LIGHTING THE WAY
FOR GENERATIONS

THE LONG-TERM PLAN
TO MEET BC'S FUTURE ELECTRICITY NEEDS

BC hydro
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BC HYDRO'S MAJOR GENERATING FACILITIES

MESSAGE FROM THE PRESIDENT & CEO

I am pleased to present "Lighting the Way for Generations: The Long-Term Plan to Meet B.C.'s Future Electricity Needs," which highlights BC Hydro's 2008 Long-Term Acquisition Plan (LTAP).

BC Hydro is at an important stage in its history. The vision and leadership that built BC Hydro into the utility it is today – and with it a legacy of reliable power for generations of British Columbians – must be matched by an equal amount of foresight and action to meet the new challenges of our growing province and vibrant economy.

Those challenges, and the choices available to meet them, are contained in the 2008 LTAP.

Above all, the 2008 LTAP is a plan of action. It examines our electricity needs over the next decade and provides cost effective resource options to meet the increasing demand for electricity in British Columbia.

We know, for example, that to become electricity self-sufficient by 2016, meet our conservation targets, and ensure that clean or renewable energy continues to account for 90 per cent of total generation, we must be both cost effective and environmentally responsible in our approach.

BC Hydro's primary focus remains the promotion of a culture of conservation across British Columbia. Our Power Smart programs and new demand-side management initiatives are designed to entrench life-long habits of conservation. We also know that securing additional clean energy sources and renewing our existing heritage assets are a necessary complement to conservation.

Together, this balanced approach forms the basis of our commitment to future generations of British Columbians – just as vital decisions made long ago led to the clean, reliable and affordable electricity we enjoy today.

Bob Elton
President and CEO

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A HERITAGE, A LEGACY

We all have a role to play in helping British Columbians realize the benefits of our province's electricity resource potential.

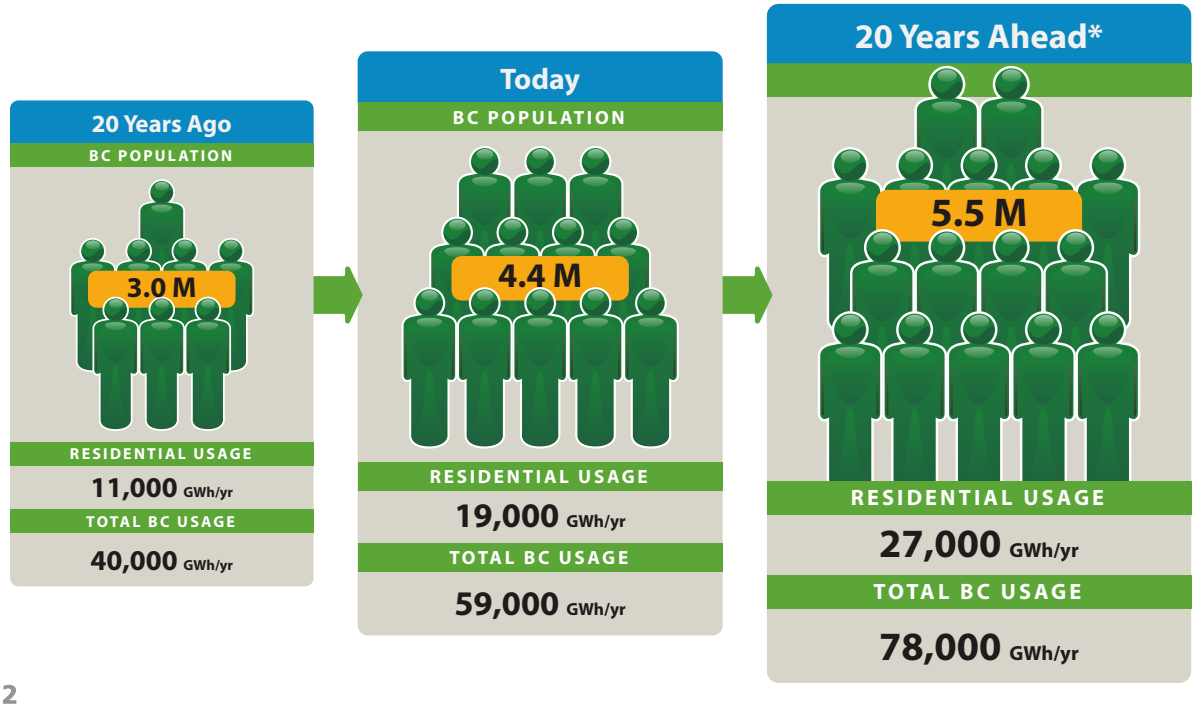
Clean, renewable electricity is at the heart of our province's economic, environmental and social heritage. With careful stewardship and foresight, it is also a legacy that will continue to light the way for future generations of British Columbians.

