

**BEFORE THE
LOUISIANA PUBLIC SERVICE COMMISSION**

DOCKET NO. I-36242

**SOUTHWESTERN ELECTRIC POWER COMPANY,
EX PARTE**

In re: 2021 Request to Initiate Integrated Resource Planning Process Pursuant to the General Order (Corrected) in Docket No. R-30021 Dated April 20, 2012.

STAFF REPORT AND RECOMMENDATIONS

I. Background

On December 28, 2022, SWEPCO (or “Company”) submitted a request to the Louisiana Public Service Commission (“LPSC,” or “Commission”) to initiate the Integrated Resource Planning (“IRP”) process (Event 1 of the IRP process).

On February 1, 2022, SWEPCO filed with the Commission its “2023 SWEPCO Integrated Resource Plan Description of Studies and Study Assumptions” presentation (referred to as “SWEPCO Assumptions”) (Event 2).

On March 29, 2022, the first stakeholder meeting (Event 3) was held virtually, at which SWEPCO presented the IRP data assumption materials and fielded questions from stakeholders. Stakeholders in attendance included Advanced Energy Management Alliance (“AEMA”), Alliance for Affordable Energy (“AAE”), the Sierra Club, the Southern Renewable Energy Association (“SREA”), and Wartsila. On May 16, 2022, Staff issued a Report of Stakeholder Meeting.

On May 27, 2022, Staff submitted its *Staff Comments on SWEPCO’s Data Assumptions* (“Staff Comments”) pursuant to Event 4. By May 29, 2022, stakeholders filed comments on SWEPCO’s data assumptions, also pursuant to Event 4.

On June 29, 2022, SWEPCO announced a stakeholder meeting for July 20, 2022, but this meeting was cancelled.

On March 28, 2023, SWEPCO published its *Draft 2023 Integrated Resource Plan Report* (“Draft IRP”) (Event 5).

The second stakeholder meeting was announced on August 24, 2023, to be held virtually on August 29, 2023 (Event 6). Staff issued a report of the meeting on September 22, 2023.

By October 24, 2023, three stakeholders filed written comments (Event 7) on SWEPCO's Draft IRP:

- AEMA: *Comments to Southwest Electric Power Company's ("SWEPCO") Draft Integrated Resource Plan ("IRP")*;
- Sierra Club: *Comments on [SWEPCO's] Draft 2023 Integrated Resource Plan*; and
- SREA: *Southern Renewable Energy Association's Comments Regarding Southwestern Electric Power Company's Draft Integrated Resource Plan*.

Staff issued its *Comments on the Draft IRP* (Event 8) November 29, 2023. The purpose of the comments was to identify issues that remained in SWEPCO's Draft IRP Report, that SWEPCO should address in its Final IRP Report and in so doing, meet the requirements established in the IRP Rules contained in LPSC Corrected General Order, Docket No. R-30021, *In re: Development and Implementation of Rule for Integrated Resource Planning/or Electric Utilities* (April 20, 2012) ("IRP Order").

SWEPCO filed its Final IRP Report and related documents on February 14, 2024 (Event 9). Event 10 allows stakeholders to disputed issues and alternative recommendations. The following stakeholders filed:

- Sierra Club: *Sierra Club's Disputed Issues of Fact and Law and Recommendations for SWEPCO's Final Integrated Resource Plan*, filed April 2, 2024; and
- SREA: Correspondence indicating it had no disputed issues, filed April 15, 2024; and
- No other intervenors filed disputed issues.

This report constitutes Event 11, the *Staff Report and Recommendations* on SWEPCO's Final IRP.

II. Staff's Comments, summary

Staff appreciates SWEPCO's efforts and recognizes that SWEPCO addressed many issues raised by Staff in Staff's comments on its Draft IRP. However, Staff is disappointed that SWEPCO's Final IRP does not address several issues:

- SWEPCO did not examine the potential economic pressures to retire the Flint Creek and Turk power plants, in the context of the Aurora modeling, and did not address potential capital cost of compliance with certain future emissions regulations;
- SWEPCO did not examine transmission options;
- In the Final IRP, SWEPCO increased the target winter reserve margin of 26% which it applied in its Draft IRP for the winter-focused portfolios to 33% without explaining why. A higher reserve margin increases the need to build new capacity; and
- SWEPCO's Preferred Plan scored poorly on several metrics, as assessed by SWEPCO itself and was one of the most expensive portfolio options which SWEPCO evaluated.

Despite these shortfalls Staff recommends that the Commission acknowledge SWEPCO's Final IRP Report as having complied with the IRP Order. Staff does not recommend initiation of proceedings for the resolution of disputed issues.

III. Staff's Comments, details

1. Going-in resources: SWEPCO hard-wired existing coal plants into its going-in resources, and did not address cost of compliance for existing coal plants

The IRP Rule states that **(emphasis added)** *"The overall objective of the IRP Process is to evaluate a comprehensive set of potential resource options, including supply-side, demand-side and economic transmission resource options, to determine a base or "reference resource" plan that offers the most economic and reliable combination of resources satisfying the forecasted load requirements. The process shall account for significant constraints such as planning, regulatory, operational, reliability and environmental requirements, and shall take into account the sensitivity of the resource plan to variations in assumptions such as load forecasts, fuel costs, market prices, construction costs, environmental regulations, and other relevant assumptions."*¹

Staff appreciates SWEPCO's detailed discussion in the Final IRP of the aspects of federal emissions regulations which apply to individual plants.² But despite Staff's request for

¹ LPSC Corrected General Order, Docket No. R-30021. Section 3.

