BEFORE THE
ARKANSAS PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR APPROVAL OF A GENERAL CHANGE IN RATES AND TARIFFS	))))	**DOCKET NO. 21-070-U**

REDACTED VERSION

DIRECT TESTIMONY OF

DEVI GLICK

ON BEHALF OF SIERRA CLUB

December 7, 2021

TABLE OF CONTENTS

LIST OF DIRECT EXHIBITS

DG-1:	Resume of Devi Glick
DG-2:	SWEPCO, Flint Creek APDES Permit Modification Application (Jan. 8, 2021)
DG-3:	SWEPCO Responses to Requests for Information, Public
DG-4:	SWEPCO Responses to Requests for Information, Highly Sensitive Confidential
DG-5:	Proposal for Decision, *Application of Southwestern Electric Power Company for Authority to Change Rates*, Tex. PUC Docket No. 51415, page 7 (Aug. 27, 2021)
DG-6:	Order on Rehearing, *Application of Southwestern Electric Power Company*, Tex. PUC Docket No. 46449, SOAH Docket No. 473-17-1764 (Mar. 19, 2018) (excerpt exhibited)
DG-7:	Schedule H-5-3.b, *Application of Southwestern Electric Power Company*, Tex. PUC Docket No. 51415, SOAH 473-21-0538 (filed Oct. 14, 2020)
DG-8:	SWEPCO Response to SC 7-6, SC_07_006_2H2016_Base Attachment_2, SC_07_006_2H2018_Base_Attachment_3, *Application of Southwestern Electric Power Company*, Tex. PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021)
DG-9:	SWEPCO IRP, SWEPCO Response to Stakeholder Comments (Oct. 15, 2021)
DG-10:	SWEPCO Response to SC 6-5, *Application of Southwestern Electric Power Company*, Tex. PUC Docket No. 51415, SOAH 473-21-0538 (filed May 6, 2021)

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION AND PURPOSE OF TESTIMONY

Q Please state your name and occupation.

A My name is Devi Glick. I am a Principal Associate at Synapse Energy Economics, Inc. ("Synapse"). My business address is 485 Massachusetts Avenue, Suite 3, Cambridge, Massachusetts 02139.

Q Please describe Synapse Energy Economics.

A Synapse is a research and consulting firm specializing in energy and environmental issues, including electric generation, transmission and distribution system reliability, ratemaking and rate design, electric industry restructuring and market power, electricity market prices, stranded costs, efficiency, renewable energy, environmental quality, and nuclear power.

Synapse's clients include state consumer advocates, public utilities commission staff, attorneys general, environmental organizations, federal government agencies, and utilities.

Q Please summarize your work experience and educational background.

A At Synapse, I conduct economic analysis and write testimony and publications that focus on a variety of issues related to electric utilities. These issues include power plant economics, utility resource planning practices, valuation of distributed energy resources,

and utility handling of coal combustion residuals waste. I have submitted expert testimony on unit-commitment practices, plant economics, utility resource needs, and solar valuation before state utility regulators in Arizona, Connecticut, Florida, Indiana, Michigan, Nevada, New Mexico, North Carolina, South Carolina, Wisconsin, Virginia, and Texas. In the course of my work, I develop in-house electricity system models and perform analysis using industry-standard electricity system models.

Before joining Synapse, I worked at Rocky Mountain Institute, focusing on a wide range of energy and electricity issues. I have a master's degree in public policy and a master's degree in environmental science from the University of Michigan, as well as a bachelor's degree in environmental studies from Middlebury College. I have more than seven years of professional experience as a consultant, researcher, and analyst. A copy of my current resume is attached as Direct Exhibit DG-1.

Q On whose behalf are you testifying in this case?

A I am testifying on behalf of Sierra Club.

Q Have you previously testified before the Arkansas Public Service Commission ("Commission")?

A No. But I submitted testimony in Texas PUC Docket No. 51415, Application of Southwestern Electric Power Company for Authority to Change Rates.

Q What is the purpose of your testimony in this proceeding?

A In this proceeding, I evaluate the economics of the coal units of Southwestern Electric Power Company ("SWEPCO" or the "Company"), with a particular focus on the Flint Creek and Welsh power stations. I assess three things with respect to SWEPCO's coal fleet: (1) the reasonableness of SWEPCO's requests related to the undepreciated capital balances for the Dolet Hills and Pirkey plants; (2) the prudence of SWEPCO continuing to invest in and operate Flint Creek and Welsh, including a review of the economic evidence related to its decision to retrofit Flint Creek to comply with the U.S. Environmental Protection Agency's ("EPA") Coal Combustion Residual ("CCR") and Effluent Limitation Guidelines ("ELG") regulations through its proposed CCR and ELG retrofit project ("CCR and ELG Project"); and (3) the prudence of the proposed decision to convert Welsh to operate on gas.

Q How is your testimony structured?

A In Section 2, I summarize my findings and recommendations for the Commission.

In Section 3, I provide a summary of SWEPCO's coal fleet and outline the test-year expenses that the Company is requesting to recover in this current docket. I briefly address the reasonableness of SWEPCO's proposals related to undepreciated capital for Dolet Hills and Pirkey.

In Section 4, I evaluate the historical economic performance of the Flint Creek and Welsh plants and calculate the Company's net revenues during recent years. I also use the Company's own data to evaluate each unit's projected economic performance over the next decade.

In Section 5, I review the analysis that SWEPCO conducted to justify retrofitting Flint Creek to comply with the CCR Rule and ELG Rule rather than retire the plant by 2028. I evaluate this evidence to assess the reasonableness of ongoing spending at Flint Creek, including in the test year. Further, I evaluate the prudence of the retrofit decision relative to retirement and replacement.

In Section 6, I review the Company's proposal to retrofit Welsh to operate on gas. I evaluate the Company's analysis and outline my recommendation on what actions should be required to justify such a decision.

Q What documents do you rely upon for your analysis, findings, and observations?

A My analysis relies primarily upon the testimonies, workpapers, exhibits, and discovery responses of SWEPCO witnesses. I also rely on public information from prior SWEPCO proceedings and other publicly available documents.

2. FINDINGS AND RECOMMENDATIONS

Q Please summarize your findings.

A My primary findings are:

1. SWEPCO is inappropriately seeking to recover the remaining plant balances of nearly $540 million at the Dolet Hills and Pirkey plants as a regulatory asset with a rate of return after the plants retire in 2021 and 2023, respectively.
2. SWEPCO incurred $158 million in net losses relative to the value of capacity and market energy at the Flint Creek power plant and incurred $194 million in net losses at the Welsh power plant over the past six years (2015–2020).
3. SWEPCO is projected to incur $132 million in net losses at Flint Creek and $254 million in net losses at Welsh, relative to the value of capacity and market energy, by continuing to invest in each of the plants over the next decade (2021–2030).
4. SWEPCO has not demonstrated the prudence of continuing to invest in and operate its Flint Creek and Welsh coal plants through each of the plants' current retirement dates.
5. SWEPCO has not complied with the Commission's requirement as part of its approval of the scrubbers at Flint Creek in Docket 12-008-U to address the load pocket in northwest Arkansas.
6. Much of the $26.8 million that SWEPCO plans to spend to retrofit Flint Creek to comply with ELG and CCR requirements will be imprudently incurred over the

next few years (2021–2023) if the Company continues to go ahead with the project, especially given that the Company could operate Flint Creek until 2028 without incurring approximately $17.8 million of these retrofit costs.

7. The *Fall 2020 Analysis* (described in Section 5 below) that SWEPCO performed to justify the avoidable CCR and ELG Project at Flint Creek was flawed and used inaccurate solar, wind, and battery storage costs and operational assumptions. It also inappropriately included transmission costs to address a load pocket that the Company is required to address regardless of Flint Creek's retirement. Under more reasonable assumptions, SWEPCO would have likely found it was costlier to continue to operate Flint Creek than to retire and replace the unit with alternatives.
8. SWEPCO has not conducted any analysis demonstrating the prudence of retrofitting Welsh to operate on gas.

Q Please summarize your recommendations.

A Based on my findings, I offer the following recommendations:

1. The Commission should not allow SWEPCO to collect a rate of return on the plant balance of Pirkey and Dolet Hills after the plants retire.
2. The Commission should disallow from the test-year base rate operations and maintenance ("O&M") and capital costs for Flint Creek and Welsh because the

Company has not met the burden of demonstrating that those costs are reasonable and that it is prudent to continuing to invest in and operate the plants.

3. The Commission should require SWEPCO to comply with its 2013 direction from Docket 12-008-U to address the load pocket in Northwest Arkansas. This should be done by either 2025 or another specified date prior to 2028, and SWEPCO should evaluate alternatives to maintaining Flint Creek and building a $150 million transmission line.

4. The Commission should find that SWEPCO's decision during the test year to undertake the CCR and ELG Project at Flint Creek, which could be avoided by a 2028 retirement, was imprudent; further, the Commission should require SWEPCO to update its *Fall 2020 Analysis* to determine whether it is prudent to proceed with the CCR and ELG Project in light of changing system and market conditions.

5. The Commission should require SWEPCO to conduct economic assessments of alternative retirement dates for Flint Creek as part of this rate case, or as part of the Company's next integrated resource plan ("IRP") process.

6. The Commission should not allow the recovery of future capital expenditures and fixed O&M costs at Flint Creek that are not necessary for the plant to operate beyond 2028 until a robust retirement study is conducted.

7. Given that the current economic outlook for Welsh does not support converting the plant to gas, the Commission should require an analysis before any decision on whether to convert the plant to operate on gas or to retire and replace the plant.
8. The Commission should not allow the recovery of future capital and fixed O&M costs at Welsh associated with the plant's conversion to operate on gas until SWEPCO has presented robust analysis justifying the conversion and continued operation of the plant.

3. SWEPCO'S ARKANSAS CUSTOMERS ARE SERVED BY FOUR SOLID-FUEL PLANTS.

Q Describe SWEPCO's solid-fuel fleet.

