BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of	)	
Columbus Southern Power Company and	)	
Ohio Power Company for Authority to	)	Case No. 11-346-EL-SSO
Establish a Standard Service Offer	)	Case No. 11-348-EL-SSO
Pursuant to §4928.143, Ohio Rev. Code,	)	
in the Form of an Electric Security Plan	)	
In the Matter of the Application of	)	
Columbus Southern Power Company and	)	Case No. 11-349-EL-AAM
Ohio Power Company for Approval of	)	Case No. 11-350-EL-AAM
Certain Accounting Authority	)	

DIRECT TESTIMONY OF THOMAS LYLE
ON BEHALF OF
NATURAL RESOURCES DEFENSE COUNCIL

May 4, 2012

Q. Please state your name and business address.

A. Thomas Lyle, Optimal Energy, Incorporated, 14 School Street, Bristol, VT 05443.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Natural Resources Defense Council.

Q. Mr. Lyle, by whom are you employed and in what capacity?

A. I am employed as a Managing Consultant by Optimal Energy, Inc, a consultancy specializing in energy efficiency, integrated resources planning and utility planning. In this capacity, I direct and perform analyses of energy efficiency and renewable energy programs, author reports and presentations, and interact with clients to address their energy consulting needs.

Q. Please summarize your qualifications.

A. I have 18 years of experience working in the electric and telecommunications industries. I have conducted and participated in several studies and/or reviews of efficiency and renewable energy potential studies and best practices, including but not limited to studies in British Columbia, California, Tennessee, New York, South Carolina, Florida, Pennsylvania, Illinois, Manitoba, Iowa, Texas, and Vermont. These studies have ranged from macro-level assessments of potential to detailed, bottom-up assessments evaluating hundreds of measures among numerous market segments. A recent example of the latter is an analysis of the electric efficiency potential for the Long Island Power Authority in New York State. Additionally, I critique and analyze long-range integrated resource plans of utilities on behalf of clients in Tennessee, Virginia, Missouri and Vermont.

Prior to joining Optimal Energy in 2008, I was a Hearing Officer with the Vermont Public Service Board (VPSB), where I presided over litigated proceedings and was responsible for writing Board Orders in accordance with State law. During my tenure at the VPSB, I was primarily engaged in efforts to diplomatically resolve disputes over public policy issues related to utility revenue requirements, rate design, transmission siting, alternative resource configurations, Gas and Electric DSM programs and Performance-Based Regulation. I have a *B.A.* in Political Science and Economics from the University of New Hampshire and an *MBA* with a concentration in Finance from Southern University of New Hampshire. My resume is provided as Exhibit NRDC-TSL-1.

Q. Have you previously testified before the Public Utilities Commission of Ohio ("PUCO")?

A. Yes. I previously submitted testimony in this docket on the applicant's original ESP application.

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to address the following issues:

- Fuel Adjustment Clause (FAC)
- Alternative Resource Rider (AER)
- Generation Resource Rider (GRR)

Additionally, I discuss American Electric Power's (AEP) Turning Point Solar project and the Timber Road Wind renewable energy purchase agreement.

Introduction

Q. Please provide a summary of your recommendations.

A. American Electric Power's (AEP or Company) request for approval of the above-noted rate riders, the Timber Road Wind renewable energy purchase agreement and the continued pursuit of the Turning Point Solar project is in the public interest provided that the Company puts in place an accounting system capable of tracking RECs for shopping customers. In the table below, I provide comparisons of AEP's requests and my recommendations.

	AEP Proposal		NRDC's recommendation	
Rider	By pass/ Non Bypass	Request	By Pass/ Non Bypass	Recommendation
FAC	Bypass	Remove RECs	Bypass	Approve
AER	Bypass	Provides for the accounting of RECs	Bypass	Approve
GRR	Non-Bypass	Recover RE investments, and other traditional supply side resources	Non - Bypass	Approve – subject to conditions highlighted below.
Timber Road	Bypass	Recover cost of REPA	Bypass	Approve - support long term development of eligible renewable energy purchase agreements.
Turning Pt.	Non-Bypass	Enter eventual, Commission-approved costs of projects into GRR	Non- Bypass	Approve; subject to the development of REC tracking as described below. Support long term cost recovery of eligible renewable projects.

