

Before the Public Service Commission of Utah

Docket No. 17-057-09

**IN THE MATTER OF THE
APPLICATION OF QUESTAR GAS COMPANY TO MAKE TARIFF
MODIFICATIONS TO CHARGE TRANSPORTATION CUSTOMERS FOR
PEAK HOUR SERVICES**

Prepared Direct Testimony of

Howard E. Lubow

On Behalf of the Utah Division of Public Utilities

July 26, 2017

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1 **Introduction and Background**

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

3 A. My name is Howard E. Lubow. My business address is Overland Consulting, 11551 Ash Street,
4 Suite 215, Leawood, Kansas 66211.

5
6 **Q. Please state your current position with Overland Consulting and summarize your professional
7 experience relevant to your testimony in these proceedings.**

8 A. I am President of Overland Consulting. I have testified in numerous proceedings across the
9 country on gas distribution utility issues including gas curtailment, gas supply procurement, class
10 cost of service, and tariff structures. I have also addressed natural gas pipeline matters, both on
11 behalf of pipelines and shippers. I have addressed these matters on behalf of utilities and state
12 commissions before state and federal regulatory agencies in the United States and Canada. A
13 more complete representation of my experience is included in my resume attached to this
14 testimony as DPU Exhibit 2.1 DIR.

15
16 **Q. Would you please briefly summarize your experience as it relates to gas pipeline and
17 distribution company operations and procurement practices?**

18 A. I was the Chief Operating Officer of a gas pipeline company in the Midwest. In this capacity,
19 among others, the Senior Vice-President, Engineering and Operations reported directly to me.
20 Within the Overland Consulting practice, we perform management audits of gas distribution
21 companies, assessing various aspects of governance, finance, and operations. More specifically,
22 these audit reviews encompass gas operations and supply practices. These engagements are
23 focused on management effectiveness, policies and procedures, and the assessment of utility
24 operations in light of industry best practices. I am currently the Project Director in a review of
25 NYSEG and Rochester Gas & Electric on behalf of the New York State Public Service Commission.
26 Included with the scope of this audit is the review of gas planning, forecasting, and procurement
27 practices.

28
29 **Q. What is the scope of your testimony in this proceeding?**

30 A. Overland was retained by the Division of Public Utilities (“DPU”) to review the Questar Gas
31 Company (“QGC” or “the Company”) filing in this proceeding and to specifically address:

- 32 • The underlying cause or causes of the January 6, 2017, Weather Event resulting in
33 interruptible customer gas curtailments;
34 • The efficacy of gas planning and procurement based on design day peak hour demand;
35 and
36 • The recovery of peak hour costs assignable to transportation customers.

37
38 This testimony addresses my review of these subjects; and more specifically, the direct
39 testimony of Company witness Kelly B. Mendenhall.

- 40
41 **Q. What material did you rely upon as the basis for your review and analysis?**
42 A. I generally relied upon the following materials:
43 • The Application, direct testimony, and exhibits filed by QGC on May 1, 2017;
44 • Proposed Tariff Sheets filed with the Application;
45 • Presentation materials distributed at the Technical Conference held on June 28, 2017;
46 • Responses to discovery; and
47 • Interviews conducted at QGC corporate offices in Salt Lake City in the June 26 to 28 time
48 period.

49
50 **January 6, 2017, Weather Event**

- 51 **Q. Are you aware of the fact that some QGC customers were curtailed for a period of time on**
52 **January 6 and 7 of this year?**
53 A. Yes. It is my understanding that interruptible customers were notified of an interruption of
54 service late morning on January 6 and that the service interruption was lifted early morning the
55 following day, on January 7.¹ At the time of the curtailment, there were 571 transportation and
56 41 interruptible customers. These customers were curtailed to the lesser of their firm
57 scheduled nomination or their maximum firm contract limit. A total of 271 transportation and
58 21 interruptible customers, or 48% of these customers, were billed an interruption penalty.²

59
60

¹ February 1, 2017, QGC IRP Workshop.

² Response to Discovery, DPU 1.06.

61 **Q. How does QGC identify the interruptible customers on its system?**

62 A. QGC has service agreements with its transportation and interruptible customers, wherein the
63 customer agrees to being subject to curtailment. The process of identifying customers with
64 interruptible loads is largely based on representations made by customers in these service
65 agreements. QGC cannot identify with certainty those customers who use gas for non-heating
66 purposes or who may have alternate fuel capabilities. However, the Company has identified
67 21 customers using gas for electric generation or the processing of metals.³

68

69 **Q. As a practical matter, what are the policies, procedures, and regulatory mechanisms in place
70 to assure that interruptible customers have service characteristics consistent with this tariff?**

71 A. Based upon section 3.02 of the Company's Tariff, those customers who fail to reduce usage
72 receive a penalty of \$45/Dth, plus applicable supplier non-gas costs and commodity costs.
73 Additionally, Interruptible customers are also required to increase the amount of firm
74 contracted demand for a three-year period.⁴ This seems to be a reasonable deterrent to
75 customers who may otherwise be provided service on a tariff inconsistent with their service
76 requirements and/or demands.

77

78 **Q. Regarding the January 6, 2017, Weather Event, did the QGC pipeline suppliers have limitations
79 on deliveries due to firm capacity or operating constraints on the pipelines?**

80 A. No. Supply reductions resulted from production shortfalls and processing plant shut downs, not
81 limitations of transportation capacity on the transmission pipelines.⁵ These production
82 shortfalls impacted supplies for transportation customers as well as sales customers.⁶

83

84 **Q. At the time of the January 6 Weather Event, was QGC experiencing peak or design day
85 conditions?**

86 A. No. The average mean temperature at the Salt Lake City airport was 7 degrees. The QGC design
87 day weather assumption is -5 degrees. The Company had adequate transmission pipeline
88 capacity on January 6, 2017.⁷

³ Response to Discovery, DPU 1.07; and Interviews with QGC representatives.

⁴ Response to Discovery, DPU 1.16.

⁵ Response to Discovery, DPU 1.17.

⁶ Response to Discovery, DPU 1.18.

