Sept 2013 Briefing deck presented by Project team to CEO and VP Cap costs in the range of $6.7B to $6.95B

There are two decks included the first was primarily focused on the award recommendation of the CH0007 contract to Astaldi.

The second deck provided an indicative level review of Final Forecast cost and the direction that was taking following some early concerns

The project team alerted senior leadership to the emergence of strategic risks in the form of bids that were recived with productivity assumptions of labour well outside of the productivity ranges that SNC used when the DG3 estimate was developed. A serious cause for concern however the deck also included the ongoing mitigations that the Project team were employing in order to drive the bids down in price

pre meeting
Calendar Entry
Thu 09/12/2013 1:15 PM - 2:00 PM

Rooms: LVL5CNF1 - Muskrat Falls/Hydro Place@NLHydro
No Location Information

Required:	Brian Crawley/NLHydro@NLHydro, Gilbert Bennett/NLHydro@NLHydro, Jason Kean/NLHydro@NLHydro, Lance Clarke/NLHydro@NLHydro, Ron Power/NLHydro@NLHydro

Description

SEPT 2013

$6.95B

Hide Details

Contracts - Way forward (Mtg 1 of 2)

Thu 09/12/2013 2:00 PM - 3:00 PM

Attendance is **required** for Paul Harrington

Chair: **Bev Tucker/NLHydro**

Rooms: LVL6BRD1/Hydro Place@NLHydro

No Location Information

	This entry has an alarm. The alarm will go off 5 minutes before the entry starts.
Required:	Brian Crawley/NLHydro@NLHydro, Ed Martin/NLHydro@NLHydro, Gilbert Bennett/NLHydro@NLHydro, Jason Kean/NLHydro@NLHydro, Lance Clarke, Paul Harrington/NLHydro@NLHydro, Ron Power/NLHydro@NLHydro

Description

Personal Notes

Contracts - Way forward (Meeting 2 of 2)

Hide Details

Fri 09/13/2013 11:45 AM - 2:00 PM

Attendance is **required** for Paul Harrington

Chair: **Bev Tucker/NLHydro**

Rooms: LVL6BRD1/Hydro Place@NLHydro

No Location Information

This entry has an alarm. The alarm will go off 5 minutes before the entry starts.	
Required:	Brian Crawley/NLHydro@NLHydro, Ed Martin/NLHydro@NLHydro, Gilbert Bennett/NLHydro@NLHydro, Jason Kean/NLHydro@NLHydro, Lance Clarke, Paul Harrington/NLHydro@NLHydro, Ron Power/NLHydro@NLHydro

Description

Personal Notes

Hide Details

LC Exec Com Bi-Weekly Meeting

Fri 09/13/2013 9:00 AM - 12:00 PM (Repeats)

Attendance is **required** for Paul Harrington

Chair: Kathy Winsor/CRP/NLHydro

Rooms: LVL1CNF1 - Bay D'Espoir/Hydro Place@NLHydro

No Location Information

This entry has an alarm. The alarm will go off 5 minutes before the entry starts.

Required:	Brian Crawley/NLHydro@NLHYDRO, Catherine Squire/NLHydro@NLHydro, Darren Debourke/NLHydro@NLHYDRO, Dawn Dalley/NLHydro@NLHydro, Derrick Sturge/NLHydro@NLHydro, Gerard McDonald/NLHydro@NLHydro, Gilbert
Optional:	Jason Kean/NLHydro@NLHydro
Repeats:	This entry repeats ⊞ View Dates

Description

Personal Notes

Powerhouse and Spillway Recommendation of Award

10-Sept-2013

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LOWER CHURCHILL PROJECT

Process

- Followed standard LCP procedures
- Separate technical and commercial teams
- All necessary corporate functions tied in per our process
- Cold eyes underway
- Excomm review

Commercial Results

- Target price (labour only) with LMAX and lump sum options
- Bidder 1 NTE - $2B TC - $1.82B
- Bidder 2 NTE - $1.149 B TC- $ 1.085B
- Bidder 3 NTE - $ 1.9B TC - $1.54B
- Bidder 4 LS - $ 1.251B

Readiness

- AFC drawings
- Claims mitigation plan
- Must set up union alignment strategy
- When can we provide:
  - unrestricted access to powerhouse and spillway
  - access to Contractor lay down areas
  - power being available
  - accommodations being available for site staff