BC Hydro's 2008 Long-Term Acquisition Plan (LTAP) details the framework, resources and measures that BC Hydro plans to use to meet its future electricity needs. By comparing the anticipated future demand for electricity with existing and committed resources, BC Hydro is able to determine the forecasted supply gap and make plans to close it through a combination of conservation programs and new supply-side resource options.

Building upon the 2006 LTAP, which proposed to meet B.C.'s future electricity needs by conserving more, purchasing power from independent power producers and investing and reinvesting in large-scale generating projects, the 2008 LTAP has incorporated significant policy and legislative changes, including the provincial government's 2007 Energy Plan and recent amendments to the Utilities Commission Act. This ambitious new direction in public policy calls upon BC Hydro to ensure that conservation and efficiency measures make up at least 50 per cent of B.C.'s new electricity needs.

The provincial government has also legislated targets to reduce greenhouse gas emissions by 33 per cent below 2007 levels by 2020 and 80 per cent or more by 2050. Although achieving these targets will involve changes beyond the electricity sector, success will rely on a substantial conservation and efficiency effort in virtually every aspect of our lives.

THE LONG-TERM TREND IS CLEAR: BC'S FUTURE ELECTRICITY NEEDS WILL CONTINUE TO GROW SIGNIFICANTLY



* Estimated forecast

BC'S GROWING ELECTRICITY NEEDS

Forecasting B.C.'s future electricity needs is not without challenges. It is like taking a very sophisticated photograph in time. Many variables and uncertainties are at play, including the continuing impacts of climate change, water levels, customer behaviours, technological shifts (such as plug-in vehicles), global energy markets and economic trends. Regardless of potential short-term shifts in supply and demand, the long-term trend is absolutely clear: British Columbia's future electricity needs will continue to grow significantly. In fact, British Columbia has imported power (from non-clean sources in other jurisdictions) for seven consecutive years up to 2008.

BC Hydro's 2008 Long-Term Acquisition Plan forecasts that our province's electricity needs will grow between 25 and 40 per cent over the next 20 years. We plan to meet the shortfall between supply and demand with programs such as the conservation and energy efficiency initiatives outlined in the 2008 LTAP.