These recommendations should help the PUCO to strike a reasonable balance between the competing interests of AEP, Competitive Retail Electric Service providers (CRES) and retail customers, while allowing for the cost-effective development of renewable energy resources.

Fuel Adjustment Clause

Q. AEP is proposing to modify the existing FAC. In your opinion, are these proposed modifications fair and reasonable?

A. Yes, they are. AEP is proposing to split expenses related to renewable energy projects currently recorded to account 555, purchased power, into two categories: Renewable energy credits (RECs) and non-REC costs.[1] Going forward, REC related expenses (or benefits) will be recoverable under the proposed Alternative Energy Rider (AER). Non REC related expenses will continue to be recoverable under the FAC. I discuss further the AER below.

In many restructured states, such as Ohio, fuel adjustment clauses take into account a broad array of supply related costs, including the cost of energy, capacity and expenses associated with administration or inventory finance charges. The value of RECs may also flow through a utility's FAC. But, the exact composition of FAC-related costs as shown on customers' bills depends on the degree of transparency the PUCO wants to include. In many states, customers only see a single FAC-related charge on their bill and have no idea about the value of RECs purchased on their behalf. By separating out REC and Non-REC costs, AEP would be providing important and useful additional information about RECs. In my opinion, customers should know and understand what these costs (and benefits) amount to over time. Without such a transparent rate mechanism, it would be

[2] AEP Witness Nelson Dir. at 19.

difficult for consumers to compare the costs of purchasing traditional dirty coal power and the value of renewable energy sources. Since AEP's proposal will separately identify REC expenses and non-REC expenses, the company's proposal will help to make transparent the value of the environmental attributes associated with renewable energy. Accordingly, the Company's proposal is in the public interest.

Alternative Energy Rider

Q. Please comment on AEP's proposed AER.

A. As noted above, AEP proposes to begin recovering REC related expenses and benefits associated with Renewable Energy Purchase Agreement (REPA) or purchased directly in the market through a by-passable AER. The intent of the AER is to separate REC charges from other charges on the customer's bill, making the monitoring, tracking and collection of REC benefits and expenses relatively easier compared to the existing practice of including RECs in the FAC. Going forward, REC expenses will no longer be recoverable through the FAC.

Q. How will AEP account for the value of RECs purchased in accordance with the terms of a REPA be determined?

A. AEP's method for recording RECs purchased in accordance with the terms of a REPA will be determined through the residual method, as discussed by AEP witness Nelson.[2] Under the residual method, the value of RECs will be unbundled from the wholesale value of energy and capacity. Energy will be determined by the monthly average PJM

[2] AEP Witness Nelson Dir. at 19.

energy market price. Capacity will be valued at market prices sold into the PJM market. Any difference between the energy market price and capacity price and the agreed upon REPA price will therefore be assigned to the value of RECs. The net result of the residual method is that AEP's accounting entries (and banked revenues) associated with RECs will fluctuate over time.

Q. Can AEP mitigate the risks associated with fluctuating REC costs?

A. Yes, they can. Because RECs are unbundled from the underlying renewable power and sold to utilities (or other buyers) with renewable energy obligations, they are commodities subject to a variety of market forces that affect their value. Fortunately, AEP and the State can mitigate the effects of potentially wide fluctuations in REC values by implementing energy efficiency best practice programs.

RPSs are typically set to equal a pre-determined percent of energy sales. In Ohio, AEP and other energy service providers are required to generate 12.5% of their load from renewable energy sources by 2025. Thus, AEP's obligation to acquire RECs can be lowered by reducing overall load. Moreover, the value of RECs, especially banked RECs used for subsequent sale, may increase as the market value of energy and capacity fall with lower demand. Insofar as AEP is able to reduce load by implementing comprehensive best practice energy efficiency programs, the company can potentially reduce its forward-looking RPS obligations in terms of total MWHs delivered.

Generation Resource Rider

Q. Is AEP's proposed GRR a sufficient funding mechanism to support the development of renewable energy resources?

A. Yes. The proposed GRR can serve as a reliable and sufficient funding source for renewable energy projects, with a few modifications, and provided that the Company demonstrates a "need" for the generation source, that the output of the new generation source is dedicated to Ohio customers, and that the project will be sourced through a competitive bid process, in accordance with ORC. 4928.143 (B)(2)(c.).

