

FILED
May 10, 2022
**INDIANA UTILITY
REGULATORY COMMISSION**

**SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
d/b/a CENTERPOINT ENERGY INDIANA SOUTH
(CEI SOUTH)**

**DIRECT TESTIMONY
OF
RALPH N. ZARUMBA
MANAGING DIRECTOR**

ON

APPLICATION OF SECURITIZATION CHARGE

**SPONSORING PETITIONER'S EXHIBIT NO. 9,
ATTACHMENT RNZ-1**

DIRECT TESTIMONY OF RALPH N. ZARUMBA

1 **I. INTRODUCTION**

2

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

4 A. My name is Ralph N. Zarumba. My business address is 11401 Lamar, Overland
5 Park, KS 66211.

6

7 **Q. By whom are you employed?**

8 A. I am employed by Black & Veatch Global Advisory ("Black & Veatch"). Black &
9 Veatch Corporation (the parent company of Black & Veatch) has provided
10 comprehensive engineering and management services to utility, industrial, and
11 governmental entities since 1915. Black & Veatch delivers management consulting
12 solutions in the energy and water sectors. In addition, our services include broad-
13 based strategic, regulatory, financial, and information systems consulting. In the
14 energy sector, Black & Veatch delivers a variety of services for companies involved
15 in the generation, transmission, and distribution of electricity and natural gas.

16

17 **Q. What is your position with Black and Veatch?**

18 A. I am a Managing Director; I lead its Natural Gas and Electricity Rates & Regulatory
19 Services Practice.

20

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

22 A. I am testifying on behalf of Southern Indiana Gas and Electric Company d/b/a
23 CenterPoint Energy Indiana ("CEI South", "Petitioner", or "Company"), which is an
24 indirect subsidiary of CenterPoint Energy, Inc.

25

26 **Q. Please describe your educational background.**

27 A. I received a Bachelor of Science Degree in Economics from Illinois State University
28 in Normal, IL, and a Master of Arts in Economics from DePaul University in
29 Chicago, IL.

30

31 **Q. Please describe your qualifications.**

32 A. I have thirty-seven (37) years of experience in the utility industry, the last twenty-

1 six (26) of which have been in the field of regulatory and economic consulting. My
2 work experience, presentation of expert testimony, and other industry-related
3 activities are included in Petitioner's Exhibit No. 9, Attachment RNZ-1. In addition,
4 I have previously supported the development of securitization mechanisms in the
5 Commonwealth of Puerto Rico.

6

7 **Q. Have you previously testified before the Indiana Utility Regulatory**
8 **Commission (“IURC” or the “Commission”) or any other regulatory**
9 **authority?**

10 A. I have not sponsored testimony before the IURC; however, I have presented
11 testimony before twenty-one other regulatory authorities in sixty-six proceedings.
12 My expert testimony has dealt with various regulatory industry matters, including
13 cost of service studies and pricing design.

14

15

16 **II. PURPOSE OF TESTIMONY**

17

18 **Q. What is the purpose of your testimony in this proceeding?**

19 A. In this proceeding, the Company is petitioning the Commission for authority to use
20 securitization to recover Qualified Costs associated with the retirement of the A.B.
21 Brown Electric Generating Units 1 & 2 (the “Brown Units”). The Qualified Costs will
22 be recovered through Securitization Charges, which will be partially offset by a
23 Securitization ADIT Credit (“SAC”) approved by the Commission. The
24 Securitization Charges are nonbypassable and must be paid by all customers and
25 customer classes of the Company. Accordingly, my testimony focuses upon the
26 following:

27

1. Assessment of Securitization Charges to Customers.

28

2. The Minimum Bill Mechanism.

29

3. Treatment of Street Lighting.

30

31 **Q. Are you sponsoring any attachments in this proceeding?**

32

A. Yes. I am sponsoring the following attachment exhibits in this proceeding:

33

- Petitioner's Exhibit No. 9, **Attachment RNZ-1**: Resume

1

2 **Q. Was this attachment prepared by you or under your supervision?**

3 A. Yes, it was.

4

5

6 **III. ASSESSMENT OF SECURITIZATION CHARGES TO CUSTOMERS**

7

8 **Q. Please generally describe the Securitization Charges, Securitization Rate**
9 **Reduction, and Securitization ADIT Credit**10 A. As discussed more in Petitioner's Exhibit No. 8 – the Direct Testimony of Matthew
11 A. Rice, the Securitization Charges will recover the Qualified Costs whereas the
12 Securitization Rate Reduction reflects removal of applicable Qualifying Costs
13 associated with the Brown Units from Petitioner's rate base. Witness Rice also
14 discusses a Securitization ADIT Credit ("SAC"), which Petitioner will establish to
15 credit customers for ADIT associated with retiring the Brown Units. Witness Rice
16 provides a description of the Securitization Charges in Tables MAR-1 and MAR-2,
17 the Securitization Rate Reduction in Tables MAR-3 and MAR-4, and the SAC in
18 Tables MAR-5 and MAR-6.

