

**SOAH DOCKET NO. 473-18-3981
PUC DOCKET NO. 48401**

APPLICATION OF TEXAS-NEW	§	BEFORE THE STATE OFFICE
MEXICO POWER COMPANY FOR	§	OF
AUTHORITY TO CHANGE RATES	§	ADMINISTRATIVE HEARINGS

DIRECT TESTIMONY & EXHIBITS

OF

JONATHAN F. WALLACH

ON BEHALF OF THE

OFFICE OF PUBLIC UTILITY COUNSEL

Resource Insight, Inc.

AUGUST 13, 2018

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DIRECT TESTIMONY & EXHIBITS OF JONATHAN F. WALLACH

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1 I. INTRODUCTION AND SUMMARY

2 Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

3 A. My name is Jonathan F. Wallach. I am Vice President of Resource Insight, Inc., 5 Water
4 Street, Arlington, Massachusetts.

5 Q. PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE.

6 A. I have worked as a consultant to the electric power industry since 1981. From 1981 to
7 1986, I was a Research Associate at Energy Systems Research Group. In 1987 and 1988,
8 I was an independent consultant. From 1989 to 1990, I was a Senior Analyst at
9 Komanoff Energy Associates. I have been in my current position at Resource Insight
10 since 1990.

11 Over the past four decades, I have advised and testified on behalf of clients on a
12 wide range of economic, planning, and policy issues relating to the regulation of electric
13 utilities, including: electric-utility restructuring; wholesale-power market design and
14 operations; transmission pricing and policy; market-price forecasting; market valuation of
15 generating assets and purchase contracts; power-procurement strategies; risk assessment
16 and mitigation; integrated resource planning; mergers and acquisitions; cost allocation
17 and rate design; and energy-efficiency program design and planning.

18 My resume is attached as Exhibit JFW-1.

19 Q. HAVE YOU TESTIFIED PREVIOUSLY IN UTILITY PROCEEDINGS?

20 A. Yes. I have sponsored expert testimony in 90 state, provincial, and federal proceedings
21 in the U.S. and Canada. I include a detailed list of my previous testimony in Exhibit
22 JFW-1.

1 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

2 A. I am testifying on behalf of the Office of Public Utility Counsel (OPUC).

3 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

4 A. Yes. I am sponsoring the following exhibits:

- 5 • Exhibit JFW-1: Resume of Jonathan Wallach, Resource Insight, Inc.
- 6 • Exhibit JFW-2: Results of Adjusted Cost of Service Study
- 7 • Exhibit JFW-3: OPUC Recommended Revenue Allocation

8 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

9 A. On May 30, 2018, Texas-New Mexico Power Company (TNMP or the Company) filed
10 an application with the Commission for authority to increase electric transmission and
11 distribution rates. My testimony responds to direct testimony by TNMP witness Stacy R.
12 Whitehurst regarding: (1) the allocation of test-year revenue requirements to rate classes
13 in the Company's cost of service study (COSS); and (2) the Company's proposal for
14 allocating test-year revenues on the basis of the results of the COSS.

15 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

16 A. With respect to the Company's COSS, I recommend that the Commission:

- 17 • Correct an error in the COSS with respect to the allocator for the Deferred Regulatory
18 Expense asset, as acknowledged in the Company's response to an OPUC RFI.
- 19 • Allocate AMS costs to rate classes with AMS meters on the basis of those classes'
20 distribution non-coincident peaks (NCP).

1 These modifications to the Company's COSS would shift about \$1.1 million of test-year
2 revenue requirements from the Residential and Secondary <5kW classes and onto the
3 Secondary >5kW Non-IDR class.

4 With respect to revenue allocation, TNMP proposes to moderate large rate
5 increases by capping the percentage increase in any class's revenues at 1.5 times the
6 system-average percentage increase. However, due to the nature of fixed caps, the
7 Company's proposed gradualism method would provide tangible relief solely to the
8 Transmission class. Instead, if the Commission chooses to consider gradualism in this
9 case, I recommend that revenues for each class be increased by the average of: (1) the
10 class's percentage increase at equalized rate of return; and (2) the system-average
11 percentage increase. Unlike the Company's proposal, my recommended approach would
12 allow for a gradual transition to cost of service for all rate classes facing substantial rate
13 increases.

14 II. COST OF SERVICE STUDY

15 Q. DID YOU MAKE ANY CHANGES TO THE COMPANY'S COSS?

16 A. Yes. I corrected an error in the COSS with respect to the allocation of the Deferred
17 Regulatory Expense asset. I also modified the allocation of AMS costs to more
18 reasonably reflect cost-causation.

19 Q. WHAT ERROR DID YOU CORRECT IN THE COSS?

20 A. As acknowledged in its response to OPUC RFI No. 3-2, TNMP mistakenly used the
21 'CUST_W_XIDR' allocator to allocate the distribution portion of the Deferred
22 Regulatory Expense – CTC asset in rate base when it should have used the

1 'CUST_W_ALL' allocator. As indicated in the response to OPUC RFI No. 3-2, this
2 correction has a very slight impact on the allocation of test-year revenue requirements at
3 an equalized rate of return (ROR).

4 **Q. PLEASE DESCRIBE YOUR MODIFICATION TO THE ALLOCATION OF AMS**
5 **COSTS.**

6 A. The Company uses a weighted customer allocator which allocates AMS costs to rate
7 classes in proportion to the Company's estimate of the cost incurred to provide AMS
8 meters to customers in each class. I modified the Company's COSS so that AMS costs
9 would instead be allocated to rate classes in proportion to each class's contribution to
10 distribution non-coincident peak (NCP) demand.

11 **Q. WHY DO YOU RECOMMEND ALLOCATING AMS COSTS BASED ON NCP?**

12 A. I recommend this change in order to more reasonably reflect cost-causation, i.e., to reflect
13 the driver of the Company's AMS investments.

14 The National Association of Regulatory Utility Commissioners describes cost
15 causation as "an attempt to determine what, or who, is causing costs to be incurred by the
16 utility."¹ In this case, the "what" causing TNMP to make discretionary investments in
17 AMS meters is the expectation that such investments would provide demand-related
18 benefits, and the "who" are the rate classes that would share in these demand-related
19 benefits as a result of the Company's AMS investments. In other words, the expectation
20 of demand-related benefits for certain rate classes was the primary driver of the

¹ National Association of Utility Regulatory Commissioners, *Electric Utility Cost Allocation Manual*,
January 1992, p. 38.

1 Company's AMS investments. Thus, allocating AMS costs in proportion to class demand
2 would be consistent with cost-causation principles.

