

# **BC Hydro and Power Authority**

## **2015/16 – 2017/18 SERVICE PLAN**



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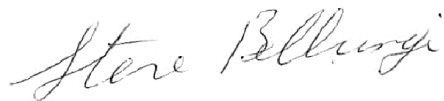
BC Hydro's Service Plan can be found online at  
[http://www.bchydro.com/about/accountability\\_reports/financial\\_reports/service\\_plan.html](http://www.bchydro.com/about/accountability_reports/financial_reports/service_plan.html)

## Accountability Statement

The 2015/16 - 2017/18 BC Hydro service plan was prepared under the Board's direction in accordance with the *Budget Transparency and Accountability Act* and the B.C. Reporting Principles. The plan is consistent with government's strategic priorities and fiscal plan. The Board and Management are accountable for the contents of the plan, including what has been included in the plan and how it has been reported.

All significant assumptions, policy decisions, events and identified risks, as of January 31, 2015, have been considered in preparing the plan. The performance measures presented are consistent with BC Hydro's mandate and goals, and focus on aspects critical to the organization's performance. The targets in this plan have been determined based on an assessment of BC Hydro's operating environment, forecast conditions, risk assessment and past performance.

Stephen Bellringer

A handwritten signature in cursive script that reads "Steve Bellringer".

Board Chair

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# Strategic Direction and Context

## Strategic Direction

BC Hydro was created over 50 years ago to generate and deliver clean, reliable and competitively priced electricity to homes and businesses throughout British Columbia. The electricity generated by our dams and delivered by our transmission and distribution infrastructure has powered B.C.'s economy and quality of life for generations.

To meet the objectives set out in the [B.C. Government's Mandate Letter](#), BC Hydro has strategies in place to safely and reliably meet the energy needs of British Columbians while also responsibly managing costs and maintaining competitive rates.

Providing reliable power to British Columbians requires maintaining the health of our infrastructure, identifying future supply to meet customers' needs, and putting in place new technologies and work methods to support the reliability and safety of our system.

Guided by [the Province's 10 year plan for rates](#), BC Hydro is implementing [the Integrated Resource Plan](#) and the [Taxpayer Accountability Principles](#). In fiscal 2016, BC Hydro will continue to carefully manage costs and foster a culture of cost consciousness and accountability to provide services as efficiently, effectively, and safely as possible.

In December 2014, the B.C. Government approved the Site C Clean Energy Project to proceed to construction in summer 2015. Once completed in 2024, Site C will provide clean, reliable and cost-effective electricity for more than 100 years. It will generate enough electricity each year to power the equivalent of about 450,000 homes.

## Operating Environment

### Priorities

Today, B.C.'s electrical system remains the backbone of our economy and quality of life. Our customers count on us to deliver clean, reliable and affordable electricity to their homes, businesses and industries. They expect us to be open, fair and responsible in our interactions with them. Customer expectations are a priority for BC Hydro.

As announced in November 2013, the Province's 10 year plan creates rate certainty for BC Hydro customers until the end of fiscal 2019. In order to meet this commitment, BC Hydro will continue to operate in an efficient manner to reduce costs. As a result we are expected to continue to have some of the lowest rates in North America for residential, commercial and industrial customers.

Within this 10 year plan for rates, BC Hydro will continue with its significant capital plan, spending an average of \$2.4 billion per year for the next 10 years to invest in the upgrading of ageing assets and construction of new infrastructure to support British Columbia's growing population and economy.

Along with this investment in our system, BC Hydro remains focused on conservation and energy efficiency measures, including the *Clean Energy Act's* objective to meet at least two-thirds of future

demand growth through conservation by 2020. This will be achieved through the efforts of our customers alongside the \$1.6 billion investment in conservation programs that BC Hydro will make over the 10 year plan for rates.

We will also ensure the safe and reliable supply of electricity through ongoing and regular maintenance of our generation, transmission and distribution systems. Supplying safe and reliable electricity also includes preventing employee, contractor and public injuries; mitigating and responding to outages from storms and other events; and, continuing to enhance our disaster preparedness in alignment with industry best practices.

We recognize the importance of building mutually-beneficial relationships with Aboriginal communities. In fiscal 2016, we will continue to develop a more comprehensive approach for long-term and effective business relationships and identify opportunities for collaboration with Aboriginal people in B.C. An example of this collaboration with Aboriginal groups is the Iskut Extension Project, which went into service in December 2014. This extension of the transmission system, combined with a new substation and distribution line, will not only provide clean power for Imperial Metal's Red Chris Mine and other potential industrial developments but also deliver clean electricity to the community of Iskut for the first time.

With prudent reinvestment, careful planning and strong, respectful relationships, BC Hydro is well positioned to deliver clean, reliable power for the long-term benefit of our growing province.

### **Risks and Opportunities**

BC Hydro strives to manage all the risks it faces on a cost effective basis, taking into account the potential benefits to be gained in return for acceptance of the risk. Risks that could significantly impact BC Hydro meeting its objectives are outlined at [www.bchydro.com/serviceplan](http://www.bchydro.com/serviceplan).

# Performance Plan

## Goals, Strategies, Measures and Targets

BC Hydro's vision is: ***Powering B.C. with clean, reliable electricity for generations*** and we have six core values that are essential to our success: accountability, integrity, safety, service, teamwork and ingenuity. In addition, six strategic goals guide our actions each supported by corresponding strategies, performance measures and targets. Each performance measure has a definition and rationale, as well as benchmarking measures that allow a comparison of performance over time. These measures track our progress on delivering key priorities. BC Hydro management is responsible for measuring performance against targets, and results are reported to the Board on a quarterly basis and publicly in the Annual Report. The vision and its associated values and strategic goals support transparency and accountability as required by Government under the Taxpayer Accountability Principles.

### **Taxpayer Accountability Principles: Service**

*BC Hydro will continue to focus on providing effective value-for-money public services and programs by setting and monitoring appropriate targets specific to our costs, rates, reliability and customer satisfaction.*

### **Goal 1: Safely Keep The Lights On**

*Safely and reliably meet the electricity needs of our customers through integrated planning and technology, and in the operation, maintenance and advancement of our system.*

#### **Strategies**

- Continue our focus on employee, contractor and public safety by implementing our five-year safety strategy, which includes:
  - improving the culture through implementing BC Hydro's Safety Taskforce's 21 recommendations;
  - focussing on regulatory compliance, particularly in moving the Asbestos Management program into day to day operations (sustainment), consolidating and enhancing the Confined Space program, and updating the Crane/Hoist authorizations and certification standards; and,
  - focussing on electrical safety with an emphasis on arc flash hazards, improvements to electrical system rules and procedures for employees and contractors, as well as expanding the public safety electrical awareness program.
- Ensure the reliability of the system by effectively implementing capital and maintenance programs to manage overall asset health.
- Improve the overall outage detection and restoration process using data from our Smart Meter Program.
- Continue to effectively manage dam safety issues, risks and regulatory requirements.

- Identify and address vulnerabilities in our operating system on a regional basis (including vulnerability to a major seismic or catastrophic event) and have in place well practiced emergency response plans in order to improve overall system reliability.

