

**STATE OF NEW JERSEY
OFFICE OF ADMINISTRATIVE LAW
BEFORE THE HONORABLE GAIL M. COOKSON, ALJ**

I/M/O THE PETITION OF)	
SOUTH JERSEY GAS FOR APPROVAL)	
OF INCREASED BASE TARIFF RATES)	
AND CHARGES FOR GAS SERVICE)	BPU DOCKET No. GR10010035
AND OTHER TARIFF REVISIONS)	OAL DOCKET No. PUC-01598-2010N
)	
)	
)	

**DIRECT TESTIMONY OF DAVID NICHOLS
ON BEHALF OF THE
NEW JERSEY DEPARTMENT OF THE PUBLIC ADVOCATE,
DIVISION OF RATE COUNSEL**

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1 **I. STATEMENT OF QUALIFICATIONS**

2 **II. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.**

3 A. My name is David A. Nichols. My business address is Synapse Energy Economics, Inc.
4 ("Synapse"), 22 Pearl Street, Cambridge, Massachusetts 02139. I am a senior consultant
5 at Synapse.

6

7 **Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE.**

8 A. For three decades, I have professionally assessed the costs and benefits of energy
9 efficiency ("EE") and energy conservation to utility ratepayers; designed energy
10 efficiency and conservation programs; reviewed and evaluated energy efficiency and
11 conservation programs of electric utilities, gas utilities, and state agencies; and analyzed
12 utility cost recovery claims associated with such programs. I have also worked in other
13 energy areas such as rate design, resource planning, and renewable resources. I have
14 presented analyses on these matters in testimony before regulatory commissions in two
15 dozen U.S. states and before the U.S. Federal Energy Regulatory Commission, as well as
16 in Canadian provinces. I testified before this Board in matters relating to energy
17 efficiency in Dockets No. EX04040276 (2004), ER02080506 (2003), GR01040280 (2001),
18 EX99050347 (2000 and 1999), EE98060402 (1998), EX94120585U (1998), ER97020101
19 (1997), and in some earlier cases. Further information on my background and experience
20 is provided in the Appendix to this testimony (Attachment DN-1 and DN-2).

21

22

1 **II. SCOPE AND PURPOSE OF TESTIMONY**

2

3 **Q. WHAT IS THE SCOPE AND PURPOSE OF YOUR TESTIMONY IN THIS**
4 **PROCEEDING?**

5 A. I was retained by the New Jersey Department of the Public Advocate, Division of Rate
6 Counsel (“Rate Counsel”) to conduct a review and analysis and present testimony in the
7 matter of the petition of South Jersey Gas Company (“SJG” or “the Company”) for
8 increased base tariff rates and charges for gas service. My testimony addresses three
9 matters found in the pre-filed testimony of South Jersey Gas Company (“SJG”, “the
10 Company”) in this case:

11 1. Mr. Fatzinger’s testimony that the Company decided last year to transform its sales
12 and marketing organization from one focused primarily on acquiring additional gas
13 customers and load into one focused on “Energy Efficiency Education and Consulting
14 (“EEE&C”).” (Fatzinger Direct Testimony, page 7, lines 6-15 et seq.)

15 2. Mr. Yardley’s testimony that the Company’s Conservation Incentive Program (“CIP”)
16 includes energy conservation programs for customers. (Yardley Direct Testimony, page
17 18, line 12 et seq., and Schedule DPY-4.)

18 3. Mr. Dippo’s testimony that the Company’s proposed Accelerated Main Replacement
19 Program (“AMRP”) would “reduce fugitive methane emissions by 350,000 metric tons
20 over ten years” (Dippo Direct Testimony, page 21, lines 3-4), and that those emission
21 reductions could be sold into the voluntary carbon market to yield revenue of at least \$1.4
22 million over that ten year period. (Dippo Direct Testimony, page 27, lines 14-16).

1 **III. THE ENERGY EFFICIENCY EDUCATION AND CONSULTING (EEE&C)**
2 **ORGANIZATION**

3
4 **Q. PLEASE DESCRIBE THE SCOPE OF YOUR TESTIMONY CONCERNING THE**
5 **ENERGY EFFICIENCY EDUCATION AND CONSULTING ORGANIZATION.**

