
BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

**IN THE MATTER OF THE APPLICATION OF)
OKLAHOMA GAS AND ELECTRIC)
COMPANY FOR COMMISSION)
AUTHORIZATION OF A PLAN TO COMPLY)
WITH THE FEDERAL CLEAN AIR ACT AND) CAUSE NO. PUD 201400229
COST RECOVERY; AND FOR APPROVAL OF)
THE MUSTANG MODERNIZATION AND)
COST RECOVERY)**

**Rebuttal Testimony of
Jeremy I. Fisher, PhD**

**On Behalf of
Sierra Club**

January 26, 2014

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1 **1. INTRODUCTION AND PURPOSE OF TESTIMONY**

2 **Q Please state your name, business address, and position.**

3 **A**My name is Jeremy Fisher. I am a Principal Associate with Synapse Energy
4 Economics, Inc. (“Synapse”), which is located at 485 Massachusetts Avenue,
5 Suite 2, Cambridge, Massachusetts.

6 **Q Are you the same Jeremy Fisher who submitted direct testimony in this case**
7 **on December 16, 2014?**

8 **A**Yes, I am.

9 **Q What is the purpose of your cross-answering testimony today?**

10 **A**My testimony replies to the responsive testimony of Mr. Scott Norwood,
11 testifying on behalf of Oklahoma Industrial Energy Consumers (“OIEC”) on
12 December 16, 2014. Mr. Norwood reviewed the environmental compliance plan
13 of Oklahoma Gas and Electric (OG&E or “the Company”), and largely dismissed
14 the model runs performed by the Company under the carbon dioxide (“CO₂”)
15 emissions-constrained sensitivity.

16 I review Mr. Norwood’s contention that “the Company’s CO₂ sensitivity appears
17 to significantly overstate costs that would likely be incurred as a result of EPA’s
18 recently proposed regulations of carbon emissions from existing generating
19 units.”¹

20 **Q Do you agree with Mr. Norwood’s contention?**

21 **A**No. Mr. Norwood has not supported his contention with any analysis, and appears
22 to have largely confused the average and marginal costs of carbon mitigation. In
23 contrast, my direct testimony showed that a reasonable assessment of OG&E’s
24 compliance obligation under the current proposed EPA carbon rule should be
25 informed by a CO₂ price, and that the CO₂ price considered by the Company
26 should be included in its base-case.

¹ Responsive testimony of Mr. Scott Norwood, page 5, lines 5-8.

1 I still believe that the Company's CO₂ price sensitivity should be considered the
2 base-case assumption, and that assessing the future of OG&E's fleet without a
3 carbon price is imprudent.

4 **2. OG&E COMPLIANCE OBLIGATIONS UNDER EPA'S CLEAN POWER PLAN**

5 **Q What is the basis for Mr. Norwood's belief that the Company's CO₂**
6 **sensitivity "overstates costs" from EPA's Clean Power Plan?**

7 **A** Mr. Norwood states that the "[CO₂] sensitivity analysis [used by the Company]
8 does not attempt to model the provisions of EPA's proposal and, in fact, appears
9 to significantly overstate the potential cost impact of EPA's proposed carbon
10 regulation in a number of ways."² He then cites the lack of consideration for
11 carbon mitigation from energy efficiency or wind energy purchases from OG&E,
12 and the "significant carbon mitigation that has already occurred in Oklahoma due
13 to the announced retirement of approximately 1,410 MW of existing coal-fired
14 generating capacity owned by PSO and GRDA."³ Mr. Norwood seems to draw his
15 conclusion that a carbon price in Oklahoma is unlikely from the argument that "to
16 the extent Oklahoma is allowed to use its vast potential for wind energy as a
17 carbon mitigation resource, there may be little need for re-dispatch of coal
18 resources for carbon mitigation...."⁴

19 I suspect that Mr. Norwood's impression is based on his understanding of EPA's
20 June 2014 proposed Clean Power Plan ("CPP") to mitigate emissions of CO₂ from
21 existing generating units, but I disagree with his assessment.

22 Below, I summarize my response to each of Mr. Norwood's arguments regarding
23 compliance with the CPP sequentially, and explain why each fails to justify
24 exclusion of a price for CO₂ emissions from OG&E's base case assumptions.
25 Each will be explained in more detail later in my testimony.

² Responsive testimony of Mr. Scott Norwood, page 21, line 11-13.

³ Responsive testimony of Mr. Scott Norwood, page 21, line 21 through page 22 line 2.

⁴ Responsive testimony of Mr. Scott Norwood, page 18, lines 11-15.

- 1 1. Mr. Norwood: The Company should attempt to model the provisions of
2 the EPA proposal. As I explain below, modeling the building blocks of the
3 CPP is fraught and not necessarily meaningful. I do not believe that
4 actually modeling this proposal using EPA’s “building blocks” is
5 necessary to assess whether the Company can meet CPP targets. As I
6 showed in my direct testimony, reviewing the Company’s mass-based
7 emissions against EPA illustrative targets on a *pro-rata* basis is, at this
8 stage, an appropriate means of assessing OG&E’s obligations.
- 9 2. Mr. Norwood: Energy efficiency and wind energy purchases could reduce
10 compliance costs. While it is true that increasing energy efficiency and
11 renewable energy would likely reduce compliance costs in the CPP,
12 neither the Company’s proposed plan, nor any model offered by Mr.
13 Norwood, incorporates relative increases in energy efficiency or
14 renewable energy purchases to reduce emissions compliance requirements.
15 To support his position, Mr. Norwood would have to show that, with
16 OG&E’s planned efficiency and wind-energy purchases, the Company
17 would meet rate targets. As I show later, under the rate-based compliance
18 mechanism in the CPP, Oklahoma would have to increase wind
19 penetration two and a half times above the incremental EPA targets for
20 2030 to eliminate the gas-coal re-dispatch compliance cost. Mr. Norwood
21 has not shown that OG&E is currently on this path.
- 22 3. Mr. Norwood: Announced coal retirements from other Oklahoma utilities
23 reduce the cost of compliance. Under the rate-based compliance
24 mechanism in the CPP, coal retirements result in fairly little progress
25 towards compliance; under the mass-based mechanism, coal retirements
26 have value towards compliance. However, OG&E should not expect, *a*
27 *priori*, to be a beneficiary of other utilities’ actions to reduce mass CO₂
28 emissions. As I discuss later, under a mass-based system, OG&E should
29 expect to pay the opportunity cost of emissions reductions – i.e., a market

price for CO₂ – even if emissions reductions are enabled by another utility’s actions.

4. Mr. Norwood: Large amounts of wind in Oklahoma should reduce the need to replace coal with natural gas. Under a mass-based mechanism, wind producers in Oklahoma would likely see additional revenues from allowance trading, but would not necessarily reduce Oklahoma’s compliance burden unless wind farms actively displace fossil generators in Oklahoma. Under the rate-based mechanism, Oklahoma would have to more than double the amount of wind projected under the EPA’s 2030 target for the state to avoid coal-to-gas switching, and I do not believe that Mr. Norwood has demonstrated that the Company’s compliance plan is on this trajectory.

Q Can you provide an overview of the CPP?

A The Clean Power Plan is EPA’s proposal to meet CO₂ emissions limitations from existing sources using a Best System of Emissions Reductions (“BSER”). EPA has structured the CPP around four fundamental “building blocks” that represent possible means for achieving the established emissions standard: (1) increasing existing coal plant efficiency, (2) displacing coal generation with existing natural gas, (3) increasing renewable energy acquisitions, and (4) implementing energy efficiency programs. Taken together, EPA estimates that these programs will reduce emissions by a certain amount in each state. EPA’s targets for each state are set as a rate, measured in pounds of CO₂ per megawatt-hour (lbs/MWh). The rate has been a source of confusion to many parties: it represents both projected emissions from existing sources, as well as generation from new renewable energy and energy efficiency programs.

The CPP sets forth two basic routes for reducing state CO₂ emissions from existing sources: states can either meet the rate-based target using a combination of the building blocks or other programs, or meet an alternate mass-based target, measured in total tons of CO₂. EPA’s proposal allows states to choose the metric by which they measure compliance.

1 The rate-based mechanism is, to my understanding, a fairly unique measure of
2 compliance, while the mass-based system is similar to the result of a cap-and-
3 trade schema, currently employed for national sulfur dioxide (“SO₂”) emissions
4 under the Acid Rain Program, regionally for nitrogen oxides (“NO_x”) budget
5 trading program, and for CO₂ in California and Regional Greenhouse Gas
6 Initiative (“RGGI”) states.

7 **Q Are the rate-based and mass-based approaches similar in their accounting?**

8 No. The rate-based approach, at least as used in EPA’s target-setting, assigns
9 credit for renewable energy and energy efficiency programs implemented by
10 entities in the state, apparently regardless of their impact. The mass-based
11 approach assigns credit for stack-based emissions reductions.

12 Mr. Norwood appears to conflate these two accounting schemas when he claims
13 that Oklahoma will doubtless receive credit for planned retirements and the
14 significant wind energy potential in the state. As I will discuss in a moment, coal
15 retirements are of particular value under the mass-based approach, and only
16 nominally valuable under the rate-based approach. On the flip side, wind energy
17 may have higher value under the rate-based approach than under the mass-based
18 approach.⁵

19 **Q Please describe how the CPP should be modeled under a mass-based**
20 **compliance scheme.**

21 **A** The mass-based compliance mechanism is the easier place to start: the operational
22 and capacity expansion impacts of a mass-based emissions reduction target are
23 well understood and readily modeled. In addition, because of the accounting
24 mechanism in the proposed CPP, coal retirements are likely to ease compliance

⁵ The value of wind to a particular state is actually highly uncertain in the current CPP proposal. The initial proposal suggests that, under the rate-based approach, renewable energy built in-state should be credited to state utilities; EPA also accepted comment if out-of-state entities should be assigned credit for purchased renewable energy credits (“RECs”) (i.e. if Arkansas utilities purchase Oklahoma wind, Arkansas would receive the credit rather than Oklahoma). A recent Notice of Data Availability (“NODA”) from EPA further suggests that EPA is considering applying credit from renewable energy based on marginal emissions rates, rather than on average fossil emissions rates. The degree to which Oklahoma would benefit from wind under a rate-based approach is quite uncertain.

1 more readily in states that choose mass-based compliance than in states that
2 choose rate-based compliance. I'll explain this more when I discuss the rate-based
3 mechanism.

4 As I stated in my direct testimony, the CO₂ price used by the Company appears to
5 represent a reasonable proxy cost that results in CO₂ emissions reductions
6 commensurate with EPA's illustrative mass-based targets – assuming that OG&E
7 is responsible for a pro-rata share of emissions reductions in Oklahoma.

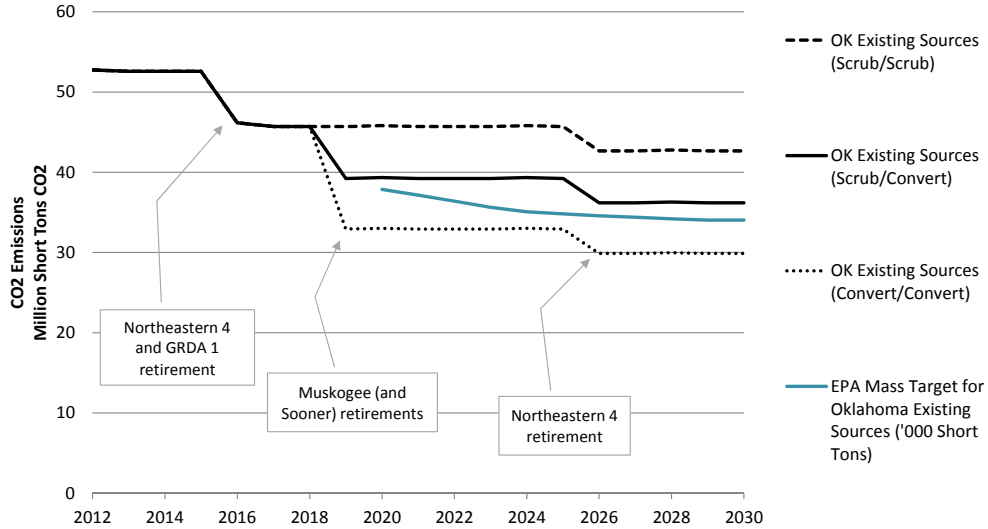
8 **Q Do announced retirements by other Oklahoma utilities allow OG&E to avoid**
9 **incurring a compliance cost with CO₂ regulations?**

10 **A** No. Mr. Norwood suggests that the planned retirement of coal-fired units at
11 Public Service Company of Oklahoma ("PSO") and Grand River Dam Authority
12 ("GRDA") could account for significant carbon mitigation, and implies that little
13 or no additional mitigation will be required from OG&E. However, it is not clear
14 if the announced retirements of the Northeastern units in 2016 and 2026, and
15 Grand River Energy Center ("GREC", previously the "GRDA Coal Fired
16 Complex") unit 1 in 2016 will be sufficient to allow the State of Oklahoma to
17 meet its commitment under a mass-based approach.

18 Figure 1, below, shows estimated CO₂ emissions from existing sources in
19 Oklahoma,⁶ with fixed 2012 capacity factors (according to EPA data), juxtaposed
20 with EPA's illustrative mass-based target for Oklahoma. I've decremented
21 emissions in three different scenarios with the retirement of Northeastern, GREC
22 1, and Muskogee and Sooner in 2019.

⁶ As defined and used by EPA in setting the CPP proposed goal, from goal-setting Technical Support Document (TSD), data available at http://www2.epa.gov/sites/production/files/2014-06/20140602tsd-egrid-methodology_0.xlsx

Figure 1. Oklahoma CO₂ emissions from existing sources under various scenarios, and EPA illustrative mass-based target for existing sources only.⁷



The three black lines show a trajectory of state emissions (again, with fixed capacity factors) for existing sources under the Scrub/Scrub, Scrub/Convert, and Convert/Convert scenarios laid out by OG&E. This chart likely undercounts expected emissions because the converted units, once converted, have been excluded from this chart, and the increase in capacity factors that OG&E projects without a CO₂ price have also been excluded. The chart shows that under the Scrub/Scrub scenario (Mr. Norwood's preferred scenario), Oklahoma remains well above the EPA's intended target in all years. Under the Scrub/Convert scenario, Oklahoma approaches, but does not meet, the mass-based target. Under the Convert/Convert scenario, Oklahoma meets (and slightly exceeds) the target.

This story is not markedly different than the finding in my direct testimony for OG&E – this simple analysis suggests that the additional retirement of Sooner would readily allow the state to meet compliance obligations under the CPP with a mass-based approach. A more detailed, comprehensive state-wide analysis would likely be required to determine if additional measures would be required under either the Scrub/Convert or even Convert/Convert scenarios to ensure that the state meets its intended target, but an initial review suggests that either a

⁷ Source: modified version of Synapse Clean Power Plan Planning Tool (CP3T).

