Northeast Energy Efficiency Partnerships, Inc.

March 20, 2009
Via U.S. Mail, and Email (gdeans@cerc.com)

Connecticut Energy Advisory Board
c/o Gretchen Deans - CERC
805 Brook Street, Bldg 4
Rocky Hill, Connecticut 06067

RE: Comments on 2009 Draft Integrated Resource Plan

Northeast Energy Efficiency Partnerships, Inc. ("NEEP")[1] appreciates this opportunity to submit comments to the Connecticut Energy Advisory Board ("CEAB" or "Board") regarding the United Illuminating Company and the Connecticut Light and Power Company ("the Companies") Draft Integrated Resource Plan ("Plan") for Connecticut.

These Comments are in response to the Board's request for written comments on how the electric distribution companies' ("EDCs'") Plan meets the statutory requirements of Connecticut General Statutes Section 16a-3a (Section 51 of Public Act 07-242, An Act Concerning Electricity and Energy Efficiency), and if not, how the Plan should be specifically modified to do so.[2]

Relevant Statutory Standard and Compliance

For the energy efficiency portions of the Plan to be in compliance, the Plan must meet the relevant statutory standards that emanate from House Bill No. 7432 Public Act No. 07-242, *An Act Concerning Electricity and Energy Efficiency* ("Act").

[1] These comments are presented by NEEP staff, and do not necessarily reflect the views of NEEP's Board of Directors, sponsors, or underwriters.

[2] The Board also asked for comments on the Department of Public Utility Control's ("DPUC") Final Decision in Docket No. 08-07-01, the DPUC's Review of the Companies 2008 Integrated Resource Plan. Further, the Board asked for comments on the direction of Connecticut's long-term strategic electric energy planning and public policy goals in light of factors such as the evolving market, environmental goals and requirements, and the American Recovery and Reinvestment Act. While NEEP is aware of the DPUC's Final Decision in Docket No. 08-07-01, it chooses not to comment on the decision at this time. Additionally, although NEEP is in favor of long-term strategic electric and general energy planning, with consideration of market and environmental goals in those plans, given the relatively short period of time for comment, NEEP will focus only on whether the Plan meets its statutory goals within the area of energy efficiency, and include any modifications NEEP feels are helpful or necessary.

The general and specific relevant portions (emphasis added) of Section 51 of that Act state that:

> (b) On or before January 1, 2008, and annually thereafter, the [electric distribution] companies shall submit to the Connecticut Energy Advisory Board an assessment of[:] (1) the energy and capacity requirements of customers for the next three, five and ten years, **(2) the manner of how best to eliminate growth in electric demand, (3) how best to level electric demand in the state by reducing peak demand and shifting demand to off-peak periods, (4) the impact of current and projected environmental standards, including, but not limited to, those related to greenhouse gas emissions and the federal Clean Air Act goals and how different resources could help achieve those standards and goals, (5) energy security and economic risks associated with potential energy resources ….**[3]
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> (c) Resource needs shall **first be met through all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible**. **The projected customer cost impact of any demand-side resources considered pursuant to this subsection shall be reviewed on an equitable bases with nondemand-side resources**. The procurement plan shall specify (1) the total amount of energy and capacity resources needed to meet the requirements of all customers, **(2) the extent to which demand-side measures, including efficiency, conservation, demand response and load management can cost-effectively meet these needs,** (3) needs for generating capacity and transmission and distribution improvements, (4) **how the development of such resources will reduce and stabilize the costs of electricity to consumers,** and (5) **the manner in which each of the proposed resources should be procured, including the optimal contract periods for various resources.**[4]

It is NEEP's opinion that the Plan is consistent with the Act's legislative mandate. The Plan outlines how best to eliminate growth in electric demand through improved energy efficiency, and shift state electric demand through demand-side response programs. Further, the Plan: explains the positive impact that energy efficiency and renewable resource upgrading and integration will have on environment standards; explains the positive impact that both energy efficiency and renewable energy will have on energy security and the state economy, as opposed to further reliance on existing generation and fuels; and demonstrates the lifetime cost, and current and future availability of these energy resources. The Plan proposed not only maintains effective existing programs, but expands those programs where it makes economic and other sense, and adds new programs that are cost effective, reliable, and feasible. In addition, the Plan

