

# Lower Churchill Project

June 15, 2011

Boundless Energy

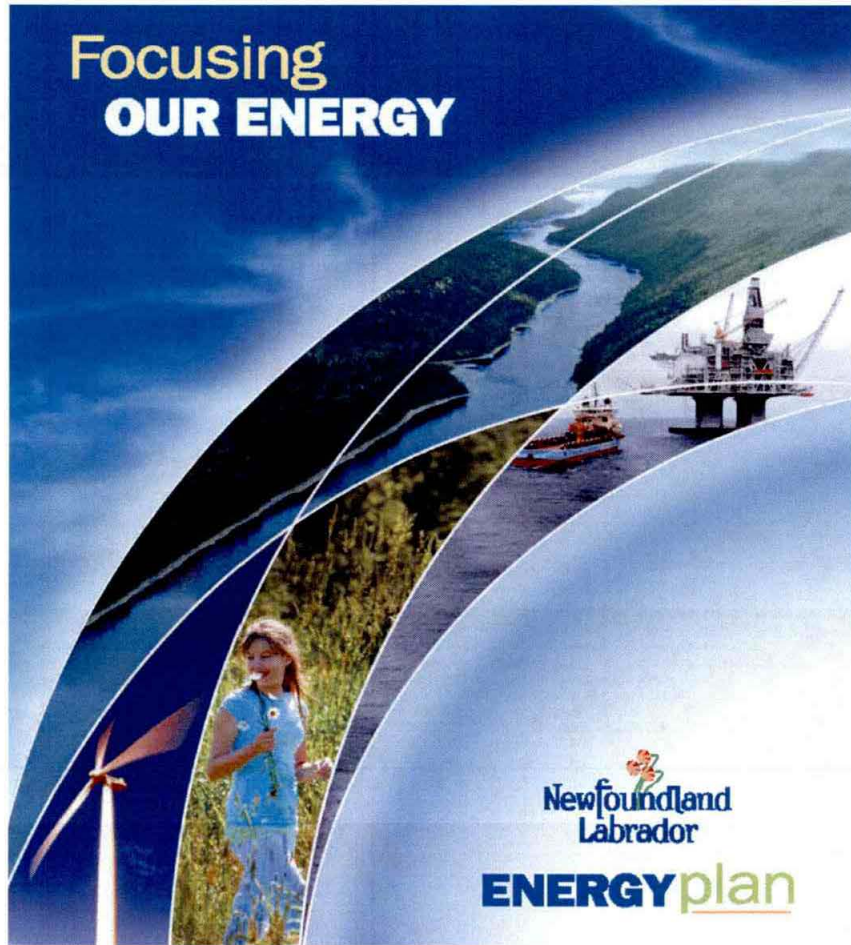


# Presentation Outline

1. Provincial Energy Plan
2. NL Supply
  - a) Demand Analysis for Capacity and Energy
  - b) Supply Alternatives Analysis
  - c) NL Supply Conclusions
  - d) Electricity Rates
3. Surplus Power
  - a) Phase 1 – Muskrat Falls
  - b) Phase 2 - Gull Island
4. Project Financing
5. Summary

# Provincial Energy Plan

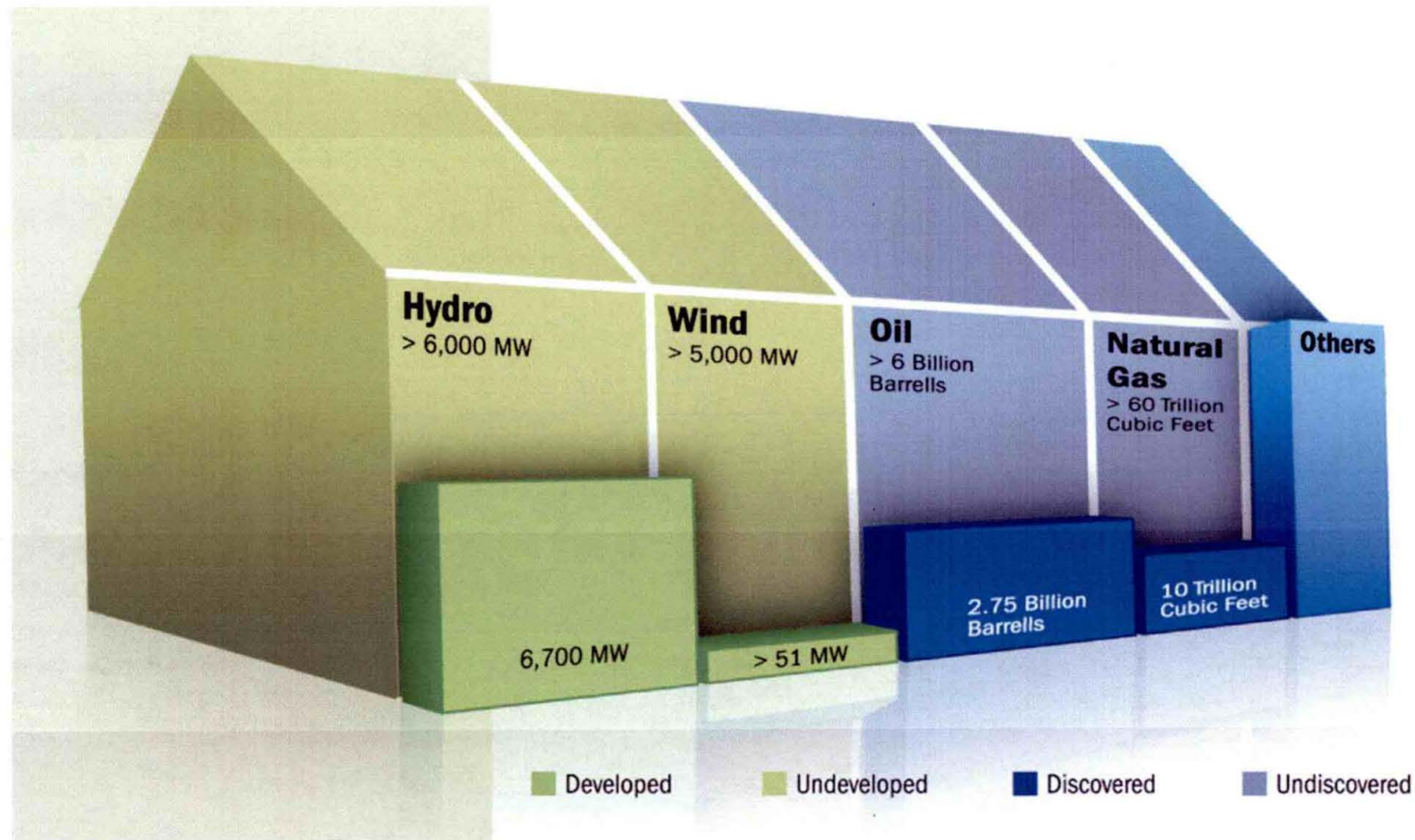
# Provincial Energy Plan



- Long term focus - 2041
- Energy Warehouse
- Non-renewables to renewables
- Creation of Nalcor
- Opportunity to get it right



# NL Energy Warehouse



# Meeting Increasing Power Needs

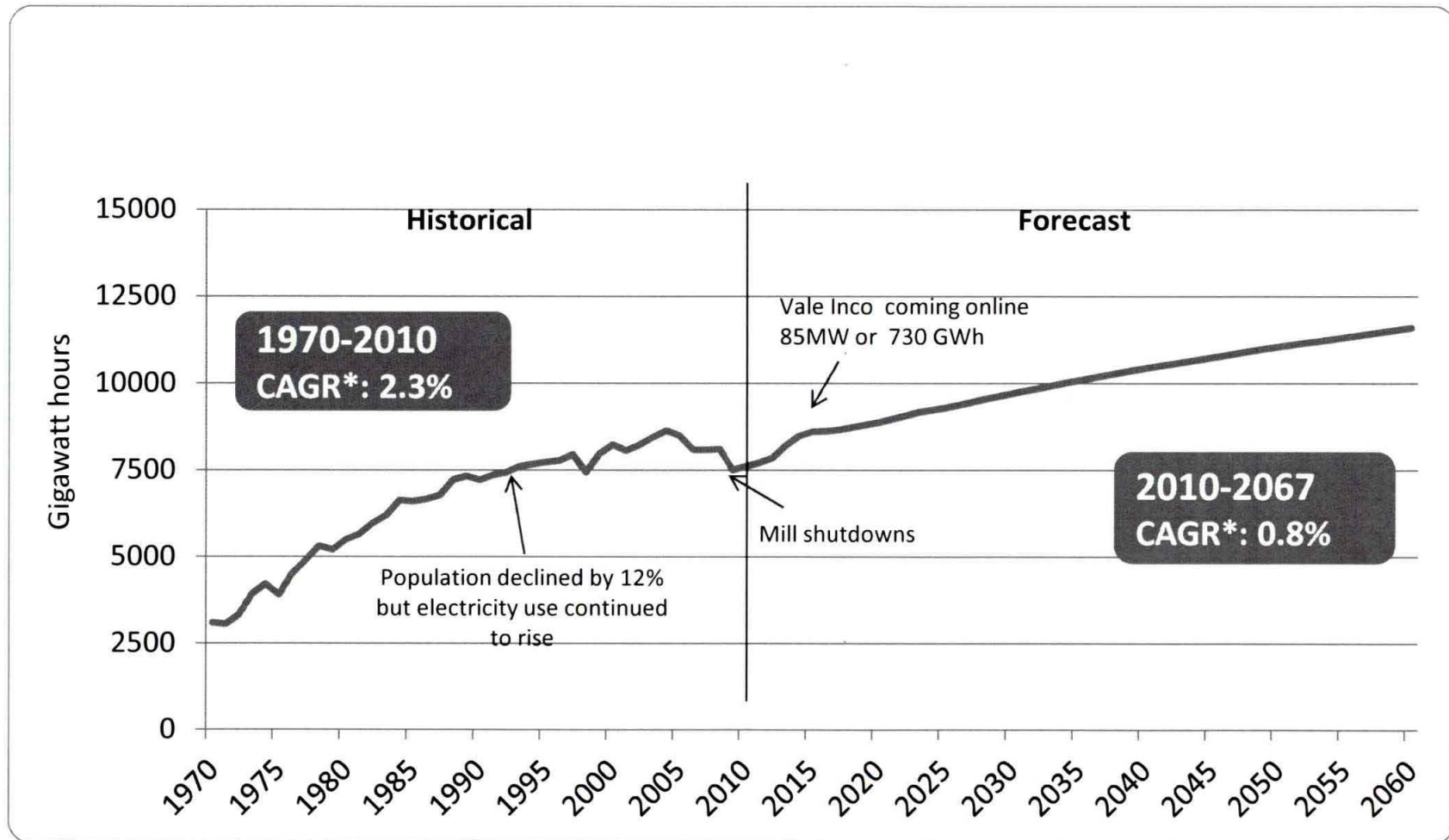
# Forecasting Electricity Needs or Demand