Recommendation

- Completion of all internal due diligence, cold eyes reviews
- Alignment with Nalcor Board and Shareholder
- Have preferred contractor sign off on site acceptance
- By September 16th Issue Limited Notice To Proceed (LNTP) to BIDDER 2 which allows Contractor to maintain schedule and start mobilizing people and equipment. Financial exposure is capped
- Complete the final contract drafting and any remaining issues with the execution of the Contract October 31 2013. This period also provides an opportunity for greater alignment and relationship building with the Contractor

Questions

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Re: FFC
Jason Kean
to:
Paul Harrington
09/11/2013 10:49 AM
Cc:
Lance Clarke
Hide Details
From: Jason Kean/NLHydro
To: Paul Harrington/NLHydro
Cc: Lance Clarke/NLHydro
History: This message has been replied to.
I will meet with George at 1pm to review

Sent from my iPad

On 2013-09-11, at 10:46 AM, "Paul Harrington" <PHarrington@lowerchurchillproject.ca> wrote:

Jason
we are meeting with Ed Thursday PM- the subject is CH0007 but he will ask about FFC. Has George been able to produce the range of FFc based on our last meeting? - that would be very helpful - And if a simple deck showing the major adds and takes sorted by the largest number could be provided that would also be a big help- I would drop the step chart - it tends to push Ed off the message
Thanks Paul

Paul Harrington
Project Director
PROJECT DELIVERY TEAM
Lower Churchill Project
t. **709 737-1907** c. **709 682-1460** f. **709 737-1985**
e. **PHarrington@lowerchurchillproject.ca**
w. **muskratfalls.nalcorenergy.com**

Final Forecast Cost Update

Presentation to Nalcor Executive

12-Sep-2013

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Purpose

- To provide an update on the "indicative" level review of the Final Forecast Cost (FFC) presented in late August.

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Final Forecast Cost Update

Presentation to Nalcor Executive

12-Sep-2013

Boundless Energy

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LOWER CHURCHILL PROJECT

Purpose

- To provide an update on the "indicative" level review of the Final Forecast Cost (FFC) presented in late August.

Key Messages (1/2)

- We are forecasting the FFC to be the range of ~$6.7 to $6.95B (8 to 12% beyond the DG3 estimate).
  - High-side FFC includes some growth allowance
  - Low-side FFC assumes continued suggest in contract awards and minimal post award changes

- Two key drivers for FFC increase:
  - View on labor performance and productivity achievable within the Province for civil works
  - Contracting market conditions driving margins

Key Growth Areas

- Three (3) key areas drive the overall growth:
  1. Powerhouse, Intake and Spillway = $400 M
  2. Transmission Civil Works Construction = $150 M
  3. Converter and Switchyards = $150 M

CH-0007

- Exposure is driven by person-hours – 3.0 million MH difference - ~$300 million
- Astaldi assumes significantly more in directs to achieve our productivity expectations – translates into significantly more labour cost
- Astaldi are setting-up the workface to achieve optimal productivity

CH0007

- We need the contractor to earn its full bonus + more
- Key to upside is reducing person-hours, through supervision, quality craft labor, work organization and planning.
- Work with the contractor to make the project successful.
- Could allow us to achieve the Target (or do better).
- But plan for worse-case.

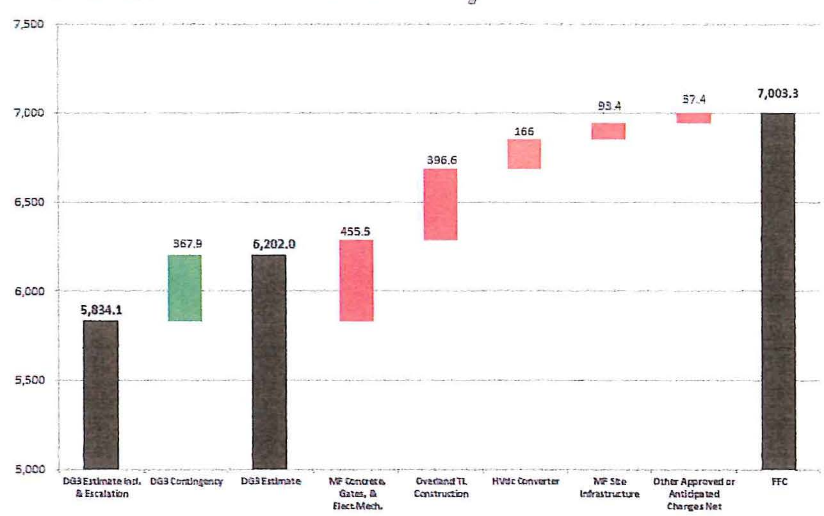
Key Messages (1/2)

