

**STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION**

IN RE: THE NARRAGANSETT ELECTRIC)
COMPANY, D/B/A NATIONAL GRID'S) DOCKET NO. 4916
FY 2020 GAS INFRASTRUCTURE)
SAFETY, AND RELIABILITY PLAN)

PREFILED DIRECT TESTIMONY OF

**Rod Walker,
CEO & President
Rod Walker & Associates
Consultancy, Inc.**

On Behalf of the Rhode Island Division of Public Utilities and Carriers

February 4, 2019

Prepared by:
Rod Walker
1320 Mayes Road
Toccoa, Georgia 30577
(706) 244-0894
rwalker@rwalkerconsultancy.com

TABLE OF CONTENTS

Section	Description	Page Nos.
I.	INTRODUCTION.....	1-3
II.	PURPOSE OF TESTIMONY	4
III.	ISR PLAN EVALUATION PROCESS	4-6
IV.	REVIEW OF ANALYSIS	6-11
V.	CONCLUSION	12-14

1 **DIRECT TESTIMONY OF JOHN RODNEY (ROD) WALKER**

2
3 **I. INTRODUCTION**

4
5 **Q. PLEASE STATE YOUR NAME AND THE BUSINESS ADDRESS OF YOUR**
6 **EMPLOYER.**

7 A. My name is John Rodney (Rod) Walker. I am employed by Rod Walker & Associates
8 Consultancy, Inc. (“RW&AC”). RW&AC is located at 1320 Mayes Road, Toccoa,
9 Georgia 30577.

10
11 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS MATTER?**

12 A. I am testifying on behalf of the Rhode Island Division of Public Utilities and Carriers
13 (“Division”).

14
15 **Q. WHAT DOES YOUR POSITION WITH RW&AC ENTAIL?**

16 A. RW&AC is a technical advisory and management consulting firm. As CEO and President
17 of RW&AC, I am responsible for the overall development, direction, supervision, and
18 preparation of technical advisory and management consulting projects for our clients,
19 including involvement in capital replacement program reviews, system modeling and
20 planning reviews, project engineering, planning and design reviews, construction
21 management, organizational assessments, due diligence reviews, strategic planning,
22 regulatory compliance and providing expert witness testimony.

1 Q. **WOULD YOU PLEASE OUTLINE YOUR EDUCATIONAL BACKGROUND?**

2 A. I graduated from Clemson University in Clemson, South Carolina in 1985 with a Bachelor
3 of Science Degree in Civil Engineering.

4

5 Q. **ARE YOU A MEMBER OF ANY PROFESSIONAL SOCIETIES?**

6 A. I am a Board Member of the American Public Gas Association. I am also active in the
7 Southern Gas Association and the American Gas Association.

8

9 Q. **PLEASE BRIEFLY DESCRIBE YOUR EXPERIENCE WITH NATURAL GAS
10 UTILITIES.**

11 A. I have worked in the natural gas industry since 1985. In the first seventeen years of my
12 career, I worked in engineering, operations and management roles at the Atlanta Gas Light
13 Company, and as Utilities Director for the City of Hartwell, Georgia and the City of
14 Toccoa, Georgia. Through my work in the gas industry, I gained significant experience in
15 the areas of natural gas utility operations, management, design engineering, system
16 reliability analysis, as well as the design and construction of hundreds of natural gas
17 infrastructure projects (pipelines, regulator stations, and tap stations). My industry work
18 has also focused on system reliability and safety, system improvements for future
19 expansion and replacement of aging infrastructure.

20

21 After my seventeen years of working in the gas industry, I have worked for several national
22 energy consulting firms, R. W. Beck/SAIC, Halcrow, Black & Veatch as well as RW&AC,
23 a gas industry consulting firm I started in 2015. In the role of a gas industry consultant, I

1 have continued working with domestic and international utilities in the areas of capital
2 planning, replacement programs evaluations, due diligence, organizational assessments,
3 strategic planning, regulatory compliance and engineering the design and construction of
4 various infrastructure projects.