² SWEPCO Final IRP Pp. 35-40.

transparency with respect to changes to dispatch and operations which SWEPCO noted may be required to comply with potential changes to National Ambient Air quality Standards (“NAAQS”) and current 2023 Louisiana NO_x budgets (under the state implementation program for the Regional Haze Rule), SWEPCO did not provide this.

Neither did SWEPCO provide its projections of the necessary capital spending at the Flint Creek and Turk plants to comply with Clean Water Act Effluent Limitations Guidelines (“ELG”). The ELG focuses on three specific wastewaters generated at coal-fired power plants:³

- Flue gas desulfurization (“FGD”) wastewater (produced by scrubbers);
- Bottom ash transport water (“BATW”) (used to flush coal ash accumulated at the bottom of the coal boiler); and
- Combustion residual leachate (“CRL”) (heavy metals, organic compounds, and other contaminants) from coal ash surface impoundments and landfills.

SWEPCO reported that the Flint Creek plant does not generate FGD wastewater and already meets ELG zero discharge requirements for BATW. The Turk plant incorporates a dry scrubber and dry ash handling systems, so only the leachate limitations of the ELG regulations apply to Turk as well. SWEPCO noted that it is still *“evaluating how the proposed combustion residual leachate limits will impact these plants.”*⁴

Coal-fired power plants in general have several options for reducing emissions of leachate, including treatment technologies such as activated carbon adsorption, ion exchange, and membrane filtration; wastewater treatment ponds; zero liquid discharge (“ZLD”) technologies such as evaporation, crystallization, and reverse osmosis; landfill liners and covers; and minimizing coal ash storage, improving waste handling practices, and preventing runoff.

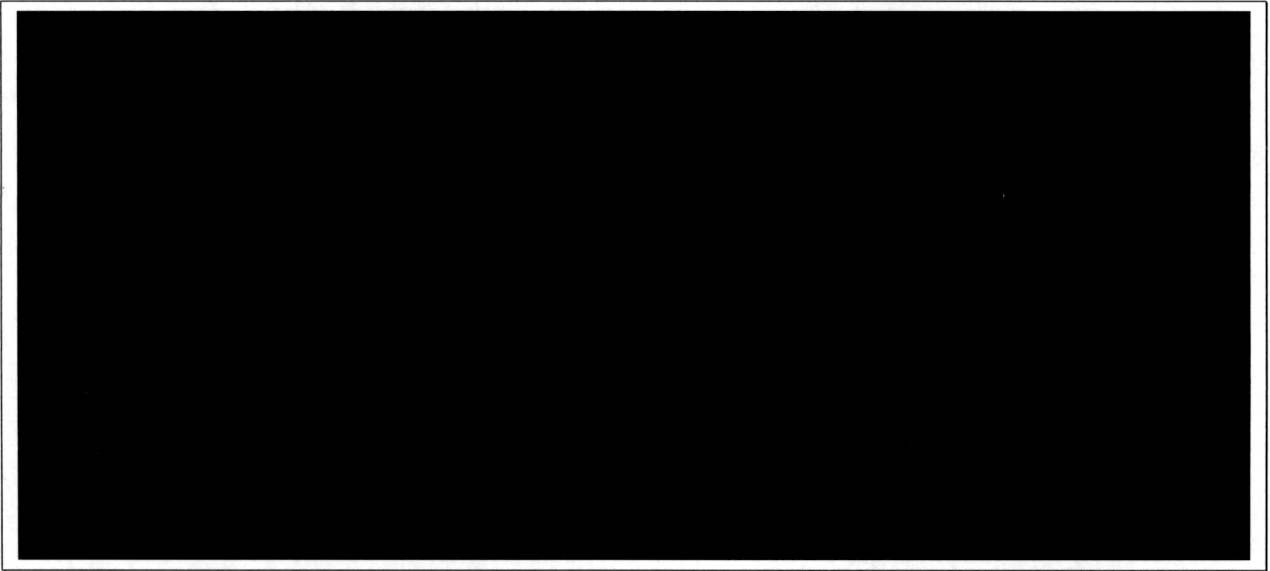
Staff’s concern with respect to SWEPCO’s assumption that Flint Creek and Turk remain operational in every scenario (Flint Creek is assumed to retire in 2039 and Turk in 2068)⁵ is that SWEPCO included no additional projected capital expenditures associated with ELG compliance.

³ Environmental Protection Agency. <https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines-2024-final-rule>.

⁴ SWEPCO Final IRP P. 39.

⁵ SWEPCO Final IRP P. 33.

In its Final IRP, SWEPCO noted that it is evaluating the potential impact on operations of ELG compliance.⁶ SWEPCO assumed that additional maintenance capital is needed every year for the plants (see Figure 1), but this does not include new capital needed to address ELG. In follow-up information, SWEPCO confirmed that only capital costs for the 2020 ELG rules in place at the time of the IRP were included, which indicates that SWEPCO's assumptions for ongoing maintenance capital do not include addressing more stringent ELG rules.⁷

