

**From:** [jamesmeaney@nalcenergy.com](mailto:jamesmeaney@nalcenergy.com)  
**To:** [Krupski, Joseph](#); [James Loucks](#)  
**Cc:** [Reynold Hokenson](#); [Manzer, Alison](#); [David Pyper](#); [John Medland](#)  
**Subject:** LCP Value Update Deck - November 6, 2013 (Confidential)  
**Date:** Wednesday, November 6, 2013 3:26:10 PM  
**Attachments:** [\\_png](#)  
[LCP Project Update to MWH - 6-Nov-2013 - Final.pdf](#)

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This is the deck Jason Kean is reviewing now.

Rey, please forward to Gerry Germain as I don't have his email address



**James Meaney, CFA**  
**General Manager Finance**  
**Nalcor Energy - Lower Churchill**  
**Project**  
t. 709 737-4860 c. 709 727-5283 f.  
709 737-1901  
e.  
[JamesMeaney@nalcenergy.com](mailto:JamesMeaney@nalcenergy.com)  
w. [nalcenergy.com](http://nalcenergy.com)  
**1.888.576.5454**

You owe it to yourself, and your family, to make it home safely every day. What have you done today so that nobody gets hurt?



# Project Update

6-Nov-2013

Boundless Energy



*Confidential and Commercially Sensitive*



# Agenda

- Safety Moment
- Background Information
- Value Update
  - Cost
  - Revenue
  - Quality
  - Status update from DG3

Take a  
**MOMENT**  
for Safety





IF ONLY ALL HAZARDS WERE THIS OBVIOUS

Whether it's skinning wires or opening a new box of office paper, protect your hands by using the right tool in the right way. And always wear protective gloves.

Take a  
**MOMENT**  
for Safety



# Background Information

- Project Engineering >90% complete
  - Detailed engineering completed by year end
- Procurement
  - ~2/3 of total value awarded/ready to be awarded
  - LNTP issued for both major MF civil works and hydro mechanical equipment
  - Award of AC transmission line construction imminent
- Construction
  - Productivity generally aligned with expectations
  - Bulk excavation critical milestone achieved

# CH0006

## Bulk Excavation

<b>Contract Award:</b>	<b>09-Nov-2012</b>
<b>Cofferdams Complete:</b>	<b>01-Nov-2013</b>
<b>Spillway Excavation Completed:</b>	<b>02-Sept-2013</b>
<b>Powerhouse Excavation Completed:</b>	<b>25-Oct 2013</b>
<b>Substantial Completion;</b>	<b>31-Dec-2013</b>



# Powerhouse Excavation January 2013

CIMFP Exhibit P-02208

Page 8





# Power house Excavation- General View Looking Downstream





# Powerhouse Excavation September 2013

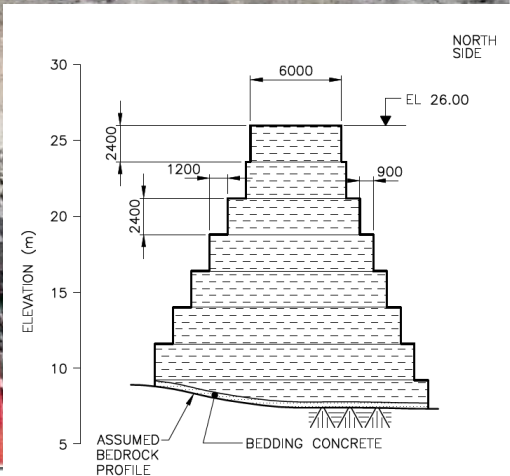
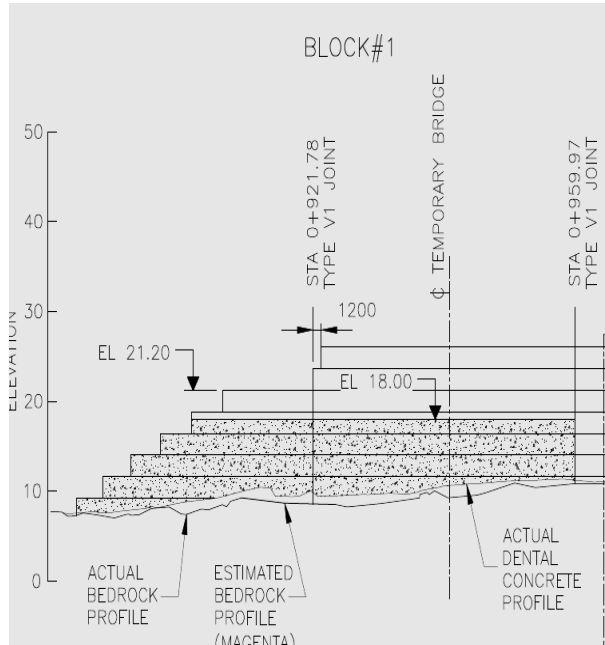
CIMFP Exhibit P-02208

