

Written Testimony of Joel N. Gordes
Before the General Assembly's Energy & Technology Committee
In Opposition to
PSB 1138 An Act Concerning CT Clean Energy Goals
March 19, 2013
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Co-Chair Duff, Co-Chair Reed, Committee Members and diligent staff. My name is Joel Gordes and I am an independent energy consultant dba Environmental Energy Solutions and although I serve on some energy-related state boards, I am purely representing myself in these remarks. I greatly appreciate the opportunity to comment on this bill that proposes major changes to the Renewable Portfolio Standard (RPS). The main points I wish to address include:

- 1) This legislation has appeared prior to publication of a long-awaited study by DEEP of the Renewable Portfolio Standard (RPS) that has been underway for a considerable period. This is a process problem;
- 2) The addition of distant, foreign, large-scale hydroelectric power further centralizes the grid. This reduces its resilience and may endanger public health, safety and security of Connecticut residents compared to smaller scale local options within the state located close to end users. NERC, tasked with grid security for the US, has warned of higher risks from purchasing power requiring transmission that spans several states.
- 3) The Renewable Portfolio Standard (RPS) role was meant to provide market support for emerging technologies to provide them with a sustained orderly development path toward cost-effectiveness. It has never been intended to subsidize already mature technologies such as large hydro just because they might offer a cheaper path to meet artificial goals that have been manipulated; and
- 4) There are also human rights allegations as concern the Innu (not Inuit), a Native North American people, who have issues over Hydro Quebec's expansionist Plan Nord. We must insure that our clean energy is "clean" in every sense of the word . (See Appendix A.)

Elaboration on the 1st Point-Process: To the best of my knowledge, in 38 years of experience with this legislature I have never encountered a bill as fully drafted as this one appears prior to the official publication of a study that had been sanctioned to provide the recommendations for such legislation. On the one hand it is amusing, but on the other tragic, that DEEP, which we hope would encourage "sustainability," has ignored one of the key, guiding principles of the document that first defined that term—that principle is, open and participatory processes.¹ Unlike the 2011 RPS study by the Connecticut Energy Advisory Board (CEAB) there has been no extensive opportunity for public input to this study. The CEAB study offered extensive open and participatory public opportunities for all parties at multiple stages along their process including a day long set of roundtables where all stakeholders were well-represented. (See Appendix B for an agenda of the roundtables.)

¹ Brundtland et al. *Our Common Future*. Oxford University Press. 1987. p. 47. This landmark document first defined the term "sustainable development" which is often shortened to "sustainability".

Elaboration on the 2nd Point- Reduced Grid Security and Resilience Due To Large, Distant Hydro:

Aside from large hydro not being an emerging technology either needing or entitled to RECs, EES opposes this portion of the current bill for several reasons but primarily on energy security concerns that may endanger the public health, safety and security of Connecticut Citizens. The importation of foreign power necessitates the need for additional large, expensive and vulnerable transmission facilities. Even if the additional cost of the transmission is “free,” this has the effect of further centralizing and adding complexity to an already overly complex electric grid which makes the state more vulnerable to even distant interruptions by physical or cyber means. The prestigious National Science Council has stated:

A direct way to address vulnerable transmission bottlenecks and make the grid more robust is to build additional transmission capacity, but there are indications that redundancy has a dark side... The likelihood of hidden failures in any large-scale system increases as the number of components increases.²
[Emphasis added.]

In 1989 Hydro Quebec experienced grid collapse due to what is termed a coronal mass ejection, an event similar to a solar flare but usually larger and more intense in scale. We are currently in what is termed a “solar maximum” period where this may become more common for several years although it may happen during off maximum periods as well. It is also known that during such events transmission lines act as large antennae to capture and transport the electromagnetic disturbances created to points where critical grid equipment can be severely damaged. This has massive consequences but is inadequately addressed at federal or state levels.

Electromagnetic pulses (EMP) accompany the detonation of nuclear devices or originate with more limited effects from what are termed flux compression generators. They have the capacity to also inflict immense damage on critical electrical components of the grid that could render it inoperative for months. All devices using semiconductors (cell phones, computers, tablets, autos) have the potential to suffer irreparable damage. While low probability events, the high impacts have prompted the North American Electric Reliability Corporation (NERC,) the organization tasked with the grid’s cybersecurity to warn³:

For its part, NERC issued a 2010 report warning that geomagnetic storms, along with cyberattack and electromagnetic pulse attack with a nuclear weapon – were three high-impact but low-probability threats worth guarding against. Last May, NERC issued an advisory to regional power system operators identifying an array of steps available to them when NOAA issues warnings of a geomagnetic storm.

