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**BRITISH COLUMBIA  
UTILITIES COMMISSION**

**ORDER  
NUMBER G-57-12**

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IN THE MATTER OF  
the Utilities Commission Act, R.S.B.C. 1996, Chapter 473

and

An Application by British Columbia Hydro and Power Authority  
to Amend Rate Schedule 1289 – Net Metering Service and  
Cancel Tariff Supplement No. 63 – Net Metering Interconnection Agreement

**BEFORE:** D.M. Morton, Commissioner

May 14, 2012

### **O R D E R**

#### **WHEREAS:**

- A. On September 9, 2011, British Columbia Hydro and Power Authority (BC Hydro) filed a copy of the F2011 Net Metering Evaluation Report (Appendix A), in compliance with British Columbia Utilities Commission (BCUC or Commission) Order G-4-09 and applied for approval pursuant to sections 58 to 61 of the *Utilities Commission Act* (the Act), amendments to the Net Metering Rate Schedule 1289 (RS 1289) and the cancellation of Tariff Supplement No. 63 – Net Metering Interconnection Agreement (TS No. 63) (Application);
- B. The amendments applied for include:
  - a. Increasing the RS 1289 Energy Price (Energy Price) to 9.99 cents per kWh consistent with the 2011 Standing Offer Program (SOP) pricing,
  - b. Amending the “Availability” section of RS 1289,
  - c. Integrating the terms and conditions of the Net Metering Interconnection Agreement (NMIA) into RS 1289 and cancelling TS No. 63;
- C. RS 1289 was last re-priced by Order G-4-09 based on the BC Hydro 2006 SOP levelized price, with an adjustment for inflation, consistent with Policy Action No. 11 of the 2007 BC Energy Plan which states that Net Metering prices should be based on SOP prices. The RS 1289 energy price (Energy Price) was established as 8.16 cents per kWh, based on the 2006 SOP levelized base price of 7.84 cents;
- D. An updated firm SOP base price of \$117.76 (11.78 cents per kWh) based on the 2008 Clean Power Call (CPC) was published on January 25, 2011 by BC Hydro. BC Hydro’s non-firm levelized CPC

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price is \$48.84 per MWh (4.88 cents per kWh). Using a ratio of 70 percent firm and 30 percent non-firm yields an updated blended price of 9.99 cents per kWh, after adjustments for inflation;

- E. The Commission has reviewed the Application and has determined that approval of certain amendments in the Application are in the public interest.

**NOW THEREFORE**, pursuant to sections 58 to 61 of the *Act*, the Commission orders as follows:

1. The RS 1289 Energy Price of 9.99 cents per kWh is approved effective June 1, 2012.
2. Amending the "Availability" section of RS 1289 is approved effective June 1, 2012, only where it increases availability, but denied where it decreases availability.
3. Integrating the terms and conditions of the Net Metering Interconnection Agreement (NMIA) into RS 1289 and cancelling TS No. 63 is approved effective June 1, 2012.
4. BC Hydro is to submit a report on the Net Metering program for F2012 by no later than March 31, 2013.
5. BC Hydro is to file the revised Tariff RS 1289 incorporating the approved changes within 30 days of the date of this Order.
6. BC Hydro is to file a copy of Net Metering Interconnection Requirements, 50 kW and below (NMIR/50) within 30 days of the date of this Order, and to file any subsequent changes to NMIR/50 within 30 days following the date NMIR/50 is changed.
7. BC Hydro is to comply with other determinations in the Reasons for Decisions attached to this Order as Appendix A.

**DATED** at the City of Vancouver, in the Province of British Columbia, this 14<sup>th</sup> day of May 2012.

BY ORDER

Original signed by:

D.M. Morton  
Commissioner

Attachments



**IN THE MATTER OF**

**BRITISH COLUMBIA HYDRO AND POWER AUTHORITY**

**APPLICATION TO AMEND RATE SCHEDULE 1289  
(NET METERING SERVICE)**

**AND**

**CANCEL TARIFF SUPPLEMENT NO. 63  
(NET METERING INTERCONNECTION AGREEMENT)**

**REASONS FOR DECISION**

**May 14, 2012**

**BEFORE:**

**D.M. Morton, Commissioner**

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## EXECUTIVE SUMMARY

This Decision relates to an application filed by British Columbia Hydro and Power Authority (BC Hydro) to make changes to its Net Metering Rate Schedule (RS 1289). Net Metering allows BC Hydro residential or commercial customers who have installed on-site generating capability no greater than 50 kW to sell electrical energy to BC Hydro and to only be billed for their 'net consumption.' If the amount of self-generation exceeds the customer load on an annual basis, BC Hydro pays the RS 1289 customer for the net annual excess generation at a price that should be based on that paid for generation under its Standing Offer Program (SOP). The Net Metering rate was originally approved in 2004 by British Columbia Utilities Commission (BCUC or Commission) Order G-26-04. The current RS 1289 price (8.16¢/kWh) was approved in 2009 by Order G-4-09.

The objectives outlined in the 2007 Energy Plan and the *Clean Energy Act* support the growth of distributed generation in British Columbia. In addition to the Net Metering program, BC Hydro has two other programs that encourage third parties to build distributed generation capacity: the SOP for producers with capacity greater than 50 kW but not more than 10 MW; and the Clean Power Purchase program for producers with capacity greater than 10 MW. Both of these programs are "gross metering" programs, so called because the energy sold is explicitly measured, as is the energy purchased.

On September 9, 2011, BC Hydro filed the F2011 Net Metering Report (Report) and an Application pursuant to sections 58 to 61 of the *Utilities Commission Act* (the Act) to amend Rate Schedule 1289 – Net Metering Rates Schedule (RS 1289) and cancel Tariff Supplement No. 63 (TS No. 63) – Net Metering Interconnection Agreement (NMIA) (Application). The Application reflects the updated pricing in the 2011 SOP.

As of May 1, 2011, BC Hydro had 116 customers receiving the Net Metering service and 64 applications in progress. Generation installed was predominantly photovoltaic (PV) solar (83 percent), with the balance made up of mainly wind and hydro installations. The majority of RS 1289

generation is used to net against the customers own retail purchases of electricity – BC Hydro purchased less than \$5,000 of electricity under RS 1289 in fiscal 2011.

BC Hydro is proposing the following in the Application:

1. Amend the RS 1289 Energy Price to 9.99 cents per kWh consistent with the 2011 SOP;
2. Amend the availability section of RS 1289; and
3. Integrate the terms and conditions of the NMIA as expressed in TS No. 63 into RS 1289, and cancel TS No. 63. (Exhibit B-1, p. 1)

BC Hydro submits that the proposed changes, in addition to increasing the Energy Price, will streamline the program by simplifying the interconnection requirements. However, the proposed changes also exclude service to a number of customer rate classes and generator types, some of which are already participants in the Net Metering program. These include primary service customers, synchronous generators, fuel cells and energy recovery generation.

In the Panel's view, the Net Metering program can be a significant contributor to the growth of distributed clean energy generation. Thus, the theme of the Panel's comments and determinations in these Reasons for Decision is that in order to achieve this objective, barriers entering into the Net Metering program should be minimized to enable customers to take economically efficient steps to build generation capacity. While the Panel is generally supportive of changes to the program that result in an Energy Price that is consistent with the SOP price and simplifies interconnection requirements, it has concerns about restricting access to the program. Some of these excluded customers – primary service and synchronous generators, for example - have more complex interconnection requirements which result in greater cost for BC Hydro. However, this disadvantage can be mitigated by charging a higher connection fee to these customers. Accordingly, in these Reasons for Decision the Panel approves all of BC Hydro's proposed changes except those that result in a potential exclusion of customers.

Other issues raised in the hearing include the lack of marketing for the program and the 50 kW limit. In addition, a number of deficiencies in the Report are identified. The Panel makes no determinations with respect to these issues, but directs BC Hydro to submit the next Net Metering Report to address these issues by no later than March 31, 2013.



## INTRODUCTION

### Net Metering Program

The Net Metering program, which is available through Rate Schedule 1289 (RS 1289), was approved in 2004 by Order G-26-04. Net Metering allows BC Hydro residential or commercial customers who have installed on-site generating capability no greater than 50 kW to sell electrical energy to BC Hydro and to only be billed for their 'net consumption.' If the amount of self-generation exceeds the customer load on an annual basis, BC Hydro pays the RS 1289 customer for the net annual excess generation at a price that should be based on that paid for generation under its SOP. During times when the amount of self-generated electricity is less than the customer's load, the RS 1289 customer consumes less electricity from BC Hydro and benefits from a correspondingly lower bill. When the amount of self-generation exceeds customer load over the course of a monthly billing period, the amount of the excess generation is credited to the customer's next bill. The credit is in terms of energy (kWh) not money. If the amount of self-generation exceeds the customer load on an annual basis, BC Hydro pays the RS 1289 customer for the net annual excess generation at a price based on that paid for new generation under its SOP. The current RS 1289 price (8.16¢/kWh) was approved in 2009 by Order G-4-09.

As of May 1, 2011, BC Hydro had 116 customers receiving the Net Metering service and 64 applications in progress. Generation installed was predominantly PV solar (83 percent), with the balance made up of mainly wind and hydro installations. The majority of RS 1289 generation is used to net against the customer's own retail purchases of electricity - BC Hydro purchased less than \$5,000 of electricity under RS 1289 in fiscal 2011.

### Application

On September 9, 2011, BC Hydro filed its F2011 Net Metering Report and an Application pursuant

to sections 58 to 61 of the *Act* to Amend Rate Schedule 1289 – Net Metering Service (RS 1289), and cancel Tariff Supplement No. 63 – Net Metering Interconnection Agreement (TS No. 63). The Application reflects the updated pricing in the 2011 SOP. The Net Metering Report (the Report) is filed in compliance with Order G-4-09, and the Application seeks no approval for the Report.

### Orders Sought

Pursuant to sections 58-61 of the *Act*, BC Hydro is seeking the following amendments to RS 1289:

1. Amend the RS 1289 Energy Price to 9.99 cents per kWh consistent with the 2011 Standing Offer Program (SOP);
2. Amend the availability section of RS 1289; and
3. Integrate the terms and conditions of the Net Metering Interconnection Agreement (NMIA), from TS No. 63, into RS 1289 and cancel TS No. 63. (Exhibit B-1, p. 1)

Specifically, the changes to RS 1289 that BC Hydro is seeking approval for, in addition to the change in Energy Price, are:

Change the eligibility for the Net Metering service to include any Residential Service Customer, except those taking service under Rate Schedules 1105 or 1148 and those enrolled in the residential inclining block rate control group;

Change the eligibility for the Net Metering service to include any General Service Customer, except those enrolled in the Medium General Service and Large General Service control group;

Modify the definition of “Generating Facility” to read a generating service that “Utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a ‘clean or renewable resource’ in the *Clean Energy Act* (as updated from time to time) to generate electricity”;

Exclude synchronous generators; and

Integrate the terms and conditions of the NMIA (TS No. 63) into RS 1289. The NMIA is currently incorporated by reference into RS 1289.