AEP states that its proposed investment in Turning Point Solar LLC represents a significant action toward complying with Ohio S.B. 221 and Ohio's renewable energy standards. I agree. But, to move forward on its proposal, the Company is seeking:

1. Affirmation from the Commission that there is a "need" for the plant,
2. Approval of the GRR, in concept, and
3. Affirmation from the Commission that Turning Point is a prudent investment.

It is my understanding that AEP is only seeking approval of the GRR in this proceeding, not approval for the costs of the Turning Point project. In fact, the request for approval of "need" is currently before the Commission in Cases No. 10-501-EL-FOR and 10-502-EL-FOR. Additionally, AEP will be seeking a prudency decision from the Commission at a later time.

As for the GRR, the Company's proposal is in the public interest. A modified GRR could, if structured properly, balance the competing interests of AEP, Competitive Retail

Electric Service providers (CRES), and ratepayers while also stabilizing sources of revenue for renewable energy projects. In my opinion, it is probably one of the only mechanisms that I can think of that provides investor owned utilities with the assurances they need to comply with their fiduciary responsibilities. Providing AEP and other IOUs with a clear path, subject to Ohio statutes, to recover prudently incurred costs of renewable energy generation will foster additional investments in renewable energy projects so that electric distribution utilities are able to comply with the State's RPS. Such a cost recovery path allows IOU's to demonstrate investors and bondholders that projects have the necessary revenue streams to repay debt and provide just and reasonable returns on investments.

Q. You note above that a few modifications are necessary before approving the GRR in concept. Please explain?

A. There are two main issues that need to be resolved before a GRR funding mechanism should be approved. The first pertains to whether the three year ESP hinders the development of renewable projects. The second pertains to AEP's processes, or lack thereof, for tracking RECs.

Q. In your opinion, does the three-year ESP term hinder the development of AEP-owned renewable projects?

A. Yes. Because the PUCO approves the ESP for a period of only three years, it is my understanding that AEP faces a number of challenges obtaining low-cost, long term financing for renewable energy projects that would provide benefits to Ohioans for 20 or

more years. At the same time, AEP is obligated to comply with the state's RPS. This is an unfortunate situation for AEP.

At this point in time, it appears that AEP's only alternatives are to purchase power under long-term agreements with third party project owners or to propose a non-bypassable rider in order to recover prudently incurred costs, in accordance with state law. AEP has pursued both alternatives in this ESP. The former alternative is viable but removes much of the control of the types of investments from AEP. Rather than aggressively develop renewable projects of all types, the company must instead rely on the market to develop projects. Additionally, the company can only pass through the costs associated with power purchase agreements. As a result, there is little or no opportunity to build its rate base and earn a return on investment for stockholders. The latter alternative, however, is also problematic but for different reasons. By making the GRR a non-bypassable but legally-compliant rider may dissuade competitors from entering the Ohio market and building additional viable renewable projects.

Q. Are there any solutions to this regulatory dilemma?

A. One potential solution is to extend the time period of the ESP so that the company is afforded a longer planning horizon to develop viable projects and seek commitments from investors. Additionally, the Commission could modify the proposed language of the GRR so that is strictly limited to renewable projects that have been deemed by the PUCO to be needed, prudent and competitively bid.

Under this scenario, the Company would still need to demonstrate need and prudency in accordance with the current rules. Demonstrating whether a specific renewable project was competitive would include a showing by AEP that its renewable energy projects were competitive compared to independently-owned renewable energy projects. Such a showing would include but not be limited to a comparison of generation rates, timing of when projects would come on line, capacity factors and O&M expenses.

Q. How will RECs associated with shopping customers be tracked and recorded?

A. The second issue related to the proposed GRR is how to track RECs. The record, to date, is not entirely clear with respect to how RECs associated with shopping customers will be tracked and monitored by AEP. Without a system for tracking and monitoring RECs, there will be a risk that shopping customers may be charged twice for RECs. To resolve this issue, I recommend that the PUCO require AEP to develop a REC tracking system in collaboration with interested stakeholders and convene a collaborative to develop a workable solution that ensures shopping customers do not pay twice for solar energy. During this collaborative, stakeholders could assist AEP to develop an accounting system that allows for the transfer of RECs from AEP and CRES's (and vice versa) as customers migrate between multiple energy providers.

