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**BEFORE**  
**THE PUBLIC UTILITIES COMMISSION OF OHIO** 2011 MAR 14 PM 5:25

In the Matter of the 2010  
Long Term Forecast Report of  
Duke Energy Ohio, Inc.

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Case No. 10-563-EL-FOR

**PUBLIC**

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**DIRECT TESTIMONY OF**  
**DAVID A. SCHLISSEL**  
**ON BEHALF OF**  
**NRDC AND THE SIERRA CLUB**

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**March 14, 2011**

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1    **Q.    Please state your name and business address.**

2    A.    My name is David A. Schlissel. I am the President of Schlissel Technical Consulting,  
3           Inc., 45 Horace Road, Belmont, MA 02478.

4    **Q.    Please summarize your educational background and recent work experience.**

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

10          Since 1983 I have been retained by governmental bodies, publicly-owned utilities, and  
11          private organizations in 28 states to prepare expert testimony and analyses on engineering  
12          and economic issues related to electric utilities. My recent clients have included the New  
13          Mexico Public Regulation Commission, the U.S. Department of Justice, the Attorney  
14          General and the Governor of the State of New York, state consumer advocates, and  
15          national and local environmental organizations.

16          I have testified before state regulatory commissions in Arizona, New Jersey, California,  
17          Connecticut, Kansas, Texas, New Mexico, New York, Vermont, North Carolina, South  
18          Carolina, Maine, Illinois, Indiana, Ohio, Massachusetts, Missouri, Rhode Island,  
19          Wisconsin, Iowa, South Dakota, Georgia, Minnesota, Michigan, Florida, North Dakota  
20          and Mississippi and before an Atomic Safety & Licensing Board of the U.S. Nuclear  
21          Regulatory Commission.

22          A copy of my current resume is attached as Exhibit DAS-1. Additional information  
23          about my work is available at [www.schlissel-technical.com](http://www.schlissel-technical.com).

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

25    A.    I am testifying on behalf of the Natural Resource Defense Council ("NRDC") and Sierra  
26          Club.

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1    **Q.    Have you testified previously before this Commission?**

2    A.    Yes. I testified in Commission Case 87-689-EL-AIR.

3    **Q.    What is the purpose of your testimony?**

4    A.    We were retained to review Duke Energy Ohio's ("Duke" or "the Company") 2010  
5        Electric Long-Term Forecast Report and Resource Plan. ("2010 LTFR") This testimony  
6        presents the results of our analyses.

7    **Q.    Who assisted you in preparing this testimony?**

8    A.    I was assisted by Anna Sommer of Sommer Energy. Ms. Sommer previously worked  
9        with me at Synapse Energy Economics, Inc. She has a Bachelor of Science Degree in  
10       Economics and Environmental Studies from Tufts University and has a Master of Science  
11       Degree from the Energy Resources Group Program at the University of California at  
12       Berkeley.

13   **Q.    What documents have you reviewed as part of your assessment of the Company's**  
14       **2010 LTFR?**

15   A.    We have reviewed Duke's original 2010 LTFR and the two subsequent revisions filed by  
16       the Company in October 2010 and February 2011. We also have reviewed the documents  
17       and information provided by Duke in response to discovery from NRDC and Sierra Club,  
18       the OCC, and other active parties.

19   **Q.    Has Duke fully responded to all of the discovery submitted by NRDC and Sierra**  
20       **Club?**

21   A.    No. Duke has not provided full responses to the latest set of discovery submitted by  
22       NRDC and the Sierra Club. This discovery was based on the latest revision to the 2010  
23       LTFR that Duke filed on February 11, 2011. Duke also has not provided full and  
24       complete responses to all of the discovery questions that NRDC and the Sierra Club  
25       submitted back in December 2010.

26   **Q.    Please summarize your conclusions.**

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1     A.     My conclusions are as follows:

- 2           1.     Duke Energy Ohio is overly dependent on coal for its energy.
- 3           2.     Duke has not appropriately evaluated the economics of continuing to operate its  
4                 existing generating facilities in light of the risks and uncertainties faced by coal-  
5                 fired units.
- 6           3.     Duke overstates its need for its existing capacity and for new supply side  
7                 resources in the 2010 LTFR.
- 8           4.     Duke's assumption that all of the customer load that migrated away from the  
9                 company will return in 2012 is overly optimistic and overstates its need for its  
10                existing coal-fired units and for new generation.
- 11          5.     Duke did not appropriately evaluate all reasonable generation options in its LTFR.