- Rigorous demand forecast completed annually by Hydro to determine requirements so there is electricity available when people need it
- Domestic
  - Driven by economic growth and electric heated homes.
  - 86% of new homes have electric space heating: conversions from oil as oil prices rise
  - On average, 50% of home electricity costs and usage are from electric heat
  - Domestic demand has grown steadily over time and will continue
- Industrial
  - Vale Inco smelter, average 85MW (0.73 TWh annually) at full production
  - Large amount of power required
- Mills in Stephenville (2005) and GFW (2008) closing meant a 5-6 year delay in needing new generation

*Peak usage peaked in 2004. Then mills started pulling back. Will get back to 2004 levels in 2013.*

# Historical & Forecast Electricity Needs

Load forecast is realistic and reflective of the expected provincial demand

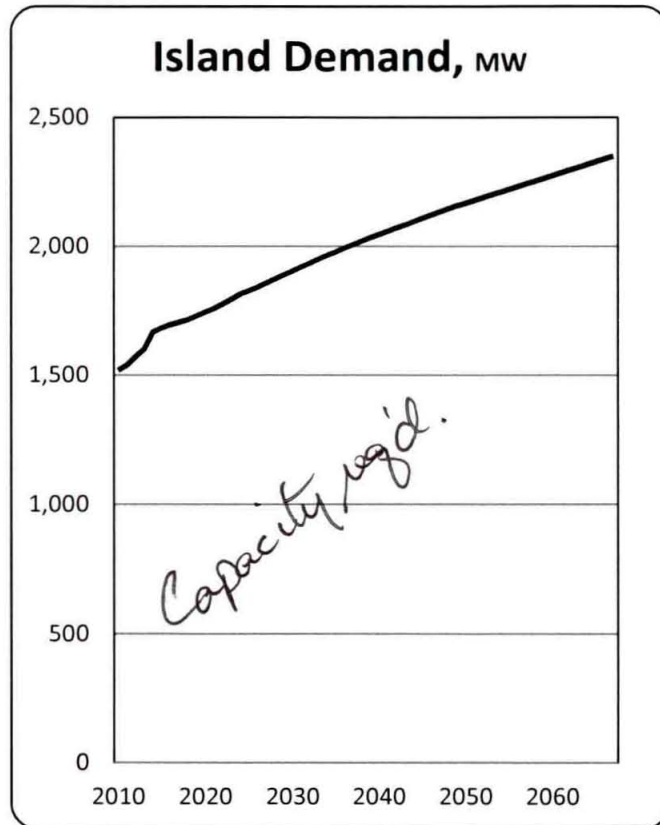


\*CAGR: Compound Annual Growth Rate



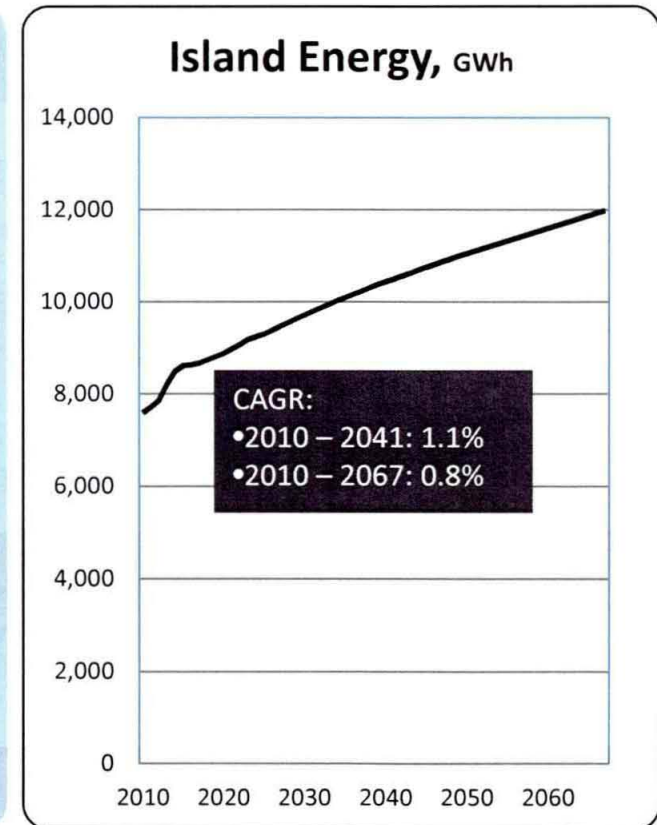
# Island Requirements

## Additional generation required by 2015



### Assumptions:

- Single newsprint mill
- Single oil refinery
- Nickel processing facility startup late 2011, reaching full production in 2014
- Duck Pond Mine continues in operation until 2013
- Hebron developed
- Economic forecasts provided by Department of Finance (Population, housing starts, GDP, etc.)