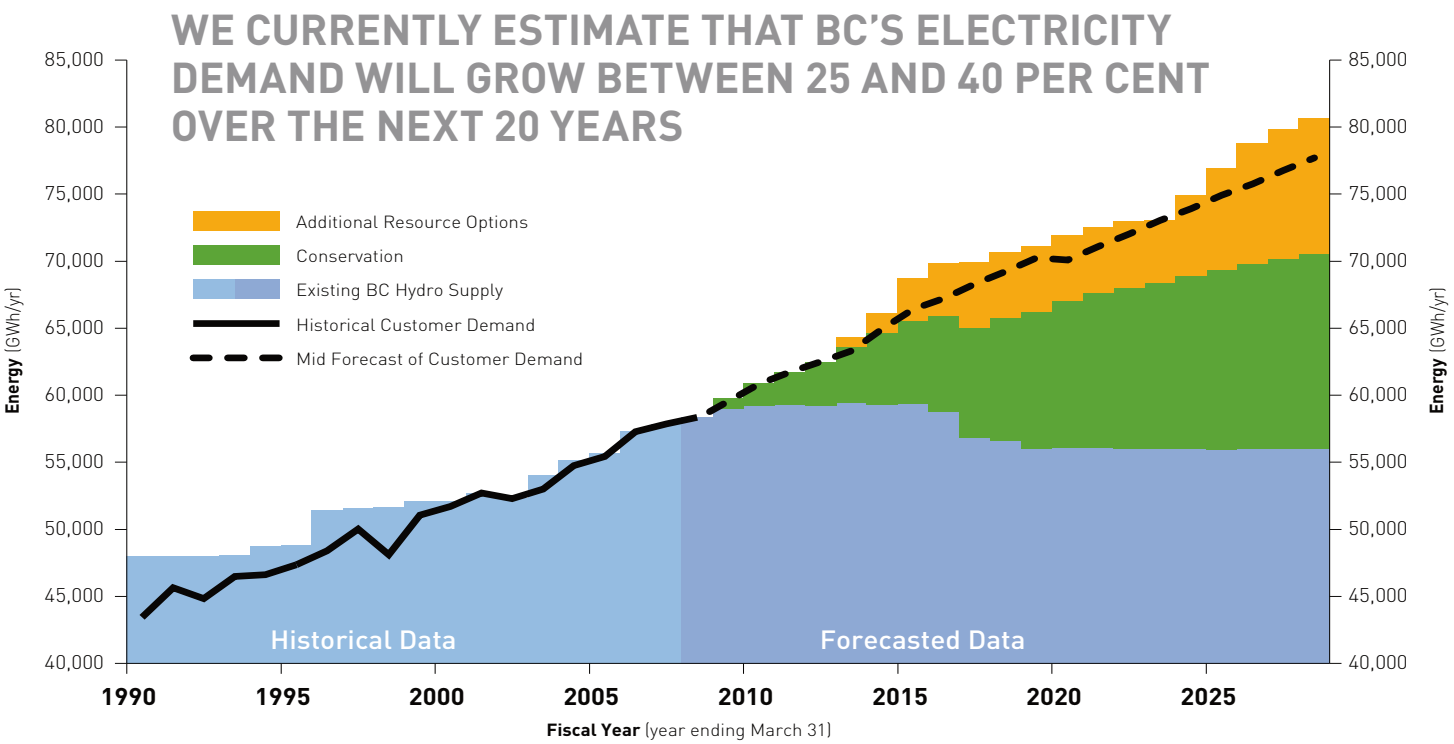
At home, at work and at play, our growing province is consuming more electricity than ever before. In two decades, British Columbia's population is forecast to grow to nearly 5.5 million people. This means that our province will have to find new electricity sources to support the needs of 1,100,000 more British Columbians and the economic activity they will generate.

Without action, B.C.'s electricity shortfall in 20 years is expected to be 19,000 gigawatt hours per year (GWh/yr) – a gap that is one-third of all the electricity (59,000 GWh/yr) that British Columbians are using today.

While using less electricity and using it wisely through conservation and energy efficiency is the first and best choice to meet this challenge, it will not be enough. New electricity resources – both large and small – must be considered.

The 2008 LTAP will guide our actions moving forward as we work to ensure that future generations of British Columbians continue to enjoy the economic, social and environmental benefits of our province's electricity.

MEETING OUR CURRENT AND FUTURE NEEDS



2007 BC ENERGY PLAN

A FUTURE BUILT ON CLEAN ENERGY LEADERSHIP

BC Hydro's actions to ensure our province can meet its future electricity needs are guided by the Government of British Columbia's 2007 BC Energy Plan: A Vision for Clean Energy Leadership. The plan sets targets to make our province electricity self-sufficient while charting a path for conservation, energy efficiency and clean energy to "arrest the growth of greenhouse gases and reduce human impacts on the climate."

The plan builds on the 2002 Energy Plan of low electricity rates, public ownership of BC Hydro, reliable supply and more private sector opportunities.

