PUBLIC SERVICE COMMISSION OF DELAWARE

IN THE MATTER OF THE INVESTIGATION INTO THE JULY, 1999 OUTAGES AND GENERAL SERVICE RELIABILITY OF DELMARVA POWER & LIGHT COMPANY, D/B/A CONECTIV POWER DELIVERY (OPENED JULY 27, 1999)	))))))	PSC DOCKET NO. 99-328

Direct Testimony of
Timothy Woolf

On Behalf of
The Delaware Public Service Commission Staff

On the Topic of
Maintaining Electric System Reliability in the Future

February 2, 2000

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1. INTRODUCTION AND QUALIFICATIONS

Q. What is your name, position and business address?

A. My name is Timothy Woolf. I am the Vice-President of Synapse Energy Economics, Inc., 22 Crescent Street, Cambridge, MA 02138.

Q. Please describe Synapse Energy Economics.

A. Synapse Energy Economics (Synapse) is a research and consulting firm specializing in electricity industry restructuring, regulation and planning. Synapse works for a variety of clients, with an emphasis on consumer advocates, regulatory commissions, and environmental advocates.

Q. Please describe your experience in the area of electric utility restructuring, regulation and planning.

A. My experience is summarized in my resume, which is attached as Exhibit TW-1. Electric power system planning and regulation have been a major focus of my professional activities for the past eighteen years. In my current position at Synapse, I investigate a variety of issues related to the restructuring of the electric industry; with a focus on market power, stranded costs, performance-based ratemaking, reliability, customer aggregation, air quality, energy efficiency and many aspects of consumer protection.

Q. Please describe your professional experience before beginning your current position at Synapse Energy Economics.

A. Before joining Synapse Energy Economics, I was the Manager of the Electricity Program at Tellus Institute, a consulting firm in Boston, Massachusetts. In that capacity I managed a staff that provided research, testimony, reports and regulatory support to state energy offices, regulatory commissions, consumer advocates and environmental organizations in the US. Prior to working for Tellus Institute, I was employed as the Research Director of the Association for the Conservation of Energy in London, England. I have also worked as a Staff Economist at the Massachusetts Department of Public Utilities, and as a Policy Analyst at the Massachusetts Executive Office of Energy Resources. I hold a Masters in Business Administration from Boston University, a Diploma in

Economics from the London School of Economics, a BS in Mechanical Engineering and a BA in English from Tufts University.

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

A. I am testifying on behalf of the Staff of the Delaware Public Service Commission (the Staff).

Q. Have you testified previously before this Commission?

A. Yes. I have testified on behalf of the Staff in Docket No. 97-58 pertaining to the merger between Delmarva Power & Light (DP&L) and Atlantic City Electric Company. I have also testified orally on behalf of the Staff in Docket No. 95-172 pertaining to the DP&L 1995 Integrated Resource Plan.

Q. Have you testified previously in this docket?

A. No, I have not.

Q. What is the purpose of your testimony.

A. Exponent Failure Analysis (Exponent) and Synapse were hired by the Staff to investigate the electricity outages that occurred on the Delmarva peninsula in July 1999. Exponent is primarily responsible for investigating the specific events and activities regarding the outages. I am primarily responsible for investigating issues related to maintaining electricity system reliability in the future. Exponent and Synapse prepared a report for the Staff on these issues. The report is provided as an exhibit to the direct testimony of Dr. Glover of Exponent. My testimony is meant to be a companion piece to Dr. Glover's testimony. The purpose of my testimony is to describe the primary conclusions and recommendations that I am responsible for in our report to the Staff.

Q. How is your testimony organized?

A. My testimony is organized as follows:

1. Introduction and Qualifications.
2. Summary of Conclusions.
3. Summary of Recommendations.

2. SUMMARY OF CONCLUSIONS

Q. What lessons can be learned from the July outages regarding DP&L's plans to divest the Indian River and Vienna generation plants?

A. One lesson is that the operation of the Indian River plant plays a key role in providing power on the Delmarva peninsula. Not only does Indian River provide essential generation services, it is also important for maintaining voltage support in emergency conditions.

Q. Does the Company's plan to divest the Indian River and Vienna plants create new concerns regarding reliability on the Delmarva peninsula?

A. Not necessarily. DP&L is taking a prudent approach with regard to reliability issues associated with the divestiture of its power plants. The draft Interconnection Agreement and the MAAC and PJM standards will require the new owners to meet the same level of reliability standards and protocols that DP&L is required to meet. Delmarva's divestiture activities do not create more reliability risks than those of other utilities selling generation assets in other parts of the country.

