BC Hydro

2017/18 – 2019/20 SERVICE PLAN

February 2017

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BC Hydro's Service Plan can be found online at BC Hydro's Service Plan

Accountability Statement

The 2017/18 – 2019/20 BC Hydro Service Plan was prepared under the Board's direction in accordance with the *Budget Transparency and Accountability Act* and the BC 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. The Board is responsible for the validity and reliability of the information included in the plan.

All significant assumptions, policy decisions, events and identified risks, as of January 31, 2017 have been considered in preparing the plan. The performance measures presented are consistent with the Taxpayer Accountability Principles, 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.

W.J. Brad Bennett

Board Chair

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Strategic Direction and Context

Strategic Direction

BC Hydro is one of the largest electric utilities in Canada. We generate and provide electricity to 95 per cent of B.C.'s population and serve over four million people. The electricity we generate and transmit to customers throughout the province powers our economy and quality of life.

BC Hydro's mission is: **To provide reliable, affordable, clean electricity throughout B.C., safely.** We have set out a three-year road map with strategies, performance measures and targets to fulfill our mission on behalf of the Province and our customers; aligned with the objectives set out in the B.C. Government's Mandate Letter, the 10 Year Rates Plan and the Taxpayer Accountability Principles.

In 2013, BC Hydro set out a 10 Year Rates Plan to keep rates low and predictable for our customers. Since then, several factors – including warmer winter weather in 2014/15 and 2015/16 and a decline in the rate of industrial customer load growth – have posed a significant challenge to our ability to meet this plan. Rather than passing these issues on to our customers, we gave careful thought to new measures to reduce our costs even further so we could stay on track.

BC Hydro has made prudent decisions to re-prioritize our capital spending and reduce planned expenditures by about $380 million over the next 3 years. We initiated a Work Smart program that has resulted in a gain of over 26,000 annual hours of capacity while improving process outcomes, made innovative, cost-effective changes to our conservation programs, and have taken several other measures as outlined in the Revenue Requirements Application filed with the BC Utilities Commission (Commission) in July 2016. These efforts, along with our forecasts and the expenditures required to cover our costs, are currently being reviewed by the Commission in an open and transparent regulatory process.

Over the next 20 years, B.C.'s population is expected to grow by more than 1 million people (an increase of over 20 per cent). The average age of our hydroelectric facilities is over 45 years, and 400,000 transmission and distribution assets require remediation or replacement within the next 10 years. To expand and maintain our system, we are investing over $2 billion per year and advancing critical projects to meet our long-term energy needs, like the Site C Clean Energy Project. We are also working with partners in the independent power sector, where over 20 new clean energy projects are currently under development.

Looking ahead, the need to make investments to provide affordable, reliable, clean electricity will become even more critical. In August 2016, the B.C. Government announced its Climate Leadership Plan, which mandates BC Hydro to invest in programs to help customers reduce their greenhouse gas emissions. More recently, commodity prices have begun to increase – a positive signal for the province's resource sector. All of these developments represent potential additional demand for electricity, further underscoring the need to invest in our system so that we are prepared to meet our future energy needs.

Operating Environment

Power Smart is BC Hydro's brand. It reflects our promise to be "smart about power in all we do" and underscores our priority as an organization to meet new and evolving needs of our customers, our workforce and our shareholder.

We have identified four key goals that reflect successfully delivering on our mission: customers will experience reliable and responsive service; their rates will continue to be affordable; we will fulfill the province's commitment to lead with clean and renewable power; and our workforce and the public will be safe.

Under the framework of the 10 Year Rates Plan and the Taxpayer Accountability Principles, we are continuing to emphasize cost-consciousness and process improvement across our operations and within our workforce. Examples include enhancing how work is delivered and a unified and systematic approach to project management practices.

Hydro-Québec conducts an annual comparison of electricity rates in 21 major North American cities, and in 2016, BC Hydro's rates continue to be among the most affordable in North America.

