

SUMMARY Resource Options Update:
 NOTES Solar Technical Engagement

March 25, 2015
 10:00 – 11:30
 BC Hydro Dunsmuir

TYPE OF MEETING	Solar Technical Engagement
ATTENDEES	Michel De Spot (EcoSmart Foundation); Ron Hankewich (Elemental Energy Inc.), Karim Hirji (Columbia Power Corp); Mike Hopkins (FortisBC); Nguyen Pham (FortisBC); David Kelly (SkyFire Energy); Ed Knaggs (HES PV); Peter Leighton (Finavera Wind Energy); Julie Chase (MEM); Paul Weiringa (MEM); Jim MacDougall (Compass Renewable Energy Consulting Inc.); Andrew Clare (Compass Renewable Energy Consulting Inc.)
BC HYDRO	Edmund Lai, Nan Dai, Anne Wilson, Alevtina Akbulatova, Steve Cao, Julien Lafaille, James Grant, Pat Mathot
OBJECTIVES	Present Consultant Work to Date Gather input from industry
AGENDA	<ol style="list-style-type: none"> 1. Background – Purpose of Resource Options Inventory and Update 2. Objectives of this Meeting 3. Scope of Study 4. Presentation by Compass 5. Wrap up/Q&A 6. Next Steps/How to Connect
MATERIALS	Compass Presentation Slides BC Hydro / FortisBC Presentation Slides

MEETING SUMMARY
<p>BC Hydro welcomed people and began the engagement session with a roundtable of introductions. The agenda and objectives were reviewed, along with the scope of the study being undertaken by the consultants, Compass Renewable Energy Consulting Inc.</p> <p>Compass then walked through the presentation slides. The following provides a summary of the discussion and questions and answer period.</p> <p>It was clarified that the scope of work started with sizes of 100 kW as it is designed for the long-term planning process, and the consultants were asked to look at 100 kW – 1 MW, 1 MW – 5 MW, and 5+ MW. It was recognized that a lot of activity is occurring in smaller scale, distribution connected facilities; however the focus for the process is at the utility scale.</p> <p>It was also clarified that the size cut off for the Standing Offer Program at BC Hydro is over 100 kW while the Net Metering Program is below that.</p> <p>Generally the 1 MW – 5 MW range would be for stand-alone solar farms, which is more of an Ontario model where there is a feed-in-tariff. In B.C. we can connect 10 MW to the distribution system. Currently, Ontario is in the middle of an RFP where a bidder can choose where they connect as well as the size of their facility; while in B.C. the Standing Offer Program is not open to facilities over 15 MW.</p> <p>There was some discussion about the amount of land needed per MW and that areas in the U.S. do not match with areas in B.C. The information presented came from a U.S. study. The 5.5 acres/MW number may be a little low for our Canadian experience. It was mentioned that using 3 hectares/MW (for DC) may be more appropriate for B.C.</p> <p>There was a question regarding how ambient temperature effects efficiencies – ambient temperature effect is not considered. Regarding the B.C solar potential, the consultants drew on NRCAN photovoltaic maps. These numbers have been validated through experience in Ontario. There was a comment that this dataset uses monitoring information from the airport; and with the SunMine project, intensity was measured for two years on the development site and the results showed a higher number than the NRCAN data.</p>

Regarding the solar potential numbers in the table “Sites for Solar Potential Analysis and BC Transmission Region” it was mentioned that these are statistics and should be presented more as a range of probabilities with error factors rather than indicating one number.

There was a question regarding how BC Hydro uses these regions in its planning process. It was clarified that the BC Hydro planning team conducts an assessment that adjusts for facilities developed closer or further away from the load, which results in a unit energy cost and that is out of scope of the consultant work.

As well, it was mentioned that another Kimberly site is not included as it is assumed that the SunMine project would expand as needed.

There was discussion regarding the difference between costs of manufacturing the component parts versus costs involved with delivering the electricity. Directionally, the trend of manufacturing is still declining, however, it was mentioned that the big costs are everything else (the balance of plant costs) in B.C., e.g., cost of labour, interconnection costs, costs involved with land title and rights of way. It was mentioned that sometimes these balance of plant costs can be up to 50 per cent. As well, there is a parallel with wind where turbines are improving, but the balance of plant costs is big.

It was mentioned that the feed-in-tariff on large scale has been eliminated in Ontario. Ontario is currently running a bid in the third and fourth quarters of this year.

It was also mentioned the declining cost of debt, estimated at around 4 to 5 per cent is making it more economic for solar farms. It was thought that this declining cost of debt is not only for solar, but rather in general and it may be a bit higher for wind.

There was a comment that the Standing Offer Program is full until 2018; so perhaps we should be looking at 2018 projected out costs.

There were further questions about tying this work into the resource plan, and it was clarified that this resource characterization is being undertaken for individual resource options trying to get a good assessment of the resource potential. BC Hydro and FortisBC would like to get industry thoughts about the balance of power costs, and it would help us with the overall assessment.

There was a comment wondering how, from a financial modelling perspective, the SunMine plant in Kimberly was economic, and this participant couldn't see how it is made to work.

In terms of financial forecasting, it was mentioned that if you can make it work for a \$2/W then your rate of return will be about 8 per cent pre-tax. To work out the numbers you have the model, the price (through the Standing Offer Program) and installed cost and you put that together to get a return. In the end there is a home for solar in B.C.

EcoSmart has another solar intensity map on their website, and there is nice spot all the way to Grand Forks.

There was a comment that utility planners should be considering now the long-term effects of the use of rooftop solar by customers as rates start to increase. Currently panels can be bought at home depot – the technology is widely available now and distributed solar will likely have a huge impact. It was acknowledged that BC Hydro is starting to look at that, and effects and changes in the distribution system. Right now in the Net Metering Program, any project above 27 kW has a study involved with it.

There were some questions about the pricing of Standing Offer Program, and that the Standing Offer Program is in the middle of a review.

BC Hydro walked through the next steps. People are invited to provide comments and input by April 10, 2015, with contact information provide on the last slide.

People were thanked for participating.

Meeting close.