5
6 Currently, I serve as an advisor to the California Energy Commission (“CEC”) on natural
7 gas industry issues. Since 2016, I have been a member of the Independent Review Team
8 (along with the Los Alamos Labs) evaluating the impact of the Aliso Canyon storage field
9 leak (and reduced gas supply) on the state-wide California and Los Angeles basin natural
10 gas supply, particularly as it affects power generation and reliability of natural gas and
11 power. I have written numerous white papers and articles on subjects affecting the natural
12 gas utility industry.

13
14 **Q. HAVE YOU PREVIOUSLY TESTIFIED AS AN EXPERT BEFORE THE RHODE**
15 **ISLAND PUBLIC UTILITIES COMMISSION?**

16 A. No. I have not testified before the Rhode Island Public Utilities Commission
17 (“Commission”)

18
19 **Q. HAVE YOU PREVIOUSLY TESTIFIED AS AN EXPERT IN OTHER**
20 **JURISDICTIONS?**

21 A. I have not testified in other jurisdictions but as I mentioned I serve as an advisor in
22 California to the CEC regarding various state and natural gas issues. I also serve as an
23 advisor to the California Public Utilities Commission regarding natural gas issues in several
24 dockets.

1

2 **II. PURPOSE OF TESTIMONY**

3

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

5 A. The purpose of my testimony is to provide the Commission with my findings and
6 recommendations on behalf of the Division regarding the Gas Infrastructure, Safety, and
7 Reliability FY 2020 Proposal of The Narragansett Electric Company d/b/a National Grid
8 (“National Grid” or the “Company”) that was provided to the Division on September 28,
9 2018 (“Initial ISR Plan”) and National Grid’s Gas Infrastructure, Safety, and Reliability
10 FY 2020 Proposal that the Company filed with the Commission on December 20, 2018
11 (“Filed ISR Plan”). My testimony will briefly summarize the collaborative process that
12 transpired between the Division and National Grid. The collaborative process produced a
13 preliminary consensus regarding the Initial ISR Plan that the Company reflected in the
14 Filed ISR Plan. Subject to my recommendations and further review of the Southern Rhode
15 Island Gas Expansion Project (“Southern Rhode Island Gas Project”) as set forth herein,
16 the Division concurs with the Filed ISR Plan and recommends its approval.

17

18 **III. ISR PLAN EVALUATION PROCESS**

19

20 **Q. WOULD YOU BRIEFLY OUTLINE THE PROCESS WHICH LEADS TO THE**
21 **DIVISION’S SUPPORT OF THE FILED ISR PLAN?**

22 A. Yes. I performed an evaluation and analysis process, including the following actions and
23 procedures:

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

- On September 28, 2018, the Company filed the Initial ISR Plan.
- RW&AC evaluated the Initial ISR Plan, and on October 29, 2018, the Division served Data Request No. 1 on the Company.
- On November 7, 2018, the Division, RW&AC and the Company met to review and discuss a presentation by the Company regarding the Initial ISR Plan and to discuss Data Request No. 1 items. The Division submitted an Informal Data Requests to the Company.
- On November 8, 2018, the Company, RW&AC and the Division conducted field visits to review main replacement projects and various regulator stations.
- On November 19, 2018 and December 5, 2018, the Company provided responses to Data Request No. 1 to the Division.
- On November 30, 2018 the Company, the Division and RW&AC held a conference call to review and discuss the Company’s main replacement prioritization practice.
- On December 3, 2018, the Division served Data Request No. 2 on the Company.
- On December 11, 2018, the Company provided responses to Data Request No. 2 to the Division.
- On December 11, 2018, the Division, RW&AC and the Company also held a follow-up conference call/WebEx on main replacement prioritization practice by the Company.
- On December 12, 2018, the Division, RW&AC and the Company held a conference call to review and discuss the Southern Rhode Island Gas Project.
- On December 13, 2018, the Company provided preliminary ISR adjustments including changes to the Proactive Main Replacement program to increase the miles of leak-prone pipe abandoned.

