OLR RESEARCH REPORT

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DEEP RENEWABLE PORTFOLIO STANDARD STUDY

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You asked that we summarize the draft Department of Energy and Environmental Protection (DEEP) study on the renewable portfolio standard (RPS). The study is available at http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/67d62db9c92d7f6885257b320066e509/$FILE/DEEP%20RPS%20STUDY.pdf. The study's recommendations are included in SB 1138, File 120, favorably reported by the Energy and Technology Committee.

OLR Report 2013-R-0137 provides a primer on the RPS.

SUMMARY

The draft study argues that the current RPS does not align with the governor's goal of providing cheaper, cleaner, and more reliable electricity for state residents. It notes that the present RPS framework has largely been met by buying renewable energy credits (RECs) from out-of-state sources that emit pollution. The present framework leaves ratepayers exposed to potential price volatility from inadequate supply of renewable power to meet the targets that have been set and potentially requires electric companies and suppliers to make expensive alternative compliance payments if they fail to comply with the RPS standards. The study primarily addresses Class I resources, which includes such things as solar and wind energy, as well as electricity produced from certain biomass facilities.

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The draft study recommends:

1. phasing in a more stringent emission standard for Class I biomass facilities to ensure that either they deliver cleaner energy or are replaced with newer cleaner resources such as wind or solar energy,

2. expanding the definition of hydropower facilities eligible for Class I designation from 5 megawatts (MW) to 30 MW,

3. allowing all electricity produced from methane that is biologically derived to count as Class I,

4. allowing large-scale hydropower to qualify as a Class I resource, in a separate "contracted tier",

5. giving DEEP authority to participate in regional procurement for Class I resources and procuring large-scale hydropower resources (greater than 30 MW), and

6. discontinuing Class III incentives for efficiency programs that are already ratepayer funded.

The study does not make any recommendations regarding Class II resources.

BACKGROUND

Current Law

The legislature adopted Connecticut's RPS as part of PA 98-28, the law permitting competition in the electric industry. The RPS requires electric companies and competitive suppliers to procure part of their power from renewable resources.

The law defines three classes of resources: I, II, and III (CGS § 16-1). Class I resources include solar and wind power, power from fuel cells, and certain biomass and hydropower resources. Power from biomass resources counts as Class I if the facility uses sustainably-produced biomass and meets other requirements. Power from other types of biomass facilities, as well as from trash-to-energy facilities, counts as Class II resources. Power from small hydropower facilities is Class I or II, depending on when the facility went into service. Class III resources are the power produced from certain cogeneration and waste heat recovery systems and the energy saved from certain conservation programs.

The requirement for Class I resources increases over time, rising to 20% of power sold in 2020. The companies and suppliers must obtain an additional 3% of their power from either Class I or II resources; in practice they obtain Class II resources because they are less expensive. Finally, they must meet 4% of their need with Class III resources. The latter two requirements do not change over time.

They can meet the RPS by buying RECs on the regional wholesale market. Class III RECs have a statutory price floor of 1 cent/kilowatt-hour (kWh); the Public Utilities Regulatory Authority (PURA) has approved a ceiling of 3.1 cents/kWh.

A company or supplier that does not meet the RPS must make a 5.5 cents/kWh alternative compliance payment for the shortfall. PURA must transfer the payments to the state's Clean Energy Fund to develop Class I resources.

Study Mandate and Development

PA 11-80 required DEEP to analyze (1) options for minimizing the cost to ratepayers of procuring renewable resources under the RPS and (2) the feasibility of increasing the RPS. The analysis must consider the benefits, costs, and impacts of expanding the definition of a Class I renewable energy source to include hydropower and other technologies that do not use nuclear or fossil fuels. It required DEEP to report the results of the analysis to the governor and the Energy and Technology Committee.

To help develop the study, DEEP retained Sustainable Energy Advantage LLC to analyze the issues and options associated with (1) incorporating low-cost renewable energy from large hydropower facilities contracts as a sub-tier of Class I and (2) adjusting Class I eligibility standards.

FINDINGS

DEEP assessed the current RPS structure to determine how effectively it supports the development of new renewable resources. The draft study considers the potential impact of various modifications to the RPS and other policies that might promote clean energy resource development.

DEEP issued its draft study in March 2013. According to the draft, Connecticut's RPS was designed to:

1. diversify the state's energy resource mix to promote reliability,
2. provide a hedge against volatile fossil fuel prices,
3. improve environmental conditions by reducing air emissions,
4. create clean energy jobs, and
5. enhance the quality of life in the state.

Class I

Costs. DEEP estimates that Connecticut ratepayers paid approximately $168.1 million in 2012 to support RPS generation sources, with Class I resource accounting for about 90% of that total. Class I REC prices increased from less than 2 cents/kWh in July 2011 to approximately 5.2 cents/kWh in August 2012, reflecting supply going from surplus into shortage. DEEP estimates that the annual cost of Class I compliance under the current rules could increase to approximately $380 million in 2022 as a result of (1) higher RPS requirements and higher REC prices, (2) potential future alternative compliance payments, and (3) the cost of supporting in-state renewable energy programs.

