

The Narragansett Electric Company
d/b/a National Grid (Interstate Reliability Project)

RIPUC Dkt. No. 4360

Testimony of

Judah L. Rose

November 21, 2012

1 Q. Please state your name and business address.

2 A. My name is Judah Rose and I am employed by ICF Resources, LLC, a subsidiary of ICF
3 International (“ICF”). My business address is 9300 Lee Highway, Fairfax, VA 22031.

4 Q. Please describe your background as it relates to this proceeding.

5 A. I am a Managing Director of ICF. After receiving a degree in economics from the
6 Massachusetts Institute of Technology and a Masters Degree in Public Policy from the
7 Kennedy School of Government at Harvard University, I joined ICF in 1982. I have
8 worked at ICF for over 30 years and now direct ICF’s Wholesale Power Line of Business
9 and co-lead ICF’s Fuels and Power practice. I have also been a member of the Board of
10 Directors of ICF International and am one of three people in a firm of approximately
11 4,500 people to have been given the honorary title Distinguished Consultant. For
12 additional details, please see my resume, submitted as Exhibit JLR-1.

13 Q. Describe the types of clients supported by your practice.

14 A. ICF supports both private and public sector clients. In the public sector, ICF has been the
15 principal power consultant to the U.S. Environmental Protection Agency continuously for
16 nearly 40 years, specializing in the analysis of the impact of air emission regulations.
17 ICF has also worked with the U.S. Department of Energy, Federal Energy Regulatory
18 Commission, Environment Canada, and numerous foreign governments, as well as with
19 state regulators and state energy agencies, including those in California, Connecticut,
20 Kentucky, New Jersey, New York, Ohio, Michigan, and Texas. In the private sector, ICF
21 has provided forecasts and other consulting service for over 30 years to practically every
22 major US electric utility, including such companies as American Electric Power, Arizona

1 Public Service, Dayton Power and Light, Delmarva, Duke, Dominion Power, Entergy,
2 FirstEnergy, Florida Power & Light, National Grid, Nevada Energy, Northeast Utilities,
3 Otter Tail Power, PacifiCorp, Pepco, Public Service of New Mexico, Sempra, Southern
4 California Edison, and Tucson Electric. ICF also provides assistance to financial
5 institutions such as Credit Suisse, power marketers such as Mirant, fuel companies such
6 as Peabody Coal Company, and independent power producers, including Sithe Global
7 Power, Kelson Energy and Reliant Energy. ICF also works with Regional Transmission
8 Organizations and similar organizations, including the Midwest Independent
9 Transmission System Operator, the Electric Reliability Council of Texas, the Western
10 Electric Coordinating Council, and the Florida Reliability Coordinating Council.

11 Q. What is ICF's role in this proceeding?

12 A. ICF was retained by National Grid and Northeast Utilities ("NU") to provide an
13 assessment of the potential for alternative resources, on both the supply and demand side,
14 to displace or defer the need for the Interstate Reliability Project ("Interstate").

15 Q. What expert testimony experience do you have related to electric power?

16 A. I have testified before, filed with, or made presentations to the Federal Energy Regulatory
17 Commission ("FERC"), an international arbitration tribunal, federal courts, domestic
18 arbitration panels, and state regulators in 22 U.S. states and Canadian provinces: Arizona,
19 Arkansas, California, Connecticut, Florida, Indiana, Kentucky, Louisiana, Manitoba,
20 Massachusetts, Minnesota, Missouri, Nevada, New Jersey, New York, North Carolina,
21 Ohio, Oklahoma, Pennsylvania, Quebec, South Carolina, and Texas. I have testified
22 extensively on the topics of electric power prices and markets, utility planning, the

1 development of new generation resources and transmission, and generation asset
2 valuation.

3 Q. What other relevant experience do you have?

4 A. In addition, I have authored numerous articles in industry journals and spoken at scores
5 of industry conferences.

6 Q. On whose behalf are you testifying in this proceeding?

7 A. I am testifying on behalf of National Grid.

8 Q. What is the purpose of your testimony?

9 A. The purpose of my testimony is to present and summarize a report prepared by ICF (the
10 “ICF Report”). The ICF Report is titled “Assessment of Non-Transmission Alternatives
11 to the NEEWS Transmission Projects: Interstate Reliability Project”, dated December
12 2011. The ICF Report was included as Appendix K to the Interstate Reliability Project
13 Environmental Report that was submitted with the EFSB Application in this proceeding.

14 Q. Please summarize your testimony.

15 A. ICF performed an assessment of Non-Transmission Alternatives to the Interstate
16 Reliability Project. The goal of the study was to determine whether new generation or
17 incremental demand resources, alone or in combination, could resolve the transmission
18 network thermal violations that the Interstate Reliability Project resolved. ICF
19 concluded, based on an intense and wide-ranging analysis of non-transmission
20 alternatives available for Interstate, that no feasible and practical non-transmission
21 alternative would meet the needs that the Interstate Reliability Project is designed to
22 meet. In addition, we concluded that any hypothetical non-transmission alternative that

1 was considered would be unprecedented in scope, immensely costly, difficult or
2 impossible to implement, and less flexible and robust in operation than Interstate.

3 Q. Please summarize ICF's experience related to the assessment of potential non-
4 transmission alternatives to electric transmission projects.

5 A. We have extensive experience in performing transmission assessments and other
6 evaluations that require modeling of the transmission system of the continental United
7 States and Canada, taking into account the economics of the power plants and the
8 physical and electrical characteristics of the transmission grid. We have performed many
9 studies requiring modeling of the New England power system. In addition, we perform
10 integrated resource planning studies, and that work is supported by our extensive
11 experience in advising clients concerning central power plant, combined heat and power,
12 distributed generation, energy efficiency and demand-side management projects.

13 Q. Do you have any revisions, updates or corrections to the ICF Report and the data and
14 conclusions set forth therein?

15 A. Recently, it was brought to my attention that a few of the transmission line ratings used in
16 the ICF Report were inaccurate. I am updating my analysis to incorporate the correct
17 ratings. These line rating changes are not anticipated to alter ICF's conclusions, however
18 I will provide the revised data when I have completed this additional analysis.

19 Q. Please summarize the results described in the ICF Report of your analysis of transmission
20 needs without Interstate in service.

21 A. Based on ISO New England's ("ISO-NE") needs assessment, ICF found a large number
22 of thermal violations spread across numerous locations in southern New England (SNE)

1 as follows: in 2015, 206 violations with 20 overloaded system elements; by 2020, 6,029
2 violations with 53 overloaded system elements, assuming the unexpected failure of two
3 key transmission elements (N-1-1 contingency analyses). With one key transmission
4 element failure (N-1 contingency analysis), 12 thermal violations occurred in 2020 with 8
5 overloaded system elements. We concluded that due to the number and locations of
6 thermal violations, a non-transmission alternative solution would likely need to be
7 dispersed across all of SNE.

8 Q. Did the ICF Report determine whether, with Interstate in service, all identified thermal
9 violations in 2015 and 2020 would be eliminated?

10 A. Yes, we determined that all identified violations would be resolved by the proposed
11 Interstate Reliability Project.

12 Q. Please summarize the work ICF did with respect to identifying potential non-
13 transmission alternatives to Interstate.

14 A. First, we obtained ISO-NE's power-flow simulation data used to evaluate the need for
15 Interstate, as ISO-NE documented it in the report titled *New England East-West Solution*
16 *(NEEWS) Interstate Reliability Project Component Updated Needs Assessment* (April,
17 2011) (*the "2011 Needs Assessment"*). Next, we translated the data into our system. We
18 could not simply load a model obtained from ISO-NE into our system because we use a
19 different power-flow analysis program than that used by ISO-NE. This primarily
20 involved saving the data in an alternate file format which could be read by the software

1 ICF relies on¹. We ran the ISO-NE power-flow cases on our software and found that
2 results of the pre-Interstate power-flow simulations agreed with those of the *2011 Needs*
3 *Assessment* and the post-Interstate simulation results agreed with ISO-NE's simulations
4 in its updated solution analysis. We then used that model to analyze the effect of non-
5 transmission alternatives in addressing the documented thermal violations.

6 Q. Did ICF analyze whether any non-transmission alternatives would have resolved or
7 aggravated the pre-Interstate voltage violations?

8 A. No.

9 Q. Why not?

10 A. None of the non-transmission alternatives resolved all thermal violations addressed by
11 Interstate so it would have been pointless to analyze the pre-Interstate voltage violations.

12 Q. What types of non-transmission alternatives were considered in the ICF Report?

13 A. In assessing the potential for alternative resources to displace or defer Interstate, ICF
14 considered the following options:

15 (1) Demand-Side Resources: Demand-side resources tend to reduce the demand for
16 system generation and transmission services either through direct reductions in
17 the load, or the addition of distributed generation at the source of the load. Both
18 active (responsive) and passive (non-responsive) demand resources were
19 considered, including energy efficiency, distributed generation, active demand
20 response resources and real-time emergency generation resources;

21

¹ICF utilizes GE's PSLF model while ISO-NE relies on Siemens PSS@E software. Both software packages simulate the power system load flow.

- 1 (2) Central Generation: Generation resources located close to the load demand
2 centers may also help reduce the overall load on the transmission system
3 provided they are appropriately sized and operating at the time of need; and
4 (3) Combination of Demand-Side and Generation Resources.

5 These resource alternatives were tested for their effectiveness in either deferring or
6 displacing the upgrades to the existing transmission system while maintaining the same
7 level of reliability i.e., fully complying with national and regional reliability criteria.