\*CAGR: Compound Annual Growth Rate

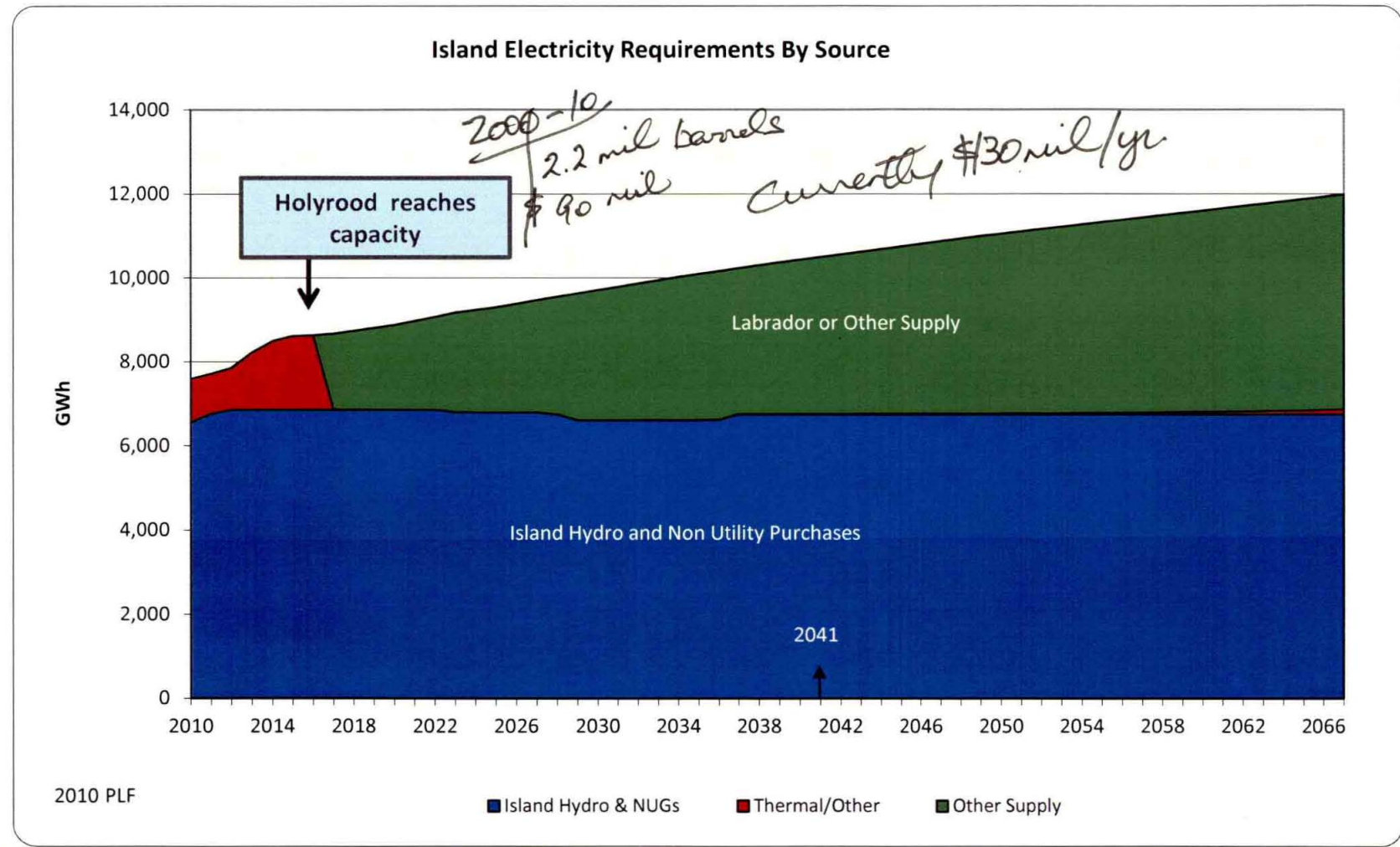
# Capacity/Energy Deficit – Forecast

Year	Island Load Forecast		Existing System		LOLH (hr/year) (limit: 2.8)	Energy Balance (GWh)
	Maximum Demand (MW)	Firm Energy (GWh)	Installed Net Capacity (MW)	Firm Capability (GWh)	HVdc Link/Isolated Island	HVdc Link/Isolated Island
2010	1,519	7,585	1,958	8,953	0.15	1,368
2011	1,538	7,709	1,958	8,953	0.22	1,244
2012	1,571	7,849	1,958	8,953	0.41	1,104
2013	1,601	8,211	1,958	8,953	0.84	
2014	1,666	8,485	1,958	8,953	2.52	468
2015	1,683	8,606	1,958	8,953	3.41	347
2016	1,695	8,623	1,958	8,953	3.91	330
2017	1,704	8,663	1,958	8,953	4.55	290
2018	1,714	8,732	1,958	8,953	5.38	221
2019	1,729	8,803	1,958	8,953	6.70	150

Deficit forecasted and new generation required

# Island Supply Requirements (2010 – 2067)

Holyrood reached maximum output and new supply required





# Analyzing the Alternatives

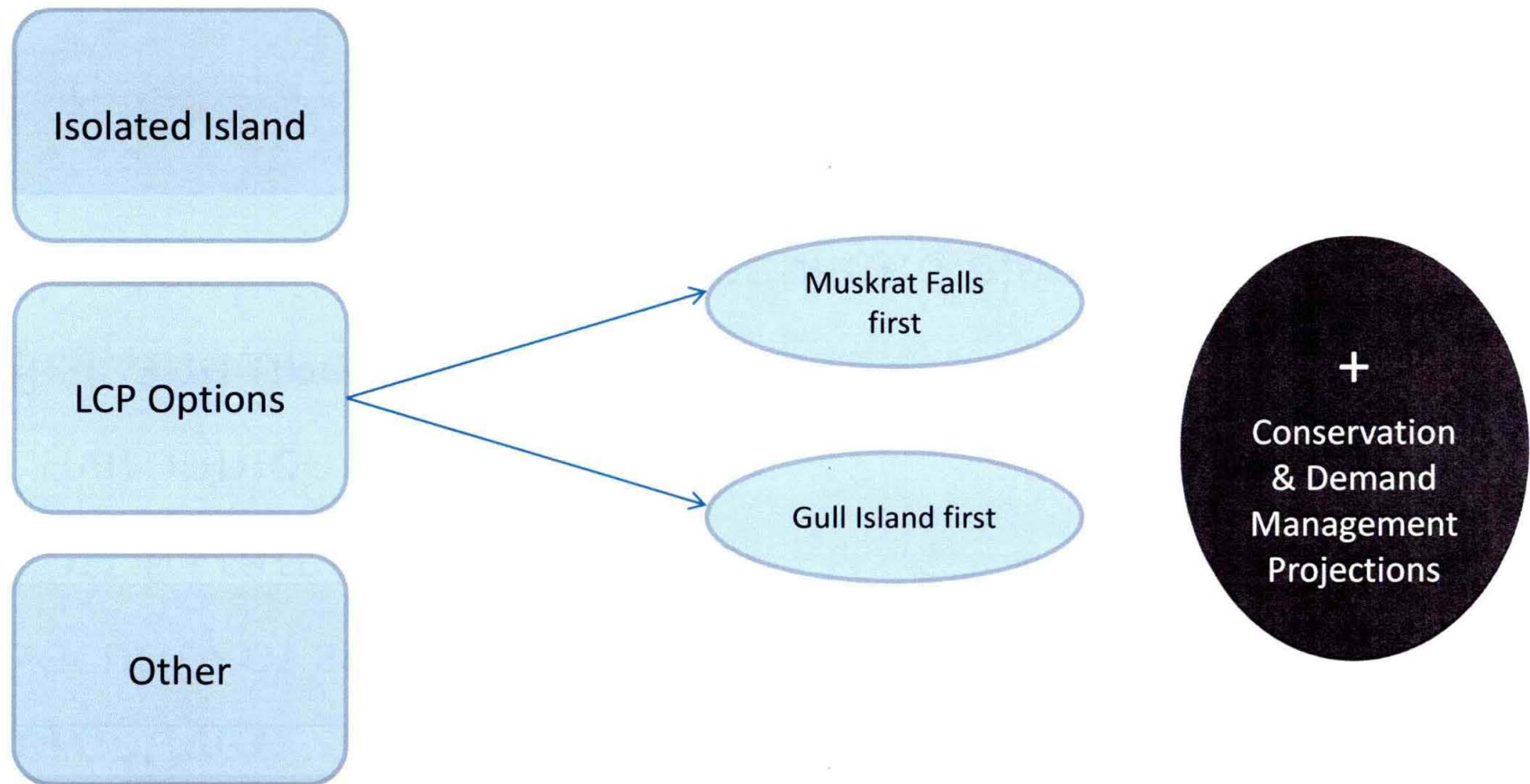


# Option Evaluation Criteria

Five key criteria were used when evaluating the alternatives

- Security of supply and reliability
- Cost to ratepayers
- Environment
- Risk and uncertainty
- Financial viability of non-regulated elements