(Exhibit B-1, Appendix B)

## **Legislative and Regulatory Context**

### ***Utilities Commission Act***

Sections 58, 59 and 60 of the *Act*, generally speaking, require the Commission to ensure that rates for a public utility enable the utility to earn a fair and reasonable compensation for the service provided by the utility, or a fair and reasonable return on the value of its property. Further, a public utility must not make, demand or receive a rate that is unjust, unreasonable, unduly discriminatory or unduly preferential or contravenes the *Act*, the regulations, orders of the Commission or any other law. Section 60, in part, provides that in setting a rate, the Commission may use any mechanism, formula or other method of setting the rate that it considers advisable and may order that the rate derived from such mechanism or formula or other method is to remain in effect for a specified period.

### ***Clean Energy Act***

The Clean Energy Act (*CEA*) received Royal Assent on June 3, 2010. It advances 16 specific energy objectives to help achieve British Columbia's energy vision, including new measures to promote electricity efficiency and conservation. One of these efficiency and conservation objectives is to "foster the development in British Columbia of innovative technologies that support ... the use of clean and renewable resources." Another objective is to "ensure the authority's rates remain among the most competitive rates charged by public utilities in North America." In the Panel's view, this supports a focus on economic efficiency criteria in the design of the Net Metering rate and a reduction of any unnecessary economic barriers to the program.

***The BC Energy Plan (2007)***

Prior to the introduction of the *CEA*, the provincial government's emphasis on the promotion of energy efficiency was articulated in both the 2002 and 2007 Energy Plans. The 2007 Energy Plan is subtitled: "A Vision for Clean Energy Leadership" and lays out a "Key Policy Objective" to "Make small power part of the solution through a set purchase price for electricity generated from projects up to 10 megawatts." Portions of the Energy Plan relevant to this Application include the following Policy Actions:

- Policy Action #2: Ensure a coordinated approach to conservation and efficiency is actively pursued in British Columbia.
- Policy Action #4: Explore with BC utilities new rate structures that encourage energy efficiency and conservation.
- Policy Action #10: Ensure self-sufficiency to meet electricity needs, including "insurance" by 2016.
- Policy Action #11: Establish a standing offer for clean electricity projects up to 10 megawatts.
- Policy Action #21: Ensure clean or renewable electricity generation continues to account for at least 90 percent of total generation.
- Policy Action #25: Ensure the procurement of electricity appropriately recognizes the value of aggregated intermittent resources.
- Policy Action #26: Work with BC Hydro and parties involved to continue to improve the procurement process for electricity.

The 2007 Energy Plan also states: "Net Metering allows customers to lower their environmental impact and take responsibility for their own power production. It helps to move the province towards electricity self-sufficiency and expands clean electricity generation, making BC's electricity supply more environmentally sustainable"; "Government's goal is to encourage a diverse mix of resources that represent a variety of technologies"; and "To close [the] electricity gap ... will require an innovative electricity industry and the real commitment of all British Columbian's to conservation and energy efficiency." (2007 Energy Plan, pp. 9-10, 26)

## Previous Commission Orders

The Commission has addressed Net Metering previously: in Letter L-37-03 and Order G-26-04, which led to the first approval of RS 1289, and in Order G-4-09 which related to an update of the RS 1289 Energy Price.

### ***Letter L-37-03 (July 22, 2003) and Order G-26-04 (March 12, 2004)***

The original policy driver for RS 1289 was the 2002 Energy Plan that encourages the development of initiatives like Net Metering to achieve a clean energy supply goal. In Letter L-37-03 dated July 22, 2003, the Commission recommended the development and implementation of a Net Metering tariff and recommended that BC Hydro submit its application for a Net Metering tariff for Commission approval by November 3, 2003. The Commission stated in this letter that the Commission's "support for a Net Metering tariff is conditional on development and implementation that does not incur any substantial cost on the utility, and that does not impose any inordinate barrier to ratepayers seeking to Net Meter." In Order G-26-04, the Commission first approved RS 1289 and requested the preparation of a Monitoring and Evaluation Report after one year to account for the specific directions articulated in the Commission's Reasons for Decision. The decision also addressed the following matters:

*Maximum generator size:* BC Hydro proposed that RS 1289 should be applicable only to small generation, 50 kW or less. The Commission supported this approach and also supported this limit as being appropriate 'at this time,' primarily to reduce the potential magnitude of cost-shifting to non-participating customers. BC Hydro was directed to review this issue as part of its Monitoring and Evaluation report, including assessing trade-offs between expected participating rates and cost-shifting.

*Interconnection:* Commission Letter L-37-03 stated that interconnection must be safe, but the rules governing interconnection should not be extensive, or burdensome in administrative process. The Commission, in G-26-04, recognised that BC Hydro may change its interconnection requirements without approval by the Commission; however, it also noted that it has the jurisdiction to respond to any customer complaints that utility requirements are unreasonable or unjustified.

*RS 1289 Energy Price:* BC Hydro initially proposed to set the RS 1289 Energy Price at zero, but the Commission recommended in L-37-03 that BC Hydro propose a rate for the purchase of net excess generation on a given anniversary date. BC Hydro proposed, and the Commission approved, a price of 5.4¢/kWh based on the weighted average energy cost of its most recent comparable Call for Tender for green power generation.

*Cost shifting:* At the time the application was approved, residential customers under RS 1289 would receive an energy credit of 6.05¢/kWh for generation not in excess of their consumption at the end of the year. This credit was slightly higher than BC Hydro's weighted average energy cost of its most recent comparable Call for Tender for green power generation of 5.4 ¢/kWh, and this cost-shifting concern was reflected in the Commission's decision to support a maximum generator size of 50 kW. However, the Commission also stated that limited cost-shifting to non-participating customers was warranted to support the implementation of Net Metering for distributed renewable generation.

*Customer Fees:* The Commission agreed that it is appropriate for Net Metering customers to incur some of BC Hydro's direct costs for service interconnections. The Commission Panel directed BC Hydro to charge a cost based fee for on-site inspection where generating facilities exceed 5 kW, the fee total not to exceed \$600 per inspection. BC Hydro was directed to monitor whether this fee is a hurdle to Net Metering uptake.

*Monitoring and Evaluation Report:* BC Hydro was directed to file a monitoring and evaluation report within one year after the Net Metering tariff is approved to include (amongst other things), uptake of RS 1289, the cost of energy to BC Hydro of energy generated by RS 1289 customers, feedback from customers on the merits and problems with RS 1289, and technological advances in distributed generation (DG).

### ***Commission Order G-4-09 (January 29, 2009)***

In this Order, the Commission approved an increase in the RS 1289 energy price from 5.40 ¢/kWh to 8.16 ¢/kWh. This was in response to Policy Action #11 of the 2007 BC Energy Plan which required that, to ensure even treatment, the rate paid for net annual surpluses of generation purchased by BC Hydro is generally consistent with the prices paid in the SOP. In its Reasons for Decision, the Commission interpreted "generally consistent" as meaning that the two rates are of similar magnitude and are not biased toward either source of supply.

BC Hydro was also directed to submit its next Net Metering – Monitoring and Evaluation Report to the Commission within 120 days after the date of submission of the SOP report associated with the review of that program.

### **Regulatory Process**

For this Application, BC Hydro proposed a written hearing process which included only Intervener Registration, Intervener Submissions and a BC Hydro Submission. By Order G-170-11 dated October 6, 2011, a written hearing process was established with one round of Information Requests (IRs), a BC Hydro Final Submission, Intervener Final Submissions and a BC Hydro Reply Submission. The IRs were scheduled for November 4, 2011, with responses November 16, 2011. By Letter L-86-11, an extension to the Regulatory Timetable was granted to allow the responses to the IRs to be filed on November 28, 2011, with Intervener Submissions December 9, 2011, and BC Hydro Reply Submission December 20, 2011.

On December 15, 2011, BC Hydro advised the Commission that it had not complied with Order G-170-11 in respect of paragraphs 2, 3 and 4. Specifically, it had not provided a copy of the application, Order G-170-11 and the Regulatory Timetable to Interveners and Interested Parties in the 2008 RS 1289 proceeding, or to all existing RS 1289 customers and those with applications in progress. It had also not posted the Order, application and the Regulatory Timetable on its website.

Accordingly, the Commission ordered a revised Regulatory Timetable to provide time for BC Hydro to comply with the terms of paragraphs 2, 3 and 4 of Order G-170-11 and to allow new Interveners and Interested Parties to register by January 20, 2012. The new Regulatory Timetable also provided for a second IR for both new and existing Interveners, a BC Hydro Final Submission, Intervener Final Submission and a BC Hydro Reply Submission. Existing Interveners that had already filed submissions under the previous timetable were allowed, if they so chose, to submit revised

Final Submissions. Three Interveners, Zdenek Los, Micro Green Hydro and BC Sustainable Energy Association and the Sierra Club of Canada submitted an additional Final Submission.

The following Interveners registered:

<b>Intervener</b>	<b>Abbreviation</b>
BC Sustainable Energy Association and the Sierra Club of Canada, BC Chapter	BCSEA
Clean Energy Association of British Columbia	CEBC
BC Agriculture Council	BCAC
Joseph Samuel	Joseph Samuel
Zdenek Los	Zdenek Los
Micro Green Hydro	MGH
CH-Four Biogas, Inc.	CH4



## KEY APPLICATION ISSUES

The Application requested Commission approval for changes to RS 1289 Energy Price and availability section, and the integration of the terms and conditions of NMIA from TS No. 63 into RS 1289 and cancellation of TS No. 63.

The Application also included the F2011 Net Metering Evaluation Report (Report), filed in accordance with a directive in Order G-4-09. The Application seeks no approval for the Report. However, findings in the Report have informed the Applicant with regard to changes that it proposes to RS 1289. In these Reasons, the Panel will first review the findings of the Report, in order to provide a framework for later determinations on the Applicant's specific proposals.

