BEFORE THE

LOUISIANA PUBLIC SERVICE COMMISSION

APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATION AND APPROVAL OF THE ACQUISITION OF CERTAIN RENEWABLE RESOURCES AND NATURAL GAS CAPACITY CONTRACTS IN ACCORDANCE WITH THE MBM ORDER, THE 1983 AND 1994 GENERAL ORDERS	:	DOCKET NO. U-

DIRECT TESTIMONY OF

PATRICK N. AUGUSTINE

FOR

SOUTHWESTERN ELECTRIC POWER COMPANY

MAY 2022

TESTIMONY INDEX

GLOSSARY OF ACRONYMS

AEPSC	American Electric Power Service Corporation
CETA	Clean Energy Technology Advancement
CRA	Charles River Associates
ECR	Enhanced Carbon Regulation
IRP	Integrated Resource Plan
MW	Megawatt
NCR	No Carbon Regulation
O&M	Operations and Maintenance
RFP	Request for Proposal
SWEPCO	Southwestern Electric Power Company
SPP	Southwest Power Pool

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A. My name is Patrick N. Augustine, and I am employed by Charles River Associates (CRA) as a Vice President in CRA's Energy Practice. CRA is a leading global consulting firm that offers economic, financial, and strategic expertise to support our clients in business decisions, regulatory and litigation proceedings, and market and policy analysis. My business address is 1201 F Street, NW, Washington, DC 20004.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I received a Bachelor of Arts degree from Harvard University and received a Master of Environmental Management degree from the Nicholas School of the Environment at Duke University. I have been employed by CRA for over six years and have worked in the energy consulting industry nearly sixteen years. Prior to joining CRA, I worked at Pace Global Energy Services, now a Siemens business, for over nine years, performing the roles of analyst, project manager, and director.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

A. At CRA, in my role as Vice President, I oversee the maintenance of the firm's power market modeling tools and processes, I manage consulting assignments in the power and utilities sectors, and I supervise junior staff in performing market, policy, and strategic analyses for our clients. My professional experience within CRA's energy practice has focused on power market analysis and utility resource planning work to support project developers, electric utilities, investors, and lenders in energy market forecasting, power asset valuation, and utility portfolio planning. This work involves

energy market research and analysis and the use of market models, particularly those that simulate the competitive electric power markets and those used for electric utility portfolio dispatch analysis and cost accounting.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY COMMISSIONS?

A. Yes. I have testified before several state regulatory commissions, including the Indiana Utility Regulatory Commission, the Public Service Commission of Wisconsin, the Public Utilities Commission of Ohio, the Michigan Public Service Commission, and the Kentucky Public Service Commission, in proceedings associated with power market analysis and electric utility resource planning.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony addresses the following two subjects:

1. CRA's involvement in the 2021 Integrated Resource Plan (IRP) filed by Southwestern Electric Power Company (SWEPCO or the Company) with the Arkansas Public Service Commission,[1] which included detailed portfolio analysis and production of the Preferred Plan and IRP report.
2. The Confirmation Analysis CRA performed at the request of the Company near to conclusion of negotiations with project developers of wind and solar resources to confirm that the assets subject to this application are economic additions to meet the Company's capacity needs when compared to other alternatives.

[1] See APSC Docket No. 07-011-U, Doc. 44-2, December 15, 2021, Integrated Resource Plan Report to the Arkansas Public Service Commission, available at http://www.apscservices.info/pdff/07/07-011-U_44_2.pdf. Note that the Louisiana IRP is currently pending in Docket #I-36242.