The 2007 plan provides BC Hydro with policy direction in these four key areas:

ENVIRONMENTAL LEADERSHIP

- Zero greenhouse gas emissions (GHGs) from coal-fired electricity generation
- Zero net GHGs from all new electricity projects
- Zero net GHGs from existing thermal power plants by 2016
- Ensure 90 per cent of total electricity continues to be clean or renewable
- No nuclear power

ENERGY CONSERVATION AND EFFICIENCY

- Meet 50 per cent of BC Hydro's new electricity needs through conservation by 2020
- Implement energy efficient building standards by 2010

INVESTING IN INNOVATION

- Implement the B.C. Bioenergy Strategy for renewable energy
- Generate electricity from mountain pine beetle wood and waste wood

ENERGY SECURITY

- Maintain public ownership of BC Hydro and BC Transmission Corporation (BCTC)
- Maintain our competitive electricity rate advantage
- Achieve electricity self-sufficiency by 2016
- Acquire additional "insurance power" by 2026
- Encourage small electricity generation projects

BC HYDRO'S ACTIONS TO MEET BC'S FUTURE ELECTRICITY NEEDS

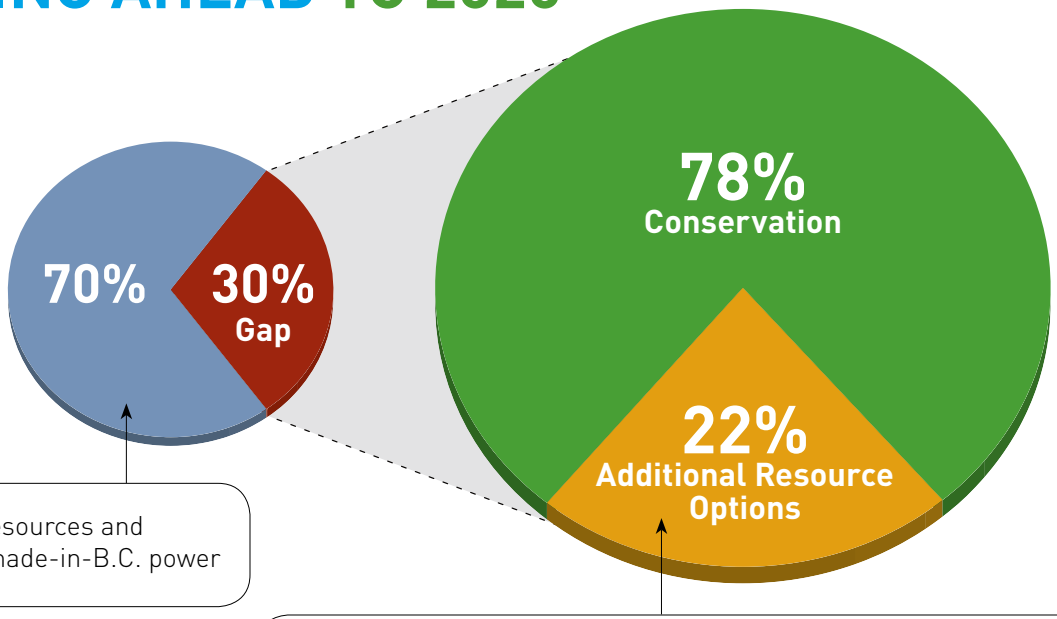
Since the release of its 2006 LTAP, BC Hydro has taken important steps to secure our province's future electricity needs, such as:

- Building public awareness of the urgent need to use less electricity and use it more efficiently through initiatives such as Team Power Smart and other conservation programs
- Acquiring more clean, made-in-B.C. power from smaller-scale projects through processes such as the Clean Power Call, the Bioenergy Call and our Standing Offer Program for power projects under 10 megawatts (MW)
- Investing $3.4 billion over the next two years to modernize our heritage hydro assets
- Partnering with BCTC to begin work on the Interior to Lower Mainland transmission network (ILM), the largest expansion to B.C.'s transmission system in 30 years
- Exploring additional large-scale electricity sources, including the possibility of a new third dam and generating station on the Peace River, known as Site C

As part of our responsibility to ensure we meet the province's electricity supply now and into the future, BC Hydro continues to explore a variety of options. Each of these options comes with its own economic and social benefits and costs; each comes with its own environmental advantages and risks.