<u>Renewable Energy Strategy for the 2012 -2014 Electric Security Plan (ESP)</u>

Q. Please comment on AEP's renewable energy strategy for this ESP.

A. Given the current regulatory framework, AEP's renewable energy options are fairly limited. The Company needs to comply with escalating annual benchmarks from solar and non – solar resources while simultaneously ensuring that half of the company's renewable energy is sourced in Ohio.[3] At the same time, the three year term limit on the ESP undermines AEP's ability to lock in long-term financing for AEP-owned renewable generation. Despite the challenging regulatory framework, AEP's approach to acquiring renewable energy resources via long term Renewable Energy Purchase Agreements (REPAs) and AEP-owned renewable projects is sensible.

With the exceptions noted above regarding the GRR, I agree in principal with AEP's renewable energy strategy. Additionally, I agree with AEP Witness Godfey's statement regarding cost recovery.[4] New renewable generation resources are unlikely to be built in Ohio unless there are assurances that prudently incurred costs are recoverable over the life the of the renewable generation asset. Without cost recovery assurances, project owners (including AEP) will face challenges obtaining favorable financing terms.

Timber Road Wind Project

Q. Have you had the opportunity to review the RFP issued by AEP that resulted in the Timber Road Wind REPA?

A. Yes, I have. The RFP appears to have reflected a competitively bid process. At the time the REPA was being negotiated, the terms and conditions of the REPA reflected common terms and conditions acceptable to many PUC's throughout the United States.

[3] ORC §4928.64 (2)(B) (3).
[4] AEP Witness Godfrey Dir. at 9.

Q. Please comment on the terms and conditions of the Timber Road REPA.

A. Generally speaking, REPAs (alternatively, Power Purchase Agreements or PPAs) are an excellent tool for capturing low cost energy resources. A wide variety of pricing mechanisms can be used to create PPAs such as the Timber Road contract to foster further development of renewable energy projects so long as there are assurances of cost recovery. A key advantage of power purchase agreements is the predictable cost of electricity over the life of a 15- to 20-year contract, which is typical of many PPAs. Long-term pricing contracts mitigate the unpredictable nature of energy price fluctuations that can negatively impact utility retail rates. In a renewable energy PPA, wholesale electricity rates are predetermined between seller and buyer, explicitly spelled out in the contract, and legally binding with little or no dependency on fossil fuel or climate change legislation, both of which can increase utility retail rates.

It is important to emphasize that all PPAs are unique. Nevertheless, there are many common pricing terms included in PPAs across the industry. Common terms include but are not limited to “all-in” fixed pricing per MWh, a fixed escalator, and unit contingent clauses. All-in pricing terms reflect all costs incurred to operate the facility without regard to seasonality or peak demand. Fixed escalation factors are also common and typically range from 1.0% to 3%, similar to the 2.25% escalation factor included in the Timber Road PPA. Unit contingencies specify that project owners are paid for what they produce.

While the contract rate of the Timber Road REPA may or may not fully reflect prices that could have been negotiated under today's market conditions, AEP cannot be faulted for the passage of time. Irrespective of the changes in the energy market and REC values, the proposed contract rate still appears to be fair, especially if the Commission places a value on wind resources as a hedge against long term energy price volatility. Additionally, if the federal production tax credit is allowed to expire at the end of this year, the market price of Wind energy could escalate rapidly.

Q. Are you aware of any alternative PPA structures?

A. An emerging PPA structure that the PUCO may want to consider has consumers (or AEP in lieu of consumers) either 1) prepaying for a portion of the power to be generated by a renewable energy project or 2) making certain investments at the site to lower the installed cost of the system. Either method can reduce the cost of electricity agreed to in the PPA itself. Prepayments can improve economics for both parties and provide greater price stability over the life of the contract. Boulder County, for example, exercised this option by making upfront investments to lower project costs. The investments resulted in a 20-year PPA with a fixed-price term of $0.065/kWH for the first seven years. Thereafter, Boulder has the option to re-negotiate terms or buy-out the contract.[5] Irrespective of which method AEP implements – either the traditional PPA or the emerging 'buy-down' path, the Company will need to demonstrate need, prudency and that its selection processes were competitively bid.