Although we consistently achieve high customer satisfaction ratings, we can improve the way we interact with our customers and deliver our services. We are identifying what our customers will want and may need in the future so we can start to make changes now. This includes the implementation of a multi-faceted customer strategy to make it easier for our customers to do business with us.

We are also implementing ambitious plans to renew and expand our generation, transmission and distribution system, as well as making operational investments in areas like technology. Over the past five years, we have completed 563 capital projects at a total cost of $6.48 billion – about $11.7 million under budget. Implementing these projects across the province concurrently can result in competing objectives and resources. We work across teams, suppliers and experts to ensure thoughtful assessment of how to successfully deliver these projects on time and on budget while respecting the unique community, environmental and cultural aspects associated with each project.

Working closely with First Nations to build better, more transparent and collaborative relationships is important to us. We seek to develop and sustain positive long-term relationships and better understand First Nations' interests so that those priorities can be incorporated, where possible, into our capital programs and business operations. This approach aligns with BC Hydro's Statement of Aboriginal Principles, our legal obligation to consult with First Nations, and First Nations' rising expectations with respect to how we address their priorities.

The electricity we generate and transmit throughout B.C. meets a high standard of reliability. Unlike most other jurisdictions, our electricity generation is over 98 per cent clean because of our system of large hydroelectric facilities and our important partnership with the independent power sector. B.C. is also a leader in conservation, and investments in smart meters and a smart grid are providing our customers with the information they need to be smart about their electricity use and ultimately use less. With continued investment in technology, we will help customers meet their energy conservation goals while also delivering sustained energy savings that will reduce costs for all ratepayers.

Achieving the results we have set out in our Service Plan is not possible without our employees and a workforce that can do their work in a safe manner. As a utility that operates in a high hazard industry, safety is top of mind and we are continuously working to improve our performance by understanding hazards and ensuring appropriate design of assets and related work procedures, while building our safety culture and competencies.

With thoughtful planning, efficient execution of our strategies and investment in strong and respectful relationships, BC Hydro is well positioned to safely deliver reliable, affordable, clean electricity throughout B.C., today and into the future.

Performance Plan

Goals, Strategies, Measures and Targets

BC Hydro's mission is: **To provide our customers with reliable, affordable, clean electricity throughout B.C., safely.** Four 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 relevant benchmarking measures that allow a comparison of performance over time. These measures track our progress on delivering our core mission to our customers and the shareholder. BC Hydro's 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 mission and its associated values and strategic goals support transparency and accountability as required by Government under the Taxpayer Accountability Principles.

Goal 1: Set the Standard for Reliable and Responsive Service

BC Hydro will reliably meet the electricity requirements of customers and respond to their evolving expectations by planning and investing in the system to meet future needs and by consistently improving our service.

Strategies

- Ensure the reliability of the generation, transmission and distribution system by effectively implementing capital and maintenance programs to manage overall asset health and secure supply to meet customer load throughout the year.
- Identify and address vulnerabilities in our operating system and develop well practiced emergency response plans to improve overall system reliability.
- Through external benchmarking of North American transmission interconnection practices, review and implement appropriate recommendations to meet customer requirements as identified in the Industrial Electricity Policy Review.
- Continue to make it easier for customers to do business with us through a series of customer facing improvements such as increased mobile access, enabling more self-service features, expanding in-person service areas, and enhanced service training for employees.
- Help customers make smart energy management choices by supporting them with rates and programs including opportunities for conservation and efficiency as well as low carbon electrification to reduce greenhouse gas emissions.
- Sustain gold-level certification under the Progressive Aboriginal Relations program by maintaining leading practices focused on Aboriginal employment, business development, community investment and community engagement.
- Through early engagement and emphasizing collaboration, respect and mutually beneficial relationships with First Nations, BC Hydro will better incorporate First Nations perspectives and interests in the delivery of our capital projects and define a future together where our business needs and First Nations interests are aligned.

