

BEFORE THE
CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

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

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CORPORATION COMMISSION
OF OKLAHOMA

RESPONSIVE TESTIMONY
OF
DANIEL PEACO
ON BEHALF OF
OKLAHOMA COGENERATION

DECEMBER 16, 2014

CAUSE NO. PUD 201400229

RESPONSIVE TESTIMONY OF DANIEL PEACO

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DEP-1 Resume of Daniel Peaco

1 **CAUSE NO. PUD 201400229**

2 **RESPONSIVE TESTIMONY**

3 **OF**

4 **DANIEL PEACO**

5
6 **I. QUALIFICATIONS**

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

8 A. My name is Daniel Peaco. I am President of La Capra Associates, Inc. My business
9 address is One Washington Mall, 9th Floor, Boston, Massachusetts 02108.

10 **Q. Please summarize your professional experience and qualifications.**

11 A. I am an electric power industry planning specialist with over 30 years of experience in
12 areas including strategic planning, power systems planning and analysis, power contracts
13 and procurement, and retail marketing and pricing.

14 I am currently President of La Capra Associates and have served in that capacity since
15 2001. Since joining La Capra Associates in 1996, my work has included several aspects
16 of power systems planning and electric industry restructuring, including wholesale and
17 retail market formation, stranded cost analysis, generation asset valuation, resource
18 planning and resource adequacy studies, and power procurement.

19 Prior to joining La Capra Associates, I held power supply planning positions with Central
20 Maine Power Company (CMP) (1986-96), Pacific Gas & Electric Company (PG&E)
21 (1981-86), and the Massachusetts Energy Facilities Siting Council (1978-79). From 1986
22 to 1993, I was the Director of Power Supply Planning at CMP, where my responsibilities

1 included conducting CMP's Integrated Resource Planning, the preparation of annual long
2 term avoided cost and fuel and purchased power cost filings with the Maine Commission,
3 evaluation of PURPA contracts pricing relative to avoided costs, and presentation of
4 information for reviews of prudence of purchased power expenses under Maine law and
5 regulation. At Pacific Gas and Electric Company, my responsibilities included power
6 system modeling and the forecasting of marginal and avoided costs.

7 I hold a master's degree in Engineering Sciences from the Thayer School of Engineering
8 at Dartmouth College (1981) and a bachelor's degree in Civil Engineering from the
9 Massachusetts Institute of Technology (1977).

10 A copy of my resume is attached hereto as Exhibit DEP-1.

11 **Q. Please summarize La Capra Associates and its business.**

12 A. La Capra Associates provides consulting services in energy planning, market analysis, and
13 regulatory policy in the electricity and natural gas industries. We serve clients throughout
14 North America from our offices in Boston, Massachusetts and Portland, Maine, providing
15 consulting services to a broad range of organizations involved with energy markets,
16 including public and private utilities, energy producers and traders, financial institutions
17 and investors, consumers, regulatory agencies, and public policy and energy research
18 organizations. Our technical skills include power market forecasting models and methods,
19 economics, management, planning, rates and pricing, and energy procurement, and
20 contracting. Over the past several years, our firm has been very active in electric industry
21 planning issues, including integrated resource planning, transmission planning and
22 wholesale and retail market analysis, competitive bidding and procurement, and renewable
23 energy.

1 **Q. Have you previously testified before this or other Commissions?**

2 A. Yes.

3 On behalf of the Oklahoma Attorney General, I have previously submitted written
4 testimony in seven Oklahoma Corporation Commission (Commission) proceedings:

- 5 1. The Oklahoma Gas & Electric (OG&E) Blackwell Wind PPA proceeding, Cause No.
6 PUD 201100186,
- 7 2. The Public Service of Oklahoma (PSO) Minco Renewable Energy Purchase
8 Agreement proceeding, Cause No. PUD 201000092,
- 9 3. The OG&E Crossroads Wind proceeding, Cause No. PUD 201000037,
- 10 4. The OG&E OU Spirit Wind Farm proceeding, Cause No. PUD 200900167,
- 11 5. The PSO and OG&E Red Rock proceeding, Cause Nos. PUD 200500516, 200600030,
12 and 200700012;
- 13 6. The PSO Lawton cogeneration proceeding, Cause PUD 200200038; and
- 14 7. The OG&E PowerSmith cogeneration proceeding, Cause PUD 200300564.

15 I presented oral testimony before the Commission in the Minco, Red Rock, Lawton, and
16 Power Smith proceedings.

17 In addition, I have submitted written testimony in eight Oklahoma Corporation
18 Commission ("Commission") proceedings on behalf of the Oklahoma Industrial Energy
19 Consumers (OIEC):

- 20 1. The PSO request for waiver from the Subchapter 34 rules for procurement, acquisition,
21 purchase, supply, or construction of supply resources, Cause No. PUD 201200034;
- 22 2. The PSO request for approval and cost recovery associated with the purchased power
23 agreement between PSO and Exelon Generation, LLC, Cause No. PUD 200900099;

- 1 3. PSO's request of the Commission to appoint an Independent Evaluator, Cause No.
- 2 PUD 200700418;
- 3 4. The PSO Blue Canyon wind power proceeding, Cause Nos. PUD 200300633;
- 4 5. The PSO Blue Canyon wind power proceeding, Cause Nos. PUD 200300634;
- 5 6. A PSO Rate Case, Cause No. PUD 200300076;
- 6 7. An OG&E Rate Case, Cause No. PUD 200500151; and
- 7 8. The remand portion of the Lawton cogeneration proceeding, Cause No. PUD
- 8 200200038. I also presented oral testimony before the Commission in the OG&E Rate
- 9 Case and the Lawton Remand proceeding.

10 In addition to my appearances before the Commission, I have testified before state
11 commissions in Maine, Arkansas, Connecticut, Georgia and Nevada and regulatory
12 commissions in the Canadian provinces of Manitoba and New Brunswick. I have also
13 testified before siting agencies in Massachusetts, Connecticut, and Rhode Island and in
14 state and federal court proceedings in several civil litigations.

15 A full listing of my appearances is included in Exhibit DEP-1.

16 **Q. Have your qualifications previously been accepted by this Commission?**

17 A. Yes, they have.

1 **II. PURPOSE OF TESTIMONY**

2 **Q. On whose behalf are you appearing in these proceedings?**

3 A. I am testifying on behalf of the Oklahoma Cogeneration LLC (Oklahoma Cogeneration).
4 La Capra Associates has been retained by Oklahoma Cogeneration to provide advice and
5 expert testimony with respect to this proceeding.

6 **Q. Please describe the purpose of your testimony.**

7 A. I am providing testimony pertaining to application of Oklahoma Gas and Electric (OG&E)
8 for approvals to replace the existing Mustang steam generating units with natural gas-fired
9 combustion turbines (CTs).

10 My testimony addresses the company's requests for determinations from the Commission
11 regarding the Company's request for pre-approval of the Mustang CTs and for the recovery
12 of costs of those facilities.

13 **Q. Please summarize your conclusions and recommendations.**

14 A. In this testimony, I observe that OG&E has bypassed the Commission competitive
15 procurement requirements and recommend that the Commission deny OG&E's application
16 for approval of the Mustang CTs and the de facto waiver of the Commission's competitive
17 procurement rules that underlies that application. In particular, OG&E plans to construct
18 120 MW of new CTs in 2019 while dismissing continued use of the 120 MW of capacity
19 from Oklahoma Cogeneration beyond its current PPA. I recommend that OG&E's
20 application be denied to allow for OG&E to consider market alternatives to the Mustang
21 CTs and the plan for an additional 560 MW combined cycle unit for a 2020 in-service date.

1 **III. OG&E's APPLICATION**

2 **Q. Please summarize OG&E's application?**

3 A. On August 6, 2014, OG&E filed its application requesting an order granting approval for
4 its plan to comply with environmental regulations under the federal Clean Air Act, to
5 construct the Mustang CTs, and recovery riders for both of those proposals. Along with
6 the application, OG&E filed supporting Direct Testimony of Donald R. Rowlett, Usha M.
7 Turner, Leon C. Howell, John J. Reed, Robert J. Burch, John, J. Spanos, and Sheri D.
8 Richard. Mr. Rowlett's testimony describes the projects, OG&E's reasons for the requests,
9 and OG&E's assessments of the benefits to customers. The proposal for the Mustang CTs
10 is addressed in the testimony of Mr. Rowlett, Mr. Burch, and Mr. Howell. The testimony
11 of Ms. Richard and Mr. Spanos address the proposed rate recovery mechanism.