6 A. Mr. Fatzinger testified that SJG decided to restructure its sales and marketing department
7 from an organization focusing on building gas customers and load into one focusing on
8 EE education and consulting. The components of the new EEE&C organization are:
9 residential energy consulting and program delivery; nonresidential energy consulting and
10 program delivery; and EE education and marketing. (Fatzinger Direct Testimony, page 7
11 line 6 et seq.) I reviewed the establishment of the EEE&C in order to determine whether
12 it entails any specific new energy efficiency activities and, in particular, whether any new
13 energy efficiency costs are reflected in the Company's rate filing. My assessment is
14 based primarily on a review of Mr. Fatzinger's testimony and of the Company's
15 responses to relevant discovery requests propounded by the Division of Rate Counsel.
16 Additionally, as Rate Counsel's consultant in the matter of SJG's new economic stimulus
17 Energy Efficiency Program ("EEP"), approved by the Board of Public Utilities ("Board",
18 "BPU") in Docket No. EO09010056 in July 2009, I am familiar with the new energy
19 efficiency initiatives whose costs are recovered through the Energy Efficiency Tracker
20 ("EET").

21
22 **Q. WHAT ARE YOUR FINDINGS RELATING TO THE EEE&C?**

23 A. My findings are as follows:

- 1 • According to the Company’s response to discovery request RCR-EE-006, the
2 EEE&C was established last October. The staff of the EEE&C organization
3 consists mainly of personnel who had been in the Company’s sales and marketing
4 department previously. Three new staff were added to the EEE&C, and the
5 Company plans to hire two further entry-level marketing staff in 2010.
- 6 • The functional activities of EEE&C staff include (1) the Energy Efficiency
7 Program funded through the EET; (2) the CIP, whose costs, according to Mr.
8 Fatzinger’s response to discovery request RCR-EE-007, are recovered from
9 shareholders; and (3) advertising “the merits of using natural gas”, according to
10 the Company’s Response to RCR-EE-006(e).
- 11 • Despite the establishment of the EEE&C organization, there appear to be no
12 energy efficiency program costs that the Company proposes to recover through
13 base rates. In response to RCR-EE-009, the Company identified the energy
14 efficiency costs that are included in this base rate case, which amount to \$1.518
15 million. This amount corresponds to sum of the EEP expense and amortization
16 costs recovered through the EET, amounting to \$1.518 million, as set forth in Mr.
17 Pignatelli’s Schedule SAP-7 (6&6). Therefore, I surmise that there are no other
18 energy efficiency costs included in the Company’s base rate filing. The EEP
19 includes home energy audits, installation and financing of home energy efficiency
20 measures, and equipment efficiency incentives that are intended to have a direct
21 impact on energy use.
- 22 • Other energy efficiency program functions are performed by the EEE&C and
23 relate to the CIP. These CIP-related EE program costs are borne by shareholders,

1 as discussed in section IV of my testimony, below. Thus, it appears that the
2 EEE&C does not translate into new energy efficiency costs included in the
3 Company's base rate filing. This is appropriate, since all energy efficiency
4 program costs should be recovered through the CIP or through a rate rider such as
5 the EET or the Societal Benefits Charge.

- 6 • However, the Company does propose to recover the costs of advertising gas use
7 "through base rates" (Response to RCR-EE-006(e)). I do not believe it
8 appropriate for advertising costs to be included in rates. This issue, however, is
9 being addressed by Rate Counsel witness Mr. Robert Henkes, who recommends
10 exclusion from rates of the advertising costs that he has identified.

11
12 **IV. THE CONSERVATION INCENTIVE PROGRAM**

13
14 **Q. PLEASE DESCRIBE THE SCOPE OF YOUR TESTIMONY CONCERNING THE**
15 **CONSERVATION INCENTIVE PROGRAM.**

16
17 A. I reviewed the CIP in order to determine whether it delivers energy efficiency activities to
18 customers at the Company's expense. My review is based on Mr. Yardley's testimony as
19 well as Company responses to discovery requests. I reviewed the last four of the
20 quarterly CIP reports that SJG provides to the Board and Rate Counsel. These reports
21 were provided in response to RCR-EE-010. I also reviewed the evaluation of the CIP
22 that is referred to on page 4 of Schedule DPY-4. I did not address the tariff aspects of the
23 CIP.