3 **Q. WHAT ARE THE EXPECTED DEMAND-RELATED BENEFITS FROM THE**
4 **COMPANY'S DISCRETIONARY INVESTMENT IN AMS?**

5 A. In Docket No. 38306, the Commission found that the Company's AMS investments
6 would yield a number of demand-related benefits:

7 Upon full deployment, TNMP's AMS will (a) encourage dynamic pricing
8 and demand response; (b) improve the deployment and operation of
9 generation, transmission, and distribution assets; (c) provide more choices
10 for electric customers; and (d) at such time as TNMP implements an
11 outage management system (OMS), increase the reliability of the regional
12 electrical network.²

13 **Q. WOULD YOUR PROPOSED ALLOCATION METHOD FOR AMS COSTS**
14 **DIFFER FROM THE METHOD USED TO ALLOCATE STANDARD METER**
15 **COSTS IN THE COMPANY'S COSS?**

16 A. Yes. Standard meter costs were incurred in order to connect customers to the Company's
17 distribution system and are therefore appropriately allocated in proportion to the
18 (weighted) number of customers in each class. In contrast, the costs to replace
19 functioning standard meters with new AMS meters, as well as the costs to install and
20 operate the AMS infrastructure, were incurred in order to provide demand-related
21 benefits. Consequently, these AMS costs are appropriately allocated to rate classes in
22 proportion to each class's NCP.

23 **Q. DID YOU ALLOCATE AMS COSTS TO ALL RATE CLASSES?**

² Order, Docket No. 38306, July 8, 2011, p. 4.

1 A. No. Consistent with the Company's approach, I allocated AMS costs solely to those
2 classes with AMS meters. Specifically, I allocated AMS costs to the Residential,
3 Secondary <5kW, Secondary >5kW Non-IDR, Primary, and Lighting classes.

4 **Q. WHAT IS THE IMPACT OF YOUR CORRECTION AND REVISIONS ON THE**
5 **ALLOCATION OF TEST-YEAR REVENUE REQUIREMENTS TO RATE**
6 **CLASSES?**

7 A. Exhibit JFW-2 shows the allocation of test-year revenue requirements at an equalized
8 ROR after making my adjustments to the Company's COSS (Adjusted COSS).³ As
9 indicated in Table 1, below, these adjustments in total shift about \$1.1 million from the
10 Residential and Secondary <5kW classes and onto the Secondary >5kW Non-IDR class.

11 **Table 1: Cost-Allocation Impact of Adjustments to TNMP COSS**

	TNMP COSS	Adjusted COSS	Difference
Residential	139,540,237	138,681,964	(858,273)
Secondary <5kW	3,125,344	2,871,489	(253,855)
Secondary >5kW Non-IDR	74,722,913	75,785,540	1,062,627
Secondary >5kW IDR	10,732,393	10,732,454	61
Primary Non-IDR	7,850,632	7,862,225	11,592
Primary IDR	9,370,229	9,370,332	104
Transmission	19,345,869	19,345,929	60
Lighting	3,956,292	3,993,976	37,684

12

³ I follow the Company's convention in reporting results inclusive of FERC Account 565 expenses that are recovered through Rider TCRF.

1 **III. REVENUE ALLOCATION**

2 **Q. IS TNMP REQUESTING THAT RATES BE INCREASED TO RECOVER**
3 **REVENUES AT AN EQUALIZED ROR IN THIS PROCEEDING?**

4 A. No. According to TNMP witness Mr. Whitehurst, "TNMP's proposed rates would begin
5 to move each customer class to [a] cost-based rate over time, but not in one proceeding."⁴

6 Instead of allocating revenues at an equalized ROR, TNMP proposes an
7 alternative allocation of test-year revenue requirements (including FERC Account 565
8 expenses recovered through Rider TCRF) that caps the percentage increase in revenues
9 for any rate class at no more than 1.5 times the system-average percentage increase.⁵
10 Under the Company's COSS, the proposed cap would apply to the Residential, Primary
11 Non-IDR, and Transmission classes. However, with my correction and change to the
12 allocation of AMS costs, the Company's proposed cap would apply to just the Primary
13 Non-IDR and Transmission classes.

14 **Q. WHY IS TNMP PROPOSING TO TRANSITION TO COST-BASED RATES**
15 **OVER TIME?**

16 A. The Company provides the following explanation for its rate-moderation proposal in
17 response to Commission Staff RFI No. 1-9:

⁴ *Direct Testimony and Exhibits of Stacy R. Whitehurst*, Docket No. 48401, May 30, 2018, p. 13.

⁵ *Id.*

1 The approved settlements in prior TNMP rate cases have established rates
 2 that allocated the revenue requirement across classes in a way that was not
 3 fully cost based. In addition, some of TNMP's revenue requirement has
 4 historically been assigned to and recovered through discretionary fees
 5 which TNMP proposes here to very substantially reduce, pursuant to the
 6 order approving settlement of its AMS deployment proceeding. In view of
 7 the more frequent rate case filings to be expected under 16 TAC section
 8 25.247, TNMP has offered its gradualism adjustment in an effort to spread
 9 the impact of moving to a more fully cost-based allocation over more than
 10 one proceeding, while taking a substantial step in that direction here.

11 **Q. SHOULD THE COMMISSION APPROVE THE ALTERNATIVE REVENUE**
 12 **ALLOCATION PROPOSED BY TNMP?**

13 A. No. I recommend that the Commission reject the Company's proposed alternative
 14 allocation because it fails to provide a reasonably "gradual implementation of cost-based
 15 rates" for all rate classes.⁶ Instead, as is indicated in Table 2, below, the Company's
 16 alternative allocation provides a gradual transition to revenues at equalized ROR for just
 17 the Transmission class. In contrast, rates for the Residential and Primary Non-IDR
 18 classes would be increased by almost the same amount as the full increase to cost of
 19 service under the Company's alternative allocation.

