NEW YORK STATE BOARD ON ELECTRIC GENERATION SITING AND THE ENVIRONMENT

IN THE MATTER

of the
Application by TransGas Energy Systems LLC for a Certificate of Environmental Compatibility and Public Need to Construct and Operate a 1,100 Megawatt Combined Cycle Generating Facility in the Borough of Brooklyn, New York

Case 01-F-1276

Direct Testimony of
David A. Schlissel
and
Geoffrey L. Keith

On behalf of
The Brooklyn Borough President
and the
Greenpoint Williamsburg Waterfront Task Force

September 29, 2003

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QUALIFICATIONS

Q. Mr. Schlissel, please state your name, position and business address.

A. My name is David A. Schlissel. I am a Senior Consultant at Synapse Energy Economics, Inc, 22 Pearl Street, Cambridge, MA 02139.

Q. Mr. Keith, please state your name, position and business address.

A. My name is Geoffrey L. Keith. I am an Associate at Synapse Energy Economics, Inc., 22 Pearl Street, Cambridge, MA 02139.

Q. On whose behalf are you testifying in this case?

A. We are testifying on behalf of the Brooklyn Borough President and the Greenpoint Williamsburg Waterfront Task Force ("Brooklyn/GWWTF").

Q. Please describe Synapse Energy Economics.

A. Synapse Energy Economics ("Synapse") is a research and consulting firm specializing in energy and environmental issues, including electric generation, transmission and distribution system reliability, market power, electricity market prices, stranded costs, efficiency, renewable energy, environmental quality, and nuclear power.

Q. Mr. Schlissel, please summarize your educational background and recent work experience.

A. I graduated from the Massachusetts Institute of Technology in 1968 with a Bachelor of Science Degree in Engineering. In 1969, I received a Master of Science Degree in Engineering from Stanford University. In 1973, I received a Law Degree from Stanford University. In addition, I studied nuclear engineering at the Massachusetts Institute of Technology during the years 1983-1986.

Since 1983 I have been retained by governmental bodies, publicly-owned utilities, and private organizations in 24 states to prepare expert testimony and analyses on engineering and economic issues related to electric utilities. My clients have

included the Staff of the California Public Utilities Commission, the Staff of the Arizona Corporation Commission, the Staff of the Kansas State Corporation Commission, the Arkansas Public Service Commission, municipal utility systems in Massachusetts, New York, Texas, and North Carolina, and the Attorney General of the Commonwealth of Massachusetts.

I have testified before state regulatory commissions in Arizona, New Jersey, Connecticut, Kansas, Texas, New Mexico, New York, Vermont, North Carolina, South Carolina, Maine, Illinois, Indiana, Ohio, Massachusetts, Missouri, and Wisconsin and before an Atomic Safety & Licensing Board of the U.S. Nuclear Regulatory Commission.

A copy of my current resume is attached as Exhibit DS/GK-1.

Q. Mr. Schlissel, have you previously testified in any Article X Proceedings before the Siting Board?

A. Yes. I have testified in Case 99-F-1627 concerning NYPA's proposed 500 MW Astoria Project. I also filed testimony in Case 99-F-1191 which was settled before hearings were held and Case 00-F-1356 in which hearings have not yet been scheduled.

Q. Mr. Keith, please summarize your educational background and recent work experience.

A. I graduated from Brown University in 1994 with an M.A. in Environmental Studies. While at Brown I wrote my Masters thesis on the deregulation of the electric power industry. Before studying at Brown, I received a B.A. in English Literature from Tufts University and later did coursework in Chemistry and Physics at the Harvard University Extension School. Prior to joining Synapse, I worked as a Research Associate at the Rhode Island Division of Public Utilities and Carriers and as a Consultant at M. J. Bradley & Associates, a strategic environmental consulting firm with expertise in the energy sectors. I joined Synapse in 2001 and am now an Associate.

For nearly ten years, I have been analyzing the electric power industry, focusing on the effects of changing market structures and new environmental policy initiatives. During my time with M. J. Bradley & Associates, I worked with large energy companies to assess market opportunities around clean power generation and to support proposed emission standards such as EPA's revised fine particulate and ozone standards and the federal "NO_x SIP Call." I also worked with northeastern environmental advocates to monitor the environmental impacts of electric restructuring and develop proposals to minimize adverse impacts.

At Synapse my work focuses on the assessment of energy and environmental policies, including new air regulations at the state and federal levels, renewable portfolio standards, emissions performance standards and information disclosure requirements. I perform both qualitative policy analysis and quantitative analysis using electric system dispatch modeling. I have performed dispatch modeling to analyze the costs and benefits of environmental and energy policies for clients such as the U.S. Environmental Protection Agency and the Ozone Transport Commission. In addition, I have reviewed corporate emissions compliance plans for state consumer advocates and other industry stakeholders.

Q. Mr. Keith, have you previously testified in any Article X Proceedings before the Siting Board?

A. No.

INTRODUCTION

Q. What is the purpose of your testimony.

A. Synapse was retained by Brooklyn/GWWTF to examine a number of issues related to TransGas Energy System's (also "the Applicant," "TransGas," and "TGE") proposed 1,100 Megawatt combined cycle electric generating facility. This testimony presents the results of our examination and investigation of the following issues set forth in the Examiners' August 4, 2003 Procedural Ruling:

1. The likelihood that the proposed facility will sell steam to Con Edison.

2. Whether construction and operation of the proposed facility are in the public interest taking into account:

   a. whether the proposed facility will displace generation at older facilities, and thereby reduce air emissions and improve air quality.

   b. whether the proposed facility will result in reduced prices for electricity.

3. The validity of TGE's claims concerning the benefits of the proposed facility on electric system reliability.

Q. Please explain how Synapse conducted its investigations and analyses on these issues.

A. We reviewed the Article X Application and the appendices to the Application. We also submitted discovery to TGE and reviewed the materials that were provided in response to that discovery. In particular, we examined the Applicant's production modeling analyses and assessed the reasonableness of the input assumptions used in these analyses.

We also reviewed materials that were presented in other recent Article X proceedings in New York State. In particular, we compared the results of TGE's analyses with the production modeling analyses that have been presented by other Article X applicants.

Finally, we reviewed materials issued by New York Independent System Operator ("NYISO"), PJM and the New England Power Pool.

SUMMARY OF FINDINGS

Q. Please summarize your findings.

A. We have found that:

1. Although TGE implies that it is involved in negotiations with Con Edison, Con Edison denies that such negotiations are occurring.

2. Con Edison has alternatives for the future use of the Hudson Avenue Station other than retirement;

3. Con Edison has at least one other significant alternative to TGE for purchasing steam produced at a cogeneration facility.

4. Consequently, at this time, there is no evidence that TGE will sell steam to Con Edison from its proposed facility.

5. The Applicant's production modeling analyses (called "MAPS" analyses) do not reasonably reflect future conditions on the New York City, New York State and neighboring electric systems in a number of important ways.

6. The MAPS analyses examine unrealistic base and low capacity expansion scenarios. These scenarios exclude significant amounts of generating capacity in downstate New York that has been certified by the Siting Board and that is likely to be built.

7. The MAPS analyses also examine a higher steam production scenario. This scenario also excludes significant amounts of generating capacity in downstate New York that has been certified by the Siting Board and that is likely to be built. This scenario is also unrealistic because there is no credible evidence that TGE will sell steam from the proposed facility to Con Edison.

8. The MAPS analyses use unreasonably low heat rates for all of the new combined cycle generating facilities in New York State. The MAPS analyses also do not reflect the higher heat rate that the proposed TGE facility will experience due to its use of an air-cooled condenser.

9. By excluding certified generating capacity and using unreasonably low heat rates, the Applicant overstates the amount of electricity that would be produced by the proposed TGE facility and, consequently, exaggerates its environmental and economic benefits.

10. The MAPS analyses overstate the amount of electricity that the proposed TGE facility would displace from large cogenerating facilities in New York State and New Jersey. The MAPS analyses also use emissions rates for some of these facilities that are five or more times as high as the limits in the facilities' air permits. These assumed emissions rates do not reflect the fact that many of these facilities have selective catalytic reduction equipment to reduce their NO_x emissions. For these reasons, TGE's MAPS analyses significantly overstate the environmental benefits of displacing the electricity that would otherwise be produced by these cogenerators.

11. The MAPS analyses do not reflect the revised emissions standards that will be in effect by 2008 in Massachusetts, Connecticut, and New Hampshire. Consequently, they overstate the emissions reductions that could be achieved due to the TGE facility's displacement of electricity that would otherwise be generated at power plants in New England.

12. The MAPS analyses do not reflect the revised emissions standards that will be in effect by 2008 in New York State. In particular, the TGE MAPS modeling clearly does not reflect New York's the SO_2 emissions cap that will be in effect by 2008: in all of the Applicant's MAPS scenarios, total New York SO_2 emissions are over 240,000 tons per year while the allowable SO_2 emissions limit will be only 131,364 tons per year. It is not clear whether the TGE MAPS modeling has included the new New York NO_x emission cap. Given its failure to reflect the new SO_2 cap limits, we suspect not.

13. The emissions benefits claimed by TGE for its proposed facility are unreasonable given that the plants it claims to be displacing in New York State will have significantly lower emission rates than were assumed in the MAPS analyses. In fact, it is reasonable to assume that the operation of the proposed TGE facility will not reduce SO_2 emissions at all given that

statewide SO_2 emissions will be capped at the same significantly lower levels whether or not TGE is built and operating.

14. The Applicant's modeling overstates the air quality benefits that the proposed facility would produce for the Greenpoint and Williamsburg communities.

15. The Applicant overstates the economic benefits that would be provided by the proposed facility due to exclusion of capacity from certified generating facilities and the use of unreasonably low heat rates.

16. The reductions in location based marginal prices, wholesale power payments and reductions costs that claimed by TGE for its proposed facility are overstated and unrealistic.

17. The Applicant's analysis of capacity market prices is pure speculation and should be afforded no weight by the Siting Board.

18. If all of the new generating projects that have been certified by the Siting Board and the transmission projects that have been approved by the Public Service Commission are considered, the net amount of capacity in New York City will grow by approximately 3,100 MW by 2008, without the proposed TGE facility.

19. Whether or not the proposed TGE facility is built, the reliability of the New York City electric system will be improved by 2008 through the addition of the capacity from other generating facilities that either are currently under construction or that will be completed.

20. TGE has not provided any analyses or studies to support the claim that its proposed facility would provide significant electric system reliability or to quantify the magnitude of the benefits that the proposed facility would provide.

21. If all of the certified generating and transmission projects are completed, New York City's electric system will have capacity reserve margins above

32 percent as late as 2015 even if the proposed TGE facility is not built. At the same time, the NYISO's 80 percent in-City Installed Capacity Requirement would be satisfied far beyond 2015.

22. Even if not all of the certified projects are completed, the New York City electric system will have adequate reserve margins through at least 2015 even if the proposed TGE facility is not built. The NYISO's 80 percent Installed in-City Capacity Requirement also would be met for several years beyond 2008.

23. If the TGE facility is not built, the reliability of New York City's electric system could be enhanced through the implementation of aggressive energy conservation/efficiency and/or demand response programs. System reliability also could be improved by the implementation of programs encouraging the use of small clean distributed generation or renewable energy facilities.

24. The available information shows that the transmission system through which power is imported into New York City is highly reliable.

25. There is no evidence that if the proposed TGE facility had been in service on August 14, 2003, it would have prevented the extended blackout in New York City or that its black start capability would have accelerated Con Edison's recovery of service.

26. For these reasons, the Applicant has not shown that the proposed 1,100 MW generating facility would provide significant environmental, economic or system reliability benefits.

27. Consequently, TGE's Application should be rejected because the Applicant has not shown that the construction and operation of its proposed facility would be in the public interest.

ISSUE NO. 1 - THE LIKELIHOOD THAT THE PROPOSED FACILITY WILL SELL STEAM TO CON EDISON

Q. Have you seen any credible evidence that suggests it is likely that TGE will enter into a contract to sell steam to Con Edison?

A. No. TGE's testimony suggests that it is in negotiations with Con Edison concerning a contract for the use of TGE's steam supply.[1] Con Edison, however, specifically states that there are no negotiations between the two parties:

> Although the [TGE] application suggests that TGE Systems and Con Edison have been in active negotiations to establish a steam sales agreement between the companies, this is not the case. Several meetings have taken place, at which TGE Systems has presented an overview of its Project plan, but there is neither a formal nor informal steam sales agreement between TGE Systems and Con Edison.[2]

Q. Did you submit discovery requests to learn the current status of the talks between TGE and Con Edison?

A. Yes. Brooklyn/GWWTF submitted a number of discovery requests to TGE concerning the claims in the Article X Application regarding the sale of the proposed facility's steam supply to Con Edison. However, TGE refused to provide the materials that might offer some insights into the status of its discussions with Con Edison. These materials included, for example, the correspondence between TGE and Con Edison concerning the possible supply of steam from the proposed project for use in Con Edison's steam distribution system.[3]

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1 Direct Testimony of William Harkins, at page 3, line 15.

2 Con Edison July 11, 2003 letter to Examiners Garlin & Casutto.

3 TGE Response to Information Request Brooklyn/GWWTF-4(a).

Q. Did TGE provide any evidence that it will be able to sell steam to Con Edison at a price that Con Edison would be motivated to pay and that would provide savings to Con Edison's ratepayers?

A. No. TGE has stated that it has no analyses, assessments, evaluations or studies that were employed to support the statements in the Application and the Direct Testimony of William Harkins that "TGE envisions selling Con Edison steam at prices that would provide cost savings to Con Edison and its ratepayers" and "TGE's steam supply would be priced lower than Con Edison's own cost of generating steam, such that Con Edison would be motivated economically to take it."[4]

TGE further stated that it did not have any analyses, assessments, evaluations or studies which compared the prices at which the proposed TransGas project would produce steam to the price at which Con Edison can produce steam."[5]

Q. TGE has claimed that the steam supply from its proposed facility could facilitate the retirement by Con Edison of the Hudson Avenue Station. Have you seen any evidence that Con Edison is interested in retiring Hudson Avenue?