# Options for Meeting Island Supply

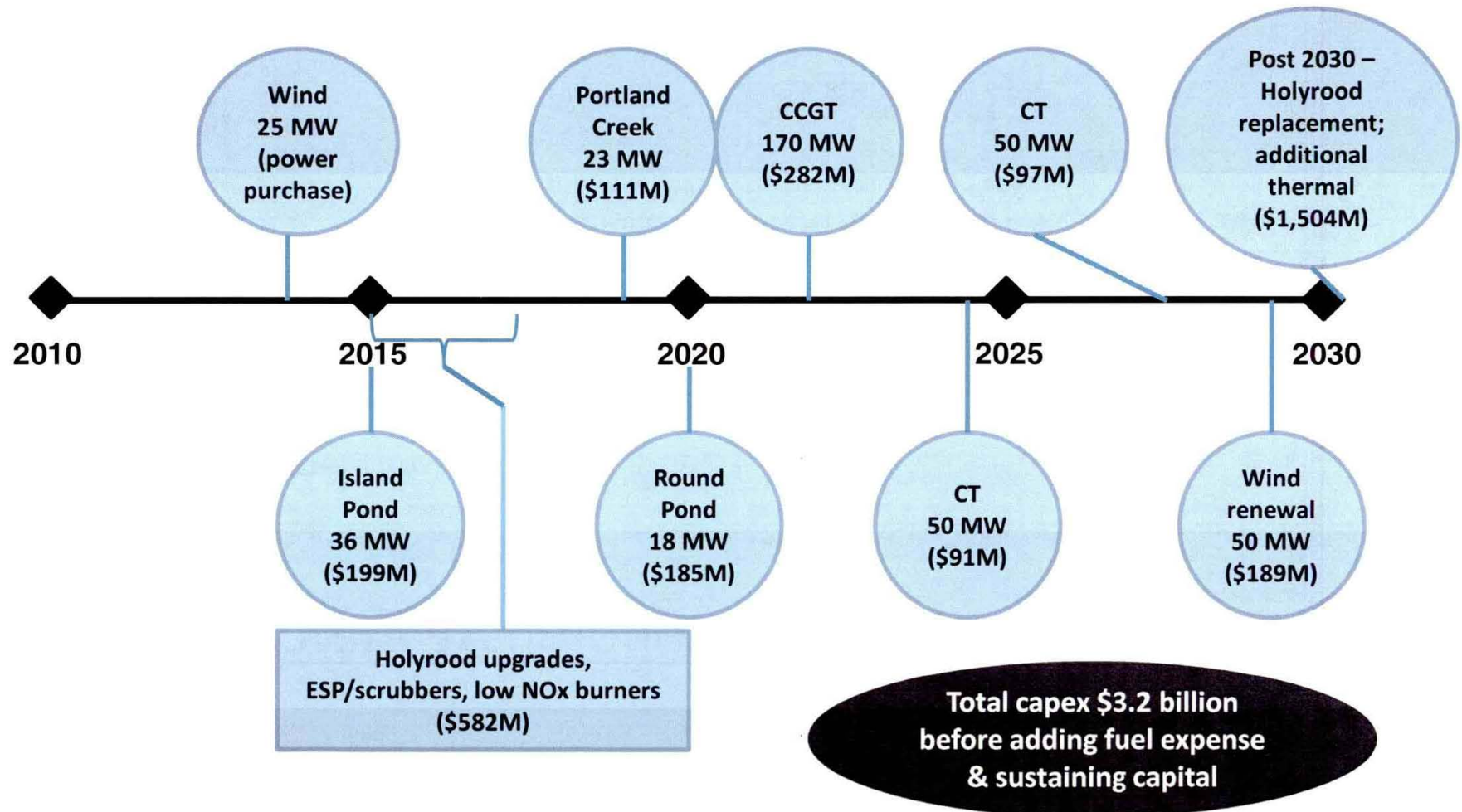


# Assumptions

## Nalcor corporate assumptions used in the evaluation

Parameter	Assumption
Regional North American Electricity prices	<ul style="list-style-type: none"> <li>PIRA Energy Group</li> </ul>
World Oil prices	<ul style="list-style-type: none"> <li>PIRA Energy Group</li> </ul>
Environmental costs	<ul style="list-style-type: none"> <li>Island Isolated Case: ESP and scrubbers included in capital costs</li> <li>No impact assumed for uncertain costs associated with Federal Atmospheric Emission regulations or GHG; such costs would be unfavourable to the Isolated Island case</li> </ul>
Cost escalation and inflation	<ul style="list-style-type: none"> <li>2% CPI</li> <li>Generation and transmission O&amp;M 2.5%</li> <li>Capital costs 2% - 3%</li> </ul>
Long run <u>regulated</u> financial assumptions	<ul style="list-style-type: none"> <li>Debt cost 7.4%</li> <li>Equity cost 10.0%</li> <li>Debt:Equity ratio: 75:25</li> <li>WACC/discount rate: 8%</li> </ul>

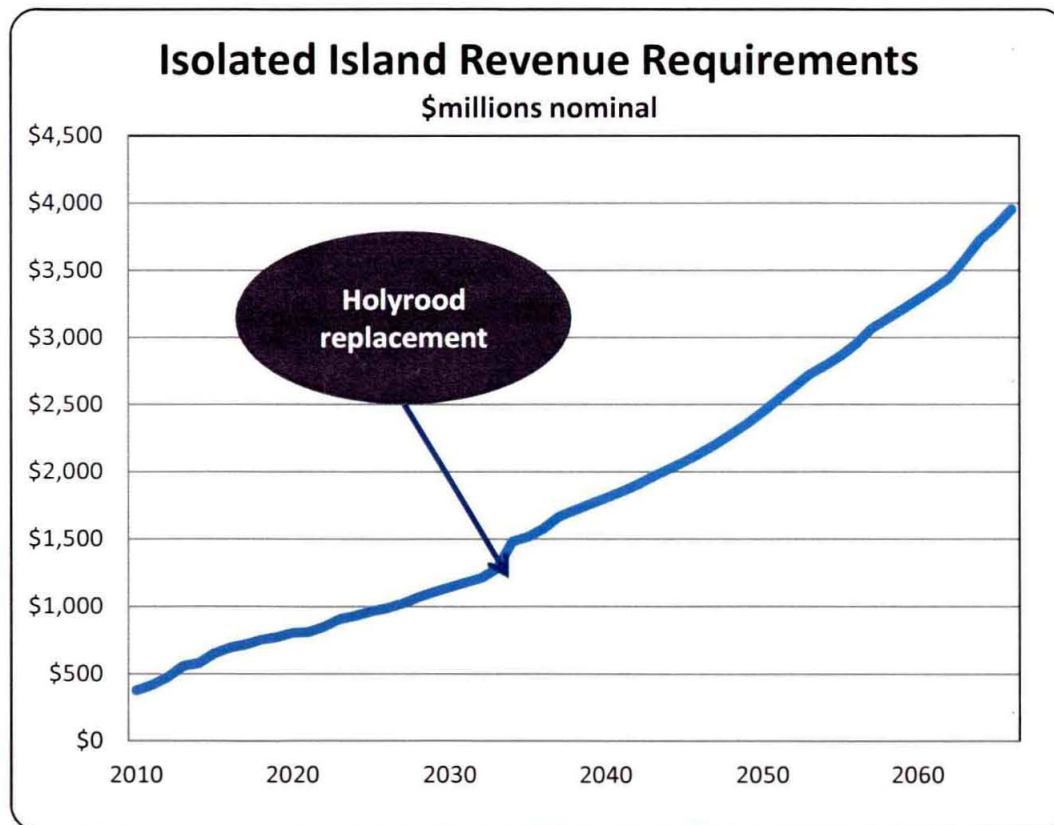
# Isolated Island – Numerous Projects & a Thermal Future



*Holyrood fuel costs  
to 2036 - \$7bil.*



# Isolated Island Key Indicators



## Economic Indicators (\$ millions)

- CPW of revenue requirement: \$12,272
- Capex de-escalated to 2010\$: \$8,074

## Key Risks:

- Fuel cost escalation/volatility
- Environmental costs

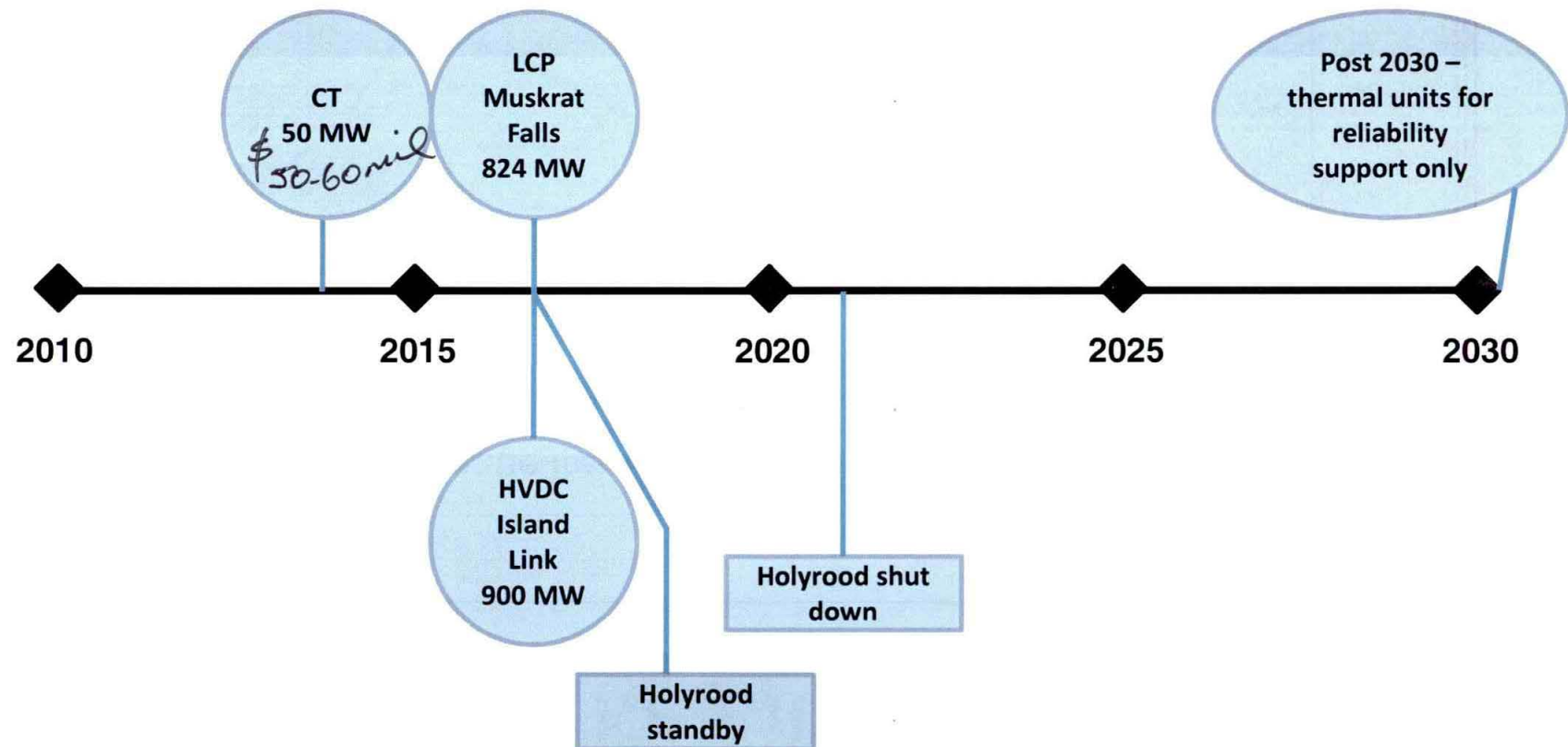
## Reliability Considerations:

- No interconnection to North American grid

## Rate of return on non-regulated elements:

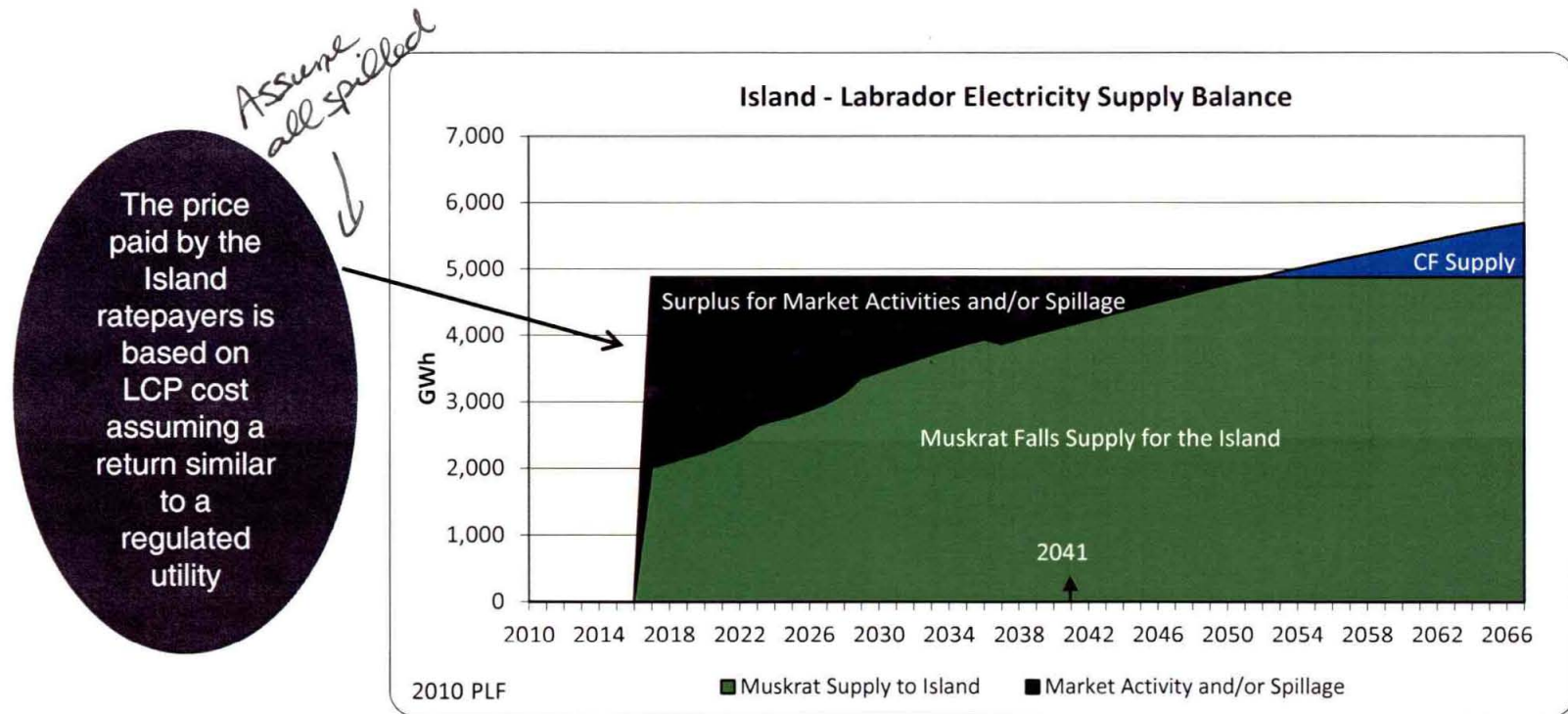
- N/A - all regulated assets

# LCP – Muskrat Falls First



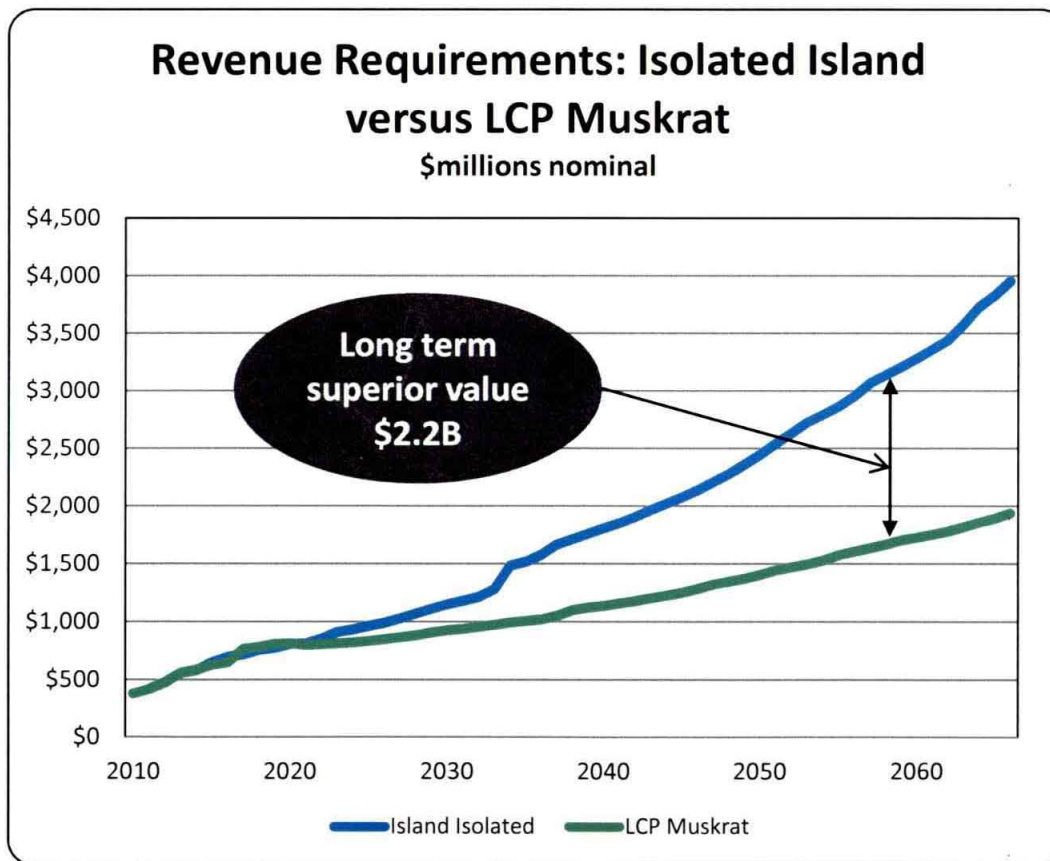
# LCP – Muskrat Falls First

MF is the least cost alternative for ratepayers even if the extra water is spilled and no income is received.





# LCP – Muskrat Falls First Key Indicators



## Economic Indicators (\$ millions)

- CPW of revenue requirement: \$10,114
- Lower CPW vs Isolated Island: \$2,158
- Capex de-escalated to 2010\$: \$6,582