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# CIMFP Exhibit P-02208 RCC COFFERDAM



# Critical Milestone Achieved

## Riverside RCC Cofferddam Completion 31-Oct-2013





# Muskrat Falls – Switchyard & Converter Earthworks (Site Grading)



# MF Infrastructure





# Churchill Falls - Switchyard Earthworks (Site Clearing)



# SOBI Cable Manufacture

Stranding



Paper Lapping



Drying and Impregnation Vessel

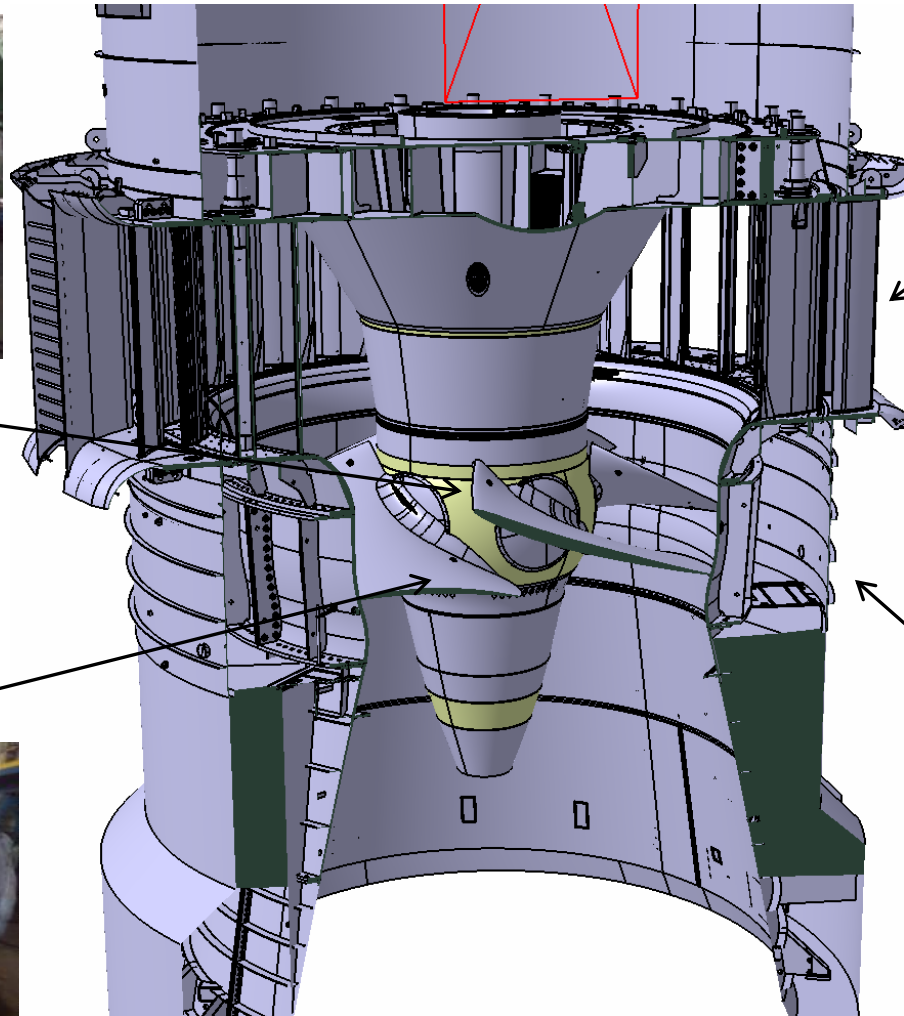




# Turbine Fabrication



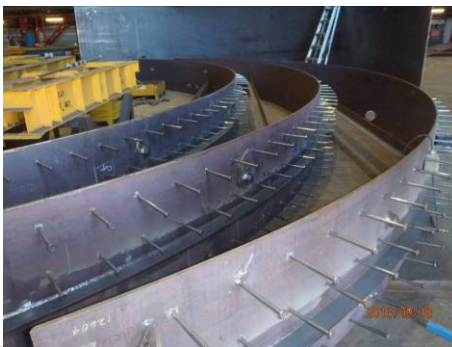
Runner Hub



Runner Blades



Stay Ring



Circular Passage Liner

# AC Right of Way Clearing





# 1<sup>st</sup> Batch of TL Towers Arriving *Goose Bay Port*



# 2<sup>nd</sup> Batch of AC Towers being Bundled

## *SARA, Turkey*





# Background Information

- Safety
  - Relentless commitment to safety
  - Positive safety culture emerging at work sites
  - ~4.0 million person hours worked, 1 LTI
- Quality
  - Positive geotechnical conditions combined with prudent execution resulting in high quality excavated surfaces
  - Design progression has resulting in selective enhancements to improve overall reliability
  - Infrastructure enhancements implemented to drive labour productivity

# Background Information

- Labour