### Net Metering Evaluation Report

The Report was filed on September 9, 2011, in accordance with a directive in Order G-4-09. BC Hydro had been directed to submit its next Net Metering – Monitoring and Evaluation Report to the Commission within 120 days after the date of submission of the SOP review report. The SOP review report was scheduled for March 2010, and actually filed in January 2011. No notice was sent to BC Hydro by the Commission informing them of the missed deadline.

BC Hydro stated in response to an IR during its 2008 Net Metering Application that if it "... is required to file an evaluation report on Net Metering, then it is of the view that it should update the original evaluation report filed with the Commission on June 1, 2005." (BC Hydro 2008 Net Metering Repricing Application, Exhibit B-4, BCSEA 1.7.4).

However, a comparison of the 2005 Net Metering Monitoring and Evaluation Report to the Report filed with this Application shows the following key areas are omitted from this Report:

50 kW Capacity Limit – assess the trade-offs between expected participation rates and cost shifting, in so far as those issues may be affected by a higher limit for capacity, or a limit based on voltage.

Net Metering Benchmarking – other utility experiences and technological advances in distributed generation.

Consultation – actively solicit feedback from customers on the merits and problems with RS 1289 at all levels of the Net Metering application process.

Costing data – include data on the cost of energy to BC Hydro of energy generated by RS 1289 customers and BC Hydro costs recovered from RS 1289 customers.

RS 1289 enquiries - include a summary of all enquiries into Net Metering and number of applications filed.

According to the Report, as of May 1, 2011, there were 116 customers receiving service under RS 1289, with an additional 64 applications in progress. RS 1289 is currently available for “a generating facility that utilizes water, wind, solar, fuel cell, geothermal, biogas, biomass, municipal solid waste, cogeneration or other energy resources or technologies meeting the requirements of the Province of British Columbia’s definition of “BC Clean Electricity” to generate electricity.” The current 180 customers are summarized by generation type below:

<b>Resource</b>	<b>Number of Projects</b>	<b>Total Generator Capacity (kW)</b>	<b>Capacity Percentage of total NM Projects (%)</b>
Biogas	1	20	1.8
Fuel Cell	1	120	10.8

Hydro	12	228	20.5
Energy Recovery Generation	1	50	4.5
Photovoltaic	152	652	58.6
Photovoltaic & Wind	5	13	1.2
Wind	8	29	2.6
<b>Total</b>	<b>180</b>	<b>1,112</b>	<b>100</b>

(Source: Exhibit B-1, Appendix A F2011 Net Metering Evaluation Report, p. 4)

BC Hydro summarizes that 83 percent of the generating facilities are PV, 76 percent have a capacity of 5 kW or less while 95 percent have a capacity of 20 kW or less and 2 percent are synchronous generating facilities. (BC Hydro Final Submission, p. 6)

Of the 115 customers billed on RS 1289 in F2011, only four had an accumulated energy credit in their generation account. The total capacity of participants in the program is 1,112 kW and they supply approximately 1,870 MWh per year of energy. BC Hydro does not consider this a significant component of its total energy portfolio. Net Metering accounts have a bi-directional meter installed. BC Hydro states that the smart meters currently being deployed can be programmed for bi-directional measurement, so it does not expect any new metering issues. (Exhibit B-1, p. 43-46, Appendix A)

The annual total costs for the Net Metering program in F2011 were \$99,567 and are anticipated to drop to \$54,567 and \$40,000 in F2012 and F2013, respectively.

In the 2008 Application, customer service issues were raised by Interveners, including billing errors, late bills and lack of online information. BC Hydro committed to addressing these issues and marketing of the Net Metering program. In this Report, BC Hydro states that it has continued to improve its billing accuracy and timeliness, but the volumes of energy do not yet merit an investment in billing software to enable customers to view their information online.

BC Hydro also reports that it has taken no further action to market the program, but instead has focussed on program simplification and removing administrative hurdles. These proposed changes have previously been outlined in these Reasons for Decision in section 2.3.

In the 2005 Net Metering Monitoring and Evaluation Report, BC Hydro identified one of the most significant barriers to the broader commercialization of distributed generation technologies as the absence of uniform technical standards for the interconnection of distributed generation (DG). In

the Report, BC Hydro determined that by using a CSA or UL certified inverter, a “Utility Accessible Disconnect Switch” is no longer required. BC Hydro also states that San Diego Gas and Electric had eliminated the need for a disconnect switch after gaining experience with over 10,000 Net Metering customer installations. (Exhibit B-1, Appendix A, p. 9; Exhibit B-3, BCUC 1.11.1)

In IR BCUC 2.1.2, BC Hydro was asked if it had attempted to minimize the differences between its connection policy and those used in other jurisdictions. In response, BC Hydro stated that it had “...reviewed the practices in other jurisdictions with a focus on adopting the practices of those jurisdictions that have successfully connected large numbers of Net Metering customers (e.g. utilities like San Diego Gas and Electric).” It submits that the changes that it has made and is proposing to make reflect a trend toward simplification, which effectively lower the barriers to entry for potential customers. BC Hydro also states that it has contacted other Canadian and North American utilities to identify both the trends in interconnection and current best practice. (Exhibit B-3, BCUC 1.11.1) However, other than the disconnect switch, the Report provides no specific points of comparison between its Net Metering program and San Diego Gas and Electric’s program, or any other Net Metering program.

The Report makes two recommendations for changes to the Net Metering program:

1. Net Metering Interconnection Agreement (NMIA) - include the terms and conditions of NMIA in RS 1289 and cancel TS No. 63; and
2. Elimination of Synchronous Generators from the Net Metering program because these generators are capable of self-exciting and back-feeding into the BC Hydro system. BC Hydro is also ... finding that it requires considerable engineering time to work with the customer and approve the interconnection. (Exhibit B-1, Appendix A, p. 12)

The Application proposes these and further changes as previously outlined in section 2.3 of these Reasons for Decision.

BC Hydro summarizes by stating that its experience with the program continues to be positive and



that the improvements in this Application will further streamline the administration of the program and enhances its simplicity. BC Hydro has committed in the next six months to enhance its website to improve communications and consider what, if any, additional rate communications may be appropriate. BC Hydro stated that it will provide a letter to the Commission and interveners by December 1, 2012, regarding its 'effort to communicate RS 1289.' (BC Hydro Reply Submission)

BC Hydro is not seeking any order with respect to the Report.

#### Distributed Generation Strategy

BC Hydro states in its Service Plan that it has developed a Distributed Generation (DG) strategy to "help integrate clean electricity into BC Hydro's grid at customer sites. This initiative will result in a small, yet comprehensive portfolio of customer programs that will enable DG from a variety of sources and support sustainable communities. Work is underway to test different business models and design the appropriate mechanisms through which customers can participate." (BC Hydro 2010/11 – 2012/14 Service Plan, p. 18)

However, BC Hydro declined to provide their DG strategy for this proceeding, stating that while its strategy doesn't culminate in a formal strategy document, it outlines a strategic approach including the identification and pursuit of pilot projects to help advance DG with its customers. In BC Hydro's view, the Application is not intended to be a review of BC Hydro's general DG strategy. (Exhibit B-3, BCUC 1.1.1)

The Report also does not present any new, or summarize any existing, goals or strategic directions for the program, although the overview of the Report states that "... the Program was designed for residential and general service customers who wish to connect a small generating unit using a clean energy source to BC Hydro's distribution system."

Commission Determination

**The Panel finds the Report, which the Commission directed BC Hydro to file in G-4-09, does not contain the information BC Hydro committed to providing in the 2008 Net Metering proceeding .**

In addition, there is no discussion of the programs goals, the strategy for achieving those goals and the measures of success that will determine if the goals are achieved. While the Panel acknowledges BC Hydro's assertion that this Application is not intended to be a review of DG strategy, the Panel is unable to evaluate some of the proposed changes to RS 1289 in the absence of a clearly articulated strategy.

The Net Metering program was originally established in response to Policy Action No. 20 of the 2002 Energy Plan, which articulated a goal for electricity distributors to acquire 50 percent of new electricity supply from clean energy, supported by policies such as Net Metering. Since that time, there has been an update to the 2002 Energy Plan (the 2007 Energy Plan), in addition to the *CEA*, which was passed in 2010. Both have reinforced and extended the mandate for BC Hydro to take steps to reduce demand and increase the amount of clean energy that it sources. In particular, the 2007 Energy Plan appears to the Panel to support the development of an innovative electricity industry and to encourage a diverse mix of electrical generation resources that represent a variety of technologies. In the absence of evidence of clear goals for the Net Metering program and strategies to reach those goals, the Panel will consider these policies as guiding factors. As such, we consider the Net Metering program as an important component in an innovative electricity industry.

In order for the Net Metering program to contribute in a more meaningful way to help BC Hydro meet its obligations, there should be clear objectives for the program that focus on economic effectiveness and efficiency. To that end, there are no clear program objectives that the Panel can use in its evaluation of the proposed changes. The Panel considers it to be important to clearly define success in order to evaluate progress and make necessary changes.



Even in the absence of clear goals and targets, the Panel is of the view that unnecessary economic and other barriers to investment in small-scale clean DG should be mitigated, provided that to do so does not incur a substantial cost on the utility or unnecessarily shift costs to other ratepayers. Thus the Panel will evaluate the changes recommended in the Report, and requested in the Application, in the context of meeting energy policy objectives in an economically efficient manner. To this end, the Panel adopts the following evaluation framework for this Application:

RS 1289 should not impose any unnecessary economic or other barriers to ratepayers seeking to install small-scale clean DG.

RSA 1289 should not incur any substantial cost on the utility.

Interconnections must be safe, but interconnection rules must not be excessive or burdensome.

With regard to specific recommendations in the Report, the Panel encourages steps to streamline the program and reduce administrative costs when that approach makes sense and demonstrably does not potentially otherwise impede or negatively impact the success of the overall program. However, with regard to some changes, it appears that streamlining the administration of the program is the goal in itself, rather than a means to a greater end. The Panel will make determinations on each of the proposed changes to RS 1289 in the sections that follow.

**The Panel directs BC Hydro to submit a report on the Net Metering program for F2012 (Report F2012) by no later than March 31, 2013.** The report should address all of the following issues:

- *Consultation:* actively solicit and record feedback at all levels of the Net Metering application process on the economic and other barriers faced by ratepayers in connecting small-scale clean DG (less than 1 MW) and receiving compensation generally consistent with the SOP price for the gross amount of energy generated.
- *DG Strategy:* file a DG strategy which shows how BC Hydro aims to help integrate clean electricity into BC Hydro's grid at customer sites. This strategy should demonstrate



coordination of BC Hydro's differing DG related initiatives, including but not limited to, BC Hydro's Net Metering tariff, the SOP, and Demand-Side Management (DSM) programs. It should also articulate clear goals and objectives for the Net Metering program.