A The Company fully or partially owns four coal units. Units 1 and 3 at the Welsh plant have a combined capacity of 1,053 megawatts ("MW") and are 100 percent owned by SWEPCO. Flint Creek is a one-unit plant with a capacity of 516 MW and is co-owned (50 percent each) with the Arkansas Electric Cooperative Corporation. The Company also owns the John W. Turk Jr. plant. This plant is not included in the Arkansas customer rate base and will not be addressed in this testimony.

The Company also fully or partially owns two lignite plants. The Dolet Hills power station is a 650 MW mine-mouth lignite plant co-owned by SWEPCO (40.234 percent), Cleco Power LLC ("Cleco"), and two other nonaffiliated minority owners. The Henry W.

Pirkey plant is a 675 MW, mine-mouth lignite plant operated by SWEPCO (85.936 percent ownership) and co-owned with two other nonaffiliated minority owners.

Q When does SWEPCO plan to retire or cease solid-fuel operations at each of these plants?

A Dolet Hills is scheduled to retire no later than December 2021[1] and Pirkey is scheduled to retire in 2023.[2] Under the current depreciation schedule, the Welsh units would retire in 2037 and 2042;[3] but SWEPCO has stated that it will cease coal operation at Welsh in 2028.[4] The Company is currently considering whether to convert the units to gas or to retire them outright. Flint Creek has an estimated retirement year of 2038, and the Company is currently undertaking a project to comply with the ELG and CCR regulations that is at least partially avoidable if the plant retires by 2028.[5]

[1] Direct Testimony of Thomas Brice, page 9.

[2] *Id.*, page 12.

[3] *Id.*, page 14.

[4] SWEPCO to End Coal Operations at Two Plants, Upgrade a Third. November 5, 2020. Available at https://www.swepco.com/company/news/view?releaseID=5847.

[5] Direct Exhibit DG-2, SWEPCO, Flint Creek APDES Permit Modification Application (Jan. 8, 2021); *see also* Direct Testimony of Joseph Perez, pages 11-15; *see generally* Direct Testimony of Gary O. Spitznogle, pages 5-14.

Q Which units do you address in this testimony?

A My testimony focuses on the economic performance and the operational and planning practices at the Flint Creek and Welsh units, but I also address the Company's requests related to Pirkey and Dolet Hills undepreciated plant balances.

Q What is the test year for this rate case?

A SWEPCO is using a test year of April 30, 2020–April 30, 2021. This is comprised of eight historical months (April 30, 2020–December 31, 2020) and four projected months (January 1, 2021–April 30, 2021).[6]

Q What is SWPECO requesting in this rate case relating to its coal and lignite fleet?

A SWEPCO is requesting the following related to its coal and lignite fleet in this rate case:

- To increase base revenues by $85 million, which will be offset by fuel and production tax credit savings associated with the North Central Energy Facilities wind project—representing a net increase of $38 Million or 12 percent.[7]
- To roll the undepreciated plant balance at Pirkey into the accumulated depreciation balance of Welsh with a 2037 retirement date or alternatively turn the undepreciated plant balance into a regulatory asset with a 15-year period, with

[6] Direct Testimony of Thomas Brice, page 14.

[7] *Id.*, page 19.

a rate of return.[8] Pirkey's undepreciated plant balance was $308,446,442 as of the last depreciation study.[9]

- To turn the undepreciated plant balance at Dolet Hills into a regulatory asset, recovered over five years with a rate of return.[10] Dolet Hills' remaining book value is $119,926,768.[11]
- To amortize the remaining fuel costs at Dolet Hills, relating to the Dolet Hills Lignite Company mines, over the next five years.[12] The Arkansas share is $20,463,785.[13]
- To amortize $7.9 million in environmental costs at Welsh and Pirkey over five years.[14]
- To recover the fixed and variable O&M expenses and ongoing capital expenditures at the Dolet Hills, Pirkey, Welsh, and Flint Creek plants.

Q What power plant O&M expenses and capital expenditures did SWEPCO include in the test year?

A As shown in Table 1, SWEPCO's total test-year O&M expenses associated with its solid-fuel fleet totaled $44.0 million, and its capital expenditures entered into rate base for the

[8] *Id.*, page 12.

[9] Direct Exhibit JAC 2, page 18.

[10] Direct Testimony of Thomas Brice, page 12.

[11] Direct Testimony of Jason Yoder, page 17.

[12] Direct Testimony of Thomas Brice, page 12.

[13] Direct Exhibit JMY-3, pages 8-9.

[14] Direct Testimony of Jason Yoder, page 17.

first time totaled $3.8 million.[15] These capital expenditures are substantially lower than what the Company requested in the most recent Texas rate case PUC Docket No. 51415 (test year April 2019–March 2020), in which SWEPCO requested a total of $27.7 million in capital expenditures across these four plants.

Table 1: Test year (April 30, 2020–April 30, 2021) O&M expenses and capital expenditures by plant

Plant	O&M Expenses ($Millions)	Capital Expenditures ($Millions)
Flint Creek	$7.3	$4.2
Welsh	$20.8	($2.6)
Dolet Hills	$9.2	$4.3
Pirkey	$6.7	($2.1)
Total	**$44.0**	**$3.8**

Source: SWEPCO Response to SC Request 1-3(a); SWEPCO Response to SC 7-1, SC_7.1_Attachment_1_TY_Cap_Expenditures.

[15] SWEPCO Response to Si Request 1-3(a).

Q What portion of the CCR and ELG Project costs at Flint Creek are avoidable if the plant retires in 2028?

A Approximately $17.3 million of SWEPCO's share of the total project costs are avoidable if Flint Creek retires by 2028.[16] The remaining $8.8 million is unavoidable due to the closure of the Primary Bottom Ash Pond required under EPA's CCR rule.[17]

Q Why is SWEPCO seeking recovery of $7.8 million in CCR/ELG costs for Pirkey and Welsh if it did not upgrade either plant to comply with these regulations?

A These costs were incurred to design the CCR and ELG Project for the Pirkey and Welsh plants and to perform the economic analysis to evaluate whether to make the CCR/ELG investments or instead retire the plants.[18] All of this work apparently occurred in the pre-construction stage.

Q Explain SWEPCO's requests at Pirkey and Dolet Hills.

A SWEPCO is asking for approval to spread out recovery of the remaining plant costs at Pirkey and Dolet Hills, beyond the retirement date of these two plants. Specifically,

[16] SWEPCO Response to Sierra Club Request 1-10, Attachment 3; SWEPCO Response to Sierra Club Request 3-5.

[17] SWEPCO initially provided a total Company-share Flint Creek CCR and ELG Project cost of $26,792,500, *see* Direct Testimony of Joseph Perez, page 13, Table 4, but then provided a slightly different cost of $26,081,313, *see* SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_1-10_Attachment 1. It is unclear which number is most up-to-date.

[18] SWEPCO Response to Sierra Club Request 6-1(b).

SWEPCO seeks to retire Pirkey in 2023 but recover the costs out through 2037 with a rate of return, and to retire Dolet Hills in 2021 but recover the costs with a rate of return over the next five years. Together these plants have approximately $537 million in undepreciated plant balances, mine costs, and environmental projects remaining, as shown in Table 2. This means SWEPCO's Arkansas ratepayers will be paying for their approximately $102 million share of the costs of Pirkey and Dolet Hills over the next decade and a half while getting no value out of the plants in return. Any capital expenditures incurred during the test year at these two plants will be added to this balance.

Table 2: Remaining plant balance and costs at Pirkey and Dolet Hills

Plant	Total ($Millions)	Arkansas Share ($Millions)
Dolet Hills	$119.9	$23.6
Dolet Hills Lignite Company Mine	$103.9	$20.5
Pirkey	$308.4	$57.1
Pirkey CCR/ELG	$4.9	$0.8
Total	**$537.1**	**$102.0**

Source: Schedule A-1; WP B 4-5; Exhibit JAC-2, page 18; SWEPCO Response to AG 3-19, Attachment 1; Exhibit JMY-3, pages 8-9; SWEPCO Response to AG 3-22(a).

Q Why is it concerning that both plants have such a large undepreciated balance?

A Over the past several years, SWEPCO has continued to invest substantial costs in keeping Pirkey and Dolet Hills online despite evidence that the plants were uneconomic, and stakeholders' repeated concerns that ratepayers would be forced to bear the costs of those ill-conceived investments. As discussed above, SWEPCO is now proposing to recover

the balance of more than $500 million at Dolet Hills and Pirkey, *with* a rate of return, after the plants retire. This alone is concerning, but even more so because this request provides a window into what we will likely seek at the Flint Creek and Welsh plants in a few years.

SWEPCO seeks to invest substantial funds in Flint Creek to comply with CCR and ELG rules to keep the unit online past 2028. The Company may also soon seek to convert Welsh to operate on gas. All while there is substantial evidence that retiring both units and replacing them is a lower cost option. Any costs to comply with CCR/ELG rules, and—at Welsh—to convert the plant to operate on gas, that SWEPCO is ultimately approved to spend will end up stranded as an undepreciated plant balance when the plants inevitably retire prior to their planned retirement date.

Q Does the Commission's decision in this case regarding the Dolet Hills and Pirkey plant balances have implications for Flint Creek and Welsh?

A Yes, it does. As discussed above, SWEPCO has a documented history of making large environmental and capital investments in its aging fossil units and then retiring the plants soon after. This pattern burdens customers with substantial avoided costs and is grossly imprudent.

If the Commission allows SWEPCO to recover the full remaining balance of Pirkey and Dolet Hills and a return on its investment as a regulatory asset, as the Company proposes,

the Commission will be sending a detrimental signal to SWEPCO. Namely, the decision would signal to SWEPCO that it can count on recovery of investments in its fossil resources *plus* a return, regardless of whether those costs were prudently incurred or the investments continue to be used and useful. SWEPCO will have no incentive to retire its existing coal plants or to seek to minimize its costs if it knows it is likely to get full recovery *plus* a return on investments even when a plant inevitably retires early.