12 **Q. What findings has OG&E requested in its application with respect to the Mustang**
13 **CTs?**

14 A. OG&E has explicitly asked the Commission to make the following findings with respect
15 to the Mustang CTs:

- 16 1) Approval of OG&E's plan to construct the new CTs at the Mustang generating
17 site;
- 18 2) Approval of recovery of costs for the Mustang unit retirements and the new
19 Mustang CTs through a rider mechanism; and
- 20 3) Approval of depreciation rates for the Mustang unit retirements and the Mustang
21 CTs.

22 In addition, the application indicates that OG&E will not be conducting a competitive
23 procurement for the capacity requirements resulting from the retirement of the Mustang

1 units, which also requires the Commission to grant a waiver from the competitive
2 procurement requirements in the rules.

3
4 **IV. MUSTANG MODERNIZATION PLAN**

5 **A. Parameters of OG&E's Mustang Modernization Plan**

6 **Q. Please summarize OG&E's Mustang Modernization Plan.**

7 A. OG&E's application includes plans to retire one of the existing Mustang coal units in 2015
8 and the remaining three in 2017.¹ This plan for the retirement of these units reduces the
9 capacity in OG&E's generation portfolio by 50 MW in 2015 and 413 MW in 2017. OG&E
10 proposes to use this site to construct new generation units.

11 **Q. How does OG&E plan to replace the retired capacity?**

12 A. OG&E's filings state that the Company intends to replace the capacity by building new
13 Mustang combustion turbine units (CTs) on the site of the retired steam units.²

14 **Q. Please describe the replacement capacity portion of the plan.**

15 A. OG&E plans to construct a total of approximately 400 MW of new peaking units as part
16 of what it calls the "Mustang Plant Modernization." The Company will construct at least
17 280 MW of new CT capacity to be in service by summer 2018 and the remaining 120 MW
18 for an in-service date of summer 2019, for a total of 400 MW of new peaking capacity.³

19 OG&E plans to construct these units on the site of the existing Mustang plant, claiming
20 that there are several benefits of this strategy (discussed below).

¹ Direct Testimony of Robert Burch ("Burch Direct"), p. 17.

² Ibid. at pp. 21-22.

³ Direct Testimony of Leon Howell ("Howell Direct"), pp. 10-11.

1 **Q. What is the estimated cost of building the new Mustang CT units?**

2 A. OG&E provided cost estimates for new capacity in its 2014 Integrated Resource Plan
3 Update (“2014 IRP Update”)⁴. Based on a Sargent & Lundy study, new CT capacity would
4 cost between \$985/kW and \$1,657/kW, depending on the technology and configuration.
5 For 400 MW, this would be \$394.0-\$662.8 million.

6 The cost estimates provided in the IRP have since been updated. OG&E’s most current
7 project cost estimate was prepared by Burns & McDonnell.⁵ This report estimates the total
8 plant cost at between \$411.8 million - \$426.3 million, depending on the labor escalation
9 rate used.⁶

10

11 B. Need for Capacity Issues

12 **Q. Has OG&E demonstrated the need for the proposed replacement capacity?**

13 A. In OG&E’s 2014 IRP Update, the Company provided a forecast of their supply-demand
14 balance assumptions. These assumptions are represented in Figure 1.

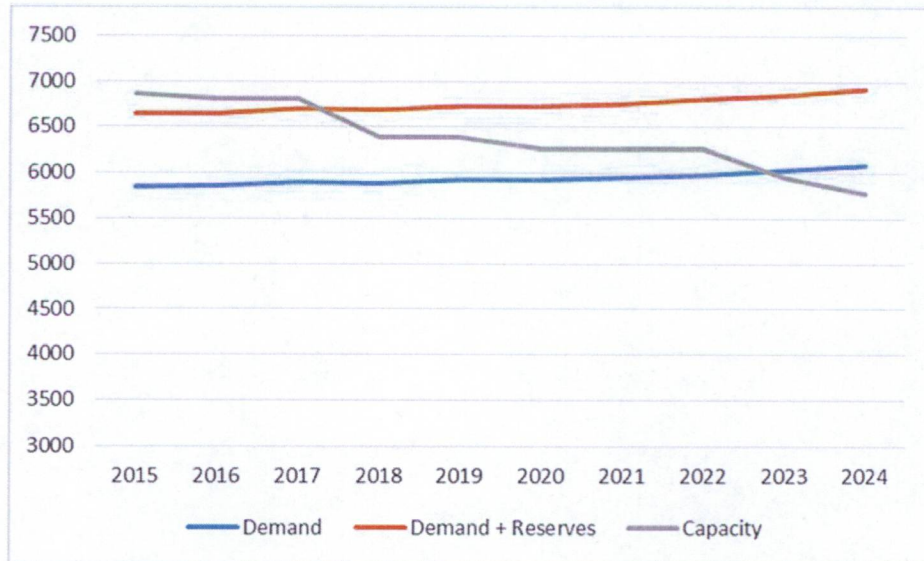
⁴ OG&E’s 2014 IRP Update is attached to the Direct Testimony of Leon Howell filed in this docket.

⁵ OG&E’s Response to Data Request QOSC 1-10.

⁶ Ibid., Attachment, p. 4-7. Note that the costs cited here are engineering cost estimates, and do not necessarily represent costs that will be reflected in rate base.

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Figure 1: OG&E 2014 IRP Update supply-demand balance (MW)



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The capacity decreases in 2016 and 2018 are related to the Mustang retirements (discussed above). The capacity decreases in 2020 and 2023 result from the expiration of PPAs with Oklahoma Cogeneration and AES Shady Point, respectively. According to OG&E’s analysis, without additional capacity, it will not meet the required 12% capacity margin beginning in 2018. OG&E’s plan to construct the Mustang CTs in 2018 and 2019 resolves this deficiency in 2018 and 2019 and move the year of need for further new capacity to 2020.

10

Q. How does OG&E’s capacity need correspond to the assumed expiration of the PPA with Oklahoma Cogeneration?

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A. As noted above, OG&E plans to build 280 MW of CT capacity to be in service prior to the 2018 summer peak, and another 120 MW of CT capacity before the 2019 summer peak. The PPA with the 120 MW Oklahoma Cogeneration plant ends after the 2019 peak. Therefore, but for a one year overlap in 2019 when both are in service, the 120 MW CT

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1 addition is essentially a capacity replacement for the Oklahoma Cogeneration PPA, which
2 OG&E assumes will not be renewed.⁷

3 **Q. Did OG&E consider the Oklahoma Cogeneration capacity as an alternative to the**
4 **need for the 120 MW in 2019 in its analysis?**

5 A. No they did not. OG&E did not evaluate any alternative sources of capacity other than the
6 new-build CT and CC options. OG&E's IRP process and proposed plan do not evaluate
7 or consider the Oklahoma Cogeneration unit, which is a reliable source of affordable
8 capacity that could continue to serve OG&E's customers for years to come.

9 The Oklahoma Cogeneration unit could be a very cost effective alternative to OG&E's
10 need for an additional 120 MW of capacity in 2019.

11 **Q. Please explain how the Oklahoma Cogeneration unit could provide capacity to**
12 **substitute for the 120 MW CT unit scheduled for service in 2019?**

13 A. If OG&E were to acquire the Oklahoma Cogeneration capacity, the unit could continue to
14 provide 120 MW of capacity and associated energy though the remaining life of the unit.
15 According to OG&E's 2014 IRP Update figures, the timing of capacity need and the
16 assumed end of the Oklahoma Cogeneration capacity is such that there would be a capacity
17 shortfall of 56 MW in 2019 if the second installation of new CT capacity was not
18 completed. In lieu of constructing 120 MW of new CT's in 2019, OG&E could obtain 56
19 MW of short-term capacity in 2019 and utilize capacity obtained from Oklahoma
20 Cogeneration.

⁷ According to OG&E's 2014 IRP Update figures, if the Mustang steam units are retired and only 280 MW of new CT capacity is built, there would be a capacity shortfall of 56 MW in 2019, with the Oklahoma Cogeneration PPA still active. This shortfall could be addressed through a short term capacity purchase.

1 In the 2014 IRP Update, OG&E tested two CT buildout scenarios and determined that
2 delaying the final 120 MWs until 2019 was a lower NPV cost solution than building that
3 capacity for operation in 2018, along with the 280 MW planned for 2018 operation. OG&E
4 has provided no evidence that it has similarly investigated any alternative options of
5 delaying new capacity until 2020.

