STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES


BPU Docket No. GO15040403

DIRECT TESTIMONY OF EDWARD A. McGEE ON BEHALF OF THE DIVISION OF RATE COUNSEL

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Dated: October 23, 2015
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DIRECT TESTIMONY OF

EDWARD A. McGEE

ON BEHALF OF THE

NEW JERSEY DIVISION OF RATE COUNSEL

BPU DOCKET No. G015040403

I. Introduction

Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?
A. My name is Edward A. McGee. My business address is P.O. Box #1659, Bethany Beach, DE. I am Principal Consultant of McGee Consulting, LLC, and I am currently working as an Engineering Associate with the Acadian Consulting Group ("ACG"). ACG is a research and consulting firm that specializes in the analysis of regulatory, economic, financial, accounting, statistical, and public policy issues associated with regulated and energy industries. ACG is a Louisiana-registered Limited Liability Company, formed in 1995, and is located at 5800 One Perkins Place, Suite 5-F, Baton Rouge, Louisiana.

Q. DO YOU HOLD ANY ACADEMIC DEGREES?
A. Yes. I was graduated from the University of Notre Dame with Bachelor and Master Degrees in Chemical Engineering. I was also graduated from the University of Chicago with a Master’s Degree in Business Administration ("MBA"). Attachment 1 provides my academic vita that includes a listing of my experience as a gas practice consultant and related positions in the energy industry.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?
A. I have been retained by the New Jersey Division of Rate Counsel ("Rate Counsel") to provide an expert opinion to the Board of Public Utilities ("BPU" or "Board") on management
and engineering issues associated with the Amended Southern Reliability Link ("SRL") proposal by New Jersey Natural Gas Company filed on June 5, 2015.

Q. HAVE YOU PREPARED ANY EXHIBITS IN SUPPORT OF YOUR RECOMMENDATIONS?

A. Yes. I have prepared three exhibits, Schedules EAM-1 through EAM-3, in support of my direct testimony that were prepared by me or under my direct supervision.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. In addition to this Introductory section, my testimony is organized into the following sections:

- Section II. Summary of Recommendations
- Section III. Overview of Proposed Southern Reliability Link Program
- Section IV. Company’s Proposed Size and Estimated Cost of SRL Pipeline
- Section V. Analysis of Proposed Size and Estimated Cost of SRL Pipeline
- Section VI. "Used and Useful" Principle for Allocation of Size and Cost
- Section VII. Estimate of Size of Allocated Costs
- Section VIII. Conclusions and Recommendations

II. Summary of Recommendations

Q. WOULD YOU PLEASE SUMMARIZE YOUR PRIMARY RECOMMENDATION REGARDING THE PROPOSED SOUTHERN RELIABILITY LINK?

A. My primary recommendation is that only a portion of the cost of the proposed line should be borne by ratepayers. The proposed line has been oversized for the current Firm Transportation (FT) contract (precedent agreement) that was negotiated with the Interstate Pipeline which would transport the gas to the Southern Reliability Link. The entire amount of natural gas that is
permitted to be transported through the current contract could be supplied to NJNG’s system through a smaller-diameter line. Therefore, only the cost of a smaller-diameter line should be borne by the ratepayers.

III. Overview of Proposed Southern Reliability Link

Q. PLEASE DESCRIBE THE COMPANY’S SRL PROPOSAL.

A. Under the proposal, New Jersey Natural Gas Company requests that the New Jersey Board of Public Utilities grant approval to install and operate approximately 30 miles of 30-inch-diameter transmission pipeline that will be constructed in Central New Jersey. The line will be constructed of steel. It will be cathodically protected and all joints will be welded and tested non-destructively at a minimum of 1,500 psig of hydrostatic test pressure for 24 hours. The Maximum Allowable Operating Pressure (MAOP) of this pipeline will be rated at 722 psig, an equivalent MAOP to that of NJNG’s existing transmission system. It is designed for a Class 4 Location (capable of operating in the highest housing density) and will be able to accommodate future in-line inspection (“ILI”) devices.