A. No.

Q. Does Con Edison have any viable alternatives to retiring the Hudson Avenue Station?

A. Yes. Con Edison is currently evaluating and analyzing possible future uses of its 74th Street, 59th Street, and Hudson Avenue Generating Stations. According to Con Edison's November 2002 Progress Report in PSC Case 99-S-1621, "the objective of these analyses, which will address costs and benefits of each possible future use, will be to identify potential future uses of the plants and sites that maximize economic efficiency while minimizing steam rates."

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[4] See TGE's responses to Brooklyn/GWWTF-4(c)(1) and 4(d).

[5] TGE's response to Brooklyn/GWWTF-4(c)(2).

Q. What specific alternatives is Con Edison examining for the Hudson Avenue Generating Station?

A. Con Edison has identified five possible future use options for Hudson Avenue:

- Maintain the existing boilers
- Install 4 dual fuel boilers that would produce 1.6 mmlbs/hr net of steam
- Install 2 6FA gas turbines with duct firing capability. These would provide 200 MW net of electricity and 1.7 mmlbs/hr net of steam.
- Install 2 7FA gas turbines with a steam turbine. This combination would provide 520 MW net of electricity and 1.6 mmlbs/hr net of steam.
- Install one dual fuel 6FA gas turbine and dual fuel boilers. This combination would provide 62 MW net of electricity and 1.6 mmlbs/hr net of steam.

Q. When will these studies be completed?

A. According to its November 2002 Progress Report, Con Edison was scheduled to issue a final report in January 2002. However, it has not yet done so.

Q. If Con Edison were interested in contracting with an outside party for a significant amount of steam supply, does it have any alternatives to entering into a contract with TGE?

A. Yes. Con Edison could enter into a contract with KeySpan for steam produced at the Ravenswood Cogeneration Station.

Q. How much steam can be produced at the Ravenswood Cogeneration Station?

A. KeySpan has said that 976,000 pounds per hour of steam can be produced at the Ravenswood Cogeneration Station.

Q. Would Con Edison's purchase of steam from the Ravenswood Cogeneration Station result in significant environmental benefits?

A. Yes. As KeySpan has explained the Ravenswood Cogeneration Station was designed with the potential to export steam to Con Edison's Manhattan steam

distribution system. If KeySpan were to enter into a contractual agreement with Con Edison:

> this steam [from the Ravenswood Cogeneration Station] would enable the displacement of the existing Boiler "A" House owned by Con Edison at the Ravenswood Generating Station. The steam generation capacity of the cleaner, natural gas-fired Facility would allow the retirement of the 50 year old, oil-fired Boiler "A" House, which would result in substantially reduced air emissions from the site. The NO_x emission rate of the Boiler "A" House is approximately 40 times higher than the proposed facility, and the SO_2 emission rate of the Boiler "A" House is approximately 550 times higher.[6]

According to KeySpan, the displacement of steam production at the Boiler "A" House would have significant benefits:

> This facility is over fifty years old and is oil-fired, producing an average of 275 tons of NO_x, 250 tons of SO_2 and 138,000 tons of CO_2 annually based on historic data (1996-1999). The displacement of this oil-fired facility with the cleaner, natural gas-fired Facility would result in reduced air emissions from the site.

It is also quite possible that some of the steam produced at the Ravenswood Cogeneration Station would displace some of the steam production at Con Edison's oil-fired 74th Street facility. This would result in additional air emission reductions.

Q. What is your conclusion concerning the likelihood that TGE will sell steam to Con Edison from its proposed facility?

A. At this time, there is no evidence that TGE will sell steam to Con Edison from its proposed facility:

- Although TGE implies that it is involved in negotiations with Con Edison, Con Edison denies that such negotiations are occurring;
- Con Edison has alternatives for the future use of the Hudson Avenue Station other than to retire the facility;

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[6] KeySpan's Ravenswood Cogeneration Facility Article X Application, at page 1-11.

- Con Edison has at least one other significant alternative to TGE for purchasing steam produced at a cogeneration facility.

ISSUE NO. 2 - WHETHER THE CONSTRUCTION AND OPERATION OF THE PROPOSED FACILITY WOULD BE IN THE PUBLIC INTEREST

Q. Please explain why it is important that an Applicant show that its proposed facility would produce environmental and economic benefits when seeking to obtain a certificate to build and operate a major electric generating facility.

A. PSL Sections 168(1) and 168(2) require that the Siting Board must make a number of specific findings on the basis of the record developed before the Presiding Examiner before it may grant a certificate for the construction or operation of a major electric generating facility. These findings include:

> (b) The nature of the probable environmental impacts, including an evaluation of the predictable adverse and beneficial impacts on the environment and ecology, public health and safety … air and water quality, including the cumulative effect of air emissions from existing facilities and the potential for significant deterioration in local air quality with particular attention to facilities located in areas designated as severe nonattainment….
>
> (c) That the facility (i) minimizes adverse environmental impacts …. (ii) is compatible with the public health and safety, … (iv) will not emit any pollutants to the air that will be in contravention of applicable air emission control requirements or air quality standards….
>
> (e) That the construction and operation of the facility is in the public interest, considering the environmental impacts of the facility ….

It is essential that there be a reasonable estimate of the environmental and economic benefits that the proposed facility could offer in order for the Siting Board to perform the balancing of benefits called for under these Sections of the Public Service Law.

Q. What claims has TGE made concerning the benefits that would be created by the construction and operation of the proposed facility?

A. TGE's Article X Application claims that the operation of the proposed 1,100 MW facility will produce a significant reduction in production costs,[7] "dramatic" decreases in SO_2, NO_x and CO_2 emissions,[8] and reductions in installed capacity costs.[9]

Q. Are these claims supported by the Applicant's production modeling analyses?

A. No. The Applicant's production modeling analyses (also called "MAPS" analyses after the GE Market Assessment & Portfolio Strategies model which is used in the analyses) do not reasonably reflect future conditions on the New York City, New York State and neighboring electric systems in a number of important ways:

1. The MAPS analyses examine unrealistic base and low capacity expansion scenarios that exclude significant amounts of generating capacity in downstate New York that has been certified by the Siting Board and that is likely to be built.

2. The MAPS analyses also examine a higher steam production scenario that excludes significant amounts of generating capacity in downstate New York that has been certified by the Siting Board and that is likely to be built. This scenario is also unrealistic because there is no credible evidence that TGE will be able to sell steam from the proposed facility to Con Edison.

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7 TGE Article X Application, at page 1-14.

8 TGE Article X Application, at page 1-15.

9 TGE Article X Application, at page 1-15.

3. The MAPS analyses use unreasonably low heat rates for all of the new combined cycle generating facilities in New York State. The MAPS analyses also do not reflect the higher heat rate that the proposed TGE facility will experience due to its use of an air-cooled condenser.

4. The MAPS analyses do not reflect new emissions standards that will be in effect by 2008 in New York State, Massachusetts, Connecticut, and New Hampshire.

5. The MAPS analyses unrealistically predict that the proposed TGE facility would displace significant amounts of electricity that would otherwise be produced at cogeneration plants. Because they use incorrect emissions rates for at least some of the cogeneration plants, the MAPS analyses overstate the reductions in the NO_x emissions from these facilities due to their displacement by TGE.

6. The Applicant's modeling overstates the air quality benefits that the proposed facility would produce for the Greenpoint and Williamsburg communities.

7. The Applicant overstates the economic benefits that would be provided by the proposed facility due to the same factors that exaggerate the claimed environmental benefits. In addition, the Applicant's analysis of capacity market prices is pure speculation and should be afforded no weight by the Siting Board.

For these reasons, the Applicant's MAPS analyses significantly overstate the electricity production of the proposed TGE facility and dramatically overstate the environmental and economic benefits that the proposed facility would provide.

Capacity Expansion Scenarios

Q. Does the Applicant's Base Case MAPS analysis appropriately reflect the generating facilities that have been certified by the Siting Board and that are likely to be built in New York State by 2008?

A. No. The Applicant's Base Case MAPS analysis reflects the construction and operation of only 50 percent of the capacity of the NYPA Poletti Expansion and SCS Astoria Energy, Brookhaven Energy, Spagnoli Road and Wawayanda facilities. In so doing, the Applicant excludes 750 MW of capacity that has been certified for construction and operation in New York City, another 395 MW of certified capacity for Long Island, and, finally, 270 MW of capacity certified for Orange County. The exclusion of this capacity artificially inflates the projected output of the proposed TGE facility and exaggerates its projected environmental and economic benefits.

Q. Has the Siting Board indicated whether already certified facilities should be included in production modeling analyses of the environmental and economic benefits from other proposed facilities?

A. Although we do not believe that the Board has ruled specifically that certified facilities should be included in production modeling analyses, in its August 14, 2002 Opinion and Order in Case 00-F-0056, the Siting Board ruled that it was appropriate to include the proposed, but not yet certified, Spagnoli Road facility in a production modeling analysis of the environmental and economic benefits that would be provided by the Brookhaven Energy plant that also was under review:

> We disagree with the Applicant that inclusion of the impacts of subsequently filed applications will create an obstacle to investment in new generation. We recognize that either facility may have a lesser impact if the other were considered as part of the base case than if it were excluded, but we will rely on the market forces in a competitive environment to ultimately determine which unit should be built. Our obligation is to ensure that each application meets the requirements of PSL Section 168, which states in part that "the construction and operation of the facility is in the public interest."
>
> In the instant case, Brookhaven claims that the public interest standard should consider the projected production cost savings. **We believe that any such projection should, as accurately as possible, assess future conditions.** No doubt, if the KeySpan unit is approved, it would have a large impact of the projected savings. Since the record has been developed on this subject, in accordance with procedures set

> forth by the examiners, we will consider the Spagnoli Road Unit in our overall assessment of the public interest.[10] (Emphasis added)

Clearly, if the Siting Board believes it is appropriate to include proposed, but not yet certified, facilities in production modeling analyses, it is even more appropriate to include all certified facilities as well. Consequently, in this proceeding, it is necessary that the Applicant's MAPS analyses include the generating units that have been certified by the Siting Board unless those units have been cancelled or delayed beyond the study period. Excluding certified units means that the projections of the proposed TGE facility's future economic and environmental benefits will not be as accurate as possible. Assuming that only 50 percent of a certified facility is built, as TGE has done, serves no purpose other than to exclude capacity that has been approved by the Siting Board and to starve the system of capacity that will probably be available before the TGE facility enters commercial service.

Q. Do you think that low capacity and high capacity scenarios can be examined in MAPS analyses?

A. Yes. We think that examining low and high capacity scenarios is a reasonable way to reflect the uncertainty concerning which of the new generating projects that have been approved by the Siting Board or that are undergoing Siting Board review actually will be built. But the low and high capacity scenarios have to be reasonable and reflect realistic views of the units that may be built. However, TGE has excluded too much capacity in both its low and high capacity scenarios.

Q. What is the current status of NYPA's Poletti Expansion Facility?

A. The Poletti Expansion facility is currently under construction. Although the project may slip some from the projected 4th Quarter of 2004 in-service date listed on the Siting Board's website, there is no reason to expect that it will not be in operation before 2008.

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[10] Opinion and Order in Case 00-F-0056, at page 71.

Q. What is the current status of the SCS Astoria facility?

A. SCS has an agreement to sell 500 MW of power to Con Edison for a period of ten years starting in 2006. It also has submitted a bid to supply 500 MW of power to LIPA. Finally, SCS has said that it is involved in negotiations to sell power to other parties.

SCS has recently retained an architect engineering firm to begin pre-construction planning and mobilization.

Q. What is the current status of the Reliant Astoria Repowering Project?

A. Reliant has delayed its proposed Astoria Repowering project until 2006/2007 due to problems raising capital in the current financial environment. Reliant has said on several occasions that it is fully committed to proceeding with this repowering once the situation in the capital markets improves and it is able to raise the needed construction funds.

It is no more speculative to assume that Reliant, an established power plant builder and operator, will be able to obtain funding for the Astoria Repowering project than TGE will be able to raise the funds needed to construction its proposed facility.

Q. What are the current statuses of the Brookhaven and Spagnoli Road facilities?

A. ANP (the developer of the proposed Brookhaven Energy Project) and KeySpan have announced the formation of a consortium to build three power plants on Long Island: a 250 MW unit at Spagnoli Road to be in service by 2006; a 250 MW unit in Brookhaven to be in service in 2007; and, finally, a possible third 250 MW unit to be completed by the summer of 2008. ANP and KeySpan have submitted a joint bid to supply power to LIPA from these facilities.

LIPA has reviewed 15 power supply proposals, including the one from ANP and KeySpan, in response to an RFP issued last spring. LIPA has said that it will decide in November which of the 15 proposals will be accepted and implemented.

In any event, it appears clear that new power plants totally at least 500 or 600 MW will be built on Long Island before 2008.

Q. Are there any facilities in the Applicant's base case MAPS scenario which have been cancelled?

A. Yes. The proposed 1,100 MW Ramapo facility has been cancelled. This unit should be excluded from the MAPS analyses to provide the most accurate forecast of the proposed TGE facility's environmental and economic benefits.

Q. In its Higher Steam Production scenario, does the Applicant also assume that only 50 percent of the Poletti Expansion, SCS Astoria, Brookhaven Energy, Spagnoli Road, and Wawayanda facilities will be built?

A. Yes. For this reason, the higher steam production scenario, like the base case analysis, overstates the amount of electricity that the proposed TGE facility can be expected to produce and the facility's likely environmental and economic benefits.