  - Collective agreements negotiated and implemented
  - Project workforce = 1,500. No issues with recruitment
- Aboriginal
  - IBA procurement commitments exceeded
  - >100 Innu working on site
  - 20% of Labrador workforce = aboriginal
- NL and Canadian Benefits
  - NL engineering commitments satisfied
  - 76% of project workforce = NL residents
  - 20% NL workforce = female

# Components of Project Value

- Overall project value is a function of revenue, cost, quality/reliability, schedule
- Costs are comprised of three main categories:
  - Facilities capital (incl. in CPW analysis)
  - Operating costs (incl. in CPW analysis)
  - Financing costs (incl. in CPW analysis)
- Revenue comprised of:
  - PPA revenue (incl. in CPW analysis, a function of revenue requirement)
  - value from excess power sales and other storage/transmission opportunities (not incl. in CPW analysis)

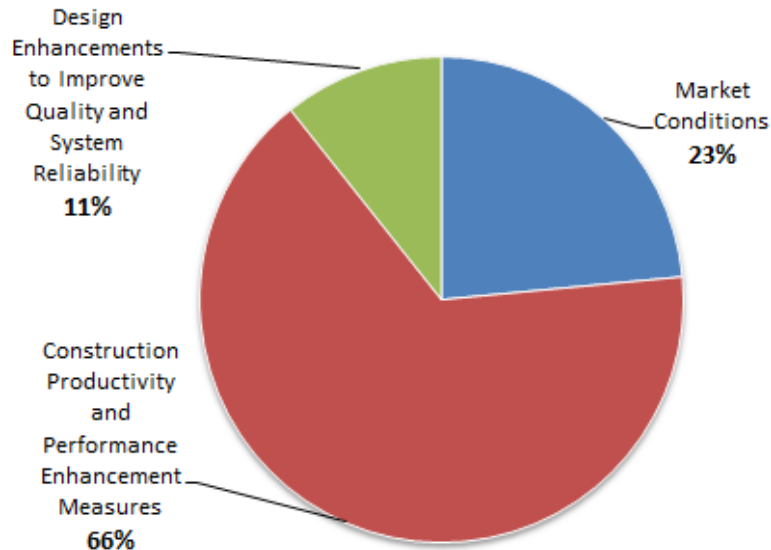
# Key Changes from DG3

- Facilities Capital Cost (+5%)      ↑ ~ \$300mm
- Financing Costs (NPV)      ↓ ~ \$300mm
- Excess Sales/Other Value      ↑ ~ \$100mm
- Quality/Reliability
  - enhanced from DG3
- Schedule
  - 2017 power achievable
  - Focus continues on optimization for resource leveling and execution effectiveness

