

2002

2003

ENERGY FOR OUR FUTURE: A PLAN FOR BC

2004

2005

2006

2007

2008

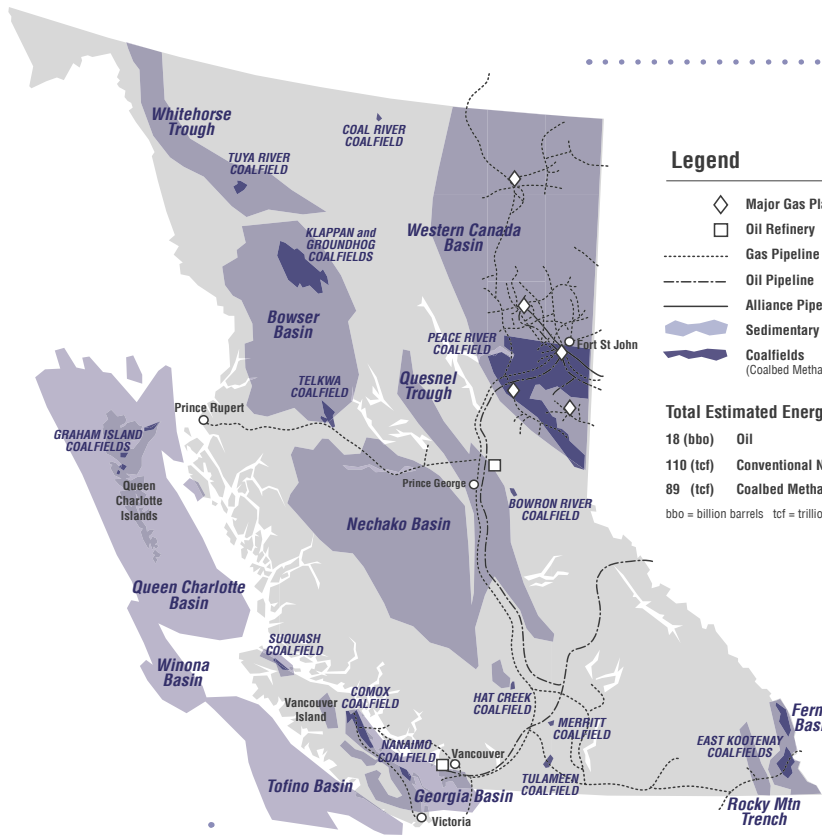
2009

2010

2012

2013





Legend

- ◇ Major Gas Plant
- Oil Refinery
- Gas Pipeline
- Oil Pipeline
- Alliance Pipeline
- Sedimentary Basins
- Coalfields (Coalbed Methane Potential)

Total Estimated Energy Resources

18 (bbo) Oil
 110 (tcf) Conventional Natural Gas
 89 (tcf) Coalbed Methane
 bbo = billion barrels tcf = trillion cubic feet

BRITISH COLUMBIA'S ENERGY RESOURCES



Legend

- 500 kV Transmission Lines
- Major Generating Plants (over 500 MW)
 - Hydroelectric
 - Steam Turbine
- 500 kV Substations
- △ Interconnections
- Series Capacitor Stations

Peace Canyon
 G.M. Shrum
 Kennedy
 Wilton
 McLeese
 Mica
 Revelstoke
 Kelly Lake
 Chapmans
 Nicola
 Ashton Creek
 Selkirk
 American Creek
 Seven Mile
 Kootenay Canal
 U.S.A.

Albera

Burrard
 Dunsmuir
 Meridan
 Ingledow

ENERGY FOR OUR FUTURE: A PLAN FOR BC

***Low electricity rates and public
ownership of BC Hydro***

Secure, reliable supply

More private sector opportunities

***Environmental responsibility
and no nuclear power sources***



MESSAGE FROM THE MINISTER

Energy is a critical part of our daily lives, powering our households, communities and businesses. In B.C., we have abundant, diverse energy resources, including hydroelectricity, oil, gas, coal, coalbed methane and a variety of clean, alternative sources. The time has come to harness their enormous potential to meet our energy needs and generate renewed economic growth and prosperity for all British Columbians.

Energy for Our Future: A Plan for BC is designed to achieve our goal in an environmentally responsible way. It is built around four cornerstones to maximize benefits for British Columbians well into the future. The cornerstones deliver low electricity prices and public ownership of BC Hydro; a secure, reliable supply of energy; more private sector opportunities; and environmental responsibility with a guarantee of no nuclear generation in B.C.

Ultimately, the plan reflects our government's vision of the future for both the energy sector and the province as a whole -- a prosperous future, lively with opportunities for all British Columbians; a dynamic future, in which British Columbia is opened up to its full potential; a certain future, in which British Columbians can move forward with confidence, knowing they live and work in the best place on earth.

