Agenda

• Introduction
• Integrated Resource Plan Overview
• Consultation Topics
• Question and Answer
• Feedback Form
BC Hydro Presenter

- Cam Matheson
- Executive Director, Energy Planning and Procurement, BC Hydro
- Oversees:
  - Long-term planning processes
  - Demand forecasts
  - Market price forecasts
  - Regulatory filings
BC Hydro Team Member

• Lindsay Fane
• Senior Resource Planning Engineer, BC Hydro
• Areas of expertise:
  – Supply and demand
  – System optimization
  – Long-term planning
Facilitator

- Judy Kirk
- President, Kirk & Co. Consulting Ltd.
- Public and stakeholder consultation specialists
Commitment to Consultation

• Comprehensive public and stakeholder process
• Parallel First Nations consultation
• Deadline to provide input in this round: April 30, 2011
Consultation Process

• Seeking public, stakeholder and First Nations feedback
• Technical Review and Foundation for Integrated Resource Planning (*Fall 2010*)
• Considering Our Clean Energy Future – Assessing and Evaluating Options (*Winter/Spring 2011*)
• Reviewing the Draft Integrated Resource Plan (*Fall 2011*)
BC Hydro Overview

• Created 50 years ago as a Crown corporation to deliver electricity to the province
• Strong legacy in helping to develop the province
• Ensure future generations will continue to enjoy the competitive advantage of clean, reliable power
IRP Overview

• The Integrated Resource Plan (IRP) is the long-term plan to meet customers’ needs for electricity over the coming decades
IRP Overview

• Potential ways to meet demand
  – Upgrade and expand heritage facilities
  – Secure new supplies of renewable energy
  – Build new transmission and distribution lines
  – Encourage conservation
  – Integrate new technologies to modernize the system
Key Planning Questions

• How much electricity will B.C. need over the next 20 years?
• What is the gap between existing supply and forecast electricity demand?
• How can BC Hydro close the gap?
Electricity Demand

• Forecast to grow approx. 40% over 20 years

• Load growth affected by:
  – Population
  – Conservation
  – Consumption
  – Efficiency
  – Electrification
  – Economic Activity
What is the Gap?

Energy Demand/Supply Balance Forecast
How to Close the Gap?

- Additional conservation and efficiency measures
- Future generation and transmission options
- IRP will examine:
  - Technical characteristics
  - Cost implications
  - Environmental and economic development characteristics
How to Close the Gap?

• Comparing alternatives
  – Must address future energy and capacity needs
  – Examine numerous combinations of options against a range potential futures such as high and low economic growth
  – Managing risks is a focus
Planning Context

• B.C.’s *Clean Energy Act*
  – Self-sufficiency by 2016
  – 66% of increased demand through conservation/efficiency
  – 93% of all electricity from clean or renewable resources
  – No nuclear
  – GHG reduction targets
  – Encourage economic development and relationship building with First Nations and rural communities

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What’s in the Plan?

• 20-year Base Resource Plan
  – Mix of demand reduction and generation, and transmission options that can fulfill forecasted demand

• Contingency Resource Plan
  – Addresses uncertainties inherent in long-term planning such as higher than expected demand

• 30-year Transmission Plan
Questions
Comments

Please type your question or comment in the Q&A window

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Consultation Topics

1. Conservation and Efficiency
2. Electricity Generation Options
3. Electrification
4. Transmission Planning
5. Export Market Potential
Conservation and Efficiency

• Conservation, or demand-side management (DSM), is BC Hydro’s first strategy for closing the gap

• DSM measures include behavioural programs, codes and standards, and electricity rates
Conservation and Efficiency

- Current BC Hydro plan to reduce demand by 79% by 2020
  - *Clean Energy Act* calls for at least 66% of new needs by 2020 to come through conservation
- Question: Should even greater conservation and efficiency be pursued?
# Conservation and Efficiency

<table>
<thead>
<tr>
<th>CONSERVATION (DSM) APPROACH</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>Current Plan</td>
<td>Combination of initiatives that include government regulations, conservation rates and Power Smart programs for all classes of customers.</td>
</tr>
<tr>
<td>Greater Conservation and Efficiency</td>
<td>Increase in mandatory government regulations on energy efficiency. Send stronger rate signals through conservation rates. Expanded Power Smart programs to help consumers find savings.</td>
</tr>
</tbody>
</table>
Questions
Comments

Please type your question or comment in the Q&A window

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Electricity Generation Options

- There are many options to choose from but not all resources are created equal
  - Intermittency, capacity, firmness
- In planning new generation, BC Hydro needs to:
  - Consider cost, reliability, environment and economic development impacts, risks, etc.
  - Address policy requirements: 93% clean energy target
- Specific questions include:
  - Need to back up intermittent resources
  - Need for Site C
  - Role of natural gas going forward
Electricity Generation Options

- Portfolio of resources
  - Seeking input on key considerations and questions

Renewables
- Mix of run-of-river hydro and wind

Site C
- Mix of run-of-river hydro and wind

Gas-fired generation
(within 7 per cent non-clean target)
### Electricity Generation Options