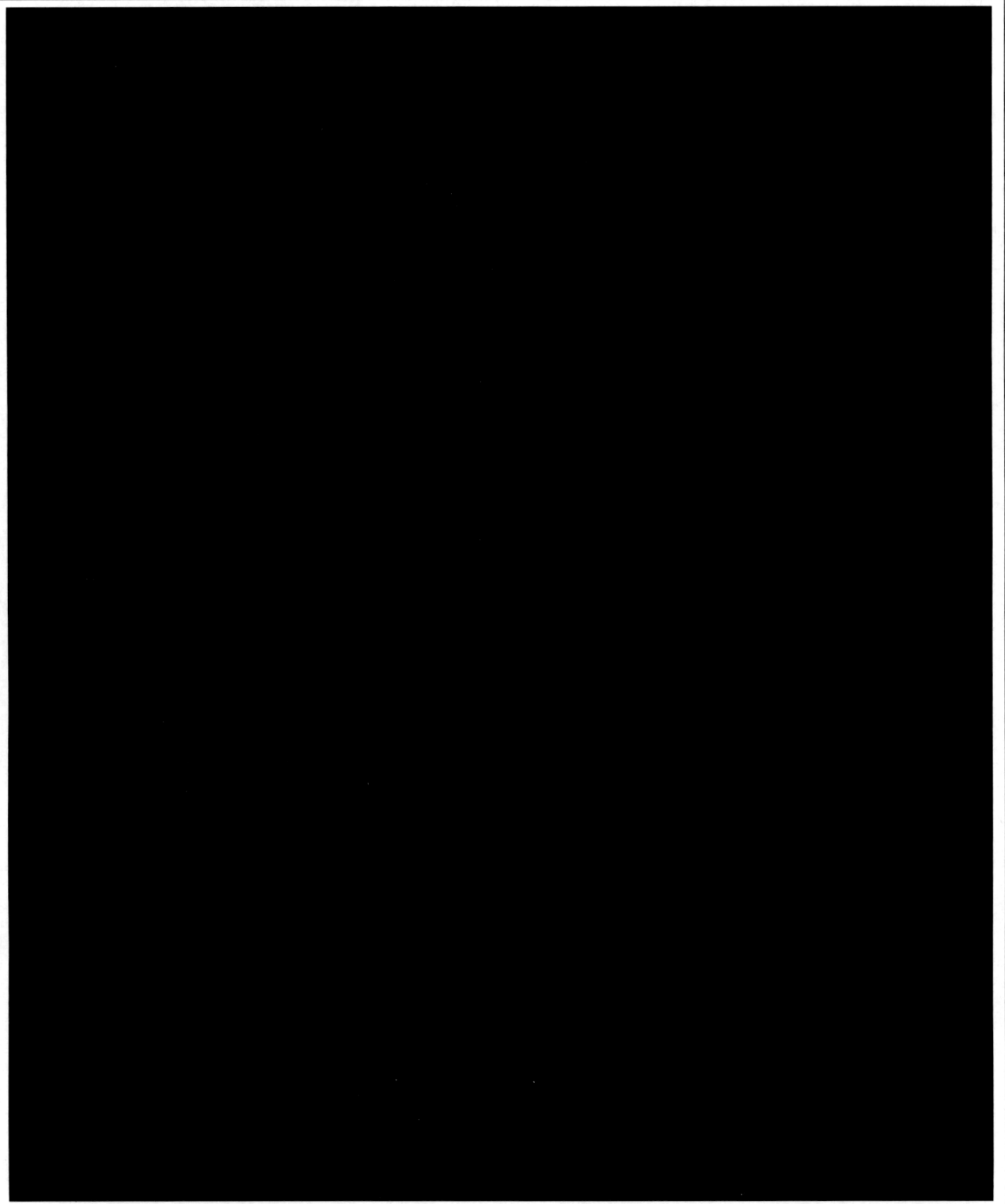


Pursuant to the IRP Rule, which states that: *“The IRP Report shall include documentation of all analyses leading to recommendations to retire, life-extend or otherwise make major investments in existing generating units. The documentation shall include a complete description of all assumptions, models and results determined from these analyses”*⁸ Staff requested in its comments on SWEPCO's Draft IRP that SWEPCO allow its Aurora-based modeling process (which combines energy price forecasting with a capacity expansion plan) to potentially flag for retirement two plants (Flint Creek and Turk) whose levelized cost of energy (“LCOE”) is higher than SWEPCO's projections of on-peak and off-peak power prices (Confidential Appendix Vol. 3, Table 3 and Table 4) in almost every year and every scenario (see Figure 2).

⁶ SWEPCO Final IRP P. 40.

⁷ SWEPCO LA IRP Response to Staff Consultant requests for additional IRP Info -- 7.19.24. Email to Staff, July 19, 2024.

⁸ LPSC Corrected General Order, Docket No. R-30021, Section 8.



Staff did **not** argue that an LCOE persistently greater than energy prices automatically implies that a plant costs more than it is worth to ratepayers, only that an LCOE greater than energy prices is an indicator that the going-forward value should be evaluated carefully. The going-forward cost

should include reasonable estimates of future capital expenditure needed at the plant, including expenditures to comply with known environmental regulations.

In SWEPCO's Final IRP, Appendix Volume 2, Exhibit J, SWEPCO argued that Staff's comparison of LCOE versus energy prices is an apples-to-oranges comparison, because energy prices do not include capacity value or reliability value, while the total services of a plant (energy, capacity, and reliability) should be compared to the total cost (LCOE) of a plant. Staff agrees with SWEPCO on this point. However, SWEPCO also seemed to imply that any increment of LCOE above the expected or projected energy price is automatically at least equal to the value of capacity and reliability. SWEPCO did not provide any estimates or projections of capacity or reliability values to support this. However, SWEPCO provided a useful comparison of projected dispatch costs (i.e., variable costs) for the two coal plants as well as a new natural gas combustion turbine ("CT") to energy market prices through 2043 in the Reference, No Carbon Reduction ("NCR"), Focus on Resiliency ("FOR"), Clean Energy Technology Advancement ("CETA"), and Enhanced Carbon Reduction ("ECR") cases. This showed that the coal plants' dispatch costs [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED].⁹

SWEPCO provided follow-up information about its assumptions for capacity values for the plants, developing indicative capacity prices.¹⁰ SWEPCO used the cost of a new CT as the basis resource for establishing net cost of new entry ("CONE") for SPP, with \$97/kW-year as the baseline measure. Based on this, SWEPCO calculated a levelized cost of capacity ("LCOC") based on the "missing money" approach, in which the annual stream of levelized energy revenues generated by the resource is compared to the resource's LCOE. If levelized energy market revenues are less than the resource's LCOE (as is the case for the Flint Creek and Turk plants), this is the "missing money" that the resource would need, to cover the total going-forward costs. SWEPCO's noted that its [REDACTED]

⁹ SWEPCO LA IRP Response to Staff_Consultant requests for additional IRP Info -- 7.19.24. Email to Staff, July 19, 2024.

