SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
d/b/a VECTREN ENERGY DELIVERY OF INDIANA, INC.
(VECTREN SOUTH)

IURC CAUSE NO. 44910





DIRECT TESTIMONY
OF
RUSSELL A. FEINGOLD
VICE PRESIDENT
BLACK & VEATCH MANAGEMENT CONSULTING, LLC

ON

# ELECTRIC UTILITY INDUSTRY PERSPECTIVES AND RATEMAKING CONCEPTS

SPONSORING PETITIONER'S EXHIBIT NO. 8,
ATTACHMENT RAF-1

**DIRECT TESTIMONY OF RUSSELL A. FEINGOLD**

## I. INTRODUCTION

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

A. My name is Russell A. Feingold. My business address is 2525 Lindenwood Drive, Wexford, Pennsylvania, 15090-7914.

**Q. By whom and in what capacity are you employed?**

A. I am employed by Black & Veatch Management Consulting, LLC ("Black & Veatch") as a Vice President and I lead its Rates & Regulatory Services Practice.

**Q. Please describe the firm of Black & Veatch.**

A. Black & Veatch Corporation has provided comprehensive engineering and management services to utility, industrial, and governmental entities since 1915. Its management consulting business, Black & Veatch, delivers business solutions and consulting services in the energy and water sectors. Our services include broad-based strategic, regulatory, financial, and information systems consulting. In the energy sector, Black & Veatch provides a variety of services for companies involved in the generation, transmission, and distribution of electricity and natural gas. From an industry-wide perspective, Black & Veatch has extensive experience in all aspects of the North American power and natural gas industries, including utility costing and pricing, competitive market analysis and regulatory practices and policies gained through management and operating responsibilities at electric transmission and distribution, gas distribution, gas pipeline and other energy-related companies, and through a wide variety of client assignments. Black & Veatch has assisted numerous electric and gas transmission and distribution utilities located in the U.S. and Canada.

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

A. I received a Bachelor of Science Degree in Electrical Engineering from Washington University in St. Louis and a Master of Science Degree in Financial Management from Polytechnic Institute of New York University.

**Q. Please describe your professional experience.**

A. I have over forty (40) years of experience in the utility industry, the last thirty-eight (38) years of which have been in the field of utility management and economic consulting. During my consulting career, I have advised and assisted utility management, industry trade and research organizations and large energy users in matters pertaining to costing and pricing, competitive market analysis, regulatory planning and policy development, gas supply planning issues, strategic business planning, merger and acquisition analysis, corporate restructuring, new product and service development, load research studies and market planning. In addition to my presentation of expert testimony in utility regulatory proceedings that I will describe below, I have spoken widely on issues and activities dealing with the pricing and marketing of electric and gas utility services. Further background information summarizing my work experience, presentation of expert testimony, and other industry-related activities is included as Petitioner's Exhibit No. 8, Attachment RAF-1 to this testimony.

**Q. Have you previously testified before the Indiana Utility Regulatory Commission ("Commission") or any other regulatory authority?**

A. Yes. I have presented expert testimony before the Federal Energy Regulatory Commission ("FERC"), the National Energy Board of Canada ("NEB"), and numerous state and provincial regulatory commissions, including this Commission on multiple occasions. My expert testimony has dealt with the costing and pricing of energy-related products and services for electric and gas distribution and gas pipeline companies.

In addition to traditional utility costing and rate design concepts and issues, my testimony has addressed revenue decoupling concepts and other innovative ratemaking approaches, gas transportation rates, gas supply planning issues and activities, market-based rates, Performance-Based Regulation ("PBR") concepts and plans, competitive market analysis, gas merchant service issues, strategic business alliances, market power assessment, merger and acquisition analyses, multi-

jurisdictional utility cost allocation issues, inter-affiliate cost separation and transfer pricing issues, seasonal rates, cogeneration rates, and pipeline ratemaking issues related to the importation of gas into the United States.

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

A. I am appearing on behalf of Southern Indiana Gas & Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc. ("Vectren South" or "the Company"), which is a subsidiary of Vectren Utility Holdings, Inc.

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

A. The purpose of my prepared direct testimony in this proceeding is to comment on the results of my review of Vectren South's cost allocation and rate design proposals for the recovery of Transmission, Distribution and Storage System Improvement Charge ("TDSIC") costs from its customers. I will also provide some relevant background to support the Company's cost allocation and rate design proposals by: (1) describing the transformational changes occurring in the electric utility industry and how they are impacting the nature and pricing of utility services to customers, and (2) explaining the theoretical and conceptual underpinnings of an appropriate rate structure for an electric utility to set rates that recognize the nature of the actual costs of providing utility services within the changing market context and the adverse consequences of rate structures that do not provide this recognition. Finally, I conclude by summarizing how Vectren South's proposal addresses these key fundamental rate design objectives.

**Q. Are you sponsoring any exhibits in this proceeding?**

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

- Petitioner's Exhibit No. 8, **Attachment RAF-1**: Educational Background, Work Experience and Regulatory Experience of Russell A. Feingold

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

A. Yes, it was.

## II. SUMMARY OF COMMENTS ON VECTREN SOUTH'S TDSIC RATE DESIGN PROPOSAL

**Q. Have you reviewed Vectren South's cost allocation and rate design proposals submitted in this proceeding?**

A. Yes. I reviewed the direct testimony of Vectren South witnesses Scott E. Albertson and J. Cas Swiz, and specifically examined the underlying conceptual basis and structure of Vectren South's rate design proposal, the method used to allocate TDSIC costs to its classes of service (rate schedules), the computational details used to derive the rate level for each rate component in its rate schedules, and the expected billing impacts on customers.

