

BC Hydro 2015 Carbon Neutral Action Report



This Carbon Neutral Action Report for the period January 1, 2015 to December 31, 2015 summarizes our emissions profile, the total offsets purchased to reach net zero emissions, the actions we have taken in 2015 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2016 and beyond.

Overview

BC Hydro is one of the largest electric utilities in Canada. BC Hydro's mission is to provide our customers with reliable, affordable, clean electricity throughout B.C., safely. We generate and provide electricity to 95% of British Columbia's population and serve over four million people. Our electricity generation in British Columbia is over 93% clean due to our system of large hydroelectric facilities and our important partnership with the independent power sector. British Columbia is also a leader in customer energy 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.

In 2015, we had a strategic objective to Mind our Footprint by carefully managing our impacts on the environment and fostering an energy efficiency and conservation culture.¹ In support of this strategic objective, we set a target of 28 thousand tonnes of emissions from our vehicle fleet, buildings and paper use in 2015.² We achieved this target in 2015.

We are also mindful of the effects that climate change may have on our assets and operations. We continue to collaborate and undertake research with the Pacific Climate Impacts Consortium to improve our understanding of the potential effects climate change in British Columbia may have upon electricity demand and upon the operation of our assets. We also participate in the development of an energy, water and climate change scenario by the Western Electricity Coordinating Council to assess potential impacts to the reliability of the electricity grid in the Western Interconnection.

¹ The strategic objectives have since been replaced by four key goals as described in our current [Service Plan](#).

² Our target was for emissions requiring offsets.

2015 Greenhouse Gas Emissions

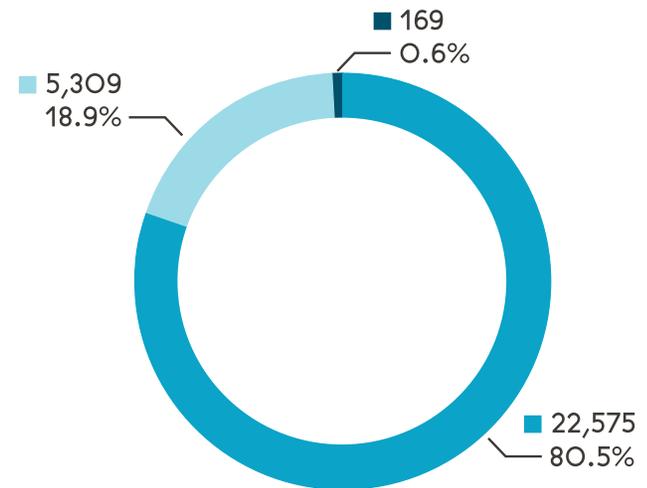
In 2015, we emitted 28,053 tonnes of carbon dioxide equivalent (CO₂e) from emission sources included in the Carbon Neutral Government Regulation. This is an increase from 2014 of 3%, due to a rise in vehicle fleet fuel use. In 2015, 80% of our emissions came from our vehicle fleet, 19% from buildings (which includes energy use for heating, cooling, lighting and IT equipment), and less than 1% from paper use.

As outlined in the regulation, some emissions must be reported but do not require offsets. For BC Hydro, emissions exempt from offsets are a result of the renewable fuel content in purchased diesel and gasoline and equalled 777 tonnes CO₂e in 2015. Emissions requiring offsets totalled 27,277 tonnes CO₂e for 2015.

Note: It was estimated that emissions from stationary combustion in crew quarters at remote diesel generating stations, emissions from mobile combustion in boats, snowmobiles and all-terrain vehicles, and fugitive emissions from cooling of buildings and vehicles do not comprise more than one per cent of BC Hydro's total carbon neutral program emissions.

An ongoing effort to collect or estimate emissions from these sources would be disproportionately onerous. For these reasons, emissions from these sources were deemed out-of-scope and are not included in BC Hydro's total GHG emissions profile or offset purchase, in accordance with the 2014/2015 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions.

BC Hydro Greenhouse Gas Emissions by Source for the 2015 Calendar Year (t CO₂e*)



- Mobile fuel combustion (fleet and other mobile equipment)
- Stationary fuel combustion (building heating and generators) and electricity
- Supplies (paper)

Total emissions: 28,053

Total offsets required: 27,277

Emissions which do not require offsets: 777**

* Tonnes of carbon dioxide equivalent (t CO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide. Due to rounding, numbers may not add up precisely to the totals provided.

** Under the Carbon neutral Government Regulation of the Greenhouse Gas Reduction Targets Act, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

Actions Taken to Reduce Emissions



Buildings

We have about 200 buildings in more than 60 municipalities across British Columbia. Every year, we prepare an energy management action plan for our buildings that identifies our vision, objectives and actions towards energy management and conservation. Our continued investment in new construction, renovations, and capital upgrades presents a key opportunity to ensure lasting energy performance by incorporating energy efficiency measures.