As a secondary matter, SWEPCO will also be less likely to adequately address the Commission's requirement to address the load pocket in Northwest Arkansas, stemming from the 2013 order approving the scrubber upgrade at Flint Creek,[19] through a robust consideration of alternatives if it believes the Commission will likely allow it to continue investing in Flint Creek regardless.

Q Is there precedent for disallowing or limiting the recovery of costs for a plant that is retired early?

A Yes. In SWEPCO's most recent rate case in Texas, the Texas PUC proposed decision recommended disallowing SWEPCO's request to earn a rate of return on its investment

[19] Order No. 14, Ark. Pub. Serv. Comm'n, Docket 12-008-U, page 39 (July 10, 2013), available at: http://www.apscservices.info/pdf/12/12-008-u_227_1.pdf. ("SWEPCO and AECC will continue to work with SPP to conduct an appropriate solutions study to timely address reliability issues in the Northwest Arkansas load pocket.")

in soon-to-be-retired plants, including Dolet Hills, once the plant is retired.[20] Specifically, the order recommended the remaining book value of the plant be put into a regulatory asset and depreciated through the plant's original retirement date in 2046, and that once the plant retires, "all other cost recovery relating to Dolet Hills, including return and expenses, its lignite inventory, the Oxbow investment, or DHLC ends."[21] In making that recommendation, the Texas PUC's proposed order reasons that SWEPCO should not earn a return on its investment after Dolet Hills retires because the power plant will no longer generate electricity, and is therefore no longer used or useful in providing electric service.[22] The Arkansas Commission should follow this precedent and at the very least not permit SWEPCO to recover a rate of return on the remaining balance of Pirkey and Dolet Hills after the plants retire.

[20] Direct Exhibit DG-5, Proposal for Decision, *Application of Southwestern Electric Power Company for Authority to Change Rates*, Tex. PUC Docket No. 51415, page 7 (Aug. 27, 2021).

[21] *Id.*

[22] *Id*., page 20-21 (quoting Order on Rehearing, PUCT Docket No. 46449, FoF Nos. 66, 68-69, 71 (Mar. 19, 2018), attached as Direct Exhibit DG-6, in which the Commission disallowed SWEPCO's request for a return on investment for the recently retired Welsh Unit 2, reasoning that "[t]he issue is fundamental to ratemaking. . . . To earn a return, an asset must be both used and useful. . . . There is no dispute that Welsh Unit 2 did serve the public in the past, but, to be included in rate base, an investment must be both used and useful. The plain meaning of "useful" is: being of use or service; serving some purpose; advantageous; of practical use, as for doing work; producing material results; supplying common needs. A retired plant does none of these things . . . .").

4. FLINT CREEK AND WELSH HAVE BEEN, AND ARE PROJECTED TO CONTINUE TO BE, UNECONOMIC.

Q Please summarize your findings on the economic performance of the Flint Creek and Welsh units.

A I find that SWEPCO incurred net operational losses of $158 million and $194 million at Flint Creek and Welsh, respectively, over the past six years. Further, the Flint Creek and Welsh units are projected to continue to incur net losses over the next decade of $132 million and $254 million, respectively. In all my net loss calculations, I relied on projected unit costs provided by the Company, as well as the Company's own power market price forecast and capacity price forecast. I also ran a conservative sensitivity using the Southwest Power Pool's ("SPP") Cost of New Entry ("CONE") as a proxy for value of capacity in the region.[23] With this high capacity price assumption sensitivity, I found that Flint Creek would just break even over the next decade, while Welsh would incur positive net revenues. In other words, customers would likely save money if SWEPCO replaced Welsh and Flint Creek with more affordable, readily-available replacement resources such as battery storage, wind, and solar PV in optimal combinations to leverage their complementary performance attributes.

[23] In SPP, CONE is calculated based on the revenue needed to cover the capital and fixed costs of a hypothetical gas-burning peaking facility. This is a conservative estimate because unless a region is capacity constrained (which SPP is not, as evident by SWEPCO's very low capacity price forecast) then capacity can generally be procured for less than the cost of building an entirely new peaking plant.

i. <u>Flint Creek and Welsh Incurred Net Losses of $158 Million and $194 Million, Respectively, Over the Past Six Years.</u>

Q Describe how the Company has been operating the Flint Creek and Welsh units over the past six years.

A Over the last six years, SWEPCO operated Flint Creek at an average capacity factor of 53 percent, and the Welsh units at an average capacity factor of 52 percent. Capacity factors have been declining in recent years across all three units, with the units' utilization dropping slighting in 2019 before plummeting in 2020.[24] These are low capacity factors for plants with such high fixed costs.

Q How did Flint Creek perform in recent years?

A As shown in Table 3, Flint Creek, SWEPCO incurred net negative revenues on a forward-looking[25] basis over the past six years (2015–2020), totaling $158 million ($2020).[26] This works out to an average of $26 million in net losses relative to the market

[24] U.S. Energy Information Administration Form 923.

[25] Forward-looking cost analysis looks at all costs incurred due to the continued operation of the plant, and therefore could be avoided by the retirement of the plant. All capital and fixed costs that had already been incurred, such as prior capital investments and fixed operating costs, are excluded from this analysis. This is because the decision to retire or operate the plant has no impact on whether or not they are incurred.

[26] Direct Exhibit DG-7, Schedule H-5-3.b, *Application of Southwestern Electric Power Company*, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed Oct. 14, 2020); SWEPCO Response to Sierra Club 1-8, Sierra Club 1_8_Attachment 2 and Sierra Club 1_8_Attachment

every year. Even if we exclude the $106 million associated with the installation of flue-gas desulfurization ("FGD") for compliance with the Mercury Air Toxics Standards ("MATS"),[27] SWEPCO's share of the unit incurred $41 million ($2020) in net negative revenues for an average of $7 million in losses annually (note that Table 3 includes the FGD costs). This demonstrates how poorly the unit has performed relative to the market value of the unit's energy and capacity in recent years.

3; SWEPCO Response to Sierra Club 1-14(a), Sierra Club 1-14(a) PIS, Attachment 3; SWEPCO Response to Sierra Club 1-17, HSPI SC 1-17 Attachment 1; Direct Exhibit DG-8, SWEPCO Response to SC 7-6, SC_07_006_2H2016_Base Attachment_2, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); Direct Exhibit DG-8, SWEPCO response to SC 7-6, SC_07_006_2H2018_Base_Attachment_3, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); SWEPCO Response to Sierra Club 1-16, SC_1-16 Attachment_1; SWEPCO Response to Sierra Club 1-10, Sierra_Club_1-10_ Attachment_3 and Sierra_Club_1-10_Attachment_4.

[27] Direct Exhibit DG-7 Schedule H-5-3.b, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed Oct. 14, 2020).

Table 3: Highly Sensitive historical net revenues of Flint Creek and Welsh Units 1 and 3, 2015–2020 (2020 $Million)

	2015	2016	2017	2018	2019	2020	Total	Annual Average
Flint Creek	[redacted]						**($157.9)**	**($7.0)**
Welsh Units 1&3	[redacted]						**($194.1)**	**($30.0)**

Synapse calculations based on: Direct Exhibit DG-7, Schedule H-5-3.b, Tex. PUC Docket No. 51415, SOAH 473-21-0538 (filed Oct. 14, 2020); SWEPCO Response to SC 1-8, Sierra Club 1_8_Attachment 2; SWEPCO Response to SC 1-8, Sierra Club 1_8_Attachment 3; SWEPCO Response to SC 1-14(a), Sierra Club 1-14(a) PIS, Attachment 3; SWEPCO Response to SC 1-17, HSPI SC 1-17 Attachment 1; SWEPCO Response to SC 7-6, SC_07_006_2H2016_Base Attachment_2, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); SWEPCO response to SC 7-6, SC_07_006_2H2018_Base_Attachment_3, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); SWEPCO Response to SC 1-16, SC_1-16 Attachment_1; SWEPCO Response to SC 1-10, Sierra_Club_1-10_Attachment_3; SWEPCO Response to SC 1-10, Sierra_Club_1-10_Attachment_4.

Q How did Welsh Units 1 and 3 perform in recent years?

A At the Welsh plant, SWEPCO incurred net negative revenues on a forward-looking basis over the years 2015–2020 totaling $194 million ($2020).[28] This works out to an average of $30 million in losses each year. Just as at Flint Creek, SWEPCO incurred a large capital expenditure at Welsh to install FGD to comply with MATS.

[28] *Id.*; SWEPCO Response to Sierra Club 1-8, Sierra Club 1_8_Attachment 2 and Sierra Club 1_8_Attachment 3; SWEPCO Response to Sierra Club 1-14(a), Sierra Club 1-14(a) PIS, Attachment 3; SWEPCO Response to Sierra Club 1-17, HSPI SC 1-17 Attachment 1; Direct Exhibit DG-8, SWEPCO Response to Sierra Club 7-6, SC_07_006_2H2016_Base Attachment_2, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); Direct Exhibit DG-8, SWEPCO response to Sierra Club 7-6, SC_07_006_2H2018_Base_Attachment_3, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); SWEPCO Response to Sierra Club 1-16, SC_1-16 Attachment_1; SWEPCO Response to Sierra Club 1-10, Sierra_Club_1-10_Attachment_3 and Sierra_Club_1-10_Attachment_4.

While the plant appears to incur positive net revenues when the environmental capital expenditures are removed, as with all capital expenditures that the Company incurs each year, the project costs must be covered by the unit's energy market revenue and any capacity value over the lifetime of the project.[29] On average, if a plant is covering its annual capital expenditures (on top of its other fixed and variable costs) with its energy market revenue and capacity value, it makes sense to continue to operate the plant. But if the plants costs are consistently higher than its revenue and value over a sustained period, then ratepayers would be better off if the Company did not maintain the plant and instead purchased energy and capacity from the market.

With respect to Welsh, if the Company was projecting that it would earn significant net revenues at the plant over the next decade then it would be possible to recover the costs associated with prior large capital investments. But, as I will discuss in the next section, SWEPCO is, in fact, projected to incur net losses at Welsh over the next decade.

