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February 7, 2008

Connecticut Energy Advisory Board
C/O Ms. Gretchen Deans
Connecticut Economic Resource Center
805 Brook Street, Building 4
Rocky Hill, Connecticut 06067

**Re: Written Comments to The Connecticut Light and Power Company and The
United Illuminating Company's Proposed Integrated Resources Plan For
Connecticut**

Dear Ms. Deans:

The Connecticut Clean Energy Fund hereby submits its written comments in the above referenced matter, which were prepared by its consultant Sustainable Energy Advantage, LLC.

Please do not hesitate to contact me if you have any questions regarding this submission.

Very truly yours,

A handwritten signature in blue ink that reads "Paul R. Michaud".

Paul R. Michaud
Director of Regulatory Policy and
General Counsel

CC: Connecticut Clean Energy Fund Board of Directors



COMMENTS OF SUSTAINABLE ENERGY ADVANTAGE, LLC

**TO THE PROPOSED INTEGRATED RESOURCES PLAN OF
THE CONNECTICUT LIGHT AND POWER COMPANY AND
THE UNITED ILLUMINATING COMPANY**

ON BEHALF OF

THE CONNECTICUT CLEAN ENERGY FUND

FEBRUARY 7, 2008

TABLE OF CONTENTS

I.	Introduction	3
II.	Examination Of The Proposed IRP.....	4
1.	The Assumptions In The IRP Regarding The Renewables Supply In Connecticut Are Not Current, Accurate Or Well Researched	4
2.	The Proposed IRP Fails To Account For The Presence And Impact Of A Substantial Amount Of Connecticut Eligible Only Class I Sources	4
3.	Connecticut REC Supply vs. Regional REC Supply.....	8
4.	The IRP Incorrectly Concludes That There Will Be Substantial And Indefinite Regional REC Shortfalls Because It Ignores Many Eligible Renewable Sources	10
5.	Regional Renewable Energy Development Pipeline Demonstrates Adequate Supply is Under Development.....	12
III.	Recommendations.....	15

I. Introduction

On January 1, 2008, The Connecticut Light and Power Company and The United Illuminating Company (“the electric distribution companies or EDCs”), with The Brattle Group, submitted their proposed Integrated Resource Plan (“IRP”) to the Connecticut Energy Advisory Board (“CEAB”). In response to the CEAB’s request for comments to the IRP, the Connecticut Clean Energy Fund (“CCEF”) retained Sustainable Energy Advantage, LLC (“SEA”), to study the IRP’s conclusions that the EDCs will fall far short of their Connecticut RPS obligations, thus resulting in substantial and prolonged penalty payments at the price cap (referred to as alternative compliance payments or ACP¹) or maximum REC prices in the market for RPS compliance. SEA is a well-respected independent consultant specializing in renewable energy market analysis and policy development, including renewable portfolio standard implementation and compliance, the analysis of REC supply and demand – and its implications on REC prices – throughout New England and adjacent power pools.

Based on SEA’s thorough and in-depth analyses of the renewable energy markets in Connecticut and New England, SEA has concluded that for the Connecticut Class I RPS, there is likely to be only a very modest REC shortage, if any, consistent with quite limited ACP payments expected over the next several years. SEA’s conclusion differs from the IRP findings, which assume significant Class I REC shortages, REC prices exceeding the price cap, and predict substantial resulting ACP payments by the electric distribution companies over the next several years. These differences suggest a potentially different set of future policy implications than implied in the IRP, which are outlined as recommendations for the CEAB’s consideration.

SEA’s examination of the proposed IRP and its recommendations are provided below:

¹ While the term Alternative Compliance Payment (ACP) is the term of art used in other New England states, ACP is not a defined term in Connecticut. The phrases used in Connecticut – and throughout these comments – are “penalty payment” or “price cap.”

