SB 1 An Act Concerning Connecticut's Energy Future

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Senator Fonfara, Representative Nardello, Committee Members and Staff, good afternoon. My name is Joel Gordes and I am an independent energy consultant active in a number of energy organizations including the CT Energy Advisory Board and the Interstate Renewable Energy Council (IREC) but, today, I am representing purely myself. I appreciate the opportunity to provide brief comments on this bill. A summary of the comments includes:

Support Creation of DEEP a high-level state energy department (w/brief history of same)* Asterisks connote more extensive comments below and on following pages
Oppose Sec 8(26) allowing large, foreign and vintage hydroelectric facilities to meet the RPS. Opposition is on energy security and environmental grounds and REC market considerations*
Support (with stipulation) of Sec. 32(h) (12-20) that incorporates what is currently 16a-3k, the CT Energy Policy Act. It must be clear this applies to ALL state entities as the original legislation did in declaring it the "policy of the State of Connecticut." The DPUC, operating under Title 16, has never accepted that Title 16a applied to them.
Oppose Sec. 33 eliminating the CEQ Executive Director position. When no one else has kept the system honest, CEQ, with an independent director, has on such issues as not meeting statutorily set GHG goals, etc.
Support Sec. 47(c) that removes the Renewable Energy Investment Fund from CT Innovations Inc. control. CII has piggybacked on CCEF assets for a decade and it is time for a complete separation from its influence.
Support Sec. 48 (a) – (g) pertaining to an Integrated Resource Plan (IRP) to be the product of DEEP, ISO-NE, the EDCs and the CEAB.
Support Sec. 49 for a plan to lower energy costs and analyze in-state renewables compared to costly and vulnerable transmission
Support Sec. 50 that provides for a proceeding to investigate the creation of a low-income electric rate.
Support Sec. 51 for what is commonly termed a Property Assessed Clean Energy (PACE) loan program.
Support Sec's. 56-63 for a variety of solar-specific programs but subject to a rate cap.*
Support Sec. 82 to review financing programs and recommend a state program for EE/RE financing
Support Sec. 83 a pilot program to use agricultural waste for anaerobic digestion for farm CHP w/virtual net metering
Support (with stipulation) Sec. 89 to establish a technology neutral feed in tariff.*
Support Sec. 91 a program to promote CHP below 3 MW.

Support Creation of DEEP as a High-level State Energy Department

More than any other portion of this legislation, the sections pertaining to Creation of DEEP are the most critical. Without this Department there is neither a single point of authority nor, more importantly, accountability. Energy has been and will continue to be a critical part of our economy and way of life. Our ability to determine a better energy future depends upon investing the resources to lower our dependency as well as our costs.

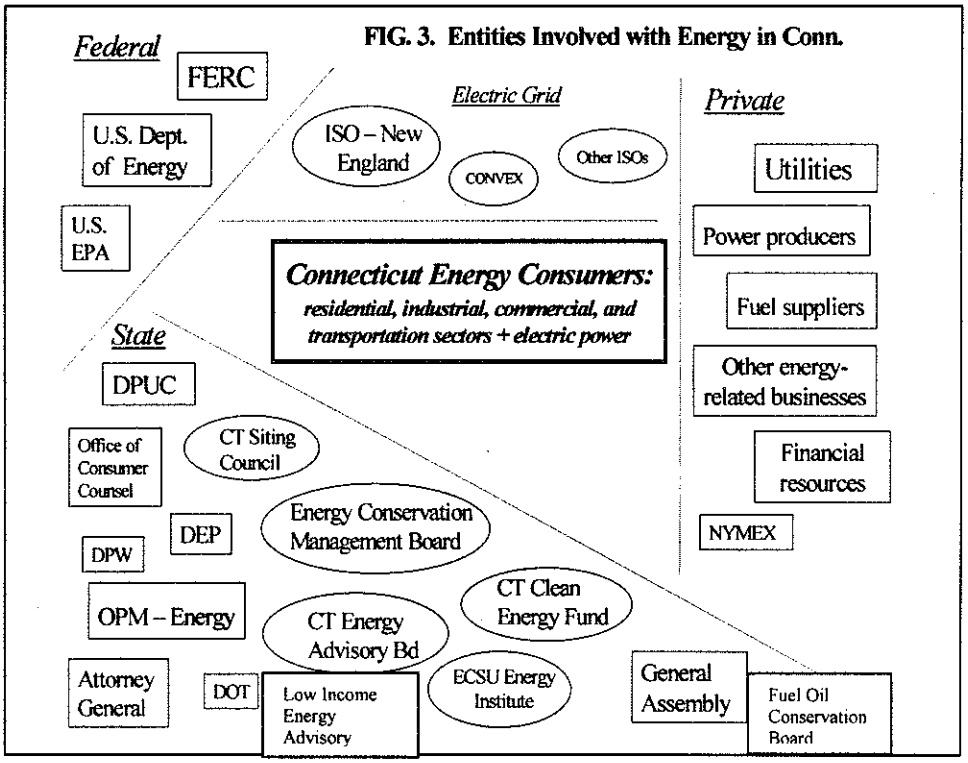
Background of Connecticut's State Energy Department