12    **Q.     What are your recommendations?**

13    A.     In its new LTFR Duke should:

- 14          1.     Present an evaluation of the economics of continuing to operate each of its  
15                 existing coal-fired generating units versus retiring that unit during the planning  
16                 period.
- 17          2.     Present scenarios that assume that less than all of the load that migrated away  
18                 from the Company will return beginning in 2012. Such scenarios should assume  
19                 that (a) 75 percent of the switched load returns, (b) 50 percent of the switched  
20                 load returns, (c) 25 percent of the switched load returns and (d) none of switched  
21                 load returns.
- 22          3.     Present analyses that reflect all reasonable supply and demand side alternatives.

23    **Q.     Duke says that qualitative perspectives such as the importance of fuel diversity, the**  
24       **Company's environmental profile and the stage of technology development are also**

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1        **important factors to consider as long-term decisions are made regarding new**  
2        **resources.<sup>1</sup> Do you agree?**

3        A.    Yes. I agree that these factors are all important regarding both new and existing  
4        resources. I further believe that such factors weigh considerably in favor of Duke Energy  
5        Ohio reducing its extremely heavy dependence on coal-fired generation.

6        Q.    **How heavily dependent on coal is Duke Energy Ohio?**

7        A.    Table 1, below, shows the Company's fuel mix for the years 2010 through 2021 by the  
8        percentage of its energy that comes from coal, from natural gas and from market  
9        purchase.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Coal-OH												
Market Purchase												
Natural Gas												

10        **Table 1:        Duke Energy Ohio Fuel Mix 2010-2021**  
11

12  
13  
14        **[REDACTED]**  
15  
16  
17

18        Q.    **What do these figures suggest?**

19        A.    These figures suggest that Duke should decrease its reliance on coal-fired generation and  
20        could increase its use of natural gas without being overly reliant on that fuel. It could do  
21        this by retiring some of its coal-fired units and building a new gas-fired combined cycle  
22        unit or by purchasing power from existing and under utilized combined cycle facilities in  
23        the region.

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<sup>1</sup>        Page 132 of the LTFR.

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1 **Q. Does Duke present any analysis in the 2010 LTFR of the economics of continuing to**  
2 **operate its existing generating units versus retirement of any of those units within**  
3 **the planning period?**

4 A. No. Duke did not conduct any analysis or assessment of continued operation versus  
5 retirement of its existing generating units as part of its modeling for the 2010 LTFR.  
6 Instead, the Company merely assumed, as a placeholder, that the coal-fired

7 **[REDACTED]**

8 **Q. Has Duke provided any analysis outside the 2010 LTFR of the economics of**  
9 **continuing to operate its existing coal-fired units versus retirement of any of those**  
10 **units during the planning period?**

11 A. No.

12 **Q. Is that prudent?**

13 A. No. Given the risks and uncertainties faced by existing coal-fired units, prudent resource  
14 planning should include periodic assessments of whether to continue to operate or retire  
15 existing coal-fired units. This is especially true for Duke's older coal-fired units such as  
16 the facilities at Beckjord and Stuart.

17 **Q. What are the main risks and uncertainties faced by existing coal-fired generating**  
18 **units and their owners?**

19 A. The main risks facing existing coal plants and their owners, like Duke Energy Ohio, are:

- 20 1. An aging coal fleet.
- 21 2. Competition from natural gas-fired capacity leading to reduced generation and  
22 lower revenues from market and off-system sales.
- 23 3. The potential for more stringent U.S. Environmental Protection Agency ("EPA")  
24 regulation of criteria and hazardous air pollutants.
- 25 4. The potential for an EPA requirement under Section 316(b) of the Clean Water  
26 Act that would require some coal units to convert from once-through to closed  
27 cycle cooling systems.



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1 Consequently, Duke would essentially be using [REDACTED] as peaking capacity  
2 during those years with single digit capacity factors. This is an inefficient and expensive  
3 use for coal-fired capacity. Combustion turbines are more effective peaking units.