8 Q. Why did you consider these types of resources as potential non-transmission alternatives
9 to Interstate?

10 A. These demand and generation resources alone, or in combination, have the potential in
11 some circumstances to defer or displace the need for upgrades to the existing
12 transmission system, while maintaining the same level of reliability. However, they may
13 not offer the same certainty offered through transmission projects. For example, to
14 provide reliability benefits, active demand resources must be dispatched. Many of these
15 resources can only be called on for short periods of time, and may take 30 minutes or
16 longer to respond, if they do respond. Hence, they do not offer the same certainty as the
17 transmission lines or components which are always present and have a very high
18 availability.

19 Q. What criteria were used in the ICF Report to evaluate whether these resources, or some
20 combination of them, could provide a practical and feasible non-transmission alternative
21 to Interstate?

1 A. We evaluated the performance of the potential non-transmission alternatives under the
2 same reliability standards and criteria that govern the New England transmission system.
3 These are the standards established by the North American Electric Reliability
4 Corporation (NERC) and the criteria established by the Northeast Power Coordinating
5 Council, Inc. (NPCC), and ISO-NE.

6 Q. What projected area loads were used in the power-flow cases you ran to test the
7 hypothetical non-transmission alternatives against the applicable reliability standards?

8 A. The load projections relied on in the ICF Report were from the ISO-NE CELT² released
9 in April 2010. The study year considered in the power-flow for the five-year horizon is
10 2015 and for the ten-year horizon is 2020. Hence, we relied on the 2015 and 2020
11 projected peak demands under the 90/10 scenario, respectively, in the ISO-NE CELT
12 report for the base power-flow case and made several adjustments to this.

13 Q. In the ICF Report, how did ICF determine the load level at which the southern New
14 England transmission system must be expanded to support demand?

15 A. The critical load level (CLL) reflects the demand level (MW) above which reliability
16 violations begin to occur. At the CLL, the transmission system must be expanded to
17 meet the demand. ICF estimated the SNE CLL based on the approach utilized by ISO-
18 NE in its analyses of the CLL for the entire regional market. ICF focused on the SNE
19 load to determine the level at which the pre-Interstate violations occur.

20 Q. Please explain the calculation of the CLL for SNE described in the ICF Report.

² “2010-2019 Forecast Report of Capacity, Energy, Loads, and Transmission,” April 2010, ISO New England.

1 A. ICF first determined a sub-regional CLL for each of the three sub-regions where the pre-
2 Interstate reliability violations occur, Eastern New England, Western New England, and
3 Rhode Island, and then combined them into a CLL for SNE.

4 Q. Is combining the CLL's for the three sub-regions to estimate a regional CLL a reasonable
5 approach?

6 A. Yes, due to the nature of power-flow cases, reductions in one sub-region have only a
7 small impact on violations in other sub-regions. Also, the aggregate CLL is less likely to
8 overstate the required load reduction as compared with a uniform regional reduction that
9 ISO-NE utilized in its analyses.

10 Q. Applying this CLL analysis, what demand reduction did ICF Report conclude would be
11 required to resolve all of the thermal violations in 2015?

12 A. A demand reduction of approximately 3,400 MW or 15% of the total SNE load would be
13 required to resolve all of the thermal violations. In Rhode Island, the demand reduction
14 would be even more severe. A demand reduction of approximately 800 MW or 38% of
15 the load in Rhode Island would be required to resolve the thermal violations.

16 Q. What demand reductions did the CLL analysis indicate would be required to resolve all
17 of the thermal violations in 2020?

18 A. A demand reduction of 5,300 MW or 22% of the total SNE load would be required to
19 resolve all of the thermal violations. In Rhode Island, a demand reduction of
20 approximately 1,100 MW or 50% of the load in Rhode Island would be required to
21 resolve all of the thermal violations.

22 Q. How were passive demand resources estimated in the ICF Report?

1 A. ICF tested two different levels of demand resources in Connecticut, Rhode Island and
2 Massachusetts, including a Reference DR Case and an Aggressive DR Case. The
3 Reference DR Case was based on estimates for each state if targeted goals for current
4 programs and expected legislation are achieved at similar levels each year through 2020,
5 while the Aggressive DR Case considered the potential for passive resources assuming
6 higher, yet reasonably achievable growth.

7 Q. How much higher was the Aggressive DR Case as compared with the Reference DR
8 Case?

9 A. The Aggressive DR Case assumed approximately 17% more load reducing resources than
10 were modeled in the Reference DR Case.

11 Q. What were the achievable demand reductions from the Reference DR Case and the
12 Aggressive DR Case as compared with the required DR reduction for SNE?

13 A. The achievable demand reductions were as follows:

Year	Required DR Reduction (MW)	Reference DR Case Reduction		Aggressive DR Case Reduction	
		MW	% of Required Reduction	MW	% of Required Reduction
2015	3,400	342	10%	405	12%
2020	5,300	1,439	27%	1,883	36%

14
15 Q. What were the achievable demand reductions from the Reference DR Case and the
16 Aggressive DR Case as compared with the required DR reduction for Rhode Island?

17 A. The achievable demand reductions were as follows:

Year	Required DR Reduction (MW)	Reference DR Case Reduction		Aggressive DR Case Reduction	
		MW	% of Required Reduction	MW	% of Required Reduction
2015	800	47	6%	61	8%
2020	1,100	161	15%	235	21%

18

1 Q. Were the passive demand resources anticipated to be achievable under the Reference DR
2 Case and the Aggressive DR Case sufficient to produce a demand resource-only non-
3 transmission alternative solution equal to the necessary load reduction for the CLL?

4 A. No, the above tables illustrate the wide gaps between the required demand reductions and
5 the achievable demand reductions when considering passive demand resources,
6 especially in Rhode Island.

7 Q. What was the next step after estimating potential passive demand resources in the
8 analysis described in the ICF Report?

9 A. ICF then evaluated potentially available active demand resources to fill the gap in
10 demand resources.

11 Q. What was the outcome of that evaluation?

12 A. ICF found that it is not reasonable to achieve the required levels of active demand
13 resources in 2015, and that achieving the required 2020 levels would require
14 unprecedented growth levels to be maintained for the next several years.

15 Q. How were the generation alternatives evaluated in the ICF Report?

16 A. ICF selected the planned interconnections into the SNE load zones in the New England
17 Generation Interconnection Queue as of April 1, 2011. ICF then categorized these
18 resources based on a likelihood of construction into three categories.

19 Q. Please briefly explain the three categories.

20 A. The three categories were as follows:

21 • Category 1 (very likely): Facilities with completed Interconnection Agreements;

- 1 • Category 2: Facilities with Proposed Plan Application approval in accordance
2 with Section I.3.9 of the ISO New England Transmission, Markets and Services
3 Tariff other than Category 1;
- 4 • Category 3 (lowest probability): All facilities in the Interconnection Queue other
5 than Category 1 or 2.

6 Q. How much capacity was assumed in the ICF Report to be available from these categories for SNE?

7 A. A total of 1,302 MW of generation capacity was assumed available for SNE from these
8 categories in 2015, and 2,850 MW in 2020, although approximately 75% of the
9 generation facilities in the Interconnection Queue never enter commercial operation.

10 Q. Using the assumptions modeled in the ICF Report, which were based on those used by
11 ISO-NE in its 2011 Updated Needs Analysis, if all of the SNE generation in the
12 Interconnection Queue were added, would the reliability criteria violations that Interstate
13 addresses be resolved?

14 A. No. In 2015, those generation resources would only reduce the thermal violations by
15 56% and in 2020, by 53%. In addition, the number of elements overloaded would only
16 decrease by 15% in 2015 and 42% in 2020 if all the queued SNE generation was
17 available.

18 Q. Why did the ICF Report consider two scenarios, Scenario 1 and Scenario 2, for the 2015
19 capacity additions?

20 A. ICF developed both scenarios to prioritize and select generators in SNE from the
21 Interconnection Queue to ensure that the choice of units did not affect the results.

1 Q. Have there been any changes to the Interconnection Queue affecting the SNE load zones
2 since April 1, 2011 that would affect ICF's analysis?

3 A. No, although we have seen both the addition and withdrawal of projects in the queue
4 since April 2011, the changes identified would not impact the result of the analysis.
5 Specifically, four facilities, totaling approximately 1066 MW of capacity in Connecticut
6 and 105 MW in Massachusetts which were assumed to contribute in part to an NTA
7 solution have withdrawn from the queue. However, the generation did not provide an
8 adequate NTA option to the Interstate project, so its withdrawal does not change our
9 conclusions. A new queue entry of 745 MW has been added in the same vicinity as one
10 of the initial projects; however, the original facilities had completed the I.3.9 process and
11 had IA contracts already in place at the time of the withdrawals and hence were eligible
12 to be included in our analysis, while the new queue entry would currently not qualify as it
13 is not past any of the queue analysis stages.

14 Q. In what manner did the analyses in the ICF Report evaluate combinations of generation
15 resources and demand resources?

16 A. ICF first developed a Reference DR Combination NTA Case and an Aggressive DR
17 Combination NTA Case using its applicable estimates of passive demand resources with
18 generation resources. Passive demand resources were estimated based on the amounts
19 that cleared in the Forward Capacity Auction #4.

