# APPENDIX A

# FISCAL 2011 PERFORMANCE OUTCOMES SAFETY



Severity is a standard Canadian Electricity Association (CEA) measure and is defined as the number of calendar days lost due to injury per 200,000 hours worked. One or two injuries can have a major impact on severity.

In order to address serious incidents, BC Hydro has continued to focus its safety efforts on ensuring hazards are identified and barriers provided, through the four pillars of the Corporate Safety Plan: Job Planning, Job Observation, Incident Investigation and Safety by Design.

ALL INJURY FREQUENCY Number of injuries per 200,000 hours worked



All Injury Frequency (AIF) is also a standard Canadian Electricity Association (CEA) measure and is defined as the total number of employee Medical Aids and Disabling injuries occurring in the last 12 months per 200,000 hours worked. Medical Aid injuries are those where a medical practitioner has rendered services beyond the level defined as "first aid" and the employee has not been absent from work after the day of injury. Disabling injuries are those where the employee is absent beyond the day of injury.

The present AIF level of 1.7 is higher than the AIF level of 1.2 achieved at the end of fiscal 2010. Performance in fiscal 2010 was unprecedented in terms of injury volume reduction. However, the AIF level of 1.7 is still lower than the most current CEA AIF composite rate, and lower than the industry average as reported by WorkSafeBC.

Both Severity and AIF metrics are, as defined in the CEA Standard, generally harmonized with the U.S. Occupational Safety and Health Administration (OSHA) Standards for safety statistics. Data is tracked through BC Hydro's internal Safety and Health Management Information System.

# RELIABILITY (CUSTOMER)

### RELIABILITY (CUSTOMER)

#### CAIDI (hours)

Average interruption in hours per interrupted customer—lower is better



#### CEMI-4 (percentage)

CEMI-4 is the percentage of customers experiencing four or more outages during a 12-month period—*lower is better* 





#### **DEMAND GROWTH** (With and Without Demand-Side Management) —percentage

### SAIFI (frequency)

SAIFI is a measure of how many sustained interruptions (longer than one minute) an average customer will experience over the course of a year *—lower is better* 



Note: Our 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 other 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.

Fiscal 2011 CAIDI at 2.20 per cent is within 10 per cent of plan while SAIFI and CEMI-4 are off plan. The poor SAIFI and CEMI-4 performance is mainly due to outages caused by trees, adverse weather and equipment failure. These three causes contributed to over 50 per cent of the total customer hours lost and over 40 per cent of customer interruptions. Tree outages alone contributed to over 30 per cent of the total customer interruptions. The good CAIDI performance is mainly due to faster outage restoration time compared to historical average.

The growth rate is calculated as the year-over-year change in domestic load. Between fiscal 2010 and fiscal 2011 all sectors grew contributing to the 0.9 per cent increase in total domestic sales. Over last year, commercial sales grew as economic conditions improved in B.C. In fiscal 2011, total industrial sales grew by about 1.0 per cent over last fiscal vear while previously they had declined by about 10.0 per cent between fiscal 2009 and fiscal 2010. This year's growth was led by the forestry sector which had higher sales due to favourable prices.

Results for Demand Growth without DSM, published in prior year reports, may differ due to changes in BC Hydro's historical annual acquired energy savings.

# CUSTOMER SATISFACTION

### **BILLING ACCURACY**

percentage—higher is better

	F2008	F2009	F2010	F2011	F2012
Target	NR	98.2	98.2	98.2	98.2
Actual	NR	98.5	98.5	98.5	

Billing accuracy is a core expectation of customers. We have therefore set our targets to deliver consistently high performance. For fiscal 2011, the Billing Accuracy target has continued to meet or surpass Service Level Agreement levels.

# CUSTOMER SATISFACTION



BC Hydro maintains a minimum threshold target of 83 per cent for Customer Satisfaction to ensure we have strong customer support. BC Hydro achieved an 89 per cent overall customer satisfaction rating for fiscal 2011.

### FIRST CALL RESOLUTION

percentage—higher is better

	F2008	F2009	F2010	F2011	F2012
Target	NR	66	71	71	71
Actual	NR	75	74	73	

The First Call Resolution (FCR) measure assesses customer service operations as a whole in terms of accurate and timely information flow, agent capability and quality, and a satisfying customer experience at a transaction level. For fiscal 2011, FCR has continued to remain stable and above target.

