

STATE OF VERMONT  
PUBLIC SERVICE BOARD

Docket No. 7533

Investigation Re: Establishment of a Standard Offer )  
Program for Qualifying Sustainably Priced Energy )  
Enterprise Development ("SPEED") Resources )

Order entered: 10/11/2011

**ORDER RE AC CAPACITY OF SOLAR STANDARD-OFFER PROJECTS**

**I. INTRODUCTION**

In this Order, as a result of changes to 30 V.S.A § 8002, included in the Vermont Energy Act of 2011 ("Act 47"),<sup>1</sup> we establish a methodology for determining an AC nameplate capacity for solar standard-offer projects and conclude that the methodology should apply only to projects signing a standard-offer contract after May 25, 2011, the effective date of the Act.

**II. BACKGROUND**

On September 30, 2009, the Public Service Board ("Board") issued an Order establishing a standard-offer program for qualifying sustainably priced energy enterprise development ("SPEED") resources pursuant to the Vermont Energy Act of 2009 ("Act 45").<sup>2</sup>

Under 30 V.S.A. § 8002(13), plant capacity is defined as "the rated electrical nameplate for a plant." In an October 16, 2009, Order implementing the standard-offer program, the Board concluded that the statute clearly intends for plant capacity to be defined as the maximum output of the generating equipment, as rated by the manufacturer and defined by the nameplate rating,

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1. Public Act No. 47 (2011 Vt., Bien. Sess.).

2. Public Act No. 45 (2009 Vt., Bien. Sess.).

and not to include adjustments for losses from ancillary equipment or transformation from DC to AC.<sup>3</sup>

In 2011, the Vermont legislature passed Act 47, which defines, under 30 V.S.A § 8002(17) and (19), "kW" and "MW" as meaning kilowatt (AC) and megawatt (AC), respectively.

On July 29, 2011, VEPP Inc. ("VEPPI"), the Board-appointed SPEED Facilitator, filed a letter requesting that the Board provide guidance on how solar project capacity for standard-offer plants be determined given the changes to Section 8002. VEPPI concludes that the additions of Sections 8002(17) and (19) mean that plant nameplate capacity is determined after the electricity is converted from DC to AC.<sup>4</sup>

On August 4, 2011, the Board issued a memorandum seeking comment on the method of determining capacity of a standard-offer project.

On August 18, 2011, and August 22, 2011, comments in response to the August 4 memorandum were filed by the Vermont Department of Public Service ("Department"), Central Vermont Public Service Corporation ("CVPS"), Renewable Energy Vermont ("REV"), Triland Partners LP ("Triland"), and VEPPI. On September 22, 2011, reply comments were filed by the Department, Triland, and Washington Electric Cooperative, Inc. ("WEC").

### **III. PARTICIPANT COMMENTS**

The Department supports using the inverter nameplate capacity to determine the capacity of solar standard-offer projects, since this represents the maximum AC output to the grid and is the value that distribution utilities use in performing a system impact study. VEPPI, Triland, and WEC support the use of a generic multiplier to change project capacities from DC to AC. REV recommends that AC capacity be defined as the lesser of either 85 percent of the manufacturer's nameplate capacity for the solar panels or the nameplate capacity of the inverter. REV contends

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3. *First Order Re Implementation Issues*, Docket 7533, Order of 10/16/09 at 16.

4. Solar is the only technology eligible for the standard-offer program that produces electricity as DC, and converts to AC through the use of an inverter.

that the conversion factor should include losses associated with the DC to AC conversion through the inverters,<sup>5</sup> transformers, lines, aging, and shading.

The Department, VEPPI, and CVPS contend that the changes to the statute should apply only to projects signing a standard-offer contract after May 25, 2011, the effective date of the Act. The Department further asserts that as a general rule, statutes operate prospectively unless they contain a clear language mandating retroactive application, and in this case the Act contained no such clear language.<sup>6</sup> REV and Triland recommend that the Board, through the Section 248 process, allow existing, executed standard-offer contracts to be amended to reflect the plant capacity being defined in AC, rather than DC. In addition, the Department and CVPS contend that the increase in the allowed output of solar facilities should be taken into account when the Board reevaluates the standard-offer prices.<sup>7</sup>

#### **IV. DISCUSSION AND CONCLUSION**

All standard-offer eligible technologies, except solar, produce electricity in an AC form and the manufacturers of the electric generating equipment provides a nameplate capacity specified in AC. Solar PV panels produce electricity in a DC form, which is then converted through an inverter to an AC form. The manufacturers of solar panels specify the nameplate capacity of the panels in DC form.