### Performance Measures 1-8<sup>1</sup>

Performance Measures	Four Year Avg.	Actual F2013	Actual F2014	Target F2015	Forecast F2015	Target F2016	Target F2017	Target F2018
<b>Safety measures</b>								
<b>Zero Fatality &amp; Serious Injury<sup>2</sup></b> [Loss of life or the injury has resulted in a permanent disability]	1.25	2 <sup>3</sup>	0	0	1 <sup>4</sup>	0	0	0
<b>Severity<sup>2,5</sup></b> [Number of calendar days lost due to injury per 200,000 hours worked]	30.9	45.1 <sup>6</sup>	28.9	25.0	20.0	25.0	25.0	25.0
<b>Lost Time Injury Frequency<sup>2,8</sup></b> [Number of employee injury incidents resulting in lost time (beyond the day of the injury) per 200,000 hours worked]	1.0	1.0	0.9	NR <sup>7</sup>	1.0	1.0	0.9	0.9
<b>Reliability measures</b>								
<b>CAIDI (duration)<sup>9</sup></b> [average interruption in hours per interrupted customer]	2.22	2.12	2.30	2.25	2.45	2.30	2.30	2.30
<b>SAIDI (duration)<sup>9</sup></b> [total outage duration (in hours) experienced by an average customer in a year]	NR	NR	3.58	3.15	3.19	3.22	3.22	3.11
<b>SAIFI (frequency)<sup>9</sup></b> [Number of sustained disruptions per year] (excluding major events)	1.58	1.29	1.56	1.40	1.30	1.40	1.40	1.35
<b>CEMI-4 (%)<sup>9</sup></b> [Customers experiencing four or more outages]	11.88	9.10	12.35	11.00	8.43	11.00	11.00	10.50
<b>Winter Generation Availability (%)</b>	96.50	98.10	96.80	96.40	96.40	96.40	96.40	96.40

<sup>1</sup> Performance Measure descriptions, rationale, data source information and benchmarking is available online at [www.bchydro.com/performance](http://www.bchydro.com/performance).

<sup>2</sup> BC Hydro's safety performance measures do not include contractor or public safety injuries or fatalities.

<sup>3</sup> Fiscal 2013 Actual reflects the July 2014 reclassification of an incident from August 2012 as a serious injury based on recent information from WorkSafeBC on the extent of the worker's injuries. Neither of the incidents in fiscal 2013 resulted in a fatality.

<sup>4</sup> The fiscal 2015 forecast reflects that a serious injury from an electrical contact occurred November 2014.

<sup>5</sup> The severity targets for fiscal 2016 and fiscal 2017 have been revised to better reflect past performance.

<sup>6</sup> The fiscal 2013 Severity result of 45.1 is unusually high compared to other years. Over 40 per cent of the fiscal 2013 Severity result is due to five injuries resulting in considerable time loss (180 days or more). Traditionally, BC Hydro only experiences one or two injuries in a year with this amount of time loss.

<sup>7</sup> There was no official Lost Time Injury Frequency target set for fiscal 2015 as this is a new measure.

<sup>8</sup> Replacement of the All Injury Frequency Safety Measure with Lost Time Injury Frequency. Focusing on Lost Time Injury Frequency encourages managers to identify modified work duties for job categories and locations where workers experience injury, enabling injured workers to stay on the job while they recover. The earlier an injured worker is able to safely return to productive employment and maintain his or her positive connection to the workplace, the more likely he or she is of obtaining maximum recovery. With the increased granularity this metric provides, the organization is better able to focus its efforts on managing the hazards that can lead to Lost Time injuries.

<sup>9</sup> Annual targets are based on a number of factors including long-term historic reliability trending, current year performance, previous years investments and future years investment plans. Targets for fiscal 2016 and fiscal 2017 have been adjusted to reflect these factors but remain in line with historical performance.

**Note:** Reliability targets are based on specific values, however performance within 10 per cent is considered acceptable given the wide range of variations in weather patterns and uncontrollable elements that can significantly disrupt the electrical system. BC Hydro measures reliability under normal circumstances, because major events are not predictable and largely uncontrollable. The reliability measure is therefore based on data that excludes major events. BC Hydro reviews performance during major events and takes the performance into consideration in reliability improvement initiatives.



## Goal 2: Succeed Through Relationships

*Gain support for our work by building trusted relationships with First Nations, customers, suppliers and the communities we serve.*

### Strategies

- Increase the integration and consistency between the different customer channels that support new connections, billing, and program participation such as BC Hydro's demand side management implementation.
- Continue to meet the evolving needs of customers by refining the customer notification process for work requiring a planned outage, and by increasing self-service options through both our web and mobile platforms.
- Sustain gold-level certification under the Progressive Aboriginal Relations program by maintaining leading practices in the areas of Aboriginal employment, business development, capacity development and community engagement.
- Increase project and operational support by continuing to build collaborative, respectful and mutually beneficial relationships with First Nations.
- Continue to advance the Clean Energy Strategy, as outlined in the Integrated Resource Plan, which includes promoting First Nations participation in clean energy projects.

### Taxpayer Accountability Principles:

#### *Respect*

*BC Hydro will continue to ensure a high level of engagement and/or consultation on significant initiatives such as our large capital plan, the Rate Design Application, and implementing the Taxpayer Accountability Principles for 2015.*

### Performance Measure 9 - 12<sup>1</sup>

Measure	Four Year Avg.	Actual F2013	Actual F2014	Target F2015	Forecast F2015	Target F2016	Target F2017	Target F2018
<b>CSAT Index</b> [Customer Satisfaction Index: % of customers satisfied or very satisfied]	86.8	86.0	85.0	85.0	<b>85.0</b>	85.0	85.0	85.0
<b>Billing Accuracy</b> [% of accurate bills]	98.6	98.5	99.1	99.0	<b>99.4</b>	99.0	99.0	99.0
<b>First Call Resolution<sup>2</sup></b> [% of customer calls resolved first time]	71.5	68.0	71.0	73.0	<b>70.0</b>	71.0	71.0	71.0
<b>Progressive Aboriginal Relations Designation<sup>3</sup></b>	N/A	Gold	Gold	Gold	<b>Gold</b>	Gold	Gold	Gold

<sup>1</sup> Performance Measure descriptions, rationale, data source information and benchmarking is available online at [www.bchydro.com/performance](http://www.bchydro.com/performance).

<sup>2</sup> The fiscal 2016 and fiscal 2017 targets were reduced compared to the 2014/15-2016/17 Service Plan due to the movement of a greater number of less complicated calls to the self-serve environment (web and phone) resulting in the call centre handling a greater percentage of complex calls that may not lend themselves to resolution on the first call.

<sup>3</sup> BC Hydro attained a gold-level designation from the Canadian Council for Aboriginal Business in fiscal 2013 which is valid for a three year period. In fiscal 2016, BC Hydro will apply for the next certification.