19

20 **Q. How are the Securitization Charges assessed to customers?**21 A. In my experience Securitization Charges are generally consumption-based (kWh)
22 which is consistent with the approach proposed by the Company in this
23 proceeding.

24

25 **Q. Will the Securitization Charges be applied based on metered kWhs?**26 A. In most cases the Securitization Charges will be assessed based on consumption
27 – metered kWhs. However, for Residential, Small General Service ("SGS"), and
28 Demand General Service ("DGS") customers, a Minimum Bill mechanism will be
29 applied. Additionally, as described by Witness Rice, Rate OSS, which is very
30 similar to DGS and closed to new customers, currently has 8 customers under
31 Rider NM. CEI South proposes that Rate OSS also receive a Minimum Bill equal
32 to the DGS Minimum Bill.

1 **IV. MINIMUM BILL**

2

3 **Q. Please describe the Minimum Bill mechanism and how Petitioner proposes**
4 **to apply it to the Securitization Charges.**5 A. Petitioner is proposing to apply a Minimum Bill for four customer classes:
6 Residential, SGS, DGS, and OSS. The Minimum Bill Mechanism would place a
7 floor on the level of consumption to which the Securitization Charges are applied.
8 The Minimum Bill will be applied to the greater of the metered usage (kWhs) or the
9 minimum bill kWhs.

10

11 **Q. Please explain how Petitioner proposes to apply the Securitization Rate**
12 **Reduction and Securitization ADIT Credit to customers who are impacted by**
13 **the Minimum Bill mechanism?**14 A. The Securitization Rate Reduction and Securitization ADIT Credit will be applied
15 to metered kWhs.

16

17 **Q. Will Petitioner apply the Minimum Bill mechanism to the base rates of the**
18 **tariffs?**

19 A. No, it will not apply to base rates.

20

21 **Q. Please describe the methodology used to determine the Minimum Bill level?**22 A. Petitioner is proposing to set the Minimum Bill threshold at the tenth percentile of
23 average monthly kWhs for the Residential, SGS and DGS customers based on
24 calendar year 2021 data. The tenth percentile of average monthly usage is
25 approximately 369 kWh for residential customers; 17 kWh for SGS customers; and
26 431kWh for DGS customers. For example, a Residential customer with 300 kWhs
27 of metered usage would pay the Minimum Bill, which, for that Residential
28 customer, would equal 369 kWhs (Minimum Bill Threshold) multiplied by the
29 Securitization Charge rate.

30

31 **Q. Given the application of a Minimum Bill mechanism, will a Rate Divisor**
32 **Gross-up be needed to calculate the Securitization Charges for Residential,**
33 **SGC, OSS, and DGS customers?**

1 A. Yes. At a high level, and as described in Witness Rice's testimony, the
2 Securitization Charges are calculated by dividing each class Securitization
3 Charges revenue requirement by April 2023-March 2024 forecasted kWhs.
4 However, when the Minimum Bill thresholds are applied, effective kWhs, will be
5 greater than the metered kWhs. As such, a gross-up adjustment to the rate divisor
6 (April 2023-March 2024 forecasted metered kWhs) is necessary. Without this
7 adjustment the Company would always over collect the Securitization Charge
8 revenue requirement, assuming actual metered kWhs matched the forecasted
9 metered kWhs.

10
11 **Q. How was the Rate Divisor Gross-up factor calculated for Residential, SGS,
12 and DGS customers?**

13 A. Using actual 2021 billing data from the Company, I divided the sum of the average
14 monthly kWhs with the Minimum Bill threshold applied by the sum of the average
15 monthly kWhs if the Minimum Bill threshold were not applied. The resulting
16 percentage is the Rate Divisor Gross-up factor. Table RNZ-1 below shows a
17 summary of the Rate Divisor Gross-up factor calculation and how it is applied to
18 the forecasted April 2023-March 2024 kWhs for the Residential, SGS, and DGS
19 Customers. The calculations for the gross-up factor are included in my workpaper
20 RNZ-WP-1.