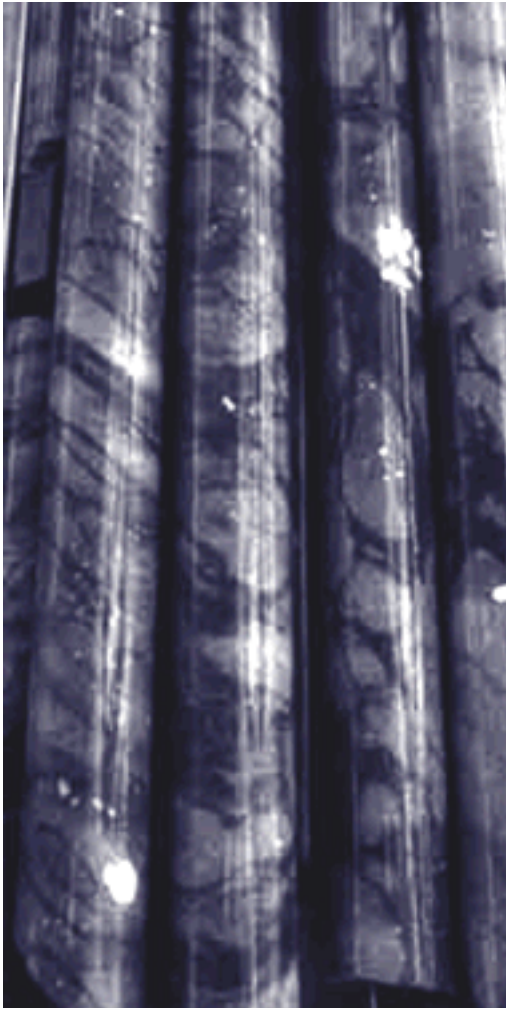
Richard Neufeld

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EXECUTIVE SUMMARY



▶ ENERGY FACT

An average household in BC Hydro's service area uses about 10,000 kWh of electricity per year.

After five decades of dramatic change, British Columbia's energy sector faces new challenges and opportunities.

Our natural gas industry has seen production more than double in the past 10 years. In North America and abroad, electric power markets are being reformed to make them more competitive. With these and other changes, the B.C. energy sector is poised for new investment, increased trade and regional economic growth. To realize its potential, the sector needs an updated plan that will guide its further development over the coming decade.

The purpose of this energy policy, *Energy for Our Future: A Plan for BC*, is to build on B.C.'s strengths to help revitalize the provincial economy and create jobs in an environmentally responsible way.

Energy policy and economic policy are inextricably linked. The Government of British Columbia is committed to restoring a strong and vibrant economy with job creation in all regions of the province. At the same time, a healthy environment is recognized as one of our enduring natural assets. This plan builds on B.C.'s advantages, in particular our abundant energy resources and low electricity prices, with improvements to strengthen the energy sector and provide sustainable economic benefits.

BACKGROUND

Energy drives the economy and makes our modern lifestyle possible.

British Columbians depend on energy to fuel their cars, run their appliances, equipment and industrial plants, and light and heat their homes, communities and businesses. Without a reliable and reasonably priced supply of energy, important industries such as forestry, chemicals, mining and high technology cannot thrive in world markets. The production and delivery of energy is itself a source of economic activity, employing about 35,000 people in 2001, and generating about \$2.4 billion in provincial revenues that support health care and other programs. While energy production is focused in the Northeast, Southeast, and on the Columbia River, development opportunities offer the prospect of new investment and jobs throughout the province.

B.C. is becoming increasingly integrated with North American energy markets.

Historically, a strong export orientation has allowed B.C. energy suppliers to take advantage of economies of scale to develop energy resources at lower cost, for the benefit of domestic consumers. Today, B.C. exports two-thirds of the energy it produces, including virtually all of our coal and more than half of our natural gas production. Most of the refined petroleum products (e.g., gasoline and home heating oil) we use comes from Alberta, while imported electricity helps meet provincial needs during periods of below-average water inflows into our hydroelectric reservoirs. The net revenues from energy trade contribute to further energy investment and low electricity rates in the province. Energy exports also play a role in continental energy security by providing clean, reliable energy for consumers in the United States and Alberta.

The province enjoys a number of key energy strengths.

B.C. has extensive reserves of coal, oil, natural gas as well as considerable undeveloped resources of coalbed methane (the gas found in coal seams), hydroelectric and alternative energy, such as small hydro, wood residue, ethanol/biofuels, wind and tidal power. In addition, BC Hydro estimates that in the order of 10 percent of electricity demand could be economically saved by 2015, through greater conservation and efficient energy use. B.C. already benefits from a highly developed energy supply network, with substantial production of coal, natural gas, oil and hydroelectricity. Electricity rates among the lowest in North America are the legacy of large-scale public investment on the Peace and Columbia rivers that was undertaken a generation ago.

CHALLENGES AND OPPORTUNITIES

New energy supplies are required to meet growing demand and support renewed economic growth.

More energy is needed to fuel the growth that will restore B.C. to its position as an economic leader within Canada. Rising energy demands and aging facilities call for major financial investment in plant upgrades and new energy production and delivery facilities. This, in turn, requires better access to energy

resources and the timely, cost-effective development of new supplies. Unless domestic energy sources are developed, British Columbians could find themselves increasingly dependent on imports and vulnerable to price swings. The government, faced with competing fiscal priorities, is looking to the private sector for much-needed energy development.

We have to keep electricity rates down to maintain B.C.'s economic advantage.

BC Hydro rates, frozen since 1996, have not changed or undergone a public review since 1993. With electricity costs rising, the rate freeze must end and BC Hydro rates must be independently regulated by the BC Utilities Commission to keep rate changes to a minimum and remove political interference. At the same time, B.C. will need to adapt to evolving market rules in the United States, if we want to continue earning the export revenues that contribute to our low power rates. These rates give B.C. industry an economic advantage in global markets.

Energy development and use must continue to be environmentally responsible.

A clean, natural environment and energy-efficient facilities and equipment are also important to ensuring our long-term economic advantage. British Columbians are concerned about the environmental impacts from energy development and use. Energy-saving activity that reduces demand and defers the need for new supply is one of the most cost effective strategies for controlling impacts on provincial airsheds and watersheds. Low electricity rates, however, provide a poor price signal for consumers to conserve and invest in energy efficiency. In general, unclear environmental standards and inefficient regulatory processes have hindered environmentally responsible energy development in the province.

The energy sector is well positioned to generate new investment, increased trade and economic growth.

