The Impact of LNG Growth on BC Hydro Customers

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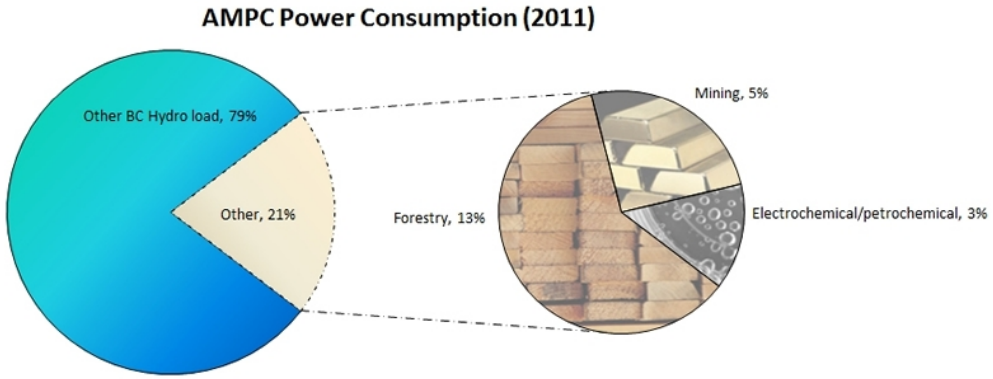
8th BC Power Summit
March 5, 2013

Association of Major Power Customers of BC

Association of Major Power Customers of BC (AMPC)

- Forestry, pulp and paper, electro-chemicals, and mining sectors in BC



- Electricity policy, regulatory and tariff issues

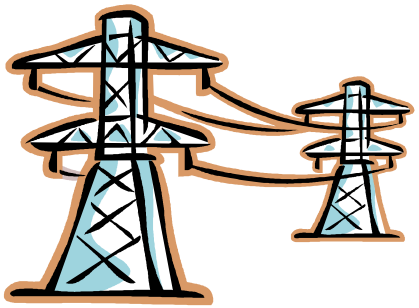
Challenges for BC Hydro

- What do customers want?
- How do we address the impact of new customers?
- How do we protect the interests of existing customers?
- How does BC Hydro implement planning and balance?

Needs of New and Existing Customers are Exactly the Same

- Every existing customer was once a new customer
- Today's new customers are tomorrow's existing customers
- The electric system is common and indivisible
- No customer can expect to benefit from the zero-sum process of cost allocation

New and Existing Customers Want



- Access to the electricity grid
- Reliable 24-hour electric service
- Predictable and stable electric rates
- Predictable and stable upfront “contributions”
- Internationally competitive prices (rates)
- Fair and consistent treatment
- Flexible customer service
- A utility focused on electric service

Accessibility

- Grid connected capacity to meet the demands of existing, growing and new customers
- Clear process for system upgrades
- Timely system impact studies
- Open tariff provisions that fairly and transparently share the costs of system expansions