Q. Please comment on AEP's solicitation process.

[5] See; *Energy Analysis: Power Purchase Agreements Checklist for State and local governments*, NREL, 2009. http://www.nrel.gov/docs/fy10osti/46668.pdf , accessed 5/12/2011.

A. Based on AEP's representations, the RFP appears to have been sufficiently detailed and relatively transparent as to what AEP's interests were for this solicitation. AEP adequately described for potential bidders their project requirements and desired contract structures. That AEP made the RFP universally available is another indication that AEP's bidding process was a competitive solicitation. Also, AEP adequately explained how timely submitted proposals would be evaluated. This was another positive indication of a competitive solicitation. Further, webinars and pre-bid meetings were indicative of the open and transparent process that AEP conducted.

Despite all of its representations, however, it is impossible to conclusively determine whether the Company's processes were actually competitive and negotiated at "arms-length". To conclusively determine if negotiations were at "arms-length" and fair to all bidders, I would need to know more about how bidders received the RFP and who was on the bid list. From the list of bidders, I could then look into whether AEP had any formal or informal business relationships with bidders or their subsidiaries.

Q. Do you have any general comments about the Timber Road PPA?

A. Yes, I do. Although AEP's representations certainly suggest that a competitive solicitation was conducted, two important facets of the Timber Road bidding process could be improved. The first pertains to the timing of the solicitation; the second pertains to the minimum size requirements. Both of these limitations were probably a byproduct of the company's need to comply with current regulatory requirements.

With respect to the timing of the solicitation, the RFP was issued on June 1, 2009 with a commercial operation date set for December 31, 2011. This two and half year time constraint suggests that AEP was interested in projects that were already well under way and had already been through much of the planning/pre-development phase. Furthermore, the tight time frame most likely limited proposals to wind projects. New biomass and hydro projects would typically be unable to respond within 30 months. Even new wind projects, which are able to navigate through the planning phase at a quicker pace than most other non-solar renewable projects, would find the tight turnaround time a challenge. Another similar constraint is that AEP appears to have signaled its preference for projects that were already in the PJM interconnection queue.

As for the minimum size limitation, the Company's policy to limit projects to 20MW or larger precluded small wind developers from aggregating projects to achieve greater economies of scale.[6] Had AEP not imposed this size limitation on wind projects, additional projects may have been proposed.

Consequences of AEP's constraints are extremely difficult to quantify but the effects of their process may have limited the range of new renewable energy projects that could have been brought on line. AEP essentially issued a RFP with the hope that projects were already in process and sufficiently developed so that the Company could step into the benefits of an existing project. Additionally, these limitations most likely limited the full

[6] The Company did allow bidders to propose smaller (5MW) solar, hydro and landfill projects.

competitiveness of projects that could have been built; either in-state or somewhere else within the PJM footprint.

Turning Point Solar Project

Q. Is AEP's proposed solar project structured in a manner that would generate rate payer benefits?

A. Aside from the issues noted above with respect to the GRR, there is nothing in AEP's representations that suggest to me that the ownership structure of the Turning Point project would be economically harmful to ratepayers. As noted above, self-building renewable generation through an equity position in a joint venture such as Turning Point, LLC, is a sensible approach to acquiring low-cost renewable resources and achieving the state's renewable goals. Consequently, I agree with the concept that renewable energy projects should be recoverable through a rider like the proposed GRR, as amended per my recommendations.

Q. Has AEP requested cost recovery of the Turning Point project?

A. No. It is my understanding that cost recovery for the project will be determined in a separate proceeding. The proposed GRR is simply a placeholder mechanism for the Commission to consider. In a subsequent proceeding, AEP will be filing a request for cost recovery of the Turning point facility. For illustrative purposes, however, the company did submit an estimate of rate impacts associated with the project. According to Witness Roush, non-shopping customers using 1,000 kWh's per month will likely incur a

$0.20 increase in their monthly bill.[7] This is $0.05 lower than the previous filing and reflects the lower cost of solar panels. I would also add that the slight increase in monthly bills could be offset if the Company were to implement programs seeking to acquire all cost effective energy efficiency.