**Q. Please summarize your comments on Vectren South's cost allocation and rate design proposals in this proceeding.**

A. Vectren South's rate design proposal is entirely appropriate, consistent with, and supportive of, the rate design concepts needed now and for the future in the electric utility industry. The TDSIC costs presented by the Company in this proceeding are allocated appropriately on cost causation principles by using the cost of service study from Vectren South's last rate case and the resulting Transmission and Distribution ("T&D") revenue requirements by rate schedule. This process mirrors the functionalization, classification and allocation of T&D costs based on the cost causative factors reflected in the cost of service study in Vectren South's last rate case. The matching of costs with the level of revenues and rates necessary to recover such costs between and within customer classes is a fundamental objective of utility ratemaking and results in fair and equitable rates for the utility and its customers.

I conclude that it is appropriate, for customers billed under two-part rates[1] (i.e., residential and small general service customers), to include and recover Vectren

[1] Under a typical two-part rate, a portion of an electric utility's fixed costs are recovered through a fixed monthly charge per customer or meter, with the remainder of those costs recovered in a volumetric (kWh) charge.

South's distribution-related TDSIC costs in the fixed monthly charges of their rate structures and to include and recover the transmission-related TDSIC costs in the variable energy or kWh charges of their rate structures. For all other rate schedules that have demand charges, I conclude that it is appropriate to include and recover the allocated TDISC revenue requirements in the demand charge component of their rate structures. By designing rates in this manner, I believe the Company has achieved a reasonable balancing of the underlying cost causative characteristics of its TDSIC costs and the principle of gradualism through the recognition of customer bill impact considerations.

I will explain later in my testimony why Vectren South's TDSIC rate design proposal satisfies the objectives of a sound rate structure and is an appropriate step in the Company's evolution of its utility service pricing methods.

**Q. Do you agree with the Company's cost allocation and rate design objectives, and that the proposals put forth by the Company in this proceeding satisfy those objectives?**

A. Yes, I do. As described in the direct testimony of witness Albertson, the Company has proposed a TDSIC cost allocation methodology and rate design approach that: (1) addresses inter-class subsidies by assigning costs to its rate schedules based on cost causation principles (namely separate and distinct allocations of T&D costs); (2) addresses intra-class subsidies that arise when customers with the same or similar power/demand requirements use electricity differently; and (3) provides appropriate price signals to customers in terms of which costs are and are not avoidable. Based on my review, the Company's cost allocation and rate design proposals will satisfy these objectives and result in just and reasonable TDSIC rates that are fair to all customers.

## III. THE TRANSFORMATIONAL CHANGES OCCURRING IN THE ELECTRIC UTILITY INDUSTRY

**Q. How would you describe the changes occurring in the electric utility industry?**

A. The U.S. electric utility industry is in the midst of rapid technological change and a transformation of the customer service paradigm. Utility customers are demanding the availability of more energy choices which are causing utilities to offer greater types and levels of service to accommodate this wider range of customer needs. These significant changes are affecting virtually every part of the traditional utility business model. Not surprisingly, over time such changes also raise issues regarding the appropriate design of utility rates.

**Q. Please describe the elements causing the transformational changes that are occurring in the electric utility industry.**

A. There are a number of external factors that contribute to the changes that are occurring in the electric utility industry. Those factors include technological changes, legislative initiatives, economic changes and, importantly, new ways in which customers across all classes of service are changing how they utilize the utility delivery system.

**Q. How do customers' energy choices change with the changes occurring in the electric utility industry?**

A. As customers, specifically mass-market customers, use of the utility's services and fixed infrastructure continue to evolve, each customer's particular selection of the various services provided by the utility will result in a different mix of hourly loads and more or less use of particular services provided by the utility. As recognized by any number of rate and regulatory commentators, the fundamental nature of the residential class of service in particular has evolved, and is evolving, in a way that the residential class is becoming less homogeneous over time. As I describe later in my testimony, this change is impacting the ability of an electric utility's traditional two-part rate structure to continue to adequately charge customers for utility service based on the costs incurred by the utility in providing those services.

**Q. How are other factors transforming the electric industry?**

A. Legislation at both the Federal and State level has changed the electric utility model.

This TDISC filing is being made pursuant to legislation that facilitates investments to improve the safety and reliability of a utility's delivery system. Technology changes for services behind the meter including distributed generation, electric storage, electric vehicles, smart inverters, in-home devices to manage energy consumption, and smart appliances are a driving force behind the electric industry transformation. Capital requirements have changed with environmental requirements, cyber security and with the need to modernize and harden utility infrastructure. As mentioned above, the Indiana legislature's passing of Senate Bill 560 in 2013 recognizes not only the appropriateness of improving the safety and reliability of the electric delivery system, but also the impact these infrastructure investments have on utilities, including the need for timely and equitable cost recovery.

The timing and impact of these transformative events differs across the landscape of electric utilities. However, utilities would be wise to act upon opportunities to incrementally change rate design in response to both the industry changes that have occurred, as well as having a vision toward where the industry is heading.

**Q. How does the above-described industry transformation impact Vectren South's TDISC filing?**

A. One of the critical elements of the transformation is the necessity for economically efficient pricing of utility services. This TDISC filing provides an opportunity to begin to improve upon an historic rate design and the current price signals customers receive that pre-dates the evolution that is occurring, in order to lay the foundation for the future consideration of rate design approaches that reflect the cost causative characteristics of each functional component of utility service and provide customers with meaningful price signals to help them make well-reasoned energy decisions.