All participants who filed comments agree that the changes in statute require a methodology for determining an AC nameplate capacity for solar standard-offer projects, since the manufacturer's nameplate capacity is specified in DC. We are persuaded by the recommendations made by some participants that the manufacturer-specified nameplate capacity of the solar panels, rather than the nameplate capacity of the inverter, represents the maximum output of the generating equipment. For example, a developer could install an inverter that is

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5. REV's filing indicates that the range of industry acceptable values for DC to AC conversion is between 0.95 and 1.00.

6. The Department cites *Town of Sandgate v. Colehamer*, 156 Vt. 77, 90 (1990).

7. Pursuant to Section 8005(b)(2)(C), the Board is required to review the standard-offer prices by January 15, 2011.

larger than necessary for the project size, but the project will only produce electricity at the level of the capacity of the solar panels minus inverter conversion losses. The Board has previously determined a generic multiplier for solar projects in the context of net metering pursuant to 30 V.S.A. § 219a.<sup>8</sup> We conclude that it is likewise reasonable to require that a generic multiplier should be applied to the DC nameplate capacity to determine an AC nameplate capacity in the standard-offer program. The generic multiplier shall be based on the inverter losses associated with the conversion from DC to AC and that the multiplier shall be 0.95, consistent with our determination in the net metering context.

The use of a generic multiplier to determine AC capacity is consistent with Section 8005(13), which defines plant capacity as "the rated electrical nameplate for a plant," and Sections 8002(17) and (19), which defines "kW" and "MW" as meaning kilowatt (AC) and megawatt (AC). The use of a generic multiplier is generally consistent with our October 16 Order in which we concluded that the statute clearly intends for plant capacity to be defined as the maximum output of the generating equipment, as rated by the manufacturer and defined by the nameplate rating, and not to include adjustments for losses associated with interconnection (transformer and line) or operation. Our October 16 Order did not allow the nameplate capacity to include adjustments for the inverter losses associated with the transformation from DC to AC. Given the changes to Sections 8002(17) and (19), we amend our October 16 Order to allow the inclusion of inverter losses in order to determine AC nameplate capacity.

As the Department correctly observes, the general rule is that statutes operate prospectively unless they contain clear language mandating retroactive application. Act 47 contains no such clear language. Therefore, we conclude that the methodology for determining an AC nameplate capacity for solar standard-offer projects shall apply only to projects that signed a standard-offer contract after May 25, 2011, the effective date of the Act.

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8. See also Board Rule 5.100, Net Metering Application Form.

The Department and CVPS contend that the increase in the allowed output of these facilities should be considered when the Board reevaluates the standard-offer prices.<sup>9</sup> We note that considerations with regard to standard-offer prices are more appropriately addressed in Docket 7780. Accordingly, we will be conducting a review of this issue in Docket 7780.

For the reasons stated above, we conclude that the manufacturer-specified nameplate capacity of the solar panels represents the maximum output of the generating equipment and that a 0.95 multiplier should be applied to the DC nameplate capacity to determine an AC nameplate capacity in the standard-offer program. In addition, we conclude that the methodology for determining an AC nameplate capacity for solar standard-offer projects shall apply only to projects that signed a standard-offer contract after May 25, 2011.

**SO ORDERED.**

Dated at Montpelier, Vermont, this 11<sup>th</sup> day of October, 2011.

<u>s/ James Volz</u>	)	
	)	PUBLIC SERVICE
	)	
<u>s/ David C. Coen</u>	)	BOARD
	)	
	)	OF VERMONT
<u>s/ John D. Burke</u>	)	

OFFICE OF THE CLERK

FILED: October 11, 2011

ATTEST: s/ Susan M. Hudson  
Clerk of the Board

*NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@state.vt.us)*

*Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.*

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9. The Board has opened an investigation to review the standard-offer prices in Docket 7780.