20 Q. Did these combined resource alternatives resolve all the identified reliability criteria
21 violations?

22 A. No.

1 Q. What was the next step in the analysis described in the ICF Report, after considering the
2 combined effect of potential generation and passive demand resources?

3 A. The next step was to factor in active demand resources to see if passive demand
4 resources, generation and active demand resources could provide a solution.

5 Q. Did this combination non-transmission alternative provide a solution?

6 A. No, while the combination non-transmission alternatives under both the Aggressive DR
7 Combination NTA and Reference DR Combination NTA Cases were nearly sufficient
8 (98-99%) in reducing thermal violations in 2020, significant thermal violations remained
9 for 2015 (35-37%) and the number of elements overloaded was reduced by only 20-25%
10 in 2015 and by 64-68% in 2020. Therefore, the combination non-transmission alternative
11 is not an adequate alternative to Interstate, which resolves all thermal violations in 2015
12 and 2020.

13 Q. Please summarize the additional load reduction required to resolve all thermal violations
14 in SNE in the demand-only and combination NTA cases in 2015 and 2020.

15 A. The required demand reductions were as follows:

Year	Demand-Only NTA		Combination NTA	
	Reference DR Case (MW)	Aggressive DR Case (MW)	Combination Reference DR Case (MW)	Combination Aggressive DR Case (MW)
2015	3,058	2,995	2,075	2,011
2020	3,861	3,417	3,382	2,937

16

17 Q. Please summarize the additional load reduction required to resolve all thermal violations
18 in Rhode Island in the demand-only and combination NTA cases in 2015 and 2020.

19 A. The required demand reductions were as follows:

Year	Demand-Only NTA		Combination NTA	
	Reference DR Case (MW)	Aggressive DR Case (MW)	Combination Reference DR Case (MW)	Combination Aggressive DR Case (MW)
2015	753	739	553	539
2020	939	865	738	665

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

From the above table, the incremental demand reduction required to resolve all thermal violations in Rhode Island in 2015 would be at least approximately 539 MW or 26% of the load. In 2020 the amount required would be at least approximately 665 MW or 30% of the load. Thus, the required reductions were extremely large for Rhode Island, even compared to the very large amounts for SNE.

Q. The ICF Report modeled and analyzed two sensitivity scenarios, why?

A. ICF determined that two sensitivity scenarios would affect the analysis of load serving capability in Eastern New England on the results of the Combination NTA assessments.

Q. Please briefly describe the two sensitivity scenarios.

A. In one scenario, the Salem Harbor generation plant is assumed to retire in 2014 based on the owner’s stated intention and ISO-NE’s direction to Transmission Owners. In the other scenario, up to 1,400 MW of incremental generation is available in northern New England by 2015 at the location of the Tewksbury Substation.

Q. What was the outcome of the Salem Harbor retirement sensitivity?

A. Reliability criteria violations worsened under this scenario.

Q. What was the outcome of the northern New England generation (Tewksbury) injection sensitivity?

A. This sensitivity improved the situation but could not resolve all of the violations.

1 Q. With Interstate in service under the sensitivity scenarios, are all identified reliability
2 criteria violations resolved?

3 A. Yes.

4 Q. What are the challenges associated with implementing non-transmission alternatives even
5 if it were possible for non-transmission alternatives to solve the thermal violations that
6 Interstate addresses?

7 A. Simply stated, the challenges of a non-transmission alternative solution include the
8 following: the hypothetical non-transmission alternatives likely would involve numerous
9 power plants and demand resources at multiple locations, absence of centralized multi-
10 state procedures for non-transmission alternative implementation, risk of over-reliance by
11 ISO-NE on demand response, greater financial risk for ratepayers due to likelihood of
12 contracts for differences to make up revenue shortfalls, very high capital costs and
13 unavailability of region-wide allocation of costs.

14 Q. Does Interstate face any of these implementation challenges?

15 A. No, these challenges do not apply to transmission projects like Interstate. Most
16 importantly, Interstate: (1) is a single integrated solution to multiple violations across the
17 SNE load system, (2) has proven technology, (3) would be administered by ISO-NE, and
18 (4) would be constructed by experienced transmission owners.

19 Q. In the ICF Report, did you estimate the capital costs of any of the portfolios of non-
20 transmission alternatives that you analyzed, as compared to those of Interstate?

1 A. Yes, we estimated the cost of hypothetical non-transmission alternative solutions based
2 on the Combination NTA Cases as compared with the then estimated cost of Interstate of
3 \$532 million. Our analysis is included as Appendix E to the ICF Report.

4 Q. Did the ICF Report evaluate the capital costs for a hypothetical demand resource-only
5 alternative and demand and supply non-transmission alternatives?

6 A. Yes.

7 Q. How did the demand resource-only alternative cost compare with the cost of Interstate?

8 A. For the demand resource-only alternative, ICF estimated the average cost of incremental
9 demand resources which was roughly 25 times the cost of Interstate on a capitalized
10 basis.

11 Q. What was the lowest estimated capital cost for a hypothetical demand and supply non-
12 transmission alternative?

13 A. The lowest capital cost calculated by ICF for a hypothetical demand and supply non-
14 transmission alternative was for the Combination NTA with Aggressive DR Case at a
15 cost of \$15.1 Billion, roughly 30 times the cost of Interstate on a capitalized basis.

16 Q. Did the ICF Report examine the potential economic benefits of hypothetical demand and
17 supply non-transmission alternatives?

18 A. No. The very high capitalized costs of the demand and supply non-transmission
19 alternatives decreased the likelihood that any economic benefits would exceed costs.

20 Q. What is the basis for the ICF Report's assessment that Interstate offers a flexible solution
21 to reliability problems and increasing deliverability?

1 A. Unlike non-transmission alternatives, Interstate solves reliability problems associated
2 with power flows in two directions. Interstate also increases both Connecticut import and
3 export capability across two of the most significant SNE transmission interfaces – the
4 New England East-West and Connecticut Import Interfaces.

5 Q. Please summarize the conclusions of the ICF Report.

6 A. We concluded, based on an intense and wide-ranging analysis of non-transmission
7 alternatives available for Interstate, that no feasible and practical non-transmission
8 alternative would meet the needs that Interstate is designed to meet. In addition, we
9 concluded that any hypothetical non-transmission alternative that was considered would
10 be unprecedented in scope, immensely costly, difficult or impossible to implement, and
11 less flexible and robust in operation than Interstate.

12 Q Have you reviewed the *Follow-Up Analysis to the 2011 New England East-West Solution*
13 *(NEEWS): Interstate Reliability Project Component Updated Needs Assessment (“2012*
14 *Follow-Up Needs Analysis”)*?

15 A. Yes, we have.

16 Q. Have you considered whether there is anything in the 2012 Follow-Up Needs Analysis
17 that would alter the essential conclusions of the ICF Report?

18 A. Yes, we have.

19 Q. And what have you determined on that point?

20 A. The 2012 Follow-Up Needs Analysis corroborates the 2011 Needs Assessment and the
21 ICF Report’s conclusions that:

- 1 • In the absence of Interstate, there are thermal overloads under contingency
- 2 conditions in Southern New England,
- 3 • Interstate resolves these violations
- 4 • Even with large reductions in demand due to greater amounts of passive demand
- 5 resources, violations remain.
- 6 • Interstate is an appropriate solution to the identified violations.

7 Q. Was there any fundamental change in the methodology that ISO-NE employed to assess
8 the need for the Interstate Project in the *2011 Needs Assessment* and that which it used in
9 the *2012 Follow-Up Needs Analysis*?

10 A. No. However, although we have not had the opportunity to conduct a detailed study
11 using the new updated ISO-NE power flow cases, our conclusion is that there are two
12 main differences between our work and the latest ISO-NE study. First, the *2012 Follow-*
13 *Up Needs Analysis* has similar net demand levels at the end of the planning period as
14 ICF, i.e., within a few percent in Southern New England, but arrives at this net demand
15 differently: ISO-NE effectively assumes that the incremental demand resources contained
16 in ICF's Reference DR Case are in place as part of its baseline assessment rather than as
17 a NTA. Importantly, both ICF and ISO-NE found that there were violations that the
18 incremental passive demand resources did not eliminate. Second, the *2012 Follow-Up*
19 *Needs Analysis* did not analyze supply NTAs. However, the ICF report analyzed supply
20 NTAs, and still did not identify a practical NTA.³

³ The 2012 Follow-Up Needs Analysis did not examine incremental active DR, but ICF did and still found no practical NTA.

1 Q. In addition to the change in the approach to modeling future energy efficiency measures,
2 does the *2012 Follow-Up Needs Analysis* include any important assumptions that are
3 different than those used in the *2011 Needs Assessment*?

4 A. No. There are other assumptions that while they have changed do not appear to be
5 significant enough to change our conclusions. They include:

- 6 • Analysis of 2022 rather than 2020
- 7 • More retirements including Salem Harbor in the baseline
- 8 • Changes in demand that nonetheless still result in similar net demand levels

9 Q. Has ICF been able to run additional power-flow analyses of potential NTA's using the
10 new approach and assumptions of the *2012 Follow-Up Needs Analysis*?

11 A. No.

12 Q. Without the benefit of additional power flow analyses, are you able to estimate whether
13 utilization of ISO-NE's new methodology and assumptions for determining need would
14 make a significant difference in your conclusion that there are no practical and feasible
15 non transmission alternatives to the Interstate Reliability Project?