## Goal 3: Mind Our Footprint

*Create a sustainable energy future in B.C. by carefully managing our impacts on the environment and fostering an energy conservation and efficiency culture.*

### Strategies

- Implement the Demand-Side Management Plan, including the *Clean Energy Act's* objective to meet at least two-thirds of future demand growth through conservation by 2020.
- This includes Power Smart programs and conservation rate structures, supporting new energy efficiency regulations, and maintaining an energy conservation and efficiency culture.
- Develop and implement appropriate independent power projects; manage energy purchased from independent power producers; and, advance clean energy capacity resources in order to continue to meet the 93 per cent clean energy objective in the *Clean Energy Act*.
- Pursue cost-effective greenhouse gas (GHG) emission reductions from our buildings and vehicle fleet and purchase offsets for our residual emissions thereby contributing to the Province's goal of carbon neutrality in the public sector.
- Support the Province's goal of reducing the carbon intensity of the transportation energy used by British Columbians by supplying low carbon electricity for transportation purposes including shore power for ships.
- Manage the impact on the environment from BC Hydro's new developments and retrofits of existing facilities by incorporating an "avoid, minimize and offset" approach to project design, planning and implementation.
- Continue to implement environmental studies and projects related to water licence requirements under BC Hydro's Water Use Plans, to confirm the suitability of operational controls at hydroelectric generating plants.
- Continue to implement the PCB electrical equipment phase-out strategy, and the long-term strategy for the handling, decontamination and disposal of PCB-contaminated equipment and materials.
- Ensure resources, training and tools are in place at BC Hydro's facilities and throughout our operations to identify risks and prevent environmental incidents, and deploy the most effective approaches to minimize impacts when incidents occur.
- Work in partnership with First Nations and communities to understand impacts related to managing BC Hydro's assets and implement compensation programs and other environmental projects reflective of this input.

### Performance Measures 13 - 16<sup>1</sup>

Performance Measures	Four Year Avg.	Actual F2013	Actual F2014	Target F2015	Forecast F2015	Target F2016	Target F2017	Target F2018
<b>Demand Side Management (DSM)</b> (GWh/year) <sup>2</sup>	This is a cumulative target; an average is not applicable.	4,460	4,776	5,500	<b>4,380</b>	5,000	5,600	6,100
<b>Clean Energy (%)</b> <sup>3</sup>	97.1	98.2	97.1	93.0	<b>93.0</b>	93.0	93.0	93.0
<b>Electricity Production GHG Emissions</b> (kilotonnes CO <sub>2</sub> e) <sup>4,5</sup>	Metric moved to calendar year in F2012.	631	730	740	<b>740</b>	1,110	1,120	1,270

<b>Carbon Neutral Program Emissions</b> (kilotonnes CO <sub>2</sub> e) <sup>4,6</sup>	Average cannot be calculated. Metric moved to report calendar year in F2012.	28.8	27.0	29.0	<b>27.3</b>	28.0	28.0	28.0
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<sup>1</sup> Performance Measure descriptions, rationale, data source information and benchmarking is available online at [www.bchydro.com/performance](http://www.bchydro.com/performance).

<sup>2</sup> Target numbers are rounded values presented as cumulative run-rate savings since 2008 and include energy savings from Power Smart programs as well as from codes/standards and rate structures. The energy savings forecast for fiscal 2015 and targets for fiscal 2016, fiscal 2017 and fiscal 2018 include the impact of the evaluation of the energy savings from conservation rate structures, which have largely contributed to a reduction of the DSM targets relative to the previous Service Plan.

<sup>3</sup> The Clean Energy Target represents the minimum threshold generation target in accordance with the B.C. Government’s requirement that at least 93 per cent of electricity generation in the province be from clean or renewable resources. BC Hydro’s forecast is based on actual resource use and is consistent with previous years.

<sup>4</sup> All actuals, forecast and targets for Electricity Production GHG Emissions and Carbon Neutral Program Emissions are presented on a calendar year basis, not fiscal year. For Electricity Production, this is to ensure consistency with GHG emissions reports filed under the *Canadian Environmental Protection Act, 1999* and the B.C. Reporting Regulation. For Carbon Neutral this is to ensure consistency with the B.C. Carbon Neutral Government Regulation.

<sup>5</sup> The upward revision of the plan compared to previous Service Plan is primarily related to the potential for higher production from existing BC Hydro and independent power producer thermal plants.

<sup>6</sup> The targets are based on an updated forecast of emissions from the vehicle fleet, buildings and paper use.

## Goal 4: Foster Economic Development

*Foster economic development opportunities across B.C. through our projects, practices and advancement of the energy efficiency and clean energy sectors.*

### Strategies

- As outlined in the Integrated Resource Plan, advance a set of actions that support a diverse clean energy sector and promote clean energy opportunities for First Nations.
- Support the Province’s priorities through implementation of projects such as transmission upgrades between Prince George and Kitimat that are required to prepare to meet future LNG requirements; and, adding supply to the northeast part of the province through the Peace Region Electricity Supply project to meet industrial load growth in the Dawson Creek/Groundbirch area.
- Help expand and retain current customers by improving the competitiveness of their businesses through Power Smart programs and the delivery of competitively priced electricity.

### **Taxpayer Accountability Principles:** *Accountability*

*Accountability is one of BC Hydro’s core values and BC Hydro’s strategic goals align directly to the Government’s strategic mandate to support economic development. We keep rates competitive by responsibly managing the business; and, we develop and promote positive, mutually beneficial relationships with First Nations, two examples of how we are supporting economic growth in the Province.*

BC Hydro continues to enable economic development and will measure performance through reliability, maintaining competitive rates, and through implementing our capital plans.

## Goal 5: Maintain Competitive Rates

*Deliver value for British Columbia and maintain competitive rates by efficiently and responsibly managing our business.*

### Strategies

- Prudently implement the 10 year plan for rates, the Integrated Resource Plan and BC Hydro's capital plan to ensure a cost-effective electricity supply.
- Continue to improve operational excellence, safety and reliability by improving work delivery methods, resourcing strategies, and integrated planning.
- Continue to implement supply chain strategies to deliver improved operational performance and efficiencies.
- Begin building Site C, a third dam and generating station on the Peace River, which is the most cost-effective way to meet the long-term need for energy and dependable capacity.

### **Taxpayer Accountability Principles: Cost Consciousness (Efficiency)**

*BC Hydro will continue to foster a culture of cost consciousness and operate within the 10 year plan by focussing on management and control of costs including implementing process improvements in order to realize efficiencies.*

### **Taxpayer Accountability Principles: Appropriate Compensation**

*BC Hydro will continue to provide sustainable total compensation to attract the best candidates, align employees to our key objectives, retain top performers and maintain employee well-being while also keeping rates low for customers.*

## Performance Measures 17 - 20<sup>1</sup>

Performance Measures	Four Year Avg.	Actual F2013	Actual F2014	Target F2015	Forecast F2015	Target F2016	Target F2017	Target F2018
<b>Competitive Rates<sup>2</sup></b>	1 <sup>st</sup> quartile	1 <sup>st</sup> quartile	1 <sup>st</sup> quartile	1 <sup>st</sup> quartile	<b>1<sup>st</sup> quartile</b>	1 <sup>st</sup> quartile	1 <sup>st</sup> quartile	1 <sup>st</sup> quartile
<b>Net Income<sup>3</sup></b> (\$ million)	NA <sup>4</sup>	509	549	582	<b>588</b>	653	693	707
<b>Operating Costs<sup>3,5</sup></b> (\$ million)	NA <sup>4</sup>	705	702	706	<b>706</b>	713	730	737
<b>Project Budget to Actual Cost<sup>6</sup></b>	-4.75% on \$3.33 billion <sup>7</sup>	+0.83% on \$3.29 billion	-4.75% on \$3.33 billion	This is a new metric. A target was not set for fiscal 2015.	Within +5% to -5% of budget excluding project reserve amounts	Within +5% to -5% of budget excluding project reserve amounts	Within +5% to -5% of budget excluding project reserve amounts	Within +5% to -5% of budget excluding project reserve amounts

<sup>1</sup> Performance Measure definitions, rationales, data sources, and benchmarking information are available at [www.bchydro.com/performance](http://www.bchydro.com/performance).

