Standing Offer Program (SOP) Review

Recommendations for SOP Pricing and SOP Changes

July 15, 2010

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Agenda:

- Updated SOP pricing
- Jurisdictional comparisons
- Summary of recommended SOP changes
- Aspects of SOP where no change is recommended
- Q&A period

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Updated SOP Pricing

> **"*The price offered in the standing offer contract would be based on the prices paid in the most recent BC Hydro energy call*"**
>
> **– 2007 BC Energy Plan**

Clean Power Call (CPC) vs. SOP:

- CPC prices are firm energy prices. SOP is a non-firm contract
  - Ratchet clause, performance penalties (LDs), securities
- CPC has mostly 'large' projects, majority are T-connected
- Both the CPC and SOP are for Clean Energy and require transfer of Environmental Attributes (EAs)

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Updated SOP Pricing

$/MWh	VI	LM	KN	CI	PR	NC	SI	EK
Proposed SOP Pricing	**102.25**	**103.69**	**97.02**	**99.26**	**94.86**	**96.17**	**98.98**	**102.18**
Original SOP Pricing	88.76	88.38	84.77	81.95	74.23	75.69	76.61	80.44
Increase	**13.49**	**15.31**	**12.25**	**17.31**	**20.63**	**20.48**	**22.38**	**21.74**
% Increase	**15%**	**17%**	**14%**	**21%**	**28%**	**27%**	**29%**	**27%**

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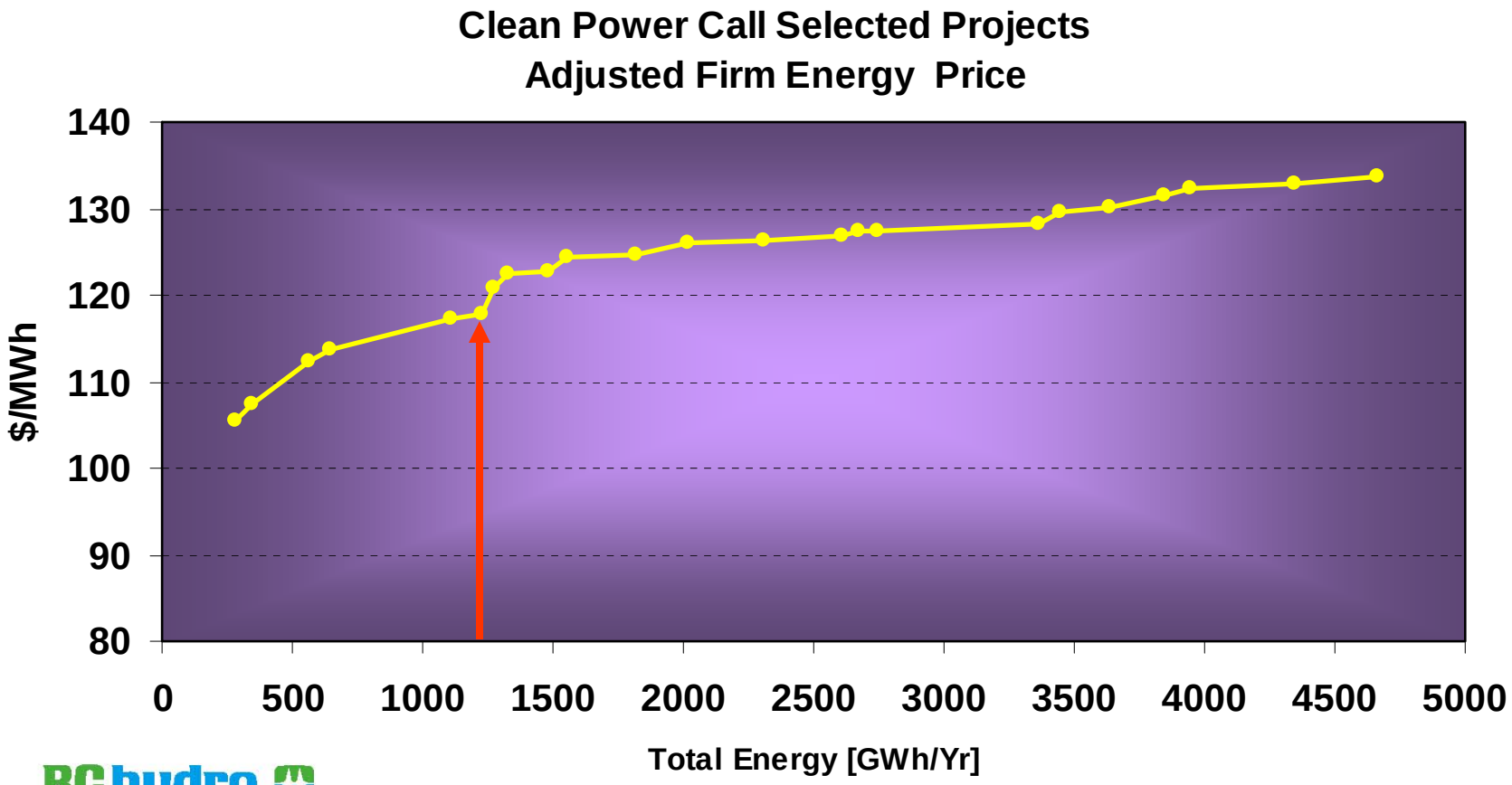
Updated SOP Pricing



