

Board

**Further Analysis and Report on Renewable Energy
Requirements**

**Prepared by the Public Service Board in
Consultation with the Commissioner of Public Service
Pursuant to Section 7 of Public Act 170**

January 15, 2013

DRAFT

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I. Introduction and Procedural History

Section 7 of Public Act 170¹ requires that the Vermont Public Service Board ("Board") submit to the Vermont Legislature by January 15, 2013, in consultation with the Commissioner of Public Service, a further analysis and report on certain issues related to renewable energy.² The following report is submitted in fulfillment of that mandate and addresses the statutory considerations of Act 170. This report provides further analysis of renewable policy options that the Legislature may use, in conjunction with the Board's 2011 report, to make a determination as to the appropriate energy policy for Vermont.

Summary of the Board's 2011 Report

On October 3, 2011, the Board submitted its report to the Legislature, entitled *Study on Renewable Electricity Requirements*, pursuant to Public Act 159, Section 13a.³ Act 159 required the Board to propose both a renewable portfolio standard ("RPS") and a revised Sustainably Priced Energy Enterprise Development ("SPEED") program, and then recommend which option Vermont should adopt. Accordingly, the Board made proposals for both an RPS and revised SPEED program, and recommended that Vermont adopt an RPS. In addition, the Board evaluated a number of specific issues identified in the statute. The following key points were made in the Board's 2011 report:

- The current SPEED Program helps the State to achieve some, but not all, of the 30 V.S.A. § 8001(a) Renewable Energy Goals. Specifically, the SPEED program does not support protecting and promoting air and water quality in the state through the displacement of fuels which are known to emit or discharge pollutants, and does not contribute to reductions in global climate change;

1. Public Act 170, §7 (2012 Vt., Adj. Sess.)

2. This further analysis relies upon, and is supplemental to, the study on renewable electricity requirements that the Board prepared in 2011, pursuant to Section 13a of Public Act 159 (2010 Vt., Adj. Sess.). Accordingly, the principles, discussions, and recommendations contained in that report do not need be repeated here in full.

3. The Board's 2011 Report can be found at the following website:
<http://psb.vermont.gov/sites/psb/files/publications/Reports%20to%20legislature/RPSreport2011/Study%20on%20Renewable%20Electricity%20Requirements%20-%20Final.pdf>

- The Board recommended that the Legislature enact an RPS in which Renewable Energy Credits ("RECs") are retired;
- The Board recommended that the Legislature enact an RPS that supports existing renewable generation resources in order to prevent "backsliding";
- The Board recommended that the RPS have a goal of achieving 75% of Vermont's electric energy needs through a combination of new and existing renewables over a 20-year period; and
- The Board noted in the 2011 report that there are limitations to what an RPS can accomplish efficiently. An RPS should not be a single, comprehensive policy intended to achieve all of the State's goals, but rather, should be used to accomplish what it can efficiently, and be complemented by other policies and programs.

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II. Statutory Considerations of Act 170

II.A. Further analysis of whether and how to establish a renewable portfolio standard in Vermont, including consideration of allocating such a standard among different categories of renewable energy technologies and of creating, for renewable energy plants, a tiered system of tradeable renewable energy credits as defined under 30 V.S.A. § 8002 or other incentives that reward increasing levels of efficiency. (Section 7(a)(1))

Analysis of Whether and How to Establish a Renewable Portfolio Standard in Vermont

The Board recommended in its 2011 report that "In order for an RPS to be successful, the goals (environmental, economic, technological or otherwise) of the RPS must be stated explicitly from the outset. Policymakers should then refer back to these goals for each policy decision to ensure that it is aimed at a specific goal."⁴ The Board notes that the Legislature has already adopted renewable energy goals, as codified in 30 V.S.A. § 8001, and that certain of these goals may be viewed as conflicting. Accordingly, the Board recommends that if the Legislature again considers renewable energy policy options for Vermont, that it explicitly state the order in which the Section 8001 goals shall be prioritized. The Board offers the following analysis and recommendations that may assist the Legislature in identifying the appropriate renewable energy policy options for pursuing those goals, once they have been prioritized.