<sup>2</sup> Based on the annual HydroQuebec Report on Electricity Rates in North America.

<sup>3</sup> Performance within (+/-) 0.5% is considered acceptable.

<sup>4</sup> As a result of reintegration of BCTC in July 2010 and changes to the presentation of certain financial statement items, previous years' numbers are not comparable.

<sup>5</sup> Operating Costs are defined as personnel, materials and external services expenses included in income that are incurred in the day-to-day operation of BC Hydro's electric utility, net of recoveries, capitalized costs and reclassification adjustments.

<sup>6</sup> Project Budget to Actual Cost metric is new for Fiscal 2016. The data includes Generation, Substation and Transmission Line projects managed by the Project Delivery groups in Generation, and Transmission and Distribution. Annually, BC Hydro reflects the past 5 years' performance in delivering capital projects. This is a 5 year rolling data set of actual costs compared to original approved full scope implementation budgets not including project reserve amounts, for capital projects that were put into service during the period.

<sup>7</sup> This is a 5 year rolling average reflecting fiscal 2010 to fiscal 2014.

## Goal 6: Engage a Safe and Empowered Team

*Empower a team that is committed to safety, innovative and prepared for the future.*

### Strategies

- Address workforce gaps to ensure recruitment and development efforts provide a readily available talent pool for specialized, critical roles.
- Ensure the optimal and diverse complement of new recruits; skilled, experienced and high-performing employees; and, contracted or outsourced service providers.
- Ensure organizational leaders have the training and tools to support and encourage high performance and engage teams to work together collaboratively, safely, and effectively.

**Note:** For information on how BC Hydro is working to ensure the safety of employees, contractors and the public see Goal 1.

## Performance Measure 21<sup>1</sup>

Performance Measures	Four Year Avg.	Actual F2013	Actual F2014	Target F2015	Forecast F2015	Target F2016	Target F2017	Target F2018
<b>Employee Engagement (%)</b> <sup>2</sup>	Survey tool updated in F2013	78 Index score was 79.	79 Index score was 79.	Meet or exceed Towers Watson's Global Utilities Index	<b>82</b> <b>Index score is 79.</b>	Meet or exceed Towers Watson's Global Utilities Index	Meet or exceed Towers Watson's Global Utilities Index	Meet or exceed Towers Watson's Global Utilities Index

<sup>1</sup> Performance Measure definitions, rationales, data sources, and benchmarking information are available at [www.bchydro.com/performance](http://www.bchydro.com/performance).

<sup>2</sup> The target is to meet or exceed the annual Towers Watson Global Utilities Index Score (2014 index score was 79 per cent).

# Financial Plan

## Summary Financial Outlook

Consolidated Statement of Operations <sup>1</sup> (\$ millions)	2013/14 Actual	2014/15 Forecast	2015/16 Forecast	2016/17 Forecast	2017/18 Forecast
<b>Revenues (\$000)</b>					
<b>Domestic</b> .....	4,319	4,828	5,057	5,403	5,604
<b>Trade</b> .....	1,073	1,026	1,029	1,024	1,012
<b>Total</b> .....	<b>5,392</b>	<b>5,854</b>	<b>6,086</b>	<b>6,427</b>	<b>6,616</b>
<b>Expenses (\$000)</b>					
<b>Operating Costs</b>					
<b>Cost of Energy</b> .....	2,145	2,310	2,280	2,525	2,590
<b>Other operating expenses</b>					
<b>Personnel expenses, materials &amp; external services</b> <sup>2</sup> .....	848	864	900	963	1,006
<b>Amortization</b> .....	995	1,212	1,254	1,253	1,246
<b>Finance charges</b> .....	598	632	751	733	796
<b>Grants and taxes</b> .....	203	209	218	229	238
<b>Other</b> .....	53	39	30	31	33
<b>Total</b> .....	<b>4,843</b>	<b>5,266</b>	<b>5,433</b>	<b>5,735</b>	<b>5,909</b>
<b>Net Income</b> .....	<b>549</b>	<b>588</b>	<b>653</b>	<b>693</b>	<b>707</b>

Consolidated Statement of Operations <sup>1</sup> (\$ millions)	2013/14 Actual	2014/15 Forecast	2015/16 Forecast	2016/17 Forecast	2017/18 Forecast
<b>Net Debt</b> <sup>3</sup> .....	<b>15,461</b>	<b>16,826</b>	<b>17,942</b>	<b>19,122</b>	<b>20,613</b>
<b>Equity</b> .....	<b>3,865</b>	<b>4,207</b>	<b>4,485</b>	<b>4,780</b>	<b>5,189</b>
<b>Capital Expenditures</b> .....	<b>2,036</b>	<b>2,268</b>	<b>2,234</b>	<b>2,277</b>	<b>2,718</b>

<sup>1</sup> Table may not add due to rounding.

<sup>2</sup> These amounts are net of capitalized overhead and consists of the following:

	F2014	F2015	F2016	F2017	F2018
Domestic Base Operating Costs	702	706	713	730	737
Other	147	158	187	233	269
	848	864	900	963	1,006

Other largely consists of Powerex & Powertech operating costs, operating costs related to energy purchase agreements accounted for as capital leases, and the transitioning of IFRS-ineligible capital overhead into operating costs over a 10-year period.

<sup>3</sup> Debt figures are net of sinking funds and cash and cash equivalents.

## Key Forecast Assumptions

Key Assumptions	2013/14 Actual	2014/15 Forecast	2015/16 Forecast	2016/17 Forecast	2017/18 Forecast
<b>Growth and Load</b>					
B.C. Real Gross Domestic Product Growth (%) <sup>1</sup>	1.9	1.9	2.3	2.5	2.5
Domestic Sales Load Growth (%) <sup>2,3</sup>	(7.00)	0.46	3.97	1.52	3.16
Residential Sales Load Growth (%) <sup>2</sup>	1.48	(0.17)	0.63	(0.61)	0.51
Light Industrial and Commercial Sales Load Growth (%) <sup>2</sup>	0.64	0.95	0.75	1.21	1.61
Large Industrial Sales Load Growth (%) <sup>2</sup>	3.60	3.82	8.95	3.85	6.13
<b>Domestic Load (GWh):</b>					
Domestic Sales Volume (GWh) <sup>3</sup>	53,018	53,262	55,379	56,224	57,998
Line Loss and System Use (GWh)	5,900	4,938	5,502	5,571	5,700
Total Domestic Load (GWh)	58,918	58,201	60,882	61,795	63,698
<b>Energy Generation</b>					
Total System Water Inflows (% of average)	95	95	100	100	100
<b>Sources of Supply to Meet Domestic Load:</b>					
Net Hydro Generation (GWh)	46,590	44,771	46,695	46,123	46,602
Market Electricity Purchases (GWh) <sup>4</sup>	918	277	1,191	1,483	2,041
Independent Power Producers and Long-term Purchases (GWh)	11,025	12,766	12,608	13,833	14,694
Thermal Generation (GWh)	385	387	387	355	361
Sources of Supply for Domestic Load (GWh)	58,918	58,201	60,882	61,795	63,698
<b>Financial</b>					
Average Mid-C Price (U.S.\$/MWh)	36.18	32.52	32.22	34.24	36.89
Average Natural Gas Price at Sumas (U.S.\$/MMBTU)	4.20	4.11	3.82	3.94	4.13
<b>Canadian Short-Term Interest Rates (%)<sup>5</sup></b>					
Canadian Short-Term Interest Rates (%) <sup>5</sup>	1.27	0.99	1.32	1.97	2.73
<b>Canadian Long-Term Interest Rates (%)<sup>5</sup></b>					
Canadian Long-Term Interest Rates (%) <sup>5</sup>	3.16	2.95	3.68	4.09	4.95
<b>Foreign Exchange Rate (U.S.\$:Cdn\$)<sup>5</sup></b>					
Foreign Exchange Rate (U.S.\$:Cdn\$) <sup>5</sup>	0.9452	0.8980	0.8561	0.8645	0.8758