Q. WHAT IS THE PURPOSE OF THE COMPANY’S PROPOSED SOUTHERN RELIABILITY LINK PROGRAM?

A. The purpose of the pipeline is to bring additional gas to NJNG’s transmission system near its southern end. The line is designed to bring gas from an Interstate Pipeline in the Township of Chesterfield in Burlington County on the western side of New Jersey to the Township of Manchester in Ocean County in Eastern New Jersey where it would join the Company’s existing transmission system. The Company justifies this investment based on its belief that it will

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1 Company Amended Petition, Sections 12, 13.
2 Company Original Petition, Section 12.
3 Company Amended Petition, Sections 12, 13.
improve the reliability of gas supplies in the southern portion of its system (Ocean, Burlington,
and Monmouth Counties). The southern portion of its system is currently supplied from interstate
pipelines to the north of its system where supplies to its southern customers must first travel
through much of NJNG’s transmission system. The Company is seeking to improve the
reliability of its gas distribution system by having an alternate supply point for its southern
customers in case of potential interruptions of supply from its northern receipt points as well as
potential emergency restrictions in its transmission system anywhere north of these southern
customers.

IV. Company's Proposed Size and Estimated Cost of SRL Pipeline

Q. PLEASE DESCRIBE IN MORE DETAIL THE SIZE OF THE COMPANY’S
PROPOSED SRL PIPELINE.

A. The Company proposes to construct a nominal 30-inch-diameter pipeline (the actual
inside diameter of a nominal 30-inch pipe is 29 inches). The proposed wall thickness is one-
half inch on both sides of the annulus, giving an outside diameter of 30 inches for the line.

Q. PLEASE DESCRIBE THE COST ESTIMATES FOR THE COMPANY’S
PROPOSED SRL PIPELINE.

A. The Company’s most recently (2014) approved SRL budget totals $147.6 Million. More
recently the Company has stated, “A general estimate was developed using comparisons of
recent 20-inch and 24-inch projects. The costs of those projects were then prorated for 30-inch.
Based on our prior experience an initial budget estimate for the project was determined to be in

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4 Company Original Petition, Exhibit C.
5 Company Response to RCR-ENG-15c.
the range of $130 to $160 Million. A new estimate is being developed by our engineering
consultant, but it has not been completed at this time.\textsuperscript{6}

Q. DO YOU FEEL THE COMPANY’S RESPONSES CONCERNING THE
ESTIMATED COST OF THE SRL PIPELINE ARE SATISFACTORY?
A. No. I’m not sure how the Company’s regulators can be expected to approve this project
and authorize the construction and operation of the SRL pipeline without having a more detailed,
up-to-date, and preferably independent estimate of its cost.

V. Analysis of Company’s Proposed Size and Estimated Cost of SRL Pipeline

Q. IS A 30-INCH-DIAMETER PIPELINE REQUIRED FOR THE SRL LINE?
A. No. The Company’s calculations indicate that a smaller-diameter pipeline would be
sufficient.\textsuperscript{7} Specifically, a 24-inch-diameter line would be able to move the maximum amount
of gas permitted by the FT contract with the connecting Interstate Pipeline, and deliver it to the
Company’s existing transmission system at the planned juncture at a sufficiently high pressure.
As shown in Schedule EAM-1, the expected pressure at the delivery juncture would be 647 psia
for a 24-inch SRL line flowing the Company’s maximum FT contract gas volume of 180,000
Dth/Day.

The Company’s existing transmission system is designed and built for peak weather
design parameters.\textsuperscript{8} The system pressure at its junction with the proposed SRL pipeline varies
with ambient temperature and load conditions. The pressure varies between 497 psia and a
maximum pressure of 618 psia on key design days. The 24-inch SRL line’s delivery pressure of
647 psia would exceed the existing pressure at that juncture by a minimum of 29 psia on any day

\textsuperscript{6} Company Response to RCR-ENG-7b.
\textsuperscript{7} Company Responses to RCR-ENG-21, 22.
\textsuperscript{8} Company Response to Discovery RCR-ENG-21c.
of the year as shown in Schedule EAM-1, verifying that all the gas transported through the SRL pipeline (up to the maximum FT quantity of 180,000 Dth/Day) would successfully flow into the Company’s existing transmission system.