20 **Table 2: Impact on Revenue Increase from TNMP Alternative Allocation**

	TNMP COSS Revenue Increase at Equalized ROR	Revenue Increase under TNMP Alternative Allocation	Alternative / Equalized ROR
Residential	20.3%	19.8%	0.97
Primary Non-IDR	21.6%	19.8%	0.92
Transmission	33.3%	19.8%	0.59

21

⁶ *Id.*

1 **Q. HOW SHOULD TEST-YEAR REVENUES BE ALLOCATED?**

2 A. If the Commission considers offering rate moderation or gradualism in rates for all rate
3 classes, I recommend that revenues for each class be increased by the average of: (1) the
4 class's percentage increase at equalized rate of return; and (2) the system-average
5 percentage increase. For example, the results of the Adjusted COSS shown in Exhibit
6 JFW-2 indicate a 19.6% revenue increase at equalized ROR for the Residential class and
7 a system-average increase of 13.2%. Under my recommended approach for allocating
8 test-year revenues, revenues for the Residential class would be increased by 16.4% (the
9 average of 19.6% and 13.2%). Exhibit JFW-3 shows the allocation of test-year revenues
10 to each rate class under my recommended approach.⁷

11 Unlike the Company's proposal for allocating test-year revenues, my
12 recommended approach would allow for a gradual transition to cost of service for all rate
13 classes facing substantial rate increases. As shown in Table 3, below, my recommended
14 approach would allow Residential and Primary Non-IDR rates to transition to cost of
15 service over time rather than all at once as under the Company's proposed approach
16 (compare with Table 2, above). Moreover, the "pace" of the transition to cost of service
17 under my recommended approach would vary with the magnitude of the revenue increase
18 required to achieve an equalized rate of return. Thus, under my recommended approach,
19 revenues for the Residential class would be increased by 84% of the 19.6% increase
20 needed to achieve cost of service. In contrast, under my recommended approach,

⁷ For the purposes of reporting the results of my recommended revenue allocation in Exhibit JFW-3, I adopt the Company's approach of adjusting the allocation of FERC Account 565 expenses.

1 revenues for the Transmission class would be increased by only 70% of the 33.3%
2 increase required to achieve cost of service.

3 **Table 3: Impact on Revenue Increase from OPUC Recommended Allocation**

	Adjusted COSS Revenue Increase at Equalized ROR	Revenue Increase under OPUC Recommended Allocation	Recommended / Equalized ROR
Residential	19.6%	16.4%	0.84
Primary Non-IDR	21.7%	17.5%	0.80
Transmission	33.3%	23.3%	0.70

4 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

5 A. Yes.

Exhibits

Qualifications of
JONATHAN F. WALLACH

Resource Insight, Inc.
 5 Water Street
 Arlington, Massachusetts 02476

SUMMARY OF PROFESSIONAL EXPERIENCE

- 1990–Present* **Vice President, Resource Insight, Inc.** Provides research, technical assistance, and expert testimony on electric- and gas-utility planning, economics, regulation, and restructuring. Designs and assesses resource-planning strategies for regulated and competitive markets, including estimation of market prices and utility-plant stranded investment; negotiates restructuring strategies and implementation plans; assists in procurement of retail power supply.
- 1989–90* **Senior Analyst, Komanoff Energy Associates.** Conducted comprehensive cost-benefit assessments of electric-utility power-supply and demand-side conservation resources, economic and financial analyses of independent power facilities, and analyses of utility-system excess capacity and reliability. Provided expert testimony on statistical analysis of U.S. nuclear plant operating costs and performance. Co-wrote *The Power Analyst*, software developed under contract to the New York Energy Research and Development Authority for screening the economic and financial performance of non-utility power projects.
- 1987–88* **Independent Consultant.** Provided consulting services for Komanoff Energy Associates (New York, New York), Schlissel Engineering Associates (Belmont, Massachusetts), and Energy Systems Research Group (Boston, Massachusetts).
- 1981–86* **Research Associate, Energy Systems Research Group.** Performed analyses of electric utility power supply planning scenarios. Involved in analysis and design of electric and water utility conservation programs. Developed statistical analysis of U.S. nuclear plant operating costs and performance.

EDUCATION

BA, Political Science with honors and Phi Beta Kappa, University of California, Berkeley, 1980.

Massachusetts Institute of Technology, Cambridge, Massachusetts. Physics and Political Science, 1976–1979.

PUBLICATIONS

“The Future of Utility Resource Planning: Delivering Energy Efficiency through Distributed Utilities” (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (460–469). Cleveland, Ohio: USAEE. 1996.

“The Price is Right: Restructuring Gain from Market Valuation of Utility Generating Assets” (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (345–352). Cleveland, Ohio: USAEE. 1996.

“The Future of Utility Resource Planning: Delivering Energy Efficiency through Distribution Utilities” (with Paul Chernick), *1996 Summer Study on Energy Efficiency in Buildings* 7(7.47–7.55). Washington: American Council for an Energy-Efficient Economy, 1996.

“Retrofit Economics 201: Correcting Common Errors in Demand-Side-Management Cost-Benefit Analysis” (with John Plunkett and Rachael Brailove). In proceedings of “Energy Modeling: Adapting to the New Competitive Operating Environment,” conference sponsored by the Institute for Gas Technology in Atlanta in April of 1995. Des Plaines, Ill.: IGT, 1995.

“The Transfer Loss is All Transfer, No Loss” (with Paul Chernick), *Electricity Journal* 6:6 (July, 1993).

“Benefit-Cost Ratios Ignore Interclass Equity” (with Paul Chernick et al.), *DSM Quarterly*, Spring 1992.

“Consider Plant Heat Rate Fluctuations,” *Independent Energy*, July/August 1991.

“Demand-Side Bidding: A Viable Least-Cost Resource Strategy” (with Paul Chernick and John Plunkett), *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

“New Tools on the Block: Evaluating Non-Utility Supply Opportunities With *The Power Analyst*,” (with John Plunkett), *Proceedings of the Fourth National Conference on Micro-computer Applications in Energy*, April 1990.

REPORTS

“Economic Benefits from Early Retirement of Reid Gardner” (with Paul Chernick) prepared for and filed by the Sierra Club in PUC of Nevada Docket No. 11-08019.

“Green Resource Portfolios: Development, Integration, and Evaluation” (with Paul Chernick and Richard Mazzini) report to the Green Energy Coalition presented as evidence in Ontario EB 2007-0707.

“Risk Analysis of Procurement Strategies for Residential Standard Offer Service” (with Paul Chernick, David White, and Rick Hornby) report to Maryland Office of People’s Counsel. 2008. Baltimore: Maryland Office of People’s Counsel.

“Integrated Portfolio Management in a Restructured Supply Market” (with Paul Chernick, William Steinhurst, Tim Woolf, Anna Sommers, and Kenji Takahashi). 2006. Columbus, Ohio: Office of the Ohio Consumers’ Counsel.

“First Year of SOS Procurement.” 2004. Prepared for the Maryland Office of People’s Counsel.