16 A. Yes. As explained above, we do not believe, subject to the caveat that we have not had
17 time to conduct detailed load flows, that ISO-NE's changes in assumptions and
18 methodology would make a significant difference to our conclusion that there are no
19 practical and feasible NTAs to Interstate, especially in Rhode Island.

20 Q. Does this conclude your testimony?

21 A. Yes, it does.

The Narragansett Electric Company
d/b/a National Grid – RIRP
RIPUC Dkt. No. 4360
Witness: Judah L. Rose

Attachments to Testimony of

Judah L. Rose

JLR-1 Judah L. Rose Resume

JUDAH L. ROSE

EDUCATION

1982 M.P.P., John F. Kennedy School of Government, **Harvard University**

1979 S.B., Economics, **Massachusetts Institute of Technology**

EXPERIENCE

Judah L. Rose joined ICF in 1982 and currently serves as a Managing Director of ICF International. Mr. Rose directs ICF's Wholesale Power practice and co-leads its Fuels and Power Line of Business. Mr. Rose has over 30 years of experience in the energy industry including in electricity generation and transmission. Mr. Rose's clients include electric utilities, financial institutions, law firms, government agencies, fuel companies, and Independent Power Producers. Mr. Rose is one of ICF's Distinguished Consultants, an honorary title given to three of ICF's 4,500 employees, and has served on the Board of Directors of ICF International as the Management Shareholder Representative.

Mr. Rose frequently provides expert testimony and litigation support. Mr. Rose has provided testimony in over 100 instances in scores of state, federal, international, and other legal proceedings. Mr. Rose has testified in over 22 states and provinces at the Federal Energy Regulatory Commission, and internationally.

Mr. Rose has supported the financing of tens of billion dollars of new and existing power plants and is a frequent counselor to the financial community.

Mr. Rose has also addressed approximately 100 major energy conferences, authored numerous articles published in Public Utilities Fortnightly, the Electricity Journal, Project Finance International, and written numerous company studies. Mr. Rose has also appeared in TV interviews.

Mr. Rose received a M.P.P. from the John F. Kennedy School of Government, Harvard University, and an S.B. in Economics from the Massachusetts Institute of Technology.

PRESS INTERVIEWS

TV: "The Most With Allison Stewart," MSNBC, "Blackouts in NY and St. Louis & ongoing Energy Challenges in the Nation," July 25, 2006
CNBC Wake-Up Call, August 15, 2003
Wall Street Journal Report, July 25, 1999
Back to Business, CNBC, September 7, 1999

Journals: Electricity Journal
Energy Buyer Magazine
Public Utilities Fortnightly
Power Markets Week

Magazine: Business Week
Power Economics

Costco Connection

Newspapers: Denver Post
Rocky Mountain News
Financial Times Energy
LA Times
Arkansas Democratic Gazette
Galveston Daily News
The Times-Picayune
Pittsburgh Post-Gazette
Power Markets Week

Wires: Bridge News
Associated Press
Dow Jones Newswires

TESTIMONY

116. Sur-Surrebuttal Testimony, In the Matter of Southwestern Electric Power Company's Petition for a Declaratory Order Finding That Installation of Environmental Controls at the Flint Creek Power Plant is in the Public Interest, Docket No. 12-008-U, September 21, 2012.
115. Surrebuttal Testimony, In the Matter of Southwestern Electric Power Company's Petition for a Declaratory Order Finding That Installation of Environmental Controls at the Flint Creek Power Plant is in the Public Interest, Docket No. 12-008-U, July 30, 2012.
114. Direct Testimony, The Connecticut Light & Power Company, Application for a Certificate of Environmental Compatibility and Public Need for the Connecticut Portion of the Interstate Reliability Project that traverses the municipalities of Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam, Thompson, and Windham, which consists of (a) new overhead 345-kV electric transmission lines and associated facilities extending between CL&P's Card Street Substation in the Town of Lebanon, Lake Road Switching Station in the Town of Killingly, and the Connecticut/Rhode Island border in the Town of Thompson; and (b) related additions at CL&P's existing Card Street Substation, Lake Road Switching Station, and Killingly Substation, Docket No. 424, July 17, 2012.
113. Direct Testimony, Southwestern Electric Power Company, In the Matter of Southwestern Electric Power Company's Petition for a Declaratory Order Finding That Installation of Environmental Controls at the Flint Creek Power Plant is in the Public Interest, Docket No. 12-008-U, February 9, 2012.
112. Rebuttal Testimony, Otter Tail Power Company, Before the Office of administrative Hearings, for the Minnesota Public Utilities Commission, In The Matter of Otter Tail Power Company's Petition for an Advance Determination of Prudence for its Big Stone Air Quality Control System Project, September 7, 2011.
111. Rebuttal Testimony, on behalf of Arizona Public Service, In the Matter of the Application of Arizona Public Service Company for Authorization for the Purchase of Generating Assets from Southern California Edison, and for an Accounting Order, Docket No. E-01345A-10-0474, June 22, 2011.

110. Direct Testimony, Duke Energy Ohio, Inc., Application of Duke Energy Ohio for Authority to Establish a Standard Service Offer Pursuant to Section 4928.143, Revised Code, in the Form of an Electric Security Plan, Accounting Modifications and Tariffs for Generation Service, Case No. 11-XXXX-EL-SSO. Application of Duke Energy Ohio for Authority to Amend its Certified Supplier Tariff, P.U.C.O. No. 20. Case No. 11-XXXX-EL-ATA. Application of Duke Energy Ohio for Authority to Amend its Corporate Separation Plan. Case No. 11-XXXX-EL-UNC, June 20, 2011.
109. Direct Testimony, Manitoba Hydro Power Sales Contracting Strategy, U.S. Power Markets, Manitoba Hydro Drought Risks, Modeling, Forecasting and Planning, Selected Risk and Financial Issues, Governance, Trading and Risk Related Comments Before the Public Utilities Board of Manitoba, February 22, 2011.
108. Surrebuttal Testimony – Revenue Requirement of Judah Rose on Behalf of Dogwood Energy, LLC, In the Matter of the Application of KCP&L Greater Missouri Operations Company for Approval to Make Certain Changes to its Charges for Electric Service, Case No. ER-2010-0356, January 12, 2011.
107. Rebuttal Report Concerning Coal Price Forecast for the Harrison Generation Facility, Meyer, Unkovic and Scott, LLP, filed December 6, 2010.
106. Direct Testimony of Judah Rose on behalf of Duke Energy Ohio In the Matter of the Application of Duke Energy Ohio for Approval of a Market Rate Offer to Conduct a Competitive Bidding Process for Standard Service Offer Electric Generation Supply, Accounting Modifications, and Tariffs for Generation Service, Case No. 10-2586-EL-SSO, filed November 15, 2010.
105. Updated Forecast, Coal Price Report for the Harrison Generation Facility, Meyer, Unkovic and Scott, LLP, filed October 18, 2010.
104. Declaration of Judah Rose in re: Boston Generating LLC, et al., Chapter 11, Case No. 10-14419 (SCC) Jointly Administered, September 29, 2010.
103. Declaration of Judah Rose in re: Boston Generating LLC, et al., Chapter 11, Case No. 10-14419 (SCC) Jointly Administered, September 16, 2010.
102. Direct Testimony of Judah Rose on behalf of Plains and Eastern Clean Line LLC, in the Matter of the Application of Plains and Eastern Clean Line Oklahoma LLC to conduct Business as an Electric Utility in the State of Oklahoma, Cause No.PUD 201000075, July 16, 2010.
101. Direct Testimony of Judah Rose on behalf of Plains and Eastern Clean Line LLC, in the Matter of the Application of Plains and Eastern Clean Line LLC for a Certificate of Public Convenience and Necessity to Operate as an Electric Transmission Public Utility in the State of Arkansas, Docket No. 10-041-U, June 4, 2010.
100. Supplemental Testimony on Behalf of Entergy Arkansas, Inc., In the Matter of Entergy Arkansas, Inc., Request for a Declaratory Order Approving the Addition of the Environmental Controls Project at the White Bluff Steam Electric Station Near Redfield, Arkansas, Docket No. 09-024-U, July 6, 2009.
99. Rebuttal Testimony on Behalf of TransEnergie, Canada, Province of Quebec, District of Montreal, No.: R-3669-2008-Phase 2, FERC Order 890 and Transmission Planning, July 3, 2009.