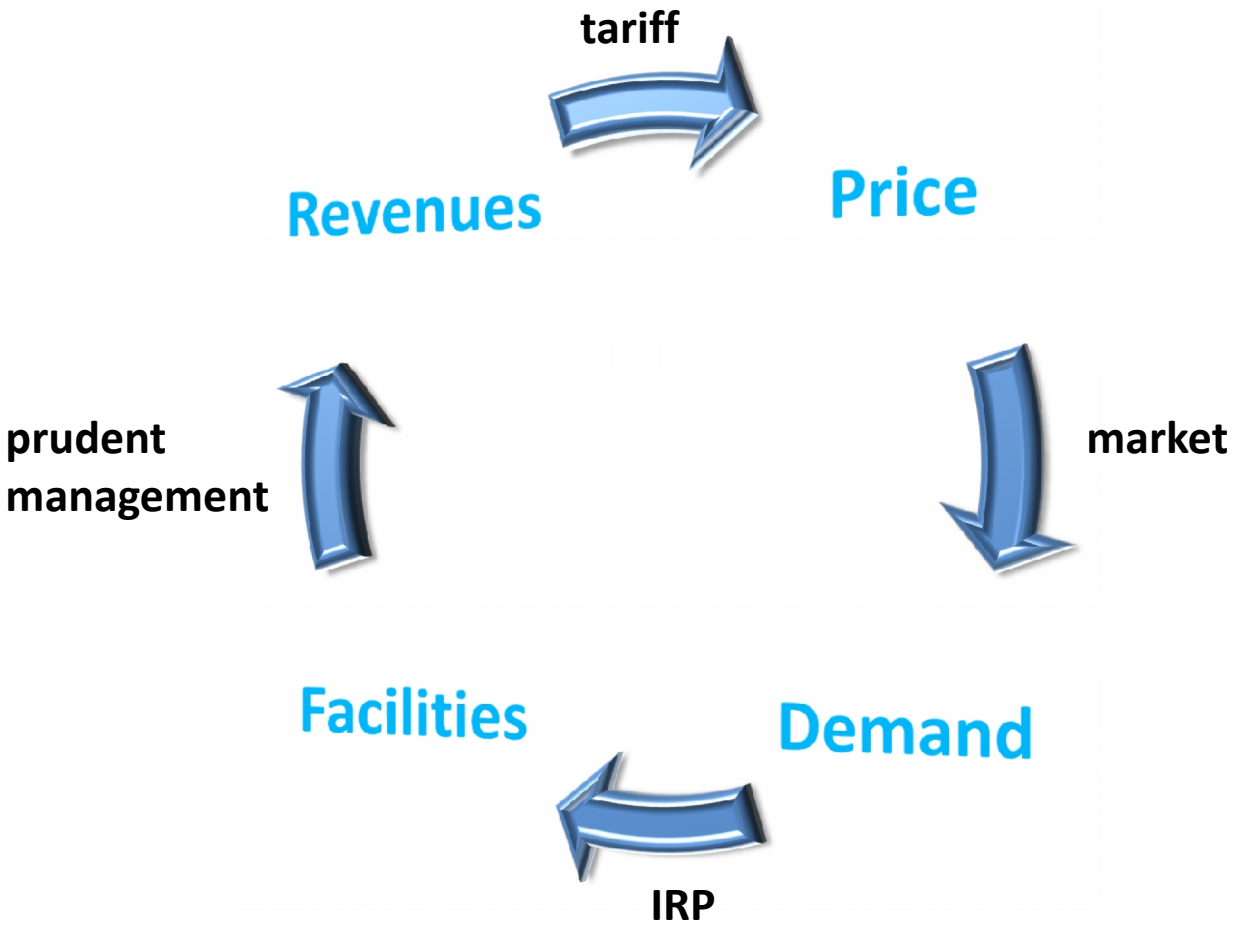
Reliable Electric Service

- Few interruptions and fast restoration to minimize production losses
- Good quality (no harmonics, sags, surges etc.)
- Capable of starting direct large motors
- Realistic treatment of intermittent resources
- Strong local grid or local firm generation

Predictability of Tariff

- Predictable and stable rates and contribution levels are essential to business planning and economic development.
- Contributions and rates become highly uncertain when subject to individual negotiation, policy flux and ad-hoc intrusions to the planning and pricing cycle.

Utility Planning Cycle



Competitive Pricing

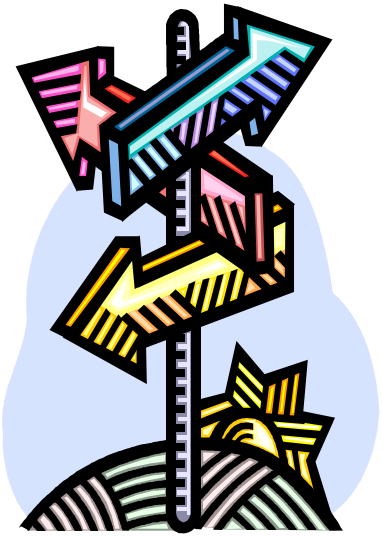
- BC industries are trade exposed and highly dependent on competitively priced electricity
- Competitors in U.S., China etc. are turning to natural gas as clean, reliable, flexible sources ($50 - $80 per MWh). This is less than half the full cost of intermittent renewables.
- BC is rapidly losing its historical cost advantage in Canada and worldwide, with 10% or more annual compound rate escalation

Fairness

- No price or service discrimination between competitors in the same or different industries
- Eliminate “end-use” rates (and its most recent incarnation “electrification”) based on each customer’s process
- Discriminate only on the basis of electrical characteristics and costs

