

**BEFORE  
THE ARKANSAS PUBLIC SERVICE COMMISSION**

<b>IN THE MATTER OF SOUTHWESTERN</b> ) <b>ELECTRIC POWER COMPANY, INTEGRATED</b> ) <b>RESOURCE PLANNING REPORT</b> ) <hr style="width: 100%; border: 0.5px solid black;"/>	)	<b>DOCKET NO. 07-011-U</b>
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**SIERRA CLUB’S PETITION TO INTERVENE AS A PARTY**

Sierra Club respectfully submits this petition to intervene as a party in this proceeding that has been initiated by the Southwestern Electric Power Company (“SWEPCO”) for its Integrated Resource Planning filings. Sierra Club petitions to intervene in this proceeding on behalf of itself and its 3,182 Arkansas members (as of Feb. 2019). Sierra Club files this Petition to Intervene, along with the attached “Sierra Club’s Petition to Require Southwestern Electric Power Company to Re-Evaluate and Re-Submit Resource Plan,” (“Petition to Re-Evaluate and Re-Submit”). Attached here as Exhibit 1. In the attached Petition to Re-Evaluate and Re-Submit, Sierra Club asks the Commission to require SWEPCO to re-evaluate and re-submits its 2018 Integrated Resource Plan (“Resource Plan”) because the company failed to perform any economic analysis of the value to customers of the Dolet Hills power plant, even though the plant has now been designated for seasonal use only and despite the high cost of continuing to operate this plant. In support of this Petition to Intervene, submitted through Rule 4.02 of the Arkansas Public Service Commission’s Rules of Practice and Procedure, Sierra Club states:

1. Sierra Club is the nation’s oldest and largest grassroots environmental organization. Sierra Club’s mission is to explore, enjoy, and protect the wild places of the earth, and to educate and enlist humanity to protect and restore the quality of the natural and human environment. Sierra Club has worked diligently to protect and improve air and water quality,

limit the adverse effects of climate change, and promote clean energy in Arkansas and throughout the United States.

2. Sierra Club regularly participates in public utility proceedings nationwide and in Arkansas to advocate for robust renewable energy and energy efficiency investments that will produce safe and sustainable jobs, while also reducing both electric system costs and emissions from coal-burning power plants. Sierra Club has previously been granted intervention in several Arkansas electric utility cases.<sup>1</sup>

3. Sierra Club participated in SWEPCO 2018 Resource Plan stakeholder process, including by participating in a stakeholder meeting in Fayetteville and via submission of comments.

4. Rule 4.02(a) of the Arkansas Public Service Commission's Rules of Practice and Procedure provides that:

Any Person whose interest may be directly affected by Commission action and whose interest is not adequately represented by other Parties may petition the Commission for leave to intervene as a Party in any Docket.

Sierra Club meets this standard both in its own right and on behalf of its members. In addition, every petition to intervene shall include:

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<sup>1</sup> E.g., Order #8, dated June 16, 2009 (granting Sierra Club intervention), No. 09-008-U, *In the Matter of the Application of Southwestern Electric Power Company for Approval of a General Change in Rates and Tariffs*; Order #11, dated Sept. 21, 2009 (granting Sierra Club intervention), Docket 09-024-U, *In the Matter of Entergy Arkansas, Inc.'s Request for a Declaratory Order Approving the Addition of the Environmental Controls Project at the White Bluff Steam Electric Station Near Redfield, Arkansas*; Order # 3, dated Mar. 6, 2012 (granting Sierra Club intervention), Docket No. 12-008-U, *In the Matter of Southwestern Electric Power Company's Petition for a Declaratory Order Finding that Installation of Environmental Controls at the Flint Creek Power Plant is in the Public Interest*; Order #13, dated July 8, 2015 (granting Sierra Club intervention), No. 15-015-U, *In the Matter of the Application of Entergy Arkansas, Inc. for Approval of Changes in Rates For Retail Electric Service*.

- (A) a clear and concise statement of the nature of the right or interest of the Petitioner in the proceeding which entitles it to participate and which will be directly affected by the Commission's action;
- (B) a demonstration that the Petitioner's interests are not adequately represented by any other Party to the proceeding;
- (C) the specific objections, if any, of the Petitioner to the Applicant's proposal(s);
- (D) the grounds and issues of fact and law upon which Petitioner wishes to be heard; and
- (E) any other reasonable information which may be required by Rule or order.

Rule 4.02(a)(1). Sierra Club respectfully submits this Petition which includes the required information.

5. Sierra Club's interest in SWEPCO's Resource Plan docket. Sierra Club seeks to participate in this docket to represent and protect its interests and those of its Arkansas members. Sierra Club and its members have a substantial interest in the production of affordable, low-polluting, and efficient energy for Arkansas, including for SWEPCO's electric system, which in 2019 will generate 89% of its energy from burning coal.<sup>2</sup> Coal is the most heavily polluting means of generating electricity. As the Commission has previously found, "Sierra Club has an organization interested in promoting environmental protection, energy conservation, and renewable energy development."<sup>3</sup>

6. Sierra Club has a specific interest in this SWEPCO Resource Planning as an active participant in the 2018 Resource Planning stakeholder process. During the Resource Planning stakeholder process, Sierra Club asked SWEPCO to perform an economic evaluation of whether the Dolet Hills has any value for customers or should instead be retired. SWEPCO declined to perform such an analysis. Pursuant to Section 4.8 of the Arkansas Public Service Commission's Resource Planning Guidelines for Electric Utilities ("Resource Guidelines"),

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<sup>2</sup> SWEPCO 2018 IRP, Executive Summary, Page 8.

<sup>3</sup> Order #13, dated July 8, 2015 (granting Sierra Club intervention), No. 15-015-U, *In the Matter of the Application of Entergy Arkansas, Inc. for Approval of Changes in Rates For Retail Electric Service*.

Sierra Club is now requesting that the Commission require SWEPCO to re-evaluate and re-submit its Resource Plan to address the economic risks to SWEPCO's Arkansas customers related to the continued operation of the Dolet Hills power plant.

7. Sierra Club's interest may be directly affected by Commission action in this proceeding. Sierra Club's interests "may be directly affected" by Commission action in this proceeding. SWEPCO's current Resource Plan fails to include any evaluation of the costs and benefits of operating Dolet Hills, nor does it assess the cost-effectiveness of operating the Dolet Hills plant. As explained in the attached Petition to Re-Evaluate and Re-Submit, both evaluations are required by the Resource Guidelines. A Commission order requiring an evaluation of the costs and benefits to Arkansas customers of retaining Dolet Hills in SWEPCO's generation portfolio would directly impact Sierra Club's interest in promoting environmental protection, energy conservation, renewable energy development, and in less reliance on coal-burning electric generation, especially from plants like Dolet Hills, that indisputably produce power at costs far exceeding available alternatives. Because a Commission decision in this proceeding may require SWEPCO to reconsider the value of its Dolet Hills coal-burning plant, and therefore the pace of the shift in Arkansas away from heavily polluting forms of energy generation and toward cleaner resources, Sierra Club has an interest in this proceeding "which entitles it to participate and which will be directly affected by the Commission's actions." Rule 4.02(a)(1)(A).

8. Issues on which Sierra Club wishes to be heard. The issues on which Sierra Club wishes to be heard are stated in the attached Petition to Re-Evaluate and Re-Submit. Such Petition to Re-Evaluate and Re-Submit is submitted pursuant to section 4.8 of the Resource

Guidelines. Under section 4.8 a stakeholder is permitted to submit a comment to the Commission asking that a utility be ordered to re-evaluate and re-submit a resource plan.

9. Sierra Club is not adequately represented by other Parties in this docket. No other party to this docket can adequately represent Sierra Club's or its members' interests in this proceeding. As of the date of this filing, no party with an environmental or public-health mission has petitioned to intervene in this SWEPCO resource planning docket. Both Staff and the Attorney General are charged with representing the general public interest, but neither Staff nor the Attorney General focuses primarily on the environmental and public-health impact of utility regulatory issues. As such, neither Staff nor the Attorney General can adequately represent Sierra Club's interest in this proceeding. Neither Staff nor the Attorney General has asked that SWEPCO be ordered to re-evaluate and re-submit the 2018 Resource Plan and so the lack of adequate representation in this regard is self-evident.

10. To the best of our knowledge, there is no deadline for intervention in a resource planning proceeding. This petition is therefore timely filed.

11. Joshua Smith and Tony Mendoza will represent Sierra Club in this proceeding. Mr. Smith is an out-of-state attorney licensed to practice in Florida and Oregon. Mr. Mendoza is an out-of-state attorney licensed to practice in the District of Columbia and New York. Both Mr. Smith and Mr. Mendoza are in good standing in the jurisdictions in which they are licensed to practice, and neither has ever been subject to a disciplinary action. Sierra Club will accept service at Mr. Smith's and Mr. Mendoza's business address, including by electronic mail, provided below. Mr. Smith and Mr. Mendoza respectfully request to appear in this docket *pro hac vice* and hereby verify their compliance with the standard set forth in Rule 4.01(b).

\* \* \*

For these reasons, Sierra Club respectfully requests that the Commission grant this petition to intervene as a party in this proceeding.

Respectfully submitted,

Dated: April 15, 2019

/s/ Tony Mendoza

Joshua Smith

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Attorneys for Sierra Club

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that the foregoing was electronically filed via the Arkansas PSC's electronic filing system. Notice of this filing will be served upon all parties of record who have registered through this electronic filing system and I will have a copy served on the parties below via email.

/s/ Tony Mendoza  
Tony Mendoza

Date: April 15, 2019

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# Exhibit 1



**BEFORE  
THE ARKANSAS PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF SOUTHWESTERN )  
ELECTRIC POWER COMPANY, INTEGRATED ) DOCKET NO. 07-011-U  
RESOURCE PLANNING REPORT )  
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**SIERRA CLUB’S PETITION TO REQUIRE SOUTHWESTERN ELECTRIC POWER  
COMPANY TO RE-EVALUATE AND RE-SUBMIT RESOURCE PLAN**

Under section 4.8 of the Arkansas Public Service Commission’s Resource Planning Guidelines for Electric Utilities (“Resource Guidelines”), Sierra Club respectfully requests that the Commission require Southwestern Electric Power Company (“SWEPCO”) to re-evaluate and re-submit its Integrated Resource Plan (“IRP” or “Resource Plan”) to address the economic risks to SWEPCO’s Arkansas customers related to the continued operation of the Dolet Hills power plant. In its final Resource Plan, SWEPCO arbitrarily refused to conduct a meaningful economic or risk analysis for Dolet Hills, even though the Company was indisputably aware that the unit consistently operates at a loss, consistently provides power at double market prices, is at risk of imminent retirement, and that mothballing or deactivating the unit would likely result in significantly lower costs for Arkansas customers. Indeed, the co-owner of Dolet Hills has concluded that switching the unit to seasonal operation will save ratepayers in Louisiana \$40 million annually, leaving SWEPCO yet to answer the question of how Arkansas ratepayers will be affected. Because SWEPCO failed to comply with the Commission’s Resource Guidelines and failed to conduct a meaningful analysis of the economics or risks associated with continuing to operate Dolet Hills—including evaluating whether retaining this plant has value for Arkansas customers or instead if customers would benefit from its retirement—the Commission should

require the Company to re-evaluate and resubmit a Resource Plan that adequately analyzes costs, economic risks, environmental risks, and the potential retirement of Dolet Hills.

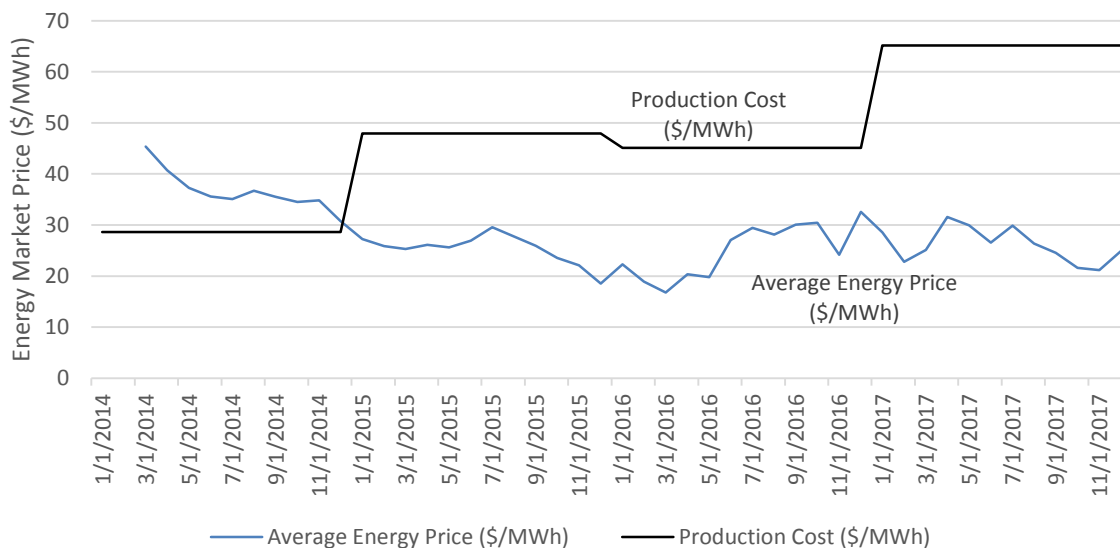
### **INTRODUCTION**

SWEPCO's Dolet Hills power plant exemplifies the downward economic trend for coal-fired generation units.<sup>1</sup> In fact, multiple analyses have demonstrated that Dolet Hills consistently operates at a loss in the Southwest Power Pool energy market, and indisputable public evidence shows that the plant produces power at double the market MISO price. Specifically, and as reflected in the attached analysis, Dolet Hills is routinely operating and dispatching energy into the market even though market prices are *below* the total production cost (*i.e.*, fuel, pollution control operating costs, and other variable operation and maintenance costs) to operate the plant. In other words, Arkansas customers would likely save money if the plant were not operated at all. Comparing locational marginal prices at SPP's Louisiana hub against the estimated production cost of Dolet Hills (as reported by SWEPCO to the U.S. Energy Information Administration), we estimate that Dolet Hills has incurred substantial losses almost every month it operated from 2014 through 2017, and since end of 2016 the plant's cost of producing power has been at least double the price of market energy.