Q. Is the Applicant's Higher Steam Production Scenario unrealistic for any other reasons?

A. Yes. The Applicant assumes in this scenario that, due to its production of steam for sale to Con Edison, the proposed TGE facility would experience a 3.5 percent improvement in the heat rate attributable to electricity.[11] As we have explained with regard to Issue No. 1 above, there is no credible evidence to support the claim that TGE will enter into a contract with Con Edison for the sale of any steam produced at the proposed facility. Therefore, any scenario that reflects such a sale is completely speculative.

[11] Attachment D to TGE's Article X Application, at page 2.3.

Q. Which facilities does the Applicant exclude from its low capacity expansion scenario?

A. TGE excluded all of those units which were not yet under construction at the time they conducted the MAPS analyses. Consequently, the low capacity expansion scenario does not include any capacity or energy from the following certified facilities: Bethlehem Energy Center, Poletti Expansion, SCS Astoria, Reliant Astoria Repowering, Brookhaven Energy, Spagnoli Road, or Wawayanda.[12] All of these facilities were assumed to be cancelled. As we have explained above, this assumption is highly problematic. The Bethlehem Energy Center and Poletti Expansion facility, for example, are already under construction.

By excluding all of these certified units, TGE's low capacity scenario creates a New York State electric system that badly needs the capacity from the proposed TGE facility. This artificially and inappropriately inflates the generation from the TGE facility and the facility's projected environmental and economic benefits.

Heat Rates

Q. What heat rates are assumed in the Applicant's MAPS analyses for the proposed TGE facility and other new combined cycle units?

A. TGE assumed that the new combined cycle units all had similar full load average heat rates of roughly 6,570 Btu/KWh.[13]

Q. Is this assumption reasonable?

A. We believe that this assumed heat rate is too low for new combined cycle units. Other studies we have seen, including a study that GE prepared for the NYISO in

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[12] Although the Applicant does include PSEG Power's Bergen facility in its low capacity expansion scenario, it is unclear whether TGE has included the Cross Hudson cable that will bring the Bergen facility electrically into New York City.

[13] TGE's response to Information Requests Brooklyn/GWWTF-81(a).

March 2001, assumed full load heat rates of 6,800 Btu/KWh or higher for new combined cycle units.[14]

Q. Have higher heat rates been used in the MAPS analyses presented in support of other Article X Applications?

A. Yes. For example, Gary Jordan from GEII Power Systems Energy Consulting was responsible for preparing the TGE MAPS analyses. Mr. Jordan testified in Siting Board Case 99-F-1627 that he used a heat rate of 6,800 Btu/KWh for NYPA's Poletti Expansion facility.[15] Mr. Jordan subsequently presented revised MAPS analyses that assumed that all new combined cycle units in New York State would achieve 6,700 Btu/KWh heat rates.[16] Interestingly, another NYPA witness testified in the same case that based on its own engineering analyses NYPA projected that its proposed Poletti Expansion facility would have a full load heat rate of 6,918 BTU/KWh.[17]

Q. Are there any design features of the proposed TGE facility that suggest that its heat rate will be higher than the heat rates of at least some of the other new combined cycle units in New York City?

A. Yes. The proposed TGE facility would use an air-cooled condenser. Although such air-cooled condensers have environmental benefits in terms of reduced water usage, their use results in a small loss of efficiency relative to an identical plant using wet cooling towers.

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[14] *Implications of Capacity Additions in New York on Transmission System Adequacy*, March 2, 2001.

[15] Case 99-F-1627, Transcript page 668, lines 6-9.

[16] Case 99-F-1627, Transcript page 669, lines 21-24.

[17] Case 99-F-1627, Transcript page 375, lines 20-23.

For example, Reliant's proposed Astoria Repowering Project will use plume-abated wet cooling towers. Reliant explained in its Article X Applicant why this means that its proposed facility will have better heat rates than the Poletti Expansion and SCS Astoria facilities which will be dry-cooled:

> It is critically important to realize that there is a fundamental difference between the steam condensing technology of the Repowering project and the other two projects (SCS Astoria and the NYPA Poletti Expansion). The Repowering project will utilize water-cooled condensers whereas the other two plant designs are based on the use of air-cooled condensers. It is a well-known fact that for combined cycle plants employing equivalent technology for the prime movers (CTs and steam turbines), water cooled condensers will result in more efficient power generation (i.e., better heat rates) than air-cooled condensers operating at the same ambient conditions. This heat rate improvement effect for water-cooled condensing systems becomes more pronounced as ambient temperatures increase (which corresponds to an increase in need for electrical generation to serve the increased load). Therefore, it is to be expected that at all reasonable operating conditions, the water-cooled Repowering project will be more efficient than either the air-cooled SCS Astoria or the air-cooled NYPA Poletti Expansion projects.[18]

PSEG Power quantified this heat rate benefit in its Article X Application for the Bethlehem Energy Center:

> As illustrated in Figure 3-2, a comparison of plant performance between the wet and dry cooling alternatives for an ambient dry bulb condition of 78 degrees F indicates that the net plant heat rate for the dry tower would be 1.16% poorer than the wet tower (6,955 BTU/KWh dry tower versus 6,875 BTU/KWh wet tower). For an ambient temperature of 94 degrees F, a more typical summer condition, the net plant heat rate for the dry tower would be 2.40% poorer than the wet tower (7,097 BTU/KWh versus 6,931 BTU/KWh wet tower). Hence the dry tower incurs a significant penalty during periods when energy is at its greatest demand.[19]

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[18] Reliant's Article X Application for the Astoria Repowering Project, at page 14-12.

[19] Addendum A.10 to Bethlehem Energy Center Article X Application, "Alternative Cooling Systems Study," at page 3-3.

Consequently, the heat rate for the proposed TGE facility should be 50 to 200 Btu/KWh higher than the heat rates for those units using wet or plume-abated wet towers – Bethlehem Energy Center, Reliant Repowering, and Bowline Unit 3

Q. Did TGE provide to Brooklyn/GWWTF any studies that project or estimate the plant-specific heat rate(s) for its proposed facility?

A. No. Although we specifically asked for these documents, TGE merely replied that the heat rate assumptions in its MAPS analyses were taken from the assumptions in the 2002 New York State Energy Plan.[20]

TGE also said in the same response that "The TransGas facility was assumed to have the same basic characteristics as the proposed facilities at Orion with the exception that the minimum power output was set to 75% rather than 50% of the unit rating." However, TGE did not provide any explanation or justification for this difference.

Q. How does the projected generation of the proposed TGE facility in the Applicant's MAPS analyses compare to the projected generation of the other new combined cycle units in New York City?

A. Table 1 below shows the capacity factors for the new combined cycle units in New York City projected in TGE's base case and low capacity expansion MAPS scenarios:

[20] TGE's response to Information Request Brooklyn/GWWTF-81(a).

Table 1. Capacity Factors projected for New York City CC Units

Unit	Base Case		Low Expansion Scenario	
	Without TGE	With TGE	Without TGE	With TGE
TGE 1		76		83
TGE 2		75		83
TGE 3		74		83
TGE 4		73		83
Poletti Expansion 1	66	60		
Poletti Expansion 2	66	59		
Reliant Repowering 1	69	66		
Reliant Repowering 2	68	64		
Reliant Repowering 3	68	65		
Reliant Repowering 4	66	61		
Reliant Repowering 5	65	59		
Reliant Repowering 6	64	57		
East River Repowering 1	101	101	101	101
East River Repowering 2	101	101	101	101
Ravenswood Cogen 1	58	48	79	76
Ravenswood Cogen 2	57	47	80	76
SCS Astoria 1	69	66		
SCS Astoria 2	69	64		
SCS Astoria 3	69	64		
SCS Astoria 4	68	63		
Bergen	66	59	79	76

Thus, except for the anomalous capacity factor projected for the units at the East River Repowering Project, all of the other in-City combined cycle units in the Applicant's base case MAPS analysis are projected to have capacity factors substantially lower than TGE's proposed facility. Even in the no-TGE scenario, none of the other new in-city combined cycle units, other than East River, would achieve the 75 percent annual capacity factors that TGE projects its own unit would achieve.

The low expansion scenario is so starved of generating capacity that those few new combined cycle units that are included have high capacity factors. But, even in this scenario, the Bergen and Ravenswood Cogeneration facilities are predicted to operate at lower capacity factors than TGE.

Q. Are these the results that you would expect if the proposed TGE facility were to have the same heat rate as the other new combined cycle facilities in New York State?

A. No. You would expect some minor differences in the output of the new combined cycle units even if they all have the same heat rates. You also might see some differences in output between upstate and downstate units based on different natural gas prices or transmission constraints. However, the significant differences between the capacity factors of the units at the proposed TGE facility and the other combined cycle facilities, especially those in New York City, are not expected.

Q. Do the capacity factors in Table 1 provide any other insights into the results of the Applicant's MAPS analyses?

A. Yes. The capacity factors presented in Table 1 reveal that the proposed TGE facility will be displacing a considerable amount of generation from other new combined cycle units in New York City. In fact, in the Applicant's base case MAPS analysis, the proposed TGE facility would displace 1,543 GWh of electricity that would otherwise be generated at other combined cycle facilities in the City. Thus, about 19 percent of TGE's output would displace efficient new units in New York City, not older inefficient generating facilities. There would be no environmental benefit from the displacement of these other new combined cycle units.

Q. How would the results of TGE's MAPS analyses change if they reflected higher heat rates for those units, like TGE, which have air-cooled condensers?

A. We would expect that the output of the units at the Reliant Astoria Repowering project would increase and the output of the TGE facility to decrease. However, you would have to rerun the MAPS analyses to quantify the precise effect.

Q. How much additional electricity could the new Poletti Expansion, SCS Astoria, and Reliant Astoria Repowering combined cycle units in New York City and the Bergen combined cycle unit in New Jersey generate if they achieved the same 75 percent capacity factors that are projected for the proposed TGE facility?

A. The Poletti Expansion, SCS Astoria, Reliant Astoria Repowering and Bergen combined cycle units together would generate an additional 7,621 GWh, or almost the total projected base case generation of TGE, if they were to operate at 75 percent capacity factors instead of the lower capacity factors forecast in the MAPS base case. This assumes that all of the Poletti Expansion (500 MW) and SCS Astoria (1,000 MW) facilities are built.

The Poletti Expansion, SCS Astoria, Reliant Astoria Repowering and Bergen combined cycle units together would generate an additional 9,461GWh (above their MAPS base case production) if they were to operate at 80 percent capacity factors.

Q. Would you expect that this additional generation from the Poletti Expansion, SCS Astoria, Reliant Astoria Repowering and Bergen facilities would displace at least a portion of the same generation from older, inefficient plants that TGE claims would be displaced by its proposed facility?

A. Yes. However, you would need to rerun the MAPS program to determine what the consequences of this additional capacity would be.

Q. Are there any other results of the Applicant's MAPS analyses that appear problematic?

A. Yes. The results of the Applicant's base case MAPS analysis predict that the proposed TGE facility would displace a significant amount of generation (1,997 GWh) from a number of what used to be designated as non-utility generators ("NUGs") in New York State. According to TGE's MAPS analyses, the NO_x emissions reductions from the displacement of the electricity that would otherwise be generated at these NUGs would be 2,000 tons per year, or about 54 percent of

the total NO_x reductions projected in the MAPS analyses for all of New York State. However, a number of factors suggest that these results may be significantly exaggerated.

First, many of the NUGs at which the Applicant's MAPS analyses show the most significant electricity displacement and reductions in NO_x emissions due to the TGE facility are natural gas-fired combined cycle units installed in the 1990s. A significant number of the NUGs are reported as having selective catalytic reduction ("SCR") control equipment to reduce their NO_x emissions.[21] This raises questions about the validity of the relatively high emission rates assumed for these units in the Applicant's MAPS analyses.

For example, the combined cycle units at the Cogen-Tech Linden facility have SCR control equipment. The Applicant's MAPS analyses predict that the TGE would displace a significant amount of electricity that would otherwise be produced by the Cogen-Tech units. The Applicant's MAPS analyses assume average NO_x emission rates of about 1.9 lbs/MWh for each of the combined cycle units at Cogen-Tech Linden. These are substantially higher emission rates than the units are allowed to emit under their air permits. Use of the more appropriate NO_x emission rate of 0.3 lbs/MWh for these units in the Applicant's MAPS analyses would reduce the predicted NO_x emission reductions from TGE's displacement of the electricity from the Linden combined cycle units by a factor of six or more. Thus, the claimed reduction in NO_x emissions from the Cogen-Tech Linden units due to TGE would decrease from about 423 tons per year to about 70 tons per year. This would be a reduction of about 350 tons per year in the claimed environmental benefits from the proposed TGE facility.

Sithe's Independence Station also is a combined cycle facility with SCR control equipment. The Applicant's MAPS analyses similarly assume average NO_x emission rates of about 2.2 lbs/MWh for this facility. This is substantially higher

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[21] The Sithe Independence facility, the Saranac Energy units, the Brooklyn Navy Yard, Phase II of the Selkirk Cogeneration facility, and several of the Indeck facilities in Upstate New York also are reported to have SCR control equipment.

than the approximate 0.3 lbs/MWh limit in the facility's Title V Air Permit. Use of the NO_x emission rate of 0.3 lbs/MWh for these units in the Applicant's MAPS analyses also would reduce the predicted NO_x emission reductions from TGE's displacement of the electricity from the Sithe Independence combined cycle units by a factor of about seven. Thus, the claimed reduction in NO_x emissions from the Sithe Independence Station due to TGE would decrease from about 568 tons per year to about 80 tons per year. This would be a reduction of about 480 tons per year in the claimed environmental benefits from the proposed TGE facility.

Similar reductions should be expected from the other NUGs with SCR equipment whose electricity is predicted to be displaced by TGE by the Applicant's MAPS analyses.

