

## DATA, BENCHMARKING AND RATIONALE – BC Hydro Annual Service Plan Report 2020/21

BC Hydro relies on various data sources for relevant and accurate reporting of our Performance Measures. This includes, but is not limited to, internal financial records, external research findings and association indexes. The Performance Measures have unique requirements for source data and accompanying considerations.

Since the 2020/21-2022/23 Service Plan, BC Hydro has:

- Made the following adjustments to Goal objectives to ensure alignment with our Five-Year Strategy:
  - Objective 2.1: Removed the following text: “electricity requirement of customers and respond to their, “to meet future needs” and “consistently”.
  - Objective 3.1: Removed “for our customers” to state the objective more concisely.
  - Objective 4.1: Restated the objective to highlight the importance of electrification.
- Expanded the Affordable Bills performance measure from one measure to three measures so that commercial and industrial customers are included. While affordability in the residential rates category is important, we recognize that it is also important to our other customers classes and this measure has now been expanded to include commercial and industrial customers.
- Changed the methodology for calculating the Affordable Bills performance measures. The Affordable Bills measure was previously based on residential customers only and was calculated by averaging BC Hydro’s ranking across multiple residential sub-categories, as reported in Hydro Quebec’s annual report on North American electricity rates. The new methodology uses the median consumption level for the residential and commercial performance measures and the largest consumption level for the industrial performance measure. Median consumption level provides a better representation of the central tendency than average and the largest consumption level provides the best indication of BC Hydro’s performance regarding rate competitiveness for large industrial customers.
- Modified targets for two performance measures – System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) – to align with historical performance, planned investment, ongoing process improvements and expected benefits from planned increased investment in transmission and distribution vegetation programs.

The information below references the Goals and Performance Measures from the 2020/21-2022/23 Service Plan.

Goal 1: Safety Above All

Objective 1.1: 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.	
Description of Performance Measure	Rationale/Benchmarking Activities
<p><b>1.a Zero Fatality and Serious Disabling Injury</b> is a measure of electrical contact, fall from height, mechanical energy or transportation incidents that have resulted in a loss of life or an injury resulting in a permanent disability, for which a disability pension has been received or is expected.</p>	<p>The measure of <b>Zero Fatality and Serious Disabling Injury</b> is unique to BC Hydro and is not benchmarked against other Canadian Electricity Association (CEA) member utilities. The CEA does not report on fatalities on an annual basis.</p> <p><b>Lost Time Injury Frequency (LTIF)</b> is an internationally recognized metric. BC Hydro benchmarks its LTIF performance against available CEA composite results.</p> <p><b>Timely Completion of Corrective Actions</b> tracks corrective actions that are put in place as a result of safety investigations and safety audits to improve our safety performance. It demonstrates that we are a learning organization with a focus on improving practices in a timely manner, based on identified deficiencies that have a direct impact on the safety of our workforce. This metric is not reported by other CEA utilities.</p> <p>BC Hydro will continue to benchmark our safety results against CEA participants. In parallel, BC Hydro will continue to explore opportunities to use other benchmarking associations. We are using leading indicators such as Potential Serious Incident and Fatality Frequency to further mitigate safety risks.</p>
<p><b>1.b Lost Time Injury Frequency (LTIF)</b> is an indicator of the likelihood of a full-time employee sustaining a time loss injury in a normal work year. Lost time injuries are those where the employee was absent from work beyond the day of injury.</p>	
<p><b>1.c Timely Completion of Corrective Actions (%)</b> is defined as the percentage of safety corrective actions closed on, or before, the scheduled due date.</p>	

Measurement
<p><b>Zero Fatality and Serious Disabling Injury / LTIF</b> - The data source for all safety performance metrics are incidents reported through the Incident Management System. To ensure accuracy and reliability of the data, each incident is reviewed to ensure the correct injury category and seriousness has been assigned. BC Hydro's safety performance measures do not include contractor or public safety injuries or fatalities.</p> <p><b>Timely Completion of Corrective Actions</b> - This performance measure includes the corrective action resulting from safety investigations and from safety audits recorded in the Incident Management System by comparing the due date against the date the action was completed.</p>

## Goal 2: Set the Standard for Reliable and Responsive Service

Objective 2.1: 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 and advancing reconciliation with Indigenous Peoples.