- 1 • On December 13, 2018, the Division, RW&AC and the Company held a conference call to
2 discuss leak-prone services, main prioritization and annual leak-prone pipe abandonment
3 miles.
- 4 • On December 16 and 18, 2018, the Company provided responses to the Division's Informal
5 Data Requests.
- 6 • On December 20, 2018, the Company submitted the Filed ISR Plan to the Commission.
7 The Filed ISR Plan included preliminary budget adjustments resulting from the Company's
8 discussion with RW&AC and the Division.
- 9 • Attached is Table 1 which summarizes the adjustments made and the preliminary
10 consensus reached between the Division and the Company for FY 2020. The consensus is
11 reflected in the Final ISR Filing.

12
13 **IV. REVIEW OF ANALYSIS**
14
15

16 **Q. PLEASE PROVIDE AN OVERVIEW OF YOUR ANALYSIS OF THE INITIAL**
17 **ISR PLAN.**

18 A. The Rhode Island natural gas distribution system is one of the oldest in the United States
19 and includes a large proportion of leak-prone and deteriorating infrastructure which in
20 some instances was installed over 100 years ago. Categories of leak-prone pipe in the
21 distribution system include cast iron, wrought iron, unprotected steel, and Aldyl-A and
22 Polybutylene plastic pipe, which are more brittle and prone to leaks than today's modern
23 plastic pipe. While the Company has done an admirable job since acquiring the gas systems
24 in Rhode Island in the 2000s in trying to eliminate its leak-prone and deteriorating

1 infrastructure, as well as reducing the overall leak rate, it still has one of the largest
2 collections of leak-prone infrastructure nationwide, if not the largest (1,124 miles).
3 Additionally, leak receipts, and its inventory of Grade 1 leaks (most hazardous), leak
4 backlog and service leak rates have increased according to the data provided by the
5 Company in its 2017 System Integrity Report.

6
7 **Q. PLEASE PROVIDE A PRINCIPAL CONCERN YOU HAD WITH THE INITIAL**
8 **ISR PLAN BASED ON YOUR ANALYSIS?**

9 A. Based on the Company's 2017 System Integrity Report (p. 21), the current replacement
10 program has, as its timetable, to eliminate all leak-prone main within 20.9 years. This
11 timetable is based on 53.6 miles of actual annual main replacement. In the Initial ISR Plan,
12 the Company indicated that it wanted to slow down the rate of its main replacement for the
13 next two years due to what the Company characterized as some "improved system
14 performance."

15
16 **Q. WHAT DID YOU RECOMMEND?**

17 A. After reviewing the 2017 System Integrity Report and performing my review, I
18 recommended that the Company revise its Initial ISR Plan to continue at the previous main
19 replacement/abandonment rate and not slow down its proactive main replacement program.
20 As a result, the Division proposed an adjustment to increase FY 2020 leak abandonments
21 by 5 miles, approximately \$6.5 Million. The Company concurred with the Division's
22 recommendation and included the adjustment in the Filed ISR Plan. Although not strictly

1 part of the Filed ISR Plan, the Division would support a similar adjustment for FY 2021.
2 See Table 1 attached.
3

4 **Q. DO YOU HAVE ANY FURTHER OBSERVATIONS REGARDING THE RATE OF**
5 **MAIN REPLACEMENT/ABANDONMENT?**

6 A. Yes, I do. The Commission should be aware that even though the Company has agreed to
7 continue at its previous main replacement/abandonment rate in the Filed ISR Plan, the plan
8 must still be evaluated to assess whether there is a need to accelerate the leak
9 main/abandonment rate even further. The Company's 2017 System Integrity Report
10 reflects a noticeable increase in Type 1 and 2 leak receipts and leaks repaired. The
11 replacement program may need to be accelerated even further if leak inventories and leak
12 rates do not start to materially decline. One would expect declines in these rates to occur
13 if the "worst offenders" are truly being eliminated to reflect that the remaining leak prone
14 pipe has been reduced to low and medium risk pipe.
15

16 **Q. DO YOU HAVE ANY OTHER CONCERNS WITH THE COMPANY'S**
17 **PROGRAM FOR ADDRESSING LEAK-PRONE AND DETERIORATING**
18 **INFRASTRUCTURE?**

19 A. Yes, I do. First, the Company's methodology for risk ranking its leak-prone and
20 deteriorating infrastructure is reasonable but needs improvement to provide the robust tools
21 necessary to ensure the "worst offenders" are being identified and scheduled for
22 replacement in Rhode Island, *i.e.*, the Company should provide a comprehensive risk
23 ranked list by segment for all infrastructure based on multiple risk factors holistically state-

1 wide. The Company indicated that it is acquiring and integrating new software to achieve
2 this goal in 2019. The Division recommends accelerating this work in advance of the next
3 risk evaluation cycle, which commences in April 2019.