1 carbon price (reducing capacity factors from coal units), or the retirement
2 commitment from Sooner would likely ensure that the state meets a mass-based
3 target.

4 To the extent that Oklahoma approaches its mass-based emissions target through
5 the actions of PSO and GRDA, I assume that these utilities would (rightly)
6 demand to have some share of their ultimate compliance costs be paid by OG&E
7 – after all, OG&E’s compliance burden will have been lightened by PSO’s
8 actions. Indeed, PSO considered CO₂ prices in its determination to retire units at
9 Northeastern Power Station in PUD 201200054, meaning that it has effectively
10 internalized a cost that Mr. Norwood suggests OG&E can otherwise avoid.

11 Similarly, to the extent that OG&E and other Oklahoma entities are able to reduce
12 their emissions more extensively than entities in other states, Oklahoma utilities
13 should command a price for CO₂ allowances sold to other utilities under a mass-
14 based system.

15 Thus, in general, OG&E should properly model the opportunity cost of emissions
16 reductions – i.e., the opportunity to either reduce compliance costs through
17 additional emissions reductions, or the opportunity to sell additional reductions to
18 other utilities who cannot reach compliance as inexpensively.

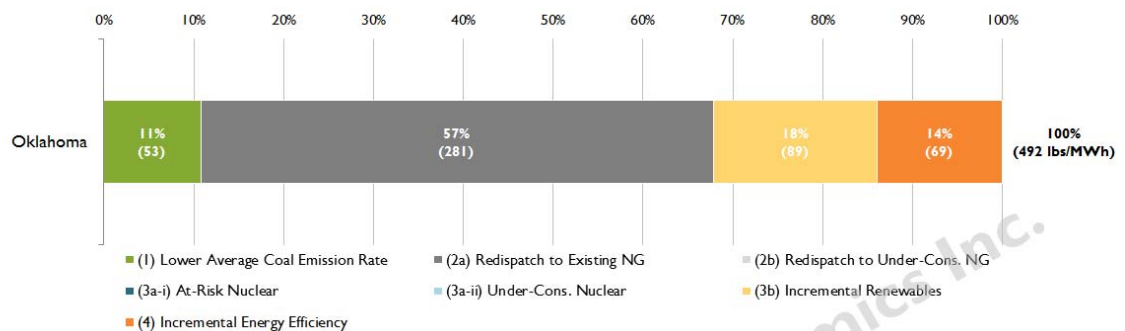
19 Using a price that allows the Company to meet its pro-rata compliance obligation
20 is a reasonable first-order approximation of the opportunity cost of compliance
21 under a mass-based target. I believe that the Company’s CO₂ price used in the
22 sensitivity accomplishes this task, and is therefore a reasonable proxy that should
23 be included in the Company’s base case.

24 **Q Please describe how the CPP should be modeled under a rate-based**
25 **compliance scheme.**

26 **A** The rate-based compliance scheme is much more difficult to model, and as far as
27 I am aware, PacifiCorp (in Utah, Wyoming, and Oregon) is the only utility
28 attempting to model many of the rate-based mechanisms in an Integrated
29 Resource Plan (IRP)-type setting.

1 The rate-based compliance mechanism sets a rate target for individual states
 2 based on an (outwardly) simple formula, in which emissions from existing
 3 generators (circa 2012) are divided by generation from existing generators (again,
 4 circa 2012) *plus* generation from renewable energy (“RE”) and energy efficiency
 5 (“EE”) that EPA considers reasonable for future years. Importantly, a large
 6 fraction of the compliance target is based on the assumption that existing natural
 7 gas combined cycle (“NGCC”) units can operate at a fairly high capacity factor
 8 (70%) and displace coal in the process. In fact, in Oklahoma, more than half of
 9 the target (57%) in 2030 is based on the assumption that existing NGCC units in
 10 Oklahoma can displace existing coal (see Figure 2, below).

11 **Figure 2. Oklahoma Emissions Reduction Target from EPA Clean Power Plan, by**
 12 **Building Block.⁸**



13
 14 EPA’s formulation assumes that a decent amount of renewable energy, amounting
 15 to about 7.1 TWh in Oklahoma (in 2030),⁹ will effectively displace a mix of gas
 16 and coal *after* the NGCC “re-dispatch.”

17 States or utilities seeking to model the impact of the CPP under a rate-based
 18 compliance scheme need to find a least-cost solution that reduces the emissions
 19 rate of existing fossil generators while including the amount of EE and RE as an
 20 additional factor in that emissions rate. I am not aware of any models currently set
 21 up to optimize this solution. PacifiCorp, cited earlier, has found that it requires

⁸ Source: Synapse Energy Economics. 2014. Synapse 111(d) Cost Estimate Tool. Available at <http://synapse-energy.com/tools/111d-cost-estimate-tool-states>

⁹ Source: Synapse Energy Economics. 2014. Synapse 111(d) Cost Estimate Tool. Tab BB3b, cell D40.

1 significant manual (i.e., non-optimal) trial and error to co-optimize dispatch and
2 EE and RE resources to meet state and regional targets.

3 **3. MODELING THE RATE-BASED PROVISIONS OF EPA’S PROPOSAL DOES NOT**
4 **ADD SIGNIFICANT VALUE**

5 **Q Mr. Norwood contends that the Company’s failure to model the building**
6 **blocks of the Clean Power Plan is problematic. How do you respond?**

7 **A** I disagree. As explained above, modeling the rate-based building blocks of the
8 current CPP proposal is problematic because there are numerous ambiguities in
9 the current EPA proposal. Use of a CO₂ price proxy that achieves similar mass-
10 based targets to the CPP, as OG&E has done, is thus appropriate.

11 As I discussed earlier, as far as I am aware, PacifiCorp is the only utility to
12 publically attempt to model the rate-based provisions of the CPP. One of the
13 results is that PacifiCorp has had to invent a difficult and roundabout mechanism
14 to shoehorn rate-based compliance into electric system models that are not
15 designed for this task. The outcome is a process that PacifiCorp admits is nowhere
16 near optimal, and is imbued with logical *non sequiturs*. For example, PacifiCorp
17 has decided to assume that new fossil sources would also be covered under the
18 same emissions targets because to exclude new gas would open a gaping
19 loophole.¹⁰ As such, their model effectively assumes that no new gas may be built
20 in Oregon – ever. As illustrated by this example, I think that until such
21 uncertainties as the extent of coverage, how compliance is measured, and the
22 impact of efficiency and renewable energy on in-state and out-of-state resources
23 is decided, attempting to specifically model the rate-based provisions of the CPP
24 is a low value proposition.

25 I thus agree with the Company’s use of a CO₂ price mechanism, but think that it
26 should be considered in the base case, rather than as a sensitivity.

¹⁰ Under the rate-based mechanism, if new gas is excluded, utilities could simply replace existing gas with new gas and meet compliance targets without reducing any emissions at all.

1 **4. NORWOOD DOES NOT MODEL ADDITIONAL EFFICIENCY OR WIND FOR CPP**
2 **COMPLIANCE**

3 **Q How do you respond to Mr. Norwood’s contention that “to the extent**
4 **Oklahoma is allowed to use its vast potential for wind energy as a carbon**
5 **mitigation resource, there may be little need for re-dispatch of coal resources**
6 **for carbon mitigation?”**

7 **A** Based on the current CPP proposal and the math therein, and holding all else
8 constant,¹¹ I estimate that Oklahoma would have to increase wind generation by
9 253% over EPA’s 15.5 TWh target in 2030 – or to about 39.4 TWh¹² – to meet
10 the same emissions target without significant re-dispatch of existing natural gas.
11 While Oklahoma may indeed have the potential to develop such wind resources,
12 OG&E’s currently proposed compliance plan does not move in that direction, and
13 thus I do not think that it is reasonable to simply assume other compliance
14 directions, such as re-dispatch, will not occur.

15 In addition, Mr. Norwood has not shown that the Company’s plan produces
16 anywhere near enough wind or efficiency to offset the re-dispatch of natural gas
17 and coal units at the level assumed in the rate-based compliance scheme.

18 **5. NORWOOD CONFUSES MARGINAL AND AVERAGE COMPLIANCE COSTS**

19 **Q Mr. Norwood asserts that due to the “announced retirement of**
20 **approximately 1,410 MW of existing coal-fired generating capacity owned by**
21 **PSO and GRDA,” compliance costs in Oklahoma will be minimal. What is**
22 **the impact of these retirements on rate-based compliance?**

23 **A** Under a rate-based scheme, the retirement of coal units actually does relatively
24 little to meet compliance. This is because a coal retirement removes both
25 emissions from the rate numerator, as well as energy from the rate denominator.
26 As a highly simplified example, imagine a state with two identical coal generators
27 with an emissions rate of 2,000 lbs CO₂/MWh. Retiring one of the units would
28 reduce CO₂ mass by 50%, but the *rate* of the remaining system (i.e., the other
29 unit) would remain the same – at 2,000 lbs CO₂/MWh.

¹¹ i.e. no retirements

¹² 39.4 TWh of wind is roughly equivalent to 11 GW of wind at 40% capacity factor.

1 The rate impact of energy efficiency and renewable energy will be incrementally
2 greater once coal units are retired, but under a rate-based compliance scheme, coal
3 unit retirements do not net significant compliance benefits. For example,
4 accounting for the GRDA and PSO retirements, Oklahoma would still have to
5 increase wind 174% above EPA 2030 targets (to 27 TWh in 2030) to avoid coal
6 re-dispatch and still hit the rate-based target.

7 In contrast, under a mass-based compliance scheme, coal retirements can net a
8 significant reduction (as I showed earlier). However, in order to count coal
9 retirements towards mass-based compliance, then one should model a marginal
10 opportunity cost, which Mr. Norwood insists is uncalled for in this circumstance.

11 I suspect that Mr. Norwood has confused the average and marginal cost of
12 emissions abatement, and perhaps this is the source of his contention that an
13 emissions cost is unwarranted in assessing the impact of the CPP.

14 **Q Why do you think that Mr. Norwood has confused the average and marginal**
15 **emissions costs?**

16 **A** OIEC issued discovery on me, asking for “the CO₂ price forecast used for the
17 Synapse Energy Economics Cost Estimate Tool for States including Oklahoma.”¹³
18 The citation refers to the Synapse 111(d) Cost Estimate Tool, an output of which
19 is shown in Figure 2, above. A close inquiry of the tool would show that it does
20 not generate an Oklahoma price forecast; rather, it simply prices the differential
21 gas-coal dispatch at EPA’s assumed “global” marginal cost of abatement – i.e.
22 \$33 per metric ton of CO₂.¹⁴

23 OIEC also asked why “it would be appropriate to include any positive CO₂
24 emission costs” if the “net cost impact of compliance with [the] CPP is

¹³ Discovery Request from OIEC to Sierra Club 1.17. Attached as Rebuttal Exhibit JIF-1

¹⁴ Source: Synapse Energy Economics. 2014. Synapse 111(d) Cost Estimate Tool. Tab RefTables, lines 15-16. Sourced from EPA’s GHG Abatement TSD, p.3-26.

1 determined to be negative.”¹⁵ This inquiry clearly confuses marginal cost of
2 abatement with the average cost of compliance.

3 Mr. Norwood’s confusion likely stems from the fact that Synapse’s tool (upon
4 which I have not relied in this case) estimates that in total, the avoided cost of
5 generation from renewable energy and energy efficiency exceeds the cost of
6 compliance – resulting in a net benefit to Oklahoma ratepayers. This tool
7 estimates that the *net* (or average) cost of compliance in Oklahoma is negative
8 (i.e., is a benefit). However, the *marginal* cost of abatement is not negative – as I
9 noted before, EPA estimates that well over half of Oklahoma’s compliance will
10 be based on the re-dispatch of natural gas, which requires a positive price on CO₂.

11 **Q Would you please clarify what you mean by the marginal cost of abatement?**

12 **A** The marginal cost of compliance is the cost to reduce the next ton of emissions. If
13 compliance is to be achieved through increasing the dispatch of lower emissions
14 (but generally higher variable cost) gas resources and reducing the dispatch of
15 high emissions (and generally lower variable cost) coal resources, it would likely
16 require the implementation of a price on emissions, or result in a shadow price on
17 emissions. In the technical support documents (“TSDs”) accompanying the CPP,
18 EPA estimates this cost at about \$33 per metric ton nationally.¹⁶ In IPM modeling
19 accompanying the CPP, EPA estimates this cost at about \$25-\$27 per short ton in
20 Oklahoma.¹⁷ This per-ton emissions cost is the marginal cost of abatement that
21 would be realized at existing fossil-fired generators, like Sooner and Muskogee.

22 Overall, having implemented gas re-dispatch, increased renewable energy and
23 energy efficiency, the cost of generation avoided by these resources could exceed
24 the cost of implementation – meaning that the average cost of compliance could

¹⁵ Discovery Request from OIEC to Sierra Club 1.10. Attached as Rebuttal Exhibit JIF-1

¹⁶ See Clean Power Plan GHG Abatement Measures Technical Support Document. June 10, 2014. Page 3-26. “The EPA also analyzed dispatch-only scenarios where shifting of generation among EGUs was limited by state boundaries. In these scenarios with less re-dispatch flexibility, the cost of achieving the quantity of CO₂ reductions corresponding to a nationwide average NGCC unit utilization of 70% was \$33 per ton.” Available at <http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-ghg-abatement-measures.pdf>

¹⁷ See Direct Testimony of Jeremy Fisher, Figure 4.

1 be zero, or even negative, and yet the marginal cost of abatement is positive. It is
2 possible for both of these conditions to be simultaneously true.

3 **Q Did Mr. Norwood execute any analysis to support his contention that**
4 **retirements and Oklahoma’s vast wind potential could, or should result in a**
5 **zero compliance cost for the Clean Power Plan?**

6 **A** No. When asked to provide “any analysis that Mr. Norwood conducted or relied
7 upon to support his assertion[s],” OIEC was unable to produce any workpapers or
8 analysis, instead re-explaining Mr. Norwood’s position laid out in testimony, and
9 casting uncertainty on “whether, when or in what form the regulations will be
10 adopted, or how they will be applied to OG&E.”¹⁸ According to his discovery
11 response, the only analysis in Mr. Norwood’s possession is the Synapse 111(d)
12 Cost Estimate tool, developed by my colleagues. Mr. Norwood neither conducted
13 nor reviewed modeling, and did not assess the amount of wind or re-dispatch that
14 would be required for compliance with the proposed rule, quantify the extent to
15 which compliance would be eased by announced retirements, or estimate the
16 opportunity cost of emissions in Oklahoma.