### CORPORATE/REGIONAL DONATIONS

	F2007	F2008	F2009	F2010	F2011
Amount Allocated	1,225	1,185	1,185	1,197	1,060
Dollars, in thousands					
Percentage Allocation					
Education	17	15	11	13	13
(Youth and Eduction)					
Environment	6	9	9	10	12
(Environmental Sustair	nability)				
United Way	6	6	1	1	1
Regional	39	42	42	42	38
Scholarships	10	7	8	12	14
Employees' Community	y 10	8	9	9	10
Services Fund					
Community Investment	t 11	19 <sup>1</sup>	21	14	13
and People and Leader	ship				

Corporate and Regional Donations are monetary grants, sponsorships or in-kind contributions provided by BC Hydro to registered charities or not-for-profit organizations to support cultural, social and economic well-being in communities around the province of British Columbia.

<sup>1</sup> For fiscal 2008 and 2009, the People and Leadership funding and Community Investment funding areas are reported together. After fiscal 2009, the funding area is called Community Leadership.

The drop in Education funding between fiscal 2008 and fiscal 2009 is due to moving one donation from Education to People and Leadership.

For fiscal 2009 donation initiatives were planned to have a stronger customer focus that included marketing and leveraging opportunities similar to sponsorships.

For fiscal 2010 and fiscal 2011 donation initiatives were planned to have a stronger alignment for energy conservation action in B.C.

# ELECTRICITY SECURITY (SUPPLY)

FORECAST SUPPLY-DEMAND BALANCE						
MW (surplus) / deficit	F2011					
Target	0					
Actual	115					

The forecast supply-demand balance metric measures the net system capacity surplus or deficit under annual peak loads for the upcoming winter at the 90th percentile. This metric is calculated using the load forecast and conditions just prior to the winter period. Approximately 115 MW of additional peaking capacity was forecast to be required beyond owned or contracted resources to meet the 90th percentile reliability standard for the annual peak load, anticipated in December 2010. This slightly underperforms the target of 0 MW; however, this target was established before BC Hydro Board of Directors' approval to place 300 MW of Burrard Thermal Generation in long-term, recallable storage. If the results are normalized to account for 300 MW removed from available resources after the target was established, the forecast supply-demand balance outperforms the target by 185 MW.

Contingency capacity options such as existing load curtailment contracts, Canadian Entitlement, and Market capacity are arranged as required to meet any potential deficits.

# WINTER GENERATION AVAILABILITY FACTOR

percentage-higher is better

, 5	F2007	F2008	F2009	F2010	F2011	F2012
Target	95.8	94.9	96.2	96.3	96.4	96.4
Actual	96.2	96.2	96.4	97.6	94.4	

The Winter Generation Availability Factor (WGAF) is a percentage of Heritage Asset units in the system greater than 20 MW and available to generate electricity (total hours available for service/total hours) during the critical peak-load period of November 15 to February 15. BC Hydro focuses on WGAF to manage the availability of generation during the critical winter period when customer loads are most likely to reach their annual peaks, and all BC Hydro generating units remain in-service barring a forced outage or urgent maintenance.

BC Hydro planned an extended outage on Cheakamus Unit 2 because it was the best time to complete the work. Significant unplanned outages include: GM Shrum Unit 8, which remained out of service until late December due to an exciter transformer failure; extension of the outage for Lake Buntzen 1 Runner Replacement Project through the winter period; and the Seven Mile Unit 2 forced outage in January due to a unit transformer failure which continued for the balance of the winter period.

BC Hydro also reviews its generation performance against available industry benchmarks such as annual system availability and the frequency of unexpected outages. While these measures provide a means of comparison against other utilities, they do not provide the best measure of reliability performance. For example, annual system availability varies significantly due to outages for planned maintenance and capital upgrades; however, such outages are scheduled so that BC Hydro's ability to generate sufficient electricity to meet customer demand is not adversely affected.

# ENERGY CONSERVATION AND EFFICIENCY

DEMAND-SIDE MANAGEMENT (DSM) GWH/YEAR—higher is better							
	F2008	F2009	F2010	F2011	F2012		
Cumulative GWh/Year since F2008							
Target	295	761	1,700	2,300	3,500		
Actual	326	983	1,778	2,348			

Demand-side management (DSM) reflects the cumulative rate of annual electricity savings resulting from DSM activities including programs, codes and standards and rate structures. The new programs and reported savings began in fiscal 2008, following the 2007 BC Energy Plan.