Second, as shown on Table 2 below, many of these NUGs are operated as cogeneration facilities and have contracts to sell steam or hot water to neighboring industrial facilities. Consequently, even if the TGE facility were operating, it might not be possible for the NUGs to reduce their electricity generation by as much as the Applicant's MAPS analyses predict because they would still need to produce steam or hot water. Or, even if these NUGs could reduce the amount of electricity they produce, they would still emit significant amounts of NO_x and SO_2 due to their ongoing production of steam. In either event, the Applicant's MAPS analyses would exaggerate the reductions in emissions that were possible at the NUGs due to the displacement of their electricity production by TGE.

Table 2. Cogeneration Facilities in New York State Displaced by TGE in Base Case MAPS analyses

Unit	NOx Emissions Reductions Attributed to TGE in MAPS Base Case (tons per year)	Contracts to Sell Steam/Hot Water
Selkirk Cogen	140	Steam to GE Plastics
Linden Cogen Combined Cycle Units	423	Steam to the Bayway manufacturing complex
Saranac Energy	154	Steam to Georgia Power and Tenneco Packaging
Brooklyn Navy Yard	214	Steam to Con Edison
Sithe Independence	568*	Hot water to Alcan Rolled Products
Indeck Corinth	48**	Steam to International Paper
Indeck Olean	**	Steam to Dresser-Rand's Turbo Products Division
Indeck Yerkes	**	Steam to Dupont
Indeck Oswego	**	Steam to Hammermill Paper
Indeck Silver Springs	**	Steam to Morton Salt

* *It is unclear from the Applicant's MAPS analyses whether the 568 tons per year of NO_x emissions reductions would solely be at Sithe's Independence facility or include some reductions at Sithe's other facilities in New York State*

** *It also is unclear whether this 48 ton figure represents the total reduction at all of Indeck's facilities or only at some.*

Finally, some of these NUGs report relatively low actual heat rates.[22] This suggests that the units should have more generation, and hence higher capacity factors, in the no-TGE scenarios and that they would be displaced less by TGE than other facilities with higher heat rates.

[22] For example, the Sithe website reports that the 1,040 MW Sithe Independence facility in Upstate New York has a full load heat rate of about 7,200 Btu/KWh. The Applicant's MAPS analyses assume a full load heat rate for this unit of about 8,400 Btu/KWh.

New State Emission Standards

Q. Do the Applicant's MAPS analyses accurately reflect the emission standards that will be in place in New York and other states in 2008?

A. No. The Applicant's MAPS analyses do not reflect the new environmental regulations that will take effect in New York and several New England states before 2008. These new regulations will result in substantially lower emission rates at many of the power plants in New England and New York. This means that many of the plants that TGE claims its facility will displace will have lower emission rates than TGE assumed in its MAPS analyses. As a result, TGE's MAPS analyses overstate the air emissions benefits from the displacement of power plants in Massachusetts, Connecticut and New Hampshire and dramatically overstate the emissions benefits of the displacement of power plants in New York State.

Q. Please describe the new air regulations in Massachusetts, Connecticut and New Hampshire?

A. The new air regulations in Massachusetts, found at 310 CMR 729, will require significant reductions in NO_x, SO_2 and CO_2 from six large power plants in the state.[23] For some of the affected plants, the rules will take affect between 2004 and 2006, and for others, they will take affect between 2006 and 2008. The rule requires that NO_x emissions from each affected plant not exceed 1.5 lbs per MWh calculated over any consecutive 12-month period, recalculated monthly. The SO_2 regulations will become effective in two steps. First, affected plants will be limited to 6.0 lbs SO_2 per MWh on the same rolling average basis. Later, plants will be limited to 3.0 lbs SO_2 per MWh, however they can comply with this step by purchasing and retiring SO_2 allowances at a 3:1 ratio. In June 2002, the Massachusetts Department of Environmental Protection approved emission control plans submitted by owners of the affected plants. Table 3 shows the allowable 2008 NO_x and SO_2 emission rates for seven units at four of the power

[23] These plants are: Brayton Point, Salem Harbor, Mount Tom, Somerset, Mystic and Canal.

plants affected by MA 310 CMR 729 as well as the emission rates assumed for these units in the TransGas modeling. The TGE modeling predicts that the project will result in emission reductions at each of these seven Massachusetts units, with the largest reductions coming from Salem Harbor 3. The use of outdated emissions rates leads the Applicant to substantially overstate the emissions reductions likely to be achieved at these seven units by its proposed facility.

Table 3. Comparison of 2008 Allowable Emission Rates for New England power plants with Emission Rates Used in TGE Modeling

Unit	State	TGE's Assumed NOx Rate (lb/MWh)	TGE's Assumed SO2 Rate (lb/MWh)	New NOx Limit (lb/MWh)	New SO2 Limit (lb/MWh)
Salem Harbor 1	MA	5.0	14.3	1.5	6.0
Salem Harbor 2	MA	6.1	17.5	1.5	6.0
Salem Harbor 3	MA	5.0	14.3	1.5	6.0
Brayton Point 1	MA	3.1	10.0	1.5	6.0
Brayton Point 3	MA	3.4	9.4	1.5	6.0
Mount Tom 1	MA	4.6	13.3	1.5	6.0
Somerset 6	MA	5.5	15.7	1.5	6.0
Schiller 4	CT	6.3	18.1	1.5	3.1*
Schiller 5	CT	5.3	15.3	1.5	3.1*
Schiller 6	CT	5.5	15.9	1.5	3.1*
Bridgeport Hbr. 3	CT	2.5	9.7	1.5	3.0*
Merrimack 1	NH	4.8	13.9	0.7*	7.8*
Merrimack 2	NH	5.0	20.0	0.8*	6.4*

**These pollutants at these units will be reduced in the context of allowance trading programs; thus it is impossible to predict what their actual 2008 emission rates will be. We have shown the emission rates used to allocate allowances to these units.*

In Connecticut, the Governor's Executive Order No. 19 in May 2000, directed the state Department of Environmental Protection (DEP) to develop new NO_x and SO_2 regulations for existing power plants. In December of that year the DEP finalized these regulations. The final rules apply to all fossil-fired electric generating plants 15 MW and above (the sources affected by the Ozone Transport Commission's NO_x Budget Program). The new NO_x regulations require these sources to meet an emission rate of 0.15 lbs/mmBtu of energy input. The DEP's final SO_2 regulations contain two tiers of requirements. Beginning January 2002, all affected sources must either combust 0.5 percent sulfur fuel, meet a unit-by-unit emission rate of 0.55 lbs SO_2 /mmBtu or meet a facility-wide monthly average emission rate of 0.5 lbs SO_2 /mmBtu. Beginning January 2003, all power

plants subject to the Acid Rain Program must meet one of the following additional requirements: combust 0.3 percent sulfur fuel, meet a unit-by-unit SO_2 rate of 0.33 lbs/mmBtu, meet a facility-wide SO_2 emission rate of 0.3 lbs/mmBtu or use emission reduction trading to meet a unit-by-unit emission rate of 0.3 lbs/mmBtu. Again, TransGas overestimates the emission reductions that would be achieved at four Connecticut generating units (shown in Table 3) as a result of the proposed TGE facility.

In New Hampshire, new emission standards for selected fossil-fired power plants were adopted in the Clean Power Act (House Bill 284), signed into law in May, 2002. The law imposes NO_x, SO_2 and CO_2 caps on the aggregate emissions from six generating units at three power plants, including the Merrimack plant, shown in Table 3. The caps will be set to reduce NO_x emissions at these units by 70 percent from current requirements, to reduce SO_2 emissions by 75 percent from current requirements and reduce CO_2 emissions by three percent below 1999 levels.

Q. Please describe the new New York State NO_x and SO_2 emission limits?

A. The New York State Department of Environmental Conservation (DEC) finalized new emissions regulations for existing power plants on March 26, 2003. These regulations were developed with input from stakeholders at a series of meetings beginning in 1999. The regulations will cap NO_x emissions during the non-summer months (emissions will be capped by the federal SIP Call NO_x program during the summer months). They will cap SO_2 emissions year round from generating units subject to the federal Acid Rain Program.[24] The SO_2 cap will reduce emissions from New York generators by 50 percent below the Acid Rain Program.

The new NO_x regulations will affect all units that serve electric generators rated at 25 MW or greater. The regulations will cap non-summer emissions at 39,908

[24] After 2004 the federal NO_x SIP Call trading program will supercede the OTC NO_x trading program in New York during the summer months (May through September). The new regulations will cap NO_x during the non-summer months.

tons. Allowances will be allocated to generating units based on historical heat input and a NO_x rate of 0.15 lbs/mmBtu. Emissions of SO_2 will be capped during the period 2005 through 2007 at 197,046 tons. In 2008 and thereafter the cap will be set at 131,364 tons. Affected units will be allocated SO_2 allowances by the DEC based on their fuel type. In the second phase of the program (2008 and after), coal-fired units will be allocated allowances based on historical heat input and a SO_2 rate of 0.6 lbs/mmBtu. For oil-fired units the allocations are based on a SO_2 rate of 0.3 lbs/mmBtu, and for all other fossil fired units the rate is 0.001 lbs/mmBtu.[25]

Q. Do the Applicant's MAPS analyses reflect the new New York SO_2 emissions caps that will be in place in 2008 and later years?

A. No. The TGE MAPS modeling clearly does not reflect New York's new SO_2 emissions cap: in all of its scenarios, the total New York SO_2 emissions are over 240,000 tons while the allowable SO_2 emissions under the new cap will be only 131,364 tons. It is not clear whether the TGE MAPS modeling has included the new New York NO_x emissions cap. Given its failure to reflect the new SO_2 cap limits, we suspect not.

Q. What is the significance of these new New York State emissions limits for the results of TGE's MAPS analyses?

A. Clearly, the emissions benefits claimed by TGE for its proposed facility are unreasonable given that the plants it claims to be displacing in New York State will have significantly lower emission rates than were assumed in the MAPS analyses. In fact, it is reasonable to assume that the operation of the proposed TGE facility will not reduce SO_2 emissions at all given that statewide SO_2 emissions will be capped at the level whether or not TGE is built and operating.

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[25] Units that have emitted less SO_2 than the numbers cited in the past will be allocated allowances only sufficient to emit at their historical levels.

The Applicant's Modeling of Air Emissions in the Greenpoint and Williamsburg Communities

Q. Do the Applicant's modeling results show a "pronounced" net air quality benefit for the Greenpoint and Williamsburg communities from the proposed project, as is claimed by TGE?[26]

A. No. The Applicant's modeling significantly overstates the air quality benefits from the proposed TGE facility in the Greenpoint and Williamsburg communities.

First, as noted above, the Applicant's MAPS analyses overstate the electric generation that can reasonably be expected at the proposed TGE facility and, consequently, the resulting displacement of electricity that would be generated at other power plants in New York City if the proposed facility is not built.

Second, the Applicant's MAPS analyses do not reflect the substantial reductions in NO_x and, perhaps, the SO_2 emissions from power plants in New York City that are likely to occur as a result of the State's new emissions standards, whether or not the proposed TGE facility is built.

Third, the Applicant's modeling of the impact of its proposed facility on air emissions in the Greenpoint and Williamsburg communities appears to ignore the Ravenswood Air Quality Improvement Program that has recently been completed by KeySpan at its Ravenswood Generating Station. According to KeySpan the improvements made at Ravenswood will reduce the plant's air emissions to one lb/MWh or less.[27] However, the workpapers for TGE's modeling of the air impacts in the Greenpoint and Williamsburg communities show that TGE used NO_x emission rates of 1.85 lb/MWh for Ravenswood Unit 1, 1.76 lb/MWh for Ravenswood Unit 2, and 1.62 lb/MWh for Ravenswood Unit 3 for this analysis. Consequently, the claimed benefits from the proposed TGE facility are overstated.

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[26] See TGE's Article X Application, at page 1-16, and at page 17 of Attachment Y-4.

[27] The Applicant's MAPS analyses correctly assumed NO_x emissions from each of the Ravenswood units would be about 1 lb/MWh .

Fourth, as we have explained above, there is no credible evidence that TGE will even sell any steam from its proposed facility to Con Edison. Therefore, all of the claimed benefits to the Greenpoint and Williamsburg communities from such steam sales are speculative.

Fifth, the Applicant overstates the amount of steam production at the Hudson Avenue Station that could be displaced by its proposed facility. TGE estimates that the Hudson Avenue Station would operate at an annual capacity factor of 33 percent without the TGE facility. This production is reduced to 11 percent with the TGE facility. However, Con Edison's detailed simulation of its steam system operations using the PROMOD model forecast that Hudson Avenue will operate at only a 20 percent capacity, or less than 2/3 as much as TGE models.

Sixth, the Applicant similarly overstates the amount of steam production at the East River Repowering Project that could be displaced by its proposed facility. TGE estimates that approximately 4,906 million pounds of steam would be produced through supplemental firing at the East River Repowering Project. Steam from the proposed TGE facility would reduce this amount to approximately 2,400 million pounds. Con Edison's detailed simulation of its steam system operations forecast that supplemental firing at the East River Repowering Project will be used to produce significantly less significantly less steam than TGE assumes, only 2,758 million pounds, or only 56 percent as much.[28]

Finally, as noted above, TGE models that its proposed facility would displace substantial steam production using duct firing at the new East River Repowering Project. However, TGE was unable to provide any cost information showing why that would be true.[29]

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[28] See Table 2-4 in Con Edison's Article X Application for the East River Repowering Project.

[29] See TGE's response to Information Request CECONY-28.

For these reasons, we have no confidence that the Applicant's modeling shows an accurate picture of the impact that its proposed facility would have on air quality in the Greenpoint and Williamsburg communities.