1 **Q. WHAT ARE YOUR FINDINGS RELATING TO THE CIP?**

2 A. The program activities described in the CIP reports are energy education, energy use
3 information, training in how to implement efficiency measures, schoolroom curricular
4 material, and similar activities. Though they do not include the kinds of activities which
5 one would expect to have a direct and quantifiable impact on energy use, such as those of
6 the EEP, the CIP programs do appear to consist of useful energy efficiency or energy
7 conservation activities. The establishment of the EEE&C organization that I discussed
8 above does not appear to have a major impact on CIP programs, since the CIP programs
9 described in the quarterly reports before and after the EEE&C was formed are similar.
10 According to the Company's response to RCR-EE-010, CIP program costs amount to
11 some \$400,000 per year, and are borne by shareholders pursuant to the Board's
12 December 12, 2006 Order in Docket No. GR0512109. However, I found that according
13 to the CIP quarterly report for the period ending Sept. 30, 2009, program expenditures for
14 the year ending that date totaled only \$365,000. I also understand that the CIP will be
15 subject to further review in a separate filing pursuant to the terms of the Stipulation and
16 Board Order dated January 21, 2010 in Docket Number GR05121019.

17
18 **V. THE ACCELERATED MAIN REPLACEMENT PROGRAM PROPOSAL**

19
20 **Q. PLEASE DESCRIBE THE SCOPE OF YOUR TESTIMONY CONCERNING**
21 **THE.AMRP.**

22 A. My testimony on the AMRP focuses on whether the AMRP as proposed by the Company
23 may yield reductions in fugitive emissions of methane, a greenhouse gas ("GHG") and, in

1 turn, revenue for ratepayers from the sale of such emission reductions. I address the
2 implications of any such benefits for the Board’s consideration of the Company’s AMRP
3 proposal. My assessment of these issues is based primarily on a review of Mr. Dippo’s
4 testimony and of the Company’s responses to relevant discovery requests propounded by
5 Rate Counsel.

6
7 **Q. WHAT IS THE AMRP?**

8 A. The Company proposes to accelerate the rate at which it replaces gas mains (cast iron
9 mains and unprotected steel mains) and unprotected services. Under the AMRP,
10 according to the testimony of Mr. Dippo (Dippo Direct Testimony, page 12 lines 1-4),
11 such mains would be replaced over a period of 20 years and services over a 10 year
12 period, whereas at the current average replacement rate it would take 46 years and 16
13 years to replace mains and services, respectively. The Company proposes to recover post
14 test year costs for the AMRP through its proposed Reliability Tracker (“RT”). Mr. Dippo
15 also estimates certain employment creation benefits and emission reduction benefits from
16 the AMRP. It is the latter, his estimate of emission reduction benefits, that is the focus of
17 my testimony.

18
19 **Q. HOW DID THE COMPANY ESTIMATE EMISSIONS BENEFITS FROM THE**
20 **AMRP?**

21 A. SJG retained Blue Source, LLC, an emissions consultancy, to estimate the total emissions
22 reduction over the next 10 years resulting from the AMRP. Blue Source concluded that
23 “over the next ten years the AMRP will prevent about 16,660 metric tons of fugitive

1 methane from being released into the atmosphere. This translates into a reduction of
2 350,000 metric tons of CO₂ equivalents (“mtCO₂e”) that otherwise would be released
3 under South Jersey’s business-as-usual main replacement program.” (Dippo Direct
4 Testimony, page 20, lines 11-15.) Blue Source also estimated that carbon credits
5 resulting from the AMRP would have a market value of at least \$1.4 million over 10
6 years. (Dippo Direct Testimony, page 27, lines 14-16.) The Company proposes that any
7 such revenue would flow to customers as a credit to the Reliability Tracker it proposes. I
8 reviewed these Blue Source estimates of physical and monetary emissions benefits, as
9 further described in the Company’s responses to discovery questions.

10
11 **Q. PLEASE DESCRIBE YOUR REVIEW OF THE QUANTITY OF EMISSIONS**
12 **REDUCTIONS FROM THE AMRP.**

13 A. The ideal method of estimating emission reductions from pipe replacement would be to
14 measure emissions on the parts of the Company’s system and compare the measured rates
15 of fugitive emissions with the estimated loss rates in new pipe. There is no indication
16 that the Company has such measured loss data. In the absence of such data, the
17 Company’s consultants relied on an estimation methodology described in the American
18 Gas Association report *Greenhouse Gas Emission Estimation Methodologies,*
19 *Procedures, and Guidelines for the Natural Gas Distribution Sector*, April 18, 2008
20 (“AGA GHG Report”). The AGA GHG Report was provided by the Company as a
21 response to RCR-EE-001(b). The AGA GHG Report makes clear the superiority of
22 system-specific measured leakage data to any estimate using leakage factors per mile of
23 pipeline. However, the report also states that default emission factors are an acceptable

1 approach for fugitive GHG emissions estimates. The AGA GHG Report's default
2 emission factors are based on a much earlier study of fugitive emissions by pipeline type
3 among 10 natural gas distribution systems.

