Comments of Lawrence J. Reilly
Chairman, Vermont Electric Power Company, Inc.

U.S. Department of Energy Quadrennial Energy Review
Stakeholder Meeting #2
New England Regional Infrastructure Constraints
Panel 4: Infrastructure Needs – Challenges and Solutions

April 21, 2014

Secretary Moniz, Governor Malloy, Representative Larson, and distinguished guests:

My name is Lawrence Reilly. I am Chairman of Vermont Electric Power Company, Inc. (VELCO), a position I have held since 2012. My professional experience includes more than 30 years working in the electric industry, primarily in New England and New York. My curriculum vitae is attached to these comments.

I would like to thank the Department of Energy for holding this meeting on Infrastructure constraints, as it looks to address transmission and distribution infrastructure, as well as storage, needs out to 2030. I appreciate having been invited to participate in this effort, which is critically important to the well-being of the citizens of New England as well as the regional economy.

VELCO

By way of background I should mention that VELCO was formed in 1956 when Vermont's local utilities joined together to establish the nation's first statewide "transmission only" company in order to create and maintain an interconnected electric transmission grid capable of sharing access to clean hydro power. VELCO currently manages a system that includes: 738 miles of transmission lines; 13,000 acres of rights-of-way; 55 substations, switching stations, and terminal facilities; equipment that enables interconnected operations with Hydro-Quebec; and fiber optic communication networks that monitor and control the electric system in Vermont. Seventy-three percent of VELCO is owned by the 17 Vermont electric distribution utilities, which include cooperatives, municipal utilities, and an investor owned utility; the remainder is owned by the Vermont Low Income Trust for Electricity (VLITE). VELCO's board of directors reflects this diverse ownership structure.[1]

[1] VELCO is a member of the GridWise Alliance, a coalition advocating for the modernization of the nation's electric grid. It represents a diverse set of stakeholders that design, build and operate the electric grid, and consists of: electric utilities; information and communications technologies and other service and equipment providers; Independent System Operators and Regional Transmission Organizations; colleges and universities; national laboratories; and, energy consulting firms. It is my understanding that the GridWise Alliance will be submitting comments in this proceeding.

Ensuring a Reliable and Affordable Electric Transmission Grid

A reliable transmission grid is essential to providing electric service to customers. Electricity is critical to our economy and the quality of life of our citizens. We tend to focus, as we should, on the issues associated with having too little transmission infrastructure because the consequences are so clear – degradation in service quality, higher power costs due to congestion, the inability to meet the needs of all customers at the time of peak demand, and, in the extreme, blackouts. The hardship and financial consequences to customers of insufficient or unreliable transmission facilities are so clear that engineers and system planners work very hard to anticipate future needs so that new facilities can get through the often lengthy siting, permitting, and construction process in time to meet anticipated customer needs.

Although we can never compromise on meeting reliability standards, our electric transmission grid also needs to be affordable. Transmission investments are inherently "lumpy" and are generally designed to serve anticipated loads for an extended period of time in the future. This means that they are likely underutilized for many years of their useful life. No one has perfect vision of how customer demand for electricity will change or shift over time, but we need to be careful not to consistently err on the side of overbuilding transmission infrastructure. There are very real costs associated with having too much transmission infrastructure – economic costs, because the facilities are included in rates paid by customers, and environmental costs associated with the construction of new facilities. Beyond that, siting and permitting major transmission facilities is a difficult and time consuming task. Transmission providers only have so much accumulated goodwill to expend in the siting process. That resource is difficult to come by and should not be depleted unnecessarily.

It is difficult to conceive of a new transmission project that will not provide some reliability benefits to customers. The key issue is whether there might be some lower cost way to meet a perceived need for new transmission infrastructure. In particular, it makes both economic and environmental sense to thoroughly consider Non-Transmission Alternatives (NTAs) when evaluating the need for new transmission infrastructure.

Striking the balance between too little infrastructure and too much infrastructure is not easy. In these comments I suggest a three-pronged strategy to help address this question and help ensure that there is adequate transmission infrastructure in place at a reasonable cost to customers. Specifically, as a region, we should ensure that we are:

1. **Implementing all cost-effective energy efficiency;**
2. **Expanding, to the fullest extent possible, the amount of price responsive demand on the system; and**
3. **Fully integrating the increasing volume of distributed energy resources into our resource planning.**

I will discuss each of these points further.

Energy Efficiency

Plain and simple, if we are not implementing all the cost-effective energy efficiency that we can, we are going to build too much infrastructure. Energy efficiency is the most cost effective way to meet customer needs from both an economic and environmental perspective. You don't need infrastructure to meet a load that doesn't exist. And, as I will discuss more fully later, targeted energy efficiency efforts can play a key role in deferring or eliminating the need for new transmission facilities.