## IV. THE THEORETICAL AND CONCEPTUAL UNDERPINNINGS OF AN APPROPRIATE RATE STRUCTURE

**Q. How does one develop an appropriate rate structure for an electric utility?**

A. To develop an appropriate rate structure for an electric utility, one must begin with an understanding of the services a utility provides to its customers. There are any numbers of service differences among utility customers and even among customers in the same class. For example, customers may choose to own their own transformers or use the utility's facilities; customers may have overhead or underground service; and customers may require redundant facilities to provide reliability. Through the ongoing interactions with its customers, a utility is able to gain valuable knowledge of the current services it provides, as well as the new services requested by customers, to continue to improve its understanding of the cost causative factors for each service. This growing knowledge also provides insights into the best way to match a utility's costs and revenues through rates. Finally, this knowledge of customers enables the utility to better understand, over time, the characteristics of different customers who use the same services to determine if a rate is just and reasonable and produces equitable contributions from all customers.

**Q. What industry changes have occurred that require a re-alignment of fixed costs and fixed cost recovery?**

A. In the past, increasing average use per customer and a growing customer base allowed utilities to cover all of their costs, on average. In many cases, the impact of scale economies and improved technology caused rates to decline over time as growth came from both new customers and added load for existing customers. With the limited alternatives to utility service available to customers previously, the inherent cross-subsidies between and within the utility's customer classes were simply not a critical consideration for utilities, regulators and consumers. However, the seeds of the current situation were being laid even in this period. The implicit subsidies in a two-part rate, in which fixed costs are recovered through a variable energy charge, incent customers to invest in reducing kWh consumption, but do not necessarily cause the same reduction in fixed, demand-related capacity requirements and distribution investments for the utility. At the same time, behind the meter technological advances have resulted in stagnant or declining average use per customer. As explained later in my testimony, this situation results in subsidies among customers that regulators will eventually have to address/eliminate in order to

maintain the financial viability of electric service for all customers.

**Q. Can you please provide an overview of the ratemaking changes that are occurring in electric utility industry?**

A. Yes. With the transformational changes occurring in the electric utility industry that I discussed previously, utilities, regulators and other market participants are closely examining and implementing a wide range of alternative rate design approaches that not only seek to accomplish the same ratemaking objectives as Vectren South desires to achieve in this filing and in the future, but also correspond to the variety of service options being made available to customers. In addition, I believe a greater effort is being placed today on evaluating the impacts of a utility's current and alternative rate design options on: (1) differently situated customers; (2) utility recovery of fixed costs; (3) Distributed Energy Resources ("DER") value chain participants; and (4) society as a whole. These types of rate design approaches are reflective of the specific manner in which customers utilize the utility's distribution grid, the underlying cost characteristics across functional (e.g., T&D), temporal (time dependent) and spatial (grid location dependent) dimensions. Once again, it is my view that Vectren South clearly recognizes these impacts and is taking an appropriate step in improving its rate design through its proposal in this proceeding.

We are seeing in the electric utility industry a growing interest in considering the adoption of alternative rate design approaches that better reflect the fixed/variable nature of the underlying costs incurred to serve customers. Multi-part rate structures (e.g., three-part rate structures) recognize the capacity or demand-related costs of serving customers and use customer billing demands to measure the maximum capacity of the electric utility's system being used by customers in any particular period of measurement. Most importantly, this type of rate structure properly aligns the fixed costs to serve different customers with fixed cost recovery. Time-variant energy pricing is another example of an alternative rate design being considered by utilities across the country. Time varying rates capture the difference in the variable cost of energy throughout the day, season, or year. While time-variant rate designs

send a more accurate price signal related to the variable cost of energy, they do not address any of the fixed cost recovery issues just discussed.

While these rate designs are more reflective of cost causation and send more accurate price signals to customers, there is no universal rate design solution applicable to all electric utilities. There are a great number of factors to be considered when determining the appropriate rate structure for a specific utility, including customer type and mix, operational considerations and market conditions.

**Q. Please explain the concept of cost causation and how the Company's rate design proposal addresses cost causation.**

A. Cost causation addresses the fundamental question – which customer or group of customers causes the utility to incur particular types of costs? To answer this question, it is necessary to establish a linkage between a utility's customers and the particular costs incurred by the utility in serving those customers. If a particular factor causes costs to be incurred, costs will vary with changes in that factor. Investments in distribution plant infrastructure, such as those proposed to be collected through a fixed charge in the Company's TDSIC rate design, are fixed in nature and do not vary with changes in electricity usage, yet many electric utilities rely on volumetric rates to recover these fixed costs. Vectren South's rate design proposal actively addresses the concept of cost causation by linking these fixed costs with fixed charges in the rate structure. As described below, this rate design approach ensures customers will be provided with electricity prices that signal their continuing responsibility for these fixed costs regardless of the amount of energy they consume – because the utility must incur these costs so that its electric system is able to meet customers' maximum capacity needs whenever they occur.

**Q. How does the concept of cost causation in rate design impact the price signals customers receive?**

A. Simply put, price signals convey to consumers the cost of the product or service they are purchasing or consuming and provide either an incentive or disincentive to consume additional units of that product/service. The underlying costs of electric

utility rates include both fixed and variable costs. In order for rates to provide accurate price signals, the fixed and variable characteristics of utility costs need to be recognized in rate design. Investments in plant/infrastructure are fixed and do not change with electricity usage. For example, if the number of kWh increases, does the cost of some input such as miles of conductor increase? Since the miles of conductor do not change with kWh on either a monthly or annual basis, energy consumption is not a cause of conductor costs. Recovery of fixed costs through variable energy charges results in kWh rates that exceed short-run marginal costs and send inaccurate price signals to customers. The end result is a structure of rates that both discourages economically justified use of utility services and wastes resources that are used to reduce use beyond an optimal level, ultimately culminating in the creation of a cross-subsidy in rates.