4
5 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE ESTIMATED**
6 **AMOUNT OF EMISSIONS REDUCTIONS FROM THE AMRP?**

7 A. My conclusions are as follows.

- 8 • It is obvious that replacing aging pipe at a faster rate will result in net emissions
9 reductions relative to replacing pipe at a slower rate.
- 10 • The emission reductions estimated in Mr. Dippo's testimony rely on an accepted
11 methodology, but are inferior to estimates based on system-specific measured
12 leakage data.
- 13 • Actual emission reductions could be higher or lower than the Company's
14 estimates.
- 15 • One indication that emissions reductions may be less than reported by Blue
16 Source is that its calculation of savings from an "accelerated" program compares
17 the accelerated case to the current average pipe replacement rate. I question how
18 realistic it is to project the current average replacement rate as a baseline into the
19 future, given another fact pointed out by Mr. Dippo: since unprotected mains and
20 services "corrode at an exponential pace as the pipe gets older", SJG has
21 experienced an increasing rate of both repair and replacement (Dippo Direct
22 Testimony, page 29, lines 13-16). If the rate of pipe replacement is already
23 increasing, and unavoidably so, then we really do not know just how much of the

1 asserted AMRP work would actually consist of projects that will have been
2 performed in that timeframe even without the AMRP in place.

3
4 **Q. HOW DID THE COMPANY ESTIMATE THE VALUE OF EMISSIONS**
5 **REDUCTIONS FROM AMRP?**

6 A. Mr. Dippo states that he believes emissions reductions from the AMRP could be sold into
7 the carbon market. Specifically, it would generate Verified Emissions Reduction
8 (“VER”) credits that could be sold. These credits are issued by third parties that verify
9 the amount of emissions reductions that are additional to business-as-usual conditions.
10 Blue Source estimates that the additional carbon emissions reductions from AMRP would
11 have a value of at least \$4/mtCO₂e, generating some \$1.4 million over the next 10 years
12 through the sale of VER credits.

13
14 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE ESTIMATED VALUE**
15 **OF EMISSIONS REDUCTIONS FROM AMRP?**

16 A. My conclusions are as follows.

- 17 • If the Company can demonstrate that emissions reductions due to AMRP are
18 voluntary and additional, these emissions will likely have a market value.
- 19 • The market value of emissions reductions over ten years is highly uncertain due to
20 (a) underlying uncertainty in the amount of additional emissions savings from the
21 AMRP, as I discussed above, and (b) uncertainty regarding the market price for
22 such credits over time. Mr. Dippo states that using the price of \$4/mtCO₂e to
23 estimate revenue is conservative, but to my mind he does not adequately support

1 that assertion. His testimony reproduces VER prices from on October 2009 report
2 of the carbon market broker Evolution Markets; the bid prices range from \$6.25 to
3 \$7.50/ mtCO₂e. However, the Jan./Feb. 2010 report from the same broker shows
4 bid prices ranging from \$0.30 to \$6.00/ mtCO₂e. I believe that whatever GHG
5 legislation Congress does or does not pass will strongly influence VER prices,
6 and that the future of Congressional action is highly uncertain. I do not claim the
7 \$4/ mtCO₂e price is an unreasonable estimate, only that it is uncertain and has not
8 been shown to be “conservative”.

- 9 • The revenue from emissions reductions estimated by the Company is much
10 smaller than the projected cost of the AMRP. The Company projects that it will
11 spend from \$23 to \$34 million per year with the AMRP over the next 10 years.
12 (Dippo Direct Testimony, page 13, line 14, and exhibit CFD-2.) According to the
13 response to RCR-EE-11, much of this cost would be incurred without the AMRP,
14 but it appears that from \$6 to \$21 million per year would be the asserted
15 “accelerated” investment. Obviously, if the emissions credit revenue averages
16 \$140,000 per year (\$1.4 million divided by 10) it will be significantly less than
17 the incremental investment costs of AMRP.
- 18 • Mr. Dippo quantifies the presumed economic benefit from emissions reductions,
19 but does not quantify the economic benefit of reduced gas leakage per se, nor to
20 what parties that benefit accrues. Reduced leakage of gas would presumably
21 reduce the Company’s cost to provide Basic Gas Supply Service, and thus the net
22 cost of pipeline replacement.