Although there are many issues and considerations underlying how we plan for B.C.'s electricity future, closing the emerging electricity gap will be met in three fundamental ways. Put simply, it means **conserving more**, **buying more** and **building more**, either by investing in our heritage assets or investigating new resource options. Our planning process assesses these options and looks at ways to mitigate the risks and maximize the opportunities that we will face in the coming years.

LOOKING AHEAD TO 2020



BC Hydro resources and additional made-in-B.C. power

A mix of additional resource options will also be considered, such as:

- Small-Scale Hydro
- Wind
- Geothermal
- Natural Gas
- Biomass
- Coal (carbon-sequestered)
- Solar, Tidal and other technologies
- Site C

78 PER CENT OF BC'S FUTURE ELECTRICITY NEEDS WILL COME FROM CONSERVATION

THE FIRST AND BEST RESOURCE OPTION IS CONSERVATION AND ENERGY EFFICIENCY

USING LESS ELECTRICITY, USING IT WISELY

The first and best way to help close B.C.'s electricity gap is through conservation and energy efficiency. Through its Power Smart program, BC Hydro is a global leader in conservation, providing an ever-expanding range of programs and incentives to help its customers conserve, be more efficient, use power wisely, and ultimately use less. British Columbians are now saving enough electricity equivalent to meet the annual needs of more than 440,000 homes.

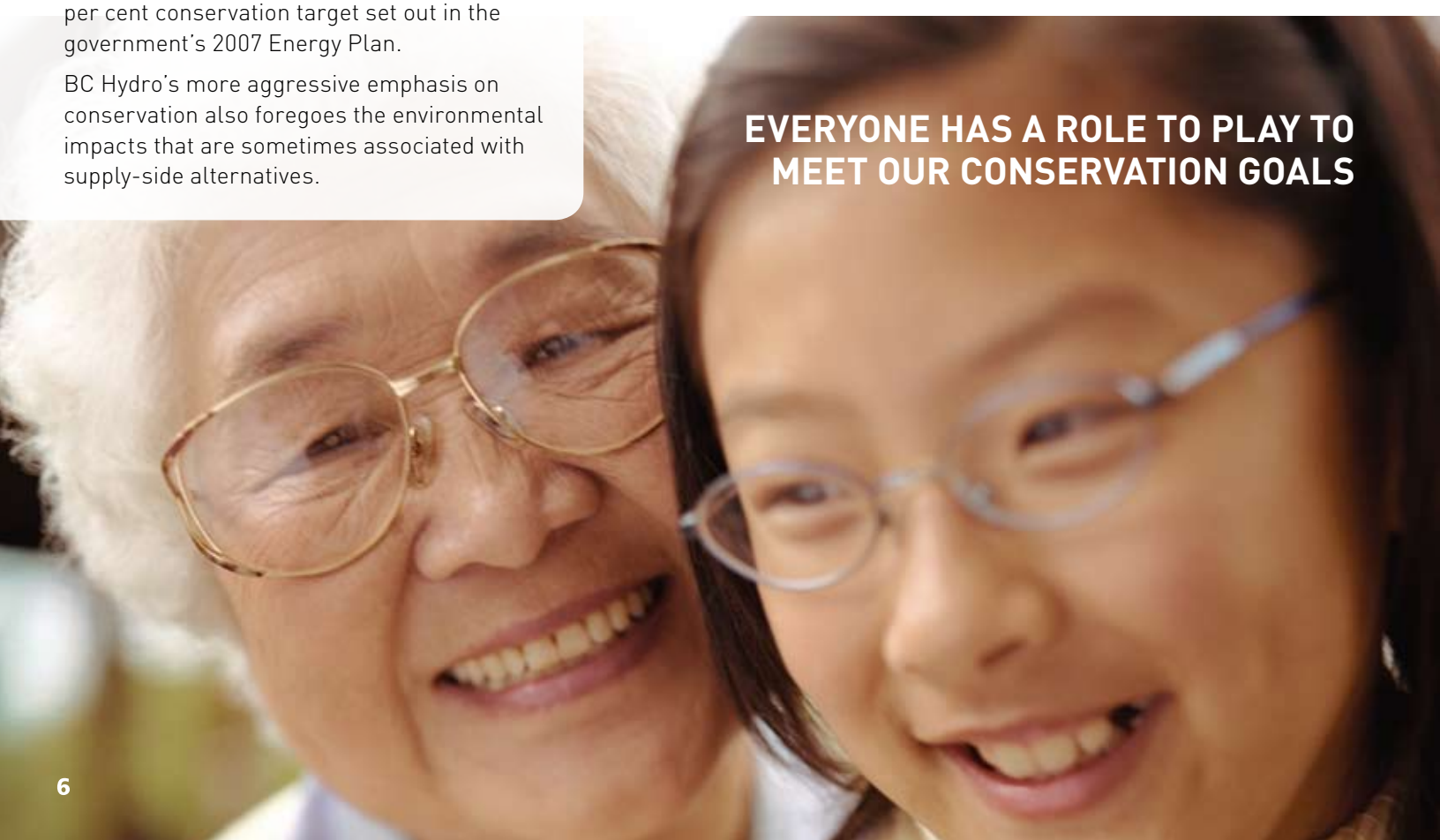
The provincial government's 2007 Energy Plan recognizes the conservation leadership that BC Hydro has helped to foster, and challenges all of us to do even more. In fact, BC Hydro's ambitious demand-side measures – from conservation programs and changes in rate structures to new regulatory codes and standards – are forecast to save over 10,000 GWh per year in 2020, which exceeds the 50 per cent conservation target set out in the government's 2007 Energy Plan.

