Southwestern Electric Power Company
2021 Integrated Resource Plan
Stakeholder Committee Report

As outlined by the Arkansas Public Service Commission's Resource Planning Guidelines for Electric Utilities,[1] SWEPCO organized and facilitated meetings of a Stakeholder Committee for resource planning purposes. The Stakeholder Committee has met and discussed SWEPCO's 2021 Integrated Resource Plan and we would like to provide the following observations and recommendations.

I. Review of Renewable Energy Assumptions

Stakeholders requested that SWEPCO use the latest National Renewable Energy Lab (NREL) Annual Technology Baseline (ATB) data for renewable energy resources. SWEPCO provided a reasonable response to stakeholders (SWEPCO Attachments 5 and 6) that at the time the IRP analyses began, the NREL ATB 2020 data and the Energy Information Administration's (EIA) 2021 Annual Energy Outlook (AEO) 2021 data were available, but not the NREL ATB 2021 data. The NREL ATB 2021 data were published mid-July 2021.

In previous IRP's, SWEPCO relied fully on the NREL ATB data. The NREL ATB data provide more granularity and forward projections than EIA data. Further, EIA data has historically not adequately captured the rapid pace of pricing and performance improvements in the renewable energy industries. The 2021 NREL ATB includes the ability for users to include (and exclude) the effects of the federal Production Tax Credit (PTC) for wind energy resources, and the Investment Tax Credit (ITC) for solar resources.

SWEPCO used the EIA AEO for generation technology prices and performance. The EIA data do not provide forward forecast improvements for price and performance; to resolve this deficiency, SWEPCO used learning curves and forecast rates from the NREL ATB 2020. SWEPCO provided a qualitative assessment of the NREL ATB 2021 data, compared to the data used in this IRP (SWEPCO Attachments 5 and 6). Stakeholders appreciate SWEPCO's responses and assessments, and while we find them generally satisfactory, we wish we had the opportunity to provide feedback prior to the data inputs being selected. The Stakeholders recommend that in the next IRP, SWEPCO begin the stakeholder process prior to selecting data inputs for model runs.

a. Renewable Pricing

Stakeholders requested that SWEPCO provide the Levelized Cost of Energy (LCOE) value associated with the various generation technologies. SWEPCO noted that LCOE's

[1] http://www.apscservices.info/Rules/resource_plan_guid_for_elec_06-028-R_1-7-07.pdf

are not inputs to the IRP models; however, LCOE's provide valuable insight regarding the model's methodologies. LCOE's help stakeholders quickly compare publicly available power purchase agreement (PPA) data against model assumptions. Often, IRP models include many more input assumptions than shared with stakeholders, making it virtually impossible for stakeholders to replicate the final and full costs associated with generation resources, such as inflation rates, interest rates, rate of return on equity, weighted average cost of capital, tax rates, and other financial metrics. Sometimes, these additional costs can be unintentionally double-counted if, for instance, the model requires Overnight CAPEX costs, but users input full CAPEX costs into the model.

While both solar PV and battery overnight capital costs are similar between SWEPCO's assumptions and the NREL ATB 2021 data, there appears to be a wider discrepancy with wind energy resources. SWEPCO's near-term wind energy overnight capital costs appear to be almost 18% higher than the NREL ATB data.

2024 Overnight Capital Costs ($/kW)

	SWEPCO	NREL ATB Moderate
Solar PV	$1,092	$1,112
Wind	$1,369	$1,164
Battery (Li-Ion)	$1,114	$1,037

SWEPCO Figure 21 (Battery), Figure 23 (Wind), Figure 25 (Solar),
NREL ATB 2021 Moderate Assumptions

SWEPCO incorporated the federal ITC/PTC for solar and wind resources, respectively. SWEPCO explained that the PTC for wind "is implemented in AURORA as a negative variable cost adder", of $15/MWh, depending on the scenario evaluated. This is an innovative and novel approach that could potentially be modified to allow SWEPCO to evaluate power purchase agreement (PPA) arrangements. Because the AURORA planning software so heavily weighs capital costs against capacity additions, wind or solar resource costs may appear front-loaded in the model results. However, PPA's shift capital costs away from utility ratepayers. PPA's may more closely resemble a zero-capital cost resource, with a variable cost component in the model (on a dollar per megawatt hour basis, $/MWh), much like how fossil units have variable fuel costs. In this configuration, the variable cost component of a renewable PPA would appear to be very much like an LCOE calculation. Stakeholders request that SWEPCO provide an analysis showing the effect of renewable PPA's in the IRP model.