17 **Q Should the impact of a regulation be ignored simply because “it is not**
18 **possible to know for certain whether, when or in what form the regulations**
19 **will be adopted?”**

20 **A** No. Just because a regulation is pending and not yet finalized does not mean that
21 one can assume that there is zero probability of its implementation. Generally, in
22 forward-looking modeling, it is important to account for both known and defined
23 costs and constraints, as well as emerging or pending regulations that can be
24 reasonably assessed to impact utility decisions. I believe that Mr. Norwood would
25 agree with this statement, as demonstrated by his recent testimony in another
26 jurisdiction.

27 In late 2013, Mr. Norwood filed testimony on behalf of the Florida Office of
28 Public Council in an environmental compliance docket not dissimilar to the
29 docket before the Oklahoma Corporation Commission today. In that docket, Mr.

¹⁸ OIEC Response to Sierra Club Data Request 1.4, attached as Rebuttal Exhibit JIF-2.

1 Norwood testified that an environmental compliance plan filed by Gulf Power
2 Company failed to assess “if the cost of complying with future, additional
3 regulations currently being considered by the Environmental Protection Agency
4 (“EPA”) ultimately [could] lead to the early retirement of Plant Smith.”¹⁹

5 He states:

6 Gulf’s so-called environmental compliance analysis for Plant
7 Smith failed to consider the alternative of retiring the plant, despite
8 the fact that an October 2012 Gulf study indicates that the
9 retirement of the Plant Smith coal units could be a lower cost and
10 less risky alternative to retrofitting the plant with environmental
11 controls and making transmission upgrades. By failing to consider
12 retirement alternatives in the Plant Smith compliance analysis,
13 Gulf’s proposed “compliance” plan could result in significant
14 unnecessary stranded investments if the cost of complying with
15 future, additional regulation currently being considered by the
16 Environmental Protection Agency (“EPA”) ultimately leads to the
17 early retirement of Plant Smith. This deficiency in Gulf’s
18 environmental compliance analysis for Plant Smith raises
19 additional serious questions regarding the prudence of Gulf’s
20 proposed environmental compliance plan and transmission upgrade
21 investments for Plant Smith.²⁰

22 In the Florida case, Mr. Norwood argued that failing to assess the costs of a
23 pending regulation on thermal water intake structures (“316(b) rule”) and the
24 disposal of coal combustion residuals (“CCR”) rendered the Company’s
25 assessment incomplete and imprudent.²¹

¹⁹ Direct Testimony of Mr. Scott Norwood in Florida Public Service Commission Dockets 130140-EI, 130151-EI, 130092-EI. November 7, 2013, at page 4, attached as Rebuttal Exhibit JIF-3.

²⁰ *Id.*

²¹ *Id.* pp 19-20.

1 In contrast, in the present case, Mr. Norwood argues that because the final rule
2 regulating emissions of CO₂ from existing sources is supposedly certain to be
3 different from the proposed rule, then the impact of carbon regulations should be
4 discounted, if not ignored altogether. This view is inconsistent with both planning
5 processes used by other utilities and with Mr. Norwood's own recommendations
6 in Florida.

7 **6. CONCLUSION**

8 **Q Please summarize your conclusions in this cross-answering testimony.**

9 **A** Mr. Norwood has recommended that the Company and this Commission sideline
10 the single CO₂ price sensitivity executed by OG&E in this case. I strongly
11 disagree, and believe that the CO₂ price used by the Company in that sensitivity
12 should be included in its base-case, rather than merely as one of several sensitivity
13 cases.

14 As I showed in my direct testimony, the Company's CO₂ price appears consistent
15 with EPA's illustrative mass-based compliance targets on a *pro-rata* basis – as if
16 OG&E were responsible for reducing emissions from its own fleet. Failure to use
17 a CO₂ price does not accomplish the redispach of OG&E's fossil resources as
18 necessary to reach mass-based targets, and is therefore likely not a reasonable
19 case. Either the Company needs to assume a CO₂ price to impact dispatch and
20 ultimately meet the target, or assume that sufficient coal retirements will allow it
21 to meet a mass-based emissions target. While the Company hypothetically could
22 assess compliance with the rate-based emissions targets of the CPP, doing so
23 would require significant changes to the modeling framework used by the
24 Company, and has not been demonstrated by Mr. Norwood to either be a viable or
25 valuable alternative to a CO₂ price.

26 I recommend that the Company evaluate its environmental compliance plan in the
27 presence of a CO₂ price, including one that is higher than the single sensitivity
28 explored by the Company. I believe that assessing the future of OG&E's fleet
29 without a CO₂ price is imprudent.

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

IN THE MATTER OF THE APPLICATION OF)
OKLAHOMA GAS AND ELECTRIC COMPANY FOR)
COMMISSION AUTHORIZATION OF A PLAN TO)
COMPLY WITH THE FEDERAL CLEAN AIR ACT) CAUSE NO. PUD 201400229
AND COST RECOVERY; AND FOR APPROVAL)
OF THE MUSTANG MODERNIZATION AND)
COST RECOVERY)

OKLAHOMA INDUSTRIAL ENERGY CONSUMERS' (OIEC)
FIRST SET OF DATA REQUESTS TO SIERRA CLUB

TO: Laurie Williams
Kristin Henry

Oklahoma Industrial Energy Consumers (OIEC) hereby serves the data requests attached hereto as Attachment "A" upon Sierra Club (Sierra Club) by and through its counsel of record. OIEC requests that Sierra Club respond to each data request separately and fully, in writing and under oath by the person or persons preparing the response within five (5) business days, by delivering its answers and all requested documents and materials to OIEC.

Thomas P. Schroedter
e-mail: tschroedter@hallestill.com
Hall Estill
320 S. Boston, Suite 200
Tulsa, OK 74103

AND

Pat Nixon
e-mail: pnixon@hallestill.com

EACH OF THE REQUESTS HEREIN SHALL BE DEEMED TO BE CONTINUING IN NATURE

AND SIERRA CLUB IS REQUESTED TO SUPPLEMENT ITS RESPONSES AS NECESSARY.

INSTRUCTIONS

1. Reproduce the data request being responded to before the response.
2. Responses to any and all OIEC data requests that are contained herein or that may be filed later should be supplied to OIEC as soon as they become available to Sierra Club. That is, Sierra Club should not hold answers to any requests for which it has responsive data, documents, etc. until responses to any or all other requests are compiled.
3. The response to each data request should be made under oath, as applicable in accordance with OAC 165:5-11-1(c) & (e) by a person competent to testify concerning the response and all documents and exhibits produced as part of the response. With respect to each request, please state (1) the name(s) and title(s) of the person or persons responsible for preparing the responses; and (2) the administrative unit which maintains the records being produced or maintains the data from which the answer was prepared; and (3) the date on which each question was answered.
4. Where information requested is not available in the precise form described in the question or is not available for all years (or other periods or classifications) indicated in a series of years (or other periods or classifications), please provide all information with respect to the subject matter of the question that can be identified in the workpapers and files of Sierra Club or any affiliated entity or all such information that is otherwise available.
5. These data requests shall be deemed to be continuing. Sierra Club is requested to change, supplement and correct its answers to conform to all information as it becomes available to Sierra Club, including the substitution of actual data for estimated data. Responses to requests for information covering a period not entirely in the past (or for which complete actual data are not yet available) should include all actual data available at that time.
6. Wherever responses include estimated information, include an explanation (or reference to a previous explanation) of the methods and calculations used to derive the estimates.

7. OIEC reserves the right to submit additional information requests to Sierra Club or any affiliated entity after receipt of the Sierra Club's answers to these data requests.

Respectfully submitted,

D. Kenyon Williams, Jr.
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320 S. Boston, Suite 200
Tulsa, OK 74103
(918) 594-0519
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ATTACHMENT "A"

OKLAHOMA INDUSTRIAL ENERGY CONSUMERS'
FIRST DATA REQUESTS TO SIERRA CLUB

Electronic files are acceptable.

1. Provide functioning electronic spreadsheet copies of all schedules and exhibits included in the responsive testimony of each Sierra Club witness.
2. Provide workpapers supporting the responsive testimony of each Sierra Club witness.
3. Identify each proceeding during the last five calendar years in which Sierra Club witnesses have recommended that coal-fired power plants be retrofitted rather than retired as part of a utility's proposed environmental compliance plan.
4. Reference the responsive testimony of Sierra Club witness Fisher, provide a listing and brief description of the scope of projects performed by Synapse Energy Economics for Sierra Club during the last five calendar years.
5. Reference the responsive testimony of Sierra Club witness Fisher, provide a listing and brief description of the scope of projects performed by Synapse Energy Economics for EPA or environmental interests other than Sierra Club during the last five calendar years.
6. Reference the responsive testimony of Sierra Club witness Fisher; provide carbon price forecasts published by Synapse Energy Economics in the last five calendar years along with the report supporting the Company's most recent published forecast.
7. Reference the responsive testimony of Sierra Club witness Fisher, provide Synapse Energy Economics most recent estimate of the net cost impact of EPA's proposed carbon regulations (111d) on Oklahoma, along with the forecasted required reduction in annual coal-fired generation (MWh) from 2012 levels underlying this impact estimate.
8. Reference page 11 of the responsive testimony of Sierra Club witness Fisher, provide any analysis conducted by or for Mr. Fisher to assess whether Oklahoma could meet EPA CPP requirements in light of announced coal plant retirements within the state to date and the proposed coal plant conversions presented in OG&E's proposed compliance plan.
9. Reference page 11 of the responsive testimony of Sierra Club witness Fisher; provide any analysis conducted by or for Mr. Fisher to assess a proxy price to represent a possible slate of activities that impact power sector CO2 emissions for Oklahoma and/or OG&E.
10. Reference page 12 of the responsive testimony of Sierra Club witness Fisher, to the extent that the net cost impact of compliance with CPP is determined to be negative (i.e., compliance is forecasted

to produce net benefits excluding health effects) explain why it would be appropriate to include any positive CO2 emission costs in OG&E's compliance analysis.

11. Reference page 14 of the responsive testimony of Sierra Club witness Fisher, please provide the EPA's proposed CO2 emissions reduction goals or requirements for OG&E along with supporting source documents.
12. Reference page 15 of the responsive testimony of Sierra Club witness Fisher, does Figure 1 include emissions from new generating units that are not subject to the EPA's proposed CPP requirements? If so, provide an updated version of Figure 1 with forecasted CO2 emissions only for those OG&E generating units that are subject to the proposed CPP's CO2 emissions reduction requirements.
13. Reference page 17 of the responsive testimony of Sierra Club witness Fisher, please provide any analysis conducted by or for Mr. Fisher to assess whether any CO2 price is required in OG&E's environmental compliance plan analysis to reflect the net cost of compliance with EPA's proposed CO2 emissions reduction goals for existing generating units for the state of Oklahoma.
14. Reference page 18 of the responsive testimony of Sierra Club witness Fisher, please provide any analysis conducted by or for Mr. Fisher to support his testimony that when no units are converted a CO2 price comparable to or in excess of the Company's estimate is required for OG&E to meet their pro-rata target at least through 2028 and provide the source documents that establish EPA's pro-rata requirement for OG&E.
15. Reference page 18 of the responsive testimony of Sierra Club witness Fisher, please provide any analysis conducted by or for Mr. Fisher to support his testimony that in the Scrub/Convert case the Company's CO2 price estimate may be sufficient to meet requirements through all years, although a prudent review might suggest a higher price is required past 2030, and provide the source documents that establish the referenced EPA proposed emission reduction requirements for OG&E.
16. Reference page 18 of the responsive testimony of Sierra Club witness Fisher, please provide any analysis conducted by or for Mr. Fisher to support his testimony that it is appropriate to compare the cost of the Convert case with no CO2 price to the cost of the Scrub/Convert case with a CO2 price, and provide the source documents that establish the referenced EPA proposed emission reduction requirements for OG&E.
17. Provide the CO2 price forecast used for the Synapse Energy Economics Cost Estimate Tool for States including Oklahoma, as provided at <http://synapse-energy.com/tools/111d-cost-estimate-tool-states>.
18. Provide the renewable energy price forecast (\$/MWh) used for the Synapse Energy Economics Cost Estimate Tool for States including Oklahoma and explain the basis for the maximum renewable energy volumes forecasted for Oklahoma in this analysis.

19. Provide the forecasted reduction in coal-fired generation in Oklahoma reflected in the Synapse Energy Economics Cost Estimate Tool for States Oklahoma and explain whether the proposed reduction in coal-fired generation due to OG&E's proposed Scrub/Convert compliance plan is included in the coal-fired generation reduction forecasted in this Synapse model.
20. Reference page 19 of the responsive testimony of Sierra Club witness Fisher; please provide any analysis conducted by or for Mr. Fisher to assess the reasonableness of the referenced carbon prices reflected in EPA's modeling of the implications of the CPP.
21. Reference page 20 of the responsive testimony of Sierra Club witness Fisher, please provide any analysis conducted by or for Mr. Fisher to support the testimony that EPA's shadow price for CO2 emissions represents a reasonable upper bound for Oklahoma.
22. Reference page 21 of the responsive testimony of Sierra Club witness Fisher, please provide any analysis conducted by or for Mr. Fisher that supports the assertion that the Company's CO2 price is a reasonable referenced case.

2196698.1:620435:01539

1.4 Refer to Responsive Testimony of Scott Norwood, page 18, lines 9-17.

- a. Please provide any analysis that Mr. Norwood conducted or relied upon to support his assertion that “there may be little need to re-dispatch coal resources for carbon mitigation.”
- b. Please provide any analyses or documentation in Mr. Norwood’s possession, relied upon or reviewed by Mr. Norwood regarding Oklahoma’s compliance with the EPA’s Clean Power Plan.
- c. Please provide any analyses or documentation in Mr. Norwood’s possession, relied upon or reviewed by Mr. Norwood regarding OG&E’s compliance with the EPA’s Clean Power Plan.
- d. Does Mr. Norwood agree with OG&E’s treatment of carbon costs in its base case?
 - i. If so, please provide any analysis performed by or available to Mr. Norwood to support OG&E’s zero carbon compliance cost.
 - ii. If not, please explain what carbon costs would be appropriate to assume in OG&E’s base case.

OIEC’s Response:

- a. The referenced testimony is based on Mr. Norwood’s review and analysis of EPA’s proposed carbon regulations for existing generating units and reflects the facts that, at present, it is not possible to know for certain whether, when or in what form the regulations will be adopted, or how they will be applied to OG&E.
- b. See <http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule>; and <http://synapse-energy.com/tools/111d-cost-estimate-tool-states>.
- c. As noted on page 18 of Mr. Norwood’s responsive testimony, at present, it is not possible to know for certain whether, when or in what form the regulations will be adopted, or how they will be applied to OG&E. Given these facts, and the fact that other Oklahoma utilities have already taken significant actions to mitigate carbon, there may be little need for OG&E to re-dispatch coal resources for carbon mitigation.
- d. Yes.
 - i. See responses to subpart a., b. and c. above.
 - ii. Not applicable.