Performance Measures 1-5[1]

Performance Measures	Four Year Avg.	Actual 2014/15	Actual 2015/16	Target 2016/17	**Forecast 2016/17**	Target 2017/18	Target 2018/19	Target 2019/20
SAIDI (duration)[2] [Total outage duration (in hours) experienced by an average customer in a year]	3.10	3.07	3.01	3.22	**3.35**	3.30	3.30	3.30
SAIFI (frequency)[2] [Number of sustained disruptions per year (excluding major events)]	1.41	1.30	1.48	1.40	**1.46**	1.40	1.40	1.40
Key Generating Facility Forced Outage Factor	1.64[3]	1.51	1.64	2.0	**1.70**	2.0	1.8	1.8
CSAT Index [Customer Satisfaction Index: % of customers satisfied or very satisfied]	86.0	86.0	87.0	85.0	**86.0**	85.0	85.0	85.0
Progressive Aboriginal Relations Designation	Gold	Gold	Gold	Gold	**Gold**	Gold	Gold	Gold

Discussion

System Average Interruption Duration Index **(SAIDI)** and System Average Interruption Frequency Index **(SAIFI)** targets are based on a number of factors including long-term historic reliability trending, current year performance, previous year's investments and future year's investment plans. The 2017/18 targets for SAIDI and SAIFI have been adjusted to reflect these factors but remains in line with historical performance.

Forced Outage Factor is defined as the total forced outage time in a period relative to the total number of hours in the same period (usually one year). A forced outage occurs when a generating unit is unable to start generating or does not stay on line as long as needed. Annually, the Forced Outage Factor can be relatively volatile and through applying the historical five year rolling average it can smooth the range to provide a more stable measure for which targets can be set. Therefore, the strategy is to keep the Forced Outage Factor below 2 per cent of the total number of hours per year. There are seven Key Generating Facilities, representing those plants with installed capacity greater than 200 MW. Together they provide 90 per cent of the average annual electricity generated by BC Hydro's facilities. This measurement will show the trend of how the assets are performing and aligns with how asset management investment decisions are made to maintain asset reliability that is reflected in a low Forced Outage Factor.

Progressive Aboriginal Relations Designation – BC Hydro attained a gold-level designation from the Canadian Council for Aboriginal Business in 2015/16, which is valid for a three year period. In 2018/19, BC Hydro will apply for the next certification.

[1] Performance Measure descriptions, rationale, data source information and benchmarking is available online at www.bchydro.com/performance

[2] Reliability targets are based on specific values, however performance within 10 percent is considered acceptable given the reliability projection modelling uncertainty, the wide range of variations in weather patterns and the 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.

[3] The Forced Outage Factor metric is reported as a five year rolling average. For consistency with how the Forced Outage Factor is reported, the value in the table is the five year average spanning 2011/12 to 2015/16 fiscal years and not a four year average as reported for the other metrics in the table.

Goal 2: Ensure Rates are Among the Most Affordable in North America

BC Hydro customers will continue to benefit from low, predictable rates while we efficiently manage our costs and make important investments to maintain and expand our system.

Strategies

- Conclude proceedings before the Commission, including the Fiscal 2017 to Fiscal 2019 Revenue Requirements Application and the Rate Design Application, and prudently implement actions to control costs and achieve the targets of the 10 Year Rates Plan.
- Continue development of the 2018 Integrated Resource Plan in consultation with stakeholders and prudently implement the 10 Year Capital Plan to keep electricity rates low and predictable.
- Improve how we operate by focusing on safety, operational excellence, efficiency and reliability by enhancing work delivery methods as well as resourcing and supply chain strategies.
- Build 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 – on time and on budget.
- Maintain scalable, robust, and consistent project delivery practices to actively manage project risks and apply industry best practices to deliver projects on time and on budget.