Q. In your opinion, do you believe that the Turning point project could satisfy the requirements of ORC 4928.143(B)(2)(c)

A. Yes, I believe it could. While I am not an attorney, it is my understanding that under ORC 4928.143(B)(2)(c) AEP needs to demonstrate that a project satisfies two important criteria before the PUCO can approve recovery of project costs through a non-bypassable rider. The criteria are:

- The project was sourced through a competitive bid process subject to any such rules as the commission adopts under division (B)(2)(b) of this section, and;
- There is a need for the facility in question based on resource planning projections.

With respect to AEP's competitive-bidding process, the Turning point project is a joint venture with an unaffiliated developer.[8] Because AEP will be a partial owner, it is obligated to develop the project at the lowest possible costs subject to such considerations as risks, reliability and statutory requirements. On the other hand, AEP's partner will seek to maximize profits. As a consequence of this apparent tension between AEP in its partner, the Commission will need to closely analyze the costs of the project when the Company files for cost recovery in order to assure itself that the project was "sourced

[7] Roush Supp. at 2, March 30, 2012.
[8] Godfrey Supp. at 3.

through a competitive bid process". I note however that the levelized cost of solar has come down quite dramatically since the company filed its original ESP in 2011.

According to AEP Witness Nelson's original testimony in July, 2011, the levelized cost of the project was estimated to be $257 per MWh based on a number of assumptions such as energy output and inflation.[9] In the updated ESP II filing, the Company has omitted references to the levelized costs. But, according the confidential exhibit PJN-5, the estimated cost of solar panels is lower in all three phases of the build out compared to the solar panel costs in 2011. Solar panel costs, according to AEP, have decreased by 35% since last year. So I would expect that the levelized cost of Turning point energy would also decrease by a similar amount.

With regard to need, AEP, as noted above, is seeking affirmation of need in a separate docket. Assuming the Commission provides such affirmation, the Company will have satisfied this requirement of the law.

Q: Does this conclude your testimony?

A: Yes. AEP is obligated to comply with the state's RPS and solar carve out provisions; accordingly, the company will need to develop viable renewable projects or secure additional REPA's. In my opinion, the GRR provides a reasonable mechanism to recover the costs associated with such projects and will help to foster the development of additional renewable energy projects in the future.

[9] AEP Witness Nelson Supp. at 7.

CERTIFICATE OF SERVICE

I hereby certify that a true and accurate copy of the foregoing *Direct Testimony of Thomas Lyle on behalf of Natural Resources Defense Council* has been served upon the following parties via electronic mail on May 4, 2012.

Christopher J. Allwein /s/_____
Christopher J. Allwein

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Optimal ENERGY *Integrated Energy Resources*

THOMAS S. LYLE
MANAGING CONSULTANT

Mr. Lyle has over 17 years of professional experience in the utility sector. The primary focus of Mr. Lyle's practice is to work collaboratively with clients to develop and implement climate-friendly public policies that result in positive economic benefits. Specifically, Mr. Lyle has been assisting clients and stakeholder advisory committees with program planning, budgeting and implementation, best practice reviews, integrated resource planning, program and portfolio evaluation, and risk management. Currently, Mr. Lyle is managing a variety of program planning, evaluation and IRP projects for clients in New York, Ohio, South Carolina, Tennessee, Iowa, Vermont, Missouri and Illinois. Mr. Lyle has also been a key advisor to renewable energy program managers on Long Island, New York. Prior to joining Optimal, Mr. Lyle was a Hearing Officer for the Vermont Public Service Board ("VPSB"). As a Hearing Officer, he was responsible for conducting technical hearings, case-load management and writing Board Orders in accordance with State law. During Mr. Lyle's tenure at the VPSB, he diplomatically resolved disputes over a diverse set of public policy issues related to utility revenue requirements, rate design, transmission siting, alternative resource configurations, Gas and Electric DSM programs and Performance-Based Regulation.