Despite a difficult economy the fiscal 2011 cumulative energy savings were above target. All areas, with the exception of the industrial sector, achieved plan levels. Industrial programs had strong performance through fiscal 2011 with areas like New Plant Design and Power Smart Partners Distribution experiencing very positive traction in the market. The Integrated Power Offer (IPO) and a renewed focus on incentives for Power Smart Partners Transmission has resulted in several large project opportunities in fiscal 2011. Customers' delays, however, have postponed many of these projects until next year, which meant that the industrial sector wasn't able to bring in as much energy savings in fiscal 2011. The residential sector, led by solid performance in both the Refrigerator Buy Back and Lighting, and the commercial sector programs, led by the strong Product Incentive Program, performed extremely well over the course of fiscal 2011.

The DSM savings in the above table reflect the cumulative rate of annual electricity savings resulting from DSM activities, such as energy conservation and efficiency, and load displacement. The targets exceed the Clean Energy Act's 66 per cent DSM target and align with the 2008 Long-Term Acquisition Plan targets, which correspond to a target of 10,000 GWh savings by 2020.

Targets are developed as part of the long-term DSM planning which uses results from the conservation potential review, and research related to other DSM tools as benchmarks for achievable savings and is updated on an annual basis, factoring in historical performance and new information. The cumulative fiscal 2012 target is per the BC Hydro Service Plan 2011/12–2013/14.

# CLIMATE CHANGE AND ENVIRONMENTAL IMPACT

## GREENHOUSE GAS EMISSIONS

Million tonnes CO2e—lower is better

	F2009	F2010	F2011	F2012
Target	1.60	1.55	1.50 <sup>1</sup>	N/A
Actual	1.46	1.36 <sup>2</sup>	1.11	

<sup>1</sup> The fiscal 2011 target has been restated from 1.50 million tonnes CO<sub>2</sub>e to 1.55 million tonnes CO<sub>3</sub>e, as a result of the BC Hydro/BCTC integration. <sup>2</sup> Previously reported fiscal 2010 performance results have been restated to reflect calculation methods required by the B.C. Reporting Regulation and the B.C. Carbon Neutral Government Regulation. At the end of fiscal 2010, they were reported as 1.31 million tonnes CO<sub>3</sub>e.

The GHG Emissions metric includes emissions from electricity generation, electricity purchased from B.C. IPPs, vehicle fleet fuel combustion, fuel combustion in buildings, and estimated fugitive SF<sub>6</sub> releases. BC Hydro's GHG emissions fluctuate from year to year primarily because of the need to ensure reliability under annual prevailing water conditions.

The fiscal 2011 overall GHG Emissions were significantly below the restated target of 1.55 million tonnes  $CO_2e$ , due to lower than anticipated use of the Island Generation Plant and BC Hydro's Burrard Generating Station. Given market conditions, Island Generation did not operate for a total of about four and a half months in fiscal 2011. The Burrard Generating Station was called into service for emergency backup supply in July 2010 due to a substation outage and in November 2010 due to a cold snap.

When compared to published emission data from other Canadian hydroelectric utilities, BC Hydro's fiscal 2011 emissions of 1.11 million tonnes  $CO_2e$  for about 50,000 GWh of generation were higher than the reported 2009 emissions of Manitoba Hydro [0.25 million tonnes  $CO_2e$  for about 35,000 GWh) and Hydro Quebec (0.39 million tonnes  $CO_2e$  for about 203,000 GWh). This reflects the higher proportions of hydroelectric generation in the resource mix for these utilities. BC Hydro's GHG emissions per unit of net system generation (not including electricity imports) of 23 tonnes  $CO_2e$  per GWh and CEA fossil fuel-fired generators (970 tonnes  $CO_2e$  per GWh) (CEA Sustainable Electricity Annual Report, 2009).