Performance Measure 6-7[1]

Performance Measures	Four Year Avg.	Actual 2014/15	Actual 2015/16	Target 2016/17	**Forecast 2016/17**	Target 2017/18	Target 2018/19	Target 2019/20
Competitive Rates	1st quartile	1st quartile	1st quartile	1st quartile	**1st quartile**	1st quartile	1st quartile	1st quartile
Project Budget to Actual Cost	-0.18% on $6.49 billion[2]	-1.8% on $3.94 billion[3]	-0.18% on $6.49 billion	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	Within +5% to -5% of budget excluding project reserve amounts

Discussion

Competitive Rates is based on BC Hydro's ranking in the residential category in the annual Hydro Quebec Report on Electricity Rates in North America. BC Hydro calculates a relative index for each usage level within the residential category and then calculates an average of the index to create an

[1] Performance Measure definitions, rationales, data sources, and benchmarking information are available at www.bchydro.com/performance
[2] This is a five-year rolling average reflecting 2011/12 to 2015/16
[3] This is a five-year rolling average reflecting 2010/11 to 2014/15

overall ranking. The rankings of the 21 participating utilities are then divided into quartiles to determine BC Hydro's ranking. Based on this same methodology, BC Hydro's rates for commercial and industrial customers rank fifth (first quartile) and seventh (second quartile) lowest, respectively, in the report.

Project Budget to Actual Cost data includes Generation, Substation and Transmission Line projects managed by Project Delivery. Annually, BC Hydro reflects the past five years' performance in delivering capital projects. This is a five-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.

Goal 3: Continue British Columbia's Leading Commitment to Renewable, Clean Power

BC Hydro will strengthen its legacy of renewable, clean power and conservation investments by implementing its energy conservation plan and by identifying and securing new competitively priced energy and capacity options to meet future customer needs.

Strategies

- Implement the Integrated Resource Plan recommendations, including renewing expiring electricity purchase agreements on a cost of service basis and acquiring new electricity through the Standing Offer Program.
- Explore opportunities for BC Hydro and independent power producers to work together in the development of a new, low-carbon economy under the Memorandum of Understanding with Clean Energy BC.
- Implement our energy conservation and energy management plan, which will exceed the *Clean Energy Act* requirement to meet at least two-thirds of future demand growth by 2020.
- Provide customers with the opportunity to access clean, renewable power to displace the use of higher carbon energy sources.
- Continue to provide opportunities for First Nations located in remote communities that are not integrated with the BC Hydro system through established renewable energy programs.

Performance Measures 8-10[1]

Performance Measures	Four Year Avg.	Actual 2014/15	Actual 2015/16	Target 2016/17	**Forecast 2016/17**	Target 2017/18	Target 2018/19	Target 2019/20
Energy Conservation Portfolio (New incremental GWh/year)	800	700	1,000	700	**700**	600	700	600
Clean Energy (%)	97.9	97.9	98.2	93.0	**98.1**	93.0	93.0	93.0
New Clean Supply (%)	n/a	100	100	100	**100**	100	100	100

Discussion

Energy Conservation Portfolio reflects the annual new incremental electricity savings resulting from demand-side management portfolio results including programs, codes and standards and conservation rates. This metric is a reflection of performance within the current period and as such is not impacted by past performance and/or adjustments made to energy savings in prior years (e.g. persistence, evaluations, measurement and verification). In some cases, the implementation date for anticipated codes and standards and timing of large customer projects can shift, which will cause actual incremental energy savings to vary from the targets that have been set for the period. Updated customer information on the timing of thermo-mechanical pulp (TMP) projects is incorporated into the plan resulting in the 2017/18 target of 600 GWh, followed by an increased target of 700 GWh in 2018/19, and a return to 600 GWh in 2019/20. The 2015/16 actual energy savings are higher than other years because of the incremental energy savings stemming from the introduction of the General Service Lighting regulation in 2014/15.

[1] Performance Measure descriptions, rationale, data source information and benchmarking is available online at www.bchydro.com/performance.

The **Clean Energy** performance measure represents the minimum threshold generation output 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 expected generation and is consistent with previous years.

New Clean Supply is a new measure introduced for 2017/18 and reflects the percentage of projects that are designated as clean or renewable in considering all greenfield generation projects that came into service during the year. BC Hydro continues to implement its plan to achieve or exceed the *Clean Energy Act* target that at least 93 per cent of our electricity is generated from clean or renewable energy sources. This new metric is a reflection of performance within the operating period in acquiring 100 per cent of supply for the integrated grid going forward from clean or renewable sources, as outlined in the Province's *Climate Leadership Plan*. Exceptions to this rule can be made for cost or reliability reasons and must be approved by government through an Integrated Resource Plan.