B.C.'s natural resources, talent and homegrown technology offer many diverse opportunities for meeting the changing energy needs of provincial consumers. Efforts are underway to make domestic electricity service even more reliable in support of technology industries and the new information

economy. The outlook for increased energy trade is favourable, given growing US demands, especially for natural gas in power generation. Here at home, the private sector has demonstrated its ability to develop the smaller-scale generation (e.g., small hydro and efficient natural gas turbines) that can locate close to load, avoid transmission losses and infrastructure costs, and provide regional economic benefits. To enable investment in the oil and gas sector, land use and pre-tenure planning, road upgrading and cooperation with First Nations are improving access to resources for exploration and development in the Northeast.

Low cost hydroelectricity and efficient regulation can help preserve our electricity rate advantage.

While other jurisdictions struggle under large power debts and high electricity prices, B.C. benefits from W.A.C. Bennett's vision of the hydroelectric system developed in the 1960s and 1970s on the Peace and Columbia rivers. These heritage assets have an inherent value given by the difference between their current cost of production and what it would cost to replace this power in the marketplace. There are ways to secure the benefits of existing low-cost generation for B.C. consumers. Furthermore, performance-based regulation and negotiated settlements can be used to regulate BC Hydro rates efficiently and encourage cost savings, so that future rate changes will be minimized.

Aggressive energy saving and alternative energy development can better manage environmental impacts.

For more than a decade, the province's energy utilities, private energy service companies and individual consumers have accumulated expertise in reducing energy use through conservation and energy efficiency. It is possible to design electricity rates to give consumers the right signals for this energy saving activity. We can also develop our alternative energy resources to provide power that is less harmful to the environment than conventional (large hydro, coal-fired and natural gas-fired) generation. Other countries have adopted portfolio standards requiring a portion of electricity supply to come from technologies that have a low impact on the environment.

The energy sector is well positioned to generate new investment, increased trade and economic growth.

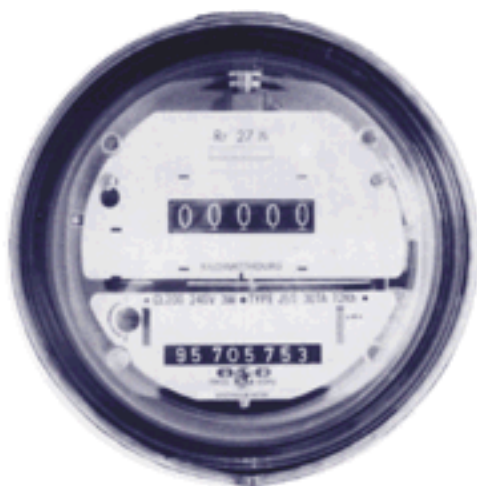


Low electricity rates and public ownership of BC Hydro

Secure, reliable supply

More private sector opportunities

Environmental responsibility and no nuclear power sources



SOLUTIONS

The four cornerstones of *Energy for Our Future: A Plan for BC* are low electricity rates and public ownership of BC Hydro; secure, reliable supply; more private sector opportunities; and environmental responsibility and no nuclear power sources.

B.C.'s low-cost electricity will remain an important economic advantage during the next decade. Stable and dependable energy supplies will be vital not only to sustain our other resource industries, but also to grow the technology sector. Private developers, including independent power producers, will be key partners in the province's energy future. We will build on one of North America's best environmental records with efficient regulation that holds energy producers and consumers accountable for their impacts.

Low electricity rates will be assured by entrenching the benefits of publicly owned assets, independently regulating BC Hydro rates and outsourcing services where economic.

BC Hydro ratepayers will benefit from a legislated heritage contract that locks in the value of existing low-cost generation (heritage energy), and from the continued use of trading revenues to supplement domestic revenues. The BC Utilities Commission will conduct an inquiry and recommend the terms and conditions of the heritage contract legislation. To benefit ratepayers and taxpayers alike, public ownership of BC Hydro generation, transmission and distribution assets will continue. The delivery of services will be outsourced where costs can be reduced for consumers while maintaining quality of service. The rate freeze will end on March 31, 2003 and the BC Utilities Commission will hold a revenue requirement hearing by the end of 2003/04 to review BC Hydro costs. Future rate changes will then be determined using performance-based regulation and negotiated settlements.

To promote secure and dependable energy, reliability standards will be maintained, new supplies will be developed and the BC Utilities Commission will be strengthened.

BC Hydro will continue to establish separate lines of business for generation, transmission and distribution. Distribution will acquire new power on a least-cost basis, subject to regulatory

Actions that support low electricity rates and public ownership of BC Hydro:

#1	A legislated heritage contract will preserve the benefits of BC Hydro's existing generation.
#2	BC Hydro ratepayers will continue to benefit from electricity trade.
#3	Public ownership of BC Hydro generation, transmission and distribution assets will continue.
#4	BC Hydro will outsource the delivery of services where costs can be reduced for electricity consumers while maintaining quality of service.
#5	The BC Utilities Commission will once again regulate BC Hydro rates.
#9	Electricity distributors will acquire new supply on a least-cost basis, with regulatory oversight by the BC Utilities Commission.
#13	The private sector will develop new electricity generation, with BC Hydro restricted to improvements at existing plants.
#15	The BC Hydro Transmission Corporation will improve access to the transmission system and enable IPP participation in US wholesale markets.
#16	The BC Utilities Commission will determine the terms and rates for this new transmission entity.
#21	New rate structures will provide better price signals to large electricity consumers for conservation and energy efficiency.
#22	The Province will update and expand its Energy Efficiency Act, and will work with the building industry, governments and others to improve energy efficiency in new and existing buildings.
#23	The Utilities Commission Act will be amended to remove a disincentive for energy distributors to invest in conservation and energy efficiency.

oversight. As part of this process, it will obtain heritage energy from the generation business at a rate to be determined by the BC Utilities Commission. The commission's structure and mandate will be strengthened to support the re-regulation of BC Hydro and the efficient regulation of other utilities.