III. 2021 INTEGRATED RESOURCE PLAN

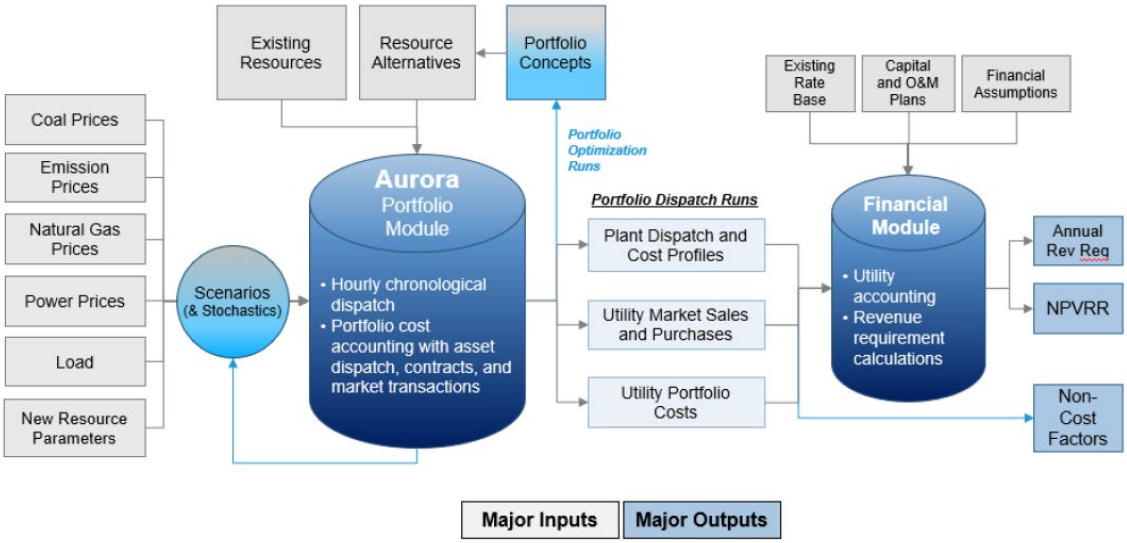
Q. WHAT WAS CRA'S ROLE IN THE PREPARATION OF THE 2021 ARKANSAS IRP?

A. The Company contracted with CRA to perform IRP modeling, prepare the IRP report, and participate in the stakeholder process. CRA worked with SWEPCO and American Electric Power Service Corporation (AEPSC) personnel to develop the modeling inputs for the SWEPCO portfolio and the broader Southwest Power Pool (SPP) market across five distinct scenarios. CRA then used the Aurora[2] model and a companion financial model to develop various portfolio options and evaluate their expected performance over time. Robust scenario-based and stochastic analyses were also performed to test the resource selections under a wide range of commodity prices, resource costs, environmental regulation assumptions, and renewable output profiles. The details of the key inputs, scenarios, portfolios, and major results are documented in the 2021 IRP.

Q. PLEASE EXPLAIN THE MODELING FRAMEWORK THAT WAS USED IN THE 2021 IRP IN MORE DETAIL.

A. The modeling framework used by CRA to perform the 2021 IRP is documented as Figure 39 in the 2021 IRP and shown below.

[2] The Aurora model is widely used by utilities for integrated resource and transmission planning, power cost analysis, and detailed generator evaluation. Aurora's database includes a representation of electric generating facilities throughout North America, projections for electric demand, and representation of zonal transmission limits, among other inputs. The inputs can be customized to evaluate specific market regions and utility portfolios in detail across a wide range of uncertainty variables.



As this Figure illustrates, the IRP analysis used the Aurora portfolio model for production cost analysis and a CRA financial model for revenue requirement accounting. Aurora is an energy market simulation model that develops expansion plans through least cost optimization analysis, while also producing plant dispatch and portfolio supply cost accounting through chronological dispatch simulation. The financial model takes power supply cost inputs from Aurora, along with the Company's existing rate base, capital and operations and maintenance (O&M) plans, and other financial assumptions to calculate an annual revenue requirement and the net present value of revenue requirements for modeled portfolios.

Q. HOW DID SWEPCO EVALUATE RISK AND UNCERTAINTY IN THE 2021 IRP?

A. Risk and uncertainty were evaluated in two ways. First, the 2021 IRP identified and assessed portfolios across a range of future scenarios. This included a Reference Case that represented an expected view of how load growth, commodity prices, technology development, and carbon policy will evolve, along with four other scenarios representing different plausible future market conditions – Clean Energy Technology

Advancement (CETA), Enhanced Carbon Regulation (ECR), Focus on Resiliency (FOR), and No Carbon Regulation (NCR). In addition, the 2021 IRP evaluated risk and uncertainty through a stochastic analysis, which consisted of a large number of random market simulations that combined the volatility of power and natural gas prices with renewable generator output uncertainty to observe the impact on customer costs.