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<sup>1</sup> Attachment A, Sierra Club's Louisiana Comments on Southwestern Electric Power Company's Integrated Resource Plan Description of Studies and Study Assumptions ("Sierra Club Comments"), pages 3-4.

**Figure 1: Dolet Hills: Production Costs Versus Market Energy Price in SPP (publicly available data)<sup>2</sup>**



In fact, from 2014 through 2017, the plant lost “more than \$207 million on the SPP energy market,” with the company’s ratepayers bearing the burden of the cost. Sierra Club Comments, page 3, 6. It appears that those fuel and operational costs are then passed along to the Company’s ratepayers.<sup>3</sup> To make matters worse, Dolet Hills is “far and away the largest single source of sulfur dioxide and nitrogen oxide” in Louisiana, and one of the largest polluters in the country. Sierra Club Comments, page 1.

Prudent resource planning requires SWEPCO to rigorously investigate the costs and benefits, as well as the risks that its coal-burning power plants pose to its ratepayers. To that end, and throughout the Resource Plan stakeholder process, Sierra Club repeatedly raised concerns about the economics and continued viability of Dolet Hills, and urged SWEPCO to fully evaluate the potential of retiring the unit to understand if such proposed retirement would

<sup>2</sup> See Sierra Club Comments, pages 5-6.

<sup>3</sup> See SWEPCO 2017 Form 10-K at 20, available at [https://www.aep.com/investors/FinancialFilingsAndReports/Filings/docs/AEP\\_10K\\_2017.pdf](https://www.aep.com/investors/FinancialFilingsAndReports/Filings/docs/AEP_10K_2017.pdf).

benefit customers. In this docket and others, Sierra Club has presented SWEPCO with substantial economic analysis demonstrating that Dolet Hills routinely operates at a loss, consistently costs over twice the MISO market price to operate, and should be replaced by lower-cost, clean energy alternatives.

In its response to stakeholder comments, SWEPCO stated that it would take Sierra Club's "request under advisement in preparing the final IRP."<sup>4</sup> But the company refused to perform any such analysis in the final IRP, preferring, apparently, to ignore the costs and benefits of continuing to operate Dolet Hills. Instead, SWEPCO revealed to both the Commission and stakeholders that it would only operate the unit seasonally but failed to analyze any economics or risks of the decision. Cleco, the co-owner of Dolet Hills, has concluded that switching the unit to seasonal operation will save customers in Louisiana \$40 million annually, leaving SWEPCO yet two fundamental questions: First, does Dolet Hills have any value at all for Arkansas customers, commensurate with the high cost of operating that plant? Second, how does the newly announced switch to seasonal operation only impact Arkansas customers, and would they be better off if the plant retired?

### **ARGUMENT**

The SWEPCO IRP fails to mention, let alone evaluate, the prospect of retirement for Dolet Hills in addition to serious economic concerns for the unit and risks to Arkansas customers. Because the IRP fails to provide a full and transparent analysis while also failing to comply with the requirements of the Resource Guidelines the Commission put forward, the

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<sup>4</sup> SWEPCO 2018 IRP, page 163 [Stakeholder Comment:] SWEPCO should perform the same analysis it performed for the Pirkey unit as for the Dolet Hills unit, with retirement taking place in 2025.

Response: SWEPCO will take this request under advisement in preparing the final IRP.

Commission should require re-evaluation and re-submission of the IRP by SWEPCO. Specifically, the Commission should require reevaluation because SWEPCO (1) failed to meaningfully engage in the stakeholder process by failing to respond to comments related to Dolet Hills' economics and risks (2) failed to meet the objectives of the resource plan by not considering the costs of Dolet Hills (3) failed to properly identify and characterize supply and demand resources by not considering the cost effectiveness of Dolet Hills and the station's role in the utility's overall planning objectives and (4) failed in selecting and evaluating its resource plan by not balancing the economic risks of adverse outcomes to its customers in continuing to operate the Dolet Hills facility.

**I. SWEPCO Failed to Meaningfully Engage in the Stakeholder Process**

Section 4.8 (Stakeholder process) of the Resource Guidelines provides that:

Each utility will organize and facilitate meetings of a Stakeholder Committee... The utility shall make a good faith effort to properly inform and respond to the Stakeholder Committee... Stakeholders and General Staff may also submit comments to the Commission on each Resource Plan after it has been submitted by the utility. Such comments should be taken into consideration by the utility in its preparation efforts and decisions concerning subsequent approval applications... if comments concerning the process and results warrant, the Commission may require the utility to re-evaluate and resubmit its Resource Plan for the current planning cycle to address concerns raised in the comments.

Due to SWEPCO's failure to follow section 4.8 of the Resource Guidelines, the Commission should require the company to re-evaluate and re-submit its Resource Plan to address concerns raised in the comments. The General Assembly has found that "there should be provided an adequate opportunity for individuals, groups interested in energy and resource conservation and the protection of the environment, state and regional agencies, local governments, and other public bodies to participate in timely fashion in decisions regarding the ... operation of major utility facilities." Ark. Code Ann. § 23-18-502 (d). While Arkansas

legislators intended for the public to have an adequate opportunity to engage in utilities' decisions, SWEPCO did not adequately allow for this process because it was not open or clear in its IRP as to why Dolet Hills will only operate seasonally. More troubling, even though the company is well-aware of the dismal economics of Dolet Hills, SWEPCO refused a stakeholder request to evaluate the costs and benefits for Arkansas customers of retiring the plant by 2025. In response to a comment that stated "SWEPCO should perform the same analysis it performed for the Pirkey unit as for the Dolet Hills unit, with retirement taking place in 2025," the utility responded, "SWEPCO will take this request under advisement in preparing the final IRP."<sup>5</sup> This statement notwithstanding, SWEPCO performed no analysis for retirement of the Dolet Hills unit, and did not even attempt (at least in public) to perform any economic analysis for the unit. This failure to analyze is particularly egregious because Dolet Hills has already operated at a loss for years and its power consistently costs double the MISO market price, which has had a direct costly impact on SWEPCO's Arkansas customers.<sup>6</sup>

While SWEPCO acknowledged that it will change Dolet Hills to seasonal operation only, the company performed no analysis that indicated how this would help save costs for customers, or whether customers would save more money if the plant were retired. If SWEPCO had performed the same or even a similar analysis as it did for the Pirkey unit's retirement, the utility would be in a better position to understand its options for the Dolet Hills unit and make the best decision for its customers. Customers and other members of the public would also have a better understanding of SWEPCO's choices. Section 4.8 requires that SWEPCO make a good-faith effort to properly respond to stakeholder comments, but here the utility has not done so. Therefore, the Commission should reject SWEPCO's current IRP and require the utility to re-

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<sup>5</sup> SWEPCO 2018 IRP, page 163.

<sup>6</sup> Sierra Club Comments, page 2.

evaluate and re-submit its Resource Plan to properly address the comments regarding the Dolet Hills unit.

**II. SWEPCO Failed to Meet the Objectives of the Resource Plan by Not Considering Costs of its Dolet Hills Power Station**

Section 4.1 (Objectives) of The Arkansas Public Service Commission's Resource Planning Guidelines for electric Utilities (Resource Guidelines) provides that:

The utility shall clearly state and support its objectives. The objectives of the Resource Plan include, but are not limited to, low cost, adequate and reliable energy services; economic efficiency; financial integrity of the utility; comparable consideration of demand and supply resources; mitigation of risks; consideration of environmental impacts; and consistency with governmental regulations and policies. In meeting the objectives, the utility should put itself in a position to respond to anticipated economic conditions and technological advancements and changes, including environmental requirements.

While Section 4.1 requires that utilities both state and support their objectives, SWEPCO has failed to adequately support how it plans to meet its objectives. In SWEPCO's IRP, the company identifies that "the goal of the IRP process is to identify the **amount**, **timing** and **type** of resources required to ensure a reliable supply of capacity and energy to customers at the least reasonable cost."<sup>7</sup> However, this objective is not supported by SWEPCO's decision to operate the Dolet Hills Power Plant seasonally or to retain the unit at all.<sup>8</sup> While SWEPCO's stated goal is to ensure energy to customers at the least reasonable cost, this goal is not supported given that Dolet Hills, as of 2018, was operating not only non-economically, but at a loss.<sup>9</sup> That cost was then passed on to the

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<sup>7</sup> SWEPCO 2018 IRP, page 1.

<sup>8</sup> SWEPCO 2018 IRP, page 30.

<sup>9</sup> Sierra Club Comments, page 1.

customers. Thus, customers have not been provided energy at the “least reasonable cost.”<sup>10</sup>

Now, SWEPCO has stated that Dolet Hills will operate seasonally.<sup>11</sup> While SWEPCO acknowledged the implications of seasonal operation from both the planning and energy perspectives,<sup>12</sup> the utility failed to discuss the economic effects of the transition. SWEPCO provided no analysis to show that operating Dolet Hills seasonally would increase its economic viability or the benefits to customers for this high-cost plant. Because of the dismal economics and high fixed costs virtually no utilities have operated coal units as peaking units, but SWEPCO is embarking on just such an experiment without having done any (public) analysis. Because SWEPCO’s objective is to provide energy to customers at the least reasonable cost, the Commission should reject SWEPCO’s IRP and require the utility to re-submit a report that adequately supports this objective through considering the cost and benefits of operating Dolet Hills seasonally versus the costs and benefits of retiring the plant entirely. Given the Company’s decision to operate the unit only seasonally, any prudent resource plan should also evaluate potential retirement. If the unit is *not* an economic resource for customers throughout most of the year, it is likely not economic to operate at all. Public data shows that the plant consistently costs double market prices and so its continued value to customers is highly questionable at best.

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<sup>10</sup> Sierra Club Comments, page 4.

<sup>11</sup> SWEPCO 2018 IRP, page 30.

<sup>12</sup> SWEPCO 2018 IRP, page 30 (“Given that Dolet Hills will continue to operate during summer peak months, this recent change does not affect the Report’s results from a capacity planning perspective; however, from an energy perspective this transition is not reflected in this report. The transition will reduce the energy contribution from this plant relative to what is reflected in this IRP.”)



**III. SWEPCO Failed to Properly Identify and Characterize Supply and Demand Resources by Not Considering the Cost Effectiveness of Dolet Hills and The Station's Role in The Utility's Overall Planning Objectives**

Section 4.3 (Identifying and Characterizing Supply and Demand Resources) of the Resource Guidelines provides that:

The utility should assess existing resources based on their cost effectiveness and considering the utility's planning objectives... Utility efforts to encourage energy efficiency, conservation, demand-side management, interruptible load, and price responsive demand should be identified. Identified resources should be investigated to determine costs, effectiveness, and other attributes such as potential future emission control or allowance costs to the extent they are monetizable. Non-monetizable costs and benefits should be recognized.

Under Section 4.3 of the Resource Guidelines, SWEPCO should have assessed Dolet Hills as an existing resource, and provided an analysis of its cost effectiveness. SWEPCO, in the IRP submitted to the Commission, failed to discuss the cost effectiveness of the power plant, despite evidence that the power plant operated at a loss of at least \$207 million in the SPP energy market from 2014 through 2017.<sup>13</sup> While SWEPCO noted that the plant will operate seasonally, the company failed to provide any economic analysis as to the cost effectiveness of this plan.

Further, had SWEPCO performed the same or a similar analysis as it performed for the Pirkey unit, as requested in the comments,<sup>14</sup> the utility would have had a much better assessment for the existing resource of Dolet Hills. Simply noting that the unit would change to seasonal operation was not adequate, as simply begs further questions: What is the value to customers of switching to seasonal operation only? More fundamentally, does the Dolet Hills plant have any value to customers commensurate with its high costs of operation? The Commission should require SWEPCO to re-evaluate and re-submit its Resource Plan to properly investigate Dolet Hills, as an identified resource "to determine costs, effectiveness."

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<sup>13</sup> Sierra Club Comments, page 6.

<sup>14</sup> SWEPO 2018 IRP, page 163.

**IV. SWEPCO Failed in Selecting and Evaluating its Resource Plan by not Balancing the Risks of Adverse Outcomes to its Customers in Continuing to Operate the Dolet Hills Facility**

Section 4.5 (Evaluation and Selection of the Utility's Resource Plan) of the Resource

Guidelines provides that:

The utility shall identify a preferred Resource Plan that provides a balance of risks of adverse outcomes to its customers and its own financial integrity, while providing flexibility to change as future conditions warrant. The evaluation should fully describe how the utility's preferred plan affects long term utility resource needs and costs.