4 **Q. Has Duke analyzed the impact of retiring any of its coal-fired generating units on**  
5 **grid reliability?**

6 A. No. Duke has not made any assessment or study of the impact that retirement of any of  
7 the company's individually-owned or jointly-owned generating units would have on  
8 transmission system reliability.<sup>2</sup>

9 **Q. Has Duke reasonably represented its need for its existing or for new generating**  
10 **capacity in the 2010 LTFR?**

11 A. No. The Company has both overstated its loads and inadequately evaluated a number of  
12 reasonable supply side alternatives. As a result, it has overstated its need both for its  
13 existing and for new generating capacity.

14 **Q. How has Duke overstated its loads during and after the planning period?**

15 A. Duke assumes that 100 percent of the load that switched away from the Company in  
16 recent years will return in 2012. However, the Company has no analysis that shows that  
17 this is a reasonable assumption.<sup>3</sup> Nor has Duke been clear about which customers it  
18 believes will switch back to its system in 2012.

19 Duke similarly assumes that no more of its current customers will switch to other  
20 suppliers beginning in 2012 even though it has no analysis to support that assumption.<sup>4</sup>

21 **Q. How many customers, representing how much load, have switched away from**  
22 **Duke?**

23 A. According to the Company, by 2009, 61,506 customers had switched from Duke. These  
24 customers represented 1,436 MW of summer peak load and 7,709,535 MWh in 2009.<sup>5</sup>

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<sup>2</sup> Response to NRDC & SC-POD-01-025.

<sup>3</sup> Response to NRDC & SC-POD-02-064a.

<sup>4</sup> Response to NRDC & SC-POD-01-043.



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1 Based on its Long Term Forecast Report (LTFR) and Resource Plan and the response to  
2 NRDC & SC-INT-01-024, it appears that most of those customers who switched through  
3 2009 were non-residential.

4 **Q. Is it reasonable to assume that all of these customers and all of these loads will**  
5 **return in 2012 and remain with the Company throughout the planning period?**

6 A. No. The current ESP will expire December 31, 2011. It's my understanding that Duke  
7 will endeavor to make its rates after 2011 comparable to alternative retail suppliers' rates  
8 since more competitive rates would likely help to stop the high levels of customer  
9 switching that the Company has experienced in recent years.

10 Just as customers are free to switch from Duke, they are also free to switch back to the  
11 Company. For purposes of this LTFR, Duke has assumed that "all currently switched  
12 load returns to the utility with the resetting on the price-to-compare with a new Electric  
13 Security Plan (ESP) price."<sup>6</sup> According to the Company, this "is realistic because a new  
14 ESP price must reflect market prices, thus eliminating pricing headroom that would make  
15 it cost-effective for customers to switch to alternate suppliers."

16 **Q. Do you agree that a new ESP with a reset "price-to-compare" would make the**  
17 **assumption that all of the switched load returns to Duke Energy Ohio "realistic?"**

18 A. No. There is no evidence that all of those switched customers would return to Duke.  
19 First and foremost, those customers switched because they could receive a better price  
20 elsewhere. A new tariff in 2012 would only make Duke competitive with other suppliers.  
21 Its new rates would have to be *below* market to induce customers to switch back to Duke  
22 just as *lower* rates induced them to switch to begin with.

23 **Q. So how should Duke incorporate this uncertainty over customer switching into its**  
24 **LTFR?**

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<sup>5</sup> Response to NRDC & SC-INT-01-024.

<sup>6</sup> Response to NRDC & SC Interrogatory 02-030.

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1 A. The Company should use scenario analysis using varying levels of switching back to  
2 Duke Energy Ohio – for example, scenarios which assume no switching, 25 percent, 50  
3 percent and 75 percent of the migrated loads. The assumption that all switched load  
4 returns to Duke's system in 2012 is an extremely optimistic one. As the response to  
5 NRDC & SC Interrogatory 01-024 indicates, even prior to the collapse of electricity  
6 prices in 2009, Duke was seeing roughly 10,000 customers switching to competitive  
7 suppliers each year. A scenario in which none of its switched customers return to Duke  
8 could in fact be optimistic.

