I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q. Please state your name and business address.

A. Philip H. Mosenthal, Optimal Energy, Inc., 10600 Route 116, Hinesburg, VT 05461.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Sierra Club.

Q. By whom are you employed and in what capacity?

A. I am the founding partner in Optimal Energy, Inc., a consultancy specializing in utility planning and energy efficiency. Optimal Energy advises numerous parties including utilities, non-utility program administrators, governments, and consumer and environmental groups.

Q. Have you previously testified before the Florida Public Service Commission?

A. Yes. I testified in Commission proceedings to review numeric conservation goals, Docket Nos. 080407–080413.

Q. Have you testified elsewhere on long-term resource planning issues?

A. Yes. I have testified before numerous states. This includes testimony related to integrated resource planning and the prudency of building or procuring new

electric resources in Illinois, Indiana, Missouri, Vermont, and Virginia, the Texas legislature, and the U.S. Nuclear Regulatory Commission.

Q. Please describe your educational background and professional experience.

A. I have 30 years of experience in utility resource planning, during which I have focused on the costs and benefits of various resources and the opportunities for demand-side resources to be considered on an equal footing with supply-side resources. This has included leading or participating in numerous studies to assess the quantity and economic value of efficiency and renewable resources as potential alternatives to conventional supply-side options for short and long range utility integrated resource planning. I have been involved in studies in numerous jurisdictions throughout the U.S. and Canada, as well as work in Europe and Asia.

Additionally, I have addressed issues of utility cost recovery, lost revenue, decoupling, and the creation of shareholder financial incentives to ensure that utilities have appropriate incentives to consider all potential energy resources on an equal footing and to pursue the prudent, least-cost solutions for customers. I have also developed numerous utility efficiency plans, and designed and evaluated utility and non-utility programs.

I have a *B.A.* in Architecture and an *M.S.* in Energy Management and Policy, both from the University of Pennsylvania. My resume is attached as Exhibit PHM-1.

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

A. I address the proposal by Gulf Power Company (Gulf or the Company) to shift its 25% ownership interest in Plant Scherer Unit 3 (Scherer 3) into rate base. The proposal includes shifting the costs associated with Scherer 3 onto Gulf's native load retail customers (customers), as well as allocating Scherer 3 capacity to customers. My testimony assesses the prudency of that proposal and whether it meets the Commission's least cost planning criteria.

Q. What are your overall conclusions?

A. Gulf's proposal is not prudent because it would impose a significant financial burden on retail customers in exchange for speculative benefits. Evidently, other market participants have rejected Scherer 3 in favor of other options. My analysis confirms that there are abundant, low-cost, and low-risk options in the market available to Gulf. Yet the Company presented no quantitative analysis of its proposal relative to these alternatives; instead, Gulf asks the Commission to rely on the Company's beliefs about alternatives that it acknowledges it never evaluated with any quantitative rigor.

Q. What sources have your relied on in your assessment of Scherer 3?

A. I have focused on Gulf's filings related to Scherer 3 in this proceeding, including its petition, direct testimony and exhibits, and discovery responses. I also reviewed Gulf's recent ten-year site plan filings as well as Commission Order No. PSC-16-0535-FOF-EI, which deferred environmental compliance cost recovery

related to Scherer pending the resolution of this proceeding. Finally, I have drawn on several recent market studies and state electric utility regulatory proceedings pertaining to resource planning and procurement. When relying on various sources, I have referenced such sources in my testimony and/or attached these sources as exhibits.

II. FINDINGS AND RECOMMENDATIONS

Q. Please summarize your findings regarding Scherer 3 in this case.

A. Including the costs associated with Scherer 3 in rate base, and allocating its capacity to Gulf's retail customers is neither prudent nor consistent with least cost planning, for the following reasons:

1. Gulf itself projects that there is no need for Scherer 3 capacity until 2023, and even then the projected capacity need is not reliable.

2. Assuming a capacity need beginning in 2023, it is premature to burden customers with the costs and risks of an aging coal plant now, when they will see no concrete benefits from Scherer 3 for seven years or more, and there is a significant risk that the costs will outweigh any long-term benefits.

3. Approval of Gulf's proposal would result in an undiversified resource portfolio that is dangerously dependent on coal, exposing customers to

unnecessary risk, and missing opportunities that would improve diversity and offer a better hedge value.

4. Gulf has not evaluated alternative options to meet its projected 2023 reliability need, nor shown that Scherer 3 is a least cost option, and there is ample evidence that lower-cost and lower-risk options are available in today's market and more than likely in the 2023 market as well.

Q. What are your recommendations to this Commission?

A. As I will explain further, the Commission should deny Gulf's proposal to add Scherer 3 to rate base in order to protect retail customers. The Commission should also reinforce that the Company is responsible for presenting sufficient information to reassure the Commission that it is planning an adequate and reliable supply of electricity at the lowest cost possible. To this end, the Company must make timely efforts, with proper Commission oversight, to evaluate and then pursue all reasonably available prudent alternatives to minimize the cost of serving its customers' needs.

III. SCHERER 3: A "MISMATCH" FOR RETAIL CUSTOMERS

Q. What is Scherer 3?

A. Scherer 3 is one of four steam units at Plant Scherer, a coal-fired power plant located about 20 miles northwest of Macon, Georgia. In 1981, Gulf purchased a

25% ownership share of Scherer 3. This is equivalent to 211 MW capacity. Scherer 3 began commercial operation in 1987.

For nearly its entire, thirty-year operating history, Gulf dedicated its portion of Scherer 3 to wholesale power contracts instead of its customers. At the time of purchase, Gulf did not have a resource capacity need, but projected that demand would grow sufficiently to require this additional capacity in the future. Gulf then entered into wholesale contracts to sell Scherer 3's available output. Gulf's forecast of load growth was overly optimistic, however, and the Company still does not have a need for this capacity to meet its reserve margins, despite some recent retirements of its other coal plants.

As the Scherer 3 wholesale contracts have begun to expire, Gulf has not been able to renew them or find new buyers, at least not at prices the Company will accept.[1] Nor has Gulf identified any viable options yet for an economic asset sale.[2]

Q. What does Gulf propose to do now with Scherer 3?

A. As witness Liu explained, Gulf is seeking authorization from the Commission to allocate all of Scherer 3's available capacity (161 MW immediately, growing to 211 MW in 2020) to retail customers, and put all outstanding, "non-clause" costs into rate base (Pages 3-4). Nevertheless, Gulf acknowledges that there is no need for

[1] *See* Gulf's Response to OPC Interrogatory No. 130, Exhibit PHM-2.
[2] *Ibid.*

Scherer 3 until 2023 at the earliest, and, as I will explain, it is unclear whether the need will in fact materialize in 2023.