**Q. Please explain the concept of a cross-subsidy in electric utility rates.**

A. Very simply, a cross-subsidy in rates means that one class of customers (or a rate schedule) is subsidizing another class of customers caused by the first class paying more than its fair share of costs and the second class paying less than its fair share of costs. In other words, one class is providing a subsidy while the other class is receiving a subsidy. This situation is referred to as an *inter-class* cross subsidy. An inter-class cross-subsidy occurs because the cost of service attributable to each class of service does not equate to the level of rate revenues set for each class. The creation of an inter-class cross-subsidy relates to the manner in which costs are allocated to a utility's rate classes.

A similar situation can occur within a customer class (or rate schedule) where one customer (or group of customers) subsidizes another customer (or group of customers). This situation is referred to as an *intra-class* cross-subsidy, and it is created through the choices made with rate design. An intra-class cross subsidy occurs when rates for a specific class of customers are not set to recover fixed costs via fixed charges (or variable costs via volumetric rates). In these instances, electricity usage becomes the primary factor driving cost recovery, and as customers

alter their usage, recovery of fixed costs for the entire class is driven more towards those high-use customers within the class.

More specifically, if a portion of an electric utility's fixed costs are recovered through a variable part of the rate structure (i.e., the kWh charge) it can create a mismatch between the costs incurred by the utility and the revenues generated through rates to recover those costs. By definition, a utility's fixed costs will not change in the short-term while the revenues from rates will change if such costs are recovered through a kWh charge since customers' electricity usage always changes. Under this condition, all other things being equal, recovering a greater amount of a utility's fixed costs through energy charges will exacerbate any existing cross-subsidies by moving rates further from cost and further skewing the price signals to customers provided from rates.

**Q. For an electric utility such as Vectren South, how does the mix of customers and their associated load characteristics within a particular customer or rate class impact the level of intra-class subsidies that are created through a two-part rate design that attempts to recover a portion of the utility's fixed costs through kWh charges?**

A. As the customers within a class become more diverse in nature, as defined by their load characteristics, the intra-class subsidies created through the two-part rate structure are exacerbated among customers. In other words, as the customer class becomes less homogeneous (i.e., as there is greater variation among customers compared to the load characteristics of the "average customer" in the class), the intra-class subsidies will become more pronounced. This occurs because the amount of revenue generated by an individual customer through the energy (kWh) charge of the rate structure, which will be a direct result of the level of electricity the customer uses each month, will likely not match the fixed costs incurred by the utility to serve that customer (as allocated in the utility's cost of service study) simply because the class has become more diverse. Since rates are designed based on the cost and load characteristics of the "average customer" in the class, as the load characteristics of customers in a class become more diverse over time, the ability of

a two-part rate structure to charge customers on a fair and equitable basis is diminished unless changes are made to the relative levels of the fixed and variable charges in the rate structure, as Vectren South has accomplished in its TDSIC rate design proposal.

**Q. How do the changes in the electric utility industry that you described earlier in your testimony impact the load characteristics of a utility's residential customers?**

A. The fundamental nature of the residential class of service has evolved in a way that it is becoming less homogeneous over time. This is true even for the full requirements residential customers served by the utility.[2] For example, Vectren South's current residential class has customers with annual load factors that range between 2% and 49%. Partial requirements residential customers with distributed generation ("DG") and other DER options typically have even lower annual load factors, with the lowest being zero and the upper end of the range typically being in the teens. The loss of homogeneity in the class over time will cause the traditional two-part rate, with a significant portion of fixed costs recovered in an energy (kWh) charge, to no longer adequately track costs among different customers. As a result, the rate design will no longer adequately reflect cost causation. Vectren South's TDSIC rate design proposal has been structured to address this evolving situation by recognizing in this TDSIC filing the importance of recovering increases in fixed costs through the fixed components of the rate structure.

**Q. Why are these subsidies problematic?**

A. In addition to causing the inefficient use of the electric utility's system and assessing rates that do not reflect cost causation, when subsidies become too great, it becomes very difficult to eliminate them without resulting in adverse impacts to those customers accustomed to receiving them. A utility's various regulatory filings made over time provide opportunities for the utility regulatory commission to gradually

[2] A "full requirements" customer (which is the most common type of customer served by a utility) takes a full bundle of all utility services provided by the utility. A "partial requirements" customer is a customer who selects to use only some components of the utility service. For example, they may generate some of their electric load and take supplemental service or standby service.

begin to phase-out rate subsidies and to prepare for new rate designs in the future. Through this gradual and deliberate process, it is important that new subsidies should not be created in the rates proposed by the utility at each point in the process.

## V. THE APPROPRIATENESS OF VECTREN SOUTH'S RATE DESIGN PROPOSAL FOR THE RECOVERY OF ITS TDSIC COSTS

**Q. Can this TDSIC proceeding play a role in moving towards more efficient rates for Vectren South that provide better price signals to its customers?**

A. Yes. The TDSIC process offers an opportunity to gradually move toward rates in a stepwise manner that track costs more closely and provide more efficient price signals prior to Vectren South's next retail rate case. This ratemaking opportunity afforded by the TDSIC process should be taken advantage of by the Company to avoid creating, over the extended period of time before its next rate case, greater rate subsidies among its classes of service and between customers within a class. Movement towards a rate structure that more accurately reflects the underlying cost to serve will provide customers with economically correct price signals that will foster a rational electricity marketplace in the future.

**Q. Do you believe that consumers are becoming more accustomed to being billed for other essential consumer services on a fixed price or fixed charge basis?**

A. Yes. There are numerous examples of regular consumer services where the service provider utilizes a fixed pricing structure. These include:

- Local and long distance telephone services
- Cellular telephone services
- Cable television and satellite basic service
- Internet access service
- Home alarm services
- Trash removal services
- Automobile leases and loan payments
- Apartment rent

Additionally, certain of these services use a pricing structure that establishes a maximum level of service, or service capacity, available to the consumer (e.g., cellular telephone service). If the service capacity is exceeded, a higher price will be charged for the excess usage and a new, higher service capacity level will be established for the customer and will serve as the basis for the higher fixed fees to be paid in the future. Based on the specific examples provided above, I believe customers are becoming accustomed to being billed for essential consumer services on a fixed price or fixed charge basis that reflects the fixed nature of the underlying costs incurred by the suppliers providing such services.