# Capital Cost Update

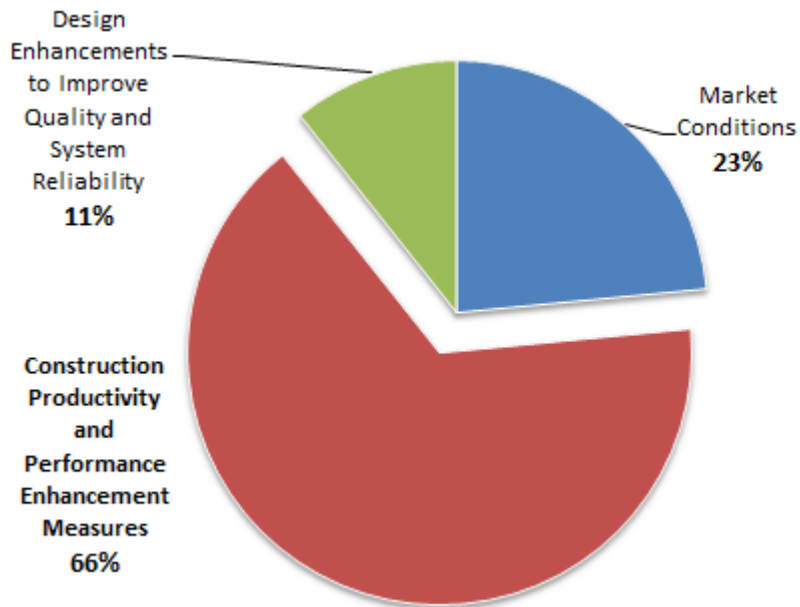


# Cost Growth – 3 Categories



- >2/3 of total cost growth used in investments related to Construction Productivity and Performance Enhancement in order to mitigate construction execution challenges
- Significant investment in design enhancements to improve system reliability
- Market Conditions reflective of current buoyant local / national market.

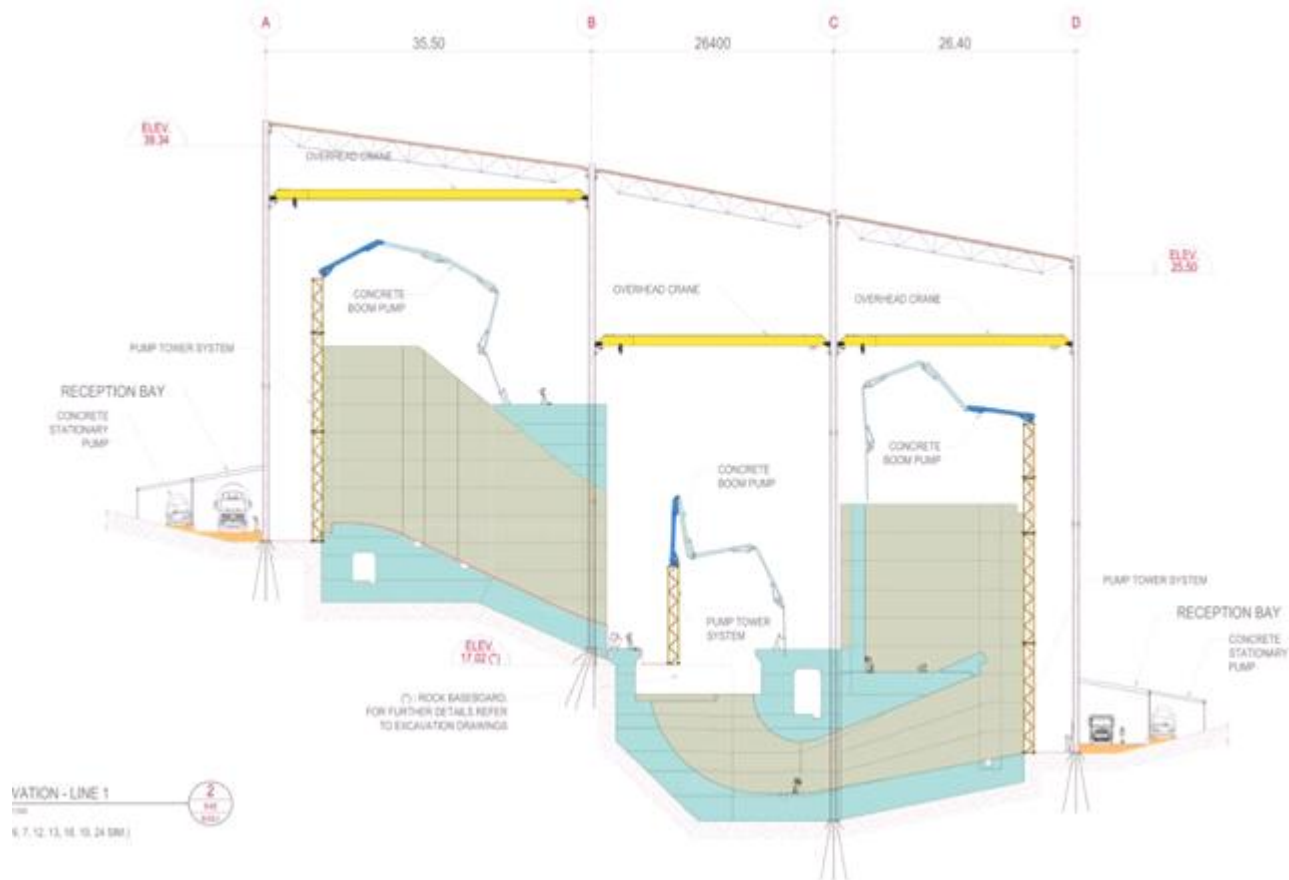
# Category 1: Construction Productivity and Performance Enhancement Measures