Q. When does Gulf project a potential need for the Scherer 3 capacity?

A. Gulf anticipates a potential need for capacity in 2023, when one of its power purchase agreements (PPA) expires.[3]

Q. Please explain whether you agree with Witness Burleson that there is a "mismatch" between Scherer 3 and the needs of retail customers.

A. Yes, there is a stunning mismatch because Scherer 3 does not line up with customer needs—not now, in fact, perhaps never. Here, as Witness Liu explains, Gulf seeks $19.4 million in Scherer 3 costs from customers in 2017 (Page 15, lines 10-11), but they do not need any additional capacity for at least another 7 years, until 2023.[4] Furthermore, Scherer 3 would not be the best option to meet such need should it ever materialize.

Q. You state that Gulf's projected need for new capacity in 2023 is not reliable. What do you base this on?

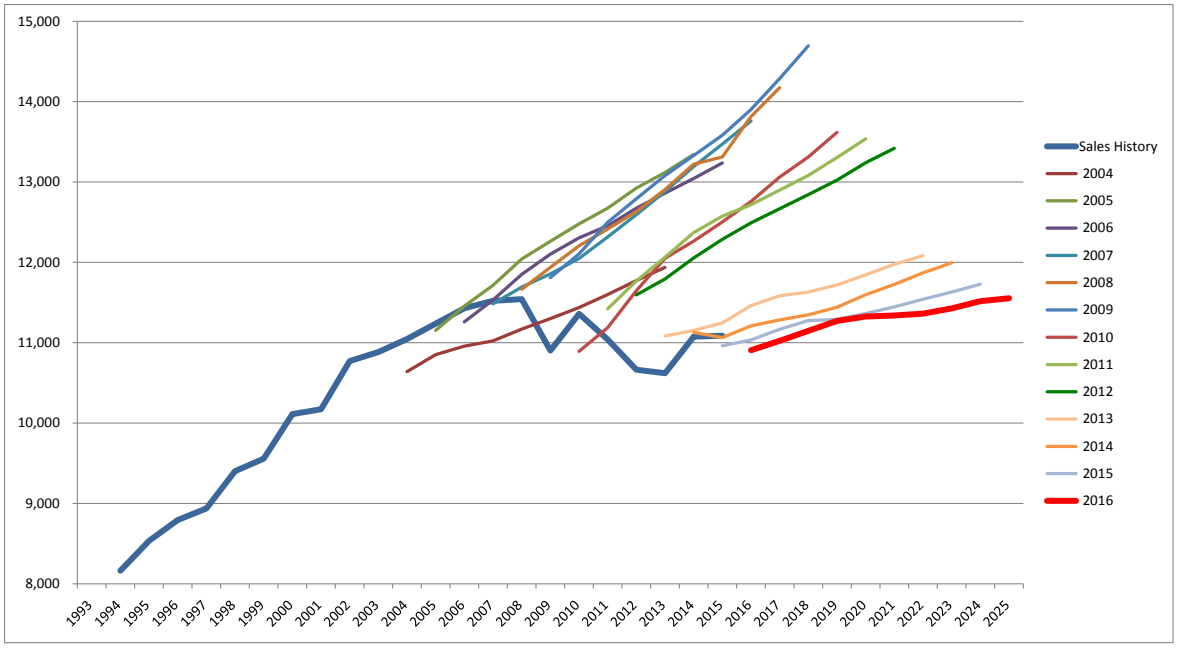
A. Gulf has a history of substantially overestimating load forecasts. For example, Witness Liu states, "Gulf's weather-normalized annual GWh sales have never reached the level that we originally projected to achieve in 2012, and sales are not

[3] Gulf's 2016 TYSP, at 52; Gulf's Response to Staff Interrogatory No. 64, Exhibit PHM-3.
[4] Exhibit PHM-3.

currently projected to reach that level in 2017" (Page 14, lines 12-15). Ms. Liu also states, "GWh sales for 2017 are forecast to be **6.3 percent below** the originally projected level for 2012" (Page 18, 12-14) [emphasis added].

Even with future load growth of approximately 1% per year – significantly more than recent history – the load in 2023 would still just barely reach the levels the Company originally projected for 2012. The figure below shows Gulf's dramatic overestimation of load growth going back to 2004.[5] Further, it depicts Gulf's failure to recognize industry trends of low load growth and the sustained impacts of efficiency and distributed generation.

Figure 1: Gulf Power Actual and Forecast Load Growth



[5] Source: Schedule 2.2 of past Gulf Ten-Year Site Plans, 2004-2016.

Q. What evidence do you have for a trend of low energy load growth?

A. There is substantial evidence of this phenomenon throughout the U.S. As an example, EIA projects U.S. retail electricity sales will grow at an average annual rate of just 0.39% from 2015-2030, substantially lower than the historic average of 1.6% from 1990-2010.[6] Excluding transportation, which is expected to grow 14% per year from adoption of electric vehicles, retail loads are projected to only grow 0.29% annually.

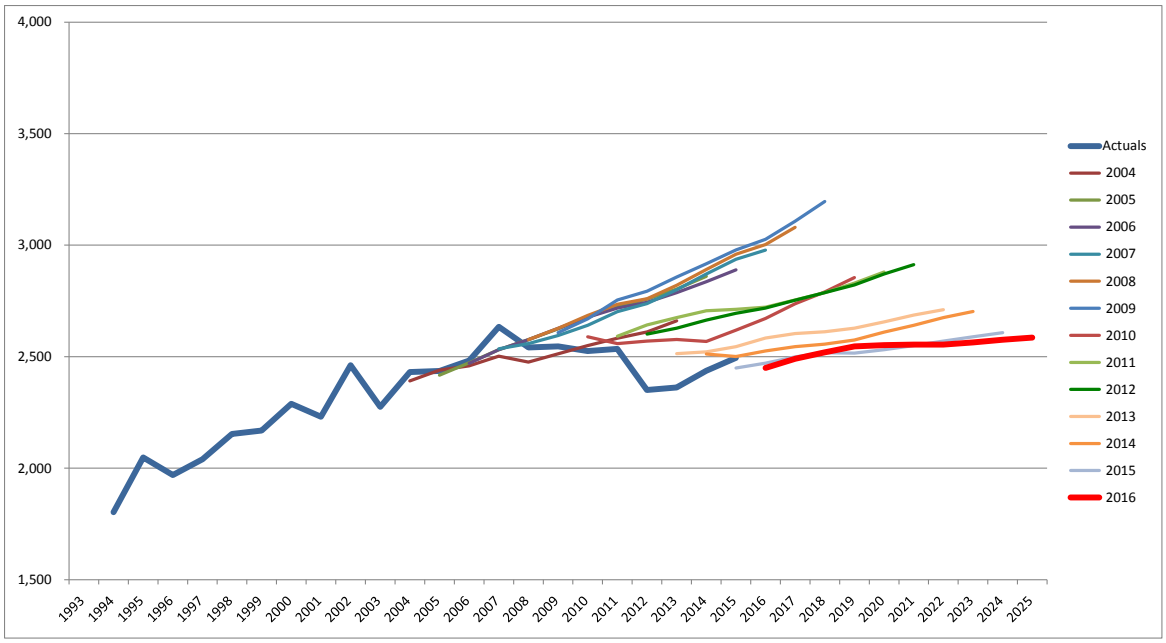
Q. Isn't Gulf's justification for the 2023 need based on peak demand and the expiration of an existing PPA, rather than energy load growth?