6 **Q. Under OG&E's current plan, when will the Company need additional capacity**
7 **beyond the new CT unit in 2019?**

8 A. OG&E estimates that it will have additional capacity need in 2020.⁸ The timing of this
9 need also coincides with the expiration of the PPA with Oklahoma Cogeneration.
10 According to the 2014 IRP Update, OG&E is planning to place an additional 560 MW
11 combined cycle unit in service in 2020, above and beyond the new CT capacity. While
12 OG&E has not asked for approval of this additional generation in this proceeding, it is
13 important to begin planning for this need, particularly given the fact that the Company has
14 estimated that just acquiring the appropriate environmental permits for a new facility could
15 take two years or more.⁹ The lead time for a new combined cycle capacity for operation
16 in 2020 is such that planning for such a facility would need to begin soon.

⁸ Howell Direct, p. 11.

⁹ OG&E's Response to Data Request PUDKC 2-8.

1 C. Replacement Capacity Details

2 **Q. Why has OG&E selected this particular plant configuration?**

3 A. OG&E witnesses have provided several explanations supporting the Company's proposed
4 replacement capacity strategy, particularly as it pertains to using the existing Mustang site:

- 5 • Emissions permits: According to OG&E, by building new capacity on the site of an
6 existing plant, OG&E can take advantage of a provision in the Clean Air Act whereby
7 the emissions of the existing unit can aid the permitting of the new unit.¹⁰
- 8 • Existing infrastructure: OG&E claims that the existing Mustang site has existing
9 infrastructure needed to support new generation, such as roads, maintenance facilities,
10 water rights, and transmission facilities.¹¹
- 11 • Proximity to load: OG&E states that siting a new facility on the existing site, which is
12 close to the Oklahoma City load center, allows for reduced losses and congestion, and
13 better reliability.¹²

14 **Q. Regarding the benefits related to emissions netting, has OG&E quantified this
15 benefit?**

16 A. No. OG&E has stated that it has not identified the cost of the permitting process for a new
17 facility without including the emissions netting.¹³

18 **Q. How has OG&E described the benefit related to emissions netting?**

19 A. OG&E has made several assertions related to the benefits derived from emissions netting
20 from the existing site. The Company claims that the netting process will allow for a shorter

¹⁰ Burch Direct, p. 22.

¹¹ Ibid.

¹² Ibid. at p. 21.

¹³ OG&E's Response to Data Request PUDKC-2.

1 and less costly permitting process. The primary benefit claimed by the Company is that if
2 they are unable to net out existing emissions to the degree they plan, they will not be able
3 to install the full 400 MW of capacity they need.¹⁴

4 OG&E witness Turner explains the process in her testimony.¹⁵ Essentially, the netting
5 process sets a baseline emissions rate from historical emissions at a project site. Taking a
6 5-year historical record of emissions, the 24-month period with the highest emissions is set
7 as the baseline, and this is incorporated in the permitting process for the new capacity.
8 OG&E has identified the “optimal” 24 month period for emissions, and claims that if the
9 approval process is delayed beyond July 2015, they will no longer be able to use this period
10 and it may impact permitting of the new capacity. According to OG&E, this makes
11 approval of their plan time-critical.¹⁶

12 **Q. Has OG&E provided adequate analysis demonstrating the consequences of delaying**
13 **the approval of the new Mustang capacity?**

14 A. No they have not. OG&E has not indicated that they will be unable to build the units if
15 they miss using the “optimal” emissions period, only that such a delay “may” impact the
16 project.¹⁷ Similarly, OG&E has not provided analysis explaining by how many megawatts
17 the project would need to be reduced, or whether or not such a reduction would ultimately
18 impact their resource adequacy. Further, they have not indicated that the permitting under
19 a delay is not feasible, only that it may be more complex.¹⁸

¹⁴ Burch Direct, p. 22.

¹⁵ Direct Testimony of Usha-Maria Turner (“Turner Direct”), pp. 15-17.

¹⁶ Burch Direct, p. 22. See also Turner Direct pp. 16-17.

¹⁷ Burch Direct, p. 22. See also Turner Direct, p. 17.

¹⁸ OG&E’s Response to Data Request PUDKC 2-8.

1 Data provided by OG&E does demonstrate that the highest level of emissions from the
2 existing units – the “optimal” period – did begin in August 2010.¹⁹ However, they have
3 provided no analysis demonstrating how this emissions level specifically relates to the
4 permitting of the new units. Nor have they demonstrated that another 24-month emission
5 period would be insufficient.

6 **Q. Regarding the benefits related to shared infrastructure of using an existing site, has**
7 **OG&E quantified this benefit?**

8 A. No. In fact, the Burns & McDonnell study anticipates that the new units require almost
9 entirely new infrastructure, including a switchyard, roads, buildings, etc.²⁰ The report
10 states that “[t]here will be no shared facilities [or] structures with the existing units, with
11 the exception of the plant raw water system.”²¹

12 **Q. Regarding the existing site’s benefits related to proximity to load, has OG&E**
13 **quantified this benefit?**

14 A. No, it has not. The Company has stated that siting generation close to load yields benefits
15 related to reducing line losses, reducing congestion, supporting voltage control, and
16 facilitating system restoration, but it has not quantified such benefits.²² In addition, the
17 Company has not made any argument that these benefits are not achievable at another
18 location. In fact, to the extent that these characteristics yield key benefits to the OG&E
19 system, the Oklahoma Cogeneration plant would deliver the same benefits due to its similar
20 proximity to Oklahoma City.

¹⁹ OG&E’s Response to Data Request QOSC 1-9 Att.

²⁰ OG&E’s Response to Data Request QOSC 1-10, Attachment, Appendix A.

²¹ Ibid. at 1-1.

²² Burch Direct, p. 21. See also Direct Testimony of Donald Rowlett (“Rowlett Direct”), p. 15.

1 **Q. Has OG&E demonstrated that the Mustang CTs are a unique solution for the**
2 **replacement for the Mustang units it plans to retire?**

3 A. No, it has not. With the acceleration of the Mustang retirements, OG&E has decided to
4 short circuit the process for selecting its options to replace all of the capacity with the new
5 Mustang CTs. As previously discussed, OG&E has made the decision to avoid the process
6 of seeking competitive bids, despite the fact that the Oklahoma Cogeneration unit could
7 displace the need to build the 120 MWs of new Mustang CTs scheduled to be in service in
8 2019.

9

10 D. Consideration of Alternatives to the Mustang CTs

11 **Q. Did OG&E consider any alternatives to building new combustion turbines as**
12 **replacement capacity?**

13 A. Yes, OG&E's 2014 IRP Update did consider three self-build options for new generation
14 facilities:

- 15 • 560 MWs of CC capacity in 2018 (with next capacity addition in 2023)
- 16 • 400 MWs of CT capacity in 2018 (with 560 MWs of CC in 2020)
- 17 • 280 MWs of CT capacity in 2018, 120 MWs of CT in 2019 (with 560 MWs of
18 CC in 2020)

19 For all options, the new capacity was assumed to be owned and operated by OG&E.²³

²³ 2014 IRP Update, pp. 41-43.

1 **Q. What analysis did OG&E conduct to select the CT option?**

2 OG&E evaluated these options using the PCI GenTrader software to calculate production
3 cost of the options. The scenario in which OG&E builds 280 MWs of CTs in 2018 and
4 120 MW of CTs in 2019 yielded the lower net present value of production cost over 30
5 years.

6 In addition to the quantitative analysis, OG&E had several justifications for building CTs
7 rather than the CC. The primary explanation is that with increased wind capacity in SPP,
8 the quick-start capability of the CTs will yield more market revenues and provide more
9 benefits to customers.²⁴

10 **Q. Given that the deferral of the 120 MW CT to 2019 was more economic than installing**
11 **that capacity in 2018, did OG&E evaluate options to defer that unit to 2020?**

12 A. No, they did not include any analysis of deferring the 120 MW CT from 2019 to 2020.

13 **Q. Did OG&E evaluate options for obtaining capacity from Oklahoma Cogeneration or**
14 **other market instead of building new capacity?**

15 A. No, OG&E dismissed the pursuit of market options. The 2014 IRP Update states that
16 “OG&E also determined that no CT’s are available for acquisition in the region.”²⁵ OG&E
17 later stated that this conclusion was developed in the spring of 2014 and is based on its
18 “experience in the SPP marketplace and its general knowledge of what generation

²⁴ Ibid. at p. 28.