BUILDING DEVELOPMENT (NEW BUILDINGS AND MAJOR RENOVATIONS)

All new buildings are designed and constructed to meet an aggressive energy intensity target. Examples of energy saving and innovative technologies used in new construction include air source heat pumps, solar hot water heating, geothermal heating, and building automation systems. In 2015, we completed construction of a new district office building in Campbell River, with others in Victoria and Vernon under construction, and several others in earlier stages of design. A major renovation of our Powertech research and development facility in Surrey was also completed in 2015.

BUILDING IMPROVEMENT

Energy efficiency opportunities are considered as part of the project scope for building improvements. Our interior space renovations are designed to reduce water and energy consumption by up to 30% through controls, lighting, air flow efficiency and other improvements. Projects with energy efficiency benefits delivered in 2015 included:

- Interior renovations, insulation and heating, ventilation and air conditioning (HVAC) upgrades in our buildings in Revelstoke and Golden;
- Continued floor upgrades at our headquarters facilities in Vancouver and Burnaby;
- Building envelope and elevator upgrades;
- Roof replacements; and
- HVAC/controls upgrades, including the installation of a heat recovery chiller at our Vancouver headquarters and building automation systems at several offices.

FACILITIES MANAGEMENT

The day-to-day operations of our larger buildings are outsourced to a facilities management service provider that is expected to achieve an annual 2% reduction target in building energy consumption through process and/or equipment improvements. The service provider has met the target in each of the first four years of the contract, including in 2015.

EMPLOYEE ENGAGEMENT

We engaged our employees in saving energy by implementing employee conservation campaigns offered through BC Hydro's Workplace Conservation Awareness program, including:

- Conducting space heater audits to try to reduce their use,
- Closing office blinds during spring, summer and fall,
- Closing loading bay doors at field sites,
- Turning off power to electricity outlets during weekends and holidays,
- Turning lights off at night after janitorial servicing, and
- Participating in Earth Hour 2015.



Vehicle fleet



Our vehicle fleet contains over 2,500 vehicles that are used daily throughout the province to support our operations and maintain a safe and reliable supply of electricity. We are improving fleet fuel efficiency by regularly replacing vehicles with newer, more efficient models and performing regular maintenance on all of our vehicles. Hybrid and electric vehicles are incorporated into our vehicle fleet as part of the regular vehicle replacement process, where cost-effective and appropriate, based on the expected vehicle operating context and the available vehicle capabilities and capacities.

We are also implementing an electric vehicle strategy to help customers who are interested in purchasing, or who already own, a plug-in electric vehicle. With funding from both the federal and provincial governments, BC Hydro is deploying 30 public fast charging stations throughout the province. In addition, our subsidiary Powertech designs and constructs fueling stations for hydrogen fuel cell electric vehicles, provides testing of high-pressure hydrogen components and operates the only fast-fill hydrogen fueling station in Canada.

Paper

In 2015, we used 12% less office paper than in 2014. In fact, since 2010 we have reduced our office paper consumption by 33%. Our network printers and photocopiers are set to double-sided printing by default.

We continue to internally promote the use of paper with 100% post-consumer recycled content. Four out of every five packages of paper we purchased in 2015 contained 100% recycled content.

We continue to promote paperless billing to our customers, with almost 40% of our customers subscribed to paperless billing at the end of 2015. We have recently made it even easier for customers to pay their bills by providing the option of detailed bill notifications by email, including the bill amount, due date and a summary of electricity usage.

Future Actions to Reduce Emissions

We will continue to seek opportunities for energy use reduction in existing buildings, with an emphasis on opportunities with shorter payback periods. Permanent new facilities will be built consistent with Power Smart high-performance building standards. Newer vehicle technologies, including hybrid and electric vehicles, will be incorporated into our vehicle fleet as part of the regular vehicle replacement process where cost-effective and appropriate.

Support for Energy Conservation in the Public Sector

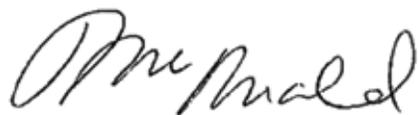
BC Hydro supports energy management, and by extension carbon neutrality, within the public sector through a variety of demand side management programs and initiatives. In 2015, we helped fund 38 energy managers in public sector organizations that are part of the carbon neutral government. In addition, we also supported 19 municipalities with a funded energy manager. The public sector is eligible to participate in a variety of BC Hydro's energy management and conservation programs that are designed to address the diverse needs and barriers that prevent organizations from adopting a strategic energy management approach, energy efficient products, or processes. In the 2015 fiscal year, BC Hydro invested more than \$10 million in energy efficiency for the public sector, including schools and hospitals. Examples of the energy efficiency projects BC Hydro helped fund include:

- An upgrade to the Nanaimo Regional General Hospital's mechanical system that saved over 300,000 kWh a year, and
- A retrofit to the lighting system of the Tumbler Ridge Secondary School (School District 59 Peace River South) that saved over 200,000 kWh a year.

BC Hydro also supports carbon neutrality in the public sector through investments in renewable and clean energy projects. This past year, construction began on the Site C Clean Energy Project, two new units were added at the Mica Generating Station, and upgrades to 1960s-era turbines were made at the Gordon M. Shrum Generating Station. We also continued our partnership with the independent power sector that operates over 100 projects across British Columbia including biomass, hydro, wind, solar and more.