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Price curve represents adjusted bid prices for firm energy, plotted against total energy

Updated SOP Pricing

BC Hydro set the updated SOP pricing based on a starting price of $117.76 for firm energy adjusted for delivery to the Lower Mainland. The lowest price on the CPC price curve is $105.36, the highest is $133.80.

BC Hydro selected this starting price because:

- This price is expected to attract a cumulative total of more than 1,000 GWh/yr of energy over two years in keeping with the target of an incremental 500 GWh/y of energy per year
- No need impose a cap or quota since the price was not selected at the top end of the curve, thus providing some limits to the amount of non-firm energy to be purchased
- Going to the next project's price represents a significant price increase in relation to the amount of additional energy acquired. (base price selected at 'natural break' in the CPC price curve)

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Updated SOP Pricing

Once the starting price was selected from the CPC curve, the following calculations were performed to arrive at the SOP base price, which is the plant gate price that gets paid to the generator:

- Adjusters that had been added to the bid prices for selection purposes in the CPC were reversed
- Firm energy price was transformed into a contractually non-firm 'total energy' price by assuming that 70% of delivered energy from SOP projects will be physically firm energy
- Price was escalated and then unlevelized to arrive at the actual price paid to the generator in 2010 dollars for each MWh generated

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Updated SOP Pricing

$/MWh	VI	LM	KN	CI	PR	NC	SI	EK
(1) Starting Price (Levelized Adjusted FEP)	117.76	117.76	117.76	117.76	117.76	117.76	117.76	117.76
(2) Losses	0.20	2.09	-5.74	-2.67	-8.08	-6.72	-2.95	1.23
Improvements to transmission system:								
(3) NU	-5.06	-5.06	-5.06	-5.06	-5.06	-5.06	-5.06	-5.06
(4) CIFT	0.00	0.00	-0.91	-1.04	-1.40	-1.04	-1.12	-1.12
(5) Levelized Firm Energy Price ($2009)	112.90	114.78	106.05	108.99	103.22	104.94	108.63	112.81
(6) Levelized Total Energy Price ($2009)	93.68	95.00	88.89	90.94	86.91	88.11	90.69	93.62
(7) Levelized Total Energy Price ($2010)	94.10	95.43	89.29	91.35	87.30	88.50	91.10	94.04
Unlevelized Price ($2010)	**102.25**	**103.69**	**97.02**	**99.26**	**94.86**	**96.17**	**98.98**	**102.18**

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Regional Adjustments - CIFT

- Cost of Incremental Firm Transmission (CIFT) is the incremental cost on the bulk system of getting the electricity from the plant gate to where the incremental load is expected to occur (currently assumed to be Lower Mainland)
- CIFT has been applied to the SOP Base Price using the same approach as was used in the original SOP pricing
- CIFT is based on information from BCTC. CIFT adjustments have decreased due to changes in baseline year and changes in methodology

		CIFT ($2009) $/MWh		
Region		Original	**Updated**	Difference
Vancouver Island	VI	0.00	**0.00**	0.00
Lower Mainland	LM	0.00	**0.00**	0.00
Kelly/Nicola	KN	4.10	**0.91**	3.19
Central Interior	CI	5.40	**1.04**	4.36
Peace Region	PR	6.80	**1.40**	5.40
North Coast	NC	5.80	**1.04**	4.76
South Interior	SI	6.60	**1.12**	5.48
East Kootenay	EK	6.60	**1.12**	5.48