Q. **IF A SMALLER LINE WOULD BE SUFFICIENT, WHY DID THE COMPANY SELECT A LARGER-DIAMETER LINE?**

A. The Company has expressed a number of reasons for their selection of a 30-inch-diameter SRL pipeline:

1. The Company’s first reason is: “The diameter of the SRL was selected by performing iterative flow modeling of our existing system with various demand and supply configurations under design day conditions with the SRL in place.”

2. The Company’s second reason is: “This diameter also is equal to NJNG’s existing backbone system beginning at our Texas Eastern supply in Middlesex County and running into northern Ocean County, as well as other existing segments that have been more recently installed.”

3. The Company’s third reason is: “This diameter will also allow greater capacity to be delivered into NJNG’s system from the new Transco supply in the future.”

Q. **IS THE COMPANY’S FIRST REASON VALID THAT A 30-INCH-DIAMETER PIPELINE IS REQUIRED FOR THE SRL LINE DUE TO THE MODELING OF DESIGN-DAY CONDITIONS?**

A. No. The Company’s response to discovery indicates that its transmission system has a Design-Day pressure of only 497 psia at the point where the SRL line will join it in Manchester,

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9 Company Response to Discovery RCR-ENG-19a.
10 Company Response to Discovery RCR-ENG-21a.
11 Company Response to Discovery RCR-ENG-21a.
New Jersey. The Company has also indicated that a 24-inch SRL would provide a pressure of 647 psia, which is more than sufficient to deliver the entire 180,000 Dth/Day of gas required.

Q. **IS THE COMPANY'S SECOND REASON VALID THAT A 30-INCH-DIAMETER PIPELINE IS JUSTIFIED SINCE THIS DIAMETER IS EQUAL TO PORTIONS OF ITS EXISTING BACKBONE SYSTEM?**

A. No. Pipelines should be sized to handle the flows that they will transport. If a Company has other objectives, such as standardization of size, it is their prerogative to build the size they desire, but ratepayers should only have to pay for the minimum size pipeline that is required to serve their interests. Oversizing a pipeline is not in the interests of ratepayers.

Q. **IS THE COMPANY'S THIRD REASON VALID THAT A 30-INCH-DIAMETER PIPELINE WILL ALLOW GREATER CAPACITY TO BE DELIVERED INTO NJNG'S SYSTEM FROM THE NEW TRANSCO SUPPLY IN THE FUTURE?**

A. NJRC disagrees and reiterates that ratepayers should not bear the entire cost of the line at this time as a smaller size line would be satisfactory. As the Company has stated in its Original Petition, "The Southern Reliability Link Project was developed as a redundant supply line to an existing system in which additional growth of the system was not taken into account during its design."\(^{12}\) Therefore, future supplies and growth cannot be part of the decision to size and allocate costs of the proposed pipeline in the most economical manner for ratepayers.

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\(^{12}\) Company Original Petition Section 14.
VI. "Used and Useful" Principle for Allocation of Size and Cost

Q. WHAT ACCOUNTING AND REGULATION PRINCIPLE JUSTIFIES NON-ALLOWANCE OF THE ENTIRE PIPELINE COST IF A SMALLER, LESS-EXPENSIVE PIPELINE WOULD DELIVER THE SAME AMOUNT OF GAS?

A. The principle of "Used and Useful" applies to this case, since only a portion of the larger pipeline would be effectively used to deliver gas. A smaller, less-costly line that can deliver the same amount of gas to current ratepayers would be better used. Typically, Rate Base excludes plant held for future use.13

Q. ARE YOU SUGGESTING THAT THE COMPANY SHOULD INSTALL A 24-INCH DIAMETER LINE AT THIS TIME INSTEAD OF ITS PLANNED 30-INCH DIAMETER PIPELINE?

A. No. While the Company should choose the size of the line, ratepayers should not be expected to pay the cost of an oversized line. We are not commenting on the size to be installed; only on the size that should be costed for fair rate treatment.

