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### Lower Churchill Phase I: Update to Indicative Ratings October, 2012

**Boundless Energy** 





**Confidential and Commercially Sensitive** 

## Nalcor Team

- Derrick Sturge VP, Finance & CFO
- Paul Harrington Project Director, Lower Churchill Project ("LCP")
- Rob Hull General Manager, Commercial & Financing
- Charles Bown Deputy Minister (NL Natural Resources)
- Laurie Skinner Deputy Minister (NL Finance)
- Jim Meaney Corporate Treasurer & Chief Risk Officer
- Auburn Warren Manager, Investment Evaluation
- John Matovich Financial Advisor (Kensington Capital)
- Tom Garner Financial Advisor (PwC)



## **Presentation Outline**

- 1. Safety Moment
- 2. Introduction and Update
- 3. Business Case Update
- 4. Project Execution and Capital Costs
- 5. Commercial Structure and Key Agreements
- 6. Government Support
- 7. Financing Strategy
- 8. Financial Metrics and Debt Service
- 9. Summary and Next Steps



### Safety Moment



## Introduction & Update



## Why are we here?

- We are moving to Sanction Decision Gate 3 ("DG3") on the Muskrat Falls/Labrador Transmission Assets ("MF/LTA") and the Labrador-Island Link ("LIL") (collectively, the "Projects" and each a "Project")
- Significant progress has been made since last indicative rating was obtained
  - Currently over 50% of engineering complete (including advancement in procurement and project execution readiness)
  - DG3 capital costs have been finalized
  - Business case has been updated
  - Progress made on legislation and NL commitments
  - Updated financing plans established
  - Progress on finalizing federal loan guarantee ("FLG")
  - Emera Agreements completed
- To support Sanction decision and completion of the FLG, now seeking an updated non-FLG rating of the Projects
- Plan to seek another indicative rating with the finalized structure incorporating the FLG at a future time
- Maritime Link is outside the scope of this rating request



## Key Messages

- Significant progress has been made in all key areas
  - Engineering, commercial, regulatory and financing activities have progressed to support a well-informed DG3 decision
- Business case has been updated with new capital cost estimates and refined assumptions
  - MF/LTA and LIL continue to remain the least cost source of supply for the Island's energy requirements
- Financing plans have been further developed and credit metrics remain robust
- Strong Provincial support continues with implementation currently in progress



## **Information Protocol**

- Today's detailed presentation is the principal document
  - A number of supporting documents will be included in the data room to enable you to complete the requested indicative ratings
- Data room from November 2011 remains accessible
  - Supplemental materials will be provided by October 12, 2012
- Follow up sessions focused on key areas will be scheduled
  - Capital Cost and Project Execution: LCP Project Team will be available to provide a detailed review of the DG3 capital cost estimate
  - Financial Models Assumptions and Metrics: Modeling team will be available to review in detail the basis and design of financial models and related assumptions



### **Project Overview**





### **Investment Grade Highlights**

### November 2011

✓ Robust business case

- ✓ Attractive project attributes
- ✓ High quality regulated revenues

- Assembled experienced team with mega-project expertise
- Proven operating experience

### October 2012

- Updated business case, including capital costs, remains robust and continues to support MF/LTA and LIL as least cost supply option
- Projects continue to have same attractive attributes
- Advanced implementation of cost recovery mechanism through proposed legislative changes and finalization of NL Term Sheet
- Continue to augment the strength of the project team (now at approx. 400 people) including the fully integrated Nalcor/SNC team
- ✓ Proven operating experience continues



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### Investment Grade Highlights (continued)

### November 2011

- ✓ Robust financial profile
- Access to export markets via two transmission routes
- ✓ Strong support from Shareholder Government of NL
- ✓ Projects supported by Innu nation
- Projects supported and endorsed by Government of Canada

### October 2012

- Updated financing approach and underlying assumptions. Resulting financial metrics continue to be robust
- Both options still available, with Emera
  Agreements now executed
- Projects continue to be a focal point for the Energy Plan; continued close working relationship with Government of NL to implement key initiatives
- Impact and Benefits Agreement ("IBA") ratified and signed; significant contracts awarded to Innu joint ventures
- Significant progress on finalization of FLG





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### **Progress Since November 2011**

### **Business Case**

- ✓ Business Case updated✓ Manitoba Hydro International
  - ("MHI") Reports for NL completed
- ✓ PUB Report released

### **Commercial**

Emera Agreements executed
 Finalizing NL Term Sheet

### Financing

- ✓ Financing approach further refined
- ✓ Creation of SPVs underway
- ✓ Moving towards finalization of FLG
- MWH Canada engaged as Independent Engineer



### Progress Since November 2011 (continued)

### **Project Execution**

- ✓ Significant progress completed in refining project definition
- Preparations for Sanction well advanced, including front end loading and strategic de-risking
- ✓ Engineering advanced from 5% at Decision Gate 2 ("DG2") to over 50% at DG3
- ✓ Early works commenced at Muskrat Falls site
- ✓ Labour negotiations well advanced
- Significant procurement initiated and award of key long lead contracts underway (Turbine and Generator, Strait of Belle Isle cable)
- ✓ Independent project reviews completed

### **Environment and Aboriginal**

- $\checkmark~$  IBA ratified and signed
- ✓ Environmental Assessment ("EA") Release on MF/LTA obtained
- ✓ LIL EIS filed

### **Government Support**

- Supportive legislation advanced and will be tabled in NL Legislature
- Enabling labour legislation passed by NL Legislature
- ✓ Finalizing equity agreements



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### Financial Snapshot (excluding Maritime Link)

	November 2011	October 2012
Construction Capital Expenditures (excluding IDC and equity component of AFUDC, in-service) <sup>(1)</sup>	\$5.0 billion	\$6.2 billion
Debt (including IDC and financing costs)	\$4.0 billion	\$4.9 billion
NL Equity Contributions (excluding AFUDC and funding phase revenues) <sup>(2)</sup>	\$1.9 billion	\$2.1 billion