Goal 4: Safety Above All

Safety at BC Hydro is a core value. We are committed to ensuring our workforce goes home safely every day, and that the public is safe around our system.

Strategies

Continually refresh the five-year safety plan to ensure the priority risk areas are identified and implement safety improvement projects that drive towards:

- Achieving zero fatalities and zero disabling injuries. Examples of projects include: implementing consistent requirements for use of insulated rubber gloves; Life Saving Rules 1-4 training and competency assessments; and implementing arc flash work methods, training and personal protective equipment to reduce burns and injuries.
- Year-over-year reduction in lost time injuries and medical aid injuries. Examples of projects include: the knife cut reduction program and the field/plant ergonomics program.
- Meeting new regulatory requirements. Examples of projects include: asbestos management and abatement in our generation plants, substations and underground ducts; procedures, training and equipment to ensure safe work in confined spaces; and revising work procedures to manage lead and silica hazards.
- Building a culture to achieve excellence in safety. Examples of investments include: regular reviews of safety incidents by senior management team; timely implementation of corrective actions that reduce risk of injuries; and completion of Safe Work Observations that identify hazards before injuries occur.
- Building corporate systems and tools supporting excellence in safety. Examples of projects include: Field Access to Safety Information which improves both the ease of access and quality of safety information; and improved safety analytics capabilities.

Performance Measures 11-13[1]

Performance Measures	Four Year Avg.	Actual 2014/15	Actual 2015/16	Target 2016/17	**Forecast 2016/17**	Target 2017/18	Target 2018/19	Target 2019/20
Zero Fatality & Serious Injury [Loss of life or the injury has resulted in a permanent disability]	0.25	1	0	0	**0**	0	0	0
Lost Time Injury Frequency [Number of employee injury incidents resulting in lost time (beyond the day of the injury) per 200,000 hours worked]	1.1	1.0	1.1	1.0	**1.0**	0.9	0.85	0.8
Timely Completion of Corrective Actions (%)	N/A	78%[2]	80%	85%	90%	93%	95%	97%

Discussion

Zero Fatality and Serious Injury – BC Hydro's safety performance measures do not include contractor or public safety injuries or fatalities. The 2014/15 actual reflects that a serious injury from an electrical contact occurred in November 2014.

[1] Performance Measure descriptions, rationale, data source information and benchmarking is available online at www.bchydro.com/performance
[2] This measure was introduced for 2016/17; however, historical information has been provided for context.

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/her positive connection to the workplace, the more likely he/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.

Timely Completion of Corrective Actions is defined as the percentage of safety corrective actions closed within 30 days of the original scheduled due date on an annual basis, with an aim to improve over time.

Financial Plan

Summary Financial Outlook

Consolidated Statement of Operations[1] ($ millions)	2015/16 Actual	2016/17 Forecast	2017/18 Forecast	2018/19 Forecast	2019/20 Forecast
Revenues					
Domestic	5,056	5,191	5,475	5,689	5,849
Trade	601	585	618	602	626
Total Revenues	5,657	5,777	6,093	6,291	6,475
Expenses					
Operating Costs					
Cost of Energy	1,852	2,005	2,175	2,241	2,368
Personnel expenses, materials & external services[2]	905	957	1,017	1,045	1,033
Amortization	1,241	1,229	1,231	1,277	1,383
Finance charges	752	608	663	707	638
Grants and taxes	220	230	237	243	248
Other Operating Costs	32	65	71	66	92
Total	5,002	5,093	5,395	5,579	5,763
Net Income	655	684	698	712	712
Net Debt[3]	18,002	19,686	20,871	21,732	23,058
Equity	4,500	4,921	5,457	6,106	6,837
Capital Expenditures	2,306	2,613	2,421	2,434	2,961

[1] Table may not add due to rounding.

