BC Hydro & Alcan 2007 EPA

Workshop

September 12, 2007

Objectives of Workshop

Provide an opportunity to:

- Explain the details of the 2007 EPA and the rationale behind it
- Respond to participants questions and concerns
- Receive feedback on draft report for completeness
- Identify and understand participants views on issues and regulatory review process

Approach to Workshop

- Focus on concerns raised in the LTEPA+ proceeding
  - 2007 EPA described in the context of concerns being addressed
- Transparent and open process
  - Unredacted copy of the 2007 EPA filed
  - Draft Report describing the 2007 EPA
  - BC Hydro negotiating team to describe the 2007 EPA
  - Alcan to describe Kemano and the Modernization Project
- Participants views to be considered for finalization of Report and BC Hydro's proposed regulatory process

Agenda

Introduction	Joanna Sofield	10:00 - 10:15 am
Overview of 2007 EPA	Mary Hemmingsen	10:15 - 10:50 am
Contract Details	Ken Spafford	10:50 - 11:25 am
Alcan in British Columbia	Paul Henning	11:25 - 12:00 pm
Lunch Break		12:00 - 1:00 pm
Cost Effectiveness Analysis	Mary Hemmingsen Ken Spafford Graeme Simpson	1:00 - 2:00 pm
Questions and Discussion		2:00 – 3:00 pm

Overview of the 2007 EPA

Mary Hemmingsen

BC hydro

BC Hydro Objectives in Negotiation

- Get access to capacity, energy and other products and services available from Kemano
  - Cost-effectively
  - Obtain the best deal possible for BC Hydro and its ratepayers
  - Structured in a way that optimizes the unique value of a hydro generating facility with storage to the BC Hydro system
- Address concerns raised in LTEPA+

LTEPA+ Issues

- Tri-party Agreement
- RESA
- Links to Modernization
- Electricity diverted from aluminum production
- BC Hydro Reliability Need
- Kemano Supply Reliability
- Reinstatement Fee
- 2006 LTEPA Recall
- New recall provisions
- Comparison to alternatives
- Alcan opportunity cost

Essence of Contract

- Bilateral commercial arrangement
  - The result is fundamentally different than the LTEPA+
  - Provides Alcan with a market for electricity that it does not use in its smelter
- No third party interest involved in the negotiation
- No mechanisms for unilateral actions that affect the contracted volumes, term or prices
- Not contingent on actions of third parties other than BCUC
- Provides substantial additional value

Bilateral Commercial Arrangements

- Alcan commits to power deliveries and to provide services through to 2034
- BC Hydro obtains:
  - Much needed capacity for the 07/08 peak season whether or not longer term deal approved
  - Four Products and Services through the full Term
    - Capacity;
    - Energy (Tier 1 Electricity and Tier 2 Electricity);
    - Scheduling rights; and
    - Coordination and Equichange Services
  - Fixed price long-term supply
  - Defined volumes and delivery commitments
- Alcan monetizes the value of its power that is not required for its smelter needs

Term

- Full term of 27 ¼ years
  - 20 years longer than the current agreement (LTEPA)
  - 10 years longer than LTEPA+
- Expires March 31, 2008 if BCUC disallows the contract

No Third Party Involved in the Negotiation

- Province not a party to agreement
- No payment relating to 2004 LTEPA recall
  - No re-instatement fee

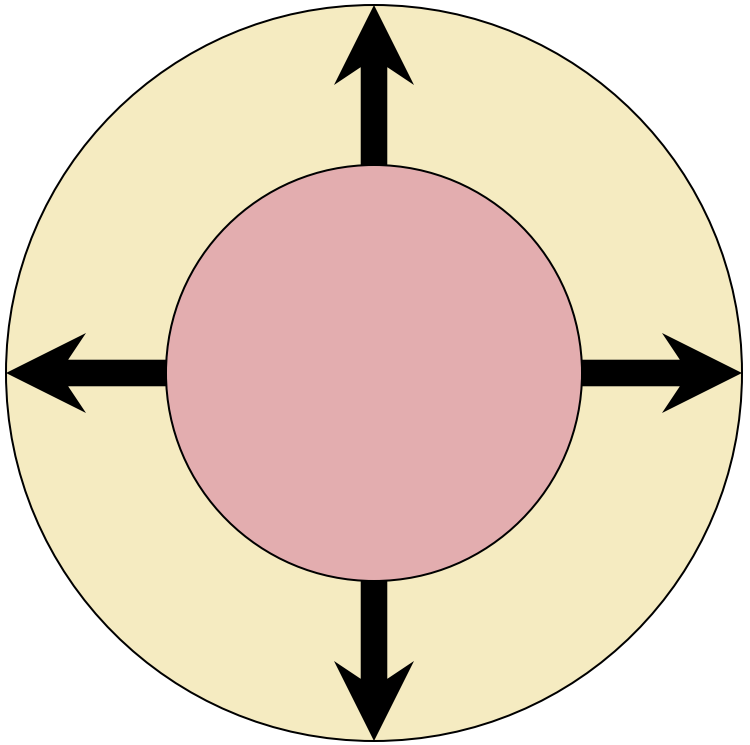
Deliveries not Contingent on Unilateral Actions

