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Maria Baitoiu

Lead Application Officer, Market Oversight and Enforcement

Uploaded electronically to the Alberta Utilities Commission (AUC) eFiling System

June 27, 2017

Dear Ms Baitoiu,

RE: Evidence Submission on "Supplemental Questions" to AUC DCG Review (22534)

The Canadian Solar Industries Association (CanSIA) is the national trade association that represents the solar energy industry throughout Canada. We applaud the Government of Alberta's decision to undertake a review of Distribution Connected Generation (DCG) in Alberta and welcome the opportunity to participate as an Intervenor therein.

Our vision for electricity in Alberta in 2030 is one with the following four characteristics: i) more energy efficiency, demand-side management and local electricity generation; ii) delivered by a cleaner and smarter grid; with iii) greater choice for consumers; and iv) more resilience to the impacts of climate change.

This Evidence Submission provides our response to the supplemental questions posed by the Alberta Utilities Commission (AUC) to registered participants in the Distribution Generation Review (Proceeding 22534) on June 16, 2017..

Answers are provided in the context that Alberta's electricity market is changing rapidly and that many policies, regulations and rules are inter-dependent. CanSIA appreciates the opportunity to continue to participate as a stakeholder in the on-going consultations as decisions are made and directions evolve.

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The questions responded to herein are listed as follows:

> ***2. Many responses from the distribution utilities indicated that, while their existing systems (e.g., billing and load settlement systems, distribution system) can currently accommodate DCG, if DCG capacity were to increase significantly, investments would be required. Please quantify what a significant increase would be, that would necessitate a required investment, for your system.***
>
> ***8. Please provide your understanding of net metering, and explain how it works.***
>
> ***9. Please provide your understanding of virtual net metering, and explain how it works.***

2. Many responses from the distribution utilities indicated that, while their existing systems (e.g., billing and load settlement systems, distribution system) can currently accommodate DCG, if DCG capacity were to increase significantly, investments would be required. Please quantify what a significant increase would be, that would necessitate a required investment, for your system.

Please see Response 3.3 in CanSIA (May 30, 2017) "RE: Evidence Submission (1/4) on Outlook & Status to AUC DCG Review (22534)" for a qualitative description of the significance of penetrations of SDCG and their impacts for system operation.

Furthermore, variability of load on a feeder is commonly up to 20%. As a result, an SDCG penetration of up to 20% of the feeder's peak load should not require system upgrades as the SDCG variability is within the normal range of existing load fluctuations.

Where SDCG penetration exceeds 20% of peak load, a greater level of analysis and connection impact assessment would be required for each additional SDCG connection. Additional devices or equipment (e.g. line upgrades, battery storage) may be required to accommodate additional SDCG, depending upon the result of the CIA.

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Wires Owners must also consider the total SDCG penetration on all feeder circuits flowing back to the transmission substation. Transmission facility operators have limits on the maximum possible back-feed or reverse power flow that the TS transformer can handle (e.g. 60% maximum for Hydro One Networks Inc).

8. Please provide your understanding of net metering, and explain how it works.

9. Please provide your understanding of virtual net metering, and explain how it works.

Net-Billing and Net-Metering are billing mechanisms for electricity customers, who in addition to consuming electricity from the distribution-system, also generate their own electricity primarily for their own use. (In future, electrical storage may also become a common technology used by electricity customers in Net-Billing and Net-Metering for "energy arbitrage").

At times when the electricity customer's generation exceeds their demand (or in the event their storage is discharged in excess of their demand), electricity is exported to the distribution-system. Each billing cycle, consumption and generation is settled on the electricity customer's bill.

Net-metering and net-billing differ in the approach they employ for settlement:

- In net-metering: either a charge is applied or a credit is received on the basis of whether total consumption is larger or smaller (respectively) than their total generation at the end of a billing cycle.
- In net-billing: a charge is applied for all electricity consumed and a credit received for all electricity generated at the end of a billing cycle.

There are several options for structuring Net-Billing and Net-Metering approaches that are presented and described in Table 1 (overleaf). Each structure involves a single generation facility but varies according to the: number of electricity customers served; the number of non-adjacent sites on which customers are served; and the number of metered loads being served.

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Table 1. Options for structuring Net-Billing and Net-Metering

	Structure	Electricity Customers (#)	Sites (#)	Meters (#)	Example
1	Traditional Net-Billing/-Metering i.e. A single electricity customer offsets their net-to-grid load requirements.	1	1	1	House or Office
2	Basic Meter Aggregation i.e. A single electricity customer produces and takes delivery from a single generation facility against their multiple loads on a single site.	1	1	>1	Farm or University Campus
3	Multi-Site/Meter Aggregation i.e. A single electricity customer produces and takes delivery from a single generation facility against their multiple loads on multiple sites.	1	>1	>1	Municipalities, Commercial Property Managers or Manufacturing and Industrial
4	Virtual Net-Billing/-Metering i.e. Multiple electricity customers take delivery from a single generation facility against their multiple loads on multiple sites.	>1	>1	>1	Community of Electricity Customers (can be from same or differing customer classes)

Virtual Net-Billing and Virtual Net-Metering are similar to Traditional Net-Billing and Traditional Net-Metering, Basic Meter Aggregation and Multi-Site/Meter Aggregation (see Table 1) in that each billing cycle, consumption and generation is settled on the electricity customer's bill.

