

BCUC Site C Inquiry: What We Have Learned So Far

ROBERT MCCULLOUGH
SEPTEMBER 13, 2017

BCUC Site C Inquiry: What We Have Learned So Far

- The BCUC released their terms of reference on August 1, 2017
- On August 30, 2017, the BCUC received 3,955 pages from over one hundred parties
- British Columbia Hydro submitted 866 pages with very little new information
- On September 8, 2017, Deloitte submitted two reports comprising 255 pages
- The vast majority of the submissions are deeply critical of Site C economics and environmental impacts

Report 1: Deloitte's Site C Construction Review

- Key Deloitte Findings:
 - On Delays and Cost Overruns – There is likely to be a cost overrun of \$1.7 to \$4.3 Billion or 10 % percent to 50% percent.
 - 1. Site C faces a real risk that it could miss the 2019 Start of River Diversion costing BC Ratepayers \$1.7 to \$4.3 billion more.
 - 2. Canadian hydroelectric dams usually experience significant delays and cost over-runs. Recent projects in Manitoba and Newfoundland had cost overruns of 55% to 90%.

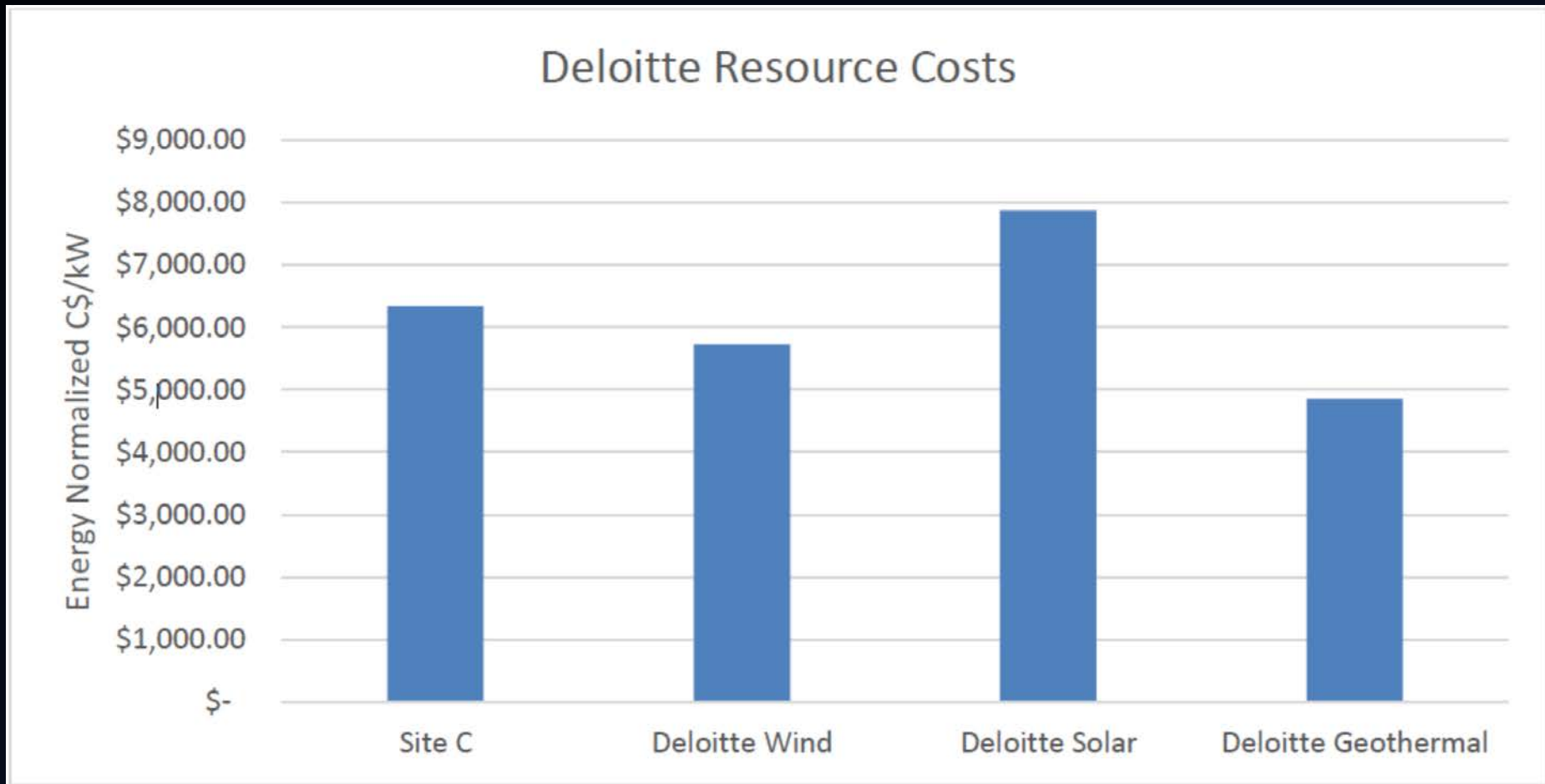
Report 2: Deloitte's Site C Alternative Resource Options and Load Forecast Assessment