- *RS 1289 Customer Data:* This should include the following:
  - summary of all inquiries into Net Metering
  - number of applications filed
  - number of executed agreements
  - Net Metering facility (type, generator rating and location)
  
- *RS 1289 Costing Data:*
  - administrative, marketing, billing/meter reading costs, engineering costs
  - connection – additional connection costs for non-standard new connections (customer at primary voltage level or with synchronous generators)
  - estimated average price paid for energy generated by RS 1289 customers, by customer class (weighted average ¢/kWh Energy Credit and Energy Price, with other assumptions clearly stated).
  
- *Energy Price:* a review of the calculation of the Energy Price.
  
- *Safety/reliability:* power quality and reliability of supply and how it affects other customers.
  
- *Benchmarking:* other utility experiences and technological advances in distributed generation. Where possible, this analysis should include the size of the Net Metering Energy Credit for residential and commercial customers in ¢/kWh. In addition, it should also contain a description of the most successful programs in North America and a comparison of the terms and conditions of RS 1289 to the terms and conditions of those programs. It should also contain a description of any incentive programs offered in those jurisdictions and marketing efforts undertaken by utilities.
  
- *Regulation:* Changes in regulatory and code requirements in BC.

- *Portfolio Planning*: Impact of Net Metering on energy portfolio planning.
- *Capacity Limit*: the issues associated with changes in capacity limits or limit based on voltage in order to mitigate market barriers to small scale clean DG while limiting any negative cost impacts on non-participants.
- *Connection policy*: consideration of any other potential future changes to mitigate economic and other barriers to connection of small-scale clean DG (provided safety not compromised etc.).
- *Other*: other issues as identified elsewhere in these Reasons.

**The Panel directs BC Hydro to consult with stakeholders in the preparation of the F2012 Report, and include the results of that consultation in the report.** Stakeholders to be consulted should include, but not be limited to, the Interveners registered in this hearing.

### **Updated Energy Price**

BC Hydro submits that the primary purpose of this Application is to update the Energy Price in RS 1289 from 8.16 cents per kWh to 9.99 cents per kWh. This increase is motivated by a provision in the 2007 BC Energy Plan that required the Net Metering tariff to be aligned and generally consistent with the prices paid under the SOP. In January 2011, the SOP adjusted energy price was updated to \$117.76/MWh (\$2009) firm and \$48.84/MWh (\$2009) non-firm, based on the 2009 Clean Power Call (CPC). The proposed Net Metering Energy Price of \$99.87/MWh or 9.99 ¢/kWh, is based on a 70/30 ratio of firm and non-firm and adjusted to 2011 dollars. (Exhibit B-1, p. 2)

BC Hydro states in the 2011 SOP two-year Review that “Many stakeholders have asked why system losses are applied to SOP projects as it is assumed that the energy from these small projects is generally delivered to local communities in which these projects are located and therefore the electricity does not need to be transmitted to the load centre in the Lower Mainland. However,

even if a project actually serves local load, it displaces other energy which then has to be transmitted to serve load elsewhere in the province, which, for loss adjustment purposes, is assumed to be concentrated in the Lower Mainland.” (Exhibit B-7, BCUC 2.3.1)

The SOP starting firm price of \$117.76 has not been grossed up for transmission losses. BC Hydro states that 79 percent of DG projects (by kW rating) under RS 1289 are in the Lower Mainland or Vancouver Island, and that 94.3 percent of the energy sold at the RS 1289 Energy Price was located on Vancouver Island. BC Hydro’s January 2011 Report on the SOP two–year Review (p. 17) shows

that the firm SOP starting point price adjustment for line losses would be 0.02¢/kWh for generation located in Vancouver Island and 0.209¢/kWh for generation located in the Lower Mainland.

(Exhibit B-3, BCUC 1.2.4, 1.2.2.1-1.2.2.2)

The SOP price has also not been adjusted for distribution losses to reflect the distribution connection point of Net Metering customers. Distribution losses are 4.1 percent of total energy. The Net Metering Energy Price also did not appear to be increased for avoided ancillary services (reactive supply and voltage control, regulation and frequency response and operating reserves), although this was consistent with the SOP energy price which was also not adjusted for avoided ancillary services. (Exhibit B-3, BCUC 1.2.3.3; Exhibit B-7, BCUC 2.2.1; Exhibit B-3, BCUC 1.2.5)

BC Hydro justifies the continuation of this approach in the 2011 Net Metering Application stating:

RS 1289 is set on a postage stamp basis across the province and does not consider regional or locational differences,

Net metering projects are quite small so losses or avoided costs are negligible, and

Policy Action No. 11 of the 2007 BC Energy Plan provides that RS 1289 Energy Prices are to be “generally consistent” with SOP prices; Policy Action No. 11 does not state that the prices must be identical.

(Exhibit B-7, BCUC 2.3.1)

BC Hydro also stated that in the 2009 Net Metering Decision that the Commission accepted an Energy Price that does not reflect regional or locational differences, and that the financial impact of the increase in the Energy Price is currently not material given the small volumes of energy - only four customers in F2011 were paid for Net Energy at the Energy Price, the total energy purchases being 57,730 kWh. (BC Hydro Final Submission, pp. 9, 10)

No Interveners raised concerns with BC Hydro’s calculation of the Net Metering Energy Price, other

than comments related to the lack of an incentive component in the Net Metering rate (this is addressed separately in Section 4.5). Zdenek Los, CEBC and BCSEA all support the proposed increase.

#### Commission Determination

The key issue is to determine if the proposed RS 1289 Energy Price is generally consistent with the SOP price. The Panel interprets “generally consistent” as being of similar magnitude and not biased toward either source of supply. An Energy Price will not be biased towards either source of supply if it includes the network benefits included in SOP, with consideration given to the generation connection points and the location. Net Metering is a postage stamp rate and so consideration should be given to the typical location of generation installed under this rate in converting a regional SOP price into a postage stamp Net Metering Energy Price.

It appears to the Panel that the Energy Price may be consistently lower than the SOP price in that it may not adequately include transmission and distribution losses and avoided costs. BC Hydro justified this approach in part on the basis that the financial impact of any increase in the Energy Price would not be material given the small volumes of energy purchased under this rate. However, the Panel is of the opinion that the Energy Price should not be not discounted because volumes purchased under the Net Metering rate are small. A change in the Net Metering program uptake could significantly increase the volume of energy sold under this rate and the Energy Price should be robust enough to withstand the change.

**BC Hydro is directed to review the calculation of the Energy Price in the next Net Metering Monitoring and Evaluation Report to determine whether it appropriately reflects all network benefits (transmission and distribution) and takes into account typical Net Metering generator location in translating a regional SOP rate to a postage stamp Net Metering rate.**

Until such time as a review of the calculation is completed, there is insufficient evidence for the Panel to determine what, if any, the adjustment for network benefits should be. However, although the Panel does not agree that the small volumes of purchases does not justify the lack of an adjustment, the Panel does agree with BC Hydro that the current volume of purchases is small enough to be of little material financial impact to BC Hydro. Further, given the directive that the Energy Price generally be consistent with the SOP price and the fact the SOP has increased since the last time the Energy Price was set, **the Panel accepts the proposed increase in Energy Price from 8.16 cents per kWh to 9.99 cents per kWh as proposed by BC Hydro, effective June 1, 2012. The Panel directs BC Hydro to ensure that any future adjustments that are made to the SOP price are also reflected in the Energy Price for RS 1289 as soon as is practicable.**

### **Eligible Rate Schedules**

RS 1289 currently lists 23 rate schedules under which customers taking service are eligible for the Net Metering program. BC Hydro proposes to simplify the language of RS 1289 by allowing all residential customers access to RS 1289, except those taking service under Rate Schedules 1105 (Closed Rate Residential Service – Dual Fuel); 1148 (Zone II residential); and customers enrolled in BC Hydro’s residential inclining block (RIB) rate control group. BC Hydro also proposes to allow all General Service Customer taking service at a secondary potential access to RS 1289, excluding those customers enrolled in BC Hydro’s Medium General Service (MGS) and Large General Service (LGS) control group. BC Hydro submits that this will allow additional flexibility to allow eligible load customers into the Net Metering program. There were no Intervener submissions on the proposed changes to the eligible rate schedules.

### Commission Determination

The Panel supports the increase in eligibility to RS 1289. However, given the lack of reasons for the exclusion of Rate Schedule 1105 and 1148, the Panel is left wondering why these two rate



schedules are excluded. Similarly with customers taking part in the RIB, MGS and LGS control groups. Further, the Panel notes the exclusion of those taking service at a secondary potential (primary service customers). In this regard, the Panel notes that there are currently eight primary service customers, or about 7 percent of the total number of RS 1289 customers. This issue is addressed later in these Reasons for Decision. (Exhibit B-3, BCUC 1.9.6)

The Panel is also concerned about the impact of these exclusions on customers in these excluded groups who may already be taking service under RS 1289. The Application is silent on how these customers will be treated on a going forward basis. **Accordingly, the Panel approves the increases in eligibility effective June 1, 2012, but denies the exclusion of any of the listed groups.** If a rationale for their exclusion is provided in the next Net Metering report, the Panel directs BC Hydro to also provide their recommendation for how these existing customers should be dealt with.

### **Eligible Generating Facility**

Currently RS 1289 defines a Generating Facility, in part, as a “generating facility that utilizes water, wind, solar, fuel cell, geothermal, biogas, biomass, municipal solid waste, cogeneration or other energy resources or technologies meeting the requirements of the Province of British Columbia definition of BC Clean Electricity to generate electricity.”

BC Hydro submits that the *CEA* was enacted in 2010, with a legislated definition of “clean or renewable resource” and is therefore applying to replace the definition above with the following: “generating facility that utilizes biogas, biomass, geothermal heat, hydro, solar, ocean, wind or other energy resources or technologies defined as a “clean or renewable resource” in the *Clean Energy Act* (as updated from time to time) to generate electricity.”

No Interveners commented on the change of definition.