9 Q. Is the issue of customer switching also significant for the Company's need for new  
10 generating capacity?

11 A. Yes. First, the Company has shortened the study period since it filed the original 2010  
12 LTFR from 2010 – 2030 to 2010-2019. According to Duke, "The reference to new  
13 nuclear was removed from the description of available resources because new nuclear  
14 capacity could not be available in the 10 year planning horizon."<sup>7</sup> No other changes were  
15 made to modeling, planning or resources assumptions. There's no indication therefore,  
16 that Duke does not still believe that a nuclear unit in 2023 would be a prudent addition to  
17 its system. Indeed, Duke says in the Executive Summary to the February 2011 Revision  
18 to the 2010 LTFR "The Company believes that advanced nuclear generation and clean  
19 coal technology are critical to meeting the [Alternative Energy Resource] standard." The  
20 Resource Plan, as it currently stands, does not meet the requirements of the AER.

21 In its modeling that includes a new nuclear unit at the end of 2023,

22 [REDACTED]

23 This suggests that  
24 the nuclear unit is not needed for energy reasons, but rather to meet the requirements of  
25 the AER standard. If customers do not return to Duke's system as the Company assumes  
26 they will, there will even less need for an expensive, new baseload plant. This issue is

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<sup>7</sup> Response to NRDC & SC-INT-03-037.

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not reasonably addressed by simply shortening the study period – it simply avoids some of the key issues confronting Duke Energy Ohio.

**Q. Has Duke adequately evaluated the potential for alternatives to the continued operation of its existing coal-fired power plants?**

A. No. Duke has not adequately considered the potential for alternatives in its LTFR modeling analyses.

For example, Duke has not analyzed the availability or cost of unused natural gas combined cycle capacity in the Company's service territory, the State of Ohio, or in any of contiguous states.<sup>8</sup>

Nor has Duke make any assessment of the feasibility or cost of constructing additional natural gas combined cycle capacity in its service territory or the state of Ohio or in any of the five contiguous states.<sup>9</sup>

In addition, Duke has not made any assessment of the potential for or the cost of combined heat and power within its service territory, the state of Ohio or in any of the 5 contiguous states?<sup>10</sup>

**Q. Has Duke made any assessment of its ability to meet the renewable requirements of the Alternative Energy Resource standard without 50% renewable energy credit (REC) purchases?**

A. No. Section 2928.64 of Ohio Revised Code requires that at least half of renewable resources implemented by a utility be met by in-state resources. Duke adopts this floor on in-state renewables as its assumption for compliance with the renewable requirements of SB 221. Its response to NRDC & SC POD 01-036 indicates that it has not evaluated its ability to achieve higher levels of in-state renewables. However, Duke does believe that a scenario of biomass and wind to meet the remaining requirements of the AER

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<sup>8</sup> Response to NRDC & SC-POD-01-032.

<sup>9</sup> Response to NRDC & SC-POD-01-033.

<sup>10</sup> Response to NRDC & SC-POD-01-034.

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1 standard is plausible. Portfolio 7 of the October 2010 Resource Plan and Portfolio 4 of  
2 the February 2011 Resource Plan both include additional in-state wind and biomass  
3 facilities to comply with the AER standard.

4 **Q. Does this complete your testimony?**

5 **A. Yes.**

## **David A. Schlissel**

### **President**

**Schlissel Technical Consulting, Inc.**  
**45 Horace Road, Belmont, MA 02478**  
**(617) 489-4840**  
**david@schlissel-technical.com**

### **SUMMARY**

I have worked for thirty six 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, respectively, and a law degree from Stanford Law School.

### **PROFESSIONAL EXPERIENCE**

**Electric Resource Planning** - Analyzed the economic costs and benefits of energy supply options. Examined whether there are lower cost, lower risk alternatives than proposed fossil and nuclear power plants. Evaluated the economic and system reliability consequences of retiring existing electric generating facilities. Investigated whether new electric generating facilities are used and useful. Investigated whether new generating facilities that were built for a deregulated subsidiary should be included in the rate base of a regulated utility. Assessed the reasonableness of proposed utility power purchase agreements with deregulated affiliates. Investigated the prudence of utility power purchases in deregulated markets.