¹⁰ SWEPCO IRP, Appendix Vol 2 (Confidential). February 13, 2024.

[REDACTED]
[REDACTED]
[REDACTED] SWEPCO did not provide the computations it used to arrive at these numbers.

In calculating the LCOE for Flint Creek, SWEPCO assumed Flint Creek would operate in the next few years at higher capacity factors than recent experience. The Energy Information Administration's ("EIA") Form 923 net generation data shows that Flint Creek produced 2,059,504 megawatt hours ("MWh") in 2023. Based on the plant's total rating of 528 megawatt ("MW", the resulting capacity factor was 45%; in 2022 EIA generation data indicate the capacity factor was 56%, and in 2021 it was 61%. SWEPCO's LCOE for Flint Creek is based on capacity factors of 79% for 2025, falling to 62% 2029, all of which are on the high end based on the plant's 2021-2023 performance.¹¹ In contrast, the 600-MW Turk plant produced 3,112,401 MWh in 2023 resulting in a 59% capacity factor; in 2022 its capacity factor was 70%, and in 2021 it was 65% based on EIA net generation data, so SWEPCO's assumptions for Turk in the range of 47% for 2025 falling to 32% for 2029 are not higher than recent experience, and are therefore reasonable.

2. Modeling assumptions: Cost and performance of future supply options were modeled reasonably

Staff finds SWEPCO's assumptions for capital cost and performance of new resources to be reasonable. Staff initially found that SWEPCO's solar PV capital costs (provided in SWEPCO's Draft IRP, Exhibit B) might be too high and asked for additional information. SWEPCO noted in its Final IRP that the costs were "informed from responses to the Company's 2021 RPF [request for proposals]."¹² Staff is satisfied that costs reflecting recent RFPs constitute a reasonable assumption.

Staff was also initially concerned that SWEPCO's assumption for the cost of an internal combustion engine ("ICE") was too low (at \$1,580 per kilowatt ("kW")) as shown in Staff's *Comments on the Draft IRP*). However, Staff made an error in reviewing SWEPCO's materials;

¹¹ SWEPCO Final IRP. Appendix J.

¹² SWEPCO Final IRP. P. 207.

the ICE resource is sized at 21 MW with an estimated cost of \$2,200/kW,¹³ which is comparable to other sources of information, and is therefore a reasonable assumption.

SWEPCO included an “early CT” option for new supply, at a capital cost of \$800/kW for 2031¹⁴ and assumed it to be “developed on an existing company site where additional Company options might be available to support bringing a resource online sooner than the generic option.”¹⁵ The capital cost assumption is reasonable given that an existing brownfield site will have resources such as transmission interconnections and other services required to develop a generating plant, and may have some permits already in place.

3. Modeling assumptions: Transmission alternatives were not examined

Staff believes that the IRP Rule intends that transmission be considered in the analysis of preferred portfolios. The IRP Rule provides that *“At times, there may be large transmission projects that could provide access to economic generation resources, and it may be desirable to treat those projects as separate resource options in the optimization process.”*¹⁶ Staff asked that, in its Final IRP, SWEPCO identify (at a general level) opportunities for transmission projects that could reduce congestion, improve reliability, and better utilize SWEPCO’s generation and transmission assets. SWEPCO did not perform such an analysis. SWEPCO indicated that its transmission and generation groups are working more closely together; however, because of the complexity of the transmission planning process at the level of the SPP regional transmission organization (“RTO”), the IRP process continues to treat the transmission system as a copper plate.¹⁷ “Copper plate” refers to abstracting from specific transmission paths, and assuming there is no congestion on the system.

4. Other resources in SPP: SWEPCO’s assumptions for future solar capacity are reasonable

SWEPCO’s assumptions for solar generation capacity in the SPP RTO impact SWEPCO’s projections of energy prices produced by SWEPCO’s model. In its Draft IRP, SWEPCO noted that

¹³ SWEPCO Final IRP. Exhibit B: Detailed Generation Technology Modeling Parameters, P. 154.

¹⁴ Ibid.

¹⁵ SWEPCO Final IRP. P. 51.

¹⁶ IRP Rule, Section 3, Footnote 6.

¹⁷ SWEPCO Conference call with Staff, June 20, 2024.

its model limited additional renewables by assuming that only 20% of the renewables in the current SPP queue would be developed. In Staff's comments on SWEPCO's Draft IRP, Staff recommended that SWEPCO consider a scenario in which, at least, the capacity currently in the SPP queue is eventually developed and it is assumed that the strong ongoing interest in solar and wind development does not come to an abrupt halt in 2023.¹⁸

SPP reported that 12.5 gigawatts ("GW") (maximum summer-rated) solar (including solar plus storage) capacity was in its interconnection queue as of March 2024;¹⁹ 20% of this is 2.5 GW. In its Final IRP, SWEPCO noted that it retained its assumption that 20% of the renewables in the current SPP queue would be developed, i.e., a putative 2.5 GW.²⁰ SWEPCO seems to have applied this limitation to *annual* solar capacity additions, not *total* solar capacity additions. By 2043, SWEPCO shows total solar installed capacity in SPP ranging from a low of 19 GW in the NCR case, to 31 GW in the Reference case, and to a high of 48 GW in the ECR case.²¹ These are relative to a very small base—SPP reported 0.32 GW of solar installed capacity as of January 2022.²² Therefore, SWEPCO's assumptions reflect current strong developer interest in solar. Staff finds SWEPCO's solar capacity growth assumptions to be reasonable.