- Bid prices for civil works are high
  - Contractor's view on labor productivity and performance - Long Harbour and Hebron driving the perception
  - Market conditions favour larger margins/profits- especially converters and transmission
  - No/low contractor risk appetite for work in NL

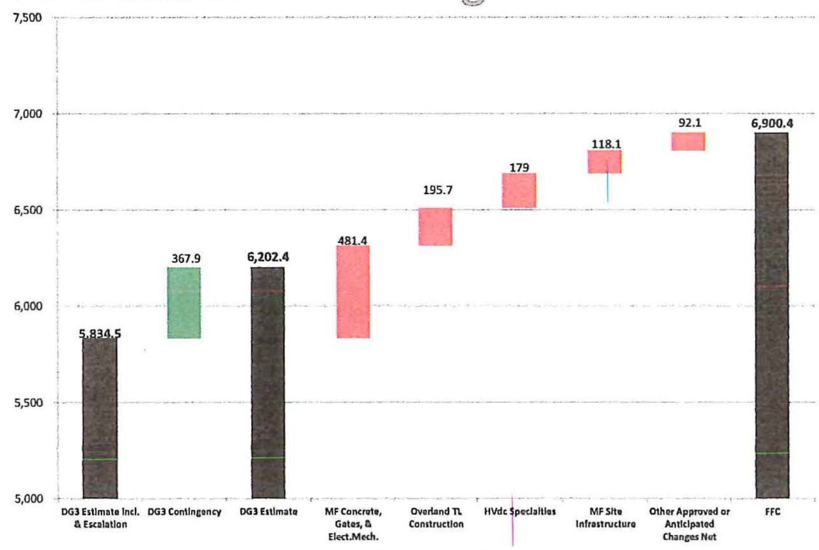
Key Messages (2/2)

- Cash flow has shifted out since DG3 – uncertain of impact on overall In-Service Cost
- Equipment Supply cost have been either better or comparable than DG3 estimate
- Overall quantities to be installed has generally remained steady
- CDN $ weakening against USD, however not seen as large exposure
- We are directing attention on how to mitigate this and future exposure

FFC Outlook – late July



FFC Outlook – late August



Mitigating Actions

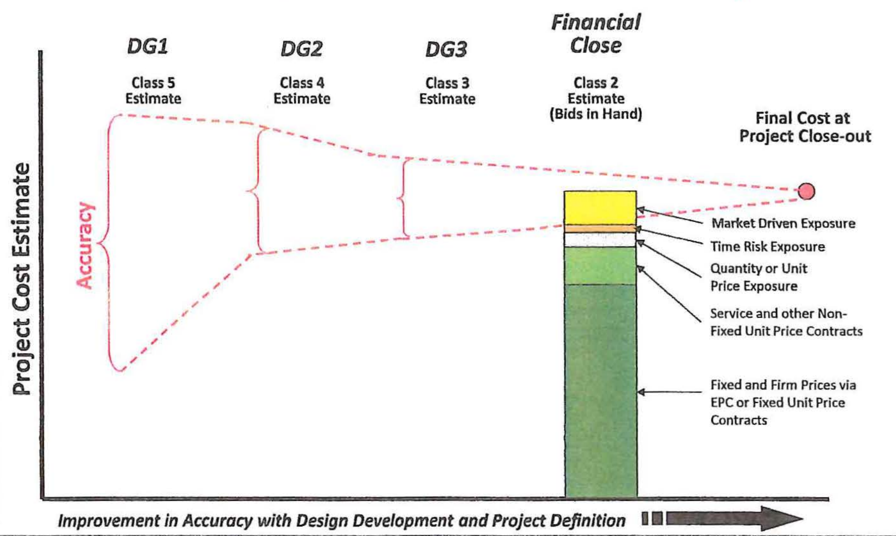
- Evaluating alternate contracting models
  - E.g. partnership arrangement for transmission construction
- Alternate commercial models
  - Target price and KPIs
- Expand local civil contractor market
- Finding ways to avail of our good labor agreements
- Optimizing construction schedule
- Mitigating areas of potential change order exposure
  - Transmission material availability and issue
- Reviewing contract risk transfer strategies
  - Are we getting what we are paying for?