89 **Q. Based upon your review of the materials available to you, were the curtailment procedures**
90 **followed by the Company during the January 6 Weather Event appropriate?**

91 A. Yes.

92

93 **Questar Gas Company Peak Hour Demand**

94 **Q. Have you had an opportunity to review the direct testimony of Kelly B. Mendenhall, the**
95 **Company witness sponsoring the analysis of peak hour demand, proposed services necessary**
96 **to meet this demand, and the proposal to charge transportation customers a portion of firm**
97 **peaking costs now being incurred?**

98 A. Yes, I have. I have reviewed the analysis of peak hour requirements, as well as the exhibits
99 accompanying this testimony. The balance of my testimony will address this material, including
100 the recommendations proposed at this time.

101

102 **Q. Would you please summarize the primary points raised by Mr. Mendenhall regarding peak**
103 **hour requirements?**

104 A. Mr. Mendenhall sponsors an analysis of historical customer demand assuming peak weather
105 conditions as reflected on QGC Exhibit 1.2. His Exhibit 1.3 provides a graphical representation of
106 estimated hourly demand occurring at the time of the 2016/2017 peak day. Based on this
107 analysis, Mr. Mendenhall concludes that the peak hour demand is 17% greater than the average
108 hourly demand that occurs during the peak day. Again, based on this analysis, QGC has
109 proposed both short-term and long-term options it now finds necessary to meet demands that
110 may occur during the peak hour on a design day.

111

112 **Q. Do you have any reason to challenge the QGC analysis that indicates a 17% spread in the peak**
113 **hour over the average hourly demand during a peak weather period?**

114 A. I do not. For purposes of my review of the QGC recommendations, I have accepted the results
115 of their analysis in this regard.

116

117

⁷ Response to Discovery, DPU 1.19.

118 **Q. Do you agree with the idea of planning supply requirements on the basis of a peak hour**
119 **versus a peak or design day event?**

120 A. No. There are supply and operational options available to manage customer demand during a
121 design day period. Pipelines provide for a certain level of variation in the delivery of peak day
122 nominations, while also charging for services in excess of delivery tolerances. Within limits, local
123 distribution companies (“LDCs”) such as QGC can also control supply needs by coordination of
124 volumes taken at various delivery points among its various pipeline suppliers. During periods of
125 peak demand, the Company can also draw from its gas storage facilities. Of course, aside from
126 these options, QGC can implement DSM programs or better align current programs to moderate
127 demand during peak conditions.

128
129 **Q. Has QGC historically developed its supply requirements based upon peak hour demand?**

130 A. No. Until recently, it has planned firm capacity needs on the basis of peak or design day load
131 requirements.

132
133 **Q. Does the Company design its distribution system on a design peak day or a design peak hour?**

134 A. The system is designed to meet the design peak day.⁸

135
136 **Q. Has the Company made any material changes in recent years to the methodology it employs**
137 **in its forecast model for peak day planning?**

138 A. No. Its modeling approach to estimate firm sales under peak design day conditions has
139 remained the same over the past ten years.⁹

140
141 **Q. In your experience, are you aware of a gas planning process to design upstream transmission**
142 **requirements based upon peak hour conditions?**

143 A. No.

144

145

⁸ Response to Discovery, DPU 1.11.

⁹ Response to Discovery, DPU 2.02.

146 **Q. Have you seen any literature or industry practice consistent with the QGC proposal to meet its**
147 **system requirements on the basis of peak hour requirements?**

148 A. No.

149

150 **Q. Did you ask the Company to provide you with any material it may have in support of its peak**
151 **hour planning and analysis?**

152 A. I did. In a data request, I asked the Company to “please provide any AGA, NARUC, or other
153 industry publications that address the use of a peak hour for gas industry planning or utility cost
154 allocation purposes that are in the Company’s possession.” The response to this request was
155 that the Company had no such studies.¹⁰

156

157 **Q. In your experience, have you previously performed utility cost of service studies relied upon**
158 **by regulators?**

159 A. Yes. I have performed numerous electric, gas, and water cost of service studies both on behalf
160 of utilities and regulators. The gas cost of service studies involved both transmission pipeline
161 and gas distribution companies. In some cases, these studies also included production and
162 gathering facilities and operations.

163

164 **Q. Have you ever considered the use of peak hour data as a basis to allocate the capacity**
165 **component of gas distribution costs?**

166 A. No.

167

168 **Q. Are you aware of the use of peak hour data relied upon by other parties in the various gas**
169 **studies in which you have been involved?**

170 A. No.

171

¹⁰ Response to Discovery, DPU 2.06. In an update to this request, QGC provided a reference to in a 1969 AGA publication that referred to “peak hour or peak day requirements” in discussing the allocation of capacity costs. The Fourth Edition of this publication, “Gas Rate Fundamentals”, published in 1987, references the use of a Peak Day as a basis for allocations of capacity costs by coincident demand (at pages 141-143). There is no reference to a peak hour allocation in this discussion. Similarly, a NARUC publication issued in June 1989, entitled “Gas Distribution Rate Design Manual, The Peak Day Demand,” as the basis for allocation of fixed costs (at pages 31 and 32). Again, there is no reference to a peak hour allocation in this discussion.

172 **Q. In its last rate filing made in 2016, did Questar Gas use a peak day or a peak hour as its basis**
173 **for distributing capacity costs?**

174 A. It used peak day data.¹¹

175

176 **Q. Do any of the Dominion Energy gas utility affiliates design or acquire transmission pipeline**
177 **capacity based on peak hour requirements?**

178 A. No.¹²

179

180 **Q. How does Questar Gas define what constitutes its design day peak?**

181 A. The design day is based on a mean temperature of -5 degrees Fahrenheit at the Salt Lake City
182 Airport. Wind speed is assumed to be at the maximum speed observed in the historical data.
183 Firm transportation contract quantities are assumed as the level of firm demand by the
184 transportation class of customers.¹³ A design day is assumed to be a once in 20 year event.¹⁴

185

186 **Q. When did QGC last experience a design day condition?**

187 A. It occurred in 1963; over 50 years ago.¹⁵

188

189 **Q. Has there been any more recent experience of conditions approaching a design day condition?**

190 A. Yes. In 1990, the average mean temperature was -4 degrees.¹⁶

191

192 **Q. Were any firm sales customers curtailed at that time?**

193 A. No.¹⁷

194

195

¹¹ Docket No. 16-057-03; Direct Testimony of Austin Summers on behalf of Questar Gas Company, "Peak Day Factor Study", at lines 180-230.