**Coal-fired Generation** - Evaluated the economic and financial risks of investing in, constructing and operating new coal-fired power plants. Analyzed the economic and financial risks of making expensive environmental and other upgrades to existing plants. Investigated whether plant owners had adequately considered the risks associated with building new fossil-fired power plants, the most significant of which are the likelihood of federal regulation of greenhouse gas emissions and construction cost increases.

**Power Plant Air Emissions** - Investigated whether proposed generating facilities would provide environmental benefits in terms of reduced emissions of NO<sub>x</sub>, SO<sub>2</sub> and CO<sub>2</sub>. Examined whether new state and federal emission standards would lead to the retirement of existing power plants or otherwise have an adverse impact on electric system reliability.

**Power Plant Water Use** - Examined power plant repowering as a strategy for reducing water consumption at existing electric generating facilities. Analyzed the impact of converting power plants from once-through to closed-loop systems with cooling towers on plant revenues and electric system reliability. Evaluated the potential impact of the EPA's Proposed Clean Water Act Section 316(b) Rule for Cooling Water Intake Structures at existing power plants.

**Electric System Reliability** - Evaluated whether existing or new generation facilities and transmission lines are needed to ensure adequate levels of system reliability. Investigated the causes of distribution system outages and inadequate service reliability. Examined the reasonableness of utility system reliability expenditures.

**Power Plant Repowering** - Evaluated the environmental, economic and reliability impacts of rebuilding older, inefficient generating facilities with new combined cycle technology.

**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. Examined 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.

**Nuclear Power** - Reviewed recent cost estimates for proposed nuclear power plants. Examined the impact of the nuclear power plant life extensions and power uprates on decommissioning costs and collections policies. Examined the reasonableness of utility decisions to sell nuclear power assets and evaluated the value received as a result of the auctioning of those plants. Investigated the significance of the increasing ownership of nuclear power plants by multiple tiered holding companies with limited liability company subsidiaries. Investigated the potential safety consequences of nuclear power plant structure, system, and component failures.

**Transmission Line Siting** - Examined the need for proposed transmission lines. Analyzed whether proposed transmission lines could be installed underground. Worked with clients to develop alternate routings for proposed lines that would have reduced impacts on the environment and communities.

**Electric Industry Regulation and Markets** - Examined whether generating facilities experienced more outages following the transition to a deregulated wholesale market in New England. Evaluated the reasonableness of nuclear and fossil plant sales, auctions, and power purchase agreements. Analyzed the impact of proposed utility mergers on market power. Assessed the reasonableness of contract provisions and terms in proposed power supply agreements.

**Expert Testimony** - Presented the results of management, technical and economic analyses as testimony in more than 100 proceedings before regulatory boards and commissions in 35 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.

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## **TESTIMONY, AFFIDAVITS, DEPOSITIONS AND COMMENTS**

### **Public Utility Commission of Colorado (Docket No. 10M-245E) – September, October and November 2010**

The reasonableness of Public Service of Colorado's proposed Emissions Reduction Plan.

### **Indiana Utility Regulatory Commission (Cause No. 43114 IGCC 4S1) – July and November 2010**

The reasonableness of Duke Energy Indiana's new analyses of the economics of completing the Edwardsport Project as an IGCC plant.

### **Oregon Public Utility Commission (Docket LC 48) – May and August 2010**

Comments and Reply Comments on Portland General Electric Company's 2009 Integrated Resource Plan.

### **South Dakota Public Service Commission (Docket No. EL-09-018) – April 2010**

The reasonableness of Black Hills Power Company's 2007 Integrated Resource Plan and the Company's decision to build the Wygen III coal-fired power plant.

### **Michigan Public Service Commission (Docket No. U-16077) – April 2010**

Comments on the City of Holland Board of Public Works' 2010 Power Supply Study.

### **Illinois Commerce Commission (Tenaska Clean Coal Facility Analysis) – April 2010**

Comments on the Facility Cost Report for the proposed Taylorville IGCC power plant.

### **North Carolina Utilities Commission (Docket No. E-100, Sub 124) – February 2010**

The reasonableness of the 2009 Integrated Resource Plans of Duke Energy Carolinas and Progress Energy Carolinas.