“Energy Plan for the City of New York” (with Paul Chernick, Susan Geller, Brian Tracey, Adam Auster, and Peter Lanzalotta). 2003. New York: New York City Economic Development Corporation.

“Peak-Shaving–Demand-Response Analysis: Load Shifting by Residential Customers” (with Brian Tracey). 2003. Barnstable, Mass.: Cape Light Compact.

“Electricity Market Design: Incentives for Efficient Bidding; Opportunities for Gaming.” 2002. Silver Spring, Maryland: National Association of State Consumer Advocates.

“Best Practices in Market Monitoring: A Survey of Current ISO Activities and Recommendations for Effective Market Monitoring and Mitigation in Wholesale Electricity Markets” (with Paul Peterson, Bruce Biewald, Lucy Johnston, and Etienne Gonin). 2001. Prepared for the Maryland Office of People’s Counsel, Pennsylvania Office of Consumer Advocate, Delaware Division of the Public Advocate, New Jersey Division of the Ratepayer Advocate, Office of the People’s Counsel of the District of Columbia.

“Comments Regarding Retail Electricity Competition.” 2001. Filed by the Maryland Office of People’s Counsel in U.S. FTC Docket No. V010003.

“Final Comments of the City of New York on Con Edison’s Generation Divestiture Plans and Petition.” 1998. Filed by the City of New York in PSC Case No. 96-E-0897.

“Response Comments of the City of New York on Vertical Market Power.” 1998. Filed by the City of New York in PSC Case Nos. 96-E-0900, 96-E-0098, 96-E-0099, 96-E-0891, 96-E-0897, 96-E-0909, and 96-E-0898.

“Preliminary Comments of the City of New York on Con Edison’s Generation Divestiture Plan and Petition.” 1998. Filed by the City of New York in PSC Case No. 96-E-0897.

“Maryland Office of People’s Counsel’s Comments in Response to the Applicants’ June 5, 1998 Letter.” 1998. Filed by the Maryland Office of People’s Counsel in PSC Docket No. EC97-46-000.

“Economic Feasibility Analysis and Preliminary Business Plan for a Pennsylvania Consumer’s Energy Cooperative” (with John Plunkett et al.). 1997. 3 vols. Philadelphia, Penn.: Energy Coordinating Agency of Philadelphia.

“Good Money After Bad” (with Charles Komanoff and Rachel Brailove). 1997. White Plains, N.Y.: Pace University School of Law Center for Environmental Studies.

“Maryland Office of People’s Counsel’s Comments on Staff Restructuring Report: Case No. 8738.” 1997. Filed by the Maryland Office of People’s Counsel in PSC Case No. 8738.

“Protest and Request for Hearing of Maryland Office of People’s Counsel.” 1997. Filed by the Maryland Office of People’s Counsel in PSC Docket Nos. EC97-46-000, ER97-4050-000, and ER97-4051-000.

“Restructuring the Electric Utilities of Maryland: Protecting and Advancing Consumer Interests” (with Paul Chernick, Susan Geller, John Plunkett, Roger Colton, Peter Bradford,

Bruce Biewald, and David Wise). 1997. Baltimore, Maryland: Maryland Office of People's Counsel.

"Comments of the New Hampshire Office of Consumer Advocate on Restructuring New Hampshire's Electric-Utility Industry" (with Bruce Biewald and Paul Chernick). 1996. Concord, N.H.: NH OCA.

"Estimation of Market Value, Stranded Investment, and Restructuring Gains for Major Massachusetts Utilities" (with Paul Chernick, Susan Geller, Rachel Brailove, and Adam Auster). 1996. On behalf of the Massachusetts Attorney General (Boston).

"Report on Entergy's 1995 Integrated Resource Plan." 1996. On behalf of the Alliance for Affordable Energy (New Orleans).

"Preliminary Review of Entergy's 1995 Integrated Resource Plan." 1995. On behalf of the Alliance for Affordable Energy (New Orleans).

"Comments on NOPSI and LP&L's Motion to Modify Certain DSM Programs." 1995. On behalf of the Alliance for Affordable Energy (New Orleans).

"Demand-Side Management Technical Market Potential Progress Report." 1993. On behalf of the Legal Environmental Assistance Foundation (Tallahassee)

"Technical Information." 1993. Appendix to "Energy Efficiency Down to Details: A Response to the Director General of Electricity Supply's Request for Comments on Energy Efficiency Performance Standards" (UK). On behalf of the Foundation for International Environmental Law and Development and the Conservation Law Foundation (Boston).

"Integrating Demand Management into Utility Resource Planning: An Overview." 1993. Vol. 1 of "From Here to Efficiency: Securing Demand-Management Resources" (with Paul Chernick and John Plunkett). Harrisburg, Pa.: Pennsylvania Energy Office

"Making Efficient Markets." 1993. Vol. 2 of "From Here to Efficiency: Securing Demand-Management Resources" (with Paul Chernick and John Plunkett). Harrisburg, Pa.: Pennsylvania Energy Office.

"Analysis Findings, Conclusions, and Recommendations." 1992. Vol. 1 of "Correcting the Imbalance of Power: Report on Integrated Resource Planning for Ontario Hydro" (with Paul Chernick and John Plunkett).

"Demand-Management Programs: Targets and Strategies." 1992. Vol. 1 of "Building Ontario Hydro's Conservation Power Plant" (with John Plunkett, James Peters, and Blair Hamilton).

"Review of the Elizabethtown Gas Company's 1992 DSM Plan and the Demand-Side Management Rules" (with Paul Chernick, John Plunkett, James Peters, Susan Geller, Blair Hamilton, and Andrew Shapiro). 1992. Report to the New Jersey Department of Public Advocate.

"Comments of Public Interest Intervenors on the 1993-1994 Annual and Long-Range Demand-Side Management and Integrated Resource Plans of New York Electric Utilities" (with Ken Keating et al.) 1992.

“Review of Jersey Central Power & Light’s 1992 DSM Plan and the Demand-Side Management Rules” (with Paul Chernick et al.). 1992. Report to the New Jersey Department of Public Advocate.

“Review of Rockland Electric Company’s 1992 DSM Plan and the Demand-Side Management Rules” (with Paul Chernick et al.). 1992.

“Initial Review of Ontario Hydro’s Demand-Supply Plan Update” (with David Argue et al.). 1992.

“Comments on the Utility Responses to Commission’s November 27, 1990 Order and Proposed Revisions to the 1991–1992 Annual and Long Range Demand Side Management Plans” (with John Plunkett et al.). 1991.