Claimed Economic Benefits

Q. Are the economic benefits shown in the Applicant's MAPS analyses similarly exaggerated?

A. Yes. The economic benefits shown discussed in TGE's Article X Application and the testimony of TGE witness Younger are overstated due to the same factors that exaggerate the claimed environmental benefits: the elimination of new certified generating capacity, the use of inappropriate heat rates, the assumption that the TGE facility will achieve higher capacity factors than almost all other new combined cycle units, and the assumption in one scenario that the proposed TGE facility will produce steam that will be sold to Con Edison.[30] These factors overstate the expected generation from the proposed facility and understate the facility's expected fuel costs. As a result, the claimed reductions in locational based marginal prices, wholesale power payments, and production costs that are attributed to the proposed facility by TGE are all overstated and unrealistic.

Q. By how much does TGE witness Younger believe that adding the TGE facility would reduce the market clearing price for capacity in New York City?

A. In this Direct Testimony, Mr. Younger said that "To provide a sense of magnitude, it is not unreasonable to assume that adding the TGE facility could reduce the market clearing price for NYC capacity by approximately $1/kW-month."[31] However, in his response to Information Request CECONY-28, Mr.

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[30] The same claims of dramatic economic benefits are presented at page 1-6 of the Article X Application, pages 3.1, 3.2, 3.5, and 3.6 of Attachment D to the Article X Application, and at pages 17 through 21 of the Direct Testimony of Mark D. Younger.

[31] Direct Testimony of Mark D. Younger, at page 13, line 22, to page 14, line 5.

Younger said that that price was incorrect: in fact, adding the TGE facility would reduce the market clearing price for capacity in New York City by $7/kW-month.

Q. Has Mr. Younger provided any analyses to support his claims that adding the TGE facility could reduce the market clearing price for capacity in New York City by $7/kW-month or even by $1/kW-month?

A. No. Mr. Younger's "analysis" of capacity market prices is pure speculation and should be afforded no weight by the Siting Board. He calculates the $7/kW-month change in the market price for capacity based on the current in-City demand curve developed by NYISO. However, the current in-City demand curve was established this year and is scheduled to be reset every three years. The prices for capacity in New York City in 2008 and subsequent years are likely to be determined based on a new in-City demand curve that should be developed in about the year 2006. The prices in the new in-city demand curve will depend upon the amount of capacity available at that time. With or without the construction of the TGE facility, it is reasonable to expect that the capacity prices on the in-City demand curve will be lower over time as the substantial amount of new capacity that is currently under construction in New York City, or that is almost certain to be built, is completed.

In addition, there are price caps currently in place on approximately 5,400 MW of Con Edison capacity. There is no reason to expect that this capacity will be bid below their capped value until there is such a market surplus that they will have to be bid lower.

In addition, it is important to recognize that any changes in the in-City demand curve will be based on all of the new capacity that is being added to the system and to the existing capacity. There is no reasonable basis for TGE's claim that its capacity will be the sole basis for all of the savings.

ISSUE NO. 3 - THE VALIDITY OF TGE'S CLAIMS CONCERNING THE BENEFITS OF THE PROPOSED FACILITY ON ELECTRIC SYSTEM RELIABILITY

Q. Why it is important that an Applicant show that its proposed facility would produce significant benefits for electric system reliability when seeking to obtain a certificate to build and operate a major electric generating facility?

A. In determining pursuant to PSL Sections 168(1) and 168(2) whether the construction and operation of a proposed facility would be in the public interest, the Siting Board must balance the benefits claimed for the facility against its environmental and other impacts. It is essential therefore that there be a reasonable estimate of the system reliability benefits that the proposed facility could offer in order for the Siting Board to make this required balancing.

Q. Do you have any overall observations or comments about TGE's discussion of electric system reliability?

A. Yes. In its Article X Application and witness testimony TGE makes many of the same claims regarding system reliability that have been made by earlier Article X Applicants seeking Siting Board approval to build and operate electric generating facilities in New York City. However, there is one important difference between the TGE Application and those earlier Article X Applications: the Siting Board already has issued Certificates for five new generating projects in New York City (East River Repowering, Ravenswood Cogeneration, SCS Astoria, Poletti Expansion, and Reliant Astoria Repowering). In addition, three of these projects are already under construction and a fourth, SCS Astoria, has entered into a contract with Con Edison to provide 500 MW of power. A new transmission line from New Jersey also has been approved. This line will bring 600 MW of power into New York City from PSEG Power's Bergen Combined Cycle facility.

The addition of these new facilities will improve electric system reliability in New York City whether or not the proposed TGE facility is approved by the Siting Board. The key question that needs to be considered by the Siting Board is whether the addition of the proposed TGE facility will further enhance the

improvements to electric system reliability in New York City that these new facilities will provide and whether the incremental reliability benefits, if any, that would be provided by the proposed TGE facility outweigh its environmental and other impacts.

Q. If all of the new generating projects that have been approved by the Siting Board and the transmission projects that have been approved by the Public Service Commission are considered, how much new capacity will be added to the New York City electric service over the next five years?

A. As shown on Table 4 below, the New York City electric system will add a total of 4,360 MW of new efficient combined cycle capacity if all of the generating and transmission projects that have been certified are completed by 2008 as is currently planned. However, approximately 1,250 MW of the existing older capacity at the Astoria facility will be retired as part of its planned repowering. Consequently, the net capacity of the New York City service will grow by approximately 3,100 MW by 2008 without the proposed TGE facility.

Table 4. New Capacity and Transmission Additions Certified for Construction and Operation for New York City

Unit	Net New Capacity (MW)	Projected In-Service Date
East River Repowering	200	2004
Ravenswood Cogeneration	250	2004
NYPA Poletti Expansion	500	2005
SCS Astoria	1,000	2006
Reliant Astoria Repowering	562	2007
PSEG Power Bergen Plant - through Cross Hudson Cable	550	2005
Total	3,062	

Q. What specific benefits has TGE claimed that its proposed facility would provide for electric system reliability in New York City?

A. TGE has claimed that its proposed facility would increase electric system reliability in the following ways:

1. Provision of Black Start Capability at 345 kV voltage to help energize NYC in the event of a full system outage.

2. New installed capacity in the New York City Load Pocket, thereby helping the New York Independent System Operator meet its installed Capacity Requirement.

3. Locating new generation in New York City displaces reliance on less reliable transmission imports and enhances NYC ability to survive system upset events.

4. The installation of an indoor, secure Gas Insulated Substation reduces New York City's exposure to system interruptions.

5. Provision of reactive power increases voltage support, thereby enhancing import capability.

6. Location of TGE south of the Rainey substation (Queens) helps relieve day-to-day congestion from areas north of New York City to Rainey.

7. Availability of space on-site for possible Con Edison equipment to serve local growing electrical loads.

8. In-City capacity will reduce transmission losses in New York State, improving efficiency, lowering the cost of transmission and reducing air pollution by the amount of the losses that are required to be made up.[32]

Q. Has TGE provided any studies or analyses to support its claim that the proposed facility would provide these benefits to electric system reliability or to quantify the magnitude of the benefits that the proposed facility would provide?

A. No. Although TGE repeats the same claims at a number of locations in its Article X Application and the testimony of Messrs. Prabhakara and Younger, the

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[32] TGE Article X Application, at page 1-3 and pages 14-10 through 14-12, Attachment Y-4, pages 8-10, the Testimony of F.S. Prabhakara, at pages 4-6, and the Testimony of Mark Younger, at pages 7 and 8.

Applicant was unable to provide any analyses or studies supporting its claimed electric system reliability benefits. For example, Information Request Brooklyn/GWWTF-5(c) asked TGE to provide copies of the analyses, assessments, evaluations and studies, prepared by or for TGE, which examined or evaluated how the addition of the proposed project would enhance reliability within the NYC area. The Applicant's response was that the requested documents "do not exist." Instead, the claimed enhancements of electric system reliability were based solely on Dr. Prabhakara's professional judgment.

Q. What is the NYISO's 80 percent Installed Capacity Requirement?

A. The NYISO requires that there be enough capacity located within New York City to support 80 percent of the expected electric system peak loads.

Q. Is the capacity from the proposed TGE facility needed to ensure adequate electric system reliability in NYC and to ensure that the NYISO's 80 percent Installed Capacity Requirement is met in 2008?

A. No. Table 5 below shows the electric system reserve margins and the installed in-City capacity in New York City in the years 2008 through 2015 assuming that all of the generating and transmission projects that have been certified by the Siting Board or the Public Service Commission are completed by 2008. This Table also shows how much installed capacity there would be within New York City in these same years.

Table 5. NYC Reserve Margins and Installed Capacity with Ravenswood Cogeneration, East River Repowering, Poletti Expansion, SCS Astoria Energy and PSEG Power Bergen Station

Year	Projected NYC Peak Loads	Installed Capacity in NYC	Import Capability	Total Capacity	Reserve Margin	Installed in-City Capacity as % of Projected Peak Demand
2008	11,935	11,852	5,120	16,972	42.2%	99.3%
2009	12,065	11,852	5,120	16,972	40.7%	98.2%
2010	12,196	11,027	5,120	16,147	32.4%	90.4%
2011	12,327	11,027	5,120	16,147	31.0%	89.5%
2012	12,457	11,027	5,120	16,147	29.6%	88.5%
2013	12,571	11,027	5,120	16,147	28.5%	87.7%
2014	12,684	11,027	5,120	16,147	27.3%	86.9%
2015	12,797	11,027	5,120	16,147	26.2%	86.2%

The analysis presented on Table 5 shows that if all of the certified projects are completed, New York City's electric system will have capacity reserve margins above 32 percent as late as 2015 even if the proposed TGE facility is not built. At the same time, the NYISO's 80 percent in-City Installed Capacity Requirement would be satisfied far beyond 2015. In fact, there would be enough in-City generating capacity without TGE to serve more than 86 percent of the projected New York City peak loads as far in the future as 2015. There would be enough generating capacity without TGE to serve over 99 percent of the projected in-City peak loads in 2008, the year in which TGE claims the capacity from its proposed facility is needed for electric system reliability.

Table 6 below then shows what electric system reserve margins and installed capacity will be in New York City in the years 2008 through 2015 reflecting a lower expansion scenario in which the SCS Astoria facility would be completed as a 1,000 MW unit and either the Cross Hudson cable or the Reliant Astoria Repowering Project is completed.

Table 6. NYC Reserve Margins and Installed Capacity with SCS Astoria and either Reliant Astoria Repowering or Cross Hudson Cable

Year	Projected NYC Peak Loads	Installed Capacity in NYC	Import Capability	Total Capacity	Reserve Margin	Installed in-City Capacity as % of Projected Peak Demand
2008	11,935	11,240	5,120	16,360	37.1%	94.2%
2009	12,065	11,240	5,120	16,360	35.6%	93.2%
2010	12,196	10,415	5,120	15,535	27.4%	85.4%
2011	12,327	10,415	5,120	15,535	26.0%	84.5%
2012	12,457	10,415	5,120	15,535	24.7%	83.6%
2013	12,571	10,415	5,120	15,535	23.6%	82.9%
2014	12,684	10,415	5,120	15,535	22.5%	82.1%
2015	12,797	10,415	5,120	15,535	21.4%	81.4%

This analysis demonstrates that even if less new capacity is added, the New York City electric system will have substantial reserve margins through at least 2015. The NYISO's 80 percent Installed in-City Capacity Requirement also would be met beyond 2015.

Finally, Table 7 shows what the electric system reserve margins and installed capacity in New York City would be if neither the Reliant Astoria Repowering

nor the Cross Hudson cable projects were ever built. In this scenario, New York City would still have adequate electric system reserve margins through 2015 and would still satisfy the 80 percent Installed in-City Capacity Requirement through at least 2011.

Table 7. NYC Reserve Margins and Installed Capacity with SCS Astoria and either Reliant Astoria Repowering or Cross Hudson Cable

Year	Projected NYC Peak Loads	Installed Capacity in NYC	Import Capability	Total Capacity	Reserve Margin	Installed in-City Capacity as % of Projected Peak Demand
2008	11,935	10,690	5,120	15,810	32.5%	89.6%
2009	12,065	10,690	5,120	15,810	31.0%	88.6%
2010	12,196	9,865	5,120	14,985	22.9%	80.9%
2011	12,327	9,865	5,120	14,985	21.6%	80.0%
2012	12,457	9,865	5,120	14,985	20.3%	79.2%
2013	12,571	9,865	5,120	14,985	19.2%	78.5%
2014	12,684	9,865	5,120	14,985	18.1%	77.8%
2015	12,797	9,865	5,120	14,985	17.1%	77.1%

Q. What are the sources of the New York City loads and installed in-City capacity figures shown on Tables 5, 6 and 7?

A. The 2003 in-City loads and installed capacity figures were taken from Table 1 in the NYISO's "Locational Installed Capacity Requirements Study, Covering the New York Control Area for the 2003-2004 Capability Year." The annual in-City loads were then increased at the same growth rates as Con Edison's loads are predicted to grow in the NYISO's 2003 Load & Capacity Data Report. The amounts of in-City installed capacity were modified to reflect the addition of the facilities listed on Table 4 above.

Q. Please explain why the amount of in-City installed capacity shown on Tables 5, 6 and 7 decreases by 825 MW in 2010?

A. Pursuant to a Settlement Agreement in Siting Board Case 99-F-1627, NYPA has agreed to retire the existing 825 MW Poletti Station by no later than February 2010. It is possible that the existing Poletti Station could be retired as early as 2008 if NYPA and the NYISO find that the unit's retirement would not lead to a violation of the NYISO's 80 percent in-City Installed Capacity Requirement.

Q. Is it possible that NYPA will decide to replace the existing Poletti Station with a new facility?

A. Yes. NYPA has agreed to decide by 2005 whether to submit an Article X Application for a unit that would replace the existing Poletti Station.

Q. Has NYPA already explored potential alternatives to the existing Poletti Station?

A. Yes. NYPA has examined a number of possible scenarios for repowering the existing Poletti Station. For example, NYPA's Article X Application for the Poletti Expansion facility explained that NYPA has evaluated the feasibility of repowering the existing Poletti facility with a nominal 750 MW combined cycle unit in conjunction with its proposed 500 MW Poletti Expansion Project.[33] The existing Poletti facility would then be retired when the new 750 MW combined cycle unit is available.

