# The Evolution of British Columbia's Industrial Electricity Policy

## Introduction

The purpose of this paper is to provide an overview of the Province's industrial electricity policy since the creation of the British Columbia Hydro and Power Authority (BC Hydro). It is intended to provide readers with a snapshot of the Province's decisions and electricity policies based on prevailing circumstances at the time. The paper is meant to show the changes to electricity policies and circumstances where the Province has come from in order to inform the discussion about where it should go to next.

The paper has six sections. Sections one through five present decade-by-decade overviews and summaries of provincial industrial electricity policy decisions running from the 1960s to the 2000s. Section six identifies current issues and trends and looks forward to how policy may need to evolve to meet a new set of circumstances.

## Section One: 1960s - The Two Rivers Policy, Creation of BC Hydro and Industrial Development

### Context

The economy was driven by historical resource industries such as forestry, mining, fishing and agriculture. The power system was designed to support this relatively small domestic resource economy. The Province was led by the Honourable W.A.C. Bennett, who wanted to transform B.C. in to a modern, industrialized society.

BC Hydro sold 1,409 gigawatt hours (GWh) to industrial customers when it was first created in 1962. This increased 223 per cent to 4,545 GWh by 1969. BC Hydro used a blended rate that combined energy and demand charges at the time. For a typical industrial customer[1], the demand related component of the rate was about $1.90/kilovolt ampere (KVa) while the energy component was about $2.80/megawatt hour (MWh).

### Government Objectives

Economic development was government's primary policy objective during this time. Premier Bennett believed that reliable and inexpensive electricity would spur the development of B.C.'s abundant natural resources. There was limited consideration of environmental or social impacts at this time.

[1] Assumes an 80% load factor

The Two Rivers Policy was the centrepiece of Premier Bennett's electricity strategy. Government policy called for large hydroelectric development on both the Peace and Columbia River systems. This would create a surplus of electricity that would power industrial growth across the province as well as serve growing demand in the lower mainland. The Province determined that British Columbia Electric (BCE), an investor-owned utility and the British Columbia Power Commission (BCPC), a public-owned utility, were not structured to deliver the Two Rivers Policy. Consequently, the provincial government decided to intervene directly in the provincial electricity sector.

## Key Government Policy and/or Legislative Actions

1. Creation of British Columbia Hydro and Power Authority

The Province expropriated BCE in 1961 and merged it with the BCPC in 1962 to create the British Columbia Hydro and Power Authority (BC Hydro). The assets of both organizations were merged in to a single, publicly-owned power system. Government became BC Hydro's sole shareholder which provided sufficient influence to implement the Two Rivers Policy.

2. Negotiating the Canada-British Columbia Agreement and Pre-Sale of Canadian Entitlement under Columbia River Treaty

The Province required capital to implement the Two Rivers Policy. The Columbia River Treaty (Treaty) provided Canada with an up front flood control payment ($64 million (M)) as well as half of the incremental generation potential at facilities in the United States (US). Premier Bennett negotiated an agreement with Canada for BC to retain most of the rights and obligations of the Treaty. Further, he used his influence to sell the first 30 years of the Canadian Entitlement to US utilities for a lump sum payment of $274.8M (Canadian) to offset the capital cost of dam construction.

3. Directing BC Hydro to Undertake Aggressive Construction Program

The Province directed BC Hydro to construct the W.A.C. Bennett Dam and G.M Shrum Generating Station, thereby creating the Williston Reservoir on the Peace River. The Province also tasked BC Hydro with constructing the three dams required under the Treaty. The facilities on the Peace first entered service in 1968 (although all of the generators would not be in place until the early 1970s). The Duncan and Arrow Dams entered service in 1968 and 1969, respectively.

# Section Two: 1970s - Economic Growth, Increased Demand and System Expansion

## Context

The 1970s saw unprecedented growth in BC's economy. The estimated provincial Gross Domestic Product increased 233 per cent from $8.762 billion (B) in 1970 to an estimated $29.32B in 1979. The Province continued to view BC Hydro as a growth facilitator despite the fact there were two changes in Government during the decade. Annual electricity sales volumes and hourly peak demand increased in eight of ten years and expenditures on new facilities increased every year. Inflation placed upward pressure on BC Hydro's capital program which led to rate increases in the middle and latter parts of the decade.