A. Yes, but the persistent bias in Gulf's above referenced projections calls into question the accuracy of Gulf's forecasts in general, and especially the Company's ability to accurately forecast the timing of a need so far in advance. In fact, as Figure 2 below shows, Gulf appears to suffer from the same persistent bias when it comes to summer peak demand, and has not experienced any actual load growth since 2007.[7]

[6] https://goo.gl/2EEapV.

[7] Source: Schedule 3.1 from past Gulf Ten Year Site Plans.

Figure 2: Gulf Power Actual and Projected Summer Peak Demand



Furthermore, as shown in Gulf's response to Staff interrogatories, its estimated 211 MW peak contribution in 2023 from Scherer represents **only 8%** of its projected 2023 summer peak.[8] As I discuss, this is well within the range that can be captured solely through efficiency and demand response (DR) programs, and certainly could be made up with a mix of efficiency, DR, distributed generation (DG) and future PPAs. Gulf also has ample time to procure these potential resources by 2023, as I will explain.

Q. Assuming for the moment that the capacity driven reliability need does exist in 2023, is Scherer a logical resource to fill that need?

[8] Exhibit PHM-4.

A. Absolutely not. As Witness Burleson notes, Scherer 3 is a coal plant with a low variable cost (Page 20, lines 25-25). Such plants generally serve as baseload plants, and Gulf has indicated that Scherer is no exception.[9]

Gulf has also acknowledged that a peaking unit is more likely what its customers would need next. Thus, Gulf plans to build a 654 MW gas combustion turbine to go online in 2023. Such turbines are designed to serve as peaking units. This makes them better able than Scherer 3 to serve customers' peak demand for electricity.

In short, you can once again see the mismatch between Scherer 3 and customer needs. It makes no sense to burden customers with a new, unneeded baseload coal plant to meet a possible future peak capacity reliability need.

Q. Could it nonetheless be prudent for customers to start funding Scherer 3 now to preserve the capacity for the future?

A. No. To be prudent, the expense has to be "used and useful" to customers. This is a core requirement in Florida, as in so many other states, to protect customers from bearing the risk of utility expenses that may never confer concrete benefits to the customers.

[9] Exhibit PHM-2 (stating Gulf only responded to RFPs to sell Scherer on the wholesale market for "base load" needs).

As discussed, Scherer 3 does not meet the used and useful requirement because customers do not need this coal plant now. Further, they may never need it. Given Gulf's faulty forecasting, its substantial overestimation of loads, and industry trends of low to no load growth, asking customers to begin paying now for a speculative, possible need in the future is unreasonable. This would be true even if Scherer 3 could somehow become a least-cost option in the future, a position that Gulf has avoided taking and could not possibly justify under current market conditions, as I will explain.

Second, even assuming a 2023 capacity need, there is no justification to impose on ratepayers this financial burden now. There are many other options that Gulf can rapidly deploy in the future, and which are likely to be less costly and require far less lead-time. As an example, one option could be for Gulf to renew the expiring Shell power purchase agreement (PPA), which as noted is mainly driving the purported 2023 need. Gulf is yet to assess this as an alternative.[10]

Third, Gulf acknowledges that the ultimate, long-term costs of Scherer 3 are uncertain and could be significantly higher in the future due to new and evolving environmental compliance requirements and other risks yet-to-be quantified or disclosed by the Company.[11] As a result, under Gulf's proposal, ratepayers would

[10] Gulf's Response to OPC Interrogatory No. 174, Exhibit PHM-4.
[11] Gulf's 2016 TYSP, at 53-65.

be committed to paying for an aging coal plant that is unneeded, may never be needed, and imposes new and unnecessary risks.

Q. But didn't Witness Burroughs say that Scherer 3 is "fully controlled" in terms of environmental compliance?

A. He could have chosen his words more carefully. It is my understanding that Scherer 3 does have some modern air pollution controls, but still faces additional costs and risks, for example, based on a recent complaint filed in Georgia state court concerning the water pollution control requirements for several coal plants, including Scherer.[12]

Further, in its 2016 Ten-Year Site Plan, Gulf acknowledges that it does not know the "ultimate financial and operational impact" of various regulations that are still in flux.[13] Keep in mind, whatever the Company has already sunk into Scherer Unit 3 does not negate the risk and cost of such potential additional regulatory compliance.

IV. HEDGING AND DIVERSIFICATION

Q. Is there any evidence that pursuing PPAs could provide Gulf with greater flexibility and potentially diminish risks?

[12] *Sierra Club, Inc. et. al v. Richard E. Dunn*, CV #: 2017CV284719, Petition for Writ of Mandamus (Jan. 12, 2017), Exhibit PHM-5.
[13] See generally Gulf's 2016 TYSP, Environmental Compliance Section, at 53-65.

A. Yes. Signing long or short term PPAs can lock in future prices now and provide a significant hedge against future risks, including fuel price volatility and evolving regulatory requirements for coal and carbon. Gulf evidently agrees, as "this strategy of supplementing Gulf's development of long-term capacity resources with shorter-term power purchase has proven to be effective over the years."[14] Gulf also notes, "longer-term power purchases from the market" may "supply flexibility and reduced commitment risk during periods in which environmental regulations (with considerable economic impacts) and legislative initiatives focusing on generation additions are in various stages of development."[15]

Q. Do you have other evidence that PPAs can be an effective hedge against future risks such as price volatility or environmental risk?

A. Yes. First, it is common practice for electric utilities to lock in contract prices as a hedge against future financial risks.