Response Prepared by: Scott Norwood

Date: 1/14/15

By responding to these Data Requests, OIEC is not indicating that the provided information is relevant or material and OIEC is not waiving any objection as to relevance or materiality or confidentiality of the information or documents provided or the admissibility of such information or documents in this or in any other proceeding.



DON GAETZ
President of the Senate

J.R. Kelly
Public Counsel

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WILL WEATHERFORD
*Speaker of the House of
Representatives*

November 7, 2013

Ann Cole, Director
Office of Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Docket No. 130140-EI; Public version of Prefiled Direct Testimony of Scott Norwood.

Dear Ms. Cole:

Enclosed for filing by the Office of Public Counsel (OPC) is the public version of the Prefiled Direct Testimony (with accompanying exhibits) of Scott Norwood. This testimony was originally filed on October 16, 2013 on a confidential basis pursuant to a notice of intent to claim confidentiality filed by Gulf Power Company (GPC) on that date.

On November 5, 2013 GPC filed redacted portions of the testimony and exhibits with the Commission, accompanied by a Request for Confidential Classification (Request).

The OPC has replaced the pages and exhibit documents subject to the Request with copies of the pages that Gulf redacted and is submitting this public version for filing in this case. By so filing the public version the OPC does not indicate a position on the merits of the Request; nor does the OPC waive any objections or challenges it may make in any dispute regarding the Request. Furthermore, the OPC will rely on the entire, unredacted testimony and accompanying exhibits filed on October 16, 2013 for the evidence it offers on the issues covered therein.

The public version of the Prefiled Direct Testimony of Scott Norwood has also been served on parties of record and Staff pursuant to the attached Certificate of Service.

Should you have any questions, please do not hesitate to contact our office.

Sincerely,

A handwritten signature in blue ink, appearing to read 'C. Rehwinkel', with a stylized flourish at the end.

Charles J. Rehwinkel
Deputy Public Counsel

Enclosure

cc: Parties of record pursuant to attached Certificate of Service

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing PUBLIC VERSION of the Direct Testimony of Scott Norwood has been furnished by e-mail, U.S. Mail and/or hand delivery to the following parties on this 7th day of October, 2013, to the following:

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Charles J. Rehwinkel
Deputy Public Counsel

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for rate increase by Gulf Power Company

DOCKET NO. 130140-EI

In re: 2013 depreciation and dismantlement study by Gulf Power Company

DOCKET NO. 130151-EI

In re: Petition of Gulf Power Company to include the Plant Daniel Bromine and ACI Project, the Plant Crist Transmission Upgrades Project, and the Plant Smith Transmission Upgrades Project in the Company's program, and approve the costs associated with these compliance strategies for recovery through the ECRC.

DOCKET NO. 130092-EI

CONFIDENTIAL Testimony
FILED: October 16, 2013

Public Version Testimony
FILED: November 7, 2013

PUBLIC VERSION

DIRECT TESTIMONY AND EXHIBITS

OF

SCOTT NORWOOD

ON BEHALF OF THE CITIZENS OF THE STATE OF FLORIDA

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DIRECT TESTIMONY

OF

SCOTT NORWOOD

On Behalf of the Office of Public Counsel

Before the

Florida Public Service Commission

Docket Nos. 130140-EI, 130151-EI, & 130092-EI

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Scott Norwood. I am President of Norwood Energy Consulting, L.L.C.

My business address is 9408 Bell Mountain Drive, Austin, Texas 78730.

Q. WHAT IS YOUR OCCUPATION?

A. I am an energy consultant specializing in the areas of electric utility regulation, resource planning and energy procurement.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I have over 30 years of experience in the electric utility industry. After graduating from the University of Texas in 1980 with a Bachelor of Science degree in electrical engineering, I began my career as a power plant engineer for the City of Austin's Electric Utility Department, where I was responsible for electrical maintenance and design projects for the City's three gas-fired power plants. In January 1984, I joined

1 the staff of the Public Utility Commission of Texas as Manager of Power Plant
2 Engineering. In that capacity, I was responsible for addressing resource planning,
3 fuel, and purchased power cost issues presented in regulatory filings before the Texas
4 Commission. In 1986, I joined GDS Associates, Inc., a consulting firm that
5 specializes in electric utility regulatory consulting and resource planning. I was
6 elected a Principal of GDS in 1990 and directed the firm's Deregulation Services
7 Department until January 2004, when I founded Norwood Energy Consulting, LLC.
8 The focus of my current consulting practice is electric utility planning and regulatory
9 analysis. Exhibit SN-1 provides a more detailed summary of my background and
10 experience.

11
12 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?**

13 A. I am testifying on behalf of the State of Florida's Office of Public Counsel ("OPC"),
14 which represents the interests of consumers in utility rate proceedings before the
15 Florida Public Service Commission ("FPSC" or "Commission").
16

17 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE FPSC?**

18 A. No. This is my first time testifying before the FPSC. However, as outlined in Exhibit
19 SN-1, I have testified in numerous regulatory proceedings involving power plant
20 certification, ratemaking issues, resource planning, environmental compliance,
21 transmission, fuel recovery and other related matters, including cases before state
22 regulatory commissions in Arkansas, Georgia, Illinois, Iowa, Michigan, Missouri,
23 New Jersey, Louisiana, Oklahoma, Texas, Virginia, Washington, and Wisconsin.

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A. The purpose of my testimony is to address (1) whether costs of certain proposed
3 transmission upgrades included in what Gulf Power Company's ("Gulf" or
4 "Company") describes as its proposed environmental compliance plans are eligible
5 for recovery through the Environmental Cost Recovery Clause ("ECRC") as
6 requested by Gulf, and (2) whether the Commission should alternatively approve the
7 recovery of the costs of those transmission facilities through base rates and authorize
8 the subsequent step increase proposed by the Company.

9
10 **Q. HAVE YOU PREPARED ANY EXHIBITS TO SUPPORT YOUR**
11 **TESTIMONY?**

12 A. Yes. I have prepared 6 exhibits, which are attached to my testimony.

13
14 **II. SUMMARY OF TESTIMONY**

15 **Q. PLEASE SUMMARIZE YOUR TESTIMONY AND RECOMMENDATIONS.**

16 A. My testimony addresses Gulf's request to recover the costs of certain transmission
17 upgrades included in what the Company describes as its proposed environmental
18 compliance plans for Plant Crist and Plant Smith. My major findings and
19 recommendations are as follows:

- 20
21 • Gulf has neither performed an analysis to support its Must-Run unit
22 designations and operating policies for Plant Crist and Plant Smith, nor
23 documented instances in which these plants have been operated primarily for

1 Must-Run (rather than economic) purposes in the past. Due to Gulf's failure
2 to provide support for the Company's Must-Run policies, there is no basis for
3 concluding that the \$153 million that the Company proposes to invest for
4 transmission upgrades is prudent and justified by projected fuel savings
5 arising from the elimination of Must-Run operating constraints at these plants,
6 as the Company claims;

7
8 • Gulf's so-called environmental compliance analysis for Plant Smith failed to
9 consider the alternative of retiring the plant, despite the fact that an October
10 2012 Gulf study indicated that retirement of the Plant Smith coal units could
11 be a lower cost and less risky alternative to retrofitting the plant with
12 environmental controls and making transmission upgrades. By failing to
13 consider retirement alternatives in the Plant Smith compliance analysis, Gulf's
14 proposed "compliance" plan could result in significant unnecessary stranded
15 investments if the cost of complying with future, additional regulations
16 currently being considered by the Environmental Protection Agency ("EPA")
17 ultimately leads to the early retirement of Plant Smith. This deficiency in
18 Gulf's environmental compliance analysis for Plant Smith raises additional
19 serious questions regarding the prudence of Gulf's proposed environmental
20 compliance plan and transmission upgrade investments for Plant Smith;

21
22 • The proposed transmission upgrades for Plant Crist and Plant Smith do not
23 meet the criteria established by the Commission to be eligible for recovery

1 through the Commission's ECRC as requested by Gulf. The primary criteria
 2 for cost recovery through the ECRC are that costs be prudently incurred and
 3 legally required to comply with environmental regulations. The proposed
 4 transmission upgrades are not required for environmental compliance and do
 5 not control emissions. The purpose of these upgrades is to improve
 6 transmission reliability and voltage regulation under certain rare outage
 7 conditions in Gulf's Pensacola and Panama City service areas. Moreover,
 8 Gulf has not demonstrated the prudence of these proposed transmission
 9 upgrades due to the Company's failure to provide support for Must-Run
 10 assumptions at each plant, and the failure to consider the Plant Smith
 11 retirement alternative. For these reasons, I recommend that the Company's
 12 request to recover the costs of proposed transmission upgrades for Plant Crist
 13 and Plant Smith through the ECRC be denied; and

- 14
- 15 • Due to Gulf's failure to establish the prudence of proposed transmission
 16 upgrades for Plant Crist and Plant Smith in this case, and due to the significant
 17 uncertainty which exists in the forecasted level of such costs in 2016, I
 18 recommend that Gulf's alternative request to approve now the recovery of the
 19 Plant Crist and Plant Smith transmission upgrade costs through a July 2015
 20 step increase to base rates be denied. In addition, Gulf should not be allowed
 21 to recover the \$637,000 in base rates for projected transmission upgrade costs
 22 for the 2014 test year.
- 23

1 **III. OVERVIEW OF GULF'S PROPOSED "COMPLIANCE" PLANS**
2 **FOR PLANT CRIST AND PLANT SMITH**

3 **Q. PLEASE SUMMARIZE GULF'S REQUEST REGARDING WHAT IT**
4 **DESCRIBES AS ITS ENVIRONMENTAL COMPLIANCE PLANS FOR**
5 **PLANT CRIST AND PLANT SMITH.**

6 **A.** Gulf is seeking approval of proposed revisions to what it describes as its
7 environmental compliance plans for Plant Crist and Plant Smith. The proposed
8 "compliance" plans are described in the Environmental Compliance Program Update
9 Report ("Compliance Report"), which is attached as Exhibit JOV-1 to Gulf witness
10 James O. Vick's direct testimony in Docket No. 130092-EI. In addition, Gulf
11 requests that it be allowed to recover the projected costs of transmission upgrades
12 associated with what the Company characterizes as its proposed environmental
13 compliance plans for Plant Crist and Plant Smith through the Company's ECRC (See
14 Gulf witness Susan D. Ritenour's testimony in Docket No. 130140-EI, page 35).

15
16 In the alternative, the Company requests that it be allowed to recover such
17 costs through base rates. (See Gulf witness Ritenour's testimony in Docket No.
18 130140-EI, page 36).

19
20 **A. PROPOSED PLANT CRIST "COMPLIANCE" PLAN**

21 **Q. PLEASE DESCRIBE THE PLANT CRIST COAL UNITS.**

22 **A.** Gulf's Plant Crist generating station, which is located just north of Pensacola, Florida,
23 includes four coal-fired electric generating units. As summarized in Table 1 below,

the Plant Crist units have a combined summer generating capacity rating of 903 MW. The Plant Crist units supply approximately one-third of the Company's total installed generating capacity.

Table 1

Plant Crist Operating Information

	Capacity	In-Service		Plan Retire		2008-2012 Operating Statistics		
	<u>MW</u>	<u>Date</u>	<u>AGE</u>	<u>Date</u>	<u>AvgEAF</u>	<u>Avg CF</u>	<u>MWh/yr</u>	<u>Fuel\$/MWh</u>
Crist 4	75	1959	54	2024	91.0%	31.5%	211,780	\$54.35
Crist 5	75	1961	52	2026	88.7%	57.5%	385,621	\$51.72
Crist 6	288	1970	43	2035	79.2%	40.2%	1,041,787	\$52.13
Crist 7	<u>465</u>	1973	40	2038	81.3%	57.8%	<u>2,371,618</u>	\$49.29
	903						4,010,807	

Sources: GPC 2013 10-yr Site Plan and Gulf's response to OPC ROG 4-117.

The Crist units are capable of burning natural gas; however, existing pipeline capacity to the plant limits the generation output from natural gas to approximately 75 MW. Gulf has designated the Plant Crist units as Must-Run units for the purpose of maintaining reliability and voltage regulation in the Pensacola area during peak demand periods. (Must-Run units are those that the utility operates under defined conditions to provide voltage support and reliability, regardless of whether they would be called upon under principles of economic dispatch.)

Q. ARE THE PLANT CRIST UNITS EQUIPPED WITH ENVIRONMENTAL CONTROLS NECESSARY FOR MERCURY AND AIR TOXICS STANDARDS ("MATS") COMPLIANCE?

1 A. Yes. Gulf installed a flue gas desulfurization system ("scrubber") in 2009, which
2 serves all four coal units at Plant Crist. Gulf has indicated that with this existing
3 scrubber system the Plant Crist units are capable of meeting MATS requirements,
4 except in instances when the scrubber is out of service. Gulf has also indicated that it
5 would be required to shut down the plant (or add other controls) to meet MATS
6 requirements during such scrubber outage periods.

7
8 **Q. WHICH MATS-RESPONSE OPTIONS DID GULF CONSIDER FOR PLANT**
9 **CRIST IN ITS UPDATED COMPLIANCE PLAN ANALYSIS?**

10 A. Gulf evaluated four MATS-response options for Plant Crist. These options are
11 described in Gulf's Compliance Report (Vick Exhibit JOV-1, pages 17-18 of 34) as
12 follows:

13
14 Option 1: Conversion of the Crist units along with the addition of a gas pipeline to
15 allow Gulf to produce [REDACTED] MW while burning natural gas;

16
17 Option 2: Conversion to allow production of [REDACTED] MW while burning natural gas (no
18 new gas pipeline), with the addition of activated carbon injection ("ACI") plus dry
19 sorbent injection ("DSI") for partially converting to natural gas, along with adding
20 ACI/DSI controls plus the use of ultra-low sulfur coal to achieve MATS compliance;

21

1 Option 3: Conversion to allow production of [REDACTED] MW while burning natural gas (no
2 new gas pipeline), plus certain transmission additions to reduce the Must-Run
3 requirements to [REDACTED] MW; and

4
5 Option 4: Construct the transmission upgrades necessary to eliminate the Must-Run
6 requirements that Gulf applies to the Crist units.

7
8 **Q. WHICH OF THE FOUR RESPONSE ALTERNATIVES EVALUATED BY**
9 **GULF WAS SELECTED AS THE PREFERRED MATS RESPONSE**
10 **STRATEGY FOR PLANT CRIST?**

11 A. Gulf's analysis indicates that Option 4, the "Transmission Only" plan, would achieve
12 what it terms as "MATS compliance" at the lowest reasonable cost of the four options
13 considered (See Revised September 24, 2013 Compliance Report, Table 3.3-1, page
14 20 of 34).

