Ministry of Energy and Mines

INFORMATION BINDER
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MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUE: British Columbia Electricity Market Structure

KEY MESSAGES:

- British Columbia's regulated, cost-based electricity market structure ensures that British Columbians continue to benefit from low cost, reliable electricity supply.

BACKGROUND:

Regulation

- The British Columbia electricity market is a cost-based system, where rates that consumers pay are based on the cost of electricity generation and procurement rather than the price set in a competitive market.
- The British Columbia Utilities Commission (BCUC) regulates BC Hydro and other electrical utilities to ensure a low cost, reliable electricity supply. Municipal utilities are exempt from BCUC regulation.

Supply

- British Columbia has over 17,000 megawatts (MW) of installed generation capacity:
  - BC Hydro (69 percent) ~12,019 MW, 43 facilities;
  - Industrial Self-Generators/Independent Generators (14 percent) ~2,406 MW, 37 facilities;
    - Alcan (5 percent) ~896 MW, 1 facility
    - Teck (3 percent) ~480 MW, 1 facility
    - Other (6 percent) ~1,030 MW, 35 facilities
  - IPPs (13 percent) ~2,295 MW, 76 facilities;
  - CPC/CBT (3 percent) ~453 MW, 3 facilities; and
  - FortisBC (1 percent) ~200 MW, 4 facilities.
- BC Hydro's total capacity is comprised of:
  - 46 percent from projects in the Columbia basin;
  - 30 percent from projects in the Peace basin;
  - 14 percent from Vancouver Island/coastal mainland hydroelectric projects; and
  - 10 percent from Burrard Thermal Generating Station and other small thermal plants.
- Based on Statistics Canada figures for 2008, 93 percent of electricity generated in British Columbia comes from clean and renewable sources.

Demand

- Utility shares, by sales of energy in 2011, are:
  - BC Hydro: 93.2 percent;
  - FortisBC: 4.2 percent;
  - All municipally-owned utilities: 2.6 percent; and
  - Other investor-owned utilities: 0.03 percent.
- BC Hydro's electricity sales by Customer type in 2011/2012:
  - 35 percent for Residential (1,671,412 customers);
  - 34 percent for Light Industrial/Commercial (197,821 customers);
  - 26 percent for Large Industrial (168 customers); and
  - 4 percent for other (3,490 customers).

Trade

- Electricity trade enhances reliability, and revenues from trade help to keep electricity rates low.
- Powerex, BC Hydro's trading subsidiary, is able to sell power to the United States and Alberta markets at peak times when prices are high, and buy power during off peak times when prices are low.
- BC Hydro has been a net purchaser of electricity, and the province a net importer, in three of the last five years.
- The electricity trade balance partly reflects cost savings by purchasing imported power when costs are less than generating that power from domestic resources (in particular, from Burrard Thermal Generating Station); however, ultimately BC Hydro has been a net importer.

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ISSUE: BC Hydro Competitive Electricity Rates

KEY MESSAGES:

- BC Hydro has completed its fifth annual rate comparison report, based on electricity rates for fiscal 2013.
- BC Hydro's rate comparison report shows that BC Hydro's ratepayers continue to have among the lowest electricity prices in North America.

BACKGROUND:

- One of the energy objectives in section 2 of the *Clean Energy Act* is to ensure that BC Hydro's rates remain among the most competitive of rates charged by public utilities in North America.
- Under section 8(4) of the *Clean Energy Act,* BC Hydro is required to produce a rate comparison report which:
    - includes the rates of at least one public utility from each of over 15 jurisdictions in North America, specifying the inclusion of key jurisdictions – Alberta, Quebec, Ontario, Manitoba, Washington State, Oregon and California;
    - compares BC Hydro's rates for the various rate classes – i.e. residential, commercial, and industrial customers – to the selected public utilities' rates; and
    - provides BC Hydro's own previous five years of ratepayer classes' rates.
- Currently, BC Hydro uses a Quebec Hydro report called "Comparison of Electricity Prices in Major North American Cities" to compile its rate comparison report findings.
- BC Hydro completed its fifth annual rate comparison report in December 2012.
- The previous rate comparison report show that BC Hydro residential rates are among the six lowest surveyed, while commercial and industrial rates are between the third and seventh-lowest.
- The new rate comparison report showed on average BC Hydro residential ratepayers pay the fourth to seventh lowest rates, commercial ratepayers pay the fourth to seventh lowest rates, and large industrial customers pay the third to fourth lowest rates in North America.
- BC Hydro's rates continue to be among the lowest in North America.

ATTACHMENT:

8A - BC Hydro Comparison Report (Excerpt)

Contact: Les MacLaren
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Date: June 19, 2013

Estimate Note: 8

Monthly Bills and Average Prices as of April 1, 2012

This is the fifth Electricity Rate Comparison Annual Report (**Report**) prepared by BC Hydro in response to the Rate Comparison Regulation, issued by Ministerial Order No. M167, under the *Utilities Commission Act*, on March 30, 2009. The Report provides a comparison of BC Hydro's monthly bills and average prices for residential, commercial and industrial customers with other North American utilities, including those in Alberta, Quebec, Ontario, Manitoba, Washington, Oregon and California.[1]

Each year BC Hydro participates in a Hydro-Quebec comparison survey, submitting bill calculations based on electricity prices that are in place as of April 1 of the current year, and which may reflect approved interim rate increases. Hydro-Quebec compiles the information and provides the monthly bills and average prices for 12 Canadian utilities and 10 American utilities in an annual report. The BC Hydro Report provides survey information taken from the Hydro-Quebec report: Comparison of Electricity Prices in Major North American Cities.[2]

The Hydro-Quebec report provides the monthly bills, excluding taxes and non-utility levies, calculated for specific consumption points for four different customer segments: residential, small power, medium power and large power. The average price is also calculated, for each customer segment and specific consumption point, by dividing the monthly bill by the amount of monthly energy consumption. For example, if an electric bill for 1,000 kWh was calculated to be a monthly amount of $50, the average price would be $50 divided by 1,000 kWh, or 5 cents/kWh.

The monthly bills for customers are presented in Table 1, Table 2, Table 3 and Table 4. The average prices for customers are presented in Table 5, Table 6, Table 7 and Table 8. BC Hydro's monthly bills and average prices over the past five years are summarized in Table 9 and Table 10.

[1] Monthly bills and average prices for American utilities have been converted to Canadian dollars using the exchange rate as at 12 PM Eastern on April 2, 2012 of CDN $0.9917 per US $1.

[2] http://www.hydroquebec.com/publications/en/comparison_prices/index.html.

The Hydro-Quebec residential segment includes calculations for BC Hydro's residential customers. The Hydro-Quebec small power segment includes calculations for both BC Hydro's general service under 35 kW customers and general service 35 kW and over customers, while the medium power segment includes calculations for BC Hydro's general service 35 kW and over customers. Lastly, the Hydro-Quebec large power segment includes calculations for BC Hydro's general service 35 kW and over customers and transmission service customers. Table 11 shows the specific BC Hydro rate schedules that have been included in each Hydro Quebec segment. Table 12 summarizes BC Hydro's relative rankings in each rate class since the first year of participation in the survey in 2008.

Based on the data from the Hydro-Quebec survey, BC Hydro's monthly bills and average prices for all customer segments are generally within the first (i.e., lowest rate) quartile of utilities, with low rates providing a competitive advantage to customers in British Columbia. The rankings of the top five participating utilities with the lowest monthly bills and average prices are noted in the tables. Out of the 22 utilities providing data, BC Hydro's monthly bills and average price rankings against the Hydro-Quebec report for April 1, 2012 data are as follows:

Rate Class & Usage	April 1, 2012
Residential - 625 kWh	4th
Residential - 750 kWh	4th
Residential - 1,000 kWh	4th
Residential - 2,000 kWh	7th
Residential - 3,000 kWh	7th
Small Power - 750 kWh/6 kW	6th
Small Power - 2,000 kWh/14 kW	5th
Small Power - 10,000 kWh/40 kW	7th
Small Power - 14,000 kWh/100 kW	5th
Small Power - 25,000 kWh/100 kW	4th
Medium Power - 100,000 kWh/500 kW	5th
Medium Power - 200,000 kWh/500 kW	5th
Medium Power - 200,000 kWh/1,000 kW	5th
Medium Power - 400,000 kWh/1,000 kW	4th
Medium Power - 1,170,000 kWh/2,500 kW	5th
Large Power - 2,340 MWh/5,000 kW/25 kV	6th
Large Power - 3,060 MWh/5,000 kW/25 kV	6th
Large Power - 5,760 MWh/10,000 kW/120 kV	3rd
Large Power - 17,520 MWh//30,000 kW/120 kV	4th
Large Power - 23,400 MWh/50,000 kW/120 kV	4th
Large Power - 30,600 MWh/50,000 kW /120 kV	4th

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ISSUE: BC Hydro Regulatory Accounts

KEY MESSAGES:

- BC Hydro's regulatory accounts have a current balance of approximately $4.3 billion, and are forecast to increase to $5.3 billion in 2019, and decline thereafter.
- Three of the largest deferral accounts are those matching the timing of costs and benefits for Demand Side Management programs, Site C, and Smart Metering and Infrastructure.
- The two largest other accounts are for the transition to International Financial Reporting Standards.
- The accounts that capture variances from forecasts when rates are set are being paid down by about $200 million per year with the rate rider on current bills.