¹² Response to Discovery, DPU 2.08.

¹³ Response to Discovery, DPU 2.03.

¹⁴ Interviews conducted with QGC representatives, June 26, 2017.

¹⁵ Kelly Mendenhall email dated June 27, 2017, re 2017 IRP Technical Conference.

¹⁶ Kelly Mendenhall email dated June 27, 2017, re 2107 IRP Technical Conference.

¹⁷ Response to Discovery, DPU 2.09.

196 **Q. Have you reviewed the historical actual firm sales peak day customer requirements?**

197 A. Yes. DPU Exhibit 2.2 DIR shows the actual firm sales for over the last 20 heating seasons. The
198 design day peak is also shown, as well as comparisons in the difference in actual sales to design
199 requirements. Over the last 20 years, the actual firm sales demand has been at least 15% below
200 the design day requirement and has averaged over 20% below design peak demand levels.

201

202 **Q. Can you compare the firm capacity available to these design day and actual firm demands?**

203 A. Yes. For the 2016/2017 heating season, QGC has approximately 1.01 MMdth/day of firm
204 capacity available from its pipeline suppliers.¹⁸ This compares to actual firm sales of
205 974,095 Dth experienced in that heating season and 996,189 Dth in the 2014/2015 season,
206 which was the highest experienced during the 20 year period.

207

208 **Q. Does this include the peak hour service of 120,000 Dth/day recently acquired from Kern River
209 Gas Transmission Company (“Kern River”)?**

210 A. No.

211

212 **Q. Have you considered the withdrawal capacity from firm storage?**

213 A. No. QGC also had the ability to withdraw approximately 300,000 Dth/day from storage facilities
214 in the last heating season.

215

216 **Q. Just to be clear, in looking at DPU Exhibit 2.2 DIR, the QGC estimate of design day demand for
217 firm sales customers for the 2016/2017 heat season was 1,316,588 Dth. Is that correct?**

218 A. Yes.

219

220 **Q. Assuming that a design day occurred in the last heating season, the Company had about
221 1,011,000 of transmission capacity and about 300,000 of storage capacity correct?**

222 A. Yes. Again, this excludes the 120,000 of peak hour service from Kern River.

223

¹⁸ Response to Discovery, DPU 2.01, Attachment 3.

224 **Q. I understand that you may disagree with the Company's interest in meeting peak hour**
225 **capacity requirements, but would you please state how much additional capacity would be**
226 **required to cover a design peak hour over the peak day requirement?**

227 A. Yes. An additional 340,000 Dth/day is forecasted for the 2017-2018 heating season.¹⁹ As a
228 point of reference, the design day peak requirements for the 2016-2017 heating season were
229 1,316,588 Dth for firm sales customers and 423,201 Dth firm transportation customers.²⁰

230

231 **Q. Has the Company taken any action to meet this peak hour demand that it now believes it**
232 **must plan for and accommodate in its supply portfolio?**

233 A. Yes. I mentioned this purchase more generally. To be somewhat more specific, QGC requested
234 that Kern River (and other potential pipelines) develop a service to address its peak hour needs.
235 This led to an Agreement with Kern River under which QGC now has the ability to nominate
236 additional volumes during a peak period condition. The Agreement provides for an equivalent
237 of an additional 100,000 Dth of Firm Peaking Service at a cost of \$864,500. This cost was
238 included in the Company's pass through filing in May.²¹

239

240 **Q. Aside from QGC, have any other shippers elected to take service under the Kern River Rate**
241 **Schedule for this new service?**

242 A. No.²²

243

244 **Q. Are you aware of any other plans or commitments QGC has made to address its peak hour**
245 **requirements?**

246 A. The Integrated Resource Plan Submitted to this Commission on June 14 indicates that:

247 For the 2017-2018 heating season, the Company has also entered into a Precedent
248 Agreement with the Company Questar Pipeline for 250,000 Dth/D of hourly Firm
249 Peaking Service, subject to FERC approval.²³

250

¹⁹ Dominion Energy Utah/Wyoming Integrated Resource Plan Submitted June 14, 2017; page 8-1.

²⁰ Response to Discovery, DPU 1.05, Attachment.

²¹ Direct Testimony of Kelly B. Mendenhall at page 3, lines 53-67.

²² Response to Discovery, DPU 1.10.

²³ Dominion Energy Utah/Wyoming Integrated Resource Plan Submitted June 14, 2017, at pages 8-4 to 8-5.

251 **Q. In your opinion, are the Agreements made or pending to secure these additional peak hour**
252 **services necessary at this time?**

253 A. No. As demonstrated on DPU Exhibit 2.2 DIR, actual firm sales have been well below Design Day
254 requirements over the 20-year historical period shown in this comparison.

255

256 **Q. To the extent that QGC needs additional firm capacity, does it have more economical options**
257 **available to it at this time?**

258 A. Yes. Kern River has posted bid solicitations for capacity up to approximately 250,000 Dth/day
259 from Wyoming to California. This option is likely to produce the most economical cost of
260 incremental capacity, if needed.²⁴

261

262 **Proposal to Assign Peak Hour Transmission Pipeline Costs to Firm Transportation Customers**

263 **Q. In the event that the Commission may ultimately disagree with your conclusions regarding the**
264 **Company's actions to secure peak hour services, is it appropriate for transportation customers**
265 **to incur a proportionate share of these costs as proposed in the QGC filing?**

266 A. I would have to answer this question with a qualified yes. I do not believe that either the firm
267 sales or firm transportation customers need or benefit from Agreements for peak hour services.
268 However, if the Commission finds this to be in the interest of its firm sales customers, it would
269 also follow that the firm transportation customers are, or may have the ability to be, similarly
270 benefitted.

271

272 **Q. Does this complete your prepared direct testimony?**

273 A. Yes, it does.

²⁴ Response to Discovery, DPU 2.05.