- Alcan may not unilaterally alter the volume or term
  - Volumes calculated assuming modernization but are committed to BC Hydro in any event
  - If modernization does not proceed, possibility of increased sale at prices favourable to BC Hydro
  - Alcan has acquired option not to sell incremental power to BC Hydro under the 2007 EPA but must pay BC Hydro an exercise fee if it exercises that option

New Value Created by Increasing the Size of Pie

Kemano generation is more fully integrated to provide value to BC Hydro system:

- Additional capacity included in 2007 EPA
- BC Hydro scheduling rights expanded
- Operational coordination formalized
- 2007 EPA term extended to the end of 2034



Contract Details

Ken Spafford

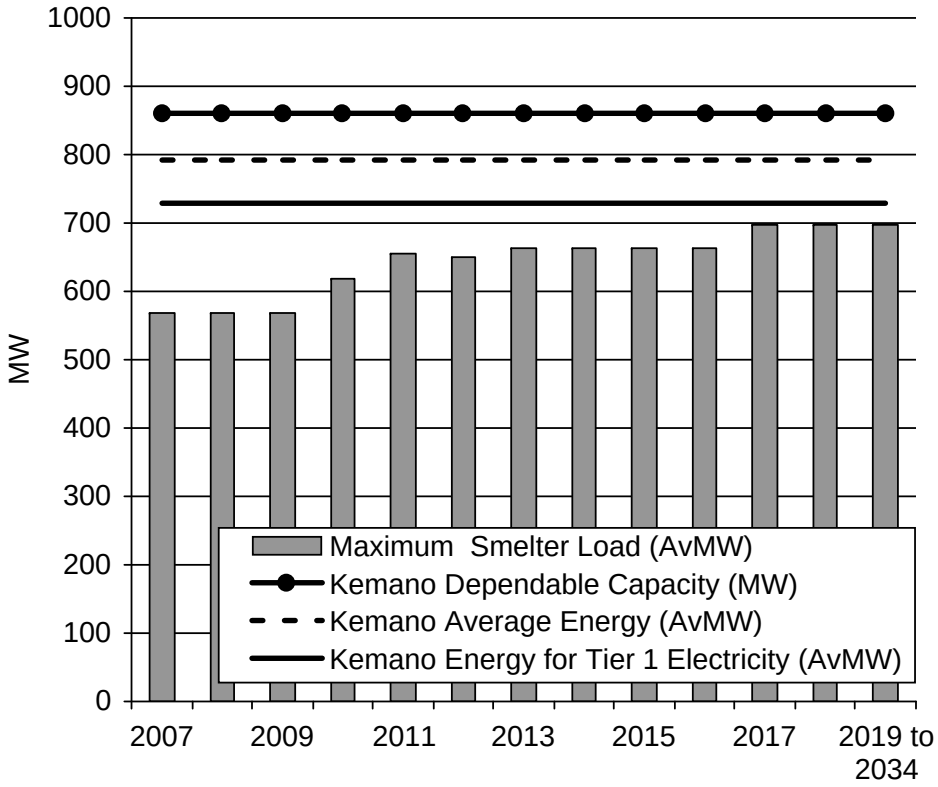
BC hydro

Kemano Capability Available to BC Hydro

- BC Hydro receives all available Kemano capacity and energy not used to serve the Kitimat Smelter Load
- Kemano capacity and energy capability confirmed
  - Identified capacity available from Kemano
  - Calculated annual expected energy production for complete water record
  - Determined increment in Firm Energy Capability provided to Heritage System
- Maximum Smelter Load is set for each year of the 2007 EPA term

Maximum Smelter Load

- 697 MW by 2017
- Increased from LTEPA+
- 99.5% of electricity sufficiently firm for Aluminum production
- No unilateral ability to modify Maximum Smelter Load