PROFESSIONAL EXPERIENCE

Optimal Energy, Inc. — Bristol, VT

Managing Consultant, 2008–present

Mr. Lyle works with clients to develop sound public policies and program plans to cost effectively achieve organizational goals. Specifically, he is responsible for providing clients with the following services:

- Pre-filed testimony on a range of DSM issues such as program designs, implementation tactics and evaluation plans.
- Developing Portfolio and Program Evaluations and plans
- Providing written reports and presentations on State energy and regulatory policies regarding financing programs, integrated least cost resource planning, efficiency program best practices, program designs and implementation strategies.
- Managing renewable energy initiatives. Responsibilities include developing program objectives, goals and budgets, monitoring and tracking performance for cost effectiveness and reporting.
- Assessing the effectiveness of efficiency program administration models in the United States and Canada—Best Practice reviews.

- In consultation with clients, developing energy and demand Savings goals and budgets, design appropriate financial performance incentives for Efficiency program administrators and plan for program evaluations
- Develop Scopes of Work for Efficiency Program and Renewable Contractors to perform.
- Develop and Design operational workflows and processes to ensure effective program administration and data capture.
- Perform analysis of viable non-transmission alternatives to ensure electric grid reliability and stability.
- Writing reports, client memoranda, and testimony before U.S. Public Utility Commissions on a range of DSM issues such as financing programs, program evaluations and implementation.

Vermont Public Service Board — Montpelier, VT

Hearing Officer/Utility Analyst, 2003–2007

Responsible for evaluating the public policy impact of utility and stakeholder petitions filed with the Board, and determining whether such petitions were consistent with the general good of the state of Vermont. Charged with the responsibility of advancing and protecting the State's interests at FERC and US Department of Energy. Determined the appropriate revenue requirements of utilities by balancing the competing interests of utility shareholders and consumers. Conducted analysis of alternative regulation policies, energy efficiency programs and the adequacy of the state's energy resources. Responsible for project and case management

International Telecommunications Consultant

Independent Consultant 2001-2003

Provided technical assistance to U.S. Public Utility Commissions and government officials of several Southern African Countries. Other tasks included:

- Conducting workshops on regulatory methods and procedures, financial and economic analysis techniques
- Project/Program Design and Management
- Capacity-building and Leadership/management training, empowering clients
- Reviewing federal, state and international policies, and writing testimony

Vitts Networks, Inc.

Government Affairs Manager, 1999-2001

Hands-on manager responsible for advancing and protecting the business interests of a small Telecommunications Start-up Company at all Government, Industry and Community levels. Assisted executive management to obtain venture capital and expand operations in 14 states.

Public Utility Commission (NH)

Utility Analyst, 1993-1999

As a Staff and Consumer Advocate, I presented expert testimony on:

- Utility Revenue requirements
- Risk adjusted cost of capital
- Cost allocations and rate design

Other specific responsibilities included:

- Stakeholder outreach and collaboration
- Policy development and implementation

EDUCATION

M.S., Business Administration, Finance, Southern New Hampshire University, Manchester, NH (1991)
B.A., Political Science, University of New Hampshire, Durham, NH (1984)

HIGHLIGHTS OF PROJECT EXPERIENCE

Program planning, evaluation and assessment

- Project manager and lead policy analyst to the British Columbia Utilities Commission. For this project, Mr. Lyle worked with Commission staff to assess the ramifications of Fortis Energy's proposed $75 million portfolio of DSM programs. The project included a comprehensive review of Fortis' gas program designs, screening processes, implementation strategies and evaluation frameworks to ensure rate payer funds are being invested in cost effective energy efficiency measures. Additionally, Mr. Lyle provided technical assistance on appropriate public policies to further advance DSM investments in the Province (*2011 – ongoing).*
- Lead author of the U.S. Department of Energy's new financing webpage. This project includes a step-by-step guide for municipal, state and NGO officials who want to establish public-private financing programs to accelerate clean energy program participation. The guide showcases innovative, cost effective financing programs currently in operation that are successfully transforming the clean energy financing marketplace. The guide includes instructions for conducting market assessments, developing program objectives, designing and implementing programs, evaluating program outcomes and redesigning programs based on evaluation results. (*2011*)
- Lead witness for the Southern Environmental Law Center (SELC) before the South Carolina Public Utilities Commission. Provided prefiled testimony on South Carolina Gas & Electric Company's (SG&E) 3-year energy efficiency program plan and budget. Mr. Lyle's testimony focused on SG&E's potential studies, cost of saved energy, program designs and implementations strategies. Compared SG&E program plans to best practices in the United States and determined that SG&E underestimated its savings goals relative to maximum achievable potential resources. Provided SELC with litigation support and assisted with negotiations. *(2009- 2010)*
- Lead author of New York Power Authority's (NYPA) evaluation planning guidebook. This guidebook provides NYPA's staff with the resources needed to prepare for an evaluation of its large custom projects. The guidebook also includes a step-by-step process for determining project baseline energy consumption based on market driven opportunities or early retirement, discretionary retrofit projects. *(2009 – 2010).*
- Lead C&I contributor to a Best Practice Report to Manitoba Hydro (MH's). For this project, Mr. Lyle compared MH's programs, including

