

Patricia Martin
17 Farrar Road
Rindge, NH 03461
June 1, 2015

Alexander F. Speidel, Esq.
Staff Attorney/Hearings Examiner
New Hampshire Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301

Dear Attorney Speidel,

Thank you for the opportunity to provide comments on IR15-124. As a consumer and active member of the Town of Rindge Energy Commission, I appreciate the chance to weigh in on this important discussion regarding our economic and energy future.

My comments are my own opinion. I represent no organization, company, lobbying group, party or special interest. While I belong to many energy related volunteer organizations and may reference published materials from such organizations; I do so without their endorsement.

I have strong ties to New Hampshire as I served in the USAF at Pease AFB and then the NH Air National Guard while I earned a BSEE from UNH in 1978. While an undergraduate at UNH, I organized a summer long project which employed 12 fellow engineering students doing energy audits at 12 colleges in New Hampshire. As a young engineer, I helped innovate the first portable computers; drawing heavily on my studies of energy management and control techniques learned in building efficiency.

I do not claim to be an expert, but I believe my background demonstrates my long term interest in what our energy future will look like and how we can make it not only affordable, but a force that fuels New Hampshire's economic resurgence. While the recent emphasis on increasing pipeline capacity for fracked gas from the Marcellus Shale has certainly amplified my interest and involvement in energy policy in New Hampshire, I have been an active participant in workshops, conferences, etc. on this subject for many years.

1.) Identification of the root cause of high winter wholesale/and or retail electricity prices.

I have studied electricity pricing in New England, New York and across the country through the ISO-NE and eia.gov websites. Although all the media focus seems to be on the actual rate paid per KWh, the EIA also tracks average monthly bills across the country. Until recently, New Hampshire has been somewhere in the middle. Tennessee which has among the lowest electricity rates, still winds up in the top ten for average monthly bills because of usage rate. The latest such study for the eia is from 2013.

<http://www.eia.gov/electricity/monthly/update/archive/march2015/>

On April 19, 2015, Maureen Callahan, from USource Energy appeared on WMUR to talk about the April 1 letter from the Business Industry Association to the New England Governors, asking them to support pipeline expansion. Ms. Callahan showed a graphic which depicted pipelines in NY and NE and had flags showing the price of gas at the city gate on February 24, 2015 at the peak of winter demand. In NY the city gate price was less than \$4.00, while in New England; the price was over \$30 per dekatherm. <http://www.wmur.com/money/regional-business-leaders-push-governors-on-energy-crisis/32399874#comment-1977523569>

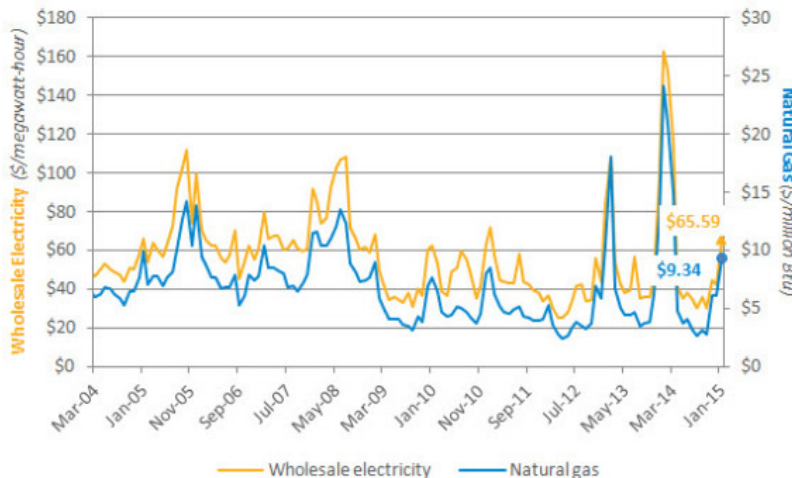
What Ms. Callahan did not show was the residential rate for electricity that New Yorkers pay is equal to what we pay in New Hampshire according to the latest eia.gov website, http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_b

So are we to conclude that all those pipelines and cheaper gas have not resulted in significantly lower electricity prices for the consumer? Granted there may be a penny or two savings over CT, but what really stands out are the relatively low rates paid in VT and ME which take advantage of significant amounts of renewable energy and energy efficiency.