### Commission Determination

The Panel is supportive of the approach taken by BC Hydro to align the definition of generating facilities in RS 1289 with the legislated definition of clean and renewable resources in the *CEA*. This means that fuel cells and energy recovery generation will be excluded from the tariff. However, the Panel notes that there is no rationale provided for this exclusion. Further, there is currently one customer with a fuel cell and one with an energy recovery generation on RS 1289. The Application is silent on how these customers will be treated on a go-forward basis. **Accordingly, the Panel approves the revised definition of generating facilities effective June 1, 2012, on the condition that BC Hydro continues to include fuel cells and energy recovery generation as eligible generating facilities. If a rationale for their exclusion is provided in the next Net Metering report, the Panel directs BC Hydro to also provide its recommendation for how these existing customers should be dealt with.**

### **Exclusion of Synchronous Generators and Primary Voltage Customers**

Currently, customers taking service at both primary and distribution voltages are eligible for RS 1289. Primary Service is defined as a customer voltage connection of 750 volts or more measured phase to phase. BC Hydro states that as of April 18, 2011, there are eight approved applications from primary service customers. There are currently seven customers taking service under RS 1289 at primary voltage, as shown in the table below. There are two customers with synchronous generators, of which one is also a primary service customer. (Exhibit B-3, BCSEA 1.4.1, 1.4.2)

	<b>Location</b>	<b>Generator Type</b>	<b>Generator Capacity (kW)</b>	<b>Annual Energy Production</b>	<b>Energy sent to BC Hydro in F2011 (kWh)*</b>
	Primary Service				
1	North Vancouver	PV	1.575	N/A	0
2	Burnaby	PV	4.69	N/A	0
3	Fort Nelson	PV	10.0	N/A	0
4	Kamloops	PV	4.0	N/A	0
5	Nakusp	PV	6.12	N/A	0
6	Vernon	PV	10.0	N/A	0
7	Victoria	PV	7.02	N/A	0
	Synchronous Generators				
8	Valemount (also a primary service customer)	Hydro	3.0	N/A	3,748

9	Abbotsford (in progress)	Biogas	20.0	N/A	N/A
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(Source: Exhibit B-3, BCUC 1.9.6)

In the Application, BC Hydro seeks to exclude primary service customers and customers using synchronous generators from eligibility in the Net Metering program. It submits that applications from these customers require a more rigorous review to ensure projects meet safety and compliance standards, and thus have higher costs to BC Hydro. BC Hydro stated that primary and synchronous applications typically require 10 or more hours of a professional engineer’s time (Exhibit B-3, BCUC 1.9.1) and that technical complexity and cost impacts are even more significant in the case of synchronous generators relative to primary service customers. (BC Hydro Final Submission, page 12)

BC Hydro further states that these costs outweigh any potential benefits to BC Hydro. Although the report is silent on what these benefits are or may potentially be, during the IR process BC Hydro states that potential benefits include: they are well suited to large scale or higher nameplate rated generation; can be made to operate at a variable power factor; can provide voltage regulation; and can operate islanded from the utility system. (Exhibit B-1, Appendix A, p. 8; Exhibit B-3, BCUC 1.9.8)

When asked to describe any safety problems with the primary voltage Net Metering program participants, BC Hydro stated that they were not aware of any. It further states that voltage level has not been a significant factor in influencing either the size or type of generation being proposed. With regard to synchronous generators, BC Hydro states that they are capable of self-exciting and back-feeding into the BC Hydro system. (Exhibit B-1, BCSEA 1.4.3, 1.4.4, Appendix A, p. 9)

BC Hydro provided a comparison of primary voltage synchronous generators eligibility for net metering programs for selected utilities in Canada in the table below:

Utility		Allowed under NM?	Mitigation Used/Comments
Toronto Hydro	Synchronous	No	Only CSA approved inverters may be used.
	Primary Service	No	Net metering not allowed above 750 V.
Hydro Quebec	Synchronous	No	Only CSA approved inverters may be used
	Primary Service	No	Connections must be under 750 V.
Nova Scotia Power	Synchronous	Yes	Transfer trip circuit required as well as sign off by a professional engineer for both the design and commissioning. Note that NSP does not have any synchronous generators connected below 1 MW at this point in time.
	Primary Service	Yes	Customer is responsible for all additional study, equipment and commissioning costs.

Utility		Allowed under NM?	Mitigation Used/Comments
FortisBC	Synchronous	Yes	Rigorous process and additional equipment required to interconnect. Note that FortisBC does not have any synchronous generators connected under their net metering rate at this point in time.
	Primary Service	No	Net metering not allowed above 750 V.
Hydro One	Synchronous	Yes	For >10 kW, P.Eng. is required to sign designs and Customer is responsible for all additional study, equipment and commissioning costs.
	Primary Service	No	Voltage limit set at 600 V.

(Source: Exhibit B-3, BCUC 1.9.2)

BC Hydro stated that it was not able to undertake a detailed review of the tariffs and terms and conditions of the various net metering programs and that “...the cost to customers of participating in a net metering rate varies between the Canadian utilities. For the utilities that allow for synchronous generation and primary service connections under their net metering programs, the customer is responsible for all additional costs. Additionally, many of the utilities require the customer designs to be stamped by a professional engineer, further increasing the cost of participating in a net metering program.” (Exhibit B-3, BCUC 1.9.2)

BC Hydro has not conducted a formal stakeholder consultation on the proposed change to primary voltage and synchronous generator eligibility. (Exhibit B-3, BCUC 1.9.3) It submits that the primary objectives in this Application are to re-price the energy price for consistency with the SOP, make improvements for customers to lower costs and simplify the interconnection process. (Exhibit B-3, BCUC 1.7.1)

When asked if excluded customers will still be able to connect small-scale clean DG to BC Hydro’s grid, it responded: “Customers have the ability to connect generators to the BC Hydro system as long as they comply with all the requirements of interconnection including covering the cost of all required studies.” (Exhibit B-3, BCUC 1.9.5) However, BC Hydro stated that, given the current suite of procurement offerings, a future primary voltage or synchronous generator customer would not receive compensation from BC Hydro for electricity fed back into the grid. (Exhibit B-7, BUC 2.4.5)

In its Final Submission, BC Hydro proposes that only those primary service customers that have filed applications on or before the date of this order would still be eligible to participate in the net metering program and all others would be excluded. If the Commission does not approve the exclusion of primary service customers, it proposes to amend RS 1289 to charge the actual costs incurred. (BC Hydro Final Submission, p. 13)

BCAC and Zdenek Los took no position on primary voltage exclusions. CEBC submits that primary service customers should not be excluded from the Net Metering program provided they pay the actual interconnection costs, including studies that BC Hydro incurs in relation to their individual projects. (CEBC Final Submission, p. 1)

BCSEA supports BC Hydro's proposal to amend RS 1289 to exclude synchronous generators and primary service customers. MGH is also supportive of the proposal, but only on the basis that it could reduce costs and safety concerns associated with an increase in the Net Metering capacity cap to 250 kW. (MGH Final Submission, March 1, 2012, p. 2; BCSEA Final Submission, p. 1)

#### Commission Determination

BC Hydro states that its primary goal in this Application is to lower the cost and complexity for customers to connect to the Net Metering program. The Panel applauds that objective and is pleased to see steps towards increasing accessibility to the program.

However, the Panel questions whether the increase in accessibility has to involve the exclusion of some customers. The 2007 BC Energy Plan states that the Net Metering program "... is designed for customers with small generating facilities who may sometimes generate more electricity than they require for their own use." There is no exclusion of any customer class, or type, in this objective. Further, the Panel observes that due to the high capital cost of distributed generation equipment, it may be more cost effective for Primary Service customers to participate in the Net Metering program than it is for Secondary Service customers who may have lower consumption profiles.

Of particular concern to the Panel is that excluding primary service customers and synchronous generators leaves these customers with no access to any BC Hydro program to purchase clean power. Given that a key objective of the 2007 Energy Plan is to "[m]ake small power part of the solution through a set purchase price for electricity generated from projects up to 10 megawatts,"



the Panel questions how BC Hydro intends to address this potential market sector.

From the evidence provided in this hearing, the Panel concludes this proposed change results in a net increase in unnecessary barriers to ratepayers seeking to install small-scale clean DG, while the current arrangements do not represent a substantial cost on the utility or result in safety issues that cannot otherwise be mitigated. Accordingly, it is the Panel's view that primary voltage customers and customers with synchronous generators should continue to be eligible for the Net Metering program. **The request to exclude primary voltage customers and customers with synchronous generators is denied.** BC Hydro can address the issue of access for these customers further in the next Net Metering Evaluation Report.

The Panel agrees with BC Hydro that customers having significantly more complex interconnection requirements than the average RS 1289 customer should bear additional interconnection costs. **Accordingly, BC Hydro's proposal to amend RS 1289 to charge primary voltage customers and customers with synchronous generators the actual connection cost is approved.**

### **Other Changes to RS 1289**

In addition to the changes previously discussed in these Reasons for Decision, the Application seeks to add the following terms to RS 1289:

A commitment from BC Hydro to accept delivery of electricity from the Customer, to act with promptness to perform inspections and/or give approvals and to not unreasonably withhold giving consent in circumstances where consent is required;

Require that the Customer receive written approval from BC Hydro before commencing operations, and an indication that BC Hydro will normally provide approval within 14 days of receipt of the final inspection report;

The condition that BC Hydro may require access to the Customer's Generating facility to carry out additional inspections, as set forth in BC Hydro's Net Metering Interconnection Requirements, 50 kW and Below (NMIR/50);

Require that Customers are responsible for the design, installation, operation and maintenance of their facility and to obtain any permits, authorizations, approvals, etc. that may be required for installation and operation;

The condition that BC Hydro may, in its sole discretion, require the Customer to interrupt or reduce the output of its Generating Facility; and

The condition that BC Hydro may require the Customer to immediately disconnect and that, in the event that the Customer is unavailable, unable or unwilling to do so, to effect the disconnection itself.

(Exhibit B-1, Appendix B)

These terms and conditions are currently covered in the NMIA. By incorporating these terms and conditions directly into RS 1289, BC Hydro proposes to discontinue the NMIA.