II. Examination Of The Proposed IRP

1. *The Assumptions In The IRP Regarding The Renewables Supply In Connecticut Are Not Current, Accurate Or Well Researched*

The IRP estimates that RPS compliance will be comprised of approximately \$200 million in penalty payments in 2011 (IRP at p. 133), based on the inappropriate assumption that the EDCs will pay the penalty cost of \$55/MWh for all RPS compliance. While the IRP acknowledges that Connecticut is part of a regional supply market, the examples provided regarding the amount of eligible supply are limited only to Connecticut, and specifically to Project 150. Further, as a substitute for the appropriate regional analysis, the IRP references proposed renewable energy projects that have filed with ISO-NE to be placed in the interconnection queue. Assuming that only half of these projects will achieve commercial operation, the IRP erroneously concludes that Connecticut-eligible supply will lag behind Connecticut RPS demand for the near future. The IRP analysis omits several important categories of eligible existing and expected renewable energy supply, which, once accurately accounted for, reveal a strikingly different picture for both Connecticut and regional supply and demand balance, and which strongly suggest that buying all RPS compliance at the \$55/MWh penalty, as predicted, is neither likely nor prudent.

2. *The Proposed IRP Fails To Account For The Presence And Impact Of A Substantial Amount Of Connecticut Eligible Only Class I Sources*

In order to understand Connecticut's near-term Class I RPS supply and demand balance, it is importance to remember that RPS resource-eligibility differs by state. Unlike other New England states' RPS requirements, which require "new" renewables, Connecticut's definition of Class I RPS-eligible generation (other than small hydropower) allows facilities of any vintage. Of particular influence are the existing biomass facilities, which may qualify so as long as they demonstrate monthly average NO_x emissions less than 0.075 lbs/MMBtu. Because of these differences in eligibility, a material quantity of existing renewable generation qualifying for Connecticut Class I is not eligible for any of the other regional RPS requirements cited in the IRP as being in shortage and subject to potential REC prices exceeding \$55/MWh. This category of Connecticut Class-I-Only RECs includes biomass and landfill gas generators on-line

before 1998, and even some older wind generation. In addition, generating electricity via fuel cells using natural gas, waste heat recovery systems and pressure reduction systems are only considered eligible renewables in Connecticut.

The category of Connecticut Class-I-Only generation has grown recently, and is poised to grow substantially further, driven by two important events:

(1) Public Act 07-5, *An Act Concerning Minor and Technical Changes to Certain Special Session and Regular Session Public Acts*, which (per the definition of “Sustainable Biomass” at Section 45) reinstates construction and demolition material as an eligible fuel until the Plainfield Renewable Energy (PRE) facility comes on-line. The DPUC’s implementation of this decision added 80 MW to CT RPS supply, amounting to approximately 510 GWhs of Connecticut Class- 1-only RECs in 2007 and 570 GWhs of RECs annually thereafter until PRE comes on-line; and,

(2) The recent convergence of CT Class I and Massachusetts REC market prices has spurred activity among half a dozen existing northern New England biomass facilities to proceed with installing post-combustion NO_x emission retrofits, allowing them to qualify all of their output as CT Class I eligible.² This additional generation, which is anticipated to fully phase in by 2009, will qualify only in Connecticut.

As shown in Figure 1 below, these Connecticut Class I-only RECs are sufficient to balance, or nearly balance, Class I demand in 2007 and are expected to satisfy the majority of the Class I demand for the next several years. Furthermore, as the projects receiving long-term contracts under Project 150 and other CCEF programs become operational (even if eligible in other states), these resources will contribute to satisfying Connecticut’s Class I renewable resource demand as well.

² When CT Class I prices were lower, many of these plants had turned their attention to exploring more costly repowering investments to qualify their incremental generation as eligible in Massachusetts. With the increase in CT Class I prices, retrofits to meet CT eligibility are far more attractive.