Throughout the IRP results, battery storage resources are not readily selected. The Stakeholders believe this to be due, in part, to the higher capital costs assumed for the 4-hour energy storage resources used in the model, as opposed to a 1-hour or 2-hour battery resource. The Stakeholders request that SWEPCO incorporate multiple battery configurations, as well as develop different dispatch strategies that may highlight battery storage value better than only energy-arbitrage.

b. Renewable Performance Levels

SWEPCO used a capacity factor of 26.6% for solar resources, and 44% for wind energy resources. These are reasonable levels, and align fairly well with the NREL ATB 2021.

In the IRP, SWEPCO provides a good summary of its Scenario Reserve Requirements in Section 7.4.3. SWEPCO cited recent studies conducted at SPP regarding Effective Load Carrying Capacity (ELCC) methodologies regarding renewables (IRP Footnotes 20, 21). SWEPCO assumed wind energy capacity credit to be "14.7% across all months" and solar energy capacity credit to be "60% but it declines to 27-34% by 2041". SWEPCO varied capacity credit for solar resources, based on the solar growth rate in its various scenarios; meaning, in a scenario where less solar resources are adopted across SPP, a higher capacity credit is assigned (e.g., No Carbon Regulation Scenario). Under SWEPCO's Focus on Resiliency (FOR) Scenario, "SPP is assumed to enforce both winter and summer reserve requirements on participating utilities." In the FOR Scenario, SWEPCO reduced solar capacity accreditation in wintertime "from 10% in 2022 to 2% in 2041." However, SWEPCO did not improve the wintertime wind energy capacity accreditation. In a wintertime reliability construct, wind energy resources are likely to have a significantly higher capacity accreditation value, because wind resources perform very well during wintertime peak periods. Energy storage capacity credit assumptions show a decline in storage value, as more energy storage is added to the SPP grid, but no material difference from summertime to wintertime capacity accreditation. Stakeholders commend SWEPCO for evaluating multiple seasons and using a variable ELCC methodology. Stakeholders recommend that SWEPCO continue to refine the capacity accreditation values for its generation resources based on ELCC calculations across multiple seasons.

Stakeholders also request that SWEPCO conduct an ELCC analysis on its existing fossil generation fleet, as well as new fossil units. In February 2021, Winter Storm Uri wreaked havoc across the SPP footprint, when fossil units failed to turn on during the peak of the storm. Further, Stakeholders request SWEPCO provide an updated Action Plan with details on the costs of winterizing its fossil fleet, in alignment with SPP recommendations.[2]

[2] https://spp.org/documents/65037/comprehensive%20review%20of%20spp's%20response%20to%20the%20feb.%202021%20winter%20storm%202021%2007%2019.pdf

c. Additions and Caps on Renewable Resources

SWEPCO has already released a 3,000 MW wind RFP, and Stakeholders applaud SWEPCO's efforts. This IRP underscores the value of adding more wind resources sooner, rather than later. SWEPCO prevented the model from selecting solar and wind energy resources prior to 2024. Stakeholders recognize that procuring new resources takes time; however, a three or four-year delay in modeling solar and wind resources is excessive. The next IRP will be filed in 2024, meaning SWEPCO may miss opportunities over the next three years, particularly as it relates to solar procurement. Stakeholders request that in future IRP's, SWEPCO allow renewable energy resources and energy storage options to be selected by the model within a year (e.g., the 2024 IRP would allow resources to come online at the end of 2025).