5. Energy efficiency ("EE") and demand-side management ("DSM"): SWEPCO provided some additional useful information

The IRP Rule defines demand-side management and energy efficiency as follows:²³

"Demand Response - Load management programs that have the intended goal of reducing or shifting load from hours with high electricity costs and/or reliability problems. Demand Response programs may include direct load control (such as air conditioners and water heaters), or incentive rates designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized;"

and

¹⁸ LPSC Docket No. I-36242. *Staff Comments on SWEPCO's Draft IRP*. P. 13.

¹⁹ SPP Generator Interconnection <<https://opsportal.spp.org/Studies/GIActive>> as of March 26, 2024.

²⁰ SWEPCO Final IRP. P. 48.

²¹ SWEPCO Final IRP. Exhibit D: Modeled Scenarios. P. 159.

²² SPP <<https://www.spp.org/about-us/fast-facts/>>.

²³ LPSC Corrected General Order, Docket No. R-30021, "Integrated Resource Planning Rules for Electric Utilities in Louisiana." Section 2 (Definitions). P. 3.

“Energy Efficiency - Permanent changes to electricity use through replacement with more efficient end-use devices or more effective operation of existing devices, and any program or resource defined as an Energy Efficiency resource in any Energy Efficiency rule(s) issued by the Commission. Generally, this type of resource results in reduced energy consumption across all hours rather than just event-driven targeted load reductions in specific hours.”

Given these definitions, SWEPCO’s IRP confusingly refers to EE in Section 6, “Demand-side Resource Options.” However, SWEPCO explains how it maps EE (in MWh) into capacity impacts (in MW), in Section 6.2. SWEPCO clarified that its references to EE imply an associated quantity of DSM, because it develops its DSM estimates based on annual EE which is then shaped into DSM using hourly load assumptions.²⁴

In Staff’s comments on the Draft IRP, Staff asked SWEPCO to clarify and add transparency to several issues related to SWEPCO’s assumptions and analysis of energy efficiency and demand-side management. These are discussed in detail below.

Question 1: Staff asked i) Does the adjustment for current EE and DSM happen after the forecast which is driven by the parameters of the econometric models? ii) What is the size and annual impact of each adjustment, for each sector? iii) When and by how much is the annual load forecast reduced by codes and standards? iv) What exactly are the codes and standards?

Responses by SWEPCO:

- i) SWEPCO responded by noting that “[N]ew company sponsored DSM programs are incorporated into the load forecast as post-model adjustments.”²⁵ On page 205 of the Final IRP report, SWEPCO referred to Figure 14 (forecasts of total demand), and Appendix A Table A-12 (total EE and DSM in MWh and MW). SWEPCO noted that the impact of codes

²⁴SWEPCO Conference call with LPSC Staff, June 20, 2024.

²⁵ SWEPCO Final IRP. Section 2.2.5, P. 18.

and standards are counted as reductions in the load forecast; while utility-sponsored programs (the “cost bundles” included in Aurora modeling) are resource options for capacity expansion.²⁶

- ii) SWEPCO did not provide annual sectoral (residential, commercial, industrial) impacts. SWEPCO informed Staff that the sectoral impact was based on a bottom-up analysis by the Electric Power Research Institute (“EPRI”), which resulted in “blended bundles” of EE that SWEPCO could not parse sector by sector.²⁷
- iii) SWEPCO provided the annual reduction in load owing to new codes and standards Appendix A Table A-12, as total EE in MWh and DSM in MW, but for only the whole load of its Louisiana system, not by customer type as was requested.
- iv) With respect to codes and standards, in Section 2.2.5 in the Final IRP,²⁸ SWEPCO noted that *“The SAE models are used to develop energy sales forecasts for the residential and commercial classes and incorporate trends in energy efficiencies consistent with the federal government’s codes and standards. Impacts to the load forecast caused by the adoption of these codes and standards are computed by taking the difference between the Energy Efficiencies’ 2023 scenario, which keeps EE standards and trends at 2023 levels for residential and commercial equipment, and the base forecast.”*²⁹ SWEPCO later provided further explanation, noting that the SAE models include efficiencies from the Energy Information Administration (“EIA”) 2023 *Annual Energy Outlook*, which reflect legislation up to and including the 2022 Inflation Reduction Act.³⁰

²⁶ SWEPCO Final IRP. P. 68.

²⁷ SWEPCO Conference call with LPSC Staff, June 20, 2024.

²⁸ SWEPCO Final IRP. P. 205.

²⁹ SWEPCO Final IRP. P. 18.

³⁰ SWEPCO LA IRP Response to Staff Consultant requests for additional IRP Info -- 7.19.24. Email to Staff, July 19, 2024.

Residential cooling, lighting, and refrigerator efficiencies are provided in Figures 10 and 11 in the IRP, and SWEPCO noted there are other efficiencies for residential and commercial models.³¹

Question 2: Staff asked how SWEPCO implemented energy efficiency adjustments that reflected codes and standards for specific types of equipment and end-uses.