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Regional Adjustments – Line Losses

- Losses were taken from average losses from projects in each region using the entire sample set of all CPC projects. This approach is the same as was used in the original SOP pricing
- Losses have decreased from the values from the original SOP pricing, primarily due to lower system demand

		Losses		
Region		Original	**Updated**	Difference
Vancouver Island	VI	-5.7%	**0.2%**	-5.9%
Lower Mainland	LM	-6.1%	**1.8%**	-7.9%
Kelly/Nicola	KN	-5.3%	**-5.3%**	0.0%
Central Interior	CI	-6.9%	**-2.3%**	-4.6%
Peace Region	PR	-13.7%	**-6.9%**	-6.8%
North Coast	NC	-13.2%	**-5.8%**	-7.4%
South Interior	SI	-11.3%	**-2.5%**	-8.8%
East Kootenay	EK	-7.0%	**1.0%**	-8.0%

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Network Upgrade Adjuster

- The NU adjuster was calculated by taking the weighted average NU adjusters (weighted by capacity) up to and including the selected price point on the CPC price curve

Firm vs Non-Firm Contract Pricing

- The 70/30 firm/non-firm split is based on the Firm Energy Load Carrying Capability (FELCC) of Intermittent Resources study (Appendix F12 in the 2008 LTAP).
- Transforming the ‘firm energy’ price for CPC into a contractually non-firm ‘total energy’ price for the SOP was done by combining the non-firm levelized plant gate price of $48.84/MWh with the firm levelized plant gate CPC price in a ratio of 30% non-firm to 70% firm

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SOP Pricing - What is staying the same?

Escalation

- Half of the SOP base price (which now include EAs) will continue to be escalated at CPI annually post Electricity Purchase Agreement (EPA) signing
- The full SOP base price (which now include EAs) will continue to be escalated at CPI annually prior to EPA signing

SOP Price will not vary by technology

- There will continue to be one SOP base price offered to all projects and technologies in each of the 8 regions
- The Clean Energy Act contemplates a Feed-in-Tariff Program which may offer different pricing to different technologies

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SOP Pricing - What is recommended to change?

Base price includes value of EAs

- There will no longer be a separate adder for Ecologo Certification, but all projects must seek this certification and BC Hydro will cover the cost

Time of Delivery Table

- There will now be different pricing adjustments for each month according to Peak, Super Peak and Non-Peak hours of the day according to the CPC specimen EPA

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Time of Delivery Table

Off Peak: 10pm–6am, Mon-Sat. All day Sun
Peak: 6am-4pm & 8pm-10pm, Mon-Sat.
Super Peak: 4pm-8pm, Mon-Sat.

LLH = Off Peak
HLH = Peak + Super Peak

	Existing SOP		Clean Power Call		
	LLH	HLH	Off-Peak	Peak	Super Peak
January	106%	125%	105%	122%	141%
February	110%	126%	101%	113%	124%
March	106%	114%	99%	112%	124%
April	95%	103%	85%	95%	104%
May	76%	92%	70%	82%	90%
June	72%	90%	69%	81%	87%
July	72%	91%	79%	96%	105%
August	81%	95%	86%	101%	110%
September	88%	96%	91%	107%	116%
October	97%	108%	93%	112%	127%
November	102%	109%	99%	112%	129%
December	102%	122%	104%	120%	142%

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SOP – Jurisdictional Comparison

- Ontario's pricing is higher than the proposed new SOP pricing and employs a Feed-in-Tariff program as opposed to a Standing Offer Program
- In the Pacific Northwest, pricing for Public Utility Regulatory Policies Act (PURPA) qualifying facilities, which is based on utilities' avoided cost, is much lower than proposed new SOP pricing but is typically based on non-clean technology (CCGTs)
- SaskPower's pricing for its Green Options Partners Program comparable but marginally lower than the proposed new SOP pricing

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Jurisdictional Comparison - Ontario