## Key Risks:

- Environmental approval/schedule
- Capital cost control

## Reliability Considerations:

- Interconnected to the North American grid via Churchill Falls

## Rate of return on non-regulated elements:

- 8.4% IRR assuming no monetization of spill

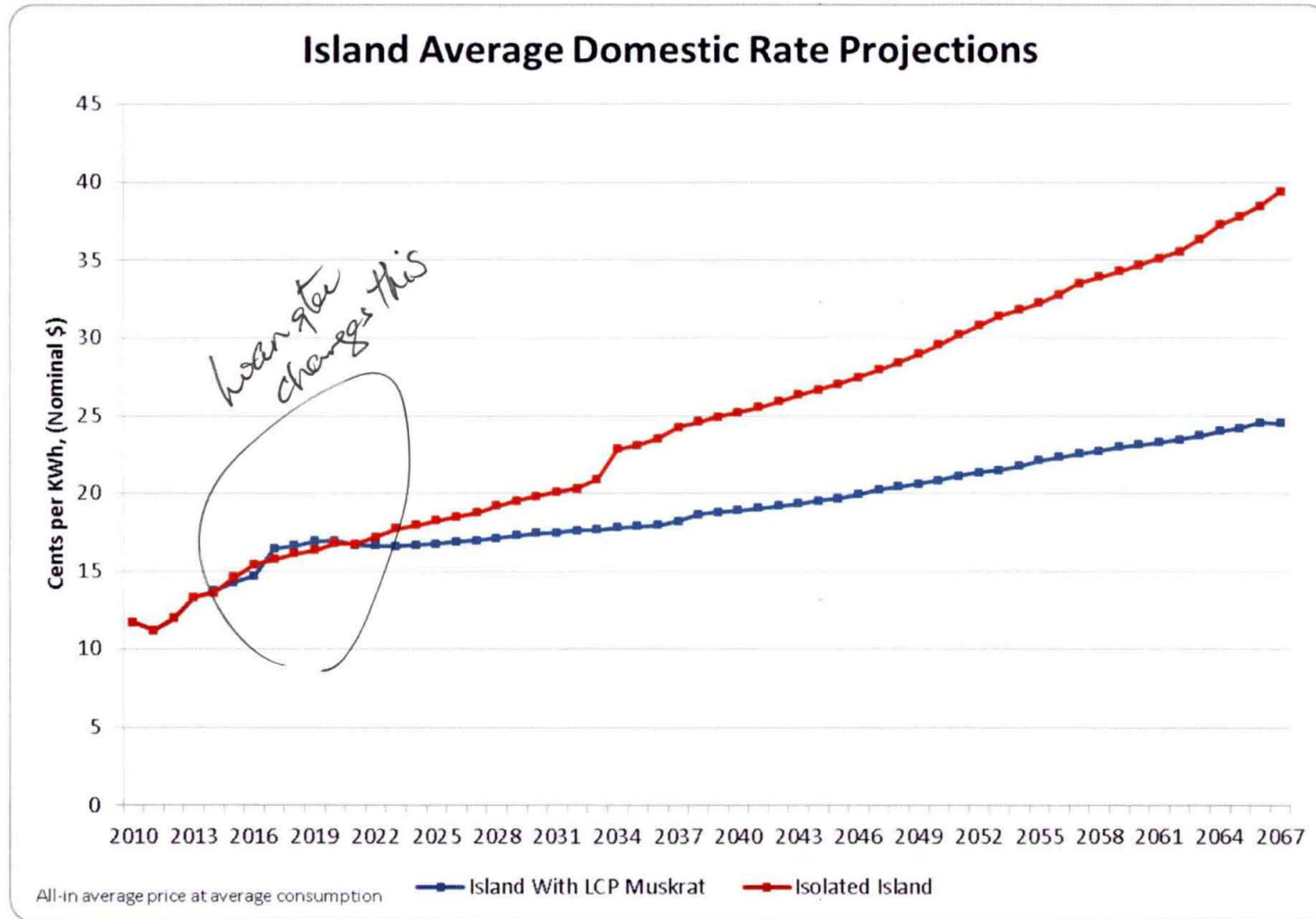


# NL Supply Conclusions

- Domestic supply requirements need to be addressed
  - Planning decisions cannot be deferred
- Muskrat Falls (824 MW) is the least-cost option for domestic supply
  - Even assuming no value obtained for surplus MF power
- Muskrat Falls translates to lower and stable rates for customers
- Muskrat Falls surplus power available for domestic use and export sales
- Gull Island (2250 MW) is the next step

# Stabilizing Electricity Rates for Consumers

# Muskrat Falls – Stable Electricity Rates



# Saving Money for Consumers

- Rates expected to rise between now and 2016 because of oil prices
- Post-2017 (MF) – rates stabilize, increases minor <1%, less than inflation
- By 2025, electricity heated home saving \$780/yr
- By 2040, same home saving \$3300 or \$275/mth



# Selling the Surplus Power

# Phase 1 – Muskrat Falls, Labrador Island Link and Maritime Link

## Labrador-Island Transmission Link

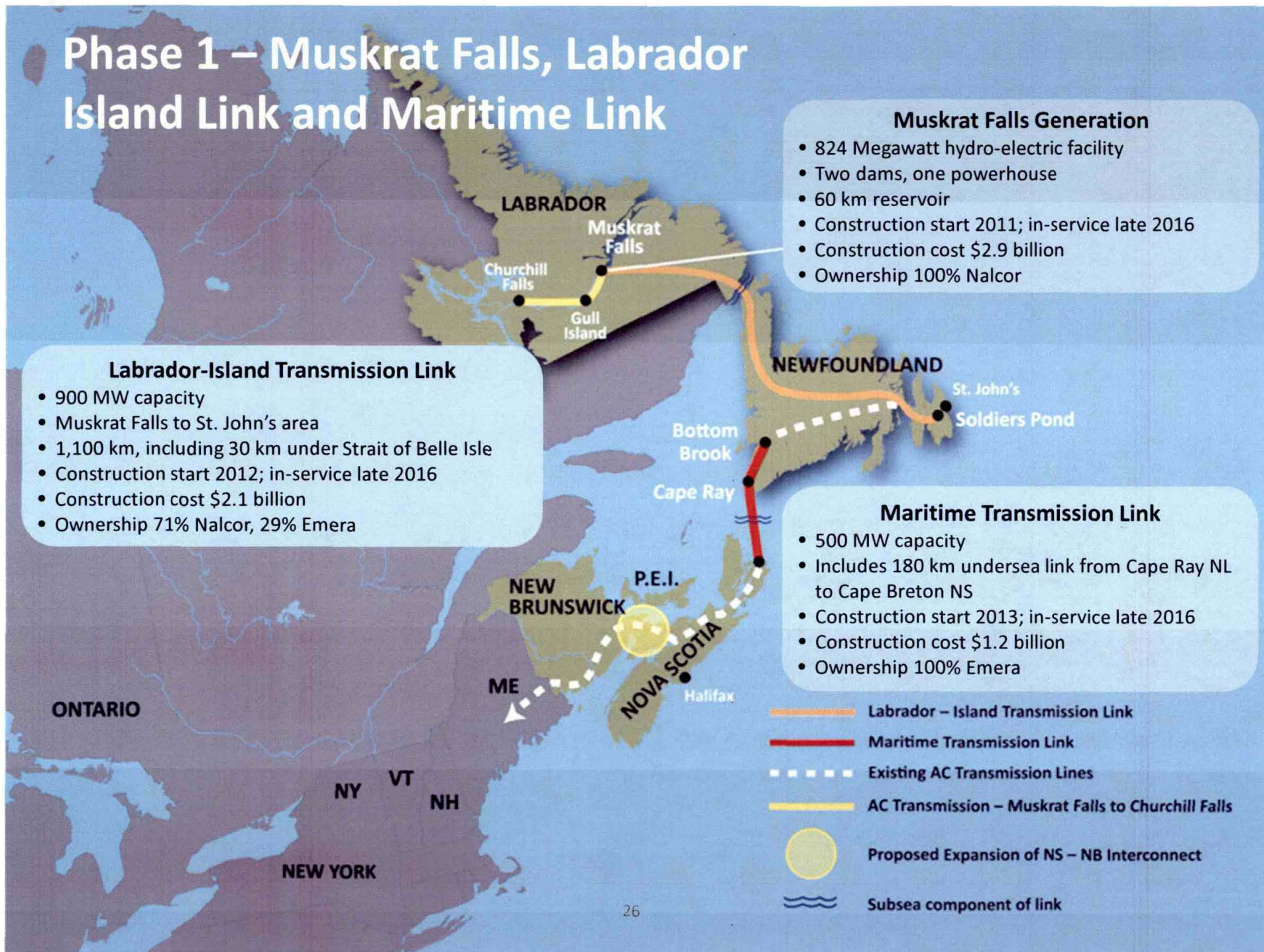
- 900 MW capacity
- Muskrat Falls to St. John's area
- 1,100 km, including 30 km under Strait of Belle Isle
- Construction start 2012; in-service late 2016
- Construction cost \$2.1 billion
- Ownership 71% Nalcor, 29% Emera

## Muskrat Falls Generation

- 824 Megawatt hydro-electric facility
- Two dams, one powerhouse
- 60 km reservoir
- Construction start 2011; in-service late 2016
- Construction cost \$2.9 billion
- Ownership 100% Nalcor

## Maritime Transmission Link

- 500 MW capacity
- Includes 180 km undersea link from Cape Ray NL to Cape Breton NS
- Construction start 2013; in-service late 2016
- Construction cost \$1.2 billion
- Ownership 100% Emera





