

McCULLOUGH RESEARCH

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To: McCullough Research Clients

From: Robert McCullough
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Subject: Market Cost of the Columbia Generating Station During the FY 2014/2015 Refueling Cycle

The Columbia Generating Station (CGS) has shared the problem of economic obsolescence with a number of superannuated nuclear plants across the U.S. and Canada. Falling natural gas prices, coupled with an increase in zero marginal cost renewable resources have exacerbated the effect of the increasing costs of maintaining equipment originally introduced during the 1970s. In October, a New York unit very similar to CGS, Entergy's Fitzgerald, announced its closure due to economic reasons.

During the FY 2013/2014 and FY 2014/2015 refueling cycle, the Columbia Generating Station cost Pacific Northwest customers \$206 million over alternative supplies from natural gas, wind, and hydro. Overall, the cost of purchasing power from CGS raises rates by over 4%, although much of the cost impact is financed by BPA into future years.

In June of 2013, BPA could have replaced the output of CGS with firm purchases at \$34.37/MWh.¹ These would have been system firm supplies with a higher level of reliability than the unit specific supply from CGS. As it happened, actual prices were lower at \$31.02/MWh for the same period – reflecting lower natural gas prices.² Overall, market prices were lower than our previous forecasts.³

Since 2008, the Columbia Generating Station costs have remained above market prices in the Pacific Northwest. All forecasts indicate that this will be the case for the foreseeable future.⁴

¹ Argus U.S. Electricity, June 3, 2013, page 9,

² As today, the Pacific Northwest had significant energy and capacity surpluses over the projected generation at CGS.

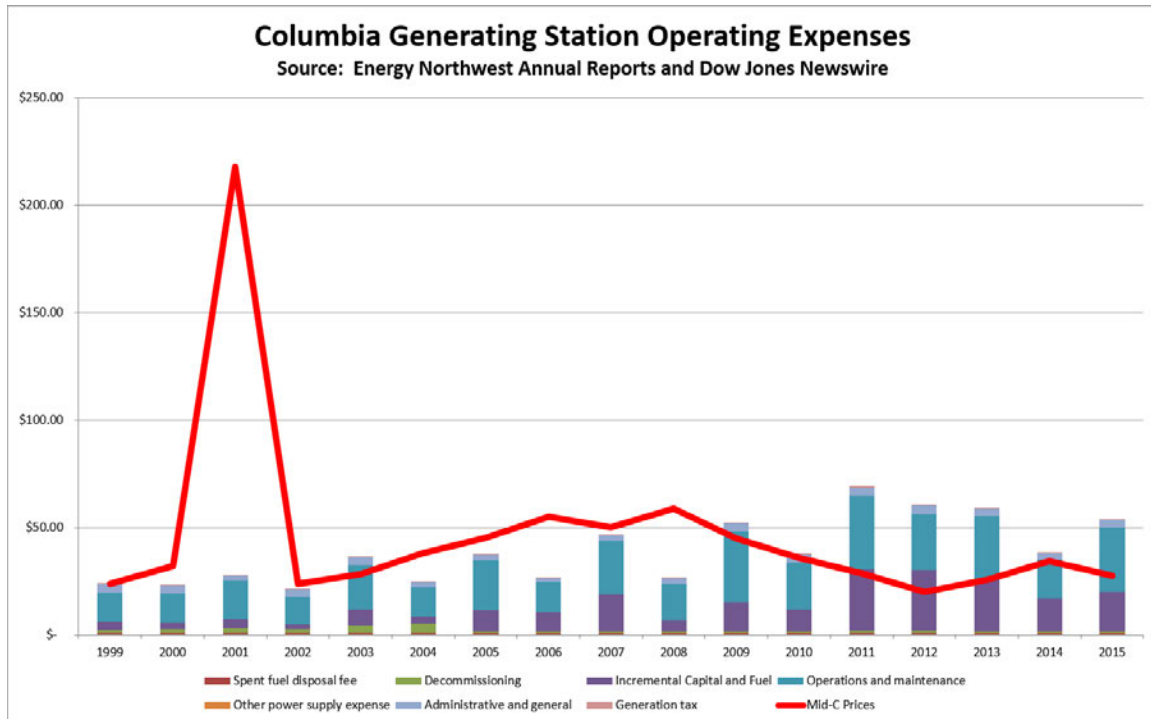
³ The Cambridge Energy Research Associates (CERA) forecast, which was part of a November 2013 report on the financial viability of the CGS commissioned by Energy Northwest, predicted that natural gas would be 40% higher than current actual market prices.