[3] *See also*, **(6) the estimated lifetime cost and availability of potential energy resources**

[4] *See also*, (d) The procurement plan shall consider: (1) **Approaches to maximizing the impact of demand-side measures;** (2) the extent to which generation needs can be met by renewable and combined heat and power facilities; (3) the optimization of the use of generation sites and generation portfolio existing within the state; (4) fuel types, diversity, availability, firmness of supply and security and environmental impacts thereof, including impacts on meeting the state's greenhouse gas emission goals; (5) reliability, peak load and energy forecasts, system contingencies and existing resource availabilities; (6) import limitations and the appropriate reliance on such imports; and (7) **the impact of the procurement plan on the costs of electric customers.**

reviews projected demand-side resource impacts on customer costs on an equitable bases with non-demand-side resources, and finds them most often superior to new generation and other forms of energy procurement in cost, as well as in their ability to stabilize and lower customers' electric costs. Finally, the Plan provides a good overview of how energy efficiency should be procured, although this area is one in which NEEP feels it can add to the Plan with constructive suggestions. Although the Plan meets its technical legal requirements, NEEP feels that the Plan can be improved, and better meet the relevant portions of the Act for more efficient use of energy by considering and following NEEP's specific recommendations, set out below.

Plan Finding and Recommendations

NEEP generally concurs with and supports the "key" findings of the Plan. It is worth noting that the reference level energy efficiency in the Plan would provide close to a 4-1 average benefit-to-cost ratio over ten years,[5] well above national benefit/cost ratios,[6] which demonstrates the evolution and effectiveness of Connecticut's energy efficiency programs. NEEP further supports the Plan's finding that not funding energy efficiency above current funding levels would leave many cost-effective opportunities untapped in the residential, commercial and industrial sectors. Especially in such times of economic difficulty, limiting or decreasing energy efficiency program opportunities would deprive Connecticut residents and businesses of needed energy savings that will amount to **over $1.5 billion** in incremental **net** lifetime benefits.[7] Most important, however, is the Plan's foresighted finding that "[l][ong-term and sustained funding is required to ramp-up and maintain the infrastructure needed to achieve Expanded [energy efficiency.]"[8]

Existing and Proposed Energy Programs

1. Small Business Energy Advantage, and Business Sustainability Challenge

The existing Small Business Energy Advantage program has been successful in saving energy, particularly with regard to lighting. But for an expanded efficiency plan, NEEP suggests that the program diversify and be less oriented around lighting contactors within the vendor pool, and provide more training in the specialty areas of air conditioning and refrigeration, where proper installation and maintenance practices are essential to achieving energy savings.

With regard to the Business Stability Challenge program, we would emphasize the need to take a "whole building" approach across energy sources that considers a comprehensive bundling of efficiency measures that can save both customers and the Companies time and money. NEEP also agrees that paying attention to smaller business customers may have large

[5] *See* Plan at 2-12.
[6] *See e.g.*, *Positive Returns: State Energy Efficiency Analyses Can Inform U.S. Energy Policy Assessments*, June 2008, by John A. "Skip" Laitner and Vanessa McKinney, ACEEE – Report Number EO84 (show industry average benefit/cost ratios at 2 to 1); See also: *Financial Analysis of Incentive Mechanisms to Promote Energy Efficiency: Case Study of a Prototypical Southwest Utility,* Peter Cappers, Charles Goldman, Michele Chait, George Edgar, Jeff Schlegel, Wayne Shirley, March 2009 (where energy efficiency portfolio benefit/cost ratios ranged from 1.7 to 2.6, with the most conservative portfolio returning a 2.6 benefit/cost ratio that is still one third less than the average Plan benefit/cost ratio).
[7] *See* Plan at ES-6, 2-26,2-44.
[8] *See* Plan, at ES-6, 2-44.

impacts, in the aggregate, as those businesses are, in total, substantial users of electricity.[9] But perhaps more importantly, as those businesses grow larger, they will have learned the economic advantages of being energy efficient, and will sustain those practices, providing them with a competitive advantage in years to come. In addition, embracing energy efficient strategies now will also better prepare businesses for future statutory codes and standards that will govern the energy use of buildings and many of the components in them.