21 **Table RNZ-1: Rate Divisor Gross-up Factor**

	Residential	SGS	DGS ¹
Minimum Bill Threshold kWhs	369	17	431
Sum of Avg. Mo. kWhs	106,599,925	5,935,182	96,715,490
Sum of Avg. Mo. kWhs with Min Bill Applied	108,357,711	6,277,937	96,760,081
Securitization Charges Rate Divisor Gross-up Factor	101.65%	105.77%	100.05%
April 2023-March 2024 Forecasted Metered kWhs	1,371,275,099	65,111,507	1,064,027,990
April 2023-March 2024 Forecasted Metered kWhs x Gross-up Factor	1,393,886,831	68,871,677	1,064,518,567

22
23 The April 2023-March 2024 Effective kWhs shown above are used in the
24 calculation of the Securitization Charges shown in Witness Rice's Direct testimony
25 in Table MAR-2: Proposed Securitization Charges.

¹ As described by Witness Rice, the rate divisor gross-up factor for OSS was set equal to DGS.

1 **V. STREET LIGHTING**

2

3 **Q. Please describe Petitioner's proposal for calculating the Securitization**
4 **Charges for its Street Lighting customers.**

5 A. As is discussed in Witness Rice's testimony, the revenue requirement for the
6 Securitization Charges and SAC is allocated based on 4CP allocation factors. The
7 4CP allocator is based on meeting a peak that traditionally happens in the late
8 afternoon in summer, however, when street lights are not operating. Therefore,
9 street lighting receives a zero allocation under the 4CP allocation factor
10 percentages. Therefore, if the Company were to solely use the 4CP allocation
11 approach, street lighting would receive zero allocation. However, the Securitization
12 Act requires the Securitization Charges be a nonbypassable charge collected from
13 all retail customers and customer classes of the electric utility; therefore, an
14 alternative approach is required to ensure the allocation applied to the Street
15 Lighting customer class remains consistent with the Securitization Act to preserve
16 Petitioner's opportunity for a AAA rating from the rating agencies.

17

18 **Q. Please describe the approach for allocating the total revenue requirement**
19 **for the Securitization Charges and SAC to the Street Lighting Tariff.**

20 A. Street Lighting is projected to be approximately 0.45 percent of total sales for April
21 2023-March 2024. The Company is proposing that 0.45 percent of the revenue
22 requirement for the Securitization Charges and SAC be allocated to Street Lighting
23 customers prior to allocating the remaining portion of the revenue requirement for
24 the Securitization Charges and SAC using the 4CP allocation factor percentages.

25

26 **Q. Please explain why this approach is consistent with Ind. Code ch. 8-1-40.5.**

27 A. Among other things, Ind. Code § 8-1-40.5-12(b) provides, in relevant part:

28 A financing order must include terms ensuring that the
29 securitization charges authorized under the order are
30 nonbypassable charges that are payable by all customers and
31 customer classes of the electric utility. . . .

32 As previously stated, the use of a 4CP allocation factor would result in an allocation
33 of zero to the Street Lighting Class for the Securitization Charges. The allocation
34 of a portion of the revenue requirement for the Securitization Charges (based on

1 sales projections for April 2023-Mar 2024) for Street Lighting is just and reasonable
2 in that it is based upon Street Lighting's proportionate share of total kWh sales and
3 complies with the nonbypassable requirement in Ind. Code ch. 8-1-40.5.

4

5 **Q. What is the portion of the revenue requirement for the Securitization Charge**
6 **and SAC that is allocated to Street Lighting and Non-Street Lighting tariffs**
7 **under your approach?**

8 A. Table RNZ-2 below shows the calculation for the revenue requirement for the
9 Securitization Charges and SAC allocated to Street Lighting and Non-Street
10 Lighting tariffs.

**Table RNZ-2: Street Lighting and Non-Street Lighting Securitization Charge and
SAC Revenue Requirement**

	Securitization Charges	Securitization ADIT Credit	Net Charge
Securitization Charges and SAC	\$ 32,862,558	\$ (4,131,567)	\$ 28,730,991
Street Lighting Allocation %	0.45%	0.45%	
Street Lighting Securitization Charges and SAC Allocation	\$ 147,164	\$ (18,502)	\$ 128,662
Non-Street Lighting Securitization Charges and SAC Allocation	\$ 32,715,394	\$ (4,113,065)	\$ 28,602,329

11

12 **Q. How will the Securitization Rate Reduction be applied to Street Lighting**
13 **Customers?**

14 A. The Securitization Rate Reduction for Street Lighting customers will be set equal
15 to the sum of the Securitization Charges and SAC.