Q. HOW DID THE 2021 IRP DEVELOP SWEPCO PORTFOLIOS FOR ANALYSIS AND COMPARISON?

A. The 2021 IRP developed least-cost plans for each of the scenarios noted above through portfolio optimization analysis in the Aurora model. In addition to least-cost plans developed from the scenarios (the Reference, NCR, CETA and ECR portfolios),[3] SWEPCO and CRA developed three additional plans for evaluation. These additional plans were modifications of the Reference Case portfolio and were designed to test specific alternative portfolio design themes. The CC Portfolio was added to test the impact of additional combined cycle gas capacity on customer costs. The Welsh 1 Conversion Portfolio was added to test the impact of repowering Welsh Unit 1 from coal to natural gas. The No Early CT Portfolio was added to include the Welsh 1 Conversion and not allow a combustion turbine to be added in the near-term. Each of these seven portfolios were stress-tested using Aurora and the financial model across

[3] Note that the least-cost plan developed from the FOR scenario was identical to the plan developed in the Reference Case. For simplicity, this plan is just referred to as the Reference Portfolio. Pages 105-106 in the 2021 IRP explain this further.

all five market scenarios as well as against the stochastic distributions of gas and power prices and renewable outputs, as I described earlier.

Q. HOW DID CRA ASSIST SWEPCO IN EVALUATING THE OUTPUT OF THE IRP MODELING?

A. CRA used the model outputs to prepare a "scorecard" to demonstrate how the various portfolios performed against a range of criteria, including short- and long-term affordability, three measures of rate stability, three measures of reliability, and local economic impact and sustainability criteria.

Q. WHAT DID THE COMPLETED SCORECARD SHOW?

A. The populated scorecard for the IRP is documented as Figure 76 in the 2021 IRP and shown below.

	Customer Affordability		Rate Stability			Maintaining Reliability			Local Impacts & Sustainability	
Portfolio	***Short Term:*** *5-yr Rate CAGR, Reference Case*	***Long Term:*** *30-yr NPVRR, Reference Case*	***Scenario Range:*** *High Minus Low Scenario Range, 30-yr NPVRR*	***Cost Risk:*** *RR Increase in Reference Case (95th minus 50th Percentile)*	***Market Exposure:*** *Net Sales as % of Portfolio Load, Scenario Average*	***Planning Reserves:*** *% Reserve Margin, Scenario Average*	***Operational Flexibility:*** *Dispatchable Capacity*	***Resource Diversity:*** *Generation Mix (MWh) by Technology Type - Reference Case*	***Local Impacts:*** *New Nameplate MW & Total CAPEX Installed Inside SWEPCO Territory*	***CO2 Emissions:*** *Percent Reduction from 2000 Baseline - Reference Case*
Year Ref.	2022-2027	2022-2051	2022-2051	2031 | 2041	2031	2022-2041	2031 | 2041	2041	2022-2031	2031 | 2041
Units	%	$MM Levelized Rate	$MM Levelized Rate	$MM	Summer | Winter	Summer | Winter	MW	%	MW | $MM	% Reduction
Reference Portfolio	2.57	15,435 $56.1	652 $3.7	25.4 | 26.8	11% | 21%	16% | 30%	3,295 | 3,431		2,720 | $2,201	79% | 84%
CC Portfolio	2.84	16,309 $59.3	1,960 $11.1	15.7 | 19.3	1% | 0%	17% | 27%	3,605 | 3,641		3,030 | $2,559	73% | 78%
Welsh 1 Gas Conv.	2.57	15,287 $55.6	649 $3.7	24.9 | 26.7	9% | 21%	16% | 31%	3,340 | 3,431		2,240 | $1,906	80% | 84%
NCR Portfolio	2.35	15,500 $56.4	837 $5.4	19.5 | 21.4	4% | 15%	8% | 13%	2,855 | 2,831		2,280 | $2,037	80% | 85%
CETA Portfolio	4.22	16,475 $59.9	1,870 $7.6	35.9 | 40.7	24% | 43%	26% | 50%	4,455 | 4,891		2,880 | $2,171	78% | 83%
ECR Portfolio	2.55	15,270 $55.5	1,044 $2.2	28.9 | 28.7	14% | 29%	10% | 23%	3,055 | 3,271		2,230 | $1,878	79% | 85%
No Early CT Portfolio	2.51	15,331 $55.8	735 $4.1	20.3 | 24.6	10% | 21%	15% | 25%	3,100 | 3,431		2,000 | $1,875	80% | 84%

The scorecard did not select a Preferred Plan but instead provided a way of systematically comparing how each of the candidate portfolios performed across each

of the four IRP objectives and ten IRP metrics. After considering the portfolio needs and risks, SWEPCO selected the No Early CT portfolio as its Preferred Plan because it scored competitively across all scorecard elements and provided a clear path to meeting the Company's requirements in the next five years and beyond.