8001(a)(1) *Balancing the benefits, lifetime costs, and rates of the state's overall energy portfolio to ensure that to the greatest extent possible the economic benefits of renewable energy in the state flow to the Vermont economy in general, and to the rate paying citizens of the state in particular.*

If this goal is correctly interpreted as seeking to obtain the economic development benefits associated with the in-state construction of renewable energy facilities, while balancing and mitigating rate impacts, the Board recommends that the most appropriate policy options to

4. 2011 Report at 20.

pursue this goal may be the standard-offer and net-metering programs. These programs each require that projects be constructed in-state, as opposed to the current SPEED program, which only requires long-term contracts, but not in-state construction. The standard-offer and net-metering programs therefore lead to economic development through construction and permitting, and mitigate above-market costs through the sale of RECs.

8001(a)(2) Supporting development of renewable energy that uses natural resources efficiently and related planned energy industries in Vermont, and the jobs and economic benefits associated with such development, while retaining and supporting existing renewable energy infrastructure.

As noted above, the current standard-offer and net-metering programs appear to be appropriate policy options for supporting the development of renewable energy generation projects and related planned energy industries in Vermont. The Board notes that Section 8005a(n) requires wood biomass resources to have a design system efficiency of at least 50%. This provision intends to support projects that use natural resources efficiently.

With respect to the goal of retaining and supporting existing renewable energy infrastructure, the Board notes that the Legislature has already taken steps to support certain existing renewable energy projects, such as agricultural methane, hydroelectric, and biomass plants, through standard-offer contracts. If the Legislature seeks to retain and support additional existing renewable energy infrastructure, the Board reiterates its recommendation from the 2011 report that one guiding principle of an RPS program should be to maintain a baseline level of renewable resources, regardless of the vintage of those resources. This could be achieved through either the upkeep and/or re-powering of existing facilities, or the purchase and retirement of a similar quantity of RECs on the market.

8001(a)(3) Providing an incentive for the state's retail electricity providers to enter into affordable, long-term, stably priced renewable energy contracts that mitigate market price fluctuation for Vermonters.

It is the Board's understanding that developers that enter into long-term stably priced contracts with retail electricity providers seek to bundle the energy, capacity, and RECs

associated with the output of a renewable energy facility. To the extent that this bundling is common practice, then the Board recommends that the current SPEED program may encourage the state's retail electricity providers to enter into such contracts. However, if the intent of this goal is to promote renewable energy in providers' supply portfolios, the Board finds that the current SPEED program does not promote the inclusion of renewable energy in providers' supply portfolios, because the current SPEED program allows for RECs to be resold. **The Board recommends that an RPS in which RECs are retired, rather than resold as allowed under the current SPEED program, is the appropriate policy for promoting renewable energy in the state.**

In order to meet any mandate that RECs are retired to fulfill an RPS's requirements, the Board recommends that any generation facility seeking to become eligible for a Vermont RPS be required to register with ISO New England's NEPOOL GIS system. This recommendation is made to ensure that renewable attributes are counted only once, to facilitate their retirement, and to provide the best opportunity to meet RPS goals at reasonable cost through a fungible commodity. The Board notes that, for a REC to be truly fungible, Vermont's eligibility requirements for renewable generation resources must be as consistent as possible with those of other New England states.

8001(a)(4) *Developing viable markets for renewable energy and energy efficiency projects.*

Consistent with the FTC guidelines described below, and with the renewable energy practices common in every other state that has a renewable energy requirement, the Board finds that the current SPEED program is not conducive to developing viable markets for renewable energy because the program allows for the sale of RECs. Rather, the Board recommends that an RPS in which RECs are retired is the appropriate policy option for this goal.

If this goal were to be interpreted as developing viable markets for renewable energy generation, the Board finds that the current net metering, standard offer, and SPEED programs each advance this goal. The Board notes that an RPS, in conjunction with the net metering and standard offer programs, would be equally adept at advancing this goal without triggering the complications associated with REC sales.