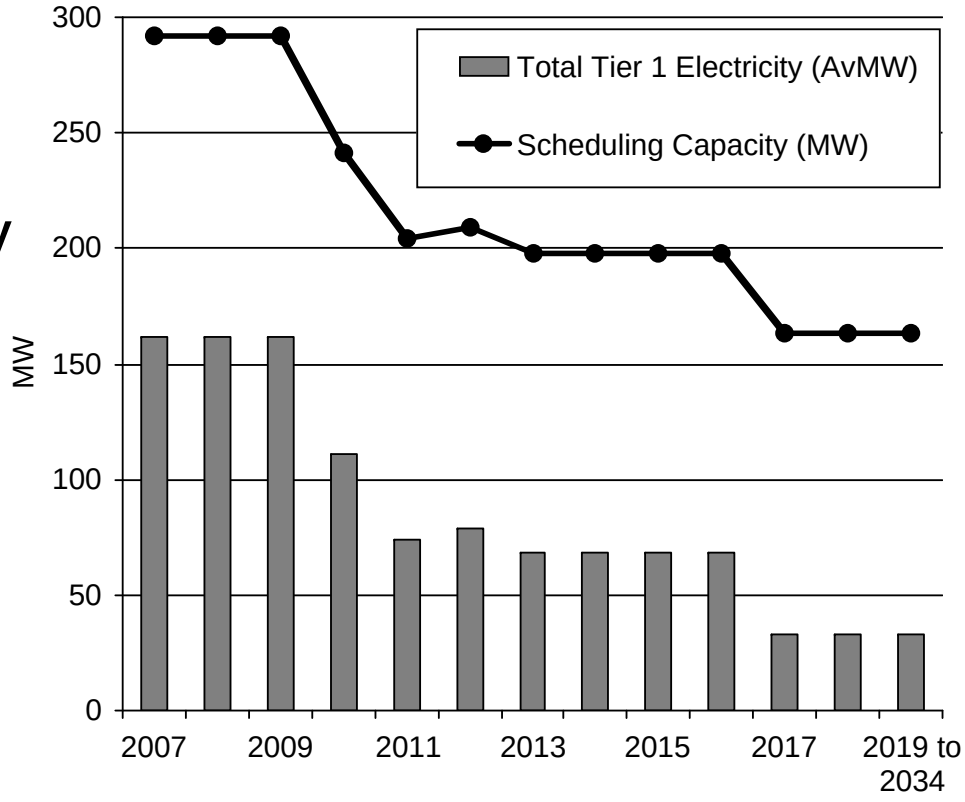
Capacity and Tier 1 Electricity

Tier 1 Electricity:

- Confirmed as firm energy
- Provides rights to schedule Tier 1 Electricity within Scheduling Capacity

Scheduling Capacity:

- Capacity associated with Tier 1 Electricity, plus
- Average of 127 MW of additional Capacity



Tier 2 Electricity

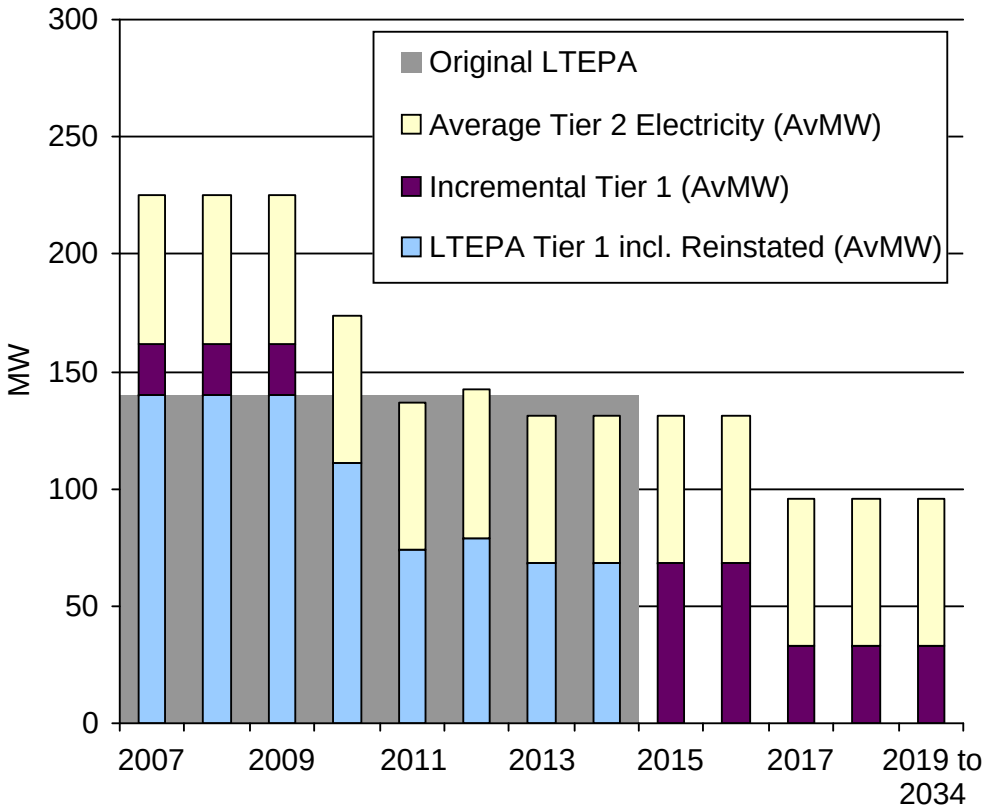
- BC Hydro acquires average of 63 AvMW of Tier 2 Electricity
  - annual volumes expected to range from 0-120 AvMW depending on water conditions
- High quality product
  - Reasonable predictability in short term
  - Some of the energy is firm
- Tier 2 Electricity Scheduled by Alcan
  - Price signal to encourage delivery in high value periods

