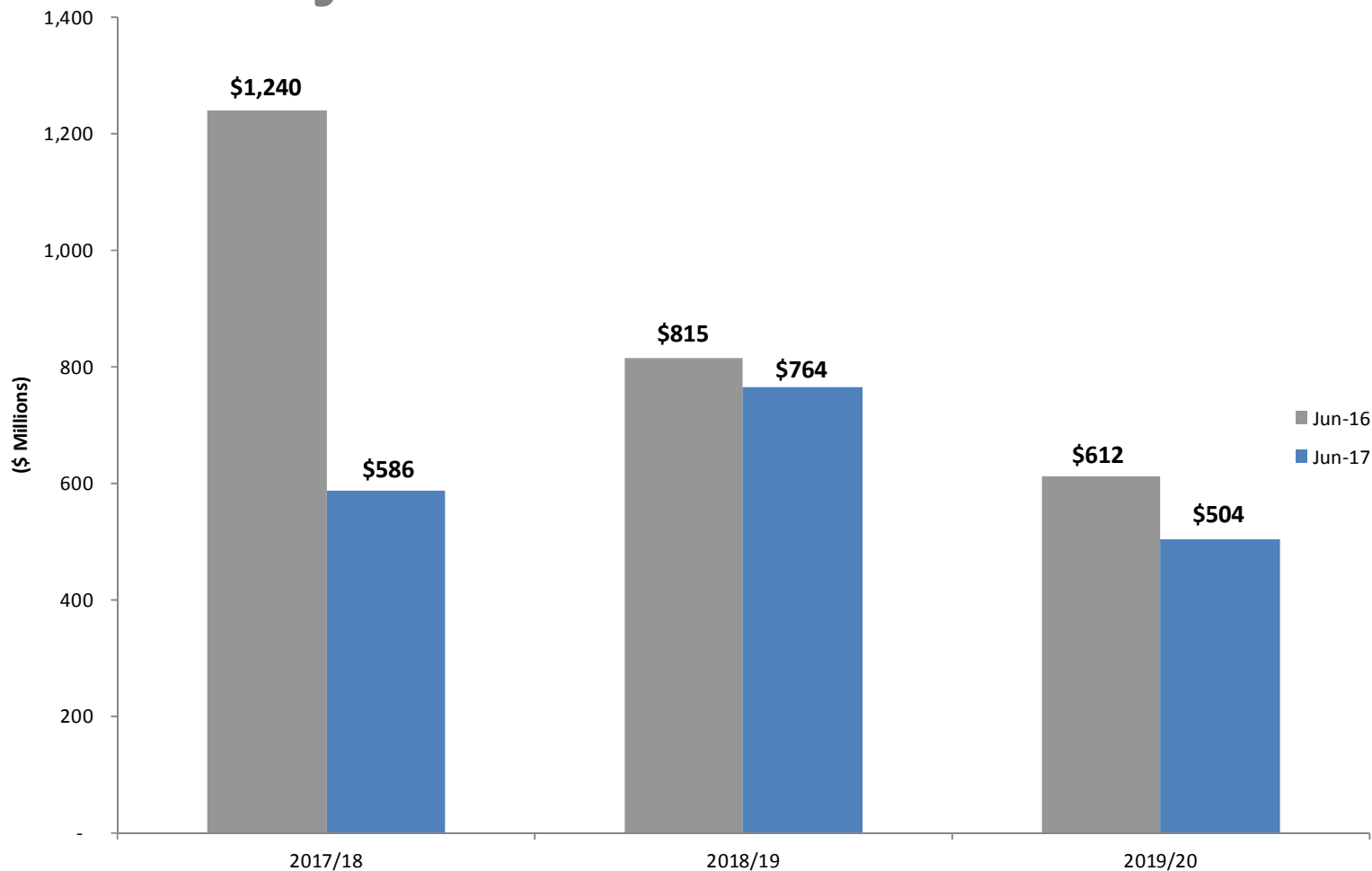
# Rate Mitigation Measures

- Transmission infeed in advance of generation
- Long-term contracts vs. market sales

# EQUITY REQUIREMENTS



# Provincial Equity Requirements for MF Project to 2020



# Provincial Equity Investment in MF Project