SWEPCO capped solar and wind annual additions. For solar, SWEPCO capped annual additions at 450 MW's per year. In multiple scenarios, the model selected the maximum amount of solar in multiple years, indicating that the solar cap was impeding the model's optimization. While its reasonable for SWEPCO to represent feasible limits on annual installs by resource type, it is also critical for the Company to understand how much the model would opt to build based purely on economics in the absence of a cap. Stakeholders requested SWEPCO run a sensitivity that removed the solar cap. SWEPCO quickly provided an updated sensitivity where it removed the solar cap in the reference scenario. In the sensitivity, the model selected more solar, sooner, than the reference case, indicating that the solar cap was artificially constraining procurement. SWEPCO also included caps for wind resource additions, albeit, significantly higher caps than solar resources. Stakeholders recommend that SWEPCO adopt the Solar #2 Reference Portfolio as the Preferred Portfolio, and update its Action Plan to issue a 1,000 MW solar RFP in 2022.

SWEPCO Attachment 10

SOUTHWESTERN ELECTRIC POWER COMPANY
An AEP Company

Solar #2: No Annual Cap

Reference Portfolio: 450 MW annual solar limit

Utility-Scale New Build Additions by Year (Nameplate MW)					
Year	New Solar	New Wind	New Gas CT	New Storage	Capacity Purchases
2022					
2023					271
2024	150*	1150*	240		46
2025		1600*			
2026					
2027	350				
2028	450		480		
2029	450				
2030	450				
2031	150				
2032	300				
2033	350				
2034					
2035					
2036	50		720		
2037			240		
2038	250				
2039	250		240		
2040			240		
2041	250				
Total	3,450	2,750	2,160	0	

Reference Portfolio: no annual solar limit

Utility-Scale New Build Additions by Year (Nameplate MW)					
Year	New Solar	New Wind	New Gas CT	New Storage	Capacity Purchases
2022					
2023					271
2024	250*	1,100*	240		46
2025		1,600*			
2026					
2027					
2028	1,600				
2029	200				
2030	50		240		
2031					
2032	300				
2033	350				
2034					
2035			240		
2036	50		720		
2037			240		
2038	250				
2039	250		240		
2040			240		
2041	300				
Total	3,600	2,700	2,160	0	

- Portfolios are very similar in total build quantities
- Optimizing with no annual limit produces 1,600 MW portfolio addition in single year 2028

SWEPCO has done a good job at issuing competitive RFPs for renewable resources. Competitive RFPs expand SWEPCO's ability to transact on multiple renewable energy projects simultaneously. Stakeholders request that in the next IRP that SWEPCO not include unreasonable annual limits on solar or wind resource additions.

II. Review of Natural Gas Assumptions

SWEPCO's high gas price forecast is far below current gas prices and therefore likely fails to adequately capture gas risk. Stakeholders requested on September 17, 2021, that SWEPCO conduct "Run a sensitivity analysis on gas prices +25% higher than the highest natural gas price against the Reference Scenario/Portfolio". On October 15, 2021, SWEPCO provided the gas sensitivity as Attachment 9 in its responses to the Stakeholders, and noted, "A higher gas price and power price environment produces lower 30-year NPVRRs for all portfolios except the CC Portfolio." Stakeholders appreciate SWEPCO's additional analysis provided. We recommend for the next IRP that SWEPCO include a much higher cost natural gas cost assumption to better capture a broader band of risk.

III. SWEPCO Should Re-Evaluate the Flint Creek Spending Decisions

SWEPCO indicated at the stakeholder workshop that it intends to complete retrofits to comply with the Effluent Limitation Guidelines (ELG) and Coal Combustion Residuals (CCR) legislation at the Flint Creek coal plant that will allow the plant to operate through

2038. It does not appear that any IRP scenario assessed the impact of an alternative retirement date for Flint Creek. Instead, the Company locked in the 2038 retirement date, and did not let the model test whether any alternative retirement or operational options (including transitioning to seasonal operations) would deliver ratepayers higher value.

We understand that the Company conducted analysis of completing the CCR and ELG upgrades at Flint Creek and continuing to operate the plant in prior dockets. But this does not negate the need to conduct ongoing assessments.

The CCR and ELG analysis that the Company relied on is now over a year old. In this time, numerous input assumptions, from peak forecasts to fuel price forecasts, have changed. Further, the assumptions used by SWEPCO to model the CCR/ELG upgrades are not readily available to stakeholder of this IRP docket, as the assumptions used in the IRP are.