While the cost of fuel is an important factor in electricity pricing, the Northeast must acknowledge that prevailing wages, rental prices, real estate values and environmental regulations are also important contributors. Expensive infrastructure projects add to higher prices in New England: the scrubber at the Merrimack Coal Plant being the most recent example.

Also worth consideration is the graph from the ISO-NE website which shows the 10 year history of wholesale electricity pricing. Notice that wholesale prices between 2004 and 2009 were, on average, higher than between 2010 and 2015. Even if the narrow spikes in the winters of 2013 and 2014 are taken into account, the average price appears to be approximately equivalent or even slightly less than prices paid in the years between 2004 and 2009.

January wholesale electricity and natural gas prices



So, what caused the price spikes in 2013 and 2014?

2013 and 2014 were severe winters. I enter the data for our town's energy consumption through the EPA's Portfolio Manager and so keep track of degree day information as well as consumption. 2012 was an unusually mild winter with below average heating degree days. The winters of 2013 and 2014 certainly highlighted the fact that the relationship between fuel consumption and degree day data is not linear. In most cases, a 9% increase in heating degree days resulted in a 30% increase in fuel consumption.

In preparation for the winter of 2013, electricity suppliers were allowed to stockpile oil for the dual use generators, in the event of a gas shortage. ISO-NE Chair Gordon Van Weylie did not support stockpiling of LNG because it would, "send the wrong market signals."

As an attendee at the 2013 and 2014 NH Energy Summit conferences, I can only conclude that Gordon Van Weylie was responding to the conference message that New England needs pipelines. And, there was a clear preference expressed that those pipelines be constructed/subscribed at ratepayer expense in the form of a tariff on utility bills.

Stockpiling oil was an expensive proposition in 2013 since oil prices were still very high. PSNH did well in the winter of 2013 because it was able to run its more expensive coal and oil burning facilities when other utilities were scrambling for capacity on the open market with natural gas prices soaring. The burden of maintaining the generating infrastructure of PSNH seemed a small price to pay compared with the prices the other utilities had to pay to buy predominantly natural gas fired electricity. This demonstrates the importance of power generation diversity and argues against committing New England to even more dependence on natural gas generated electricity.

In 2014, unfortunate timing in going out to purchase default electric capacity and anticipated shortages of natural gas led to record high electricity rates. Shortly after the NH utilities went out to bid, oil prices fell dramatically, bringing gas and LNG prices with them.

In 2014-2015, the Winter Reliability Program included oil AND LNG stockpiling which led to wholesale electricity prices stabilizing significantly compared with 2013-2014.

There is little doubt that electricity pricing tracks natural gas prices. Since ISO-NE generates over 50% of its electricity with natural gas, this is unsurprising.

Is the root cause of high electricity pricing during 2013-2014 a result of a lack of pipeline capacity? The answer should be, no. Given that PSNH was able to weather the worst of the winter of 2013-2014 due to having diverse fuel sources for generation and the generally lower prices of electricity in States like Washington, Maine and Vermont due to hydro and renewable generation, the root cause of high prices should be tied to a decrease in fuel diversity and an over reliance on a single fuel source.

- 2.) **How the preferred solution results in lower wholesale and/or retail electricity prices for New Hampshire consumers. For example, if the preferred solution requires one or more New Hampshire EDCs to purchase firm pipeline capacity, explain in detail how that purchase translates into lower Load Marginal Prices (LMPs) for wholesale electricity customers and eventually lower electric energy rates for retail customers. Identify all steps in the process and specify all assumptions.**

New England pipeline capacity currently totals 3.4 bcf/day. A little over 1 bcf/day is used to generate electricity. The problems with pipeline capacity occur during the winter months when non-electric generation usage of natural gas for heating homes and businesses peaks. During those four months, pipeline capacity would have to nearly double to accommodate demand. This leaves nearly 8 months during which an expanded pipeline would only be filled to 25% or less of capacity for electricity generation.