SWEPCO's response was "[T]he *Xheat* variable is derived by multiplying a **heating index variable** [emphasis added] by a heating use variable. The heating index **"incorporates information** about heating equipment saturation; heating equipment efficiency standards and trends; and thermal integrity and size of homes... The *Xcool* variable is derived by multiplying a cooling index variable by a cooling use variable. The cooling index **"incorporates information** about cooling equipment saturation; cooling equipment efficiency standards and trends; and thermal integrity and size of homes..." And "The efficiency trends are based on DOE forecasts and Itron analysis."³² However, there is no discussion of the actual trends in the index variables.

Question 3: Staff asked why both DSM and EE declined to zero by 2034.

SWEPCO explained that the DSM and EE levels included in the base case load forecast (Appendix A, Exhibit A-12, which includes only the impact of codes and standards) "represent approved programs by different Commissions" and "While there is a continued gross savings, the Load Forecast information represents the relative net impact to the Company's load from approved EE programs as new codes and standards are implemented."³³ In follow-up, SWEPCO clarified that the decline in assumed DSM and EE was implemented as an artifact of the modeling. The decline is not intended to reflect actual energy consumption trends but is

³¹ Ibid.

³² SWEPCO Final IRP. P. 22.

³³ SWEPCO Final IRP. P. 206.

required to avoid double-counting of EE and DSM impacts, as the impacts of codes and standard are added to the load forecast over time.³⁴

Question 4: Staff asked for discussion of SWEPCO's residential and commercial EE programs' historical rate of uptake, and the implied uptake for the various cost bundles which are modelled in Aurora.

SWEPCO responded they have seen "gross EE capacity" of 14 MW annually over the in the past 5 years.³⁵ Capacity (measured in MW) refers to DSM impacts, because DSM serves as a resource which the utility can call upon to reduce load, as noted above in the definition from the IRP Rule. SWEPCO said it included 19 MW of "gross EE" through 2028; as noted previously, SWEPCO explained that it converts energy efficiency into load impacts by using assumptions for hourly load shapes.

Question 5: Staff noted that, given a high energy-price scenario (such as SWEPCO's ECR scenario), customers would be motivated to adopt more EE. Why is this not evident in SWEPCO's scenarios? Why does cumulative annual EE peak in 2028 in every scenario?

SWEPCO said that *"New EE resources are selected as part of the economic set of resources in the portfolio to meet SWEPCO's capacity obligation."*³⁶ SWEPCO then goes on to refer to *"appliance saturations discussed in Section 2.2.5 of the IRP."* SWEPCO provided further information, noting that the bundles of EE only incentivize early adopters; after ten years, all new equipment is covered by appliance standards.³⁷ Therefore, less and less new DSM is assumed to be available as a supply option.

6. Portfolio analysis: SWEPCO's rankings across portfolios provide useful insights

³⁴ SWEPCO Conference call with LPSC Staff, June 20, 2024.

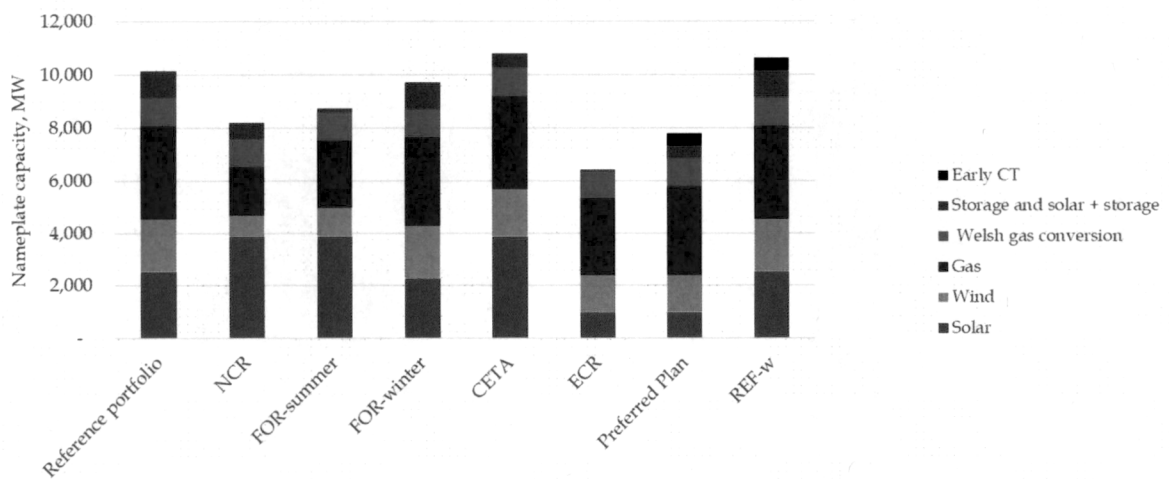
³⁵ SWEPCO Final IRP. P. 206.

³⁶ SWEPCO Final IRP. P. 206.

³⁷ SWEPCO Conference call with LPSC Staff, June 20, 2024.

SWEPCO used the AURORA model to select an optimal portfolio of resources to meet projected load under several market scenarios (Reference, NCR, FOR, CETA, and ECR). Each of these portfolios is considered “optimal” in the sense that each one is optimized relative to the market scenario for which it was designed.³⁸ SWEPCO’s resource portfolios result in a range of less than 7,000 MW to over 10,000 MW of new (nameplate) capacity additions (see Figure 3). This range includes SWEPCO’s Preferred Plan, which will be discussed in more detail below.

Figure 3. New supply resources, by optimized portfolio 2024-2043



Source: SWEPCO Final IRP Report, Appendix A, Exhibit F.