Supply Only Eligible in CT vs. CT RPS Demand

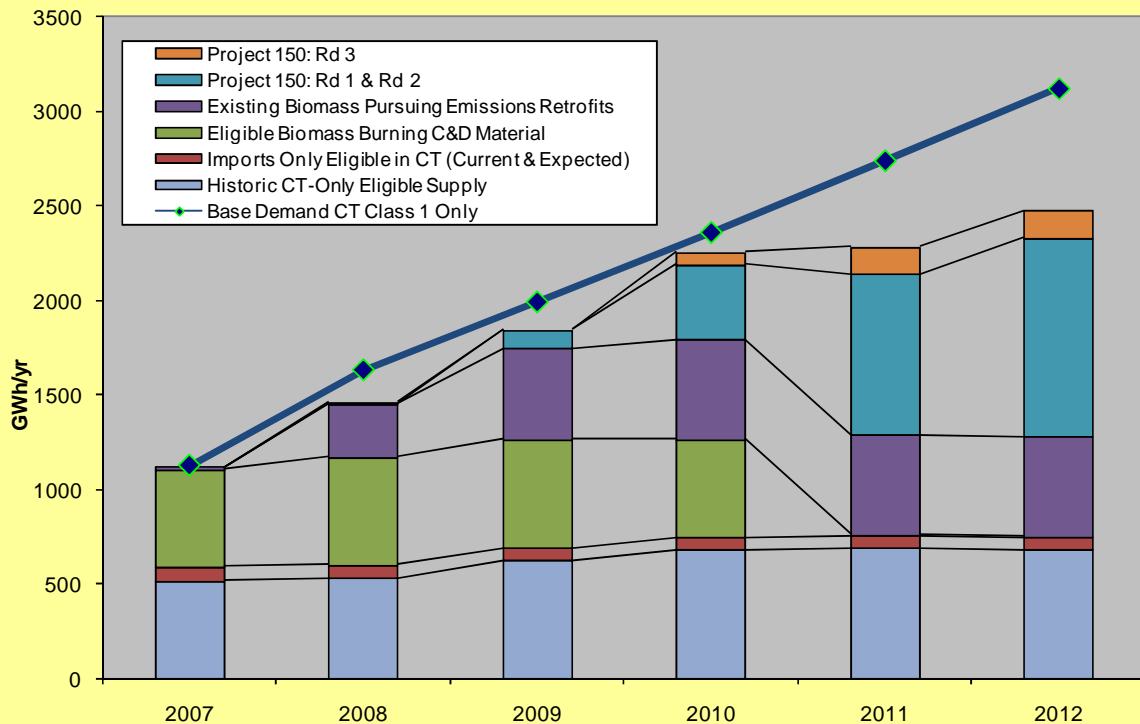


Figure 1: CT Class I-Only Supply & Demand
Source: Sustainable Energy Advantage, LLC proprietary database

Based on the above, it is not reasonable to expect REC prices for Connecticut Class I to exceed the \$55/MWh price cap. First, those renewable generators creating Connecticut Class I-only RECs, with no other premium market (no place else to go), have a very strong incentive not to have their RECs retire as worthless. Thus, they will most certainly seek prices less than the price cap rather than securing no revenue. Any available supply should be at prices sufficiently below the cap to justify the buyer's transaction costs and inconvenience relative to paying the penalty. It is for this reason that, ever since the outset of the region's RPS REC markets, even when markets have been short, prices have always settled below the applicable price cap.

Due to the nature of new resource development over time (or the retrofitting of existing facilities into eligible generators over time) the total number of RECs available for RPS compliance in a given year may not become apparent until late in that year – for example, as late as when RECs for the 4th quarter are traded (from April 15th through June 15th of the subsequent calendar year). As a result, the current practice of locking in all compliance early in the year and at the

maximum price precludes the ability to make opportunistic purchases late in the year, which could reduce compliance costs to ratepayers. Of course, it is not suggested that the utilities should rely on late-in-the-year purchases for all compliance. Simply, allowing a more sophisticated REC procurement approach and contracts of different terms helps to both mitigate long-term risk and capture the benefit of temporary price decreases in the short-term market.

Regardless of the precise balance in 2007, 2008 and 2009, the facts above demonstrate that the vast majority of the Connecticut RPS compliance will be achieved through the acquisition of available RECs. The plan in the IRP to pay the \$55/MWh penalty rather than procure RECs at prices, which will certainly be below the price cap, is not prudent. SEA expects there to be limited penalty funds required in the near term, and nowhere near the \$200 million forecasted by the IRP for 2011.

In fact, Figure 1 above suggests that if Connecticut load serving entities hold and utilize even a modest quantity of RECs, which are also eligible in another state towards Connecticut Class I compliance, the Connecticut RPS market could reach equilibrium or experience modest surplus, potentially causing REC prices to fall well below the \$55 price cap.

The implication of the current approach to procurement for RPS compliance by the EDCs, which pushes the obligation up to their wholesale suppliers, is that it guarantees a worst-case outcome. Any procurement approach which effectively pre-purchases all RPS compliance at \$55/MWh, boxes out the ability for ratepayers to pay less than the penalty in the event of adequate supply (surplus) OR substantial Connecticut Class I-only supply (even without a surplus). It is SEA's strong belief that it is NEVER prudent to lock in at the worst-case scenario; rather, as described in our recommendations below, ratepayers will benefit under an approach that balances the ability to exchange long-term contracts for prices below the price cap, and take advantage of RECs on the short-term market when available at prices below the cap.