²⁵ Ibid.

1 resources were available at that time.”²⁶ The same response to a data request stated that a
2 combined cycle plant submitted an unsolicited offer to sell capacity to OG&E.

3 OG&E witnesses explicitly state that no competitive solicitation was conducted.²⁷

4 **Q. Do you agree with OG&E’s conclusion to dismiss consideration of market**
5 **alternatives to securing replacement capacity for the Mustang retirements?**

6 A. No.

7 OG&E has not considered addressing its capacity needs through purchasing or contracting
8 for existing capacity, despite the fact that the 120 MW Mustang CTs planned for 2019 are
9 functionally a direct replacement for the assumed loss of the Oklahoma Cogeneration
10 capacity due to the expiration of its current PPA.

11 It is notable that OG&E, in dismissing market options, indicates that they know of no CTs
12 available in the SPP market, indicating that their need is not specific to the Mustang site.
13 In fact, OG&E’s strategy for replacing the Mustang retirements contradicts the
14 recommendations of the Company’s own expert witness. In the context of discussing
15 OG&E’s strategy to convert the Muskogee units to natural gas, John Reed (OG&E’s
16 independent expert) states that ideally, OG&E would evaluate options to purchase existing
17 capacity.²⁸ While this discussion is in the context of the coal-to-gas conversion, the same
18 principles apply to building new capacity.

19 Further, it has not demonstrated that combined cycle facilities, such as Oklahoma
20 Cogeneration or other existing combined cycle facilities in the market could not provide

²⁶ OG&E’s Response to Data Request Cogen 1-5.

²⁷ Rowlett Direct, pp. 15-16.

²⁸ Direct Testimony of John Reed (“Reed Direct”), p. 28.

1 suitable replacement capacity as opposed to the new-build combined cycle options that it
2 evaluated in its planning.

3 Finally, with respect to the timing, OG&E does have more time to seek alternatives to the
4 120 MW CT in 2019 and the CC planned for 2020. Even if the timing prohibits testing
5 market options for the 280 MW of CTs slated for 2018 operation, OG&E should consider
6 market options for the 2019 and 2020 planned capacity additions.

7 **Q. Is it your understanding that capacity alternatives exist in the market in Oklahoma?**

8 A. Yes. At the very least, if OG&E had explored the market alternatives, the Company would
9 have learned that Oklahoma Cogeneration capacity was available for OG&E's
10 consideration as an alternative.

11 **Q. Have other Oklahoma utilities taken a different approach to addressing capacity
12 needs?**

13 A. Yes. OG&E's dismissal of the market differs from the approach that Public Service of
14 Oklahoma (PSO) has taken. In planning for the 2016 retirement of the Northeastern coal
15 plant, PSO determined that a PPA with an existing resource would provide the most
16 feasible and economical solution to a capacity shortage.²⁹ In April 2012, PSO issued an
17 RFP for up to 260 MW of long-term market capacity as part of its coal retirement plans.³⁰
18 After receiving multiple responses, PSO contracted with Calpine for a 15-year PPA for 260
19 MW of the Oneta unit.³¹

²⁹ Direct Testimony of Steven Fate (PSO), p. 26. September 26, 2012. OCC Cause No. PUD 201200054.

³⁰ PSO 2012 Integrated Resource Plan. <http://occeweb.com/pu/PSO%202012%20IRP.pdf>

³¹ Direct Testimony of Steven Fate (PSO), pp. 26-30. September 26, 2012. OCC Cause No. PUD 201200054.

1 In addition, PSO is currently conducting a market solicitation for 250 MW of short term
2 capacity.³² This demonstrates an alternate strategy from OG&E's, one which presumes
3 that there is no suitable capacity available in the market.

4

5 E. Relationship to the Environmental Compliance Plan

6 **Q. How does the Mustang Modernization Plan relate to the environmental compliance**
7 **plan also included in this docket?**

8 A. The two plans are not related, except that the two plans have been included in a single
9 application to the Commission.

10 The environmental regulations impact four of OG&E's coal units and three gas units, but
11 do not impact the Mustang units.³³ The environmental compliance strategy includes plans
12 to install scrubbers on some units, and convert coal units to natural gas. The justification
13 for the Mustang retirements is entirely separate from the environmental plans.³⁴

³² <https://www.psoklahoma.com/b2b/rfp/2014ShortTermCapacity/>

³³ Burch Direct, p. 2.

³⁴ Ibid. pp. 18-21.

1 **V. COMPETITIVE PROCUREMENT AND COST APPROVAL ISSUES**

2 **Q. Please explain your understanding of the requirements established in the**
3 **Commission's rules with respect to competitive procurement and the approvals for**
4 **cost recovery that OG&E is seeking for the Mustang Retirement/Replacement Plan.**

5 A. It is my understanding that subchapters 34 (Competitive Procurement) and 38 (Recoverable
6 Costs) of Chapter 35 of the Commission's rules govern the requirements for competitive
7 bidding and cost recovery approvals for constructing new generating facilities such as the
8 Mustang CTs in that plan.

9 Subchapter 34 indicates that a utility must conduct competitive bidding if it is to obtain a
10 presumption of prudence for construction of new long-term electric generation.³⁵ If
11 competitive bidding is not used, there are provisions for the utility to seek a waiver from
12 the competitive bidding requirement prior to taking action to construct the facility.³⁶

13 Subchapter 38 included provisions for a utility's recovery of costs associated with the
14 construction of a generating facility when competitive bidding is used.³⁷ If competitive
15 bidding is not used, there are provisions requiring the utility to open a cause if it wishes to
16 obtain approval of costs before construction starts.

17 **Q. Has OG&E conducted or proposed to conduct competitive bidding associated with its**
18 **need for capacity associated with the Mustang retirements?**

19 A. No. Mr. Rowlett indicates that they did not.³⁸ OG&E also indicated in its 2014 Integrated
20 Resource Plan that it intended to conduct request for proposals for equipment and work

³⁵ 165:35-34-1(a).

³⁶ 165:35-34-3(e).

³⁷ 165:35-38-1 and 165:35-38-5.

³⁸ Rowlett Direct, p. 15:23-25.

1 associated with the Mustang CTs, but does not indicate any intent to solicit alternative
2 generation options,³⁹ which is consistent with Mr. Rowlett's testimony. Competitive
3 procurement of the components of its CTs is not the same as solicitation of alternatives to
4 the CTs.

5 **Q. Has OG&E sought a waiver from the competitive bidding requirements?**

6 A. I have no knowledge of any application for a waiver apart from the information contained
7 in the application in this cause.

8 **Q. Has OG&E provided any explanation of its reasons for not conducting a competitive**
9 **procurement associated with its need for capacity associated with the Mustang**
10 **retirements?**

11 A. The OG&E includes in its testimony reasons why it prefers to preserve generation at the
12 Mustang site and has represented that it has not been able to find any CTs to purchase in
13 the SPP market.⁴⁰

14 In addition, while OG&E has provided some explanation for why it is specifically targeting
15 CTs over CCs,⁴¹ it has not provided any analysis demonstrating any benefits of building
16 400 MWs of CTs over, for example, building 280 MW of CTs and acquiring 120 MW of
17 existing CC capacity from Oklahoma Cogeneration.

³⁹ 2014 IRP Update, Schedule H, page 39.

⁴⁰ Rowlett Direct, pp. 15:25 – 16:8.

⁴¹ See, e.g., 2014 IRP Update, p. 28.

1 **Q. Do you consider these reasons to be sufficient justification to waive the competitive**
2 **bidding requirement?**

3 A. No. These reasons fall short of any demonstration that there are no alternatives in the
4 market to meet the capacity requirements of OG&E, whether it be from existing CTs,
5 alternative new CTs, or capacity from other generating supply options.

6 In particular, the basis for waiving the requirement for the 120 MW CT planned for 2019
7 is not justified. In addition to the added time available for that unit, it is clear that the
8 Oklahoma Cogeneration capacity is available and an option that could be considered in
9 lieu of that unit.

10 OG&E's preference to take advantage of its existing site at Mustang is just that, its
11 preference. The need has not been defined to necessarily preclude generation at other
12 locations, as is evident in the statement that they at least considered whether they could
13 purchase CTs at any location within the SPP market. Further, the need has not been defined
14 to be limited to capacity from facilities other than CTs.