16

17 **Q. Why will the Securitization Rate Reduction be applied to Street Lighting**
18 **Customers in a manner that is different than other customer classes?**

19 A. The Securitization Rate Reduction essentially offsets the Brown Unit revenue
20 requirement included in customer rates. Currently, under the 4CP allocator
21 method, Street Lighting Customers are not allocated any costs associated with the
22 Brown Units in their base rates. Assessing the Securitization Charges, SAC and
23 the Securitization Rate Reduction resulting in a net positive or negative impact on
24 these customers would be inconsistent with the application of these mechanisms
25 to other customer classes. Since Street Lighting Customers do not pay for the

1 Brown Units in base rates and charges, setting the Securitization Rate Reduction
2 equal to the Securitization Charges and SAC results in a net zero impact for Street
3 Lighting Customers. Table RNZ-3 below shows the initial net impact to Street
4 Lighting customers.

5 **Table RNZ-3: Net Impact to Street Lighting Customers**

Securitization Coal Plant Charge Revenue Requirement	\$ 147,164
Securitization ADIT Credit	\$ (18,502)
Securitization Rate Reduction	\$ (128,662)
Net Charge	\$ -

6

7 **Q. If a 4CP Allocator had been applied to the Securitization Charges, SAC and**
8 **Securitization Rate Reduction what would be the impact be for Street**
9 **Lighting Customers?**

10 A. Using a 4CP allocator for the Securitization Charges, SAC and Securitization Rate
11 Reduction would result in a net impact of zero for Street Lighting customers.

12

13 **Q. Does this conclude your testimony?**

14 A. Yes.

VERIFICATION

I affirm under penalties for perjury that the foregoing representations are true to the best of my knowledge, information, and belief.

SOUTHERN INDIANA GAS AND ELECTRIC
COMPANY D/B/A CENTERPOINT ENERGY
INDIANA SOUTH



Ralph N. Zarumba, Managing Director,
Black & Veatch Global Advisory

5/5/2022
Date

Ralph Zarumba

Managing Director, Strategic Advisory

Electricity & Natural Gas Regulatory Practice Leader

Ralph Zarumba is an economist with 37 years of experience specializing in the energy industry's regulatory and system planning issues.

Mr. Zarumba is a regulatory economist and leads the Natural Gas & Electric Regulatory Practice at Black & Veatch. For the past 26 years, he has been a consultant at various firms prior to entering consulting, Mr. Zarumba was employed by various investor-owned utilities in the U.S. in the regulatory, system planning, and marketing functions.

Mr. Zarumba has appeared as an expert witness or authored expert reports in 60 regulatory and legal proceedings in 18 jurisdictions in North America. In addition, global advisement work has included engagements in the U.K., the Middle East, Southeastern Europe, Central America, and the Pacific Rim.

REPRESENTATIVE PROJECT EXPERIENCE

Cost of Service

- Mr. Zarumba sponsored an embedded cost of service study and pricing design for CenterPoint, Minnesota Natural Gas.
- Sponsored an embedded cost of service study and pricing design for Liberty Utilities New Brunswick natural gas.
- Mr. Zarumba led an effort performed for the Province of Alberta, which compared the cost of providing distribution services for Rural Electric Associations versus Investor-Owned Utilities.
- Mr. Zarumba is the principal author and expert witness of an Electric Marginal Cost of Service Study for Montana-Dakota Utilities for their Montana service area.
- Heritage Gas (Nova Scotia) prepared a cost allocation for a natural gas storage field presented before the Nova Scotia Utility and Review Board.
- Mr. Zarumba provided testimony in the proceedings reviewing the 2014 Nova Scotia Power Cost-of-Service study.
- Mr. Zarumba prepared and sponsored before the FERC and the NYISO a cost-of-service filing supporting a Reliability Must-Run filing on the Cayuga Operating Company.
- On behalf of the Ontario Energy Board, prepared a white paper addressing the apportionment of regulatory commission costs to stakeholders.