[29] SPP does not have a capacity market. I use SWEPCO's capacity price forecast as a proxy for the value of capacity in the region. I also ran sensitivities using SPP CONE as a proxy for the capacity value.

Q Explain how you calculated the values displayed in Table 3.

A I calculated the net revenues in Table 3 using the Company's own data on unit costs and revenues.

For costs, SWEPCO provided historical fuel costs[30] and total O&M costs[31] by unit for each historical year between 2015–2020. The Company also provided historical capital expenditures[32] for the period 2015–2020 but did not provide capital expenditures for environmental projects. I relied on a public schedule SWEPCO included in its Texas rate case application in Docket No. 51415 for the environmental spending,[33] as well as the Company's responses in this docket with CCR and ELG costs.[34] I added the capital expenditure costs to the fuel and O&M costs to get total unit costs.

For revenues, SWEPCO provided energy and ancillary market revenues[35] from selling energy from each unit into the SPP market. Although SPP does not have a capacity

[30] SWEPCO Response to Sierra Club Request 1-8, Attachment 3.

[31] SWEPCO Response to Sierra Club Request 1-8, Attachment 2.

[32] SWEPCO Response to Sierra Club 1-14(a), Attachment 3.

[33] Direct Exhibit DG-7, Schedule H-5-3.b., Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed Oct. 14, 2020).

[34] SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_1-10_Attachment_3 and Sierra_Club_1-10_Attachment_4.

[35] SWEPCO Response to Sierra Club Request 1-17, HSPI SC 1-17 Attachment 1.

market, and therefore the Company earned no capacity market revenues over the years 2015–2020, I included a capacity value calculated based on the Company's forward capacity price forecast produced between the years of 2016–2019.[36] I summed energy, ancillary, and capacity revenue to get total unit revenues.

Finally, I calculated the difference in each year between unit costs and revenues to produce the net revenues at each plant, shown in Table 3.

Q Explain why you added the full cost of each expenditure in the year it was incurred instead of annualizing the costs over the remaining life of the plant?

A I expensed the full cost of each capital expenditure in the year it was incurred because this approach is more robust against early retirements. In years where large projects are undertaken, capital expenditures will likely exceed the resources' total revenues and value; but the reverse is also true. And over a multi-year timeframe, if the plant is operating economically, the total costs incurred and total energy revenues earned and capacity value should at the very least net out. If they don't, meaning that the plant's total fixed and variable costs consistently sum to more than its total energy market revenues

[36] Direct Exhibit DG-8, SWEPCO Response to SC 7-6, SC_07_006_2H2016_Base Attachment_2, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); Direct Exhibit DG-8, SWEPCO response to SC 7-6, SC_07_006_2H2018_Base_Attachment_3, Texas PUC Docket No. 51415, SOAH 473-21-0538 (filed May 12, 2021); SWEPCO Response to SC 1-16, SC_1-16 Attachment_1.

and capacity value, then continuing to invest in the plant is not in ratepayers' interest on a forward-going basis.

In contrast, the Company typically annualizes capital expenditures (based on the utility's cost of capital) and spreads the costs out over the remaining economic life of the plant. This approach is reasonable with projects where there is a reasonable degree of certainty that the plant will operate through its planned retirement date. But it is dangerous with aging resources, like coal plants, that we know are likely to retire early. A project might look economic when spread out over 18 years with 18 years of energy market revenues and capacity value to balance it out. But if it has to be recovered over only five or ten years instead (with only five to ten years of revenue and value as well), it suddenly becomes clear how expensive and uneconomic it was to invest in the plant.

This is exactly what we are seeing now with Pirkey and Dolet Hills. The mine expansion at Dolet Hills and many other major capital investments at the two plants were justified by SWEPCO based on the assumption that the costs were going to be recovered over the remining decades of the plants' lives (despite clear indications that both plants were already uneconomic). Now that the plants are both retiring, SWEPCO expects ratepayers to pay capital expenditures of over $500 million with no revenue or value in exchange. As I will discuss in the next section, this is what I expect will happen at Flint Creek and Welsh as well if the Company continues to invest in these plants.

ii. <u>Flint Creek and Welsh Are Projected to Continue to Incur Significant Losses Over the Next Decade of $132 Million and $254 Million, Respectively.</u>

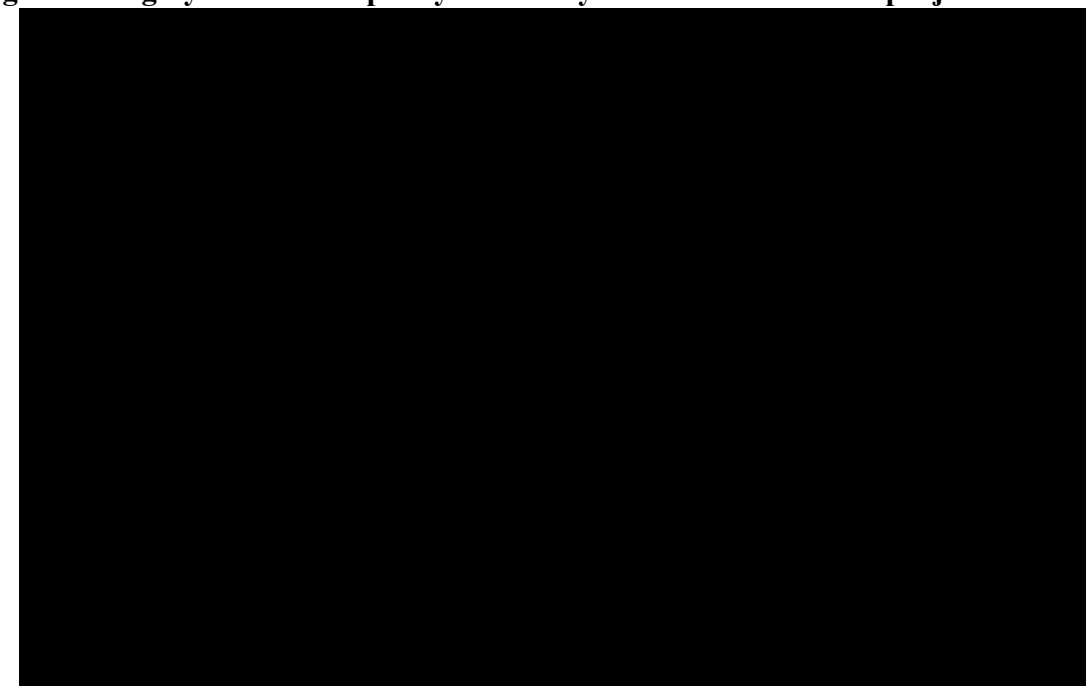
Q How does the Company project it will operate the Flint Creek and Welsh plants over the next decade?

A SWEPCO's own analysis projects dramatically decreasing utilization of the Flint Creek and Welsh units. Specifically, over the next decade (2021–2030) SWEPCO's modeling shows Flint Creek operating at only a [redacted] capacity factor and the Welsh units operating at only a [redacted] capacity factor.[37] These capacity factors roughly match those produced in the Company's *Unit Disposition Study* that was completed in Fall 2020.[38] As shown in Figure 1 below, this represents a substantial decrease in utilization relative to the recent performance. These results indicate that there are lower-cost options that the Company can use to serve load and that Flint Creek and Welsh are relatively more expensive and less competitive than market energy and other Company resources. Given the significant deviation between the Company's projected capacity factors and its historical performance, I evaluated the units' projected revenues using both the projected, as well as historical, capacity factors. I will discuss the results of both sets of analysis below.

[37] SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1.

[38] SWEPCO Response to Sierra Club Request 1-6(l), Attachment SC_1-6_Attachment_11.

Figure 1: Highly Sensitive capacity factors by unit—historical and projected



Synapse calculations based on: SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1.

Q What did you find regarding the forward-looking economics of Flint Creek over the next decade?

A As shown in Figure 2, I find that SWEPCO is projected to incur net losses at Flint Creek of $132 million (on a present value basis) over the next decade or an average of $16 million per year (2020$) at Flint Creek. These results are based on valuing capacity at SWEPCO's projected capacity price.[39]

[39] SWEPCO Response to Sierra Club Request 1-10, SC_1-10 Attachment 15.

Figure 2: Highly Sensitive projected net revenue at Flint Creek, 2021–2030 ($Million)

Synapse calculations based on: SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1; SWEPCO Response to SC 1-10, SC 1-10, Attachment 3; SWEPCO Response to SC 1-10, SC 1-10, Attachment 4; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 1; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 2; SWEPCO Response to SC 1-10, SC_1-10 Attachment 15; SWEPCO Response to SC 1-18, Attachment HS SC 1-18.

Q What did you find regarding Flint Creek's performance under a different capacity price and capacity factor assumption?

A As shown in Table 4, I find that the unit is projected to incur net revenue losses. I conducted a sensitivity analysis using a higher capacity price represented by the SPP

CONE.[40] CONE is defined as "the total annual net revenue (net of variable operating costs) that a new generation resource would need to recover its capital investment and fixed costs, given reasonable expectations about future recovery over its economic life."[41] The CONE values are calculated based on the cost to build a new natural gas-fired peaking facility in SPP.[42] This is a conservative capacity value estimate because unless a region is capacity constrained (which SPP is not, as evident by SWEPCO's low capacity price forecast) then capacity can generally be procured for less than the cost of building an entirely new peaking plant. Under this conservative capacity price assumption, Flint Creek is projected to just break even on a present value basis over the next decade.

I also tested alternative capacity factors assumptions. Specifically, I tested the assumption that SWEPCO continues to operate Flint Creek at historical levels. Using the plant's average capacity factor from the past six years (53 percent) I find that the plant is still projected to incur net losses over the next decade. In fact, I find that Flint Creek would

[40] Southwest Power Pool – Open Access Transmission Tariff, Sixth Revised Volume No.1 – Attachment AA Resource Adequacy – Attachment AA Section 14. Cost of New Entry. Available at: https://spp.org/documents/58599/cone-effective%207-1-2018.pdf

[41] PJM Cost of New Entry, The Brattle Group. April 2018. Available at: https://www.pjm.com/~/media/committees-groups/committees/mic/20180425-special/20180425-pjm-2018-cost-of-new-entry-study.ashx.