Q. WHAT NEW RESOURCES WERE PART OF THAT PREFERRED PLAN?

A. Table 1 below shows the nameplate capacity additions in the Preferred Plan through 2028. In 2023 and 2024, short-term capacity purchases were included to cover reserve margin requirements. By the end of 2025, 2,450 MW (nameplate) of wind and 550 MW (nameplate) of solar were selected in the Preferred Plan. Thereafter, additional solar resources, a gas conversion at the existing Welsh coal plant, and long-term natural gas peaking capacity were part of the Preferred Plan.

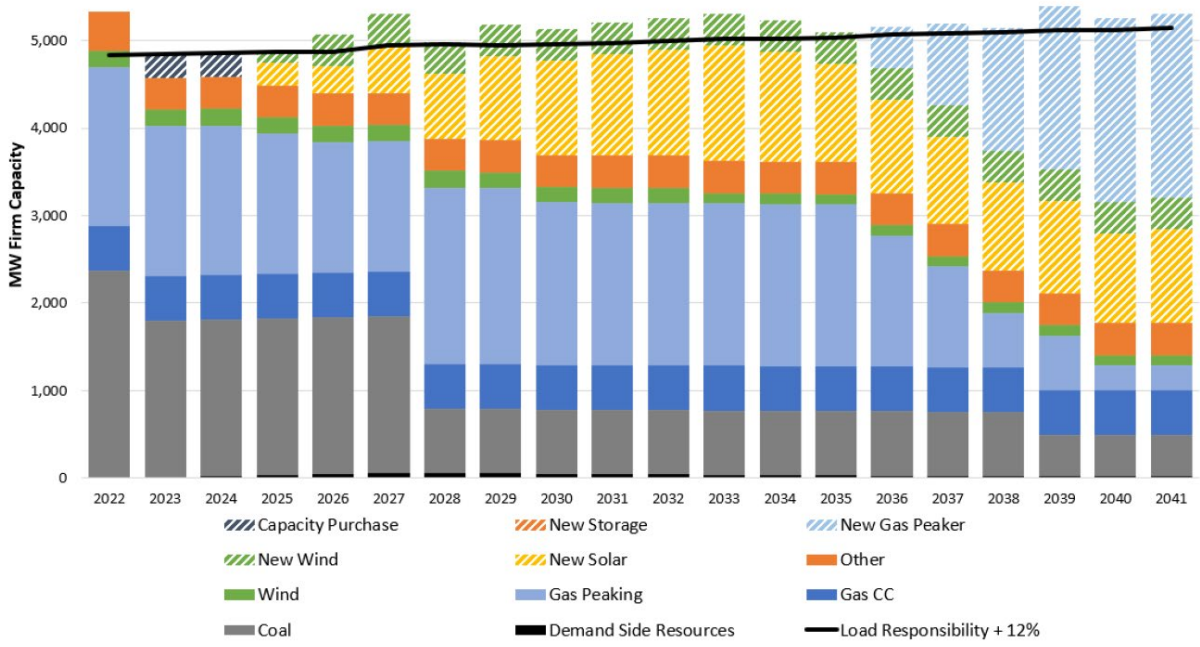
TABLE 1: IRP NAMEPLATE CAPACITY ADDITIONS THROUGH 2028

	2021 IRP PREFERRED PLAN NEAR-TERM ADDITIONS - NAMEPLATE (1)				
	New Solar	New Wind	Total New Resources	Welsh 1 Gas Conversion	Short-Term Capacity Purchases
2023			0		271
2024 (2)	450	950	1,400		279
2025 (2)	100	1,500	1,600		
2026			0		
2027	400		400		
2028	450		450	525	
Total	**1,400**	**2,450**	**3,850**		

(1) 2021 IRP Figure 77
(2) Wind and solar added 12/31/24 and 12/31/25 to take advantage of tax incentives. The first year used for capacity requirements is 2025 and 2026, respectively.

Figure 1 below shows a long-term view of the summer supply-demand balance. The black line represents the Company's SPP capacity obligation. The bars in the chart show what existing and new resources were selected to meet that requirement each year through 2041. This figure is presented in terms of SPP Accredited Capacity.