Howard E. Lubow, President

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GENERAL

Mr. Lubow is President of Overland Consulting. He has more than 30 years of experience as a public utility consultant. His consulting engagements have encompassed a broad spectrum of management, finance, and regulatory issues for electric, gas, water, pipeline, and telephone utilities. Recent project experience includes focused management audits, analysis of utility diversification and acquisition plans, prudence studies, accounting systems design, cost-of-service determination and allocation, utility property valuation, rate of return determinations, and rate design issues. Mr. Lubow has testified in more than 100 regulatory and civil litigation proceedings and has testified in approximately 20 jurisdictions through the country.

PROFESSIONAL WORK HISTORY

Overland Consulting

1991 – Present

President

Responsible for administration and review of management auditing, regulatory consulting, and litigation support services. Provide expert witness services in projects involving decision analysis, damages assessment, ratemaking, valuation, and accounting.

Kansas Pipeline Company

1997 – 1999

Executive Vice President, Chief Operating and Financial Officer

Responsible for the day-to-day operations of this natural gas pipeline, as well as direct responsibilities associated with the financial, accounting, and regulatory functions of the Company. Implemented a reengineering and downsizing program that resulted in a major reduction in operating expenses. Negotiated new gas supply and transportation contracts. Renegotiated credit lines on more favorable terms. Responsible for the negotiation and acquisition of a natural gas marketing company. Developed and implemented a management incentive program for senior executives. Developed due diligence and presentation materials relied upon by potential buyers of Kansas Pipeline assets.

Amerifax, Inc. (Americonnect)

1990 – 1991

Chief Executive Officer

Directed the IPO for this telecommunications switchless rebiller. The company implemented a national marketing program, focusing primarily in the Midwest. After five years, the company was acquired for approximately three times its IPO valuation.

LMSL, Inc.

1983 – 1990

President

Responsible for administration and review of regulatory services projects and research studies. Expert witness in regulatory proceedings. Director of special projects including management audits, financing feasibility studies, property acquisition and merger feasibility studies, and development of innovative solutions to current regulatory issues.

Drees Dunn Lubow & Company

1976 – 1982

Managing Partner

Responsible for projects for utility clients. Responsibility included financial and managerial analysis of public utility companies and the presentation of expert testimony before regulatory commissions.

Troupe, Kehoe, Whiteaker & Kent

1972 – 1976

Senior Regulatory Consultant

Responsible for special services work for utility clients, including accounting systems design, cost-of-service determination and allocation, budgeting, and rate designs. Performed fair value determinations, developed cost analysis studies, curtailment requirements analysis, and forecasts of utility operations.

Kansas City Power & Light Company

1968 – 1972

Senior Accountant

Analyzed accounting and reporting procedures, taxes, and costs of operations. Assisted in the preparation of Federal and State income tax returns and the Annual Report to stockholders. Assisted with rate filings in Kansas and Missouri. Developed tax basis property accounting system.

PROFESSIONAL EXPERIENCE***ELECTRIC AND GAS***

- Project Director in a management and operations audit of New York New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation, both subsidiaries of Avangrid Networks, the ultimate parent being Iberdrola, S.A. headquartered in Madrid, Spain. The scope of the review included corporate governance, finance, electric and gas planning, project and work management, and customer service functions.
- Engagement Director in a comprehensive management and operations audit of Central Hudson, on behalf of the New York State PSC. The audit includes a comprehensive assessment of the utility's construction program planning processes and an evaluation of the efficiency of the utility's operations with a focus on opportunities to improve performance.
- Project Director in a focused review of the general rate application of Southwest Gas Corporation, on behalf of the Arizona Corporation Commission. The review addresses procurement activities, depreciation studies, rate design and revenue decoupling, and a class cost of service study.
- Project Director in the review of the proposed merger between Exelon Corporation and Pepco Holdings, Inc., on behalf of the Maryland PSC. Appeared as the lead policy witness, addressing financial, governance, and rate issues implicit in the merger review.
- Project Director in the review of the proposed merger between Exelon Corporation and Pepco Holdings, Inc., on behalf of the Delaware PSC. Prepared written testimony, addressing financial, governance, and rate issues implicit in the merger review.
- Project Director in a focused audit of all major electric and gas utilities in the State of New York. The audit addressed the reliability and comparability of operating metrics reported to the Commission concerning electric reliability, gas safety, and customer service.
- Project Manager in a management audit of South Jersey Gas Company and its parent, South Jersey Industries. The audit addressed compliance with affiliate transaction rules, as well as all primary

functional areas of utility and corporate operations. Specifically addressed corporate governance, finance, gas operations, gas safety, and gas procurement functions within the audit. Reviewed implications of diversification on utility risk.

- Project Director in a focused review of PG&E practices associated with their gas transmission system. This project arose from the San Bruno incident, which led to intense investigations at the state and federal level. Overland was retained by the California PUC to audit the management operations and financial commitments of PG&E necessary to assess the adequacy of resources supporting gas safety policies and procedures. In this context, capital expenditures and operating budgets were reviewed in relation to regulatory commitments reflected in customer rates over time. Provided testimony on the financial capacity of PG&E to support capital investments needed to upgrade gas safety and reliability across the transmission system, as well as to consider the implications of potential fines under review by the CPUC.
- Project Director in a focused review of PG&E gas distribution gas safety and reliability financial commitments and operations procedures. Considered the adequacy of financial commitments and management practices, as well as consequences of resource restrictions on safety and reliability metrics. Results were provided in a report filed with the CPUC on behalf of the Public Safety Division.
- Project Director in a focused audit of National Grid service and parent company charges to New York jurisdictional utilities. The audit included a review of internal control procedures, as well as an in-depth review of transactions over a 20-month period, ultimately associated with jurisdictional cost-of-service implications. The scope of charges considered in the audit exceeded \$5.0 billion. Overland sampled the total population of costs through direct and statistical analysis.
- Project Director in the review of the proposed merger between Exelon Constellation Energy on behalf of the Maryland PSC. Appeared as the lead policy witness, addressing financial, governance, and rate issues implicit in the merger review. Considered the implications of market power and cost-benefit analyses in making recommendations concerning proposed settlement options.
- Project Manager in a management audit of Connecticut Natural Gas and its parent, Iberdrola USA. The audit scope included all significant functions of the company including a review of corporate governance and executive management, accounting and finance, conservation activities, and operations. A number of special topics were also addressed including: customer demand metering, billing determinates, and billing procedures.
- Project Director in the review of the proposed merger of FirstEnergy and Allegheny on behalf of the Maryland PSC. Appeared as the lead policy witness, addressing financial, governance, and rate issues implicit in the merger review. Proposed conditions necessary to comply with statutory criteria. Provided a set of ring-fencing conditions appropriate to maintain financial and governance policies necessary to protect Potomac Edison, the Maryland regulated utility under review.
- Project Director in the review of the proposed transaction between Constellation Energy and EDF involving, among other things, the sale of a 50% interest in Constellation's nuclear facilities. Lead witness on behalf of the Maryland Staff addressing various transaction issues including: impact on Baltimore Gas & Electric customers, corporate governance and financial implications, ring-fencing measures, and cost-benefit analysis.
- Project Manager of the management audit of Atlantic City Electric and its parent PHI Holdings. The audit covered a detailed review of the corporate governance, strategic planning, executive management, and finance functions. Other key areas of review included affiliate transactions, generation and transmission planning, service quality, and system reliability.

