

From: [Paul Harrington](#)
To: [lance.clarke@](#) [Brian.Crawley@](#)
Subject: Fwd: Estimate Chronology
Date: Wednesday, May 10, 2017 10:23:05 AM

Input from Jason

Sent from my iPhone

Begin forwarded message:

From: Project Solutions <[project.solutions@](#) >
Date: May 10, 2017 at 8:16:58 AM EDT
To: Paul Harrington <[pharrington@](#) >
Cc: Jason Kean <[project.solutions@](#) >
Subject: Re: Estimate Chronology

I will leave you to forward to Ed as you see appropriate.

JK

Jason R. Kean, P. Eng., MBA, PMP
Principal Consultant
Project Solutions Inc.

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On May 10, 2017, at 9:24 AM, Paul Harrington
<[pharrington@](#) > wrote:

Thanks Jason

Sent from my iPhone

On May 10, 2017, at 7:49 AM, Project Solutions
<[project.solutions@\[REDACTED\]](mailto:project.solutions@[REDACTED])> wrote:

Paul,

Please find below a quick snapshot of the LCP Cost Estimate development chronology. I have not overlaid these dates with actual events such as bids received, or % construction complete. I suggest this could be done to create a more fulsome picture. The first attachment provides a high-level review of the progression of LCP costs.

<MF Project Capital Cost Overview June 2016.pdf>

Spring 2010 - DG2 Estimate released at \$5.0B

Winter 2011 - DG3 estimate development kick's off. Details of process contained in the DG3 Basis of Estimate Report.

Dec 15, 2011 - SLI Phase 2 Deliverable due and submitted which included Cost Estimate for the components SLI falling within the EPCM Services Agreement (i.e. C1, C3 and C4). This estimate as produced by SLI was considered poor quality as it did not follow the requirements specified in the EPCM Services Agreement as it relates to the approach to develop the estimate. Upon receipt of this deliverable, Mark Turpin and myself re-organized the SLI estimating resources under our direction.

Jan and Feb 2012 - Re-alignment of SLI produced estimate, addressing punch list items, etc. in order to produce an estimate suitable for use.

March 2012 - 1 week estimate process review by John Hollmann - very positive findings

Spring 2012 - Manitoba Hydro's review of DG3 estimate and estimating process as reported in the MHI October 2012 report - positive findings

May 2012 - Westney Risk Assessment completed in order to recommend Estimate Contingency and risk exposure beyond estimate contingency. It is from this analysis that the P50 estimate contingency of \$368M was

established.

Mid-July 2012 - Final review of estimate with CEO prior to submittal to Investment Evaluation. See attached deck.

<2012-07-16 - DG3 Estimate Update to CEO.pdf>

July 2012 - Final DG3 Estimate locked down at \$6.2B excluding IDC. Estimate provided to Investment Evaluation for CPW modelling.

December 2012 - Project Sanction at \$6.2B (P50 estimate contingency and excluding allowance for strategic risk as to be covered by management reserve / contingent equity)

September 2013 - CH0007 Contract Awarded to Astaldi at ~\$300 M more than budget - significant drawdown on contingency to make this happen. Contractor price considered to include provision for strategic labor supply and productivity.

September 2013 - Briefing to Nalcor Executive re FFC increase from \$6.2 to \$7.0B driven by market pricing conditions. - see attached

<2013-09-12 - FFC Briefing to Nalcor Executive.pdf>

December 2013 - Financial Close occurs at \$6.53B (consistent with briefings provided to IE and Canada in November 2013)

June 2014 - AFE Rev 1 approved at \$6.99B

March 2015 - Internal briefings on FFC which is forecasted at \$7.65B and assume Astaldi maintain LMax and recover to original plan. It is noted that \$7.65B will get the Project to mid 2016 only and has several major exclusions.

September 2015 - AFE Rev 2 approved at \$7.65B

Feb and March 2016 - QRA Update completed which forecasts completion costs at \$9.1B (assuming \$500M contribution towards Astaldi's completion)

Jason

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