#### NMIA / NMIR/50

The NMIA (TS No. 63) is the agreement currently signed by each net metering applicant before they may interconnect their generator with BC Hydro's distribution grid. However, BC Hydro is of the view that a separate agreement is not necessary and creates unnecessary paperwork and administrative costs. Therefore, BC Hydro is proposing to amend RS 1289 to delete the reference to the NMIA and insert the terms and conditions currently contained in the NMIA directly into RS 1289 itself. BC Hydro is also, as a consequence, requesting approval to cancel and delete from its Electric Tariff TS No. 63. (Exhibit B-1, p. 6)

NMIR/50 contains the interconnection requirements for generator owners connecting generators to the BC Hydro distribution system when the BC Hydro service voltage is 600 V or less. BC Hydro advised that, in an effort to simplify the Net Metering program and to reduce both BC Hydro administration costs and customer's costs, it issued an Addendum to its NMIR/50 in May 2011. As a result of a safety and operational review, it was determined that small generators using Canadian Standards Association (CSA) or Underwriters Laboratory (UL) certified inverters cannot create a

hazardous back-feed into the BC Hydro system. As a result, for the majority of net metering applications, a Utility Accessible Disconnect Switch is no longer required. However, the May 2011 changes were actually made to the NMIR/50 Amendment Interconnection Requirements for Small Net Metering Distributed Generators (Solar PV,  $\leq 25$  kW). (Exhibit B-1, Appendix A, p. 9)

#### Commission Determination

**The Panel accepts incorporating the terms and condition of the Net Metering Interconnection Agreement into RS 1289 and cancelling TS 63 effective June 1, 2012.**

The Panel notes that with respect to the changes to NMIR/50, Commission Order G-29-04 stated that BC Hydro may change its interconnection requirements without approval by the Commission. Accordingly, this Panel makes no determination on changes that were made in May 2011. However, as noted in Order G-29-04, the Commission has the jurisdiction to respond to any customer complaints that utility requirements are unreasonable or unjustified. Accordingly, **the Panel directs BC Hydro to file a copy of the NMIR/50 within 30 days of the date of this Order, and to file any subsequent changes to NMIR/50 within 30 days following the date of change.**

The Panel also notes that the change to more simplified interconnection requirements only apply to solar PV  $\leq 25$  kW. **The Panel directs BC Hydro to include, in its next Net Metering and Evaluation Report, an analysis and recommendations on simplifying the interconnection requirements for other types of net metering installations.**

## OTHER ISSUES RAISED

During the review of the Application, other issues were raised or addressed by Interveners. These included the net metering marketing strategy, capacity limit, billing, demand-side management, incentive pricing and the energy credit. The Panel addresses these issues in this section.

### Net Metering Marketing Strategy

BCSEA argues that the absence of marketing is a key barrier. It submits that "... the time has come for BC Hydro to take active steps to increase customer participation in the program." It compares the some 180 program participants in the BC Hydro Net Metering program to San Diego Gas and Electric's over 10,000 net metering customer installations, and recommends that the Commission encourage BC Hydro to actively market the Net Metering program and to report on the results in its next annual report on the program. CEBC agrees, stating that BC Hydro should actively market the Net Metering program to increase participation in it. The proposal that BC Hydro should actively market the Net Metering program was also supported by Zdenek Los. (CEBC Final Submission, p. 2; Zdenek Los Final Submission, March 2, 2012, p. 1; BCSEA Final Submission, December 12, 2011, p. 1)

BC Hydro is uncertain as to the potential future uptake of the Net Metering program by customers. However, it did indicate that the impact of a lack of marketing on Net Metering uptake may become more significant as the cost of technology barrier decreases, BC Hydro states that "...cost reductions in small scale generation technologies may provide further opportunities for conventional utility customers to supply electricity. This coupled with the advent of smart meters and a modernized grid may enable greater penetration of distributed generation." (Exhibit B-3, BCSEA 1.1.3, BCUC 1.7.2)

BC Hydro submits that it would not be appropriate for the Commission to direct BC Hydro regarding the marketing of this rate. However, in its Reply Submission, BC Hydro has committed to the following over the next six months:

Communicate the Commission's decision and any changes to the rate to RS 1289 customers and applicants.

Enhance its web site to improve communications regarding RS 1289, including additional contact information, process information, and linkages to other initiatives in BC Hydro, such as Power Smart.

Consider what if any additional rate communications may be appropriate, including engagement with RS 1289 customers and applicants as well as other stakeholders. BC Hydro will provide a letter to the Commission and interveners by December 1, 2012 regarding its efforts to communicate RS 1289.

(BC Hydro, Reply Submission, p. 6; Exhibit B-3, BCSEA 1.1.6)

#### Commission Determination

The Panel shares the concerns of some of the Interveners that the program may suffer from a lack of marketing. However, there is little evidence or discussion of the success (or lack thereof) of similar programs in other jurisdictions and the role that marketing plays in those successes. This makes it difficult to assess whether additional marketing effort would increase the uptake of the program here in BC.

As an example, the Panel notes that the comparison between BC Hydro and San Diego Gas and Electric's net metering programs shows a substantial difference in the number of program participants between the two service areas. However, there are numerous differences between the two jurisdictions that could account for some or all of this difference - including number of ratepayers, climate, existing rate structures, regulatory regimes, incentive programs available, etc. Accordingly, it is not possible for the Panel to derive any meaningful conclusions at this time, even though there appears to be general agreement among many of the Interveners that 180 customers

is on the low side of the potential number of participants. There is no estimate of the potential number of customers for the Net Metering Program and, as such, it is difficult to evaluate its current efficacy.

Given this lack of evidence, it is not possible to definitively say whether an increase in marketing efforts is required, what level of marketing is required and what is the best way to market the Net Metering program.

**The Panel directs BC Hydro to consult with program participants in a meaningful way to identify if absence of marketing is a market barrier, and if so to develop and evaluate options to address it. BC Hydro is directed to report on this evaluation in its next Net Metering Monitoring and Evaluation Report.**

In the interim, the Panel supports the marketing initiatives that BC Hydro has committed to in its Reply Submission.

### **Capacity Limit**

The capacity limit for the Net Metering program is currently 50 kW. BC Hydro has not applied to increase that limit. In its Application, BC Hydro submits that currently 82 percent of generators in the Net Metering program have a capacity of less than 5 kW and only 3 percent have capacities greater than 25 kW. However, a number of Interveners submit that this limit should be reconsidered with a view to increasing it. Accordingly, the Commission will consider the Interveners' arguments.

BC Hydro originally proposed the 50 kW limit in the 2003 Net Metering hearing. At that time it submitted that 50 kW is consistent with the maximum amperage and voltage at which most residential customers and many commercial customers take electric service. Further, it stated that

this is the size of project that is best suited to a process; doesn't result in costly interconnection improvements; was not anticipated to result in safety concerns; and ensured that the volume of intermittent energy coming onto the grid could be effectively managed. It submits that this rationale was accepted by the Commission and that led to the establishment of the Net Metering program. (BC Hydro Final Submission, pp. 15 - 18)

However, when the Commission originally approved the project capacity limit in RS 1289 it also stated: "Further, and more importantly to net metering tariff design from a regulatory perspective, limits to system size are intended to reduce the potential magnitude of cost-shifting to non-participating customers." (Reasons for Decision, Order G-26-04, p. 5)

BC Hydro stated in the 2005 Net Metering Monitoring and Evaluation Report, that it had received 22 inquiries in the range of 50 kW to 1 MW, and that some inquirers reduced the size of their projects in order to fit the 50 kW limit. CEBC submits that the current level of 50 kW is too small to attract more distributive generation, especially from the agricultural industry and supports increasing the level to 250 kW. (CEBC Final Submission, p. 1)

The Commission in IR BCUC 1.7.2 explored the capacity limit for net metering programs in other Canadian jurisdictions. BC Hydro was asked to update the review of net metering in Canada it had provided in 2005. The results of this update, as they relate to the capacity limit, are summarized in the table below:

<b>Province</b>	<b>Capacity Limit</b>
British Columbia	50 kW (both BC Hydro and Fortis)
Yukon	5 kW customers on a shared transformer  25 kW customers on a single transformer
Northwest Territories	50 kW (aggregate) pilot program began September 1, 2010. No single project greater than 5 kW
Saskatchewan	100 kW
Quebec	50 kW
New Brunswick	100 kW
Nova Scotia	100 kW class 1  1000 kW class 2
PEI	100 kW
Ontario	500 kW



Alberta	The <i>Alberta Electric Utilities Act</i> , Micro-Generation Regulation, Alberta Regulation 27/2008, allows for micro generators with bi-directional interval meters where total nominal capacity does not exceed 1,000 kW.
Manitoba	No formal program
Nunavut	No formal program

(Source: Exhibit B-3, BCUC 1.7.2; Exhibit B-7, MGH 2.8.0)

MGH believes that “... typical 250 kW projects will not require material Transmission System upgrades nor are they large enough to likely create substantial difficulties within the BC Hydro grid. This is especially true of 250 kW projects connected at secondary voltage using induction generators delivering power over three phases.” (MGH Final Submission, December 9, 2011, p. 4)

MGH also submits that BC Hydro should establish a fixed interconnection fee for generators between 51 kW to 250 kW to cover BC Hydro’s costs associated with micro-project interconnection, suggesting that this fee would eliminate cost-shifting. MGH further submits that BC Hydro could apply for additional contribution if a particular project caused “extraordinary” costs over and above the fixed interconnection fee. (MGH Final Submission, March 1, 2012, pp. 1-2)

MGH further submits that the best evidence of the failure of the SOP is the lack of Micro Projects, other than government funded municipal showcase projects. BC Hydro has acknowledge this lack

of participation, and stated that it did not know the reason for it. MGH believes that increasing the Net Metering cap to 250 kW is the simplest way to incorporate ratepayers who wish to develop Micro Projects to self-generate electricity. MGH believes that increasing the limit of the Net Metering program, a program that typically includes small induction generators at secondary voltage up to 50 kW, is less complicated than remedying deficiencies in the SOP, where typical projects are synchronous primary voltage generators up to 15 MW with electricity flowing through the BC Hydro Transmission System. (MGH Final Submission, December 9, 2011, p. 1; MGH Final Submission, March 1, 2012, p. 3; Exhibit B-3, BCSEA 1.3.2)

The BCSEA disagree that changes to the upper limit of the Net Metering program to accommodate micro projects should be categorically rejected. It submits that there is sufficient evidence for the Commission to conclude that there may be problems with energy opportunities for micro generators. However, BCSEA does agree with BC Hydro's submission that increasing the 50 kW limit would require consideration of a number of technical and financial factors, and supports BC Hydro's continued explorations of simplified energy procurement opportunities for small generators (less than 2 MW) with the objective of resolving, if possible, concerns expressed by organizations such as MGH. Finally, BCSEA suggest that the Commission direct BC Hydro to report on the progress of its efforts to resolve concerns regarding energy procurement opportunities for small generators in BC Hydro's next report to the Commission regarding either the SOP or the Net Metering program. (BCSEA Final Submission, February 17, 2012, p. 3)

Zdenek Los submits that he has built a 50 kW plant under the Net Metering program which he has successfully operated for the past 20 months. He further submits that he has "... a water license and adequate pressure to install a 90 kW plant. This plant would fit into the low end of the SOP. After considering the cost of a Technical Review, the very long time for the project approval process, compulsory insurance and other requirements like a dedicated phone line, I gave up on the SOP and was forced to install a 50 kW generator." He maintains that the 50 kW limit is hard to

justify on technical grounds and that many jurisdictions in North America have a much higher limit. (Zdenek Los Final Submission, p. 1)