<sup>(1)</sup> IDC means Interest During Construction; AFUDC means Allowance for Funds Used During Construction <sup>(2)</sup> Funding phase revenues means revenues earned prior to final completion of the Projects



## **Financing Summary**

### **November 2011 Key Elements**

- Sizing of debt based on domestic NL regulated revenues
- ✓ Both base and contingent equity provided by Government of NL
- Capital structure for LIL established at 75:25 Debt-to Equity Ratio ("DER") and for MF/LTA 58:42 DER with total required debt of \$4.0 billion
- Liquidity reserve account ("LRA") for MF is fully funded and remains in place for 10 years
- Two distinct financings comprised of bank debt and a long term bond takeout at in-service

### **October 2012 Refinements**

- ✓ Unchanged
- Unchanged
- Capital structure for LIL unchanged and MF/LTA established at 65:35 DER with total required debt of \$4.9 billion
- Increased LRA for MF/LTA to incorporate higher capital costs and DER
- Two distinct financings updated to reflect structure in which there are periodic bond issuances throughout the construction period

### Credit metrics remain as robust as previously presented





### **Business Case Update**



## **Business Case – Key Messages**

- Business case analysis focused on Island's long term energy requirements
  - Isolated and Interconnected options
- Capital requirements for all available options have increased significantly
- Although fuel price forecasts have declined since DG2, there remains significant risk associated with fuel cost volatility over the long term
- MF energy delivered by the LIL remains the least-cost solution to meet Island demand
  - Provides long term rate stability and removes exposure to global fuel prices



## Island Energy Requirements





## **Island Supply Projections**





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## Wholesale Rate Profile

- MF energy delivered by the LIL provides the least-cost alternative to meet NLH customer demand for power
  - Long-term rate stability removes reliance on thermal generation and global fuel prices
  - MF provides real rate reduction for customers



NLH overall wholesale rate is the total revenue requirement for the Island grid which would be recovered from its wholesale customer (i.e., Nfld Power), direct industrial customers, and its own direct retail customers in more rural areas of the Island grid.



### **Robustness of Island Supply Decision**

CPW Sensitivity Results: Preference of Interconnected Over Isolated Island Alternative





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### **Oil Price Assumptions**







### **Project Execution and Capital Costs**



# Key Messages - Project Execution & Capital Cost Update

- 1. We are following our Gateway process
  - Our process is structured, organized and follows project execution best practices:
    - Independent reviews confirm best practices
    - Project Execution Roadmap
    - Project Definition refinements since DG2

### 2. Review of the DG3 Cost Estimate

- Robustness of the estimating process and outcome
- Greater cost certainty based on over 50% engineering
- Estimate reflects a fixed and firm design
- Key changes since DG2 and main drivers of change



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## Nalcor's Stage-Gate Process

Structured, front-end loading process that enables risk-informed decision making at Decision Gates by completing critical analysis in the Phase leading to the Decision Gate, while ensuring a balance of analysis with capital preinvestment





## **Front-End Loading:** #1 Predictor of Project **Outcome**



- Gateway Phase 3 focus directed towards completing the level of front-end loading to confirm the project definition and a "Sanction-quality" Class 3 cost estimate.
- We are tracking industry best practices which suggest expending 4 to 6% of total invested capital in FEL activities pre-DG3
  - ~\$250 million expended to-date
  - Engineering and detailed design is now well advanced and greater than 50% complete



### **Front-End Loading Overview**

Front-End Loading





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## **Making Progress Against Plan**





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# Strategic De-risking



Risk management is achieved via disciplined management process

#### Achieved

- Selection of robust LCC HVdc technology with overload capacity
- SOBI consists of three cables including a redundant or spare cable each in separate seabed routes
- Secured SNC-L, a world class Engineering, Procurement and Construction Management ("EPCM") contractor
- Extensive geotechnical baseline
- IBA and land claims with Innu Nation
- Pilot program for horizontal directional drilling to confirm production rates prior to bid
- Turbine model efficiency testing program in order to guarantee turbine efficiency and power output
- Physical model testing to confirm MF plant layout and hydraulics

#### **On-Going**

- Finite modeling of reinforcement steel requirements in powerhouse concrete
- Using geotechnical results from bulk excavation to achieve firmer prices on powerhouse contract
- Contracting that optimizes competition and synergies
- Early award of bulk excavation contract to protect schedule
- Confirming long-lead deliveries and prices
- Cost certainty through Engineering, Procurement and Construction ("EPC") / Engineering, Procurement, Construction and Installation ("EPCI") fixed unit price contracts
- Project labour agreements with SPOs
- System engineering / integration focus



### Project Execution Updates Since November 2011



# Environmental Assessment

- MF/LTA
  - Released from EA in March 2012
  - Conditions of EA Release being implemented no showstoppers
- LIL
  - Environmental Impact Statement ("EIS") submitted for review
  - Awaiting Ministerial feedback
  - EA Release anticipated in Q1-2013



# **Aboriginal Affairs**

- Innu Nation
  - Innu Nation ratified and signed the IBA
  - Implementation of IBA underway
    - Significant contracts awarded to Innu companies
- Other Aboriginal Groups
  - Implementation of consultation plan for LIL EIS through various community engagement agreements
  - Over 500 Aboriginals trained in required trades



### Labour

- Labour Availability
  - Labour agreements which will provide:
    - Attractive rotation cycles, shorter travel times than to Alberta
    - Competitive wage rates comparable to Alberta
    - Top quality camp and facilities comparable to Alberta
    - Foreign worker options
    - Lessons learned from other labour agreements across Canada
  - We are sponsoring training programs for traditionally under represented groups in the workforce – many local to the site
- Labour Relations
  - Legislation passed in the Spring session of the NL Legislature to enable overlapping Special Project Orders
  - Negotiation of collective agreements currently underway
  - Special Project Orders will be enacted in 2013



## **Engineering & Procurement / Contracting**

Overall engineering is greater than 50% complete, with over \$2 billion of procurement activity already awarded/pending or underway