Q. Will there be higher electric system reserve margins and more in-City installed capacity if NYPA does decide to install a new generating unit upon the retirement of the existing Poletti facility?

A. Yes. The system reserve margins and installed in-City capacity figures shown in Tables 5, 6 and 7 for the years 2010 and after would be higher if we assumed that NYPA will add a generating unit to replace the retired Poletti facility.

Q. What impact would the assumption that summer weather will be hotter than normal have on the analyses presented in Tables 5, 6 and 7?

A. The assumption that summer weather will be hotter than normal will not have much of an impact on the results shown in Tables 5, 6 and 7. When considering the effect of hotter than normal weather, it is also necessary to consider NYISO's demand response programs which will mitigate the economic and reliability impacts of the hotter weather. These programs were implemented on a number of

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[33] NYPA Article X Application, at page 15-5.

occasions in 2001 and 2002 – resulting in as many as 1,400 MW of load reductions on hot days.[34]

Q. Have you included in Tables 5, 6 and 7 all of the new transmission lines that have been proposed to import power into New York City from Upstate New York, PJM, and Nova Scotia?

A. No. We have only included the approved Cross Hudson cable. We have not included the proposed 2,000 MW Conjunction Cable from Albany to New York City or the proposed lines from Nova Scotia to New York City and from New Jersey to New York City and Long Island.

Q. Do the peak demands used in the analyses presented in Tables 5, 6 and 7 reflect existing NYISO demand response programs or the implementation of aggressive conservation/energy efficiency programs?

A. No. It is possible that future peak loads in New York City could be reduced below the levels shown in Tables 5, 6 and 7 through the implementation of more aggressive energy conservation/efficiency and/or demand response programs. In addition, the amount of generating capacity in New York City shown in these Tables could be augmented as a result of programs encouraging the use of clean distributed generation or renewable energy facilities. The implementation of such programs would further improve electric system reliability above the levels shown on Tables 5, 6 and 7.

Q. TGE has said that locating its proposed facility in New York City would displace reliance on less reliable transmission imports and enhances New York City's ability to survive system upset events. Have you seen any evidence that the transmission system through which power is imported into New York City is unreliable?

A. No. The evidence we have seen suggests that the New York transmission system is very reliable. For example, a November 2000 Report on the Reliability of New

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[34] NYISO *Power Alert III*, Figure 1 on page 42.

York's Electric Transmission and Distribution Systems by the New York State Energy Planning Board found that:

> New York's electricity transmission and distribution systems, by all objective measures and compared to other states and regions, currently are very reliable. The very high level of reliability is the result of strict adherence by the New York Independent System Operator (NYISO) and transmission and distribution companies, to well-developed procedures specifically designed to maintain the security of the electric infrastructure, as well as close oversight by the New York State Public Service Commission. Continued compliance with existing reliability standards is a key component to ensuring the future reliability of New York's interconnected electricity system.[35]

The same study also found that "Different methods of assessing transmission system reliability in New York show consistently that New York's transmission system is highly reliable and that this high reliability is improving and there is a low risk of major failure."[36] The Study further found that the New York bulk transmission system "is improving its ability to withstand severe disturbances."[37]

This is not to say that enhancements to the transmission system are not needed as demand grows. However, there is no evidence to support the claim that the transmission system is unreliable or "less reliable."

Q. Have you seen any evidence that the power plants from which power is exported to New York City are more reliable than the power plants that will be available in New York City by 2008?

A. No.

Q. If it had been in service on August 14, 2003, would the proposed TGE facility have prevented the extended loss of power in New York City?

A. The precise causes of the widespread electric blackout of August 14, 2003 are still being investigated. However, we have seen no evidence that the blackout would

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[35] At page 2.

[36] At page 18.

[37] At page 21.

have been avoided entirely in New York City, or that its geographic scope would have been more limited, if the proposed TGE facility had been on-line.

Q. Please comment on TGE's claim that adding its proposed facility will reduce transmission losses in New York State, improve efficiency, lower the cost of transmission, and reduce air pollution by the amount of the losses that are required to be made up.

A. TGE has provided absolutely no analyses or studies to support this claim. As noted earlier, the New York City electric system will add a net 3,100 MW of new generating capacity over the next five years without the proposed TGE facility. There is no evidence that adding TGE will produce incremental benefits beyond those that already will be provided by the Ravenswood Cogeneration Project, the East River Repowering Project, the Poletti Expansion Project, SCS Astoria, the Reliant Astoria Repowering Project, and the 550 MW of power from the Bergen combined cycle facility that will be imported over the Cross Hudson cable.

Q. Does the fact that the proposed TGE facility would include the installation of indoor, secure Gas Insulated Substations represent a benefit for electric system reliability?

A. No. An indoor, secure Gas Insulated Substation may be more reliable than an outdoor substation but there is no evidence that any new substations would have to be added at the TGE site if the new generating facility were not being built. Therefore, the fact that the proposed TGE facility will include such a substation cannot be cited as a benefit as compared to an electric system that does not include any TGE facility or associated substations. The question of whether a new substation would have to be built at the TGE site if there were no new generating facility is a transmission/distribution system-related question that falls within Con Edison's authority. It makes no sense to build a new 1,100 MW generating plant solely because it will provide an indoor, secure Gas Insulated Substation.

Q. Did TGE provide any analyses to support its claim that the addition of its generating facility in Brooklyn would help relieve day-to-day congestion from areas north of New York City to the Rainey substation in Queens?

A. No. TGE witness Prabahakara merely stated that the flow is congested. He did not analyze for how many hours the flow is congested each year. He also did not analyze the value of relieving the congestion or whether there are reasonable transmission alternatives for relieving it.

Q. Would adding a new 1,100 MW generating facility in Brooklyn provide reactive power, thereby increasing system voltage support?

A. Yes. However, it makes no sense to build an 1,100 MW generating facility that provides no other economic or environmental benefits merely because it will provide reactive power/voltage support. There are less expensive solutions, from both economic and environmental points of view, for adding reactive power and providing voltage support.

Q. Does providing available space on-site at the proposed TGE facility for possible Con Edison equipment to serve local growing electrical loads represent a meaningful electric system benefit?

A. No. TransGas has not provided any analyses that show that Con Edison needs any additional space in the Greenpoint and Williamsburg area or that, if Con Edison has a need for additional space for its distribution or transmission system equipment, it is experiencing any problems finding that space.

Q. Does TGE's claim that its proposed facility will provide black start capability at 345 kV to help energize NYC in the event of a full system outage represent a significant system reliability benefit that should justify certification of the facility?

A. No. As TGE witness Prabhakara acknowledges, there are already about 1,081 MW of black start capable generators in the NYISO Black Start and System Restoration Plan. However, it is not clear whether this black start capacity was used by Con Edison as it recovered from the recent blackout. In addition, at least

one of the NRG gas turbines in Queens has black start capability. We understand that this turbine was used to restart one of the Astoria Units during the recent blackout.

Given the existence of this black start capable capacity in New York City, TGE has not provided any analysis or evidence that shows that adding the extra black start capability from its proposed facility will accelerate the recovery from a full system outage. In any event, the manner in which Con Edison will seek to restore its system following another full system outage will depend upon the specific nature and extent of that outage. Therefore, the black start capability of the proposed TGE facility might not be used, and might not be needed, even if it is available.

Q. When was the last full system outage in New York City prior to August 14, 2003?

A. The last full system outage in New York City prior to August 14, 2003 occurred 26 years earlier, on July 13-14, 1977.

CONCLUSION

Q. What are your conclusion ns?

A. We have concluded that:

1. There is no credible evidence that TGE will be able to sell steam produced at its proposed facility to Con Edison.

2. TGE has exaggerated the environmental and economic benefits that would be provided by its proposed facility.

3. TGE's proposed facility will not provide significant benefits for electric system reliability.

4. Consequently, TGE's Application should be rejected because the Applicant has not shown that construction and operation of its proposed facility would be in the public interest.

Q. Does this complete your testimony?

A. Yes.

EXHIBIT DS/GK-1

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SUMMARY

I have worked for twenty-eight years as a consultant and attorney on complex management, engineering, and economic issues, primarily in the field of energy. This work has involved conducting technical investigations, preparing economic analyses, presenting expert testimony, providing support during all phases of regulatory proceedings and litigation, and advising clients during settlement negotiations. I received undergraduate and advanced engineering degrees from the Massachusetts Institute of Technology and Stanford University and a law degree from Stanford Law School

PROFESSIONAL EXPERIENCE

Electric Industry Restructuring and Deregulation - Investigated whether generators have been intentionally withholding capacity in order to manipulate prices in the new spot wholesale market in New England. Evaluated the reasonableness of nuclear and fossil plant sales and auctions of power purchase agreements. Analyzed stranded utility costs in Massachusetts and Connecticut. Examined the reasonableness of utility standard offer rates and transition charges.

System Operations and Reliability Analysis - Investigated the causes of distribution system outages and inadequate service reliability. Evaluated the impact of a proposed merger on the reliability of the electric service provided to the ratepayers of the merging companies. Assessed whether new transmission and generation additions were needed to ensure adequate levels of system reliability. Scrutinized utility system reliability expenditures. Reviewed natural gas and telephone utility repair and replacement programs and policies.

Power Plant Operations and Economics - Investigated the causes of more than one hundred power plant and system outages, equipment failures, and component degradation, determined whether these problems could have been anticipated and avoided, and assessed liability for repair and replacement costs. Reviewed power plant operating, maintenance, and capital costs. Evaluated utility plans for and management of the replacement of major power plant components. Assessed the adequacy of power plant quality assurance and maintenance programs. Examined the selection and supervision of contractors and subcontractors. Evaluated the reasonableness of contract provisions and terms in proposed power supply agreements.

Nuclear Power - Examined the impact of industry restructuring and nuclear power plant life extensions on decommissioning costs and collections policies. Evaluated utility decommissioning cost estimates. Assessed the potential impact of electric industry deregulation on nuclear power plant safety. Reviewed nuclear waste storage and disposal costs. Investigated the potential safety consequences of nuclear power plant structure, system, and component failures.

Economic Analysis - Analyzed the costs and benefits of energy supply options. Examined the economic and system reliability consequences of the early retirement of major electric generating facilities. Quantified replacement power costs and the increased capital and operating costs due to identified instances of mismanagement.

Expert Testimony - Presented the results of management, technical and economic analyses as testimony in more than seventy proceedings before regulatory boards and commissions in twenty one states, before two federal regulatory agencies, and in state and federal court proceedings.

Litigation and Regulatory Support - Participated in all aspects of the development and preparation of case presentations on complex management, technical, and economic issues. Assisted in the preparation and conduct of pre-trial discovery and depositions. Helped identify and prepare expert witnesses. Aided the preparation of pre-hearing petitions and motions and post-hearing briefs and appeals. Assisted counsel in preparing for hearings and oral arguments. Advised counsel during settlement negotiations.

TESTIMONY

Arkansas Public Service Commission (Docket 02-248-U) – May 2003
Entergy's proposed replacement of the steam generators and the reactor vessel head at the ANO Unit 1 Steam Generating Station.

Appellate Tax Board, State of Massachusetts (Docket No C258405-406) – May 2003
The physical nature of electricity and whether electricity is a tangible product or a service.

Maine Public Utilities Commission (Docket 2002-665-U) – April 2003
Analysis of Central Maine Power Company's proposed transmission line for Southern York County and recommendation of alternatives.

Massachusetts Legislature, Joint Committees on Government Regulations and Energy – March 2003
Whether PG&E can decide to permanently retire one or more of the generating units at its Salem Harbor Station if it is not granted an extension beyond October 2004 to reduce the emissions from the Station's three coal-fired units and one oil-fired unit.

New Jersey Board of Public Utilities (Docket No. ER02080614) – January 2003
The prudence of Rockland Electric Company's power purchases during the period August 1, 1999 through July 31, 2002.

New York State Board on Electric Generation Siting and the Environment (Case No. 00-F-1356) – September and October 2002 and January 2003
The need for and the environmental benefits from the proposed 300 MW Kings Park Energy generating facility.

Arizona Corporation Commission (Docket No. E-01345A-01-0822) – March 2002
The reasonableness of Arizona Public Service Company's proposed long-term power purchase agreement with an affiliated company.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1627) – March 2002
Repowering NYPA's existing Poletti Station in Queens, New York.

Connecticut Siting Council (Docket No. 217) – March 2002, November 2002, and January 2003
Whether the proposed 345-kV transmission line between Plumtree and Norwalk substations in Southwestern Connecticut is needed and will produce public benefits.

Vermont Public Service Board (Case No. 6545) – January 2002
Whether the proposed sale of the Vermont Yankee Nuclear Plant to Entergy is in the public interest of the State of Vermont and Vermont ratepayers.

Connecticut Department of Public Utility Control (Docket 99-09-12RE02) – December 2001
The reasonableness of adjustments that Connecticut Light and Power Company seeks to make to the proceeds that it received from the sale of Millstone Nuclear Power Station.

Connecticut Siting Council (Docket No. 208) – October 2001
Whether the proposed cross-sound cable between Connecticut and Long Island is needed and will produce public benefits for Connecticut consumers.

New Jersey Board of Public Utilities (Docket No. EM01050308) - September 2001
The market power implications of the proposed merger between Conectiv and Pepco.

Illinois Commerce Commission Docket No. 01-0423 – August, September, and October 2001
Commonwealth Edison Company's management of its distribution and transmission systems.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1627) - August and September 2001
The environmental benefits from the proposed 500 MW NYPA Astoria generating facility.

New York State Board on Electric Generation Siting and the Environment (Case No. 99-F-1191) - June 2001
The environmental benefits from the proposed 1,000 MW Astoria Energy generating facility.

New Jersey Board of Public Utilities (Docket No. EM00110870) - May 2001
The market power implications of the proposed merger between FirstEnergy and GPU Energy.