BCAC states “...given appropriate support and removal of unnecessary hurdles, BC’s agricultural sector could provide over 100 MW of distributed electricity from anaerobic digestion, wind, biomass and micro-hydro projects.” Further, the majority of these projects would be in the 50 – 999 kW range, which are too small to capture the economies of scale experienced by multi-MW projects, but are too large for the Net Metering program. BCAC submits that this void could be remedied by increasing the net metering limit to 250 MW and making changes to the SOP program for projects under 1 MW. (BCAC Final Submission, p. 1)

Although BC Hydro acknowledges that there is general support for an increase in the capacity limit in RS 1289, it remains of the view that 50 kW remains the appropriate limit, given the intent of the rate. It maintains that there is no evidence that 50 kW is insufficient to allow most residential and small commercial customers to participate in RS 1289 for the purpose of meeting all or part of their electricity demand. It is BC Hydro’s view that the purpose of the Net Metering program is to enable these customers to sell some of their surplus electricity and is not intended to incent Independent Power Producers (IPPs) or encourage surplus customer generation. BC Hydro opposed the extraordinary cost option proposed by MGH and stated that it would explore a simplified energy procurement opportunity for small generators under 2 MW. (BC Hydro Reply Submission, p. 17)

While BC Hydro acknowledges the concerns expressed with the SOP in the context of small micro generators, particularly in respect of the interconnection and study costs, it submits that: “[i]t is not appropriate to remedy alleged deficiencies with the SOP with respect to small micro-generators (less than 2 MW) by changing the RS 1289 project capacity limit.” However, BC Hydro maintains that it is exploring simplified energy procurement opportunities for small generators (less than 2 MW). At this time, BC Hydro does not know what the outcome may be, but commits to advising the Commission and interested stakeholders. (BC Hydro Final Submission, pp. 3-4)

### Commission Determination

BC Hydro states that the original intent of the Net Metering program was to allow individual customers to meet all or part of their electricity demand and to that end, the 50 kW limit is consistent with the maximum amperage and voltage that most residential and commercial customers take service. The Panel has concerns about this rationale for the 50 kW limit. An underlying assumption appears to be that since a residence doesn't require any greater capacity than 50 kW to meet its own consumption needs, then the owner doesn't need to purchase and install generating equipment with a capacity greater than 50 kW. The Panel agrees that this would be the case for, say, a backup diesel generator – why pay for a larger piece of equipment than will be required? However, the Panel feels that the economics of the Net Metering program and the clean, small power installations that it comprises are fundamentally different. In this regard we note the situation of Zdenek Los. He submitted that he had sufficient resources – *i.e.* water licences and water pressure – to build a 90 kW plant. While it is true that this may far exceed his own domestic power requirement, it is presumably more economically efficient for him to install larger generation capability and sell the excess power back to BC Hydro, thus making his installation more cost effective and reducing the payback period on his capital investment.

Implementing new generation capacity is an expensive endeavour, either for BC Hydro when it is building dams and powerhouses, or for a residential consumer installing distributed generation equipment. To this end, the Panel notes that in its Final Submission, BC Hydro stated that the key barrier to participation in RS 1289 remains the cost of technology. However, in the case of the distributed generation equipment typical in the Net Metering program, none of the capital costs are borne by BC Hydro or its ratepayers. As can be seen in Zdenek Los' case, by allowing for a larger capacity limit, the Net Metering program could possibly be made more attractive and more accessible to potential customers, which would benefit BC Hydro and its ratepayers. It is the Panel's view that the capacity of a Net Metering installation should be driven by considerations of economically available clean energy and not by the theoretical maximum capacity a homeowner

may require. Further, given the emphasis placed on electrical self-sufficiency and clean electricity generation by BC energy policy and legislation, the Panel is of the opinion that encouraging participation by lowering barriers should be of primary importance.

In the Panel's view, the original policy driver was to support a clean energy goal, and the Commission stated that support was conditional that it did not incur any substantial cost on the utility or impose any inordinate barrier to ratepayers seeking to net meter. Thus the most important reason for the cap was to reduce the potential magnitude of cost-shifting. The potential for cost shifting is greatest when the Energy Credit is greater than the cost of comparable energy purchased by BC Hydro under the SOP. Minimizing the amount of energy that a Net Metering customer is able to generate reduces the amount that they can potentially sell at the Energy Credit rate. The Panel acknowledges the potential effectiveness of this approach. However, the Panel also notes two mitigating circumstances. At the time the Net Metering rate was first approved, the Energy Credit received by Net Metering residential customers was 6.05 ¢/kWh (the residential energy charge in the Electric Tariff), which was higher than BC Hydro's estimate of the avoided cost of comparable green power generation (the 5.4 ¢/kWh Energy Price). Now, however, the reverse is true. The second is that the Commission stated that limited cost shifting was warranted to support the implementation of Net Metering. The Panel is of the view that BC Hydro should demonstrate that increasing the cap would result in a substantial cost on the utility and its ratepayers, not just that it would result in more exports to the grid.

BC Hydro was required to report on this trade-off in its Net Metering Evaluation Report, but failed to do so. Accordingly, the Panel is of the view that BC Hydro should reconsider the rationale for the limit to the Net Metering program. As with the case of the primary service customers and customers with synchronous generation, the Panel's principal concern is that customers will potentially "slip through the cracks" between BC Hydro's Net Metering and the SOP. It is in the public interest for the Applicant to consider both of these programs together, in light of the BC Energy program key policy objective to "make small power part of the solution."

While the Panel agrees with the Interveners that the current limit may be too low, BC Hydro is not seeking any increase to this limit at this time. In addition, there is insufficient evidence provided for what a new upper limit should be and how, or even if, extraordinary connection costs for larger capacity plants should be assessed to new program participants. **The Panel directs BC Hydro to further consider the issue of capacity limit. BC Hydro is directed to consult with affected market participants to identify connection related barriers to entry to small-scale clean DG less than 2 MW, develop and evaluate options to address those barriers and provide the results of this consultation in the next Net Metering Monitoring and Evaluation Report.**

### **Billing**

BC Hydro stated in its Application (Appendix A, p. 11) that “Customer service issues raised by interveners in that [2008 Net Metering] proceeding included billing errors, late bills, and the lack of online information. While BC Hydro has continued to improve its billing accuracy and timeliness, participation rates in the net metering program and the volumes of energy do not yet merit an investment in billing software that would enable customers to view their information online.”

Zdenek Los submits that it “... took seven months and many phone calls and emails to receive the first net metering statement.” (Zdenek Los, Final Submission, December 15, 2011, p.2)

BC Hydro stated that smart meters will enable customers to receive more timely information on their energy consumption. Using the website tool, which is expected to be available in spring 2012, Net Metering customers will be able to access a secure BC Hydro website which will display how much energy they used and when it was used. (Exhibit B-3, BCUC 1.8.2)

### Commission Determination

The Panel finds there is evidence that the timeliness and accuracy of billing for RS 1289 customers may continue to be an issue for customers. However, there is insufficient evidence to determine if BC Hydro could cost effectively improve the level of billing service it provides. It does appear to the Panel that the smart metering program, once in place, may effectively address the issue of timely access to information. **The Panel directs an analysis of billing issues be included in BC Hydro's Net Metering and Evaluation Report.** These issues include, but are not limited to statistic reporting: on-time billing, billing errors and customer complaints; in addition to descriptions of customer complaints.

### **Net Metering as a Demand-Side Measure**

MGH believes the Net Metering program is an effective Demand-Side Measure. It submits an increase in Net Metering capacity is in the best interests of ratepayers as it is an effective demand side measure. MGH further submits BC Hydro ratepayers should have the same demand-side management opportunities offered to the majority of Canadian ratepayers. (MGH Final Submission, March 1, 2012, pp. 1-3)

BC Hydro submits it is not necessary, at this time, to determine whether or not RS 1289, in whole or in part, is a form of DSM under the *Clean Energy Act* because it is irrelevant to the orders sought in this Application. (BC Hydro Reply Submission, p. 5)

### Commission Determination

With regard to the Net Metering program being a Demand-Side Management program, the Panel agrees with BC Hydro that it is not relevant to the orders sought in the application and makes no determination on this issue.

## Incentive Pricing

Two Interveners submit that the price paid for energy generated should be based on the cost of the generating facility to the investor, rather than the market value of the electricity generated. Joseph Samuel states that he is able to predict that a typical system using PV would require nearly 20 to 25 years to break even, given the proposed pricing of 9.99 cents per kWh. He submits that this factor alone discourages any would be IPPs. He further maintains that: “[w]hile BC Hydro should be given credit for administering the net metering program and simplifying the process there should be a genuine interest in bringing [the] Clean Energy Act into a reality. This could never be achieved without at least balancing the cost of renewable energy generation.” (Exhibit B-3, Joseph Samuel 1.1.0)

The BC Agricultural Council submits that at “such lower tariff” small generating projects less than 1 MW are unable to make any substantial revenue from energy sales. It further states that they are only viable when significant grant money is available as there is minimal cash flow in order to service debt.” (Exhibit B-7, BCAC 2.1.0, p. 28)

When asked by the BCAC if the small increase in the Energy Price would increase the viability of net metering projects, BC Hydro responded that it is not proposing the Energy Price increase for the express purpose of enhancing the economic viability of projects. As part of its F2012/13 RRA, BC Hydro described a residential load displacement program which is planned “...to prime the solar photovoltaic energy market in B.C. ... The program will focus on lowering the cost barrier for those customers that want to install solar technology, even though it is not currently cost-effective. This would likely be achieved by offering incentives toward the installation of solar technology along with clear communication that these technologies are not yet cost effective. The program has not yet launched but is planned for the future. No expenditures are planned in F2012 and F2013.” (Exhibit B-7, BCAC 2.1.0, BC Hydro 2012-2014 RRA, Exhibit B-1-3B, p. 139)



The Commission has previously addressed the issue of incentive pricing raised by an intervener. Order G-4-09 stated, “The Province has not yet issued a directive to the Commission with respect to incentive pricing and the specific role of the Net Metering program in achieving conservation objectives. Until the time that such a direction is issued, the Commission cannot presume the details of potential Government policy. The Commission is therefore not persuaded that it should order BC Hydro to include an incentive component into the Net Metering price at this time.”