One risk that the utilities may currently perceive with long-term REC contracts or establishing a REC portfolio is the risk of over-procurement. Over-procurement represents the situation in which the utilities purchase more RECs than needed for RPS compliance and thereby incur costs that may not be seen as recoverable. Connecticut should mitigate the risk of over-compliance by adopting a "banking" provision into its RPS regulations. Banking is incorporated into the RPS regulations of all other New England states, and enables the obligated entity to enter long-term REC supply agreements (taking some risk of over-contracting), which can

support a greater volume of renewable energy and drive down prices without exposing the utility to the risk that its RECs will not be able to be applied to an RPS obligation, or will be sold at a loss if the current year is in surplus and prices crash. Banking policies in New England typically allow the obligated entity to use RECs toward RPS compliance in the compliance year in which it was purchased or in either of the two subsequent compliance years. Banking policies also typically limit the quantity of RECs, which can be banked. For example, Massachusetts and Rhode Island allow obligated entities to bank up to 30% of their current year RPS compliance obligation. Banking can accomplish several benefits: it creates a more stable REC market; it mitigates the risk to generators of price crashes; it creates new tools for mitigating the price risk of obligated entities (both EDCs and competitive suppliers); it removes a reason for obligated entities to avoid contracting for RECs, which might be attractively priced; and it increases overall market liquidity.

3. *Connecticut REC Supply vs. Regional REC Supply*

While it is important to rely on in-state renewable energy to meet the Class I RPS requirement to the extent possible, it is neither required nor ideal to rely exclusively on in-state renewables. Connecticut will benefit from diversification of the regional power supply, in terms of reliability, diversity, and suppression of regional electricity and natural gas prices. It is commendable that the EDCs are finally recognizing within the IRP that electricity prices could be more stable as a result of regional renewable energy resources (wind power in particular) reducing natural gas price volatility. The CCEF for the past several years has been an active proponent of the hedge value concept of regional renewable energy resources before the Department and up until now, the EDCs had yet to recognize the benefit Connecticut ratepayers would receive from regional renewable energy resources. Ratepayer interests will be served in balancing the benefits of in-state renewable energy generation with minimizing the cost of complying with the RPS. Renewable resource potential is modest in Connecticut relative to the rest of the region; this can be seen from the relative distribution of development in the renewable energy pipeline shown in Figure 2.

New England RE Development Pipeline: MW by State, 2015

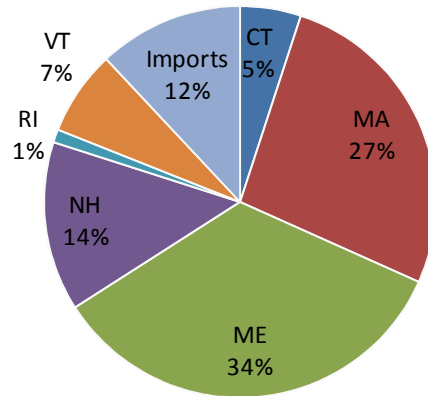


Figure 2: New England Renewable Energy Development Pipeline, by State, including current and expected imports, 2015 (Source: Sustainable Energy Advantage, LLC proprietary database)

New England RE Development Pipeline: MWhs by state, 2012

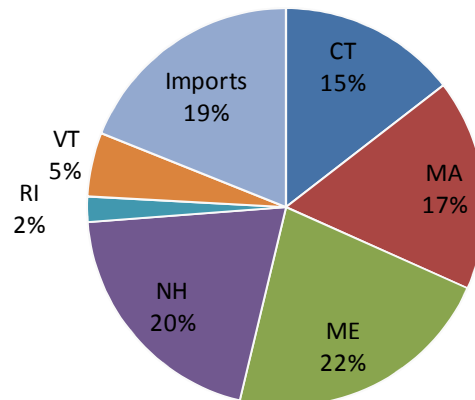


Figure 3: New England Renewable Energy Development Pipeline: Distribution of MWhs by state, including current and expected imports, 2012 (Source: Sustainable Energy Advantage, LLC proprietary database)

4. The IRP Incorrectly Concludes That There Will Be Substantial And Indefinite Regional REC Shortfalls Because It Ignores Many Eligible Renewable Sources

The IRP errs in limiting its focus to just the ISO New England interconnection queue by concluding that the New England region will be, and remain, in shortfall and suffer from prolonged high REC prices. While shortages have been the case in the past, the IRP makes no analysis of the degree of ongoing development in the region to meet these demands, and ignores whole categories of resources contributing to REC supply.