[42] Southwest Power Pool – Open Access Transmission Tariff, Sixth Revised Volume No.1 – Attachment AA Resource Adequacy – Attachment AA Section 14. Cost of New Entry. Available at: https://spp.org/documents/58599/cone-effective%207-1-2018.pdf.

have to sustain a capacity factor of 62 percent over the next decade to break even. The plant has not operated at that level since 2015.

Table 4: Highly Sensitive projected net revenues at Flint Creek with capacity price and capacity factor sensitivities (2020 $Million)

Year	Net revenues (losses) ($Millions)	
	w/AEP Capacity Price	w/SPP CONE Capacity Price
2021	[redacted]	[redacted]
2022	[redacted]	[redacted]
2023	[redacted]	[redacted]
2024	[redacted]	[redacted]
2025	[redacted]	[redacted]
2026	[redacted]	[redacted]
2027	[redacted]	[redacted]
2028	[redacted]	[redacted]
2029	[redacted]	[redacted]
2030	[redacted]	[redacted]
NPV Nominal	($132.0)	$3.3
Annual Average ($2020)	($16.2)	$0.6

Synapse calculations based on: SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1; SWEPCO Response to SC 1-10, SC 1-10, Attachment 3; SWEPCO Response to SC 1-10, SC 1-10, Attachment 4; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 1; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 2; SWEPCO Response to SC 1-10, SC_1-10 Attachment 15; SWEPCO Response to SC 1-18, Attachment HS SC 1-18.

Q What did you find regarding the forward-looking economics of Welsh over the next decade?

A As shown in Figure 3, I find that Welsh units 1 and 3 are projected to incur net losses of $254 million over the next decade (on a present value basis) or an average of $32 million per year (2020$).

Figure 3: Highly Sensitive projected net revenue at Welsh, 2021–2030 ($Million)

Synapse calculations based on: SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1; SWEPCO Response to SC 1-10, SC 1-10, Attachment 3; SWEPCO Response to SC 1-10, SC 1-10, Attachment 4; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 1; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 2; SWEPCO Response to SC 1-10, SC_1-10 Attachment 15; SWEPCO Response to SC 1-18, Attachment HS SC 1-18.

Q Explain what the results at Welsh look like under an alternative capacity price?

A As shown in Table 5, the results of the net revenue analysis at Welsh are heavily dependent on how capacity is valued. For example, when capacity is priced using SPP CONE instead of SWEPCO's capacity price forecast, the plant nets positive revenues over the next decade.

Table 5: Highly Sensitive projected net revenues at Welsh with capacity price and capacity factor sensitivities (2020 $Million)

	Net revenues (losses) ($2020 Millions)	
	w/AEP Capacity Price	w/SPP CONE Capacity Price
2021	[redacted]	[redacted]
2022	[redacted]	[redacted]
2023	[redacted]	[redacted]
2024	[redacted]	[redacted]
2025	[redacted]	[redacted]
2026	[redacted]	[redacted]
2027	[redacted]	[redacted]
2028	[redacted]	[redacted]
2029	[redacted]	[redacted]
2030	[redacted]	[redacted]
NPV Nominal	($254.5)	$297.8
Annual Average ($2020)	($31.9)	$36.6

Synapse calculations based on: SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1; SWEPCO Response to SC 1-10, SC 1-10, Attachment 3; SWEPCO Response to SC 1-10, SC 1-10, Attachment 4; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 1; SWEPCO Response to SC 1-14, HS SC 1-14, Attachment 2; SWEPCO Response to SC 1-10, SC_1-10 Attachment 15; SWEPCO Response to SC 1-18, Attachment HS SC 1-18.

I calculated a break-even capacity value for Welsh—that is the capacity price that would allow the plant to net zero dollars in both losses and revenues through 2030 and found a value of $126.46/MW-day. This price falls between SWEPCO's capacity price forecast

over this same period (2021–2030), which averages $31.70/MW-day,[43] and SPP CONE at $234.55/MW-day.[44]

This means that for Welsh to provide net value to its customers, the value of capacity has to be more than four times what the Company is currently forecasting for capacity prices. While this is not impossible, it is not a prudent assumption for system planning.

As I will discuss in Section 6, this shows how important it is for SWEPCO to perform robust analysis to evaluate the cost of continuing to operate Welsh before it makes any significant investments in the unit that will lock ratepayers into more fixed and capital costs.

I also tested an alternative capacity factor assumption for Welsh. Specifically, I tested the assumption that SWEPCO continues to operate Welsh at historical levels. Using the plant's average capacity factor from the past six years (52 percent) I find that the plant is still projected to incur substantial net losses over the next decade. In fact, I find that Welsh would have to sustain a capacity factor of 68 percent over the next decade to break even. The plant has not operated at a capacity that high any time in the past six years.

[43] SWEPCO Response to Sierra Club Request 1-10, SC_1-10 Attachment 15.

[44] Southwest Power Pool – Open Access Transmission Tariff, Sixth Revised Volume No.1 – Attachment AA Resource Adequacy – Attachment AA Section 14. Cost of New Entry. Available at: https://spp.org/documents/58599/cone-effective%207-1-2018.pdf

Q How did you calculate the net revenue values shown in Figure 2 (Flint Creek) and Figure 3 (Welsh)?

A I calculated the values shown in **Figure 2** and **Figure 3** using the Company's own projections of unit costs and operation over the next decade. SWEPCO provided the outputs from a recent run of its PLEXOS production cost model, which included capacity factors, fixed and variable O&M costs, fuel costs, and generation.[45] The Company also provided a schedule of planned capital expenditures[46] for the years 2021–2030 and the cost of its project to upgrade Flint Creek to comply with CCR and ELG regulations.[47] I added together the costs for fuel, fixed and variable O&M, capital expenditures, and the outstanding CCR and ELG Project cost to get total unit costs by year.

For revenues, I relied on the energy market revenues provided by SWEPCO[48] and both AEP's capacity forecast and SPP's value for CONE. SPP does not have a capacity market, so I estimated a capacity value by applying the capacity prices for the SPP Central Region calculated by SWEPCO[49] to the Company's megawatt share of each unit's capacity. As a sensitivity, I also calculated the value of capacity at SPP's CONE,

[45] SWEPCO Response to Sierra Club Request 1-9, HS Attachment 1.

[46] SWEPCO Response to Sierra Club 1-14, HS SC 1-14, Attachment 1; SWEPCO Response to Sierra Club 1-14, HS SC 1-14, Attachment 2.

[47] SWEPCO Response to Sierra Club 1-10, SC 1-10, Attachment 3; SWEPCO Response to Sierra Club 1-10, SC 1-10, Attachment 4.

[48] SWEPCO Response to Sierra Club 1-18, Attachment HS SC 1-18.

[49] SWEPCO Response to Sierra Club 1-10, SC_1-10 Attachment_15.

which is a highly conservative assumption. I then found the difference between the projected revenues and costs for each unit in each year. These values represent the projected net revenues of the units.

Q Did you have any concerns with any of the input costs of revenues provided by SWEPCO?

A Yes. SWEPCO's projected energy revenue was higher than expected based on the Company's projected annual generation and its fundamental forecast, so I calculated my own energy revenue projection to assess the deviation. Specifically, I took the Company's hourly market prices that it used in PLEXOS for 2021–2030,[50] the Company's projected annual generation by unit,[51] and the Company's load shape from a historical year (2019).[52] Based on this data, I found that the Company's forecasts were on average 32 percent higher at Flint Creek over the next decade than what I would expect based on its projected market price and its historical load shape. This difference summed to $16.3 million on a net present value ("NPV") basis, meaning that my analysis is conservative and likely over-states projected revenues at Flint Creek by around $16

[50] SWEPCO Response to Sierra Club 3-1, Sierra Club 3-1 Attachments 2 & 3.

[51] SWEPCO Response to Sierra Club 1-9, Sierra Club 1-9 HSPI Confidential Attachment 1.

[52] U.S. Environmental Protection Agency (EPA), Clean Air Markets Division (CAMD) data, available at: https://ampd.epa.gov/ampd/.

million. At Welsh, the difference was lower at around 5 percent, amounting to a difference of $3.3 million on an NPV basis.

Q Does your analysis fairly consider both the costs of continuing to operate the coal plants and the cost of replacement resources?

A Yes. I use the value of market energy and capacity as a proxy for the cost of replacement resources. As I show in the next section where I critique the Company's *Fall 2020 Analysis*, the cost of renewables and battery storage are already competitive with fossil resources, and they are projected to continue falling. By 2028, they will have decreased further and will be even more competitive than they are today.

Q Would your results have been any different if you had looked at the time period 2021–2038 rather than ending in 2030?

A No, not necessarily. While there would have been an additional nine years of energy revenues and capacity value, there also would have been an additional nine years of fixed costs, variable costs, and most importantly capital expenditures required to maintain the plant and comply with any future environmental regulations that may be implemented.

Q What do you conclude regarding the economic status of the Flint Creek and Welsh units?

A As summarized in Table 6, I find that under any reasonable capacity value assumption, SWEPCO has incurred significant losses at both plants over the past six years and is

projected to continue to incur significant losses at both plants over the next decade. Further, the Company's own analysis shows that the plants are projected to be operated at extremely low capacity factors moving forward.

Table 6: Summary of historical and projected net revenue at Flint Creek and Welsh ($Million)

	2015-2020	2021-2030	
	Historical Net Revenue ($2020)	**Projected NPV (Nominal)**	**Projected Annual Average Cost ($2020)**
Flint Creek	($158)	($132)	($16)
Welsh	($194)	($254)	($32)

Source: See Tables 3, 4 and 5, above.

Q Did SWEPCO study the near-term retirement of Flint Creek as part of its most recent IRP?

