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BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

COURT CLERK'S OFFICE - OKC
CORPORATION COMMISSION
OF OKLAHOMA

**IN THE MATTER OF THE APPLICATION OF)
OKLAHOMA GAS AND ELECTRIC)
COMPANY FOR COMMISSION)
AUTHORIZATION OF A PLAN TO COMPLY)
WITH THE FEDERAL CLEAN AIR ACT AND)
COST RECOVERY; AND FOR APPROVAL)
OF THE MUSTANG MODERNIZATION AND)
COST RECOVERY)**

CAUSE NO. PUD 201400229

Summary of Responsive Testimony of Rachel Wilson

My name is Rachel Wilson. I am a Senior Associate with Synapse Energy Economics, Inc., an energy consulting firm based in Cambridge, Massachusetts. I am testifying on behalf of Sierra Club in this proceeding. In terms of my education and experience, I have a Bachelor of Arts from Claremont McKenna College in Environment, Economics, and Politics (EEP) and a Master of Environmental Management from the School of Forestry and Environmental Studies at Yale University. I currently provide consulting services relating to integrated resource planning, power plant economics, and compliance with federal and state clean air policies. In my work at Synapse, I use optimization and electric system dispatch models to conduct analyses of electric power systems, including utility service territories and regional energy markets. I have direct experience running the Strategist, PROMOD IV, PROSYM/Market Analytics, PLEXOS, and PCI Gentrader models.

Summary of Responsive Testimony

My responsive testimony reviews the modeling analysis done by Oklahoma Gas and Electric (OG&E) in this docket, including the Company's inputs and modeling files, and the describes faults that I identified in that analysis. I performed my own modeling analysis in this docket using the OG&E inputs and the PCI Gentrader model. My testimony describes this analysis and presents the results of that evaluation. Based on my review, I conclude that OG&E has not shown that its choice to install scrubbers at the Sooner units and convert the Muskogee units to burn natural gas – the "Scrub/Convert portfolio" – represents the portfolio that is the lowest cost to ratepayers under conditions reasonably expected to occur.

First, the Company's modeling is faulty in that it assumes that its generating units operate independently from the market, taking energy prices as given rather than operating within the market and contributing to the magnitude of these prices. OG&E simulated the entire Southwest Power Pool Independent Marketplace ("SPP IM") using the PROMOD IV model to determine hourly prices for energy. In PROMOD, hourly energy prices are determined by regional loads

and by the operating characteristics of the units that are available to meet that load in a given hour. The Company took those prices and input them into the PCI Gentrader model, dispatching its generating units against this set of market prices. OG&E's assumption that the market energy prices are exogenous to the Gentrader model results in erroneous output. When the OG&E units are dispatched solely against the market prices, the operation of one unit has no effect on the operation of another unit. OG&E can, therefore, run the Sooner 1 and 2 Scrub option at the same time as the Sooner 1 and 2 Convert option or the Sooner 1 and 2 Replace option, and simply pick and choose a resource portfolio from the output results. However, this approach implies that the operation of the OG&E units has no effect on market prices, which is not true. OG&E makes up 13 percent of the SPP IM,¹ and the choices made by the utility, such as the type and quantity of generating resources in its portfolio, do influence the operations of the SPP IM. OG&E's modeling in Gentrader does not reflect this. Instead, the Company should have produced hourly energy price forecasts for each of its environmental compliance plans using the PROMOD IV model and taken the output results directly from those runs.

Second, OG&E has not modeled installation of pollution control retrofits that will likely be necessary to control nitrogen oxide emissions at the Sooner 1 and 2 units. In the first part of my modeling analysis, I assumed that the Company's sensitivity case that contains a price per ton of CO₂ beginning in 2020 represents a realistic base case. I then examined two different scenarios, using the OG&E CO₂ scenario as my starting point. The first scenario that I evaluated incorporates costs associated with the installation of SCR technology at Sooner 1 and 2. My modeling results show that inclusion of costs to install selective catalytic reduction ("SCR") technologies at the Sooner units would place an additional operating penalty on these units and negatively affect their profitability in the SPP IM. With SCR at each Sooner unit, the production cost associated with the Scrub/Convert portfolio (Sooner units are scrubbed and the Muskogee units are converted) rises from \$19.590 billion to \$19.612 billion.

OG&E has also failed to model compliance with the EPA's proposed 111(d) rule, which would place limits on carbon dioxide ("CO₂") emissions from the power sector. The second part of my modeling analysis evaluates an increase in the price per ton of CO₂ to reflect the shadow price for CO₂ that the EPA estimates would be necessary for compliance with the proposed 111(d) rule.² Inclusion of EPA's shadow price on CO₂ as a means to model 111(d) compliance further disadvantages OG&E's preferred resource portfolio – the "Scrub/Convert" portfolio – relative to other compliance options. Those results are shown in Table 1, below.

¹ Wilson Responsive Testimony at 5.

² Note that this second scenario does not include installation of selective catalytic reduction technology at the Sooner units.

Table 1. NPV and Rank of OGE Portfolios Under OGE Base, OGE CO₂, and Synapse 111(d) CO₂ Scenarios.

Portfolio	OGE Base	Rank	OGE CO₂	Rank	Synapse 111(d) CO₂	Rank
Scrub/Convert	\$22,352	1	\$26,404	2	\$27,163	2
Scrub	\$22,423	2	\$27,049	5	\$27,911	3
Convert	\$22,484	3	\$25,879	1	\$26,379	1
Scrub/Replace	\$23,226	4	\$26,867	4	\$28,009	4
Replace	\$24,230	5	\$26,800	3	\$28,215	5

Based on my review, I conclude that OG&E has not shown that its choice to install scrubbers at the Sooner units and convert the Muskogee units to burn natural gas – the “Scrub/Convert portfolio” – represents the portfolio that is the lowest cost to ratepayers under conditions that can be reasonably expected to occur.