# Phase 2 – Gull Island



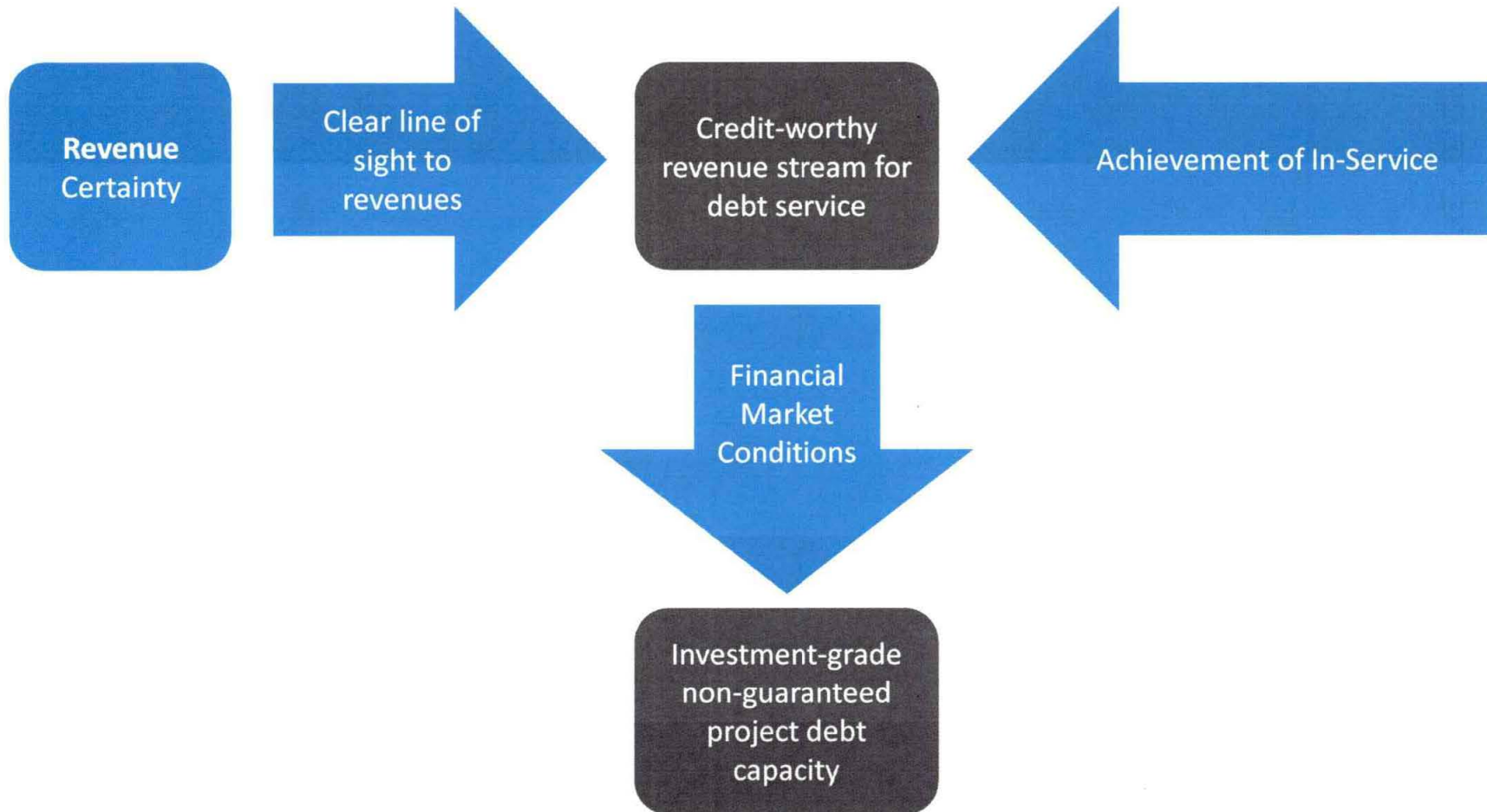
# Financing the Project



# Overview

- Lender Considerations
- Project Business Case
- Federal Loan Guarantee
- Project Cash Flows

# Lender Considerations



# Project Business Case

- Mature, proven technology
- Utility level return on capital of over 9%
- High quality revenue stream for debt service
  - Primary customer for both MF and LIL is NL Hydro, regulated utility with strong credit rating
  - Power and transmission contract lengths that contemplate term of debt financing
- Investment grade project - prudent leverage that considers appropriate debt service coverage
- Robust cost/schedule estimates
- Disciplined risk management program

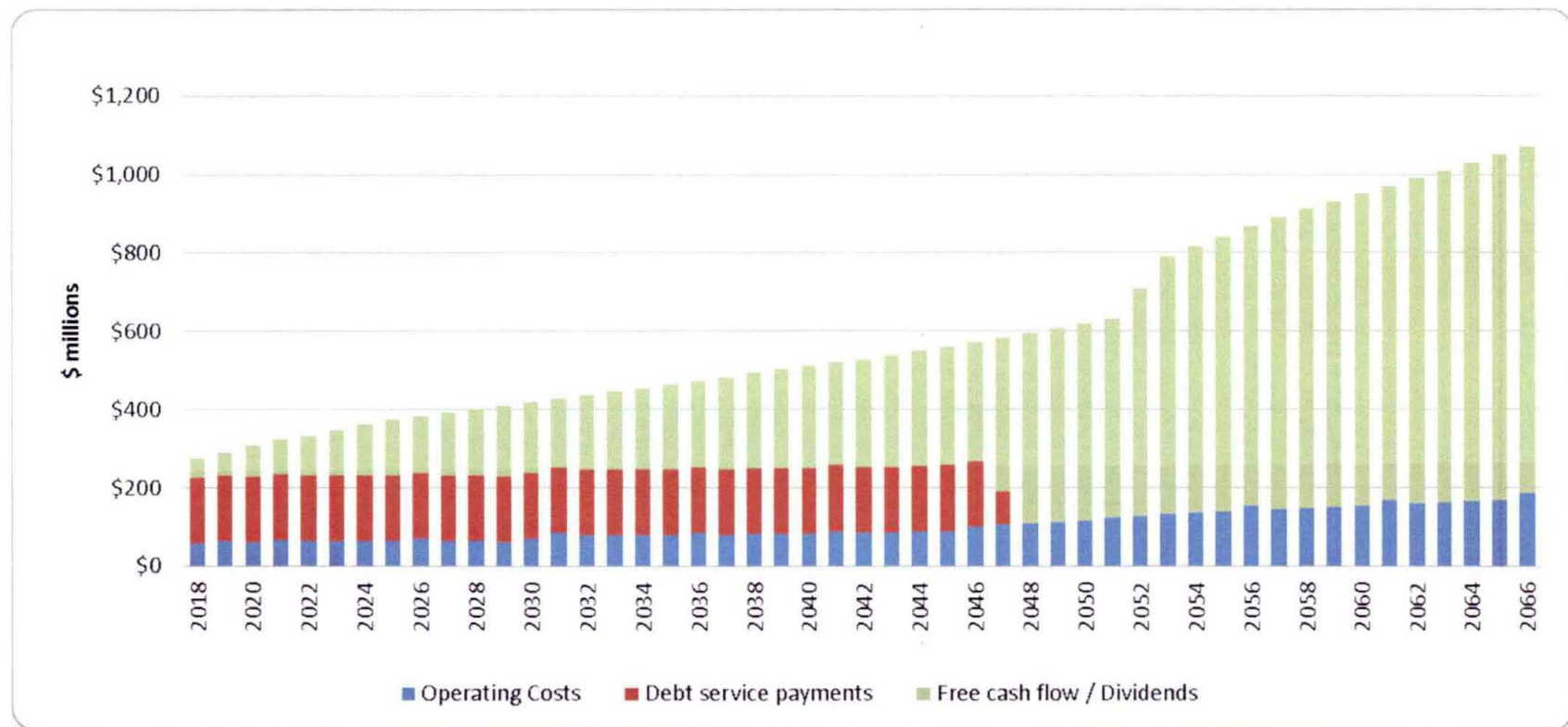
# Federal Loan Guarantee

- Would further enhance an already sound business case, with the economic benefit of lower debt costs being passed on to NL and NS customers
- The capital structure for Muskrat Falls may be adjusted if federal loan guarantees are provided