**Q. Please provide a further explanation of the reasons why you believe Vectren South's TDSIC cost allocation and rate design proposals are an appropriate ratemaking approach for this proceeding.**

A. Vectren South's rate design proposal reflects the concept of cost causation by class and rate schedule. For rate schedules with demand charges, the fixed T&D costs are proposed to be recovered through demand charges. For rate schedules without demand charges, the Company's rate design proposal to recover distribution costs through monthly fixed charges and transmission costs through energy (kWh) charges represents meaningful movement toward appropriate fixed cost recovery. By recovering transmission costs (which are demand related) through energy (kWh) charges for its residential and small general service rate schedules, the Company has also recognized the ratemaking objectives of gradualism and continuity of rates.

**Q. Q. Based on your previous discussion on the definition and cause of cross-subsidies in utility rates, does the Company's TDSIC cost allocation and rate design proposal recognize the need to minimize the cross-subsidies in its rates?**

A. A. Yes. By using a revenue allocation method to assign TDSIC costs to Vectren South's rate schedules that reflects the fixed nature and cost causative characteristics of its T&D costs, and by moderating the level of costs designed to be recovered through energy charges, the Company has recognized the need to

minimize the cross-subsidies in its rates, giving consideration to customer bill impacts and rate gradualism reflected in its rate design proposal.

## VI. CONCLUSION

**Q. Please summarize your direct testimony.**

A. My review of Vectren South's proposal in this proceeding indicates that the method of allocating TDSIC costs to its rate schedules is fair and reasonable and results in class revenues to be recovered through rates that reflect the underlying cost causative characteristics of the TDSIC investments proposed in this proceeding. Moreover, the Company's intra-class rate design proposal achieves a reasonable balance between cost causation principles and the impact of its rate design method on customers' electric bills. Under these methods, the Company will avoid creating greater cross-subsidies between rate schedules and among customers within a particular rate schedule during the 7-year TDSIC Plan period. Finally, the Company's TDSIC rate design proposal reduces, or at the very least avoids increasing, both inter- and intra-class subsidies and will help establish the necessary ratemaking foundation to evaluate a wider variety alternative rate design approaches that will recognize the changing landscape of the electric utility industry and assist its customers in making economically rational decisions on the energy choices available to them.

**Q. Does this conclude your prepared direct testimony?**

A. Yes, it does.

## VERIFICATION

I, Russell A. Feingold, Vice President of Black & Veatch Management Consulting, LLC, under penalty of perjury, affirm that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Black & Veatch Management Consulting, LLC

By: _____

Russell A. Feingold
Vice President

Dated: February 22, 2017

# EDUCATIONAL BACKGROUND, WORK EXPERIENCE AND REGULATORY EXPERIENCE
# RUSSELL A. FEINGOLD

## EDUCATIONAL BACKGROUND

- Bachelor of Science degree in Electrical Engineering from Washington University in St. Louis
- Master of Science degree in Financial Management from Polytechnic Institute of New York University

## WORK EXPERIENCE

| | |
|---|---|
| **2007 – Present** | **Black & Veatch Management Consulting, LLC** |
| | Vice President, Rates & Regulatory Services Practice Lead |
| **1996 – 2007** | **Navigant Consulting, Inc.** |
| | Managing Director, Energy Practice - Litigation, Regulatory & Markets Group; Energy Delivery Practice Lead |
| **1990 – 1996** | **R.J. Rudden Associates, Inc.** |
| | Vice President and Director |
| **1985 – 1990** | **Price Waterhouse** |
| | Director, Gas Regulatory Services |
| | Public Utilities Industry Services Group |
| **1978 – 1985** | **Stone & Webster Management Consultants, Inc.** |
| | Executive Consultant |
| | Regulatory Services Division |
| **1973 – 1978** | **Port Authority of New York and New Jersey** |
| | Staff Engineer and Utility Rate Specialist |
| | Design Engineering Division |

**PRESENTATION OF EXPERT TESTIMONY**

- Federal Energy Regulatory Commission
- National Energy Board of Canada
- Arkansas Public Service Commission
- British Columbia Utilities Commission (Canada)
- California Public Utilities Commission
- Connecticut Department of Public Utility Control
- Delaware Public Service Commission
- Georgia Public Service Commission
- Illinois Commerce Commission
- Indiana Utility Regulatory Commission
- Iowa Utilities Board
- Kentucky Public Service Commission
- Manitoba Public Utilities Board (Canada)
- Massachusetts Department of Public Utilities
- Michigan Public Service Commission
- Minnesota Public Utilities Commission
- Missouri Public Service Commission
- Montana Public Service Commission
- Nebraska Public Service Commission
- New Hampshire Public Utilities Commission
- New Jersey Board of Public Utilities
- New Mexico Public Regulation Commission
- New York Public Service Commission
- North Carolina Utilities Commission

- North Dakota Public Service Commission
- Ohio Public Utilities Commission
- Oklahoma Corporation Commission
- Ontario Energy Board (Canada)
- Oregon Public Utility Commission
- Pennsylvania Public Utility Commission
- Philadelphia Gas Commission
- Quebec Natural Gas Board (Canada)
- South Dakota Public Service Commission
- Tennessee Regulatory Authority
- Utah Public Service Commission
- Vermont Public Service Board
- Virginia State Corporation Commission
- Washington Utilities and Transportation Commission
- Public Service Commission of Wyoming

**EDUCATIONAL AND TRAINING ACTIVITIES**

- Past Chairman, Rate Training Subcommittee, Rate and Strategic Issues Committee of the American Gas Association.
- Seminar organizer and co-moderator at the American Gas Association, "Workshop on Unbundling and LDC Restructuring," July 1995.
- Course organizer and speaker at the annual industry course, American Gas Association – Gas Rate Fundamentals Course, University of Wisconsin – Madison and University of Chicago School of Business, 1985 – 2016.
- Course organizer and speaker at the annual industry course, American Gas Association – Advanced Regulatory Seminar, University of Maryland - College Park, 1987 –1992, and University of Chicago School of Business, 2012-2016.