One issue NEEP sees as needing particular attention is in determining how savings will be properly attributed to programs for additional energy efficiency measures business owners install, or behavioral modifications due the business owners' influence over their energy choices.[10]

2. Energy Opportunities

The Energy Opportunities program of retrofitting existing buildings is important in addressing building energy use beyond what building energy codes can govern.

One practical issue to address with retrofit programs, including Energy Opportunities, is that although the structure allows for and offers the perception of true comprehensiveness, it is extremely difficult to actually *be* comprehensive. For example, NEEP, in its regional Commercial and Industrial Buildings and and Technologies Initiative, seeks to establish best practices to inform how customers, the utilities, or other entities can provide energy efficiency programs and measures that go beyond the initial incentives into deeper, more comprehensive energy savings through multiple measures that take into account all fuels in system-oriented programming that also addresses operations and maintenance, re-commissioning, financing, sector strategies, and the role of Energy Service Companies. As Connecticut's stakeholders examine how these programs may expand, NEEP suggests that the Board and the EDC's incorporate some of these best practices that carry the potential for more comprehensive measures and deeper savings.

3. Energy Conscious Blueprint

The Energy Conscious Blueprint program of outreach and training to construct new buildings that perform beyond the base building energy code is of great value. Practically speaking, however, the first emphasis for both existing and expanded programs is proper outreach to the community to educate building owners about energy efficiency and the economic and other benefits associated with energy efficiency. Further, the definitions within the program need to be properly coordinated with other energy efficiency programs, such as the

[9] On page 2 of his 2006 testimony before the Pennsylvania House of Representatives' Environmental Resources and Energy Committee on energy efficiency, Christopher J. Lynch, Director of the Environmental Management Assistance Program at the Wharton School of the University of Pennsylvania, Mr. Lynch testified that small business energy use constitutes 74 percent of total commercial energy use. http://www.crisciassociates.com/Newsletter/docs/3/LynchTestimony.pdf

[10] NEEP notes that although this area is relatively new to Evaluation, Measurement, and Verification, studies exist that examine spillover effect on the educated or trained party regarding subsequent energy use, and these studies can help to quantify these costs, and account for behavioral effects. For example, Building Operator Training programs available within New England and the studies relating to them provide insight into subsequent energy use. *See, http://www.theboc.info/profiles.html; http://www.neep.org/html/BOC_evaluation_release.pdf*

high performance schools program, which might quantify the same property differently, making it potentially eligible as both a "new building" due to the significant reconstruction and treated as such through Energy Conscious Blueprint, and an "existing building" available for retrofit under the schools program, creating confusion. The practical effect is that the school administrator will be thinking his/her project qualifies for a existing building retrofit program that will pay 75 percent of the cost, while the EDC'S might classify the project as a new construction project, and will only fund the project based on the number of kWh saved beyond code, thus confusing the participants and leading to inefficiency and diminished energy savings.

NEEP also recommends that other guidance be incorporated into the programs, and, in particular, recommends guidance that relates to and builds off of energy codes. For example, LEED, while well-known and beneficial in driving some advanced building practices, is a "rating system," neither related to nor capable of being administered as a building energy code. Therefore, using LEED or other similar rating systems as the basis for such programs does not provide an appropriate link to building energy codes, which should ideally act in tandem with beyond-code guidance, with one – the programs – representing "the ceiling," while the other – the code – represents "the floor." As the programs introduce new building practices, raising "the ceiling," the codes are also enhanced, simultaneously bringing up "the floor," consistently moving forward together to improve building energy performance. In the area of new school construction, NEEP recommends the protocols created through the *Northeast Collaborative for High Performance Schools* (NE-CHPS). For other buildings, NEEP recommends *ENERGY STAR New Homes* for new residential buildings,[11] and the New Buildings Institute's *Core Performance Guide* for new commercial buildings.[12] In other states, such as Massachusetts, these building guidelines are actually being implemented as part of a "stretch code" appendix to the building energy code to not only maintain a consistent link with the new construction energy efficiency programs as offered by that state's utilities, but also provide guidance to cities or towns that may wish to go beyond the state's minimum building energy code. [13]

Finally, NEEP recommends that proper the Plan resolve the issues of determining proper attribution of energy savings to each program that provides outreach, training, and code compliance training and/or support.[14]