#### **Contracts Awarded/LOI**

- Turbines & Generators ("T&G")
- SOBI Cable Supply & Install
- AC Tower Steel
- MF South Side Access Road
- MF Construction Power
- EPCM Services

Approx. Value \$850 million

#### **Awards Pending**

- MF Accommodations Complex
- Bulk Excavation
- MF Medical Services
- MF Security Services
- LTA Foundation Steel

#### **RFPs Issued**

- MF Powerhouse/Intake & Spillway
- LTA Right-of-Way Clearing
- LTA Construction
- LTA Conductors
- LTA Hardware

Approx. Value \$300 million Approx. Value \$900 million



# South Side Access Road Construction Page 35 Progress





# Early Works: South Side Access Road

- The South side access road is approximately 21 km and is needed to gain access to the Muskrat Falls site
- The road is used to bring in the heavy equipment for construction
- Progress to date is 16 km out of 21 km





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## Early Works: Cleared Accommodations Complex Area

- The accommodations complex will be where we have the camp, catering, recreation facilities
- We have purchased a starter camp and will be bringing that in over the coming months
- Our target is to have this available up and running for the work mid-2013





### **Performance Security & Insurance**

- Strategy as presented in November 2011 is being implemented
- Performance security approach has been utilized in key contracts already awarded (e.g., T&G and SOBI)
- Early Works insurance in place
- Market submission prepared for placement of full project insurance



## Performance Security in Awarded

#### Contracts

#### **Turbines & Generators**

- Performance Bond (50%) with rider
- Rider confirms liquidated damages are included and eliminates notice requirements for scope changes
- Bond to be issued by Zurich Canada
- Letters of Credit (15%) to be issued by Schedule I Bank with S&P minimum credit rating of A-

#### **SOBI Cable**

- 15% Standby Documentary Credit issued by Schedule I Bank
- 50% Performance Bond with rider issued by a surety with S&P minimum credit rating of A-



### **Project Definition – HVdc Transmission**



#### **HVdc Overview**





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## A Closer Look: HVdc Transmission

Significant engineering design development complete





## **HVdc Engineering & Design Progress**

#### **Decision Gate 2**

- Preliminary 2 km wide transmission corridor selected and basic geotechnical data obtained
- Generic tower configurations not specific to our line
- Desktop tower loading work underway
- Preliminary execution plan
- Preliminary conductor selection
- Budgetary quotes for tower steel and conductor



#### **Decision Gate 3**

- Lidar topography survey complete of corridor
- Line routing within corridor complete
- Individual tower locations selected
- Harsh climatic conditions of southern Labrador and Long Range Mountains confirmed with meteorological data and / or modelling
- 13 tower loading cases identified resulting in significant number of tower designs
- Foundation designs in-progress
- Conductor optimization and system stability studies complete
- Right-of-way ("ROW ") vegetation and clearing plans inplace
- Insulator and tower hardware designs progressing
- Budgetary quotes for all material
- Detailed construction plan in-place
- Acquisition of property for marshalling yards underway
- All line crossings and property easements identified
- Tie-in points being designed



#### CIMFP Exhibit P-00854 Meteorological Conditions

- 3,650 towers
- 350,000 insulators
- 3,000,000 m of conductor
- 13 distinct wind and ice combination zones developed from multiple desktop report and existing network of test towers/ test spans
- 170 km of high alpine (Rime) ice and wind loading, 180 km heavy glaze ice
- 250 km of remote inaccessible line in central Labrador





## Lidar Terrain Mapping

(Lidar = Aircraft based remote sensing technology to detect terrain conditions)

**Avalon** - Starting at Port Blandford, higher population density, more infrastructure and land use constraints







## Field Assessment of lerrain to Verify Line Routing





#### **Project Definition – Muskrat Falls**



#### Muskrat Falls (as Currently Envisioned)





#### CIMFP Exhibit P-00854 Page 49 Completed Muskrat Falls Engineering Work Plan





## **MF Engineering & Planning Progress**

#### **Decision Gate 2**

- Desktop studies complete based upon early field work to confirm development variant
- Quantities calculated using 1998 feasibility studies
- River and ice management studies underway
- 1998 geotechnical investigations
- Leverage Gull Island studies for infrastructure works



#### **Decision Gate 3**

- Numerical modeling of hydraulic passages completed
- Geotechnical investigations for powerhouse completed
- Site layout optimized to ensure operational reliability and long-term asset integrity
- All structures modeled in CATIA 3D to produce quantities of rock excavation and concrete
- Scaled physical model testing completed to verify layout and various river management operations (e.g., temporary diversion)
- Turbine efficiency model testing completed and incorporated into contractual commitments
- Detailed constructability optimizations completed / underway
- Turbine & Generator contract has been awarded
- Engineering completed for infrastructure works



## Geotechnical Investigations Confirm Sub-Surface Conditions

Borehole Locations at Muskrat Falls



Borehole Operations at Muskrat Falls





# Numerical Modeling Identified Potential Operational Integrity Issues

- Hydraulic conditions near the surface upstream of the intake indicated the presence of eddies and flow velocity parallel to the intake at Unit 1 (at the top of the graph)
- These conditions indicate a potential problem at this unit, including the possibility of a vortex, increase of head losses at the intake or non-optimal flow conditions at the unit



#### **Solution: Plant Reorientation by 30°**





#### **Revised Layout Designed in 3D CAD**





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#### Layout Verified by Scaled Operational Model





## Rare Operational Events Modelled

(North RCC Dam – Secondary Spillway)





## **3D Model Used for Construction Planning**

(Superstructure under Construction)









## **Operational and Schedule Risk Reduction**

(Turbine Model Testing)





### **Project Definition – SOBI Crossing**



### **SOBI Crossing Overview**





## SOBI Crossing: A "deeper" look

Selected solution for the SOBI cable crossing builds upon team's extensive experience in the design and installation of subsea infrastructure in harsh environments combined with lessons from similar projects