### **Mississippi Public Service Commission (Docket No. 2009-UA-014) – December 2009**

The costs and risks associated with the proposed Kemper County IGCC power plant.

### **Public Service Commission of Wisconsin (Docket No. 05-CE-137) –December 2009 and January 2010**

The costs and risks associated with the proposed installation of emissions control equipment at the Edgewater Unit 5 coal-fired power plant.

### **Public Service Commission of Wisconsin (Docket No. 05-CE-138) –September and October 2009**

The costs and risks associated with the proposed installation of emissions control equipment at the Columbia 1 and 2 coal-fired power plants.

### **Public Service Commission of Michigan (Docket No. U-15996) – July 2009**

Comments on Consumer Energy's Electric Generation Alternatives Analysis for the Balanced Energy Initiative including the Proposed Karn-Weadock Coal Plant.

**Public Service Commission of Michigan (Docket No. U-16000) – July 2009**

Comments on Wolverine Power Cooperative's Electric Generation Alternatives Analysis for the Proposed Rogers City Coal Plant.

**Georgia Public Service Commission (Docket No. 27800-U) – December 2008**

The possible costs and risks of proceeding with the proposed Plant Vogtle Units 3 and 4 nuclear power plants.

**Public Service Commission of Wisconsin (Docket No. 6680-CE-170) – August and September 2008**

The risks associated with the proposed Nelson Dewey 3 baseload coal-fired power plant.

**Indiana Utility Regulatory Commission (Cause No. 43114 IGCC 1) – July 2008**

The estimated cost of Duke Energy Indiana's Edwardsport Project.

**Public Service Commission of Maryland (Case 9127) – July 2008**

The estimated cost of the proposed Calvert Cliffs Unit 3 nuclear power plant.

**Ohio Power Siting Board (Case No. 06-1358-EL-BGN) – December 2007**

AMP-Ohio's application for a Certificate of Environmental Compatibility and Public Need for a 960 MW pulverized coal generating facility.

**U.S. Nuclear Regulatory Commission (Docket Nos. 50-247-LR, 50-286-LR) – November 2007 and February 2009**

The available options for replacing the power generated at Indian Point Unit 2 and/or Unit 3.

**West Virginia Public Service Commission (Case No. 06-0033-E-CN) – November 2007**

Appalachian Power Company's application for a Certificate of Public Convenience and Necessity for a 600 MW integrated gasification combined cycle generating facility.

**Iowa Utility Board (Docket No. GCU-07-01) – October 2007**

Whether Interstate Power & Light Company's adequately considered the risks associated with building a new coal-fired power plant and whether that Company's participation in the proposed Marshalltown plant is prudent.

**Virginia State Corporation Commission (Case No. PUE-2007-00066) – November 2007**

Whether Dominion Virginia Power's adequately considered the risks associated with building the proposed Wise County coal-fired power plant and whether that Commission should grant a certificate of public convenience and necessity for the plant.

**Louisiana Public Service Commission (Docket No. U-30192) – September 2007**

The reasonableness of Entergy Louisiana's proposal to repower the Little Gypsy Unit 3 generating facility as a coal-fired power plant.



**Arkansas Public Service Commission (Docket No. 06-154-U) – July 2007**

The probable economic impact of the Southwestern Electric Power Company's proposed Hempstead coal-fired power plant project.

**North Dakota Public Service Commission (Case Nos. PU-06-481 and 482) – May 2007 and April 2008**

Whether the participation of Otter Tail Power Company and Montana-Dakota Utilities in the Big Stone II Generating Project is prudent.

**Indiana Utility Regulatory Commission (Cause No. 43114) – May 2007**

The appropriate carbon dioxide ("CO<sub>2</sub>") emissions prices that should be used to analyze the relative economic costs and benefits of Duke Energy Indiana and Vectren Energy Delivery of Indiana's proposed Integrated Gasification Combined Cycle Facility and whether Duke and Vectren have appropriately reflected the capital cost of the proposed facility in their modeling analyses.

**Public Service Commission of Wisconsin (Docket No. 6630-EI-113) – May and June 2007**

Whether the proposed sale of the Point Beach Nuclear Plant to FPL Energy Point Beach, LLC, is in the interest of the ratepayers of Wisconsin Electric Power Company.

