Brookfield

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BEFORE THE ENERGY COMMISSION
OF THE STATE OF CALIFORNIA

In the matter of:	)	
	)	Docket No. 11-RPS-01
Developing Regulations and Guidelines	)	and
For the 33% Renewables	)	02-REN-1038
Portfolio Standard	)	

COMMENTS FROM BROOKFIELD ENERGY MARKETING TO THE CALIFORNIA ENERGY COMMISSION'S NOTICE TO CONSIDER ADOPTION OF REVISIONS TO THE RENEWABLES PORTFOLIO STANDARD ELIGIBILITY GUIDEBOOK

Brookfield Energy Marketing ("Brookfield") appreciates the opportunity to submit comments on the Draft of the Renewables Portfolio Standard ("RPS") Eligibility Guidebook (7thEd.) (the"Guidebook").

Brookfield engaged in discussions with Commission Staff in June 2012 to attempt to clarify the rules around claiming Portfolio Content Category Number 1 ("PCC 1") RECs for a certified RPS generator with partial renewable output. For some generators only the portion of incremental generation above their historic baseline qualifies as renewable generation. Existing CEC documentation does not address this unique case and how to determine the eligible quantity of PCC1 RECs. At that time Brookfield provided Commission Staff with examples and three proposed options for how to address this issue. We did not receive feedback from Commission Staff on our proposal. Later we were told by Commission Staff that this issue would be best addressed in the 7th Edition of the RPS Eligibility Guidebook and our comments should be focused through that stakeholder initiative. We have reviewed the Guidebook and do not believe our prior questions and concerns have been adequately addressed. Therefore, as described further in our comments below, we request the Commission to update the Guidebook and provide further clarifications.

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The main challenge in determining PCC 1 RECs for a generator with partial renewable output is that the historic baseline is calculated as a monthly value while the tracking of PCC 1 RECs, as described in the Guidebook, must be accounted for hourly. The Guidebook is still unclear as to how to match a monthly value to an hourly value. Brookfield proposes three options for how the hourly PCC1 RECs can be determined in this scenario[1]:

1. Even allocation of REC generation across all hours in a month and then to determine PCC1 RECs calculate:

   Min (AVG Hourly REC, Hourly E-Tag, Hourly Metered Generation)

2. Determine hourly REC quantities after monthly baseline has been achieved. Then to determine PCC1 RECs calculate:

   *Min (Hourly E-Tag, Hourly Metered Generation * Renewable %)*

3. Determine PPC1 RECs incremental to historic baseline on an hourly basis by performing the following calculations:

   a. Convert the monthly historic baseline into an average hourly value by dividing historical baseline by 720 hours in a month to equal (this can either be done as a different value for each month or a fixed yearly value)

   b. Determine the hourly incremental generation above the baseline by calculating:

[1] A PowerPoint presentation as well as a spreadsheet with detailed examples was provided to Commission Staff in June 2012. The PowerPoint presentation is included as Attachment A to these comments

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(*Hourly Usage – Hourly Average Baseline*)

c. Calculate the PCC 1 quantities by applying the following methodology:

*Min (Hourly E-Tag, Incremental Generation * Renewable %)*

The Section of the Guidebook on Incremental Generation (Section E) states the following:

The incremental generation from the facility is defined as the electricity generated by the facility in excess of the baseline. The generation attributed to the baseline generation, generation that cannot be counted as RPS eligible, must include renewable generation equal to the renewable baseline and include additional generation, renewable or nonrenewable, equal to the remainder of the historical baseline. Facilities not producing renewable generation in excess of the renewable baseline, or any generation in excess of the historical baseline, in a particular month will not produce any incremental generation that month.

Upon reading this section, although it is not explicitly stated, we could infer that Option # 2 described above is the preferred approach by the Commission to calculate PCC 1 RECs in this case. This would mean that any PCC 1 RECs would be attributed only to the last hours of the month after the historical baseline is achieved. We see this alternative as the least desirable of the three for a number of reasons 1) Incremental generation is modeled inaccurately since incremental generation increases generation in all hours of the month not only in the last half of the month. 2) Results in the procurement of transmission that may not be needed because transmission cannot be procured for just the latter portion of the month. 3) Affects dispatch for facilities participating in the CAISO markets as facilities in this scenario will all have higher

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marginal costs early in a month and lower later in a month and could impact dispatches by the CAISO.