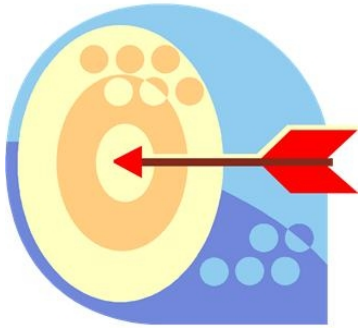
Flexibility

- Price/planning able to accommodate changes to economy, markets, technology and customer preferences without major modifications
- Open tariff with service options such as:
  - Renewable supply at a premium
  - Interruptible service at a discount
  - Self-supply wheeling
  - Surplus energy at a discount
  - Access to electric energy markets



Simple and Clear Utility Goals

- “Safe, reliable electric service at the lowest achievable cost ”
- Remove policy and social goals beyond basic electric service and replace with shareholder incentives for cost effectiveness
- Develop clear, simple and stable tariffs with less administrative burden



LNG Challenges & Opportunities

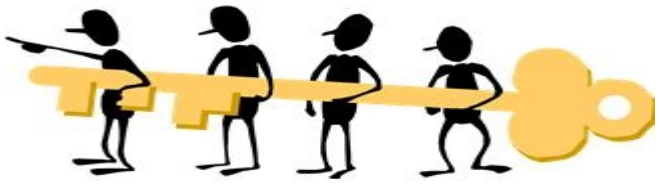
- Incremental cost of new generation & transmission is greater than the cost of existing facilities
- Plan must incorporate:
  - Uncertainty of new loads to be served
  - Realistic costs include transmission and risks
  - New customers bring new revenues
  - Minimize net impact on rates

Concerns for LNG and Existing BC Hydro Customers

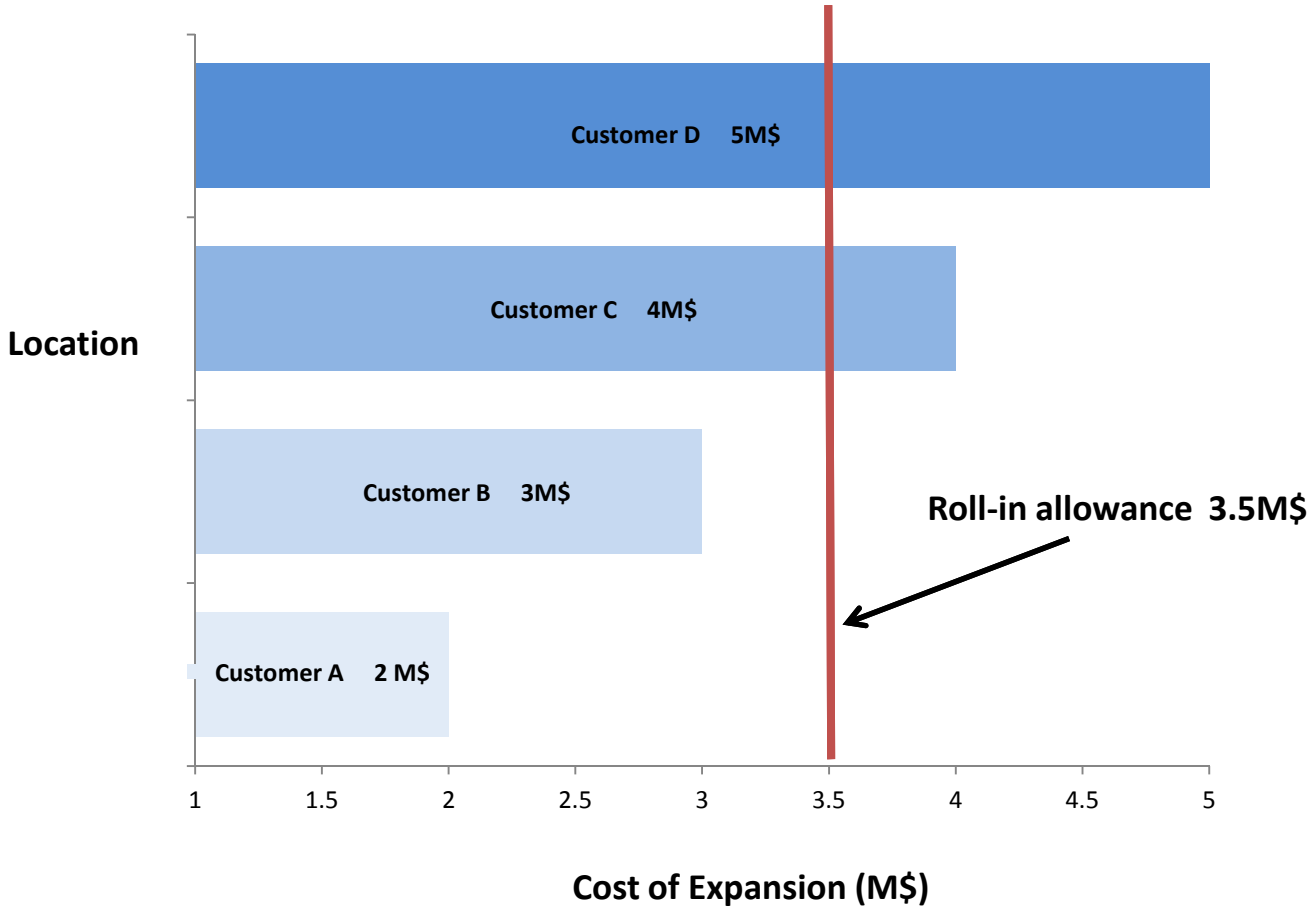
- Expensive power supply due to BC Clean Energy Act
  - Expensive and intermittent IPPs
  - Site C costs and timing
  - Integrating transmission, etc.
- BC Hydro Tariff Supplement #6
  - Outmoded contribution policy
  - Discourages efficient economic development