BC Hydro sold 5,062 GWh to industrial customers in 1970. This increased 80 per cent to 9,133 GWh in 1979. BC Hydro's demand charge for industrial customer's in 1970 was $2/KVa and its energy charge was $3.00/MWh. The demand charge increased 105 per cent to $4.10/KVa and the energy charge increased 100% to $6.00/MWh by 1979.

## Government Objectives

Both governments in the 1970s maintained a pro-growth agenda. Both parties viewed BC Hydro as an important instrument in fulfilling government's economic development goals. This drove BC Hydro's expansion agenda. The emerging environmental movement was putting pressure on Government to ensure BC Hydro took non-economic factors in to account when developing projects. This was the first step towards stakeholder consultations that are now a staple of public policy and project development.

**Government Policy and Legislative Actions**

1. Decision to Construct of Revelstoke Dam

Government directed BC Hydro to construct the Revelstoke Dam in order to take advantage of water regulation provided by the Mica Dam upstream and the storage in the Kinbasket Reservoir. The decision to build in advance of need was taken in the belief that demand would continue to grow over time. All of Revelstoke's output was surplus when it came in to service in 1985.

2. Government Subsidies to BC Hydro

The Province provided a "Special Subsidy" to BC Hydro of $32.6M in each of 1975 and 1976. Government provided the subsidy mainly to offset losses from BC Hydro's passenger transportation operations, but also because inflation was increasing borrowing costs.

Government provided the subsidy so that BC Hydro could maintain its credit rating and continue to obtain market financing for its projects.

## Section Three: 1980s - Rise of Conservation, Creation of the British Columbia Utilities Commission and Energy Surplus

### Context

The international oil crisis and associated recession reduced demand and created an energy surplus. The surplus was exacerbated when the Revelstoke Dam entered service in 1985. Inflation was rampant and interest rates greatly increased the cost of borrowing to fund large capital projects, placing upward pressure on rates. The 1980s represented a turning point in provincial energy policy as government started moving away from direct market intervention.

BC Hydro sold 9,217 GWh of energy to industrial customers in 1980. This increased 33% to 12,338 GWh in 1989. It is worth noting that overall industrial demand continued to increase despite the difficult economic conditions at the time. BC Hydro's demand charge for industrial customer's in 1980 was $4.60/KVa and its energy charge was $8.00/MWh. The demand charge decreased 12 per cent to $4.04/KVa and the energy charge increased almost 200 per cent to $23.10/MWh by 1989.

### Government Objectives

The Province recognized that future development of new resources would occur in more remote areas. Further, the burgeoning environmental movement in conjunction with a growing desire for citizens to be consulted on public policy decisions limited government's ability to pursue economic objectives without due consideration of other impacts. This began to change the tone of public policy dialogue.

BC Hydro's spending decisions and rates were approved by government until the late 1970s. The corporation became an increasingly complex organization during that time. Government determined that it would be in the best interests of ratepayers if BC Hydro was put under the oversight of an arm's length regulator.

The Government's 1980 Energy Plan, *An Energy Secure British Columbia: the Challenge and the Opportunity*, stressed conservation of oil. The conservation ethic spread from oil to electricity. BC Hydro introduced the first industrial and commercial energy efficiency programs in the early 1980s to evaluate energy use and provide suggestions on reducing consumption. This was a departure from previous policy which focused almost entirely on building out BC Hydro's generation and transmission resources.

## Key Government Policy and Legislative Actions

1. 1980 Energy Plan

The 1980 Energy Plan was designed to move the B.C. economy off of its reliance on imported oil. The goal was to reduce oil's share of BC's total energy consumption from 45 per cent to 40 per cent by 1985. The shortfall would be met through a combination of natural gas, coal, biomass and electricity.

2. Creation of the BC Utilities Commission (BCUC)

The Province passed the *Utilities Commission Act* in 1980, expanding the powers of the former BC Energy Commission to regulate BC Hydro's electricity and gas rates and establishing a joint British Columbia Utilities Commission (BCUC)-provincial government Energy Project Review Process.

3. Rate Restraint Act (1982)

BC Hydro requested 30 per cent rate increases as part of its Revenue Requirement to offset construction and financing costs for the Peace and Columbia projects. Government passed legislation setting rate increases at 6 per cent. BC Hydro deferred projects and sold off its rail and gas divisions by the end of the decade.