SWEPCO is required, under Section 4.5 of the Resource Plan, to balance risks of adverse outcomes for customers and its financial integrity. One such risk would that SWEPCO should have considered here includes whether the costs of operation for Dolet Hills will continue to vastly exceed the benefit of operating that plant, such that Arkansas customers are needlessly paying higher electric bills. SWEPCO failed to assess this risk of high costs in the IRP it submitted to the Commission, however, when it did not consider the economic impact of operating Dolet Hills seasonally. Coal-burnings power plants pose a risk to utilities' ratepayers given that "25% of the remaining coal fleet is teetering on the edge of competitiveness and could be rendered uncompetitive by low natural gas prices, the increasing penetration of renewable resources, a lack of load growth, and environmental regulations."<sup>15</sup> In the past, Dolet Hills operated at a regular loss, and in fact costs about double the price of MISO market price. SWEPCO has decided to operate Dolet Hills seasonally, but has not yet looked at the economic risks to its customers that would result from this decision. The Commission should therefore reject SWEPCO's IRP, and require the company to submit an addendum report that properly

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<sup>15</sup> Sierra Club Comments, page 3-4.

balance risks through looking at the long term costs of operating Dolet Hills seasonally in comparison to resource needs.

Further, SWEPCO should be required to resubmit its IRP after considering environmental compliance risks that are associated with the continued operation of Dolet Hills. Should Dolet Hills continue to operate, environmental investments will likely be required. It is likely that new environmental regulations will be put forward within the time of SWEPCO's IRP through the Clean Air Act's Regional Haze Rule, the Coal Ash Combustion Residuals Rule, the Effluent Limitations Guidelines for scrubber and ash handling wastewater, and potential carbon regulators. The risk of new regulations presents a risk to SWEPCO's customers because they would ultimately be responsible for additional costs associated with any new regulations. SWEPCO failed to evaluate any of these risks.

### **CONCLUSION**

Sierra Club respectfully requests that the Commission require SWEPCO to re-evaluate and re-submit a Resource Plan that addresses the potential retirement of Dolet Hills and the costs, benefits, and risks associated with that retirement. SWEPCO's latest IRP is woefully inadequate because it fails to adequately consider comments from stakeholders and does not contain required elements under the Arkansas Guidelines.

Respectfully submitted,

Dated: April 15, 2019

/s/ Joshua Smith

Joshua Smith  
Tony Mendoza  
Sierra Club

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Attorneys for Sierra Club

# Attachment A



September 25, 2018

**VIA U.S. PRIORITY MAIL & FACSIMILE TRANSMISSION**

Ms. Terri Bordelon  
Louisiana Public Service Commission  
Records Division  
602 N. Fifth St.  
Galvez Bldg, 12th Floor  
Baton Rouge, LA 70802

**Re: LPSC DOCKET NO. I-34715, Sierra Club's Comments on Southwestern Electric Power Company's Integrated Resource Plan Description of Studies and Study Assumptions**

Dear Ms. Bordelon:

Enclosed please find the one (1) original and three (3) copies of Sierra Club's Comments on Southwestern Electric Power Company's Integrated Resource Plan Description of Studies and Study Assumptions in the above-captioned docket. Please file the original in the record and return one (1) date-stamped copy to me in the self-addressed stamped envelope enclosed. If you have any questions or require any additional information, please to not hesitate to contact me.

Respectfully submitted,



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**BEFORE THE  
LOUISIANA PUBLIC SERVICE COMMISSION**

**SOUTHWESTERN ELECTRIC POWER COMPANY (SWEPCO), INTEGRATED RESOURCE PLANNING PROCESS PURSUANT TO THE GENERAL ORDER R-30021 (CORRECTED) ISSUED APRIL 20, 2012**

**Docket No. I-34715**

**SIERRA CLUB’S COMMENTS ON SOUTHWESTERN ELECTRIC POWER COMPANY’S (SWEPCO) INTEGRATED RESOURCEPLAN DESCRIPTION OF STUDIES AND STUDY ASSUMPTIONS**

Like most utilities in the country, SWEPCO stands at a crossroads. One path is business as usual, in which SWEPCO continues to operate one of the largest-polluting fleets in Louisiana, even though the Company has excess generation capacity through 2022,<sup>1</sup> some of which is increasingly uneconomic and uncompetitive in the energy market. Indeed, as reflected in the figure below, SWEPCO’s Dolet Hills Power Station is far and away the largest single source of sulfur dioxide and nitrogen oxide in the state.

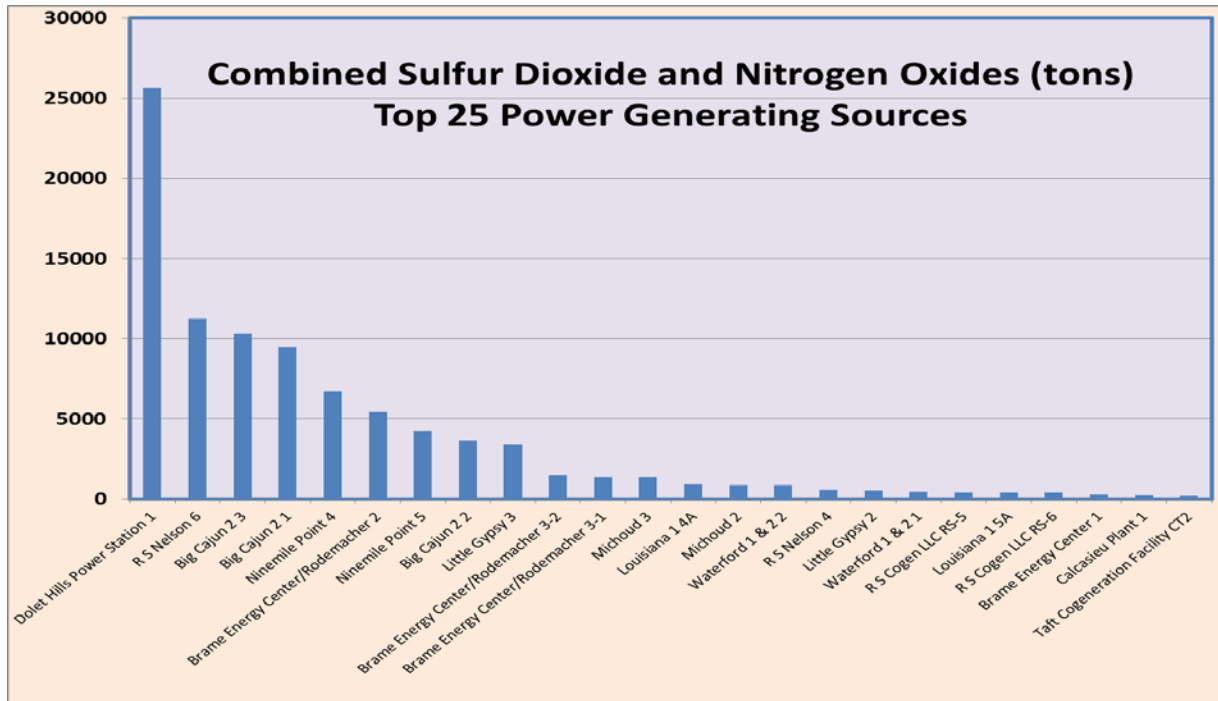


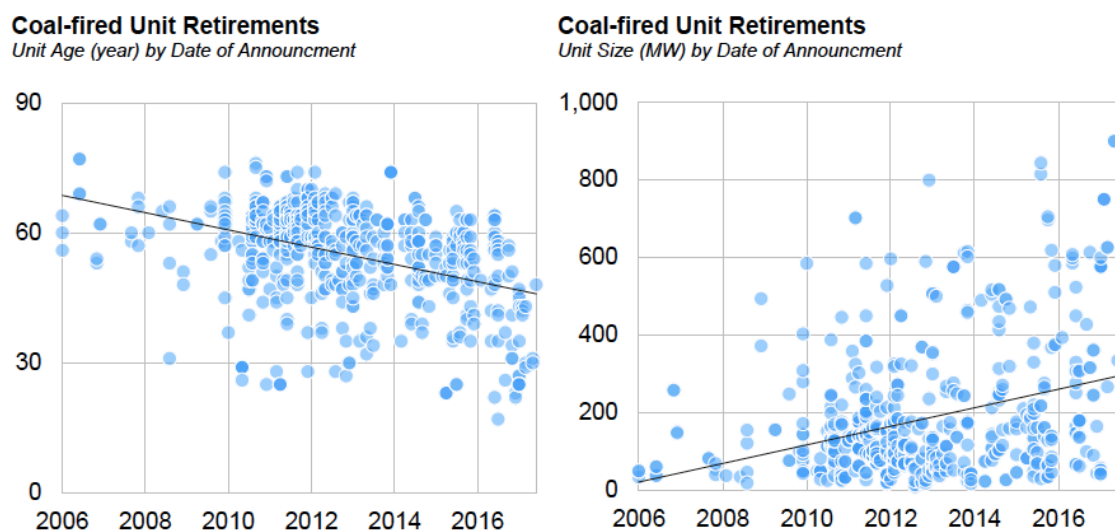
Figure 1 – Combined Annual Sulfur Dioxide and Nitrogen Oxide Emissions 2015<sup>2</sup>

<sup>1</sup> SWEPCO July 25, 2018 Stakeholder Presentation at 10.

<sup>2</sup> EPA Air Markets Database, <https://ampd.epa.gov/ampd/>.

Moreover, the Dolet Hills lignite-burning unit regularly operates at a loss—*i.e.*, its total production cost exceeds its energy revenues in the Southwest Power Pool (“SPP”) energy market. Meanwhile, and as discussed in further detail below, Dolet Hills’ sister lignite-burning power plant in Texas, the Pirkey Power Station, is similarly uneconomic in the energy market. Moreover, the Company faces several critical decision points relating to capital investments required to continue operating of each of its solid-fuel power plants. Thus, in addition to being among the highest-polluting units in the region, the Company’s lignite units are increasingly uncompetitive and face a long future of potentially significant capital expenses that will increase costs for Louisiana ratepayers.

And the outlook for SWEPCO’s solid-fuel fleet gets worse. Indeed, over the past decade, the average age of retirement for coal- and lignite-burning power plants across the country is trending younger and younger—and significantly so. An analysis by Lawrence Berkeley National Laboratory indicated that the median retirement age for coal units projected to retire between 2017–2023 is between 40–50 years old, rather than the 50–60 years for units retired between 2010 and 2016.<sup>3</sup> A recent M.J. Bradley & Associates study similarly concluded that retirements are affecting larger and younger units.<sup>4</sup> While units that had announced plans to retire between 2010 and 2015 were on average 57 years old, units that have announced plans to retire since 2016 are only 42 years old on average.



*Figure 1: Trends in Coal Unit Retirements: Age and Unit Size*

<sup>3</sup> Lawrence Berkeley National Laboratory, Energy Analysis and Environmental Impacts Division, *Power Plant Retirements: Trends and Possible Drivers* at 8 (Nov. 2017), [https://emp.lbl.gov/sites/default/files/lbnl\\_retirements\\_data\\_synthesis\\_final.pdf](https://emp.lbl.gov/sites/default/files/lbnl_retirements_data_synthesis_final.pdf).

<sup>4</sup> MJB&A Issue Brief, *Coal-Fired Electricity Generation in the United States and Future Outlook* (Aug. 28, 2017), at <https://www.mjbradley.com/sites/default/files/MJBacoalretirementissuebrief.pdf>



And a recent Brattle Group study confirms that coal- and lignite-fired power plants across the country are increasingly uneconomic, and that the continued operation of those plants could cost ratepayers billions.<sup>5</sup> Despite the widely-acknowledged unfavorable fundamentals for nation's aging coal- and lignite-burning fleet and the increasing speed at which those plants are retiring, SWEPCO's based case does not assume *any* coal retirements over twenty-year planning horizon.<sup>6</sup> This is an unrealistic and risky assumption for SWEPCO's ratepayers.

To SWEPCO's credit, the Company recognizes that there is another path—one that involves investing in clean, sustainable, and cost-effective renewable energy and energy efficiency resources to replace aging fossil-fuel resources. Indeed, to the extent the Company needs additional generation capacity, SWEPCO's IRP modeling demonstrates that wind and solar power additions are far and away the least-cost options for Louisiana ratepayers.<sup>7</sup> SWEPCO also recognizes that energy storage options are increasingly attractive, and supply-side efficiency measures like upgrading the utility's transmission system can play a significant role in reducing electric system costs. We support those aspects of SWEPCO's initial assumptions, and commend the Company's efforts to adopt a more sustainable mix of lower-cost and reliable renewable, coupled with battery storage and innovative energy efficiency programs and demand response.

At the same time, however, we have concerns about SWEPCO's planning assumptions. As noted, we urge SWEPCO to recognize the changing landscape for its increasingly uneconomic and highly-polluting solid fuel fleet. Utilities across the country are abandoning reliance on similarly uneconomic fossil fuel generation resources and adopting a mix of lower-cost, sustainable, and reliable generation resources like utility scale solar and wind, coupled with battery storage and innovative energy efficiency programs and demand response. We urge SWEPCO to do the same. To that end, we urge the Company to adopt a transparent and robust resource planning framework that fully evaluates the replacement of its uneconomic fossil fuel resources—Dolet Hills and Pirkey, at a minimum—with affordable renewable energy and energy efficiency investments, which will produce safe and sustainable jobs, while also reducing electric system costs for both utilities and ratepayers and reducing emissions from fossil fuel energy sources. Specifically, and as explained below, we urge SWEPCO to run scenarios specifically evaluating the retirement of those two units. Additionally, we urge SWEPCO to revise and update its IRP assumptions to reflect more recent renewable energy assumptions and cost-effective storage and efficiency measures.