- Each of the 3 submarine cables will each have a dedicated horizontally directionally drilled (HDD) conduit to protect the cable from shore and pack ice at the landfall points
- The conduits will take each cable to a water depth of between 60 to 80m, thus avoiding iceberg scour
- The cables will then be laid on the sea bed and each protected with a separate rock berm which will protect against fishing gear and dropped objects









#### **SOBI – Iceberg Risk**





#### **Conceptual Design Routing**





#### Nalcor's Estimating Approach



## **Establishing a Quality DG3 Cost Estimate**

- Estimate accuracy is the degree of confidence that the estimated cost will be close to the final project cost
- As a project becomes better defined and less likely to change the more confidence there is that the estimate will accurately predict the final project cost
- The accuracy of a project's cost estimate is a function of the:
  - level of front-end loading (i.e., project definition) completed
  - understanding and mitigation of project's risk exposure



## Estimate Accuracy

(Shaping Characteristics for Lower Churchill)

- Association for Advancement of Cost Engineering International ("AACEI") has identified two drivers that improve the estimate accuracy, LCP scores high on these:
  - Primary Driver:
    - Higher degree of project definition than other hydro projects (i.e., represented by amount of engineering completed greater than 50% to date)
  - Secondary Drivers:
    - LCP is not overly technically complex tried and tested technology used
    - Significant amount of effort expended to prepare estimate
    - High quality benchmark reference cost data available



#### **Estimate Accuracy Evolution**



Required for	Decision Gate 1	Decision Gate 2	Decision Gate 3	Financial Close	Mid-Point Check
Class	AACEI Class 5	AACEI Class 4	AACEI Class 3	AACEI Class 2	AACEI Class 1
Estimate Purpose	Opportunity Screening	Alternative Selection	Sanction / Control	Financing	Check Estimate
Project Definition	0% to 2%	1% to 15%	10% to 40%	30% to 70%	50% to 70%



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## Nalcor's Estimating Approach

- Adopt industry recommended practice
  - AACEI
- Focus on key cost drivers
- Fully engage project team
  - Combined Nalcor / SNC-Lavalin with greater than 400 FTEs
- Understand and apply lessons learned from other projects
- Gather external and independent input



### **Cost Estimate Components**



Provision for changes in price levels driven by economic conditions, including inflation. Estimated using economic indices weighted against base estimate components.

Provision made for variations to the basis of an estimate of time or cost that are likely to occur, that cannot be specifically identified at the time the estimate is prepared but, experience shows, will likely occur. It is not meant to cover scope changes outside the Projects' parameters (i.e., events such as strikes or natural disasters, escalation or foreign currency impact), or changes that alter the basis upon which the control point for management of change has been established (e.g., basis of design, project execution plan).

Reflects most likely costs for known and defined scope associated with project's specifications and execution plan as produced by the estimator.



### DG3 Estimate – How it was produced

- Owner-led estimate team comprised of SNC-Lavalin and various third parties
- Developed over a 12-month period
- Leveraged extensive historical data for hydro and transmission projects throughout Canada
- Reflects what a construction contractor would need to do to evaluate project costs for which a bid is being prepared
  - This approach could be best described as a bottom-up, first principle estimate as opposed to a parametric or stochastic method
- Concurrent "check" or validation estimates and estimate process check completed by expert consultants



## **Establishing the Cost Estimate**

The accuracy of the cost estimate is a function of the engineering, procurement and contracting carried out as shown below:





CIMFP Exhibit P-00854

#### **Estimate Leverages Extensive Information**




# **Key Quantities**

- Powerhouse, Intake and Spillway
  - Mass Excavation of 2.5M m<sup>3</sup>
  - 390,000 m<sup>3</sup> of concrete
  - 200,000 m<sup>2</sup> of formwork
  - 57,000 tonnes of rebar
  - 88 m high and 225m wide (the Peace Tower is 92.2 m high)
- Dams and Cofferdams
  - 895,000 m<sup>3</sup> material
- Roller Compacted Concrete:
  - 226,000 m<sup>3</sup> RCC
- North Spur:
  - Overburden and rock excavation of 700,000 m<sup>3</sup>
  - Rockfill of 1M m<sup>3</sup>

- HVac LTA Transmission
  - 490 km in length
  - 1,280 towers
- HVdc LIL Transmission
  - 1,079 km in length
  - 3,642 towers
- MF Reservoir
  - 1,800 hectares
  - 157 kms of roads
  - 390,000  $m^3$  of saleable wood



# **Estimate Contingency Setting**

- Nalcor follows the AACEI Recommended Practice to establish contingency
- Nalcor uses the Westney proprietary risk resolution process
- Deterministic cost ranges are established for identified cost risks
- Following Monte Carlo analysis a probabilistic cost curve is generated
- The difference between the actual estimate and the P50 probability point is the contingency



# **Independent Findings**

- Westney engaged to conduct risk assessment in late May / early June with Project Team. Key findings:
  - The scope for the project is well defined and represents design development consistent with project 1. sanction. Considerations, such as likely geotechnical conditions and quantity variations due to further design development, were quantified based on the experience of the project team and used as a basis for assessing the possible outcomes.
  - 2. The estimate and quantification are consistent with the requirements of project sanction. In many cases, pricing was based on actual bids and budgetary guotes. "Check" estimates were developed by industry experts for key areas, including the Muskrat Falls powerhouse and dam works. Other pricing was benchmarked against representative projects. The effects of weather, labour /skills availability, and supervision were also considered and/or benchmarked. Overall, this project's degree of design development, definition, and methodology is consistent with an AACEI Class 2 estimate.
  - 3. The estimate, plus an amount to reach the P50 on the results curve, should represent the cost at which the project can be executed according to the plan exclusive of external uncertainties.