Practical actions that can be taken, for instance, include purchasing power from generators closer to where the power is being consumed rather than buying blocks of power that have to be sent on transmission lines that span several states, a move that enhances the stability of the grid by helping maintain necessary voltages on the system. *[Emphasis added.]*

Additionally, in 1998, northern New England and Canada had a massive January ice storm that left millions in the dark and cold when ice equal to or in excess of 3.5 inches collapsed Canadian transmission towers leaving many without power with monetary damage attributable to lost power in just Canada up to \$694 million (US). In short, Canadian hydro adds complexity and risk.

Elaboration on the 3rd Point – Role of an RPS: The Renewable Portfolio Standard (RPS) was meant to provide market support for emerging technologies to provide them with what is termed a “sustained orderly development” path toward cost-effectiveness by ensuring a stable and growing market. One of key developers of this concept is Dr. Donald W. Aitken who is well-known in renewable energy circles. Circa 1990 he and others determined that over time, with increasing production and steady procurement of emerging renewable technologies, it would be

² Making the Nation Safer: The Role of Science and Technology in Countering Terrorism. National Academy Press. p.302. June 2002.

³ *Could intense solar storm shut down US power grid?* Mark Clayton. The Christian Science Monitor. Jan 24, 2012.

possible to lower their price to eventually match the cost of conventionally-generated power. His depiction of this is shown below:⁴

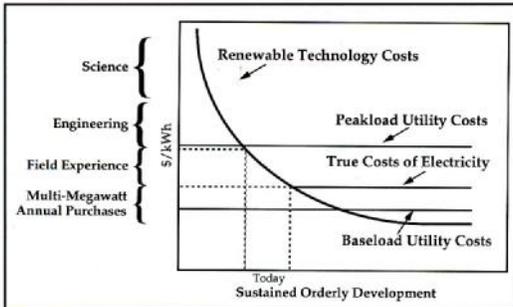


Figure 1: Reducing the Price of Renewable Energy. A schematic presentation of the various stages contributing to the “Sustained Orderly Development” of a renewable electric technology. Relative widths of brackets are hypothetical, for illustrative purposes only.

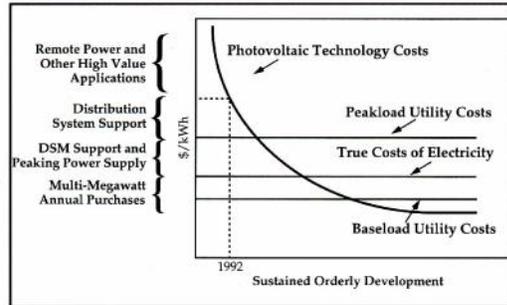


Figure 2: Sustained Orderly Development Showing Utility Market Drivers in the PV Industry. The same as Figure 1, with the left axis brackets relabeled to suggest the actual market “drivers” that can pull the PV industry through the process of “Sustained Orderly Development”. In this case the relative widths and positions of the brackets conform approximately to actual PV and utility costs.

This 1992 depiction is very close to what has and is currently taking place. In the same article he makes an important point relevant to this Hydro Quebec conversation:⁵

Thus the “push” from regulators and legislators is still warranted, along with a supportive understanding and participation by consumer and ratepayer advocacy groups, just to give the renewable technologies a fair chance against the major financial and institutions barriers they face. But unless actual market forces are harnessed in a way that can support the sustained orderly development of the solar electric technologies, no amount of governmental incentives will do the job.

Sustained orderly development does not imply that orders should be placed for unworthy technologies, nor that they should not also stand on their own correctly-defined economic merits. [Dr. Aitken’s emphasis]

This last sentence may be construed as saying certain technologies are unworthy of the aid provided by subsidies but even those that are worthy eventually need to economically stand on their own merits. Most solar advocates look forward eagerly to the day when solar technologies no longer need an RPS to provide “a fair chance against major financial and institutional barriers” and that day is relatively near compared to when this article was written. It also states that other technologies are “unworthy” and Hydro Quebec seems to meet that criteria.