Based on approval of an export license for Pieridae Energy by the Department of Energy in May, up to .8 bcf/day may be headed for export to Canada for conversion to LNG for the international market. Reversal of the flow of the Maritimes pipeline system will allow a path from New England north to Canada. This will also cut off the source of natural gas supplies flowing from Canada to New England. It is difficult to see how encouraging export of natural gas to the world market and cutting off imports from the north will help pricing in New England.

If we were to assume that the problem of a decline in fuel diversity is the root cause of high electricity prices, we might want to look at attacking the problem of peak demand from a number of angles. **Begin by attempting to shave the natural gas demand peak in the winter:**

- A.) Create a regional project/focus on weatherization of buildings which use natural gas for heating. (20% improvement is typical)
- B.) Expand opportunities for natural gas consumers to convert from non-condensing to condensing furnaces by providing incentives. (10 to 15% improvement in efficiency is typical) <http://www.eia.gov/todayinenergy/detail.cfm?id=14051>

A 20% reduction in demand during the winter months or approximately 0.68 bcf/day, would obviate the need for additional pipeline capacity and increased reliance on fossil fuels.

Every KWh is not created equal.

The ITRON meters currently being deployed to Eversource customers do not have Demand Response capability. This is unfortunate and serves as yet another example of wasted opportunity for which ratepayers will pick up the tab. Demand Response via Smart Metering is working very well for customers in other parts of the country and even among some of New Hampshire's other utilities. Rewarding customers for load reduction during periods of peak demand is an effective way to avoid overbuilding infrastructure.

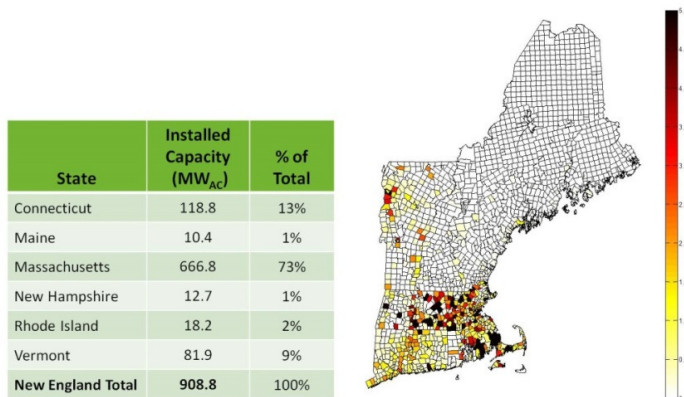
<http://www.nashuatelegraph.com/news/1037346-469/psnh-meter-readers-wont-have-to-leave.html>

Establish a Carbon Tax

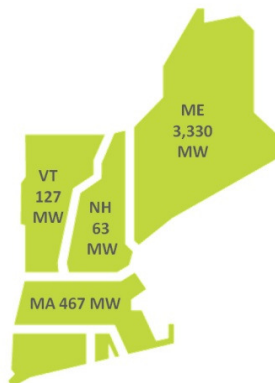
In 2011, I learned that the NH Legislature had set a maximum of \$55 per Renewable Energy Credit. I called Jack Ruderman of the PUC to ask how this could possibly work. He explained that if a utility or generator could not purchase RECs for \$55 or less, they paid a fine or Alternative Compliance Payment (ACP) of \$55. This system has made it very difficult for renewable energy suppliers to justify investing in the New Hampshire market. Although that price has worked for some biomass and wind suppliers, it is not competitive for rooftop solar installs.

What happened to letting the “market” determine economic outcomes? NH utilities and electric suppliers have little incentive to purchase renewable energy since the ACP is usually cheaper than picking up RECs on the open market. The evidence of this can be seen in the Earth Day report from ISO-NE, <http://isonewswire.com/updates/2015/4/22/iso-ne-marks-earth-day-with-an-update-on-energy-efficiency-s.html>

The chart below from the ISO-NE report shows solar installed capacity in New England. Out of 908 MW installed capacity, NH has only 12.7 MW.