# Escalation Estimating Process

Nalcor follows principles of AACEI Recommended Practice No. 58R-10





# **Escalation Allowance**



## **Escalation by Cost Type**

- Custom project-specific model developed
- Used a combination of Global Insight, Power Advocate and LCP market intelligence
- Costs broken down into 30 categories
- Contract pricing provides ٠ greater certainty for some project components



## CIMFP Exhibit P-00854 MHI Review – Findings

- "From a review of the information provided, Nalcor has performed the design, scheduling and cost-estimating work for the Muskrat Falls Generating Station and the Labrador Transmission Assets with the degree of skill and diligence required by customarily accepted practices and procedures utilized in the performance of similar work. The current Lower Churchill Project design, schedules and cost estimates are considered consistent with good utility practice. The design, construction planning, cost estimate and schedule are comprehensive and sufficiently detailed to support a Decision Gate 3 project sanction..." [page 56]
- "The costs of the Strait of Belle Isle marine crossing have increased marginally but are considered to be reasonable and within the AACE Class 3 estimate range for Decision Gate 3. MHI is of the opinion that there is an equal likelihood that the costs will decrease, as a result of opportunities through optimized design." [page 52]
- "Nothing was found in any of the technical or financial reviews that would substantially change MHI's findings under the existing assumptions." [page 8]



## **Key Drivers of DG3 Estimate**



## **Cost Estimate Update Since DG2**





# **Key Changes Affecting Estimate**

## • HVdc Overland

- Operability / Reliability Driven Change
  - Voltage optimized needing higher towers
  - Ice loadings resulted in more towers and heavier towers
- Constructability and Labour Driven Change
  - Access to very remote areas resulted in costlier helicopter construction
  - Increased person-hours at higher unit cost to compete with latest labour agreements
- Muskrat Falls Structures
  - Operability / Reliability Driven Change
    - Reorientation of structures resulted in more excavation and more concrete
    - Intake structure stability and spillway issues resulted in more concrete
  - Constructability and Labour Driven Change
    - Reservoir clearing resulted in more roads
    - Ice management resulted in additional cofferdam on South side
    - Increased person hours at higher unit cost, to compete with latest labour agreements



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# Key Changes Affecting Estimate (continued)

## • Engineering and PM

- EPCM awarded after DG2
  - DG3 estimate reflects actual contract costs
  - Benefits Strategy came after DG2 all engineering work in NL resulted in increased travel and accommodation allowances
  - Strong competition for experienced engineering and PM personnel
  - EA release delayed carrying costs for two years

## Switchyards

- Operability / Reliability Driven Change
  - Churchill Falls switchyard extension required, more civil work and greater cost
  - Muskrat Falls switchyard extension to allow for HVGB connection
- Constructability and Labour Driven Change
  - Geotechnical site investigation identified additional excavation and fill needed
  - Additional camp required at Churchill Falls
  - Increased logistic/transportation costs
  - Increased person-hours at higher unit cost to compete with latest labour agreements



# Commercial Structure and Key Agreements



# **NL Agreements – Overview**

- Structure and contractual obligations remain unchanged with all cash flows originating from NLH and directed by Trustee in priority order as per lending agreements. Four key commercial agreements:
  - Power Purchase Agreement ("PPA");
  - Generator Interconnection Agreement ("GIA");
  - LIL Assets Agreement; and
  - Transmission Funding Agreement ("TFA")
- Finalizing detailed Term Sheet between Nalcor and NLH ("NL Term Sheet") building on the Memorandum of Principles ("MOP") approved by NL Cabinet in September 2011
  - Key terms remain the same, providing for a full recovery of all project costs through NLH, and allowing for a defined equity return to Project borrowing entities
  - Commercial agreements also under development
- NL equity funding agreements that support financing arrangements as addressed in the October 2011 NL Commitment Letter, also under development



# **Structure – Key Operating Cash Flows**





## **NL Agreements**

Agreement	Key Provisions	NL Term Sheet Enhancements and Clarifications
Muskrat - NLH Power Purchase Agreement ("PPA")	<ul> <li>Based on escalating supply price and predetermined volume; irrevocable payment obligation by NLH that recovers all MF cash flows, including capital, operating &amp; maintenance, taxes, GIA payments, debt service costs and a defined equity IRR</li> <li>Variations in hydrology will not impact these revenues</li> <li>Initial term of at least 50 years</li> </ul>	<ul> <li>In a given year, monthly payments are set as being constant versus having seasonal variability</li> <li>MF power available during commissioning (prior to commencement of PPA term) will be sold to NLH on a price certain basis</li> <li>PPA payment includes adjustment mechanism to ensure debt service obligations always met (as stated in MOP) – if utilized, NLH reimbursed at future date when funds available after debt service</li> </ul>

Lab Transco -	•	E
Muskrat		F
Generator		l
Interconnection		r
Agreement		(
("GIA")	•	I

- Based on escalating supply price; irrevocable payment obligation by Muskrat that recovers all LTA cash flows, including capital, operating & maintenance, taxes, debt service costs and a defined equity IRR
- Initial term of at least 50 years

 Like the PPA, GIA payment includes adjustment mechanism to ensure debt service obligations always met – if utilized, MF (and ultimately NLH) reimbursed at future date when funds available after debt service



## NL Agreements (continued)

Agreement	Key Provisions	NL Term Sheet Enhancements and Clarifications
LIL OpCo - LIL LP LIL Assets Agreement	<ul> <li>In exchange for conveying the transmission rights on the LIL to LIL OpCo and LIL OpCo agreeing to operate and maintain the LIL, LIL OpCo makes an irrevocable rent payment to LIL LP equal to LIL LP's capital (depreciation) plus a return on rate base (weighted average debt interest cost plus regulated ROE), plus other related amounts (e.g., Tax Adjustment Amount)</li> <li>Term is one month prior to end of Service Life in accordance with the NL Development Agreement. If this is before the end of the TFA, LIL rent is paid by NLH directly to LIL LP</li> </ul>	<ul> <li>Greater definition of LIL agreements that enable cost recovery</li> <li>In support of the commercial arrangements, LIL ROE provision will be implemented as a requirement by Government</li> </ul>
LIL OpCo - NLH Transmission Funding Agreement ("TFA")	<ul> <li>Irrevocable payment obligation from NLH to LIL OpCo that recovers the LIL Assets Agreement rent payment plus all operating and maintenance costs incurred by LIL OpCo to operate and maintain the LIL</li> <li>Term is up to a period of 55 years</li> </ul>	Greater definition of LIL agreements that enable cost recovery