15 **Q. Is OG&E seeking to obtain approval of costs of the Mustang CTs before construction**
16 **starts?**

17 A. Yes. According to the Application filed in this Cause, OG&E is seeking "approval of and
18 determination of need for the Mustang modernization plan under Section 17 O.S. 286(C).
19 In response to discovery, OG&E has indicated that it considers its application in this cause
20 to be its required action under Subsection 35-38-5(e) to seek approval of costs before
21 construction,⁴² which is the section of the Commission's rules that implements Section 17
22 O.S. 286(C).

⁴² See OG&E's Response to Data Request OER 2-4.

1 **Q. Please explain your understanding of Section 17 O.S. 286(C) and Subsection**
2 **35-38-5(e).**

3 A. This statute provides utilities with a mechanism to seek preapproval of costs of new power
4 supplies. Subsection 35-38-5(e) pertains to such an application for preapproval under the
5 statute when competitive bidding is not used, which is the case with the plan for the
6 Mustang CTs. It is my understanding that OG&E is seeking preapproval for the cost of
7 the Mustang Modernization plan, at a cost in excess of \$400 million, using the preapproval
8 procedures established by this statute and Commission rule.

9 **Q. What are your conclusions on the competitive bidding issues associated with its need**
10 **for capacity associated with the Mustang retirements?**

11 A. OG&E has inappropriately bypassed the competitive bidding requirements in the
12 Commission's rules in its plan to construct the 400 MW of CTs at the Mustang site,
13 generally, and the 120 MW of CTs planned at that site for 2019 in particular. While the
14 Company has not formally sought a waiver from the competitive bidding requirements, its
15 presentation in testimony in this cause is effectively seeking such a waiver, as well as
16 seeking cost pre-approval for these facilities under the Subsection 35-38-5(e) which applies
17 in circumstances where competitive bidding has not been utilized.

18 **Q. What is your understanding of the obligation to consider alternatives when a utility**
19 **makes a preapproval application under Subsection 35-38-5(e)?**

20 A. This subsection of the rules specifically apply to the circumstance when the utility seeks
21 preapproval without using the Commission's competitive bidding process. The rules
22 specify that a Cause is to be opened for such applications. Section 17 O.S. 286(C) allows
23 for such an application and Commission consideration of the application, stating:

1 “The Commission shall enter an order on an application filed pursuant to
2 this subsection within two hundred forty (240) days of the filing of the
3 application, following notice and hearing and after consideration of
4 reasonable alternatives.” (emphasis added)

5 It is my understanding that reasonable alternatives are to be considered in a Cause opened
6 under this subsection. The absence of competitive bidding for alternatives does not excuse
7 the consideration of reasonable alternatives.

8 **Q. Do you believe that OG&E has provided sufficient information in this Cause to allow**
9 **the Commission to consider reasonable alternatives to the Mustang Modernization**
10 **Plan at issue?**

11 A. No. As I have described elsewhere in this testimony, OG&E did not test the market in any
12 significant way, whether through competitive bidding or outreach to potential sources of
13 capacity such as Oklahoma Cogeneration, in order to determine if reasonable alternatives
14 to the Mustang Modernization Plan existed. OG&E has failed to provide information in
15 this Cause that would provide this Commission the opportunity to consider reasonable
16 alternatives to its plan.

17 **Q. Do you believe the cost of the plan warrants full consideration of reasonable**
18 **alternatives?**

19 A. Yes. OG&E does not yet have a definitive cost estimate for its plan, but it is clear from
20 the Company’s preliminary estimates that it involves investments in excess of \$400
21 million. This is a substantial investment which coincides with the considerable cost of the
22 environmental compliance plan. A broader consideration of alternatives, including testing
23 for market solutions, is very important for an investment of this magnitude.

24

1 **VI. TREATMENT OF OKLAHOMA COGENERATION IN THE IRP**

2 **Q. Please explain how the OG&E IRP has considered the Oklahoma Cogeneration**
3 **facility.**

4 A. The OG&E 2014 IRP Update assumes that the Oklahoma Cogeneration facility is available
5 to meet OG&E load and reserve requirements through the 2019 peak summer season, after
6 which the contract expires.⁴³ Beginning in 2020, OG&E's 2014 IRP Update no long
7 assumes that capacity is available. As noted in Figure 1 above, the needed capacity in this
8 year includes the loss of the Oklahoma Cogeneration facility.

9 OG&E includes the Oklahoma Cogeneration facility in its GenTrader modeling from 2015-
10 2019, consistent with the term of the existing PPA.

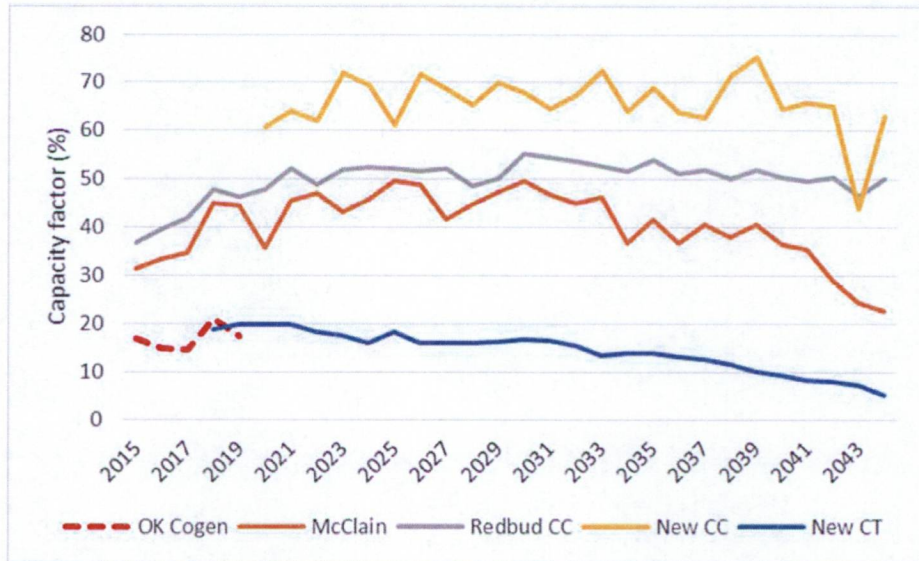
11 **Q. How does the performance of Oklahoma Cogeneration compare to other gas units in**
12 **OG&E's modeled portfolio?**

13 A. The capacity factors of Oklahoma Cogeneration and the other natural gas units modeled
14 by OG&E are depicted in Figure 2. Note that the dispatch level of the new CT units is
15 between 10-20%, similar to the Oklahoma Cogeneration's forecasted operation from 2015-
16 2020. Therefore, on an energy and capacity basis, the Oklahoma Cogeneration unit is
17 functionally similar to the performance of the new Mustang CT units.

⁴³ OG&E's Response to Data Request Cogen 1-2. See also 2014 IRP Update, p. 56.

1

Figure 2: Modeled capacity factor of natural gas units (%)



2

3

VII. SUMMARY OF THE OKLAHOMA COGENERATION FACILITY

Q. Please describe the Oklahoma Cogeneration facility.

A. The Oklahoma Cogeneration facility is a 120 MW combined cycle power plant operating in cogeneration mode, providing power output to OG&E in accordance with an existing PPA. The facility was placed into operation in 1989 and has operated as a PURPA qualifying facility selling power to OG&E since it was constructed. The facility is located in Oklahoma City, proximate to the Mustang site.

Q. What is the capability of the facility to provide power beyond the term of the current PPA?

A. The Oklahoma Cogeneration facility has significant remaining useful life. The owners have represented to me that the unit has been well maintained and they plan for continued operation of the facility well beyond the current PPA. As I have noted earlier, if OG&E had solicited capacity options from the market, it would have obtained information on the

1 condition of the facility and have been able to make its own assessment of its remaining
2 useful life.