Utility law holds that the prudence of a project should be continually evaluated, and this is especially important when ratepayers will be asked to bear the costs associated with stranded assets, as the Arizona Corporation Commission recently explained:

> We believe that a utility has a duty to monitor the economics of its investments in a project from the inception . . . until the project is completed and that each investment made along the way is subject to a prudency determination. We also believe that a utility has a duty to alter its choices and its course for a project if doing so makes sense economically and is in the public interest, even if altering the course may not be as advantageous to the utility's shareholders . . . .[3]

This admonition applies to the Flint Creek spending SWEPCO is contemplating. Up until the Company begins operation of the investments, the Company can and should evaluate if conditions have changed enough to warrant canceling the upgrades. Canceling a project, even after some of the project funds have been spent, can still result in savings for ratepayers.

These CCR and ELG projects have not yet been approved by the Commission, and recent utility Commission rulings in other states cast doubt on the economics of investing in environmental upgrades to prolong the life of aging coal plants. In July, the Public Service Commission of Kentucky denied Kentucky Power's request for the ELG upgrades at AEP plant Mitchell, stating that the Company "failed to carry its burden of proof that there is a need to construct projects to comply with ELG rules, that the proposed ELG compliance project will not create a wasteful duplication of facilities, and that the proposed ELG

[3] Arizona Corporation Commission, Arizona Public Service Company, Docket No. E-01345A-19-0236, Oct. 26, 2021, available online at: https://docket.images.azcc.gov/E000016333.pdf

compliance project is reasonable and cost effective."[4] Similarly, in August, the State Corporation Commission in Virginia denied Application Power's requests for approval of ELG upgrades at AEP plants Amos and Mountaineer on the basis that the Company failed to demonstrate that such investments are reasonable and prudent.[5] At the end of October, the Arizona Corporation Commission, as noted above, denied recovery to Arizona Public Service of $215.5 million out of the full $450 million in environmental upgrades that the Company made to the Four Corners coal plant.[6]

Given the declining economics of coal plants today, including specifically at Flint Creek, it is unlikely that Flint Creek will actually operate through its planned retirement date in 2038. If the ELG and CCR projects are completed and approved by the Commission, they are very likely to become stranded assets. Given that these project costs will be added to the Flint Creeks' undepreciated plant balance, this could create rate shock for SWEPCO's ratepayers when the plant inevitably does retire.

Given all of these factors, we therefore request that SWEPCO test at least one scenario, with the most up-to-date resource cost, fuel cost and market power price assumptions, that retires Flint Creek in 2028 (or 2027) and avoids the capital outlay associated with retrofitting the site. In this scenario, SWEPCO should assume that transmission funding from the recently enacted bipartisan infrastructure bill (that has now been signed into law) will cover half of the cost of the transmission upgrades that SWEPCO assumes are required in the northwest Arkansas load pocket if Flint Creek retires.

IV. SWEPCO's Scorecard is Not Reasonably Constructed

The Stakeholder Group recommends that SWEPCO include public health and environmental justice impacts as a metric in its portfolio scorecard. In addition, the Stakeholder Group recommends that the "Local Impacts" metric be adjusted to consider respending benefits and the unique job impacts of different resource types.

In developing its IRP and selecting a preferred portfolio, Sierra Club encourages SWEPCO to include quantified consideration of the health impacts of each portfolio. To achieve this, SWEPCO should document the impacts that air pollutants—sulfur dioxide, nitrogen oxides, and particulate matter—have on public health, which include increased instances of asthma attacks, respiratory infections, hospital admissions, missed school and work days, and a variety of other health problems. Air pollution contributes significantly to increased morbidity and mortality, and existing, publicly available modeling

[4] Kentucky Public Service Commission Order, Case No. 2021-00004.
[5] Virginia State Corporation Commission Order Granting Rate Adjustment Clause, Case NO. PUR-2020-00258.
[6] Van Voorhis, Scott. *APS vows legal action after Arizona regulators deny cost recovery of $215.5 M coal plant upgrades*. Utility Dive. October 2021.

tools—such EPA's BenMAP[7] or the Clean Air Task Force's "Toll From Coal"[8]—can be used to translate air pollution into social cost estimates.