Second, renewable energy PPAs are now often the cheapest and most prevalent new generation resource, as I discuss below. These PPAs also have no fuel costs, and thus completely hedge against volatile fuel prices. The U.S. Department of Energy has found, "[s]olar and wind generation significantly reduces the exposure

[14] Gulf's 2016 TYSP, at 51.
[15] *Id.* at 67.

of electricity costs to natural gas price uncertainty in fossil-based generation portfolios on a multi-year to multi-decade time horizon."[16]

Third, the Commission for Environmental Cooperation (CEC), which is the collaborative between the U.S., Canada, and Mexico on advancing economic development alongside environmental protection, has also found that long-term renewable energy contracts are very attractive to utilities and their customers for their long-term hedge value. The CEC concludes that the fixed, long-term price of these contracts for terms that often exceed ten years, "offer[s] a **longer-term hedge** than many of the conventional hedging strategies, which often focus on short-term markets."[17]

Further, the CEC has emphasized the value of renewables as a hedge against regulatory compliance risks:

> Future requirements are likely to be more severe than they are today. Traditional air pollutants (SOx, NOx, mercury, particulate matter) may be more tightly regulated and new state or federal carbon regulations may be implemented. Utility-owned fossil projects and long-term power purchase agreements may be subject to these downside regulatory risks. However, renewable energy is likely to be unaffected.

[16] https://goo.gl/PAAwrR.
[17] https://goo.gl/YeiOvm.

Thus, the CEC concluded, "those utilities that consider seriously the risk of future environmental regulations will prefer new renewable energy to new fossil generation, all other things equal."[18]

Q. Doesn't witness Burleson state that Scherer 3 will also offer value in the long run by offsetting some coal plant retirements and tempering a trend in Florida toward natural gas?

A. While he does say that, his emphasis on the rest of Florida is misplaced. Gulf's own resource mix is the most relevant concern in this proceeding where the Commission sets rates in order to minimize the costs and risks to Gulf's captive customers. As Staff demonstrated in their review of Gulf's Ten Year Site Plan, Gulf projects a dramatic shift away from its current mix with 40.6% coal generation to a dangerously undiversified portfolio that relies on coal for 84.9% of generation.[19] See Figure 3 below.

[18] *Id* at 34.
[19] Florida PSC, *Review of the 2016 Ten Year Site Plans of Florida's Electric Utilities,* November 2016, at 69.

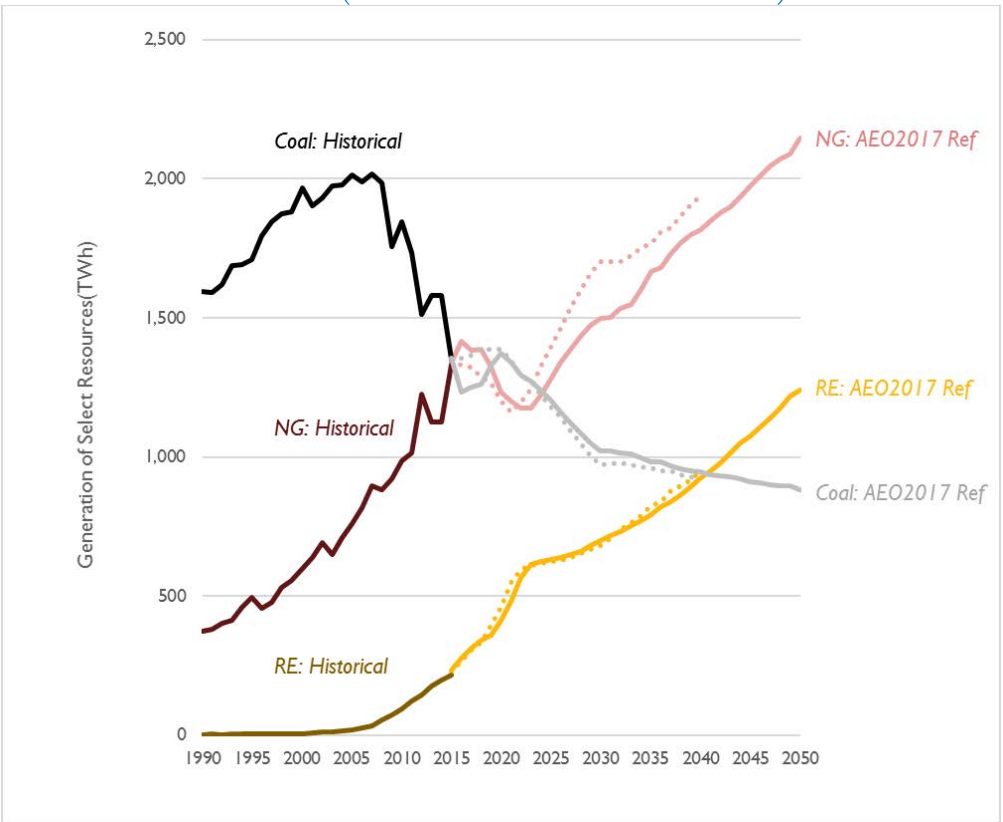
Figure 3: Gulf Power Energy Consumption by Fuel Type

Fuel Type	Net Energy for Load			
	2015		2025	
	GWh	%	GWh	%
Natural Gas	7,787	**64.9%**	1,828	**14.5%**
Coal	4,876	**40.6%**	10,687	**84.9%**
Nuclear	0	**0.0%**	0	**0.0%**
Oil	1	**0.0%**	0	**0.0%**
Renewable[6]	235	**2.0%**	1,091	**8.7%**
Interchange	-903	**-7.5%**	-1,023	**-8.1%**
NUG & Other	0	**0.0%**	0	**0.0%**
Total	**11,996**		**12,583**	

Q. How does this compare with industry trends?

A. Gulf is going in exactly the opposite direction as the industry. Utilities are deliberately selecting strategies to avoid over-reliance on any single fuel source, much less coal. It is a well-known fact that utilities across the country are rapidly retiring and divesting their coal generation. The EIA expects this trend to continue until 2050, as shown in Figure 4 below.

Figure 4. Comparison of electricity generation from coal, natural gas, and renewables in the AEO 2017 Reference case (AEO2017 Ref) relative to the same cases in AEO 2016 (shown on this chart in dotted lines)[20]



Q. Is this national trend occurring in the Southeast as well?

A. Yes. EIA notes, "[i]n the Southeast, coal consumption in Georgia, North Carolina, and Alabama in 2015 was half the level it was in 2007."[21] Quite simply, Gulf's heavy reliance on coal would result in a much less diverse resource mix and represents a dangerous outlier in the region.