It is also interesting to note that Wikipedia uses large versus small hydro as a prime example of eligibility:⁶

States often start with an assessment whether the renewable technology is economically feasible in the absence of an RPS program. This is best personified by distinguishing between small and large hydroelectric facilities. Many states exclude existing renewable facilities from benefiting from an RPS program for the same reason.

In closing this section, it is safe to say that Connecticut officials, in making Hydro Quebec a Class I renewable are out of step not only with the environmental and clean energy communities but with those thoughtful pioneers who first formulated the RPS and worked diligently for its adoption.

Appendices follow on the following pages.

Appendix A – Hydro Quebec as a human rights issue.

Appendix B – The agenda showing a fully participatory process on an RPS study by the CEAB.

⁴ Aitken, Dr. Donald W. *Sustained Orderly Development*. Solar Age. p. 21. May/June 1992.

⁵ Op. cit. Aitken. p. 22.

⁶ http://en.wikipedia.org/wiki/Renewable_portfolio_standard

The history of our treatment of Native North Americans has been disgraceful and today would likely be called genocide, most of it over the taking of land and with it, destroying their culture. Before Connecticut becomes a party to any offers by Hydro Quebec, it should be mandatory that we investigate the allegations being made by some Innu who, like many Native Americans, may hold beliefs different from the majority of Americans or Canadians. Former Yale Professor Albert E. Burke explained such beliefs this way:⁷

As far as the American Indian was concerned, land was not an investment. It was not property. The idea that anybody could think so, simply made no sense. That idea was more than strange to the Indian. For good reason, he saw it as immoral, indecent, completely inhuman, and completely deadly. It was monstrous to think that anyone could claim this as personal, private property.

It is also noteworthy to recall that in the mid-1990's similar efforts to secure land from the Ouje Bougoumou Cree Native North Americans to enlarge Hydro Quebec's capacity was met with regional opposition but a later settlement occurred. The question of Hydro Quebec conduct is not a new issue.

Activists From Québec's Innu First Nation To Protest This Weekend's New England Governors' Conference in Burlington

Posted by [Ken Picard](#) on July 26, 2012 at 12:43 PM. [Click on this link](#) for full article.

More than a dozen protesters from Quebec's Innu First Nation are due to arrive in Vermont this weekend to protest the Conference of New England Governors and Eastern Canadian Premiers, being held in Burlington. They are protesting against the construction of a new hydroelectric dam on the Romaine River by Hydro-Québec, which they say would destroy their entire way of life. Vermont purchases the vast majority of its power from the Canadian utility giant and Gov. Peter Shumlin currently chairs the New England Governors' Conference.

This new dam is but one aspect of a much larger development project in the region known as Plan Nord. According to the [Québec government's official website](#), Plan Nord is "one of the biggest economic, social and environmental projects in our time." The 25-year, \$80 billion project will create or consolidate an average of 20,000 jobs per year, the Québec government says.

The Innu people — not to be confused with Canada's Inuit people — come from the community of Mani-Utenam, near the city of Sept Iles. They are an indigenous population from northeastern Quebec and Labrador who claim they have never ceded their rights to the land to the Québec or Canadian governments.

In March of 2012, members of the Mani-Utenam community, which numbers roughly 4000 people, erected a blockade along Québec's Highway 138, the main artery along the north shore of the St. Lawrence River. The blockade was a protest against Plan Nord and dams being built along the Romaine River, about two to three hours northeast of their community. Highway 138 is the only way, except by boat, to access the inland areas along the north shore. It's also the only road into this part of Québec, and facilitates most of the industrial development that happens in this region.

Among the activists coming to Vermont is Elyse Vollant, an Innu grandmother who in June was arrested at the blockade, along with several others from the community. After the blockade was removed by dozens of riot police and Surete du Québec (Quebec state police), the Innu erected an encampment alongside 138.

Many Innu feel that the Charest government has ignored their concerns and traditional right to the land. While some tribal councils have signed on to the Romaine project, other Innu view these councils as colonial forms of government that were set up by the Québec government without much consent from Innu decades ago.

According to Vermont activists working with the Innu, Mani-Utenam has not signed any agreements around the Romaine project. However, Hydro-Québec has started clear cutting swaths of forest near their community for the transmission lines that will carry power from the dams. For more on the Innu protests from earlier this year, check out [this piece](#) by Alexis Lathem in *Toward Freedom*.

⁷ Burke, Albert. *The Monster Slayer, Part II*. Probe TV Show Transcript. 1962.