With respect to developing viable markets for energy efficiency projects, the Board notes that Vermont currently has robust energy efficiency programs in place. In its 2011 report, with respect to the question of including electric energy resources in an RPS or revised SPEED program, the Board wrote:

Electric energy efficiency inherently affects any electricity resource requirement because efficiency reduces total load and therefore the amount of electricity that must be produced or purchased. While some states include the purchase of electric energy efficiency resources in their RPS requirements, it is important to bear in mind the purpose of a state's RPS when considering whether to include electric energy efficiency as a resource. If a state's goal is to achieve reductions in greenhouse gas emissions, then the purchase of electric energy efficiency is currently the most cost-effective way to achieve this goal. If, however, a state has other goals, including achieving a diversity of resources or promoting the development of renewable energy projects, markets and industries, then the purchase of electric energy efficiency resources is not likely a viable way to achieve those goals.⁵

The Board recommends that energy efficiency programs not be specifically included in an RPS or SPEED program. Rather, policy options for developing energy efficiency projects are appropriately considered in the context of 30 V.S.A. §§ 209(d)(4) and 235.

Furthermore, the Board observes that the current SPEED program, which allows the state's electric utilities to sell the RECs associated with SPEED resources, yet is intended to be a program that achieves the state's renewable energy goals under Section 8001, may be incompatible with Federal Trade Commission ("FTC") guidelines for the use of environmental marketing claims. Pursuant to 16 CFR Part 260.15(d), "If a marketer generates renewable electricity but sells renewable energy certificates for all of that electricity, it would be deceptive for the marketer to represent, directly or by implication, that it uses renewable energy." The FTC gives examples of such deceptive representations. For example:

A toy manufacturer places solar panels on the roof of its plant to generate power, and advertises that its plant is "100% solar-powered." The manufacturer, however, sells renewable energy certificates based on the renewable attributes of all the power it generates. Even if the manufacturer uses the electricity generated by the solar panels, it has, by selling renewable energy certificates, transferred the right to characterize that electricity as renewable. The manufacturer's claim is

5. 2011 Report at 29.

therefore deceptive. It also would be deceptive for this manufacturer to advertise that it “hosts” a renewable power facility because reasonable consumers likely interpret this claim to mean that the manufacturer uses renewable energy. It would not be deceptive, however, for the manufacturer to advertise, “We generate renewable energy, but sell all of it to others.”⁶

The Board finds that this example is comparable to a Vermont utility that owns or contracts with a SPEED resource, sells the associated RECs, and advertises that it owns, hosts, or produces renewable energy. While such a scenario would be consistent with the laws governing the SPEED program, it would be inconsistent with this FTC guideline unless the utility also expressly advertises that it sells all of the renewable energy to others.

8001(a)(5) *Protecting and promoting air and water quality in the state and region through the displacement of those fuels, including fossil fuels, which are known to emit or discharge pollutants.*

The Board notes that there are at least two policy options apt for pursuing this goal: energy efficiency, and an RPS in which RECs are retired. Electric energy efficiency in Vermont inherently reduces the amount of electricity that must be produced in the state and region, including that produced using fuels which are known to emit or discharge pollutants. A Vermont RPS in which RECs are retired, rather than resold, will also displace electricity generation in the state and region that utilizes fuels known to emit or discharge pollutants. The Board recommends that the current SPEED program, which does not require the retirement of RECs, is not an appropriate policy option for advancing this goal. Under the SPEED program, a utility in another state may, in part, meet its RPS obligation by purchasing Vermont RECs. As a consequence of such a transaction, the SPEED program will provide no incremental protection or promotion of air and water quality in the state or region through the displacement of polluting fuels.

6. Federal Register, Vol. 77, No. 197, October 11, 2012, at 62131-62132.

8001(a)(6) *Contributing to reduction in global climate change and anticipating the impacts on the state's economy that might be caused by federal regulation designed to attain these reductions.*

See recommendation under 8001(a)(5).

8001(a)(7) *Providing support and incentives to locate renewable energy plants of small and moderate size in a manner that is distributed across the state's electric grid, including locating such plants in areas that will provide benefit to the operation and management of that grid through such means as reducing line losses and addressing transmission and distribution constraints.*

The current net metering program provides support, and in the case of photovoltaic generation⁷, incentive, to locate renewable energy plants of small and moderate size across the state's electric grid. The standard-offer program also provides support and incentive for such generation, and additionally, pursuant to Section 8005a(d)(2), provides support and incentive for generation that will provide benefit to the operation and management of the grid. The Board finds that these programs are functioning as intended, and are appropriate for pursuit of this goal.