In October 2002 the Legislative Program Review and Investigations Committee undertook it's study *Energy Management by State Government* and did a superb job of identifying some of the major problems. The PRI

Committee chose only to endorse the more modest proposals. Most noteworthy in regards to the legislation before us is the observation that today:

> *No single individual or governmental entity has overall responsibility for energy policy in Connecticut.* As shown in the Figure below, more than a dozen state governmental bodies[1] have specific energy-related responsibilities. In addition, numerous types of private businesses play important roles making energy products and services available. Federal entities also are important participants in setting energy policies.

FIG. 3. Entities Involved with Energy in Conn.



Arguments against bill in 2006 creating an energy department ran the gamut from increasing the cost of government to one state senator's likening it to a Soviet-type organization. Missing from the conversation was the lack of knowledge the state once had a vibrant, well-staffed state energy office:

- From about 1974 we had what was officially called the "The Department of Planning and Energy Policy".
- It's first permanent Commissioner was Lynn Alan Brooks[2] who had a nuclear background from the U.S. Navy. He was followed by Sister Claire A. Markham, RSM, Ph.D, a Professor of chemistry at St. Joseph's College.
- At its height, the state energy office employed ~88 people in varied aspects of energy. It was a vibrant and knowledgeable organization that did much to bring energy into the mind and actions of Connecticut citizens.
- In ~1977, under a general reorganization, it was merged into a new super-agency, The Office of Policy & Management.
- 1981-1982 we saw oil rise to ~$40/barrel; equal to ~$80/barrel today corrected for inflation. A 1984 survey[3] noted 80% saw the energy crisis as "serious" or "very serious" in 1980 but slipped to 50% by October 1984 after oil prices had plummeted to new lows.

[1] Since year 2002 two additional boards (Low Income Energy Advisory and Fuel Oil Conservation) have been added and are shown.

[2] Eckhardt "Chris" Beck, borrowed from DEP, was its first Acting Commissioner.

- With the drop in oil price, the value of the Energy Office was diminished and it's staff was scattered .

Oppose Sec. 8(26) Allowing Large, Foreign and Vintage Hydroelectric Facilities to Meet the RPS

I oppose this portion of the bill for several reasons including:

1) The importation of foreign power necessitates the need for additional large, expensive and vulnerable transmission facilities. Even if for "free," this has the effect of further centralizing the electric grid which makes the state more vulnerable to interruptions by physical or cyber means. In 1989 Hydro Quebec experienced some degree of grid collapse due to what is termed a coronal mass ejection, an event similar to a solar flare, and we are entering an era of what is termed a "solar max" where this may become more common. In 1998, Northern New England and Canada had a massive January ice storm that left millions in the dark and cold when ice of as much as 3.5 inched collapsed Canadian transmission towers leaving many without power with monetary damage attributable to lost power in just Canada up to $694 million (US) . One account adds:

> Another intriguing outcome of this ice storm was that Hydro-Québec, North America's largest electricity producer, was sued by 22 insurance companies for the unreliability of its grid. In their suit, the insurers claimed that not only bad weather was to blame for the damages, but also the power network configuration, inadequate maintenance, technical weaknesses, and human errors, all of which led to the high number and value of claims. As of December 2003, this suit remains unsettled.[4]

In addition, the National Research Council (National Academies of Science/Engineering) has warned:

> 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 (in addition to increased costs). The likelihood of hidden failures in any large-scale system increases as the number of components increases. Modeling techniques are only now emerging for the analysis of such hidden failures.[5]

2) Buying RECs and power from out of state at promised prices that appear to be too good to be true may carry unintended consequences including providing more energy-related jobs for Canadians than Connecticut citizens. Greater amounts of smaller scale, in-state renewables provides greater resiliency as well as employment opportunities. The recent energy-related problems in Japan due to the earthquake/tsunami can be instructive if we are receptive to the lessons to build a more decentralized and resilient energy infrastructure.

3) Making large and vintage hydro facilities eligible as a REC source may flood the market leading to the failure of projects under way or in the planning stages not only costing jobs but, once again, giving Connecticut the reputation of being an unreliable regional partner.