## Strategic Investments Include:

- Enclosure of Powerhouse to provide safer working conditions, increased productivity, longer continued employment opportunities for workforce
- Enhanced camp and recreational complex as well as catering to increase worker attraction and retention
- Starter camp to support Bulk Excavation
- Change diversion window from 2015 to 2016 to reduce weather window risk on spillway construction
- Significant site infrastructure upgrades – e.g. laydown area expansion to increase overall efficiencies and productivities
- Extensive investment in environmental mitigations to reduce risk of construction delays
  - Site Water Controls
  - Historical Resource Recovery

# Astaldi's Integrated All-Weather Cover System

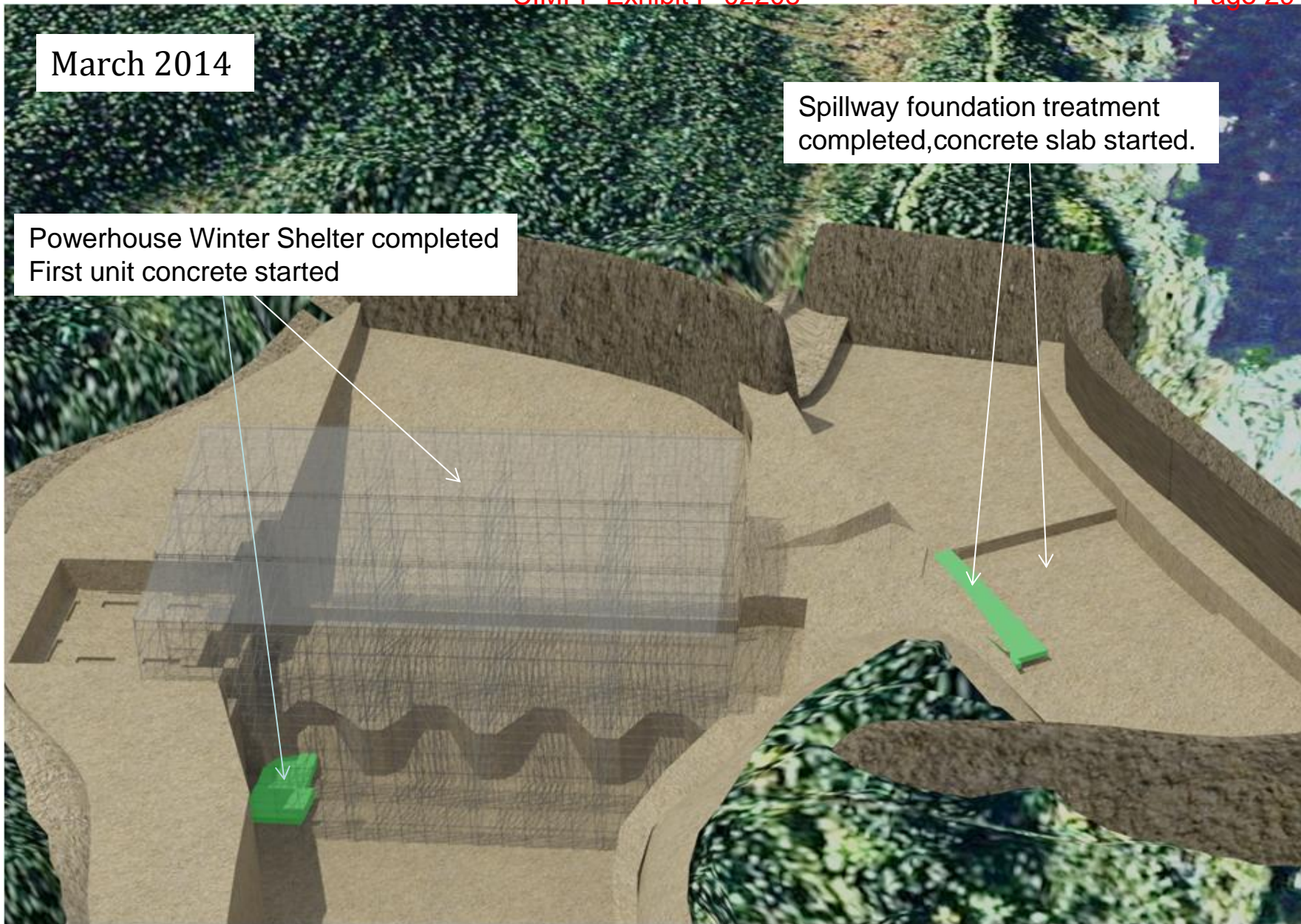




March 2014

Spillway foundation treatment completed, concrete slab started.