To encourage new resources, the government will develop requirements for exploring and developing coalbed methane and other unconventional hydrocarbon resources. In general, energy reliability will be maintained and improved through well-functioning natural gas markets and coordinated electricity planning.

A dedicated provincial offshore oil and gas team will develop a provincial position, work with the federal government and move effectively toward development of offshore oil and gas resources.

Before offshore development can proceed, further issues need to be resolved such as an agreement between the federal and provincial governments on an overall management regime, including regulatory, royalty and environmental requirements. The Province will also need to work with coastal communities and First Nations to ensure that benefits accrue to the areas where activity occurs.

Actions that support secure reliable supply:

#1	A legislated heritage contract will preserve the benefits of BC Hydro's existing generation.
#6	The Vancouver Island Generation Project will be reviewed to determine if it is the most cost-effective means to reliably meet Island power needs.
#7	High reliability and energy security will be maintained through well-functioning natural gas markets and coordinated electricity planning.
#8	BC Hydro distribution will operate as a separate line of business from generation.
#9	Electricity distributors will acquire new supply on a least-cost basis, with regulatory oversight by the BC Utilities Commission.
#10	Development of coalbed methane and other unconventional resources will be encouraged to provide a new source of energy supply and opportunities for regional economic growth.
#11	The Ministry of Energy and Mines will establish a dedicated provincial offshore oil and gas team to develop a provincial position, work with the federal government and move effectively toward development of the offshore resources.
#12	The structure of the BC Utilities Commission, and its mandate in regulating BC Hydro and other energy distributors, will be strengthened.
#13	The private sector will develop new electricity generation, with BC Hydro restricted to improvements at existing plants.
#15	The BC Hydro Transmission Corporation will improve access to the transmission system and enable IPP participation in US wholesale markets.
#18	Pre-tenure and land use planning, as well as northern road improvements, are improving access to oil and gas resources.
#19	Natural gas marketers will be allowed to sell directly to small volume customers, and will be licensed to provide consumer protection.
#21	New rate structures will provide better price signals to large electricity consumers for conservation and energy efficiency.
#22	The Province will update and expand its Energy Efficiency Act, and will work with the building industry, governments and others to improve energy efficiency in new and existing buildings.
#23	The Utilities Commission Act will be amended to remove a disincentive for energy distributors to invest in conservation and energy efficiency.

A dedicated provincial offshore oil and gas team will develop a provincial position, work with the federal government and move effectively toward development of the offshore oil and gas resources.

ENERGY FACT

Industry invested \$5.1 billion in B.C.'s petroleum and natural gas resources, a 46 % increase over 2000.

The publicly owned BC Hydro Transmission Corporation will operate BC Hydro's transmission system to ensure fair access for all generators

To increase opportunities for the private sector, independent power will be developed and ongoing support will be provided for the oil and gas industry.

Independent power producers (IPPs) will develop new generation, with BC Hydro's role limited to undertaking efficiency improvements at existing facilities. A separate entity, BC Hydro Transmission Corporation, will operate BC Hydro's publicly owned transmission system, to ensure fair access for all generators. Under a new BC Hydro rate structure, IPPs will be able to serve a portion or all of the electricity needs of large customers. Similarly, natural gas marketers will be free to sell directly to residential and small commercial natural gas consumers. These and other ongoing government initiatives in the oil and gas sector (e.g., royalty reform, pre-tenure planning and public-private partnerships for road upgrades) will support private investment and economic opportunities across the province.

Environmental responsibility will be assured through a clean energy goal, new price signals for conservation, clear emission standards and other strategies.

Electricity distributors will pursue a voluntary goal to purchase at least 50 percent of their new power supply from BC Clean resources that are renewable or result in a net environmental improvement over existing generation. New rate structures (stepped and time-of-use rates) will give better signals for energy saving activity. The government will also expand and update its Energy Efficiency Act and regulations, and will change utility regulatory practices to remove a disincentive to energy efficiency investments by utilities. The Ministries of Energy and Mines and Water, Land and Air Protection are working together on strategies to address climate change and air quality in sensitive airsheds. In other areas, provincial processes for environmental assessment, water licensing and waste permitting are being streamlined. To allow a fair evaluation of

Actions that support more private sector opportunities:

#4	BC Hydro will outsource the delivery of services where costs can be reduced for electricity consumers while maintaining quality of service.
#9	Electricity distributors will acquire new supply on a least-cost basis, with regulatory oversight by the BC Utilities Commission.
#10	Development of coalbed methane and other unconventional resources will be encouraged to provide a new source of energy supply and opportunities for regional economic growth.
#11	The Ministry of Energy and Mines will establish a dedicated provincial offshore oil and gas team to develop a provincial position, work with the federal government and move effectively toward development of offshore resources.
#13	The private sector will develop new electricity generation, with BC Hydro restricted to improvements at existing plants.
#14	Under new rates, large electricity consumers will be able to choose a supplier other than the local distributor.
#15	The BC Hydro Transmission Corporation will improve access to the transmission system and enable IPP participation in US wholesale markets.
#17	The Ministry of Energy and Mines will provide support for continued industry investment in natural gas production over the next 10 years.
#18	Pre-tenure and land use planning, as well as northern road improvements, are improving access to oil and gas resources.
#19	Natural gas marketers will be allowed to sell directly to small volume customers, and will be licensed to provide consumer protection.
#25	Provincial processes for environmental assessment, water licensing and waste permitting are being streamlined.
#26	To allow for a fair evaluation of coal-fired electricity projects, final emission standards will be adopted for coal-fired power plants.

the role of coal-fired generation in B.C.'s electricity future, the Province will adopt emission guidelines for coal-fired power plants that will allow B.C. to compete for investment with neighbouring jurisdictions.