- **On Energy Demand – Site C is not needed.**
- BC Hydro systematically overestimates demand for electricity by up to 30.8%.
- Deloitte's revised forecast shows that Site C is not needed. Put another way, the amount by which BC Hydro has exaggerated forecast demand for electricity is larger than the capacity and energy provided by Site C – 1,100 MW and 5,100 GWh.
- Both Deloitte and BC Hydro forecast higher demand for electricity than Bloomberg, Wood Mackenzie, ABB Power and PIRA Energy.

Alternative Resources

- On Alternatives to Site C – There are environmentally friendly and less costly alternatives to Site C – primarily geothermal and wind
- 6. Deloitte used their revised electricity demand forecast and power generation options to produce an environmentally friendly and less costly power generation portfolio existing hydro upgrades, geothermal, and wind.
- 7. In its power generation portfolio, Deloitte used a price for wind power that is higher than the price achieved elsewhere in North America.

Deloitte Resource Costs



What is critically important to the decision to terminate Site C?

- 1. The real cost of Geothermal and Wind are a fraction of the real cost of Site C making termination the correct decision.
- 2. We do not need Site C for dispatchability. In fact BC Hydro's load forecast says we need minimal new capacity.
- 3. Any excess Site C power cannot be sold at a profit to the US.
- 4. The demand forecast of BC Hydro is highly overstated.

The real cost of Geothermal and Wind are a fraction of the real cost of Site C making termination the correct decision.

- Renewables are in the midst of a world wide revolution – outside of British Columbia
- Oregon and Washington – the two U.S. states most similar to British Columbia have ten times the wind capacity of British Columbia (6,288 MW)
- Ontario and Quebec have almost as much wind capacity (4,302 MW)
- Economies of scale have caused a tremendous price reduction

Wind Price Reductions



We do not need Site C for dispatchability. In fact BC Hydro's load forecast says we need minimal more capacity.

- The Northwest Power Pool has upwards of 80,000,000 acre-feet of hydrological storage.
- Site C has only .4% of the storage of Williston
- “The Project reservoir, with a normal operating range of 1.8 m and an active storage volume of 0.4 per cent of the active storage volume of Williston Reservoir, does not have sufficient storage volumes to provide seasonal shaping of generation.” *BCH Site C submission, Appendix F, page 3.*