3

4 **X. CONCLUSIONS AND RECOMMENDATIONS**

5 **Q. Please summarize your conclusions.**

6 A. Based on my review of OG&E's request for approval of the Mustang CTs as replacement
7 capacity for the retirement of the existing units at the Mustang site, I observe that:

- 8 1) OG&E current timing of the retirement of the exiting Mustang units creates a need for
9 new capacity prior to 2020.
- 10 2) OG&E has proposed the Mustang CTs to provide the replacement capacity needed
11 when those retirement occur.
- 12 3) OG&E has determined that 280 MW of CTs are needed in 2018 and an additional 120
13 MW of CTs are needed in 2019.
- 14 4) OG&E has assumed that it will not utilize any capacity from the Oklahoma
15 Cogeneration facility after the end of the current PPA in 2019.
- 16 5) The 2019 CTs are, in effect, replacement capacity for the assumed loss of Oklahoma
17 Cogeneration capacity.
- 18 6) OG&E has bypassed market options for supplying replacement capacity for the
19 Mustang retirements, contrary to Commission rules requiring competitive procurement
20 for such capacity.
- 21 7) OG&E's application for approval of the Mustang CTs is, in effect, a request of this
22 Commission to grant a waiver to OG&E from its competitive procurement rules.
- 23 8) If the new Mustang CTs are built, OG&E still faces a capacity need in 2020 due to the
24 advanced retirement schedule of the Mustang units as well as the expiration of the

1 Oklahoma Cogeneration PPA. This application does not address that need, but the
2 2014 IRP Update indicates that the Company may intend to build a new combined
3 cycle unit. Given the lead time required for new combined cycle permitting, OG&E
4 will need to initiate competitive procurement to address that capacity need in the very
5 near future.

6 9) OG&E has not demonstrated that new construction of CTs is the least cost solution for
7 its capacity needs in 2018 and beyond.

8 10) OG&E has not considered avoiding the cost of constructing the 120 MWs of new CT
9 capacity (in-service 2019) by acquiring the Oklahoma Cogeneration facility or
10 extending its PPA.

11 **Q. What are your recommendations regarding OG&E's application for approval of the**
12 **Mustang CTs?**

13 A. I recommend that the Commission:

- 14 1) Deny OG&E's application for approval of the Mustang CTs and associated cost
15 recovery mechanism; and
16 2) Deny OG&E's de facto request for a waiver from the Commission's competitive
17 procurement rules for the replacement capacity for the Mustang retirements.
18 3) Require OG&E to issue a competitive solicitation for the replacement capacity. At a
19 minimum, OG&E should be required to solicit alternatives for the 2019 CTs and the
20 planned CC addition in 2020.

21 **Q. Does this conclude your testimony?**

22 A. Yes.



DANIEL E. PEACO
La Capra Associates
President

Daniel Peaco is a utility industry planning specialist with more than 30 years of experience in strategic planning, pricing and price forecasting, rate-making and regulatory policy, power procurement and contracts, and power systems planning. Mr. Peaco has significant experience as an expert witness and as an advisor to senior utility managers and public policy officials. He has provided and directed a broad range of consulting assignments over the past 18 years at La Capra Associates, having served as its President since 2002. In addition, he has held management and planning positions at Central Maine Power, CMP International Consultants, Pacific Gas & Electric, and the Massachusetts Energy Facilities Siting Council.

EMPLOYMENT HISTORY

La Capra Associates	Boston, MA
<i>President</i>	2002-current
<i>Managing Director</i>	1996-2002
Central Maine Power Company	Augusta, ME
<i>Manager, Industrial Marketing and Economic Development</i>	1995-96
<i>Principal, CMP International Consultants</i>	1993-95
<i>Director, Power Supply Planning</i>	1987-93
<i>Power Supply Planning Analyst</i>	1986-87
Pacific Gas & Electric Company	San Francisco, CA
<i>Power Supply Planning Analyst</i>	1985-86
<i>Hydropower Planning Analyst</i>	1983-84
<i>Cogeneration Contracts Analyst</i>	1981-82
Massachusetts Energy Facilities Siting Council	Boston, MA
<i>Planning Engineer</i>	1978-79

EDUCATION

Thayer School of Engineering, Dartmouth College Hanover, NH	
<i>M.S. in Engineering Sciences, Resource Systems and Policy Design</i>	1981
Massachusetts Institute of Technology Cambridge, MA	
<i>B.S. in Civil Engineering, Water Resource Systems</i>	1977

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Review of Georgia Power Company Solar Projects at Forts Benning, Stewart, and Gordon, Report for the Georgia Public Service Commission. October 14, 2014. Lead Consultant and Principal Author.

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<u>Forum</u>	<u>Client</u>	<u>Topic</u>
Maine Public Utilities Commission Docket No. 2014-048	Central Maine Power	Testimony regarding CMP's application for approval Maine Power Connection Transmission Project. Testimony addressed economic benefits associated with Interregional transmission connection and associated wind energy development benefits. Oral Testimony September 18, 2014
US District Court Colorado Civil Action No. 10-CV-02349-WJM-KMT	Nebraska Power Supply Issues Group	Expert testimony regarding Tri-State G&T cost to serve five Nebraska members. Expert Report December 31, 2012 Deposition Testimony February 27, 2013 Oral Testimony May 19, 2014
Public Utilities Board Manitoba, Canada Needs For and Alternatives To (NFAT)	PUB NFAT Panel	Independent Expert (IE) for the review of Manitoba Hydro's Hydropower and Transmission Development Plan for 2,160 MW of hydro capacity at two locations, a 500 kV transmission line to Minnesota, and associated export contracts. Expert Reports I January 24, 2014 Expert Reports II February 28, 2014 Oral Testimony April 8, 9, 10, 11, 2014
Superior Court Windham Unit State of Vermont Docket No. 547-11-12 Wmev	TransCanada Hydro Northeast, Inc.	Expert testimony regarding the valuation of a four hydropower facilities totaling 260 MW in appeal of appraised values in the towns of Vernon, Rockingham, and Barnet VT. Valuation Report July 15, 2013 Deposition February 4, 2014
Arbitration AAA Case No. 11 198 Y 002014 12	City of Burlington, VT Burlington Electric Dept.	Expert testimony regarding the valuation of a 7 MW hydropower facility and the determination of fair value for transfer of ownership of the asset. Valuation Report June 21, 2013 Rebuttal Report July 26, 2013 Deposition Testimony September 12, 2013 Oral Testimony October 4, 2013

Arkansas Public Service Commission Docket No. 12-069-U	General Staff of the AK Public Service Comm.	Testimony regarding the evaluation of Entergy Arkansas's proposed divestiture of its transmission business to ITC Holdings.								
		<table border="0"> <tr> <td>Direct Testimony</td> <td>April 19, 2013</td> </tr> <tr> <td>Surrebuttal Testimony</td> <td>June 7, 2013</td> </tr> <tr> <td>Supplemental Testimony - Rate Mitigation</td> <td>Aug 15, 2013</td> </tr> </table>	Direct Testimony	April 19, 2013	Surrebuttal Testimony	June 7, 2013	Supplemental Testimony - Rate Mitigation	Aug 15, 2013		
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Supplemental Testimony - Rate Mitigation	Aug 15, 2013									
Arbitration AAA Case No. 11 153 Y 02133 11	Owners of Brassua Dam FPL Hydro Maine LLP Madison Paper Industries Merimil Ltd Partnership	Expert testimony regarding the valuation of a 4 MW hydropower facility and the determination of amortization reserve obligations under FERC license provisions.								
		<table border="0"> <tr> <td>Valuation Report</td> <td>November 1, 2012</td> </tr> <tr> <td>Amortization Reserve Report</td> <td>November 1, 2012</td> </tr> <tr> <td>Amortization Reserve Rebuttal</td> <td>November 15, 2012</td> </tr> <tr> <td>Oral Testimony</td> <td>December 5, 2012</td> </tr> </table>	Valuation Report	November 1, 2012	Amortization Reserve Report	November 1, 2012	Amortization Reserve Rebuttal	November 15, 2012	Oral Testimony	December 5, 2012
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Burrillville Board of Review	TransCanada; Ocean States Power Holdings, Ltd..	Expert testimony regarding the valuation of a 540 MW combined cycle power plant in appeal of an appraisal conducted for the Town of Burrillville, RI.								
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Arkansas Public Service Commission Docket No. 10-011-U	General Staff of the AK Public Service Comm.	Testimony regarding the evaluation of Entergy Arkansas's strategic reorganization options and request for authorization to transfer control of its transmission asset to the Midwest ISO.								
		<table border="0"> <tr> <td>Oral Testimony</td> <td>May 31, 2012</td> </tr> <tr> <td>Surrebuttal Testimony</td> <td>April 27, 2012</td> </tr> <tr> <td>Direct Testimony</td> <td>March 16, 2012</td> </tr> </table>	Oral Testimony	May 31, 2012	Surrebuttal Testimony	April 27, 2012	Direct Testimony	March 16, 2012		
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Oklahoma Corporation Commission Cause No. PUD 201100186	OK Corporation Commission OK Attorney General	Testimony regarding a 60 MW Wind Energy Purchase Agreement and Cogeneration deferral Agreement proposed by Oklahoma Gas & Electric Company, addressing cost pre-approval, and a requested waiver from competitive procurement. requirements.								
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Pre-filed Testimony	February 8, 2012									