“Comments on the 1991–1992 Annual and Long Range Demand-Side-Management Plans of the Major Electric Utilities” (with John Plunkett et al.). Filed in NY PSC Case No. 28223 in re New York utilities’ DSM plans. 1990.

“Profitability Assessment of Packaged Cogeneration Systems in the New York City Area.” 1989. Principal investigator.

“Statistical Analysis of U.S. Nuclear Plant Capacity Factors, Operation and Maintenance Costs, and Capital Additions.” 1989.

“The Economics of Completing and Operating the Vogtle Generating Facility.” 1985. ESRG Study No. 85-51A.

“Generating Plant Operating Performance Standards Report No. 2: Review of Nuclear Plant Capacity Factor Performance and Projections for the Palo Verde Nuclear Generating Facility.” 1985. ESRG Study No. 85-22/2.

“Cost-Benefit Analysis of the Cancellation of Commonwealth Edison Company’s Braidwood Nuclear Generating Station.” 1984. ESRG Study No. 83-87.

“The Economics of Seabrook 1 from the Perspective of the Three Maine Co-owners.” 1984. ESRG Study No. 84-38.

“An Evaluation of the Testimony and Exhibit (RCB-2) of Dr. Robert C. Bushnell Concerning the Capital Cost of Fermi 2.” 1984. ESRG Study No. 84-30.

“Electric Rate Consequences of Cancellation of the Midland Nuclear Power Plant.” 1984. ESRG Study No. 83-81.

“Power Planning in Kentucky: Assessing Issues and Choices—Project Summary Report to the Public Service Commission.” 1984. ESRG Study No. 83-51.

“Electric Rate Consequences of Retiring the Robinson 2 Nuclear Plant.” 1984. ESRG Study No. 83-10.

“Power Planning in Kentucky: Assessing Issues and Choices—Conservation as a Planning Option.” 1983. ESRG Study No. 83-51/TR III.

“Electricity and Gas Savings from Expanded Public Service Electric and Gas Company Conservation Programs.” 1983. ESRG Study No. 82-43/2.

“Long Island Without the Shoreham Power Plant: Electricity Cost and System Planning Consequences; Summary of Findings.” 1983. ESRG Study No. 83-14S.

“Long Island Without the Shoreham Power Plant: Electricity Cost and System Planning Consequences; Technical Report B—Shoreham Operations and Costs.” 1983. ESRG Study No. 83-14B.

“Customer Programs to Moderate Demand Growth on the Arizona Public Service Company System: Identifying Additional Cost-Effective Program Options.” 1982. ESRG Study No. 82-14C.

“The Economics of Alternative Space and Water Heating Systems in New Construction in the Jersey Central Power and Light Service Area, A Report to the Public Advocate.” 1982. ESRG Study No. 82-31.

“Review of the Kentucky-American Water Company Capacity Expansion Program, A Report to the Kentucky Public Service Commission.” 1982. ESRG Study No. 82-45.

“Long Range Forecast of Sierra Pacific Power Company Electric Energy Requirements and Peak Demands, A Report to the Public Service Commission of Nevada.” 1982. ESRG Study No. 81-42B.

“Utility Promotion of Residential Customer Conservation, A Report to Massachusetts Public Interest Research Group.” 1981. ESRG Study No. 81-47

PRESENTATIONS

“Office of People’s Counsel Case No. 9117” (with William Fields). Presentation to the Maryland Public Utilities Commission in Case No. 9117, December 2008.

“Electricity Market Design: Incentives for Efficient Bidding, Opportunities for Gaming.” NASUCA Northeast Market Seminar, Albany, N.Y., February 2001.

“Direct Access Implementation: The California Experience.” Presentation to the Maryland Restructuring Technical Implementation Group on behalf of the Maryland Office of People’s Counsel. June 1998.

“Reflecting Market Expectations in Estimates of Stranded Costs,” speaker, and workshop moderator of “Effectively Valuing Assets and Calculating Stranded Costs.” Conference sponsored by International Business Communications, Washington, D.C., June 1997.

EXPERT TESTIMONY

1989 **Mass. DPU** on behalf of the Massachusetts Executive Office of Energy Resources. Docket No. 89-100. Joint testimony with Paul Chernick relating to statistical analysis of U.S. nuclear-plant capacity factors, operation and maintenance costs, and capital additions; and to projections of capacity factor, O&M, and capital additions for the Pilgrim nuclear plant.

1994 **NY PSC** on behalf of the Pace Energy Project, Natural Resources Defense Council, and Citizen's Advisory Panel. Case No. 93-E-1123. Joint testimony with John Plunkett critiques proposed modifications to Long Island Lighting Company's DSM programs from the perspective of least-cost-planning principles.

1994 **Vt. PSB** on behalf of the Vermont Department of Public Service. Docket No. 5270-CV-1 and 5270-CV-3. Testimony and rebuttal testimony discusses rate and bill effects from DSM spending and sponsors load shapes for measure- and program-screening analyses.

1996 **New Orleans City Council** on behalf of the Alliance for Affordable Energy. Docket Nos. UD-92-2A, UD-92-2B, and UD-95-1. Rates, charges, and integrated resource planning for Louisiana Power & Lights and New Orleans Public Service, Inc.

1996 **New Orleans City Council** Docket Nos. UD-92-2A, UD-92-2B, and UD-95-1. Rates, charges, and integrated resource planning for Louisiana Power & Lights and New Orleans Public Service, Inc.; Alliance for Affordable Energy. April, 1996.

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- 1999 **Maryland PSC** Case No. 8795, Delmarva Power & Light comprehensive restructuring agreement, Maryland Office of People's Counsel. July 1999.
- Support of proposed comprehensive restructuring settlement agreement
- Maryland PSC** Case Nos. 8794 and 8808, Baltimore Gas & Electric Company comprehensive restructuring agreement, Maryland Office of People's Counsel. Initial Testimony July 1999; Reply Testimony August 1999; Surrebuttal Testimony August 1999.
- Support of proposed comprehensive restructuring settlement agreement
- Maryland PSC** Case No. 8797, comprehensive restructuring agreement for Potomac Edison Company, Maryland Office of People's Counsel. October 1999.
- Support of proposed comprehensive restructuring settlement agreement
- Connecticut DPUC** Docket No. 99-03-35, United Illuminating standard offer, Connecticut Office of Consumer Counsel. November 1999.
- Reasonableness of proposed revisions to standard-offer-supply energy costs. Implications of revisions for other elements of proposed settlement.
- 2000 **U.S. FERC** Docket No. RT01-02-000, Order No. 2000 compliance filing, Joint Consumer Advocates intervenors. Affidavit, November 2000.
- Evaluation of innovative rate proposal by PJM transmission owners.
- 2001 **Maryland PSC** Case No. 8852, Charges for electricity-supplier services for Potomac Electric Power Company, Maryland Office of People's Counsel. March 2001.
- Reasonableness of proposed fees for electricity-supplier services.
- Maryland PSC** Case No. 8890, Merger of Potomac Electric Power Company and Delmarva Power and Light Company, Maryland Office of People's Counsel. September 2001; surrebuttal, October 2001. In support of settlement: Supplemental, December 2001; rejoinder, January 2002.
- Costs and benefits to ratepayers. Assessment of public interest.
- Maryland PSC** Case No. 8796, Potomac Electric Power Company stranded costs and rates, Maryland Office of People's Counsel. December 2001; surrebuttal, February 2002.
- Allocation of benefits from sale of generation assets and power-purchase contracts.
- 2002 **Maryland PSC** Case No. 8908, Maryland electric utilities' standard offer and supply procurement, Maryland Office of People's Counsel. Direct, November 2002; Rebuttal December 2002.