Existing NWPP Storage and Site C



Williston

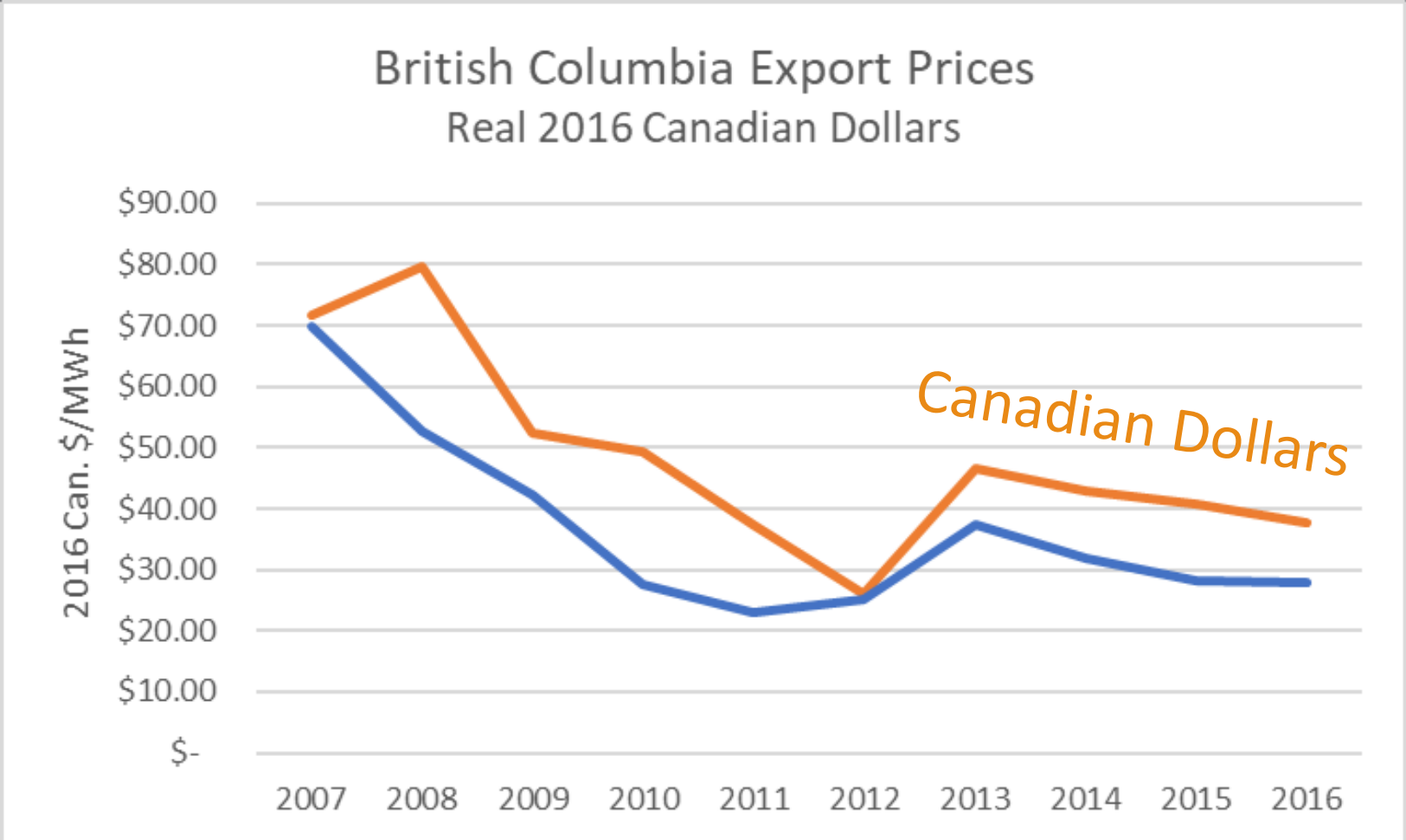


Site C

Any excess Site C power cannot be sold at a profit to the US

- Export prices have declined precipitously over the last decade
- In real terms British Columbia exports are selling for 50% their level in 2007
- Forward markets indicate that Mid-Columbia prices will be lower in 2019 than 2017
- Additional zero marginal cost resources have a downward impact on power markets

Any excess Site C power cannot be sold at a profit to the US.