Although Maine has very little solar, this map from the same ISO-NE report shows that Maine dominates the installed capacity for wind. Again, NH has the least installed capacity with a little over 1% of the total for New England.



It is time to develop legislation to allow true virtual net metering in New Hampshire

Although the Group Net Metering legislation championed by Senator Molly Kelly helped open the door to more cost effective, larger solar projects, it is still being worked out and interpreted by the utilities in ways that are frequently unfavorable to participants.

Group Net Metering is not an effective tool for other types of renewable generation such as wind or conventional hydro. The reason for this is that there must be a host meter on a building which serves as the first interconnect or host point. Wind, in particular, does not lend itself well to this restriction.

Utilities need to invest in more Research & Development

The decision by ISO-NE to award the grid reliability project to Eversource for an ac backbone on above ground towers is disappointing. Burying cables and providing dc interconnects such as described in the SeaLink proposal makes much more sense as we experience more severe weather events and attempt to integrate renewable resources into the grid.

The Northern Pass project should bury all cables, not only to preserve views, but to reduce vulnerability to weather events.

As mentioned earlier, the deployment of the ITRON meters to Eversource customers is also extremely disappointing and a missed opportunity to manage peak demand.

Allowing Cape Wind to wither and die is a mistake and I hope ISO-NE and the utilities will do something about bringing it back to life.

With the recent announcement from Tesla and Solar City, our utilities ought to be motivated to study ways that they can add value instead of merely obstructing progress and defending the past.

Again...Every KWh is not created equal

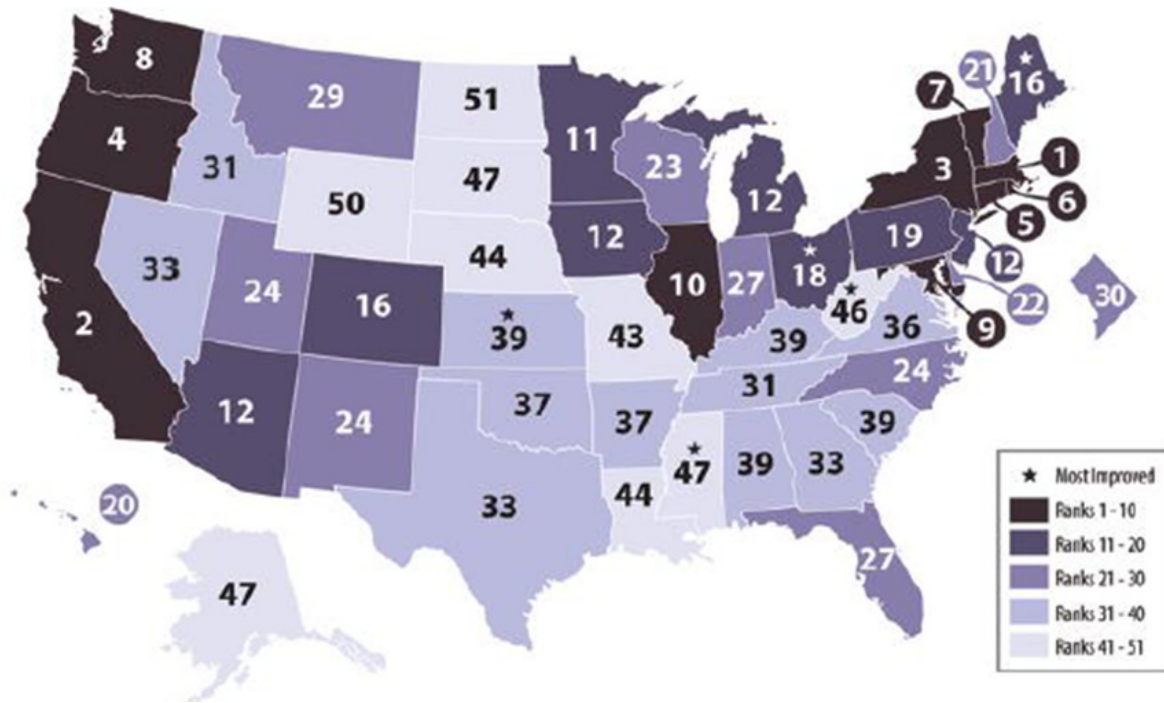
Currently, customers get a reduction in rates for the KWhs consumed above 650 KWh/month. Utilities make more money when they sell more power. The time has come to recognize these two facts drive us in the wrong direction when it comes to bringing down electricity prices and rewarding efficiency.