EDUCATION

MA, Economics, DePaul University, 1986

BS, Economics, Illinois State University 1982

YEARS OF EXPERIENCE

37

RELEVANT EXPERTISE

Pricing Design; Cost of Service Analysis; Market Analysis; Regulatory Planning; System Planning; Power; Expert Witness Testimony

Pricing

- On behalf of Enbridge Gas, New Brunswick appeared as an expert witness on marginal cost analysis and its application to pricing in the New Brunswick Power rate request.
- On behalf of Bermuda Electric Power Company, prepared a marginal cost of service study, an allocated cost of service study, and a pricing design proposal implementing movement to access charges.
- On behalf of Puerto Rico, Electric Power Authority managed that company's first regulated rate request. The witness supported pricing design, the marginal cost of service, an embedded cost of service study, an electric rating period study, proposals for unbundling tariffs into functional components, and detailed testimony addressing compensation for Distributed Energy Resources.
- As an advisor to the Ontario Energy Board, assisted in developing a proposal to change electric distribution pricing into a fully fixed tariff design and eliminate the volumetric (i.e., K.W.H. charge) component.
- Prepared a Pricing Strategy for the South Carolina Public Service Company (Santee Cooper).
- Prepared testimony proposing Retail Conjunctive Billing Pricing filed in Illinois and Wisconsin, filed before the Illinois Commerce Commission and the Wisconsin Public Service Commission.
- Negotiated complex service contracts with thermal energy customers, which led to a significant expansion of the Wisconsin Electric Steam System.
- Prepared proposals for ancillary services pricing based upon market-based mechanisms for San Diego Gas and Electric Company.

Revenue Requirements

- Prepared several Cash Working Capital studies for various distributors and transmitters in the Province of Ontario.
- For a confidential client, prepared a benchmarking analysis of the costs of regulatory proceedings associated with introducing a new electric generation.
- Managed a project for Commonwealth Edison Company in their Electric Rate Request (Illinois Commerce Commission Docket No. 10-467) in which a Cash Working Capital study was provided.
- He assisted Indianapolis Power & Light in preparing a cost recovery plan for Energy Efficiency and Demand Side Management Expenditures.
- On behalf of the Missouri River Electric Cooperative, managed a project team that completed a Remaining Life Study for the Western Minnesota Municipal Power Agency.
- Heritage Gas (Nova Scotia) prepared a cost allocation for a natural gas storage field presented before the Nova Scotia Utility and Review Board.
- Mr. Zarumba provided testimony in the proceedings reviewing the 2014 Nova Scotia Power Cost-of-Service study.

- Mr. Zarumba prepared and sponsored before the FERC and the NYISO a cost-of-service filing supporting a Reliability Must-Run filing on the Cayuga Operating Company.
- On behalf of the Ontario Energy Board, prepared a white paper addressing the apportionment of regulatory commission costs to stakeholders.
- Prepared proposals for ancillary services pricing based upon market-based mechanisms for San Diego Gas and Electric Company.

Electric Transmission

- He assisted the Long Island Power Authority in purchasing distribution, transmission, and regulatory assets and prepared that utility's non-jurisdictional open-access transmission tariff.
- Prepared the pricing portion of a FERC open access tariff (Docket No. ER96-96-43.000) for San Diego Gas and Electric Company; testified on revenue requirements and pricing, including opportunity costs.
- I prepared a Reliability Must-Run for the Cuyahoga Generating Station and filed it with the Federal Energy Regulatory Commission and the New York Public Service Commission.

Regulatory Policy

- I prepared a white paper on rate mitigation mechanisms for the Ontario Energy Board.
- We prepared an analysis of pricing mechanisms for optional renewable energy products for a Midwestern public power association.
- Prepared a financial plan, electric rate design, and phase-in plan for a new electric generation plan for Fayetteville (North Carolina) Public Works Commission.
- On behalf of the Ontario Energy Board, Mr. Zarumba co-authored a study that identified factors that could impede the combination of regulated distributors in that Province.

Valuations and Estimation of Damages

- On behalf of the Government of the Province of Newfoundland, prepared a valuation of specific hydroelectric generating units expropriated by the Province after the Abitibi Pulp and Paper Mill closure.
- Mr. Zarumba has prepared several studies preparing valuations of specific generating assets facing market-based pricing in North America.
- As a contractor to NERA Economics, assisted in preparing a study quantifying the damages associated with an accident at the Hawthorne Generating Station.

Generation Market Analysis

- A major public power generation owner prepared a strategy of internal coal versus natural gas generation dispatch protocols including the treatment of liquidated damages.