GHG emissions from BC Hydro-owned electricity generating facilities were calculated using methods required under the B.C. Reporting Regulation, with the exception of small generating stations that were not subject to reporting under the Regulation. For these facilities, published emission factors from Environment Canada were applied to known fuel use. Fugitive SF<sub>6</sub> emissions are inventoried once per year and annual results for the 2010 calendar year were used to estimate fiscal 2011 SF<sub>6</sub> releases. The methods used to calculate GHG emissions from BC Hydro's buildings and vehicle fleet are described under the Carbon Neutral Program Emissions section. GHG emissions from independent power producers (IPPs) were estimated and will be updated when regulatory report information becomes available. BC Hydro has retained an external verifier to verify GHG emissions from owned electricity generation and fugitive SF<sub>6</sub> emissions a required by the Reporting Regulation. All source data are subject to internal controls including data range controls and manager approval of source data.

Note: In the past, BC Hydro set targets for two GHG emissions measures: one for overall GHG emissions, and one to track performance toward carbon neutral public sector objectives. These two metrics have been reported above in this Annual Report. Starting with the new Service Plan 2011/12-2013/14, we replaced the overall GHG Emissions measure with the Electricity Production GHG Emissions measure to ensure that all material emission sources are included in one of the two GHG metrics, but not both. Restricting one metric to Electricity Production also makes our numbers more comparable to other utilities. BC Hydro will start reporting on the new Electricity Production GHG Emissions in the fiscal 2012 Annual Report.

### CARBON NEUTRAL PROGRAM EMISSIONS

Million tonnes CO,e – lower is better

	F2009	F2010	F2011	F2012
Target	0.0257	0.0265	0.0270 <sup>1</sup>	0.0300
Actual	0.0273	0.0299	0.0295	

 $^{\rm 1}$  The fiscal 2011 target has been restated from 0.260 million tonnes CO  $_{\rm 2}{\rm e}$  to 0.0270 million tonnes.

Under the Carbon Neutral Government Regulation of the B.C. Greenhouse Gas Reduction Targets Act, BC Hydro achieved carbon neutrality for calendar year 2010 by accurately measuring our greenhouse gas emissions, aggressively reducing emissions from operations and offsetting our remaining emissions using high-quality and verifiable offsets from the Pacific Carbon Trust. The scope of the carbon neutral program includes emissions from the vehicle fleet; heating, cooling and lighting buildings; and paper consumption. The fiscal 2011 Carbon Neutral Program Emissions were 0.0295 million tonnes CO<sub>2</sub>e, which is nine per cent higher than the 0.0270 million tonne CO<sub>2</sub>e target. This result is attributable to higher than anticipated levels of vehicle fuel use and building energy use, as well as improvements in data capture to include more sources identified since the targets were set. Targets set for the F2011/12-F2013/14 Service Plan reflect data capture improvements.

In the compliance period of calendar year 2010, BC Hydro emitted 29,763 tonnes (0.0298 million tonnes) of CO<sub>2</sub>e from sources covered under the Regulation. Of these emissions, 75 per cent come from the vehicle fleet, 24 per cent from buildings and one per cent from paper use. BC Hydro purchased 30,000 tonnes of carbon offsets from the Pacific Carbon Trust to achieve carbon neutrality for calendar year 2010.

Note 1: The BC Hydro Service Plan 2009/10–2011/12 established targets for Carbon Neutral Program Emissions for F2009, F2010 and F2011 for the first time. The F2010 and F2011 targets were recalibrated in the BC Hydro Service Plan 2010/11-2012/13 to reflect additional data on building emissions, and subsequently updated to incorporate emissions from the B.C. Transmission Corporation in July 2010. BC Hydro has been proactively developing programs and initiatives to reduce carbon neutral emissions, including fleet greening, facility improvement and employee engagement.

#### CLEAN ENERGY

Percentage - higher is better

	F2008	F2009	F2010	F2011	F2012
Target	90	90	90	<b>93</b> <sup>1</sup>	93
Actual	94	94	93	95	

<sup>1</sup> The F2011 Plan was restated in June 2010 due to the passing of the Clean Energy Act from 90 per cent to 93 per cent.

BC Hydro established the Clean Energy measure as a minimum threshold target in accordance with the B.C. Government's requirement that at least 93 per cent of electricity generation in the province should be from clean or renewable resources, i.e., from biogas, biomass, energy recovery generation, geothermal, hydrocarbon, hydro, hydrogen, municipal solid waste, solar, tidal, wave, wind or other potential clean or renewable electricity sources recognized by the B.C. Government. The 93 per cent minimum threshold ensures that we continue to contribute toward this provincial goal and try to improve upon our current performance.