4
5 Second, the Company could not identify a list of, and does not track, isolated services,
6 which are metallic services (cast iron, unprotected and protected steel and copper) that are
7 installed on plastic mains and not part of any overall replacement program. Best practice
8 in the natural gas industry is to identify, track and eliminate these services as soon as
9 possible to eliminate leak-prone services not included in other replacement programs. The
10 Division recommends that the Company identify and track, isolated services, which are
11 metallic services (cast iron, unprotected and protected steel and copper) that are installed
12 on plastic mains and not part of any overall replacement program.

13
14 **Q. DO YOU HAVE ANY OTHER OBSERVATIONS AND/OR RECOM-**
15 **MENDATIONS FROM YOUR REVIEW AND ANALYSIS?**

16 **A.** Yes, I do. In my experience, I have observed that it is of the utmost importance that system
17 planning, modeling, main replacement, operations, gas procurement and risk evaluation
18 teams are coordinated in their review of areas of the natural gas distribution system needing
19 hardening and pressure improvements to ensure capital programs that eliminate leak-prone
20 pipe and deteriorating infrastructure produce safety and reliability for the entire system
21 based on all factors. The Division recommends that the Company proceed in such a
22 coordinated fashion.

23

1 Additionally, the costs for the Company's program have been evaluated using data
2 provided by the Company for reasonableness. Overall, the cost for main replacement is
3 \$1.3 million/mile. This cost does not include the cost of the most expensive projects (the
4 Large Diameter Replacement Program and the Atwells Avenue Project). The cost for the
5 Southern Rhode Island Gas Project is \$7.984 million/mile. Both of these cost figures
6 appear high compared to similar costs for natural gas infrastructure in similar areas.

7
8 This is a preliminary assessment only as the Company maintains and therefore has provided
9 limited detailed cost breakdowns which are not sufficient to evaluate whether main
10 replacement costs are high or reasonable for the Rhode Island area. In last year's ISR the
11 Division also had observed that the Company did not "record costs with sufficient
12 granularity to provide responsive answers for the replacement mains" but that the Company
13 had "agreed to explore separating out the service from main costs on replacement projects."

14
15 In other jurisdictions, utility companies track unit costs by projects and produce an annual
16 set of standard unit cost tables showing typical costs by size and material of pipe with
17 sensitivity for projects in congested areas, rural areas, replacement versus new
18 construction, *etc.*

19
20 Overall, it is in the Company's, its customers' and in Rhode Island citizens' best interests
21 to find the most *cost effective*, efficient, safe and reliable way to eliminate leak-prone
22 infrastructure in the shortest time possible while continuing to plan and monitor the
23 Company's natural gas system overall for reliability for *all* factors, not just for aging

1 infrastructure alone. The Division recommends that the Commission direct the Company
2 to track unit costs by project and produce an annual set of standard unit cost tables showing
3 typical costs by size and material pipe with sensitivity for projects in congested, rural areas,
4 replacement versus new construction, *etc.*

5
6 **Q. DID YOUR REVIEW OF THE INITIAL ISR PLAN INCLUDE A REVIEW OF**
7 **THE SOUTHERN RHODE ISLAND GAS PROJECT?**

8 A. I have performed a high-level review of the Southern Rhode Island Gas Project. As of the
9 date of the submission of this testimony, the Division generally agrees that the project is
10 needed. As expressed above, however, the Division has some questions about the overall
11 cost of the project and seeks to better understand why specific improvements are needed
12 to build the project within the timeframes described. Accordingly, as of the date of the
13 filing of my direct testimony, the Division's review of the project is ongoing. After the
14 filing of this testimony, National Grid and the Division have agreed to schedule a meeting
15 at which it is anticipated National Grid will provide the Division with further detail
16 regarding both the need for, and overall cost of, the Southern Rhode Island Gas Project.
17 The Division will supplement its recommendation regarding the project when it files its
18 Surrebuttal Testimony.