cost effectiveness, to best practices throughout North America. The report evaluated the cost of energy saved, delivery strategies and MH's capabilities to overcome market barriers. (2009)

- Co-authored prefiled testimony for the Iowa Office of Consumer Advocate before the Iowa Utilities Board. Testimony focused on energy efficiency administrative models, best practices, program designs and implementation. (2008-2009)
- C&I team leader to the Iowa Office of Consumer Advocate. Regularly participate in stakeholder committee meetings to ensure energy efficiency programs administered by Investor owned utilities are cost effective and achieving a high rate of energy savings. (*in progress*).
- Team lead of Efficiency Vermont's (EVT) Commercial Real Estate initiative. EVT is in the process of assessing market barriers to the Commercial Real Estate market, including first costs, split incentives and lack of knowledge. Under Mr. Lyle's research and direction, EVT is developing innovative program tools and tactics to address market barriers in this market space. (*2011*).

Resource Planning

- Lead witness for Natural Resource Defense Council in AEP – Ohio's rate proceeding. Testimony addressed the public policy and economic ramifications of AEP-Ohio's proposal to recover investments in clean energy projects (wind and solar). Provided recommendations on how AEP-Ohio could comply with Ohio's renewable portfolio standard and recover prudently incurred costs in a competitively neutral manner *(2011)*.
- Lead technical advisor to the Southern Alliance for Clean Energy (SACE) in its review of the Tennessee Valley Authority's (TVA) Integrated resource plan. Based on Mr. Lyle's assessment of TVA's potential studies, program plans and implementation strategies, TVA substantially increased the role of energy efficiency in TVA's 20 year integrated resource plan. Mr. Lyle's work focused on gaps in TVA's planning processes such as omitting commercially available technologies and retrofit opportunities, underestimating penetration rates and severely restricting the role of cost effective energy efficiency compared to risky supply side resources. (2010-2011).
- Technical advisor to the Natural Resource Defense Council in its review of Ameren Missouri's 20 year Integrated Resource Plan before the Missouri Public Utilities Commission. The focus of Mr. Lyle's work is to ensure the Company's alternative resource plans can reliably serve customer demand at the lowest present value life cycle costs. His primary responsibility is to work with the Company and stakeholders to analyze demand side management resources on an equal basis with supply side resources. (*in progress*)

Program management

- Management advisor to American Municipal Power Association (AMP) in Ohio. Optimal has provided financial and management operations support to AMP as it begins the operation of "Efficiency Smart" in 2011. Efficiency Smart provides a wide range of energy efficiency and implementation services for AMP's municipal member utilities. As part of AMP's ramp-up, Mr. Lyle developed a management operations manual tailored to the needs of AMP managers who are charged with overseeing the day-to-day operations of "Efficiency Smart". The operations manual provides AMP managers with a checklist tool to systematically review proposed energy efficiency programs for comprehensiveness, fairness and adherence to best practices.

- Technical advisor to Long Island Power Authority's Renewable energy program manager. Provided technical support in developing program goals, budgets and implementation strategies. Responsibilities included monitoring program progress, cost of installed systems and generation, and reporting. (2009).

Summary: Testimony of Thomas Lyle electronically filed by Mr. Christopher J Allwein on behalf of Natural Resources Defense Council