8001(a)(8) *Promoting the inclusion, in Vermont's electric supply portfolio, of renewable energy plants that are diverse in plant capacity and type of renewable energy technology.*

As discussed in more detail below, Vermont currently has in place programs, including net metering, standard offer, and SPEED, that promote a diversity of plant capacity. In addition, the standard-offer program, pursuant to Section 8005a(c)(2), requires that the cumulative plant capacity be allocated among specified categories of renewable energy technologies. The Board recommends that these programs are appropriate for promoting the build out of generation plants that are diverse in plant capacity and type of renewable energy technology. However, the Board notes that the current SPEED and standard-offer programs do not promote the inclusion in Vermont's electric supply portfolio of any renewable energy plants, because under these

7. 30 V.S.A. § 219a(h)(1)(K) provides that an electric company shall offer a credit to each net metering customer using solar energy.

programs the renewable attributes of these plants are sold out of state. Accordingly, an RPS in which RECs are retired would serve this purpose in place of the current SPEED program.

Different Categories of renewable energy technologies

Act 170 added to the State's renewable energy goals 30 V.S.A. § 8001(a)(8), in which the General Assembly found it in the interest of the State to promote "the inclusion, in Vermont's electric supply portfolio, of renewable energy plants that are diverse in plant capacity and type of renewable energy technology."

There are both benefits and costs associated with allocating an RPS among different categories of renewable technologies. For instance, one benefit of requiring a certain minimum technology diversification is that a certain technology that is economically competitive, yet undesirable for other reasons, will not dominate compliance with the standard as it would absent the diversification requirement. Diversification may also serve as support for a nascent technology that would take advantage of a state's resources, yet without such a diversification requirement would be bypassed for mature, commercially competitive technologies.

One of the costs of requiring a diversity of technology is that the overall cost of compliance will likely be greater than an RPS without such a requirement. RPS compliance costs can be minimized when market forces and available resources dictate the size and technology of new renewable generation resources. In addition, requiring a prescribed diversity of technologies adds complexity to procurement, compliance monitoring, administering, and even understanding the requirements of an RPS.

The Board notes that Vermont presently has distinct programs that deal with different categories of renewable projects: net metering for smaller-scale projects (up to 500 kW), standard offer for small and medium-scale projects (up to 2.2 MW), and SPEED for medium- and utility-scale projects (no size limit). The Board recommends that new projects developed under each of these programs should be eligible to count towards an RPS's goals.

The Board does not recommend that an RPS require allocation among different categories of renewable energy technologies. On this point, the Board's consultants, Clean Energy States Alliance and Sustainable Energy Advantage ("CESA" and "SEA", collectively, "the Board's

consultants"), wrote in the 2011 report: "[A]n RPS that allows eligibility for a large number of technologies without regard to their size or geographic location will be more cost-effective on a megawatt-hours-generated basis."⁸ Therefore, the Board does not recommend any allocation requirement of renewable energy technologies beyond the technology allocation requirements of the standard-offer program.⁹ Enacting such a requirement in an RPS would likely result in an overall increase in the cost of an RPS. The Board recommends that standard-offer projects be eligible to count towards RPS goals, and that standard-offer projects, in concert with net-metered and large-scale resources, will help to achieve the new Section 8001(a)(8) goal.

Tiers that reward increasing levels of efficiency

The Board notes that an RPS inherently provides incentive to developers to produce energy efficiently. Renewable generation plant owners seek to maximize the number of MWh (energy) and RECs (one REC is assigned to each MWh of energy produced from a renewable resource) generated per dollar invested in the plant or expended in plant operation. Such a model necessarily calls for cost-efficient plant construction and operation.

To the Board's knowledge, the only RPS requirement related to a tiered system of RECs that rewards increasing levels of efficiency relates specifically to woody biomass generator projects. On August 17, 2012, the Massachusetts Department of Energy Resources ("Mass DOER") adopted revised regulations pertaining to biomass generating unit overall efficiency.¹⁰ Stated briefly, the Mass DOER regulations would grant a full REC value for generating units that achieve a 60% overall efficiency threshold, and decrease linearly to one half of a REC for generating units that achieve a 50% overall efficiency threshold.¹¹ In addition, the new regulations would grant no more than one half of a REC for generating units utilizing advanced technologies that achieve a minimum overall efficiency threshold of 40%. The Mass DOER

8. *Analysis of Renewable Energy Policy Options for Vermont* at 24-25.