Connecticut Department of Public Utility Control (Docket 99-09-12RE01) - November 2000
The proposed sale of Millstone Nuclear Station to Dominion Nuclear, Inc.

Illinois Commerce Commission (Docket 00-0361) - August 2000
The impact of nuclear power plant life extensions on Commonwealth Edison Company's decommissioning costs and collections from ratepayers.

Vermont Public Service Board (Docket 6300) - April 2000
Whether the proposed sale of the Vermont Yankee nuclear plant to AmerGen Vermont is in the public interest.

Massachusetts Department of Telecommunications and Energy (Docket 99-107, Phase II) - April and June 2000
The causes of the May 18, 1999, main transformer fire at the Pilgrim generating station.

Connecticut Department of Public Utility Control (Docket 00-01-11) - March and April 2000
The impact of the proposed merger between Northeast Utilities and Con Edison, Inc. on the reliability of the electric service being provided to Connecticut ratepayers.

Connecticut Department of Public Utility Control (Docket 99-09-12) - January 2000
The reasonableness of Northeast Utilities plan for auctioning the Millstone Nuclear Station.

Connecticut Department of Public Utility Control (Docket 99-08-01) - November 1999
Generation, Transmission, and Distribution system reliability.

Illinois Commerce Commission (Docket 99-0115) - September 1999
Commonwealth Edison Company's decommissioning cost estimate for the Zion Nuclear Station.

Connecticut Department of Public Utility Control (Docket 99-03-36) - July 1999
Standard offer rates for Connecticut Light & Power Company.

Connecticut Department of Public Utility Control (Docket 99-03-35) - July 1999
Standard offer rates for United Illuminating Company.

Connecticut Department of Public Utility Control (Docket 99-02-05) - April 1999
Connecticut Light & Power Company stranded costs.

Connecticut Department of Public Utility Control (Docket 99-03-04) - April 1999
United Illuminating Company stranded costs.

Maryland Public Service Commission (Docket 8795) - December 1998
Future operating performance of Delmarva Power Company's nuclear units.

Maryland Public Service Commission (Dockets 8794/8804) - December 1998
Baltimore Gas and Electric Company's proposed replacement of the steam generators at the Calvert Cliffs Nuclear Power Plant. Future performance of nuclear units.

Indiana Utility Regulatory Commission (Docket 38702-FAC-40-S1) - November 1998
Whether the ongoing outages of the two units at the D.C. Cook Nuclear Plant were caused or extended by mismanagement.

Arkansas Public Service Commission (Docket 98-065-U) - October 1998
Entergy's proposed replacement of the steam generators at the ANO Unit 2 Steam Generating Station.

Massachusetts Department of Telecommunications and Energy (Docket 97-120) - October 1998
Western Massachusetts Electric Company's Transition Charge. Whether the extended 1996-1998 outages of the three units at the Millstone Nuclear Station were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 98-01-02) - September 1998
Nuclear plant operations, operating and capital costs, and system reliability improvement costs.

Illinois Commerce Commission (Docket 97-0015) - May 1998
Whether any of the outages of Commonwealth Edison Company's twelve nuclear units during 1996 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses, and program deficiencies could have been avoided or addressed prior to plant outages. Outage-related fuel and replacement power costs.

Public Service Commission of West Virginia (Case 97-1329-E-CN) - March 1998
The need for a proposed 765 kV transmission line from Wyoming, West Virginia, to Cloverdate, Virginia.

Illinois Commerce Commission (Docket 97-0018) - March 1998
Whether any of the outages of the Clinton Power Station during 1996 were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 97-05-12) - October 1997
The increased costs resulting from the ongoing outages of the three units at the Millstone Nuclear Station.

New Jersey Board of Public Utilities (Docket ER96030257) - August 1996
Replacement power costs during plant outages.

Illinois Commerce Commission (Docket 95-0119) - February 1996
Whether any of the outages of Commonwealth Edison Company's twelve nuclear units during 1994 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses, and program deficiencies could have been avoided or addressed prior to plant outages. Outage-related fuel and replacement power costs.

Public Utility Commission of Texas (Docket 13170) - December 1994
Whether any of the outages of the River Bend Nuclear Station during the period October 1, 1991, through December 31, 1993, were caused or extended by mismanagement.

Public Utility Commission of Texas (Docket 12820) - October 1994
Operations and maintenance expenses during outages of the South Texas Nuclear Generating Station.

Wisconsin Public Service Commission (Cases 6630-CE-197 and 6630-CE-209) - September and October 1994
The reasonableness of the projected cost and schedule for the replacement of the steam generators at the Point Beach Nuclear Power Plant. The potential impact of plant aging on future operating costs and performance.

Public Utility Commission of Texas (Docket 12700) - June 1994
Whether El Paso Electric Company's share of Palo Verde Unit 3 was needed to ensure adequate levels of system reliability. Whether the Company's investment in Unit 3 could be expected to generate cost savings for ratepayers within a reasonable number of years.

Arizona Corporation Commission (Docket U-1551-93-272) - May and June 1994
Southwest Gas Corporation's plastic and steel pipe repair and replacement programs.

Connecticut Department of Public Utility Control (Docket 92-04-15) - March 1994
Northeast Utilities management of the 1992/1993 replacement of the steam generators at Millstone Unit 2.

Connecticut Department of Public Utility Control (Docket 92-10-03) - August 1993
Whether the 1991 outage of Millstone Unit 3 as a result of the corrosion of safety-related plant piping systems was due to mismanagement.

Public Utility Commission of Texas (Docket 11735) - April and July 1993
Whether any of the outages of the Comanche Peak Unit 1 Nuclear Station during the period August 13, 1990, through June 30, 1992, were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 91-12-07) - January 1993 and August 1995
Whether the November 6, 1991, pipe rupture at Millstone Unit 2 and the related outages of the Connecticut Yankee and Millstone units were caused or extended by mismanagement. The impact of environmental requirements on power plant design and operation.

Connecticut Department of Public Utility Control (Docket 92-06-05) - September 1992
United Illuminating Company off-system capacity sales.

Public Utility Commission of Texas (Docket 10894) - August 1992
Whether any of the outages of the River Bend Nuclear Station during the period October 1, 1988, through September 30, 1991, were caused or extended by mismanagement.

Connecticut Department of Public Utility Control (Docket 92-01-05) - August 1992
Whether the July 1991 outage of Millstone Unit 3 due tot he fouling of important plant systems by blue mussels was the result of mismanagement.

California Public Utilities Commission (Docket 90-12-018) - November 1991, March 1992, June and July 1993
Whether any of the outages of the three units at the Palo Verde Nuclear Generating Station during 1989 and 1990 were caused or extended by mismanagement. Whether equipment problems, personnel performance weaknesses and program deficiencies could have been avoided or addressed prior to outages. Whether specific plant operating cost and capital expenditures were necessary and prudent.

Public Utility Commission of Texas (Docket 9945) - July 1991
Whether El Paso Electric Company's share of Palo Verde Unit 3 was needed to ensure adequate levels of system reliability. Whether the Company's investment in the unit could be expected to generate cost savings for ratepayers within a reasonable number of years. El Paso Electric Company's management of the planning and licensing of the Arizona Interconnection Project transmission line.

Arizona Corporation Commission (Docket U-1345-90-007) - December 1990 and April 1991
Arizona Public Service Company's management of the planning, construction and operation of the Palo Verde Nuclear Generating Station. The costs resulting from identified instances of mismanagement.

New Jersey Board of Public Utilities (Docket ER89110912J) - July and October 1990
The economic costs and benefits of the early retirement of the Oyster Creek Nuclear Plant. The potential impact of the unit's early retirement on system reliability. The cost and schedule for siting and constructing a replacement natural gas-fired generating plant.

Public Utility Commission of Texas (Docket 9300) - June and July 1990
Texas Utilities management of the design and construction of the Comanche Peak Nuclear Plant. Whether the Company was prudent in repurchasing minority owners' shares of Comanche Peak without examining the costs and benefits of the repurchase for its ratepayers.

Federal Energy Regulatory Commission (Docket EL-88-5-000) - November 1989
Boston Edison's corporate management of the Pilgrim Nuclear Station.

Connecticut Department of Public Utility Control (Docket 89-08-11) - November 1989
United Illuminating Company's off-system capacity sales.

Kansas State Corporation Commission (Case 164,211-U) - April 1989
Whether any of the 127 days of outages of the Wolf Creek generating plant during 1987 and 1988 were the result of mismanagement.

Public Utility Commission of Texas (Docket 8425) - March 1989
Whether Houston Lighting & Power Company's new Limestone Unit 2 generating facility was needed to provide adequate levels of system reliability. Whether the Company's investment in Limestone Unit 2 would provide a net economic benefit for ratepayers.

Illinois Commerce Commission (Dockets 83-0537 and 84-0555) - July 1985 and January 1989
Commonwealth Edison Company's management of quality assurance and quality control activities and the actions of project contractors during construction of the Byron Nuclear Station.

New Mexico Public Service Commission (Case 2146, Part II) - October 1988
The rate consequences of Public Service Company of New Mexico's ownership of Palo Verde Units 1 and 2.

United States District Court for the Eastern District of New York (Case 87-646-JBW) - October 1988
Whether the Long Island Lighting Company withheld important information from the New York State Public Service Commission, the New York State Board on Electric Generating Siting and the Environment, and the U.S. Nuclear Regulatory Commission.

Public Utility Commission of Texas (Docket 6668) - August 1988 and June 1989
Houston Light & Power Company's management of the design and construction of the South Texas Nuclear Project. The impact of safety-related and environmental requirements on plant construction costs and schedule.

Federal Energy Regulatory Commission (Docket ER88-202-000) - June 1988
Whether the turbine generator vibration problems that extended the 1987 outage of the Maine Yankee nuclear plant were caused by mismanagement.

Illinois Commerce Commission (Docket 87-0695) - April 1988
Illinois Power Company's planning for the Clinton Nuclear Station.

North Carolina Utilities Commission (Docket E-2, Sub 537) - February 1988
Carolina Power & Light Company's management of the design and construction of the Harris Nuclear Project. The Company's management of quality assurance and quality control activities. The impact of safety-related and environmental requirements on construction costs and schedule. The cost and schedule consequences of identified instances of mismanagement.

Ohio Public Utilities Commission (Case 87-689-EL-AIR) - October 1987
Whether any of Ohio Edison's share of the Perry Unit 2 generating facility was needed to ensure adequate levels of system reliability. Whether the Company's investment in Perry Unit 1 would produce a net economic benefit for ratepayers.

North Carolina Utilities Commission (Docket E-2, Sub 526) - June 1987
Fuel factor calculations.

New York State Public Service Commission (Case 29484) - May 1987
The planned startup and power ascension testing program for the Nine Mile Point Unit 2 generating facility.

Illinois Commerce Commission (Dockets 86-0043 and 86-0096) - April 1987
The reasonableness of certain terms in a proposed Power Supply Agreement.

Illinois Commerce Commission (Docket 86-0405) - March 1987
The in-service criteria to be used to determine when a new generating facility was capable of providing safe, adequate, reliable and efficient service.

Indiana Public Service Commission (Case 38045) - December 1986
Northern Indiana Public Service Company's planning for the Schaefer Unit 18 generating facility. Whether the capacity from Unit 18 was needed to ensure adequate system reliability. The rate consequences of excess capacity on the Company's system.

Superior Court in Rockingham County, New Hampshire (Case 86E328) - July 1986
The radiation effects of low power testing on the structures, equipment and components in a new nuclear power plant.

New York State Public Service Commission (Case 28124) - April 1986 and May 1987
The terms and provisions in a utility's contract with an equipment supplier. The prudence of the utility's planning for a new generating facility. Expenditures on a canceled generating facility.

Arizona Corporation Commission (Docket U-1345-85) - February 1986
The construction schedule for Palo Verde Unit No. 1. Regulatory and technical factors that would likely affect future plant operating costs.

New York State Public Service Commission (Case 29124) - January 1986
Niagara Mohawk Power Corporation's management of construction of the Nine Mile Point Unit No. 2 nuclear power plant.

New York State Public Service Commission (Case 28252) - October 1985
A performance standard for the Shoreham nuclear power plant.

New York State Public Service Commission (Case 29069) - August 1985
A performance standard for the Nine Mile Point Unit No. 2 nuclear power plant.

Missouri Public Service Commission (Cases ER-85-128 and EO-85-185) - July 1985
The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Wolf Creek Nuclear Plant.

Massachusetts Department of Public Utilities (Case 84-152) - January 1985
The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Seabrook Nuclear Plant.

Maine Public Utilities Commission (Docket 84-113) - September 1984
The impact of safety-related regulatory requirements and plant aging on power plant operating costs and performance. Regulatory factors and plant-specific design features that will likely affect the future operating costs and performance of the Seabrook Nuclear Plant.

South Carolina Public Service Commission (Case 84-122-E) - August 1984
The repair and replacement strategy adopted by Carolina Power & Light Company in response to pipe cracking at the Brunswick Nuclear Station. Quantification of replacement power costs attributable to identified instances of mismanagement.

Vermont Public Service Board (Case 4865) - May 1984
The repair and replacement strategy adopted by management in response to pipe cracking at the Vermont Yankee nuclear plant.

New York State Public Service Commission (Case 28347) -January 1984
The information that was available to Niagara Mohawk Power Corporation prior to 1982 concerning the potential for cracking in safety-related piping systems at the Nine Mile Point Unit No. 1 nuclear plant.

New York State Public Service Commission (Case 28166) - February 1983 and February 1984
Whether the January 25, 1982, steam generator tube rupture at the Ginna Nuclear Plant was caused by mismanagement.

U.S. Nuclear Regulatory Commission (Case 50-247SP) - May 1983
The economic costs and benefits of the early retirement of the Indian Point nuclear plants.