- Project Manager in the review of long-term financial projections prepared by Midland Cogeneration Venture Limited Partnership to be used in regulatory proceedings concerning proposed modifications to a power purchase agreement. The engagement included the sensitivity testing of major variables in the partnership's financial model.
- Project Manager in the review of accounting and finance issues raised by Connecticut utilities in connection with proceedings on long-term capacity measures. Addressed the implications of new generation facilities and DSM projects on regulated electric utilities.
- Project Director for a multi-disciplinary consulting team that reviewed the proposed Exelon/PSEG merger on behalf of the New Jersey Board of Public Utilities. Also the primary expert witness in areas of finance and regulatory policy; responsible for analysis of the merger's financial impacts, in particular the impact on PSE&G, the New Jersey utility. Responsible for recommendations to insure that if the merger is approved, the transaction price, terms, and conditions are fair and reasonable in light of applicable standards for review, and that the New Jersey utility remains financially secure.
- Performed a financial and market feasibility study of a fiber optic network designed to provide SCADA requirements for a large multi-state electric utility interested in selling capacity to telecommunications carriers and high volume customers.
- Sponsored the overall development of utility revenue requirements, jurisdictional, and class cost-of-service studies and rate design issues in numerous electric, gas, water, and telecommunication cases throughout the country.
- Conducted an analysis of the adequacy of depreciation rates for a large independent telephone company located in Texas in order to assess the relationship of capital recovery in light of technological obsolescence.
- Directed and developed a two-day training seminar for the Kentucky Public Service Commission addressing energy and telecommunications issues raised in rate filings, utility planning, and forecast models required in considering the use of projected test year data.
- Supervised and directed a group of PSC Staff members in the review of a rate filing relying upon the use of a projected test year.
- Directed a comprehensive financial and regulatory base period audit of a large gas transmission and distribution company in connection with implementation of an incentive regulation plan. Reviewed savings resulting from force reductions of 1,200 employees and implementation of aggressive cost reduction programs.
- Performed a study of a LDC's gas supply and transportation procurement practices in a post-Order 636 operating environment, where the LDC's transportation and supply services continued to be provided by affiliated companies. The parent reorganized its pipeline transmission and gas supply services into a separate company, transferring jurisdiction from state regulators to the FERC. Developed a model to quantify an optimal supply and transportation mix for state ratemaking purposes.
- Performed a review of intrastate pipeline issues including the use of a straight fixed-variable cost methodology, regulatory treatment of stranded costs, pipeline competition issues, and the merits of a corporate restructuring and related effects on cost-of-service and changes in corporate operations.
- Developed a revenue requirement analysis of an intrastate gas transmission pipeline company addressing issues including: proper recognition of net operating loss carryforwards for ratemaking

purposes, treatment of deferred start-up costs, application of criteria for consideration of acquisition premium in rates, and the recognition and relationship of financial criteria in the rate-setting process.

- Directed a comprehensive review of the \$850 million PG&E gas transmission pipeline expansion project. This study included a review of regulatory considerations in recognizing construction and operating costs in light of competition in the California pipeline markets and, based upon the Commission intended allocation of risks among regulated customers, project shippers, and the pipeline owner.
- Directed a review of gas procurement policies and procedures and addressed the impact of FERC Order 636 for three Wyoming LDC's. This study addressed the relationship of gas pipeline and LDC affiliate organizations associated with the gas supply and transportation functions and the impact of the affiliated organizational structures on gas prices measured against other utilities in the region.
- Reviewed impacts of FERC Order 636 on gas utility distribution companies including staffing and other operating requirements, changes in gas procurement and storage policies, and effects on marketing plans. Also reviewed various pipeline compliance filings, analyzing impacts on firm and non-firm customers.
- Reviewed electric and gas utility fuel procurement policies and procedures, organization, and internal controls in various engagements. Developed recommendations resulting in significant benefits to utilities under review.
- Performed fuel audit investigations in several jurisdictions addressing such issues as economic dispatch procedures, fuel acquisition policies, affiliated mine or pipeline operations, captive mine development, and compliance with Commission rules and regulations. These studies included the review of prices and returns produced from affiliated operations versus third-party options and market prices available.
- Reviewed gas supply issues including procurement policies, supply mix, affiliate transactions, and contract provisions in the context of both cost-of-service and management review proceedings. Provided policy analysis regarding considerations and benefits of increased gas supply and pipeline competition.
- Participated in three FERC interstate pipeline rate proceedings addressing cost-of-service issues, including appropriate classification and allocation methodologies. Also addressed construction costs, overhead, and pipeline operations issues in a major oil pipeline docket.
- Performed a detailed analysis and presented testimony regarding the relative economic benefits of the operation of a LNG plant versus meeting seasonal peak demands through pipeline contract commitments.
- Developed gas transportation pricing criteria and implementation guidelines in the development of tariff service offerings for several gas LDC's.
- Developed numerous gas cost service studies and related rate design recommendations for local distribution companies, as well as pipeline suppliers. Testimony regarding such studies was presented before various state commissions, as well as the FERC.
- Responsible for gas distribution company revenue requirements in over 25 cases addressing accounting, cost allocation, operations, and rate design issues. These cases generally included an analysis of gas production, gathering, and transmission systems owned by the LDC parent.