BACKGROUND:

- BC Hydro has been using regulatory accounts since the early 1980s.
- As of March 31, 2012 there were 27 regulatory accounts with a net balance owing from future ratepayers of $2.7 billion.
- In November 2012 BC Hydro calculated that the net balance on regulatory accounts would increase to $4.3 billion by the end of fiscal 2013 due to a change to International Financial Reporting Standards (IFRS). The IFRS accounts do not create new costs or financial risks, but change the timing of recognition of costs and revenues as income.
- There are three primary types of regulatory accounts:
    - **Forecast variance accounts** capture variations (above and below forecast) for volatile items such as reservoir inflows and market prices (which drives import costs and trade income). These accounts should average out over time. If large amounts accumulate, a rate rider has been established to pay down amounts owing from future customers. There is currently a 5 percent rate rider in effect that reduces balances by about $200 million per year. As of March 31, 2012, the total for forecast variance accounts was $774 million. This was forecast to rise to $1,047 million in fiscal 2013, mainly due to an increase of $297 million in non-current pension costs.
    - **Capital-like accounts** are established to match the costs of programs and investments with the beneficiaries of those investments. Power Smart program costs are recovered over 10 to 15 years. Costs to develop Site C and smart metering and infrastructure will be brought into rates when those assets come into service. The March 31, 2012 balance for capital-like accounts was $1,055

million. This was forecast to rise to $1,476 million in fiscal 2013, due to increases in demand side management, Site C, smart metering and Infrastructure deferral accounts.

- **Offsets and provisions accounts** are mostly non-cash items such as First Nations Settlement Costs and environmental provisions. For these accounts, a future liability is recognized and the account is drawn down over time as payments are made. The March 31, 2012 balance for these types of accounts was $625 million, and they were forecast to rise to $703 million in fiscal 2013.

- In addition to these regulatory account categories, BC Hydro has an additional account category for its transition to IFRS. These accounts totalled $222 million on March 31, 2012 and are projected to increase to $1,168 million in fiscal 2013.
- The IFRS deferral accounts are intended to spread out the rate impact of transitioning to IFRS. Without them, the immediate rate impact of transitioning to IFRS would be much larger. For example, under former accounting rules, BC Hydro capitalized overhead on capital projects, which sat under Property Plant and Equipment on the balance sheet. This is not allowed under IFRS, so BC Hydro created a regulatory account where almost $1 billion will be amortized over the same term as the assets they are associated with.
- After fiscal 2013, the rate of increase in regulatory account balances is expected to moderate, with balances peaking at approximately $5.3 billion in 2019 and decreasing beyond that.
- In spring 2010, the *Budget Measures Implementation Act* included the ability for Treasury Board, by regulation, to establish accounting standards that differ from those of other standards bodies.
- In 2011, Treasury Board adopted a portion of US Generally Accepted Accounting Principles that allows for rate regulated accounting and regulatory accounts.
- The former Auditor General of British Columbia appeared to have a fundamental disagreement with government's policy decision to continue rate regulated accounting, although it is strongly supported by the Office of the Comptroller General and regulated utilities across North America.

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ISSUE: BC Hydro Review and Implementation

KEY MESSAGES:

- In spring 2011, the Province appointed a panel of Deputy Ministers to review BC Hydro and develop options to reduce the impact of rate increases.
- The June 2011 review report included 56 recommendations on how BC Hydro could reduce costs.
- BC Hydro has established a team to oversee and implement the recommendations.
- BC Hydro expects to implement the recommendations that apply to it by the end of 2013/14.
- In early February, the Province announced changes to the electricity self-sufficiency policy, which will reduce forecast rate increases by up to eight percent in 2016 and 20 percent in 2020.
- In July, the Province changed the self-sufficiency regulation to require BC Hydro to plan for average water conditions, and to remove the requirement for 3,000 gigawatts per year of insurance by 2020.
- Recommendations on other policy issues, such as reviewing water rentals and BC Hydro's capital structure, have been considered but not implemented at this time, as they affect the Province's fiscal plan.

BACKGROUND:

- On March 1, 2011, BC Hydro applied to the British Columbia Utilities Commission (BCUC) for a 9.73 percent rate increase in each of the following three years.
- Government announced a review of BC Hydro on April 7, 2011 to try to find ways to minimize rate increases while maximizing benefits to the Province, taxpayers and ratepayers.
- The panel examined BC Hydro's financial performance, including:
  - operating costs;
  - cost containment strategies;
  - capital planning and spending;
  - BC Hydro's forecasting system;
  - procurement processes; and
  - rate structures.

- The Government review does not replace the more detailed examination of BC Hydro's Revenue Requirements Application normally conducted by the BCUC.
- On May 22, 2012, the BCUC was directed to set rates so that the total three-year effect on customer bills is the same as what BC Hydro applied for. On June 20, 2012, the BCUC approved the 1.44 percent increase for 2013.
- BC Hydro has established a Project Management Office to implement the panel's recommendations by following up with detailed actions and specific timelines. BC Hydro continues to report quarterly to Government on its progress.

CROSS-REFERENCE:

9 - BC Hydro Regulatory and Deferral Accounts

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ISSUE: BC Hydro Smart Meter and Smart Grid Programs

KEY MESSAGES:

- BC Hydro's Smart Meter and Smart Grid Project is modernizing the BC Hydro grid by improving reliability, operating efficiencies and service, reducing electricity theft, helping facilitate energy conservation, and increasing worker and public safety.
- Under the Smart Meter Initiative (SMI), BC Hydro is installing digital meters along with a telecommunications system that supports two-way communications between the meters and BC Hydro.
- The Smart Grid Project includes technology for theft detection, enabling SCADA (supervisory control and data acquisition), infrastructure upgrades, and new telecommunications and information systems to make the distribution network more intelligent and to allow for future technologies such as distributed generation and electric vehicles.
- BC Hydro's SMI business case indicates that smart meters pay for themselves by delivering $1.6 billion in total benefits for a net benefit of $520 million over 20 years after all costs are deducted.
- While there is some public concern primarily about health and privacy impacts, BC Hydro considers smart meters safe. Dr. Perry Kendall, Provincial Health Officer, states that "given the current scientific evidence, the consensus of public health practitioners is that at current exposure levels these electromagnetic fields do not constitute a threat to the health of the public". BC Hydro reports that 20 years of exposure to a smart meter is equal to exposure during a single 30 minute cell phone call.
- The B.C. Privacy Commissioner found that BC Hydro is taking reasonable steps to protect its customers' private information.
- BC Hydro had installed 93 percent (1.73 million of 1.87 million) smart meters, and was directed by Government to complete the remaining installations by December 31, 2013.
- BC Hydro is working with customers who still have concerns with smart meters. Currently, BC Hydro will not install a new meter without the customer's agreement. After contacting the customers on the "on hold" list, BC Hydro will be in a better position to provide some idea of what alternatives to a regular smart meter installation may be considered.

BACKGROUND:

- More than 150 jurisdictions around the world, including 116 in North America, are moving to install smart meters and put smart grid components in place.
- The 2010 *Clean Energy Act* (*CEA*) required BC Hydro to install and activate smart meters by December 31, 2012. The *CEA* requires the British Columbia Utilities Commission (BCUC) to set BC Hydro's rates to allow for recovery of smart meter and smart grid costs. The Smart Meters and Smart Grid Regulation (Minister's Regulation) sets requirements for BC Hydro, specifying the equipment capabilities and where the meters must be installed.
- The *CEA* exempts BC Hydro from BCUC approval for complying with the obligations imposed by the Minister's Regulation. BC Hydro or its agents may enter property, other than private dwellings, without the owner's consent for purposes relating to BC Hydro's smart meters and its smart grid.
- The BCUC must consider the Government's goal of having smart meters and a smart grid in use for customers of other utilities when considering similar applications.
- In December 2012, the Minister's Regulation was amended to, in effect, remove BC Hydro's obligation to complete the smart meter installation program by December 31, 2012. The Minister's Regulation amendment recognized that of the approximately 1.9 million meter installations required by the statutory deadline of December 31, 2012, approximately 140,000 were not scheduled to be completed by the end of 2012. The then Minister of Energy, Mines and Natural Gas directed BC Hydro to complete all remaining installations no later than December 31, 2013, and to provide quarterly updates to the Ministry.
- Of the 1.9 million BC Hydro meters, about 90,000 have not been replaced with smart meters as of March 31, 2013. About 65,000 of these deferrals are a result of customers refusing a smart meter. Of these, BC Hydro anticipates about 50,000 will continue to refuse one despite further customer communication.
- In addition, a BCUC proceeding related to FortisBC's July 2012 application to seek approval for their Advanced Meter Initiative (AMI) is ongoing. A BCUC decision is expected by July 20, 2013. It is possible that the BCUC will approve the AMI program subject to FortisBC offering an "opt-out" program to FortisBC customers who prefer having a "radio-off" smart meter installed and are willing to pay the incremental costs.
- Such an outcome would reflect the regulator's approach in Quebec and some U.S. jurisdictions, and could be considered for BC Hydro.