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Virtual Net-Billing and Virtual Net-Metering are different to Traditional Net-Billing and Traditional Net-Metering, Basic Meter Aggregation and Multi-Site/Meter Aggregation (see Table 1) in that multiple loads of multiple electricity customers are served across multiple non-adjacent sites by a single electricity generation facility.

CanSIA (May 30, 2017) "RE: Evidence Submission (2/4) on Community Solar to AUC DCG Review (22534)" presents a proposed "Shared Solar Approach to Enabling Community Solar in Alberta". This approach employs a Virtual Net-Billing structure.

10. Many parties indicated that there is a value to society created by alternative and renewable DCG, and because of that, some of the costs that would normally be charged to those who cause the costs, should be reduced. Please explain who should cover the difference.

With respect to defining value of SDCG, please see CanSIA (May 30, 2017) "RE: Evidence Submission (3/4) on Retail & Rate Design to AUC DCG Review (22534)" discussion of rate design for electricity, system benefits and environmental attributes (Response 19, 20 and 21).

Furthermore, the following excerpt from "Solar Energy Industries Association (SEIA)'s "Principles for the Evolution of Net Energy Metering and Rate Design" provides additional guiding principles for solar rate design:

- *"Rate design should seek to send clear price signals to customers that encourage sustainable, cost-effective investments in SDCG and complementary technologies.*
- *Rate designs should not create barriers to the deployment of SDCG or DER technologies other than solar.*
- *Rate designs that provide greater incentives for DER technology deployment (e.g. more steeply inverted block rates) can be considered to encourage early adoption of efficiency, distributed generation and storage technologies.*
- *Rate designs that emphasize temporal cost-causation (time-varying, critical peak pricing and critical peak rebates) are generally consistent with solar deployment, and may be quite beneficial to customer and system alike when solar is integrated with DERs like storage or demand response.*

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- *Rate designs that emphasize higher fixed (e.g. customer, service and facility or basic service) charges than necessary for recovery of strictly customer-related costs like service drop, billing, and metering, or quasi-fixed (e.g. mandatory residential demand) charges do not reflect cost causation, disproportionately impact low and moderate income customers, and should be discouraged."*

With respect to defining the cost of SDCG, please see the following excerpt from "Solar Energy Industries Association (SEIA)'s "Principles for the Evolution of Net Energy Metering and Rate Design" on basic principles:

- "*Most studies have shown that the benefits of SDCG are equal or exceed costs to the utility or other customers where penetration is low. Assertions that current or future solar customers have shifted or will shift costs to others, and/or create new costs, must be demonstrated with valid, transparent data that reflects the values, avoided utility costs, and results of deploying SDCG, as well as the utility cost of providing service.*
    - *A cost of service study that fails to consider the benefits of SDCG cannot establish a cost-shift.*
    - *Regulators should require an independent cost-benefit analysis before considering substantial rate design or compensation changes based on cost-shift assertions.*
    - *The benefits of existing SDCG should be recognized when considering any asserted cost shift.*
    - *The time frame for review of costs and benefits must be on par with the life of the particular type of Distributed Energy Resources (DER) assets, e.g. 20-30 years, and be forward looking, not a snapshot of one year of sunk costs as is typical in a general rate case (GRC).*
    - *Regulators should seek to ensure in GRC, Integrated Resource Plans (IRP) and other relevant proceedings that future avoided costs found in cost/benefit studies related to SDCG and other DER are actually avoided (e.g. the canceled PG&E transmission projects saving $200 million and the Brooklyn-Queens Demand Management project avoiding costly upgrades).*
    - *Since some level of quantifiable cross-subsidization is inherent in all rate design, particularly for large diverse classes, an independent finding of a material cost shift*

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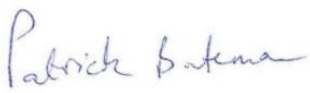
should be required before regulators authorize substantial changes to rates or rate design.

- *Since some level of quantifiable cross-subsidization is inherent in all rate design, particularly for large diverse classes, an independent finding of a material cost shift should be required before regulators authorize substantial changes to rates or rate design*".

We look forward to participating in the oral proceedings and to responding to additional questions that you may have throughout this process. Thank you for your consideration.

Best regards,



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