BC Hydro's more aggressive emphasis on conservation also foregoes the environmental impacts that are sometimes associated with supply-side alternatives.

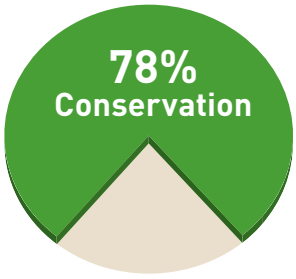
BC Hydro plans to meet its aggressive conservation targets through:

- **Codes and Standards** – including changes to energy efficiency regulations for appliances and building standards
- **Rates** – implementing "conservation" rate structures
- **Programs** – including incentives and marketing efforts for residential, commercial and industrial customers

New Power Smart initiatives are encouraging people, businesses and communities throughout B.C. to make a difference by taking a leadership role in conservation and energy efficiency.



EVERYONE HAS A ROLE TO PLAY TO MEET OUR CONSERVATION GOALS



CONSERVATION IN ACTION

BC Hydro has established the following initiatives, including:

- The Electricity Conservation and Efficiency Advisory Committee, comprised of leaders from across the province who work together with BC Hydro to identify innovative ways to meet conservation targets
- Team Power Smart, comprised of B.C.'s business, political, community and sports leaders who share their passion for energy efficiency and conservation
- A new Public Sector Energy Conservation Agreement in partnership with the province, which focuses on reducing electricity consumption by 20 per cent by 2020 and expanding the use of alternative energy options across more than 6,500 public sector buildings in B.C.
- BC Hydro is working with the provincial and federal governments on an integrated residential energy efficiency upgrade initiative under the LiveSmart BC: Efficiency Incentive Program
- The Power Smart Appliance program provides mail-in rebates on Energy-Star-labeled clothes washers, refrigerators and freezers
- The Power Smart Innovation Challenge – a competition encouraging students, staff and faculty from B.C.'s post secondary institutions – identifies innovative conservation solutions and ideas
- A smart metering pilot study of nearly 2,000 volunteer residential customers. Smart meters allow consumers to better track their consumption patterns and adjust their habits accordingly, and allow BC Hydro to use rate structures to encourage energy efficiency and conservation

While BC Hydro will continue to play a leadership role in conservation, it will take personal leadership in households across the province to achieve our conservation targets. Households will not only have to curb the growth in electricity use, but also consume 10 per cent less electricity than they do today to achieve the residential conservation goal. Together, we can make a big difference.