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- Developed a damages model for a gas utility in civil litigation arising from acquisition of a defective distribution system caused by improper installation practices. Measured incremental construction and operating costs associated with pipe replacement program.
 - Developed a risk analysis model used to associate the relationship between cost recovery and changes in class consumption patterns for a gas distribution company.
 - Developed a quantitative model to estimate jurisdictional and class-peak consumption for distribution gas companies.
 - Performed an overview of regulatory considerations in the oversight of holding company formations and operations. This project was conducted on behalf of a PUC to analyze issues associated with holding company formations, utility diversification, and affiliated interest oversight and controls. The four largest electric utilities in the state were included in the study. The final report covered policy issues, as well as more detailed discussions of monitoring procedures and recommended filing requirements.
 - Developed diversification guidelines for utilities in several jurisdictions. Addressed regulatory concerns and limits that might be implemented to control contingent adverse consequences to utility ratepayers.
 - Performed an overview of regulatory considerations in the oversight of holding company formations and operations. This study addressed appropriate regulatory guidelines and oversight policies for utility and non-utility operations.
 - Directed reviews of two major utility subsidiary gas intrastate pipeline systems, addressing cost-of-service, operating issues, and appropriate accounting for overheads and affiliated transactions from regulated electric utility parent companies.
 - Developed a financing plan and reorganization of corporate structure for an electric utility having gas properties and a separate gas subsidiary. This project included preparation of SEC U-1 filings, filings with regulatory agencies, and testimony to address the impact of the proposed financing and reorganization on cost of capital and rates.
 - Responsible for the independent analysis of the feasibility and economics of consolidation of two major electric utilities. The project focused primarily on the quantification of merger benefits associated with consolidated operations. This in-depth 12-month study also included a detailed review of the scope of services and basis of pricing such services among affiliates. The study addressed a number of affiliate interest issues including: the basis of pricing and level of capacity and/or energy supplied by affiliate versus third parties, the services provided by an affiliate "service" company versus internal resources or purchases from third parties, and the consideration of management resources devoted to non-utility functions and the basis of compensation for such resource transfers.
 - Reviewed American Electric Power System Agreement to assess the reasonableness of fuel and purchased power costs incurred and allocated to its utility operating companies. The analysis also considered system dispatch and related fuel accounting issues associated with energy requirements of regulated customers versus wholesale transactions.
 - Responsible for the development and implementation of phase-in plans utilized to defer initial costs of new generation facilities. Developed assessment criteria and related models to assign capacity from new plant additions between jurisdictional and non-regulated service.

- Developed and conducted a training program on the measurement of relative and absolute fuel productivity measures in ranking utility's effectiveness in fuel procurement and generation system operations.
- Developed a framework for implementation of competitive pricing for an electric utility facing higher costs due to nuclear plant additions. The analysis also encompassed an incentive rate program designed to induce greater use of excess capacity, as well as to improve the utility load factor.
- Analyzed and implemented economic dispatch models used to evaluate the effects of changes in generation capacity and fuel use.
- Conducted several comprehensive nuclear management and prudence reviews addressing construction, management, planning, and economics issues.
- Directed a two-year study of the impacts on and options available to an electric utility due to the abandonment of a nuclear plant near completion. Presented a workout plan to regulators. Study involved a five-year forecast of financial results including construction expenditures and operating costs.
- Developed commercial operation date criteria and guidelines for nuclear power plants which were supported by a national industry survey.
- Developed a financial analysis of a major municipal utility facing an extended outage of its nuclear power plant, with alternative pricing strategies, recognizing competitor pricing in adjacent service areas. Developed multi-year cost-of-service and revenue requirements models and presented results to the Utility Board.
- Performed studies for municipalities to determine the feasibility of acquiring street lighting facilities or, in the alternative, pricing options other than PSC-regulated tariffs.
- Conducted an industry survey of the effectiveness and relative benefits achieved from the use of uniform filing requirements in utility rate applications. The findings were published and distributed to the utility industry and regulatory commissions.
- Developed class cost-of-service studies including identification of direct assignments and review of distribution facilities, methodologies, and criteria for the allocation of generation and bulk power facilities and risk differentials associated with various classes of service.
- Project Director of a review of Kentucky current statutes, regulations, and policies governing integrated resource planning. The project addressed recommendations necessary to mitigate impediments to the development of appropriate demand-side management programs, energy efficiency, renewables, and new generation technology options available within the state.

WATER

- Senior Auditor on two financial audits of a large Kansas City area water utility. Lead Consultant working with this client on an engagement to develop an improved model to forecast water consumption. Provided consulting services to the client in the development of inverted rate design structure.
- Project Director in revenue requirement, cost-of-service, and rate design studies for a Kansas area water utility. Responsible for the filing of two cases before the Kansas Corporation Commission. Also advised this client on the going concern valuation of the utility, relied upon in a transaction for the sale of the utility assets.

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- Developed a class cost-of-service analysis involving a St. Louis area water utility and submitted the study in rate proceedings before the Missouri Public Service Commission.
 - Addressed tax issues impacting the revenue requirements of a large Indiana water company before the Indiana Utility Regulatory Commission.
 - Developed rate filings on behalf of several water companies within the state of Missouri. Responsible for revenue requirement, cost-of-service, and rate design evidence in two applications on behalf of this client.
 - Project Manager of a regulatory audit of California American Water Company's general office activities and costs, including unregulated activities, cost allocations, and affiliate transactions.
 - Project Manager in a rate design analysis of Cal Am Water Phase 2 Rate proceedings. Addressed appropriate rate design considerations in a market area highly constrained by available supply. Proposed use of inverted rates and other conservation mechanisms to address limited supply conditions. Reviewed price elasticity implications on usage, metering options for irrigation customers, cost-of-service analysis, and pricing of service charge component of customer tariffs.