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ISSUE: Burrard Thermal Generating Station

KEY MESSAGES:

- Phasing out of Burrard Thermal (Burrard) is part of the Province's commitment to reduce greenhouse gas emissions and become a clean energy powerhouse.
- Burrard can still be maintained as an important 'back up' facility when needed.
- On November 5, 2010, the Province issued a regulation under the *Clean Energy Act* limiting BC Hydro's use of this facility.
- The "Authorization for Burrard Thermal Electricity Regulation" (Regulation) allows BC Hydro to rely on Burrard, as required, until completion of Mica 5 and 6, the Interior to Mainland Transmission line and upgrading of the Meridian Substation.
- The March 8, 2013 Ministerial Order No. 059 amends the Regulation to enable BC Hydro to operate Burrard Thermal to produce steam for sale to Imperial Oil's adjacent asphalt plant in accordance with BC Hydro's Electric Tariff Supplement No. 56.
- The Burrard phase out commitment was made in 2001 and reinforced through the Energy Plan, the August 2009 Throne Speech and by direction to the British Columbia Utilities Commission (BCUC) under section 3 of the *Utilities Commission Act* in October 2009.

BACKGROUND:

- The BCUC's July 2009 Decision on BC Hydro's Long Term Acquisition Plan directed BC Hydro to rely on 5,000 gigawatt-hours (GWh) from Burrard annually, for planning purposes. This decision was at odds with Government policy to phase out Burrard. The Government restated its policy intentions in the August 2009 Throne Speech, stating that "Phasing out Burrard Thermal is a critical component of British Columbia's greenhouse gas reduction strategy".
- On October 29, 2009, the Government issued Direction No. 2 to the BCUC under section 3 of the *Utilities Commission Act*, directing that BC Hydro should no longer plan to rely on Burrard for firm energy.
- The direction does provide flexibility for BC Hydro to rely on Burrard for capacity, or 'back up' purposes, for up to 900 megawatts of capacity.

- The *Clean Energy Act* restated Government's position on Burrard being phased out for energy purposes. Section 12 (3) of the Act directs that BC Hydro must not operate Burrard except:
  (a) in case of emergency
  (b) to provide transmission support services or
  (c) as authorized by regulation.
- The Province clarified its intention to BC Hydro's use of Burrard through the November 5, 2010 Regulation, limiting the use of this facility.
- The Regulation allows BC Hydro to rely on Burrard, as required, until completion of Mica 5 and 6, the Interior to Mainland Transmission line and upgrading of the Meridian Substation, with all projects on track and to be operational by the end of 2015.
- With respect to Burrard providing steam to Imperial Oil, sales are generally through the use of an auxiliary non-generating boiler. Ministerial Order No. 59 makes it clear that BC Hydro may run one of Burrard's generating boilers when necessary to meet its steam commitments to Imperial Oil, should auxiliary boiler steam be unavailable.

CROSS-REFERENCE:

22 - *Clean Energy Act* Implementation

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ISSUE: Industrial Electricity Policy Review

KEY MESSAGES:

- Several industrial electricity policy issues arose during the British Columbia Utilities Commission (BCUC) hearing on the Dawson Creek-Chetwynd Area Transmission (DCAT) Project.
- Government committed to launching a public process to address the issues raised in the hearing as well as other outstanding industrial electricity policy issues.
- Government announced the Industrial Electricity Policy Review on January 13, 2013. It appointed a task force consisting of Messrs. Chris Trumpy, Peter Ostergaard and Tim Newton to review the industrial electricity policy and regulatory framework.
- The task force completed three rounds of in-person and written consultation
- The consultation identified several issues not covered in the Terms of Reference (ToR). The Minister extended the Review from July 31, 2013 to October 31, 2013 in order to provide the task force sufficient time to consider these additional issues.

BACKGROUND:

- BC Hydro's current industrial tariff governing how new industrial customers connect to the provincial grid was implemented in 1991. Since then the circumstances for both industrial customers and BC Hydro have changed.
- The BCUC issued a review of BC Hydro's Transmission Service Rate (TSR) for industrial customers in December 2009, but Government has not taken any action on the recommendations to date.
- Government's current electricity policy framework contains multiple objectives that compete, and at times conflict, with each other complicating the BCUC's DCAT review process.
- Ratepayer groups have consistently warned Government and BC Hydro on the economic risks associated with rapidly rising electricity costs. The impact is particularly acute on industrial customers given how much electricity they consume and the fact they are generally trade-exposed price-takers.
- The Ministry issued a ToR for the Industrial Electricity Policy Review and appointed a task force to oversee the Review in January 2013.

- The task force consists of Chris Trumpy, former Deputy Minister, Peter Ostergaard, former Assistant Deputy Minister and Chair of the BCUC, and Tim Newton, former Vice President of Powerex, a BC Hydro subsidiary.
- The purpose of the review is to examine the existing policy and legislative framework governing provincial industrial electricity policy and report to the Minister of Energy and Mines.
- The primary focus of the review is to identify how industrial electricity policy links to economic development, electricity conservation and meeting Government's greenhouse gas reduction targets. The task force was also asked to identify potential conflicts and "trade-offs" between these areas.
- Between January and May 2013 the task force met with key industrial, electricity and environmental stakeholders with interests in the outcome of the Review.
- The task force issued a Draft Consultation Summary (Summary) compiling the input it received from all stakeholders on May 1, 2013. It received verbal and written comments on the Summary.
- The task force originally intended to release a draft task force report to stakeholders on May 31, 2013.
- A review of stakeholder submissions and the task force's draft consultation summary identified some issues that require additional analysis. The Review has been extended to October 31, 2013 to provide the task force with additional time. The original ToR required the task force to release a final report publicly by July 31, 2013.
- The ToR directs the task force to issue an Interim Report publicly prior to the final report. Ministry officials are currently working with the task force to establish new timelines to complete the Review.
- Ministry officials are developing a communications strategy to inform stakeholders of the rationale for the extension, how the process will unfold over the next four months as well as to manage the release of the report.

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ISSUE: BC Hydro Integrated Resource Plan (IRP)

KEY MESSAGES:

- BC Hydro's Integrated Resource Plan (IRP) will set out how it proposes to meet future electricity demand, which is expected to grow by 40 percent over the next 20 years.
- BC Hydro will submit its IRP to Government by August 3, 2013.
- The IRP will demonstrate that from a planning perspective, BC Hydro is well positioned to meet current and future demand, including serving the needs of Liquefied Natural Gas and mining projects.

BACKGROUND:

- BC Hydro is required by the *Clean Energy Act* (Act) to prepare and submit for Government review, an IRP that sets out its long-term plan for acquiring the electricity resources to meet its customers' needs for the next 20 years.
- In accordance with the Act, the IRP is to include:
  - A description of BC Hydro's 20-year load forecasts of energy and capacity requirements to achieve electricity self-sufficiency;
  - A description of how the IRP responds to British Columbia's other energy objectives, including the objective to ensure that its rates remain among the most competitive of rates charged by public utilities in North America;
  - BC Hydro's plans for demand-side management, construction or expansion of its facilities, and acquisition of electricity from private energy producers;
  - BC Hydro's consultations with the public and First Nations;
  - An assessment of export market potential; and
  - An assessment of transmission infrastructure requirements over the next 30 years.
- BC Hydro initiated the IRP process in December 2010 and conducted an initial set of consultations with the public and First Nations in March and April 2011.
- BC Hydro established a Technical Advisory Committee to provide technical advice to BC Hydro during the development of the IRP. This Committee included many of the regular intervenors at British Columbia Utilities Commission hearings and met six times. The Ministry of Energy and Mines sat on this Committee.
- BC Hydro suspended the IRP process in April 2011 following the Government's announcement of the review of BC Hydro.
- The IRP process remained suspended following release of the review of BC Hydro in August 2011, as the report included a recommendation that Government undertake an evaluation of its electricity self-sufficiency policy.

- On February 3, 2012, as part of the Government's announcement of its Liquefied Natural Gas (LNG) Strategy, the Premier and Minister of Energy, Mines and Natural Gas (Minister), announced that the self-sufficiency policy would be amended to require BC Hydro to meet customer demand based on an average water year, instead of the previous critical water definition. This change, which has the effect of reducing the need for new firm energy by about 4,500 gigawatt-hours per year, will ensure BC Hydro customers continue to pay some of the lowest prices for electricity in North America.
- A second phase of consultation took place in May and June 2012 following the release of the draft IRP.
- Following these consultations, BC Hydro was to make revisions, as appropriate, to the IRP and submit it to the Minister by December 3, 2012 for Government review. However, it was granted a further extension to August 3, 2013 to incorporate more information about LNG demand.
- More recent information suggests that BC Hydro's final IRP will report an energy surplus, some of which is expected to be taken up by LNG and mining demand.
- s.13

- Much of the projected surplus is driven by planned energy conservation actions, and BC Hydro proposes to reduce expenditure on these to limit costs associated with the surplus.
- BC Hydro has not consulted on the changes made to the IRP since December 2012.