98. Surrebuttal Testimony – Revenue Requirement of Judah Rose on Behalf of Dogwood Energy, LLC, before the Missouri Public Service Commission, In the Matter of the Application of KCP&L GMO, Inc. d/b/a KCP&L Greater Missouri Operations Company for Approval to Make Certain Changes to its Charges for Electric Service, Case No. ER-2009-0090, April 9, 2009.
97. Hawaii Structural Ironworkers Pension Trust Fund v. Calpine Corporation, Case No. 1-04-CV-021465, Assessment of Calpine’s April 2002 Earnings Projections, March 25, 2009.
96. Coal Price Report for Harrison Coal Plant, Allegheny Energy Supply Company, LLS and Monongahela Power Company versus Wolf Run Mining Company, Anker Coal Group, etc., Civil Action. No. GD-06-30514, In the Court of Common Pleas, Allegheny County, Pennsylvania, February 6, 2009.
95. Supplemental Direct Testimony of Judah Rose, on behalf of Southwestern Electric Power Company, In the Matter of the Application of Southwestern Electric Power Company for Authority to Construct a Natural-Gas Fired Combined Cycle Intermediate Generating Facility in the State of Louisiana, Docket No. 06-120-U, December 9, 2008.
94. Rebuttal Testimony of Judah Rose on behalf of Kelson Transmission Company, LLC re: Application of Kelson Transmission Company, LLC For A Certificate of Convenience and Necessity For the Amended Proposed Canal To Deweyville 345 kV Transmission Line Within Chambers, Hardin, Jasper, Jefferson, Liberty, Newton, And Orange Counties, SOAH Docket No. 473-08-3341, PUCT Docket No. 34611, October 27, 2008.
93. Testimony of Judah Rose, on behalf of Redbud Energy, LP, in Support of Joint Stipulation and Settlement Agreement, In the Matter of the Application of Oklahoma Gas and Electric Company for an Order of the Commission Granting Pre-Approval of the Purchase of the Redbud Generating Facility and Authorizing a Recovery Rider, Cause No. PUD 200800086, September 3, 2008.
92. Direct Testimony of Judah L. Rose on behalf of Duke Energy Carolinas, In the Matter of Advance Notice by Duke Energy Carolinas, LLC, of its Intent to Grant Native Load Priority to the City of Orangeburg, South Carolina, and Petition of Duke Energy Carolinas, LLC and City of Orangeburg, South Carolina for Declaratory Ruling With Respect to Rate Treatment of Wholesale Sales of Electric Power at Native Load Priority, Docket No. E-7, SUB 858, August 15, 2008.
91. Affidavit filed on behalf of Public Service of New Mexico pertaining to the Fuel Costs of Southwest Public Service for Cost-of-Service and Market-Based Customers, August 11, 2008.
90. Direct Testimony of Judah L. Rose on behalf of Duke Energy Ohio, Inc., Before the Public Utilities Commission of Ohio, In the Matter of the Application of Duke Energy Ohio, Inc. for Approval of an Electric Security Plan, July 31, 2008.
89. Rebuttal Testimony, Judah L. Rose on Behalf of Duke Energy Carolinas, in re: Application of Duke Energy Carolinas, LLC for Approval of Save-A-Watt Approach, Energy Efficiency Rider and Portfolio of Energy Efficiency Programs, Docket No. E-7, Sub 831, July 21, 2008.
88. Updated Analysis of SWEPCO Capacity Expansion Options as Requested by Public Utility Commission of Texas, on behalf of SWEPCO, June 27, 2008.

87. Direct Testimony of Judah L. Rose on Behalf of Nevada Power/Sierra Pacific Electric Power Company, Docket No. 1, Public Utilities Commission of Nevada, Application of Nevada Power/Sierra Pacific for Certificate of Convenience and Necessity Authorization for a Gas-Fired Power Plant in Nevada, May 16, 2008.
86. Rebuttal Testimony of Judah L. Rose on Behalf of the Advanced Power, Commonwealth of Massachusetts, Before the Energy Facilities Siting Board, Petition of Brockton Power Company, LLC, EFSB 07-7, D.P.U. 07-58 & 07-59, May 16, 2008.
85. Supplemental Rebuttal Testimony on Commissioner's Issues of Judah L. Rose for Southwestern Electric Power Company, on behalf of Southwestern Electric Power Company, PUC Docket No. 33891, Public Utilities Commission of Texas, May 2008.
84. Supplemental Direct Testimony on Commissioners' Issues of Judah Rose for Southwestern Electric Power Company, for the Application of Southwestern Electric Power Company for Certificate of Convenience and Necessity Authorization for a Coal-Fired Power Plant in Arkansas, SOAH Docket No. 473-07-1929, PUC Docket No. 33891, Public Utility Commission of Texas, April 22, 2008.
83. Rebuttal Testimony of Judah Rose, In the Matter of the Application of Tucson Electric Power Company for the Establishment of Just and Reasonable Rates and Charges Designed to Realize A Reasonable Rate of Return on the Fair Value of Its Operations Throughout the State of Arizona, Estimation of Market Value of Fleet of Utility Coal Plants, April 1, 2008.
82. Rebuttal Report of Judah Rose, Ohio Power Company and AEP Power Marketing Inc. vs. Tractebel Energy Marketing, Inc. and Tractebel S.A. Case No. 03 CIV 6770, 03 CIV 6731 (S.D.N.Y.), January 28, 2008
81. Proposed New Gas-Fired Plant, on behalf of AEP SWEPCO, 2007
80. Rebuttal Report, Calpine Cash Flows, on behalf of Unsecured Creditor's Committee, November 21, 2007.
79. Expert Report. Calpine Cash Flows, on behalf of Unsecured Creditor's Committee, November 19, 2007.
78. Application of Duke Energy Carolina, LLC for Approval of Energy Efficiency Plan Including an Energy Efficiency Rider and Portfolio of Energy, Docket No. 2007-358-E, Public Service Commission of South Carolina, December 10, 2007.
77. Independent Transmission Cause No. PUD200700298, Application of ITC, Public Service of Oklahoma, December 7, 2007.
76. Verified Petition of Duke Energy Indiana, Inc. Requesting the Indiana Utility Regulatory Commission to Approve an Alternative Regulatory Plan Pursuant to Ind. Code §8-1-2.5-1, et. Seq. for the Offering of Energy Efficiency Conservation, Demand Response, and Demand-Side Management Programs and Associated Rate Treatment Including Incentives Pursuant to a Revised Standard Contract Rider No. 66 in Accordance With Ind. Code §§8-1-2.5-1 et seq. and 8-1-2-42(a); Authority to Defer Program Costs Associated with its Energy Efficiency Portfolio of Programs; Authority to Implement New and Enhanced Energy Efficiency Programs, Including the PowerShare® Program in its Energy Efficiency Portfolio of Programs; and Approval of a

- Modification of the Fuel Adjustment Cause Earnings and Expense Tests, Indiana Utility Regulatory Commission, Cause No. 43374, October 19, 2007.
75. Rebuttal Testimony, Docket No. U-30192, Application of Entergy Louisiana, LLC For Approval to Repower the Little Gypsy Unit 3 Electric Generating Facility and for Authority to Commence Construction and for Certain Cost Protection and Cost Recovery, October 4, 2007.
 74. Direct Testimony of Judah Rose on Behalf of Tucson Electric Power Company, In the matter of the Application of Tucson Electric Power Company for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of Its Operations Throughout the State of Arizona, Estimation of Market Value of Fleet of Utility Coal Plants, July 2, 2007.
 73. Supplemental Testimony on behalf of Southwestern Electric Power Company before the Arkansas Public Service Commission, In the Matter of Application of Southwestern Electric Power Company for a Certificate of Environmental Compatibility and Public Need for the Construction, Ownership, Operation, and Maintenance of a Coal-Fired Base Load Generating Facility in the Hempstead County, Arkansas, dated June 15, 2007, Docket No. 06-154-U.
 72. Rebuttal Testimony, Causes No. PUD 200500516, 200600030, and 20070001 Consolidated, on behalf of Redbud Energy, before the Corporation Commission of the State of Oklahoma, June 2007.
 71. Rebuttal Testimony on behalf of Duke Energy Indiana, IGCC Coal Plant CPCN, Cause No. 43114 before the Indiana Utility Regulatory Commission, May 31, 2007.
 70. Responsive Testimony, Causes No. PUD 200500516, 200600030, and 200700012 Consolidated, on behalf of Redbud Energy, before the Corporation Commission of the State of Oklahoma, May 2007.
 69. Rebuttal Testimony on behalf of Florida Power & Light Company In Re: Florida Power & Light Company's Petition to Determine Need for FPL Glades Power Park Units 1 and 2 Electrical Power Plant, Docket No. 070098-EL, March 30, 2007.
 68. Rebuttal Testimony, Electric Utility Power Hedging, on behalf of Duke Energy Indiana, Cause No. 38707-FAC6851, May 2007.
 67. Direct Testimony for Southwestern Electric Power Company, Before the Louisiana Public Service Commission, Docket No. U-29702, in re: Application of Southwestern Electric Power Company for the Certification of Contracts for the Purchase of Capacity for 2007, 2008, and 2009 and to Purchase, Operate, Own, and Install Peaking, Intermediate and Base Load Coal-Fired Generating Facilities in Accordance with the Commission's General Order Dated September 20, 1983. Consolidated with Docket No. U-28766 Sub Docket B in re: Application of Southwestern Electric Power Company for Certification of Contracts for the Purchase of Capacity in Accordance with the Commission's 'General Order of September 20, 1983, February 2007.
 66. Second Supplemental Testimony on Behalf of Duke Energy Ohio Before the Public Utility Commission of Ohio, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA, February 28, 2007.