Arkansas Public Service Commission Docket No. 10-011-U	General Staff of the AK Public Service Comm.	Testimony regarding the evaluation of Entergy Arkansas's strategic reorganization options upon its exit from the Entergy System Agreement.								
		<table border="0"> <tr> <td>Oral Testimony</td> <td>September 9, 2011</td> </tr> <tr> <td>Surrebuttal Testimony</td> <td>August 18, 2011</td> </tr> <tr> <td>Supplemental Initial Testimony</td> <td>July 12, 2011</td> </tr> <tr> <td>Initial Testimony</td> <td>February 11, 2011</td> </tr> </table>	Oral Testimony	September 9, 2011	Surrebuttal Testimony	August 18, 2011	Supplemental Initial Testimony	July 12, 2011	Initial Testimony	February 11, 2011
Oral Testimony	September 9, 2011									
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State Corporation Commission of the State of Kansas	The Landowner Group	Testimony regarding the application of ITC Great Plains for a siting permit for a 345-kV Transmission Line addressing project need and route selection methodology.								
		<table border="0"> <tr> <td>Initial Testimony</td> <td>April 18, 2011</td> </tr> </table>	Initial Testimony	April 18, 2011						
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Federal Energy Regulatory Commission (FERC) RM10-23-000	Maine Public Utilities Commission, et. al.	Expert Affidavit regarding economic analysis methodology for transmission project evaluation. Provided in reply comments on the FERC Transmission Planning and Cost Allocation NOPR.								
		<table border="0"> <tr> <td>Affidavit</td> <td>November 12, 2010</td> </tr> </table>	Affidavit	November 12, 2010						
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Maine Public Utilities Commission Docket No. 2008-255	Central Maine Power	Testimony regarding CMP's application for approval the Lewiston Loop 115kV Transmission Project. Testimony addressed non-transmission alternatives.								
		<table border="0"> <tr> <td>Oral Testimony</td> <td>November 16, 2008</td> </tr> <tr> <td></td> <td>December 14, 2010</td> </tr> <tr> <td>Rebuttal Testimony</td> <td>November 8, 2010</td> </tr> <tr> <td></td> <td>August 27, 2010</td> </tr> </table>	Oral Testimony	November 16, 2008		December 14, 2010	Rebuttal Testimony	November 8, 2010		August 27, 2010
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Oklahoma Corporation Commission Cause No. PUD 201000029	OK Corporation Commission OK Attorney General	Testimony regarding a 99.2 MW wind farm power purchase agreement and green energy choice tariff proposed by Public Service Company of Oklahoma, addressing cost pre-approval, resource need, and competitive procurement. requirements..								
		<table border="0"> <tr> <td>Pre-filed Testimony</td> <td>October 5, 2010</td> </tr> <tr> <td>Oral Testimony</td> <td>November 3, 2010</td> </tr> </table>	Pre-filed Testimony	October 5, 2010	Oral Testimony	November 3, 2010				
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Oklahoma Corporation Commission Cause No. PUD 201000037	Oklahoma Attorney General	Testimony regarding a 198 MW wind farm proposed by Oklahoma Gas & Electric, addressing cost pre-approval, resource need, and competitive procurement. requirements.								
		<table border="0"> <tr> <td>Pre-filed Testimony</td> <td>June 11, 2010</td> </tr> </table>	Pre-filed Testimony	June 11, 2010						
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Connecticut Dept. of Public Utilities Control (DPUC) Docket No. 10-02-07	Connecticut Energy Advisory Board (CEAB)	Lead witness sponsoring the CEAB's 2010 <i>Comprehensive Plan for the Procurement of Energy Resources</i> .								
		<table border="0"> <tr> <td>Oral Testimony</td> <td>June 2 & 3, 2010</td> </tr> </table>	Oral Testimony	June 2 & 3, 2010						
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Georgia Public Service Commission	Georgia Public Service Commission Public Interest Advocacy Staff	Witness sponsoring testimony regarding integrated resource planning methods, renewable energy, solar PV demonstration projects, and uncertainty analysis.
Docket No. 31081		Written Testimony May 7, 2010 Oral Testimony May 18, 2010
Maine Public Utilities Commission	Central Maine Power	Testimony regarding CMP's application for approval \$1.5 B Maine Power Reliability Transmission Project. Testimony addressed non-transmission alternatives and economic benefits, economics of proposed solar alternative, wind energy development benefits.
Docket No. 2008-255		Oral Testimony October 10, 2008 November 19, 2008 December 21, 2009 February 4, 2010 Rebuttal Testimony December 4, 2009 April 3, 2009
Oklahoma Corporation Commission	Oklahoma Attorney General	Testimony regarding a 102 MW wind farm proposed by Oklahoma Gas & Electric, addressing cost pre-approval, resource need, and competitive procurement requirements.
Cause No. PUD 200900167		Pre-filed Testimony Sept 29, 2009
Oklahoma Corporation Commission	Oklahoma Industrial Energy Consumers (OIEC)	Testimony regarding a power contract pre-approval and recovery of Independent Evaluator costs of Public Service Company of Oklahoma.
Cause No. PUD 200900099		Pre-filed Testimony July 14, 2009
Connecticut Dept. of Public Utilities Control (DPUC)	Connecticut Energy Advisory Board (CEAB)	Lead witness sponsoring the CEAB's 2009 <i>Comprehensive Plan for the Procurement of Energy Resources</i> .
Docket No. 09-05-02		Oral Testimony June 30, 2009
Connecticut Dept. of Public Utilities Control (DPUC)	Connecticut Energy Advisory Board (CEAB)	Lead witness sponsoring the CEAB's 2008 <i>Comprehensive Plan for the Procurement of Energy Resources</i> . This Plan is the first prepared under the State's new integrated resource planning statute.
Docket No. 08-07-01		Oral Testimony August 28, 2008 September 22, 2008 October 3, 2008

Maine Superior Court Civil Action Docket No. cv-06-705	Worcester Energy Co., Inc.	Expert opinion regarding renewable energy and power procurement services. Pre-filed Report January 30, 2008 Oral Testimony March 18, 2009
Massachusetts Dept. Of Telecommunications And Energy Docket No. DTE/DPU-06-60	Russell Biomass	Testimony regarding economic, reliability and environmental need for renewable power in the Massachusetts and New England in support of Russell Biomass petition for a zoning exemption. Pre-filed Testimony June 2007 Oral Testimony October 30, 2007
Hawaii Public Utilities Commission Docket No. 04-0046	Hawaii Division of Consumer Advocacy	Testimony regarding Hawaii Electric Light Company's integrated resource plan. Pre-filed Testimony September 28, 2007 Oral Testimony November 26, 2007
Nevada Public Utilities Commission Docket No. 06-12002	Nevada Attorney General Bureau of Consumer Protection	Testimony regarding the prudence of Sierra Pacific Power Company in its purchased power expenses for the period December 2001 through November 2002. Pre-filed Testimony September 14, 2007
Oklahoma Corporation Commission Cause No. PUD 2005516 Cause No. PUD 2006030 Cause No. PUD 2007012	Oklahoma Attorney General	Testimony regarding a 950 MW coal-fired generation facility proposed by Public Service of Oklahoma and Oklahoma Gas & Electric, including IRP, competitive procurement, and construction financing issues. Pre-filed Testimony May 21, 2007 Rebuttal Testimony June 18, 2007 Oral Testimony July 26, 2007
Oklahoma Corporation Commission Cause No. PUD 2002-038 REMAND	Oklahoma Industrial Energy Consumers (OIEC)	Testimony regarding a power contract proposal of Lawton Cogeneration and the pricing analysis of Public Service Company of Oklahoma. Pre-filed Testimony October 28, 2005 Rebuttal Testimony March 17, 2006 Oral Testimony May 9, 2006
New Brunswick Board of Commissioners of Public Utilities (PUB) Ref: 2005-002	New Brunswick Power Distribution Company	Testimony regarding La Capra Associates' three technical audits of the NBP-Disco purchased power budget and variance analyses for FY 2004 – 2006. Oral Testimony February 14-22, 2006