Powerhouse Winter Shelter completed  
First unit concrete started





# MF Laydown Area Expansion



# MF Accommodations / Administration Complex





# New Accommodations Camp - Churchill Falls



# TL Material Marshalling Yard





# Site Water Controls





# Historic Resources Recovery



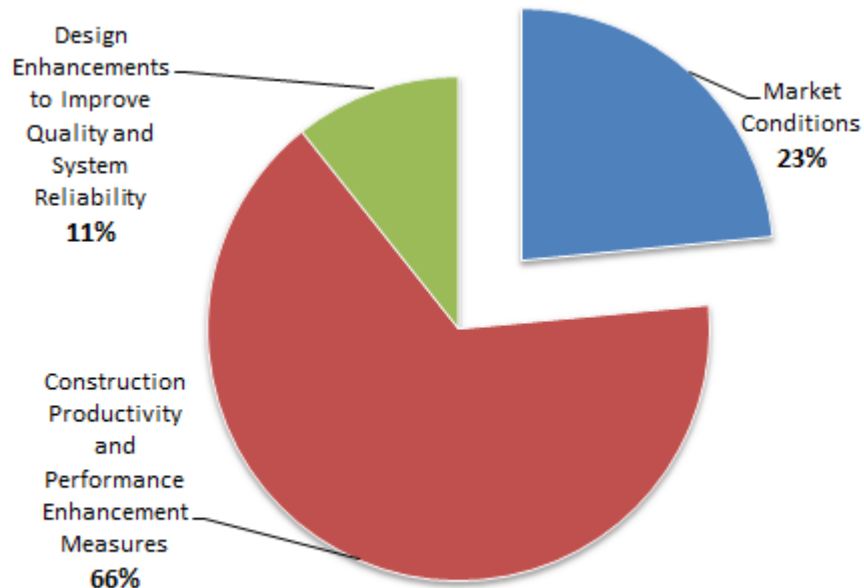


# Churchill River 25kV Line Crossing



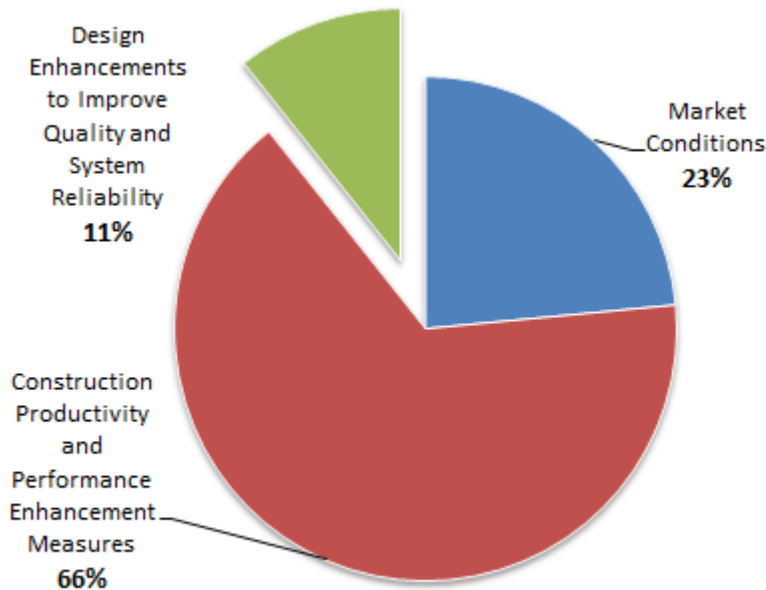


## Category 2: Market Conditions



- Increased contractor margins and risk premiums driven in-part due to contractor's negative views on labor productivity and performance
  - Influenced by the Vale Long Harbour experience
  - Industry trends due to departure of experienced workers
  - We are actively managing this perception
- Permanent plant equipment and material supply cost have been either better or comparable than DG3 estimate, including:
  - SOBI Cable
  - Turbine and Generators
  - Transmission Hardware & Steel
  - Powerhouse Crane

# Category 3: Design Enhancements to Improve Quality and System Reliability



## Substantiate Design Enhancements:

- Use of 5 low-level vertical gates in spillway to improve winter operation reliability
- Spillway discharge channel concrete liner to remove risk of potential erosion
- North Spur cut-off wall extension
- Procurement of additional critical operational spares
- Addition of 2<sup>nd</sup> service bay on North Side of Powerhouse to provide operational flexibility