65. Electric Utility Power Hedging, on behalf of Duke Energy Indiana, Cause No. 38707-FAC6851, February 2007.
64. Supplemental Testimony on behalf of Duke Energy Carolinas before the North Carolina Utilities Commission in the Matter of Application of Duke Energy Carolinas, LLC for Approval for an Electric Generation Certificate of Public Convenience and Necessity to Construct Two 800 MW State of Art Coal Units for Cliffside Project, Docket No. E7, SUB790, December 2006.
63. Expert Report, Chapter 11, Case No. 01-16034 (AJG) and Adv. Proc. No. 04-2933 (AJG), November 6, 2006.
62. IGCC Coal Plant, Testimony on behalf of Duke Energy Indiana, Cause No. 43114, October 2006.
61. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106 OAL Docket No. PUC-1874-05, Supplemental Testimony March 20, 2006.
60. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, Surrebuttal Testimony December 27, 2005.
59. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, November 14, 2005.
58. Brazilian Power Purchase Agreement, confidential international arbitration, October 2005.
57. Cost of Service and Fuel Clause Issues, Rebuttal Testimony on behalf of Public Service of New Mexico, Docket No. EL05-151, November 2005.
56. Cost of Service and Peak Demand, FERC, Testimony on behalf of Public Service of New Mexico, September 19, 2005, Docket No. EL05-19.
55. Cost of Service and Fuel Clause Issues, Testimony on behalf of Public Service of New Mexico, FERC Docket No. EL05-151-000, September 15, 2005.
54. Cost of Service and Peak Demand, FERC, Responsive Testimony on behalf of Public Service of New Mexico, August 23, 2005, Docket No. EL05-19.
53. Prudence of Acquisition of Power Plant, Testimony on behalf of Redbud, September 12, 2005, No. PUD 200500151.
52. Proposed Fuel Cost Adjustment Clause, FERC, Docket Nos. EL05-19-002 and ER05-168-001 (Consolidated), August 22, 2005.
51. Market Power and the PSEG Exelon Merger on Behalf of the NJBPU, FERC, Docket EC05-43-000, May 27, 2005.
50. New Air Emission Regulations and Investment in Coal Power Plants, rebuttal testimony on behalf of PSI, April 18, 2005, Causes 42622 and 42718.
49. Rebuttal Report: Damages due to Rejection of Tolling Agreement Including Discounting, February 9, 2005, CONFIDENTIAL.

48. New Air Emission Regulations and Investment in Coal Power Plants, supplemental testimony on behalf of PSI, January 21, 2005, Causes 42622 and 42718.
47. Damages Due to Rejection of Tolling Agreement Including Discounting, January 10, 2005, CONFIDENTIAL.
46. Discount rates that should be used in estimating the damages to GTN of Mirant's bankruptcy and subsequent abrogation of the gas transportation agreements Mirant had entered into with GTN, December 15, 2004. CONFIDENTIAL
45. New Air Emission Regulations and Investment in Coal Power Plants, testimony on behalf of PSI, November 2004, Causes 42622 and 42718.
44. Rebuttal Testimony of Judah Rose on behalf of PSI, "Certificate of Purchase as of yet Undetermined Generation Facility" Cause No. 42469, August 23, 2004.
43. Rebuttal Testimony of Judah Rose on behalf of the Hopi Tribe, Case No. A.02-05-046, Mohave Coal Plant Economics, June 4, 2004.
42. Supplemental Testimony "Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, May 20, 2004.
41. "Application of Southern California Edison Company (U338-E) Regarding the Future Disposition of the Mohave Coal-Fired Generating Station," May 14, 2004.
40. "Appropriate Rate of Return on Equity (ROE) TransAlta Should be Authorized For its Capital Investment Related to VAR Support From the Centralia Coal-Fired Power Plant", for TransAlta, April 30, 2004, FERC Docket No. ER04-810-000.
39. "Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, April 15, 2004.
38. "Valuation of Selected MIRMA Coal Plants, Acceptance and Rejection of Leases and Potential Prejudice to Lessors" Federal Bankruptcy Court, Dallas, TX, March 24, 2004 CONFIDENTIAL.
37. "Certificate of Purchase as of yet Undetermined Generation Facility", Cause No. 42469 for PSI, March 23, 2004.
36. "Ohio Edison's Sammis Power Plant BACT Remedy Case", In the United States District Court of Ohio, Southern Division, March 8, 2004.
35. "Valuation of Power Contract," January 2004, confidential arbitration.

34. "In the matter of the Application of the Union Light Heat & Power Company for a Certificate of Public Convenience and Necessity to Acquire Certain Generation Resources, etc.", before the Kentucky Public Service Commission, Coal-Fired and Gas-Fired Market Values, July 21, 2003.
33. "In the Supreme Court of British Columbia", July 8, 2003. CONFIDENTIAL
32. "The Future of the Mohave Coal-Fired Power Plant – Rebuttal Testimony", California P.U.C., May 20, 2003.
31. "Affidavit in Support of the Debtors' Motion", NRG Bankruptcy, Revenues of a Fleet of Plants, May 14, 2003. CONFIDENTIAL
30. "IPP Power Purchase Agreement," confidential arbitration, April 2003.
29. "The Future of the Mohave Coal-Fired Power Plant", California P.U.C., March 2003.
28. "Power Supply in the Pacific Northwest," contract arbitration, December 5, 2002. CONFIDENTIAL
27. "Power Purchase Agreement Valuation", Confidential Arbitration, October 2002.
26. "Cause No. 42145 - In support of PSI's petition for authority to acquire the Madison and Henry County plants, rebuttal testimony on behalf of PSI. Filed on 8/23/02."
25. "Cause No. 42200 - in support of PSI's petition for authority to recover through retail rates on a timely basis. Filed on 7/30/02."
24. "Cause No. 42196 - in support of PSI's petition for interim purchased power contract. Filed on 4/26/02."
23. "Cause No. 42145 - In support of PSI's petition for authority to acquire the Madison and Henry County plants. Filed on 3/1/2002."
22. "Analysis of an IGCC Coal Power Plant", Minnesota state senate committees, January 22, 2002
21. "Analysis of an IGCC Coal Power Plant", Minnesota state house of representative committees, January 15, 2002
20. "Interim Pricing Report on New York State's Independent System Operator", New York State Public Service Commission (NYSPSC), January 5, 2001
19. "The need for new capacity in Indiana and the IRP process", Indiana Utility Regulatory Commission, October 26, 2000
18. "Damage estimates for power curtailment for a Cogen power plant in Nevada", August 2000. CONFIDENTIAL
17. "Valuation of a power plant in Arizona", arbitration, July 2000. CONFIDENTIAL

16. Application of FirstEnergy Corporation for approval of an electric Transition Plan and for authorization to recover transition revenues, Stranded Cost and Market Value of a Fleet of Coal, Nuclear, and Other Plants, Before PUCO, Case No. 99-1212-EL-ETP, October 4, 1999 and April 2000.
15. "Issues Related to Acquisition of an Oil/Gas Steam Power plant in New York", September 1999 Affidavit to Hennepin County District Court, Minnesota
14. "Wholesale Power Prices, A Cost Plus All Requirements Contract and Damages", Cajun Bankruptcy, July 1999. Testimony to U.S. Bankruptcy Court.
13. "Power Prices." Testimony in confidential contract arbitration, July 1998.
12. "Horizontal Market Power in Generation." Testimony to New Jersey Board of Public Utilities, May 22, 1998.
11. "Basic Generation Services and Determining Market Prices." Testimony to the New Jersey Board of Public Utilities, May 12, 1998.
10. "Generation Reliability." Testimony to New Jersey Board of Public Utilities, May 4, 1998.
9. "Future Rate Paths and Financial Feasibility of Project Financing." Cajun Bankruptcy, Testimony to U.S. Bankruptcy Court, April 1998.
8. "Stranded Costs of PSE&G." Market Valuation of a Fleet of Coal, Nuclear, Gas, and Oil-Fired Power Plants, Testimony to New Jersey Board of Public Utilities, February 1998.
7. "Application of PECO Energy Company for Approval of its Restructuring Plan Under Section 2806 of the Public Utility Code." Market Value of Fleet of Nuclear, Coal, Gas, and Oil Power Plants, Rebuttal Testimony filed July 1997.
6. "Future Wholesale Electricity Prices, Fuel Markets, Coal Transportation and the Cajun Bankruptcy." Testimony to Louisiana Public Service Commission, December 1996.
5. "Curtailement of the Saguaro QF, Power Contracting and Southwest Power Markets." Testimony on a contract arbitration, Las Vegas, Nevada, June 1996.
4. "Future Rate Paths and the Cajun Bankruptcy." Testimony to the U.S. Bankruptcy Court, June 1997.
3. "Fuel Prices and Coal Transportation." Testimony to the U.S. Bankruptcy Court, June 1997.
2. "Demand for Gas Pipeline Capacity in Florida from Electric Utilities." Testimony to Florida Public Service Commission, May 1993.
1. "The Case for Fuel Flexibility in the Florida Electric Generation Industry." Testimony to the Florida Department of Environmental Regulation (DER), Hearings on Fuel Diversity and Environmental Protection, December 1992.

SELECTED SPEAKING ENGAGEMENTS

103. Rose, J.L., Implications of Current Low Natural Gas Price environment on Wholesale Power, Edison Electric Institute, May 3, 2012.