How to Resolve?

- Accommodating high growth in demand is not a new problem and has been solved elsewhere
  - For instance, Alberta's growth from oil "booms"
  - The solution to finding the desired balance lies in having a well designed contribution policy



Contribution Policy Example



Mechanics of Contribution Policy

- Determine incremental cost of transmission to serve new loads
- Include incremental cost of generation only if it can substitute for transmission expansion
- Determine a simple “roll-in” ratio between new and existing customers
- Calibrate the roll-in ratio to produce reasonable contributions without upward pressure on rates

LNG in BC

- The only timely and economic power supply option that can match load growth is local gas-fired generation. This also avoids the cost of building major transmission.
- Calibrate “roll-in” ratio such that LNG customers prefer local generation vs. direct-drive alternative
- Lower costs to serve LNG load plus rate revenue and contributions from LNG keeps overall rates lower

How Not to do This?

- Negotiate a “special power deal” with LNG
  - Pit LNG customers against each other and existing customers in an uncertainty provoking scramble
  - Create an opportunity for new customers to avoid fair cost allocations and escape BC Hydro’s growing liabilities
- Negotiate with LNG in isolation, without the involvement of:
  - Existing (and growing) BC Hydro customers
  - Regulatory oversight to ensure principles of efficient, fair and stable rate design and cost allocations are met

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Background Material

- BC Hydro
  - History, Mid-Life Crisis and Today
- Role of Government
- Role of Utility
- Role of Customers

Early BC Hydro

- Columbia River Treaty (CRT), agreement on flood control in Washington and Oregon provided U.S. financing for BC dams and incidental benefit of a large surplus of low cost renewable electric energy.
- Surplus of cheap energy provided decades of low cost electricity and development regardless of how BC Hydro was organized, managed or regulated.

BC Hydro's Mid-Life Crisis

- Low heritage costs allowed social objectives to be added with loss of focus on core business
- Led to confusion of the role of government, utility and market or regulator
- Focus lost. Culture became one of "gold standard" with constantly growing dividends
- Integrated price-planning cycle replaced by discrete micro-management with unintended consequences

BC Hydro Today

- Infrastructure in need of expensive repairs
- Tariff comprising outdated “supplements” with no comprehensive review for decades
- A loss of direction with no incentives for least cost planning (no fear of disallowance)
- $5 Billion in deferral accounts. High shareholder returns with no risk.
- Stalled plans on how to meet uncertain future

Role of Government

- Determines overarching policy such as:
  - International treaties (e.g. CRT), eligibility of electric sources (e.g. nuclear and coal), structure of the electricity market or monopoly, extent of public/private ownership and rules to encourage efficient and orderly development, form of regulation of electric monopolies etc.
  - General environmental standards that are applicable to all industries

Role of Utility

- Subject to customer input and regulatory approval (or market discipline where feasible) the utility determines:
  - Planning standards (including economic hurdles for DSM); need and timing for specific facility additions (e.g. IPP calls, transmission, local generation); technology choices (e.g. Site C, smart grid elements); revenue targets, all tariff structures and associated business practices and interpretations (e.g. contribution policy)

Role of Customer

- Subject to market alternatives and applicable environmental standards, the customer determines:
  - The manner in which electricity is consumed or conserved or displaces other fuels on premises, and all environmental and social consequences such as GHG emissions.