1 V. CONCLUSION

2

3 Q. DOES THE DIVISION SUPPORT NATIONAL GRID'S FY 2020 GAS ISR PLAN
4 PROPOSAL FOR \$162.46 MILLION IN BUDGETED CAPITAL EXPEN-
5 DITURES, INCLUDING \$81.41 MILLION IN DISCRETIONARY CAPITAL
6 EXPENDITURES, \$36.59 MILLION FOR NON-DISCRETIONARY CAPITAL
7 EXPENDITURES AND \$44.46 MILLION IN CAPITAL EXPENDITURES FOR
8 THE SOUTHERN RHODE ISLAND GAS PROJECT?

9 A. Yes, subject to the Division's recommendations contained herein and its further review of
10 the Southern Rhode Island Gas Project, the Division supports the Company's Filed ISR
11 Plan. The Division proposed an adjustment increase of 5 miles (\$6.5 million) in FY 2020
12 leak-prone pipe abandonments. The Company has incorporated this adjustment into the
13 Filed ISR Plan.

14

15 Q. WHAT ARE YOUR RECOMMENDATIONS BASED ON YOUR REVIEW AND
16 ANALYSIS?

17 A. The four (4) recommendations related to suggested practices to ensure prudent capital
18 investment by the Company to identify and accelerate its replacement of leak-prone aging
19 pipe, and continue to provide safe, reliable natural gas delivery to the citizens of Rhode
20 Island are summarized below:

21

22 1) The Company should accelerate its efforts to install new software that will provide
23 more robust tools to risk rank its natural gas infrastructure especially its leak-prone

1 infrastructure. The greatest needs in the Company's annual planning and risk evaluation
2 activities are to: a) ensure it is removing the "worst offenders" of its leak-prone natural gas
3 mains and services, and b) develop the most efficient program to accelerate its main and
4 service replacement program to remove all leak-prone infrastructure in the shortest amount
5 of time while maintaining the reliability and safety of the natural gas system for its
6 customers and citizens in the areas that the Company serves.

7
8 2) The Company should develop a list of isolated services (metallic services attached
9 to plastic or non-metallic mains) that details as specifically as possible the material type,
10 size, date of installation, condition, and risk of these isolated services in the Company's
11 natural gas distribution system. Once the list is developed, the Company should make a
12 plan to replace all these services within the shortest timeframe possible, starting with the
13 riskiest services first.

14
15 3) The Company should also review its system planning, modeling, main replacement,
16 operations, gas procurement and risk evaluation teams processes to ensure they are
17 coordinated in their identification of and development of capital programs for infrastructure
18 safety and reliability so that the elimination of leak-prone and deteriorating infrastructure
19 is synced up with areas of the gas distribution system needing hardening and pressure
20 improvement. This will ensure safety and reliability for the entire system based on all
21 factors.

22

1 4) The Commission should direct the Company to track unit costs by project and
2 produce an annual set of standard unit cost tables showing typical costs by size and material
3 pipe with sensitivity for projects in congested areas, rural areas, replacement versus new
4 construction, *etc.*

5

6 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

7 A. Yes.

8

Table 1

RI GAS ISR SPENDING FORECAST
(\$000)