102. Rose, J.L., Anticipating the Next Turn in a Gas-Rich Environment, Key Pricing Drivers, and Outlook, Houlihan and Lokey Merchant Energy Conference, April, 24, 2012.
101. Rose, J.L., CREPC/SPSC Natural Gas – Electricity in West Panel, San Diego, April 3, 2012
100. Rose, J.L., EUCI Financing Transmission Expansion, San Diego, CA, March 8-9, 2011.
99. Rose, J.L., Vinson & Elkins Conference, Houston, TX, November 11, 2010.
98. Rose, J.L., Fundamentals of Electricity Transmission, EUCI, Crystal City, Arlington, VA, June 29-30, 2010.
97. Rose, J.L., Economics of PC Refurbishment, Improving the Efficiency of Coal-Fired Power Generation in the U.S., DOE-NETL, February 24, 2010.
96. Rose, J.L., Fundamentals of Electricity Transmission, EUCI, Orlando, FL, January 25-26, 2010.
95. Rose, J.L., CO₂ Control, “Cap & Trade”, & Selected Energy Issues, Multi-Housing Laundry Association, October 26, 2009.
94. Rose, J.L., Financing for the Future – Can We Afford It?, 2009 Bonbright Conference, October 9, 2009.
93. Rose, J.L., EEI’s Transmission and Market Design School, Washington, D.C., June 2009.
92. Rose, J.L., ICF’s New York City Energy Forum - Market Recovery in Merchant Generation Assets, June 10, 2008.
91. Rose, J.L., Southeastern Electric Exchange – Integrated Resource Planning Task Force Meeting, Carbon Tax Outlook Discussion, February 21-22, 2008.
90. Rose, J.L., AESP, NEEC Conference, Rising Prices and Failing Infrastructure: A Bleak or Optimistic Future, Marlborough, MA, October 23, 2006.
89. Rose, J.L., Infocast Gas Storage Conference, “Estimating the Growth Potential for Gas-Fired Electric Generation,” Houston, TX, March 22, 2006.
88. Rose, J.L., “Power Market Trends Impacting the Value of Power Assets,” Infocast Conference, Powering Up for a New Era of Power Generation M&A, February 23, 2006.
87. Rose, J.L., “The Challenge Posed by Rising Fuel and Power Costs”, Lehman Brothers, November 2, 2005.
86. Rose, J.L., “Modeling the Vulnerability of the Power Sector”, EUCI – Securing the Nation’s Energy Infrastructure, September 19, 2005
85. Rose, J.L., “Fuel Diversity in the Northeast, Energy Bar Association, Northeast Chapter Meeting, New York, NY, June 9, 2005.
84. Rose, J.L., “2005 Macquarie Utility Sector Conference”, Macquarie Utility Sector Conference, Vail, CO, February 28, 2005.

83. Rose, J.L., "The Outlook for North American Natural Gas and Power Markets", The Institute for Energy Law, Program on Oil and Gas Law, Houston, TX, February 18, 2005.
82. Rose, J.L. "Assessing the Salability of Merchant Assets – What's on the Horizon?" Infocast – The Market for Power Assets, Phoenix, AZ, February 10, 2005.
81. Rose, J.L. "Market Based Approaches to Transmission – Longer-Term Role", National Group of Municipal Bond Investors, New York, NY, December 10, 2004.
80. Rose, J.L. "Supply & Demand Fundamentals – What is Short-Term Outlook and the Long-Term Demand? Platt's Power Marketing Conference, Houston, TX, October 11, 2004.
79. Rose, J.L. "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?", Infocast's Buying, Selling, and Investing in Energy Assets Conference, Houston, TX, June 24, 2004.
78. Rose, J. L. "After the Blackout – Questions That Every Regulator Should be Asking," NARUC Webinar Conference, Fairfax, VA, November 6, 2003.
77. Rose, J. L., "Supply and Demand in U.S. Wholesale Power Markets," Lehman Brothers Global Credit Conference, New York, NY, November 5, 2003.
76. Rose, J.L., "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?", Infocast's Opportunities in Energy Asset Acquisition, San Francisco, CA, October 9, 2003.
75. Rose, J.L., "Asset Valuation in Today's Market", Infocast's Project Finance Tutorial, New York, NY, October 8, 2003.
74. Rose, J.L., "Forensic Evaluation of Problem Projects", Infocast's Project Finance Workouts: Dealing With Distressed Energy Projects, September 17, 2003.
73. Rose, J.L., National Management Emergency Association, Seattle, WA, September 8, 2003.
72. Rose, J.L., "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?", Infocast's Buying, Selling & Investing in Energy Assets, Chicago, IL, July 24, 2003.
71. Rose, J.L., CSFB Leveraged Finance Independent Power Producers and Utilities Conference, New York, NY, "Spark Spread Outlook", July 17, 2003.
70. Rose, J.L., Multi-Housing Laundry Association, Washington, D. C., "Trends in U.S. Energy and Economy", June 24, 2003.
69. Rose, J.L., "Power Markets: Prices, SMD, Transmission Access, and Trading", Bechtel Management Seminar, Frederick, MD, June 10, 2003.
68. Rose, J.L., Platt's Global Power Market Conference, New Orleans, LA, "The Outlook for Recovery," March 31, 2003.
67. Rose, J.L., "Electricity Transmission and Grid Security", Energy Security Conference, Crystal City, VA, March 25, 2003.

66. Rose, J.L., "Assessing the Salability of Merchant Assets – When Will We Hit Bottom?, Infocast's Buying, Selling & Investing in Energy Assets, New York City, February 27, 2003.
65. Rose, J.L., Panel Discussion, "Forensic Evaluation of Problem Projects", Infocast Conference, NY, February 24, 2003.
64. Rose, J.L., PSEG Off-Site Meeting Panel Discussion, February 6, 2003 (April 13, 2003).
63. Rose, J.L., "The Merchant Power Market—Where Do We Go From Here?" Center for Business Intelligence's Financing U.S. Power Projects, November 18-19, 2002.
62. Rose, J.L., "Assessing U.S. Regional And The Potential for Additional Coal-Fired Generation in Each Region," Infocast's Building New Coal-Fired Generation Conference, October 8, 2002.
61. Rose, J.L., "Predicting the Price of Power for Asset Valuation in the Merchant Power Financings," Infocast's Product Structuring in the Real World Conference, September 25, 2002.
60. Rose, J.L., "PJM Price Outlook," Platt's Annual PJM Regional Conference, September 24, 2002.
59. Rose, J.L., "Why Investors Are Zeroing in on Upgrading Our Antiquated Power Grid Rather Than Exotic & Complicated Technologies," New York Venture Group's Investing in the Power Industry—Targeting The Newest Trends Conference, July 31, 2002.
58. Rose, J.L., Panel Participant in the Salomon Smith Barney Power and Energy Merchant Conference 2002, May 15, 2002.
57. Rose, J.L., "Locational Market Price (LMP) Forecasting in Plant Financing Decisions," Structured Finance Institute, April 8-9, 2002.
56. Rose, J.L., "PJM Transmission and Generation Forecast", Financial Times Energy Conference, November 6, 2001.
55. Rose, J.L., "U.S. Power Sector Trends", Credit Suisse First Boston's Power Generation Supply Chain Conference, Web Presented Conference, September 12, 2002.
54. Rose, J.L., "Dealing with Inter-Regional Power Transmission Issues", Infocast's Ohio Power Game Conference, September 6, 2001
53. Rose, J.L., "Where's the Next California", Credit Suisse First Boston's Global Project Finance Capital Markets Conference, New York NY, June 27 2001
52. Rose, J.L., "U.S. Energy Issues: What MLA Members Need to Know," Multi-housing Laundry Association, Boca Raton Florida, June 25, 2001
51. Rose, J.L., "How the California Meltdown Affects Power Development", Infocast's Power Development and Finance Conference 2001, Washington D.C., June 12, 2001
50. Rose, J.L., "Forecasting 2001 Electricity Prices" presentation and workshop, What to Expect in western Power Markets this Summer 2001 Conference, Denver, Colorado, May 2, 2001

49. Rose, J.L., "Power Crisis in the West" Generation Panel Presentation, San Diego, California, February 12, 2001
48. Rose, J.L., "An Analysis of the Causes leading to the Summer Price Spikes of 1999 & 2000" Conference Chair, Infocast Managing Summer Price Volatility, Houston, Texas, January 30, 2001.
47. Rose, J. L., "An Analysis of the Power Markets, summer 2000" Generation Panel Presentation, Financial Times Power Mart 2000 conference, Houston, Texas, October 18, 2000
46. Rose, J.L., "An Analysis of the Merchant Power Market, Summer 2000" presentation, Conference Chair, Merchant Power Finance Conference, Atlanta, Georgia, September 11 to 15, 2000
45. Rose, J.L., "Understanding Capacity Value and Pricing Firmness" presentation, Conference Chair, Merchant Plant Development and Finance Conference, Houston, Texas, March 30, 2000.
44. Rose, J.L., "Implementing NYPP's Congestion Pricing and Transmission Congestion Contract (TCC)", Infocast Congestion Pricing and Forecasting Conference, Washington D.C., November 19, 1999.
43. Rose, J.L., "Understanding Generation" Pre-Conference Workshop, Powermart, Houston, Texas, October 26-28, 1999.
42. Rose, J.L., "Understanding Capacity Value and Pricing Firmness" presentation, Conference Chair Merchant Plant Development and Finance Conference, Houston, Texas, September 29, 1999.
41. Rose, J.L., "Comparative Market Outlook for Merchant Assets" presentation, Merchant Power Conference, New York, New York, September 24, 1999.
40. Rose, J.L., "Transmission, Congestion, and Capacity Pricing" presentation, Transmission The Future of Electric Transmission Conference, Washington, DC, September 13, 1999.
39. Rose, J.L., "Effects of Market Power on Power Prices in Competitive Energy Markets" Keynote Address, The Impact of Market Power in Competitive Energy Markets Conference, Washington, DC, July 14, 1999.
38. Rose, J.L., "Peak Price Volatility in ECAR and the Midwest, Futures Contracts: Liquidity, Arbitrage Opportunity" presentation at ECAR Power Markets Conference, Columbus, Ohio, June 9, 1999.
37. Rose, J.L., "Transmission Solutions to Market Power" presentation, Do Companies in the Energy Industry Have Too Much Market Power? Conference, Washington, DC, May 24, 1999.
36. Rose, J.L., "Repowering Existing Power Plants and Its Impact on Market Prices" presentation, Exploiting the Full Energy Value-Chain Conference, Chicago, Illinois, May 17, 1999.
35. Rose, J.L., "Transmission and Retail Issues in the Electric Industry" Session Speaker, Gas Mart/Power 99 Conference, Dallas, Texas, May 10, 1999.
34. Rose, J.L., "Peak Price Volatility in the Rockies and Southwest" presentation at Repowering the Rockies and the Southwest Conference, Denver, Colorado, May 5, 1999.