- Co-founder, course director and instructor in the annual course, "Principles of Gas Utility Rate Regulation" sponsored by The Center for Professional Advancement 1982-1987.
- Contributing Author of the Fourth Edition of "Gas Rate Fundamentals," American Gas Association, 1987 edition.
- Organizer, Editor, and Contributing Author of the upcoming Fifth Edition of "Gas Rate Fundamentals," American Gas Association (in progress).

**PUBLICATIONS AND PRESENTATIONS**

- "The Valuing and Pricing of Distributed Energy Resources: Some Inconvenient Truths," SNL Energy Utility Regulation Conference, December 14-15, 2016.
- "Pricing Concepts and Regulatory Issues for Distributed Energy Resources," American Gas Association, State Affairs Committee Meeting, October 9-12, 2016.
- "State Regulatory Update – Regulatory Responses to a Changing Utility Industry," American Gas Association Financial Forum, May 15-17, 2016.
- "State Regulatory Update: Regulatory Responses to a Changing Utility Industry" American Gas Association, Finance Committee Meeting, March 14-16, 2016.
- "Rate Restructuring Tiers and Other Pricing Twists", SNL 2015 Utility Regulation Conference, December 10, 2015.
- "Utility Ratemaking Solutions During a Time of Transition", American Gas Association, State Affairs Committee Meeting, October 4-7, 2015.
- "Current Regulatory and Ratemaking Issues", American Gas Association, Accounting Principles Committee Meeting, August 17-19, 2015.
- "Utility Ratemaking Solutions for a Changing Energy Marketplace", SNL Online Course, July 15, 2015 and October 27, 2015.
- "State Regulatory and Legislative Issues", American Gas Association Financial Forum, May 17-19, 2015.
- "Rate Design and Cost Allocation Issues", SNL 2014 Utility Regulation Conference, December 8-9, 2014.

- "Current Regulatory and Ratemaking Issues", American Gas Association, Accounting Principles Committee Meeting, August 18-20, 2014.
- Regulatory Update", Southern Gas Association, 2014 Management Conference, Accounting & Financial Executives Roundtable, April 2-4, 2014.
- "Emerging Regulatory Issues for Gas Distribution Companies," American Gas Association, Finance Committee Meeting, March 17-19, 2014.
- "Balancing Rising Costs & Customer Expectations," co-authored with Will Williams and Jeff Evans, Western Energy Institute, WE Magazine, Winter 2013 issue.
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- "Natural Gas Infrastructure and Electric Generation: Proposed Solutions for New England," American Gas Association State Affairs Committee Meeting, October 6-9, 2013
- "Utilities 2.0 Roundtable," 2013 National Town Meeting on Demand Response and Smart Grid, July 10-11, 2013
- "State Regulatory and Legislative Issues," American Gas Association Financial Forum, May 5-7, 2013
- "Providing Natural Gas to Unserved and Underserved Areas," American Gas Association Rate Committee Meeting and Regulatory Issues Seminar, October 28-31, 2012
- "State Regulatory Issues Affecting Gas Utilities," American Gas Association Accounting Principles Committee Meeting, August 13-15, 2012
- "State Regulatory Landscape and Future Trends Affecting Utilities," American Gas Association Financial Forum, May 6-8, 2012.
- "The Continuing Saga of Fixed Cost Recovery: Arguments in Utility Rate Proceedings," American Gas Association Rate Committee Meeting and Regulatory Issues Seminar, October 30 - November 2, 2011.
- "State Regulatory Issues Affecting Utilities," American Gas Association Accounting Principles Committee Meeting, August 15-17, 2011.
- "State Regulatory Issues Affecting Utilities," Edison Electric Institute/American Gas Association Accounting Leadership Conference, June 26-29, 2011.

- "State Regulatory and Legislative Issues Affecting Utilities," American Gas Association Financial Forum, May 15-17, 2011.
- "2011 Forecast – Regulatory Issues and Risks for Utilities," American Gas Association Finance Committee Meeting, March 16-18, 2011.
- "State Regulatory Issues Affecting Utilities," Edison Electric Institute and American Gas Association Accounting Leadership Conference, June 27-30, 2010.
- "State Regulatory and Legislative Issues Affecting Utilities," American Gas Association Financial Forum, May 17-19, 2010.
- "A Utility's Regulatory Compact: Where's the Right Balance? – RMEL Electric Energy Magazine, Issue 1 – Spring 2010.
- "Communicating Ratemaking and Regulatory Concepts to a Utility's Stakeholders," American Gas Association, Communications and Marketing Committee Meeting, March 16-17, 2010.
- "Managing Regulatory Risk Workshop", Rocky Mountain Electric League, October 8, 2009.
- "State Regulatory and Legislative Issues Affecting Utilities," American Gas Association, 2009 Financial Forum, May 3, 2009.
- "Financial Incentives for Energy Efficiency: Lessons Learned to Date," American Gas Association, Rate Committee Meeting and Regulatory Issues Seminar, April 7, 2009.
- "Breaking the Link Between Sales and Profits: Current Status and Trends," Energy Bar Association, Electricity Regulation and Compliance Committee, February 17, 2009.
- "State Ratemaking Issues for Gas Distribution Utilities," Energy Law Journal, Volume 29, No. 2, 2008 (Report of the Natural Gas Regulation Committee).
- "Current Issues in Cost Allocation and Rate Design for Utilities," SNL Energy, Utility Rate Cases Today: The Issues and Innovations, November 6, 2008.
- "Current Issues in Revenue Decoupling for Gas Utilities," American Gas Association, Financial and Investor Relations Webcast, October 16, 2008.
- "Addressing Utility Business Challenges Through the State Regulatory Process," American Gas Association, 2008 Legal Forum, July 20-22, 2008.