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ISSUE: Northwest Transmission Line and Iskut Extension

KEY MESSAGES:

- The Northwest Transmission Line (NTL) will encourage industrial and clean energy development in the northwest part of British Columbia while supporting the Province's goal of mitigating greenhouse gas emissions.
- Permit cost increases have been due to challenges clearing rights of way and building roads, higher labour costs due to shortages and winter work, and deciding to use heavier line to increase capacity and reduce losses.
- The terms of the Contribution Agreement with Canada require British Columbia to electrify Iskut. The proposed Iskut Extension will extend publicly owned, high-voltage transmission infrastructure north to support regional economic development.
- As part of a commercial agreement between BC Hydro and Imperial Metals, Imperial Metals is constructing the transmission line portion of the Iskut Extension to BC Hydro standards and will sell it to BC Hydro.
- This commercial arrangement will meet Government's goal of extending the publicly-owned, high voltage system as well as maintain Imperial Metal's earliest in-service date for the Red Chris Mine.

BACKGROUND:

- The NTL is a 287 kilovolt (kV) line that runs 344 km from Skeena Substation (near Terrace) to Bob Quinn Lake. The $746 million (M) project will support mining, and potentially clean energy development north of Terrace.
- The Government of Canada (Canada) committed $130M to the NTL provided it:
  1) met federal environmental assessment standards;
  2) met the federal obligation to consult with First Nations; and
  3) electrified Iskut to reduce emissions from diesel generation within 12 months of when the NTL enters service.
- The NTL is fully permitted and is under construction. BC Hydro estimates it will enter service in summer 2014.
- Imperial Metals Corporation's (Imperial) Red Chris Mine (Red Chris) requires a minimum of a 138 kV transmission line to interconnect to the provincial grid. This infrastructure would normally be permitted, constructed and owned by Imperial.
- Imperial's proposed 138 kV line would not provide enough capacity to support further mining development north of Iskut. Imperial included a line route for both a 138 kV and 287 kV transmission line when it filed to amend its Environmental Assessment Certificate (EAC) in 2011.

- In April 2012, BC Hydro entered formal negotiations with Imperial to secure the larger line that could support more investment.
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- The Tahltan First Nation supports the higher voltage line. However, it wants to ensure the Crown's obligation to consult, and if necessary accommodate, First Nations is met. BC Hydro will engage directly with the Tahltan on facilities it will construct. Imperial is required to meet the Crown's duty to consult for the transmission line.
- Imperial is currently securing Crown permits for the transmission line. BC Hydro is currently securing Crown permits for upgrades to the Bob Quinn substation, the new Tatogga substation and the distribution line from Tatogga to Iskut.
- The Ministry of Forests, Lands and Natural Resource Operations (FLNRO) expects to complete consultation on initial Crown permits in July 2013. Construction could begin as early as late summer 2013.
- Official engagement between BC Hydro and the Tahltan started in April 2013. Imperial has a commercial arrangement with the Tahltan Nation Development Corporation to facilitate direct economic benefits for its portion of the project.

s.13, s.16

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ESTIMATES BRIEFING NOTE 2013/14

ISSUE: Site C Clean Energy Project

KEY MESSAGES:

- BC Hydro intends to complete the Site C Clean Energy Project by 2022, subject to the current approval and construction schedule, at a capital cost of $7.9 billion (nominal).
- Site C would provide 1,100 megawatts (MW) of capacity and produce about 5,100 gigawatt-hours (GWh) of electricity annually – about eight percent of BC Hydro's current electricity needs, providing enough electricity to power more than 450,000 homes.
- On January 28, 2013, BC Hydro submitted the Site C Clean Energy Project Environmental Impact Statement (EIS) to the Canadian Environmental Assessment Agency and the British Columbia Environmental Assessment Office for review.
- The provincial and federal governments are undertaking an independent, harmonized environmental review of Site C led by the Canadian Environmental Assessment Agency and the BC Environmental Assessment Office. This includes a Joint Review Panel process.
- The EIS indicates BC Hydro anticipates significant impact to: 1) fish and fish habitat; 2) habitat for certain migratory birds including species considered "species at risk" and species considered to be of provincial concern; and 3) unique terrestrial habitat including fragmentation and impacts to two red-listed rare plant species.
- Site C would create an estimated 7,000 person-years of direct construction employment, and up to 35,000 direct and indirect jobs through all stages of development and construction. Site C would also help facilitate the integration of additional clean and renewable projects — such as wind, run-of-river hydro and solar — by providing reliable backup to these intermittent resources.

BACKGROUND:

- The Site C Clean Energy Project (Project) is a proposal to build the third dam and hydroelectric generating station on the Peace River, seven kilometers southwest of Fort St. John.

- Large hydro projects, such as Site C, have the ability to provide a reliable supply of both dependable capacity and energy without ongoing cost volatility. As well, hydroelectric projects are a renewable and clean source of energy with a long life of more than 100 years.
- The Project need is based on BC Hydro's evaluation of forecast customer demand, existing and committed supply-side resources and conservation and efficiency initiatives. Without the Project, BC Hydro forecasts the current energy and capacity surplus will turn to an energy deficit by 2024 and a capacity deficit by 2025 (this does not factor in potential future electricity demand from liquefied natural gas projects in British Columbia, but includes meeting the current demand-side management target of 7,800 GWh /year energy savings and associated capacity savings of 1,400 MWh by Fiscal 2021 and completing the Revelstoke Unit 6 project).
- BC Hydro estimates an adjusted unit energy cost of $110/MWh for Site C ($2013), whereas the alternative portfolios of clean energy projects with natural gas generation and without natural gas generation would be between $156-181/MWh (i.e., portfolios including wind, run-of-river, hydro, biomass, pumped storage, geothermal and upgrades to existing generation facilities, keeping electricity generation within the 93 percent clean or renewable resources objective stated in the *Clean Energy Act*).
- Under the *Clean Energy Act*, BC Hydro is exempted from the requirement to seek approval of the Project from the British Columbia Utilities Commission (BCUC). The Project requires environmental approval and other regulatory permits and approvals before proceeding to construction. In addition, the Crown has a duty to consult and, where appropriate, accommodate First Nation groups.
- The environmental assessment (EA) is a joint process between the Canadian Environmental Assessment Agency and the British Columbia Environmental Assessment Office, guided by the February 13, 2012 three-stage "Agreement to Conduct a Cooperative Environmental Assessment, Including an Agreement to Establish a Joint Review Panel of the Site C Clean Energy Project" signed between Canada and British Columbia. The complete process, including a Joint Review Panel, is anticipated to last three years.
- Stage 1 of the EA review is a pre-panel technical review expected to take 24 months (August 2013 completion target). A Working Group composed of federal and provincial, local government and First Nations representatives were recently established, and will be responsible for reviewing the EIS. The Ministry of Forests, Lands and Natural Resource Operations (FLNRO) provided consolidated comments on the EIS from all natural resource ministries.
- The EIS identifies and assesses potential project effects and opportunities to provide lasting benefits for the region including First Nation groups. Where adverse effects are unavoidable, BC Hydro will evaluate options for mitigation, and identify where significant impacts from the Project cannot be mitigated.
- In Stage 2, following the pre-panel technical review of the EIS, a three-person Joint Review Panel, jointly-appointed by the federal and provincial governments, will review the EIS for sufficiency (April 2014 target). This stage will also provide for public hearings, including submissions by First Nation groups. In Stage 3, the Panel's report will be reviewed, and followed by joint preparation of a referral package for final decision by Provincial and Federal Ministers (September 2014 target).

- During the EA-related consultations, BC Hydro will also explore benefit agreements with First Nation groups and regional communities.
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s.12

- Assuming Environmental Certification, Stage 4 of the Project review process allows for a prudency review of the project design and construction planning to determine whether Site C should proceed to construction. This review would be based on the final project definition as approved by environmental regulators.
- Stage 5 of the Project review process is construction of the project. If Site C is approved, construction would take about seven years.
- The Minister of Energy and Mines, as the Minister responsible for BC Hydro, is not a designated decision-maker in the EA process, in order to avoid the perception of conflict. The federal and provincial environment ministers will be making appointments to the Joint Review Panel in the latter part of July 2013.

MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUES: Utility Demand Side Management

KEY MESSAGES:

- Utilities help British Columbian families and businesses reduce their energy bills through energy efficiency and conservation programs – otherwise known as demand-side management (DSM).
- BC Hydro has projected an electricity surplus, and the Ministry is working with BC Hydro to prudently reduce DSM spending to minimize rate increases, while preserving the flexibility to bring back DSM programs to higher levels if demand increases faster than anticipated.
- BC Hydro's DSM expenditures in 2013/14 will total $178 million, with estimated savings of 850 gigawatt-hours (GWh) per year from Power Smart, conservation rates, codes and standards. This is equivalent to the annual electricity demand of 77,000 houses.
- The PowerSense program of FortisBC (electric) saved 32 GWh in 2012. This is equivalent to the annual electricity demand of 3,000 houses. The DSM program of FortisBC (natural gas) saved 450,000 gigajoule in 2012, enough natural gas to heat 6,000 houses. This resulted in greenhouse gas emission reductions of 22,500 tonnes.
- Utility DSM expenditures are approved by the British Columbia Utilities Commission (BCUC).
- The Province provides the regulatory framework for DSM through legislation and regulation, including the *Clean Energy Act*, the *Utilities Commission Act* and the Demand-Side Measures Regulation (DSM Regulation).