<sup>1</sup> Economic assumptions, based on calendar year, from Ministry of Finance First Quarterly Report September 2014.

<sup>2</sup> Includes the impact of Demand-Side Management programs.

<sup>3</sup> Includes surplus sales volume.

<sup>4</sup> Assumes that gas fired power generation capability available to service domestic demand is sometimes displaced by more cost-effective market purchases.

<sup>5</sup> Fiscal 2014; three months rate for short term and 10 years for long term. Fiscal 2015 to fiscal 2018, financial assumptions from Ministry of Finance, December 2014.

## Sensitivity Analysis

Factor	Change	Approximate change in fiscal 2016 earnings before regulatory account transfers (in \$ millions)
Hydro Generation (GWh) <sup>1</sup>	+/- 1%	15
Electricity trade margins	+/- 10%	15
Interest rates	+/- 1%	50
Exchange rates (US/ CDN)	\$0.01	5
Weather	1°C change in average temperature	25

<sup>1</sup> Assumes a change in hydro generation is offset by corresponding change in energy imports. (i.e. increase in hydro generation is offset by decrease in energy imports.)

## Management Perspective on Future Financial Outlook

In November 2013, the Province, as part of the 10 year plan for rates, announced rate increases for BC Hydro in fiscal 2015 and fiscal 2016 of 9 per cent and 6 per cent, respectively, with rate increases for fiscal 2017 to fiscal 2019 capped at 4 per cent, 3.5 per cent and 3 per cent, respectively. The 10 year plan for rates included several rate mitigation actions to lower future year rate increases, including changing water rental rates, lowering the return on equity, reducing dividends and smoothing general rate increases through the use of a regulatory account.

BC Hydro prepared the current financial projections for revenues and expenses through fiscal 2018 which were approved by the Board and submitted to the Ministry of Finance in January 2015. These financial projections are consistent with the 10 year plan for rates.



# Capital Plan and Major Projects

## Capital Expenditure by Year and Type and Function

(\$millions)	2013/14 Actual	2014/15 Forecast	2015/16 Forecast	2016/17 Forecast	2017/18 Forecast
<b>Capital Expenditures by Type<sup>1</sup></b>					
Sustaining	979	1,125	1,209	1,202	1,419
Growth	1,057	1,143	1,025	1,075	1,299
Subtotal – BC Hydro Capital Expenditures before CIA	2,036	2,268	2,234	2,277	2,718
Contributions-in-Aid (CIA) <sup>2</sup>	(131)	(260)	(131)	(144)	(158)
Total – BC Hydro Capital Expenditures net of CIA	1,905	2,008	2,103	2,133	2,560
<b>Capital Expenditures by Function</b>					
Generation	496	635	637	610	717
Transmission and Distribution	1,334	1,336	1,147	902	1,009
Properties, Technology and Other	206	283	268	274	279
Site C	-	14	182	491	713
Subtotal – BC Hydro Capital Expenditures before CIA	2,036	2,268	2,234	2,277	2,718
CIA	(131)	(260)	(131)	(144)	(158)
Total BC Hydro Capital Expenditures net of CIA	1,905	2,008	2,103	2,133	2,560

<sup>1</sup> BC Hydro classifies capital expenditures as either sustaining capital or growth capital:

- Sustaining capital includes expenditures to ensure the continued availability and reliability of generation, transmission and distribution facilities. It also includes expenditures to support the business, such as vehicles and information technology.
- Growth capital is required to meet customer load growth and other business investments. Growth capital expenditures relate to the expansion of existing generation assets as well as expansion and reinforcement of the transmission and distribution system, and includes Site C.

<sup>2</sup> Contributions in aid of construction are amounts paid by certain customers toward the cost of property, plant and equipment required for the extension of services to supply electricity.

## Planned Projects over \$50 million

BC Hydro has planned for the following projects, each with capital costs expected to exceed \$50 million, listed according to targeted completion date. These projects have been approved by the Board of Directors. Appendix B provides further details on each \$50 million project.

<b>Capital Project</b> (Project descriptions can be found in Appendix B)	<b>Targeted Completion Date</b> (calendar year)	<b>Total Cost</b> (\$ millions)	<b>Life to Date (LTD) Cost</b> as of December 31, 2014 (\$ millions)
<b>Projects Recently Put Into Service</b>			
<b>Vancouver City Central Transmission</b>	March 2014, In-Service	\$171	\$171
<b>Northwest Transmission Line Project</b>	July 2014, In-Service	\$716	\$664
<i>Total cost represents the gross cost of the project and has not been netted for contributions, which total \$220 million from the Federal Government and a customer prior to the in-service date. Additional annual payments will be received from a customer for 20 years after the in-service date.</i>			
<b>Mica SF<sub>6</sub> Gas Insulated Switchgear Replacement Project</b>	August 2014, In-Service	\$199	\$175
<b>Iskut Extension Project</b>	December 2014, In-Service	\$209	\$167
<i>The total cost represents the gross costs of the project and has not been netted to reflect the contribution from the customer towards the construction of the transmission line. The total cost increased from \$180M to \$209M to reflect a higher cost for the transmission line. BC Hydro purchased the transmission line upon completion by the customer at a fixed cost. The additional cost of the line, including the cost increase, was paid for by the customer and the net cost to BC Hydro for the project has not increased.</i>			
<b>Ongoing and Planned</b>			
<b>Merritt Area Transmission Project</b>	2015 Targeted completion	\$65	\$42
<b>Dawson Creek/Chetwynd Area Transmission Project</b>	2015 Targeted completion	\$296	\$183
<b>G.M. Shrum Units 1 to 5 Turbine Replacement</b>	2015 Targeted completion	\$272	\$144
<b>Long Beach Area Re-Inforcement</b>	2015 Targeted completion	\$56	\$22
<b>Surrey Area Substation Project</b>	2015 Targeted completion	\$94	\$39
<b>Interior to Lower Mainland Project</b>	2015 Targeted completion	\$725	\$574
<b>Smart Metering &amp; Infrastructure Program</b>	2015 Targeted completion	\$930	\$721
<i>Smart Metering &amp; Infrastructure Program amount includes both capital costs and operating expenditures subject to regulatory deferral.</i>			