SWEPCO reported the net present value of the revenue requirement (“NPVRR”) for the 20-year period through 2043 for each of its portfolios. Staff overlaid a heat map in which the lowest-cost portfolios are green, the next lowest-cost are yellow, then orange, then red for the highest-cost portfolios (see Figure 4). Assuming each scenario is equally likely, the expected value (cost) of SWEPCO’s Preferred Plan is the most expensive (at \$16.8 billion) of all the portfolios except for the FOR-winter and Reference-winter portfolios.

³⁸ SWEPCO Final IRP. P.104.

Figure 4. Net present value of 20-year revenue requirement, Final IRP (million dollars)

Portfolio	Scenario						Expected value
	Ref	CETA	ECR	FOR	NCR		
Reference	\$ 15,851	\$ 15,745	\$ 16,351	\$ 15,819	\$ 15,055		\$ 15,764
Reference-winter	\$ 17,817	\$ 17,610	\$ 18,039	\$ 17,805	\$ 16,977		\$ 17,650
Clean Energy Tech Advance	\$ 16,371	\$ 16,208	\$ 16,777	\$ 16,319	\$ 15,585		\$ 16,252
Enhanced Carbon Regulation	\$ 16,126	\$ 15,992	\$ 16,165	\$ 16,077	\$ 15,842		\$ 16,040
Focus on Resiliency-summer	\$ 15,630	\$ 15,531	\$ 16,493	\$ 15,610	\$ 14,704		\$ 15,594
Focus on Resiliency-winter	\$ 17,705	\$ 17,557	\$ 18,036	\$ 17,704	\$ 16,831		\$ 17,567
No Carbon Regulation	\$ 15,582	\$ 15,349	\$ 16,506	\$ 15,571	\$ 14,619		\$ 15,525
SWEPCO Preferred Plan	\$ 16,774	\$ 16,770	\$ 18,243	\$ 16,821	\$ 15,519		\$ 16,825

Note: Red is most expensive, orange less expensive, yellow less than orange, and green is least expensive.

Source of numerical information: Preferred Plan, SWEPCO Final IRP, Table 29; other portfolios, SWEPCO Final IRP, Table 22.

Staff also overlaid a heatmap onto SWEPCO's Final IRP scorecard, in which red is most expensive, most risky, or otherwise "bad;" green is less expensive, less risky, or otherwise "good." SWEPCO re-defined several categories in its Final IRP scorecard analysis compared to its Draft IRP report: the 5-year cumulative annual growth rate ("CAGR") for 2023 through 2028 in customer rates in the Draft scorecard became a 7-year CAGR (2024-2031) in the Final scorecard, and the 30-year NPVRR in the Draft scorecard became a 20-year NPVRR. In SWEPCO's Final IRP Report, it dropped Locational Diversity and replaced it with Locational Impacts—the flip side of the same metric.

SWEPCO found that the Focus on Resiliency-summer ("FOR-summer") portfolio and the NCR portfolio were the least expensive: They had the least impact on 7-year customer rates and the lowest 20-year NPVRR (see Figure 5).

Figure 5. SWEPCO's scorecard, with Staff's heatmap overlay, Final IRP Report

Portfolio	Customer affordability		Rate Stability			Maintaining Reliability			Local impacts and Sustainability	
	7-year rate CAGR,	20-yr levelized	High-Low	Cost Risk: RR	Mkt Exposure (net	P/in Res (% Scenario Avg,	Op flex (dispatchabl	Resource diversity,	Locational	CO2 emissions
	Reference case	NPVRR	scenario range,	increase in	sales as % of	Summer 2033)	e cap, 2043,	reference case (pie	impacts (MW	% reduction
	(2024-2031)	Reference case	levelized 20-year	Case, 2043 (95th-50th)	portfolio load,		2043, (eyeballed))	charts, percent wind,	built inside	from 2005 - Ref
		NPVRR			summer 2033)				SWEPCO)	Case, 2043
Reference	1.53	\$ 67.20	9.61	169.5	-5	24	4,331	0.33	1,998	0.73
Reference-winter	3.83	\$ 75.40	9.19	171.8	-1	40	5,816	0.4	3,086	0.7
Clean Energy Tech Advance	1.9	\$ 69.30	9.35	178.4	2	33	5,491	0.3	2,446	0.68
Enhanced Carbon Regulation	1.83	\$ 68.30	7.01	162.4	8	25	4,276	0.38	2,033	0.75
Focus on Resiliency-summer	1.49	\$ 66.20	11.7	146.5	-11	20	3,996	0.24	1,911	0.73
Focus on Resiliency-winter	3.99	\$ 74.90	9.79	169	-1	36	5,732	0.45	3,086	0.71
No Carbon Regulation	1.49	\$ 66.00	12.13	127.1	-12	17	3,671	0.2	1,876	0.71
SWEPCO's Preferred Plan	3	\$ 71.00	16.21	145.2	-16	29	5,581	0.46	2,898	0.67

Note: Red is most expensive, most risky, or otherwise "bad;" green is cheaper, less risky, or otherwise "good."

Source of numerical information: SWEPCO Final IRP Report, Figure 82.