BACKGROUND:

- The *Clean Energy Act* includes a target for BC Hydro to meet 66 percent of its new demand through DSM by 2020.
- Utility DSM programs are "decoupled" from sales of gas/electricity, allowing utilities to earn a return on DSM investments and ensuring efficiency and supply investments are treated as comparable alternatives in resource planning.
- DSM expenditures are approved by the BCUC for two or three-year terms.
- The DSM Regulation allows the Minister to specify criteria for evaluating cost effectiveness and adequacy of a DSM portfolio.
- BC Hydro's targeted cost of DSM is $37 per megawatt-hour (MWh), significantly below the British Columbia clean and renewable electricity supply cost of $129/MWh.

- BC Hydro is forecast to have an electricity supply surplus for up to 10 years. In order to minimize upward rate pressures resulting from DSM during this period, BC Hydro's Power Smart programs will be reduced in the near-term.
- MEM and BC Hydro staff have developed the following set of principles to guide DSM reductions in future planning:
    - ensure overall cost-effectiveness for consumers and the utility;
    - preserve flexibility to ramp-up DSM in future deficit periods;
    - maintain support for prospective codes and standards;
    - minimize the reduction of "missed opportunity" measures (e.g. providing incentives for incremental improvement to building envelope upgrades or new construction); and
    - maximize the range of ratepayers able to participate in DSM and benefit from lower bills (i.e., ensure equity across customer groups).
- Accordingly, BC Hydro has indicated it will make a 52 percent reduction in DSM expenditures and 51 percent reduction in targeted energy savings by 2015/2016 (from the 2008 Long Term Acquisition Plan projected levels). BC Hydro has initiated these reductions in advance of its forthcoming expenditure application to the BCUC.
- By contrast, the FortisBC Energy Utilities spending on DSM has increased dramatically in recent years, from $4.5 million in 2009 to $23.8 million in 2012. This is a result of an increased corporate commitment as well as enabling provisions in the DSM Regulation.

CROSS-REFERENCE:

14 - BC Hydro Integrated Resource Plan

Pages 27 through 28 redacted for the following reasons:
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s.14

MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUE: Regional Transmission Expansion Planning Project

KEY MESSAGES:

- British Columbia collaborates with other Western Interconnection jurisdictions under the auspices of the Western Interstate Energy Board (WIEB) and the Western Electricity Coordinating Council (WECC).
- The U.S. Department of Energy (DOE) has provided funding to develop a 10- and 20-year regional transmission plan. WIEB and WECC both received funding to support a regional transmission planning project in the Western Interconnection.
- The Ministry of Energy and Mines (MEM) and Powerex hold positions on key steering committees to ensure provincial interests are represented.

BACKGROUND:

- The Western Interconnection is the regional transmission grid that stretches from Alberta and British Columbia down to northern Mexico and as far east as Wyoming. British Columbia has a long history of collaboration with other Western Interconnection jurisdictions on matters related to regional transmission planning.
- WIEB is the energy policy arm of the Western Governors' Association. WECC is the regional entity responsible for coordinating and promoting bulk electricity system reliability and regional planning in the Western Interconnection.
- The DOE received funding under the Obama Administration's economic stimulus package to support regional transmission planning. The Western Governors' Association and WECC submitted coordinated applications and received funding.
- WECC has responsibility for delivering a 10-year regional transmission plan by fall 2011, and a 20-year transmission plan by fall 2014. The Western Governors' Association, through WIEB, is required to coordinate regional social, economic and environmental policy input in to the planning process. The WECC Board approved the draft 10-year regional transmission plan in September 2011.
- Consensus has been reached on future electricity generation and transmission scenarios that will form the basis of the 20-year plan. WECC has released the first draft of the plan for stakeholder review. WECC will hold another comment period during the summer prior to finalizing the draft plan for Board approval in September 2013.
- MEM will put forward comments as part of the WIEB, but also has the option to put forward its own comments if deemed appropriate. MEM will consult with staff from Alberta Energy, BC Hydro and the Alberta Electric System Operator to determine whether there is a need to provide a Canadian response to the draft plan.

- WECC is currently undergoing a mandate review in light of several reliability events in the Western Interconnection, notably the southwest blackout in fall 2011. The new WECC structure may have an impact on WECC's ability to deliver the 20-year plan on the DOE's current time frame.
- British Columbia's participation in the regional planning process is largely defensive in nature. It is common for U.S.-based public and private entities to not consider Canadian issues when they discuss the future of the western grid. British Columbia and Alberta participation ensure that Canadian issues are considered and action can be taken in circumstances where U.S. decision-makers propose activities that may adversely affect provincial interests.

MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUE: BC Hydro Clean and Renewable Power Acquisitions

KEY MESSAGES:

- As directed by the 2007 Energy Plan to support British Columbia's energy and climate change goals, BC Hydro has :
  - completed the 2008 Clean Energy Call;
  - completed a two-phase Bioenergy Call for Power;
  - initiated a Community- Based Biomass Power Call; and
  - implemented a Standing Offer Program (SOP), which is ongoing.
- On August 3, 2010, BC Hydro made its final announcement for successful projects in the 2008 Clean Power Call (Call), which included 25 electricity purchase agreements for 27 projects, (1 waste heat project, 6 wind and 20 hydroelectric projects).
- The Bioenergy Phase 1 Call, completed in 2009, resulted in four electricity purchase agreements (EPAs) for a total of 579 gigawatt hours (GWh) of electricity per year – enough to power 52,000 homes.
- The Bioenergy Phase 2 Call for projects greater than 5 megawatts (MW), completed in August 2011, awarded four contracts for 754 GWh of firm energy per year and 104 MW of capacity.
- The Community- Based Biomass Call awarded one EPA for a 1 MW biogas project. Discussions are still open with three other projects.
- The SOP was first introduced in 2008 in response to the 2007 Energy Plan. After a two-year review in 2010, it was relaunched in January 2011.
- In March 2013, three rule changes were implemented.

BACKGROUND:

- Under the *Clean Energy Act*, "clean or renewable resource" means biomass, biogas, geothermal heat, hydro, solar, ocean, wind or any other resource prescribed through regulation. BC Hydro power acquisitions in the 2008 Clean Energy Call, a two-phase Bioenergy Call for Power; a Community Based Call, and the SOP, are restricted to projects meeting the "clean or renewable" definition.
- On August 3, 2010, BC Hydro made its final announcement for successful projects in the 2008 Clean Power Call (25 electricity purchase agreements for 27 projects were issued, for 1,168 MW of capacity and 3,266 GWh of energy).

- Phase 1 of the Bioenergy Call for Power was completed in 2009. Two of the successful proposals are in Prince George, one is in Kamloops and one in Castlegar.
- The Bioenergy Phase 2 Call was a competitive call through Request for Proposals for biomass projects above 5 MW with a target to acquire up to 1,000 GWh per year of cost-effective electricity. s.12 The Phase 2 Call was completed in August 2011 and a complete report on the Bioenergy Phase 2 was released on February 15, 2012.
- Four projects were awarded contracts in the Phase 2 Bioenergy Call (West Fraser Mills in Chetwynd, Western Bioenergy in Fort St. James, West Fraser Mills in Fraser Lake and Western Bioenergy in Merritt) and announced on August 4, 2011. The weighted average price for the Phase 2 call is $10 per megawatt hour (MWh) lower than the 2008 Clean Power Call.
- The Community Based Biomass Call was conducted through the Request for Quotes, followed by negotiations with short listed projects. Six projects were shortlisted and two have since withdrawn. The projects selected for contract discussions in December 2010 were Revelstoke, Burnaby - SFU, Richmond, Kamloops, Lytton and Anahim Lake, with a total capacity of 14.5 MW. Lytton and Revelstoke have since withdrawn.
- BC Hydro has received 32 SOP applications. Of these, two are new applications, 11 are proceeding through the review process, 10 have been removed from consideration (as they are part of the bilateral Robson Valley initiative), and nine EPAs have been executed.
- BC Hydro projected that within the first two years of the SOP, it would acquire between 90 GWh/year and 900 GWh/year. The nine contracted projects will generate approximately 205 GWh/year of energy and have a capacity of 48 MW.
- In March 2013, BC Hydro introduced three rule changes to re-affirm the SOP's original spirit and intent, while reducing risk that the program will procure significantly more energy than currently needed.
- BC Hydro is exploring how to address the treatment of high-efficiency cogeneration projects in the SOP going forward.
- On November 23, 2012, BC Hydro received 26 responses (representing 29 projects) to its Request for Expressions of Interest for development of clean energy projects on Haida Gwaii. Next steps could include bilateral discussions with one or more respondents, a more formal Request for Proposals process, or a decision to defer additional procurement activities. BC Hydro will consult with the Haida Nation and engage other groups regarding the proposed approach.
- With the current decreased demand in the provincial electricity load forecast, BC Hydro is focused on reducing supply-side acquisitions and decreasing demand-side management expenditures over the short- to medium-term.