# **Emera Agreements**

- 13 Formal Agreements formalizing the Term Sheet concluded between Nalcor and Emera on July 31, 2012
- Two key aspects of the transaction:
  - In exchange for developing (i) the Maritime Link (to which Nalcor receives all transmission rights in excess of that required to deliver the NS Block) and (ii) providing pay- as-you go transmission rights in Nova Scotia, Emera will receive the NS Block
    - Emera also pays 20% of operating costs until Nalcor assumes ownership of the Maritime Link (35 years)
  - In exchange for investing in the LIL, Nalcor receives pay-as-you-go transmission rights in New Brunswick and through to New England
- The Formal Agreements are consistent with the Emera Term Sheet
- Importance of the agreements from a financial perspective:
  - Establishes the commercial structure and capital requirements of Nalcor and Emera related to the project assets
  - Provides Muskrat Falls with transmission rights to move the Residual Block to markets beyond the Maritime Link

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# **Government Support**



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# **Government Support - Key Messages**

- NL is fully committed to the Projects
- NL is providing full support to advancement of a Sanction decision
- NL continuing to advance the implementation of this commitment



# **Government Commitments**

## Achieved

- ✓ Energy Plan
- ✓ Creation of Nalcor and subsidiaries
- ✓ Water Management Agreement
- ✓ Water Lease
- ✓ New Dawn Agreement
- ✓ Funding of pre-Sanction expenditures
- Commitment Letter (including base and contingent equity and cost recovery mechanism)
- ✓ Memorandum of Principles
- Draft enabling legislation, including cost recovery mechanism
- ✓ Strengthened balance sheet for major off taker, NLH
- ✓ Approved a market-appropriate ROE for NLH
- ✓ FLG Memorandum of Agreement

## **On-going**

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- ✓ Conclude FLG Agreement
- ✓ Finalization of NL Term Sheet
- Legislative amendments to facilitate financing
- ✓ Other legislation to advance Projects
- ✓ NL Equity Guarantee Agreement
- ✓ Sanction decision
- ✓ Permits and approvals

## NL continuing to advance the implementation of their commitment



# **NL Legislation to Support Financing**

- Government undertakings outlined in NL Commitment Letter that support financing arrangements enacted through:
  - 1. Order in Council dated May 29, 2012 authorizing the creation of Project-related subsidiaries of Nalcor
    - Governing documents (e.g., Articles of Incorporation) and Board appointments for Nalcor's LIL limited and general partner entities completed in July 2012 as part of executing Nalcor-Emera agreements
    - Work underway to establish the remaining Project-related entities
  - 2. Enabling legislation has been advanced and will be tabled in the NL House of Assembly in Fall 2012



# **Key NL Legislative Provisions**

### Provision

## Highlights

Amendments to the *Electric Power Control Act* and *Hydro Corporation Act* to ensure the recovery of all Project costs through the regulated rates of NLH via:

- i. Enhanced government powers to direct PUB
- ii. Ensuring NLH recovers LCP related costs from island utilities/industrials
- iii. NLH authority to make long-term power supply and transmission commitments with Project entities

Amendments to the *Energy Corporation Act* and *Hydro Corporation Act* to enable Province of NL equity funding during Project development

- Will ensure that cash flows to the Project borrowing entities are stable and highly predictable to support debt service
- To facilitate certainty regarding the recovery of all Project costs through the regulated rates of NLH, the PUB will not be able to disallow Project costs when setting these rates

- With respect the Province's equity funding to the Project, the commitments made through the equity support arrangements will be in place for the entire construction period and not be subject to annual appropriations
- Lenders will have recourse to NL Consolidated Revenue Fund for the equity commitment, if required



# Key NL Legislative Provisions (continued)

#### **Provision** Highlights Exempt borrowing for the Muskrat Falls Project Project entities will have the required authority from the \$600 million limit currently prescribed in to secure sufficient debt to complete the Project the Energy Corporation Act for Nalcor and its subsidiaries Amendments to the Energy Corporation Act and In commercial arrangements relating to the *Hydro Corporation Act* clarifying the Crown agency Project, Nalcor will be contracting in its own status of Nalcor and NLH as it relates to the capacity and not as an agent of the NL Crown Muskrat Falls Project In NLH's execution of the power supply and transmission related contracts it will be doing so in its own capacity and not as an agent of the NL Crown



# **NL Equity Support**

- NL Government has committed to providing base and contingent equity
  - Equity investment to date: \$250 million
  - Cumulative equity investment prior to financial close: \$900 million
  - Total base equity: \$2.1 billion
- Equity Support Agreement: Unconditional and irrevocable covenant of Nalcor to Lenders to make investments in each SPV, on demand of each SPV, to finance the equity portion of project costs (based on applicable DER)
- Equity Support Guarantee: Unconditional and irrevocable guarantee by NL of Nalcor's obligations to make those equity investments



# **Financing Strategy**



# Financing Considerations

- Overall financing approach predicated on: (i) construction financing, (ii) long-term financing and (iii) hedging facilities, as required
  - Nalcor's focus has always been on identifying the most cost-effective, actionable solution
- Combination of market developments and strong credit support potentially allow for greater structural flexibility and lower cost of funds
- Models presented in the Data Room for purposes of this indicative rating will reflect the following financing assumptions:
  - i. an appropriately sized bank facility to fund ongoing construction requirements, and
  - ii. periodic bond issuances throughout the construction phase
- Work continues on the assessment of other potential financing options, if applicable (e.g., upfront bond)