[2] These amounts are net of capitalized overhead and consists of the following:

	2015/16	2016/17	2017/18	2018/19	2019/20
Domestic Base Operating Costs	715	747	747	759	765
Other	190	210	270	286	268
	905	957	1,017	1,045	1,033

Commencing in 2016/17, Domestic Base Operating Costs include net sustainment costs related to the Smart Metering & Infrastructure Program which were incurred in previous years but which were subject to regulatory deferral in those years. For 2016/17, these net sustainment costs are $22 million. 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.

[3] Debt figures are net of sinking funds and cash and cash equivalents.

Key Forecast Assumptions

Key Assumptions	2015/16 Actual	2016/17 Forecast	2017/18 Forecast	2018/19 Forecast	2019/20 Forecast
Growth and Load					
B.C. Real Gross Domestic Product Growth (%)[1]	2.7	2.7	2.2	2.3	2.3
Domestic Sales Load Growth (%)[2,3]	11.89	0.24	0.20	(1.02)	0.06
Residential Sales Load Growth (%)[2]	1.67	1.40	3.06	0.77	0.45
Light Industrial and Commercial Sales Load Growth (%)[2]	(0.77)	1.53	0.44	0.61	0.81
Large Industrial Sales Load Growth (%)[2]	(2.50)	(3.26)	(0.29)	4.24	0.28
Domestic Load (GWh):					
Domestic Sales Volume (GWh)[3]	57,300	57,439	57,552	56,968	57,000
Line Loss and System Use (GWh)	5,836	5,152	5,349	5,425	5,466
Total Domestic Load (GWh)	63,136	62,591	62,901	62,392	62,466
Energy Generation					
Total System Water Inflows (% of average)	97	99	100	100	100
Sources of Supply to Meet Domestic Load:					
Net Hydro Generation (GWh)[4]	48,370	48,271	47,091	46,077	45,853
Market Electricity Purchases (GWh)[5]	122	165	330	637	673
Independent Power Producers and Long-term Purchases (GWh)	14,319	13,968	15,141	15,325	15,585
Thermal Generation & Other (GWh)	326	186	339	353	356
Sources of Supply for Domestic Load (GWh)	63,136	62,591	62,901	62,392	62,466
Average Mid-C Price (U.S.$/MWh)	23.12	21.54	25.00	26.49	28.52
Average Natural Gas Price at Sumas (U.S.$/MMBTU)	2.15	2.29	2.59	2.45	2.52
Financial					
Canadian Short-Term Interest Rates (%)[6]	0.87	0.61	0.67	0.98	1.54
Canadian Long-Term Interest Rates (%)[5]	2.37	2.08	2.43	2.75	3.31
Foreign Exchange Rate (U.S.$:Cdn$)[5]	0.7625	0.7628	0.7702	0.7900	0.8035

[1] Economic assumption based on calendar year, from Ministry of Finance September 2016 First Quarter Report.
[2] Includes the impact of Demand-Side Management programs.
[3] Includes surplus sales volume, which can vary year to year. High growth in domestic sales in fiscal 2015/16 was caused by higher surplus energy volumes in fiscal 2015/16 compared to minimal volumes in fiscal 2014/15, in order to manage system reservoirs and reduce the risk of spill. Annual changes over fiscal 2016/17 to fiscal 2019/20 period reflect continued reservoir drawdown closer to historic average elevations and average inflows.
[4] Initial system storage at the start of fiscal 2016/17 was above average and system storage is forecast to return to near historical average levels by the end of fiscal 2017/18. This results in above average generation in these two years while storage is drawn down, returning to forecast average hydro generation in fiscal 2018/19 and beyond.
[5] Assumes that gas fired power generation capability available to service domestic demand is sometimes displaced by more cost-effective market purchases.
[6] 2015/16 three months rate for short term and 10 years for long term. 2016/17 to 2019/20, financial assumptions from Ministry of Finance, October 2016.