Rate stability metrics were mixed. ECR showed the lowest range in NPVRR between high and low costs across scenarios, with a moderate (yellow) level of cost risk in the reference case. NCR had the lowest risk of increased costs in the Reference case, but more high-low risk (the increment to revenue requirement when moving from the 50th to the 95th percentile of portfolio costs in years 2033 and 2043 in the same scenario). CETA showed the highest risk in the Reference case, but low risk in the high-low scenario range. SWEPCO's Preferred Plan had the highest high-low risk, but low risk relative to the Reference case, and the least "Market Exposure" for 2033. SWEPCO defined "Market Exposure" as hourly energy purchases less sales in summer (June, July, and August), and purchases less sales in winter (December, January, and February), each divided by total energy consumption over the corresponding months, for the year 2033.³⁹ The metric shown in Figure 5 above is SWEPCO's summer metric. If sales are greater than purchases, the metric is negative. It is not clear that this "Market Exposure" metric can accurately capture impacts on rates or rate stability. SWEPCO's use of the Aurora model would have allowed it to examine cost impacts directly, because energy prices (variable costs) and the level of output for a power resource are all outputs of Aurora. SWEPCO could have looked at the entire energy portion of the bill impact of the variable cost of the portfolio—the volume of energy provided multiplied by its cost. This begs the question of why SWEPCO chose to define a less-accurate "Market Exposure" metric. In any case, SWEPCO's Preferred Plan had the highest share of extra sales, at 16% of summer energy consumption. ECR had the lowest share (i.e., the highest share of purchases) at 8% of summer consumption.

Reliability metrics were also mixed. FOR-winter, Reference-winter, and CETA had the highest scores for planning reserves, and NCR had the lowest. SWEPCO's Preferred Plan was slightly better than average for planning reserves. SWEPCO's Preferred Plan scored well on operational flexibility but had the worst score for resource diversity.

SWEPCO's "Locational Impact" is an ambiguous metric. As noted above, in the Draft IRP, SWEPCO scored the locational characteristics of its portfolio using the opposite metric, "Locational Diversity," with the implication that a more locationally diverse portfolio is better. In the Final IRP, SWEPCO seems to have decided that less locational diversity is better.

³⁹ SWEPCO Final IRP. P. 99.

The Reference portfolio and the ECR portfolio had the largest carbon reductions. SWEPCO's Preferred Plan had the least reductions.

7. Preferred Plan: SWEPCO's Preferred Plan is one of the highest-cost portfolios which it evaluated

SWEPCO said it identified its Preferred Plan based on insights from the different portfolio analyses. SWEPCO's analysis of the NPVRR of the portfolios shows that its Preferred Plan had the highest cost of any of the options that did not have a winter reliability focus, and the worst carbon impact, as summarized above. The Preferred Plan had ambiguous scores (mix of high and low) for rate impacts and reliability.

Therefore, based on SWEPCO's own scoring, it is hard to determine what criteria SWEPCO used to choose its Preferred Plan, unless SWEPCO is assuming that it must meet an SPP winter planning reserve margin ("PRM") which is very high. The winter reserve margin of the various portfolios reached a high of an average of 34% (the Reference-winter portfolio and the FOR-winter portfolio). The Preferred Plan achieved a winter reserve margin of 33%. These percentages are all higher than the 26% PRM that SWEPCO assumed in its FOR-winter scenario, as described in its Draft IRP report. Staff noted in its comments on the Draft IRP that the assumption of a 26% winter reserve margin was reasonable. However, in the Final IRP, SWEPCO increased its target winter reserve margin for the winter-focused portfolios, without explaining why: *"The Company also assumed that each candidate winter portfolio included a planning reserve margin of 33% above its winter peak load by 2025 when optimizing each candidate portfolio to its native market scenario."*⁴⁰

The assumption that SWEPCO must meet a higher reserve margin increases the need to build new capacity and can increase costs to ratepayers. Currently, SPP's winter resource adequacy proposal is still under development. SPP's initial proposal to the Federal Energy Regulatory Commission ("FERC") was rejected because it did not include an availability requirement for the winter season.⁴¹

⁴⁰ SWEPCO Final IRP. P. 116.

⁴¹ Federal Energy Regulatory Commission. Docket No. ER23-2781-000. *Order Rejecting Tariff Revisions*. November 30, 2023.

In addressing rate impacts, SWEPCO compared its Preferred Plan to the Reference portfolio and the Reference-winter portfolio. It found the Preferred Plan to be more expensive than the Reference portfolio (not surprising given the NPVRR results shown previously in Figure 4 above).⁴² It found the Preferred Plan less expensive than the Reference-winter portfolio, again, not surprisingly. Therefore, SWEPCO found its Preferred Plan less expensive than planning for a winter reliability standard. This is not a strong argument that the Preferred Plan is the least-cost option, unless the high winter reliability standard is eventually mandated by SPP.

Staff asked for clarification of CO₂ emissions projections by scenario, which SWEPCO provided in Table 26 in its Final IRP.

IV. Conclusion

Staff's concerns, as presented in detail *supra*, center around the cost and assumptions behind SWEPCO's Preferred Plan. These concerns are consistent with the requirements of the IRP Rule. While SWEPCO's Final IRP Report did not address some issues raised by Staff in response to its Draft IRP Report, it is Staff's position that SWEPCO has met its obligations under the IRP Order requirements. Staff's position is based on its thorough review of the IRP Order and SWEPCO's Final IRP Report, assessing it for substantive methodological errors and omissions, as well as compliance with Staff's comments.

Staff therefore recommends that the Commission acknowledge SWEPCO's Final IRP Report as having complied with the IRP Order. Staff does not recommend initiation of proceedings for the resolution of disputed issues. Staff further recommends that as part of its next IRP cycle, SWEPCO address the concerns as set forth herein.

Respectfully submitted,



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Louisiana Public Service Commission

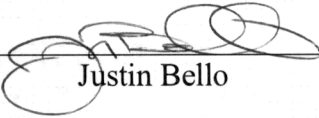
Post Office Box 91154

⁴² SWEPCO IRP. P. 125.

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CERTIFICATE OF SERVICE

I hereby certify that I have this 27th day of August, 2024, served copies of the foregoing pleading upon all known parties of this proceedings by electronic mail.


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