Investment Categories	FY2020	FY2021	FY2022	FY2023	FY2024	Commentary
NON-DISCRETIONARY						
Public Works	\$ 16,940	\$ 17,448	\$ 17,972	\$ 18,511	\$ 19,066	Assumes 13 miles of LPP abandonment for FY 2020 to 2024.
Mandated Programs	\$ 19,403	\$ 21,344	\$ 21,798	\$ 22,272	\$ 22,431	
Damage/Failure (Reactive)	\$ 250	\$ 250	\$ 250	\$ 250	\$ 250	
Special Projects	\$ -	\$ -	\$ -	\$ -	\$ -	
NON-DISCRETIONARY TOTAL	\$ 36,593	\$ 39,042	\$ 40,020	\$ 41,033	\$ 41,747	
DISCRETIONARY						
Proactive Main Replacement	\$ 50,619	\$ 52,743	\$ 68,255	\$ 70,303	\$ 72,412	Assumes 42 miles of LPP abandonment in FY 2020 & 2021. 52 miles of abandonment from 2022 to 2024.
Proactive Main Replacement - Large Diameter LPCI Program	\$ 4,418	\$ 4,418	\$ 5,796	\$ 5,862	\$ 5,929	
Proactive Main Replacement - Atwells Avenue	\$ 1,280	\$ 2,260	\$ 4,000	\$ -	\$ -	
Reliability	\$ 17,903	\$ 27,435	\$ 20,662	\$ 18,190	\$ 20,830	
SUBTOTAL DISCRETIONARY (Without Gas Expansion)	\$ 74,220	\$ 86,856	\$ 98,713	\$ 94,355	\$ 99,171	
Southern RI Gas Expansion Project	\$ 44,459	\$ 33,723	\$ 31,800	\$ -	\$ -	
DISCRETIONARY TOTAL (With Gas Expansion)	\$ 118,679	\$ 120,579	\$ 130,513	\$ 94,355	\$ 99,171	
GAS ISR TOTAL (Without Gas Expansion)	\$ 110,813	\$ 125,898	\$ 138,733	\$ 135,388	\$ 140,918	
GAS ISR TOTAL (With Gas Expansion)	\$ 155,272	\$ 159,621	\$ 170,533	\$ 135,388	\$ 140,918	LPP abandonment total of 55 miles in FY 2020 and 2021 and 65 miles from 2022 to 2024.
Proposed Adjustments:						
Proactive Main Replacement	\$ 6,565	\$ 13,524				Adjustment would increase FY 2020 abandonments by 5 miles to a total of 60 (consistent with FY 2019) and an increase of 10 miles for a total of 65 miles for FY 2021.
Reliability/Take Stations (Remote operated Valves)	\$ 625	\$ (625)				Accelerate risk mitigation by pulling forward the installation of 4 take station remote operated valves in FY 2020. These valves will be installed at high pressure connection points and will support the ability to shorten response time in the event of a major gas release. They represent the final 4 take stations where the Company has identified the need for this enhancement and is not being addressed by any other project.
Revised Gas ISR TOTAL (With Gas Expansion)	\$ 162,462	\$ 172,520	\$ 170,533	\$ 135,388	\$ 140,918	
Revised Gas ISR TOTAL (Without Gas Expansion)	\$ 118,003	\$ 138,797	\$ 138,733	\$ 135,388	\$ 140,918	

JOHN RODNEY WALKER

1320 Mayes Road, Toccoa, GA 30577 | 706-244-0894 | rwalker@rwalkerconsultancy.com



Mr. Walker is CEO & President of Rod Walker & Associates, a Management Consultancy focused on “Helping Organizations Perform Better”.

Rod Walker is an industry executive who brings thirty-two years of technical expertise and business acumen combined with executive management experience leading organizations and serving as a trusted advisor to clients in the energy industry domestically and worldwide. His breadth of experience in the natural gas industry combined with his engineering background and management consultancy work allows him to provide strong leadership to organizations strategically and tactically to evaluate and provide technical and business solutions to issues they face. Mr. Walker has significant experience with all aspects of natural gas system planning, capital planning, replacement program evaluation, designing and building infrastructure as well as assessing, recommending and implementing organizational performance improvements addressing people, process, data, technology, financial infrastructure, regulatory and enterprise risk issues.

EDUCATION

Clemson University, Clemson SC
B. S. Civil Engineering

1985

WORK EXPERIENCE

Rod Walker & Associates Consultancy, Toccoa, GA- CEO & President (current)

2015-present

Provide overall direction for firm and associates to provide exemplary management consulting services worldwide to help organizations perform better through organizational assessments & coaching, strategic planning, workforce planning, process improvement, business planning and issue resolution.

Contanda Terminals (formerly Westway Group), Houston TX- Vice President-Engineering

2015-2017

Hired to turn around the Engineering and Construction group within Westway, which overran projects previously from \$40 million to \$90 million with focus on changing People, Process and Data. E&C group is now stable and projects are being executed in an industry best practices manner (\$20-29 million annual spend) in since Mr. Walker’s taking the helm, all on time and within budget.