## **I. Existing Coal Asset Risk**

It is no secret that the coal fleet in the United States is shrinking. The number of coal-fired power plants is half of what it was just 10 years ago, and about 25% of the remaining coal fleet is teetering on the edge of competitiveness and could be rendered uncompetitive by low

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<sup>5</sup> Metin Celebi, et al., *The Cost of Preventing Baseload Retirements: A Preliminary Examination of the DOE Memorandum* (Brattle Group July 2018), <http://www.brattle.com/news-and-knowledge/news/report-by-brattle-economists-assesses-potential-costs-associated-with-administration-policy-designed-to-prevent-the-retirement-of-all-coal-and-nuclear-plants>.

<sup>6</sup> SWEPCO July 25, 2018 Stakeholder Presentation at 10 (reflecting total coal capacity remaining constant throughout planning period).

<sup>7</sup> *Id.* at 34.

natural gas prices, the increasing penetration of renewable resources, a lack of load growth, and environmental regulations.<sup>8</sup> In fact, Bloomberg New Energy Finance issued a detailed report this year that from 2012-2017, “[h]alf of U.S. coal capacity ran with net losses last year,” noting that “operating expenses exceeded revenue.”<sup>9</sup> Prudent resource planning requires SWEPCO to rigorously investigate the risk that its coal-fired power plants pose to its ratepayers.

**A. *Dolet Hills is Currently Uneconomic and Poses Significant Risk.***

Dolet Hills operates in two separate energy markets: SWEPCO sells energy into the Southwest Power Pool (“SPP”) and its co-owner, Cleco Power, into the Midcontinent Independent System Operator (“MISO”). Energy markets are reverse auctions where sellers bid in a price and the market selects the lowest cost resources needed to meet demands for electricity in a secure and reliable way. All resources called in a given hour are paid the clearing price as set by the bid of the marginal resource. Energy markets are designed to offer appropriate incentives known as “price signals” to encourage new resources to enter the market, thereby maintaining adequate supply for reliable electric service while simultaneously keeping costs down for consumers.

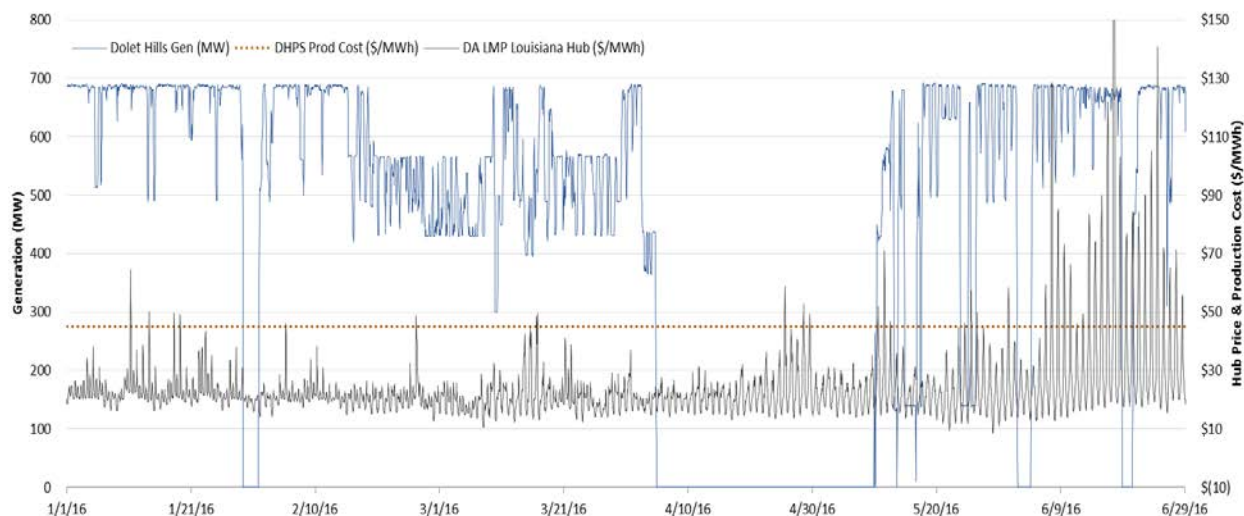
Using publicly reported data, however, Sierra Club has determined that SWEPCO is likely operating some of its plants—Dolet Hills, in particular—non-economically, or at a loss. Specifically, it appears that Dolet Hills is routinely “self-scheduled”—that is, committed to operate regardless of the market price. In other words, Dolet Hills is routinely operating and dispatching energy into the market even though market prices are *below* the total production cost (*i.e.*, fuel, pollution control operating costs, and other variable operation and maintenance costs) to operate the plant. It appears that those costs are then passed along to the Company’s ratepayers through its fuel adjustment clause (“FAC”), under which the utility recovers its fuel costs incurred, less energy market revenues.<sup>10</sup>

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<sup>8</sup> Union of Concerned Scientists, *A Dwindling Role for Coal* (2017), <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/coal-transition#.WxHHxoCUuUl>.

<sup>9</sup> Nelson et al., *Half of U.S. Coal Fleet on Shaky Economic Footing* (Bloomberg New Energy Finance Mar.26, 2018).

<sup>10</sup> See SWEPCO 2017 Form 10-K at 20, *available at* [https://www.aep.com/investors/FinancialFilingsAndReports/Filings/docs/AEP\\_10K\\_2017.pdf](https://www.aep.com/investors/FinancialFilingsAndReports/Filings/docs/AEP_10K_2017.pdf).



*Figure 3—Dolet Hills Dispatch: Out of Merit Order*

The figure above is a snapshot of Dolet Hills’ actual operations for the six-month period from January through June 2016. The blue line across the top represents the generation for the unit, indicating that it operated frequently at or near its capacity. The dotted yellow line represents the unit’s total production cost (i.e., fuel costs and consumables) for that period of time. The black line represents the locational marginal price at the Louisiana hub, indicating that the unit was frequently operating even though the costs of operating the unit regularly exceeded the price that Dolet Hills received for energy generated.

SWEPSCO’s non-economic operation of Dolet Hills can be further demonstrated through a comparison of production costs for the unit and the approximate revenues that the power plant receives for producing energy. While production cost data is generally proprietary, fuel costs are generally available through public databases. Dolet Hills acquires coal from the Dolet Hills mine at around 3.5c/MMBtu,<sup>11</sup> putting its fuel costs as the 95<sup>th</sup> percentile most expensive in the country (2015-2017). In recent years, some of the coal delivered to Dolet Hills has cost over 5.0c/MMBtu, making it nearly the most expensive coal plant in the country.

Despite the fact that the cost of operating Dolet Hills is significantly higher than the average power plant, Dolet Hills consistently dispatched at a high capacity factor, operating well above market prices. Examining locational marginal prices at SPP’s Louisiana hub (data from SPP) against the estimated production cost of Dolet Hills<sup>12</sup> and the actual operations of those units as reported to EPA’s Air Markets Program Dataset (“AMPD”), we estimate that Dolet Hills has incurred substantial losses almost every month its operated from 2014 through 2017.

<sup>11</sup> EIA Form 923, 2013-2017.

<sup>12</sup> Data derived from S&P Global Market Intelligence, which collects publicly available data. Fuel and O&M costs are also available through the U.S. Energy Information Administration’s website, and are based on utility self-reported costs.

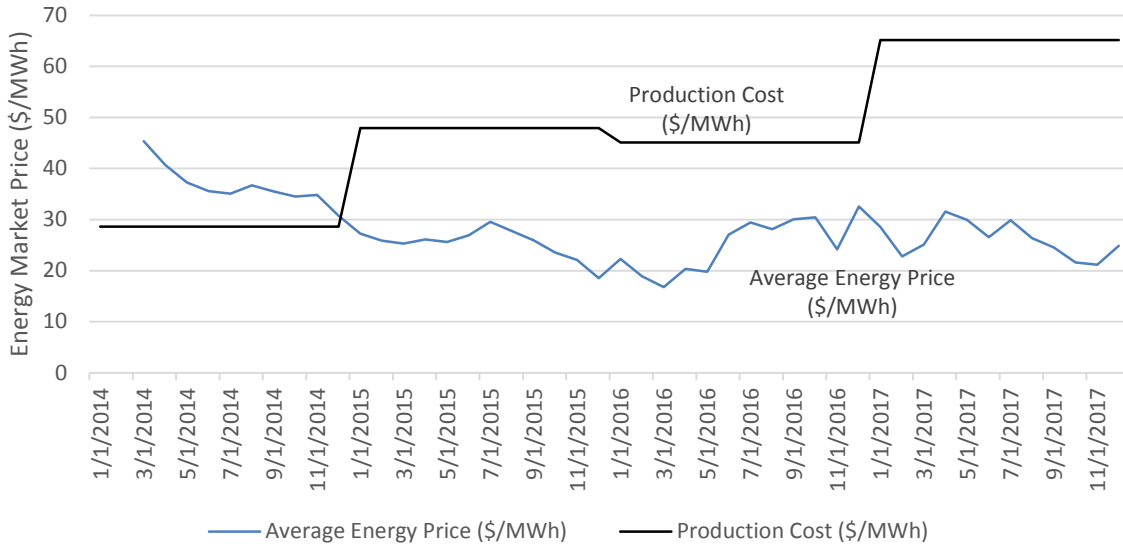


Figure 4—Dolet Hills: Production Costs Versus Locational Marginal Price in SPP

Based on this analysis, it appears that Dolet Hills lost more than \$207 million on the SPP energy market from 2014 through 2017. Dolet Hills’ lost approximately \$200 million in the MISO energy market. It is important to note that this estimate of losses is likely conservative because it does not account for fixed operations and maintenance and capital costs.

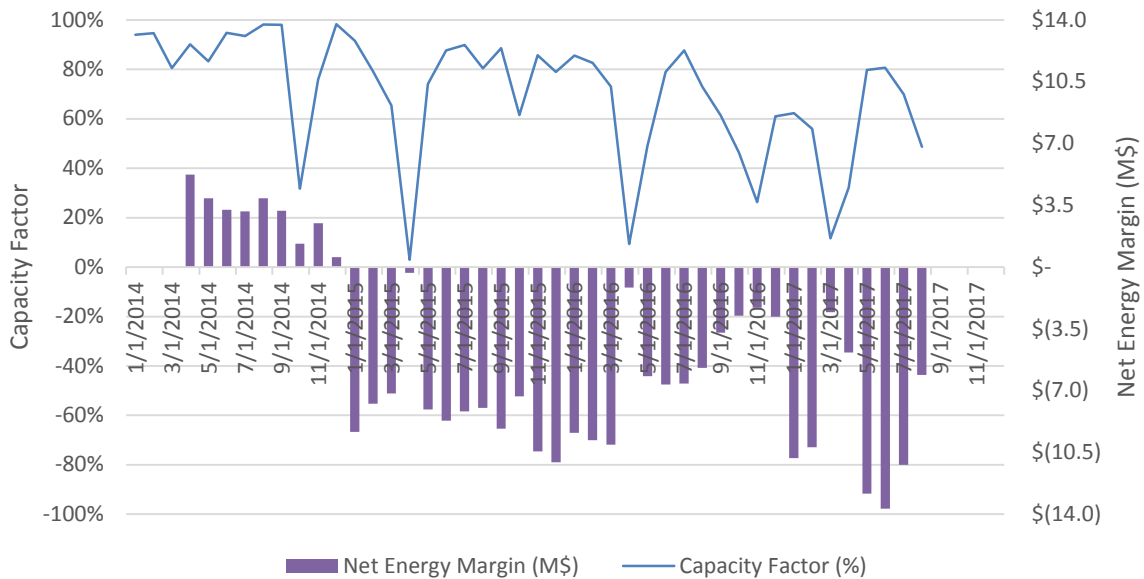


Figure 5—Dolet Hills Net Energy Revenues in SPP

Sierra Club’s analysis of SWEPSCO’s Pirkey power plant presents a similarly bleak future for the Company’s lignite-burning power plant in Texas. Comparing publicly-available production costs (again derived from S&P Global Market Intelligence data) against the locational marginal prices at SPP’s Texas hub (data from SPP) against the estimated production cost of Dolet Hills (derived from SNL data) and the actual operations of those units as reported to EPA’s Air Markets Program Dataset (“AMPD”), Pirkey incurred similarly substantial losses.