Customers who consume electricity for non-heating purposes during peak demand or who consume above the monthly average should pay a premium for that electricity.

Utilities should expand their CORE weatherization and energy efficiency programs and consider partnering with solar companies to help low income homeowners finance rooftop or community solar installations with financing and administration.

Currently, NH ranks 21st among the States in terms of Energy Efficiency while ME ranks 16th and the other NE States are all in the top ten. The PUC is to be commended for IR 15-073 which studied the establishment of an EERS for New Hampshire.

2013 State Energy-Efficiency Scorecard



Source: ISO-NE Energy Efficiency Forecast 2-21-2014

As Governor Hassan said at the 2013 and 2014 NH Energy Summits, “The cheapest KWh is the one you don’t use.” This should be our first plan of attack. Our other New England neighbors should cooperate by helping the LDCs reduce their natural gas demand during the heating season with weatherization and energy efficiency programs.

Conclusion

I won’t attempt to answer questions 3 through 8, except to say that the results of the PUC Docket, IR 15-073, seem reasonable to me in support of energy efficiency improvements. My one suggestion would be to target natural gas heated buildings and make it a regional effort so that the natural gas shortage is addressed first. On the other hand, building pipelines when fuel prices are so volatile and which will further erode fuel diversity when other options such as energy efficiency and demand response exist, seems very shortsighted. Reducing demand for natural gas during the heating season would constructively address the problem with a clear advantage to the consumer through lower bills.

Demand Response rewards on customer electric bills during the summer season would also help reduce peak demand and prevent building an unnecessarily complex and over capacity system. Our investments should be spent on making electricity more affordable by following the example of States that are investing in locally sourced renewable energy and energy efficiency. The states with the lowest energy costs have local sources of fuel and/or hydro. I applaud all the efforts by the PUC, Legislature and ISO-NE to integrate renewable resources into the grid and the market, but think more effort needs to be spent on R&D to solve the problems of storage and intermittency.

There is also the risk that fracking will be banned or, more likely, prices will soar as the yields begin to drop. Then what? Will we be facing another Seabrook, Merrimack Scrubber, or ITRON meter solution?

As a participant in the New Hampshire Leadership Series, I learned how Don Shumway and Richard Crocker were able to close the Laconia State School. It seemed such an overwhelming problem to solve. They used a technique they called "Incremental Opportunism." By that they meant that you start with each small decision and ask yourself which answer will take you closer to your goal. Over a few years they were able to help create the area agencies by discharging clients to them with their funding as each review came up. They did not attempt to "fix" the Laconia State School, which was a restrictive and inhumane environment for people with disabilities; they emptied it.

I see this pricing issue and the proposed pipeline solution in a similar light to Laconia State School. New Hampshire was the first State in the nation to close its state school. As a citizen of New Hampshire, I am very proud of that. We know that sustainable pricing and climate change are overwhelming problems for us; perhaps applying the principal of incremental opportunism will help us reach another proud moment?

I know you will be scheduling interviews with stakeholders in this process and do not want to add to your burden, but if you think it would be in anyway helpful, I would be happy to appear to speak as a consumer.

Thank you to the Commission for welcoming me as a consumer at these proceedings and for allowing me to comment.

Sincerely,

Pat Martin