

State of Vermont
Public Service Board

Docket No. 6545

Investigation in General Order No. 45)
Notice filed by Vermont Yankee Nuclear)
Power Corporation re: proposed sale)
of Vermont Yankee Nuclear Power Station)
and related transactions)

SURREBUTTAL TESTIMONY OF
BRUCE EDWARD BIEWALD
ON BEHALF OF THE
VERMONT DEPARTMENT OF PUBLIC SERVICE

Synapse Energy Economics, Inc.
22 Pearl Street, Cambridge, MA 02139

March 18, 2002

Summary: Mr. Biewald's surrebuttal testimony addresses the costs, benefits, and risk considerations of the proposed sale of Vermont Yankee.

Q. Please state your name.

A. My name is Bruce Edward Biewald.

Q. Are you the same Bruce Biewald who prepared testimony on the economics of the proposed sale of Vermont Yankee filed on January 7, 2002 in this docket?

A. Yes.

Q. What is the purpose of this surrebuttal testimony?

A. This surrebuttal testimony provides an adjusted economic analyses of the proposed sale of Vermont Yankee. These analyses presented here reflect new information from Vermont Yankee witness Bruce Wiggett's rebuttal testimony and exhibits, as well as new market price forecasts developed by CVPS and by LaCapra Associates for GMP. It also addresses questions raised by the Board on February 15, 2002. In addition, this testimony addresses the discussion of the risk implications of the proposed transaction in the rebuttal testimony of CVPS witnesses James Cater and William Deehan.

Economics of the Proposed Transaction

Q. What scenarios have you analyzed?

A. I have run several sets of cases. The basic methodology is the same as that used for the analysis described in my direct testimony in this case. The new cases presented here are different only in terms of the input data. The sets of cases presented here are the following:

First, I present two items that were inadvertently omitted from my direct testimony – the results for the “capacity factor sensitivity case” and the “decline case.”

Second, I present results analogous to those in my direct testimony, updated to recognize changes from VY witness Bruce Wiggett and Department Witness David Effron.

Third, I present results for a set of cases with a range of forecasts, including the CVPS forecast and the LaCapra forecast.

Fourth, I present results for a “Case B” described in Department witness William Sherman’s surrebuttal testimony. This case has particular inputs selected from the range between VY’s reference case and Synapse’s reference case.

Q. Please describe the “capacity factor” and “decline” sensitivity results?

A. For the capacity factor sensitivity, the result is symmetrical. A five percent higher capacity factor decreases the value of the sale by \$50 million (2001 present value dollars) and a five percent lower capacity factor increases the value of the sale by \$50 million. For the decline scenario, we found that with a one percent annual decrease in capacity factor and a one percent annual increase in O&M costs (these are during the license extension period only) results in a \$102 million (in 2001 present value dollars) increase in the value of the sale.

Q. Why were these cases not presented in your direct testimony?

A. This was inadvertent. I had run those cases, but in completing my testimony and exhibits they were unintentionally omitted.

Q. Is it a simple matter to calculate the results for those sensitivity cases?

A. Yes. With my excel workbook for the reference case calculations it is a reasonably straightforward matter to change the capacity factors, O&M costs, or other input assumptions and to produce results for alternate cases.

Q. Please describe the updated scenarios.

A. The results presented in my Exhibits DPS-BEB-3 and DPS-BEB-4 with my direct testimony were calculated using inputs from VY witness Bruce Wiggett and Department witness David Efron, among others. In rebuttal testimony, Mr. Wiggett provided updated runs of VY's financial model, which have various changes, most notably higher projected base operating costs, lower projected O&M costs, lower projected shutdown project costs, and higher projected capital costs. Department witness Efron has modified his recommendations with respect to terminal equity, and has provided me with new input data. I have revised my analysis to reflect these changes, and the results are presented in Exhibits DPS-BEB-7 and DPS-BEB-8.

Q. Why do you no longer make the adjustments for NEIL reimbursements, nuclear security costs, and the transaction date in this set of results?

A. I do not make adjustments for NEIL reimbursements, nuclear security costs, and transaction date because these are now reflected in Mr. Wiggett's revised cost projections that my analysis uses as a starting

point.

Q. What is the revised Reference Case result?

A. In my direct testimony filed on January 7, 2002, I presented a reference case result of \$13 million benefit for the sale compared to the keep case (Biewald pft. at 4, line 7). The revised reference case result is a \$39 million benefit for the Sell case compared to the Keep Case. The overall pattern of the results is similar those presented in my direct testimony in this case, but overall the revised results are slightly more favorable for the sale than the previous set of results.

Q. Please describe your results for the other market price forecasts.

A. The Board requested analyses done with a range of reasonable market price forecasts. In addition to the high and low market price sensitivity cases presented in Exhibit DPS-BEB-3 with my direct testimony, and analogous sensitivity cases presented here in Exhibit DPS-BEB-7, I have run cases with the new CVPS February 2002 forecast and with the new LaCapra Associates January 2002 Forecast. Those market price forecasts are presented in Exhibit DPS-BEB-9, and the associated

results are presented in Exhibit DPS-BEB-10. With the lower market price forecasts, the benefits of the Sell Case relative to the Keep Case are greater.