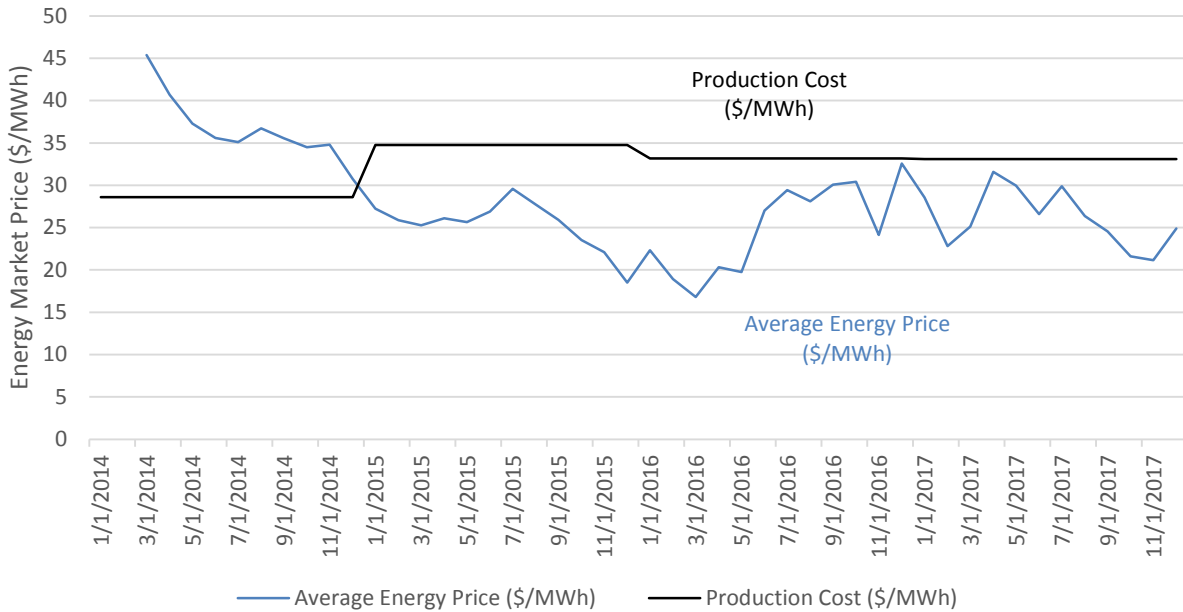


Figure 6—Pirkey: Production Costs Versus Locational Marginal Price in SPP

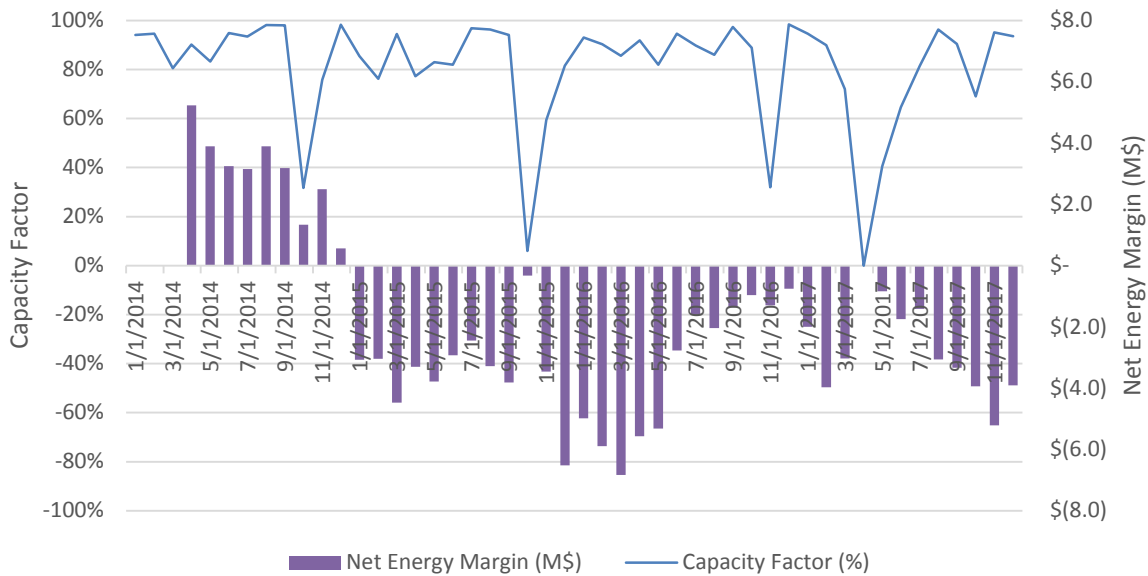


Figure 7—Pirkey Net Energy Revenues in SPP

This analysis makes clear that certain coal units in SWEPCO's fleet—Dolet Hills and Pirkey, in particular—are uncompetitive in the energy market, and are imposing costs on retail ratepayers, who are effectively subsidizing the uneconomic operation of those plants.<sup>13</sup> And if operational costs increase further or if renewable energy prices continue to decline (as expected), the continued operation of those two plants will impose further risk and cost on ratepayers, who would have lower electricity bills if SWEPCO bought the energy necessary to serve load directly from the market.

***Recommendations to Address Coal Fleet Risk:***

1. SWEPCO should present a scenario specifically evaluating the costs and benefits of retiring SWEPCO's lignite-fired units, with an emphasis on Dolet Hills and Pirkey.<sup>14</sup>
2. SWEPCO should present a detailed financial analysis of the costs of continuing to operate each its coal- and lignite-fired units, including an analysis of each unit's total production costs compared to its operational revenues.

***B. Retirement Potential***

Decisions surrounding the continued operation or retirement of existing plants are fundamentally the same as those surrounding new asset procurement. The need for capital investments, variable costs, fuel costs, fixed costs, and regulatory costs influences the decision to build new units or shut down old units.

As suggested above with respect to the continued operation of Dolet Hills, the Company should engage in optimization of the build-out of new resources while accounting for the changes in load and the possible retirement of existing resources—with a focus on the Company's solid fuel resources. This is especially important given that the Company is already long on capacity for the short term.

Given SWEPCO's planned acquisition of generation, the Company should conduct a fleet optimization scenario. This means that coal and gas units should be optimized compared to other options in the modeling (such as SPP market purchases) and allowed to retire or ramp down, rather than "hardwired" into the model. While hardwiring resources in a model to meet state and federal regulatory requirements may be reasonable (e.g., an existing energy efficiency goal), by assuming the continued operation of all coal- and gas-fired units, SWEPCO denies its ratepayers the opportunity to find cost-effective alternatives its existing resources. Hardwiring the model to avoid the retirement of potentially non-economic units is antithetical to prudent planning. Restricting the model from allowing the retirement of uneconomic coal- or gas-fired plants would effectively render this IRP process meaningless.

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<sup>13</sup> See generally Daniel, Joe, *Backdoor Subsidies for Coal in the Southwest Power Pool: Are utilities in SPP Forcing Captive Customers to Subsidize Uneconomic Coal and Simultaneously Distorting the Market?* (Sierra Club), <https://www.sierraclub.org/sites/www.sierraclub.org/files/Backdoor-Coal-Subsidies.pdf>

<sup>14</sup> At a minimum, SWEPCO's analysis should be consistent with the Company's concurrent IRP analysis in Arkansas, where SWEPCO is specifically modeling a scenario with the retirement of Pirkey. Given the shaky economics of Dolet Hills, Sierra Club urges the Company to specifically evaluate retirement of that unit.

As discussed in further detail below, retirement assessment should also include an assessment of reasonable replacement resources (if any), including a portfolio analysis (*i.e.*, not a single replacement unit, but a portfolio of replacement energy and capacity from least-cost resources), as well as decommissioning and demolition costs for the remediation of non-economic units.<sup>15</sup>

***Recommendations:***

1. SWEPCO should allow the model to determine unit retirement decisions endogenously.
2. Such retirement decisions should be made in the context of portfolio replacement options, rather than single one-off replacement assumptions (*i.e.*, a single natural gas combined cycle (“NGCC”) unit) to capture least-cost resource options.
3. SWEPCO should develop estimates for decommissioning and demolishment of its units. These estimates should be open to vetting by the commission and stakeholders and should be presented in terms of net costs (the cost of decommissioning and demolition less the revenue generated from sale of scrap metal, salvaged equipment, and land value).

***C. Environmental Compliance Risk***

The U.S. coal fleet is facing mounting costs to comply with federal environmental regulations designed to protect human health. Many utilities are opting to retire their coal-fired units, rather than continue to invest into these risky assets. SWEPCO is, by no means, immune from these costs, and prudent planning would suggest that any utility that owns a coal-fired power plant would rigorously investigate the risks that continued operation of that plant poses to ratepayers. Indeed, the Commission’s IRP rules recognize the need for prudent planning, and explicitly require SWEPCO to account for environmental impacts and discuss plans to meet environmental regulatory requirements at its affected facilities.<sup>16</sup>

Although the current administration has indicated that it will not enforce most environmental regulations affecting power plants, SWEPCO’s coal units nevertheless face significant environmental compliance risk relating to the Clean Air Act, Clean Water Act, and related federal laws. Even if this administration does not impose any new regulations, it is highly likely that greenhouse gas emissions will be regulated at some point within the planning horizon. Similarly, SWEPCO’s coal-fired EGUs will, at some point during the planning period, likely face environmental compliance costs relating to the Clean Air Act’s regional haze program, existing and future National Ambient Air Quality Standards (“NAAQS”), Clean Water Act section 316(b), Effluent Limitation Guidelines (“ELG”), Cross State Air Pollution Control rule Phase 2 and other phases, and the Coal Combustion Residuals (“CCR”) rule.

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<sup>15</sup> Some utilities use the historic costs of retiring units to develop a cost estimate but will skew the price by including the costs to decommission nuclear plants. Other utilities will develop cost estimates but ignore important aspects like economies of scale or the ability to recoup scrap metal or salvaged equipment. All of these practices should be avoided by the company in estimating post-retirement costs and are examples of why not just the assumption, but the method to develop the assumption, should be transparent.

<sup>16</sup> I LPSC Docket No. R-30021, Integrated Resource Planning Rules for Electric Utilities in LA at ¶ 7(d).

It is our understanding that SWEPCO plans to incorporate a carbon price commensurate with the implementation of the Clean Power Plan into its base case.<sup>17</sup> While SWEPCO deserves credit for recognizing some form of carbon regulation, the Company should reevaluate a carbon price adder in light of the Trump Administration’s proposal to roll back the Clean Power Plan. More concerning, SWEPCO appears to assume that it will incur *zero* environmental compliance costs for the 20-year planning horizon.

Despite the current EPA’s attempts to roll back certain public health protections, complying with the Clean Air Act and Clean Water Act and their implementing regulations will cost SWEPCO’s ratepayers significantly, and given that several of SWEPCO’s solid fuel plants have outdated sulfur dioxide and wastewater control, it is unreasonable to assume *zero* environmental compliance costs for the next 20 years. The difference between properly accounting for the risks these regulations present to continued operation of coal units, and discounting these risks to zero could impose detrimental risks on SWEPCO’s customers.

While it is true that the precise costs or timing of regulations may be uncertain, SWEPCO can and should develop a range of costs to comply with Clean Air Act and Clean Water regulations. Indeed, the Company has incorporated an estimated range of costs for compliance with carbon dioxide regulation. It should do the same for other environmental compliance risks.

### 1. Regional Haze

Under the Clean Air Act’s visibility provisions, states must develop state implementation plans (“SIP”) that include enforceable emission limits at major sources of haze-causing pollution to ensure “reasonable progress” toward the goal of achieving no man-made pollution in each national park or wilderness area by 2064.<sup>18</sup> The Regional Haze Rule includes several interlocking measures designed to make “reasonable progress” towards achieving the 2064 natural visibility goal. Relevant to SWEPCO’s fleet, the Regional Haze Rule requires states (or, where the state fails to do so, EPA) to (1) develop a long-term strategy for making reasonable progress toward the national goal, and (2) implement the best available retrofit technology (“BART”) for some of the oldest and dirtiest sources of haze-causing pollutants. *Id.*; 40 C.F.R. § 51.308(d), (e).<sup>19</sup> In developing a long-term strategy, the Clean Air Act requires states to evaluate whether pollution controls or emission reductions for any source—*whether subject to BART or not*—should be required to ensure reasonable progress toward the national goal. 42 U.S.C. § 7491(b)(2); 40 C.F.R. § 51.308(d)(1)(iii)(iv) and (3)(iv).<sup>20</sup>

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<sup>17</sup> SWEPCO July 25, 2018 Stakeholder Presentation at 15; *see also* SWEPCO, DRAFT OF THE INTEGRATED RESOURCE PLANNING REPORT TO THE ARKANSAS PUBLIC SERVICE COMMISSION (Aug. 7, 2018).

<sup>18</sup> 42 U.S.C. § 7491(b)(2); 40 C.F.R. § 51.308(d).

<sup>19</sup> BART means an “emission limitation based on the degree of reduction achievable through the application of the *best system of continuous emission reduction* for each pollutant,” and applies to major emission sources, like Rodemacher 2, which was put into operation between 1962 and 1977, and reasonably contribute to visibility impairment in one or more Class I areas. 40 C.F.R. § 51.301 (emphasis added)

<sup>20</sup> In evaluating whether emission reductions are required, states must consider four factors: (1) the costs of compliance, (2) the time necessary for compliance, (3) the energy and non-air quality environmental



While EPA recently approved Louisiana’s regional haze SIP for the first planning period, and recently proposed a regional haze trading plan for Texas<sup>21</sup>—neither of which require any additional reductions at power plants operated by SWEPCO—the Louisiana SIP has already been challenged in the Fifth Circuit Court of Appeals, and the Texas trading plan will almost certainly face judicial review.<sup>22</sup> If either of those plans are invalidated, EPA, Louisiana, or Texas will be required to reconsider sulfur dioxide and nitrogen oxide pollution reductions at each of its solid-fuel burning power plants. Even if both of the regional haze plans are upheld, each of SWEPCO’s coal plants must be reevaluated in 2021, when the state’s regional haze plan for the second planning period is due. If additional controls are cost-effective and will improve visibility in affected national parks and wilderness areas, compliance is typically required within five years. 42 U.S.C. § 7491(g)(4).

With that timeline in mind, and given that cost estimates are readily available for pollution reduction technologies typically required under regional haze,<sup>23</sup> SWEPCO should include a sensitivity reflecting compliance. SWEPCO’s IRP fails to evaluate, let alone acknowledge, the potential costs associated with a revised regional haze rule for its Louisiana or Texas facilities. To inform a more robust and rigorous analysis, SWEPCO should, at a minimum include potential regional haze compliance costs in its Environmental scenarios.

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impacts of compliance, and (4) the remaining useful life of any potentially affected sources. 42 U.S.C. § 7491(g)(1); 40 C.F.R. § 51.308(d)(1)(i)(A), (d)(3).

<sup>21</sup> Approval and Promulgation of Implementation Plans; Louisiana; Regional Haze State Implementation Plan, 82 Fed. Reg. 60,520 (Dec. 21, 2017); Promulgation of Air Quality Implementation Plans; State of Texas; Regional Haze and Interstate Visibility Transport Federal Implementation Plan: Proposal of Best Available Retrofit Technology (BART) and Interstate Transport Provisions, 83 Fed. Reg. 43,586 (Aug. 27, 2018).