Where Supply Comes From. According to the draft study, only 11% of the electricity used to meet Connecticut's Class I standard comes from in-state projects. A total of 76% of ratepayer costs for Class I resources supports biomass plants, located primarily in Maine and New Hampshire. These plants are among the least clean Class I resources and many were already operating when the RPS requirement was established. Another 13% of Connecticut's Class I requirement is supplied by landfill gas projects, most located out-of-state. In some cases, electricity production from these projects is used to count towards the RPS in New York as well as in Connecticut. While Connecticut had only about 5% of New England's installed renewable capacity as of 2011, it accounted for more than one-third of the Class I RPS demand in the region.

Future Supply. According to the draft study, solar and fuel cells represent the largest potential for growth in Connecticut-based Class I resources, while wind has, by far, the largest potential in New England. While in-state facilities will help Connecticut meet its RPS requirements, the resources most available in Connecticut can be more expensive than Class I resources available regionally. As a result, the draft study

estimates that by 2020 in-state resources will produce approximately 23% of the Class I RPS requirement, but will account for 32% to 45% of the total cost of complying with the Class I requirements.

Classes II and III

As of 2010 (latest available data), approximately 47% of the RECs used to comply with the Class II requirement were produced from generators located in Connecticut, primarily trash-to-energy facilities.

Through 2012, there was a surplus of Class II and Class III renewable resources. This surplus has driven down REC prices: in August 2012, the price of a Class II REC was 0.4 cents/kWh, and Class III RECs sold at the floor price of 1 cent/kWh. Since the Class II and Class III targets do not increase, the draft anticipates that the surplus will continue to keep Class II and III REC prices low and costs relatively constant through 2020.

The draft study argues that the oversupply of Class II and Class III resources has resulted in limited incentives to support new or existing investments in these resources. The oversupply problem is compounded by the fact that the Class III RPS currently provides incentives for efficiency investments made through the state's conservation programs, which are already supported by ratepayer funds and increasingly leveraged with private capital through the Clean Energy Finance and Investment Authority.

RECOMMENDATIONS

Class I

DEEP examined two policy options to reduce the cost of complying with the current RPS while advancing the goal of reducing the negative impacts of traditional generation. One option would expand the eligibility of Class I resources to include resources that count as Class I resources in other New England states. DEEP also evaluated more substantial changes that would allow a portion of Class I to be met by large hydroelectric power. The draft study notes that there is significant potential for new large (greater than 30 MW) hydropower development outside of New England. These resources could be used to help meet Connecticut's energy needs as well as the environmental goals of the RPS and the state's Global Warming Solutions Act.

As part of the first option, DEEP recommends that:

1. the electricity produced by geothermal steam generation qualify as a Class I resource,

2. anaerobic digesters be specifically qualified as a Class I resource, and

3. post-2003 hydro projects up to 30 MW that meet the Low Impact Hydro Institute's certification standards count as Class I resources.

In its second option, the draft study recommended allowing large-scale hydropower to meet a portion (contracted tier) of Class I requirements. The study posited that it may be possible to contract for Canadian hydropower delivered into New England at approximately the projected market price of non-renewable power while paying little or no renewable premium. It argued that significant savings are possible by allowing this change in the Class I requirements. According to the draft study, allowing the importation of 100 MW of large hydropower would decrease electric rates, because it is the lowest cost renewable option. Assuming the power could be bought for no premium over the cost of non-renewable power, the draft study estimates the cost of large hydropower to be $48.2 million less in 2025 than the estimated cost of out-of-state wind, the next least costly option. Using a scenario in which the total Class I requirement was increased to 25% in 2025, the draft study estimates that Connecticut ratepayers could save from $564-$830 million in nominal dollars or $355-$542 million on a present value basis over the 10-year period from 2013 to 2022.

The draft study recommends that renewable power bought under long-term contracts be allowed to fill part of the Class I requirement starting in 2014, with the proportion increasing to 4.5% in 2020. The contracted tier could be filled with either large-scale hydro (greater than 30MW) with no premium, or other low-cost Class I resources. DEEP further recommends that the Class I requirement be increased to 25% in 2025, and that the contracted tier be increased to 7.5% in 2025.

As noted above, Connecticut allows older, less-clean biomass and landfill gas facilities to qualify under Class I. The draft study recommends the gradual introduction of more stringent emission controls, which will either encourage these facilities to deliver cleaner energy or promote the development of new, cleaner resources. The draft cautions that this transition should be carefully timed so as not to become effective until other Class I resources can be developed or large-scale hydro can be used to meet the region's needs.

Class III

The draft study notes that the current supply of Class III resources is significantly greater than the existing requirements. Oversupply in the Class III markets has resulted largely from continued growth in utility energy efficiency programs, which account for approximately two-thirds of the RECs.

DEEP believes that the best way to improve the Class III market would be to discontinue eligibility for efficiency programs administered by the utility companies. If RECs from these programs were removed from the market, the oversupply would reverse and there would be an under-supply of Class III RECs. This would drive the price to the current cap of 3.1 cents per kWh. The higher REC prices would increase revenues for existing combined heat and power projects and provide a greater incentive for new projects and third party conservation development.

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