Q. Besides the coal divestment trend, what about new generation?

A. The industry has turned sharply away from coal towards renewables, as the dominant source of new generation. While the EIA is still finalizing the 2016 data,

[20] Note: In this figure, "Renewables" includes all generation from wind and solar. Generation from hydro, geothermal, and biomass is excluded.
[21] https://goo.gl/h6wQuF.

it expects that, "[f]or the third consecutive year, more than half of [the country's new generation] additions are renewable technologies, especially wind and solar."[22]

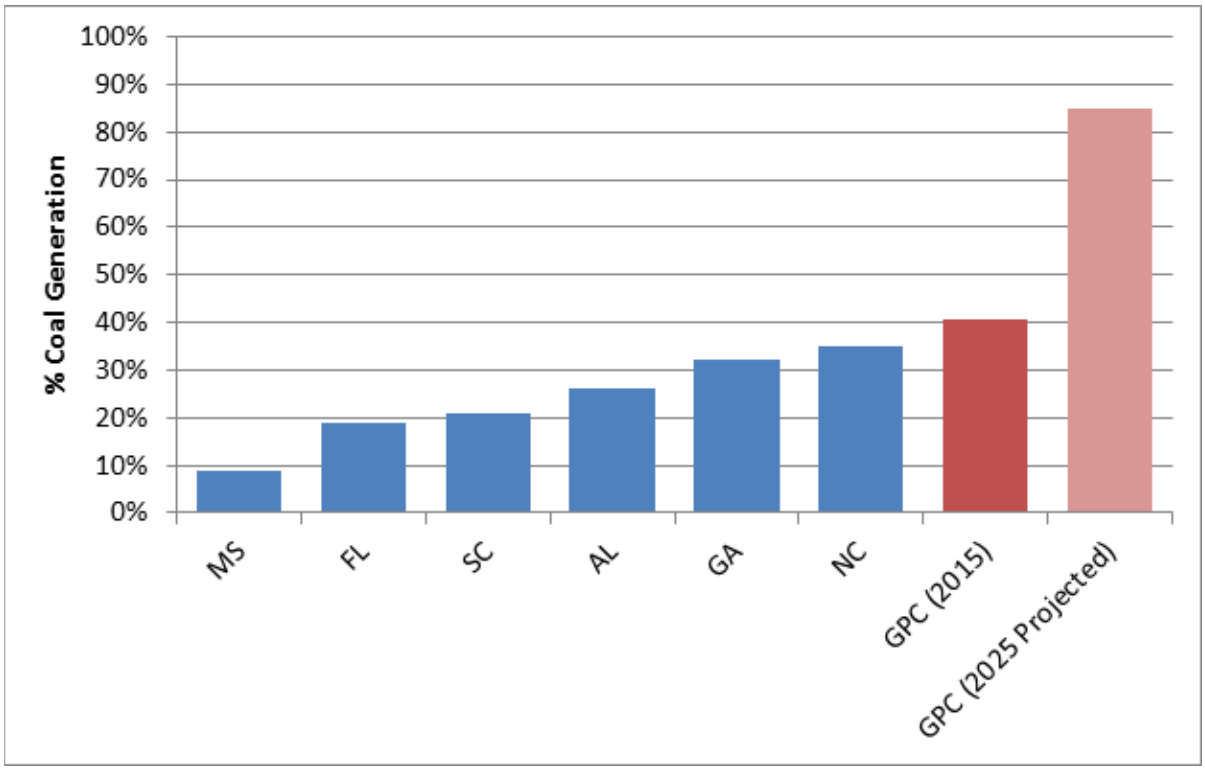
This trend is expected to continue, if not accelerate. The U.S. production tax credit for wind and the solar investment tax credit were extended in 2015 and will continue, although at declining levels, until 2020 (wind) and 2022 (solar).[23] With the projected further cost reductions and performance improvements of renewable technologies, today's renewable energy boom will very likely grow in the future.

Q. How does Gulf's coal dependence compare to its peers in the region?

A. It is a clear outlier. The figure below shows installed coal capacity of states in the Southeast U.S., compared to Gulf.. Gulf is already higher than any of state, and significantly higher than Florida. What is even more concerning is that its projected coal dependence by 2025 would be an extreme outlier and counter to industry trends.[24] .

[22] Marcy, Cara. "Renewable generation capacity expected to account for most 2016 capacity additions." U.S. Energy Information Administration, 10 Jan. 2017, https://goo.gl/Z5x1ao, Exhibit PHM-6.
[23] *Id.*
[24] Source: http://www.eia.gov/state/ Net Electricity Generation by Source, September 2016.

Figure 5. Percent Coal Generation, by State and Actual and Forecast for Gulf Power



Q. Why is Gulf's increased coal dependence risky?

A. It is common practice with any asset portfolio to include a diverse mix of assets to hedge against any particular asset becoming uneconomic, non-productive resource, or otherwise a liability. Therefore, having 85% of any single asset type presents significant risk if that asset becomes uneconomic or no longer viable. This is one of the drivers of the significant coal retirements that have been occurring throughout the country. Not only is new generation of coal generally no longer competitive with gas plants or utility scale renewables, but concerns about climate change clearly make dependence on the most carbon-heavy option especially risky. As noted, uncertain environmental compliance requirements and

fuel price volatility pose additional financial risk, which can be hedged with renewables and efficiency.

The Tennessee Valley Authority explicitly notes this in its 2015 findings on financial risks: "Risks are minimized by maintaining a diverse portfolio and not over-emphasizing any specific resource type." (p. 5) Further, "[m]aintaining the diversity of TVA's energy resources is fundamental to our ability to provide low-cost, reliable and clean electric power" (p. 36)[25] Consistent with these findings, TVA plans further coal retirements and no new coal generation additions through at least 2033 (figure 9-3, p. 116).

V. ALTERNATIVES

Q. You have stated that Gulf failed to analyze alternatives to Scherer 3, or show that it is the least-cost option. What is the basis for your statement?

A. Gulf itself makes this perfectly clear in response to discovery. Public Counsel asked what analysis of alternatives Gulf has done to assess whether Scherer 3 is a least-cost resource, including any economic or risk assessments. Gulf responded, it "has not performed, nor had performed on its behalf, an analysis to evaluate

[25] https://goo.gl/ZljjYt.

utilizing Gulf's ownership share of Scherer Unit 3 to serve retail customers post-2015 versus other alternatives." [26]

This is an unacceptable omission. It leaves the Commission with absolutely no evidence that the Company made a timely effort to investigate and pursue every reasonably available prudent action to minimize its cost of service. Furthermore, since Gulf could not find any buyers for this power in competitive markets, Scherer likely does not represent a least costs resource.

Q. Is it common for utilities to assess alternative supply resources to determine least cost solutions to future capacity needs?