SWEPCO should also incorporate consideration of the environmental justice impacts of its portfolios when selecting its preferred plan. Communities that are harmed most by utilities' persistent reliance on fossil-burning power plants, based on their geographic proximity to fossil plants, are often disproportionately composed of minority and low-income populations. These communities would benefit the most from reduced emissions, coal retirements, and investments in renewable energy and should be involved in the development of plans to retire and replace these existing polluting resources. Integrating community involvement into the resource planning process can deliver better and lower-cost solutions than soiled centralized resource planning processes can deliver alone.

SWEPCO should begin by assessing the environmental justice implications of its resource selections, including its existing resources, in this planning process — by using and EPA's EJ Screen tool.[9] The Company should then develop a plan for engaging the local community in resource planning decisions that directly impact the identified environmental justice communities. Entergy Arkansas stated that it plans to outline measures the Company has taken and plans to take to address environmental justice concerns and public health impacts in their operations and in their IRP process, and we similarly urge SWEPCO to address these issues directly and with the attention they merit.[10]

In addition to adding scorecard metrics on public health impacts and environmental implications, the stakeholders note certain limitations to the categories that are already included on the scorecard. The "Local Impacts" metric appears to unfairly benefit high-cost portfolios and omits certain components that should be considered. SWEPCO has chosen to measure "Local Impacts" using Total New Nameplate MWs and Total Capital Expenditures within SWEPCO's service territory. However, not all megawatts and capital expenditures are created equal when it comes to local economic impact and job creation.

Using Total capital expenditures as a measure of local impact ensures that expensive portfolios will rank highly on the scorecard. But this obscures the full picture of direct, indirect, and induced effects of various portfolios. A lower cost portfolio would result in lower electricity costs for SWEPCO customers. This money would be respent locally in other industries, spurring local job creation in other parts of the local economy. These outcomes are referred to as "induced" effects within the field of economic impact

[7] https://www.epa.gov/benmap
[8] https://www.tollfromcoal.org/
[9] https://www.epa.gov/ejscreen
[10] EAL Response to Stakeholder Group (Sept. 30, 2020).

analysis.[11] A full economic impact analysis would count the direct effects of capital expenditures but also consider the indirect supply chain effects and the induced respending effects.

The choice of Total MWs as a metric similarly obscures the nuances of resource job creation. Not all resource types create the same type or quality of jobs. Renewable projects can often be smaller and more modular than traditional fossil resources, a feature that distributes economic and employment benefits across a wider area. Meanwhile, energy efficiency and demand-side management is the fastest growing energy employment sector. According to the U.S. Energy and Employment Report 2020 ("USEER"), the EE/DSM industry has created over 400,000 jobs in three years nationwide, a growth rate of 5.8%.[12]

In conjunction with the 2020 USEER report, the National Association of State Energy Officials ("NASEO") also released a report on the wages and benefits associated with energy industry employment.[13] NASEO found that opportunities created by investment in EE/DSM are not just high in number, they also often have higher wages, are more likely to be permanent, and are less geographically constrained. In fact, NASEO found that 99.8% of all counties in the U.S. had EE jobs and that the average median hourly income of these jobs was 28% higher than the national median income.[14] Jobs in EE are so widespread because "energy efficiency technologies and services are applicable to commercial, industrial, and residential sectors across the economy. Unlike many other energy jobs, installation, maintenance, and repair jobs in the energy efficiency sector are more universally distributed."[15]

Utility investment in renewable energy and energy efficiency provides a more effective and certain way to spur job creation across SWEPCO's territory relative to investment in large fossil plants that face an uncertain future due to carbon policy and low-cost renewables. SWEPCO's "Local Impacts" section in the scorecard should reflect this by focusing on a full economic and job impact analysis, rather than an approach that simply benefits high-cost portfolios.

---

[11] Joe Demski, "Understanding IMPLAN: Direct, Indirect, and Induced Effects," *IMPLAN,* 18 June 2020. Available at: https://blog.implan.com/understanding-implan-effects

[12] National Association of State Energy Officials and the Energy Futures Initiative, "U.S. Energy and Employment Report 2020," available at: https://www.usenergyjobs.org/.