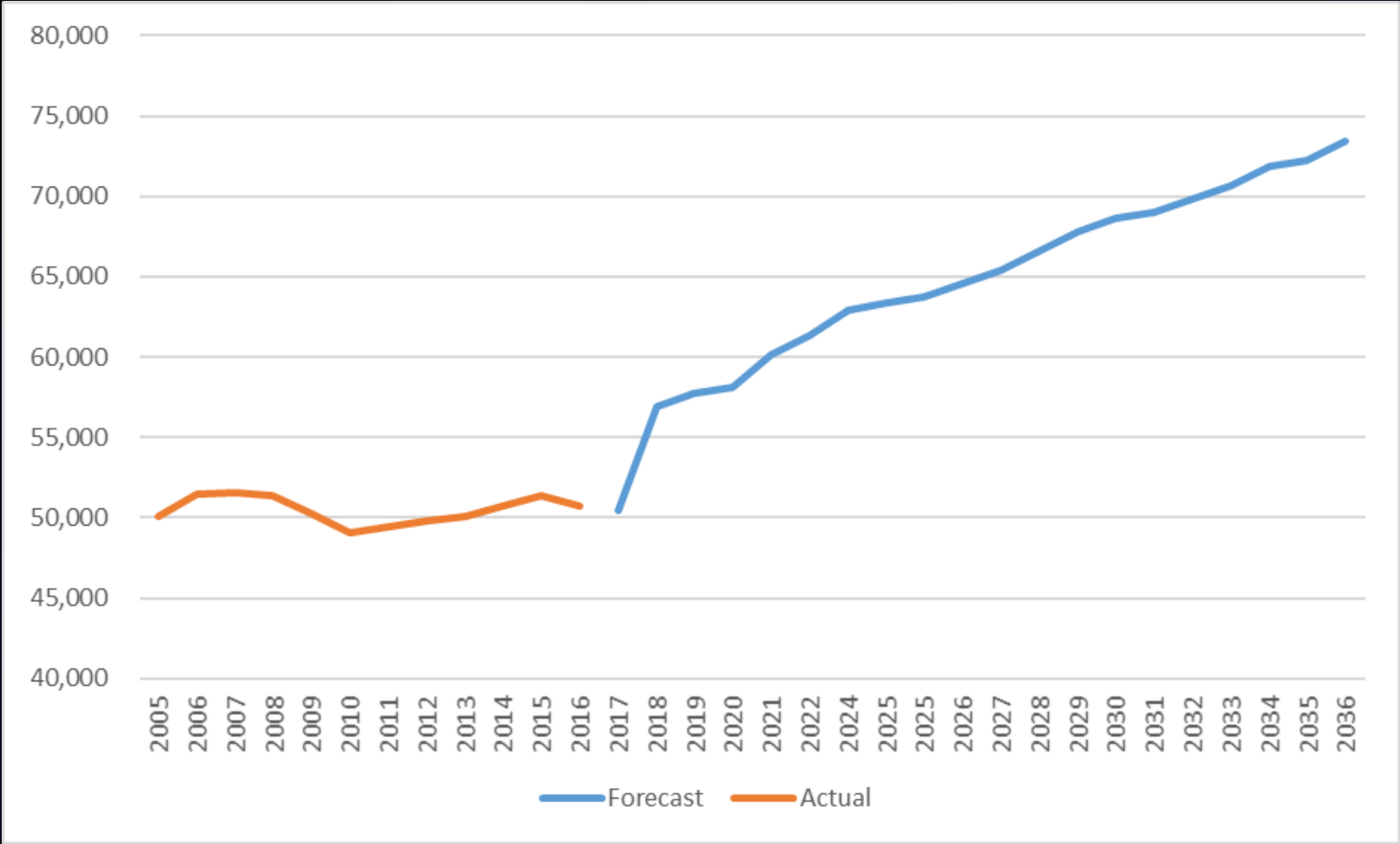
4. The demand forecast of BC Hydro is highly overstated