<sup>22</sup> See *Sierra Club v. U.S. EPA*, No. 18-60116 (5th Cir.) (Louisiana SIP challenge). The Texas regional haze plan has been tied up in litigation for the last three years, and will likely be litigated for several years.

<sup>23</sup> In the Louisiana Public Service Commission proceeding involving Cleco’s request for authority to recover the costs associated with complying with the Mercury and Air Toxics Rule, evidence was presented estimating potential compliance costs for installing additional pollution controls to reduce sulfur dioxide and nitrogen oxide emissions at the Dolet Hills plant, which is co-owned by SWEPCO. *In re Application of SWEPCO Power LLC for: (i) Authorization to Install Emissions Control Equipment at Certain of its Generating Facilities in Order to Comply with Federal National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units Rule; (ii) Authorization to Recover the Costs Associated with the Emissions Control Equipment in LPSC Jurisdictional Rates; and (iii) Expedited Treatment*, Docket No. U-32507 (Direct Testimony of Jeremy Fisher filed Nov. 8, 2013) (noting that the cost to install a new scrubber at Dolet Hills could be as much as \$341 million). SWEPCO itself presented similar cost estimates for nitrogen oxide and sulfur dioxide controls at each of its power plants in a recent rate case before the Public Utility Commission of Texas. See, e.g., *Application of Southwestern Electric Power for Authority to change Rates*, PUCT Docket No. 46449 (Direct Testimony of Mark A. Becker filed Dec. 16, 2016). In any event, to conduct an informative environmental compliance risk sensitivity, it is not necessary to have precise cost and engineering estimates for these controls. Instead, general cost estimates, which are readily available in the industry, are sufficient.

## 2. Effluent Limitations Guidelines and Coal Ash

On November 3, 2015, EPA published its updated Effluent Limitation Guidelines (“ELGs”) for steam electric power plants under the Clean Water Act.<sup>24</sup> These updated ELGs impose stringent technology-based effluent limitations on new and existing discharges of several common waste streams at coal-burning power plants, including fly and bottom ash transport water, and wastewater from flue gas desulfurization systems. *See* 40 C.F.R. § 423.13. The ELG Rule requires power plants to comply with the updated effluent limitations “as soon as possible” after November 1, 2018, and no later than December 31, 2023.<sup>25</sup> These limits must be incorporated into any NPDES permit, and require compliance no later than 2023.

In 2015, EPA published rules governing the disposal of coal ash combustion residual (“CCR”) waste CCR Rule. 80 Fed. Reg. 21,302. The 2015 CCR Rule establishes national minimum criteria for existing and new landfills and surface impoundments, including location restrictions, design requirements, operating requirements, closure and post-closure requirements. *Id.* Some of its key protections include semi-annual groundwater monitoring requirements which trigger corrective action obligations at lined impoundments and closure obligations at unlined ones; location restrictions to keep CCR units out of unstable areas, wetlands, faults areas, seismic zones and the groundwater table; structural stability criteria for impoundments; and comprehensive closure and post-closure requirements. *Id.*

Similar to the compliance risks associated with regional haze, SWEPCO has already obtained cost estimates for compliance with Clean Water Act effluent limitations, as well as coal ash disposal regulations.<sup>26</sup> Despite uncertainties surrounding the timeline for implementing the CCR rule, SWEPCO should include those costs in its Environmental scenario runs.

## 3. CO<sub>2</sub> Price

Despite some uncertainty surrounding the timeline and costs, it is critical and common in prudent utility planning to incorporate a price for carbon dioxide. Many of the nation’s largest investor-owned utilities have recognized the need to plan for likely CO<sub>2</sub> costs by including non-zero carbon cost forecasts in their planning.<sup>27</sup> SWEPCO’s draft Arkansas IRP indicates that it is planning to use a proxy for Clean Power Plan compliance as its carbon dioxide price.

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<sup>24</sup> U.S. EPA, *Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 80 Fed. Reg. 67,837 (Nov. 3, 2015), codified at 40 C.F.R. part 423.

<sup>25</sup> 80 Fed. Reg. 67,854.

<sup>26</sup> Again, in the the LPSC proceeding involving Cleco’s request for recovery of the MATS Rule retrofits, Cleco obtained and submitted evidence regarding specific cost estimates for compliance with the ELG and CCR Rules at Dolet Hills. As the co-owner of Dolet Hills, SWEPCO has access to the same cost estimates. Moreover, given that SWEPCO has repeatedly characterized Pirkey as “similar” to Dolet Hills, the cost estimates for Dolet Hills should provide a reasonable point of reference for Pirkey. *See, e.g.*, PUCT Docket No. 46449 (Rebuttal testimony of SWEPCO witness Thomas Brice filed May 19, 2017) (“Pirkey and Dolet Hills are very similar plants of the same vintage and operating characteristics”).

<sup>27</sup> *See* Luckow, P., et. al., 2013 CARBON DIOXIDE PRICE FORECAST at 17 (Synapse 2013), *available at* <http://www.synapse-energy.com/Downloads/SynapseReport.2013-11.0.2013-Carbon-Forecast.13-098.pdf> (examining 26 utility reference cases for CO<sub>2</sub> pricing); *see also* Ken Corum, NORTHWEST POWER AND CONSERVATION COUNCIL, A PRIMER ON CARBON EMISSIONS, *available at* <http://www.nwcouncil.org/media/42758/p5.pdf>.

If the Company does include the cost of compliance with EPA’s Clean Power Plan under section 111(d), the Company should ensure that the model includes a carbon cap that applies to both existing and new sources. This most appropriately addresses “leakage” problems under section 111(d) plans that address only existing sources.<sup>28</sup> Under an existing-source only cap, the modeling would inappropriately and artificially shift generation to new fossil-fuel sources, without appropriately incorporating the cost of emissions from those sources.

Although the Trump Administration has proposed to partially roll back the Clean Power Plan, we note that the proposed rule maintains so-called “inside the fence” emission reduction requirements. These are typically power plant efficiency measures like turbine upgrades, economizers, and other upgrades that improve the heat rate for coal powered plants. These same inside the fence efficiency upgrades were included in the Clean Power Plan, so SWEPCO should already have compliance cost and should (at a minimum) include those costs in its modeling.

Although the Company should model compliance with the Clean Power Plan, we urge SWEPCO to acknowledge and incorporate a pricing sensitivity to address other potential outcomes, such as a carbon tax. In the Company’s 2015 IRP planning process, SWEPCO adopted one of the lowest prices in the region.

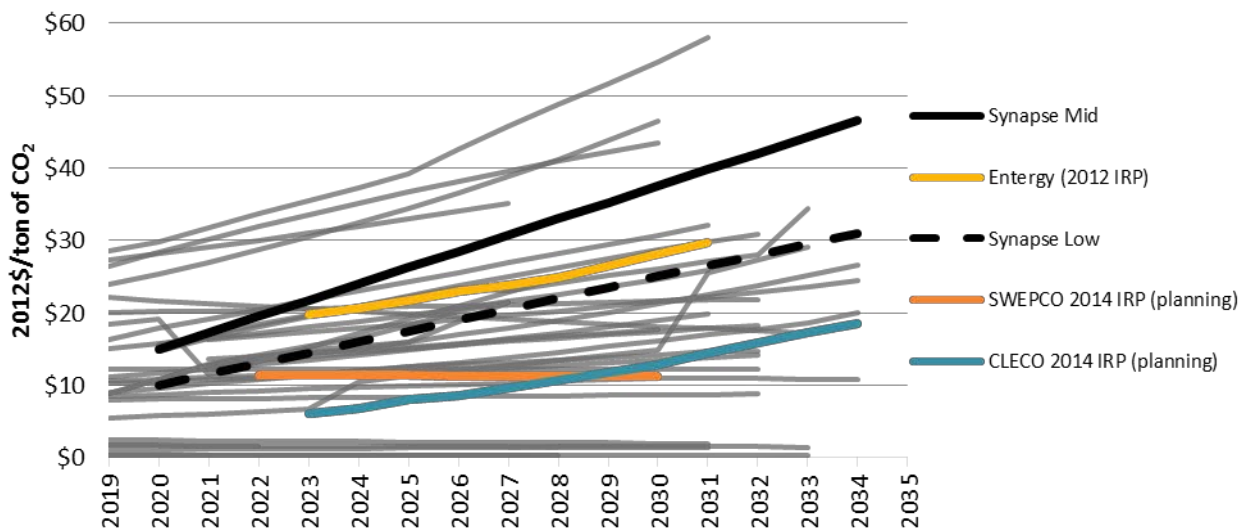
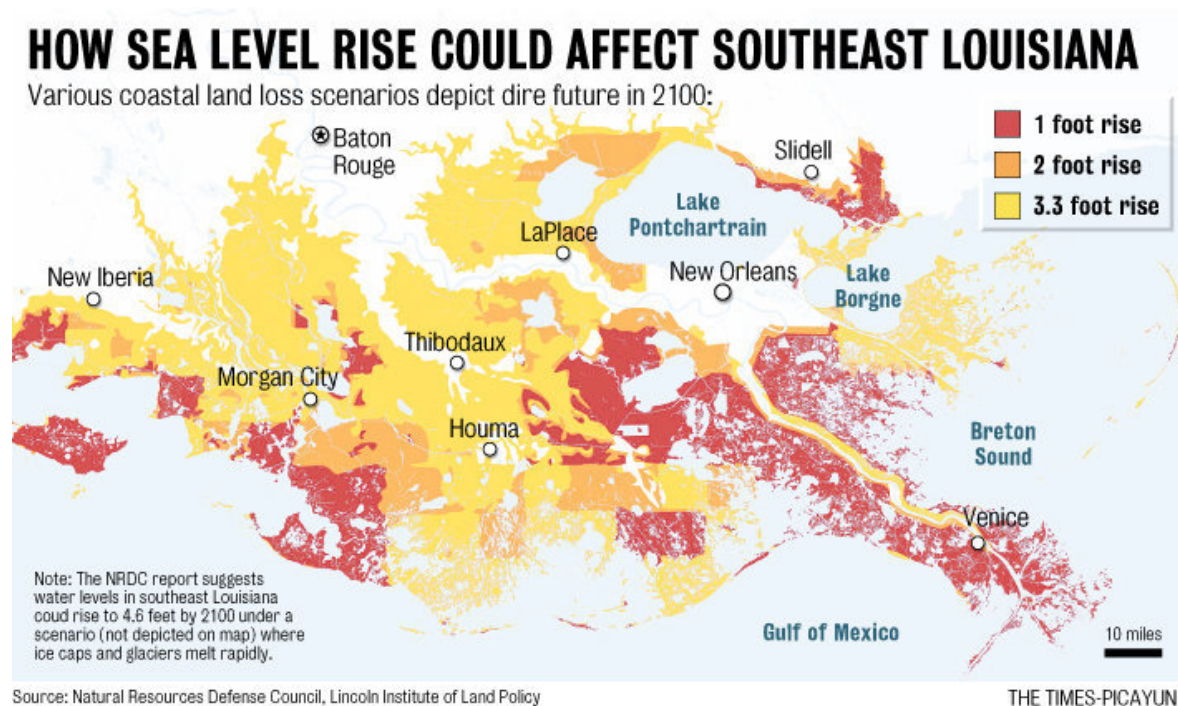


Figure 8 – Recent utility CO<sup>2</sup> forecasts (Synapse, only select years shown)

Given the risks of increasingly intense climate impacts—which threaten to disproportionately impact Louisiana—it is important that SWEPCO recognize the risk of

<sup>28</sup> Under the Finalized 111(d) rule, states opting for a “trading ready” mass-based compliance plan could either chose a plan that covered only existing sources, or chose a plan that covered both existing and potential new sources (under the “new source complement” model rule). Commenters noted that a trading plan that excluded new sources would create an incentive to build and operate new plants at the expense of existing plants, even if emissions were not ultimately reduced (i.e. “leaking” emissions from existing to new sources). Because such a rule interpretation would likely be found ineffective for its stated purposes, it is dubious that such an approach would have longevity under future modifications of the rule.

additional potential CO<sub>2</sub> costs in the form of a reasonable per ton emission price, similar to prices that many other utilities in the region are using for planning purposes.



SWEPCO is well aware of the regulatory risks associated with continued operation of its coal-fired units. Indeed, the Company discusses each one of those regulations, and the risks associated with compliance, in its annual reports filed to the SEC. In fact, in the Company's 2017 Form 10-k filing to the SEC, the Company explicitly notes that environmental regulations "could impact the continued operation, cost recovery and/or profitability of generation plant"<sup>29</sup> Yet SWEPCO's IRP assumptions fail to disclose those costs or the corresponding risk of retirement.

***Recommendations for Environmental Regulatory Risk Assessment:***

1. SWEPCO should present findings from a detailed financial analysis including the costs of compliance with the Regional Haze Rule, the ELG rule, CCR Rule, and all proposed and emerging regulations.
2. This analysis should also include sensitivities for compliance costs and the resulting effect on the fleet's operations.
3. For CO<sub>2</sub> regulatory risk, SWEPCO should model a cap reflecting the application of section 111(d) to both existing and new electric generating units.
4. SWEPCO should develop at least one CO<sub>2</sub> price forecast reflecting the potential for additional carbon dioxide regulation beyond section 111(d), such as a reasonable carbon tax forecast. We suggest using the Synapse 2015 mid-case forecast as a reasonable starting point.