The preferred approach would be Option # 3 as it is most reflective of actual generation on an hourly basis and accurately accounts for incremental generation each and every hour. This would require the existing historic baseline to be converted to an hourly baseline.

Option # 1, while preferable to Option # 2 is not as accurate as Option # 3 as it will evenly allocate RECs to all hours regardless if the generator is producing energy or not.

In summary, Brookfield appreciates the efforts put forth by Commission Staff to develop this most recent version of the Guidebook. We respectfully request the Commission to update the *RPS Eligibility Guidebook, 7th Edition* with the specific clarifications described herein along with an accompanying example that clearly describes what approach should be used to determine PCC 1 RECs for a certified RPS generator with partial renewable output.

Brookfield is happy to answer any questions on the alternatives provided and to discuss this issue further with Commission staff if required.

Sincerely,

_____/s/ Margaret Miller_____

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Dated: March 22, 2013

Brookfield

Brookfield Renewable Energy Group

Focusing on Renewable Power Generation

Calculation of RECs for Partial Renewable Output

For Discussion Purposes Only

Calculation of Bucket 1 RECs for Facility with non renewable output

Question : How do we account for portion of generation that does not count as renewable generation?

- For some generators only the incremental portion of generation above the historic baseline qualifies as renewable energy
- Existing CEC documentation does not address these unique cases and how to determine quantity of Bucket 1 RECs
- Brookfield seeks to work in concert with the CEC to develop methodology by evaluating three (3) proposed options

For Discussion Purposes Only

Brookfield proposes three options to calculate Bucket 1 RECs:

Option A – Even Allocation of REC Generation Across All Hours in Month

- Take monthly REC generation and allocate evenly among all the hours in the month. To calculate bucket 1 REC quantity take the minimum of:
  1. Generation Meter Hourly Quantity; or
  2. E-Tag Hourly Quantity; or
  3. Average Hourly REC Quantity

Option B – Match Hourly After Monthly Baseline Quantity is Achieved

- After exceeding the historic ineligible Monthly baseline quantity, track/match REC quantities hourly. To calculate bucket 1 REC quantity take the minimum of:
  1. Generation Meter Hourly Quantity reduced for Non-Renewable Percentage; or
  2. E-Tag Hourly Quantity

Option C – Calculate Hourly REC Generation Incremental to Baseline

- Calculate the historic ineligible average Hourly baseline quantity; track/match incremental REC quantities hourly. To calculate bucket 1 REC quantity take the minimum of:
  1. Incremental Generation above the historic ineligible average hourly baseline generation reduced for Non-Renewable Percentage; or
  2. E-Tag Hourly Quantity

For examples in the subsequent slides assume the following scenario

Assumptions

- Total monthly generation = 35,000 MWh *(48.61 MW x 720 hrs/month)*
- Generator Historic Baseline Quantity = 20,000 MWh *(27.78 MW x 720 hrs/month)*
- Renewable Percentage = 75% (i.e. 25% non-renewable)
- CEC RECs = [Total monthly generation *(35,000 MWh)* – Historic Baseline Quantity *(20,000 MWh)*] x Renewable Percentage *(75%)* = 11,250 MWh
- Average Hourly RECs = 11,250 MWh / 720 hrs = 15.625 MW

Detailed examples are contained in the spreadsheet provided

Option A – Example

- Using proposed methodology to determine bucket 1 quantities we would calculate:
  - **Min(AVG Hourly REC, Hourly E-Tag, Hourly Metered Generation)**
- If you refer to the provided spreadsheet you can see, when the E-Tags or the Hourly Generation are insufficient to cover renewable generation only a portion of the quantity can count towards bucket 1.
- *For example, using the proposed methodology the spreadsheet shows:*
  - HE01 on Day 1 there are 52 MWh of E-Tags and only 15.625 RECs; therefore, all RECs can be bundled with energy to count towards bucket 1;
  - HE11 on Day 5 there is 1 MWh of E-Tags and 15.625 RECs; therefore, only 1 MWh of RECs can be bundled with energy and count towards bucket 1 (the remaining can be bundled with energy in future hours to count towards bucket 2 or sold as bucket 3).