VII. Estimate of Size of Allocated Costs

Q. IS IT POSSIBLE TO ADJUST THE CONSTRUCTION COST OF THE SRL LINE FOR A DIFFERENT DIAMETER?

A. Yes. There are costing techniques to estimate the variance in installation costs of a pipeline for a range of sizes close to its actual size. One common technique is based on the principle that pipeline installation costs are constant when they are measured as cost per inch-mile. As shown in Schedule EAM-2, this relationship affords a method of adjusting estimated

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installed costs for other pipe diameters. Specifically, a range of estimated costs for the proposed
30-inch line are adjusted to derive costs for a 24-inch pipeline.

Q. ARE THE COSTS SHOWN IN SCHEDULE EAM-2 FOR THE PROPOSED SRL
PIPELINE IN LINE WITH OTHER NEW JERSEY PIPELINE COSTS IN YOUR
EXPERIENCE?

A. As recently as 2012, there was an estimate for a proposed 22-mile, 24-inch transmission
line in Southern New Jersey, not far from the location of the SRL line.14 The cost was estimated
at $90.984 Million, which was equivalent to $4.06 Million per mile or $169 Thousand per inch-
mile. Factoring up these costs to $2016 (at 3 percent per year) is equivalent to a current cost of
$4.57 Million per mile and $190 Thousand per inch-mile. The construction cost of $4.57 Million
per mile is for a 24-inch pipeline; therefore, the estimated cost in this case would be raised (by
(30/24)) to an equivalent $5.71 Million per mile for a 30-inch pipeline.

Comparing these costs to the costs shown in Figure EAM-2, indicates a close comparison
to the estimated SRL construction cost (range of $4.7 to $6.0 Million per mile and range of $156
to $200 Thousand per inch-mile). These cost ranges correspond to estimates of $140 to $180
Million, so if the estimated cost for the SRL pipeline stays within this range, it would be
comparable to the cost of the line in Southern New Jersey.

Q. CAN YOU SHOW THE RECOMMENDED ALLOCATION OF
CONSTRUCTION COST FOR THE PROPOSED 30-INCH SRL PIPELINE, SHOWING
THE PROPORTION OF THE COST OF THE LINE THAT SHOULD BE BORNE BY
RATEPAYERS AND WHAT PORTION SHOULD BE BORNE BY THE COMPANY?

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14 In the Matter of the Petition of South Jersey Gas Company for Authorization to Construct a 24" Pipeline Through Maurice River Township in Cumberland County, the City of Estell Manor in Atlantic County, and Upper Township in Cape May County New Jersey, Docket Number GO13030202.
A. Yes. Schedule EAM-3 shows the recommended allocation of costs between the Company and the ratepayers. Ratepayers should be allocated 80 percent of the cost of the 30-inch line – equivalent to the cost of a 24-inch pipeline that can carry the total amount of gas. The Company’s share is the difference between the cost of a 30-inch line and a 24-inch line, or 20 percent of the cost of the 30-inch line.

VIII. Conclusions and Recommendations

Q. WHAT ARE YOUR MAJOR CONCLUSIONS AND RECOMMENDATIONS REGARDING THE COMPANY’S PLAN TO INSTALL A 30-INCH-DIAMETER SRL PIPELINE?

A. My primary recommendation is that only a portion of the cost of the proposed line should be borne by ratepayers. The proposed line has been oversized for the current Firm Transportation (FT) contract (precedent agreement) that was negotiated with the Interstate Pipeline that would transport the gas to the Southern Reliability Link. The entire amount of natural gas that is permitted to be transported through the current contract could be supplied to NJNG’s system through a smaller-diameter line. Therefore, only the cost of the smaller-diameter line should be borne by ratepayers.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes it does. However, I reserve the right to supplement my testimony if any updated or additional information becomes available during the course of this proceeding.
ATTACHMENT I
Credentials of Edward A. McGee
CREDENTIAALS OF EDWARD A. McGEE

PROFESSIONAL CAREER

2012 – Present  Acadian Consulting Group
Engineering Associate

As Engineering Associate for Acadian Consulting Group, I am responsible for assisting in studies performed for Public Utility Commissions.