<b>Hugh Keenleyside Spillway Gate Reliability Upgrade</b>	2015 Targeted completion	\$123	\$87
<b>Upper Columbia Capacity Additions at Mica – Units 5 &amp; 6</b>	2015 Targeted completion	\$714	\$486
<b>Big Bend Substation</b>	2017 Targeted completion	\$56	\$18
<b>Ruskin Dam Safety and Powerhouse Upgrade</b>	2017 Targeted completion	\$748	\$283
<b>John Hart Generating Station Replacement</b>	2019 Targeted completion	\$1,093	\$239
<b>Cheakamus Unit 1 and Unit 2 Generator Replacement</b>	2019 Targeted completion	\$74	\$4
<b>Site C Clean Energy Project</b>	2024* Targeted completion	\$8,335**	\$415 (deferred capital)

*\*Planned in-service date for all units. This timeline reflects the project's current schedule and is subject to change based on a review of the construction schedule.*

*\*\*Site C forecast and life-to-date amounts include both capital costs and expenditures subject to regulatory deferral. Total cost excludes the Project Reserve of \$440 million (established by the British Columbia Government to account for events outside of BC Hydro's control that could occur during construction) which is held by the Treasury Board. The increase to the 2010 capital cost estimate from \$7,900 million to \$8,335 million reflects costs associated with the change from the harmonized sales tax to the provincial sales tax, and a revised construction start date from January 2015 to summer 2015.*

## Contemplated Projects over \$50 million

BC Hydro is contemplating the following projects over \$50 million commencing during fiscal 2016-fiscal 2018, listed in alphabetical order. These projects are in the initial project phases; scope, final cost and benefit assessment, and completion dates are still to be determined. These projects are not yet approved by the Board of Directors.

<b>Capital Project</b> (Project descriptions can be found in Appendix B)	
Bridge River 2 Units 5 and 6 Upgrade	Peace Region Electric Supply
Bridge River 2 Units 7 and 8 Upgrade	Prince George to Terrace Capacitors
Clowhom Unit Upgrade	Revelstoke Improve Left Bank Slope Stability
Downtown Vancouver Electricity Supply Plan	Revelstoke Unit 6 Installation
G.M. Shrum G1-G10 Control System Upgrade	Seven Mile Unit 1-3 Turbines Overhaul
Horne Payne Substation Upgrade	Strathcona Dam Spillway Upgrade
John Hart Dam Seismic Upgrade	Strathcona Dam Discharge Upgrade
Ladore Dam Spillway Gates Upgrade	Terrace – Kitimat Transmission Project
Metro North System Supply Reinforcement	W.A.C. Bennett Dam Rip-Rap Upgrade
Northwest Substation Upgrades Project	

## Appendix A:

# Hyperlinks to Additional Information

## Corporate Governance

Information about Corporate Governance can be found at:

[http://www.bchydro.com/about/accountability\\_reports/financial\\_reports/service\\_plan.html](http://www.bchydro.com/about/accountability_reports/financial_reports/service_plan.html).

This includes links to information regarding:

- Board of Directors
- Executive Team
- Code of Conduct

### **Taxpayer Accountability Principles:**

#### ***Integrity***

*Integrity is one of BC Hydro's core values. BC Hydro has an Ethics Officer, and an Employee Code of Conduct which provides guidance on the standards of conduct expected of Directors, Employees and Contractors of BC Hydro. This includes guidelines on conflict of interest to ensure decisions and actions are transparent, ethical and free from conflict of interest.*

## Operating Environment

Information about BC Hydro's Operating Environment can be found at:

[http://www.bchydro.com/about/accountability\\_reports/financial\\_reports/service\\_plan.html](http://www.bchydro.com/about/accountability_reports/financial_reports/service_plan.html).

This includes links to information regarding:

- About BC Hydro: Organizational Overview
- Mandate and Legislation
- Risks and Opportunities
- Performance Measures Data Analysis, Benchmarking and Rationale

# Appendix B:

## Capital Project Descriptions

### Projects Recently Put Into Service

*(All costs are expressed in millions) (Life to Date costs as of December 31, 2014)*

#### Vancouver City Central Transmission

**March 2014, In-Service      \$171 Total cost      \$ 171 Life to Date (LTD) cost**

Built an enclosed 230/12 kV substation in the Mt. Pleasant area of Vancouver and two new underground 230 kV transmission lines connecting the new substation to the existing transmission network to serve growing loads in the Mt. Pleasant/False Creek area and maintain a reliable supply of electricity to other areas of Vancouver.

#### Northwest Transmission Line Project

**July 2014, In-Service      \$716 Total cost      \$664 LTD cost**

Constructed an approximately 340 km, 287 kV transmission line between Skeena Substation near Terrace and a new substation near Bob Quinn Lake to ensure a reliable supply of clean power to potential industrial developments in the area, and provide a secure interconnection point for clean generation projects. The total cost decrease from \$746M to \$716M is due to lower than estimated costs for line construction, clearing work, overhead and interest during construction.

*Total cost represents the gross cost of the project and has not been netted for contributions, which total \$220 million from the Federal Government and a customer prior to the in-service date. Additional annual payments will be received from a customer for 20 years after the in-service date.*

#### Mica SF<sub>6</sub> Gas Insulated Switchgear Replacement Project

**August 2014, In-Service      \$199 Total cost      \$175 LTD cost**

Replace the switchgear system at the Mica Generating Station and install additional switchgear capacity to accommodate the future Units 5 and 6 additions to ensure the reliability of this key generating station and reduce SF<sub>6</sub> (a greenhouse gas) leakage. The switchgear system, energized at 500 kV, conducts energy from the Mica underground powerhouse to the surface, where it transitions to transmission lines.

#### Iskut Extension Project

**December 2014, In-Service      \$209 Total cost      \$167 LTD cost**

The project includes construction of a customer-built 287 kV transmission line extension from Bob Quinn Substation to the customer's mine, via a new BC Hydro-built substation at Tatogga Lake. In addition, BC Hydro has built a 16 km distribution line from Tatogga Lake Substation to the community of Iskut. The total cost represents the gross costs of the project and has not been netted to reflect the contribution from the customer towards the construction of the transmission line. The total cost increased from \$180M to \$209M to reflect a higher cost for the transmission line. BC Hydro purchased the transmission line upon completion by the customer at a fixed cost. The

additional cost of the line, including the cost increase, was paid for by the customer and the net cost to BC Hydro for the project has not increased.

## Ongoing and Planned

*(All costs are expressed in millions) (Life to Date costs as of December 31, 2014)*

### Merritt Area Transmission Project

**2015 Targeted completion                      \$65 Total cost                      \$42 Life to Date (LTD) cost**

Construct a new 138 kV transmission line between the Merritt and Highland substations, expand the Merritt Substation and add new equipment at the Highland Substation to meet the increased demand for power in the Merritt area.

### Dawson Creek/Chetwynd Area Transmission Project

**2015 Targeted completion                      \$296 Total cost                      \$183 LTD cost**

The project will expand the Peace Region 230 kV transmission system to the Dawson Creek/Chetwynd Area to supply the area's load growth. The solution will include the construction of new 230 kV lines between Dawson Creek and Bear Mountain Terminal (BMT), and from BMT to a new substation called Sundance Lake Substation, located approximately 19 km east of Chetwynd. The total cost forecast increased from the 2013/14-2015/16 Service Plan due to increases in cost estimates for labour and materials and additional project consultation requested by the BCUC. The total cost estimate is within the range provided in the project's CPCN application update provided to the BCUC in March 2012.

