scenarios due primarily to the life extension costs that would be required to operate Ghent 2 through 2050.

IV. CRITIQUES OF THE JOINT INTERVENORS' MODELING

Q. Have you reviewed the resource modeling presented by Ms. Sommer and the workpapers associated with the two alternative portfolios she developed?[39]

A. Yes.

Q. Please summarize her analysis.

A. First, as I explained earlier, the Companies' analysis was completed in three stages. After developing the economically optimal portfolio for meeting minimum reliability in Stage One, the Companies compared that portfolio to a wide variety of other portfolios in Stage Two. Ms. Sommer did not present any modeling results that disagreed with the Companies' economically optimal portfolio. Rather, like the Companies did in their Stage Two analysis, Ms. Sommer developed two alternative portfolios by introducing additional modeling constraints and new energy efficiency programs based on Mr. Grevatt's testimony.

Q. How did Ms. Sommer model the new energy efficiency programs?

A. In PLEXOS, Ms. Sommer modeled the energy efficiency programs as a reduction to load in years 2025 through 2040. To do this, she applied load reductions up to 1.62 percent, as shown in ~~Table 3~~Table 2, using the same percentage reduction in all hours of each year. In her financial models, she assumed a non-escalating nominal cost for the programs of $30/MWh in all years. In SERVM, Ms. Sommer modeled the 2028

[39] Sommer at 25-35.

for economics and practicability, but it was not included in their PLEXOS modeling, which was an oversight. Regardless, this cost should clearly be included when the wind PPA is included in a modeled portfolio like Ms. Sommer's.

Q. What impact does adding the omitted transmission costs have on Ms. Sommer's analysis?

A. When Ms. Sommer's financial model is updated to include the omitted transmission costs, the PVRR increases by $186 million. This update alone changes the claimed $104 million NPVRR benefit of her "Renewables Plus One NGCC" portfolio in the 30% increased capital cost case to being $82 million NPVRR more expensive than the Companies' proposed portfolio.

Q. What is another concern you have regarding Ms. Sommer's modeled portfolios?

A. As I discussed above, Ms. Sommer included a significant amount of additional energy efficiency savings in her modeled portfolio at a levelized cost of $30/MWh.[42] Regardless of the reasonableness of assuming such savings (I noted my concerns about them above), Ms. Sommer provides no justification for assuming them only in her selected portfolios and not the Companies' portfolio, and I am unaware of any reason why they should not be applied to the Companies' portfolio if they are to be assumed for Ms. Sommer's portfolio. Indeed, the Joint Intervenors recommend that the Commission "[m]odify and approve an expanded portfolio of DSM/EE, as recommended by Witness Grevatt";[43] if the Commission did so, the Joint Intervenors' claimed savings would presumably apply regardless of the approved supply-side portfolio. As I show in ~~Table 5~~ Table 4 below, adding these savings results in a

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[42] *See* Joint Intervenors' Response to Companies' DR 21.
[43] McDonald Corrected Testimony at 4.

effect of my concerns with Ms. Sommer's modeling of detailed production costs using PLEXOS.

Q. What are your concerns with Ms. Sommer's modeling of detailed production costs using PLEXOS?

A. ~~Table 4~~ Table 3 compares production costs from PROSYM through 2030 to the production costs Ms. Sommer developed using PLEXOS for the Companies' recommended portfolio. While PLEXOS is a proven tool for computing detailed production costs, the Companies have not calibrated its inputs and settings for this purpose. For example, for portfolio screening, PLEXOS necessarily utilizes a simplified heat rate curve to dispatch thermal units and estimate fuel costs. However, Ms. Sommer inappropriately used the same simplified heat rate curve to model detailed production costs. In addition, the Companies capture the cost of SCCT starts in PROSYM, but these costs are modeled as shadow costs in PLEXOS such that they impact dispatch decisions but not production costs. Ms. Sommer should have configured PLEXOS to include the cost of SCCT starts when computing detailed production costs. The fact that the production costs from Ms. Sommer's PLEXOS modeling are consistently lower than PROSYM is concerning from a modeling perspective.

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Q. What is the impact of using PROSYM for detailed production cost modeling on Ms. Sommer's analysis of the Companies' recommended portfolio and her "Renewables Plus One NGCC" portfolio?

A. ~~Table 5~~ Table 4 below shows the results of the impact of using PROSYM for detailed production cost modeling on Ms. Sommer's analysis of the Companies' recommended portfolio and her "Renewables Plus One NGCC" portfolio. The first line of the table begins with the PVRR difference between the portfolios according to Ms. Sommer, i.e., it shows the "Renewables Plus One NGCC" portfolio as having a $104 million lower PVRR than the Companies' portfolio. In the second line of the table, the Companies add the $186 million PVRR impact of including transmission cost for the wind resource in the "Renewables Plus One NGCC," which cost Ms. Sommer had omitted.

The third through fifth lines of the table reflect the Companies' use of PROSYM to model their proposed portfolio and the "Renewables Plus One NGCC" portfolio. Note that the Companies modeled their proposed portfolio in PROSYM as Ms. Sommer modeled it in PLEXOS, including the RFP resources Ms. Sommer added to her portfolio and the Companies' portfolio after 2040.

The third line of the table reflects the PVRR difference between modeling the portfolios in PROSYM versus PLEXOS. Based on Ms. Sommer's analysis using PLEXOS, annual production costs for her portfolio were higher than the Companies' portfolio. This difference is slightly greater with the Companies' calibrated model (PROSYM), resulting in a $211 NPVRR increase in the relative cost of Ms. Sommer's portfolio.