15
16 **Q. WHAT ARE THE TRANSMISSION UPGRADES WHICH GULF PLANS TO**
17 **INSTALL UNDER WHAT IT DESCRIBES AS PLANT CRIST MATS**
18 **COMPLIANCE OPTION 4?**

19 A. The transmission upgrades evaluated in MATS-response Option 4 for Plant Crist
20 include the installation of a new 60-mile, 230 kV transmission line from the
21 Company's Alligator Swamp substation north to the Florida-Alabama state line near
22 Brewton, Alabama, along with a Static Var Compensator ("SVC") and a Capacitor
23 Bank for voltage regulation during contingencies in the Pensacola service area (See

Gulf witness P. Chris Caldwell's testimony in Docket No. 130140-EI, pages 18-19).
The estimated total capital cost of these transmission upgrades, which are scheduled for completion by 2018, is approximately \$76 million (See Gulf witness Vick's April 1, 2013 testimony in Docket No. 130092-EI, page 8).

B. PROPOSED PLANT SMITH COMPLIANCE PLAN

Q. PLEASE DESCRIBE THE PLANT SMITH COAL UNITS.

A. Gulf's Plant Smith facility includes two coal-fired electric generating units (Units 1 and 2), which have a combined summer generating capacity of 357 MW. In addition, two natural gas-fired generating units, including a 556 MW combined cycle unit (Unit 3) and a 32 MW combustion turbine unit (Unit 4), are also located at the Plant Smith site, which is located just north of Panama City, Florida. Operating statistics for Plant Smith Units 1, 2 and 3 are summarized below in Table 2.

Table 2

Plant Smith Operating Information

	Capacity	In-Service		Plan Retire		2008-2012 Operating Statistics		
	<u>MW</u>	<u>Date</u>	<u>AGE</u>	<u>Date</u>	<u>AvgEAF</u>	<u>Avg CF</u>	<u>MWh/yr</u>	<u>Fuel\$/MWh</u>
Smith 1	162	1965	48	2030	89.7%	51.0%	724,372	\$52.01
Smith 2	195	1967	46	2032	91.2%	47.2%	807,192	\$51.79
Smith 3	<u>556</u>	2002	11	2042	89.9%	73.8%	<u>3,316,420</u>	\$42.76
	913						4,847,984	

Sources: GPC 2013 10-yr Site Plan and Gulf's response to OPC ROG 4-117.

The total 945 MW of generating capacity at Plant Smith represents approximately 35% of Gulf's total installed generating capacity. Gulf has designated

1 the Smith units as Must-Run units for the purpose of maintaining reliability and
2 voltage regulation in the Panama City service area during high demand periods.
3

4 **Q. ARE THE PLANT SMITH COAL UNITS CURRENTLY EQUIPPED WITH**
5 **ENVIRONMENTAL CONTROLS NECESSARY FOR MATS COMPLIANCE?**

6 A. No. The Plant Smith coal units are equipped with low-NOx burners and use low-
7 sulfur coals to control SO2 emissions. However, unlike Gulf's Plant Crist coal units,
8 the Plant Smith coal units are not equipped with scrubbers and, therefore, will require
9 significant investments for new emissions controls under any plan to comply with
10 acid and mercury emissions limits of MATS when this new regulation becomes
11 effective in April 2015.
12

13 **Q. WHAT OPTIONS DID GULF EVALUATE IN ITS UPDATED**
14 **"COMPLIANCE" PLAN ANALYSIS FOR PLANT SMITH?**

15 A. Gulf evaluated only two MATS-response options for Plant Smith, as described on
16 page 26 of 34 of the Revised Compliance Report:
17

18 Option 1: Add ACI/DSI controls for compliance with MATS and continue operations
19 as Must-Run units (i.e., no transmission); and
20

21 Option 2: Add ACI/DSI controls for compliance with MATS and construct
22 transmission upgrades necessary to eliminate Must-Run requirements that apply to
23 the Smith units.

1 **Q. WHICH OF THE TWO “COMPLIANCE” ALTERNATIVES EVALUATED**
2 **BY GULF WAS SELECTED AS THE PREFERRED PLAN?**

3 A. Gulf selected Option 2 (Controls Plus Transmission) as the preferred response plan
4 because Gulf asserts it would eliminate the existing Must-Run operating restrictions
5 at Plant Smith and, therefore, allow for economic dispatch and reduced fuel costs
6 when compared to Option 1 (See Revised September 24, 2013 Compliance Report,
7 Table 3.3-2, page 29 of 34).

8
9 **Q. WHAT ARE THE TRANSMISSION UPGRADES WHICH GULF PLANS TO**
10 **INSTALL UNDER WHAT IT DESCRIBES AS PLANT SMITH**
11 **COMPLIANCE OPTION 2?**

12 A. The transmission upgrades evaluated in MATS-response Option 2 for Plant Smith
13 include the installation of a new 70-mile, 230 kV transmission line from the Holmes
14 Creek substation near the Alabama state line to the Highland City substation in
15 Panama City, along with a 230/115 kV autotransformer and improvements to the
16 Holmes Creek substation (See Gulf witness Caldwell’s testimony in Docket No.
17 130140-EI, page 20). The estimated total cost of these transmission upgrades is
18 approximately \$77 million (See Gulf witness Vick’s April 1, 2013 testimony in
19 Docket No. 130092-EI, page 12). These upgrades are expected to be completed and
20 placed in service in 2015.

1 **IV. PROPOSED TRANSMISSION UPGRADE COSTS ARE NOT ELIGIBLE FOR**
2 **RECOVERY THROUGH GULF'S ECRC**

3 **Q. WHAT ARE THE CRITERIA FOR DETERMINING WHETHER COSTS**
4 **ARE ELIGIBLE FOR RECOVERY THROUGH THE ECRC?**

5 **A. In Order No. PSC-94-0044-FOF-EI, issued January 12, 1994, the Commission**
6 **established the following three criteria for recovery of costs through the ECRC:**

- 7
- 8 1) Such costs were prudently incurred after April 13, 1993;
- 9
- 10 2) The activity is legally required to comply with a governmentally imposed
11 environmental regulation that was enacted, became effective, or whose effect was
12 triggered after the company's last test year upon which rates are based; and
- 13
- 14 3) Such costs are not recovered through some other cost recovery mechanism or
15 through base rates.
- 16

17 **Q. DO THE COSTS OF PROPOSED TRANSMISSION UPGRADES MEET THE**
18 **ABOVE ELIGIBILITY CRITERIA FOR RECOVERY THROUGH THE**
19 **ECRC?**

20 **A. No. The proposed transmission upgrades for Plant Crist and Plant Smith are not**
21 **legally required to comply with any governmentally imposed environmental**
22 **regulation and, therefore, fail to meet the second criterion established by the**
23 **Commission for recovery through the ECRC.**

1 **Q. WHAT IS THE PRIMARY PURPOSE OF THE TRANSMISSION UPGRADES**
2 **AT PLANT CRIST AND PLANT SMITH?**

3 A. Gulf's Ten-Year Transmission Plan indicates that the primary purpose of each
4 proposed transmission upgrade at Plant Crist and Plant Smith is to address potential
5 transmission overload and voltage regulation concerns in the Pensacola and Panama
6 City service areas, respectively, during extremely rare scenarios in which Gulf
7 experiences forced outages of all generating units at one of these plants and a
8 simultaneous outage of a critical transmission line at the time of Gulf's summer peak
9 demand (See Confidential Exhibit SN-2, which includes Gulf's Responses to
10 Citizens' Request for Production of Documents, Nos. 74 and 75).

11
12 **Q. HAS GULF DEMONSTRATED THAT THE REQUESTED TRANSMISSION**
13 **UPGRADE COSTS FOR PLANT SMITH WOULD BE PRUDENTLY**
14 **INCURRED AS REQUIRED BY THE FIRST CRITERION FOR RECOVERY**
15 **THROUGH THE ECRC?**

16 A. No. I will discuss how Gulf's so-called environmental compliance analyses are based
17 on unsupported Must-Run operating criteria and do not consider retirement
18 alternatives for Plant Smith. Due to these key flaws in Gulf's analyses, it is not
19 possible to determine whether the proposed compliance plans and associated
20 transmission upgrades are prudent.

A. GULF HAS FAILED TO SUPPORT ITS MUST-RUN

OPERATING CRITERIA

Q. WHAT ARE THE MUST-RUN CRITERIA THAT GULF APPLIES TO OPERATIONS OF THE PLANT CRIST AND PLANT SMITH UNITS?

A. The Must-Run criteria for Plant Crist and Plant Smith are confidential and are summarized in the discovery response attached as Confidential Exhibit SN-3 to my testimony.

Q. HAS GULF PROVIDED ANY SUPPORT FOR ITS MUST-RUN OPERATING POLICIES OR THE IMPACT OF THESE POLICIES ON THE PERFORMANCE OF THE PLANT CRIST AND PLANT SMITH UNITS?

A. No. Gulf admits that it has no analysis to support its Must-Run operating policies for Plant Crist and Plant Smith (See Exhibit SN-4). In its answer to Citizens' Interrogatory No. 123, the Company also admits that it has not recorded the historical levels of Must-Run generation at either plant (See Exhibit SN-5).

Q. IF GULF HAS NEITHER AN ORIGINAL ANALYSIS SUPPORTING THE ESTABLISHMENT OF ITS MUST-RUN DESIGNATION NOR HISTORICAL DATA REGARDING PAST LEVELS OF MUST-RUN GENERATION, WHAT IS THE BASIS FOR THE COMPANY'S CLAIMS THAT THE BENEFITS OF ELIMINATING MUST-RUN CONSTRAINTS JUSTIFY THE COST OF ACCELERATING TRANSMISSION UPGRADES AT PLANT CRIST AND PLANT SMITH?

1 A. In its answer to Citizens' Interrogatory No. 123, Gulf says that it employed certain
2 "reasonable simplifying assumptions for prospective modeling" to develop a
3 "forward looking economic analysis" of the benefits of eliminating Must-Run
4 transmission constraints that alter the commitment and dispatch of the units at Smith
5 and Crist (See Exhibit SN-5).

6
7 **Q. IS THE PROSPECTIVE MODELING ANALYSIS TO WHICH GULF**
8 **REFERS IN ITS ANSWER TO CITIZENS' INTERROGATORY NO. 123**
9 **SUFFICIENT TO SUPPORT THE COMPANY'S CLAIMS REGARDING THE**
10 **BENEFITS OF ELIMINATING MUST-RUN CONSTRAINTS AT PLANT**
11 **CRIST AND PLANT SMITH?**

12 A. No. The simplifying assumptions Gulf used for its prospective modeling of the
13 impact of its Must-Run policies at Plant Crist and Plant Smith are not described in the
14 Company's Compliance Report. Moreover, it is not possible to judge the
15 reasonableness of the Company's simplifying modeling assumptions, or Gulf's
16 forecasted benefits of eliminating the Must-Run constraint, without knowing the
17 actual impacts of those Must-Run constraints on Gulf's operations in the past.
18 Because the forecasted fuel savings benefits of eliminating Must-Run operations
19 constitute the primary economic justification for the transmission upgrades included
20 in Gulf's proposed compliance plans for Plant Crist and Plant Smith, the Company
21 must be held accountable to demonstrate the reasonableness of the Must-Run
22 assumptions used to derive such benefit estimates.

1 Q. WHAT ARE YOUR CONCLUSIONS REGARDING GULF'S ANALYSIS OF
2 THE BENEFITS OF ELIMINATING MUST-RUN OPERATING
3 CONSTRAINTS AT PLANT CRIST AND PLANT SMITH?

4 A. Gulf has not provided an adequate basis to demonstrate that its Must-Run policies for
5 Plant Crist and Plant Smith are reasonable or necessary, or to support the
6 reasonableness of its forecasts of the benefits of eliminating Must-Run constraints as
7 reflected in the Company's environmental compliance analyses.

8
9 For these reasons, the Company has no basis for demonstrating that its Must-
10 Run policies are reasonable or necessary, or that the forecasted Must-Run levels
11 reflected in Gulf's environmental response analyses are reasonable.

12
13 Q. WHY ARE THESE MUST-RUN CRITERIA RELEVANT IN DETERMINING
14 THE PRUDENCE OF WHAT GULF DESCRIBES AS ITS PROPOSED
15 ENVIRONMENTAL COMPLIANCE PLAN EXPENDITURES?

16 A. The primary reason why Gulf's analyses for Plant Crist and Plant Smith indicate that
17 the proposed transmission upgrades are justified is that these upgrades would
18 effectively eliminate the Must-Run operating constraints that apply to these units and,
19 therefore, produce fuel savings by eliminating periods when the plants are operated
20 for Must-Run purposes even though other lower cost resources are available. For
21 example, Gulf's analyses for Plant Smith forecasts that the fuel cost savings benefit
22 resulting from the elimination of the Must-Run requirement will range from [START
23 CONFIDENTIAL] [REDACTED] END CONFIDENTIAL]

1 depending on the option and scenario evaluated (See page 17 of Gulf's Compliance
2 Report). Without these forecasted savings, which depend completely on the validity
3 of the wholly unsupported Must-Run designation and policies, the increased cost of
4 proposed transmission upgrades under Gulf's proposed MATS-response plans for
5 Plant Crist and Plant Smith would not be justified.

6
7 **B. GULF FAILED TO EVALUATE THE PLANT SMITH**

8 **RETIREMENT OPTION**

9 **Q. DID GULF EVALUATE THE ALTERNATIVE OF EARLY RETIREMENT**
10 **OF THE PLANT SMITH COAL UNITS IN WHAT IT CALLS ITS UPDATED**
11 **ENVIRONMENTAL COMPLIANCE ANALYSIS?**

12 **A.** No. While Gulf's updated Compliance Report indicates that the Company is still
13 evaluating the retirement alternative for the Plant Smith units, the retirement option
14 was not considered in what the Company describes as its updated environmental
15 compliance analysis.