A. Yes. In my experience, best practice would include a robust scenario analysis of the various electric resources that could be deployed, their projected capital and variable costs, and the different risk factors. This analysis is even more important due to rapid changes in electric markets. To be clear, this analysis is supposed to help identify and manage uncertainty by calculating how sensitive the analysis is to common risks such as fuel price volatility, potential variation between actual and forecasted loads, and weather, economic and environmental risks.

The fact that Gulf has either failed to perform these analyses, or at least failed to provide the Commission with convincing details and results of any integrated

[26] Exhibit PHM-5.

resource planning analysis, should be justification alone to reject its Scherer 3 proposal. Quite simply, Gulf failed to show that its proposal is in the best interest of customers, and I will offer evidence that it is not.

Q. What are the various alternatives that Gulf should have analyzed?

A. Gulf should have done a comprehensive assessment of all reasonable potential sources of new capacity, generation and demand management. This should include: 1) ownership, construction and retirement options of traditional fossil fuel plants and Gulf's existing fleet; 2) a full range of renewable energy options (both utility-owned and built, PPAs and distributed generation); 3) pursuit of a range of different PPA options, including potentially renewal of its expiring Shell PPA; and 4) the full achievable potential of energy efficiency and demand response resources.

Q. Is it likely that one or more of these alternatives are a lower-cost resource?

A. Yes. There is much evidence that such alternatives are generally less costly and less risky than a coal plant. For example, energy efficiency and demand response are generally only a fraction of the cost of traditional supply-side options and recent renewable energy cost reductions have now made it the majority of new generation investments in the U.S.

Q. What evidence do you have that non-coal PPAs are available as a lower-cost alternative?

A. While I will describe some specific data on PPAs that are relevant, the most obvious evidence is the fact that Gulf has been unable to find buyers for Scherer 3 generation through long-term wholesale contracts. Nor has the Company identified any viable asset sale opportunities.[27] If Scherer 3 does not represent a good value for power purchases or investors, the same is very likely true for customers.

In terms of recent data on actual executed PPAs, the U.S. Department of Energy has documented the dramatic decreases in solar PPA prices in the last 10 years. The figure below shows the dramatic decreases in solar PPAs over recent years, with levelized average generation weighted prices below $50/MWh now and projected to continue to decline.[28]

[27] Exhibit PHM-2.

[28] Figure 17, Utility-Scale Solar 2014: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United State, Authors Mark Bolinger and Joachim Seel, Lawrence Berkeley National Laboratory, September 2015, Exhibit PHM-7.

Figure 6.

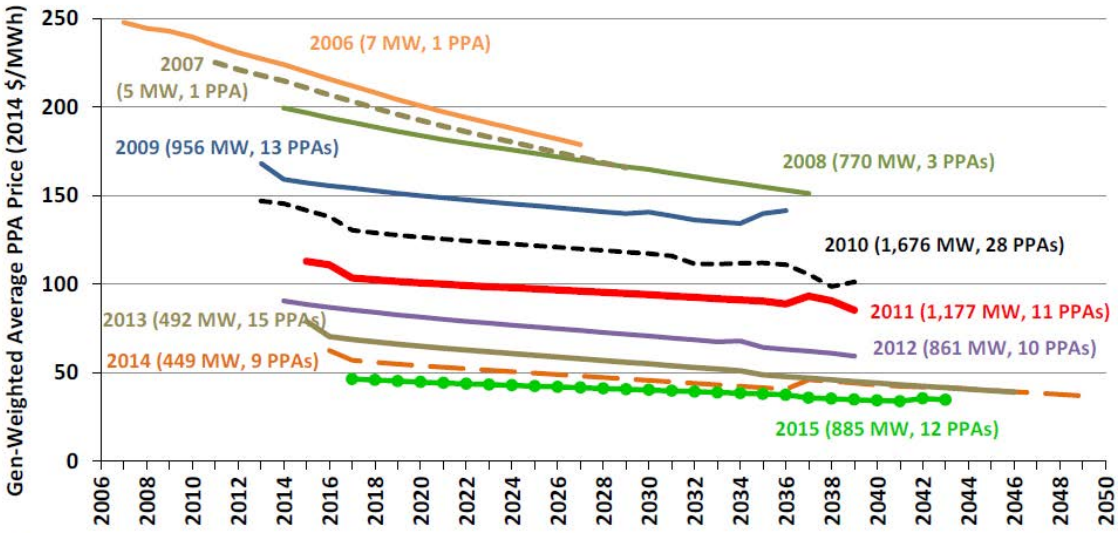


Figure 17. Generation-Weighted Average PV PPA Prices Over Time by Contract Vintage

While solar PPA costs have come down considerably nationally, the figure below shows that two solar PPAs of between 50 and 100 MW each were signed in the Southeast region in just the past two years at prices comparable to regions with far more experience developing utility-scale solar resources.[29]

[29] Figure 19, Utility-Scale Solar 2015: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United State, Authors Mark Bolinger and Joachim Seel, Lawrence Berkeley National Laboratory, August 2016, Exhibit PHM-8.

Figure 7.

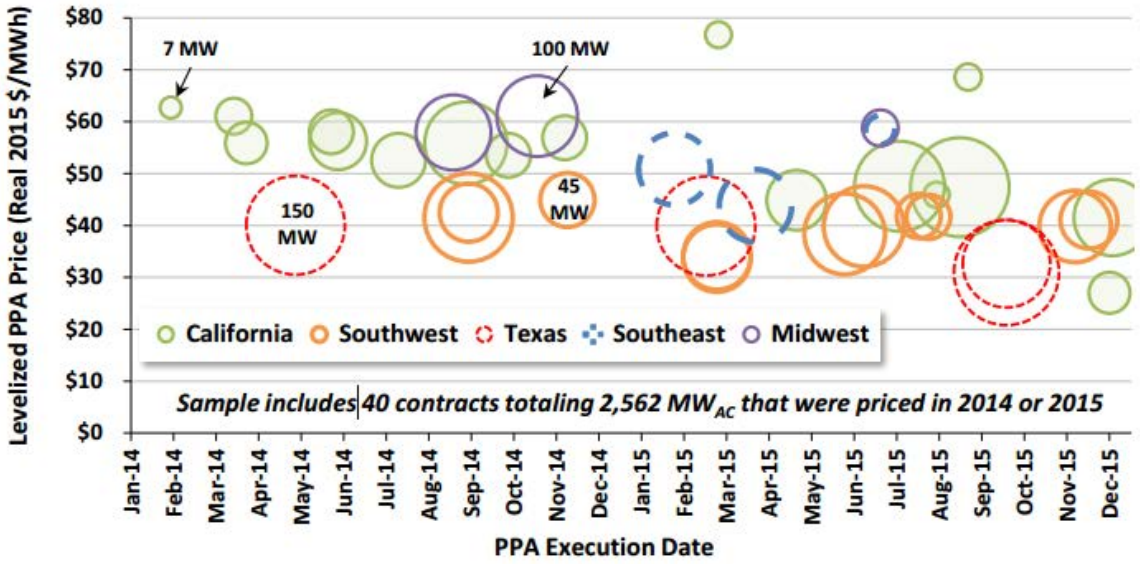


Figure 19. Levelized PPA Prices by Region, Contract Size, and PPA Execution Date: 2014 and 2015 Contracts Only