FIGURE 1: PREFERRED PLAN SUMMER CAPACITY POSITION



Q. DID THE IRP PREFERRED PLAN COME TO THE SAME CONCLUSIONS REGARDING OPTIMAL RESOURCE SELECTION AS THE Q1 2021 ANALYSIS DISCUSSED BY COMPANY WITNESS JAMES F. MARTIN?

A. The results were very similar. As discussed in the testimony of Company witness Martin, the Company prepared an analysis in the first quarter of 2021 (the Q1 2021 analysis) which led to the issuance of the three Request for Proposals (RFPs) discussed by Company witness Amy E. Jeffries. That analysis suggested that the optimal mix of

resources to meet the Company's 2025/2026 capacity needs at the least cost was 2,600 MW of wind and 1,350 MW of solar to be placed in service by the end of 2025.

By comparison, as shown above in Table 1, the IRP Preferred Plan modeling selected 2,450 MW of wind and 550 MW of Solar by the end of 2025. Based on the similarities in the modeling, the Company's reliance on the Q1 2021 analysis as the basis for types and quantities of resources that were sought in the three RFPs in 2021 prior to the issuance of the IRP was reasonable.

IV. CONFIRMATION ANALYSIS

Q. DID THE COMPANY DIRECT CRA TO PERFORM ADDITIONAL ANALYSIS AFTER THE CONCLUSION OF THE IRP IN LATE 2021?

A. Yes. As discussed in the testimony of Company witness Martin, as the negotiations and due diligence on the short-listed RFP projects neared their completion, the Company directed CRA to perform additional analysis to assess whether the three Selected Facilities were economic relative to other available options to meet SWEPCO's future resource needs.

Q. HOW WAS THIS ANALYSIS CONDUCTED?

A. The Company provided all cost and energy production data for each of the three Selected Facilities to CRA. Using the same Aurora model that was deployed in the 2021 IRP, a resource selection analysis was performed to identify preferred resources from options that included the Selected Facilities and other alternatives needed to meet the Company's capacity requirement.

Q. WHAT SPECIFIC DATA DID THE COMPANY PROVIDE TO CRA?

A. The Company provided detailed information related to each of the short-listed bids, including the Selected Facilities. This included nameplate capacity in MW, in-service date, capital cost (inclusive of contingency, owner's costs, and accumulated funds used during construction), O&M costs, expected congestion costs, and projections of hourly energy output.

Q. WHICH ASSUMPTIONS WERE HELD CONSTANT RELATIVE TO THE 2021 IRP?

A. The confirmation analysis evaluated resource selection under the 2021 IRP's Reference Case, which includes a price on carbon emissions, and under the NCR scenario, which has lower gas prices and no carbon burden. All market assumptions incorporated in those scenarios were held constant, and the expected reserve margin requirement was held constant at 12%. In addition, SWEPCO's load forecast and existing generation supply characteristics were all substantially the same as the 2021 IRP.

Q. WHICH ASSUMPTIONS CHANGED IN THE CONFIRMATION ANALYSIS RELATIVE TO THE 2021 IRP?

A. Firstly, a new inflation assumption was adopted to reflect the year ending 2021 Consumer Price Index inflation rate of 7.0% as reported by the US Labor Department. An expectation of a higher near-term inflation rate of 4.0% over the 2022-2024 period was also incorporated, with inflation gradually declining to 2.3% per year by 2025.

In addition, changes to SWEPCO's future generating portfolio were incorporated. These changes included extensions to the lives of the Lieberman 3 and Lieberman 4 facilities to retire in 2026 and inclusion of a 72.5 MW PPA at the Rocking

R solar site, starting in 2025 and lasting for 20 years. The 2023-2026 capacity purchases that the Company proposed as part of the RFP process were also included in the analysis, and the three Selected Facilities were added as new resource options, along with the availability of short-term capacity purchases beyond 2026.

The costs for generic resource options were also updated based on knowledge gained from the RFPs as well as third-party sources. In addition, the Company directed CRA to make certain changes to the available years for several alternative resource options based on observed development activity in SPP and updated expectations for interconnection and construction timelines. These assumptions are discussed in more detail below and by Company witness Martin.