4. Discounted Power for Economic Development

All energy from Revelstoke was surplus to BC Hydro's needs when it entered service. Under the *Industrial Electricity Rate Discount Act*, BC Hydro offered discounts to industrial customers purchasing additional electricity in order to pursue incremental economic development opportunities. Export market access was limited and prices were relatively low, so BC Hydro ratepayers benefitted from additional domestic electricity sales.

5. Water Rentals

In the early 1980s water rentals were one of the drivers of rate increases. In 1981 and 1982, the BCUC approved rate increases for residential, general and bulk customers to pass on water rental fees government introduced for using water for hydroelectric production. BC Hydro's Rate Schedule 1899 took effect in early 1982 to recover the cost of water rentals from bulk customers. The rate was approximately $3.20, which was in addition to the $15.40/MWh cost under Rate Schedule 1821. As a per MWh charge, the associated rate increase hit industrial customers disproportionately.

# Section Four: 1990s - Reduced Industrial Demand, Job Retention and No Change to Market Structure

## Context

Electricity policy in the 1990s focused on market design. Developed countries explored deregulating electricity markets and started to move away from vertically integrated utilities. In Canada, both Alberta and Ontario deregulated their respective electricity sectors in to generation, transmission and distribution utilities. The US Federal Energy Regulatory Commission ordered utilities to create open access transmission tariffs to mitigate rate increases through improved trade. Improved market access to the US provided new opportunities for BC Hydro to generate value for its ratepayers. The Commission signalled its desire to have electricity prices reflect market prices and/or BC Hydro's acquisition cost to send better price signals to consumers to conserve energy.

BC Hydro sold 13,375 GWh of energy to industrial customers in 1990. This increased 11 per cent to 14,894 GWh in 1999. Year-over-year industrial demand slowed compared to the growth seen in the 1960s, 1970s and 1980s. However, the fact there was any demand growth at all was notable given the weak economy in the early part of the decade. BC Hydro's demand charge for industrial customer's in 1990 was $4.10/KVa and its energy charge was $23.41/MWh. The demand charge increased 8 per cent to $4.41/KVa and the energy charge increased 11 per cent to $25.99 by 1999.

Industrial customers expressed interested in taking advantage of open access transmission tariffs to procure inexpensive market energy that was available in the mid-1990s. Spot market electricity prices rose dramatically at the end of the 1990s due to deregulation in California, with the result that industrial customers chose to continue to procure power from BC Hydro. BC Hydro's Tariff Supplement 6, which came into effect in 1991 following BCUC approval, contains additional terms and conditions for new transmission service. In the late 1980s, government had directed BC Hydro to develop a new approach to addressing costs triggered by new transmission customer based on sharing these costs between ratepayers and new customers. Previously, new customers were responsible for all connection costs.

## Government Objectives

Government's main focus was industry retention as the natural resource industries suffered through an economic downturn. Government took a particular interest in rates during the decade as a means to keep costs down for all ratepayers. This interventionist position was in contrast to other jurisdictions (Alberta, California, Ontario) that de-regulated their retail power markets during that time.

The Commission determined that BC Hydro would no longer be in a surplus position. It directed BC Hydro to expand its conservation programming and assume up to 2500 GW.h per year of

imports for resource planning purposes, as alternatives to building its own plants. Government encouraged this policy as a means to further mitigate rate increases.

## Government Policy and Legislative Actions

1. Government Did Not Deregulate Electricity Market

The Province determined that it was not in the public interest to de-regulate the electricity market after watching similar actions in other jurisdictions. BC Hydro remained a regulated, publicly-owned, vertically integrated utility.

2. Rate Freezes

During the 1990s, new and amended directions, Ministers' exemption orders, and legislation limited BCUC jurisdiction to regulate BC Hydro. Rates were capped in 1996 by the *Tax and Consumer Rate Freeze A*ct. After customer groups asked BC Hydro to apply for rate reductions, rates were frozen in 1998 by the *BC Hydro and Power Authority Rate Freeze and Profit Sharing Act*. BC Hydro deferred capital spending and resource acquisition during this time.

3. Power for Jobs

Government passed the *Power for Jobs Development Act*. This enabled government to notionally allocate a portion of the energy and capacity from the Canadian Entitlement under the Columbia River Treaty to support economic development and job retention. Government negotiated energy supply agreements directly with industrial and commercial customers that planned to invest, expand operations, or retain jobs in B.C.