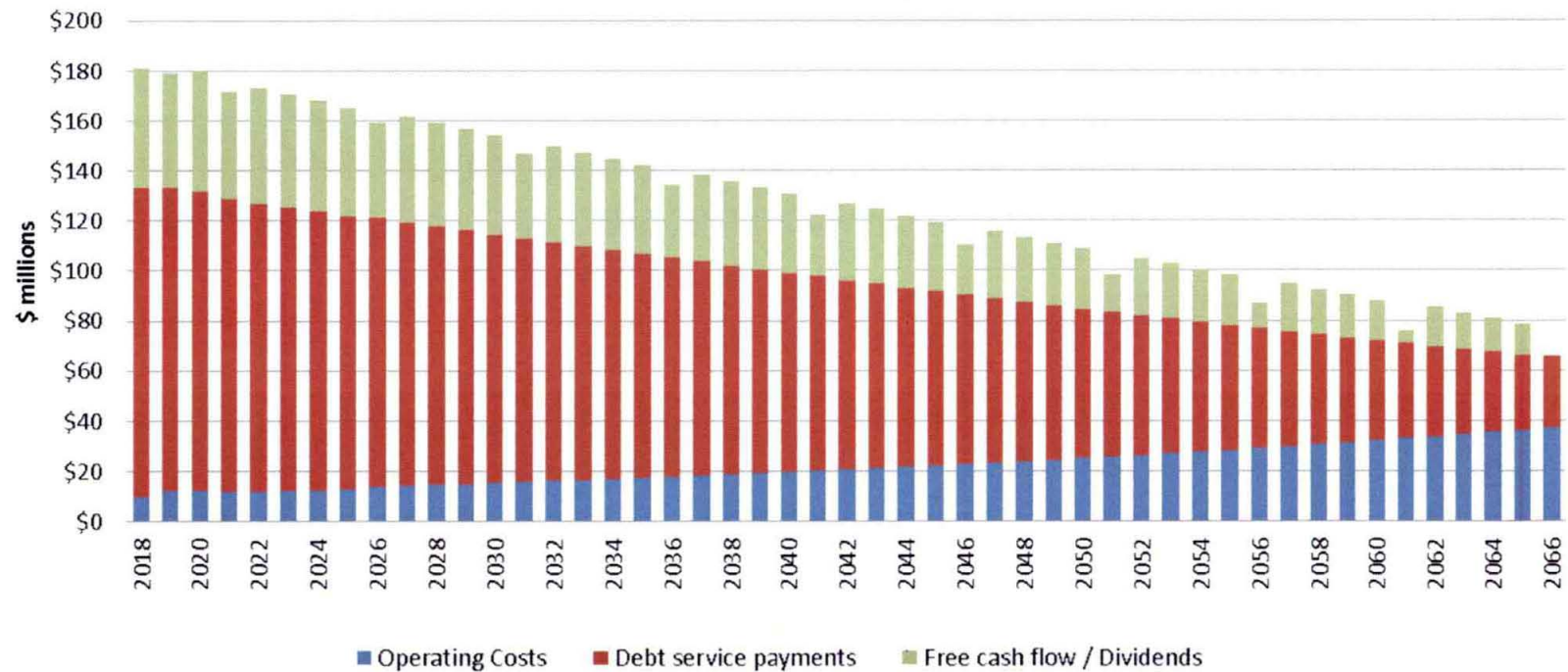
# Muskrat Falls Cash Flow

- MF provides lenders with sufficient cash flow to service the debt



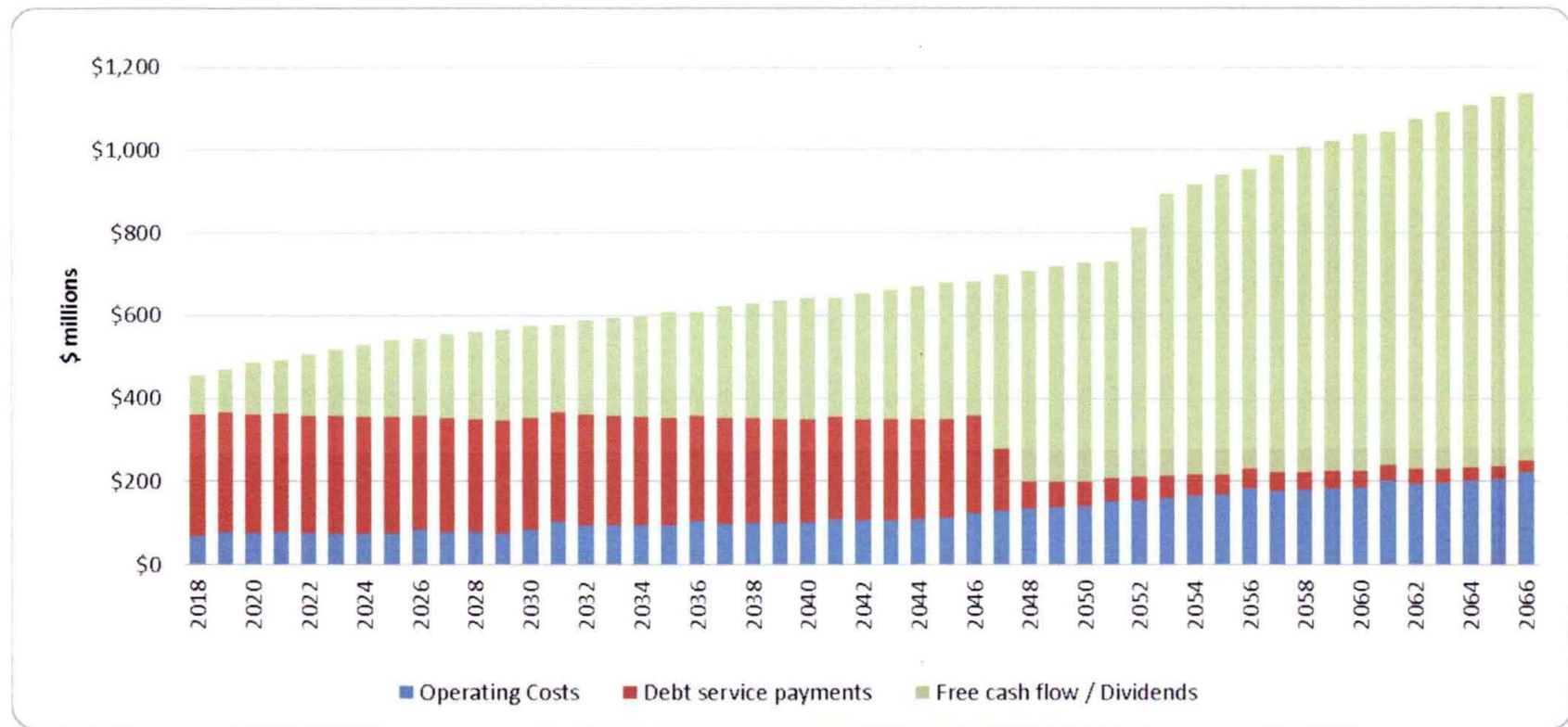
# LIL Cash Flow

- LIL provides lenders with sufficient cash flow to service the debt



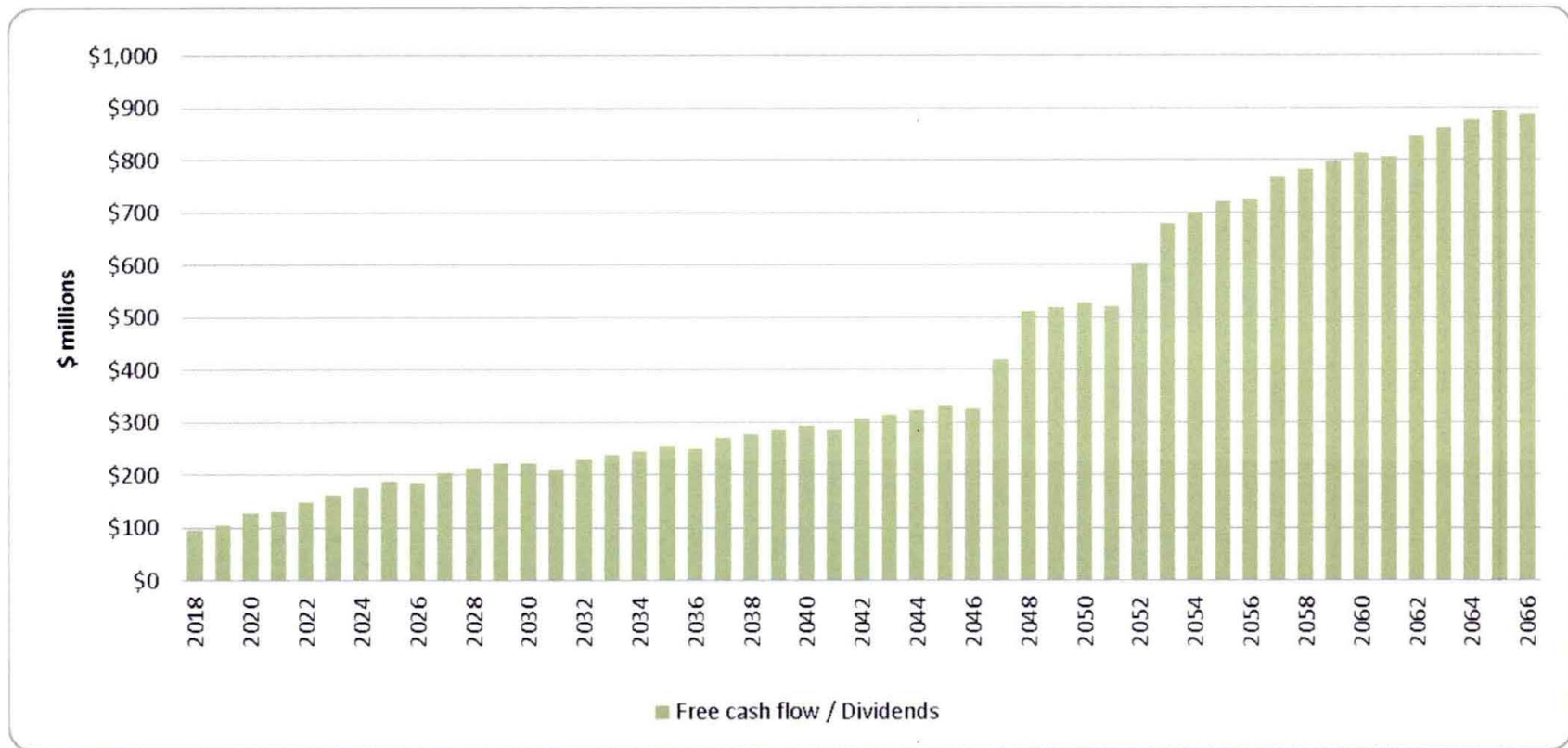
# MF + LIL Cash Flow

- Dividends from both MF and LIL are available to service any Provincial debt borrowings made to provide equity



# MF + LIL Available Cash Flow to Province

- Dividends from both MF and LIL are more than sufficient to service the Provincial debt borrowings





# LCP Benefits

# Phase I Construction Employment

- Employment
  - 70 different occupations represented during construction
  - 2,700 person peak work force
  - 8,600 PYE direct employment
    - 5,400 PYE in Labrador
  - 18,400 PYE direct, indirect & induced employment
    - 7,500 PYE in Labrador

*... Direct employment 50% greater than Hebron!*

# Phase I Business and Labour Benefits

- \$1,430.M Business & Labour Income
- 450.M Income in Labrador
- \$212.M taxes to Province

# Why LCP is the Right Decision



# Summary

- NL requires new generation to meet load growth
- Muskrat Falls and Transmission Link to the Island is best solution
  - Most economic and least-cost option
  - 500MW Holyrood thermal plant coming off-line and thermal replacement avoided
  - Enhances system reliability and security of supply with interconnection
  - Rate stability for customers over long term
  - Generates a positive rate of return for province
- Electricity demand met up to 2041+
- Generation >98% GHG free
- Robust business case – very good project for Newfoundlander and Labradorians