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[11] When specific states participate in the *Residential Homes with Energy Star* program, the programs tailor the name of each program to their state – e.g., "Connecticut Energy Smart Homes" program. For more information, please see: http://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_hpwes

[12] For more information, please see: http://www.advancedbuildings.net/corePerf.htm

[13] For example, NEEP notes that when wanting to build beyond code, NEEP's "Informative Appendix" or "stretch code," which is pending inclusion in Massachusetts, is an excellent reference point. *See*, http://www.neep.org/newsletter/4Q2008/codes.html

[14] For reference on how to quantify energy efficiency and peak savings from Code and standard advocacy and training programs, NEEP recommends various California PUC decisions, including California PUC Decision 05-09-043, *Interim Opinion: Energy Efficiency Portfolio Plans And Program Funding Levels For 2006-2008 - Phase 1 Issues*, at 123 et seq., September 22, 2005 (where the CPUC determined how best to quantify energy and peak savings from utility codes and standards advocacy programs). In addition, NEEP also notes that its Evaluation Measurement &Verification (EM&V) Forum, within which Connecticut has representatives from its Department of Public Utility Control, electric distribution companies, and representatives from the Energy Conservation and Management Board, is scheduled to address state energy efficiency programs that advance codes and standards, and quantifying associated energy savings impacts in late 2009. For more information, please see: http://www.neep.org/policy_and_outreach/EMV.html

4. Residential New Construction

NEEP commends Connecticut for its strong Residential New Construction program of outreach and training. Particularly effective has been the strategy of bolstering energy efficiency through creating good relationships with builders. Further, the use of "published" incentives as guidelines has worked well because instead of hard and fast fixed incentive levels, it allows for flexibility and encourages negotiation with prospective builders.

Within the current Residential New Construction program, NEEP recommends better outreach the sub-contracting trades to incorporate energy efficiency standards, and better ensuring comprehensiveness via an "all fuels" or "whole house" energy efficiency strategy. NEEP strongly supports the Plan's recommendation to improve code knowledge and code enforcement through training, but in terms of determining cost effectiveness, as with some other commercial and industrial programs, NEEP suggests that the Plan resolve the issue of how to best and accurately attribute code compliance support savings to each specific program.[15]

When examining "green building" or "high performance" building standards, as referenced in the Plan's Residential New Construction Expanded Energy Efficiency proposal, NEEP recommends *ENERGY STAR New Homes*,[16] and is finalizing for public release its "Model Progressive Building Energy Codes Policy for Northeast States," which recommends a comprehensive set of measures designed to maximize the energy savings potential of the building energy codes that govern new building construction and major building additions. One important element of this report is the need to coordinate any building code or standard related public policy with existing energy efficiency programs such that these efforts will complement each other to the benefit of building owners and occupants. In terms of looking for even greater energy savings from the building sector, additional state and federal strategies are under development to guide the development of "Net Zero Energy Buildings," or buildings that are so highly efficient and incorporate renewable energy that they expend no more energy than they provide for themselves. Massachusetts, for example, earlier this month released the findings of its state-sponsored Zero Net Energy Building Taskforce[17] in a report entitled *Getting to Zero: Final Report of the Massachusetts Zero Net Energy Buildings Task Force.*[18] In this report are numerous standards and other recommendations for commercial, residential, and state-owned building, work-force development, and more that can provide additional guidance to Connecticut's high performance building strategies.

5. Residential Retail Products Program

While NEEP supports the Plan's Residential Retail Products program, and its objectives of building awareness, acceptance, and market share of ENERGY STAR lighting, appliances, and electronics, NEEP feels the Plan should include and address a few additional important categories and topics. Specifically, consumer electronics, which represent a significant portion

[15] For insight on how to resolve this issues, please *see* note 14, *supra.*
[16] http://www.energystar.gov/index.cfm?c=new_homes.hm_index
[17] http://www.mazneb.org/
[18] http://www.mass.gov/Eoeea/docs/eea/press/publications/zneb_taskforce_report.pdf

of total residential electric use,[19] should be addressed. In addition, although ENERGY STAR is a good benchmark for residential retail products, the Plan should explore and fund plans to introduce products that exceed ENERGY STAR standards [20] Also, the plans don't address solid state lighting (SSL) opportunities, which represent the next big opportunity for savings in lighting. As such lighting technologies evolve, it will be important for Connecticut's energy efficiency programs to stay ahead of the curve.