Q. Does the divestiture of power plants in general increase uncertainties and risks associated with reliability?

A. Yes. The sale of generation assets creates uncertainty and risk regarding how responsible, cooperative, and capable the new power plant owners will be. Simply increasing the number of power plant owners on the peninsula increases the complexity of maintaining reliability – particularly under emergency conditions. This increased uncertainty is part of a broader development associated with the restructuring of the electricity industry in general.

Q. How does electricity industry restructuring in general increase the uncertainties and risks associated with reliability?

A. The regulations, institutions, standards and protocols required to ensure reliability have not necessarily evolved sufficiently to keep pace with the restructuring changes. The industry is increasingly influenced by many new market players, less long-term planning, greater reliance upon unpredictable market signals, less

regulatory oversight, and increased need for complex communication systems. All of these changes increase the risk that reliability will deteriorate in the future.

Q. Are the financial incentives created by the restructured electricity industry likely to affect reliability?

A. Yes. In a competitive electricity market, generating companies often have an incentive to maintain as little capacity as is necessary to meet reliability requirements. This trend can already be seen in DP&L's increasing reliance upon purchases, increasing reliance upon off-peninsula generation and declining CETO/CETL margins. Operating "closer" to reliability requirements increases the risk of reliability problems, particularly under unusual circumstances such as extreme weather conditions.

In addition, Distribution companies subject to a price cap have an incentive to reduce or postpone transmission and distribution investments that might enhance reliability. DP&L has postponed some key transmission and distribution upgrades as a consequence of budgetary constraints – upgrades that could have played a critical role in mitigating the July outages. Such cost-cutting incentives pose even greater reliability risks if the distribution company operates within a transmission load pocket, such as the Delmarva peninsula.

Q. Are DP&L's current plans for providing future generation services adequate?

A. In the restructured electric market, DP&L will offer a regulated default service and a competitive merchant generation service. Delmarva has not provided detailed information about how it plans to provide these services, particularly with regard to its merchant generation service. Therefore, it is difficult to answer this question with much detail or confidence at this time.

DP&L appears to have sufficient generation capacity to meet the needs of default service customers. However, the amount of generation available to these customers will depend upon the arrangement that DP&L makes with NRG Energy, the new owners of the Indian River and Vienna plants, for buying back the energy from those plants. Either way, it will be important for the Commission

to play an active role in overseeing DP&L's activities and plans for providing the default and merchant generation services.

3. SUMMARY OF RECOMMENDATIONS

Q. What should the Commission do to ensure that the sale of DP&L's power plants do not create any reliability problems?

A. The Commission should follow up on the on-going sale of power plants to ensure that the terms and conditions of the sale will minimize any problems with reliability. In particular, the Commission should review a final copy of the draft Interconnection Agreement to ensure that it contains all of the reliability-related provisions of the current draft. The Commission should ensure that NRG will indeed be committed to maintaining the Indian River and Vienna plants as Capacity Resources.

Q. Would it be useful to conduct more detailed assessments of the potential reliability and market power problems that might be created by the sale of the Indian River and Vienna plants?

A. Yes. The Commission should request that the PJM Market Monitoring Unit perform a market power and reliability analysis of the Indian River and Vienna units, similar to the analysis that was performed for the District of Columbia Public Service Commission.[1] In addition, in any future investigations of market power on the peninsula in general, the Commission should investigate the specific market power issues associated with NRG's ownership of the Indian River and Vienna plants.

Q. Should the Commission dedicate much attention to overseeing reliability issues in the newly restructured electricity industry?

A. Yes. The Commission should make reliability a high priority, both during the transition to a competitive market and beyond. Although the Electric Utility Restructuring Act of 1999 has defined the "transition period" as running through 2003 (for DP&L), the electricity market might not be fully competitive by that

[1] On January 31 the Commission authorized the Staff to request such a study of the PJM MMU.

time. Even when the market does become more competitive, there will still be a need for Commission oversight of reliability issues.

Q. What steps should the Commission take to help maintain reliability on the Delmarva peninsula?

The Commission should establish a generic proceeding to investigate opportunities for regulatory policies and mechanisms to maintain reliability in the future. First and foremost, the Commission should assess the opportunities for applying performance standards to DP&L. The Commission should also assess additional measures for promoting reliability, including improved load management programs, demand-side bidding, energy efficiency, and distributed generation resources.

Q. How would reliability performance standards be structured?

A. Reliability performance standards should begin with a set of clearly-defined benchmarks for an acceptable level of reliability. These benchmarks could include indices used by DP&L in the past – such as the System Average Interruption Frequency Index (SAIFI), the System Average Interruption Duration Index (SAIDI), and the Customer Average Interruption Duration Index(CAIDI) – and they could include additional indices. The performance standards should include penalties for substandard or unacceptable levels of reliability performance. These penalties would provide a clear financial incentive for DP&L to maintain at least the level of reliability dictated by the standards.