- "Earning on Natural Gas Energy Efficiency Programs," American Gas Association Rate and Regulatory Issues Conference Webcast, May 23, 2008.

- "State Regulatory Directions: Utility Challenges and Solutions," American Gas Association Financial Forum, May 4, 2008.

- "Ratemaking and Financial Incentives to Facilitate Energy Efficiency and Conservation," The Institute for Regulatory Policy Studies, Illinois State University, May 1, 2008.

- "Update on Revenue Decoupling and Innovative Rates," American Gas Association, Rate Committee Meeting and Regulatory Issues Seminar, March 10, 2008.

- "Update on Revenue Decoupling and Utility Based Energy Conservation Efforts," American Gas Association, Rate and Regulatory Issues Conference Webcast, May 30, 2007.

- "A Renewed Focus on Energy Efficiency by Utility Regulators," American Gas Association, Rate and Regulatory Issues Seminar and Committee Meetings, March 26, 2007.

- "The Continuing Ratemaking Challenge of Declining Use Per Customer," American Public Gas Association, Gas Utility Management Conference, October 31, 2006.

- "Understanding and Managing the New Reality of Utility Costs in the Natural Gas Industry," Financial Research Institute, Public Utility Symposium, University of Missouri – Columbia, September 27, 2006.

- "Ratemaking and Energy Efficiency Initiatives: Key Issues and Perspectives," American Gas Association, Ratemaking Webcast, September 14, 2006.

- "Ratemaking Solutions in an Era of Declining Gas Usage and Price Volatility," Northeast Gas Association, 2006 Executive Conference, September 10-12, 2006.

- "Rethinking Natural Gas Utility Rate Design," American Gas Foundation and The NARUC Foundation, Executive Forum, Ohio State University, May 2006.

- "Rate Design, Trackers, and Energy Efficiency – Has the Paradigm Shifted?" Energy Bar Assocation, Midwest Energy Conference, March 2006.

- "Key Regulatory Issues Affecting Energy Utilities," American Gas Association, Lunch 'n Learn Session, November 2005.

- "Decoupling, Conservation, and Margin Tracking Mechanisms," American Gas Association, Rate & Regulatory Issues – Audio Conference Series, October 2005.
- "In Search of Harmony, [Utilities and Regulators] Respondents Weigh in with Needed Actions", Public Utilities Fortnightly, November 2005
- "The Use of Trackers as a Regulatory Tool," Midwest Energy Association – Legal, Regulatory, and Government Relations Roundtable, October 9-11, 2005.
- "Rate Design and the Regulatory Environment," American Gas Association Finance Committee Meeting, October 2005.
- "Creative Utility Regulatory Strategies in a High Price Environment," American Gas Association Executive Conference, September 2005.
- "Revenue Decoupling Programs: Aligning Diverse Interests," The Institute for Regulatory Policy Studies, Illinois State University, May 2005.
- "Key Regulatory Issues Affecting Energy Utilities" American Gas Association Financial Forum, May 2005.
- "Energy Efficiency and Revenue Decoupling: A True Alignment of Customer and Shareholder Interests," American Gas Association Rate and Regulatory Issues Seminar and Committee Meetings, April 2005.
- "Rate Case Techniques: Strategies and Pitfalls" American Gas Association, Rate & Regulatory Issues – Audio Conference Series, March 2005.
- "Regulatory Uncertainty: The Ratemaking Challenge Continues" Public Utilities Fortnightly, Volume 142, No. 11, November 2004.
- "Current Trends in Utility Rate Cases and Pricing: Surveying the Landscape," Platts Rate Case & Pricing Symposium, October 25-26, 2004.
- "State Regulatory Oversight of the Gas Procurement Function" Energy Bar Association, Natural Gas Regulation Committee, Energy Law Journal, Volume 25, No. 1, 2004.

- "Cost Allocation Across Corporate Divisions", American Gas Association, Rate and Strategic Issues Committee Meeting, April 2003.

- "Unbundling Initiatives – How Far Can We Go?" American Gas Association Restructuring Seminar: Service and Revenue Enhancements for the Energy Distribution Business, December 2002.

- "Utility Regulation and Performance-Based Ratemaking (PBR)," PBR Briefing Session sponsored by BC Gas Utility Ltd., April 2002.

- "LDC Perspectives on Managing Price Volatility" American Gas Association, Rate and Strategic Issues Committee Meeting, March 2002.

- "Can a California Energy Crisis Occur Elsewhere?" American Gas Association, Rate and Strategic Issues Committee Meeting, March 2001.

- "Downstream Unbundling: Opportunities and Risks," American Gas Association, Rate and Strategic Issues Committee Meeting, April 2000.

- "Form Follows Function: Which Corporate Strategy Will Predominate in the New Millennium?" American Gas Association 1999 Workshop on Regulation and Business Strategy for Utilities in the New Millennium, August 1999

- "Total Energy Providers: Key Structural and Regulatory Issues," American Gas Association, Rate and Strategic Issues Committee Meeting, April 1999.

- "The Gas Industry: A View of the Next Decade," National Association of Regulatory Utility Commissioners (NARUC) Staff Subcommittee on Accounts, 1998 Fall Meeting, September 1998.