# Section Five: 2000s - Energy Plans, Climate Action, Clean Energy Act and the Economic Downturn

## Context

The collapse of the dot-com bubble brought about another recession in the US. Canada's economy remained relatively strong despite reduced US demand from 2001-2003. Job creation remained steady and Canada did not experience negative growth. The B.C. economy grew in the early and middle part of the decade. High natural gas prices drove economic development in the northeast and bolstered Government natural resource revenues. US implementation of open access policies continued to progress, and the amount of trade with the US and other Canadian provinces increased from the prior decade. The province's strong economic growth resulted in net purchases of electricity rather than net sales of electricity, as in previous decades.

With robust economic growth, government increased its focus on the social and environmental impacts of economic development, particularly greenhouse gas (GHG) emissions that contribute to climate change. Stronger energy efficiency and conservation measures were also supported by government.

BC Hydro sold 14,697 GWh to industrial customers in 2000. Industrial electricity demand increased 11 per cent to a high of 16,374 GWh in 2006 before dropping to a low of 13,019 GWh in 2010 as the impacts of the global economic downturn were felt in B.C. Industrial sales increased 4 per cent from the low point to a total of 13,521 GWh in 2012.

BC Hydro's demand and energy charges for industrial customers remained generally unchanged from 1993 to 2003, as the new government extended the rate freeze by two years to allow for the completion of the 2002 Energy Plan and the implementation of the *BC Hydro Public Power Legacy and Heritage Contract Act* of 2003. There were short term adjustments to demand and energy charges between 2004 and 2006 as the current Transmission Service Rate program was developed. BC Hydro's demand charge was $4.65/KVa and its energy charge was $27.25/MWh in 2006. The demand charge increased 35 per cent to $6.26/KVa and the energy charge increased 35 per cent to $36.71/MWh by April 2012.

## Government Objectives

Government placed a strong emphasis on sustainable development across the spectrum of natural resource industries.

Economic policy in the early part of the decade focused on reducing government intervention in the economy. This was done largely by reducing the regulatory and tax burden on business and adopting a strict no subsidy policy. Government's economic development objectives included growing the emerging natural gas and service sectors while retaining existing industry to the greatest possible extent.

This approach changed in the latter part of the decade when the Province implemented is Climate Action Plan. The Climate Action plan introduced new statutory and regulatory requirements and a Carbon Tax designed to reduce BC's greenhouse gas emissions, amongst other initiatives.

Provincial decisions were increasingly influenced by a combination of economic, environmental and social policy considerations as well as public input. The goal was to strike the "right balance" between competing objectives rather than choose one at the expense of the other two. The introduction of the Climate Action Plan created policy tensions and the need to make trade offs between different government objectives.

## Key Government Policy and Legislative Actions

1. 2002 Energy Plan Impacts on Provincial Electricity Policy

The 2002 Energy Plan set the tone for the Province's electricity policy. Government enacted the *BC Hydro Public Power Legacy and Heritage Contract Act* to ensure BC Hydro remained publicly-owned and that BC Hydro ratepayers received the benefit of embedded cost resources. Government strengthened the powers of the Commission, committed to return BC Hydro to regulatory oversight for rates and expenditures, and tasked the Commission to ensure distributors acquired resources on a least-cost basis. Government indicated that the private sector would build new generation and BC Hydro would have a role in large hydroelectric projects in addition to maintaining and/or upgrading its existing facilities. There was also a strong focus on energy efficiency and conservation with a commitment for BC Hydro to set conservation rates for customer classes.

The 2002 Energy Plan set the context for the BCUC-led 2003 Heritage Contract Inquiry that made recommendations on two key issues: a Heritage Contract to secure for British Columbians those benefits attributed to BC Hydro's low-cost generation system, and a more efficient use of energy resources and private investment in new generation that can be fostered by a stepped rate structure. The Inquiry Report resulted in BCUC recommendations on transmission service rates and retail access for industrial consumers (i.e., industry's access to third party supply). The transmission service rate changes, which included a stepped rate approach for industrial consumers along with a time-of-use rate option, were driven by conservation objectives, whereas retail access recommendations were intended to give customers choice while promoting domestic independent power producers. The BCUC approved BC Hydro's application in 2005, and these were implemented by 2006.