Additional Services in 2007 EPA

- 2007 EPA provides
  - Scheduling services
  - Equichange Services
  - Coordination Services
- Services create the ability to extract additional value from Kemano as compared to previous agreements

Volumes within Original LTEPA

- Preponderance of LTEPA volumes sold at LTEPA prices
- Provides satisfactory resolution to recall issue



Electricity Pricing

	Plant Gate	Lower Mainland Equivalent
Incremental Tier 1 Electricity:		
◆ Near Term (2007-2009)	$ 54.0/MWh	$ 56.4/MWh
◆ Long Term (2015-2034)	$ 68.8/MWh	$ 76.9/MWh
Tier 2 Electricity:		
◆ Near Term (2007-2009)	$ 52.0/MWh	$ 55.4/MWh
◆ Long Term (2010-2034)	$ 54.0/MWh	$ 57.8/MWh
Capacity:		
◆ Near Term (2007-2012)	$ 58.9/kW-yr	$ 65.6/kW-yr
◆ Long Term (2013-2034)	$ 45.5/kW-yr	$ 70.7/kW-yr

Alcan in British Columbia

Paul Henning

BC hydro

Cost-Effectiveness of 2007 EPA

Mary Hemmingsen
Ken Spafford
Graeme Simpson

BC hydro

Economic Value of 2007 EPA

- Economic analysis shows 2007 EPA to be economic and resilient against a range of uncertainties

Electricity & Gas Price Scenario	Net Benefit of 2007 EPA (NPV 2006 $ millions)	
	5.25%	8.00%
Scenario Average	165.9	126.9
High Gas	319.8	233.8
EIA	108.3	87.8
Confer	37.4	37.9

Opportunity Cost

- Alcan has opportunities that appear to be similar to prices in 2007 EPA
  - BCTC report on transmission availability
  - Court decision on Alcan's right to sell electricity