<table>
<thead>
<tr>
<th>Electricity Generation Portfolio</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>PORTFOLIO 1</strong>&lt;br&gt;Renewable Mix</td>
<td>Renewable mix. No Site C. No gas.</td>
</tr>
<tr>
<td></td>
<td>Base Energy: <img src="wind" alt="827" /> <img src="solar" alt="72" /></td>
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<td></td>
<td>Backup: <img src="electricity" alt="backup" /></td>
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<tr>
<td><strong>PORTFOLIO 2</strong>&lt;br&gt;Renewable Mix With Site C</td>
<td>Renewable mix including Site C. No gas.</td>
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<td></td>
<td>Base Energy: <img src="wind" alt="496" /> <img src="solar" alt="43" /> <img src="fossil" alt="1" /></td>
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<tr>
<td></td>
<td>Backup: <img src="electricity" alt="backup" /></td>
</tr>
<tr>
<td><strong>PORTFOLIO 3</strong>&lt;br&gt;Renewable Mix with Site C and Gas-Fired Generation (within 93 per cent Clean Energy Act target)</td>
<td>Renewable mix with wind, Site C and gas within 93 per cent Clean Energy Act target.</td>
</tr>
<tr>
<td></td>
<td>Base Energy: <img src="wind" alt="438" /> <img src="solar" alt="38" /> <img src="fossil" alt="1" /> <img src="gas" alt="1" /></td>
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<tr>
<td></td>
<td>Backup: <img src="electricity" alt="backup" /></td>
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Electrification

- Potential to use B.C.’s clean electricity system to reduce GHG emissions through fuel switching
  - Transportation (cars, trucks, rail, shipping)
  - Industry (oil and gas)
  - Home heating
Electrification

• Timing is everything
• Should BC Hydro take a proactive approach to electrification?
• Considerations:
  – Additional reductions in provincial GHG emissions
  – Increase need for electricity generation resources
  – Potential to increase costs
## Electrification

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<tr>
<th>ELECTRIFICATION APPROACH</th>
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<tr>
<td>RESPONSIVE APPROACH TO ELECTRIFICATION</td>
<td>BC Hydro responds to electrification driven by customers’ needs, and works to ensure electricity is used efficiently as part of its obligation to serve customers’ needs.</td>
</tr>
<tr>
<td>PROACTIVE APPROACH TO ELECTRIFICATION</td>
<td>BC Hydro works with government and other partners to facilitate and encourage increased efficient electrification.</td>
</tr>
</tbody>
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Transmission Planning

- 30-year timeframe
- Removing constraints (system optimization and reliability)
- Strengthening the ability to move energy optimally across the system and into export markets
- Question: To what extent should BC Hydro consider, plan and build transmission lines in anticipation of need?
Transmission Planning

- Considerations:
  - Higher short-term costs
  - Potential long-term benefits
  - Open areas for new economic development
  - Potential for stranded investments
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<tbody>
<tr>
<td>RESPONSIVE APPROACH</td>
<td>BC Hydro develops transmission plans in response to forecast need.</td>
</tr>
<tr>
<td>PROACTIVE APPROACH</td>
<td>BC Hydro develops long-term transmission plans in anticipation of potential future need over a 30-year horizon.</td>
</tr>
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Export Market Potential

- Opportunity exists to aggregate renewable energy from IPPs for the purpose of long-term export contracts
- *Clean Energy Act* requires BC Hydro to look at this
- Ratepayers are protected from risk but get potential benefits
Export Market Potential

• BC Hydro assessing:
  – Demand for renewables in markets such as California
  – Market share that it could capture
  – Expenditures required

• Considerations:
  – Policy environment
  – Competitiveness of B.C.-based resources
  – Transmission requirements
## Export Market Potential

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<th>EXPORT APPROACH</th>
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<tr>
<td>CURRENT APPROACH – “TRADITIONAL” EXPORTS</td>
<td>Sell the surplus capability (system) including that which arises from achieving self-sufficiency by 2016 and insurance by 2020.</td>
</tr>
<tr>
<td>CLEAN GENERATION FOR THE PURPOSE OF EXPORT</td>
<td>Acquiring additional renewable energy produced in B.C. for the sole purpose of export. This will cause additional Independent Power Producers generation projects to be built in B.C.</td>
</tr>
</tbody>
</table>
Questions Comments

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or select the icon
Closing Remarks
Questions and Answers/Comments
Online Feedback Form

BC Hydro Wants To Hear From You

Integrated Resource Plan

Creating B.C.'s Clean Energy Future
Consistent with British Columbia's new Clean Energy Act, BC Hydro is preparing a long-term Integrated Resource Plan (IRP) for submission to the Ministry of Energy by early December 2011, after which the government will review the Plan and decide whether to approve it. The IRP will establish BC Hydro's plan for conservation and set its course for acquiring sufficient generation and transmission resources to reliably and cost-effectively meet customers' anticipated future electricity needs over the coming decades.
Online Feedback Form

BC Hydro 2011 Integrated Resource Plan

PLANNING FOR A CLEAN ENERGY FUTURE

CONSULTATION WORKBOOK
MARCH 1 – APRIL 30, 2011

FEEDBACK FORM

Next

Your Opinion Counts!

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Online Feedback Form

Q1.
Please indicate your level of agreement with this greater conservation and efficiency approach. In developing your response, please consider the summary above, including the trade-offs and other factors that have been provided.

(please check one box only)
- Strongly Agree
- Somewhat Agree
- Neither Agree nor Disagree
- Somewhat Disagree
- Strongly Disagree

Please provide any comments in the space provided below to explain the reasons for your agreement or disagreement.*

*For privacy reasons please do not provide opinions about identifiable third parties.
Contact

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