Sensitivity Analysis

Factor	Change	Approximate change in 2017/18 earnings before regulatory account transfers (in $ millions)
Hydro Generation (GWh)[1]	+/- 1%	10
Electricity trade margins	+/- 10%	20
Interest rates	+/- 100 basis points	35
Exchange rates (US/ CDN)	$0.01	5
Weather	10% change in normal degree days	35

Management Perspective on Future Financial Outlook

In November 2013, the Province, as part of the 10 Year Rates Plan, announced rate increases for BC Hydro in 2014/15 and 2015/16 of 9 per cent and 6 per cent, respectively, with rate increases for 2016/17 to 2018/19 capped at 4 per cent, 3.5 per cent and 3 per cent. The 10 Year Rates Plan includes several actions to reduce pressure on rates including prioritizing and reducing capital spending, limiting operating costs, implementing a debt management strategy, updating our Demand-Side Management Plan, eliminating tier three 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 2019/20 which were approved by the Board and submitted to the Ministry of Finance in January 2017. These financial projections are consistent with the 10 Year Rates Plan.

[1] 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).

Capital Plan and Major Projects

Capital Expenditure by Year and Type and Function

($millions)	2015/16 Actual	2016/17 Forecast	2017/18 Forecast	2018/19 Forecast	2019/20 Forecast
Capital Expenditures by Type[1]					
Sustaining	1,136	1,207	1,245	1,200	1,232
Growth	1,170	1,406	1,176	1,234	1,729
Subtotal – BC Hydro Capital Expenditures before CIA	2,306	2,613	2,421	2,434	2,961
Contributions-in-Aid (CIA)[2]	(134)	(86)	(100)	(106)	(116)
Total – BC Hydro Capital Expenditures net of CIA	2,172	2,527	2,321	2,328	2,845
Generation	498	550	537	425	488
Transmission and Distribution	1,035	1,082	941	964	1,023
Properties, Technology and Other	284	238	226	216	192
Site C	489	743	717	829	1,258
Subtotal – BC Hydro Capital Expenditures before CIA	2,306	2,613	2,421	2,434	2,961
CIA	(134)	(86)	(100)	(106)	(116)
Total BC Hydro Capital Expenditures net of CIA	2,172	2,527	2,321	2,328	2,845

[1] 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.

[2] 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.

Projects over $50 million

BC Hydro has 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.

Major Capital Project (over $50 million)	Targeted Completion Date (calendar year)	Approved Anticipated Total Cost ($ millions)	Life to Date (LTD) Cost as of December 31, 2016 ($ millions)
Projects Recently Put Into Service			
Surrey Area Substation Project Constructed a new 200 MVA 230/25 kV substation in the Fleetwood area of Surrey. The station is supplied from the adjacent 230 kV transmission line and allows for future expansion to 400 MVA to service high load growth in the Fraser Valley West area. Construction of this new Fleetwood Substation allows for the decommissioning of four ageing substations in the Surrey/Langley area.	March 2016, In-Service	$94	$79
Ongoing			
Big Bend Substation The South Burnaby, Big Bend area requires a new, 100 MVA, 69/12 kV substation to meet local residential and commercial load growth.	2017 Targeted In-Service	$72	$61
Ruskin Dam Safety and Powerhouse Upgrade Improve seismically deficient dam and rehabilitation/replacement of powerhouse equipment that was brought into service between 1930 and 1950. The project includes: upgrading of the right abutment; redeveloping the dam and powerhouse to meet current seismic standards for earthquakes; and replace major generation equipment which is in poor unsatisfactory condition.	2017 Targeted In-Service	$748	$506
Horne Payne Substation Project Expand the Horne Payne Substation with the addition of two 230/25kV, 150MVA transformers, gas-insulated 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.	2018 Targeted In-Service	$93	$17