		Cdn $/MWh (Levelized 2010)		
Technology	**Capacity Range**	**Ontario***	**BC Hydro SOP****	**Difference**
Solar PV – Rooftop	> 500 kW	453	91.39	361.61
Solar PV – Ground-mounted	> 10 kW ≤ 10 MW	372	91.39	280.61
Wind – Onshore	Any size	118	91.39	26.61
Wind – Offshore	Any size	166	91.39	74.61
Waterpower	≤ 10 MW	114	91.39	22.61
	< 10 MW ≤ 50 MW	106	91.39	14.61
Biomass -	≤ 10 MW	120	91.39	28.61
	> 10 MW	113	91.39	21.61
Biogas	> 500 kW ≤ 10 MW	128	91.39	36.61
	> 10 MW	90	91.39	-1.39
Landfill gas	≤ 10 MW	97	91.39	5.61
	> 10 MW	90	91.39	-1.39

* Ontario prices are levelized prices, not reported prices from the FIT Rules

** Taking simple average of levelized prices across Regions

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Jurisdictional Comparison – Pacific Northwest

Fixed prices for PURPA qualifying facilities. Prices are based on the utility's avoided costs.

	CAD $ / MWh					
Year	PGE		PacifiCorp		Idaho Power	PSE
	Peak	Off-peak	Peak	Off-peak		
2010	50.05	42.19	53.71	41.38	79.33	88.79
2011	68.76	48.58	57.80	44.18	81.56	91.02
2012	62.51	49.93	61.60	45.71	83.95	93.29
2013	98.18	63.80	64.34	47.20	85.94	95.62
2014	97.15	62.12	83.49	64.01	87.99	98.01
2015	95.49	59.81	85.58	65.77	90.08	100.47
2016	95.78	59.53	87.95	67.79	92.34	102.97
2017	98.04	60.87	90.23	69.71	94.53	105.55
2018	101.23	63.48	92.98	72.09	96.90	108.18
2019	105.69	67.21	91.91	70.65	99.20	110.90
2020	106.39	67.31	92.81	71.18	101.56	113.66
2021	137.18	68.91	97.82	75.81	103.98	
2022	111.19	70.48	103.17	80.76	106.45	
2023	114.97	73.35	97.79	74.98	109.00	
2024	118.32	76.18	94.67	71.46	111.60	
2025	120.74	77.67	99.29	75.67	114.28	
2026	122.15	79.13	101.23	77.19	117.53	
2027	125.37	80.63	101.52	77.06	120.88	
2028	127.71	82.12	105.28	80.38	124.34	
2029					127.91	
2030					131.58	
2031					134.56	
2032					138.17	
2033					141.88	
2034					145.70	

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[1] Peak and Off-peak prices calculated as yearly averages. Different avoided costs are provided by month.
[2] PacifiCorp – Pacific Power and Light Company in Oregon – Avoided Cost Prices effective April 4, 2010.
[3] Non-levelized avoided cost rates for non-fueled projects. (Idaho PUC, 2009).

Jurisdictional Comparison – SaskPower

SaskPower's Green Options Partners Program

	Price ($/MWh)	
COD Year	SaskPower	BC Hydro SOP*
2010	94.21	99.30
2011	96.09	101.29
2012	98.02	103.31
2013	99.98	105.38
2014	101.98	107.49
2015	104.02	109.63
2016	106.10	111.83
2017	108.22	114.06
2018	110.38	116.35

* Taking simple average across Regions and assuming CPI = 2%

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Recommended Program Changes

What is staying the same?

- Ineligibility of F2006 Projects
- Mandatory transfer of EAs
- Permitting requirements
- Continued flexibility on when to initiate intercon. study
- Lower Project Size Limit
- No cap or quota

What is recommended to change?

- Network Upgrade Threshold amount
- Interconnection Screening Process
- Review of First Nations consultation
- Eligibility of Non-Proven Technologies
- Term of EPA vs. term of Permits
- Increased Upper Project Size Limit
- Auxiliary Fuel
- Pre-application Meeting
- Discretion
- Buyer Turndown Right
- Risk Allocation for intercon. delays

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Ineligibility of F2006 Projects

- Feedback received during dialogue sessions highlighted the desire for consistency among all F2006 projects
  - ‘Whatever you do, do it for all F2006 projects, not just some’
- Revised recommendation of continued ineligibility of F2006 projects for the SOP represents consistent treatment of all F2006 projects
- Many F2006 Call projects are progressing under their original terms and pricing. BC Hydro needs to give these projects more time to prove out under their original contract
- Allowing these projects to terminate their contracts and participate in the SOP will undermine acquisitions processes because it will provide such an incentive that even viable projects that could proceed under the original F2006 pricing would naturally opt for higher pricing if it were available