1 • Mr. Dippo states that “gas saved through improved distribution infrastructure is
2 equally effective in advancing the [New Jersey Energy Master Plan] goals as a
3 unit saved through demand measures or consumption efficiency improvements.”
4 (Dippo Direct Testimony, page 22, lines 17-19.) While this may be true, it
5 neglects the fact that New Jersey utility demand-side efficiency programs, such as
6 the Company’s recently launched EEP, are generally informed by cost-benefit
7 analysis to establish that their prospective benefits exceed their prospective costs.
8 In this case, the Company has not properly isolated and compared the incremental
9 costs and incremental benefits of its proposal from a GHG perspective. However,
10 the emissions benefits cited by the Company appear to be such a small and
11 uncertain part of the cost-benefit equation that they cannot, in themselves, justify
12 going forward with the accelerated program.

13

14 **Q. DOES THIS COMPLETE YOUR TESTIMONY?**

15 A. Yes, it does. However, I reserve my right to amend my testimony subject to updated
16 information from the Company

APPENDIX

**DAVID NICHOLS
PROFESSIONAL BIOGRAPHY**

David Nichols is a senior consultant with Synapse Energy Economics of Cambridge, Massachusetts, USA. For 25 years Nichols was a vice president of Tellus Institute in Boston, of which he was a cofounder. Before that he was associate professor at the State University of New York (Albany).

Nichols works throughout the U.S., as well as internationally. His energy work includes efficiency studies, technology assessment, cost benefit analysis, design and evaluation of demand-side load response and efficiency programs, and policy analysis. He has testified before regulatory commissions in the U.S. and Canada on energy efficiency, renewable energy, rate design, performance-based ratemaking, and other issues. Current and recent work includes:

- Consultant to the New Jersey Division of Rate Counsel for: the Renewable Energy Task Force, the Clean Energy Council, the Energy Master Plan, design and administration of renewable energy and energy efficiency programs, and gas and electric utility recovery of demand-side management costs; as well as off-tariff rate applications. This work has included testimony in several Board of Public Utilities dockets.
- Training of midlevel professionals in India and Indonesia on electric resource planning and demand-side management. This work was done for the U.S. Agency for International Development through the Institute of International Education.
- Comprehensive reports on states' policy and regulatory treatment of energy efficiency and renewable energy for the American Council for an Energy-Efficient Economy, the Colorado Governor's Office of Energy Management, E-Source, and others.
- Study of the achievable potential from new electric energy efficiency and load response measures in Utah, completed for an Advisory Group to the Public Service Commission.
- Heading the team that developed performance indicators for the Climate Change programs (renewable energy and energy efficiency) of the Global Environmental Facility.
- Lead author for the World Commission on Dams' *Thematic Review of Planning Approaches*, focusing on enabling participation in multi-stakeholder planning, avoiding adverse impacts through energy and water conservation, and better siting and operating practices.
- Analyses of utility cost recovery and incentives for ratepayer-funded energy efficiency for the Regional Environmental Councils of Quebec, West Kootenay Power Co., Enbridge Gas Ltd., Southern Alliance for Clean Energy, and others, including related testimony before several regulatory commissions.

Nichols has participated in task forces, advisory groups, collaborative processes, workshops, working groups and settlement discussions on oil, gas, and electric energy efficiency, as well as rate design. In these working group processes he assisted such stakeholders as energy utilities,

commission staffs, consumer advocates, energy offices, and environmental agencies.

Nichols' articles have appeared in *Electricity Journal*, *Industry and Environment Review*, *Pace Environmental Law Review*, *Polity*, and conference proceedings published by the American Council for an Energy Efficient Economy, Electric Power Research Institute, and others. He was educated at Clark University, the University of Chicago, and Massachusetts Institute of Technology, where he received his Ph.D.

TESTIMONY BEFORE REGULATORY COMMISSIONS

JURISDICTION	APPEARANCES		JURISDICTION	APPEARANCES	
	<u>DSM</u>	<u>Other</u>		<u>DSM</u>	<u>Other</u>
Arizona		1	North Carolina	1	
Colorado	2		Nova Scotia	3	
Connecticut	4	1	Ohio	3	
Delaware	1		Oklahoma		1
US Federal Energy Regulatory Commission	2	2	Ontario	3	1
Kansas		3	Pennsylvania	1	
Maine	3		Rhode Island	1	2
Maryland		1	South Carolina	1	1
Massachusetts	3	1	Texas		2
Missouri		1	Utah	1	2
Nevada		2	Vermont	3	1
New Hampshire		1	Virginia	1	
New Jersey	11	2	Wisconsin	2	
New York	2	3			
				Total DSM 48	Total Other 27

DSM: Demand-side management, including energy conservation, energy efficiency and demand response.

Other: Planning, rate design, other energy analysis.

Table does not include testimony that was filed but not heard.