- Benefits of proposed settlement to ratepayers. Standard-offer service. Procurement of supply.
- 2003 **Maryland PSC Case No. 8980, adequacy of capacity in restructured electricity markets; Maryland Office of People's Counsel. Direct, December 2003; Reply December 2003.**
- Purpose of capacity-adequacy requirements. PJM capacity rules and practices. Implications of various restructuring proposals for system reliability.
- 2004 **Maryland PSC Case No. 8995, Potomac Electric Power Company recovery of generation-related uncollectibles; Maryland Office of People's Counsel. Direct, March 2004; Supplemental March 2004, Surrebuttal April 2004.**
- Calculation and allocation of costs. Effect on administrative charge pursuant to settlement.
- Maryland PSC Case No. 8994, Delmarva Power & Light recovery of generation-related uncollectibles; Maryland Office of People's Counsel. Direct, March 2004; Supplemental April 2004.**
- Calculation and allocation of costs. Effect on administrative charge pursuant to settlement.
- Maryland PSC Case No. 8985, Southern Maryland Electric Coop standard-offer service; Maryland Office of People's Counsel. Direct, July 2004.**
- Reasonableness and risks of resource-procurement plan.
- 2005 **FERC Docket No. ER05-428-000, revisions to ICAP demand curves; City of New York. Statement, March 2005.**
- Net-revenue offset to cost of new capacity. Winter-summer adjustment factor. Market power and in-City ICAP price trends.
- FERC Docket No. PL05-7-000, capacity markets in PJM; Maryland Office of People's Counsel. Statement, June 2005.**
- Inefficiencies and risks associated with use of administratively determined demand curve. Incompatibility of four-year procurement plan with Maryland standard-offer service.
- FERC Dockets Nos. ER05-1410-000 & EL05-148-000, proposed market-clearing mechanism for capacity markets in PJM; Coalition of Consumers for Reliability, Affidavit October 2005, Supplemental Affidavit October 2006.**
- Inefficiencies and risks associated with use of administratively determined demand curve. Effect of proposed reliability-pricing model on capacity costs.
- 2006 **Maryland PSC Case No. 9052, Baltimore Gas & Electric rates and market-transition plan; Maryland Office of People's Counsel, February 2006.**

Transition to market-based residential rates. Price volatility, bill complexity, and cost-deferral mechanisms.

Maryland PSC Case No. 9056, default service for commercial and industrial customers; Maryland Office of People's Counsel, April 2006.

Assessment of proposals to modify default service for commercial and industrial customers.

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Assessment of effects and risks of proposed merger on ratepayers.

Illinois Commerce Commission Docket No. 06-0411, Commonwealth Edison Company residential rate plan; Citizens Utility Board, Cook County State's Attorney's Office, and City of Chicago, Direct July 2006, Reply August 2006.

Transition to market-based rates. Securitization of power costs. Rate of return on deferred assets.

Maryland PSC Case No. 9064, default service for residential and small commercial customers; Maryland Office of People's Counsel, Rebuttal Testimony, September 2006.

Procurement of standard-offer power. Structure and format of bidding. Risk and cost recovery.

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Maryland PSC Case No. 9063, optimal structure of electric industry; Maryland Office of People's Counsel, Direct Testimony, October 2006; Rebuttal November 2006; surrebuttal November 2006.

Procurement of standard-offer power. Risk and gas-price volatility, and their effect on prices and market performance. Alternative procurement strategies.

Maryland PSC Case No. 9073, stranded costs from electric-industry restructuring; Maryland Office of People's Counsel, Direct Testimony, December 2006.

Review of estimates of stranded costs for Baltimore Gas & Electric.

2007 **Maryland PSC Case No. 9091**, rate-stabilization and market-transition plan for the Potomac Edison Company; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Rate-stabilization plan.

Maryland PSC Case No. 9092, rates and rate mechanisms for the Potomac Electric Power Company; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Cost allocation and rate design. Revenue decoupling mechanism.

Maryland PSC Case No. 9093, rates and rate mechanisms for Delmarva Power & Light; Maryland Office of People's Counsel, Direct Testimony, March 2007.

Cost allocation and rate design. Revenue decoupling mechanism.

Maryland PSC Case No. 9099, rate-stabilization plan for Baltimore Gas & Electric; Maryland Office of People's Counsel, Direct, March 2007; Surrebuttal April 2007.

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Assessment of proposed capacity contracts.

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Benefits of long-term planning and procurement. Proposed aggregation of customers.

Maryland PSC Case No. 9117, Phase II, residential and small-commercial standard-offer service; Maryland Office of People's Counsel. Direct, October 2007.

Energy efficiency as part of standard-offer-service planning and procurement. Procurement of generation or long-term contracts to meet reliability needs.

2008 **Connecticut DPUC 08-01-01**, peaking generation projects; Connecticut Office of Consumer Counsel. Direct (with Paul Chernick), April 2008.

Assessment of proposed peaking projects. Valuation of peaking capacity. Modeling of energy margin, forward reserves, other project benefits.

Ontario EB-2007-0707, Ontario Power Authority integrated system plan; Green Energy Coalition, Penimba Institute, and Ontario Sustainable Energy Association. Evidence (with Paul Chernick and Richard Mazzini), August 2008.

Critique of integrated system plan. Resource cost and characteristics; finance cost. Development of least-cost green-energy portfolio.