Black & Veatch, Overland Park, KS- Director

2011-2015

Team lead for the Oil & Gas Practice in Management Consulting division of B&V focusing on business development and project delivery to clients worldwide in the areas of C-level advisory, due diligence advisory, utility risk assessments, organizational and critical infrastructure review and strategic planning.

Halcrow, London, UK-Director- Natural Gas Practice

2010-2011

Developed and led the Natural Gas Practice for the firm worldwide focusing on business development and project delivery to clients in the areas of due diligence advisory, utility risk assessments, organizational and critical infrastructure reviews.

R. W. Beck, Inc., Seattle WA- Principal Consultant

2006-2010

Team lead for R. W. Beck natural gas infrastructure group on directing business development and project delivery efforts for clients focused on capital program management, pipeline and natural gas facilities design, due diligence advisory and utility risk assessments.

Diversified Energy Services, Inc., Atlanta GA- Executive Vice President-Engineering

2002-2006

Led the Engineering Division of the Company providing business development and project delivery for clients in all areas of the project life cycle including pipeline and natural gas facilities design, project management, permitting, right-of-way acquisition.

- City of Toccoa, Georgia-Natural Gas Director** **2001-2002**
 Directed City of Toccoa’s natural gas utility serving 8800 customers in northeast Georgia and western North Carolina.
- City of Hartwell, Georgia- Public Works Director** **1999-2001**
 Directed the City’s utilities and street division serving 5500 natural gas customers and 8000 water and sewer customers in northeast Georgia.
- Atlanta Gas Light Company** **1985-1999**
 Served in a variety of positions at AGLC including (first to last):

 - Corporate Engineer-Perform key support functions including gas system modeling (Stoner software), reviewing and writing procedures, large project design calculations related to meeting gas flow, pressure delivery requirements.
 - Design Engineer/Drafting Supervisor -provided engineering design and coordinated all aspects of over 200 projects from concept to completion including Department of Transportation relocation, pressure improvements and new business main extension projects in Gwinnett County (\$3 million) (3rd fastest growing county in US at the time). Directed 2 draftspersons in developing project drawing and updating as-built information.
 - Engineering Supervisor- provided engineering design and coordinated all aspects of projects from concept to completion including Department of Transportation relocation, pressure improvements and new business main extension projects in Clayton, Henry and Fayette Counties (\$5 million) (other fast-growing counties in the greater Atlanta area at the time). Directed 2 pressure crews to annually inspect and maintain over 300 district pressure regulator stations, pressure points.
 - GIS Program Management-led the development of the Company’s initial geographical information system (GIS) including detailed system, hardware and software evaluation and selection, data conversion, user training and acceptance.
 - Region Design Engineer-Managed all engineering support activities related to Clayton, Henry, Rockdale and Fayette Counties including bare steel program design and oversight (\$2 million), gas system modeling (Stoner), gas facilities design and project bid package development.

PUBLICATIONS AND PAPERS

- “Strategic Directions in the Natural Gas Industry”-co-contributor*
 Black & Veatch annual survey and report on state of and issues affecting natural gas industry 2012-2015
- “Lessons learned from the San Bruno incident”*
 Presentation presented at American Public Gas Association (APGA) Operations conference 2012, 2014
- “Why Risk Assessments Are Important for Utilities”*
 Presentation presented at the Western Energy Institute (WEI) Annual Conference 2013
- “Validating Maximum Allowable Operating Pressures (MAOP)”*
 Presentation presented at the Energy Association of Pennsylvania (EAP) Spring Meeting 2012
- “Black & Veatch Aims to Ease Pipeline Challenges” North American Oil & Gas Pipelines* 2014
- “Independent Review of Hydraulic Modeling” Report (A review of the SoCal Gas System modeling of Aliso Canyon Storage outage effect on reliability of power and gas in the LA Basin) co-authored with Los Alamos National Labs (LANL)* 2016, 2017
- “Institutional Knowledge Hides the Blind Spots in an Organization”* 2018

AWARDS

- American Public Gas Association (APGA) Harry M. Cooke Award for Distinguished Service to Natural Gas Industry 2012

MEMBERSHIPS

- American Public Gas Association (APGA), Board Member