16
17 **Q. IS THERE EVIDENCE WHICH INDICATES THAT THE PLANT SMITH**
18 **COAL UNITS MIGHT BECOME UNECONOMICAL TO OPERATE, THUS**
19 **RENDERING THE RETIREMENT OF THOSE UNITS NECESSARY?**

20 **A.** Yes. In October 2012, Gulf prepared an internal presentation reporting the results of
21 an economic study which indicated that the retirement of Plant Smith appeared to be a
22 lower cost and a less risky alternative than retrofitting the Smith coal units to comply
23 with MATS and other pending future environmental regulations (See Confidential

1 Exhibit SN-6). [REDACTED]
2 [REDACTED]
3 [REDACTED] [START
4 CONFIDENTIAL] [REDACTED]
5 [REDACTED]
6 [REDACTED] [END
7 CONFIDENTIAL] For example, on page 9 of this presentation, Gulf notes that the
8 cost of retrofitting Plant Smith in order to achieve compliance with MATS and other
9 EPA regulations could require [START CONFIDENTIAL] [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED] [END
13 CONFIDENTIAL]
14

15 Q. YOU MENTIONED MATS AND "OTHER EPA REGULATIONS." PLEASE
16 DESCRIBE THE "OTHER EPA REGULATIONS" TO WHICH YOU REFER.

17 A. The MATS rule, which addresses standards for mercury and other toxic air emissions,
18 was finalized in early 2012. This is the regulation to which the transmission upgrades
19 and retrofit options described by Gulf witnesses in these proceedings are directed.
20 Utilities must comply with MATS beginning in April 2015.

21
22 The two other significant pending EPA regulations considered by Gulf's
23 October 2012 retirement analysis for Plant Smith are a pending rule to implement

1 Section 316(b) of the Clean Water Act ("CWA"), which would establish standards to
2 minimize the impact of power plant cooling water intake structures on aquatic
3 organisms, and EPA's pending Coal Combustion Residuals ("CCR") rule, which
4 addresses regulation of coal ash and other wastes arising from coal combustion and
5 air pollution control systems, such as scrubbers. The final CCR rule could require
6 significant investments to improve the integrity of on-site storage areas for coal ash
7 and other wastes. The pending rule to implement CWA Section 316(b) could
8 ultimately require that plants add closed cycle cooling water systems, such as cooling
9 towers, in instances where existing power plant cooling water intake structures are
10 found to adversely impact aquatic organisms. Recent industry reports suggest that the
11 pending rule to implement CWA Section 316(b) may be finalized by the end of 2013,
12 while the EPA's CCR rule is expected to be finalized in 2014. Although Gulf's
13 October 2012 retirement analysis indicates that the potential cost of compliance with
14 these two pending environmental rules at Plant Smith could be [START
15 CONFIDENTIAL] [REDACTED] [END
16 CONFIDENTIAL], these pending regulations were not evaluated in the Company's
17 environmental compliance analysis for Plant Smith.

18
19 **Q. DOES GULF'S OCTOBER 2012 PRESENTATION ADDRESS THE**
20 **POTENTIAL IMPACT ON THE ECONOMIC VIABILITY OF SMITH UNITS**
21 **1 AND 2 IF THE FORECASTED COMPLIANCE COSTS FOR THE**
22 **PENDING CCR RULE AND THE PENDING RULE TO IMPLEMENT CWA**

1 **SECTION 316(B) ARE ADDED TO THE MATS COMPLIANCE COSTS FOR**
2 **PLANT SMITH? IF SO, WHAT DOES THE ANALYSIS SHOW?**

3 A. Yes. The October 2012 Gulf presentation indicates that, when forecasted compliance
4 costs for the CCR rule and the pending rule to implement CWA Section 316(b) are
5 added to MATS compliance costs for Plant Smith, along with the proposed
6 transmission upgrade costs, the cost of continued operation of the Smith coal units is
7 **[START CONFIDENTIAL]** [REDACTED]
8 [REDACTED]
9 [REDACTED] **[END CONFIDENTIAL]** (See Confidential
10 Exhibit SN-6, pages 6 and 7).

11
12 Moreover, on page 14 of the presentation, Gulf concludes that **[START**
13 **CONFIDENTIAL]** [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED] **[END CONFIDENTIAL]** (See Confidential Exhibit SN-6,
17 page 8).

18
19 Q. **IS THERE OTHER EVIDENCE SUGGESTING THAT THE PLANT SMITH**
20 **RETIREMENT OPTION MAY BE A LOWER COST ALTERNATIVE TO**
21 **GULF'S PROPOSED "COMPLIANCE" PLAN?**

22 A. Yes. Gulf's Ten-Year Transmission Plan states that the proposed transmission
23 upgrades for Plant Smith are intended to address **[START CONFIDENTIAL]**

1 [REDACTED]
2 [END CONFIDENTIAL] (See Confidential Exhibit SN-2, Confidential Project
3 Descriptions from Gulf's Current Ten-Year Transmission Plan, as provided in Gulf's
4 response to Citizens' Request for Production of Documents No. 75): [START

5 CONFIDENTIAL] [REDACTED]

6 [REDACTED] [END
7 CONFIDENTIAL]

8
9 Q. DOES GULF'S FAILURE TO EVALUATE PLANT SMITH RETIREMENT
10 OPTIONS RAISE SERIOUS QUESTIONS REGARDING THE PRUDENCE
11 OF THE COMPANY'S PROPOSED TRANSMISSION PROJECT FOR
12 PLANT SMITH?

13 A. Yes. If approved, the Company's proposed "compliance" plan would provide for
14 Gulf to invest approximately [REDACTED] for emissions controls plus another \$76
15 million for transmission upgrades for the Plant Smith coal units. Gulf's proposal to
16 incur this level of investment without first evaluating Plant Smith retirement
17 alternatives obviously raises serious prudence and potential stranded investment
18 concerns. Consequently, Gulf has essentially asked the Commission to authorize it to
19 place an expensive cart before the horse.

20
21 Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING GULF'S
22 PROPOSAL TO RECOVER TRANSMISSION UPGRADE COSTS
23 THROUGH THE ECRC.

1 A. The transmission upgrade costs that Gulf seeks to recover are not required for
2 environmental compliance and have not been demonstrated to be prudent; therefore,
3 these costs do not meet the Commission's criteria for recovery through the ECRC.
4

5 V. GULF HAS NOT DEMONSTRATED THAT THE PROPOSED
6 TRANSMISSION UPGRADE COSTS SHOULD BE RECOVERED IN BASE
7 RATES

8 Q. WHAT IS GULF'S ALTERNATIVE REQUEST TO RECOVER PLANT
9 CRIST AND PLANT SMITH UPGRADE COSTS?

10 A. Gulf's alternative request for recovery of transmission upgrade costs is to recover
11 \$637,000 in base rates for projected transmission upgrade costs for the 2014 test year
12 (See Gulf witness Ritenour's testimony in Docket No. 130140-EI, page 36). In
13 addition, Gulf requests approval of a step increase to base rates of \$16.392 million,
14 effective on July 1, 2015, to recover the projected costs of transmission upgrades for
15 Plant Crist and Plant Smith for the 12-month period ending June 30, 2016 (See Gulf
16 witness Ritenour's testimony in Docket No. 130140-EI, page 37).
17

18 Q. IS GULF'S ALTERNATIVE RECOVERY PROPOSAL FOR TRANSMISSION
19 UPGRADE COSTS REASONABLE?

20 A. No. As explained earlier in my testimony, Gulf has not demonstrated that its
21 proposed transmission upgrades are prudent due to the Company's failure to provide
22 support for its Must-Run operating assumptions and its failure to consider Plant Smith
23 retirement alternatives. Moreover, there is significant uncertainty regarding the

1 forecasted step increase for these upgrades due to the fact that the forecasts extend
2 approximately 18 months beyond the end of the 2014 test year. For these reasons, I
3 recommend that Gulf's alternative request to recover proposed transmission upgrade
4 costs associated with its proposed environmental "compliance" plan for Plant Crist
5 and Plant Smith be denied.

6
7 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.**

8 A. I recommend that the Commission deny Gulf's request to recover proposed
9 transmission upgrade costs through the Company's ECRC because these costs are not
10 legally required to comply with environmental regulations and have not been
11 demonstrated to be prudent. I further recommend that the Commission deny Gulf's
12 alternative proposal to recover proposed transmission upgrade costs through a step
13 increase to base rates because these costs have not been demonstrated to be prudent
14 and are too uncertain to be included in base rates. I also recommend that the
15 Commission deny Gulf's request to recover \$637,000 in base rates for projected
16 transmission upgrade costs for the 2014 test year.

17
18 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

19 A. Yes, it does.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a copy of the foregoing PUBLIC VERSION of the Direct Testimony of Scott Norwood has been furnished by e-mail, U.S. Mail and/or hand delivery to the following parties on this 7th day of October, 2013, to the following:

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SUMMARY

Scott Norwood is an energy consultant with over 30 years of experience in electric utility regulatory consulting, resource planning and energy procurement. His clients include government agencies, publicly-owned utilities, public service commissions, municipalities and various electric consumer interests. Mr. Norwood has presented expert testimony on electric restructuring, resource planning and ratemaking issues in regulatory proceedings in Arkansas, Georgia, Iowa, Illinois, Michigan, Missouri, New Jersey, Oklahoma, South Dakota, Texas, Virginia, Washington and Wisconsin.

Prior to founding Norwood Energy Consulting in January of 2004, Mr. Norwood was employed for 18 years by GDS Associates, Inc., a Marietta, Georgia based energy consulting firm. Mr. Norwood was a Principal of GDS and directed the firm's Deregulated Services Department which provided a range of consulting services including merchant plant due diligence studies, deregulated market price forecasts, power supply planning and procurement projects, electric restructuring policy analyses, and studies of power plant dispatch and production costs.

Before joining GDS, Mr. Norwood was employed by the Public Utility Commission of Texas as Manager of Power Plant Engineering from 1984 through 1986. He began his career in 1980 as Staff Electrical Engineer with the City of Austin's Electric Utility Department where he was in charge of electrical maintenance and design projects at three gas-fired power plants.

Mr. Norwood is a graduate of the college of electrical engineering of the University of Texas.

EXPERIENCE

Energy Planning and Procurement Services

Dell Computer Corporation – Negotiated retail power supply agreement for Dell's Round Rock, Texas facilities producing annual savings in excess of \$2 million.

Texas Association of School Boards Electric Aggregation Program – Serve as TASB's consultant in the development, marketing and administration of a retail electric aggregation program consisting of 2,500 Texas schools with a total load

of over 300 MW. Program produced annual savings of more than \$30 million in its first year.

Oklahoma Industrial Energy Consumers - Analyzed and drafted comments addressing integrated resource plan filings by Public Service Company of Oklahoma and Oklahoma Gas and Electric Company.

S.C. Johnson - Analyzed and presented testimony addressing Wisconsin Electric Power Company's \$4.1 billion CPCN application to construct three coal-fired generating units in southeast Wisconsin.

Oklahoma Industrial Energy Consumers - Analyzed wind energy project ownership proposals by Oklahoma Gas and Electric Company and presented testimony addressing project economics and operational impacts.

City of Chicago, Illinois Attorney General, Illinois Citizens' Utility Board - Analyzed Commonwealth Edison's proposed divestiture of the Kincaid and State Line power plants to SEI and Dominion Resources.

Georgia Public Service Commission - Analyzed and presented testimony on Georgia Power Company's integrated resource plan in a certification proceeding for an eight unit, 640 MW combustion turbine facility.

South Dakota Public Service Commission - Evaluated integrated resource plan and power plant certification filing of Black Hills Power & Light Company.

Shell Leasing Co. - Evaluated market value of 540 MW western coal-fired power plant.

Community Energy Electric Aggregation Program - Served as Community Energy's consultant in the development, marketing and start-up of a retail electric aggregation program consisting of major charitable organizations and their donors in Texas.

Austin Energy - Conducted competitive solicitation for peaking capacity. Developed request for proposal, administered solicitation and evaluated bids.

Austin Energy - Provided technical assistance in the evaluation of the economic viability of the City of Austin's ownership interest in the South Texas Project.

Austin Energy - Assisted with regional production cost modeling analysis to assess production cost savings associated with various public power merger and power pool alternatives.

Sam Rayburn G&T Electric Cooperative - Conducted competitive solicitation for peaking capacity. Developed request for proposal, administered solicitation and evaluated bids.

Rio Grande Electric Cooperative, Inc. - Directed preparation of power supply solicitation and conducted economic and technical analysis of offers.

Electric Restructuring Analyses

Electric Power Research Institute - Evaluated regional resource planning and power market dispatch impacts on rail transportation and coal supply procurement strategies and costs.

Arkansas House of Representatives - Critiqued proposed electric restructuring legislation and identified suggested amendments to provide increased protections for small consumers.

Virginia Legislative Committee on Electric Utility Restructuring - Presented report on status of stranded cost recovery for Virginia's electric utilities.

Georgia Public Service Commission - Developed models and a modeling process for preparing initial estimates of stranded costs for major electric utilities serving the state of Georgia.

City of Houston - Evaluated and recommended adjustments to Reliant Energy's stranded cost proposal before the Public Utility Commission of Texas.

Oklahoma Attorney General - Evaluated and advised the Attorney General on technical, economic and regulatory policy issues arising from various electric restructuring proposals considered by the Oklahoma Electric Restructuring Advisory Committee.

State of Hawaii Department of Business, Economics and Tourism - Evaluated electric restructuring proposals and developed models to assess the potential savings from deregulation of the Oahu power market.

Virginia Attorney General - Served as the Attorney General's consultant and expert witness in the evaluation of electric restructuring legislation, restructuring rulemakings and utility proposals addressing retail pilot programs, stranded costs, rate unbundling, functional separation plans, and competitive metering.

Western Public Power Producers, Inc. - Evaluated operational, cost and regional competitive impacts of the proposed merger of Southwestern Public Service Company and Public Service Company of Colorado.

Iowa Department of Justice, Consumer Advocate Division - Analyzed stranded investment and fuel recover issues resulting from a market-based pricing proposal submitted by MidAmerican Energy Company.

Cullen Weston Pines & Bach/Citizens' Utility Board - Evaluated estimated costs

and benefits of the proposed merger of Wisconsin Energy Corporation and Northern States Power Company (Primergy).

City of El Paso - Evaluated merger synergies and plant valuation issues related to the proposed acquisition and merger of El Paso Electric Company and Central & Southwest Company.

Rio Grande Electric Cooperative, Inc. - Analyzed stranded generation investment issues for Central Power & Light Company.

Regulatory Consulting

Oklahoma Industrial Energy Consumers - Assisted client with technical and economic analysis of proposed EPA regulations and compliance plans involving control of air emissions and potential conversion of coal-to-gas conversion options.

New York Public Service Commission - Conducted inter-company statistical benchmarking analysis of Consolidated Edison Company to provide the New York Public Service Commission with guidance in determining areas that should be reviewed in detailed management audit of the company.

Oklahoma Industrial Energy Consumers - Analyzed and presented testimony on affiliate energy trading transactions by AEP in ERCOT.

Georgia Public Service Commission - Presented testimony before the Georgia Public Service Commission in Docket 3840-U, providing recommendations on nuclear O&M levels for Hatch and Vogtle and recommending that a nuclear performance standard be implemented in the State of Georgia.