A No. SWEPCO failed to evaluate the near-term retirement of Flint Creek as part of its most recent IRP.[53] The Commission's ruling in this rate case on SWEPCO's ability to continue to recover test-year O&M and capital expenditures has important implications for SWEPCO's resource planning process. No SWEPCO witness, other than Perez through the flawed *Fall 2020 Analysis* that I will discuss in the next section, offered any quantitative defense of Flint Creek's retention.

[53] Direct Exhibit DG-9, SWEPCO IRP, SWEPCO Response to Stakeholder Comments (Oct. 15, 2021). The Stakeholder Committee as part of the 2021 IRP process submitted a request to SWEPCO to study a 2027 Flint Creek retirement. SWEPCO responded that "this analysis was already completed in the SWEPCO CCR/ELG analysis."

Q Do you have any other concerns with SWEPCO's request to recover test-year spending at Flint Creek?

A Yes. As mentioned above, SWEPCO has failed to comply with the Commission's requirements from Docket No. 12-008-U. Specifically, the Company has failed to address the load pocket in Northwest Arkansas, as it was required by the Commission to do when the scrubbers were approved for the plant in 2013.[54] This is especially concerning as the decision to install scrubbers at Flint Creek wasn't even the least-cost solution at the time, but the Commission appears to have allowed the project to proceed based on its concerns with the load pocket and the understanding that SWEPCO would work to address it. Today, the only options SWEPCO presents are to invest in Flint Creek or install a $150 million transmission line. But these are not the only options, and SWEPCO's continued insistence that maintaining Flint Creek is the best solution to address the load pocket is not in the best interest of ratepayers.

[54] Order No. 14, Ark. Pub. Serv. Comm'n, Docket 12-008-U, at 39 (July 10, 2013), available at: http://www.apscservices.info/pdf/12/12-008-u_227_1.pdf.

5. SWEPCO'S ECONOMIC EVIDENCE RELATED TO THE CCR/ELG DECISION DOES NOT SUPPORT TEST YEAR SPENDING OR THE DECISION TO EXTEND THE LIFE OF THE PLANT BEYOND 2028.

Q Has SWEPCO decided to proceed with environmental compliance spending at Flint Creek?

A Yes. SWEPCO has decided to retrofit the Flint Creek plant to comply with the ELG and CCR regulatory requirements, with the intention of operating the plant beyond 2028.[55]

Q What requirements of the ELG and CCR rules are most pertinent for SWEPCO's planning at Flint Creek?

A Under the ELG rule, EPA regulates the discharge of pollutants from bottom ash transport water. The rule requires steam electricity generating units such as Flint Creek to comply with best available technology requirements by December 31, 2025, or permanently cease the combustion of coal by December 31, 2028. This rule allows electricity generating units to continue operating until retirement without additional ELG-related retrofits.[56] The CCR rule, which regulates the disposal of coal ash from coal-fired power plants, requires that CCR impoundments close by October 15, 2023. But, it includes an

[55] Direct Exhibit DG-2, Flint Creek APDES Permit Modification Application, Attachment 1, pages 1-2.

[56] U.S. EPA, Steam Electric Reconsideration Rule, 85 Fed. Reg. 64,650, 64,661, 64,680 (Oct. 13, 2020); *see* SWEPCO Response to Sierra Club Request 3-2(e).

option to continue operating CCR impoundments such as Flint Creek's primary ash pond as long as the plant commits to cease the combustion of coal and close impoundments by October 17, 2028 (this applies to impoundments, like the one at Flint Creek, larger than 40 acres).[57] Flint Creek handles coal ash by wet sluicing bottom ash to the primary ash pond and is planning to convert to dry ash handling.[58] Currently, SWEPCO is in the preliminary engineering and design phase of the projects selected to comply with these avoidable ELG and CCR requirements. SWEPCO estimates the projects will be completed by November 30, 2022 and February 28, 2023, respectively.[59] This means that the project is only just underway and the majority of the project costs can still be avoided.

The estimated cost of the CCR and ELG Project is $26.8 million.[60] Because of the ELG and CCR rule exemptions for power plants that cease burning coal by 2028, SWEPCO could operate the plant through 2028 and avoid approximately $17.3 million of these costs, provided it commits to retire the plant by that time.[61]

[57] 40 CFR § 257.103(f); SWEPCO Response to Sierra Club Request 3-2(d).

[58] Direct Exhibit DG-2, Flint Creek APDES Permit Modification Application, Attachment 1, page 1.

[59] *Id*, Attachment 2; SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_1-10 _Attachment_2.

[60] Direct Testimony of Joseph Perez, page 13, Table 4; SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_1-10_ Attachment_1.

[61] SWEPCO Response to Sierra Club Request 1-10(d); SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_Attachment_3.

Q Is SWEPCO seeking recovery of the CCR and ELG Project expenses at Flint Creek in this rate case?

A No. But the Company did present in the direct testimony of Mr. Perez a discussion of the studies and analysis that the Company performed to support both its request to recover CCR/ELG costs for Welsh and Pirkey as a regulatory asset, and its plan to install upgrades at Flint Creek to comply with CCR and ELG regulations. My testimony, therefore, responds to Mr. Perez's discussion of the Company's analysis, and the discovery responses that the Company produced relating to the analysis. Most important, this analysis shows the going-forward value of Flint Creek is low and is thus relevant to the ongoing non-environmental spending at issue for the Flint Creek test year spending in this case. Further, the study and the related Perez testimony shows that SWEPCO has failed to comply with the Commission's order to address the load pocket in Northwest Arkansas.

Q What analysis did SWEPCO conduct to justify continued investment in, and operation of, the Flint Creek Power Plant?

A SWEPCO conducted a *Unit Disposition Study* in 2020 that it refers to as the "Fall 2020 Analysis." This was an economic analysis conducted using the PLEXOS model that compared the revenue requirement of (1) installing upgrades at the Flint Creek, Pirkey, and Welsh plants necessary to comply with CCR and ELG regulations which would allow the plants to continue operation on solid fuels; and (2) forgoing the CCR and ELG

capital expenditures by retiring the plants (or ceasing to burn coal) by the 2028 deadline and replacing the units with wind, solar, gas, or market capacity.[62] Each study evaluated the option of compliance or retirement for each unit independently.

Q What did SWEPCO find in these studies?

A At Pirkey and Welsh, SWEPCO found that it was more expensive to install upgrades to comply with CCR and ELG regulations than it was to retire the plants. The Company also evaluated the costs of [redacted]. At Flint Creek, SWEPCO did not conduct an appropriate replacement analysis. But the analysis that it did perform found that the revenue requirement of installing upgrades to comply with CCR and ELG regulations and continuing to operate the plant beyond 2028 was lower than the revenue requirement of retiring the plant and replacing it with new generation capacity and a new $150 million transmission line.

Q Please explain your concerns with SWEPCO's *Fall 2020 Analysis*.

A As a preliminary point, it is implausible to assume that a coal plant that is marginal today will somehow become more economic as its equipment ages, renewables come onto the

[62] Direct Testimony of Joseph Perez, page 4, lines 7-20.

grid, and the grid itself faces carbon constraints. Given this reality, SWEPCO had to rely on overly conservative and unrealistic assumptions to produce the results it presented.

Aside from that general concern, I have the following specific concerns with SWEPCO's *Fall 2020 Analysis*:

1. The NPV of continuing to operate Flint Creek showed it was only marginally less expensive than retiring and replacing the plant. This difference was miniscule relative to the Company's entire revenue requirement and could easily flip under slightly different and more realistic assumptions (including removing even part of the cost of the transmission project).
2. SWEPCO relied on outdated assumptions, mainly that Pirkey will retire in 2028, not in 2023 as it is currently scheduled, and that Welsh will continue to operate on coal.
3. SWEPCO modeled solar PV, wind, and battery storage with very high and conservative costs and low performance assumptions.
4. SWEPCO inappropriately included the full $150 million cost for a new transmission project in the Flint Creek retirement scenario and did not conduct robust technical analysis of alternatives to address the load pocket in Northwest Arkansas.

Q Explain your concerns with the level of savings that SWEPCO used to justify the decision to retrofit Flint Creek.

A SWEPCO asserts that its results show it is lower cost to retrofit Flint Creek to comply with the CCR and ELG rules than to the retire the plant in 2028. But the Company's

analysis shows savings over the next decade were projected to be only [redacted][63] out of a total [redacted] total system revenue requirement over that same time period.[64] That amount of savings is not immaterial, but when the input assumptions are flawed and highly uncertain over an extended planning period, this finding does not represent a significant result. In other words, the uncertainty or margin of error around each individual assumption is likely larger than the savings SWEPCO reported. Additionally, these observed savings are due in large part to SWEPCO's inappropriate inclusion of the full $150 million cost for a new transmission line in the scenario where Flint Creek retires. Without this cost, the observed savings will likely disappear.

Q Can you explain the outdated assumptions that SWEPCO modeled?

A SWEPCO assumed that Pirkey would continue to operate on coal through 2028 in all of the Flint Creek model runs. But Pirkey is now scheduled to retire five years earlier, in 2023. According to Perez, the Company will be short 267 MW of capacity once this happens.[65] This capacity will be replaced by alternative resources. SWEPCO has also

[63] The savings that SWEPCO witness Perez reports in his testimony are for the entire planning period (2021–2050) and include end effects. The majority of these savings are expected to occur more than a decade into the future and are therefore based on assumptions that are significantly less certain than the near-term results.

[64] SWEPCO Response to Sierra Club Request 1-5, SC_1-5_Highly _Sensitive_Confidential_Attachment_2_(Fall_2020_CCR_ELG_Analysis_Summary).

[65] Direct Testimony of Joseph Perez, page 9, and Table 2.

announced that Welsh units 1 and 3 will cease to operate on coal by 2028 at the latest.[66] SWEPCO's main options at Welsh are converting the units to operate on gas or retiring them. But in all the Flint Creek model runs, SWEPCO assumed the units would continue to operate on coal beyond 2028. These changes at Welsh and Pirkey will result in a fundamentally different electricity system than the one SWEPCO modeled to test the conversion of Flint Creek.