- Increased reliability in TL beyond initial design return period expectations
  - Use of low temperature steel for HVdc TL
  - Additional foundation corrosion protection
  - Higher utilization factor for AC TL towers

# 315kV Tower Type "D" Prototype Testing



# Protecting Our Investment

- Lump sum or unit price contracts
  - Contractor holds performance accountability
- Category 1 investments to reduce execution risk (Schedule, labor, infrastructure)
- Capped labor exposure with Astaldi using Lmax
- Framework negotiated with Astaldi to expand scope to include N. Spur and Dams
  - Target Price reduces by \$40 million
  - Home overhead, Indirect and equipment cost covered within CH0007
  - Fixed Profit
- Expanding the traditionally local civil subcontractor marketplace for EPC contractors to avail of during preparation of their RFP responses

# Construction Management Update

- H&S Management
  - Maintaining relentless commitment to Zero Harm – Nobody Gets Hurt
  - New initiatives including rollout of Nalcor’s “Take a Moment for Safety” program
- Contractor Performance Management
  - Tier 1 contractors, with “A Execution Teams” identified through comprehensive prequalification and bid evaluation
  - Performance accountability of contractors maintained through fixed and firm or unit price arrangements
- Labor Management
  - Positive experience to-date – good productivity, minimal grievances
- Interface and Integration Management
  - Strong Project Delivery Team in-place actively managing key interfaces