- 2009 **Maryland PSC** Case No. 9192, Delmarva Power & Lights rates; Maryland Office of People's Counsel. Direct, August 2009; Rebuttal, Surrebuttal, September 2009.
Cost allocation and rate design.
- Wisconsin PSC** Docket No. 6630-CE-302, Glacier Hills Wind Park certificate; Citizens Utility Board of Wisconsin. Direct and Surrebuttal, October 2009.
Reasonableness of proposed wind facility.
- PUC of Ohio** Case No 09-906-EL-SSO, standard-service-offer bidding for three Ohio electric companies; Office of the Ohio Consumers' Counsel. Direct, December 2009.
Design of auctions for SSO power supply. Implications of migration of First-Energy from MISO to PJM.
- 2010 **PUC of Ohio** Case No 10-388-EL-SSO, standard-service offer for three Ohio electric companies; Office of the Ohio Consumers' Counsel. Direct, July 2010.
Design of auctions for SSO power supply.
- Maryland PSC** Case No. 9232, Potomac Electric Power Co. administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, Rebuttal, August 2010.
Proposed rates for components of the Administrative Charge for residential standard-offer service.
- Maryland PSC** Case No. 9226, Delmarva Power & Light administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, Rebuttal, August 2010.
Proposed rates for components of the Administrative Charge for residential standard-offer service.
- Maryland PSC** Case No. 9221, Baltimore Gas & Electric cost recovery; Maryland Office of People's Counsel. Reply, August 2010; Rebuttal, September 2010; Surrebuttal, November 2010
Proposed rates for components of the Administrative Charge for residential standard-offer service.
- Wisconsin PSC** Docket No. 3270-UR-117, Madison Gas & Electric gas and electric rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, September 2010.
Standby rate design. Treatment of uneconomic dispatch costs.

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Effectiveness of fuel-adjustment incentive mechanism.

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Assessment of drought-related financial risk.

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Merger and competitive markets. Competitively neutral recovery of utility investments in new generation.

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Assessment of utility proposal for recovery of contract costs.

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Cost allocation and rate design. Allocation of DOE settlement payment.

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Costs to comply with Cross State Air Pollution Rule.

2012 **Maryland PSC** Case No. 9149, Maryland IOUs' development of RFPs for new generation; Maryland Office of People's Counsel. March 2012.

Failure of demand-response provider to perform per contract. Estimation of cost to ratepayers.

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Structure of auctions, credits, and capacity pricing as part of transition to competitive electricity markets.

Wisconsin PSC Docket No. 3270-UR-118, Madison Gas & Electric rates, Wisconsin Citizens Utility Board. Direct, August 2012; Rebuttal, September 2012.

Cost allocation and rate design (electric).

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Cost allocation and rate design (electric).

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Recovery of environmental remediation costs at a manufactured gas plant. Cost allocation and rate design.

2013 **Corporation Commission of Oklahoma Cause No. PUD 201200054**, Public Service Company of Oklahoma environmental compliance and cost recovery, Sierra Club. Direct, January 2013; rebuttal, February 2013; surrebuttal, March 2013.

Economic evaluation of alternative environmental-compliance plans. Effects of energy efficiency and renewable resources on cost and risk.

Maryland PSC Case No. 9324, Starion Energy marketing, Maryland Office of People's Counsel. September 2013.

Estimation of retail costs of electricity supply.

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Cost allocation and rate design; rate-stabilization mechanism.

Wisconsin PSC Docket No. 4220-UR-119, Northern States Power Company gas and electric rates, Wisconsin Citizens Utility Board. Direct, Rebuttal, Surrebuttal, October 2013.

Cost allocation and rate design.

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Need for new capacity. Economic assessment of alternative resource options.

2014 **Maryland PSC Case Nos. 9226 & 9232**, administrative charge for standard-offer service; Maryland Office of People's Counsel. Reply, April 2014; surrebuttal, May 2014.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Conn. PURA Docket No. 13-07-18, rules for retail electricity markets; Office of Consumer Counsel. Direct, April 2014.

Estimation of retail costs of power supply for residential standard-offer service.

PUC Ohio Case Nos. 13-2385-EL-SSO, 13-2386-EL-AAM; Ohio Power Company standard-offer service; Office of the Ohio Consumers' Counsel. Direct, May 2014.

Allocation of distribution-rider costs.

Wisc. PSC Docket No. 6690-UR-123, Wisconsin Public Service Corporation electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, August 2014; Surrebuttal, September 2014.

Cost allocation and rate design.

Wisc. PSC Docket No. 05-UR-107, We Energy biennial review of electric and gas costs and rates; Citizens Utility Board of Wisconsin. Direct, August 2014; Rebuttal, Surrebuttal September 2014.

Cost allocation and rate design.

Wisc. PSC Docket No. 3270-UR-120, Madison Gas and Electric Co. electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, September 2014.

Cost allocation and rate design.

Nova Scotia UARB Case No. NSUARB P-887(6), Nova Scotia Power fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Evidence, December 2014.

Allocation of fuel-adjustment costs.

2015 **Maryland PSC** Case No. 9221, Baltimore Gas & Electric cost recovery; Maryland Office of People's Counsel. Second Reply, June 2015; Second Rebuttal, July 2015.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Wisconsin PSC Docket No. 6690-UR-124, Wisconsin Public Service Corporation electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, September 2015; Surrebuttal, October 2015.

Cost allocation and rate design.

Wisconsin PSC Docket No. 4220-UR-121, Northern States Power Company gas and electric rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, October 2015.

Cost allocation and rate design.

Maryland PSC Cases Nos. 9226 & 9232, administrative charge for standard-offer service; Maryland Office of People's Counsel. Third Reply, September 2015; Third Rebuttal, October 2015.

Proposed rates for components of the Administrative Charge for residential standard-offer service.

Nova Scotia UARB Case No. NSUARB P-887(7), Nova Scotia Power fuel-adjustment mechanism; Nova Scotia Consumer Advocate. Evidence, December 2015.

Accounting adjustment for estimated over-earnings. Proposal for modifying procedures for setting the Actual Adjustment.

2016 **Maryland PSC** Case No. 9406, Baltimore Gas & Electric base rate case; Maryland Office of People's Counsel. Direct, February 2016; Rebuttal, March 2016; Surrebuttal, March 2016.

Allocation of Smart Grid costs. Recovery of conduit fees. Rate design.

Nova Scotia UARB Case No. NSUARB P-887(16), Nova Scotia Power 2017-2019 Fuel Stability Plan; Nova Scotia Consumer Advocate. Direct, May 2016; Reply, June 2016.