ATTACHMENT:
BC Hydro Energy Procurement Update, May 2013

Pages 33 through 36 redacted for the following reasons:
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s.13, s.16, s.17

MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUE: Clean and Renewable Power Producers Facts

KEY MESSAGES:

- The Provincial energy objectives in the *Clean Energy Act* confirm the role of clean, renewable energy producers in meeting British Columbia's electricity needs.
- As of June 2013, there were 81 operational projects with Electricity Purchase Agreements (EPAs) with BC Hydro. BC Hydro also manages another 48EPAs for projects in the pre-commercial operation stage. Additionally, there are 11 applications proceeding through the Standing Offer Program (SOP) review process.
- Of the 81 projects delivering power to BC Hydro:
  - 56 are hydro projects, including 11 storage hydro projects;
  - three are wind projects;
  - 16 are biogas/biomass projects;
  - two are gas-fired thermal projects;
  - one is a municipal solid waste project; and
  - three are heat recovery projects.
- To date, these projects deliver 15,127 gigawatt hours (GWh) per year of electricity to BC Hydro; power procurement processes have included Clean Power Calls; Bioenergy Calls; Integrated Power Offer (IPO) for Pulp and Paper Customers, and the SOP for projects with less than 15 megawatts (MW) capacity.

BACKGROUND:

- Several of British Columbia's energy objectives under the *Clean Energy Act* are relevant to clean and renewable energy projects, namely:
  - To achieve electricity self-sufficiency;
  - To generate at least 93 percent of the electricity in British Columbia from clean or renewable resources and to build the infrastructure necessary to transmit that electricity;
  - To use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;
  - To reduce green house gas emissions; and
  - To reduce waste by encouraging the use of waste heat, biogas and biomass.

- The Province has implemented a number of tax and royalty policies to encourage the development of clean, renewable energy projects in British Columbia.
- All waterpower projects require a water licence to build and operate, issued by the Ministry of Forests, Lands and Natural Resource Operations. Projects over 50 MW also require a certificate under the *Environmental Assessment Act*.
- As of June 24, 2013, there are 558 water licence applications in the Provincial water licensing database with Power-General as one of the (or the sole) beneficial use categories (category).
- As of June 24, 2013, 230 Power-General water licences have been issued that are still current. Some clean, renewable waterpower projects are issued two or more licences.
- At present, there are three operational wind farms and over 350 land tenures issued for wind power projects in the Province.
- BC Hydro awarded 25 EPAs to projects successful in the 2008 Clean Power Call for a total of 3,266 GWh and nine additional EPAs to projects through the SOP.

ATTACHMENT:
Questions & Answers for Clean and Renewable Power Production in British Columbia

June 2013

Q's & A's for Clean and Renewable Power Production in BC

What is the role of Clean and Renewable Power Producers?

- A number of generators including Crown agencies, self generators, utilities and clean, renewable power producers, produce electricity in B.C. BC Hydro produces 69 percent of total electricity generation in B.C. while other generators include Alcan, Teck, Columbia Power Corp., industrial self-generators and clean, renewable power projects.
- In the 2002 Energy Plan, "Energy for Our Future: A Plan for BC", British Columbia moved to strengthen the opportunities for private sector investment in developing new electricity generation.
- The 2007 Energy Plan targets energy conservation, investments by BC Hydro in Heritage Assets & system expansion and competitive sourcing from clean, renewable power projects.
- The *Clean Energy Act* affirms this direction with the 16 Provincial Energy Objectives, which include: achieving electricity self-sufficiency, a conservation target for BC Hydro of 66 percent by 2020 (up from 50 percent), and ensuring that at least 93 percent of the electricity generated in BC is from clean or renewable resources (up from 90 percent). Related policy actions were designed to ensure a continued supply of affordable, reliable supply of electricity over the long term to provide value to ratepayers.
- Clean energy producers bring entrepreneurial capital, access to monetary capital and take on associated risk.
- Clean, renewable power producers have a proven track record in B.C., demonstrating the development and operation of cost-effective projects.
- Clean, renewable power producers and their projects contribute to a balanced strategy for ensuring communities, individuals and industries in B.C. have access to adequate supplies of affordable electricity.

What is the role of BC Hydro?

BC Hydro acquires power from clean and renewable power projects primarily through competitive processes. In some cases, BC Hydro acquires power under bilateral arrangements outside of its competitive processes, with pricing linked to the most recent competitive calls. The amount of power acquired is based on the system need. To date, BC Hydro's initiatives for purchasing electricity from independent and clean, renewable power projects include:

- existing contracted purchases of approximately 15,000 gigawatt-hours per year (GWh/year) of electricity;
- Clean Power Call;
- Bioenergy Call; and
- Standing Offer Program for projects less than 15 megawatts (MW).

BC Hydro's primary business activities are the generation and distribution of electricity, as well as planning and assessing to ensure sufficient power will be available to meet its customer's needs through a combination of:

- demand management programs to reduce growth in electricity demand;
- investing in upgrades to its existing assets to improve power production; and
- acquiring power from outside suppliers.

- BC Hydro plans, operates and maintains an extensive publicly owned electrical transmission system (wires, poles, towers, substations, etc.), ensuring non-discriminatory and open access to the system.
- BC Hydro has a history of construction and operation of large-scale hydroelectric generation facilities with associated dams and water reservoirs.

- BC Hydro is responsible for the operation, maintenance and improvement of large hydro projects, such as:
    - Revelstoke Generating Station (Unit 5 and 6 at about 500 MW each);
    - Peace Canyon Generating Station (installation of new stators and turbine overhaul);
    - Gordon M. Shrum Generating Station (replacement of three stators);
    - Spillway Gate Reliability Updates;
    - Mica Generating Station (replacement of four stators, proposed installation of two large turbines, Unit 5 and 6 at about 500 MW each); and
    - Fort Nelson Generating Station Update;
    - John Hart Generating Station Replacement Project;
    - Ruskin Dam and Powerhouse Upgrade;
    - Smart Metering infrastructure.
- BC Hydro has now moved to the third stage in evaluating the possibility of a third dam on the Peace River called Site C, having submitted the Environmental Impact Statement to the Canadian Environmental Assessment Office and the British Columbia Environmental Assessment Office on January 28, 2013. There are four review stages, which will take four or five years to complete, before a final decision on Site C can be made. If approved, Site C would then enter its fifth stage, which is construction.
- BC Hydro also owns Powerex Corp. Powerex helps optimize BC Hydro's electric system resources, improve the security and reliability of electricity supply for the province, and provide significant economic benefits to British Columbians.
- Electricity trade and power marketing are possible because BC Hydro's bulk transmission network is interconnected with Alberta to the east, and the Bonneville Power Administration to the south. This transmission network links BC Hydro with a huge market for the purchase and sale of wholesale electricity outside the province.

How does BC Hydro decide how much power it needs from clean and renewable projects?

- The *Clean Energy Act* requires BC Hydro to submit an Integrated Resource Plan (IRP) to the Government setting out how it will implement Provincial Energy Objectives and the results of public and First Nations consultations on the IRP. The IRP will also include and assessment of export market potential and an assessment of transmission infrastructure requirements over the next 30 years.
- BC Hydro is currently preparing its 2012 IRP with its long-term plan for acquiring the energy resources to meet its customers' needs for the next 20 years.
- When finalized, the IRP will be submitted to Government for review and approval.

What is the role of conservation and energy efficiency?

- Under the *Clean Energy Act* a Provincial Energy Objective is for BC Hydro to meet 66 percent of its increased resource requirements to 2020 through energy efficiency and conservation.
- In evaluating the need for additional generation, BC Hydro prepares estimates of the electricity that can be "saved" by users through the adoption of conservation and energy efficiency measures.
- BC Hydro's "Powersmart" program encourages the adoption of energy efficient activities through education and financial incentives and rebates for customers who choose energy efficient products.
- The LiveSmart BC: Efficiency Incentive Program invests $110 million over 5 years (2008-2013) to help families, low income British Columbians and small business owners lower their energy bills and reduce greenhouse gas emissions.
- These types of programs are called "Demand Side Management". BC Hydro's 2008 Long Term Acquisition Plan proposes demand side management programs to save up to 70

percent of incremental energy requirements. This reduces the need to build and purchase new electricity supply.

How many clean and renewable power projects are there in B.C.?

- In order to answer this question, it is important to be clear about what is being counted. Generally, when discussing clean and renewable power producers, Crown corporations are excluded (BC Hydro and Columbia Power Corporation) as well as Alcan, Teck, and FortisBC.
- Following the rule above, as of June 2013, BC Hydro has Electricity Purchase Agreements with 76 clean, renewable power projects. Of these operational projects, 53 are waterpower projects (45 non-storage hydro and 8 storage hydro), 16 are biogas/biomass projects, three are wind power projects, three are energy recovery generation projects, and one is a municipal solid waste project.
- Please note that this total does not include two EPAs that BC Hydro has with natural gas thermal facilities.