Q. What are some of the primary advantages of reliability performance standards?

A. There are many advantages of establishing reliability performance standards at this time. For example:

- Once they are designed and in place, reliability performance standards require less regulatory oversight than alternative regulatory approaches to reviewing generation, transmission and distribution plans. They focus on a few key benchmarks of customer needs, and allow the utility to identify the best means of achieving those benchmarks.

- Reliability performance standards provide direct financial incentive to offset the cost-cutting incentives created by price caps or price freezes.
- Reliability performance standards should help prevent future outages. However, if such outages do occur, performance standards can provide clear, direct resolution to questions about responsibility and corrective actions.
- Reliability performance standards can be applied to the regulated utilities over which the Commission will continue to have jurisdiction. These utilities can, in turn, use their influential roles in the industry to encourage improved reliability standards among other market actors (e.g., the new owners of their power plants, other members of PJM).
- Reliability performance standards provide the Commission with a means of striking the appropriate balance between increased costs and increased reliability.
- Reliability performance standards can be designed to provide direct compensation to those customers that are affected by reliability problems.

Q. Should the Commission obtain additional information over time to help ensure that future reliability is being maintained?

A. Yes. I recommend that the Commission require DP&L to provide semi-annual reliability reports. These reports should provide certain key reliability statistics, as well as general information about changes to the PJM and DP&L electricity systems. Such reports will be necessary in order to keep the Commission and Staff appraised of how well reliability is being maintained as the electricity industry evolves over time. Reliability reports will be important in a restructured electricity industry, and will be especially important for utilities operating within a transmission load pocket.

Q. What sort of information should be included in the semi-annual reliability reports?

A. The structure and contents of these reports should be addressed in more detail in a separate proceeding – ideally in a generic proceeding to establish reliability performance standards and other reliability measures. In general, the reports should include indices on how well distribution companies have achieved certain reliability goals, e.g., SAIDI, SAIFI, CAIDI and others. They should also include

a summary of informative reliability statistics such as forecasted peak loads, generation resources and reserve margins. This information should be provided for DP&L's default service, its merchant generation business, and for the Company as a whole. Similar loads and resources information for all of PJM could be provided as well. The reliability reports should also include summaries of recent transmission and distribution planning studies and network capability studies (including CETO and CETL results). Furthermore, the reliability reports should provide summaries of any changes to reliability-related requirements, standards and procedures at PJM, MAAC or NERC.

Q. Does this conclude your testimony?

A. Yes, it does.

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PROFESSIONAL EXPERIENCE

Synapse Energy Economics Inc., Cambridge, MA. Vice President, 1997-present. Conducting research, writing reports, and presenting expert testimony pertaining to consumer, environmental, and public policy implications of electricity industry regulation. Primary focus of work includes electricity industry restructuring and competition, electric power system planning, power plant performance and economics, stranded costs, performance-based ratemaking, market power, customer aggregation, information disclosure, air quality, energy efficiency, renewable resources, and many aspects of consumer and environmental protection.

Tellus Institute, Boston, MA. Senior Scientist, Manager of Electricity Program, 1992-1997. Responsible for managing six-person staff that provided research, testimony, reports and regulatory support to consumer advocates, environmental organizations, regulatory commissions, and state energy offices throughout the US.

Association for the Conservation of Energy, London, England. Research Director, 1991-1992. Researched and advocated legislative and regulatory policies for promoting integrated resource planning and energy efficiency in the competitive electric industries in the UK and Europe.

Massachusetts Department of Public Utilities, Boston, MA. Staff Economist, 1989-1990. Responsible for regulating and setting rates of Massachusetts electric utilities. Drafted integrated resource planning regulations. Evaluated utility energy efficiency programs.

Massachusetts Office of Energy Resources, Boston, MA. Policy Analyst, 1987-1989. Researched and advocated integrated resource planning regulations. Participated in demand-side management collaborative with electric utilities and other parties.

Energy Systems Research Group, Boston, MA. Research Associate, 1983-1987. Performed critical evaluations of electric utility planning and economics, including production cost modeling and assessment of power plant costs and performance.

Union of Concerned Scientists and Massachusetts Public Interest Research Group, Cambridge and Boston, MA. Energy Analyst, 1982-1983. Analyzed environmental and economic issues related to nuclear plants, renewable resources and energy efficiency.

EDUCATION

Masters, Business Administration. Boston University, Boston, MA, 1993.
Diploma, Economics. London School of Economics, London, England, 1991.
B.S., Mechanical Engineering. Tufts University, Medford, MA, 1982.
B.A., English. Tufts University, Medford, MA, 1982.

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