9. Section 8005a(c)(2) requires the Board to allocate the cumulative capacity among different categories of renewable energy technologies.

10. More information on the Mass DOER RPS Biomass Regulation can be found at: <http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/biomass/renewable-portfolio-standard-biomass-policy.html>

11. 225 CMR 14.05(8)(c)3a, b, and c.

regulations are an attempt to protect a limited forest resource, to assist Massachusetts' achievement of its greenhouse gas reduction goals, and to promote advanced technologies.¹²

The benefits of such a tiered system that prescribes the level of overall system design efficiency is that it inherently protects the forest resource by requiring less woody biomass fuel to be harvested per unit of energy, and it assists in the regulation of air pollution. The costs of such a tiered system is that its efficacy is untested, and if the requirements are overly stringent then it may not be technically possible or economically reasonable to construct a facility that would comply.

It is unclear whether such a tiered system, focused on rewarding increasing levels of efficiency, is applicable to any other renewable technology category. Because a tiered system may only be applicable to one category of renewable technology, the Board recommends that the Legislature not adopt such a system. Instead, the Board recommends that RPS-eligible resources and projects should be allowed to compete on price, thus creating an inherent incentive to increase efficiency.

If the Legislature enacts an RPS, the Board recommends that any such policy be drawn to take account of the requirements for woody biomass generating units of other New England states.¹³ The Board's consultants noted in 2011, "Although each state RPS inevitably has unique features, markets will be more robust and procurement costs lower if Vermont's *resource eligibility definitions*, compliance mechanisms, compliance periods, and other RPS features were made as similar as possible to those of other New England states."¹⁴ (emphasis added) If a state adopts eligibility definitions that do not align with those of other states, it risks paying a higher cost for RECs that are not marketable in multiple jurisdictions.

The Board notes that the Legislature has adopted, in 30 V.S.A. § 248(b)(11), criteria that the Board must consider in petitions for certificates of public good ("CPG") for in-state

12. *See*

<http://www.mass.gov/eea/energy-utilities-clean-tech/renewable-energy/biomass/renewable-portfolio-standard-biomass-policy.html>

13. It is the Board's understanding that Massachusetts is the only New England state has adopted woody biomass requirements, as described above.

14. *Analysis of Renewable Energy Policy Options for Vermont* at 26.

generation facilities that produce electric energy using woody biomass. This criterion requires that such generation facilities comply with the applicable air pollution control requirements under the Clean Air Act, incorporate commercially available and feasible designs to achieve a reasonable design system efficiency, and comply with the harvesting guidelines and procurement standards that are consistent with the guidelines and standards developed by the secretary of natural resources pursuant to 10 V.S.A. § 2750. The voluntary harvesting guidelines are intended to help ensure long-term forest health. If the Legislature enacts an RPS, the Board recommends that plants seeking RPS eligibility be required to demonstrate compliance with any guidelines or standards for woody biomass procurement and harvesting that ANR promulgates pursuant to Act 170. The Board further recommends that the Agency of Natural Resources and Department of Forests, Parks and Recreation regularly review the guidelines and standards that have been adopted in the region, and update the Vermont guidelines and standards as necessary to reflect current best practices. The Board finds that adoption of these recommendations, when coupled with the requirements of 30 V.S.A. § 248(b)(11), will ensure that in-state woody biomass generation facilities will employ current, regionally consistent best practices that will promote long-term forest health while not unnecessarily increasing the cost of RPS compliance. The Board notes that, pursuant to 30 V.S.A. § 248(p), an in-state woody biomass electric energy generation facility must annually disclose to the Board the amount, type, and source of wood acquired to generate energy. This requirement may serve as both a measure of a facility's impact on natural resources and a test for compliance with an RPS.

II.B. Examination of whether and how, either as part of a renewable portfolio standard or through other means, to provide incentives for renewable energy generation that avoids, reduces, or defers transmission or distribution investments, provides baseload power, reduces the overall costs of meeting the public's need for electric energy, or has other beneficial impacts. (Section 7(a)(2))

Transmission or distribution investments

The Board notes that Vermont currently has several mechanisms in place, through statutory requirements, that attempt to address transmission and distribution constraints.