The benefits of energy efficiency are widely recognized in New England. The six New England states combined are forecast to spend $5.7 billion on energy efficiency between 2016 and 2022. These programs are estimated to save 9.5 GWh of electricity and provide average annual reductions in peak demand of 193 megawatts for the region. In terms of infrastructure, ISO-New England has already identified at least 10 transmission line upgrades that can be deferred to 2020 or beyond saving customers an estimated $400 million.

These efficiency benefits can be achieved in any number of ways – through special purpose entities or through individual utilities.[2] In the case of individual utilities, regulators in New England have recognized the impact that energy efficiency has on a utility's revenue stream and have implemented decoupling mechanisms and established shareholder incentives to align customer and utility interests and make energy efficiency a profit center.

I think most would agree that New England is a leader in energy efficiency and would suggest that other regions could benefit from considering the approaches that have been implemented here.

Price Responsive Demand

The vast majority of electric customers in New England pay for electricity on a per kilowatt-hour (kWh) basis that does not change with the changing cost of electricity in the wholesale market. Because of this dislocation, most customers have no incentive to reduce consumption when wholesale power supply costs are highest or shift usage to times when costs are low. Time of use rates, which typically only apply to medium and large commercial and industrial customers, provide some price signal to customers, but the differing periods reflected in those rates are based on typical patterns and therefore do not reflect the reality of what is happing to prices in the wholesale market in real- or near-real time.

With almost all other products, consumers know what a given item is going to cost before they consume it and can take that into account when making a purchasing

[2] In Vermont, a special purpose non-profit entity, Efficiency Vermont, provides energy efficiency services throughout the entire state, with the with the exception of Burlington where the Burlington Electric Department provides energy efficiency services. Both Efficiency Vermont and the Burlington Electric Department provide energy efficiency services under the jurisdiction of the Vermont Public Service Board.

decision. For example, if the price of beef goes up, consumers might buy chicken or fish instead. Similarly, if customers were aware of the true cost of the electricity they consume, they would make more economically efficient decisions about using it. Better yet, if they had an opportunity to share in the value created by not consuming electricity at peak times or shifting usage to off peak periods, they could help reduce peak demand and the need for new infrastructure.

There is a long history of utilities controlling customer loads such as electric water heaters, pool pumps and central air conditioning units. More recently, demand response has been offered to customers as a service. Notably, not too far from here in Southwest Connecticut, demand response programs played a critical role in meeting customer needs – on an interim basis – as necessary transmission reinforcements were constructed. That case is a perfect example of the benefits that demand response can play in deferring the need for infrastructure. ISO-New England now recognizes demand response as a resource in its planning and system dispatch activities, but I submit we have only scratched the surface of its potential value as a resource.

For demand response to work, a reliable real time communication system needs to be in place. For large customers the benefits of participating in economic or emergency demand response programs can justify the necessary investment in communication equipment. The economics are more challenging for residential customers, where individual contributions might be small, even though they may be significant in aggregate. Smart meters and the related communication infrastructure may make the difference. For instance, thanks in large part to a $69 million smart grid investment grant from the Department of Energy that was matched by utility funds, Vermont now has smart meters in place for more than 90 percent of its customers. This investment is already providing benefits in terms of improved customer service and reduced labor costs, but more needs to be done to fully realize the potential of this new technology and increase the use of price responsive load to defer or eliminate the need for investment in new transmission facilities.

Although this is already an area of focus by DOE, I suggest that an increased emphasis here – in studying how best to influence or change customer behavior and evaluating technologies to automate demand response activity – could pay significant dividends in avoiding unnecessary transmission infrastructure investment with attendant economic and environmental benefits.

Integrating Distributed Energy Resources

For a variety of reasons – including technological innovations, state policy initiatives, improving economics, Federal and State tax incentives, and a desire for a robust and more resilient grid – New England, has experienced, and is still experiencing, a significant increase in the number of distributed energy resources. These resources vary widely in their size and in terms of important performance characteristics such as their dispatchability.

There can be no doubt that these resources provide real value to the grid. The challenge is determining that value and then integrating it into the regional transmission planning process lead by ISO-New England. They have begun that effort, but it is a difficult process given that these resources are of a scale below the level typically considered by ISO-New England and because they are predominately connected to the distribution system where much of the value they provide is highly dependent on where they are geographically located on the distribution network.