VALUATION

- Conducted a feasibility study regarding the sale of a utility power plant used to provide steam heat and process steam to commercial customers through a downtown area distribution system. The feasibility study addressed energy alternatives and pricing options, cogeneration, and a financial and operating forecast assuming alternative case scenarios based upon various potential ownership structures.
- Performed a valuation analysis on behalf of an investor group for the construction and operation of a high-capacity fiber network between Seattle and Vancouver, designed to serve large commercial companies and telecommunications providers. Provided due diligence analysis of market demand and pricing assumptions, competition, and anticipated construction and operation costs.
- Performed a valuation analysis of an electric utility in the southwest on behalf of a private investor group interested in making a tender offer for the shareholder interests of this public company. Also participated in presentations to investment bankers and commercial banks who were to fund the acquisition.
- Performed a valuation study regarding two natural gas distribution affiliates in the Midwest, whose electric utility parent was seeking offers for a sale of the assets and related securities. Developed analysis of the impact of regulation on property values.
- Performed a valuation analysis of a gas transmission company used to evaluate offers for the company. Developed due diligence and information materials provided to interested parties. Participated in presentations to interested parties with investment bankers.
- Developed a valuation analysis used in litigation proceedings to support the reasonableness of the acquisition price for a rural electric company acquired by an investor-owned electric utility company.
- Developed and applied a model for the determination of the value of helium extracted from natural gas relied upon in litigation cases in federal courts in Oklahoma and Kansas. Analysis required the determination of extraction costs at plants involving four major pipeline systems in the Midwest. Developed studies of construction and operating costs associated with helium extraction plants, as well as the analysis of incremental costs and revenues related in by-product liquid extractions.

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- Performed an analysis of the value of long-term gas transportation contracts relied upon in civil litigation and by regulators. The studies included the development of construction cost and operations estimates, as well as discount rates to be employed.
 - Performed a reproduction cost study for a cable television company located in the west. As part of the project, developed a continuing property records system. The company used the results in the negotiation of the sale of its assets.
 - Represented a member of a consortium formed to build a satellite network for cellular services with commercial applications throughout the United States. Developed a valuation analysis and business plan used in a private placement for equity financing. Acted as a co-investment advisor with a large Wall Street firm in providing these services and making presentations to potential investors.
 - Developed a valuation analysis of nuclear facilities which included a detailed study of assets, and their costs, required for environmental protection as defined by state statutes and federal regulations. The study was relied upon in determining the proper classification and valuation of nuclear assets for property tax purposes.
 - On behalf of a state department of revenue, developed a review of property tax rules and definitions as applied to telephone, cellular, and cable companies. The study included a national survey of valuation practices relied upon by each state department of revenue.
 - Developed appraisals of telecommunications properties for property tax purposes using standard valuation methods. Presented studies in administrative and civil proceedings. Developed cost of capital analysis based upon applications of the DCF and CAPM models.
 - Developed appraisals relied upon in property tax cases involving telecommunications properties where subject sales were involved within two years of the date of property assessment.
 - Prepared appraisals for a natural gas transmission company in appeals of property tax assessments in administrative proceedings in Kansas and Oklahoma.
 - Prepared appraisals of two investor-owned utilities on behalf of the Iowa Department of Revenue. The appraisals included a subject sale analysis and a review of economic obsolescence.
 - Developed appraisals of two Class I railroad companies in contested property tax valuation in civil proceedings in New York. Valuation studies included the review of the cost method based on RCNLD.
 - Assisted an electric G&T coop in valuation and due diligence analysis of electric and gas properties offered for sale by a large independent telephone company.
 - Developed a manual for “Alternative Valuation Procedures” on behalf of the Virginia State Corporation Commission – Public Service Taxation Division in a state that otherwise relies on the cost method.
 - Developed a business plan and other financial advisory services to the National Homebuilders Association joint venture subsidiary, “Smarthouse,” in connection with securities offerings.
 - Developed a complete appraisal of a cogeneration facility on behalf of the Virginia State Corporation Commission – Public Service Taxation Division. The study included “Subject Sale” and “Comparable Company” analyses, as well as a review of capacity and energy forecast prices in the PJM market area.
 - Prepared a complete appraisal of CSX Railroad operating property on behalf of the Florida Department of Revenue.

- Prepared a complete appraisal of Qwest Corporation on behalf of the Iowa Department of Revenue. The appraisals included “Subject Sale” and “Comparable Company” market analyses.
- Developed a complete appraisal of the Dickerson Electric Generation Plant located in Dickerson, Maryland, on behalf of the Maryland State Department of Assessments and Taxation and Montgomery County, Maryland. The plant was comprised of three coal and three gas units with a total capacity of approximately 900 Mw. The ultimate owner of these facilities was Mirant Corporation, now known as GenOn Energy.
- Retained by the Virginia Public Service Taxation Division to perform a valuation of the Portsmouth Genco and James River Genco, both coal-fired generation units. The units were owned and operated by Cogentrix Energy, whose ultimate owner was the Carlyle Group.

TELECOMMUNICATIONS

- Developed and directed a three-day nationally attended conference entitled, “Competitive Strategies in the Local Exchange Marketplace.”
- Directed audits of RBOCs regarding compliance with regulatory accounting requirements, procedures to allocate costs between regulated and non-regulated activities, policies and rules for pricing transactions among affiliates, and monitoring reports filed with regulators.
- Conducted a review of depreciation rates for local exchange telecommunications property of the central division of a national carrier.
- Directed a comprehensive review of the operation of a RBOC telecommunications incentive plan, based upon a revenue sharing mechanism, over a three-year period. The study reviewed quality of service measures, capital expansion programs, workforce reductions, and other major elements of operating expense for the review period. Provided policy options regarding modifications to the incentive plan for prospective consideration.
- Developed a business plan and other related materials for a telecommunications reseller in its initial public offering. Provided ongoing financial and regulatory services, including development of all SEC filings.
- Directed an analysis of switching and other LEC facilities required and costs of providing inter-exchange services to an alternative service provider in the Phoenix, AZ, area.

INCOME TAX

- Expert witness in numerous regulatory proceedings addressing the proper recognition of investment tax credits and accelerated depreciation for accounting and ratemaking purposes. Provided guidance on intent of IRS regulations in use of tax benefits in the rate-setting process. Such testimony was provided in a number of jurisdictions including: Arizona, Oklahoma, Missouri, Indiana, Kansas, and Mississippi.
- Addressed the implications of utility net operating loss carryforwards for GAAP and ratemaking purposes before the Kansas Corporation Commission and the FERC.
- Provided expert analysis and testimony on the proper recognition of tax benefits arising from participation of subsidiary utilities in consolidated tax returns that include regulated and unregulated affiliates.
- Expert witness testimony and analysis of tax timing differences arising from utility operations as considered for income tax, accounting, and ratemaking purposes. Provided an assessment of proper

application of normalization or flow-through of tax timing differences for accounting and ratemaking purposes. These issues were addressed in over 20 cases in various jurisdictions throughout the U.S.