Description of Performance Measure	Rationale/Benchmarking Activities
<p><b>2.a SAIDI (System Average Interruption Duration Index)</b> is a utility standard measure of the total sustained outage duration (measured in hours) experienced by an average customer over the course of a year, excluding major events.</p>	<p><b>SAIDI &amp; SAIFI:</b> 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. Reliability targets are based on specific values; however, performance within 10 per cent is considered acceptable given the estimation uncertainty, the wide range of variations in weather patterns and uncontrollable elements that can significantly disrupt the electrical system. The reliability targets are, 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.</p> <p>Annually, BC Hydro participates in the Distribution Service Continuity benchmarking survey conducted by the CEA and the Transmission &amp; Distribution combined benchmarking study conducted by First Quartile Consulting.</p> <p><b>Key Generating Facility Forced Outage Factor:</b> A forced outage occurs when a generating unit is unable to start generating or does not stay on line as long as needed. 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). Annually, the Forced Outage Factor can be relatively volatile and applying the historical five-year rolling average can smooth the range to provide a more stable measure for which targets can be set.</p>
<p><b>2.b SAIFI (System Average Interruption Frequency Index)</b> is a utility standard measure of how many sustained interruptions (longer than one minute) an average customer will experience over the course of a year, excluding major events.</p>	
<p><b>2.c Key Generating Facility Forced Outage Factor</b> measures the percentage of time key generating units are unavailable when they are needed due to internal unplanned causes. There are seven Key Generating Facilities, representing the plants operated by BC Hydro with installed capacity greater than 200 MW.</p>	
<p><b>2.d Customer Satisfaction (CSAT)</b> is an index that measures residential, commercial and key account customers' level of satisfaction in five areas:</p> <ul style="list-style-type: none"> <li>• Value for money;</li> <li>• Commitment to customer service;</li> <li>• Providing reliable electricity;</li> <li>• Acting in the best interest of British Columbians; and,</li> <li>• Efforts to communicate with customers and communities.</li> </ul>	<p><b>CSAT:</b> BC Hydro maintains a minimum threshold target of 85 per cent for CSAT to ensure we have strong customer support. This measure gauges the degree to which BC Hydro is meeting customers' electricity and service needs.</p>
<p><b>2.e Progressive Aboriginal Relations (PAR)</b> is a certification from the Canadian Council for Aboriginal Business designed to help Canadian businesses benchmark, improve and signal their commitment to progressive relationships with Indigenous communities, businesses and people.</p>	<p><b>Progressive Aboriginal Relations certification:</b> BC Hydro was recertified at the gold level for three years in 2018/19. We filed our submission for PAR certification for another three years on March 31, 2021.</p>
<p><b>Measurement</b></p>	
<p><b>SAIDI &amp; SAIFI:</b> The data gathered to measure our reliability performance measures is collected and validated in a process that starts with operational staff recording the start and end time of each power outage, as well as the cause. Based on the location of the outage, the number of customers impacted is calculated automatically. This information is collected in a centralized database that allows outage records to be reviewed by managers regularly to ensure accuracy. Outages that impact a significant number of customers or involve lengthy repair times require a formal outage report to be written by an engineer and approved by management.</p>	

Annually, circuits are benchmarked to prioritize investment for sustained reliability improvement on the worst performing circuits. The most significant outages are reviewed regularly to ensure accuracy of data, effectiveness of restoration actions, and to better understand vulnerabilities. As a second check for accuracy, trends in recent performance measures are compared against past results and forecast performance. The Reliability Improvement team reviews the monthly performance measures and takes action when actual performance deviates from forecast.

**Key Generating Facility Forced Outage Factor:** BC Hydro has seven key generating facilities which are defined as BC Hydro operated 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. The measure aims to keep the Forced Outage Factor below 1.80 per cent for the total number of hours generated per year in 2020/21. This measurement shows the trend of how the assets are performing and aligns with how asset management investments decisions are made to maintain asset reliability.

**CSAT:** BC Hydro conducts monthly telephone surveys of residential and small and medium-sized commercial customers. Throughout the year, approximately 2,600 customers and 2,000 commercial customers are surveyed. In addition, BC Hydro collects approximately 200 responses from the annual survey of Key Account customers.

Surveys use a four-point scale with results indicating the percentage of customers that are satisfied or very satisfied with BC Hydro’s service in the five areas measured. The CSAT index represents the average of the CSAT results for each of the three sectors.