“5.2 Demand for Electricity is Increasing

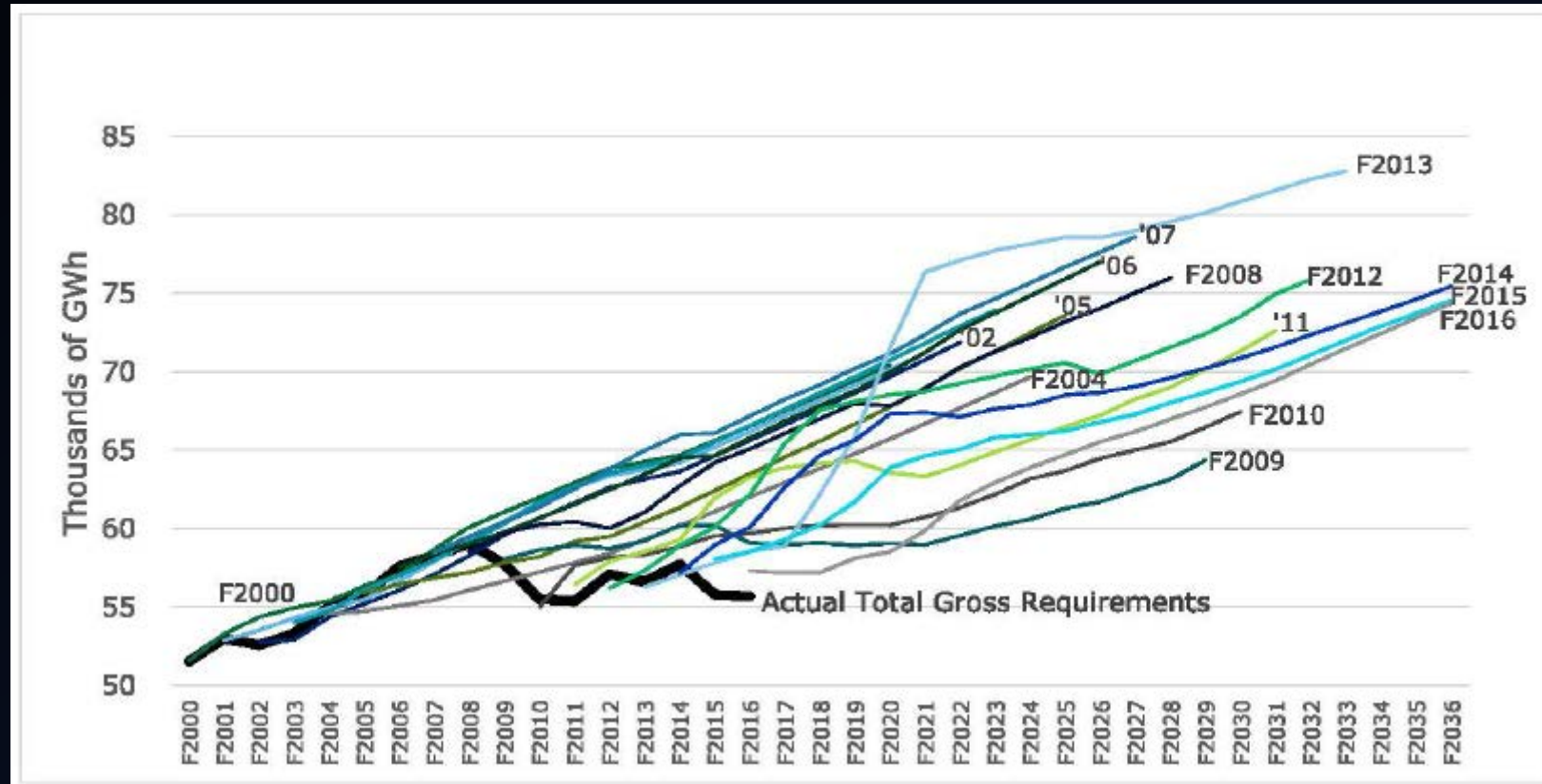
In this section we set out our expectations for customer load. Our Current Load Forecast identifies continued load growth. As shown by Figure 8, while the recession of 2008 resulted in a decrease to customer load, since that time load growth has resumed and has been substantial on a before-DSM basis. Please see **Appendix H** for a discussion of BC Hydro’s load history.”

BCH Submission, page 44

Actually, Demand is Much Different



Past demand forecasts of BC Hydro have been highly overstated





Thank you.

- Robert McCullough
- McCullough Research
- www.mresearch.com