Q. Besides solar PPAs, do you have any data on wind PPAs?

A. Yes. A similar report on wind from the U.S. Department of Energy shows, in the figure below, that median wind PPA price from contracts executed from 2014 to 2016 are roughly $25 per MWh and are consistently at or below the low end of the projected natural gas fuel cost range from now through 2040.[30]

[30] Figure 50, 2015 Wind Technologies Market Report, Authors Ryan Wiser and Mark Bolinger, Lawrence Berkeley National Laboratory, August 2016, Exhibit PHM-9.

Figure 8.

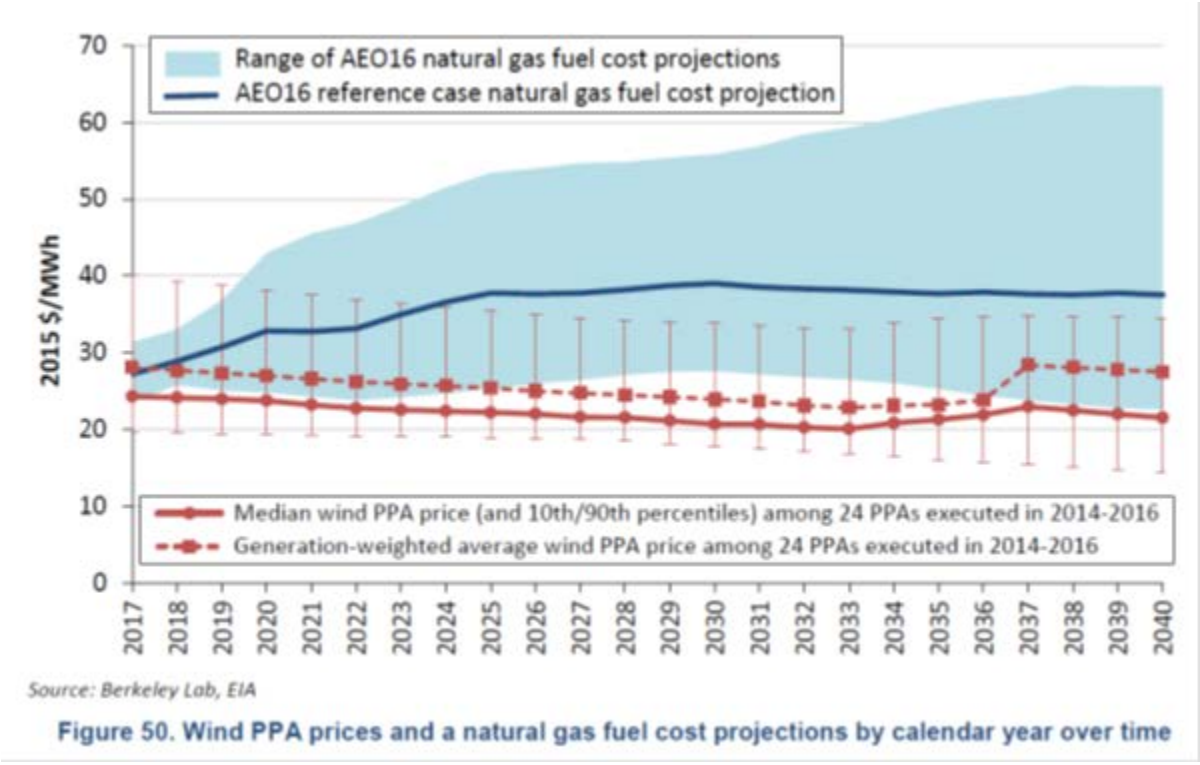


Figure 50. Wind PPA prices and a natural gas fuel cost projections by calendar year over time

Q. You discuss options for PPAs, including renewables. Can they meet capacity reliability needs?

A. Yes, so long as a diversified combination of resources is pursued. As noted, efficiency and DR alone could probably serve such needs in today's market. However, even solar can potentially meet this need by 2023. NextEra Energy, owner of Florida Power & Light Company (FPL), recently confirmed that combinations of solar plus storage will be able to not only serve as peaker plants, but likely will be the preferred solution. In 2015, NextEra Energy Chairman Jim Robo stated: "Post-2020, there may never be another peaker built in the United

States – very likely you'll be just building energy storage instead."[31] In fact, FPL Witness Barrett recently testified before this Commission that in the next four years "large scale deployment" of energy storage and a "large program" of solar are not only possible, together, they can address peak demand, save customers money, and produce other benefits.[32]

Q. Is there sufficient time for Gulf to forego dedicating Scherer 3 to its retail customers now and pursuing a PPA?

A. Yes. Gulf witness Burleson makes this clear. For example, he describes how Gulf issued a request for proposal (RFP) for PPAs in February 2006 for capacity starting in June 2009 (Page 16). It also began preparing in 2008 for a PPA RFP for capacity in 2014.[33] The current 855 MW Shell PPA that will expire in 2023 creating a potential reliability need was actually signed in March 2009 for delivery starting in November 2009.[34] Evidently, there is ample time for Gulf to solicit new PPAs, or potentially renew the Shell PPA, to meet any potential capacity shortfall seven years from now. In addition, as discussed, given the continuing rapid declines in renewable energy PPA costs, it is likely that going to market now or later for a PPA could provide lower market prices than Scherer offers, while

[31] https://goo.gl/Z6WcyD.
[32] Docket 160021, October 27, 2017, Hearing Transcript at 104, 113, 116–17 (Barrett), https://goo.gl/JBlbuO.
[33] *Ibid.*
[34] *Ibid.*

minimizing risk and creating greater flexibility. It would also prevent ratepayers from accepting a rate-based obligation today when their need is well in the future.

Q. What evidence do you have that energy efficiency or demand response could provide a lower cost alternative to Scherer 3?