⁴ As referenced in footnote 3, CERA's November 2013 report was an outlier, assuming that natural gas prices would increase dramatically, and stay there in perpetuity. This particular forecast disagreed with the official

Market Cost of the Columbia Generating Station

November 16, 2015

Page 2



McCullough Research first reported on CGS, the Pacific Northwest’s sole commercial nuclear power plant, in December of 2013. At the time of that report, CGS had operating costs that totaled roughly twice the wholesale price of Mid-Columbia electricity.⁵ To date, the plant’s operating costs continue to exceed Mid-C prices; over its two most recent fiscal years, CGS has produced an estimated \$555.3 million of electricity at a cost of over \$761.4 million.

The market value of the nuclear plant’s output is calculated by multiplying the actual output of the facility by the price of electricity in the Mid-Columbia region.^{6,7} Operational costs of

forecasts of CERA’s authors, published on their own website and in other documents they prepared contemporaneously and has, thus far, proven extremely inaccurate.

⁵ McCullough Research. “Economic Analysis of the Columbia Generating Station.” December 2013. Pp. 11. Available at: <http://www.mresearch.com/pdfs/541.pdf>

⁶ CGS generation data has been received from Energy Northwest, the entity responsible for its day-to-day operations, through regular public records requests.

⁷ Mid-C prices taken from historical issues of “Megawatt Daily,” Platts: McGraw Hill Financial. 2013-2015.

the plant are publicly reported in Energy Northwest’s two most recent financial Annual Reports.^{8,9} The following table presents a comparison of CGS’s cost with the value of its electricity production for the last two fiscal years:¹⁰

Energy NW FY 2014	Value of Generation (EN hourly data)
Q1 (July-September 2013)	\$81,581,982.52
Q2 (October-December 2013)	\$96,533,035.60
Q3 (January-March 2014)	\$96,646,520.17
Q4 (April-June 2014)	\$57,781,000.34
Total	\$332,542,538.63
Energy NW FY 2015	Value of Generation (EN hourly data)
Q1 (July-September 2014)	\$80,142,743.35
Q2 (October-December 2014)	\$75,892,286.03
Q3 (January-March 2015)	\$44,704,521.09
Q4 (April-June 2015)	\$22,002,109.77
Total	\$222,741,660.24
Energy NW	Total Operating Costs
FY 2014 Annual Report	\$363,204,000.00
FY 2015 Annual Report	\$397,900,000.00
Total 2-year Value	\$555,284,198.87
Total 2-year Costs	\$761,104,000.00

The organization of CGS, its ownership, and its operation is unique. The Bonneville Power Administration (BPA) is contractually committed to pay all of the plant’s costs on an ongoing basis. The actual costs are recovered through increased BPA rates.

Calculation of the rate impact is complicated further by the intricate puzzle box nature of BPA’s rate calculations where each piece requires the shift of many other pieces to see the final result.

⁸ <http://www.energy-northwest.com/whoweare/finance/Documents/2014%20Energy%20Northwest%20Annual%20Report.pdf>

⁹ <http://www.energy-northwest.com/whoweare/finance/Documents/2015%20Annual%20Budget/Final%202015%20CGS%20Long%20Range%20Plan.pdf>

¹⁰ Energy Northwest’s fiscal year runs from July 1 through June 30.

Market Cost of the Columbia Generating Station

November 16, 2015

Page 4

Over Energy Northwest's two fiscal years comprising the refueling cycle which just ended, Energy Northwest received direct payments of \$628,374,000 from BPA.¹¹ The additional costs of operating the Columbia Generating Station are folded into interest and repayment commitments for current and future years.

Over the period in question BPA's Gross Sales totaled \$5,033,284,000. Operating expenses for the Columbia Generating Station were 12.5% of the total. During this period, BPA could have saved \$73,090,000 by purchasing from regional markets. If this approach had been adopted, BPA's revenues (and its rates) would have been 1.45% lower. Since most of the additional costs occur in amounts to be paid in future years, the actual impact is more on the order of 4.09% as BPA "pushes ahead" the increasing cost of the nuclear unit.

¹¹ BPA Quarterly Packages for BPA Fiscal Years 2013, 2014, and 2015.