EDUCATION AND PROFESSIONAL CERTIFICATION

- **University of Missouri – Kansas City**, Kansas City, MO
Bachelor of Business Administration – Accounting, Economics Minor, May 1968.
- **University of Missouri – Kansas City**, Kansas City, MO
Graduate studies in quantitative and systems analysis, 1968 – 1970.

PUBLICATIONS AND PRESENTATIONS

- *Utility Merger Review – Training Workshop for Regulators and Consumer Stakeholder Representatives*. An advanced course discussion of utility M&A technical and policy issues. Presented to Regulators and Staff in Dover, DE, and Trenton, NJ, May 2015.
- *Systematic Ring Fencing: A Quantitative Approach to Balancing the Interests of Utilities and Regulation*. Presented at the NARUC Accounting & Finance Spring Meeting, Jacksonville, FL, March 2014.
- *CPUC Knowledge Transfer Workshop – Executive Summary*. A presentation for senior staff and policy makers, February 2014.
- *California Public Utilities Commission Staff Workshop*. An overview of management, financial, and regulatory considerations associated with the PG&E San Bruno incident, November 2013.
- *How to Build a Fence (and When)*; Ryan Pfaff and Leslie Romine, co-authors. *Public Utilities Fortnightly*, October 2013.
- *Constellation/EDF Nuclear Joint Venture: Regulatory Issues and Subsequent Resolutions*. Ryan Pfaff, co-author. Published in the *Electricity Journal*, March 2010. Also presented at the Western States Association of Tax Administrators Annual Meeting, February 2010.
- *Rating Agencies – Current Methods Employed and Recognition of Imputed Debt*. WSATA Unitary Appraisal School, Advanced Class, Logan, UT, January 2008.
- *Accounting Pronouncements Impacting Financial Reporting Associated with Utility Purchase Power Agreements*. WSATA Unitary Appraisal School, Advanced Class, Logan, UT, January 2008.
- *Accounting and Finance Issues Associated with Contracts for Differences – Generation/DSM Projects*. Gregory Oetting, co-presenter. Connecticut Department of Public Utility Control, September 2007.
- *Overview of FIN 46(R), SFAS No. 133, and SFAS No. 71*. Gregory Oetting, co-presenter. Connecticut Department of Public Utility Control, May 2007.
- *The Yield Capitalization Method – Application Issues*. WSATA Unitary Appraisal School, Advanced Class, Logan, UT, January 2007.
- *Blue Chip Method Overview*. 21st Conference of Unit Value States, Memphis, TN, October 2004.
- *Appraisers Find Help in Recent Accounting Rules*. Gregory Oetting, co-author. *Fair & Equitable*, August 2003.
- *Impact of Deregulation and Competition On Property Tax Valuation Within the Utility Industry*. Western States Association of Tax Administrators, Austin, TX, September 1995.

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- *Considerations Associated with the Review of Rate Applications Based Upon Projected Test Periods.* A two-day training seminar conducted on behalf of the Kentucky Public Service Commission, December 1992.
 - *Competitive Strategies in the Local Exchange Marketplace.* A three-day telecommunications conference sponsored by Overland Consulting and the University of Missouri – Kansas City, September 1991.
 - *Framework for a Competitive Strategy.* Southeastern Regional Public Utilities Conference, Atlanta, GA, September 1988.
 - *Regulatory Considerations Inherent in Assessing Utility Culpability.* Richard Ganulin, co-author. *Public Utilities Fortnightly*, 1987.
 - *On the South Texas Project and Other Cases.* Published in *The Advisory*, March 1987.
 - *Regulatory Implications Associated with the Prudence Audit Process.* NARUC Biennial Regulatory Information Conference, September 1986.
 - *Review of The Proposed Amendment to FASB Statement No. 71.* Presentation to the Financial Accounting Standards Board, June 1986.
 - *Rate Moderation Plan Considerations.* Presented at the Public Utilities Accounting and Ratemaking Conference, sponsored by the Texas Society of CPAs, April 1985.
 - *Regulatory and Accounting Implications of Phase-in Plans.* Presented at the NARUC Biennial Regulatory Information Conference with Gary Harpster, co-presenter, September 1984.
 - *The Use of Uniform Filing Requirements by State Regulatory Commissions – An Industry Survey.* May 1980.

Dominion Energy Questar Gas Company				
Design Peak Day to Firm Sales Comparison - 1997 to 2017 Heating Season				
Heating Season	Design Peak Firm Sales (Dth)	Actual Firm Sales (Dth)	Difference	% Difference
1997/98	958,798	635,083	323,715	33.76%
1998/99	977,251	772,309	204,942	20.97%
1999/00	999,650	592,807	406,843	40.70%
2000/01	1,024,602	*	-	-
2001/02	1,046,073	779,359	266,714	25.50%
2002/03	1,086,287	662,201	424,086	39.04%
2003/04	1,068,527	725,763	342,764	32.08%
2004/05	1,076,542	720,777	355,765	33.05%
2005/06	1,106,256	818,191	288,065	26.04%
2006/7	1,144,307	952,121	192,186	16.79%
2007/8	1,163,302	874,365	288,937	24.84%
2008/9	1,195,606	846,142	349,464	29.23%
2009/10	1,256,979	899,353	357,626	28.45%
2010/11	1,271,746	989,785	281,961	22.17%
2011/12	1,280,770	763,290	517,479	40.40%
2012/13	1,285,693	984,588	301,105	23.42%
2013/14	1,267,049	911,101	355,949	28.09%
2014/15	1,285,857	996,189	289,668	22.53%
2015/16	1,305,701	880,378	425,323	32.57%
2016/17	1,316,588	974,095	342,493	26.01%

Source: DPU 2.01, Attachments 1 and 2.
*Some legacy data for this heating season cannot be found. The day of highest sendout may have been Dec 29, 2000.

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