Like energy efficiency, the prevalence of (or siting of new) distributed energy resources can play a role in deferring or eliminating transmission investments. The incentives to do so; however, are not clear. The ISO-New England regional transmission tariff has been very effective at getting needed transmission built. More than $5 billion of new facilities have been place in service over the past nine years. Under the tariff, the costs of resources serving the bulk grid are allocated among users of the grid in proportion to their load. For example, the state of Vermont, which is about 4% of the New England load, is allocated that percentage of the cost of building and maintaining the regional bulk transmission grid. This methodology has a number of benefits, but it does not promote the integration of distributed generation resources in to the system. For example, if a bulk transmission reinforcement costing $200 million was needed in Vermont, 4% of that cost, or $8 million would be allocated to Vermont and the balance would be allocated to transmission users in other states. However, if a peaking plant with a capital cost of $80 million could eliminate the need for the transmission upgrade, 100% of the cost of that project would likely be paid for by electricity customers in Vermont – or the customers of just one utility in the state. In this example, the least cost solution for the region is the peaking plant, but the least cost solution for Vermont is the transmission investment.

Notwithstanding the economic incentives, in 2013, VELCO, in strong collaboration with other entities in Vermont and ISO-New England, avoided a $157 million transmission upgrade. This was accomplished by targeting investments in energy efficiency, incremental net metering, and incremental renewable distributed energy projects to specific geographic locations. If savings such as these are possible by targeting investments to specific areas in Vermont, it stands to reason that significantly larger benefits could be achieved if a similar approach were applied more broadly in New England.

FERC has reiterated its position, most recently in Order 1000, that transmission planners must consider NTAs as part of the planning process. However, I suggest that expanded emphasis on this area be considered as you deliberate your broad recommendations for the areas of focus as you complete the first part of the Quadrennial Energy Review.

Conclusion

Thank you for the opportunity to present these thoughts for your consideration and I look forward to the responding to questions.

LAWRENCE J. REILLY

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SUMMARY

Larry Reilly, an accomplished CEO of a vertically integrated electric utility (Central Vermont Public Service Corporation; NYSE: CV), with significant experience as a chief operating officer and chief US legal officer for a major international energy delivery company (National Grid), is a recognized expert on energy issues. Larry has a distinguished track record of success in leading utility rate cases and regulatory approval processes for mergers and acquisitions with a value in excess of $10 billion. He has frequently testified before state utility commissions and legislatures on energy policy issues including, utility mergers, rate cases, energy efficiency, transmission and generation facility siting, and industry restructuring. Larry applies his broad industry experience to bring creative solutions to emerging issues in the energy sector.

CURRENT ACTIVITIES

YALE SCHOOL OF FORESTRY AND ENVIRONMENTAL STUDIES, New Haven, Connecticut
Lecturer, 2014-Present

Currently teaching a graduate level course entitled "Electric Utilities: an Industry in Transition". The course focusses on the impacts that new technologies, regulatory policies, energy efficiency, and rapidly expanding distributed energy resources are having on traditional electric utility business models.

ROSEWOOD ENERGY CONSULTING, LLC, Hopkinton, Massachusetts
Founder and Principal, 2012-Present

Drawing upon the Founder's 30-plus years of experience in a broad range of roles in the energy business, Rosewood Energy Consulting provides strategic planning, regulatory, public policy, and technical expertise to public utilities and other stakeholders in the energy sector that face complex business, regulatory, technological, or legal challenges. During 2013 Rosewood Energy provided consulting services to UNS Energy Corporation and, through the US Agency for International Development, the Tanzania Electric Supply Company Limited (TANESCO).

VERMONT ELECTRIC POWER COMPANY, Rutland, VT
Chairman of the Board, 2012-Present

Board member of VELCO since 2011, elected Chairman in 2012. VELCO manages Vermont Transco LLC, which owns the high-voltage transmission system in Vermont and provides service to all 17 distribution utilities in Vermont under FERC approved tariffs. As Chairman I oversee meetings of 13 member board that represents a wide variety of stakeholders. Also meet periodically with senior management to discuss important operational, regulatory, and policy issues.

PRIOR EXPERIENCE

CENTRAL VERMONT PUBLIC SERVICE CORPORATION (NYSE: CV), Rutland, Vermont
President and CEO, 2011-2012

Worked closely with Board of Directors to refine and implement five-year strategic plan. Evaluated offers to acquire the company against options to remain a standalone entity. Led and facilitated management team efforts to implement strategy and address pressing issues in areas of power supply and regulatory relations. Led company through competitive sale process resulting in 55.2% premium for shareholders. Oversaw award-winning response to devastation wrought upon company facilities by tropical storm Irene. Guided rollout of $60,000,000 smart meter program, including installation of new meter data management system and interfaces to legacy information

technology systems. Co-chaired integration steering committee responsible for achieving $226,000,000 of savings from integration of CV and Green Mountain Power.