1. 30 V.S.A. § 218c. Least-cost integrated planning

Subsection 218c(d) requires the owner and operator of electric transmission facilities within the state, in conjunction with any other electric companies that own or operate these facilities, to jointly prepare and file with the Public Service Department and Board a transmission system plan that looks forward for a period of at least 10 years. The objective of these plans is to identify the potential need for transmission system improvements as early as possible in order to allow sufficient time to plan and implement cost-effective non-transmission alternatives ("NTA") to meet reliability needs, wherever feasible. The plans must identify the demand or supply parameters that generation, demand response, energy efficiency or other NTA strategies would need to address to resolve the reliability deficiencies identified.

In order to accomplish the planning requirements of this subsection, the Board and stakeholders have developed the Vermont System Planning Committee ("VSPC"), developed in the context of Docket No. 7081. The VSPC process is binding on all Vermont utilities, and calls for a 20-year transmission plan, above the statutory 10-year minimum. The VSPC includes both voting members (including three public members, VELCO, large distribution utilities with transmission assets, large distribution utilities without transmission assets, municipal utilities without transmission assets, and energy efficiency utilities) and non-voting members (including the Department and SPEED Facilitator). Together, the members review the long-range transmission plan, seek public input on the plan, conduct analyses of NTAs where they can meet

needs identified in the plan, and ultimately identify the best solutions for identified needs in compliance with the subsection 218c considerations.

In addition, this subsection requires each regulated electric or gas company to prepare and implement a least-cost integrated plan for the provision of energy services to its Vermont customers. The purpose of these plans is to meet the public's need for energy services, after safety concerns are addressed, at the lowest present-value life-cycle cost, including environmental and economic costs, through a strategy combining investments and expenditures on energy supply, transmission and distribution capacity, transmission and distribution efficiency, and comprehensive energy efficiency programs. Retail electricity providers are required to incorporate into their least-cost integrated planning processes the most recently filed long-range transmission plan, and to cooperate as necessary to develop and implement joint least-cost solutions to address reliability deficiencies.

These integrated plans are regularly reviewed by the Board and the Department. In practice, whenever a regulated electric or gas company petitions the Board for a certificate of public good ("CPG") under Section 248 for the construction of transmission or generation facilities, they must demonstrate under Section 248(b)(2) that the proposed facility is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost-effective manner through energy conservation programs and measures and energy-efficiency and load-management measures, including but not limited to those developed pursuant to the provisions of subsection 209(d), section 218c, and subsection 218(b). In addition, the company must demonstrate under Section 248(b)(6) that the proposed facility is consistent with the principles for resource selection expressed in that company's approved least-cost integrated plan.

2. 30 V.S.A. § 209(d)(4). Jurisdiction; general scope

This subsection requires the Board, in its evaluation of the volumetric charge that it may establish under Section 209(d)(3) for the support of energy efficiency programs (the energy efficiency charge or "EEC") that meet the requirements of Section 218c, must determine an

appropriate balance among several objectives, including limiting through energy efficiency services, the need to upgrade the state's transmission and distribution infrastructure.

In its consideration and approval of energy efficiency budgets for Efficiency Vermont, the statewide energy efficiency utility, the Board has designed, in concert with the Department, electric utilities, and other stakeholders, a program that targets energy efficiency investments in locations where incremental energy efficiency measures may defer or avoid utility transmission or distribution investments that would otherwise be required to address an identified constraint.

3. 30 V.S.A. § 8005a. SPEED; Standard Offer Program

Act 170 added 30 V.S.A. § 8005a, which governs the SPEED standard-offer program. Section 8005a(d)(2) requires the Board to make standard offers available to plants that it determines will have sufficient benefits to the operation and management of the electric grid or a provider's portion thereof because of their design, characteristics, location, or any other discernible benefit. These plants are intended to help mitigate transmission and distribution constraints. Such plants' capacities will not count toward the 127.5 MW cumulative plant capacity limit of the program.

The Board and stakeholders are actively developing, in Docket No. 7873, a screening framework that will provide developers with adequate information regarding areas where generation having particular characteristics are reasonably likely to provide sufficient benefit to the operation and management of the electric grid, such that the generation would qualify for eligibility under Section 8005a(d)(2). The Board is required to make a determination regarding this screening framework no later than March 1, 2013.