[13] National Association of State Energy Officials and the Energy Futures Initiative, "Wages, Benefits, and Change: A Supplement Report to the Annual U.S. Energy and Employment Report," p. 5, available at: https://www.usenergyjobs.org/.

[14] National Association of State Energy Officials and the Energy Futures Initiative, "Wages, Benefits, and Change: A Supplement Report to the Annual U.S. Energy and Employment Report," p. 5, available at: https://www.usenergyjobs.org/.

[15] Ibid.

V. SWEPCO Did Not Seriously Consider Solar-Battery Hybrids in Its Portfolios

As discussed in the Renewable section above, the Stakeholders appreciate SWEPCO's efforts to respond to stakeholder modeling requests and provide the cost and operational assumptions for renewable resources that the Company relied on in its IRP modeling. One area of concern that remains is the Company's assumptions around hybrid paired resources.

SWEPCO indicated that it assumed that the cost of paired resources was equal to the sum of the cost of each stand-alone resource. But often paired resources share hardware, such as inverters, and therefore there are economies of scale relative to building each resource individually. NREL ATB projects that paired solar and storage resources experience around 25 percent cost savings relative to standalone solar PV and battery storage systems. By failing to capture this cost efficiency, SWEPCO is substantially over-stating the cost of paired resources. It is therefore not surprising that no paired resources were selected as part of any of SWEPCO's IRP portfolios.

The Company is also modeling the ELCC for paired resources as simply the sum of the ELCC for each individual resource. SWEPCO defended this decision by citing the two most recent SPP ELCC studies, stating that "SWEPCO does not believe a hybrid solar+storage or wind+storage facility would provide a meaningful increase in the ELCC value when compared to modeling as stand-along resources." This approach oversimplifies the dynamic between two or more resources, and likely underestimates the combined contribution of the resources to SWEPCO's reliability. This can be addressed with an evaluation of system reliability more broadly.

We recommend that SWEPCO conduct a reliability study that evaluates the loss of load expectations (LOLE) and ELCC's for resources on SWEPCO's system and captures the interaction between all resources across the Company's entire portfolio. As the penetration of solar and wind on the system increases, the timing of system peaks will change. For example, as the penetration of solar on the system increases, the peak may shift later in the evening. But wind generation tends to pick up later in the evening, and this later peak may now align better with wind generation. This dynamic, and many others, are critical to capture in resource planning modeling as the penetration of renewables (paired and stand-alone) increases.

VI. SWEPCO includes minimal Energy Efficiency Investment in its IRP

SWEPCO included very minimal energy efficiency investment as part of all scenarios in its IRP. Even more concerning is that it projects a significant decline in EE investment beyond 2028 for reasons that are not explained in the IRP.

Stakeholders requested SWEPCO provide data on the Company's projected net annual incremental savings from EE as a percentage of sales for each scenario. The Company indicated that it did not calculate this metric as part of its IRP, but did provide annual energy saved under each portfolio. The stakeholders appreciate the Company providing this data, but we are concerned that this data provides little information on the investments that the Company plans to make in each year, and over the resource planning period. EE measures have a measure life, after which they are no longer credited as providing savings. Because of this, the annual savings data does not provide a clear picture of the Company's plan to invest in EE.

This is especially concerning because SWEPCO has historically invested minimally in EE. In 2020, the Company's EE investments accounted for only 0.41 percent of total sales.[16] This is less than a half the national average reported by ACEEE in its most recent report (which was based on 2018 data), and nearly a tenth the level seen among leading utilities.[17] EE has been proven time and again to be the lowest cost energy resource, and will become even more critical as the Company retires its existing fossil resources and invests in renewables and battery storage. Additionally, investment in EE lowers energy bills by reducing the quantity of electricity that people need to purchase. This has an outsized benefit for low-income customers by reducing their energy burden (that is the percentage of their income that goes towards their electricity bill).

Based on these concerns, we encourage the Company as part of the next IRP to (1) have a full energy efficiency potential study conducted by an outside firm with expertise to fully understand its EE potential; (2) increase investment to at least approach the national average over the next five years; (3) report annual incremental EE investments.