33. Rose, J.L., "Understanding Generation" presentation and Program Chairman at Buying & Selling Power Assets: The Great Generation Sell-Off Conference, Houston, Texas, April 20, 1999.
32. Rose, J.L., "Buying Generation Assets in PJM" presentation at Mid-Atlantic Power Summit, Philadelphia, Pennsylvania, April 12, 1999.
31. Rose, J.L., "Evaluating Your Generation Options in Situations With Insufficient Transmission," presentation at Congestion Management conference, Washington, D.C., March 25, 1999.
30. Rose, J.L., "Will Capacity Prices Drive Future Power Prices?" presentation at Merchant Plant Development conference, Chicago, Illinois, March 23, 1999.
29. Rose, J.L., "Capacity Value – Pricing Firmness," presentation at Market Price Forecasting conference, Atlanta, Georgia, February 25, 1999
28. Rose, J.L., "Developing Reasonable Expectations About Financing New Merchant Plants That Have Less Competitive Advantage Than Current Projects," presentation at Project Finance International's Financing Power Projects in the USA conference, New York, New York, February 11, 1999.
27. Rose, J.L., "Transmission and Capacity Pricing and Constraints," presentation at Power Fair 99, Houston, Texas, February 4, 1999.
26. Rose, J.L., "Peak Price Volatility: Comparing ERCOT With Other Regions," presentation at Megawatt Daily's Trading Power in ERCOT conference, Houston, Texas, January 13, 1999.
25. Rose, J.L., "The Outlook for Midwest Power Markets," presentation to The Institute for Regulatory Policy Studies at Illinois State University, Springfield, Illinois, November 19, 1998.
24. Rose, J.L., "Developing Pricing Strategies for Generation Assets," presentation at Wholesale Power in the West conference, Las Vegas, Nevada, November 12, 1998.
23. Rose, J.L., "Understanding Electricity Generation and Deregulated Wholesale Power Prices," a full-day pre-conference workshop at Power Mart 98, Houston, Texas, October 26, 1998.
22. Rose, J.L., "The Impact of Power Generation Upgrades, Merchant Plant Developments, New Transmission Projects and Upgrades on Power Prices," presentation at Profiting in the New York Power Market conference, New York, NY, October 22, 1998.
21. Rose, J.L., "Capacity Value – Pricing Firmness," presentation to Edison Electric Institute Economics Committee, Charlotte, NC, October 8, 1998.
20. Rose, J.L., "Locational Marginal Pricing and Futures Trading," presentation at Megawatt Daily's Electricity Regulation conference, Washington, D.C., October 7, 1998.
19. Rose, J.L., Chairman's opening speech and "The Move Toward a Decentralized Approach: How Will Nodal Pricing Impact Power Markets?" at Congestion Pricing and Tariffs conference, Washington, D.C., September 25, 1998.

18. Rose, J.L., "The Generation Market in MAPP/MAIN: An Overview," presentation at Megawatt Daily's MAIN/MAPP – The New Dynamics conference, Minneapolis, Minnesota, September 16, 1998.
17. Rose, J.L., "Capacity Value – Pricing Firmness," presentation at Market Price Forecasting conference, Baltimore, Maryland, August 24, 1998.
16. Rose, J.L., "ICF Kaiser's Wholesale Power Market Model," presentation at Market Price Forecasting conference, New York, New York, August 6, 1998.
15. Rose, J.L., Campbell, R., Kathan, David, "Valuing Assets and Companies in M&A Transactions," full-day workshop at Utility Mergers & Acquisitions conference, Washington, D.C., July 15, 1998.
14. Rose, J.L., "Must-Run Nuclear Generation's Impact on Price Forecasting and Operations," presentation at The Energy Institute's conference entitled "Buying and Selling Electricity in the Wholesale Power Market," Las Vegas, Nevada, June 25, 1998.
13. Rose, J.L., "The Generation Market in PJM," presentation at Megawatt Daily's PJM Power Markets conference, Philadelphia, Pennsylvania, June 17, 1998.
12. Rose, J.L., "Market Evaluation of Electric Generating Assets in the Northeast," presentation at McGraw-Hill's conference: Electric Asset Sales in the Northeast, Boston, Massachusetts, June 15, 1998.
11. Rose, J.L., "Overview of SERC Power," opening speech presented at Megawatt Daily's SERC Power Markets conference, Atlanta, Georgia, May 20, 1998.
10. Rose, J.L., "Future Price Forecasting," presentation at The Southeast Energy Buyers Summit, Atlanta, Georgia, May 7, 1998.
9. Rose, J.L., "Practical Risk Management in the Power Industry," presentation at Power Fair, Toronto, Canada, April 16, 1998.
8. Rose, J.L., "The Wholesale Power Market in ERCOT: Transmission Issues," presentation at Megawatt Daily's ERCOT Power Markets conference, Houston, Texas, April 1, 1998.
7. Rose, J.L., "New Generation Projects and Merchant Capacity Coming On-Line," presentation at Northeast Wholesale Power Market conference, New York, New York, March 18, 1998.
6. Rose, J.L., "Projecting Market Prices in a Deregulated Electricity Market," presentation at conference: Market Price Forecasting, San Francisco, California, March 9, 1998.
5. Rose, J.L., "Handling of Transmission Rights," presentation at conference: Congestion Pricing & Tariffs, Washington, D.C., January 23, 1998.
4. Rose, J.L., "Understanding Wholesale Markets and Power Marketing," presentation at The Power Marketing Association Annual Meeting, Washington, D.C., November 11, 1997.
2. Rose, J.L., "Determining the Electricity Forward Curve," presentation at seminar: Pricing, Hedging, Trading, and Risk Management of Electricity Derivatives, New York, New York, October 23, 1997.

3. Rose, J.L., "Market Price Forecasting In A Deregulated Market," presentation at conference: Market Price Forecasting, Washington, D.C., October 23, 1997,
1. Rose, J.L., "Credit Risk Versus Commodity Risk," presentation at conference: Developing & Financing Merchant Power Plants in the New U.S. Market, New York, New York, September 16, 1997.

SELECTED PUBLICATIONS

Rose, J.L. and Surana, S. "Using Yield Curves and Energy Prices to Forecast Recessions – An Update." *World Generation*, March/April 2011, V.23 #2.

Rose, J.L. and Surana, S. "Oil Price Increases, Yield Curve Inversion may be Indicators of Economic Recession." *Oil and Gas Financial Journal*, Volume 7, Issue 6, June 2010

Rose, J.L. and Surana, S. "Forecasting Recessions and Investment Strategies." *World-Generation*, June/July 2010, V.22, #3.

Rose, J.L., "Should Environmental Restrictions be Eased to Allow for the Construction of More Power Plants? The Costco Connection, April 2001.

Rose, J.L., "Deregulation in the US Generation Sector: A Mid-Course Appraisal", *Power Economics*, October 2000.

Rose, J. L., "Price Spike Reality: Debunking the Myth of Failed Markets", *Public Utilities Fortnightly*, November 1, 2000.

Rose, J.L., "Missed Opportunity: What's Right and Wrong in the FERC Staff Report on the Midwest Price Spikes," *Public Utilities Fortnightly*, November 15, 1998.

Rose, J.L., "Why the June Price Spike Was Not a Fluke," *The Electricity Journal*, November 1998.

Rose, J.L., S. Muthiah, and J. Spencer, "Will Wall Street Rescue the Competitive Wholesale Power Market?" *Project Finance International*, May 1998.

Rose, J.L., "Last Summer's "Pure" Capacity Prices – A Harbinger of Things to Come," *Public Utilities Fortnightly*, December 1, 1997.

Rose, J.L., D. Kathan, and J. Spencer "Electricity Deregulation in the New England States," *Energy Buyer*, Volume 1, Issue 10, June-July 1997.

Rose, J.L., S. Muthiah, and M. Fusco, "Financial Engineering in the Power Sector," *The Electricity Journal*, Jan/Feb 1997.

Rose, J.L., S. Muthiah, and M. Fusco, "Is Competition Lacking in Generation? (And Why it Should Not Matter)," *Public Utilities Fortnightly*, January 1, 1997.

Mann, C. and J.L. Rose, "Price Risk Management: Electric Power vs. Natural Gas," *Public Utilities Fortnightly*, February 1996.

Rose, J.L. and C. Mann, "Unbundling the Electric Capacity Price in a Deregulated Commodity Market," *Public Utilities Fortnightly*, December 1995.

Booth, William and J.L. Rose, "FERC's Hourly System Lambda Data as Interim Bulk Power Price Information," *Public Utilities Fortnightly*, May 1, 1995.

Rose, J.L. and M. Frevert, "Natural Gas: The Power Generation Fuel for the 1990s." Published by Enron.

EMPLOYMENT HISTORY

ICF Resources Incorporated	Managing Director	1999-Present
	Vice President	1996-1999
	Project Manager	1993-1996
	Senior Associate	1986-1993
	Associate	1982-1986