Energy consumers, private investors and B.C. communities will all benefit from the plan, as it is implemented over the next two years.

Energy for Our Future: A Plan for BC will be fully implemented by 2004. B.C. consumers will enjoy low electricity rates, greater choice among energy suppliers and potential savings in their electricity and natural gas bills. Private investors will be able to better access and develop new energy resources, while communities will reap the benefits of economic development and local environmental improvement. Taken together, the plan's 26 actions will make the energy sector more resilient and flexible for future changes that will serve British Columbians' interests.

***Energy for Our Future:
A Plan for BC will be
fully implemented
by 2004.***

Actions that support environmental responsibility:

#13	The private sector will develop new electricity generation, with BC Hydro restricted to improvements at existing plants.
#20	Electricity distributors will pursue a voluntary goal to acquire 50 percent of new supply from BC Clean Electricity over the next 10 years.
#21	New rate structures will provide better price signals to large electricity consumers for conservation and energy efficiency.
#22	The Province will update and expand its Energy Efficiency Act, and will work with the building industry, governments and others to improve energy efficiency in new and existing buildings.
#23	The Utilities Commission Act will be amended to remove a disincentive for energy distributors to invest in conservation and energy efficiency.
#24	The government is developing strategies to manage B.C.'s greenhouse gas emissions and air quality in threatened airsheds.
#25	Provincial processes for environmental assessment, water licensing and waste permitting are being streamlined.
#26	To allow for a fair evaluation of coal-fired electricity projects, final emission standards will be adopted for coal-fired power plants.



INTRODUCTION



British Columbia's energy sector encompasses all the people, facilities and equipment involved in energy production, delivery and consumption. The sector has been transformed over the past half century. Today, new challenges and opportunities call for an updated energy policy that will support renewed economic growth in the province.

A LOOK BACK

B.C.'s energy sector has changed dramatically during the past 50 years, with public investment in electric power and private development of oil, natural gas and coal resources.

In the early 1950s, energy and the provincial economy looked very different. The energy sector was focused on serving a small domestic resource economy. Energy was supplied by localized monopolies and power rates were relatively high. The next four decades saw tremendous change, from large-scale hydroelectric development on the Peace and Columbia rivers and the construction of major pipelines to expanding oil and gas production in the Northeast, to deregulation of natural gas markets and the emergence of independent power producers. Today, B.C. enjoys a more diversified economy, an extensive network of energy supply facilities, low electricity rates and the benefits of a more competitive, export-oriented energy sector.

Provincial energy policy has evolved along with these changes.

In 1980, the Province of British Columbia released its first energy policy. An *Energy Secure British Columbia* sought to manage energy resources for a secure supply, reduce oil imports and conserve resources. Direct government intervention in energy markets, from setting natural gas prices to building hydroelectric facilities, was the dominant policy direction. At the same time, the BC Utilities Commission was created to provide independent oversight of energy utilities.

The 1980s witnessed a shift from government intervention to market determination of oil and gas prices. In 1985, natural gas markets were opened up and the federal government

relinquished control of petroleum markets. A second policy statement, *New Directions for the 1990s*, appeared in 1990, with two new priorities - efficient energy and clean energy; and two left over from the previous decade - secure energy and energy for the economy. The objectives of this policy were to make markets more competitive, send better price signals to consumers, encourage cleaner fuels and energy efficiency and strengthen environmental standards.

Two investigations in the mid-1990s looked at reforming the B.C. electricity market to make it more competitive.

At the request of Lieutenant Governor in Council, the BC Utilities Commission undertook an Electricity Market Structure Review in 1994/95. This review found that the driving forces for electricity reform, in particular high prices, did not exist in B.C. The Commission's report recommended that B.C. move forward with increased competition at the wholesale level (e.g., private power producers selling to BC Hydro) and real-time pricing, which allows large power users to obtain their additional electricity requirements at market prices.¹

In 1997, a BC Task Force on Electricity Reform was unable to agree on the components of market reform for the province. The head of the task force, Dr. Mark Jaccard, subsequently presented his own proposal for phased electricity reform.² Dr. Jaccard's suggestions included establishing an independent grid operator to improve (wholesale) access for competitive suppliers to BC Hydro's transmission system, allowing non-utility suppliers to sell directly to industrial customers (limited retail access), and setting a portfolio standard to require that a percentage of power generation come from environmentally desirable technologies.

Since the release of these reports, some of their suggested reforms have been implemented, including wholesale transmission access, real-time pricing for large BC Hydro customers and retail access for Aquila Networks Canada (formerly West Kootenay Power) industrial customers. Others, such as the independent grid operator and portfolio standard, were not acted upon.

In August 2001, Premier Gordon Campbell commissioned the Task Force on Energy Policy to provide recommendations to government.

After producing an interim report³ in November 2001, the task force consulted with stakeholders and the public. A final report⁴ was submitted to the Minister of Energy and Mines on March 15, 2002, with 46 recommendations in the areas of conservation and energy efficiency, alternative energy, electricity, oil and natural gas, coal and regulation. These recommendations support a series of policy directions that include developing new energy supplies, making markets more competitive, reforming the electricity industry, ensuring sound environmental decisions and harmonizing government regulations. Appendix 1 lists the recommendations in full and provides a government response in each case.

THE PATH FORWARD

B.C.'s new *Energy for Our Future: A Plan for BC* builds on these past efforts with a strategic path for the energy sector.