Q. Are those market price forecasts reasonable?

A. In my opinion the DPS 2001 forecast may be high in the near term (given market developments since the time of the forecast) but is reasonable for the mid to long term. The CVPS forecast is low, but within the range of reasonable possibilities. The LaCapra Associates forecast is not reasonable. The LaCapra forecast has the new gas-fired combined-cycle plants in the region barely covering their variable costs (fuel and O&M) in the market. In my view, this could occur for a short period of time – but it is implausible that such conditions would hold for an extended period. The LaCapra forecast has the market in a condition of surplus supply with new plants losing money for more than a decade. Moreover, the near-term prices in the LaCapra forecast are far below current forward prices in the region (e.g., Natsource prices for power deliveries in 2003 and 2004). I also note that GMP, the client for whom the LaCapra forecast was prepared, does not use the forecast directly, but rather concludes that a number of upward adjustments to the LaCapra price

forecast are appropriate.

Q. Why then did you run cases with the LaCapra forecast?

A. I present these cases merely for completeness, to show how the results vary with this forecast, since the LaCapra forecast has been introduced and used by others in this case. I caution that it is my view it would be inappropriate to base a decision upon this forecast.

Q. How did you extend the LaCapra forecast out to 2032 for the analysis of the case with license renewal?

A. The LaCapra forecast was done for the period from 2002 to 2011. For the cases with license extension of the VY plant, it is necessary to have projected market prices through 2032. For the analysis presented here, I applied an annual escalation rate of 4 percent (nominal) to extend the LaCapra forecast. I wish to emphasize that this extrapolation is not based upon any information or opinions from LaCapra staff. Nor is it my own opinion that the 4 percent escalation is reasonable. Because the forecast itself through 2011 is, in my view, unreasonable, I have no rational basis for an opinion on the appropriate extension of that forecast into the future. Rather, I have used the 4% escalation rate merely to illustrate the economic results for the proposed transaction with an

extraordinarily low price forecast.

Q. Please describe your "Case B" input assumptions.

A. To comprehensively respond to the Board's questions of February 15, 2002, I also ran a case described in Department witness William Sherman's surrebuttal testimony with a specific set of assumptions, some from VY, others from the Department witnesses, and some in between. The input assumptions for this "Case B" are identified in Exhibit DPS-BEB-11. It has no capacity uprate or license renewal. It does have the Department's adjustments for the spent fuel payment from DOE and the accounting adjustments recommended by David Effron. For two items, it has an input between the Department's and VY's. Specifically, it has roughly one-half of the Department's annual O&M cost adjustments and it has a lower annual decommissioning cost (i.e., \$11.4 million per year instead of Vermont Yankee's higher figure or the Department's zero decommissioning cost contribution).

Q. Please describe you Case B results.

A. Under this set of assumptions Sale has a \$177 million (cumulative 2001 present value) advantage over the Keep Case. This result is calculated using the DPS market price forecast. In Exhibit DPS-BEB-12, I

also present results for “Case B” assumptions, substituting in the CVPS and LaCapra market price forecasts.

Risk Implications of the Proposed Transaction

Q. Which rebuttal witnesses addressed the risk aspects of the proposed transaction?

A. CVPS witnesses James Cater and William Deehan filed joint testimony which critiqued my direct testimony on the risk implications of the proposed transaction.

Q. Do you agree with the rebuttal testimony of Cater and Deehan?

A. I disagree with aspects of Cater and Deehan’s rebuttal testimony. Despite these disagreements, however, I believe that their overall conclusion – that on balance the sale has risk advantages to Vermont customers – is correct.

Q. What aspects of Cater and Deehan's rebuttal testimony do you disagree with?

A. Messrs. Cater and Deehan apparently misunderstand my direct testimony. First, in their reproduction of my summary table, Messrs. Cater and Deehan fail to include the repair costs and dropped costs. Cater and Deehan pfrt at 7, lines 4 to 9. Second, they assume that the probabilities of an extended outage and of a permanent shutdown are the same regardless of plant ownership. While I did not assign specific probabilities to events, my analysis was structured to allow for the potential that the probabilities would depend upon ownership. While different individuals can and do have different views of how ownership might influence decision-making, it is clear to me that the effect of ownership on decision-making is a key aspect of understanding the risk implications of the proposed transaction. The risk analysis structure offered by Messrs. Cater and Deehan assumes away any differences in decision-making depending upon ownership (i.e., the likelihood of an outage or plant closure is identical in their framework regardless of whether it is owned by VYNPC or by Entergy).

Third, Messrs. Cater and Deehan run their "risk analysis" with scenarios that combine the market price, O&M, and decommissioning cost uncertainties. I believe that it would be better to examine these items

individually in order to better understand the risk implications of the proposed transaction. By lumping a set of assumptions together that all go in one direction (i.e., either favorable or unfavorable to the transaction) one can get a misleading view of the risks. If, for example, in a situation with discrete probabilities, and each individual sensitivity having a ten percent chance of occurring, then the combination of three such sensitivities all occurring would be one tenth of one percent ($0.1 \times 0.1 \times 0.1 = 0.001$). A more sophisticated approach would recognize the combinations in a way that has them sometimes offsetting each other. Presumably, the tools that Messrs. Cater and Deehan have under development but not quite ready (page 15, lines 2 to 6) would address this.

And finally, Messrs. Cater and Deehan observe that there is a discrepancy between their number and my number for the expected MWh output from VY. This difference is, I believe, due to the capacity uprate (in my base case, but not in theirs).

Q. Does this conclude your testimony?

A. Yes.