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Mandatory Transfer of EAs

- The transfer of EAs was mandatory in the CPC process so the value of EAs is embedded in the CPC bid prices, which were used to derive the proposed SOP price
- Including the value of EAs in the base price is consistent with many other jurisdictions that have energy procurement programs for renewables
- There is a potential GHG liability from acquiring null electricity (unbundled from the attributes) because, depending on future regulation, null electricity can carry a GHG intensity
- BC Hydro may require these EAs if a Renewable Portfolio Standard is set for the utility

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Interconnection Network Upgrade (INU) Threshold amount

- Calculated as the weighted average (weighted by capacity) of the network upgrade cost per megawatt for all projects up to and including the selected price point on the CPC price curve
- Original INU Threshold = $87,500/MW
- **Updated INU Threshold = $150,000/MW**

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Interconnection Screening Process

- Standardized and simplified interconnection feasibility assessment for projects between 50 kW and 15 MVA that intend to connect to BC Hydro's primary distribution system below 35 kV
- Identify the scope, costs, and timeframe of the supplemental studies required for projects that fail one or more screen(s)
- Provide a high level assessment of the minimum technical requirements and cost range (level) of potential network upgrades
- Projects that pass all screens may follow a fast track interconnection since there will be no significant impact on the BC Hydro system

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Review of First Nations Consultation

- BC Hydro requires documentation from proponents on their consultation efforts to assess the adequacy
- Because the SOP requires major permits to be in place, proponents or Crown agencies will have undertaken the required consultation in respect of these permits
- However, BC Hydro *may* have to seek additional information to make a determination on the adequacy of consultation to undertake its Crown duty
- Revised SOP Rules and all EPAs will have to address this new requirement
- Revised SOP First Nations EPA clause will be adopted from CPC EPA

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Eligibility of Non-Proven Technologies

- BC Hydro to allow the participation of non-proven generation technologies (i.e. near commercial and/or prototype technologies) in the Program, but no special provisions will be made for such projects

Term of EPA vs. Term of Permits

- EPA can be terminated by BC Hydro if a material permit or tenure has expired and not been successfully renewed prior to the expiry of the EPA

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Increased Upper Project Size Limit

- Upper project size limit can only be increased by way of regulation from the Provincial Government
- BC Hydro's recommendation is to increase the size to **15 MW**
- 15 MW is recommended as the new upper project size limit because:
  - 15 MW is a measured approach that limits BC Hydro's exposure given that the SOP is for a contractually non-firm product acquired in a non-competitive process with no program cap
  - Projects greater than 15 MW typically have more stringent and costly interconnection studies and system requirements, which make them less conducive to what is supposed to be a 'simple' process
  - Projects greater than 15 MW would be ineligible for the interconnection screening process because they are not D-connected

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Auxiliary Fuel

- Adopt BioEnergy Call treatment concerning auxiliary fuel, which is to allow an unlimited amount of non-clean fuel for start-up, but cap the amount used for auxiliary purposes to 3% otherwise

Discretion

- Include a general provision in the SOP Rules granting BC Hydro the discretion to waive SOP Rules and/or eligibility criteria in cases where doing so would better meet the spirit and intent of the Program. Any waiver would have to still be in keeping with the overall objectives of the SOP

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Pre-Application Meeting

- Introduce a formal opportunity for BC Hydro to answer questions and ensure that the applicant has an understanding of the SOP application process, the contract, the interconnection costs associated with the project, and requirements regarding First Nations consultation

Buyer Turndown Right

- Include the right by BC Hydro to turn down SOP projects and pay Seller based on deemed available output. This clause would be similar to the one included in the CPC Specimen EPA although it would have a broader scope to allow turn down for economic reasons

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Risk Allocation for Interconnection Delays

- BC Hydro shall not assume the risk of delays in meeting the target commercial operation date (COD) due to delays in interconnection works for D-connected projects. This is consistent with existing SOP treatment of T-connected projects
- This risk allocation is an equitable approach because there is no compensation afforded to BC Hydro resulting from a delay in meeting target COD attributable to the developer
- This approach is also consistent with load customer interconnections, which are not offered compensation for delays in interconnection facilities
- Furthermore, this risk is mitigated by the fact that the target COD is aligned with the expected in-service date specified in the detailed interconnection studies

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Questions and Answers

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