### G.M. Shrum Units 1 to 5 Turbine Replacement

**2015 Targeted completion                      \$272 Total cost                      \$144 LTD cost**

Replace the Units 1 to 5 turbines to reduce the risk of runner failure, decrease maintenance costs and improve operating efficiency.

### Long Beach Area Re-Inforcement

**2015 Targeted completion                      \$56 Total cost                      \$22 LTD cost**

Expansion of Long Beach and Great Central Lake substations with two new transformers at each and capacitor banks at Long Beach to support the load growth and provide voltage support in the area.

### Surrey Area Substation Project

**2015 Targeted completion                      \$94 Total cost                      \$39 LTD cost**

Construct a new 200 MVA 230/25 kV substation in the Fleetwood area of Surrey. The station will be supplied from the adjacent 230 kV transmission line and will allow for future expansion to 400 MVA to service high load growth in the Fraser Valley West area. Construction of this new Fleetwood Substation will also allow for the decommissioning of 4 ageing substations in the Surrey/Langley area.

### Interior to Lower Mainland Project

**2015 Targeted completion                      \$725 Total cost                      \$574 LTD cost**

Construct a new 500 kV transmission line, approximately 247 km in length, between the Nicola Substation near Merritt and the Meridian Substation in Coquitlam and build a new series capacitor station at Ruby Creek near Agassiz to help meet domestic load growth in the Lower Mainland.

## **Smart Metering & Infrastructure Program**

**2015 Targeted completion                      \$930 Total cost                      \$721 LTD cost**

The Smart Metering and Infrastructure Program includes the installation of 1.9 million smart meters in homes and businesses across the province, an advanced telecommunications infrastructure to support electricity system management and customer applications, and information technology to support customer billing, load forecasting and outage management systems.

*Smart Metering & Infrastructure Program amount includes both capital costs and operating expenditures subject to regulatory deferral.*

## **Hugh Keenleyside Spillway Gate Reliability Upgrade**

**2015 Targeted completion                      \$123 Total cost                      \$87 LTD cost**

Upgrade the spillway gates at the Hugh Keenleyside Dam to increase public and employee safety by ensuring the gates meet flood discharge reliability requirements.

*Spillway gates control the amount of water that can be discharged from the reservoir. They are generally used in times of flood to pass high inflows.*

## **Upper Columbia Capacity Additions at Mica – Units 5 & 6**

**2015 Targeted completion                      \$714 Total cost                      \$486 LTD cost**

Install two additional 500 MW generating units into existing unit bays at the Mica Generating Station. The new units are similar to the four existing units, but with more efficient turbines.

## **Big Bend Substation**

**2017 Targeted completion                      \$56 Total cost                      \$18 LTD cost**

The South Burnaby, Big Bend area requires a new, 100 MVA, 69/12 kV Substation to meet local residential and commercial load growth.

## **Ruskin Dam Safety and Powerhouse Upgrade**

**2017 Targeted completion                      \$748 Total cost                      \$283 LTD cost**

Improve seismically deficient dam and rehabilitation/replacement of powerhouse equipment that was brought into service between 1930 and 1950. The project includes: reinforcement of the right embankment; seismic upgrade of the dam and water intakes; powerhouse upgrades; and, relocation of the switchyard. Once completed, the upgraded facility will be reliable and safe and will produce enough electricity to serve more than 33,000 homes.

## **John Hart Generating Station Replacement**

**2019 Targeted completion                      \$1,093 Total cost                      \$239 LTD cost**

Replace the existing six-unit 126 MW generating station (in operation since 1947) and add integrated emergency bypass capability to ensure reliable long-term generation and to mitigate earthquake risk and environmental risk to fish and fish habitat.



## **Cheakamus Unit 1 and Unit 2 Generator Replacement**

**2019 Targeted completion                      \$74 Total cost                      \$4 LTD cost**

Replace the two generators at Cheakamus generating station (commissioned over 50 years ago) to address the poor condition and known deficiencies. Replacing the generators will increase the capacity of each unit from 70 MW to 90 MW.

## **Site C Clean Energy Project**

**2024\* Targeted completion                      \$8,335\*\* Total cost                      \$415 (deferred capital) LTD cost**

Site C will be a third dam and hydroelectric generating station on the Peace River approximately seven kilometres southwest of Fort St. John. It will be capable of producing approximately 5,100 gigawatt-hours of electricity annually and 1,100 megawatts of capacity. Site C project was approved by the Provincial Government in December 2014. Site C will provide clean, renewable and cost-effective power in B.C. for more than 100 years.

*\*Planned in-service date for all units. This timeline reflects the project's current schedule and is subject to change based on a review of the construction schedule.*

*\*\*Site C forecast and life-to-date amounts include both capital costs and expenditures subject to regulatory deferral. Total cost excludes the Project Reserve of \$440 million (established by Government to account for events outside of BC Hydro's control that could occur during construction) which is held by the Treasury Board. The increase to the 2010 capital cost estimate from \$7,900 million to \$8,335 million reflects costs associated with the change from the harmonized sales tax to the provincial sales tax, and a revised construction start date from January 2015 to summer 2015.*

## **Contemplated Projects over \$50 million**

### **Bridge River 2 Units 5 and 6 Upgrade**

The Bridge River 2 generating Units 5 and 6 are rated as unsatisfactory and have been de-rated from 71MW to 48MW. This project will restore the capacity and reliability of the Unit 5 and 6 generators as well as the reliability of other major components.

### **Bridge River 2 Units 7 and 8 Upgrade**

The Bridge River 2 generating Units 7 and 8 are rated as unsatisfactory and have been de-rated from 71MW to 62MW. This project will restore the capacity and reliability of the Unit 7 and 8 generators as well as the reliability of other major components.

### **Clowhom Unit Upgrade**

Major components of the Clowhom generating unit are in unsatisfactory or poor condition. This project will address issues with the generating unit in order to maintain reliability and reduce the risk of forced outages at the Clowhom facility.

## **Downtown Vancouver Electricity Supply Plan**

Upgrade and expand the transmission and distribution network serving downtown Vancouver over the next 20 to 30 years to improve reliability and seismic resiliency. Several projects will be identified in the plan including the addition of a new transmission cable coming into the downtown core, the construction of new substations, and the refurbishment and/ or replacement of the existing substations. The project also includes converting the existing distribution system from a 12 kV dual radial system to a 25 kV open-loop system. This program appeared in the 2014/15–2016/17 Service Plan as the Downtown Vancouver Redevelopment Program.

## **G.M. Shrum G1-G10 Control System Upgrade**

The condition of the legacy controls for GMS generating units, which were originally installed in the 1960s and 1970s, is of growing concern due to increasing maintenance requirements, lack of spare parts availability and decreasing reliability. The controls are well beyond their expected life, cause operating problems and increase the risk of damage to major equipment.

## **Horne Payne Substation Upgrade**

Expand the Horne Payne Substation with the addition of two 230/25kV, 150MVA transformers, gas-insulated (GIS) feeder sections, and a new control building. This project will increase the firm capacity of the substation, add needed feeder positions, facilitate the gradual conversion of the area supply voltage from 12kV to 25kV, and allow for the implementation of an open-loop distribution system.