Exposure if Mitigations are Successful

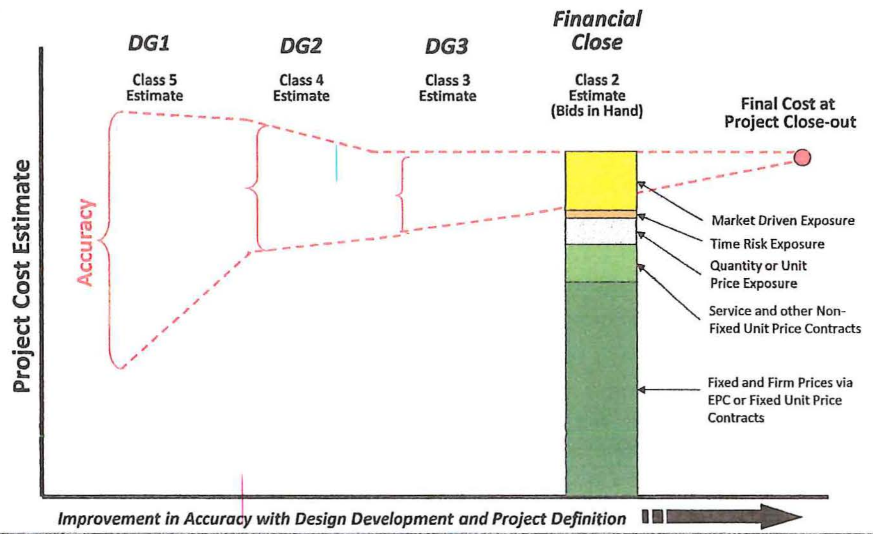
- Potential reduction in FFC by ~$100 million
  - Converter equipment specification and alternate civil construction approach

- FFC would be reduced to $6.8 B.

DG3 Estimate + 18 Months View: *Expected*



DG3 Estimate + 18 Months View: *Actual*



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What is Driving the FFC (1/5)

1. **Powerhouse Concrete and Civil Works (i.e. CH-0007)**
   - Our largest contract and will be presented for approval in late August
   - 4 bids received; wide variance in bid prices between N. American and European firms. Focusing negotiations with 2 bidders, however both are beyond DG3 estimate.
   - Approx. 1/3 of FFC delta attributable to design development
   - Balance attributable to contractor risk perception. Contractors view NL as a difficult and expensive place to carry out work, plus the civil/local contractors are feeding this with high pricing and productivity concerns
   - Contractors have concerns with the large quantities of concrete, the availability of labour and the complexity of the undertaking
   - Target Cost Model introduced to facilitate sharing of labour risk
   - Have relaxed diversion window in order to help contractor be successful

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What is Driving the FFC (2/5)

2. Transmission Line Construction

- HVac bids were 30% higher than DG3 estimate. Trend included for HVdc in FFC.
- Bid prices reveal significant delta on productivity for tower erection
- Contractor margins beyond typical, reflecting heated market – there are limited contractors who can execute the large, complex scope and they are very busy within N. America – they dictate price
- Contractors are including risk premiums to cover concerns of labour, regulatory, aboriginal, civil works, access and local contractors
- Increase tonnage due to inclusion of tower loading safety margins
- Project Team is exploring alternative risk sharing execution frameworks with major transmission contractors
- Mobilizing additional construction management expertise to the team through specialist Construction Management consultants

What is Driving the FFC (3/5)

3. HVdc Converters and Transition Compounds

- 3 Bids recently received, all of which are significantly higher than budgetary prices each provided for DG3. Lowest bid included in FFC.
- The HVdc converter market is very active and the pricing reflects the dominant position that the suppliers currently enjoy
- The contractors view NL as a difficult and expensive place to carry out work and have built in large risk premiums in their bids, plus the civil/local contractors are feeding this with high pricing and productivity concerns
- Despite meetings at Senior levels with the bidders – local contractor civil costs continue to drive up the contract prices disproportionately
- Project is reviewing design and ways to cut scope and overall costs

What is Driving the FFC (4/5)

4. Muskrat Falls Infrastructure

- Many IBA related contracts involved which are proving to be costly and challenging
- Permanent camp is delayed – contractor performance and sub supplier Chapter 11
- Temporary camp and services required because of delays to permanent camp
- Inadequate SLI Construction management required Nalcor intervention and command and control
- Site services have been badly managed by SlI requiring Nalcor intervention at a late stage
- Demonstrations, site disruptions and forest fires have all contributed to loss of productivity, delays and claims from the contractors which are built into the FFC

What is Driving the FFC (5/5)