#### Commission Determination

The Panel finds that incentive pricing is beyond the scope of this hearing and makes no determination on this issue.

#### **Energy Credit**

The Energy Price is only paid if the customer has delivered a net annual surplus of energy. If there is no net annual surplus of energy, the effective price that a Net Metering customer receives for the energy they provide to BC Hydro is their avoided energy charge (the Energy Credit), which, for a residential customer, for example, is currently 6.67 ¢/kWh kWh for the first 1350 kWh in a two month billing period and 9.62 ¢/kWh for any additional consumption – although BC Hydro notes that the Step 2 rate will rise above 9.9 ¢/kWh based on its F2013 RRA. This is in contrast to the SOP program, under which eligible generators receive one price for all generation output and are not required to first offset their own consumption. (Exhibit B-3, BCUC 1.5.2, 1.5.13)

Residential customers make up almost 75 percent of the RS 1289 customers. (Exhibit B-3, BCUC 1.2.1) For a customer currently consuming only Tier 1 electricity (annual consumption of 8,100 kWh/year) the difference between the RS 1289 Energy Price (9.99 ¢/kWh) and the RS 1289 Energy Credit they would receive (6.67 ¢/kWh) results in a subsidy from the DG investor to other ratepayers. This Net Present Value (NPV) of this subsidy could amount to as much as \$3,710 over a

typical 30-year asset life, assuming a discount rate of 8 percent, and CPI of 2.1 percent annually. Forty percent of RS 1289 residential customers receive at least part of their compensation at the Tier 1 price. This indicates that only larger residential customers may be able to economically take advantage of the Net Metering rate. (Exhibit B-3, BCUC 1.2.1, 1.5.3)

BC Hydro does not agree with the assumption that Net Metering customers are underpaid for the electricity they generate. BC Hydro submits that it must plan to meet Net Metering customers' loads even though they have installed generators. Further, the customers may generate energy whenever they are able to do so and BC Hydro effectively banks this energy for the customers at no cost to them. BC Hydro also states that: "[t]he Net Metering rate is designed to be a simple program that bills customers for their net consumption rather than gross generation. Gross metering would be a fundamentally different program. A gross metering rate would involve a different tariff, with multiple meters at the customer site, more complex terms and conditions, and would result in higher costs." (BCUC 1.5.2.3)

#### Commission Determination

If the customer's retail rate is greater than the Energy Price then the effective rate they receive for their energy can be greater than the cost to BC Hydro of comparable green power generation purchased under the SOP. However, when the retail rate is lower than the Energy Price, the reverse is true.

This situation is further complicated by the fact that most BC Hydro customers take energy at a two tier rate. The recent BC Hydro Rib Re-Pricing Hearing set both the Tier 1 and the Tier 2 residential rate. While the residential Tier 2 price (9.62¢/kWh) approximates the Energy Price (9.99¢/kWh), the residential Tier 1 price of 6.67 ¢/kWh is significantly lower. The Panel also notes that the Commission has determined, in the BC Hydro RIB Re-Pricing Application that BC Hydro's long-run marginal cost (LRMC) of new supply continues to be the appropriate referent for the Step-2 energy

rate for residential customers. BC Hydro has estimated its residential long-run cost at 12.96 ¢/kWh, which is higher than the Energy Price. Over time, the residential Tier 2 price may therefore exceed the Energy Price, although the residential Tier 1 price may continue to be lower. (Exhibit B-1, page 4)

This gives rise to two concerns for the Panel. The first is that paying a price that is higher than the SOP price to Net Metering customers means that potentially the price paid for energy under the Net Metering program may be unduly preferential, and in contravention of section 59 of the *Act*. Why should Net Metering customers receive a greater rate for their energy than SOP producers? However, in this regard, the Commission stated in Order G-26-04 that “limited cost-shifting to non-participating customers was warranted to support the implementation of Net Metering for distributed renewable generation.” The second concern is that customers receiving a price that is lower than the SOP are subsidizing the energy that they supply to BC Hydro, thereby facing a disincentive, compared to other DG producers that are not in the same situation.

Given that the Tier 2 residential rate is close to the proposed Energy Price, and also given the lack of information about amounts of energy purchased by BC Hydro and the Energy Credit paid, the Panel makes no determinations on this issue. **BC Hydro is directed to provide an analysis of the estimated Energy Credit paid to Net Metering customers in the next Net Metering and Evaluation Report.**

#### **Revisions to RS 1289**

**BC Hydro is directed to file a revised Tariff RS 1289 incorporating the approved changes within 30 days of the date of this Order.**

**COMMISSION PANEL'S FINDINGS AND DIRECTIVES**

This Summary is provided for the convenience of readers. In the event of any difference between the Directions in this Summary and those in the body of these Reasons for Decision, the wording in the Reasons for Decision shall prevail.

	<b>Finding and Directives</b>	<b>Page</b>
1.	The Panel finds the Report, which the Commission directed BC Hydro to file in G-4-09, does not contain the information BC Hydro committed to providing in the 2008 Net Metering proceeding.	20
2.	The Panel directs BC Hydro to submit a report on the Net Metering program for F2012 (Report F2012) by no later than March 31, 2013.	21
3.	The Panel directs BC Hydro to consult with stakeholders in the preparation of the Report F2012, and include the results of that consultation in the report.	23
4.	BC Hydro is directed to review the calculation of the Energy Price in the next Net Metering Monitoring and Evaluation Report to determine whether it appropriately reflects all network benefits (transmission and distribution) and takes into account typical Net Metering generator location in translating a regional SOP rate to a postage stamp Net Metering rate.	25
5.	The Panel accepts the proposed increase in Energy Price from 8.16 cents per kWh to 9.99 cents per kWh as proposed by BC Hydro, effective June 1, 2012. The Panel directs BC Hydro to ensure that any futures adjustments that are made to the SOP price are also reflected in the Energy Price for RS 1289 as soon as is practicable.	26
6.	The Panel approves the increases in eligibility effective June 1, 2012, but denies the exclusion of any of the listed groups.	27
7.	The Panel approves the revised definition of generating facilities effective June 1, 2012, on the condition that BC Hydro continues to include fuel cells and energy recovery generation as eligible generating facilities. If a rationale for their exclusion is provided in the next Net Metering report, the Panel directs BC Hydro to also provide its recommendation for how these existing customers should be dealt with.	28

	<b>Findings and Directives</b>	<b>Page</b>
8.	The request to exclude primary voltage customers and customers with synchronous generators is denied.	33
9.	BC Hydro's proposal to amend RS 1289 to charge primary voltage customers and customers with synchronous generators the actual connection cost is approved.	33
10.	The Panel accepts incorporating the terms and condition of the Net Metering Interconnection Agreement into RS 1289 and cancelling TS 63 effective June 1, 2012.	35
11.	The Panel directs BC Hydro to file a copy of the NMIR/50 within 30 days of the date of this Order, and to file any subsequent changes to NMIR/50 within 30 days following the date of change.	35
12.	The Panel directs BC Hydro to include, in its next Net Metering and Evaluation Report, an analysis and recommendations on simplifying the interconnection requirements for other types of net metering installations.	35
13.	The Panel directs BC Hydro to consult with program participants in a meaningful way to identify if this is a market barrier, and if so to develop and evaluate options to address it. BC Hydro is directed to report of this evaluation in its next Net Metering Monitoring and Evaluation Report.	38
14.	The Panel directs BC Hydro to further consider the issue of capacity limit. BC Hydro is directed to consult with affected market participants to identify connection related barriers to entry to small-scale clean DG less than 2 MW, develop and evaluate options to address those barriers and provide the results of this consultation in the next Net Metering Monitoring and Evaluation Report.	45
15.	The Panel directs that an analysis of billing issues be included in BC Hydro's Net Metering and Evaluation Report	46
17.	BC Hydro is directed to provide an analysis of the estimated Energy Credit paid to Net Metering customers in the next Net Metering and Evaluation Report.	50
18.	BC Hydro is directed to file a revised Tariff RS 1289 incorporating the approved changes within 30 days of the date of this Order.	50

LIST OF DEFINITIONS

<b>Term/Acronym</b>	<b>Definition</b>
CSA	The Canadian Standards Association. This organization is responsible for setting standards and certifying a range of electrical, and other, equipment in Canada.
Distributed Generation (DG)	Energy generated from many small dispersed energy sources is often referred to as Distributed Generation (DG). The energy generated by Net Metering customers is a very good example of Distributed Generation.
Energy Credit	The amount of electrical energy consumption that a net metering customer offsets with energy supplied to BC Hydro.
Energy Price	The amount (typically expressed either in \$/MWh or ¢/kWh) paid to a Net Metering customer on an annual basis, for any accumulated sales to BC Hydro in excess of their consumption.
Hydro	When used to describe a type of net metering generation, Hydro refers to the conversion of naturally flowing water to electricity. The conversion is typically accomplished using a synchronous or asynchronous generator. This generation type is sometimes referred to as Micro Hydro, which reflects the small scale of these generators.
Inverter	A static device that converts direct current into alternating current. Inverters approved for use in Net Metering applications ensure that the frequency of the output voltage and current is consistent with the grid frequency.

LIST OF DEFINITIONS

<p>Long Range Marginal Cost (LRMC)</p>	<p>When used in this decision, it refers to BC Hydro’s long range marginal cost of electrical energy. It is a forecast of what BC Hydro expects to pay in the future to acquire additional electrical energy.</p>
<p>NMIA</p>	<p>Net Metering Interconnection Agreement. This is the agreement currently signed by each net metering applicant before they may interconnect their generator with BC Hydro’s distribution grid.</p>
<p>NMIR/50</p>	<p>Net Metering Interconnection Requirements 50 kW and below. This contains the interconnection requirements for generator owners connecting generators to the BC Hydro distribution system when the BC Hydro service voltage is 600 V or less.</p>
<p>Photovoltaic (PV)</p>	<p>When used to describe a type of Net Metering generation, Photovoltaic refers to energy conversion that converts sunlight into electricity. The output of a Photovoltaic device is direct current.</p>
<p>Synchronous Generator</p>	<p>An electric machine that generates an alternating voltage when its armature or field is rotated by a motor, an engine, or other means. The output frequency is exactly proportional to the speed at which the generator is driven. The output frequency of a synchronous generator can be regulated to match the frequency of the utility’s electrical supply and operate in parallel with the utility. If the utility supply is removed, the synchronous generator can supply power to its load (islanding operating mode).</p>
<p>UL</p>	<p>Underwriters Laboratories. This organization is responsible for setting standards and certifying a range of electrical, and other, equipment in the United States.</p>