- On behalf of Nalcor Co-authored a report on the feasibility and economics of the proposed development of the Lower Churchill Hydroelectric project.
- Prepared several electric market price forecasts for many regions of the United States and Central America.
- Supported the electric pricing and infrastructure analysis for a Least-Cost Resource Plan for San Diego County.
- Prepared an analysis of the saturation of coal-fired electric generation technology in the Western Electric Coordinating Council.
- Developed a long-run electric expansion plan for the Railbelt System in Alaska.
- Managed a team that prepared a long-term capacity and energy forecast for a medium-sized municipal utility.
- For Manitowoc Public Utilities prepared a resource plan evaluating various generation expansion options.

Management Audit and Affiliate Code of Conduct

- Led the regulatory and financial review for a management audit of Jersey Central Power & Light on behalf of the New Jersey Board of Public Utilities.
- On behalf of a coalition of marketers and energy service companies Mr. Zarumba presented testimony before the Illinois Commerce Commission addressing affiliate rules and code of conduct.
- On behalf of a coalition of marketers and energy service companies Mr. Zarumba presented testimony before the Wisconsin Public Service Commission addressing affiliate rules and code of conduct.

Demand Response

- Assisted the Building Owners and Managers of Chicago (BOMA/Chicago) develop a program where they can bid demand response based ancillary services into the P.J.M. market.
- Prepared a presentation for the Public Utilities Commission of Ohio on Commercial and Industrial Dynamic Pricing and Demand Response in an unregulated regulatory environment.

Merger, Acquisition and Divestiture

- On behalf of the Minnesota Public Service Commission. Mr. Zarumba co-authored an analysis of the merger savings associated with the proposed Primergy Merger (the proposed combination of Northern States Power and Wisconsin Energy). The analysis included a detailed review of cost savings that would emanate from the merger and regulatory commitments made by the companies to regulatory authorities in Minnesota.
- For the Manitowoc Public Utilities prepared an analysis that evaluated the divestiture of its transmission assets to the American Transmission Company.

International

- Assisted the Israel Public Utility Authority in electric tariff reviews for the Israel Electric Company and the Jerusalem District Electric Company.

- During the time period 2007 through 2017 assisted the Albanian Electric Regulator in several rate requests, taring of staff and negotiations involving the privatization of the electric distribution system.
- Mr. Zarumba assisted the electric regulator in the Republic of Macedonia with various regulatory issues including pricing design, revenue requirements and privatization issues. Included in the assistance was the development of market designs for the electricity sector.
- Completed a tariff implementation plan proposal for the privatization of the distribution companies of the Bulgarian Electric Utility.
- Led a team to implement regulatory procedures and methodology for the electric power industry in Bosnia and Herzegovina.
- Conducted a study of the electric power market in El Salvador including a quantification of the level of generation market power using the Lerner Index.

PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. 2016 – 2020

Vice President

Navigant Consulting 2008-2016

Director

Science Applications International Corporation 2004-2008

Director

Zarumba Consulting 2002-2004

President

Sargent & Lundy Consulting Group 2000-2002

Management Consultant

Analytical Support Network, Inc. 1997-2000

President

Synergic Resources Corporation 1996-1997

Manager, Pricing Practice

San Diego Gas & Electric Company 1994-1994

Senior Analyst

Wisconsin Electric Power Company 1990-1994

Senior Analyst

Eastern Utilities Associates 1988-1990

Analyst 4

Illinois Power Company 1985-1988

Analyst

PRESENTATIONS & PUBLICATIONS

Renewable Distributed Generation and Pricing Challenges – May 2020

Are Demand Charges Appropriate for Sending Price Signals for Electric Distribution Systems? – June 2020

White Paper Prepared for the Ontario Energy Board on Approaches to Rate Mitigation for Transmitters and Distributors

White Paper Prepared for the Ontario Energy Board Cost addressing Distributor Efficiency

White Paper Prepared for the Ontario Energy Board Cost addressing Cost Assessment Models for Regulators

Economic Issues Related to Tariff Development (with Thomas Welch)

Public Utilities Fortnightly "Pricing Social Benefits - Calculating and allocating costs for non-traditional utility services" Ralph Zarumba, Benjamin Grunfeld and Koby Bailey, August 2013

American Gas "Modernization: The Quest for 21st Century Utilities" Ralph Zarumba and Peter Haapaniemi, November 2012

Public Utilities Fortnightly "Pre-Funding to Mitigate Rate Shock" Sherman Elliot and Ralph Zarumba, September 2012