Major Capital Project (over $50 million)	Targeted Completion Date (calendar year)	Approved Anticipated Total Cost ($ millions)	Life to Date (LTD) Cost as of December 31, 2016 ($ millions)
Ongoing			
John Hart Generating Station Replacement 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.	2019 Targeted In-Service	$1,093	$615
Cheakamus Unit 1 and Unit 2 Generator Replacement Replace the two generators at Cheakamus generating station (in operation since 1957) to address the poor condition and known deficiencies, and increase the capacity of each unit from 70 MW to 90 MW.	2019 Targeted In-Service	$74	$13
Fort St. John and Taylor Electric Supply This project will maintain adequate supply capability, reduce line losses and improve reliability to the loads in the Fort St. John and Taylor areas by re-terminating 138kV transmission lines at the new Site C switchyard, and the addition of a 75 MVA transformer and new feeder positions.	2019 Targeted In-Service	$53	$ -
W.A.C Bennett Dam Riprap Upgrade Project This project will address inadequate erosion protection on the upstream face of the W.A.C Bennett Dam. The primary driver of the project is safety of the dam itself as well as safety of the public, property, and environment downstream.	2019 Targeted In-Service	$170	$33
South Fraser Transmission Relocation Project In September 2013, the Province of B.C. announced that the George Massey Tunnel will be replaced with a new bridge. The construction of the new bridge, modifications to Highway 99 and the decommissioning of the George Massey tunnel will require BC Hydro to relocate certain sections of two 230kV transmission circuits (Circuit 2L62 and Circuit 2L58) from their present location adjacent to Highway 99 and in the George Massey tunnel. These two 230kV circuits form a critical part of BC Hydro's transmission network supplying power to customers in Richmond, Delta and the Greater Vancouver area.	2019 Targeted In-Service	$76	$5

Major Capital Project (over $50 million)	Targeted Completion Date (calendar year)	Approved Anticipated Total Cost ($ millions)	Life to Date (LTD) Cost as of December 31, 2016 ($ millions)
Ongoing			
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. The project will replace the controls equipment, provide full remote control capability from the remote control center, and rectify deficiencies in the current system.	2021 Targeted In-Service	$60 (Partial Implement-ation Funding)	$12
Site C Clean Energy Project 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.* ***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.*	2024* Targeted In-Service	$8,335**	$1,453

Appendix A:

Corporate Governance

Information about Corporate Governance can be found at:
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

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.

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:

Subsidiaries and Operating Segments

Active Subsidiaries

As wholly-owned subsidiaries, Powerex Corp. and Powertech Labs Inc. are subject to the same corporate governance practices as BC Hydro. Both BC Hydro and its wholly-owned subsidiaries follow best practices in corporate governance and subsidiary activities align with the Crown's mandate, strategic priorities and fiscal plan, and the Taxpayer Accountability Principles.

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 B.C..

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. The Powerex CEO and the Chair of the Powerex Board ensure that BC Hydro's Chief Executive Officer, BC Hydro's Executive Team and the Board of BC Hydro are 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 $59 to $142 million (2011/12 to 2015/16). The Service Plan forecast includes annual net income from Powerex of approximately $120 million per year for 2017/18 to 2019/20. For more information, visit powerex.com.

Board of Directors:

- W. J. Brad Bennett, O.B.C.
- Jessica McDonald
- Len Boggio
- James Brown
- James Hatton

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 2015/16 was approximately $36 million with a net income of approximately $4 million. The Service Plan forecast includes annual net income from Powertech ranging from approximately $4 million to $5 million for 2017/18 to 2019/20. For more information, visit powertechlabs.com**.**

Board of Directors:

- Jessica McDonald
- Greg Reimer
- Chris O'Riley
- Mark Poweska
- David Lebeter

Other Subsidiaries

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

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 from Stewart, B.C. 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 or are considered to be inactive/dormant. The inactive/dormant subsidiaries do not carry on active operations. As of December 31, 2016, these other subsidiaries consisted of the following:

Nominee Holding Companies

1. Columbia Estate Company Limited
2. Edmonds Centre Developments Limited
3. Hydro Monitoring (Alberta) Inc.
4. Waneta Holdings (US) Inc.

Inactive/Dormant Subsidiaries

1. British Columbia Hydro International Limited
2. British Columbia Power Exchange Corporation
3. British Columbia Power Export Corporation
4. British Columbia Transmission Corporation
5. Fauquier Water and Sewerage Corporation
6. Victoria Gas Company Limited