1999 – Present  McGee Consulting
Principal Consultant and Engineer – Energy Industry

As Principal Consultant and Engineer, I am responsible for assisting larger consulting firms in their studies performed for utility companies and Public Utility Commissions.

1985 - 1999  Stone & Webster Management Consultants, Inc.
Vice President/Director

As Vice President of Stone & Webster Management Consultants, I was responsible for consulting studies in the Gas Practice area, where I performed consulting analyses in the gas planning and gas operations areas for gas utility companies and public utility commissions.

1982 - 1985  Stone & Webster Engineering Corporation
Business Development Manager

As Business Development Manager at Stone & Webster Engineering Corp., I was responsible for the construction of investment models for feasibility studies on large-scale chemical and refining complexes.

Director of Energy Resources
Manager of Chemical Development

As Director of Energy Resources for W. R. Grace, I advised the Chief Operating Officer on corporate energy consumption and production. I also assisted operating divisions in securing long-term energy resources.

As Manager of Chemical Development at W. R. Grace, I analyzed potential acquisition targets in specialty chemical and high technology fields, developing corporate strategies for selected expansions.
AMOCO Oil
Supervisor of Technical Computer Programming
Internal Operations Research Consultant

In a variety of engineering and computer modeling capacities at AMOCO Oil directed a staff
of professionals in the development of technical programs in the refining,
distribution and marketing areas.

EDUCATION

University of Chicago, Master of Business Administration, Quantitative Analysis and
Computers

University of Notre Dame, Master of Science in Chemical Engineering

University of Notre Dame, Bachelor of Science in Chemical Engineering

LICENSES & CERTIFICATES

Licensed Professional Engineer (License Currently Retired) -- State of Indiana
U.S. Patent Holder -- Refinery Treating Process

PROFESSIONAL AFFILIATIONS

American Institute of Chemical Engineers
The Institute of Management Sciences

SAMPLE PUBLICATIONS AND PAPERS

"Using a Personal Computer as a Gas Supply Planning Tool." Gas Industries lead article.


"Personal Computer-Based Long-Range Planning for Natural Gas Development and
Supply Management." Presented at the International Gas Union's 18th World Gas
Conference, Berlin, Germany.

"Role of Optimization Models in Dispatching Gas Supplies." Presented at AGA
Distribution/Transmission Conference, Toronto, Canada.

"Experience With Gas Supply Optimization Models at Inland Natural Gas." Presented
TABLE OF SCHEDULES
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<td>EAM-3</td>
<td>Allocation of Construction Costs to Ratepayers and to the Company</td>
</tr>
<tr>
<td>EAM-2</td>
<td>Adjustment of Construction Cost of SR1 Pipeline to Other Diameters</td>
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<tr>
<td>EAM-1</td>
<td>Comparison of Pressure Profile of 24-inch SR1 and System Pressures at Junction</td>
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Exhibit
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<th>Degree-Days Available Pressure at Various Junctions on</th>
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Source: Company's response to RCR-ENG-21 and RCR-ENG-22.

1 psia = pressure in pounds per square inch, absolute.
To illustrate 24-inch construction costs as a function of the estimated cost of a 30-inch line.

1. Column C represents a range of potential construction costs varying between $140 Million and $180 Million which is used.

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1) For $140 Million Estimated Cost of 30-inch SR Line
2) For $160 Million Estimated Cost of 30-inch SR Line
3) For $180 Million Estimated Cost of 30-inch SR Line

### Schedule item: EAM 2
515404033
Witness: MacGee

To Other Diameters
Adjustment of Construction Cost of SR Pipeline
<table>
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<th>Costs to Company</th>
<th>SR Line ($Millions)</th>
<th>SR Line Construction Cost of 24-Inch Estimated</th>
<th>Remaining ($Millions)</th>
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<th>Remaining ($Millions)</th>
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</table>

This column represents a range of potential construction costs varying between $140 Million and $180 Million.

Allocation of Construction Costs to Ratepayers

Witness: Mceee