Oklahoma Industrial Energy Consumers - Analyzed and presented testimony addressing power production and coal plant dispatch issues in fuel prudence cases involving Oklahoma Gas and Electric Company.

Georgia Public Service Commission - Analyzed and provided recommendations regarding the reasonableness of nuclear O&M costs, fossil O&M costs and coal inventory levels reported in GPC's 1990 Surveillance Filing.

New York Public Service Commission - Conducted inter-company statistical benchmarking analysis of Rochester Gas & Electric Company to provide the New York Public Service Commission with guidance in determining areas which should be reviewed in detailed management audit of the company.

Oklahoma Attorney General - Analyzed and presented testimony regarding fuel and purchased power, depreciation and other expense items in Oklahoma Gas & Electric Company's 2001 rate case before the Oklahoma Corporation Commission.

City of Houston - Analyzed and presented testimony regarding fossil plant O&M expense levels in Houston Lighting & Power Company's rate case before the Public Utility Commission of Texas.

City of El Paso - Analyzed and presented testimony regarding regulatory and technical issues related to the Central & Southwest/El Paso Electric Company merger and rate proceedings before the PUCT, including analysis of merger synergy studies, fossil O&M and purchased power margins.

Residential Ratepayer Consortium - Analyzed Fermi 2 replacement power and operating performance issues in 1994 and 1995 fuel reconciliation proceedings for Detroit Edison Company before the Michigan Public Service Commission.

Residential Ratepayer Consortium - Analyzed and prepared testimony addressing coal plant outage rate projections in the Consumer's Power Company fuel proceeding before the Michigan Public Service Commission.

City of El Paso - Analyzed and developed testimony regarding Palo Verde operations and maintenance expenses in El Paso Electric Company's 1991 rate case before the Public Utility Commission of Texas.

City of Houston - Analyzed and developed testimony regarding the operations and maintenance expenses and performance standards for the South Texas Nuclear Project, and operations and maintenance expenses for the Limestone and Parish coal-fired power plants in HL&P's 1991 rate case before the PUCT.

City of El Paso - Analyzed and developed testimony regarding Palo Verde operations and maintenance expenses in El Paso Electric Company's 1990 rate case before the Public Utility Commission of Texas. Recommendations were adopted.

Power Plant Management

City of Austin Electric Utility Department - Analyzed the 1994 Operating Budget for the South Texas Nuclear Project (STNP) and assisted in the development of long-term performance and expense projections and divestiture strategies for Austin's ownership interest in the STNP.

City of Austin Electric Utility Department - Analyzed and provided recommendations regarding the 1991 capital and O&M budgets for the South Texas Nuclear Project.

Sam Rayburn G&T Electric Cooperative - Developed and conducted operational monitoring program relative to minority owner's interest in Nelson 6 Coal Station operated by Gulf States Utilities.

KAMO Electric Cooperative, City of Brownsville and Oklahoma Municipal Power Agency - Directed an operational audit of the Oklaunion coal-fired power plant.

Sam Rayburn G&T Electric Cooperative - Conducted a management/technical assessment of the Big Cajun II coal-fired power plant in conjunction with ownership feasibility studies for the project.

Kamo Electric Power Cooperative - Developed and conducted operational monitoring program for client's minority interest in GRDA Unit 2 Coal Fired Station.

Northeast Texas Electric Cooperative - Developed and conducted operational monitoring program concerning NTEC's interest in Pirkey Coal Station operated by Southwestern Electric Power Company and Dolet Hills Station operated by Central Louisiana Electric Company.

Corn Belt Electric Cooperative/Central Iowa Power Cooperative - Perform operational monitoring and budget analysis on behalf of co-owners of the Duane Arnold Energy Center.

PRESENTATIONS

Quantifying Impacts of Electric Restructuring: Dynamic Analysis of Power Markets, 1997 NARUC Winter Meetings, Committee on Finance and Technology.

Quantifying Costs and Benefits of Electric Utility Deregulation: Dynamic Analysis of Regional Power Markets, International Association for Energy Economics, 1996 Annual North American Conference.

Railroad Rates and Utility Dispatch Case Studies, 1996 EPRI Fuel Supply Seminar.

Quantifying Potentially Stranded Costs: Modeling and Policy Issues, 1996 NASUCA Annual Meeting.

**TESTIMONY OF DON SCOTT NORWOOD
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1	01/27/03	Texas Public Utility Commission	26186	Southwestern Public Service Company (Direct)	Reasonableness of Reconcilable Fuel and Purchased Power Expenses for 24 month Reconciliation Period
2	02/10/03	Texas Public Utility Commission	27320	Reliant Energy Retail Services, LLC (Direct)	Reasonableness of Proposed Increase to PTB Fuel Factor and the Reasonableness of Rate Case Expenses
3	04/09/03	Texas Public Utility Commission	27035	Central Power and Light Company (Direct)	Reasonableness of CPL's Request to Reconcile Fuel Costs
4	04/10/03	Texas Public Utility Commission	26194	El Paso Electric Company (Direct)	Reasonableness of EPE's Request to Reconcile Fuel Costs
5	06/26/03	Texas Public Utility Commission	27956	Reliant Energy, and Retail Services, LCC (Direct)	Reasonableness of Reliant's Proposal to Increase PTB Fuel Factors
6	07/07/03	Public Service Commission of Wisconsin	05-CE-130	Wisconsin Electric Power Company (Direct)	Reasonableness of Input Assumptions and Results of Economic Analysis of ERGS
7	07/18/03	Texas Public Utility Commission	27576	Texas-New Mexico Power Company (Direct)*	Reasonableness of TNMP's Application for Final Reconciliation of Fuel Costs
8	08/19/03	Texas Public Utility Commission	26000	West Texas Utilities Company (Remand Direct)	Reasonableness of WTU's Application to Reconcile Eligible Fuel Expenses and Fuel Factor Revenues
9	08/26/03	Public Service Commission of Wisconsin	05-CE-130	Wisconsin Electric Power Company (Rebuttal)	Reasonableness of FEIS Economic Analysis of ERGS
10	08/26/03	Public Service Commission of Wisconsin	05-CE-130	Wisconsin Electric Power Company (Surrebuttal)	Reasonableness of Input Assumptions and Results of Economic Analysis of ERGS
11	09/05/03	State Corporation Commission of Virginia	PUE-2003-00285	Virginia Electric and Power Company (Direct)	Reasonableness of VEPCO's natural gas, coal, and purchased energy price forecasts underlying the Company's Fuel Factor Proposal
12	10/28/03	Texas Public Utility Commission	26195	Texas Genco and CenterPoint Energy (Refilled Direct)	Reasonableness of Estimated Costs and Benefits under a Joint Operating Agreement
13	11/05/03	Texas Public Utility Commission	28045	Southwestern Public Service Company (Direct)	Reasonableness of SWEPCO's Application for Reconciliation of Fuel Costs
14	12/12/03	Michigan Public Service Commission	U-13808	The Detroit Edison Company (Direct)	Analysis and Recommendations regarding DECO's proposed 2004 PSCR Plan applications and PSCR factor
15	02/27/04	Oklahoma Corporation Commission	PUD 200400004	Oklahoma Gas and Electric (Direct)	Request for Approval of McClain PPA
16	03/26/04	Michigan Public Service Commission	U-13808	The Detroit Edison Company (Direct)	Rebuttal Testimony Addressing DECO's proposed 2004 PSCR Plan applications and PSCR factor
17	03/29/04	Texas Public Utility Commission	29206	Texas New Mexico Power Company	Reasonableness of TNMP's Application for Final True-up of Stranded Costs
18	06/01/04	Texas Public Utility Commission	29526	CenterPoint, TGN, Reliant	Reasonableness of Applicants' Application for Final True-up of Stranded Costs
19	07/19/04	State of Wisconsin Division of Hearings and Appeals	3-SE-01-41-0005-0019	Wisconsin Electric Power Company	Authority for construction of ERGS facilities in Lake Michigan lakebed.
20	07/24/04	State of Wisconsin Division of Hearings and Appeals	IH-04-03	Wisconsin Electric Power Company	Comparison of environmental, social, capital and operating costs of proposed ERGS SCPC units to IGCC alternatives
21	8/9/04	State of Wisconsin Division of Hearings and Appeals	3-SE-01-41-0005-0019	Wisconsin Electric Power Company	WEPCO's failure to conduct a practicable alternatives analysis for wetlands impact of the ERGS.
22	8/18/04	Texas Public Utility Commission	29526	CenterPoint, TGN, Reliant	Reasonableness of Applicants' request for interest on claimed stranded costs; contribution of capacity auction true-up to return on stranded costs.
23	09/02/04	Texas Public Utility Commission	29526	CenterPoint, TGN, Reliant	Reasonableness of Applicants' request for interest on claimed stranded costs; contribution of capacity auction true-up to return on stranded costs.
24	9/10/04	Texas Public Utility Commission	27035	AEP TCC	Level and cost of capacity included in TCC's summer on-peak block energy purchases
25	09/27/04	State of Wisconsin Division of Hearings and Appeals	3-SE-01-41-0005-0019	Wisconsin Electric Power Company	Authority for construction of ERGS facilities in Lake Michigan lakebed.
26	10/26/04	Texas Public Utility Commission	29801	Southwestern Public Service Company (Direct)	Reasonableness of SWEPCO's Application for Reconciliation of Fuel Costs
27	11/22/04	Texas Public Utility Commission	29206	Texas New Mexico Power Company (Remand Direct)	Reasonableness of TNMP's Claim for Interest on Final True-up Costs
28	1/18/05	Texas Public Utility Commission	29703	AEP Texas North Company (Direct)	Reasonableness of TNC's Final True-up Costs

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29	1/20/05	Michigan Public Service Commission	U-14274	Consumers Energy Company (Direct)	Reasonableness of CECO's proposed 2005 PSCR Plan
30	2/23/05	Texas Public Utility Commission	30143	El Paso Electric Company (Direct)	Reasonableness of EPE's Request to Reconcile Fuel Costs
31	5/26/05	State Corporation Commission of Virginia	PUE2005-0012	Craig-Botetourt ECI (Direct)	General Rate Case, Power Supply Procurement Process
32	7/25/05	Oklahoma Corporation Commission	PUD 2002-00754	Public Service Company of Oklahoma (Direct)	Energy Trading Margins Allocation
33	09/02/05	Texas Public Utility Commission	31056	AEP TCC (Direct)	Reasonableness of TCC's Final True-up Costs
34	9/12/05	Oklahoma Corporation Commission	PUD 2005-00151	Oklahoma Gas and Electric (Direct)	Revenue Requirements, planning prudence, cost allocation
35	11/28/05	Louisiana Public Service Commission	U-27469	tergy Gulf States, Inc. and Entergy Louisiana, Inc. (Direct)	Reasonableness of Settlement on Avoided Energy Costs
36	11/29/05	State Corporation Commission of Virginia	PUE2005-00056	Appalachian Power Company (Direct)	General Rate Case, Environmental and Reliability Costs
37	4/17/06	Texas Public Utility Commission	32475	AEP TCC (Direct)	Reasonableness of TCC's Securitization Proposal
38	4/25/06	State Corporation Commission of Virginia	PUE2006-00032	Delmarva Power & Light Company (Direct)	General Rate Case, Purchased Power Costs
39	5/15/06	Texas Public Utility Commission	31994	Texas New Mexico Power Company (Direct)	Reasonableness of TNP's CTC Proposal
40	8/24/06	Texas Public Utility Commission	32758	AEP TCC (Direct)	Reasonableness of TCC's CTC Proposal
41	10/04/06	State Corporation Commission of Virginia	PUE2006-00065	Appalachian Power Company (Direct)	General Rate Case, Off-System Sales and Jurisdictional Allocation
42	8/24/06	Texas Public Utility Commission	32758	AEP TCC (Direct)	Reasonableness of TCC's CTC Proposal
43	12/15/06	Texas Public Utility Commission	32766	Southwestern Public Service Company (Direct)	General Rate Case, Purchased Power Costs, Market-Based Sales
44	1/25/07	Texas Public Utility Commission	33106	Texas New Mexico Power Company (Direct)	Reasonableness of TNMP's CTC Carrying Charge Proposal
45	1/30/07	Texas Public Utility Commission	32898	Southwestern Electric Power Company (Direct)	Reasonableness of Fuel and Purchased Power Costs
46	2/15/07	Texas Public Utility Commission	31461	AEP TNC (Direct)	Reasonableness of TNC's CTC Proposal
47	3/13/07	Texas Public Utility Commission	33309	AEP TCC (Direct)	Reasonableness of Proposed Cost Allocation, Rate Design and Tariffs
48	3/13/07	Texas Public Utility Commission	33310	AEP TNC (Direct)	Reasonableness of Proposed Cost Allocation, Rate Design and Tariffs
49	3/20/07	Oklahoma Corporation Commission	PUD 2006-00285	Public Service Company of Oklahoma (Direct)	Non-fuel O&M, fuel costs, energy trading margins, purchased capacity costs
50	4/9/07	Oklahoma Corporation Commission	PUD 2006-00285	Public Service Company of Oklahoma (Rebuttal)	Non-fuel O&M, fuel costs, energy trading margins, purchased capacity costs
51	4/27/07	Texas Public Utility Commission	33687	Entergy Gulf States, Inc.	Transition to Competition Plan
52	5/21/07	Oklahoma Corporation Commission	PUD 2006-00030	Public Service Company of Oklahoma (Direct)	Prudence of Red Rock Generating Plant
53	5/21/07	Oklahoma Corporation Commission	PUD 2007-00012	Oklahoma Gas & Electric Company (Direct)	Prudence of Red Rock Generating Plant
54	6/8/07	Texas Public Utility Commission	33734	AEP/ETT	Formation of ETT Transmission Utility
55	6/18/07	Oklahoma Corporation Commission	PUD 2006-00030	Public Service Company of Oklahoma (Rebuttal)	Prudence of Red Rock Generating Plant
56	6/18/07	Oklahoma Corporation Commission	PUD 2007-00012	Oklahoma Gas & Electric Company (Rebuttal)	Prudence of Red Rock Generating Plant