<sup>29</sup> See SWEPCO 2017 10-k at iii, [https://www.aep.com/investors/FinancialFilingsAndReports/Filings/docs/AEP\\_10K\\_2017.pdf](https://www.aep.com/investors/FinancialFilingsAndReports/Filings/docs/AEP_10K_2017.pdf).

5. SWEPCO should use a non-zero CO<sub>2</sub> price in all of its “Environmental” scenarios.
6. In modeling, CO<sub>2</sub> cost should influence the dispatch of SWEPCO’s units, and not be treated as a cost “after the fact.”
7. Sensitivities for potential CO<sub>2</sub> and other environmental compliance costs should be conducted independently of each other and other variables (i.e. not correlated).

## II. Model Structure

Setting up long term, least cost planning typically involves the modeling of existing and potential resources on an economic basis to minimize the costs of providing power to ratepayers. These resources typically include internal supply and demand-side resources, market purchases, and power purchase agreements (“PPA’s”). Existing resources are dispatched in the order of ascending cost of operation (given load levels and other constraints) while new resources are selected for construction when economic to do so. Reasons for new construction may include needs for new capacity or energy, or that existing plants are no longer economic (or cannot economically meet regulatory constraints). To ensure that the company is appropriately accounting for future uncertainties, the system must be tested under reasonable ranges of variables that will influence the outcome of the modeling. At the very least, resource planning should be conducted under a range of variables including (but not limited to): fuel prices, energy prices, capacity prices (where applicable), environmental regulations, and demand.<sup>30</sup>

There are various reasonable ways to model resource plans, but based on the initial assumptions, it is important that SWEPCO avoid constraining its model in ways that could “hardwire” certain resource choices or result in less-than-optimal addition of supply- and demand resources.

It is important that SWEPCO’s model does not inadvertently exclude combinations of options that deserve consideration. This might occur in one of four ways: (a) through manually-selected resource portfolios, (b) through overly-constrained model structures, (c) by failing to capture critical revenue streams that occur outside of traditional energy planning, and (d) by failing to assess the value of resource combinations, rather than single resources.

In the first instance, future resource portfolios are user-defined, rather than selected by the model, thus creating future resource portfolios that are suboptimal – or potentially largely not cost effective. It is critical that the Company *minimize manual portfolio decisions* and prescreening options. As an example, the Company should ensure that the Aurora model has ability to fully optimize SWEPCO’s portfolio, including the ability to select existing units for cost-effective retirement (“endogenous retirement”) and use of a range of demand-side resources and storage to meet demand. Failing to examine existing large fossil units for potential cost-effective retirement pre-judges the efficacy of those resources and denies ratepayers the opportunity to achieve lower cost (and cleaner) energy options.

Additionally, SWEPCO’s assumptions appear to include a “cap” on wind and solar energy resources. For wind, the Company has manually capped the addition of new wind at 1,900 MW, with a 600 MW annual limit. This amount of wind energy would provide roughly 40% of SWEPCO’s energy. For solar, the cap is 1,300 MW over the planning horizon, with a 300 MW annual limit. This would be approximately 15% of SWEPCO’s energy demand. We note that other utilities have exceeded these levels of wind and solar in their modeling. In particular,

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<sup>30</sup> See Wilson, R., Biewald, B., “Best Practices in Electric Utility Integrated Resource Planning.” (2013)

in May 2018, MidAmerican announced plans to develop enough wind energy to provide 100% renewable energy to its customers by the early 2020s.<sup>31</sup>

We do not suggest that SWEPCO must adopt a 100% renewable energy resource portfolio, but models in which the optimization is overly constrained may fail to examine cost effective portfolios simply due to those constraints. An example of an overly constrained model is by allowing only the addition of large blocks of highly modular renewable energy options (such as wind or solar), or limiting the availability of these options outside of real-world constraints. As an example, it appears as though SWEPCO is evaluating only one option for battery storage, which provides four hours of energy. As discussed below, the Company should also include an option for a two-hour battery.

Relatedly, there are many benefits to demand-side management (“DSM”) and storage resources that are not captured through traditional capacity-expansion modeling. For DSM, avoided transmission and distribution investments are real and avoidable costs that are often not priced into the value of the DSM resource. For storage, additional value streams for frequency regulation, voltage support, ramping capability, and blackstart capability are not effectively captured by traditional resource planning. It is important that the Company seek to ensure that the model appropriately recognizes those many benefits of DSM and storage options. One method for doing so would be through either assessment of those value streams outside of the model structure (and subsequent repricing in the model).

Finally, traditional capacity expansion modeling does not recognize the energy shifting value of storage or demand response, a critical value when integrating substantial new renewable energy. An effective use of utility-scale storage paired with solar can shift the solar to peak period requirements, thus improving the capacity capabilities of solar. Using those resources to shift peak demand can enhance the capabilities of wind. In total, a packaged combination of these resources would show a much higher value in traditional resource planning than any of these resources on their own.

Increasingly, utilities and experts are looking to this modular portfolio planning as a way of meeting needs rather than relying on specific technology solutions. Rocky Mountain Institute recently published a method for developing and evaluating “clean energy portfolios” designed to meet (or exceed) the capabilities of new gas-fired units at competitive costs.<sup>32</sup> Public Service Company of New Mexico (“PNM”) recently issued an all-source request for proposals (“RFP”) in which the Company will seek to assess and integrate all bids, including packaged renewable energy, storage, demand-side resources, and distributed energy solutions.<sup>33</sup> Similarly, the city of Glendale, California issued an all-source RFP for 171 MW of generation, seeking to create a “virtual power plant” from modular bids down to 1 MW in size.<sup>34</sup> As a demonstration, Southern California Edison (“SCE”) recently completed the procurement of resources in their “Preferred

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<sup>31</sup> <https://www.midamericanenergy.com/news-article.aspx?story=858>

<sup>32</sup> Mark Dyson, Alexander Engel, and Jamil Farbes, The Economics of Clean energy Portfolio How Renewable and Distributed Energy Resources Are Outcompeting and Can Strain Investment in Natural Gas-Fired Generation (Rocky Mountain Institute May 2018), <https://www.rmi.org/insights/reports/economics-clean-energy-portfolios/>.

<sup>33</sup> <https://www.pnm.com/rfp>

<sup>34</sup> <http://www.glendaleca.gov/home/showdocument?id=44964>

Resources Pilot,” a project to replace the sudden closure of the San Onofre Nuclear Generating Station (“SONGS”); in that project, SCE successfully procured 238 MW from contracted resources including energy efficiency, demand response, behind-the-meter renewables, energy storage, and combined heat and power.<sup>35</sup> Similarly, Xcel Energy Colorado recently conducted an all-source RFP and received over 400 bids, most of which were for renewable resources, with the median bid for stand-alone wind energy resources \$18.10/MWh. Adding battery storage to wind energy resulted in median bids of \$21/MWh. Moreover, Xcel received 152 bids for solar projects comprising more than 13 GW of capacity, with the median bid \$29.50/MWh. Coupling solar with battery storage resulted in bids for \$36/MWh.<sup>36</sup>

Those all-source RFP processes make clear that significant renewable alternatives are, in fact, available. Recent studies and analogous RFPs confirm the potential for similar results in Louisiana. Indeed, in a recent (albeit limited scope) RFP for only 5 MW of solar capacity, Entergy New Orleans received 17 different qualifying proposals representing approximately 325 MW of capacity.<sup>37</sup> Moreover, studies demonstrate that there is substantial distributed energy potential, load shaping, and interruptible load potential in the state—as much as 3,000 MW.<sup>38</sup> SWEPCO should ensure that its resource planning process is able to capture these cost effective resources and deploy them intelligently, rather than just moving to single central-station technology resources.

***Recommendations for Resource Increment Options:***

1. SWEPCO should ensure that the model is allowed to pick partial blocks of resources wherein block size is not a barrier (such as solar and wind), and pick reasonable partial blocks of other resources where capacity can be shared between utilities.
2. SWEPCO should be sure to not overly constrain the model including ensuring that it minimizes manual portfolio decisions and prescreening.
3. SWEPCO should ensure that it captures avoided costs that are provided by certain resources that occur outside of traditional energy planning. Ideally, this would be done through an assessment of those value streams outside of the model structure (and subsequent repricing in the model)
4. SWEPCO should ensure that the model captures the energy shifting value of storage or demand response.
5. Ensure Aurora model has ability to fully optimize the SWEPCO portfolio, including retirements and demand side resources.

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<sup>35</sup> [https://www.sce.com/wps/wcm/connect/d7cb7297-cbc4-4766-a640-e01e9fd0adc1/020317\\_PRP\\_PortfolioDesignReport.pdf?MOD=AJPERES](https://www.sce.com/wps/wcm/connect/d7cb7297-cbc4-4766-a640-e01e9fd0adc1/020317_PRP_PortfolioDesignReport.pdf?MOD=AJPERES)

<sup>36</sup> Xcel Energy (December 28, 2017). 2016 Electric Resource Plan, 2017 All Source Solicitation 30-Day Report (Public Version) CPUC Proceeding No. 16A-0396E.

<sup>37</sup> Entergy New Orleans, Application of Entergy New Orleans, Inc. for Approval to Construct Distributed Generation Scale Solar Photovoltaic Systems and Request for Cost Recovery, Docket No. 17-05 (Oct. 2017) (Direct Testimony of Seth Cureington).

<sup>38</sup> Power and Energy Systems Group, Oak Ridge National Laboratory, Eastern Interconnection Demand Response Potential at B-26 (Nov. 2012), <https://info.ornl.gov/sites/publications/files/Pub37931.pdf>.

### III. Commodity Prices

A utility’s commodity forecasts have a dramatic impact on what resources are considered optimal, and it is essential that SWEPCO use reasonable forecasts. While no forecast is perfect, there are there are often estimates which more accurately reflect historical and likely future conditions, or are at least based on publicly-accessible data and verifiable methodologies.

At the outset, we urge SWEPCO to evaluate a range of commodity forecasts that do not all include highly correlated prices. For example, based on its presentation to Arkansas stakeholders, it appears that SWEPCO assumes that gas, energy, and carbon prices are all perfectly correlated. When carbon regulations are incorporated into the modeling, gas and energy prices increase proportionately and in lockstep.<sup>39</sup> At the same time, coal prices do not appear to be similarly correlated. We urge SWEPCO to evaluate a sensitivity in which carbon regulation does not correlate perfectly with, and cause, a corresponding gas price spike.

We also urge the Company in its draft IRP to conduct and disclose a robust analysis for its solid fuel costs. SWEPCO’s fleet burns both sub-bituminous coal from the Powder River Basin and lignite. Each of these solid fuels currently has very different prices, delivery risks, and would be subject to different market trends over the planning period. Powder River Basin and Illinois Basin coals, for example, are subject to significant transportation charges. Coal prices are becoming more uncertain as some mines experience lower demand and push higher fixed costs into their coal prices.

Moreover, while two of its power plants burn lignite, SWEPCO has not disclosed its recent lignite costs. And according to publicly available data, those fuel costs are significantly higher and subject to greater volatility than the Company’s projections for Powder River Basin coal.

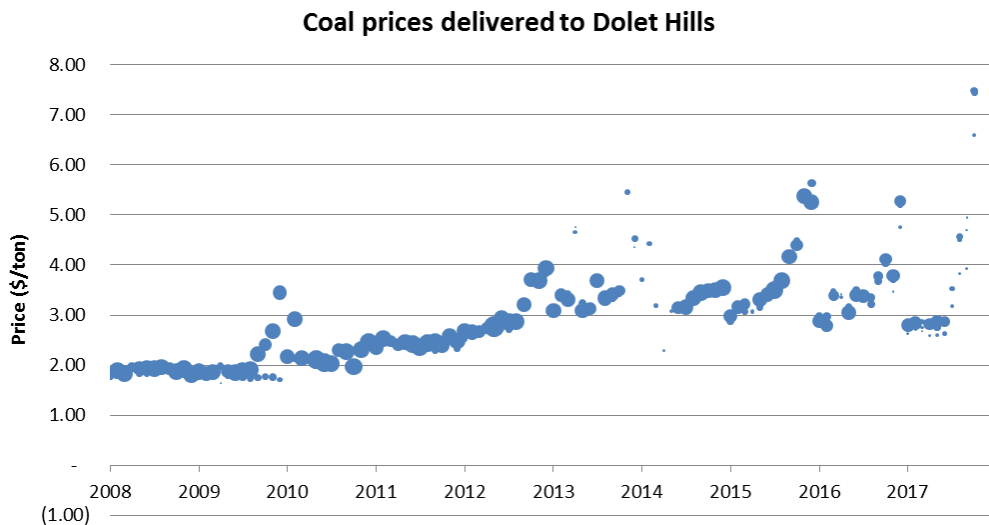


Figure 9 – Recent Lignite Prices for Dolet Hills<sup>40</sup>

<sup>39</sup> See, e.g., SWEPCO Arkansas IRP Stakeholder Presentation at 33 (Aug. 14, 2018).

<sup>40</sup> Data from EIA 923 (2008-2017)



Given recent lignite costs from the adjacent mine, the Company should include a reasonable price forecast. Moreover, it does not appear that the company plans on running any high coal cost scenarios.

***Recommendations for Commodities:***

1. Present historic prices and price forecasts for its solid fuel costs.
2. For each year in the study period, present the high and low projections for all fuels, as done with natural gas projections.
3. Evaluate these sensitivities independent of other variables.

**IV. Renewable Energy Costs, Demand-Side Management, and Supply-Side Efficiency**

Distributed generation, renewable energy resources, energy efficiency, and other demand side resources all can have a direct influence on load shape and load forecasts. Consequently, appropriately accounting for these resources is necessary to ensure least cost resource planning. Increases in distributed generation and energy efficiency will reduce the amount of energy and capacity SWEPCO needs to provide to its customers, and the associated costs. As a result, underestimating—or excluding outright—reasonably expected demand side resources will result in the Company overbuilding or over-procuring energy and capacity.