What is the impact for BC Hydro to purchase electricity from clean and renewable power producers on provincial electricity rates?

- BC Hydro usually acquires power through competitive processes, where projects bid against each other for the opportunity to supply power to BC Hydro. BC Hydro designs its power acquisition programs to obtain competitively priced supplies of electricity, and these processes evolve over time to address its needs and to meet Provincial policy.
- Notwithstanding the competitive nature of power pricing from clean energy projects, the cost of power from new generation projects is higher than the cost of power from BC Hydro's existing Heritage Assets. It can be expected that as new supply is needed to meet growing needs, this will put upward pressure on electricity rates.
- This is the case regardless of who builds the new projects. For example, BC Hydro's Aberfeldie Redevelopment Project has costs equivalent to accepted projects from BC Hydro's 2006 Call for Power.
- Clean, renewable power producers have demonstrated their ability to finance, build and operate facilities effectively. They bring entrepreneurial capital, access to monetary capital and take on associated risk, have a proven track record in the development and operation of cost-effective projects.

Can clean and renewable power producers export power?

- It is legal to export electricity, as it is for other commodities produced in B.C. For example, BC Hydro, through Powerex, exports electricity surplus to B.C.'s needs.
- Clean and renewable power producers are free to export power if they: obtain the required approvals and permits to make use of provincial resources, meet provincial and federal environmental standards for their projects, arrange for and fund access to the transmission system, and obtain an export permit from the National Energy Board.
- Although the opportunity for clean and renewable power producers to sell to markets in the United States and Alberta exists, B.C. IPPs have been focusing on selling power to BC Hydro.
- There are a number of reasons the export market has not been attractive, including the cost and availability of transmission to other markets, the difficulties in marketing power from intermittent power projects, and financing of large capital projects without a long term sales agreement.
- Once B.C. achieves electricity self-sufficiency, there will be opportunities to provide B.C.'s clean, low carbon electricity to neighbouring jurisdictions that are looking to reduce their greenhouse gas emissions and meet renewable energy targets. Indications show that B.C. has sufficient resource potential to continue to meet its own needs while capitalizing on opportunities to create jobs in B.C. and help other jurisdictions achieve their environmental goals. A robust, competitive market for electricity will help reduce long term costs to buyers.

How many clean and renewable power projects will there be in the future?

- This is a difficult question to answer, as there are a number of variables, several of which are difficult to predict.
- BC Hydro is acquiring electricity a number of ways including through their Standing Offer Program.
- BC Hydro awarded EPAs for a total of 3,266 gigawatt hours of electricity through the 2008 Clean Power Call. The BC Hydro Standing Offer Program for projects less than 15 megawatts is an open program that accepts projects as submitted, therefore the number of projects in the future is not known, but is expected to number in the dozens as opposed to the 100's.
- The IRP will identify any further domestic need in the province and make recommendations about how best to meet the anticipated load demand.
- Projects could also be developed to export power in the future, although to date development for export has not been pursued.
- Regardless of what opportunities are pursued by producers, all power project proposals must meet provincial and federal environmental requirements in order to be developed in B.C.

How are clean and renewable power project proposals evaluated?

- Projects are evaluated several times as they move from original concept through to full development.
- All projects on Crown land, regardless of size or type, must receive the appropriate permits under the *Water Act* (for a waterpower project) and the *Land Act* from the Provincial government. In deciding whether to issue these permits, Government considers technical information, Federal and Provincial agency comments, comments from the public, local government and First Nations. For example, in total, a typical run-of-river project will require more than 50 permits, licences, approvals and reviews from regulatory bodies, including federal, provincial, local and First Nations.
- In its acquisition process, BC Hydro has specific evaluation criteria developed for the review of project submissions.

What rights do clean and renewable power producers acquire when they develop a wind or waterpower project?

Waterpower

- In order to develop a waterpower project, the developer must apply for and receive a water licence and associated tenures for Crown land and the project must be compliant with the *Water Act* and the *Land Act*.
- The water licence and land tenures give the developer the right to temporarily use water, modify the land and/or construct improvements as specified in the tenure document, develop a transmission line from the power project to electrical grid connection, power substation and operations centre. Generally this means the construction and operation of the project is described in their submitted and approved development plan for a 40 year term. Ownership of the water resource remains with the Province.
- The developer may construct and operate their project for the time period specified in the permits. The water licence and Crown land tenures may contain terms and conditions which must be adhered to by the developer for the duration of the tenure.
- Where a project has received an Electricity Purchase Agreement (EPA) from BC Hydro, the length of the land tenure matches the time period for the EPA. However, the length of the water licences is fixed by the *Water Act* to be 40 years.
- If the project has not received an EPA, the land tenures are awarded for 10 years.
- The developer has the right to develop their project subject to any terms and conditions on the tenure, to sell electricity for a fair return on investment, and must pay the Province of British Columbia for their use of the water and land. The fees are based on the capacity of the project and the amount of electricity produced, and on the area of land under tenure.

- At the end of the tenure term, the developer may apply for a renewal, and this application will be adjudicated following normal procedures at that time for water licences and Crown land tenures.
- At the end of the tenure term, the Province of British Columbia may chose to not renew the water licence and land tenures, and may ask the developer to remove the improvements and return the waterway and lands to original condition.
- The IPP Guidebook outlines in more detail the permitting and approval process for waterpower projects.

Wind Power

- In order to develop a wind power project, the developer must apply for and receive land tenures for the turbines, transmission lines connecting between the turbines, transmission line from the turbine cluster to electrical grid connection, power substation and operations centre. The project must be compliant with the Crown Land Use Operational Policy for Wind Power Projects.
- The land tenures give the developer the right to construct and operate a wind power project as described in their approved development plan.
- The developer may construct and operate their project for the time period specified in the permits. The Crown land tenures may contain terms and conditions which must be adhered to by the developer for the duration of the tenure.
- Where a project has received an Electricity Purchase Agreement (EPA) from BC Hydro, the length of the land tenure matches the time period for the EPA.
- If the project has not received an EPA, the land tenures are awarded for 10 years.
- The developer has the right to develop their project subject to any terms and conditions on the tenure, to sell electricity for a fair return on investment, and must pay the Province of British Columbia for their use of land. The fees are based on the capacity of the project and the amount of electricity produced, and on the area of land under tenure.
- At the end of the tenure term, the Province of British Columbia may chose to not renew the land tenures, and may ask the developer to remove the improvements and return the lands to original condition.
- The IPP Guidebook outlines in more detail the permitting and approval process for wind power projects.

How do investigative permits and water licence applications relate to actual number of clean and renewable power producer projects built?

- Developers interested in hydropower, wind power and ocean power must first apply for an investigative permit under the *Land Act*, and file a water licence application under the *Water Act*.
- These initial applications allow for the investigation of a particular site to determine if a viable project can be developed. Resource data and environmental information is collected, preliminary engineering plans are drawn up, and financial analysis is conducted.
- Where there is a good indication that a project could be successful, the developer moves through the permitting requirements under the *Land Act* and *Water Act* and seeks permission to construct their project.
- There has been a speculative environment among hydro developers. As of June 24, 2013, there were 558 Power-General water licence applications recorded in the Provincial water licensing database with Power-General as one of the (or the sole) beneficial use categories (category), and a total of 230 IPP water licences issued that are still current. Some clean, renewable waterpower projects are issued two or more licences.
- For potential wind power projects, over 350 investigative tenures have been issued and three projects are now operational.
- For potential ocean energy projects, about 40 investigative permits have been issued, with no project being authorized to move to the construction stage.

- It is important to note that an application for a water licence or having an investigative permit for wind power development does not mean that a water licence or a permit to construct a wind power project will be granted. Only those applications that are able to meet British Columbia's significant regulatory requirements will proceed beyond the application stage.

How is the environment protected when Clean, Renewable Power Projects are developed?

- All clean, renewable power projects, regardless of size, must meet stringent environmental requirements to receive the necessary permits to construct and operate generation projects.
- The review process for projects 50 MW or larger is subject to an environmental assessment under the *Environmental Assessment Act* and is coordinated by the Environmental Assessment Office.
- Projects subject to an assessment under the *Environmental Assessment Act* must not proceed until they have received an Environmental Assessment Certificate, as well as all other applicable permits and licences.
- The Environmental Assessment Certificate, as well as permits and licences, contain terms and conditions the developer must adhere to, and report on, in order to ensure the environment is protected.
- Smaller projects are assessed as part of the review of permit or licence applications under specific statutes such as the *Water Act* or the *Land Act.* The permits or licences contain terms and conditions the developer must adhere to, and report on, in order to ensure the environment is protected.
- Environmental Assessment certificates are identified on the Environmental Assessment Office's website; water licences may be queried in the Provincial water licence database; and Crown land tenure applications and reasons for decision are posted by the Ministry of Forests, Lands and Natural Resource Operations.