VII. Review of IRP Process

Stakeholders appreciate SWEPCO's IRP process. SWEPCO provided stakeholders with a robust IRP analysis prior to the Stakeholder meeting. SWEPCO responded to the Stakeholder Committee's requests quickly and in easy formats as requested. SWEPCO did not deny any Stakeholder request based on any assertion of confidentiality or proprietary information. While SWEPCO and Stakeholders had disagreements, SWEPCO earnestly engaged Stakeholders' requests.

The Stakeholder Committee has made several requests and recommendations for the next IRP process. The most important request is that SWEPCO engage with the Stakeholder Committee earlier in the process, prior to selecting data inputs and running

[16] Calculated based on EIA 861 data on Energy Efficiency Investment and Sales for 2020.
[17] Grace Relf, Emma Cooper, Rachel Gold, Akanksha Goyal, and Corri Waters. *2020 Utility Energy Efficiency Scorecard.* ACEEE. February 2020.

models. This IRP process has been the quickest IRP process in recent history. SWEPCO's analyses could be improved and Stakeholders feel that SWEPCO will earnestly want to engage in dialog on the topics.

IRP Stakeholder Process Timeline

6/18/21 - SWEPCO contacts previous stakeholders asking for meeting preference on 9/15, whether virtual or in-person in Texarkana

7/28/21 - SWEPCO informs stakeholders the meeting will be virtual

9/2/21 - SWEPCO sends Webex and meeting agenda

9/13/21 - SWEPCO emails Draft IRP report, invited stakeholder list, meeting agenda, and APSC Resource Planning Guidelines

9/15/21 - SWEPCO hosts IRP Stakeholder meeting, sends slide deck materials and contact information

9/17/21 - Stakeholders submit list of questions and requests to SWEPCO

9/24/21 - SWEPCO responds to Stakeholder requests, providing materials in Excel spreadsheet format via large file format. SWEPCO lets Stakeholders know that additional material will be made available by 10/16/21.

10/15/21 - SWEPCO provides additional data, along with sensitivity analyses requested by stakeholders

10/18/21 - Stakeholders hold a conference call to discuss materials shared, and timeline to draft the Stakeholder Report

11/5/21 - Stakeholders complete draft Stakeholder Report

11/12/21 - Stakeholders finalize Stakeholder Report

VIII. Stakeholder Recommendations

The Stakeholder Committee proposes the following recommendations for consideration in this and future IRP's:

1. Complete the 3,000 MW wind RFP

2. Adopt the Solar #2 Reference Portfolio as the Preferred Portfolio
3. Update the Action Plan to issue a 1,000 MW solar RFP in 2022
4. Use the most up-to-date NREL ATB cost assumptions for renewable generation resources
5. Begin the stakeholder process prior to selecting data inputs for model runs
6. Provide an analysis showing the effect of modeling renewable generation resources as PPA's in the IRP model
7. Incorporate multiple battery storage configurations (1-hr, 2-hr, and 4-hr), and develop different dispatch strategies that may better highlight battery storage value
8. Conduct a reliability study that evaluates the loss of load expectations (LOLE) and ELCC's for resources on SWEPCO's system and captures the interaction between all resources across the Company's entire portfolio
9. Conduct an ELCC analysis on its existing fossil generation fleet, as well as new fossil units
10. Provide an updated Action Plan with details on the costs of winterizing its fossil fleet, in alignment with SPP recommendations
11. Allow renewable energy resources and energy storage options to be selected by the model within a reasonable amount of time (1-2 years)
12. Do not include annual limits on solar or wind resource additions
13. Include a much higher cost natural gas cost assumption to better capture a broader band of risk
14. Continue monitoring federal policy changes (e.g., PTC/ITC extensions)
15. Include a sensitivity in this Arkansas IRP that tests the prudence of going forward with the ELG/CCR retrofits at Flint Creek based on current inputs
16. Revise the IRP scorecard to include public health and environmental justice impacts
17. Adjust the IRP scorecard measure of local jobs impact to more accurately capture the number of jobs created by different portfolios
18. Improve modeling of paired resources, solar-battery hybrids in particular by recognizing the economics of scale that exist when co-locating resources.
19. Conduct a full energy efficiency potential study by an outside firm with expertise to fully understand EE potential
20. Increase energy efficiency investment to at least approach the national average over the next five years and report annual incremental EE investments