**PAR:** The Progressive Aboriginal Relations is certification program administered by the Canadian Council for Aboriginal Business that assesses performance in Leadership Actions, Community Relations, Employment & Business Development. Committing to the PAR program helps companies assess and improve their Indigenous relations policies, strategies and actions and signals to communities that they are committed to prosperity in Indigenous communities. The level of certification (gold, silver or bronze) is supported by an independent, third party verification and is determined by a jury comprised of Aboriginal businesspeople. Certification is for a three year period.

### Goal 3: Help Keep Electricity Bills Affordable for our Customers

**Objective 3.1:** BC Hydro customers will help keep electricity bills affordable for our customers by managing our costs, exploring innovative solutions to support our customers and making cost-effective investments to maintain and expand our electricity system.

Description of Performance Measure	Rationale/Benchmarking Activities
<b>3.a Affordable Bills</b> measures BC Hydro’s residential rates against other utilities across North America. The analysis is from the annual Hydro Quebec report, <i>Comparison of Electricity Rates in Major North American Cities</i> .	Pursuant to Rate Comparison Regulation under the <i>Clean Energy Act</i> , Ministerial Act No. 167, issued on June 28, 2011, BC Hydro provides an Electricity Rate Comparison Annual Report to the Minister of Energy, Mines and Low Carbon Innovation.
<b>3.b Project Budget to Actual Cost</b> compares actual project costs at completion to the original approved full scope implementation budgets, not including project reserve amounts, for capital projects that were put into service during the five-year rolling period.	BC Hydro regards <b>Project Budget to Actual Costs</b> as an important measure for evaluating its performance in delivering capital projects on budget and compares actual costs to full scope implementation budgets (excluding project reserve funds).

#### Measurement

The **Affordable Bills** measure is based on survey information taken from the annual Hydro Quebec report, *2020 Comparison of Electricity Rates in Major North American Cities*, which compiles monthly bills and average prices of 22 participating utilities. BC Hydro calculates a relative index for each usage level within the residential, small, medium, and large power categories and then calculates an average of the index to create an overall ranking. The rankings of the 22 participating utilities are then categorized into quartiles. The report is used as a benchmark to demonstrate that our bills are affordable and predictable compared to other major North American utilities.

**Project Budget to Actual Costs** is measured using a five-year rolling data set of actual costs compared to original approved full scope implementation budgets in aggregate, excluding project reserve funds, for capital projects that were put into service during the period. This measure includes Dam Safety, Generation, Transmission Line, Substation as well as major Distribution and Property projects, managed by BC Hydro Capital Infrastructure Project Delivery. The +/- 5 per cent target is the same over the plan period, as it is the objective to have the entire project portfolio in-service within this actual cost range.

Goal 4: Help Make Renewable, Clean Power British Columbia's Leading Energy Source

Objective: BC Hydro will strengthen its legacy of renewable, clean power and conservation investments through its energy-efficiency and conservation programs, capacity reduction initiatives and support of low-carbon electrification .	
Description of Performance Measure	Rationale/Benchmarking Activities
<p><b>4a. Energy Conservation Portfolio (New Incremental GWh/year)</b> reflects the annual new incremental electricity savings from programs, codes and standards and conservation rates that measure BC Hydro's performance against annual energy targets.</p>	<p><b>Energy Conservation Portfolio Energy Savings (New Incremental GWh/yr)</b> 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. In some cases, the timing of savings 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.</p>
<p><b>4b. The Clean Energy</b> measure represents a 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. Consistent with B.C. regulation, this measure does not include electricity to serve demand from facilities that liquefy natural gas for export.</p>	<p>The <b>Clean Energy</b> target aligns with the objectives set forth in the 2010 <i>Clean Energy Act</i>. BC Hydro does not benchmark its results for this performance measure against other utilities.</p>
Measurement	
<p>BC Hydro undertakes a comprehensive approach to estimating energy conservation savings. Depending on the initiative, there can be up to four distinct areas of activity that ultimately contribute to the confirmation of energy conservation savings estimates: technical reviews of programs and energy conservation projects; site inspections on a sample of projects; measurement and verification of project performance on a sample of projects; and evaluation of programs, conservation rates, building codes and product standards.</p> <p>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. The generation data is reviewed and verified internally at BC Hydro for reliability, consistency and data integrity. While actual output of the non-clean resources in the system supports system reliability and can vary depending on market conditions and inflows to our reservoirs, we expect that the actual performance will remain close to 98 per cent.</p>	