Testimony before Senate Natural Resources and Energy Committee

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Summary:

Passage of H40 will cause significant cost increases to Vermont's residents from overly ambitious renewable goals and other provisions. There is no need to pass H40 to preserve the current $50 M annual REC revenues. H40 would affect Vermont's energy policy, which has enormous cost impacts that can last decades. The Vermont legislature's decisions on energy policy will not change the world's climate, but will certainly change Vermont's economic climate. Lawmakers are being informed mainly by renewable advocates such as GMP, the Vermont renewable energy industry and the DPS. There are questions about GMP joint venture(s) with solar developer(s). Experts skeptical of the state's ambitious renewable goals need to provide more information for a more balanced debate. Solar benefits have been based on studies with outdated, incorrect assumptions. New information shows that the solar benefit to the electric grid infrastructure is considerably overestimated. New renewable energy imports from Canada can meet state goals without sacrificing countless picturesque Vermont fields. Yet Vermont utilities ignore the Canadian renewable option. More long term impact cost and economic impact analysis is needed before any changes are made to Vermont's energy policy.

Problems with H40

- **Extremely complicated law**
  - **Ambitious renewable goals will have major cost impacts**
    - **Required upgrades to electric system**
    - **Higher cost power vs. alternatives**
    - **Smart Power upgrades**
    - **Reliability concerns of intermittent energy sources**
    - **Savings based on future, unknown and volatile prices**
      - **Economist Tom Kavet's caveats**
  - **Unknown impact of consumer behavior re: heat pumps**
  - **Requires considerable time for expert analysis and conveying those results to lawmakers**

H40 does not mandate consideration of new Canadian renewable energy imports as alternative to in state solar and wind projects

New under water/ground Quebec to Vermont transmission intertie under PSB review – "New England Clean Energy Link"

Canadian Hydropower can help meet renewable goals without sacrificing much of Vermont's land

Also, Canadian option may lower costs

H40 sets in motion a system that will be difficult to change

"Runaway Train" problem: (another Vermont Health Connect?)

Energy transformation problems

GMP and many contractors already promoting heat pumps

Prone to cross subsidies among customer groups

PSB is overworked with multitude of net metered solar projects

Solar and wind benefits are overestimated

Capacity benefit for generation and transmission is too high

Laws of diminishing returns

(1) New solar capacity shifts electric peaks to later in the day, when solar generation is much lower → So new solar projects have little value in reducing electric grid costs

Peak shift recognized by GMP:

Extract from Rutland Area Reliability Plan 4-1-2015

Further offset by solar generation is expected within a very few years but will level off as the area's post-sundown loads (which are unaffected by solar generation) begin to exceed the customary midday to afternoon peak load. This time-shift in the daily peak load is changing the way planning studies must be done for the Rutland area, and in fairly short order, will have the same effect statewide as solar power gains traction.

(2) Large amount of new solar and wind capacity requires new grid upgrades

Power flow can reverse direction and exceed allowed limits

Reliability and operational issues

There is no need to pass H40 to preserve Vermont utilities' current REC income:

CONNECTICUT PUBLIC UTILITIES REGULATORY AUTHORITY

DOCKET NO. 15-01-03	**DECLARATORY RULING REGARDING CONN. GEN. STAT. §16-1(a)(20), AS AMENDED BY PA 13-303, CONCERNING THE POSSIBLE DOUBLE COUNTING OF RECS**

March 25, 2015

V. Conclusion

The Authority concludes that the SPEED 2012 goal does not trigger a claim under Conn. Gen. Stat. §16-1(a)(20). The Connecticut provision precludes the eligibility of megawatt hours that are claimed toward another state's renewable energy program goals, and the SPEED 2012 program does not have identifiable numerical goals between 2012 and 2017. The Authority does not discount that voluntary representations made by Vermont retail electricity providers raise concerns. However, the federal consumer protection regime is addressing those concerns. Beginning January 1, 2017, the Vermont SPEED program may trigger a claim under Conn. Gen. Stat. §16-1(a)(20). However, the Authority concludes it is not necessary to make a final determination with respect to post-2017, particularly because legislative efforts are currently underway in Vermont to flesh out the impending post-2017 program. Finally, the Authority determines that Vermont's Standard Offer program does not preclude the use of associated renewable energy certificates for Connecticut compliance.

Recommendations

Postpone action on H40 until next year

In the meantime, obtain more information:

- **Seek info from unbiased sources (not GMP and DPS)**
- **Do detailed studies before considering H40**
  - **Option of Canadian renewable energy imports**
  - **Rate impacts from mandated renewable purchases**
  - **Cross subsidies: do the poor subsidize the rich?**
  - **Quantify land use impacts**
    - **Tourism and property value impacts**
    - **Opportunity costs of 25 year solar projects**
- **Wait and learn from other states with similar renewable goals**
- **Wait for technology advances in more efficient solar and storage**

Relevant articles and report

Problems of changing regulatory policy on net metering – the "runaway train" problem

http://www.hblr.org/2013/12/the-regulatory-challenge-of-distributed-generation/

Electric grid problems that occur as net metered solar generation grows

http://www.nytimes.com/2015/04/19/business/energy-environment/solar-power-battle-puts-hawaii-at-forefront-of-worldwide-changes.html?hp&action=click&pgtype=Homepage&module=second-column-region&region=top-news&WT.nav=top-news&_r=0

Battery storage needed to solve solar induced peak shift

http://www.nytimes.com/2015/04/21/science/batteries-and-renewable-energy-set-to-grow-together.html?_r=0

ISO-New England report: 2015 Regional Electricity Outlook

See page 25 in Integrating Renewables section

"Wind and Solar… have a limited ability to serve peak load."

http://www.iso-ne.com/static-assets/documents/2015/02/2015_reo.pdf

My Qualifications

Electric Power Engineer

Career with electric utilities and their consultants

Retired after 26 years at CVPS and GMP

Includes solar value analysis at GMP

Extensive experience with Hydro Quebec and 2,000 MW Phase II High Voltage Direct Current Interconnection of HQ to New England

My Motivation to Testify

Decisions being made with inadequate information and analysis

Decisions have extremely large and long lasting impacts

Debate is not balanced

Vermont Renewable Energy Industry is very powerful

DPS influenced by governor's pro-renewable policy

Inadequate information on negative cost impacts