At the outset, we commend SWEPCO for recognizing that, to the extent the Company needs additional generation capacity, wind and solar resources are the least-cost options for Louisiana ratepayers.<sup>41</sup> It is important, however, that SWEPCO’s draft IRP include transparent cost assumptions based on industry-accepted cost estimates. Unfortunately, SWEPCO’s initial renewable energy prices and performance assumptions are unclear and unsupported. While the Company sets out costs and capacity factors for a wide variety of fossil fuel resources, for example, wind and solar are presented on a single price curve without any reference to performance or the decreasing costs of certain technologies. Moreover, the Company presents only one battery storage option, which does not refer to any performance characteristics.

***A. Renewable Energy Costs and Policy***

Based on its relatively generic planning assumptions, it appears that current long-term wind PPAs are being offered by developers at prices much lower than the Company’s assumed levelized cost of wind. As reflected in the figure below, new wind PPAs have reached “all-time lows” costing “around \$25/MWh nationwide,”<sup>42</sup> which is significantly lower than SWEPCO’s forecasted costs. In fact, numerous utilities in the southcentral region of the United States have recently signed PPAs for wind energy for less than \$35/MWh, or approximately \$15/MWh less than SWEPCO projects for self-build wind.<sup>43</sup> For example, Alabama Power has signed long-term

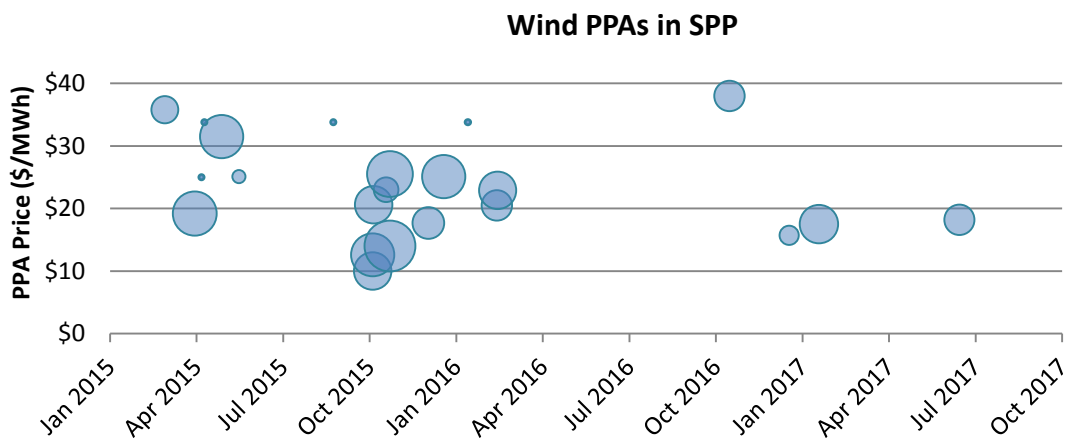
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<sup>41</sup> July 25, 2018 Stakeholder Presentation at 34.

<sup>42</sup> U.S. Department of Energy (DOE). 2013. *2013 Wind Technologies Report*. Page ix.

<sup>43</sup> Michael Goggin, *Once Errors Corrected, Koch Professor's Study Shows Economic Benefits of RPS*, American Wind Energy Association (Mar. 11, 2015), *available at* <http://aweablog.org/blog/post/once-errors-correctedkoch-professors-study-shows-economic-benefits-of-rps>.

PPA contracts for wind in Oklahoma and Kansas at \$32 per MWh,<sup>44</sup> nearly 40 percent less than what the Company assumes.<sup>45</sup>



Similarly, SWEPCO appears to significantly overestimate the installed cost of solar resources, and as with its wind energy analysis, includes only an evaluation of self-build generation. Indeed, the Company's lowest estimates of wind and solar energy appear to be higher than industry standards.<sup>46</sup> Lazard Associates, which develops "levelized cost of energy" analysis for various technologies, including wind energy, solar power, battery storage, indicates that SWEPCO's price estimates for several renewable energy and storage options are much higher than prices observed in the industry. Lazard's cost estimates are provided without subsidies or incentives, and are widely used throughout the industry. Unsubsidized utility-scale wind power prices likely range from \$30-\$60/MWh; adding the federal production tax credit reduces these prices to \$14-\$52/MWh. Unsubsidized utility-scale solar power prices likely range from \$43-\$53/MWh; adding the federal investment tax credit reduces these prices to \$35-\$42/MWh.

Moreover, SWEPCO makes no mention of the changing landscape of renewable energy policies that will have material impacts of the Company's long-term plans—namely the LPSC's net metering policy. Stakeholders in Louisiana are pushing for changes in the net metering policy, including lifting (or potentially removing) the current 0.5% cap on net metered facilities.<sup>47</sup> Increased penetration of net metering will impact SWEPCO in at least two ways.

<sup>44</sup> Alabama Power. "Chisholm View, Buffalo Dunes projects provide cost-effective power," *available at* <http://www.alabamapower.com/environment/news/chisholm-view-project-provides-low-cost-power.asp>; Inda, A., J. Wu, and D. Zhou. 2014. "Assessing the Hedging Value of Wind Against Natural Gas Price Volatility" at 34, *available at* [http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/8582/Inda\\_Wu\\_Zhoupercent20percent20Assessingpercent20thepercent20Hedgingpercent20Valuepercent20ofpercent20Wind.pdf?sequence=1](http://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/8582/Inda_Wu_Zhoupercent20percent20Assessingpercent20thepercent20Hedgingpercent20Valuepercent20ofpercent20Wind.pdf?sequence=1).

<sup>45</sup> July 25, 2018 Stakeholder Presentation at 34.

<sup>46</sup> *See, e.g.*, Lazard, Lazard's Levelized Cost of Energy Analysis, version 11 (Nov. 2017).

<sup>47</sup> Owens, D., "One Regulated Utility's Perspective on Distributed Generation." Entergy presentation at Southeast Energy Power Summit. (2014)

First, it will reduce both energy and capacity demand. Second, it may also require investments in the distribution grid.

SWEPCO also fails to mention improvements in the performance of wind and solar energy generation resources, and the improvements in capacity factors and reliability. Indeed, the Department of Energy forecasts a 9-19% improvement in the capacity factor of Louisiana wind energy resources by 2020. Without those performance characteristics, it is difficult to evaluate the most reliable and least-cost option for ratepayers.

### ***Recommendations for Renewable Energy***

1. SWEPCO should include a cost projection for wind and solar resources that reflects current industry understanding and expectations.
2. SWEPCO should develop a reasonable range of wind and solar resource alternatives using multiple variations of various technologies of different sizes, and ensure that its model optimizes decision-making by allowing it to choose partial blocks of resources, or combinations of resources.

### ***B. Demand Side Management and Energy Efficiency***

Demand-side management (“DSM”) measures reduce peak load through demand response, which is only called upon during peak hours, and through energy efficiency, which is spread among hours throughout the day. Thus, demand response directly reduces peak load but has little effect on energy sales, while energy efficiency reduces sales and also reduces peak load as it coincides with peak hours. Additional DSM directly reduces the Company’s capacity and energy requirements, avoiding the need to build or retrofit supply resources and generation to meet load.

SWEPCO should be treating energy efficiency like any other available resource and pursuing programs that are available and beneficial to ratepayers. As pointed out by PacifiCorp, one of the largest utilities in the country, “energy efficiency is a resource used to meet demand: its elements have costs, supply curves, and a load shape. As such, it is comparable, and directly compatible, with resource optimization modeling.”<sup>48</sup> Energy efficiency can be, and should be, compared side-by-side with other new resource alternatives. Increased energy efficiency targets do not always translate to an increased per unit cost of saved energy—costs can actually drop with greater penetration of energy efficiency.<sup>49</sup> Some studies have shown that energy efficiency is not only competitive with supply side resources, but that even half to one-third the cost of the next best alternative.<sup>50</sup> Because efficiency can avoid the need for building new capacity and

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<sup>48</sup> PacifiCorp 2013 IRP, April 30, 2013. Page 4.

<sup>49</sup> K. Takahashi and D. Nichols (2008). The Sustainability and Costs of Increasing Efficiency Impacts: Evidence from Experience to Date, proceedings of the 2008 ACEEE Summer Study on Energy Efficiency in Buildings, ACEEE; John. Plunkett, et al. An Empirical Model for Predicting Electric Energy Efficiency Resource Acquisition Costs in North America: Analysis and Application, proceedings of the 2012 ACEEE Summer Study on Energy Efficiency in Buildings, ACEEE.

<sup>50</sup>Molina, M., “The best Value for America’s Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs.”

(2014).

retrofitting existing resources, energy efficiency could also be used as a mechanism for compliance with forthcoming environmental regulations.<sup>51</sup> Finally, SWEPCO should ensure that energy efficiency is modeled under the utility cost test.

### ***Recommendations for Energy Efficiency***

1. SWEPCO should disclose the costs of energy efficiency to be assumed for this IRP and provide the underlining assumptions.
2. All of model runs should have SWEPCO meet any mandated energy efficiency and DSM goals.
3. SWEPCO should develop a supply curve for energy efficiency; the development of the supply curve should be disclosed for the Commission and stakeholders.
4. SWEPCO should model efficiency as a resource, and using the utility cost method.

### ***C. Battery Storage***

While the storage industry lags behind that of other clean energy technologies such as wind and solar, there is substantial recent development throughout the country. Moreover, it is clear that when coupled with renewable energy generation, battery storage is not only becoming more cost-effective, but can provide substantial benefits to the grid. Battery storage systems are unique because they can act both as electricity supply resources and as electricity demand resources. When the battery system charges, it functions as a demand resource; when the battery system discharges, it acts as a supply resource. Although a battery can shift load on the system and provide some regulation on the system while charging, a battery's main benefits to the electrical grid arise as a supply and balancing resource. When a battery acts as a supply resource, it can provide four distinct benefits to the grid: (1) Capacity—the ability to produce electricity; (2) Energy—putting electricity onto the grid; (3) Reserves—as a resource that can be dispatched quickly, a battery can function as a reserve resource: it can maintain a charge in case something else on the system fails or can no longer function, and it can respond quickly and provide energy to the system until the problem is fixed; and (4) Regulation—automatically responding to changes in the frequency of the electrical system second-to-second, maintaining the reliability of the system (regulation service can be provided both while discharging and charging). Acting as a flexible balancing resource, a battery can absorb excess generation, dampening swings from variable energy resources. In addition, storage provides other value streams to resource planning that are not well captured by traditional modeling, such as black start capability, deferral of transmission and distribution investments, reduced start/stop time on the fleet, and rapid and modular deployment with minimum permitting risk. Storage resources can offset the need for other, more expensive forms of capacity.

With large enough storage facilities on the grid, and in conjunction with other renewable energy resources, SWEPCO could offset the need for whole power plants—either by avoiding a new fossil-fired unit, or by allowing an older, higher-emitting unit to retire.<sup>52</sup> It does not appear

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<sup>52</sup> See, e.g., Synapse Energy Economics, Inc., *Stacking Up the Benefits of Storage for New England* (Oct. 2017), <http://www.synapse-energy.com/sites/default/files/Stacking-Up-Benefits-of-Storage-NE.pdf>.

that SWEPCO's initial assumptions incorporate or even recognize these co-benefits, or any others.

In addition to failing to mention the benefits of battery storage in its analysis, it appears that SWEPCO's analysis is unduly limited to a single battery storage option.<sup>53</sup> SWEPCO should expand the options available and include a two-hour option, which provides for different operational capabilities and benefits depending on the time of day that the resource is deployed. Finally, as discussed above, SWEPCO should allow its modeling to select among portfolios of options including solar or wind coupled with batteries, which together can reliably serve a wide variety of reliability needs, load types, and can be deployed to coincide with load curve.<sup>54</sup>

#### ***Recommendations for Battery Storage***

1. SWEPCO should incorporate into its analysis the important co-benefits of battery storage.
2. SWEPCO should expand the options available and include additional battery store alternatives, including a two-hour option.
3. SWEPCO should allow its modeling to select among portfolios of options including solar or wind coupled with batteries.

#### **VIII. Conclusion**

Sierra Club looks forward to reviewing SWEPCO's draft IRP, and continuing to participate in subsequent stakeholder proceedings. Incorporating the recommendations that are listed above will help ensure that the ratepayers of Louisiana continue to enjoy the reliability and affordability that SWEPCO has provided in the past. Revising the Company's input assumptions will aid the Company in accounting for the increased risk and variability that currently exists in the utility planning landscape. Sierra Club looks forward to a continued engagement with SWEPCO's planning process.

Respectfully submitted this 5th day of June, 2018,



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<sup>53</sup> July 25, 2018 Stakeholder Presentation at 32.

<sup>54</sup> See, e.g., AES Energy Storage, *About the AES Alamosa Modernization Project* (2015), <http://www.renewaesalamosa.com/AES-Alamosa-Fact-Sheet-2015.pdf> (Describing AES's Aliso Canyon battery project, a 200 MW "flexible resource" because the system can be used as 100 MW of storage capacity during off-peak times and then as 100 MW of flexible capacity during times of peak demand).

**CERTIFICATE OF SERVICE**

I hereby certify that on this 25<sup>th</sup> day of September, 2018, I served a copy of Sierra Club's Comments on SWEPCO Power's Draft IRP Report by electronic mail on the Official Service List.

/s/ Joshua Smith  
Joshua Smith  
Sierra Club