LAW OFFICES OF LAWRENCE J. REILLY, Hopkinton, Massachusetts
Principal, 2008-2011

Provided consulting services (legal and commercial advice) to NuGen Capital Management, LLC in connection with various mid-sized (1 to 10 megawatt) solar photovoltaic projects. Participated on Advisory Board of start-up, internet focused smart grid company that was ultimately acquired by Tendril.

NATIONAL GRID USA, (formerly New England Electric System or NEES) Waltham, Massachusetts

Executive Vice President Legal and Regulation, 2007-2008

Following worldwide restructuring, assumed role as National Grid USA Chief Legal Officer and Head of Regulatory Affairs for all US lines of business. Oversaw General Counsel, Senior Vice President of Regulation, and 200 staff. Managed legal budget of $40,000,000.

Executive Vice President and General Counsel, Westborough, Massachusetts 2001-2007

Headed US legal, federal affairs, corporate communications, and corporate security functions. Served as Chief Compliance Officer. Led staff of 200. Held responsibility for all legal affairs in US. Oversaw internal and external communications functions. Held responsibility for Washington office and internal and external lobbyists. Chaired corporate political action committee. Assumed central role in $3,000,000,000 acquisition of Niagara Mohawk, New York's second largest gas and electric utility (closed in January 2002). Led successful negotiations for new 10-year New York rate plan. Led team winning New York and other regulatory approvals required for 2007, $7,300,000,000 acquisition of KeySpan, the second largest Northeast natural gas distributor. Also led year-long negotiations to take over KeySpan's operation of Long Island Power Authority's electric transmission and distribution system.

President, Distribution Companies, Northborough, Massachusetts, 1996-2001

Assumed chief operations role for NEES's three electric distribution companies operating in Massachusetts, Rhode Island, and New Hampshire. Led staff of 2,500 in operations, customer service, regulatory affairs, technical services, and energy efficiency. Responsible for all customer-facing functions. Developed capital expenditure budget and delivered projects on time and within budget. Led project to evaluate alternative technologies to automate meter reading function. Worked closely with IT department to update systems and customer service function for opening of retail markets to power supply competition. Managed relationships with outside directors on subsidiary boards prior to functional consolidation of management. Developed constructive working relationships with union leadership.

Vice President and Director of Rates, Westborough, Massachusetts, 1990-1996

Managed extensive rate case litigation and utility competition work for all three of NEES's distribution companies and affiliated wholesale generation and transmission company regulated by the Federal Energy Regulatory Commission. Prepared and filed routine rate cases to recover revenue requirements. Also developed innovated rates, such as interruptible rates to help manage peak loads and sophisticated time-of-use rates to send appropriate price signals to customers. Prepared and litigated wholesale power rate cases on virtually an annual basis. Negotiated settlement of most cases before FERC and state regulatory agencies. Worked closely with accounting and financial forecasting departments. Reported regularly to NEES Board of Directors on progress of pending cases and major developments.

Assistant General Counsel, Providence, Rhode Island, 1987-1990

Assigned by General Counsel to coordinate all legal work, including extensive regulatory and rate work before Rhode Island Public Utilities Commission, for subsidiary with 300,000 customers. Negotiated groundbreaking utility energy conservation incentive program, balancing environmental, customer, and investor interests to achieve significant shareholder return for meeting conservation goals. Won licenses and permits for 450-megawatt upgrade/reconstruction of aged Providence power plant.

Corporate Attorney, Westborough, Massachusetts, 1982-1987

Served as member of 30-person legal department and worked on a variety of corporate matters. Led US Department of Energy permitting process for Hydro-Quebec (Phase 2) Canada-to-US electric transmission lines/facilities project. Did legal work on creation of Ocean State Power (Burrillville, Rhode Island), one of region's first independent power producers, in which NEES held part ownership as well as power purchase agreement.

EDUCATION

HARVARD UNIVERSITY, JOHN F. KENNEDY SCHOOL OF GOVERNMENT, Cambridge, Massachusetts, **Master of City and Regional Planning, Energy and Environmental Policy,** 1982

BOSTON UNIVERSITY SCHOOL OF LAW, Boston, Massachusetts, **J.D.** ***cum laude,*** 1982

STATE UNIVERSITY OF NEW YORK AT ALBANY, Albany, New York, **B.A.** ***magna cum laude,*** **Geography/Urban Studies,** 1978

LICENSES

New York Bar, 2008
Rhode Island Bar, 1989
Massachusetts Bar, 1982