The Board believes that these mechanisms, pursuant to the statutory requirements of Sections 218c, 209(d)(4), and 8005a(d)(2), will make meaningful contributions to the avoidance, reduction, or deferral of transmission and distribution investments by Vermont's electric utilities. The efficacy of the standard-offer program in addressing such investments has not yet been tested, and the geo-targeted energy efficiency programs are relatively nascent. As the Board and stakeholders gain experience with their implementation it is likely that they will be effective in achieving their intended result. However, the Board notes that not all transmission and

distribution investments can be addressed through these mechanisms due to circumstances outside the control of the Board, the Legislature, and other stakeholders. For example, North American Electric Reliability Corporation ("NERC") reliability standards are regularly reviewed and updated, and may require a utility to conform to new standards within a short time frame, such that energy efficiency or generation solutions would not be able to address the need for a transmission or distribution investment.

Renewable energy generation plants that are part of an RPS could also make meaningful contributions to the avoidance, reduction, or deferral of transmission and distribution investments depending on the attributes and location of the facility. In some cases a new generation facility could require an increase in transmission and distribution investments. In the event that the Legislature adopts an RPS, the Board recommends that projects that can, if they so choose, demonstrate that they are part of a preferred NTA solution to an identified transmission or distribution constraint should receive a known, predetermined RPS multiplier. However, the Board again notes that RPS policies should not be created with the intent of addressing all aspects of the public's need for energy services, thereby adding additional complexity. Accordingly, the Board recommends that such an RPS should not require that proposed plants address this criteria.

Baseload Power

The available baseload renewable energy generation technologies include landfill methane, agricultural methane, hydro, and biomass. Each of these technologies is, to a certain extent, resource constrained: there are only so many available landfills, farms, waterways, and trees. The Legislature has already created incentives for the in-state development of these resources through the standard-offer program. In addition, the Legislature has provided incentives for one existing large-scale biomass project (*see* 30 V.S.A. § 8009 - Baseload renewable power portfolio requirement). Beyond these programs, there are no current statutory incentives for large-scale baseload renewable generation projects, beyond the ability to raise revenue through the sale of RECs. The Board notes that the SPEED targets established in Act 170 (55% of each retail electricity provider's annual electric sales during the year beginning

January 1, 2017, increasing by an additional four percent each third January 1 thereafter, until reaching 75% on and after January 1, 2032), in addition to a utility's portfolio needs, may provide incentive for incremental renewable baseload generation. The Board does not recommend additional incentives targeted specifically at renewable baseload generation.

Reduction of the Overall Cost of Meeting the Public's Need for Energy

There are at least three ways in which an RPS may, in part, reduce the overall cost of meeting the public's need for energy. These include: the so-called "price-suppression effect," the potential avoidance of increased future costs through long-term, stably priced contracts, and the avoidance or deferral of incremental transmission and distribution investments through strategic siting of renewable generating facilities.

The Board's 2011 report to the Legislature provides an introduction to the price-suppression effect concept and gives one estimate of the price-suppression effect of the Board's proposed policy.¹⁵ In theory, most renewable generators, especially those that are non-fuel based, should have lower operating costs than non-renewable generators. This should enable renewable generators to bid their energy output into wholesale markets at relatively lower prices. When a generator bids their energy output into a market at relatively low prices, a higher-cost generator will be displaced. This results in a lower wholesale electricity price applied to all electricity traded in that market during that period, not just the renewable resource. Several states that have implemented an RPS, including Illinois,¹⁶ Massachusetts,¹⁷ and New York,¹⁸ have observed this effect in practice, and the Board's consultants in the 2011 report provided

15. See Study on Renewable Energy Requirements, 2011, at 15.

16. *2012 Annual Report: The Costs and Benefits of Renewable Resource Procurement in Illinois Under the Illinois Power Agency and Illinois Public Utilities Acts*, Submitted to the Illinois General Assembly and the Illinois Commerce Commission Pursuant to PA 97-0658 by the Illinois Power Agency, March 30, 2012, at 19.

17. *Recent Electricity Market Reforms in Massachusetts, A Report of Benefits and Costs*, Executive Office of Housing and Economic Development and Executive Office of Energy and Environmental Affairs, July 2011, at 23-25.