First, the IRP omits discussion of the critical, and growing, contribution of imports from neighboring control areas to regional RPS compliance. RECs imported (with energy, on an hourly basis, and in accordance with the applicable NEPOOL GIS rules) from control areas adjacent to ISO-NE are eligible for use towards RPS compliance in each New England state RPS. As can be seen in Figure 4, the minimally expected imports into New England provide a material contribution to meeting the regional supply. More than a dozen facilities are currently importing RECs from either New York or Quebec. Further, REC imports have more than tripled between 2005 and 2007. Without these imports, the regional market would clearly be in shortage. The imports depicted in Figure 4 reflect the sum of historical imports, additional facilities qualified to import RECs in at least one New England state but have not yet begun to do so, and that portion of additional generation being developed in New York to satisfy the New York RPS, which is not under contract. Such imports, while ultimately subject to physical limitations of the ties between NEPOOL and its neighbors, could increase several-fold before physical constraints begin to limit their participation.

Aggregate RE Supply & RPS Demand: NEPOOL Supply (60/30/20 Scenario) + Current & Expected Imports

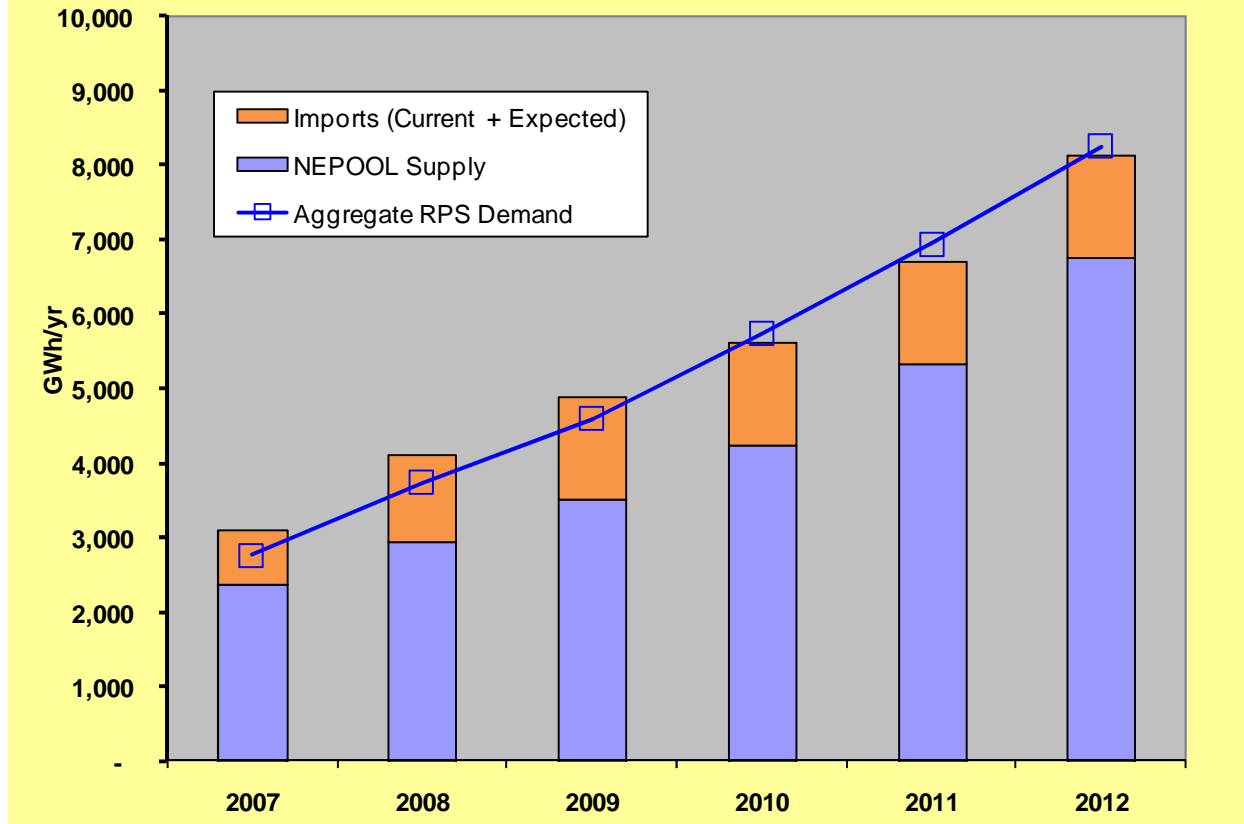


Figure 4: NEPOOL + Current & Expected Imports
Source: Sustainable Energy Advantage, LLC proprietary database

Second, projects listed in the ISO-NE interconnection queue – on which the IRP’s discussion relies – are an important subset of proposed projects, but do not represent all projects currently eligible or under development in New England. Specifically, additional projects not included in the ISO queue and which would be eligible for Connecticut or other regional RPS requirements include:

- (1) Existing biomass facilities such as those discussed above which are only eligible for the CT Class I RPS, as well as several plants whose “above-vintage” generation is eligible in Massachusetts;
- (2) Projects under development but not yet known to ISO-NE;

- (3) Imports (both current and under development);
- (4) Projects which switch fuels to become eligible (e.g. substitute burning biomass for fossil fuels in an existing plant), and
- (5) The substantial number of small renewable generators at the community scale or interconnected behind the customer meter.

While SEA would certainly not expect that all projects would come to fruition, the addition of the above categories of existing and proposed generation substantially increases the gross number of potential GWs as compared to assumptions made in the IRP.