4) In addition, the CT Energy Advisory Board has a comprehensive study already underway to more closely investigate the ability of the state to make its 20% by 2020 RPS goal without resorting to market-disrupting practices such as this. This premature action, most likely based upon obsolete data from the CEAB's 2010

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[3] "Survey Finds Stable Energy Prices Diminish Worries About Conservation," Phil Lohman. The Hartford Courant. 11/22/84. Survey performed by the Institute for Social Inquiry.

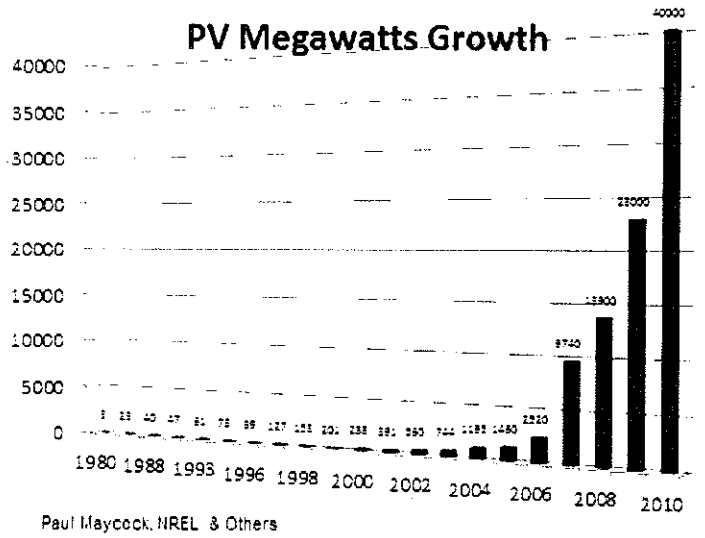
[4] From *Reducing Risk With Distributed Generation.* Gordes, Joel and Lenssen, Nicholas. Primen. June 2004. As described in "Hydro-Québec Sued," [21]; and Hydro-Québec, Annual Report of Hydro-Québec, (Montreal: Hydro-Québec, December 2003).

[5] *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism.* National Academy Press. Committee on Science and Technology for Countering Terrorism, National Research Council. *p.302.2002.*

Integrated Resource Plan, does not need to be taken now when REC prices are about one-third of what they were a year or two ago. Even photovoltaics, currently touted as one of the most expensive technologies, is undergoing rapid deployment accompanied by considerable cost reductions. Investing into Canadian sources under long term contracts might have lasting economic consequences to compound past mistakes in Connecticut RPS history.

Support Secs. 56 to 63 for a Variety of Solar-specific Programs

Probably the most important section of these is Section 56 which places a rate cap on how much may be spent for these various solar programs as last year's version of this bill was unfairly characterized by some as potentially leading to runaway rate increases. This clarifies the situation although it should be noted that the price of PV technologies has been falling rapidly in recent years and periodic review of the number of MWs allowed should be undertaken to revise upward any figures due to those price decreases. The chart to the left provides a history of the cumulative number of megawatts deployed on a global basis and illustrates the large increase in PV deployment in the past four years. This massive deployment aids in the reduction of cost as do several other factors such as dedicated sources of polysilicon, the major feedstock required for the manufacture of many brands of PV. In addition, Sec. 61(e) allows utility participation including ownership of PV projects. Due to the larger scale of such utility projects, this has the ability to continue to move the cost curve downward making the technology more affordable to all players and should be encouraged. In addition, it provides another value stream by which utilities may realize a rate of return other than building endless transmission -- whether it is needed or not. While not well known to many of today's generation of advocates, many of the early PV programs and projects were the product of utility efforts and there was even an organization PV for Utilities (PV4U,) managed by IREC, which was valuable for information sharing and lessons learned.



Support Sec. 89 to Establish a Technology Neutral Feed-in Tariff

I commend the legislature for not attempting to micromanage the details of the feed-in tariff proposed within this legislation but, instead, ordering a docket by the DPUC to determine the specifics. Done correctly a feed-in tariff can quickly jumpstart activity to deploy renewable energy technology such as has been done in Germany, a nation with half the sunlight of Connecticut. At the same time, a feed-in tariff done incorrectly can have disastrous results such as the feed-in tariff in Spain which failed to place adequate controls to de-escalate the incentives over time leading to unanticipated demand and rate pressures. This forced an abrupt and painful change to the program which led to unemployment and a global glut of PV panels. Similar pressures have also arisen in Italy due to its program design.

It is suggested the docket carefully investigate and then articulate the goals to be met by the feed-in tariff and then design the program to maximize those goals. It is highly recommended the DPUC and the parties to this docket avail themselves of the recent document by the National Renewable Energy Laboratory (NREL) titled *A Policymaker's Guide to Feed-in Tariff Policy Design* to aid them in avoiding the pitfalls and meeting the agreed upon goals. The document can be downloaded at www.nrel.gov/docs/fy10osti/44849.pdf