Energy policy and economic policy are inextricably linked. The government is committed to restoring a strong and vibrant provincial economy with employment opportunities for British Columbians. At the same time, a healthy environment is recognized as one of B.C.'s important natural assets. The purpose of this new policy is therefore to build on the province's energy strengths, in particular our abundant natural resources and low electricity prices, to help revitalize the economy and create jobs in an environmentally responsible way.

There are four cornerstones of B.C.'s plan:

Low electricity rates and public ownership of BC Hydro.

Low-cost electricity will be an enduring economic advantage during the next decade. Legislation will entrench the benefits of our publicly owned hydroelectric power assets, and will ensure efficient regulation to keep rates low, maintain industry competitiveness, and support economic growth.

Secure, reliable supply. Stable and dependable energy supplies are increasingly vital in the move to an information economy. To sustain our resource industries and expand the technology sector, energy reliability will be improved and energy markets will be diversified, with more sources of supply, greater competition in electricity generation and enhanced customer choice.

More private sector opportunities. The private sector will be a key partner in the province's energy future. New investment in private power production and continued high activity levels in the oil and gas industry will be critical to realize our full potential as a leading energy supplier in North America.

Environmental responsibility and no nuclear power sources. B.C. has a history of environmentally responsible energy development and one of the best environmental records on the continent. We continue to reject nuclear power and will build on our clean energy strengths with incentives for alternative energy development, new rate signals to encourage energy saving and aggressive strategies for conservation and energy efficiency.

This plan outlines actions the government will take, or has already initiated, to achieve these four objectives.

The plan begins by providing some background on energy production and use in B.C. It then describes several challenges and opportunities currently facing the energy sector. Next, a series of policy actions are outlined in support of the four cornerstones above. The statement ends with a summary of the implications of these policies for consumers, producers, and other participants in the sector. Readers should note that the plan does not address energy use in transportation, which is being dealt with separately through the BC Climate Change Plan and other initiatives underway.

¹ British Columbia Utilities Commission, *The British Columbia Electricity Market Review: Report and Recommendations to the Lieutenant Governor in Council*, September 1995.

² Dr. Mark Jaccard, *Reforming British Columbia's Electricity Market: A Way Forward*, Final Report of the British Columbia Task Force on Electricity Market Reform, January 1998.

³ Task Force on Energy Policy, *Strategic Considerations for a New British Columbia Energy Policy, Interim Report*, November 2001.

⁴ Task Force on Energy Policy, *Strategic Considerations for a New British Columbia Energy Policy, Final Report*, March 2002.



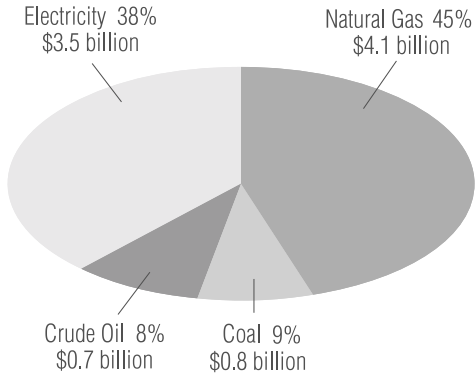
ENERGY FACT

A typical large office building (20-25 stories) will consume 3.5 GWh of electricity per year, equal to the consumption of 350 households.

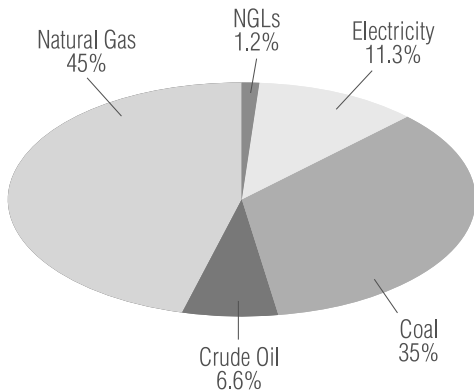


BACKGROUND

VALUE OF BC ENERGY PRODUCTION - 2000
\$9.1 Billion total



BC PRIMARY ENERGY PRODUCTION - 2000



Energy is a necessity for and a key driver of B.C.'s economy and quality of life. It contributes to the international trade that is responsible for most of the economic benefits in which we all share. Energy markets continue to evolve with pressures for change in the electricity industry. Appendix 2 provides an overview of the B.C. energy sector.

THE IMPORTANCE OF ENERGY

Energy fuels our daily lives.

British Columbians rely on energy to power their cars, run their appliances, equipment and industrial plants, and light and heat their homes, communities and businesses. Perhaps nowhere is the importance of energy more evident than in the case of electric power. Whereas 20 years ago the average home had relatively few appliances, today it has a computer, two TVs, a dishwasher, microwave oven, VCR and DVD player, among other items. New technologies such as high resolution TVs can consume significantly more energy. Likewise, the typical office is now equipped with computers, photocopiers, fax machines and other electricity-using equipment.

Energy also drives the provincial economy.

Energy is a significant input into the production of other resource commodities. The energy-intensive sectors of forest products, mining, refining, and chemicals together make up 70 percent of provincial exports. These sectors, facing tough competition in the global marketplace, must control costs and increase efficiency and productivity to maintain their economic advantage.

Access to reliable, low-cost energy is also important for attracting and developing the technology sector in B.C. Technology firms are particularly dependent on a continuous supply of electricity, as shown by California's recent energy crisis. The Silicon Valley Manufacturing Group has estimated that its almost 200 members lost more than \$100 million during one day of rolling blackouts in June 2000.⁵

The energy sector itself is a major source of economic activity.

The sector as a whole (electricity, natural gas, oil and coal) employs about 35,000 people. Energy accounts for about four percent of provincial gross domestic product, the value of our economy's output.