5. Regional Renewable Energy Development Pipeline Demonstrates Adequate Supply is Under Development

The CEAB seeks comment on the method and cost of RPS compliance for periods three, five and ten years from today. The IRP lacks defensible analysis. The IRP's position that the region will be short, just because the region has been short in the past, is unsupported and inconsistent with the analysis presented herein. The IRP ignores a substantial development pipeline of hundreds of renewable energy generators being developed in response to increasing regional demands.

Based on SEA's detailed understanding of renewable generation operating and proposed in ISO-NE (taking into account project failures), and capable of importing into ISO-NE (taking into account physical import limitations), SEA believes there is a reasonable likelihood that there will be renewable energy supply sufficient to meet both Connecticut and regional demand through the next three years, and potentially longer. As shown in Figure 5, there are adequate projects in the development pipeline to more than meet the regional REC demand³. The key question for REC prices will be how much of what is in the pipeline can be delivered, and when?

³ The demand shown assumes that an energy bill currently before the Massachusetts legislature (in conference) passes, which would increase the Massachusetts RPS at 1% per year annually after 2009.

Table 1: Probability of Success Scenarios, with Probability as a Function of Development Status

Probability of Success-Based Sensitivity Analysis			
	Seeking Permits	Under Development	Feasibility/ Pre-Development
Probability (80/70/40)	80%	70%	40%
Probability (70/50/30)	70%	50%	30%
Probability (60/30/20)	60%	30%	20%
Probability (50/10/10)	50%	10%	10%

CCEF commissioned Sustainable Energy Advantage to examine its proprietary database of regional renewable energy development under a range of assumptions regarding probability of projects reaching commercial operation. Four scenarios are described in Table 1, and compared in Figure 5 to the case in which all generation in the development pipeline reaches fruition. As can be seen, there are reasonable assumptions under which supply may or may not be adequate over the next five years; while permitting has been particularly difficult throughout the region, for both wind and biomass plants (the two largest contributors to the pipeline), there is no basis to conclude that supply will be definitely short in the absence of analysis to the contrary.