2. 2007 Energy Plan and 2008 Climate Action Plan Impacts on Provincial Electricity Policy

The 2007 Energy Plan solidified the policy direction set out in 2002 with some notable additions. The Plan introduced a 90 per cent clean generation target for BC Hydro and required the corporation to meet 50 per cent of its incremental resource needs through conservation by 2020. BC Hydro was to accomplish these goals while maintaining B.C.'s competitive rate advantage. Government passed the *Greenhouse Gas Reductions Target Act* that set legislated targets for B.C. to reduce its carbon emissions over time. The 2007 Energy plan supported government's emission reduction targets by requiring fossil-based electric generation to have net zero greenhouse gas emissions.

3. 2010 *Clean Energy Act*

The *Clean Energy Act* included 16 Provincial energy objectives that included most of the Government's policy commitments from the 2002 and 2007 Energy Plans with a few notable alterations. The CE Act increased BC Hydro's clean and renewable generation requirement from 90 per cent to 93 per cent and its conservation target from 50 per cent to 66 per cent.

There were also explicit objectives directing BC Hydro to encourage economic development and support First Nations and rural communities through clean and renewable energy development. The Act also removed a number of BC Hydro project and procurement processes from requirements for prior BCUC approval.

# Section Six: Emerging Issues and Trends

## Context

There are several drivers that are likely to shape industrial electricity policy decision-making over the next decade.

1. Capital Reinvestment

BC Hydro, is undertaking significant capital investment in generation, transmission and distribution facilities. Capital spending has been deferred at different points starting in the 1980s in favour of rate mitigation, but it cannot be put off indefinitely. This will place upward pressure on rates for all ratepayers, including industrial customers, which has implications for government's economic development objectives.

2. Imminent Energy Surplus

Incremental clean energy acquisition combined with slower domestic growth and declining US demand point to BC Hydro entering a short to medium term period of energy surplus, depending on the pace of electricity demand growth. The size and duration of the surplus will depend on population and economic activity, particularly industrial growth. It will also be affected by the energy choices the industrial customers make in the short and medium terms. A surplus energy position has a material impact on what policy flexibility the government has going forward.

3. Low Natural Gas Prices and Weak Electricity Markets

The slow pace of economic recovery in the US, particularly in the western US, has reduced electricity demand. It is possible that the current level of economic activity may represent a new normal. This is exacerbated by low natural gas prices and an abundance of subsidized US renewable generation. The net effect is that market prices are expected to be depressed compared to historic averages for the foreseeable future. This adversely affects B.C.'s ability to sell its energy and capacity resources in to the market.

4. Medium Term Prospects for Industrial Growth

There is reason for cautious optimism in B.C. despite the sluggishness of the global economy. Mineral exploration is on an upswing and commodity prices are strong. The emerging liquefied natural gas industry will drive upstream gas development that will likely require electricity. The global forest industry remains highly competitive marketplace, but B.C.'s industry has posted solid performance recently. The possibility for industrial expansion in the medium term makes the next decade different than the surplus period in the 1980s.

## Rationale for Industrial Electricity Policy Review

Electricity policy and industrial development in B.C. have been and remain inextricably linked. Access to affordable and reliable electricity has been a cornerstone of the Province's industrial development since BC Hydro was formed and B.C.'s modern hydroelectric infrastructure was developed. The Province requires a clear, balanced and flexible industrial electricity policy framework as part of its toolkit to retain existing industry and encourage new industry to locate in B.C.

The succession of energy policies represented government's best efforts to address issues of the day and set a forward-looking vision. Economic development drove energy policy decisions in the 1960s and most of 1970s. Social and environmental considerations and reduced government intervention were placed on more even footing with economic development in the late 1970s and 1980s. Economic development considerations once again came to the fore in the 1990s during an economic downturn. Social and environmental considerations arguably overshadowed economic development in the early and middle part of the 2000s before giving way to economic development considerations later in the decade.

Government policy decisions are, and will continue to be, based on some combination of economic, environmental and social considerations. The balance of the three is driven by the circumstances at the time. Ultimately, the goal of the Industrial Electricity Policy Review is to engage with stakeholders and analyze relevant technical information in order to provide government with advice on the different options available to implement a provincial policy framework that meets B.C.'s needs in the near, medium and longterm.