# Evolution of Financing Approach (for Rating)

Date	Key Assumptions & Considerations for Rating Purposes
November 2011	<ul> <li>Traditional project finance structure - fixed rate bank debt during construction with single long-term bond takeout at in-service; appropriate as illustrative approach at that stage realizing a more detailed financing structure would develop as the projects progressed towards Sanction and financial close</li> <li>DER for ME/ITA 58:42 (combined) and LIL 75:25</li> </ul>
	<ul> <li>Single interest rate assumption for both construction and long-term periods</li> </ul>
October 2012	<ul> <li>Bank debt with period bond issuances throughout construction period</li> </ul>
	<ul> <li>DER for MF/LTA 65:35 (combined) and LIL 75:25 - increased leverage benefits NL ratepayers while maintaining investment grade financial metrics</li> </ul>
	<ul> <li>Interest rate assumptions based on (i) updated Conference Board of Canada forecasts of Government of Canada ("GOC") Treasury and Long Bond benchmark rates; and (ii) forecasted debt issuance schedule</li> </ul>
	<ul> <li>Increased level of consultation with relationship banks on market conditions and key financing parameters</li> </ul>
	<ul> <li>Recent power sector project/utility financings received favorably by market (e.g., Lower Mattagami, Enbridge, Hydro One, Canadian Utilities, AltaLink)</li> </ul>



# **Key Financing Assumptions**

Element	Assumption
Construction Financing	\$1.85 billion bank facility (MF/LTA : \$1.1 billion; LIL: \$750 million)
Long Term Financing	Periodic issuances throughout construction period
Currency	Long term financing to be denominated in Canadian dollars
Targeted Issuance Size	Individual issuances of up to: MF/LTA: \$750 million; LIL: \$500 million
Amortization Profile (following completion of construction)	MF/LTA – Mortgage Style LIL – Level Dollar
DER	MF/LTA: 65:35 LIL: 75:25
Term	MF/LTA: 30 years LIL: 50 years
Equity Funding	Pro-rata funding of equity and debt after target DER achieved through rebalancing



# Hedging Approach

- In order to mitigate potential increases in the overall cost of the Projects, Nalcor has reviewed its exposure to fluctuations in: (i) currency; and (ii) interest rates
- Based on the nature of the Projects' requirements and Nalcor's overall contracting strategy, it was determined that a distinct currency hedging strategy would not be required
- With respect to interest rate exposure, Nalcor has evaluated several potential solutions, including: (i) bond forwards; and (ii) cash-settled delayed start swaps
- Given the nature of the financing approach outlined in this presentation, cashsettled delayed start swaps provided: (i) the greatest execution certainty over the contemplated time period; and (ii) a low-cost alternative
  - Actual amounts hedged and preferred instrument will ultimately be determined at Financial Close
- From a financial modeling perspective, Nalcor has incorporated the following key assumptions:
  - Matching of cash-settled delayed start swaps with proposed bond issuance profile
  - Settlement amount either added to/subtracted from overall financing requirements in applicable periods



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## Sources and Uses (Base Case)

\$ billions	(Note – totals may not add due to rounding)	MF/LTA	LIL	Total
Sources:				
Debt Drawdowns		\$2.3	\$2.1	\$4.4
IDC and Financing Costs		\$0.3	\$0.3	\$0.5
Total Debt		\$2.6	\$2.3	\$4.9
NL Equity Contrib	outions	\$1.5	\$0.6	\$2.1
AFUDC / Funding Phase Revenue		\$0.3	\$0.2	\$0.5
Total Equity		\$1.8	\$0.8	\$2.6
Total Sources		\$4.4	\$3.1	\$7.5
Total Sources Uses:		\$4.4	\$3.1	\$7.5
Total Sources <u>Uses:</u> Construction Cap	vital Expenditures <sup>(1)</sup>	\$4.4 \$3.6	\$3.1 \$2.6	\$7.5 \$6.2
Total Sources <u>Uses:</u> Construction Cap IDC/AFUDC and F	vital Expenditures <sup>(1)</sup> Financing Costs	\$4.4 \$3.6 \$0.4	\$3.1 \$2.6 \$0.4	\$7.5 \$6.2 \$0.9
Total Sources <u>Uses:</u> Construction Cap IDC/AFUDC and F Reserves and Oth	ital Expenditures <sup>(1)</sup> inancing Costs her	\$4.4 \$3.6 \$0.4 \$0.3	\$3.1 \$2.6 \$0.4 \$0.1	\$7.5 \$6.2 \$0.9 \$0.4

<sup>(1)</sup> Excludes IDC and equity component of AFUDC



## Capital Expenditures (Base Case)





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## MF/LTA Financing Profile (Base Case)





# LIL Financing Profile (Base Case)





# **Key Risks & Mitigation**

Risk	Description	Mitigation
Construction Delays (All Projects)	<ul> <li>Potential delays to critical path activities resulting in a delay to</li> <li>First or Full Power, caused by:</li> <li>Physical damage event(s)</li> <li>Force majeure event(s)</li> <li>Contractor or equipment failure in performance or default</li> </ul>	<ul> <li>Only Tier 1 contractors and suppliers will be chosen based on detailed pre-qualification process and their performance will be monitored in the event replacement required</li> <li>SOBI Shoreline Protection pilot HDD program and seabed survey program completed</li> <li>LTA delay remote possibility - conventional AC transmission along existing line corridors</li> <li>Early award of SOBI subsea cable and turbine &amp; generator contracts and issuance of RFP's for key civil contracts in Fall 2012</li> </ul>
Construction Cost Overruns (All Projects)	Cost overruns resulting from delay risks (noted above) or the unfavorable impact of labour disruptions or productivity issues	<ul> <li>Strategic de-risking and contracting strategy facilitates realistic cost estimates and contractor performance – over 50% of detailed engineering and design completed</li> <li>High quality camp, competitive rates and attractive rotation cycles closer to NL – there are approximately 16,000 NL workers commuting to Western Canada on rotation</li> <li>SPOs and Labour Agreement will avoid strikes, lockouts and disruptions and will be designed to address productivity – legislation enacted in Spring 2012 to enable overlapping SPO's</li> </ul>