What is an environmental assessment under the Environmental Assessment Act for Clean Power Projects 50 MW or greater?

BC's environmental assessment (EA) process provides a mechanism for reviewing major projects to assess their potential impacts. In order for a major project to proceed, an EA review must be completed successfully and the proposed project much be approved by two provincial Ministers who can issue an Environmental Assessment Certificate.

The EA process addresses a broad range of environmental, economic, social, health and heritage issues through a single, integrated process. It ensures that the issues and concerns of all interested parties and First Nations are considered together, and that a project, if it is to proceed, will do so in a sustainable manner.

How long does an environmental assessment certificate last?

An environmental assessment certificate remains in effect for the life of the project, unless suspended or cancelled by the Minister of Environment for reasons of non-compliance with the *Environmental Assessment Act*. All certificates also contain a deadline of between three and five years from the date of issuance for the project to be "substantially started". If substantive project development has not begun by this deadline, the holder of the certificate can apply for one extension of the deadline for up to five more years.

What is the role of the public, local governments and First Nations in clean and renewable power project development?

- All clean power projects, regardless of size or type must receive the appropriate permits under the *Water Act* or the *Land Act* from the provincial government.

- Obtaining input from the public, local governments, and First Nations, and any other interests potentially affected by a project is an essential component of permit reviews regardless of project size.
- Input from the public, local governments, and First Nations is used by agencies in deciding whether or not to issue a permit under the *Water Act* or the *Land Act*.
- First Nations are also consulted with respect to how any potential project may impact their asserted rights and title.
- For projects 50 megawatts or greater the BC Environmental Assessment Office establishes an advisory Working Group that consists of First Nations, federal, provincial and local government who participate throughout the project review. The environmental assessment process fosters public involvement through a number of channels including: notification of key consultation events, thorough formal public comment periods on the Terms of Reference and the Application and public meetings.
- The mini-guide, "Opportunities for Local Government and Public Participation in Provincial Regulatory Processes for Independent Power Producers' Projects," available at: http://www.empr.gov.bc.ca/EAED/AEPB/AEPS/Documents/MiniGuide.pdf, describes the regulatory processes and requirements of the provincial *Water Act*, *Land Act* and *Environmental Assessment Act*.

MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUE: Clean and Renewable Power Producers Projects Policy Issues

KEY MESSAGES:

- Clean, renewable energy producers have been supplying competitively priced clean electricity to BC Hydro for more than 20 years. They will continue to help meet power needs in British Columbia.
- BC Hydro currently has a surplus of electricity and does not expect to issue any calls for power in the near future.
- BC Hydro and other hydroelectric generators pay for the use of provincial water resources. As a provincially-owned resource, clean, renewable energy producers must receive water licences before they can use provincial water resources.

BACKGROUND:

- BC Hydro is acquiring new electrical generating capacity from clean, renewable energy producers. BC Hydro is pursuing the development of Site C, as approved by Cabinet.
- In the *Clean Energy Act,* 16 Provincial Energy Objectives are set out, including: achieving electricity self-sufficiency; a conservation target for BC Hydro of 66 percent by 2020; and ensuring that at least 93 percent of the electricity generated in British Columbia is from clean or renewable resources. The 2007 Energy Plan established a 50 percent conservation target and 90 percent requirement for clean or renewable resources.
- In 2010, BC Hydro awarded 25 Electricity Purchase Agreements (EPAs) to projects in the 2008 Clean Power Call for a total of 3,266 gigawatt hours (GWh). Nine additional EPAs were awarded to projects through the Standing Offer Program.
- In 2011, BC Hydro awarded four EPAs totalling 754 GWh/yr to successful projects in Phase 2 of the Bioenergy Call for Power.
- The Ministry of Energy, Mines and Natural Gas has the lead responsibility for developing, implementing and maintaining strategic energy policy, whereas the Ministry of Forests, Lands and Natural Resource Operations has the responsibility for Crown land policy.
- Waterpower producers pay for the use of provincial water resources. Water resources remain in public hands and clean, renewable energy projects must receive water licences before they can use the water.

- As of June 2013, BC Hydro managed 81EPAs for projects in commercial operation, delivering 15,127 GWh/year of contracted energy to both its integrated and non-integrated system including 45 non-storage hydro projects. This includes three EPAs for projects owned by Columbia Power Corporation, one EPA with Rio Tinto Alcan, plus 77 EPAs with smaller private clean energy producers.
- As of June 2013, BC Hydro manages 48 EPAs for projects in the pre-commercial operation stage, representing 7,325 GWh/year of contracted energy, or about 5,000 GWh/year when adjusted for potential attrition.
- Crown land tenures are required if components of the projects are located on Crown land. Water and Crown land rental payments, like royalty payments for forestry, petroleum and mineral resources, are set by the Province to ensure the people of British Columbia receive fair value for these resources. Royalty and rental policies are reviewed from time to time to ensure provincial objectives are being met.
- The BC Hydro Review Panel determined that BC Hydro was paying water rental rates in excess of those paid in other jurisdictions and directed government to review those rates and adjust them when fiscal conditions in the province improve. This remains to be implemented due to the current fiscal situation.
- The *Clean Energy Act* created the First Nation Clean Energy Business Fund to facilitate increased First Nations participation in clean energy projects. The funding may flow to First Nations as: capacity development funding; funding to acquire equity positions in clean energy projects or to develop community projects; and revenue sharing with directly impacted First Nations (revenue from water, land and, eventually, wind participation rents).

CROSS-REFERENCE:
22 - *Clean Energy Act* Implementation
37 - BC Hydro Clean and Renewable Power Acquisitions
37A - BC Hydro's Energy Procurement Update – May 2013
38 - Clean and Renewable Power Producer Facts
38A - Questions & Answers - Clean and Renewable Power Producers

MINISTRY OF ENERGY AND MINES
ELECTRICITY AND ALTERNATIVE ENERGY DIVISION
ESTIMATES BRIEFING NOTE 2013/14

ISSUE: Sale of Self-Generated Electricity

KEY MESSAGES:

- In a decision dated May 6, 2009, the British Columbia Utilities Commission (BCUC) ruled that self-generating customers should not be permitted to benefit from the purchase and resale of electricity at the expense of other BC Hydro customers.
- This decision had significant implications for other BC Hydro customers – like pulp and paper mills – with self-generation.
- It is not in the interest of BC Hydro's ratepayers for a self-generating customer to sell its own power at market prices and replace it with cheaper power from the grid.
- BC Hydro would have to replace it with new power at market prices, leading to higher rates for BC Hydro customers.
- This ruling is consistent with the Heritage Contract. The Heritage Contract ensures that BC Hydro's customers receive the benefit of low-cost heritage electricity from BC Hydro's heritage assets.

BACKGROUND:

- In July 2008, the City of Nelson and Nelson Hydro announced an agreement to sell up to nine megawatts (MW) of power from the Upper Bonnington Generating Facility on the open electricity market through North Point Energy Solutions, a wholly-owned marketing subsidiary of Regina-based SaskPower.
- The City of Nelson proposed to arbitrage between the price of electricity it purchases from FortisBC at the BCUC-approved rate of 3.507 cents per kilowatt hour (kWh) and the price it receives selling its generation output in the export market.
- Under this proposed arrangement, it was very likely that FortisBC would purchase additional energy from BC Hydro under its Power Purchase Agreement (PPA), at an approved rate of 2.952 cents/kWh, to provide replacement power to the City of Nelson.
- The proposal would have had an impact on BC Hydro's ratepayers whose rates would increase due to the need to acquire new resources to provide replacement power.
- In August 2008, a similar agreement was announced between FortisBC and Mercer International Inc. (Mercer, owner of the Celgar pulp mill), which would have allowed Mercer to arbitrage between the price of electricity it could purchase from FortisBC and the price it could receive selling its self-generation into the market.

- BC Hydro applied to the BCUC for an amendment to the PPA to prevent arbitrage by customers of FortisBC, such as the City of Nelson and Celgar, and the then Ministry of Energy and Mines (MEM) filed a written argument in support of BC Hydro's application.
- MEM argued that the City of Nelson's proposed arbitrage was inconsistent with the intention of the Heritage Contract, whose objective is to ensure that BC Hydro's heritage assets continue to provide benefits for all BC Hydro customers, and not benefit one set of customers who seek to use the heritage assets as the basis for arbitrage between low cost energy from the heritage assets and market prices.
- The Ministry also stated its position that it is appropriate for self-generating customers to sell to market electricity that is in excess of historical generation.
- On May 6, 2009, the BCUC approved BC Hydro's application to amend the PPA to prevent the arbitrage activities proposed by the City of Nelson and Celgar.
- Self-generators, such as Mercer's Celgar pulp and paper mill, continue to exert pressure on both the BCUC and Government to allow them to engage in arbitrage by selling self-generated electricity at market prices while purchasing low-cost power from their utility.
- In April 2012, Mercer filed a request for arbitration under the North American Free Trade Agreement (NAFTA), alleging that the Province's actions, through BC Hydro and the BCUC, amount to discrimination and seeking damages of $250 million.

CROSS-REFERENCE:
41 - Mercer NAFTA Challenge