Base Cost of Fuel forecast. Allocation of Maritime Link capital costs. Fuel cost hedging plan.

Wisconsin PSC Docket No. 3270-UR-121, Madison Gas and Electric Company electric and gas rates; Citizens Utility Board of Wisconsin. Direct, August 2016; Rebuttal, Surrebuttal, September 2016.

Cost allocation and rate design.

Wisconsin PSC Docket No. 6680-UR-120, Wisconsin Power and Light Company electric and gas rates; Citizens Utility Board of Wisconsin. Direct, Rebuttal, Surrebuttal, Sur-surrebuttal, September 2016.

Cost allocation and rate design.

Minnesota PSC Docket No. E002/GR-15-826, Northern States Power Company electric rates; Clean Energy Organizations. Direct, June 2016; Rebuttal, September 2016; Surrebuttal, October 2016.

Cost basis for residential customer charges.

Nova Scotia UARB Case No. NSUARB M07611, Nova Scotia Power 2016 fuel adjustment mechanism audit; Nova Scotia Consumer Advocate. Direct, November 2016.

Sanctions for imprudent fuel-contracting practices.

2017 **Kentucky PSC Case No. 2016-00370, Kentucky Utilities Company electric rates; Sierra Club. Direct, March 2017.**

Cost basis for residential customer charges. Design of residential energy charges.

Kentucky PSC Case No. 2016-00371, Louisville Gas & Electric Company electric rates; Sierra Club. Direct, March 2017.

Cost basis for residential customer charges. Design of residential energy charges.

Massachusetts DPU 17-05, Eversource Energy electric rates; Cape Light Compact. Direct, April 2017; Supplemental Direct, Surrebuttal, August 2017.

Cost Allocation. Cost basis for residential customer charges. Demand charges for net metering customers.

Michigan PSC Case No. U-18255, DTE Electric Company electric rates; Natural Resources Defense Council, Michigan Environmental Council, and Sierra Club. Direct, August 2017.

Cost basis for residential customer charges.

North Carolina NCUC Docket No. E-2, Sub 1142, Duke Energy Progress electric rates; North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy. Direct, October 2017.

Cost basis for residential customer charges.

Indiana Utility Regulatory Commission Cause No. 44967, Indiana Michigan Power Company electric rates; Citizens Action Coalition of Indiana, Indiana Coalition for Human Services, Indiana Community Action Association, and Sierra Club. Direct, November 2017.

Cost basis for residential customer charges.

2018 **North Carolina NCUC Docket No. E-7, Sub 1146, Duke Energy Carolinas electric rates; North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy. Direct, January 2018.**

Cost basis for residential customer charges.

PUC Ohio Case Nos. 15-1830-EL-AIR, 15-1831-EL-AAM, 15-1832-EL-ATA; Dayton Power and Light Company electric rates; Natural Resources Defense Council. Direct, April 2018.

Cost basis for residential customer charges.

Indiana Utility Regulatory Commission Cause No. 45029, Indianapolis Power and Light Company electric rates; Citizens Action Coalition of Indiana, Indiana Coalition for Human Services, Indiana Community Action Association, and Sierra Club. Direct, May 2018.

Cost basis for residential customer charges. Design of residential energy rates.

COST ALLOCATION AT EQUALIZED RATE OF RETURN
AFTER ADJUSTMENTS TO TNMP COST OF SERVICE STUDY

Description	1	2	3	4	5	6	7	8	9	10	11
	Test Year Revenue Requirement Total	Residential	Secondary < 5 KW	Secondary > 5 KW	Secondary > 5 KW	Secondary > 5 KW IDR	Primary	Primary IDR	Transmission	Lighting	Total TX-Retail
Transmission	236,062,375	118,573,321	1,843,266	67,852,296	10,495,564	6,742,520	9,078,522	18,364,515	3,112,373	236,062,375	
Distribution	27,551,962	17,204,122	854,753	7,122,988	127,906	1,020,389	206,485	926,251	89,068	27,551,962	
Metering	1,113,556	813,456	46,962	123,921	57,708	7,220	37,402	25,179	1,707	1,113,556	
Billing	3,916,016	2,091,066	126,509	686,336	51,276	92,096	47,923	29,983	790,828	3,916,016	
T&D Customer Service	268,643,909	138,681,964	2,871,489	75,785,540	10,732,454	7,862,225	9,370,332	19,345,929	3,993,976	268,643,909	
Total Adjusted Revenue Requirement											
Retail Test Year Revenues		115,958,870	2,899,042	74,506,878	10,219,672	6,458,102	9,197,150	14,508,805	3,611,902	237,360,418	
Change in Revenue Requirement		22,723,095	(27,553)	1,278,663	512,783	1,404,123	173,183	4,837,124	382,074	31,283,491	
Percent Change		19.596%	-0.950%	1.716%	5.018%	21.742%	1.883%	33.339%	10.576%	13.180%	

OPUC RECOMMENDED REVENUE ALLOCATION

Description	1	2	3	4	5	6	7	8	9	10	11
	Test Year Revenue Requirement Total	Residential	Secondary < 5 KW	Secondary > 5 KW	Secondary > 5 KW IDR	Primary	Primary IDR	Transmission	Lighting	Total TX-Retail	
Transmission Distribution	236,062,375	118,573,321	1,843,266	67,852,296	10,495,564	6,742,520	9,078,522	18,364,515	3,112,373	236,062,375	
Metering	27,551,962	17,204,122	854,753	7,122,988	127,906	1,020,389	206,485	926,251	89,068	27,551,962	
Billing	1,113,556	813,456	46,962	123,921	57,708	7,220	37,402	25,179	1,707	1,113,556	
T&D Customer Service	3,916,016	2,091,066	126,509	686,336	51,276	92,096	47,923	29,983	790,828	3,916,016	
Account 565 Adjustment		(3,720,007)	204,820	4,270,576	417,072	(276,481)	519,489	(1,462,451)	46,983	(0)	
Total Adjusted Revenue Requirement	268,643,909	134,961,957	3,076,309	80,056,116	11,149,526	7,585,744	9,889,821	17,883,478	4,040,958	268,643,909	

Retail Test Year Revenues	115,958,870	2,899,042	74,506,878	10,219,672	6,458,102	9,197,150	14,508,805	3,611,902	237,360,418
Change in Revenue Requirement	19,003,087	177,267	5,549,239	929,854	1,127,642	692,672	3,374,674	429,057	31,283,491
Percent Change	16.388%	6.115%	7.448%	9.099%	17.461%	7.531%	23.259%	11.879%	13.180%