**RE Supply & RPS Demand:
Probabilistic Analysis of RE Supply vs. RPS Demand**

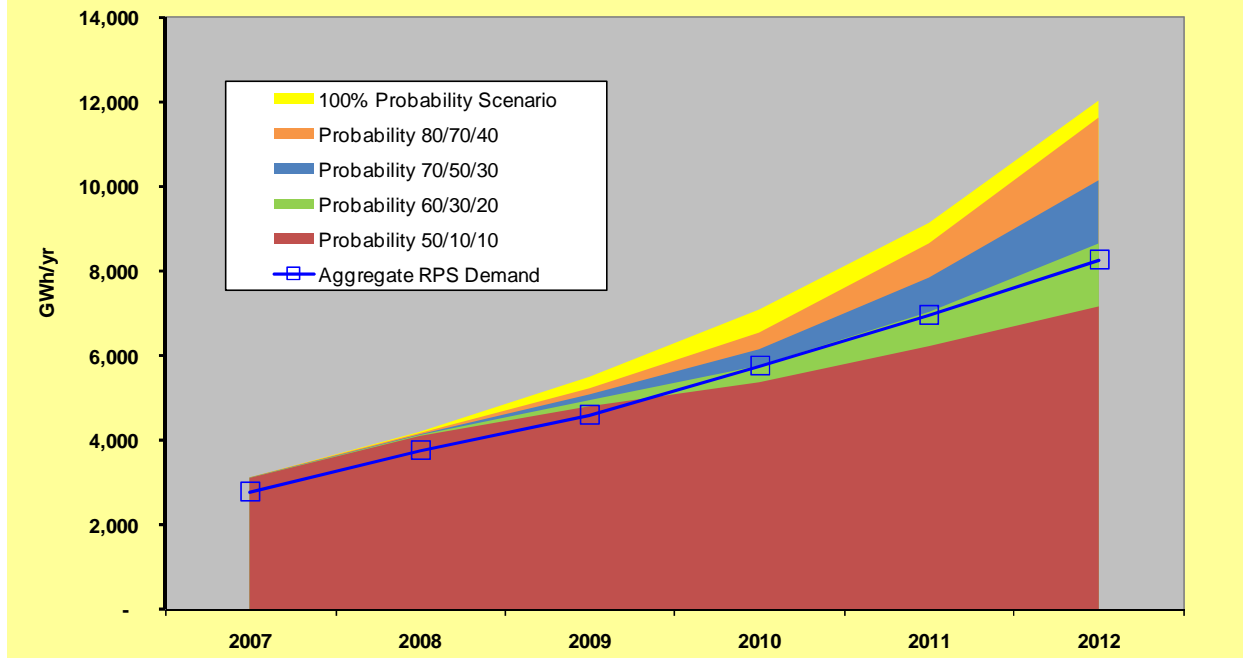


Figure 5: Sensitivity of New England renewable energy supply and demand balance to variation in assumed probability of success of proposed projects (excludes potential network transmission expansion) (Source: Sustainable Energy Advantage, LLC proprietary database)

Note that this analysis (a) reflects only what is currently under development, and (b) omits substantial supply under development, which depends on the ability of northern New Hampshire and Maine to permit, fund and construct new network transmission capacity.⁴

Analyzing the supply and demand picture in 2018 requires a different approach. Most new renewable energy facilities coming on-line to serve RPS demand in 2018 are not yet “on the drawing board.” As such, it is impossible to rely exclusively on an examination of the development pipeline to describe the likely market conditions from 2008 through 2013. Rather, REC market conditions in 2018 will be influenced by factors including, but not limited to: regional resource availability (technical potential has been documented as more than

⁴ On a related note, the IRP raised the issue of regionally coordinated policies to address, among other things, regional projects in transmission to access renewable energy. It is clear that a substantial quantity of renewable energy generation, which would be eligible for Connecticut Class I and other regional RPS obligations, could be accessed through transmission expansion. Because resource potential is not distributed in proportion to the volumetric RPS demands, we concur that regional solutions to supporting transmission may be worthy of consideration.

adequate), the future availability of the federal production tax credit, the success of major network transmission enhancements (including both intra- and inter-regional expansion), individual state decisions to maintain their RPS targets, and the relative difficulty of siting new renewable generation throughout New England. Aside from the potential shift in demand targets, these factors are more likely to determine the marginal – REC price setting – resource than preclude the ability for renewable energy supply to meet demand. As a result, we believe that most RPS compliance will be achieved with RECs, as opposed to penalty payments. To the extent that some amount of penalty payments occurs, it is SEA understands that the CCEF is well positioned to direct these funds to the benefit of Connecticut ratepayers.