- "Regulatory Responses to the Changing Gas Industry," Canadian Gas Association, 1998 Corporate Challenges Conference, September 1998

- "Trends in Performance-Based Pricing," American Gas Association Financial Analysts Conference, May 1998.

- "Unbundling – An Opportunity or Threat for Customer Care?" presented at the American Gas Association/Edison Electric Institute Customer Services Conference and Exposition, May 1998.

- "Experiences in Electric and Gas Unbundling," presented at the 1997 Indiana Energy Conference, December 1997.

- "Asset and Resource Migration Strategies," presented at the Strategic Marketing For The New Marketplace Conference sponsored by Electric Utility Consultants, Inc. and Metzler & Associates, November 1997.

- "The Status of Unbundling in the Gas Industry," presented at the American Gas Association Finance Committee, March 1997.

- Seminar organizer and co-moderator at the American Gas Association, "Workshop on Unbundling and LDC Restructuring," July 1995.

- "State Regulatory Update," presented at the American Gas Association - Financial Forum, May 1995.

- "Gas Pricing Strategies and Related Rate Considerations," presented before the Rate Committee of the American Gas Association, April 1995.

- "Avoided Cost Concepts and Management Considerations," presented before the Workshop on Avoided Costs in a Post-636 Industry, sponsored by the Gas Research Institute and Wisconsin Center for Demand-Side Research, June 1994.

- "DSM Program Selection Under Order No. 636: Effect of Changing Gas Avoided Costs," presented before the NARUC-DOE Fifth National Integrated Resource Planning Conference, Kalispell, MT, May 1994.

- "A Review of Recent Gas IRP Activities," presented before the Rate Committee of the American Gas Association, March 1994.

- Seminar organizer and co-moderator at the American Gas Association seminar, "The Statue of Integrated Resource Planning," December 1993.

- "Industry Restructuring Issues for LDCs, presented before the American Gas Association–Advanced Regulatory Seminar, University of Maryland, 1993-1996.

- "Acquiring and Using Gas Storage Services," presented before the 8$^{th}$ Cogeneration and Independent Power Congress and Natural Gas Purchasing '93, June 1993.

- "Capitalizing on the New Relationships Arising Between the Various Industry Segments: Understanding How You Can Play in Today's Market," presented before the Institute of Gas Technology's Natural Gas Markets and Marketing Conference, February 1993.

- "The Level Playing Field for Fuel Substitution (or, the Quest for the Holy Grail)," presented before the 4$^{th}$ Natural Gas Industry Forum - Integrated Resource Planning: The Contribution of Natural Gas, October 1992.

- "Key Methodological Considerations in Developing Gas Long-Run Avoided Costs," presented before the NARUC-DOE Fourth National Integrated Resource Planning Conference, September 1992.

- "Mega-NOPR Impacts on Transportation Arrangements for IPPs," co-presented before the 7th Cogeneration and Independent Power Congress and Natural Gas Purchasing '92, June 1992.

- "Cost Allocation in Utility Rate Proceedings," presented before the Ohio State Bar Association - Annual Convention, May 1992.

- "The Long and the Short of LRACs," presented before the Natural Gas Least-Cost Planning Conference April 1992, sponsored by Washington Gas Company and the District of Columbia Energy office.

- Seminar organizer and moderator at the American Gas Association seminar, "Integrated Resource Planning: A Primer," December 1991.

- Session organizer and moderator on integrated resource planning issues at the American Gas Association Annual Conference, October 1991.

- "Strategic Perspectives on the Rate Design Process," presented before the Executive Enterprises, Inc. conference, "Natural Gas Pricing and Rate Design in the 1990s," September 1990.

- "Distribution Company Transportation Rates," presented before the American Gas Association–Advanced Regulatory Seminar, University of Maryland 1987-1992.

- "Design of Distribution Company Gas Rates," presented before the American Gas Association - Gas Rate Fundamentals Course, University of Wisconsin, 1985-1998.

- Seminar organizer, speaker and panel moderator at the American Gas Association seminar, "Natural Gas Strategies: Integrating Supply Planning, Marketing and Pricing," 1988-1990.

- "Local Distribution Company Bypass - Issues and Industry Responses," (Co-author) June 1989.

- "So You Think You Know Your Customers!," presented before the American Gas Association–Annual Marketing Conference, April 1990.

- "Gas Transportation Rate Considerations - A Review of Gas Transportation Practices Based on the Results of the A.G.A. Annual Pricing Strategies Survey," presented before the Rate Committee of the American Gas Association, April 1985-1991.

- "Market-Based Pricing Strategies - Targeted Rates to Meet Competition," presented before the American Gas Association Annual Marketing Conference, March 1989.

- "Gas Rate Restructuring Issues - Targeted Prices to Meet Competition," presented before the Fifteenth Annual Rate Symposium, University of Missouri, February 1989.

- "Gas Transportation Rates - An Integral Part of a Competitive Marketplace," *American Gas Association, Financial Quarterly Review*, Summer 1987.

- "Gas Distributor Rate Design Responses to the Competitive Fuel Situation," *American Gas Association, Financial Quarterly Review*, October 1983.

- "Demand-Commodity Rates: A Second Best Response to the Competitive Fuel Situation," presented before the American Gas Association, Ratemaking Options Forum, September 1983.

- Cofounder, course director and instructor in the annual course, "Principles of Gas Utility Rate Regulation" sponsored by The Center for Professional Advancement 1982-1987.

- "Current Rate and Regulatory Issues," presented before the National Fuel Gas Regulatory Seminar, July 1986.

**AFFILIATIONS AND HONORS**

- Financial Associate Member, American Gas Association
- Member, State Affairs Committee of the American Gas Association
- Member, Energy Bar Association
- Member, Institute of Electrical and Electronic Engineers
- Listed in Who's Who of Emerging Leaders in America, 1989-1992

(Current as of January 2017)