Q. PLEASE PROVIDE ADDITIONAL DETAIL ON THE CHANGES TO THE COSTS FOR NEW RESOURCES YOU REFERENCED IN THE PRIOR RESPONSE.

A. Cost increases for new generation resources have been observed across the industry. Therefore, the Company provided CRA with an updated perspective on future cost expectations for wind, solar, storage, and natural gas resources based on RFP data and other commercial sources. For wind and solar, bids submitted to the Company for resources to come online in the 2024-2025 time period were used to formulate an opinion on the cost of future resources. For new generic wind and solar projects entering into service at the end of 2025 and 2026 (capacity years 2026 and 2027), it was assumed that they would be priced at the highest-cost bid from amongst the short-listed facilities in nominal terms. For new generic wind and solar projects entering into service at the end of 2027 (capacity year 2028), it was assumed that they would be priced at the weighted average of the short-listed bids in nominal terms. After 2028, it

was assumed that future generic wind and solar costs would decline at the same rate that was assumed in the 2021 IRP.

For natural gas additions, the Company was informed by third-party estimates and supplied CRA a cost adder assumption of 23.5%, meaning generic new natural gas facilities increased in cost by 23.5% in nominal terms relative to what was assumed in the 2021 IRP. For new 4-hour storage facilities, it was assumed that the cost increase would be equivalent to the cost increase of the solar bids.

Q. IN YOUR OPINION, WERE THE CHANGES IN ASSUMPTIONS FOR NEW GENERIC RESOURCE COSTS REASONABLE?

A. Yes. New resource costs have gone up considerably in recent months as a result of global supply chain pressures, increases in the prices of key raw materials, cost increases associated with labor and shipping, the threat of tariffs, and other general inflationary trends.[4] The results from the Company's RFP provide current market information, which is consistent with the types of cost increases witnessed for other wind and solar projects across the country. Given project backlogs, ongoing uncertainty associated with U.S. Commerce Department tariff inquiries, and sustained inflation through the first part of 2022, retaining elevated cost projections for generic resource options for two additional years after the expected online dates for the RFP projects is a reasonable assumption.

[4] See, for example, the International Energy Agency's latest report on trends in renewables: https://www.iea.org/reports/renewables-2021/executive-summary and a recent summary article from Utility Dive: "Supply-chain squeeze: Solar, storage industries grapple with delays, price spikes as demand continues to grow," March 31, 2022, https://www.utilitydive.com/news/solar-storage-delays-price-supplychain/620537/

Q. DO THE COST PRESSURES FACED BY NEW WIND AND SOLAR PROJECTS ALSO APPLY TO OTHER TECHNOLOGY TYPES?

A. Yes. Many of the underlying cost pressures facing solar and wind projects are also influencing the costs of other large construction projects like new natural gas plants. Natural gas turbines and other power equipment are subject to different cost pressures compared to wind and solar due to different raw material and labor requirements, but significant cost pressures are being observed and reported across the power sector. The cost increase assumed by the Company for natural gas capacity additions is based on third-party sources and reflective of expected inflationary pressures specific to natural gas plants. It should be noted that recent significant increases in commodity prices for natural gas and coal would also impact the all-in cost of other alternatives, but the confirmation analysis did not refresh these assumptions relative to those used in the 2021 IRP.

Q. WHAT DID THE CONFIRMATION ANALYSIS ASSUME WITH REGARD TO THE AVAILABILITY OF NEW RESOURCE OPTIONS FOR SWEPCO?

A. The Diversion wind facility was assumed to be available at the end of 2024 for capacity year 2025, and the Mooringsport solar and Wagon Wheel wind facilities were assumed to be available at the end of 2025 for capacity year 2026. As explained in more detail by Company witness Martin, generic natural gas-fired options were assumed to be first available at the beginning of 2029, conversion of Welsh 1 to use gas as its fuel source was included as an option by the end of 2027 for capacity year 2028, generic wind

resources were assumed to be available at the end of 2025 for capacity year 2026,[5] generic solar resources were assumed to be available at the end of 2025 for capacity year 2026, generic storage resources were assumed to be available at the beginning of 2025, and short-term capacity purchases (incremental to those the Company has proposed for 2023-2026) were assumed to be available at the beginning of 2027.

Q. WHAT WERE THE MAJOR FINDINGS OF THE CONFIRMATION ANALYSIS?

A. The confirmation analysis in the Reference Case scenario[6] resulted in the new resource selections shown in Table 2 below.[7] The least cost plan selected by the optimization model includes the three Selected Facilities being procured at the end of 2024 and 2025 (for capacity years 2025 and 2026), along with 1,600 MW nameplate of new generic wind at the end of 2025 for capacity year 2026. In 2027, no new resources were added. In 2028, the model selected the Welsh 1 gas conversion, 600 MW nameplate of new generic solar, 50 MW nameplate of new generic wind, 20 MW nameplate of new generic 4-hour storage, and 200 MW of short-term capacity contracts. In 2029 and beyond, a mix of new natural gas and wind capacity was added to the SWEPCO portfolio.