III. Recommendations

Based on analysis of the proposed IRP, both SEA and the CCEF make the following recommendations to the CEAB:

First, the EDCs should incorporate long- and medium-term contracts with renewable energy generators into the IRP. Long-term contracts with renewable generators can provide an important hedge against the volatility of the price of electricity from fossil fuel-based resources. In many instances, long-term contracts for RECs can result in prices at a substantial discount to the current spot market prices, particularly when such contracts are negotiated with new facilities trying to secure financing and/or when RECs are bundled with long-term electricity purchases. In seeking commitments over a variety of terms, the electric distribution companies will have the ability to identify the best alternatives for purchase at any given time. A laddered portfolio of long-, medium- and short-term purchases will minimize ratepayer costs and RPS compliance with RECs instead of penalty payments (in a similar manner to the benefits potentially achievable by using a laddered portfolio for standard service procurement).

Second, the EDCs should be allowed and encouraged to procure RECs both independently and bundled with electricity. Presently, RPS compliance is purchased short-term (e.g. less than 3 years) from entities, which (with some exceptions) spend little time thinking about and participating in renewable energy markets. In order to develop prudent and cost effective REC purchasing strategies, the EDCs should be given the flexibility to put their electricity and REC requirements out to bid either together or separately. It is reasonable to seek REC quotes from commodity suppliers (in case they price aggressively), while also being prepared to seek prices

aggressively and independently. Without such an option, the EDCs – and ultimately ratepayers – will end up as price takers. To date, this may mean paying \$55/MWh for RPS compliance to entities whose interest in minimizing the cost of RPS compliance is not as strong as that of the EDCs. Renewable energy generators have been shut out of competing directly to meet EDC demand. If a surplus were to materialize later in any year, the SOLR supplier may be able to buy at a discount to the price cap, without customers benefiting. In contrast, allowing the EDCs to shop and compare, they would not be locking into the worst-case scenario, not shutting generators out of the market, and allowing for competition (especially late in the compliance year). As described above, such a portfolio will optimize long-term discounted REC contracts, and short-term opportunistic purchases.

Third, the DPUC and legislature should maintain the current criteria of geographic eligibility for RPS compliance⁵. As demonstrated by Figure 4 and the arguments above, imported RECs play an important role in regional RPS compliance – acting as a balancing agent or “safety valve” over time. When New England REC prices are high, imports will flow and bring the regional supply and demand closer to equilibrium. When REC prices soften, the costs and risks of importing RECs may make the practice less viable. While every effort should be taken to encourage regional renewable energy supply – and the capture of corresponding economic development and environmental benefits – it is also important to maintain the current level of flexibility to allow load-serving-entities in Connecticut to meet their RPS obligations with qualifying resources that can be delivered to the region and which result in a lower cost to ratepayers than relying on the ACP.

Finally, the Connecticut legislature should consider amending the state’s RPS regulations to allow RPS-obligated entities to bank (e.g. set aside) a limited number of RECs for compliance in either of the subsequent two compliance years. This policy is already in effect in Massachusetts, Rhode Island, Maine and New Hampshire (once the NH RPS takes effect in 2009). In most cases, the bankable quantity is limited to two-year duration and 30% of the current year’s compliance obligation.

⁵ In general, it is critical for market investment and development that the current regulations remain unchanged. Each change in the RPS regulations, especially in eligibility criteria, undermines investor confidence by creating the appearance that one cannot reasonably expect the market to structure to remain in effect long enough to recover an investment in new renewable generation.

There is at least one additional factor that Connecticut policy makers should be aware of but which is outside of their immediate control – federal tax incentives for new renewable energy projects. Most types of renewable energy technologies – wind energy in particular – benefit from the federal production tax credit (PTC). In addition, the fuel cell Investment Tax Credit (ITC) is valuable to Connecticut ratepayers due fuel cell eligibility for the Class I RPS. The availability of the PTC and ITC have a major impact on the long-term power and REC purchases prices offered by renewable energy generators. The PTC and ITC are currently set to expire on December 31, 2008. The close proximity of this date has already disrupted the development process of many New England wind projects and Connecticut fuel cell projects. A prompt extension of the PTC and ITC will benefit Connecticut ratepayers through the availability of more renewable energy and at lower long-term prices than would be available in its absence. Connecticut's congressional delegation should be encouraged to seek this ratepayer benefit and act to extend the PTC and ITC.