Revenues to energy industries totaled \$9.1 billion in 2000, and direct revenues to government exceeded \$3 billion. The oil and gas industry, at \$1.8 billion in 2000, is B.C.'s largest source of natural resource revenues that help to fund health care and education. In 2001/02, lower prices resulted in a decline of \$650 million to the Province. Dividends, water rentals, and taxes from BC Hydro yield in the order of \$700 million annually. Aside from its employment and revenue benefits, energy contributes to regional development, primarily in the Northeast and Southeast, but increasingly with opportunities across the province.

THE ROLE OF TRADE

An export orientation has allowed energy resources to be developed at lower cost for British Columbians.

British Columbia currently exports two-thirds of the energy it produces. Much of today's network of energy production and delivery facilities would not exist had resources been developed only to serve provincial consumers. Examples include an extensive hydroelectric system on the Peace and Columbia rivers, the Duke Energy (formerly Westcoast Energy) pipeline bringing natural gas to Vancouver, and natural gas drilling in the Northeast. A strong export orientation has allowed the energy sector to take advantage of economies of scale and develop resources at lower cost. This, in turn, has resulted in reliable and reasonably priced energy service for B.C. consumers.

Electricity trade helps ensure low power rates and reliability for domestic consumers.

The province's flexible hydroelectric system, with its large reservoirs for storing water, enables highly beneficial trade in electricity. BC Hydro earns revenues by importing electricity when market prices are low and exporting electricity when prices are high, while at all times satisfying domestic power needs. The net revenues from this trade help keep provincial rates low and stable.

Imports also help meet electricity requirements during times of reduced water inflows into B.C. reservoirs. BC Hydro can earn significant trading income even in low water years, when the province is a net importer, because of the flexibility of our large hydroelectric and reservoir systems. Net trading revenue averaged around \$100 million annually during the 1990s.

Our clean energy exports contribute to continental energy security.

B.C.'s hydro-based electricity exports offer a source of clean, reliable power for consumers in the United States and Alberta. In US markets, our natural gas displaces oil and coal used to generate electricity. With growing North American demand, especially for natural gas used in power plants, B.C. has a key role to play in supporting continental energy security. Continued integration with regional power markets will provide better access to reliable, low-cost electricity for our export customers and provincial consumers alike.

B.C.'S ENERGY STRENGTHS

We have extensive undeveloped energy resources for new supply and a significant potential to further reduce energy use.

Discovered reserves of natural gas are sufficient to meet domestic and export needs for the next decade. Undiscovered reserves of natural gas, including coalbed methane, could add

decades of new supply, but will require further exploration to be realized. Coal resources, if used for electricity production at B.C.'s current electricity consumption rate, could last well over a century.

While there are considerable resources remaining for large hydroelectric development, many are on protected rivers. The potential for other renewable electricity, including small hydro, wood residue, wind and tidal energy, is growing over time as technologies improve and costs decline. In total, new conventional (available large hydro, natural gas-fired and coal-fired) and alternative energy resources are currently estimated at more than double existing generating capacity. In addition, BC Hydro estimates that 10 percent of total electricity demand could be economically saved by 2015, through increased conservation and energy efficiency.

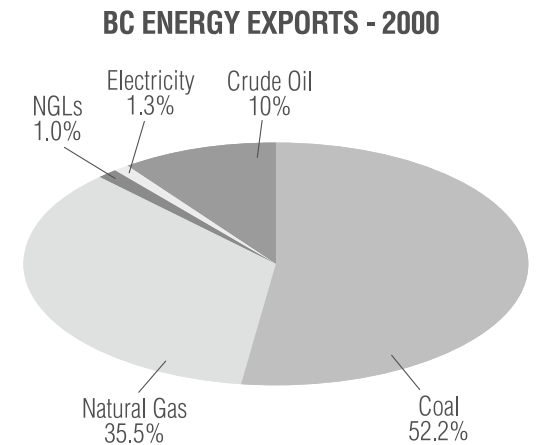
Biofuel technologies are under development to convert plant material such as wood waste into ethanol and other transportation fuels. B.C. has enough wood residue to produce over 300 million litres of ethanol annually. Ethanol is blended with gasoline and diesel fuel to add oxygenation, extend conventional fuel supplies and reduce transportation-related emissions.

A diverse, reliable energy supply network has evolved in the province.

The energy sector is large and diverse. It comprises substantial production of hydroelectricity, natural gas, coal and oil. Highly developed systems of pipelines and power lines deliver energy to domestic and export consumers. B.C. companies are also pursuing leading-edge alternative technologies, such as fuel cells, and innovative ventures in wind, wave and solar power.

Electric utilities and natural gas suppliers have a proven record of providing reliable energy for both the provincial and export markets. Natural gas suppliers ensure reliability by upgrading production facilities and pipeline capacity to meet growing demand. Electricity suppliers do so by

Electricity trade helps ensure low power rates and reliability for domestic consumers.