**Florida Public Service Commission (Docket No. 070098-EI) – March 2007**

Florida Light & Power Company's need for and the economics of the proposed Glades Power Park.

**Michigan Public Service Commission (Case No. 14992-U) – December 2006**

The reasonableness of the proposed sale of the Palisades Nuclear Power Plant.

**Minnesota Public Utilities Commission (Docket No. CN-05-619) – November 2006, December 2007, January 2008 and November 2008**

Whether the co-owners of the proposed Big Stone II coal-fired generating plant have appropriately reflected the potential for the regulation of greenhouse gases in their analyses of the facility; and whether the proposed project is a lower cost alternative than renewable options, conservation and load management.

**North Carolina Utilities Commission (Docket No. E-7, Sub 790) – September 2006 and January 2007**

Duke's need for two new 800 MW coal-fired generating units and the relative economics of adding these facilities as compared to other available options including energy efficiency and renewable technologies.

**New Mexico Public Regulatory Commission (Case No. 05-00275-UT) – September 2006**

Report to the New Mexico Commission on whether the settlement value of the adjustment for moving the 141 MW Afton combustion turbine merchant plant into rate base is reasonable.

**Arizona Corporation Commission (Docket No. E-01345A-0816) – August and September 2006**

Whether APS's acquisition of the Sundance Generating Station was prudent and the reasonableness of the amounts that APS requested for fossil plant O&M.

**U.S. District Court for the District of Montana (Billings Generation, Inc. vs. Electrical Controls, Inc, et al., CV-04-123-BLG-RFC) – August 2006**

Quantification of plaintiff's business losses during an extended power plant outage and plaintiff's business earnings due to the shortening and delay of future plant outages.  
[Confidential Expert Report]

**Deposition in South Dakota Public Utility Commission Case No. EL05-022 – June 14, 2006**

**South Dakota Public Utility Commission (Case No. EL05-022) – May and June 2006**

Whether the co-owners of the proposed Big Stone II coal-fired generating plant have appropriately reflected the potential for the regulation of greenhouse gases in their analyses of the alternatives to the proposed facility; the need and timing for new supply options in the co-owners' service territories; and whether there are alternatives to the proposed facility that are technically feasible and economically cost-effective.

**Georgia Public Service Commission (Docket No. 22449-U) – May 2006**

Georgia Power Company's request for an accounting order to record early site permitting and construction operating license costs for new nuclear power plants.

**California Public Utilities Commission (Dockets Nos. A.05-11-008 and A.05-11-009) – April 2006**

The estimated costs for decommissioning the Diablo Canyon, SONGS 2&3 and Palo Verde nuclear power plants and the annual contributions that are needed from ratepayers to assure that adequate funds will be available to decommission these plants at the projected ends of their service lives.

**New Jersey Board of Public Utilities (Docket No. EM05020106) – November and December 2005 and March 2006**

Joint Testimony with Bob Fagan and Bruce Biewald on the market power implications of the proposed merger between Exelon Corp. and Public Service Enterprise Group.

**Virginia State Corporation Commission (Case No. PUE-2005-00018)– November 2005**

The siting of a proposed 230 kV transmission line.

**Iowa Utility Board (Docket No. SPU-05-15) – September and October 2005**

The reasonableness of IPL's proposed sale of the Duane Arnold Energy Center nuclear plant.

**New York State Department of Environmental Conservation (DEC #3-3346-00011/00002) – October 2005**

The likely profits that Dynegy will earn from the sale of the energy and capacity of the Danskammer Generating Facility if the plant is converted from once-through to closed-cycle cooling with wet towers or to dry cooling.

**Arkansas Public Service Commission (Docket 05-042-U) – July and August 2005**

Arkansas Electric Cooperative Corporation's proposed purchase of the Wrightsville Power Facility.

**Maine Public Utilities Commission (Docket No. 2005-17) – July 2005**

Joint testimony with Peter LanzaLotta and Bob Fagan evaluating Eastern Maine Electric Cooperative's request for a CPCN to purchase 15 MW of transmission capacity from New Brunswick Power.

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Joint Affidavit and Supplemental Affidavit with Bruce Biewald on the market power aspects of the proposed merger of Exelon Corporation and Public Service Enterprise Group, Inc.