Connecticut Department of Public Utility Control Docket No. 05-07-14 Phases I and II	Connecticut Energy Advisory Board	Testimony regarding Connecticut's need for electric capacity to meet reliability requirements and to mitigate congestion charges in the wholesale markets.
		Oral Testimony February 14-22, 2006 May 1, 2006 June 15, 2006 September 26, 2005
Hawaii Public Utilities Commission Docket No. 03-0372	Hawaii Division of Consumer Advocacy	Testimony regarding competitive bidding rules and integrated resource planning.
		Oral Testimony December 12-16, 2005
Oklahoma Corporation Commission Cause No. PUD 2005-151	Oklahoma Industrial Energy Consumers (OIEC)	Testimony regarding resource planning, prudence of generation investment of Oklahoma Gas & Electric Company.
		Pre-filed Testimony September 12, 2005 Rebuttal Testimony September 29, 2005 Oral Testimony October 18, 2005
Oklahoma Corporation Commission Cause No. PUD 2003-076	Oklahoma Industrial Energy Consumers (OIEC)	Testimony regarding resource planning, prudence of generation investment and fuel and purchased power expenses of Public Service Company of Oklahoma.
		Pre-filed Testimony January 4, 2005
Oklahoma Corporation Commission Cause No. PUD 2003-633/4	Oklahoma Industrial Energy Consumers (OIEC)	Testimony regarding power contract proposal for Blue Canyon wind development and avoided costs of Public Service Company of Oklahoma.
		Pre-filed Testimony August 16, 2004
Civil Litigation Maine Superior Court Docket No. CV-01-24	Central Maine Power Co.	Factual and expert witness in litigation regarding pricing provisions of a purchased power agreement between Central Maine Power and Benton Falls Associates.
		Deposition Testimony April 28, 2004
Oklahoma Corporation Commission	Oklahoma Attorney General	Testimony regarding power contract proposal for PowerSmith Cogeneration and avoided cost analysis of Oklahoma Gas & Electric Company.
		Pre-filed Testimony February 18, 2004 Rebuttal Testimony March 16, 2004 Oral Testimony August 4, 2004
Nevada Public Utilities Commission	Nevada Attorney General Bureau of Consumer Protection	Testimony regarding the Nevada Power Company's Integrated Resource Plan and associated financial plan.
		Pre-filed Testimony September 19, 2003 Oral Testimony October 15, 2003

Massachusetts Energy Facilities Siting Council Docket No. EFSB-02-2	Cape Wind	Testimony regarding economic, reliability and environmental need for power in the Massachusetts and New England power markets regarding the need for new wind power facility. Pre-filed Testimony February 14, 2003 Oral Testimony August 6&7, 2003
Maine State Board of Property Tax Review	United American Hydro	Testimony regarding the Maine and New England power market prices pertaining to the valuation of a hydro-electric power facility in Winslow, Maine. Oral Testimony June 18, 2003
Nevada Public Utilities Commission Docket No. 03-1014	Nevada Attorney General Bureau of Consumer Protection	Testimony regarding the prudence of Sierra Pacific Power Company in its purchased power expenses for the period December 2001 through November 2002. Pre-filed Testimony April 25, 2003
Oklahoma Corporation Commission Cause No. PUD 2002-038	Oklahoma Attorney General	Testimony regarding a power contract proposal of Lawton Cogeneration and the pricing analysis of Public Service Company of Oklahoma. Pre-filed Testimony December 16, 2002 Oral Testimony May 22, 2003
Arkansas Public Service Commission	General Staff of the AK Public Service Comm.	Testimony regarding the Development of Competition in Electric Markets and the Impact on Retail Consumers in Arkansas. Pre-filed Testimony September 4, 2001
Arkansas Public Service Commission	General Staff of the AK Public Service Comm.	Testimony regarding the Development of Competition in Electric Markets and the Impact on Retail Consumers in Arkansas. Pre-filed Testimony September 29, 2000
Arkansas Public Service Commission	General Staff of the AK Public Service Comm.	Testimony regarding the establishment of uniform Policies and guidelines for a Standard Service Package. Staff Proposal and Comments June 13, 2000 Reply Comments July 21, 2000 Sur reply Comments August 2, 2000 Oral Testimony August 8, 2000 Petition for Rehearing Rebuttal Testimony November 15, 2000 Oral Testimony November 29, 2000

Arkansas Public Service Commission	General Staff of the AK Public Service Comm.	Testimony regarding the determination of the merits of declaring retail billing services competitive effective At the start of retail open access. Oral Testimony June 27, 2000 Pre-filed Rebuttal Testimony June 23, 2000 Pre-filed Testimony June 16, 2000 Oral Testimony May 10, 2000
Arkansas Public Service Commission	General Staff of the AK Public Service Comm.	Testimony regarding the minimum filing requirements for market power studies to be filed by the Arkansas Electric utilities and affiliated retail companies. Oral Testimony June 1, 2000
Amer. Arb. Assoc. No. 50T 198 00197-98	Vermont Joint Owners	Testimony regarding economic damages resulting from alleged breach of a long-term purchase power agreement between Hydro-Quebec and Vermont utilities (VJO). Oral Testimony May 25, 2000 Pre-filed Rebuttal Testimony February 10, 2000 Pre-filed Testimony August 13, 1999
Rhode Island Energy Facilities Siting Board	Indeck-North Smithfield, L.L.C.	Testimony regarding economic, reliability and environmental need for power in the Rhode Island and New England power markets regarding the need for new, merchant power facility. Pre-filed Testimony August 16, 1999 Oral Testimony August 17, 2000 Pre-filed Testimony January 26, 2001 Oral Testimony March 23, 2001
Civil Litigation Maine Superior Court Docket No. CV-98-212	Central Maine Power Co.	Factual and expert witness in litigation regarding pricing provisions of a purchased power agreement between Central Maine Power and Regional Waste Systems. Deposition Testimony May 5, 1999
Connecticut Energy Facilities Siting Council Docket No. 190	PDC – El Paso Meriden LLC	Testimony regarding economic, reliability and environmental need for power in the Connecticut and New England power markets regarding the need for new, merchant power facility. Pre-filed Testimony January 25, 1999
Rhode Island Energy Facilities Siting Council Docket No. SB-98-1	R. I. Hope Energy, L. P.	Testimony regarding economic, reliability and environmental need for power in the Massachusetts and New England power markets regarding the need for new, merchant power facility. Oral Testimony November 4, 1998 Pre-filed Testimony October 30, 1998

Massachusetts Energy Facilities Siting Council Docket No. EFSB-91-101A	Cabot Power Corp.	Testimony regarding economic, reliability and environmental need for power in the Massachusetts and New England power markets regarding the need for new, merchant power facility. Oral Testimony May 27, 1998 Pre-filed Testimony August 15, 1997
Massachusetts Energy Facilities Siting Council Docket No. EFSB-97-2	ANP Blackstone Energy	Testimony regarding economic, reliability and environmental need for power in the Massachusetts and New England power markets regarding the need for new, merchant power facility. Oral Testimony April 6, 1998 Pre-filed Testimony January 23, 1998
Massachusetts Energy Facilities Siting Council Docket No. EFSB-97-1	ANP Bellingham	Testimony regarding economic, reliability and environmental need for power in the Massachusetts and New England power markets regarding the need for new, merchant power facility. Oral Testimony February 3, 1998 January 28, 1998
Rhode Island Energy Facilities Siting Board Docket No. SB-97-1	Tiverton Power Associates LP	Testimony regarding economic, reliability and environmental need for power in the Rhode Island and New England power markets regarding the need for new, merchant power facility. Oral Testimony October 15, 1997 Pre-filed Testimony October 1, 1997
Maine Public Utilities Commission Docket No. 92-102	Central Maine Power	Testimony regarding CMP's avoided cost methods and practices pertaining to the prudence of power purchase contract decisions with regard to contract awards and contract management. Oral Testimony July 1993 Deposition Testimony February 25, 1993 March 1, 1993 Pre-filed Rebuttal Testimony June 7, 1993 Pre-filed Testimony June 15, 1992
Maine Public Utilities Commission Docket No. 92-315	Central Maine Power	Testimony regarding CMP's avoided cost methods and practices pertaining to the setting of long-term avoided costs, CMP's Energy Resource Plan, and the relationship of marginal costs of generation to embedded costs. Supplemental Pre-filed Testimony April 20, 1993 Pre-filed Testimony February 17, 1993
Maine Public Utilities Commission Docket No. 87-261 Docket No. 88-111	Central Maine Power	Testimony regarding CMP's avoided cost methods and practices pertaining to the setting of long-term avoided costs, CMP's Energy Resource Plan, and the proposal for a 900 MW power Contract with Hydro Quebec. Oral Testimony Summer 1988 Pre-filed Testimony October 31, 1987