6. **In-Home Services**

NEEP applauds the Plan's goals in expanding its In-Home Services (IHS) program, but we believe that through aligning the program with ENERGY STAR, the EDCs can dramatically increase the speed, reach, and overall effectiveness of the program. Because the current IHS program is well structured, it will likely need to change little, if any at all, to be approved by ENERGY STAR as a Home Performance with ENERGY STAR program. [21] Absent the brand awareness and demand that approval by ENERGY STAR will bring, ramp-up of IHS could be unnecessarily slow and expensive. In addition, NEEP believes that the IHS program should transition away from a direct-install based program to a more market based program, and without ENERGY STAR to drive it, this transition will be similarly slow and the capacity of the direct install pool will quickly be reached. And without use of a market-driven model, Connecticut will not effectively achieve the significant and comprehensive energy savings for existing homes that are envisioned.

In addition, Connecticut's existing low income In-Home Services program is also well developed, but suffers from the same lack of market penetration due to lack of name recognition, again, a situation easily remedied through transitioning to Home Performance with ENERGY STAR.[22] Further, having a comprehensive application of the program on a "whole house" or "all fuels" basis, and clarifying how multiple funding sources might be leveraged would also help complement the aims of the states low-income programs.

Analyzing Cost Effectiveness

In footnote 3 on page 2-2 of the Plan, it states that "[t]he benefit-cost ratios calculated in this section are based on the benefit-cost test formerly known as the "utility cost test.'" As an alternative, NEEP recommends the Total Resource Cost ("TRC") test. The TRC test is the most effective test currently available. In its benefit and cost calculations, it takes into account multiple externalities, such as the consumer cost, environmental benefits, and energy

[19] Residential electronics represent 11% of electric use in the home, and 4% of total electric use, and is expected to increase by 20 percent by 2015: *See*, https://www.energystar.gov/ia/partners/downloads/meetings/Consumer_Electronics_Light_Fixtures.pdf.
[20] For insight on products and appliances that exceed Energy Star recommended products and appliances, NEEP recommends TopTen USA, a new non-profit corporation that will provide information on top efficiency rated products and services. For more information on TopTen USA, please see: http://www.toptenusa.org/TopTen_Summary.pdf.
[21] For more information on Home Performances with Energy Start, please see: http://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_hpwes.
[22] NEEP recommends examining New York's "Assisted Home Performance" or Home Performance with Energy Star as a reference; http://www.getenergysmart.org/.

stabilization benefits. NEEP also advocates inclusion of all reasonably quantifiable environmental externalities in the avoided cost component of the TRC test.

NEEP realizes that the Plan's cost effectiveness evaluation uses the utility cost test as the primary test, and does include the TRC test as a supplemental test. While this may allow consideration of certain elements of the TRC into the evaluation, NEEP favors the reverse, with the more comprehensive TRC test as the primary or exclusive test, and, if necessary, the utility cost test as a supplemental test. NEEP notes that in the National Action Plan on Energy Efficiency, as developed by the U.S. Department of Energy and Environmental Protection Agency, a comparison of various state cost-effectiveness tests shows that a great many other states that have strong energy efficiency programs comparable to Connecticut's use the TRC as their primary or exclusive test.[23] Accordingly, Connecticut may be undermining some energy efficiency opportunities by its use of the utility cost test rather than the TRC test, which incorporates additional benefits to allow a more comprehensive analysis. Should Connecticut opt to stay with its current use of the utility cost test as the primary cost-effectiveness test, NEEP recommends that that it examine closely the differences between the utility and TRC tests to be sure that all reasonably quantifiable environmental externalities are included in the avoided cost component of the TRC, and included in Connecticut's overall cost effectiveness analysis.

Conclusion

NEEP applauds the EDC's for crafting a thoughtful and forward-looking plan, the great majority of which we are happy to endorse and support. As noted, our recommendations are made in the spirit of enhancing the Plan's reach and effectiveness, and we stand willing to assist the Board and the EDC's in implementation to whatever extent we are able.

Sincerely,

Douglas Denny-Brown
Manager of Public Policy Outreach

[23] *See*, *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy Makers*, at 5-4, Table 5-3, November 2008.