This means that SWEPCO's *Fall 2020 Analysis* did not actually demonstrate that investing in CCR and ELG upgrades at Flint Creek is the least-cost option based on SWEPCO's current system.

Q Do you have concerns with SWEPCO's cost and operational assumptions for renewables and battery storage?

A Yes, SWEPCO relied on capital costs for solar PV, wind, and battery storage that are substantially higher than both industry averages and the cost that the Company itself relied on for resource plans—one of which was created prior to the *Fall 2020 Analysis*. This systematically skewed SWEPCO's modeling in favor of keeping Flint Creek online.

[66] SWEPCO to End Coal Operations at Two Plants, Upgrade a Third. November 5, 2020. Available at https://www.swepco.com/company/news/view?releaseID=5847.

Q Please explain your concerns with how SWEPCO modeled solar PV.

A As shown in Figure 4, SWPECO's projected costs for solar PV in the near term are in line with industry projections from the National Renewable Energy Laboratory's ("NREL") Annual Technology Baseline ("ATB") and with the costs that SWEPCO relied on in both of its most recent IRPs in 2018 and 2021. But in 2025, SWEPCO projects a jump in solar costs (likely based on the assumed expiration of tax credits). This means that by the time replacement resources are needed for Flint Creek in 2028, the solar PV costs in SWEPCO's model have only marginally come down from where they currently are. This disadvantages solar within the model as part of a portfolio of replacement resources.

Figure 4: HSPI Solar PV capital cost (2020 $/kW)

Source: SWEPCO Response to SC 1-6, SC_1-6_Supplemental_HSPI_Confidential_Attachment_1; SWEPCO Response to SC 1-6, Attachment 17, HSPI 2020 EIA Wind Build Costs; SWEPCO Response to SC 1-6, Attachment 17, Response to SC HSPI 2020 EIA Solar Tier 1&2 Build Costs; SWEPCO Response to SC 1-12, SC_1-12_Attachment_2; SWEPCO Response to SC 1-11, SC_1-11_CONFIDENTIAL_Attachments 6, 7 and 8; National Renewable Energy Laboratory, Annual Technology Baseline 2020; National Renewable Energy Laboratory, Annual Technology Baseline 2021.

The Company also assigned an overly conservative capacity credit to solar PV. Specifically, the Company assigned solar a firm capacity credit of only [redacted].[67] This assumption is extremely conservative and limits the ability for solar PV to contribute to energy and capacity needs in system planning. SPP conducted a study of

[67] SWEPCO Response to Sierra Club Request 1-6, SC_1-6_Attachment_13; SWEPCO Response to Sierra Club Request 1-6, SC_1-6_Attachment_2.

solar effective load carrying capacity ("ELCC")[68] on the SPP system in 2019 and found that at the level of solar on the system at that time (4,282 MW), solar should be valued with an ELCC of 62.4 percent.[69] This is nearly [redacted] the capacity credit assigned to solar by SWEPCO. This decision to assign solar PV a low capacity credit significantly decreases its ability to meet any capacity needs in the model. This is a major problem in the retire-or-retrofit study because solar PV would likely be a key part of the lowest-cost suite of resources to replace Flint Creek.

Q Please explain your concerns with how SWEPCO modeled wind.

A For wind, SWEPCO's forecast falls between NREL's 2020 and 2021 forecast in the near term, but above the Company's assumptions from both of its most recent IRPs. As shown in Figure 5, SWEPCO also projects a large spike in prices in 2025 (also likely due to the assumed expiration of tax credits). This spike means that wind prices in 2028 are actually 25 percent higher than they were in 2022—the first year that wind is available to the model. This assumption is absolutely unsupported and once again biases the model against selecting wind as part of a portfolio of replacement resources for Flint Creek.

[68] ELCC is defined by SPP as "the amount of incremental load a resource can reliably serve, while also considering probabilistic parameters of unserved load caused by forced outages, load uncertainty, and other factors." SPP uses ELCC to award facility's capacity accreditation.

[69] Southwest Power Pool, ELCC Solar Study Report. September 2019, available at: https://www.spp.org/Documents/60747/2019%20ELCC%20Solar%20Study%20Report.docx.

Figure 5: HSPI Wind capital costs (2020 $/kW)

Source: SWEPCO Response to SC 1-6, SC_1-6_Supplemental_HSPI_Confidential_Attachment_1; SWEPCO Response to SC 1-6, Attachment 17, HSPI 2020 EIA Wind Build Costs; SWEPCO Response to SC 1-6, Attachment 17, Response to SC HSPI 2020 EIA Solar Tier 1&2 Build Costs; SWEPCO Response to SC 1-12, SC_1-12_Attachment_2; SWEPCO Response to SC 1-11, SC_1-11_CONFIDENTIAL_Attachments 6, 7 and 8; National Renewable Energy Laboratory, Annual Technology Baseline 2020; National Renewable Energy Laboratory, Annual Technology Baseline 2021.

Q Please explain your concerns with how SWEPCO modeled battery storage.

A The Company's treatment of battery storage in the *Fall 2020 Analysis* is perhaps most concerning. Company witness Perez discusses battery storage as a replacement resource option.[70] But in the Company's modeling files for the *Fall 2020 Analysis*, there is no evidence that battery storage was considered and offered to the PLEXOS model as a

[70] Direct Testimony of Joseph Perez, page 12 and Table 3.

resource option at all. The Company provided no information on operational assumptions for battery storage,[71] and only provided cost information after several requests by Sierra Club.[72] And in supplemental discovery, the Company indicated that it did model battery storage,[73] and provided its cost assumptions.[74]

As shown in Figure 6, SWEPCO assumes that battery storage costs are 25–35 percent higher than NREL's two most recent ATB reports in the near term (2020). It also assumes that battery storage costs will decrease only marginally over the next decade, and ultimately increase on a real basis over the next few decades.

Bizarrely, these assumptions depart substantially from the battery storage cost assumptions that the Company relied on its two most recent IRPs, one of which was completed years prior to the *Fall 2020 Analysis*. Battery storage is critical as part of a portfolio of replacement resources because it can provide dispatchable capacity. But the Company uses unsupported assumptions that bias the model strongly in favor of existing resources. Modeling battery storage with such a high cost ensures it will never be selected by the model. This essentially removes battery storage as a resource option and

[71] *See* SWEPCO Response to Sierra Club 1-6, SC_1-6_Attachment 13.

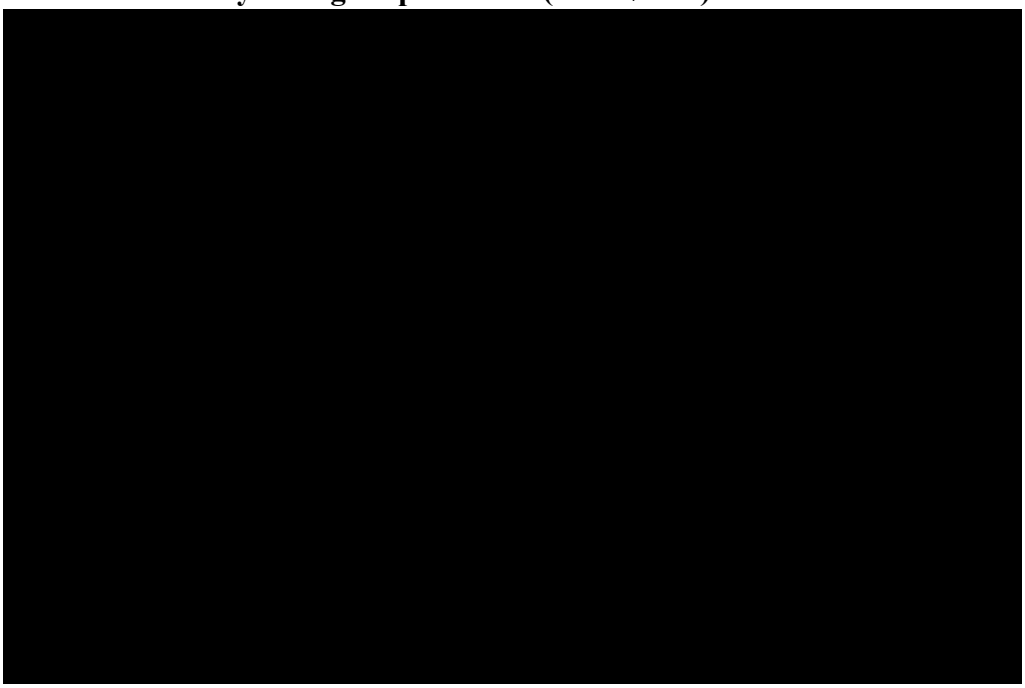
[72] *See* SWEPCO Responses to Sierra Club 1-6 and 7-5.

[73] SWEPCO Response to Sierra Club 8-2(b).

[74] SWEPCO Supplemental Response to Sierra Club 1-6, SC 1-6_Supplemental_HSPI_Confidential_Attachment_1.

forces the model to choose between market capacity, gas, and the existing coal unit to meet any dispatchable capacity needs.

Figure 6: HSPI Battery storage capital costs (2020 $/kW)



Source: SWEPCO Response to SC 1-6, SC_1-6_Supplemental_HSPI_Confidential_Attachment_1; SWEPCO Response to SC 1-6, Attachment 17, HSPI 2020 EIA Wind Build Costs; SWEPCO Response to SC 1-6, Attachment 17, Response to SC HSPI 2020 EIA Solar Tier 1&2 Build Costs; SWEPCO Response to SC 1-12, SC_1-12_Attachment_2; SWEPCO Response to SC 1-11, SC_1-11_CONFIDENTIAL_Attachments 6, 7 and 8; National Renewable Energy Laboratory, Annual Technology Baseline 2020; National Renewable Energy Laboratory, Annual Technology Baseline 2021.

Q Do you think the retirement of Flint Creek would have been the lowest-cost option if SWEPCO had used more reasonable cost assumptions in its *Fall 2020 Analysis*?