Cost-Effectiveness Attributes

	Characteristic	2007 EPA	Columbia Capacity	Canadian Entitlement	Mid-C Market Forwards	Spot Market	SCGT	CCGT	2007 (Future) Call
1	Capacity	Dependable; on average, provides 150 MW additional capacity	Dependable	Dependable, firm by Treaty	Dependable, commercially firm	No	Dependable	Dependable	Mix of commercially firm, hourly or monthly and non-firm
2	Energy	Tier 1: defined amounts varying over Term; Tier 2: remaining electricity up to limit	Some expected energy gain from each resource	No, any energy priced separately	Firm (can be for flat, HLH or LLH delivery)	Non-firm	Firm, as required	Firm	Firm and non-firm
3	Capacity Price net of System Benefits	NT: $1.7/kW-yr LT: $40.8 /kW-yr	$23.3- $52.5/kW-yr	Market value, current estimate $10/kW-yr	N/A	N/A	$105 to $110/kW-yr	N/A	N/A
4	Energy Price	NT Tier 1: $56.4/MWh LT Tier 1: $76.9/MWh Tier 2: $55 to $57/MWh	N/A	N/A	$69.9/MWh	NT: $56.6/MWh LT: $69.0/MWh	N/A	$95.9/MWh; will vary with gas price	Average of $85.7/MWh based on F2006 Call
5	Price Certainty	All products and services at pre-defined fixed prices	Investigation level costs and system benefits that are subject to change	Variable prices, floating with market	Some uncertainty until contracted, fixed once contracted	Variable prices, floating with market	Investigation level costs and system benefits that are subject to market conditions	Investigation level costs that are subject to market conditions	Uncertain reproducibility in future cals, subject to market conditions
6	Schedule and Timing Availability	Available immediately, no development risk	Earliest availability is October 2013; subject to planning; regulatory and development risks	Available immediately	Available immediately through 2011	Available immediately	Earliest availability F2012; subject to planning, regulatory, financing and development risks	Earliest availability F2013; subject to planning, regulatory, financing and development risks	In-service F2012-F2015; subject to planning, regulatory, financing and development risks
7	Term	27¼ years, 2007 through 2034	50 year expected life	Committed on monthly or annual basis	One to five years, less liquidity in later years	1 hour	20 to 25 years	20 to 25 years	20 to 40 years, averaging 30 years
8	Reliability	Very high; reliable interconnection and facility	Very high; reliable interconnection and facility	Subject to transmission reliability	Subject to transmission reliability and availability	Subject to transmission reliability and availability	High (lower than hydroelectric facilities), subject to outages	High (lower than hydroelectric facilities), subject to outages	Uncertain, subject to attrition, machine availability and economics
9	Operational Availability	Tier 1 Electricity available 95% of time	Very high, direct control by BC Hydro	Available	Financial product; physical delivery subject to some availability risk	Subject to availability of electricity in market	Likely high, would be dependent on commercial terms with IPP	Likely high, would be dependent on commercial terms with IPP	Moderate to high, dependant on commercial terms of the EPAs
10	Shaping / Scheduling / Coordination	Full scheduling rights of Tier 1; indirect control of Tier 2; other flexibility options	Energy gain, daily, seasonal and annual shaping benefits	No	No	Purchases can be shaped as required and available	Yes, a key right that BC Hydro would need to acquire for SCGT to have value	Would depend on contract arrangements, and would come at an additional cost	None or limited indirect control of non-firm through price signal
11	Dispatchability	Yes for Tier 1	Yes	No	No	Yes, if and as available	Yes, would be a key right	Limited, subject to design	No
12	Safety	No materially distinguishing features between resources							
13	Financing Arrangements	No new financing required by supplier or BC Hydro	Would be financed by BC Hydro as an owned asset	No material financial commitments	Minimal, credit provisions depending on the commitment	Cash flow item, no financial commitments required by BC Hydro	Financed by an IPP with associated risks	Financed by an IPP with associated risks	Financed by an IPP with associated risks
14	Location	In B.C.; local support to NW region	In B.C.	External to B.C.	External to B.C.	External to B.C.	In B.C.; local support to Lower Mainland	In B.C.	In B.C.
15	Environmental Impacts	All environmental permits exist, no incremental impact	Low; within an existing facility and installed in a pre-existing unit bay	Unknowable, sources of supply are external to B.C.	Unknowable, financial products with supply at sellers discretion	Unknowable, sources of supply are external to B.C.	GHG emissions; relatively low local emissions for a thermal project due to low operating hours	GHG emissions; relatively low local emissions for a thermal project due to efficiency	Mix of resource types and environmental impacts
16	Alignment with Energy Plan 2007	Renewable resource located in B.C.; provides additional flexibility to shape intermittent renewable resources	Renewable resource located in B.C.; provides additional flexibility to shape intermittent renewable resources	Useful as a contingency resource; market purchases from outside B.C. do not align with self-sufficiency	Useful as a contingency resource; market purchases from outside B.C. do not align with self-sufficiency	Useful as a contingency resource; market purchases from outside B.C. do not align with self-sufficiency	B.C. based, but negatively impacted by GHG and 90% clean/renewable	B.C. based, but negatively impacted by GHG and 90% clean/renewable	Clean/renewable sources are aligned; Gas or coal-fired resources must comply with GHG requirements

Comparison to LTEPA+ Issues

LTEPA+ Issues		2007 EPA Context
◆ Tri-party Agreement	⇒	Bilateral commercial agreement
◆ RESA	⇒	RESA has extinguished
◆ Links to Modernization	⇒	No incentive links to Modernization size or schedule
◆ Electricity diverted from aluminum production	⇒	697 MW of 700 MW of available firm supply dedicated to aluminum by 2017
◆ BC Hydro Reliability Need	⇒	Reliability need starting in F2011
◆ Kemano Supply Reliability	⇒	Reliability of Kemano supply confirmed
◆ Reinstatement Fee	⇒	No reinstatement fee
◆ 2006 LTEPA Recall	⇒	Resolved at no cost
◆ New recall provisions	⇒	No unilateral volume or term modifications
◆ Comparison to alternatives	⇒	2007 EPA tested against wide range of alternative resources
◆ Alcan opportunity cost	⇒	BC Hydro assessment of Alcan opportunity cost presented