REPORTS, ARTICLES, AND PRESENTATIONS

Power Plant Repowering as a Strategy for Reducing Water Consumption at Existing Electric Generating Facilities. A presentation at the May 2003 Symposium on Cooling Water Intake Technologies to Protect Aquatic Organisms. May 6, 2003.

Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-tiered Holding Companies to Own Electric Generating Plants. A presentation at the 2002 NASUCA Annual Meeting. November 12, 2002.

Determining the Need for Proposed Overhead Transmission Facilities. A Presentation by David Schlissel and Paul Peterson to the Task Force and Working Group for Connecticut Public Act 02-95. October 17, 2002.

Future PG&E Net Revenues From The Sale of Electricity Generated at its Brayton Point Station. An Analysis for the Attorney General of the State of Rhode Island. October 2, 2002.

PG&E's Net Revenues From The Sale of Electricity Generated at its Brayton Point Station During the Years 1999-2002. An Analysis for the Attorney General of the State of Rhode Island. October 2, 2002.

Financial Insecurity: The Increasing Use of Limited Liability Companies and Multi-Tiered Holding Companies to Own Nuclear Power Plants. A Synapse report for the STAR Foundation and Riverkeeper, Inc., by David Schlissel, Paul Peterson, and Bruce Biewald, August 7, 2002.

Comments on EPA's Proposed Clean Water Act Section 316(b) for Cooling Water Intake Structures at Phase II Existing Facilities, on behalf of Riverkeeper, Inc., by David Schlissel and Geoffrey Keith, August 2002.

The Impact of Retiring the Indian Point Nuclear Power Station on Electric System Reliability. A Synapse Report for Riverkeeper, Inc. and Pace Law School Energy Project. May 7, 2002.

Preliminary Assessment of the Need for the Proposed Plumtree-Norwalk 345-kV Transmission Line. A Synapse Report for the Towns of Bethel, Redding, Weston, and Wilton Connecticut. October 15, 2001.

ISO New England's Generating Unit Availability Study: Where's the Beef? A Presentation at the June 29, 2001 Restructuring Roundtable.

Clean Air and Reliable Power: Connecticut Legislative House Bill HB6365 will not Jeopardize Electric System Reliability. A Synapse Report for the Clean Air Task Force. May 2001.

Room to Breathe: Why the Massachusetts Department of Environmental Protection's Proposed Air Regulations are Compatible with Reliability. A Synapse Report for MASSPIRG and the Clean Water Fund. March 2001.

Generator Outage Increases: A Preliminary Analysis of Outage Trends in the New England Electricity Market, a Synapse Report for the Union of Concerned Scientists, January 7, 2001.

Cost, Grid Reliability Concerns on the Rise Amid Restructuring, with Charlie Harak, Boston Business Journal, August 18-24, 2000.

Report on Indian Point 2 Steam Generator Issues, Schlissel Technical Consulting, Inc., March 10, 2000.

Preliminary Expert Report in Case 96-016613, Cities of Wharton, Pasadena, et al v. Houston Lighting & Power Company, October 28, 1999.

Comments of Schlissel Technical Consulting, Inc. on the Nuclear Regulatory Commission's Draft Policy Statement on Electric Industry Economic Deregulation, February 1997.

Report to the Municipal Electric Utility Association of New York State on the Cost of Decommissioning the Fitzpatrick Nuclear Plant, August 1996.

Report to the Staff of the Arizona Corporation Commission on U.S. West Corporation's telephone cable repair and replacement programs, May, 1996.

Nuclear Power in the Competitive Environment, NRRI Quarterly Bulletin, Vol. 16, No. 3, Fall 1995.

Nuclear Power in the Competitive Environment, presentation at the 18th National Conference of Regulatory Attorneys, Scottsdale, Arizona, May 17, 1995.

The Potential Safety Consequences of Steam Generator Tube Cracking at the Byron and Braidwood Nuclear Stations, a report for the Environmental Law and Policy Center of the Midwest, 1995.

Report to the Public Policy Group Concerning Future Trojan Nuclear Plant Operating Performance and Costs, July 15, 1992.

Report to the New York State Consumer Protection Board on the Costs of the 1991 Refueling Outage of Indian Point 2, December 1991.

Preliminary Report on Excess Capacity Issues to the Public Utility Regulation Board of the City of El Paso, Texas, April 1991.

Nuclear Power Plant Construction Costs, presentation at the November, 1987, Conference of the National Association of State Utility Consumer Advocates.

Comments on the Final Report of the National Electric Reliability Study, a report for the New York State Consumer Protection Board, February 27, 1981.

OTHER SIGNIFICANT INVESTIGATIONS AND LITIGATION SUPPORT WORK

Reviewed the salt deposition mitigation strategy proposed for Reliant Energy's repowering of its Astoria Generating Station. October 2002 through February 2003.

Assisted the Connecticut Office of Consumer Counsel in reviewing the auction of Connecticut Light & Power Company's power purchase agreements. August and September, 2000.

Assisted the New Jersey Division of the Ratepayer Advocate in evaluating the reasonableness of Atlantic City Electric Company's proposed sale of its fossil generating facilities. June and July, 2000.

Investigated whether the 1996-1998 outages of the three Millstone Nuclear Units were caused or extended by mismanagement. 1997 and 1998. Clients were the Connecticut Office of Consumer Counsel and the Office of the Attorney General of the Commonwealth of Massachusetts.

Investigated whether the 1995-1997 outages of the two units at the Salem Nuclear Station were caused or extended by mismanagement. 1996-1997. Client was the New Jersey Division of the Ratepayer Advocate.

Assisted the Associated Industries of Massachusetts in quantifying the stranded costs associated with utility generating plants in the New England states. May through July, 1996

Investigated whether the December 25, 1993, turbine generator failure and fire at the Fermi 2 generating plant was caused by Detroit Edison Company's mismanagement of fabrication, operation or maintenance. 1995. Client was the Attorney General of the State of Michigan.

Investigated whether the outages of the two units at the South Texas Nuclear Generating Station during the years 1990 through 1994 were caused or extended by mismanagement. Client was the Texas Office of Public Utility Counsel.

Assisted the City Public Service Board of San Antonio, Texas in litigation over Houston Lighting & Power Company's management of operations of the South Texas Nuclear Generating Station.

Investigated whether outages of the Millstone nuclear units during the years 1991 through 1994 were caused or extended by mismanagement. Client was the Office of the Attorney General of the Commonwealth of Massachusetts.

Evaluated the 1994 Decommissioning Cost Estimate for the Maine Yankee Nuclear Plant. Client was the Public Advocate of the State of Maine.

Evaluated the 1994 Decommissioning Cost Estimate for the Seabrook Nuclear Plant. Clients were investment firms that were evaluating whether to purchase the Great Bay Power Company, one of Seabrook's minority owners.

Investigated whether a proposed natural-gas fired generating facility was need to ensure adequate levels of system reliability. Examined the potential impacts of environmental regulations on the unit's expected construction cost and schedule. 1992. Client was the New Jersey Rate Counsel.

Investigated whether Public Service Company of New Mexico management had adequately disclosed to potential investors the risk that it would be unable to market its excess generating capacity. Clients were individual shareholders of Public Service Company of New Mexico.

Investigated whether the Seabrook Nuclear Plant was prudently designed and constructed. 1989. Clients were the Connecticut Office of Consumer Counsel and the Attorney General of the State of Connecticut.

Investigated whether Carolina Power & Light Company had prudently managed the design and construction of the Harris nuclear plant. 1988-1989. Clients were the North Carolina Electric Municipal Power Agency and the City of Fayetteville, North Carolina.

Investigated whether the Grand Gulf nuclear plant had been prudently designed and constructed. 1988. Client was the Arkansas Public Service Commission.

Reviewed the financial incentive program proposed by the New York State Public Service Commission to improve nuclear power plant safety. 1987. Client was the New York State Consumer Protection Board.

Reviewed the construction cost and schedule of the Hope Creek Nuclear Generating Station. 1986-1987. Client was the New Jersey Rate Counsel.

Reviewed the operating performance of the Fort St. Vrain Nuclear Plant. 1985. Client was the Colorado Office of Consumer Counsel.

WORK HISTORY

2000 - Present: Senior Consultant, Synapse Energy Economics, Inc.

1994 - 2000: President, Schlissel Technical Consulting, Inc.

1983 - 1994: Director, Schlissel Engineering Associates

1979 - 1983: Private Legal and Consulting Practice

1975 - 1979: Attorney, New York State Consumer Protection Board

1973 - 1975: Staff Attorney, Georgia Power Project

EDUCATION

1983-1985: Massachusetts Institute of Technology
Special Graduate Student in Nuclear Engineering and Project Management,

1973: Stanford Law School,
Juris Doctor

1969: Stanford University
Master of Science in Astronautical Engineering,

1968: Massachusetts Institute of Technology
Bachelor of Science in Astronautical Engineering,

PROFESSIONAL MEMBERSHIPS

- New York State Bar since 1981
- American Nuclear Society
- National Association of Corrosion Engineers
- National Academy of Forensic Engineers (Correspondent Affiliate)

EXHIBIT DS/GK-2

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PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Cambridge, MA. Associate, 2001-present.
Area of focus includes environmental and economic analysis related to power generation projects, energy policy and environmental policy. Assesses total costs and benefits of renewable resources and distributed generation and of emission controls and cooling systems at fossil-fueled power plants. Models power systems to assess costs and environmental impacts of proposed policies or predicted changes in demand or the generation fleet.

M. J. Bradley & Associates, Concord, MA. Environmental/Energy Consultant, 1996-2001.
Worked with environmental advocates and energy companies in support of more stringent air regulations and energy policies supporting clean energy technologies. Facilitated strategic partnerships to address regulatory and market barriers to clean distributed generation. Participated in regulatory and legislative proceedings relevant to renewable resources and distributed generation and coordinated communication between technology developers, advocates and energy and air regulators.

Rhode Island Division of Public Utilities and Carriers, Providence, RI. Policy Analyst, 1995-1996. Analyzed the economic and environmental implications of restructuring strategies. Helped facilitate the Rhode Island Electric Industry Restructuring Collaborative and co-authored the Division's restructuring plan.

Institute for Resource and Security Studies, Cambridge, MA. Intern, 1992.
Managed research projects including the creation of a sustainability database for the City of Cambridge and a report on energy use in the city.

National Outdoor Leadership School, Lander, WY. Field Instructor, 1989-1990.
Completed instructors training program. Responsibility for the safety and education of students on 30-day wilderness expeditions in Alaska. Organized and led a 30-day trek in the Himalaya.

EDUCATION

Masters, Environmental Studies. Brown University, Providence, RI, 1995.
Graduate Work, chemistry, statistics and economics. Harvard Extension School, Cambridge, MA, 1993.
B.A., English. Tufts University, Medford, MA, 1988.

RECENT REPORTS

Estimating the Emission Reduction Benefits of Renewable Electricity and Energy Efficiency in North America: Experience and Methods. Lead author on report for the Center for Environmental Cooperation, September 2003.

Modeling Demand Response and Air Emissions in New England, lead researcher and author on report for the U.S. Environmental Protection Agency, September 2003.

The Emission Reduction Workbook, lead researcher and author of Excel-based spreadsheet tool for estimating emission reductions from energy policies in the Northeast, November 2002.

Comments on EPA's Proposed Clean Water Act Section 316(b) for Cooling Water Intake Structures at Phase II Existing Facilities, co-authored analysis and comments on behalf of Riverkeeper, Inc.

Predicting Avoided Emissions from Policies that Encourage Energy Efficiency and Clean Power, report prepared for the Ozone Transport Commission, June 2002.

Survey of Clean Power and Energy Efficiency Programs, report co-authored with other Synapse staff for the the Ozone Transport Commission, January 2002.

Distributed Resources and their Emissions: Modeling the Impacts, report co-authored with the Natural Resources Defense Council and Institute for Lifecycle Analysis, April 2001.

Utility Tariffs and Charges Affecting Distributed Generation, inventory and report prepared for the Natural Resources Defense Council, August, 2000.

Fuel Cells: Clean, Reliable, Onsite Generation, informational brochure prepared for the Northeast Fuel Cell Work Group, March 2000.

Emissions Trading and Fuel Cells: Issues and Opportunities, prepared for the Northeast Fuel Cell Work Group, April 1999.

Lead author of chapters on renewable and fossil-fired electricity generation for the report, *Reducing Greenhouse Gases and Air Pollution: A Menu of Harmonized Options*, published by STAPPA/ALAPCO in 1999.

Benchmarking the Air Emissions of Electric Utility Generators in the Eastern United States, report co-authored with the Natural Resources Defense Council and Public Service Electric & Gas, March 1997.

TESTIMONY AND PRESENTATIONS

Responding to the Blackout of 2003. Testimony before the New York City Council, New York, New York, September 16, 2003.

The Environmental Impacts of Load Response in New England. Presentation to the New England Demand Response Initiative (NEDRI), Holyoke Massachusetts, July 2003.

Distributed Generation and Air Emissions in the U.S., presentation at the Distributed Generation: Technologies for a New Energy Market conference, Pescara Italy, April 2002.

Potential Emissions from Diesel Generators, presentation at the Globalcon Energy Conference on Energy Technology and Policy, Atlantic City, New Jersey, March 2001.

Capacity Crises and Air Emissions, presentation at the Electric Utility Environmental Conference, Tucson, Arizona, January 2001.

Lessons from Existing Credit Trading Programs, presentation at NYSERDA/ASERTTI Conference on Developing Tradable Credits for Renewable Energy, Lake George, New York, October 2000.

Clean Energy Opportunities and Barriers, presentation at a roundtable meeting of New York State Legislature on Energy and Environmental Technologies, Albany, New York, May 2000.

Coordinating Energy and Environmental Policy to Support Clean Energy, presentation at the OTC/ECOS Environmental Technologies Conference, Pittsburgh, Pennsylvania, June 1999.

Resume dated September 2003.