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57	6/19/07	Arkansas Public Service Commission	04-113-U	Entergy Arkansas Inc. (Direct)	Calculation of Avoided Energy Costs
58	7/24/07	Arkansas Public Service Commission	04-113-U	Entergy Arkansas Inc. (Surrebuttal)	Calculation of Avoided Energy Costs
59	9/26/07	Texas Public Utility Commission	34470	Southwestern Public Service Company (Direct)	System Loss Evaluation
60	10/01/07	State Corporation Commission of Virginia	PUE-2007-00067	Appalachian Power Company (Direct)	Fuel Factor Evaluation
61	10/03/07	State Corporation Commission of Virginia	PUE-2007-00069	Appalachian Power Company (Direct)	Environmental and Reliability Surcharge
62	11/02/07	State Corporation Commission of Virginia	PUE-2007-00066	Dominion Virginia Power (Direct)	Wise County Coal Plant Application
63	12/10/07	State Corporation Commission of Virginia	PUE-2007-00068	Appalachian Power Company (Direct)	WV IGCC Power Plant Proposal
64	1/18/08	Texas Public Utility Commission	34410	AEP TCC (Direct)	Oklahoma Sale True-up
65	4/4/08	Oklahoma Corporation Commission	PUE 2007-00365	Public Service Company of Oklahoma (Direct)	Fuel Prudence Review
66	4/11/08	Texas Public Utility Commission	34800	Entergy Gulf States, Inc. (Direct)	Fuel Reconciliation Case
67	5/15/08	Oklahoma Corporation Commission	PUD 2007-00364	Oklahoma Gas & Electric Company (Direct)	Fuel Prudence Review
68	5/23/08	Texas Public Utility Commission	33672	ERCOT (Direct)	Competitive Renewable Energy Zones for Wind Generation
69	6/3/08	Texas Public Utility Commission	33672	ERCOT (Rebuttal)	Competitive Renewable Energy Zones for Wind Generation
70	6/12/07	State Corporation Commission of Virginia	PUE-2008-00039	Dominion Virginia Power (Direct)	Fuel Factor Application
71	7/11/08	Oklahoma Corporation Commission	PUD 2008-00148	Oklahoma Gas & Electric Company (Direct)	Proposed Transmission for Wind Generation
72	7/17/08	Oklahoma Corporation Commission	PUD 2007-00364	Oklahoma Gas & Electric Company (Rebuttal)	Fuel Prudence Review
73	8/13/08	State Corporation Commission of Virginia	PUE-2008-00045	Appalachian Power Company (Direct)	Environmental and Reliability Surcharge
74	9/26/08	State Corporation Commission of Virginia	PUE-2008-00046	Appalachian Power Company (Direct)	Capacity Equalization, capital additions, production O&M
75	10/3/08	State Corporation Commission of Virginia	PUE-2008-00033	Polomac Edison Company (Direct)	Purchased Power Cost Recovery
76	10/13/08	Texas Public Utility Commission	35763	Southwestern Public Service Company (Direct)	Incremental Cost of Wholesale Sales, OSS and Commodity Trading Margins
77	10/29/08	Oklahoma Corporation Commission	PUE 2008-00144	Public Service Company of Oklahoma (Direct)	Capital additions, affiliate charges, corporate strategy
78	11/5/08	Oklahoma Corporation Commission	PUE 2008-00144	Public Service Company of Oklahoma (Direct)	Base rate fuel costs, reactive power charges
79	1/7/09	Texas Public Utility Commission	36324	Southwestern Electric Power Company (Direct)	Interim Fuel Factor Proposal
80	6/23/09	State Corporation Commission of Virginia	PUE-2009-00038	Appalachian Power Company (Direct)	Fuel Factor Evaluation
81	6/24/09	Oklahoma Corporation Commission	PUD 2008-00398	Oklahoma Gas & Electric Company (Direct)	General Rate Case, Rate Design Issues
82	6/25/09	State Corporation Commission of Virginia	PUE-2009-00016	Dominion Virginia Power (Direct)	Fuel Factor Application
83	8/27/09	State Corporation Commission of Virginia	PUE-2009-00039	Appalachian Power Company (Direct)	Environmental and Reliability Surcharge
84	9/29/09	Oklahoma Corporation Commission	PUD 2009-00167	Oklahoma Gas & Electric Company (Direct)	Certification of OU Spirit Wind Generation Project
85	11/2/09	State Corporation Commission of Virginia	PUE-2009-00019	Dominion Virginia Power (Direct)	General Rate Case

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86	11/17/09	Washington Utilities and Trade Commission	UE-090704	Puget Sound Energy (Direct)	General Rate Case
87	12/28/09	State Corporation Commission of Virginia	PUE-2009-00030	Appalachian Power Company (Direct)	Base rate case, capacity equalization charges
88	1/13/10	State Corporation Commission of Virginia	PUE-2009-00081	Dominion Virginia Power (Direct)	DSM Cost Recovery, Voltage Reduction Program
89	1/28/10	Washington Utilities and Trade Commission	UE-070725	Puget Sound Energy (Direct)	Ratemaking Treatment of REC Sale Proceeds
90	3/17/10	Oklahoma Corporation Commission	PUE 2009-00158	Public Service Company of Oklahoma (Direct)	Affiliate Energy Trading Costs
91	5/6/10	Texas Public Utility Commission	37162	Southwestern Electric Power Company (Direct)	Energy Trading Margin Refund
92	6/11/10	Oklahoma Corporation Commission	PUD 2010-00037	Oklahoma Gas & Electric Company (Direct)	Crossroads Wind Generation Project
93	7/6/10	Texas Public Utility Commission	38361	El Paso Electric Company (Direct)	Mine Reclamation Costs
94	7/12/10	Texas Public Utility Commission	37162	Southwestern Electric Power Company (Direct)	Affiliate Energy Trading Costs
95	7/20/10	Oklahoma Corporation Commission	PUE 2009-00158	Public Service Company of Oklahoma (Surrebuttal)	Affiliate Energy Trading Costs
96	9/10/10	Texas Public Utility Commission	38339	CenterPoint Energy Houston Electric, LLC (Direct)	Storm Hardening and Distribution O&M Expenses
97	10/05/10	Oklahoma Corporation Commission	PUE 2010-00092	Public Service Company of Oklahoma (Direct)	Wind Energy PPA, REC Treatment
98	10/26/10	Oklahoma Corporation Commission	PUE 2010-00050	Public Service Company of Oklahoma (Direct)	Base Rate Case
97	1/7/11	State Corporation Commission of Virginia	PUE-2010-00126	Northern Virginia Electric Cooperative (Direct)	Biomass Power Plant CPCN
98	1/14/11	Oklahoma Corporation Commission	PUD 2010-00146	Oklahoma Gas & Electric Company (Direct)	SPP Cost Tracker
99	3/11/11	Oklahoma Corporation Commission	PUD 2010-00175	Oklahoma Gas & Electric Company (Direct)	2009 Fuel Prudence Review
100	3/15/11	Arkansas Public Service Commission	10-067-U	Oklahoma Gas & Electric Company (Direct)	Coal Inventory, Production O&M, ECR Revisions
99	4/1/11	Oklahoma Corporation Commission	PUD 2010-00172	Public Service Company of Oklahoma (Direct)	Fuel Prudence Review
100	7/20/11	State Corporation Commission of Virginia	PUE-2011-00037	Appalachian Power Company (Direct)	Base rate case, capacity equalization charges
101	7/21/11	State Corporation Commission of Virginia	PUE-2011-00027	Dominion Virginia Power (Direct)	Performance Incentive Program
102	7/29/11	State Corporation Commission of Virginia	PUE-2011-00035	Appalachian Power Company (Direct)	Environmental Compliance Rate Adjustment Clause
103	8/23/11	State Corporation Commission of Virginia	PUE-2011-00034	Appalachian Power Company (Direct)	RPS Rate Adjustment Clause
104	9/12/11	Texas Public Utility Commission	39504	CenterPoint Energy Houston Electric, LLC (Direct)	Stranded Cost Remand
105	9/16/11	Oklahoma Corporation Commission	PUD 2011-00106	Public Service Company of Oklahoma (Direct)	SPP Transmission Cost Recovery Rider
106	11/22/11	State Corporation Commission of Virginia	PUE-2011-00073	Dominion Virginia Power (Direct)	Biomass Conversion Project
107	12/7/11	Washington Utilities and Trade Commission	UE-111048	Puget Sound Energy (Direct)	Lower Snake River Wind Generation Project
108	1/17/12	State Corporation Commission of Virginia	PUE-2011-00093	Dominion Virginia Power (Direct)	DSM Program Evaluation and Cost Recovery
109	2/8/12	Oklahoma Corporation Commission	PUD 2011-00186	Oklahoma Gas & Electric Company (Direct)	OSU Special Contract

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110	4/6/12	Oklahoma Corporation Commission	PUD 2011-00132	Oklahoma Gas & Electric Company (Direct)	2010 Fuel Prudence Review
111	4/30/12	Oklahoma Corporation Commission	PUD 2011-00129	Public Service Company of Oklahoma (Direct)	2010 Fuel Prudence Review
112	6/21/12	Texas Public Utility Commission	40020	Lone Star Transmission, LLC (Direct)	Transmission O&M Expenses
113	9/14/12	Oklahoma Corporation Commission	PUD 2011-00186	Oklahoma Gas & Electric Company (Direct)	SPP Cost Rider
114	12/10/12	Texas Public Utility Commission	40443	Southwestern Electric Power Company (Direct)	Turk Settlement Costs, Welsh 2 Retirement, Production O&M
115	1/8/13	Oklahoma Corporation Commission	PUD 2012-00054	Public Service Company of Oklahoma (Direct)	Environmental Compliance Plan
116	2/11/13	Oklahoma Corporation Commission	PUD 2012-00054	Public Service Company of Oklahoma (Rebuttal)	Environmental Compliance Plan
117	3/1/13	State Corporation Commission of Virginia	PUE-2012-00128	Dominion Virginia Power (Direct)	Brunswick CCCT CCN
118	3/22/13	Oklahoma Corporation Commission	PUD 2012-00054	Public Service Company of Oklahoma (Surrebuttal)	Environmental Compliance Plan
119	1/8/13	Oklahoma Corporation Commission	PUD 2012-00054	Public Service Company of Oklahoma (Direct)	Environmental Compliance Plan
120	4/23/13	State Corporation Commission of Virginia	PUE-2012-00141	Appalachian Power Company (Direct)	Coal-fired Generating Asset Transfers
121	7/31/13	State Corporation Commission of Virginia	PUE-2013-00020	Dominion Virginia Power (Direct)	Performance Incentive Program, Nuclear Outage Costs, Storm Expense

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**Gulf Power Company
Ten Year Transmission Plans
2012 Assessments for Planning Horizon 2013-2022**

Confidential in its entirety

Citizens' Fourth Request to Produce
Documents
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76. Transmission. Please provide copies of all operating policies that specify the criteria and conditions governing must-run generation for the Plant Crist and Plant Smith generating units as described in the Company's response to OPC Interrogatory No. 118.

ANSWER:

Responsive electronic documents that include confidential information are located in the folder named OPC POD_076 CONF on the DVD labeled Docket No. 130140-EI Citizens' Fourth Request to Produce Documents (Nos. 74-89) Disk 2-Confidential. Hard copy documents that have been saved in electronic (PDF) format are saved in this folder and are page numbered 130140-OPC-POD-76-1 through 130140-OPC-POD-76-2.

SYSTEM CONTROL POLICY ON GENERATOR UNIT MUST-RUN REQUIREMENTS

SUBJECT

GENERATOR MUST-RUN REQUIREMENTS

PURPOSE:

The purpose of this policy is to ensure that adequate generation is available to maintain system reliability, taking into account both high and low load situations and corresponding contingencies. This policy also provides a process to ensure that proper notification is made to the PCC for communicating with the trading floor for appropriate gas nominations.

Must-Run Rules

Crist Plant:

██████████ at all times - one of which must be ██████████
 *Special arrangements must be made in advance when ██████████ have to be off at the same time.

Smith Plant:

System Load Level	L. Smith unit dispatch		
	LS1	LS2	LS3
85-100	██████████		
70-85			
60-70			
50-60			
<50			

*System Load Levels are percentages of Summer Gross Weather Normal Loads. Based on Gulf Summer Gross of ██████████ (YR-2013)

*Special arrangements must be made in advance when ██████████ Smith units have to be off at the same time.

Instructions

Crist Plant:

1. Night Shift PSC to check the Unit Commitment Report for any Crist unit coming offline.
2. Ensure the Must-Run Application matches the current Unit Commitment Report.

Smith Plant:

1. Night Shift PSC to check the Unit Commitment Report for any Smith unit coming offline.
2. Ensure the Must-Run Application matches the current Unit Commitment Report.

Responsibility

It is the responsibility of the System Operations Manager and the Transmission Control Center Supervisor to ensure that this procedure is followed.

Citizens' Fourth Request to Produce Documents

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78. Transmission. Please provide all studies or analyses documenting the basis for the decisions to implement must-run operations at the Plant Smith and Plant Crist units as identified in the Company's response to OPC Interrogatory No. 140.

ANSWER:

There are no studies or analyses documenting the initial determination of Plant Crist and Plant Smith as must-run facilities.

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123. Transmission. Please provide the number of hours in each month over the last five calendar years that each of the Company's Plant Crist and Plant Smith generating units were operated primarily to meet must-run conditions rather than for economic dispatch purposes.

ANSWER:

The information as requested is not available. The Company does not have the granularity in its historical operating data to determine which hours a specific unit was committed solely for transmission reliability must run requirements. Typically, units are committed and dispatched based upon a combination of operational factors which influence the dispatch economics for any particular hour of operation. For example, because steam units require many hours to start-up, a unit which will be needed and would have been in economic dispatch to serve a daily peak must be committed (or kept on line) during the off-peak hours as well, even though its relative economics during those off-peak hours may be less attractive.

Many other factors influence unit commitment and dispatch economics as well. Examples include testing plant equipment, meeting environmental limits, storm considerations, short-term fuel pricing volatility, maintenance outages, unplanned outages, area voltage support, and transmission reliability must run.

Due to the high number of constraints, we use a complex set of optimization models that concurrently meet the system constraints in the most cost effective manner for Gulf Power's customers. The number of constraints being managed and the significant overlap between these constraints makes it impractical to differentiate between individual drivers in a historical assessment. Therefore, while Gulf can employ reasonable, simplifying assumptions for prospective modeling, historical data regarding unit operation does not allow Gulf to identify when the seven individual generating units at Plant Smith and Plant Crist were used "primarily to meet must-run conditions rather than for economic dispatch purposes" over the 43,800 hour, five-year period.

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From a transmission planning perspective, reliability must run analysis assesses whether a specific unit is needed to meet transmission reliability criteria under any expected system conditions. The analysis used in the Gulf Power Company Environmental Compliance Program Update to quantify the transmission reliability "must-run" costs/benefits was a forward looking economic analysis that considered the impact of increased cost due to the MATS rule, the Company's strategies to comply with the MATS rule and the resulting impact on Gulf's customer costs. In this forward looking model, it is possible to isolate a single constraint, while holding the other constraints constant, and assess the cost impact over a time period. This approach was utilized to determine the cost impact to Gulf customers associated with transmission constraints that effectively alter the commitment and dispatch of the units at Smith and Crist.

Gulf Crist and Smith Update

October 1, 2012

Confidential in its entirety