## **John Hart Dam Seismic Upgrade**

Upgrade the John Hart Dam to reliably withstand moderate to severe earthquake loadings and meet normal operations criteria post-earthquake.

## **Ladore Dam Spillway Gates Upgrade**

Reduce the risk of failure of the spillway gates and hoist structure due to a seismic event. Improve post-seismic operability in order to prevent the subsequent uncontrolled release of water into the downstream John Hart Reservoir and maintain reservoir control in the system.

## **Metro North System Supply Reinforcement**

Add new 230 kV transmission line(s) between Coquitlam and Vancouver to address load growth in the Metro Vancouver area and to strengthen the reliability of the network.

## **Northwest Substation Upgrades Project**

Carry out modifications, upgrades and additions to five substations in the northwest (Williston, Glenannan, Telkwa, Skeena and Minette) to accommodate the interconnection of industrial loads in the northwest, including Shell's LNG Canada Liquefied Natural Gas facility expected to come on line in early 2020.

## **Peace Region Electric Supply**

Increase transmission capacity to the South Peace area by providing a second 230 kV supply to Dawson Creek in response to the significant load growth in the area, mainly from the gas production industry.

## **Prince George to Terrace Capacitors**

Increase the capacity of the 500kV circuit supplying the north coast areas. This will increase the transfer capacity by up to approximately 60 per cent through the addition of reactive compensation. This additional capacity is required to provide capacity for industrial loads expected to interconnect to in the northwest, including Shell's LNG Canada's Liquefied Natural Gas plant that is scheduled for early 2020.

## **Revelstoke Improve Left Bank Slope Stability**

This project will improve the stability of the left bank slope, adjacent to the dam and powerhouse, to reduce the potential for slides or rock fall to impact the penstocks and powerhouse.

## **Revelstoke Unit 6 Installation**

Supply and install a 500 MW unit in the existing empty Unit 6 bay at Revelstoke Generating station to add capacity to the BC Hydro system. Revelstoke Unit 6 is identified as a contingency resource in BC Hydro's 2013 Integrated Resource Plan (IRP).

## **Seven Mile Unit 1-3 Turbines Overhaul**

This project will perform a major overhaul of the Unit 1-3 turbines, installed in 1979 and 1980, in order to address condition issues and extend the life of the turbine.

## **Strathcona Dam Spillway Upgrade**

Upgrades to the Strathcona Dam spillway will provide reservoir retention and post-seismic operability; as well as reliability of the spillway gates for flood passage capability.

## **Strathcona Dam Discharge Upgrade**

This project will provide deep reservoir drawdown capability, as a first line of defense against uncontrolled release of the reservoir, resulting from damage to the dam caused by an earthquake or other Dam Safety events such as increased seepage through the earth fill dam, and to facilitate a future dam upgrade project and decommissioning of the existing low level outlet beneath the dam.

## **Terrace – Kitimat Transmission Project**

Replace the existing transmission line serving the Kitimat area that has reached the end of its serviceable life. This project would replace the 60km transmission line that runs between Skeena and Minette substations and the 3km transmission line that runs between Minette and Kitimat substations with new lines on a new right of way. Both of these lines have been de-rated due to defects and deficiencies, and cannot supply current and forecast load demands.

## **W.A.C. Bennett Dam Rip-Rap Upgrade**

The W.A.C. Bennett Dam rip-rap has degraded since its completion in 1968. The project will rebuild the upstream slope to ensure there is adequate protection and shielding to the embankment dam from the wind generated waves.

## Appendix C:

# Subsidiaries and Operating Segments

### Active Subsidiaries

BC Hydro has created or retained a number of other subsidiaries for various purposes, including to hold licenses in other jurisdictions, to manage real estate holdings and to manage various risks.

#### **Powerex Corp.**

Powerex Corp. is a wholly-owned subsidiary of BC Hydro and a key participant in energy markets across North America, buying and supplying wholesale power, renewable energy, natural gas, ancillary services, and financial energy products and services. Established in 1988, its export, marketing and trade activities help manage BC Hydro's electric system resources and provide significant economic benefits to British Columbia.

Powerex supports BC Hydro's electric system requirements through importing and exporting energy as required in addition to meeting its own trade commitments. Powerex also markets, on behalf of the Province, the Canadian Entitlement to the Downstream Benefits of the Columbia River Treaty.

The Chief Executive Officer (CEO) of Powerex reports directly to the Board of Directors of Powerex through the Chair of Powerex and works closely with the President & CEO of BC Hydro as a member of the Executive Team. The Chair of the Powerex Board, the Powerex CEO and BC Hydro's Chief Executive Officer (who is also a member of the Powerex Board), ensure the Board of BC Hydro is informed of Powerex's key strategies and business activities.

Powerex operates in complex and volatile energy-markets, which can cause net income in any given year to vary significantly. Market and economic conditions, reduced BC Hydro system flexibility, income timing differences and the strength of the Canadian dollar can materially impact Powerex net income. Over the previous five years, Powerex income has ranged from \$8 to \$142 million (fiscal 2010 to fiscal 2014). The Service Plan forecast includes annual net income from Powerex of approximately \$100 million per year for fiscal 2016 to fiscal 2018. For more information, visit [powerex.com](http://powerex.com).

#### **Powertech Labs Inc.**

Powertech Labs, operating in Surrey since its inception in 1979, is a wholly-owned subsidiary of BC Hydro. Powertech is internationally recognized as holding expertise in various fields of operation, and provides research and development, testing, technical services and advanced technology services to the international energy community including BC Hydro.

Powertech's revenue in fiscal 2014 was \$30 million with a net income of \$3.8 million. The forecasted revenue for fiscal 2015 is \$31 million with a net income of \$4.5 million. The Service Plan forecast includes annual net income from Powertech ranging from \$4 million to \$6 million for fiscal 2016 to fiscal 2018. For more information, visit [powertechlabs.com](http://powertechlabs.com).

All the staff and management needs of the active subsidiaries below are fulfilled by BC Hydro employees, who perform these duties without additional remuneration. Three of these subsidiaries are considered active:

**BCHPA Captive Insurance Company Ltd**

Procures insurance products and services on behalf of BC Hydro.

**Columbia Hydro Constructors Ltd**

Administers and supplies the labour force to specified projects.

**Tongass Power and Light Company**

Provides electrical power to Hyder, Alaska due to its remoteness from the Alaska electrical system.

**Nominee Holding Companies and/or Inactive/Dormant  
Subsidiaries**

BC Hydro's remaining subsidiaries either serve as nominee holding companies (indicated with an \*) or are considered to be inactive/dormant. The inactive/dormant subsidiaries do not carry on active operations. As of December 31, 2014, these other subsidiaries consisted of the following:

1. BCH Services Asset Corp.
2. British Columbia Hydro International Limited
3. British Columbia Power Exchange Corporation
4. British Columbia Power Export Corporation
5. British Columbia Transmission Corporation
6. Columbia Estate Company Limited\*
7. Edgewood Water Corporation
8. Edmonds Centre Developments Limited\*
9. Fauquier Water and Sewage Corporation
10. Hydro Monitoring (Alberta) Inc.\*
11. Waneta Holdings (US) Inc.\*