18. *New York Renewable Portfolio Standard Market Conditions Assessment Final Report*, Prepared for the New York State Energy Research and Development Authority, February 19, 2009, at S-18

estimates of what this effect might produce in Vermont under several policy scenarios.¹⁹ While there can be no certainty regarding the magnitude of this effect in Vermont, it would be reasonable to conclude that the addition of new generation resources with zero variable fuel costs would have qualitatively similar results.

Another benefit of increased penetration of renewable generation which may at times reduce the overall cost of meeting the public's need for energy is that, for non-fuel based renewable generation, the volatility associated with wholesale market prices for fuel-based generation is avoided. This is especially true when such energy is procured through long-term stably priced contracts. However, such contracts come with a price premium, regardless of whether any associated RECs are retired or resold, due to the hedging premium inherent in long-term contracts. This hedging premium is associated with all types of generation, not just renewables.

In addition, as discussed above, strategically placed generation facilities may have the effect of avoiding or deferring more costly transmission and distribution alternatives. This is particularly true when such generation is part of a portfolio solution that may include customer demand response and targeted energy efficiency.

It is prudent that these potential cost reducers be considered in the broader context in which some renewable technologies are currently considerably more costly than market wholesale power. Thus, while renewable generators can have certain attributes that would contribute to a reduction in cost, there are at the same time countervailing cost pressures that may mitigate those beneficial attributes.

19. *Analysis of Renewable Energy Policy Options for Vermont* at 102-103.

III. Recommendations

The Board recommends that, if the Legislature again considers renewable policy requirements for Vermont, that it first identify and prioritize the goals that it would seek to accomplish through such renewable policy. Once this has been accomplished, the Board recommends that such renewable policy requirements be informed by the analysis in Section II, above, and on the *Analysis of Renewable Policy Options for Vermont* report by the Board's consultants, incorporated in the Board's 2011 report.

Such a consideration by the Legislature may ultimately lead to a Vermont renewable policy that is much different in design than what the Board recommended in its 2011 report. The Board recommends that, even under such a scenario, any renewable policy should be consistent with the following fundamental principles, if not the ultimate recommendation advanced in the Board's 2011 report, which were based, in part, on the goals of 30 V.S.A. § 8001:

1. Maintain a baseline level of renewable resources, regardless of the vintage of those resources;
2. Encourage the development of the most cost-effective new renewable resources, regardless of whether they are located in Vermont or elsewhere; and
3. Encourage the development of in-state renewable distributed generation resources to the extent permissible under federal law in order to bolster Vermont's transmission and distribution systems.

The Board recommends that any renewable policy should be mindful of the FTC guidelines regarding the use of environmental claims generally, and specifically those regarding renewable energy. Such a policy will ensure that electric utility customers will have certainty as to the nature of the electricity that they purchase, and will protect Vermont's electric utilities from exposure related to claims about the nature of their supply portfolios. In addition, any renewable energy policy for Vermont that seeks to optimize the environmental benefits within Vermont of renewable generation should include a requirement that RECs associated with utility owned (or purchased) renewable energy generation be retired. It will also best achieve the environmental goals of 30 V.S.A. § 8001, such as protecting and promoting air and water quality in the state and

region and contributing to reductions in global climate change by reducing double counting of environmental benefits.

In addition, in the event that an RPS is again considered in Vermont, the Board recommends that the Legislature give consideration to a central-procurement approach to an RPS, including consideration of central-procurement policies and programs that have been adopted and implemented in other jurisdictions. Several states, including New York, have already implemented this approach to an RPS.²⁰ This recommendation is made because, under certain program designs, such an approach to an RPS may have the effect of reducing the uncertainty in the cost of policy compliance. The Legislature could enact certain guidelines for establishing the budget, similar in concept to the guidance given under Section 209(d) for establishing energy efficiency budgets. The Board would then conduct a process with stakeholder input to determine the appropriate budget level over a prescribed time period, similar to the manner in which budgets are established for the energy efficiency utilities.

Board
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20. More information about the New York RPS can be found at the following website:
<http://www.nyserda.ny.gov/Programs/Program-Planning/Renewable-Portfolio-Standard.aspx>