REINVESTING IN OUR HERITAGE ASSETS

With our ongoing Resource Smart initiatives, BC Hydro continues to make important investments to modernize, expand the capacity, and extend the life of its existing assets. These investments, totaling over $3.4 billion over the next two years alone, will continue to ensure that the backbone of our system remains strong and reliable.

- A new fifth unit at the Revelstoke generating station will add 500 MW of capacity
- The redevelopment of the Aberfeldie generating station near Cranbrook will increase capacity from 5 MW to 24 MW
- BCTC's Interior to Lower Mainland transmission network (ILM)
- Major upgrades are also planned for the Mica, Peace Canyon and GM Shrum generating stations, as well as seismic upgrades to the Coquitlam Dam

In total, these major upgrades to our renewable heritage assets will add enough electricity to supply some 130,000 homes each year – with little or no impact on our environment.

LONG-TERM PLAN FOR BURRARD THERMAL

The energy from Burrard Thermal natural gas generating station, which is now old and inefficient, is not considered a clean energy source. Nevertheless, Burrard Thermal will continue its role of providing reliable back-up power to the province until at least 2019. This will ensure BC Hydro can meet peak demand and ensure that there is an option available, within the province, when it is needed.

REINVESTING IN OUR AGING HERITAGE HYDRO ASSETS WILL EXPAND THEIR LIFESPAN AND CAPACITY

COMPARING OUR ADDITIONAL RESOURCE OPTIONS

Even though conservation will meet over three-quarters of our future electricity needs, BC Hydro must still consider other made-in-B.C. resource options to meet the balance of our requirements.

Our province is fortunate to have several potential clean resource options to meet our needs, including hydroelectric dams, biomass facilities, small hydro and wind projects. When considering these made-in-B.C. options, BC Hydro weighs a range of important factors, as discussed on the following pages.

CLEAN

CLEAN refers to energy that meets the BC Clean Guidelines as outlined by the provincial government.

FIRM

FIRM refers to electricity that is available at all times. Examples include large hydroelectric dams, bioenergy, geothermal and natural gas.

INTERMITTENT

INTERMITTENT electricity is limited or not available at all times, such as wind energy, which only produces power when the wind is blowing. Other examples of intermittent electricity include run-of-river projects, solar, and tidal energy.

PEAK DEMAND

PEAK DEMAND refers to the highest level of electricity that the utility can supply at any one time.

COMPARING OUR ADDITIONAL RESOURCE OPTIONS

SMALL-SCALE HYDRO

- Electricity is generated from water temporarily diverted from a stream, passed through hydro generators, and returned to the stream
- Provides intermittent supply with low dependable capacity
- Normally no significant water storage
- Many small hydro projects are situated on non-fishbearing streams or allow fish passage
- Sites could be situated in close proximity to interconnect with integrated system
- Good resource potential
- B.C.'s steep mountain terrain lends itself to small hydro development, with some concentration of sites
- **Identified within BC Clean Guidelines and may be certified as Green Energy**

WIND

- Electricity is generated by wind farms using large wind-powered turbine generators
- Provides intermittent supply with low dependable capacity
- Most wind sites are situated in remote areas so there are long distances to interconnect with integrated system
- Good resource potential
- B.C.'s sites include ridge-based and offshore
- **Identified within BC Clean Guidelines and may be certified as Green Energy**

GEOTHERMAL

- Electricity is generated by using a natural heat source to power a steam generator
- Provides reliable supply with both dependable capacity and firm energy
- Potential at a limited number of sites in B.C.
- **Identified within BC Clean Guidelines and may be certified as Green Energy**

ALL NEW ELECTRICITY GENERATION PROJECTS WILL HAVE ZERO NET GREENHOUSE GAS EMISSIONS

NATURAL GAS

- Electricity is generated from high-efficiency gas-fired turbines in medium-to-large generating stations
- Provides reliable supply with both dependable capacity and firm energy
- May be situated on existing industrial sites, with low associated land impact
- Good resource potential
- B.C. has natural gas and has access to market supply
- Project developers may face long-term fuel availability/price risks and costs of future greenhouse gas regulation