Option B – Example

- Since the baseline for our sample generator is 20,000 MWh for the month we do not begin to determine bucket 1 REC quantities until the baseline is fulfilled.
  - To demonstrate this we have grayed out the first 17 days and 8 hours in the provided spreadsheet;
  - HE09 on Day 18 is the marginal hour to achieve the baseline. There was 45 MWh of generation in that hour so the first 27 MWh is needed to hit the baseline while the remaining 18 MWh is non-baseline (13.5 MWh renewable + 4.5 MWh non-renewable).
- Using the proposed methodology to calculate bucket 1 quantities we would calculate:
  - **Min (Hourly E-Tag, Hourly Metered Generation * Renewable %)**
- *For example, using the proposed methodology the spreadsheet shows:*
  - HE09 on Day 18 shows 13.5 RECs can be attributed to bucket 1 as there are 45 MWh of E-Tags and only 13.5 MWh of E-Tags are needed.
  - HE24 on Day 30 there are 10 MWh of E-Tags and 48 MWh of generation; from which 36 RECs are generated due to 75% of MWs counting as renewable. As there are only 10 MWh of E-Tags, only 10 RECs count as bucket 1 (the remaining can be bundled with energy in future hours to count towards bucket 2 or sold as bucket 3)

Option C – Example

- First we convert the monthly historic baseline into an average hourly value by dividing 20,000 MWh by 720 hours in a month to equal 27.78 MW *(this can either be done as a different value for each month or a fixed yearly value)*
- Then we determine the hourly incremental generation above the baseline by calculating:
  - **(Hourly Usage – Hourly Average Baseline)**
  - For example, in HE01 the incremental generation = (50 – 27.78) * 0.75 = 16.665 MWh
- To calculate the bucket 1 quantities we apply the following methodology:
  - **Min (Hourly E-Tag, Incremental Generation *Renewable %)**
- *For example, using the proposed methodology the spreadsheet shows:*
  - HE03 on Day 9 shows 12.92 MWh can be attributed to bucket 1 as the e-tag for that hour is 45 MWh but the incremental generation is 12.92 MWh.
  - HE11 on Day 4 shows 0 MWh can be attributed to bucket 1 because all of the generation in that hour is associated with the baseline generation.

Evaluation of Proposed Options

	Pro	Con	Comments
Option A Even Allocation of REC Generation Across All Hours in Month	•Allows for good transmission procurement management •Simple methodology	•Allocates RECs to all hours regardless if generator is producing energy or not •Calculation unknown until month end	Not as accurate due to averaging and simplicity of calculations Seems to be a Bucket 2 product
Option B Match Hourly After Monthly Baseline Quantity is Achieved	•Calculation known ahead of time for forecasting and optimization	•Poor transmission procurement management. Can't procure transmission just for back half of month •Does not recognize incremental generation properly (incremental generation increases generation in ALL hours, not only in the last half of a month)	Would result in procurement of transmission that may not needed Generator outages before hitting monthly baseline disregard incremental generation early in the month for expanded facilities
Option C Calculate Hourly REC Generation Incremental to Baseline	•Adequate transmission procurement management •Calculation known ahead of time for forecasting and optimization •More accurate as accounts for all inputs on an hourly basis •Does not penalize outages	•Not as good as method A for procurement of transmission as the quantities vary by hour significantly	Change needed to CEC certificate to disaggregate baseline shown on certificate to hourly value (either different values Monthly or calculated as Hourly value based on Yearly average) Only method to correctly match incremental values for all hours in a month

Recommendation

Our recommendation is *Option C*, because…

Option A

- Least intuitive and flawed as it attributes RECs to all hours regardless of generation.
- RECs can be attributed to hours that had 0 MW generation.

Option B

- Least preferred approach as it makes it very hard to procure transmission economically.
- A lot is spent on unneeded transmission.
- This method does not accurately model incremental generation properly.

Option C

- Preferred methodology and the most technically/fundamentally correct.
- Accurately measures incremental energy on an hourly basis.
- Accumulates RECs for each hour the generation exceeds the historic baseline quantity.
- All values are calculated on an hourly basis to ensure accuracy and consistency in treatment.
- Correctly calculates the incremental generation that occurs early in the month.
- Generator outage that occurs late in the month does not impact the facility expansion and additional hourly generation already achieved.
- Consistent with how incremental hydro is calculated.

(Incremental hydro does not only occur after the arrival of average water flows, it occurs for all water due to efficiency)

Notes: The fundamental difference between Options B and C is how the historic monthly baseline is calculated: **monthly** or **hourly.**