5. All Other Items Net FFC Impact

- Reflects market premiums for other civil works, incl. North Spur Stabilization, Synchronous Condensers, and Switchyards
- Site Services and CM costs resulting in from movement of First Power from target of mid to end of 2017
- Switch from EPCM to EPC model for Synchronous Condensers and Switchyards
- Removal of Holyrood Synchronous Condenser Conversion Scope
- SOBI Cable crossing savings, incl. reduced route, embedded fibre

Bid Prices incl. some amount of Strategic Risk Exposure

Performance Risk Exposure

The performance rates /norms and indirect estimates used in the estimate, including the estimate contingency, are based upon historical performance for similar hydro-projects and are predicated upon achieving the envisioned labor strategy and rare much better than what is being experience in Long Harbour (restrictive work practices). Contractor mark-ups for unit price agreements could be excessive if there is a perception risk that the labor strategy will not materialize.

Experience front-line supervision, a key to performance, is now a world market and will likely experience high demand during this project.

Competition for Resources

The estimate for MF is based upon the labor rates in the Hebron Agreement. Given that the total project has approx. 18 million person-hours of labor requirements (including Owner + PMT + Services), it is likely to compete with Western Canada for labor. The wages used for estimating are slightly lower than Western Canada, but NL have larger union premiums resulting in lower take-home compensation. In addition completion bonus are planned for Western Canada.

Escalation allowance assumes between 3 and 3.5% annual increase in labor cost.

Schedule Risk Exposure

There is a potential time or schedule risk exposure for beyond the plan due to the weather and volume of work in the powerhouse. The current schedule for MF assumes achievable performance in the powerhouse concrete, however the sustainability of the required production rates for placement of the ~460,000 m3 of concrete through-out several winters will be challenging.

Maintaining a October 2012 start of Bulk Excavation is considered critical to maintain the overall program.

Supplemental Information

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FFC Review Basis

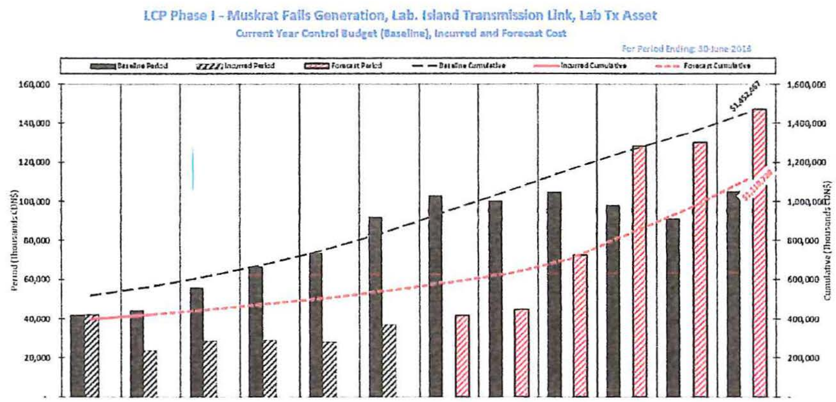
- Considers cost reporting up to 30-Jun-2013
- Leverages insights from all RFP submittals received up to same period

Anchoring Back: DG3 Estimate

LCP Phase 1 (Excluding Maritime Link)
DG3 Estimate Summary (millions Jan 2012 CDN $)

	MF	LTA	LITL	Totals
Base Estimate	$2,511.92	$601.31	$2,359.61	$5,472.84
Contingency	$226.69	$54.83	$86.48	$368.00
Escalation Allowance	$162.54	$35.44	$163.66	$361.64
Totals	$2,901.15	$691.58	$2,609.75	$6,202.48
% of Total	46.8%	11.2%	42.1%	100.0%

Expenditures & Progress Significantly Lag DG3 Plan



Period	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Baseline (OCB)	41,863	44,991	56,040	68,374	73,458	91,786	102,972	100,378	104,808	99,099	91,041	105,069
Incurred	41,915	23,857	28,541	29,036	28,240	36,684	-	-	-	-	-	-
Forecast		-	-	-	-	-	41,976	44,966	72,761	128,614	130,427	147,239
Cumulative	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13
Baseline (OCB)	316,143	362,434	418,474	484,848	758,906	850,100	953,072	1,053,450	1,158,258	1,256,357	1,347,398	1,452,467
Incurred	396,370	432,295	460,727	479,813	508,053	544,737	-	-	-	-	-	-
Forecast							586,719	631,679	704,440	833,054	963,481	1,110,720

Note 1: OCB = Original Control Budget reflects Nalcor Energy LCP's DG3 Approved Capital Budget

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