A Yes. The retrofit of Flint Creek was only economic with the inclusion of $150 million in transmission costs, and with the use of exceptionally high renewable and battery storage cost assumptions that are much higher than SWEPCO's own IRP assumptions. Battery

storage (and solar PV) costs have been declining dramatically over recent years. These price declines for renewable and storage technologies have made standalone and paired projects viable and cost-effective replacement options. If SWEPCO had included these resources in the model with reasonable costs and operational assumptions, it is very likely SWEPCO would have found retirement and replacement with a portfolio that includes solar PV and battery storage to be a lower-cost option. Because the cost advantage of retaining Flint Creek beyond 2028 was so small in SWEPCO's analysis, this change alone could have reversed the outcome of the study.

Lazard's *Levelized Cost of Storage—Version 4.0* states that there have been large cost declines for battery storage resources across most use cases and technologies, and that "sustained cost declines have exceeded expectations for lithium-ion technologies," specifically.[75] Bloomberg New Energy Finance ("BNEF") analyzed historical battery storage costs, finding that costs for lithium-ion batteries have fallen 76 percent between 2012 and the first half of 2019.[76] BNEF noted this was its most striking finding when looking at historical cost trends for both renewable and storage technologies.

[75] Lazard. 2018. *Levelized Cost of Storage Analysis—Version 4.0*. Available at: https://www.lazard.com/media/450774/lazards-levelized-cost-of-storage-version-40-vfinal.pdf. Note that Lazard did not update this cost decline analysis in subsequent versions of this report.

[76] Utility Dive. 2019. *Electricity costs from battery storage down 76 percent since 2012: BNEF*, available at: https://www.utilitydive.com/news/electricity-costs-from-battery-storage-down-76-since-2012-bnef/551337/.

Battery storage costs are predicted to continue their cost decline. As a result, storage resources are and will continue to be a cost-effective replacement resource for traditional peaking units.

Q Explain your concerns around the Company's transmission upgrade assumptions. Specifically, did the Company incur transmission costs as part of any retirement scenario?

A Yes. SWEPCO asserts that if Flint Creek retires, it will need to install a new 345 kV line upgrade to address an N-1-1 contingency and maintain system reliability in Northwest Arkansas.[77] SWEPCO estimated the cost of this transmission project at $150 million.[78] The Company included this estimated cost in the Flint Creek retirement scenarios.[79] But there is no evidence that SWEPCO conducted a robust analysis on the ability of alternatives to address or mitigate the load pocket concerns in Northwest Arkansas. In fact, SWEPCO at one point acknowledged that the transmission reliability issue could be resolved for as little as $40 million.[80] The Company later claimed that this initial option was not acceptable, but then failed to follow up on whether there were ways to make that option viable, or whether there were other similar and lower cost ways to address it. In

[77] SWEPCO Response to Sierra Club Request 2-6(ii).

[78] Direct Testimony of Joseph Perez, page 13, lines 6-7.

[79] SWEPCO Response to Sierra Club Request 1-6, Attachment 17 HSPI SWEPCO FOM and OGC Forecast – Updated for Unit Retirement Scenarios and Gas Conversions -100620.

[80] Direct Exhibit DG-10, SWEPCO Response to SC 6-5, Tex. PUC Docket No. 51415, SOAH 473-21-0538 (filed May 6, 2021).

either event, it is not reasonable to include the cost of this project in the *Fall 2020 Analysis*.

Q Why is it not reasonable to include the full cost of the transmission project in the *Fall 2020 Analysis*?

A The Company has known since at least 2007 that it needs to address the load pocket in Northwest Arkansas.[81] This concern has been ongoing, independent of any decision to retrofit or retire Flint Creek. In fact, SWEPCO has ignored the Commission's requirement that the Company address the load pocked for nearly a decade now. In 2013, when the Arkansas Commission approved FGD scrubber upgrades at Flint Creek, it also required SWEPCO to study and address the load pocket in a timely manner.[82] This Fall 2020 analysis demonstrates that the Company has failed to do so and therefore has failed to comply with the Commission order.

As a secondary matter, inclusion of these costs ignores the ability for replacement resources to serve as solutions themselves to the load pocket, or at least to mitigate the reliability concerns and reduce the scale of the needed solution. Battery storage coupled with solar (and not to mention increased energy efficiency investment) can be installed

[81] Order No. 14, Ark. Pub. Serv. Comm'n, Docket 12-008-U, page 37 (July 10, 2013), available at: http://www.apscservices.info/pdf/12/12-008-u_227_1.pdf.

[82] *Id.*

within the load pocket and directly replace the energy and capacity being retired at Flint Creek.

Q Has SWEPCO updated its analysis, or re-evaluated the economics of the CCR/ELG retrofit at Flint Creek in the year plus since the study was conducted?

A No. SWEPCO is obligated to regularly re-evaluate the prudence of its decisions, especially if market conditions or system conditions change substantially. Gas prices have gone up since the analysis was conducted, renewable prices have continued to fall, SWEPCO moved the retirement of Pirkey up to 2023, and announced it would end the use of coal at Welsh by 2028. These are all substantial changes to SWEPCO's system. But when asked about this issue SWEPCO indicated that the Company had used the best available market information at the time the Company made the decision on the CCR/ELG upgrades and "therefore there is no need to re-run the analysis at this time."[83]

This approach is inconsistent with the Company's own evaluation of similar environmental retrofits. In evaluating whether to retrofit its coal units to comply with the EPA's MATS Rule, for example, the Company conducted monthly unit disposition

[83] SWEPCO Response to Sierra Club Request 2-4(b).

analyses in response to changing commodity prices. SWEPCO fails to provide any reasoned explanation for refusing to do the same here.[84]

Q Even though the project is currently in Stage 1, are there still avoidable costs if the conversion is stopped?

A Yes. Stage 3-4 are not scheduled to begin until next year and Stages 5-7 are not scheduled to begin until 2023. That means that $15.6 million out of the $17.3 million in projected CCR/ELG costs at Flint Creek are still avoidable if SWEPCO updated its analysis and decided to retire the plant.[85] This excludes the $8.8 million in bottom ash pond closure costs which are incurred regardless of the plant's retirement date.[86]

Q What is your conclusion with regards to the evidence that SWEPCO relied on and the prudence of the Company's decision to invest in the CCR and ELG upgrades at Flint Creek?

A First, taken together, if the reasonable adjustments that should have been made to the Fall 2020 study were corrected—most importantly the use of battery storage, wind, and solar costs that are at least in line when SWEPCO's own IRP—it would likely show that the

[84] Direct Exhibit DG-6, Order on Rehearing, *Application of Southwestern Electric Power Company*, Tex. PUC Docket No. 46449, SOAH Docket No. 473-17-1764, page 17, paragraph 42 (Mar. 19, 2018).

[85] SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_1-10_Attachment_4; SWEPCO Response to Sierra Club Request 1-10, Sierra_Club_1-10_Attachment_3.

[86] SWEPCO Response to Sierra Club Request 1-10(b).

going forward value of Flint Creek is negative today. Thus, the evidence supports my conclusion that the test year spending at the plant should be disallowed.

Second, I find that SWEPCO acted imprudently in deciding to invest the $26.8 million to upgrade Flint Creek when at least $17.3 million of those costs could be avoided by retiring the unit in 2028. To demonstrate the prudence of the avoidable CCR and ELG Project, SWEPCO needs to show that, based on the information known at the time, it would be cheaper to retrofit Flint Creek and keep it operating beyond 2028 than to retire it and replace it with alternative resources. Such analysis would have required modeling a reasonable range of alternative resources, including gas, battery storage, wind, or solar PV—or at the very least testing a large number of distinct scenarios with various combinations of alternative resources. But SWEPCO provided no such analysis and therefore has not demonstrated the prudence of the decision to lock ratepayers into $26.8 million in project costs.

6. SWEPCO IS CONSIDERING CONVERSION OF WELSH TO OPERATE ON GAS, BUT THE COMPANY HAS YET TO PROVIDE ANY REASONABLE ECONOMIC ANALYSIS TO SUPPORT THE DECISION.

Q What is SWEPCO's plan or proposal with regards to the Welsh plant?

A SWEPCO has announced its intention to cease burning coal at Welsh by 2028,[87] and therefore has decided it will not install upgrades necessary to comply with ELG and CCR requirements. The Company has indicated that it is considering switching the unit to operate on gas, among other options.[88] The Company estimates that the cost of a conversion to gas at Welsh would be $32 million.[89]

Q What analysis has SWEPCO conducted to support converting the plan to operate on gas?

A The Company has conducted only a "conceptual review" of the conversion of Welsh to operate on gas.[90] SWEPCO has not yet conducted any robust analysis on this option. The Company did consider the conversion of Unit 1 to operate on gas as one of the scenarios in its Fall 2020 *Unit Disposition Analysis*, but for the reasons discussed in the section

[87] SWEPCO to End Coal Operations at Two Plants, Upgrade a Third. November 5, 2020, available at https://www.swepco.com/company/news/view?releaseID=5847.

[88] *Id.*

[89] SWEPCO Response to Sierra Club Request 1-20(e).

[90] SWEPCO Response to Sierra Club Request 1-20.

above, this analysis was not robust. Even if the analysis had been robust, SWEPCO's results found that [redacted] [91] SWEPCO conducted no analysis on the option to convert both units to operate on gas or the option to retire and replace both units.[92]

Q What type of analysis should the Company conduct to justify the decision to convert the unit to operate on gas?

A Prior to making any investments in a conversion project, SWEPCO should be required to produce robust analysis that evaluates and compares the costs of converting the plant to the cost of retiring the plant and investing in alternatives. The analysis in the *Fall 2020 Analysis* is not sufficient; instead, the Company should be required to produce optimized capacity expansion and production cost runs, or at the very least the results of specific scenarios that test retirement of both Welsh units and replacement with a reasonable range of alternative resources, including battery storage, solar PV, wind, and increased energy efficiency deployment.

Q Does this conclude your testimony?

A Yes.

[91] SWEPCO Response to Sierra Club Request 1-5, HS Attachment 6.

[92] SWEPCO Response to Sierra Club Request 1-6, SC 1-6, Attachments 4 thru 6.