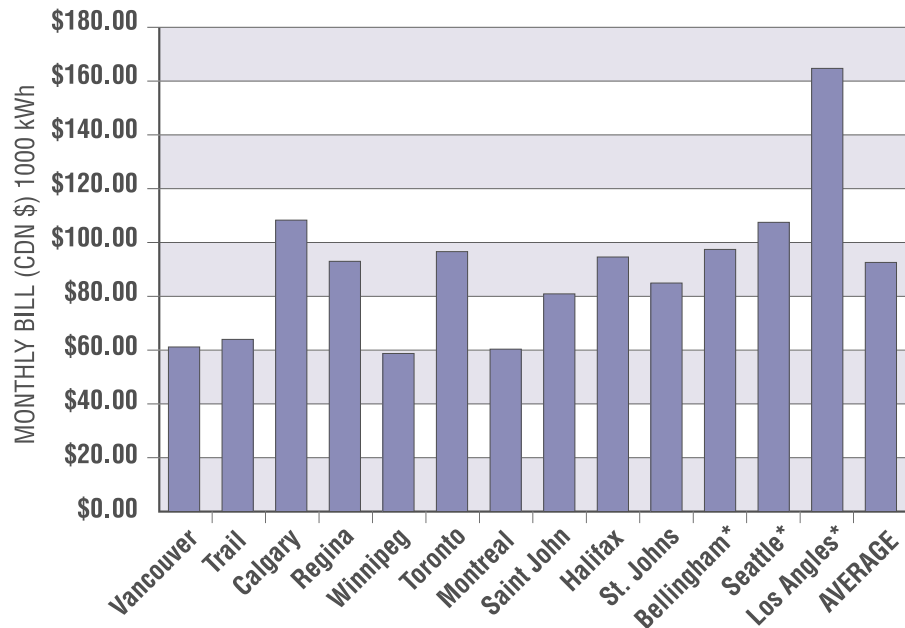
Low electricity rates and public ownership of BC Hydro

maintaining capacity and energy reserve margins (buffers of extra available generation and transmission), developing and applying short-term reliability standards, and participating in a western North American electricity reliability network.

Low electricity rates reflect major public investments in hydroelectric power made a generation ago.

Our electricity rates are among the lowest in North America. A previous generation's investment during the 1960s and 1970s has benefited all British Columbians over the past two decades. Today, hydroelectric facilities on the Peace and Columbia rivers account for approximately 75 percent of BC Hydro's generating capacity. Together with its coastal hydroelectric and thermal power plants, these heritage assets produce electricity at a much lower average cost than the cost of new generation or prices in neighbouring markets.

COMPARISON OF RESIDENTIAL ELECTRICITY RATES



B.C.'s low electricity rates are the direct legacy of abundant hydroelectric resources and a flexible power system that has enabled trade.

Some jurisdictions have a legacy of public investments in nuclear power, which has proven to be far less reliable as an energy source and far more costly than B.C.'s hydro-based system.

Our advantage in energy technologies offers domestic and export opportunities.

British Columbia profits from a growing alternative fuel industry, as well as expertise in hydroelectric power. The growth of firms such as Ballard Technologies (fuel cells) and Westport Innovations (natural gas vehicles) demonstrates our capacity for technology development. A recent survey of renewable energy strengths identified the Pacific Northwest as having the potential to become a world leader in solar photovoltaics and power transmission technologies.⁶ This technological know-how can be used to develop new energy supplies within the province, and to generate additional revenues and jobs from trade.

CHANGING ENERGY MARKETS

Canadian natural gas markets have been deregulated since 1985.

In 1985, the federal government and western provinces agreed to deregulate natural gas to allow consumers to make their own purchase arrangements. Since then, high-volume industrial and commercial consumers have been able to purchase directly from natural gas producers as an alternative to the local distribution utility. All major pipelines provide open access, and an interconnected North American market now functions with little government intervention.

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Other jurisdictions have reformed their electricity markets, with mixed success.

Electricity market reform has taken place in a number of other countries, including Great Britain, Norway, Australia, New Zealand, Argentina, Chile, and parts of the United States. In Canada, Alberta and Ontario have significantly restructured their electricity sectors. The rationale for change has generally been to support broader economic reforms (i.e., privatization), reduce electricity prices, and/or comply with access rules in interconnected markets. While there have been many successes in electricity reform, poor timing, inadequate planning, and a lack of regulatory foresight have led to difficulties in some jurisdictions.

The extent of market reform varies in other jurisdictions.

In general, reforms are intended to reduce costs by making electricity markets more competitive. Integrated utility monopolies are typically unbundled into separate generation, transmission and distribution entities. In some cases, generation and distribution are privatized and further divided into multiple companies to create competition. The transmission system is opened up, allowing private generators to sell to the distribution company (wholesale access/competition). A market is usually established to determine competitive pricing for this power. Private generators may also be allowed access to the distribution system, so that they can sell directly to electricity consumers (retail access/competition). Most jurisdictions undertaking such reforms have had power rates significantly higher than those in B.C.

B.C.'s electricity industry has undergone some changes over the past decade.

In the late 1980s, BC Hydro began requesting new generation projects from independent power producers (IPPs). Access to its transmission system, and to Aquila Networks Canada's system, was opened up in 1996. This allowed IPPs to use the transmission network to sell power into the export market, and BC Hydro's export subsidiary (Powerex) to trade directly in US wholesale

markets. Starting in 1998, Aquila Networks Canada offered retail access to industrial customers. In June 2001, at the request of the BC Hothouse Growers' Association, the BC Utilities Commission granted approval to IPPs to access BC Hydro's distribution system. Most recently, BC Hydro has been reorganizing into functional business units for generation, transmission, and distribution, in order to make its operations more transparent and cost-effective.

Energy for Our Future: A Plan for BC provides a measured response to continue improving our power market.

B.C. is not ready for, or in need of, large-scale electricity reform. To function properly, competitive markets require many buyers and sellers. Despite the recent growth in private power, the B.C. market is still dominated by a large Crown corporation with a concentration of low-cost generating assets. Moreover, our low power rates do not provide the same impetus for widespread reform as in higher-cost jurisdictions. At the same time, there are opportunities to introduce more competition in the development of new sources of electricity supply, while preserving the benefits of low-cost generation and trade revenues for provincial consumers. This plan includes actions to do just that.

⁵ United States, National Energy Policy, Report of the National Energy Policy Development Group, May 2001, p. 2-8.

⁶ Planit Management, Compass Resource Management, and Steeple-jack Consulting, Poised for Profit, Report Prepared for Climate Solutions, November 2001.

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