A. There is ample evidence that energy efficiency and demand response (collectively, "demand-side management" or "DSM") are the lowest cost resource to meet marginal energy and capacity needs. The record in the 2014 hearings on the numeric conservation goals of the utilities subject to the Florida Energy Efficiency and Conservation Act provides substantial such evidence. Witness Sim testified that the total revenue requirement for the utility (i.e., the costs paid by ratepayers) is lower under a plan with higher energy efficiency savings.[35] Other witnesses demonstrated that energy efficiency generally costs less than half as much as conventional power plants.[36]

Turning to demand response, the experience of two large independent system operators is instructive. Both the PJM regional transmission organization (PJM) and the Independent System Operator of New England (ISO-NE) have emphasized the deployment of demand response in those regions to ensure sufficient capacity to meet expected loads. More specifically, they provide

[35] Docket No. 130199, Hearing Transcript, Aug. 8, 2014, at 1492 (FPL witness Sim).

[36] *See, e.g., id.* at 1116-17 (Sierra Club witness Woolf).

payments for capacity that are determined three years in advance of when that capacity is needed, thus giving capacity suppliers confidence that their investments will earn some financial return. In both cases, demand response participates in the market as a cost-effective means of supplying needed capacity. The most recent results have demand response providing nearly 8 percent[37] and 6 percent[38] of ISO-NE's and PJM's capacity requirement in 2019, respectively. This demonstrates that demand response is cost-competitive with traditional supply options, and even without added efficiency programs could potentially replace the entire capacity shortfall covered by Scherer.

Q. Can you cite any recent examples of utilities in the region that are, as part of an IRP process, planning to pursue a greater mix of renewables, distributed generation and efficiency?

A. Yes. For example, Georgia Power—a Gulf sister company—recently entered into a stipulation on its integrated resource plan that includes commitments to procure 1.2 GW of renewable energy, including 150 MW of distributed generation, and 1,050 MW of utility scale resources. These would be primarily procured through RFPs that would include 525 MW of renewables with in service dates of 2018 and 2019—just 3 years after the stipulation signing and well before Gulf's need. It also calls for the rapid procurement of customer sited distributed generation in 2017

[37] https://goo.gl/0PzLd5
[38] https://goo.gl/5v7fRj

and 2018. This 150 MW of DG alone is approximately ¾ of the Scherer 3 capacity needed in 2023. The stipulation also calls for investment in energy efficiency and capital expenditure limits on existing coal plants.[39]

Q. Gulf argues because its share of Scherer 3 was originally purchased in 1981 with the intent of being used in the future as a dedicated retail customer resource, that alone is reason to simply adopt that 35 year old plan now. Can you comment on that?

A. It has been my experience, having worked in the regulated utility industry in many jurisdictions throughout the U.S. over the past three decades, that regulated electric utility commissions seek the best current evidence and judge the prudence of utility cost recovery proposals based on that evidence. This is not just a matter of custom and practice, but also commonsense—to protect captive customers from undue rate increases. I can see no justification for now burdening Gulf's customers with an imprudent and non-least cost solution to future reliability needs simply because of a decision that the company made 35 years ago. Gulf took the risk and had a responsibility to mitigate it.

Q. Are you aware of any Florida precedent that might be germane to this issue?

A. Yes. In fact, Gulf witness Deason testified about it (Pages 17-18). As part of its rate case in 1989, Gulf proposed transferring 63 MW of the 212 MW of Scherer

[39] Georgia Power IRP Stipulation, Exhibit PHM-10.

capacity into rates.[40] The bulk of this capacity (44 MW) had become available as a result of a default by Gulf States Utilities on a wholesale power contract with Gulf. Mr. Deason acknowledges that the commission denied this request to put a portion of Scherer into rate base because: 1) there was no current need for the capacity on the retail system; 2) the proposal for the 44 MW was only being made because of the contract default; and 3) because only the shareholders derive benefit from the off-system sales they should absorb any liability related to inability to sell wholesale power and retail customers should be insulated from this liability. [41]

Q. What do you conclude from the Commission's decision in that proceeding?

A. The issue there was directly analogous to Gulf's proposal today in two ways. First, the Commission found the current lack of need for the available capacity important and a reason for not burdening customers with the unnecessary costs. I have already described that this is also true for Scherer 3, and Gulf confirms this with its own data.[42] Second, because the off-system sales had the potential to benefit shareholders rather than customers, the Commission found that shareholders now faced with a potential financial loss from the default should absorb this liability given that customers had no need for the excess capacity. This is also clearly analogous to the present Scherer situation, where Gulf has

[40] Docket No. 891345-EI, and Deason Direct Testimony, at 17.
[41] *Ibid.*
[42] Exhibit PHM-3.

attempted but failed to find buyers for its excess capacity at its required return and is therefore now proposing to shift this financial burden to customers despite them not needing it.

Q. What evidence do you have that Gulf's decision to allocate Scherer power to customers was driven by the fact that it was no longer able to profitably engage in off-system sales.

A. In its response to discovery, Gulf explains its efforts in recent years to enter into either long term wholesale contracts, or to pursue an asset sale.[43] Gulf pursued numerous long-term wholesale contracts, both solicited and unsolicited, including 13 RFPs, without success. They also explored possible asset sales and determined that "there do not currently appear to be any **economically viable** asset sale opportunities." [emphasis added][44] This response indicates that Gulf made serious efforts to either sell the Scherer asset or capacity but could not find buyers in the market and therefore is now attempting to off-load it to its captive customers.

Q. Please summarize your testimony regarding Gulf's proposal to move Scherer 3 into rate base.

A. My testimony shows that Gulf's proposal to burden ratepayers with financial responsibility for Scherer 3 capacity is not justified or in the public interest, because:

[43] Exhibit PHM-2.
[44] *Ibid.*

1. Customers have no need for new capacity resources through at least 2023, so absorbing Scherer 3 power now will not benefit them.

2. Any need for new capacity or energy resources in 2023 and beyond is speculative, and there is ample time to refine forecasts and procure alternative resources later if necessary.

3. It will exacerbate an already dangerously undiversified portfolio at a time when heavy exposure to coal resources is considered financially risky by many in the industry, it diverges from current trends to divest of coal resources, and alternative renewable resources are both affordable and could provide a hedge against risk.

4. Gulf has failed to analyze any alternatives to meet the need in 2023 and beyond, consistent with planning best practices and the desire to identify the least cost solutions.

5. Not only has Gulf failed to analyze whether Scherer 3 is an optimal and least cost solution for its ratepayers, but there is substantial evidence that it is not, and that Gulf has plenty of time to perform this analysis and procure alternative resources.

Q: Does this conclude your testimony?

A. Yes.