CEAB Roundtable Discussion on Connecticut RPS Policy Objectives
Monday, April 11, 2011 9:00 – 4:10
Connecticut Department of Environmental Protection – Phoenix Auditorium
79 Elm Street
Hartford, CT 06106
Agenda

8:30 – 9:00 – Registration & Light Breakfast

9:00 – 9:10 Welcome and Introductions – *Tim Cole, CEAB*

9:10- 10:00 - Overview on Historical Connecticut RPS Policy and Objectives - *Bob Grace, Sustainable Energy Advantage*

10:00 – 11:30 - Roundtable #1 “Current Renewable Portfolio Standard Policy Objectives and Implications in Connecticut”

Moderator – *Joel Gordes, CEAB*

- Shirley Bergert, Connecticut Legal Services, Inc.
- Kevin DelGobbo, CT Department of Public Utility Control
- Bryan Garcia, Yale Center for Business and Environment
- Anne George, ISO-NE
- Jim Shuckerow, Connecticut Light and Power Company
- Roger Smith, Clean Water Action
- Jessie Stratton, Environment Northeast
- Alan Trotta, United Illuminating Company

Anticipated questions to roundtable

- Does Connecticut have a clearly defined set of objectives for the RPS?
- What do you think the goals of the current RPS policy are?
- Do you believe that the current RPS policies are meeting these goals?
- How do you think that the various, sometimes competing, goals of the different RPS classes affect the State’s ability to meet its RPS objectives? (both in State and in Region)
- Are Connecticut’s RPS goals similar or different to New England’s goals?

11:30 – 12:45 - Lunch Break

12:45 – 2:15 – Roundtable #2 – “RPS Policy Experience in Connecticut: A Perspective of Market Participants”

Moderator – *David Goldberg, CCEF*

- Dan Allegretti, Constellation Energy
- Christie Bradway, Connecticut Light and Power
- Duncan Broatch, Summit Hydro
- Mike Brown, UTC Power
- Susan Bruce, McNeas Wallace & Nurick LLC (on behalf of Kimberly-Clark)
- Bob Cleaves, Biomass Power Association
- Tim Daniels, Deepwater Wind
- Amy Fisher, GE Capital
- Jonathan Gordon, NRG

- Thomas Jacobsen, Element Markets
- Thomas Lyons, Covanta Energy
- Paul Michaud, Renewable Energy and Efficiency Business Association
- Tom Swank, Noble Environmental Power
- Mike Trahan, Solar Connecticut

Anticipated questions to roundtable

- What problems have you encountered as a participant in the Connecticut REC market, and what would be a possible solution?
- What policies have worked the best in Connecticut?
- What are some of the best practices in other States that you feel would improve the RPS in Connecticut?
- How should CT establish RPS objectives in the future?
- How should Connecticut and other New England states work together to maximize RPS policy benefits?

2:15 – 2:30 - Break

2:30 - 4:00 – Roundtable #3 – "A Regional Perspective on Connecticut RPS Policies"

Moderator – *Frank Felder, Rutgers University*

- Dwayne Breger, Massachusetts Department of Energy Resources
- Kate Epsen, New Hampshire Public Utilities Commission
- Daniel Esty, Connecticut Department of Environmental Protection
- John Fonfara, Connecticut General Assembly Energy and Technology Committee
- Jeff Gaudiosi, CEAB
- Heather Hunt, NESCOE
- Warren Leon, Clean Energy States Alliance
- Vickie Nardello, Connecticut General Assembly Energy and Technology Committee
- David O'Connor, on behalf of NECEC
- Francis Pullaro, Renewable Energy New England
- Joe Rosenthal, CT Office of Consumer Counsel
- Catherine Smith, Connecticut Department of Economic and Community Development

Anticipated questions to roundtable

- Do you feel that there is adequate renewable supply in the region for the various States to meet their RPS goals?
- How has Connecticut's RPS policies affected the RPS in other States in the region?
- What are some of the best practices in other States that you feel would improve the RPS in Connecticut?
- Are there any features of the current RPS policy that you would like to see changed? How would you change them?
- How should Connecticut and other New England states work together to maximize RPS policy benefits?
- 4:00 – 4:10 Wrap-up and final thoughts – *Tim Cole, CEAB*
 - Comments may be submitted in writing by April 21, 2011 to gdeans@cerc.com