[5] Note that the 2021 IRP's annual constraint of 1,600 MW for generic wind resources was preserved in the Confirmation Analysis modeling, although total annual wind additions were allowed to exceed this amount if the Selected Facilities were also added in the same year.

[6] The Reference Case included the expected views for key inputs, including a moderate price on carbon emissions starting in 2028.

[7] Note that the shaded areas in the table indicate capacity years for which the various candidate resource options were assumed to be available. Note that the short-term capacity purchases are for only one year, and the Welsh 1 gas conversion is assumed to have only a ten-year life. All other new resources would be expected to have a 30-year life.

TABLE 2: REFERENCE CASE CONFIRMATION ANALYSIS RESULTS (NAMEPLATE MW)

	Conversion	New Build Additions by Year (Nameplate MW)								
Year	Welsh 1 Gas Conversion	Diversion Wind	Mooringsport Solar	Wagon Wheel Wind	New Solar	New Wind	New Gas CC	New Gas Peaker	New Storage	Short Term Capacity
2022										
2023										
2024										
2025		200.6							0	
2026			200.0	598.4	0	1600			0	
2027					0	0			0	0
2028	525.0				600	50			20	200
2029					0	0	550	0	0	
2030					0	0	0	0	0	
2031					0	0	0	0	0	
2032					0	0	0	0	0	
2033					0	0	0	240	0	
2034					0	0	0	0	0	
2035					0	450	0	0	0	
2036					0	0	0	480	0	
2037					0	0	0	480	0	
2038					0	50	0	480	0	
2039					0	250	0	240	0	
2040					0	50	0	240	0	
2041					0	150	0	0	0	

The confirmation analysis in the NCR scenario[8] resulted in the new resource selections shown in Table 3 below.[9] The least cost plan selected by the optimization model includes the three Selected Facilities being procured at the end of 2024 and 2025 (for capacity years 2025 and 2026), along with 1,550 MW nameplate of new generic wind at the end of 2025 for capacity year 2026. In 2027, no new resources were added. In 2028, the model selected the Welsh 1 gas conversion, 500 MW nameplate of new generic solar, 40 MW nameplate of new generic 4-hour storage, and 200 MW of short-term capacity contracts. In 2029 and beyond, new natural gas capacity makes up most of the incremental additions to the SWEPCO portfolio.

[8] The NCR scenario included lower natural gas prices and no price or limits on carbon emissions.
[9] Note that the shaded areas in the table indicate capacity years for which the various candidate resource options were assumed to be available. Note that the short-term capacity purchases are for only one year, and the Welsh 1 gas conversion is assumed to have only a ten-year life. All other new resources would be expected to have a 30-year life.

TABLE 3: NCR CONFIRMATION ANALYSIS RESULTS (NAMEPLATE MW)

	Conversion	New Build Additions by Year (Nameplate MW)								
Year	Welsh 1 Gas Conversion	Diversion Wind	Mooringsport Solar	Wagon Wheel Wind	New Solar	New Wind	New Gas CC	New Gas Peaker	New Storage	Short Term Capacity
2022										
2023										
2024										
2025		200.6							0	
2026			200.0	598.4	0	1550			0	
2027					0	0			0	0
2028	525.0				500	0			40	200
2029					0	0	550	0	0	
2030					0	0	0	0	0	
2031					0	0	0	0	0	
2032					0	0	0	0	0	
2033					0	0	0	240	0	
2034					0	0	0	0	0	
2035					0	0	0	0	0	
2036					50	50	0	240	0	
2037					0	0	0	480	0	
2038					0	0	0	720	0	
2039					0	0	0	240	0	
2040					0	0	0	240	0	
2041					0	0	0	0	20	

Both scenarios result in similar resource selection, particularly in the near-term, demonstrating that the three Selected Facilities are economic additions to the portfolio, given the input assumptions and constraints. Additional wind resource additions eligible for production tax credits are also identified as preferred resource additions by the end of 2025. Finally, both scenarios also confirm the 2021 IRP findings related to the Welsh 1 gas conversion in 2028.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.