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Joint testimony with Peter LanzaLotta and Bob Fagan evaluating Maine Public Service Company's request for a CPCN to purchase 35 MW of transmission capacity from New Brunswick Power.

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Analysis of Bangor Hydro-Electric's Petition for a Certificate of Public Convenience and Necessity to construct a 345 kV transmission line

**United States District Court for the Southern District of Ohio, Eastern Division (Consolidated Civil Actions Nos. C2-99-1182 and C2-99-1250)**

Whether the public release of company documents more than three years old would cause competitive harm to the American Electric Power Company. [Confidential Expert Report]

**New Jersey Board of Public Utilities (Docket No. EO03121014) – February 2005**

Whether the Board of Public Utilities can halt further collections from Jersey Central Power & Light Company's ratepayers because there already are adequate funds in the company's decommissioning trusts for the Three Mile Island Unit No. 2 Nuclear Plant to allow for the decommissioning of that unit without endangered the public health and safety.

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Analysis of Maine Public Service Company's request to construct a 138 kV transmission line from Limestone, Maine to the Canadian Border.

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Southern California Edison's proposed replacement of the steam generators at the San Onofre Unit 2 and Unit 3 nuclear power plants and whether the utility was imprudent for failing to initiate litigation against Combustion Engineering due to defects in the design of and materials used in those steam generators.

**United States District Court for the Southern District of Indiana, Indianapolis Division (Civil Action No. IP99-1693) – December 2004**

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**California Public Utilities Commission (Application No. AO4-01-009) – August 2004**

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**Public Service Commission of Wisconsin (Docket No. 6690-CE-187) – June, July and August 2004**

Whether Wisconsin Public Service Corporation's request for approval to build a proposed 515 MW coal-burning generating facility should be granted.

**Public Service Commission of Wisconsin (Docket No. 05-EI-136) – May and June 2004**

Whether the proposed sale of the Kewaunee Nuclear Power Plant to a subsidiary of an out-of-state holding company is in the public interest.

**Connecticut Siting Council (Docket No. 272) – May 2004**

Whether there are technically viable alternatives to the proposed 345-kV transmission line between Middletown and Norwalk Connecticut and the length of the line that can be installed underground.

**Arizona Corporation Commission (Docket No. E-01345A-03-0437 – February 2004**

Whether Arizona Public Service Company should be allowed to acquire and include in rate base five generating units that were built by a deregulated affiliate.

**State of Rhode Island Energy Facilities Siting Board (Docket No. SB-2003-1) – February 2004**

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**State of Maine Department of Environmental Protection (Docket No. A-82-75-0-X) – December 2003**

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**Rhode Island Public Utility Commission (Docket No. 3564) – December 2003 and January 2004**

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The environmental, economic and system reliability benefits that can reasonably be expected from the proposed 1,100 MW TransGas Energy generating facility in Brooklyn, New York.

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The reasonableness of Wisconsin Public Service Corporation's decommissioning cost collections for the Kewaunee Nuclear Plant.

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Whether Empire District Electric Company properly reduced its capital costs to reflect the write-off of a portion of the cost of building a new electric generating facility.

**Arkansas Public Service Commission (Docket 02-248-U) – May 2003**

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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**

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The market power implications of the proposed merger between Conectiv and Pepco.

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**Indiana Utility Regulatory Commission (Docket 38702-FAC-40-S1) - November 1998**

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Entergy's proposed replacement of the steam generators at the ANO Unit 2 Steam Generating Station.

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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. [Confidential Testimony]

**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 to the fouling of important plant systems by blue mussels was the result of mismanagement.

**California Public Utilities Commission (Docket 90-12-018) - November 1991, April 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) - June 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**

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**Federal Energy Regulatory Commission (Docket EL-88-5-000) - November 1989**

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**Connecticut Department of Public Utility Control (Docket 89-08-11) - November 1989**

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**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.

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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**

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**Federal Energy Regulatory Commission (Docket ER88-202-000) - June 1988**

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**Illinois Commerce Commission (Docket 87-0695) - April 1988**

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*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**

- 2010 - President, Schlissel Technical Consulting, Inc.
- 2000 - 2009: 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