BIOMASS

- Electricity is generated by burning wood residues from the forest industry or municipal solid waste as a fuel for steam generators
- Provides reliable supply with both dependable capacity and firm energy
- Potential varies with availability of fuel source
- Biomass availability varies with the state of the forest industry
- Project developer faces costs of mitigation of emissions
- **Identified within BC Clean Guidelines and may be certified as Green Energy**

CLEAN COAL

- The BC Energy Plan stipulates that coal will only be allowed as a resource for electricity generation when it can reach zero greenhouse gas emissions. As "clean-coal" technology with full carbon sequestration is not yet commercially available, it remains out of the scope of BC Hydro's current planning horizon.

MORE CLEAN POWER

BC Hydro has three competitive procurement processes underway to acquire additional power. These include:

- A Standing Offer Program for clean electricity projects of less than 10 megawatts
- A Clean Power Call, targeting 5,000 GWh/year of energy
- A Bioenergy Call for projects that generate electricity from under-utilized wood residues, including wood affected by the mountain pine beetle

LARGE HYDRO

SITE C: A POTENTIAL OPTION TO HELP MEET BC'S FUTURE ELECTRICITY NEEDS

Site C is a potential third dam and generating station on the Peace River in the province's northeast region, and is one of several resource options that could help meet British Columbia's energy needs. Site C would provide about 900 megawatts of capacity, and produce approximately 4,600 gigawatt hours of electricity each year – enough to power about 460,000 homes. If built, Site C would be a mid-size facility with a significant upfront capital cost, a long operating life and low operating costs.

BC Hydro has developed a five-stage approach for evaluating Site C that enables the provincial government to evaluate and decide at key points in the process whether or not to proceed with the project. BC Hydro has completed Stage 1, and is currently in Stage 2, Project Definition and Consultation. Stage 2 involves further project definition, including environmental, engineering and socio-economic studies, as well as consultation with First Nations, communities, and stakeholders. At the end of Stage 2, BC Hydro will make a recommendation to government for a decision on whether to proceed to the next stage of project planning and development.

Based on the proposed schedule, the earliest Site C could operate, should the project proceed, would be 2019. Much more work and analysis needs to happen before the provincial government considers that decision.

MAKING OUR PLAN A REALITY

BC Hydro has an obligation to provide reliable, cost-effective electricity supply in an environmentally responsible manner, sufficient to meet customer demand. This obligation forms the basis of BC Hydro's planning objectives.

BC Hydro's current load forecast indicates that B.C.'s electricity requirements will grow by between 25 and 40 per cent over the next 20 years. As part of BC Hydro's responsibility to ensure the province's electricity supply for the future, we are looking at a variety of options to close the gap that will emerge in the years ahead.

Central to our objective of closing that gap is an ambitious demand-side management plan to encourage conservation.

Demand-side measures – from conservation programs and changes in rate structures to new regulatory codes and standards – are forecast to save over 10,000 GWh per year by 2020, which exceeds the 50 per cent conservation target set out in the government's B.C. Energy Plan.

Not only is conservation the first and best way to help close B.C.'s electricity gap, but it is the most cost-effective option. It also foregoes the environmental impacts that are sometimes associated with supply-side alternatives.

But energy efficiency and conservation will not be enough to meet the growing demand for electricity in the province. New electricity resources – both large and small – must be considered. The 2008 LTAP examines the costs and benefits of resource options such as small hydro, wind, geothermal and biomass projects, as well as the potential for a large-scale hydro project on the Peace River.

The 2008 LTAP identifies the risks, the uncertainties and ultimately the steps BC Hydro proposes to take during the next two to three years to meet future demand.

It's an ambitious plan of action but also one that is cost effective and environmentally responsible ... for generations.

For more information about BC Hydro's 2008 Long-Term Acquisition Plan, please go to: **www.bchydro.com**

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