# Key Risks & Mitigation (continued)

Risk	Description	Mitigation
Geotechnical Risk (MF and LIL)	Subsurface conditions materially worse than assumed, negatively impact project construction or operation	<ul> <li>Less potential cost impact due to dam size</li> <li>Extensive geotechnical studies already performed at MF site over the past 20+ years - design and engineering modifications already made to address potential risks</li> <li>Extensive geotechnical studies already performed for SOBI sea bed and HDD - design and engineering modifications already made to address potential risks</li> </ul>
Environmental & Aboriginal (All Projects)	Environmental or aboriginal issues negatively impact the Projects	<ul> <li>MF/LTA EA release obtained in March 2012</li> <li>Innu IBA ratified and signed in November 2011</li> <li>LIL EA release targeted for Q1-2013</li> <li>Nalcor working closely with NL Government and aboriginal groups to identify labour requirements and align with training and education courses to meet demands</li> </ul>
Hydrology (MF)	Decreased water flow results in lower generation	<ul> <li>Variations in hydrology will not impact NLH revenues</li> <li>Water management agreement</li> <li>50 years of hydrology studies</li> <li>Curtailment of non-firm blocks</li> </ul>

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# Key Risks & Mitigation (continued)

Risk	Description	Mitigation
Interest Rate Risk (All Projects)	Fluctuations in interest rates negatively impacting debt service	<ul> <li>Hedging strategy to be implemented at Financial Close</li> <li>Full cost recovery through agreements with NLH</li> </ul>
Operating Risks (All Projects)	Natural hazards or equipment failures could result in business interruptions, liability for damage or regulatory action for non- compliance with laws	<ul> <li>Property liability and D&amp;O insurance</li> <li>MF has four individual generating units</li> <li>Installed spare cable across SOBI which can be quickly put in service</li> <li>New equipment based on proven technology</li> <li>NLH's 40+ years of operating experience</li> </ul>
Inflation Risk (All Projects)	Increases or decreases in inflation may adversely impact operating costs	<ul> <li>Full cost recovery through agreements with NLH</li> </ul>
Regulatory Risk (All Projects)	Changes in government regulations materially affect the operation of MF/LTA	<ul> <li>Nalcor owned by Province of NL – strong support for the Projects</li> </ul>

Government Assurance and Contingent Equity supplements all other mitigation strategies



# **The Path to Financial Close**




### **Financial Metrics and Debt Service**



### **Financial Model Assumptions**

Assumption		November 2011	October 2012			
		Base Case	Base Case	Stress Case		
Export Sales Price		50% PIRA	No export sales included			
Capital cost		DG2 (\$5.0 billion)	DG3 (\$6.2 billion)	DG3 + 15% (\$7.1 billion)		
Operating cost		DG2 estimates	DG3 estimates	DG3 estimates + 30%		
Interest rate	Basis	Fixed	Based on debt issuance schedule			
	Bank	7.3%	3-month T-bill + 115 bps	Base Case + 100 bps		
	LT Bonds	7.3%	GoC + 350 bps			
Financing Fees (Construction phase)		Arrangement: 170 bps; Stand by: 75 bps	ement: 170 bps; Arrangement: 25 bps; d by: 75 bps Stand by: 20 bps			
Financing fees (Bond takeout)		250 bps				
Liquidity Reserve Account	Term	10 years for MF/LTA only				
	Amount	\$65 million	\$95 million			
MF Hydrology		4.9 TWh per annum (average power)		First 10 years - 4.5 TWh p.a. (firm power)		
LIL Regulated ROE		9.50% (long-run rate)	9.25% (long-run rate)	8.4% (floor/current)		



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### MF/LTA Regulated Revenue (Base Case)





### LIL Regulated Revenue (Base Case)





## **Debt Service**

# Nalcor's proposed financial structure provides for robust debt service in both base and stress case conditions

\$ millions (except ratios)

Case	Capex <sup>(1)</sup>	Debt	Equity	DER <sup>(2)</sup>	IRR/ROE <sup>(3)</sup>	Lowest DSCR	Average DSCR			
Muskrat Falls / Labrador Transmission Assets										
DG3 Base Case	3,593	2,615	1,792	65:35	8.40% <sub>IRR</sub>	1.44	2.14			
Stress Case	4,139	3,060	2,097	65:35	8.40% <sub>IRR</sub>	1.33	2.01			
Labrador-Island Link										
DG3 Base Case	2,610	2,303	768	75:25 <sub>Reg</sub>	9.25%roe	1.39	1.42			
Stress Case	2,990	2,673	891	75:25 <sub>Reg</sub>	8.40% <sub>ROE</sub>	1.35	1.37			
Total										
DG3 Base Case	6,203	4,918	2,561							
Stress Case	7,129	5,733	2,988							

<sup>(1)</sup> Construction capital expenditures escalated in nominal dollars, excludes IDC and equity component of AFUDC

<sup>(2)</sup> DER excludes funding phase revenue and LRA funding

<sup>(3)</sup> MF/LTA equity return based on IRR over service life while LIL based on regulated ROE subject to a "floor" value



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### **MF/LTA Debt Service Profile**





### **LIL Debt Service Profile**





### **Summary and Next Steps**



# Summary – Key Messages

- Fundamental elements supporting indicative rating provided in November 2011 have been further enhanced
- Significant progress made in all key areas
  - Engineering, commercial, regulatory and financing activities have progressed to provide greater certainty and reduce risks
- Business case updated with new capital cost estimates and other assumptions
  - MF/LTA and LIL remain the least cost source of supply for the Island's energy requirements
- Financing plans further developed and credit metrics remain robust
- Greater certainty on implementation of strong Provincial support



## Next Steps

Milestones	Date
Data Room Access	October 12
Financial Model/Capital Cost Estimate Review Sessions	Week of October 15
Progress Update before Ratings Committee	Week of November 4
Preliminary Rating Report	November 23

#### Contacts

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#### **Information Request Protocols**

- Send all indicative rating information requests to <u>lcprating@nalcorenergy.com</u>
- Nalcor will respond within 48 hours



### **Questions?**