Retirement of Offsets

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, BC Hydro is responsible for arranging for the retirement of the offsets obligation reported for the 2015 calendar year, together with any adjustments reported for past calendar years. We hereby agree that, in exchange for the Ministry of Environment ensuring that these offsets are retired on our behalf, we will pay the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on our behalf plus GST.

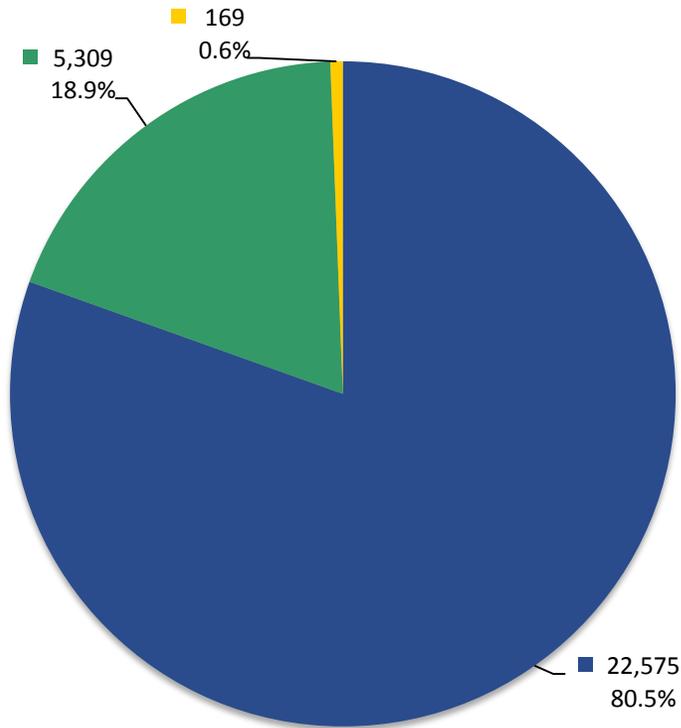


Jessica McDonald, President & CEO

Summary of GHG emissions and offsets

GHG emissions created in calendar year 2015	
Total emissions (tonnes CO ₂ e)	28,053
Total offsets (tonnes CO ₂ e)	27,277
Adjustments to GHG emissions reported in previous years	
Total emissions (tonnes CO ₂ e)	-7
Total offsets (tonnes CO ₂ e)	-7
Total emissions for offset for the 2015 reporting year	
Total offsets (tonnes CO ₂ e)	27,270

**BC Hydro
Greenhouse Gas Emissions by Source
for the 2015 Calendar Year (tCO₂e*)**



Total Emissions: 28,053

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2015 (Generated May 26, 2016 8:51 AM)

Total offsets required: **27,277**. Total offset investment: **\$681,925**. Emissions which do not require offsets: **777** **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.

2015 Carbon Neutral Action Report Survey

Organization Name:

BC Hydro

Please select your sector:

- Crown Corporation

1) Stationary Sources (Buildings, Power Generators, Ext. Lighting) Fuel Combustion, Electricity use, Fugitive Emissions:

Please indicate which actions your PSO took in 2015:

Have developed an overall strategy/plan to reduce energy use in your organization's buildings inventory:

Yes

If Yes, please describe:

Every year, we prepare an energy management action plan for our buildings that identifies our vision, objectives and actions towards energy management and conservation. Our continued investment in new construction, renovations, and capital upgrades presents a key opportunity to ensure lasting energy performance by incorporating energy efficiency measures.

BUILDING DEVELOPMENT

(NEW BUILDINGS AND MAJOR RENOVATIONS)

All new buildings are designed and constructed to meet an aggressive energy intensity target. Examples of energy saving and innovative technologies used in new construction include air source heat pumps, solar hot water heating, geothermal heating, and building automation systems. In 2015, we completed construction of a new district office building in Campbell River, with others in Victoria and Vernon under construction, and several others in earlier stages of design. A major renovation of our Powertech research and development facility in Surrey was also completed in 2015.

BUILDING IMPROVEMENT

Energy efficiency opportunities are considered as part of the project scope for building improvements. Our interior space renovations are designed to reduce water and energy consumption by up to 30% through controls, lighting, air flow efficiency and other improvements. Projects with energy efficiency benefits delivered in 2015 included:

- * Interior renovations, insulation and heating, ventilation and air conditioning (HVAC) upgrades in our buildings in Revelstoke and Golden;*
- * Continued floor upgrades at our headquarters facilities in Vancouver and Burnaby;*
- * Building envelope and elevator upgrades;*
- * Roof replacements; and*
- * HVAC/controls upgrades, including the installation of a heat recovery chiller at our Vancouver headquarters and building automation systems at several offices.*

FACILITIES MANAGEMENT

The day-to-day operations of our larger buildings are outsourced to a facilities management service provider that is expected to

achieve an annual 2% reduction target in building energy consumption through process and/or equipment improvements. The service provider has met the target in each of the first four years of the contract, including in 2015.

Undertook evaluations of building energy use:

Yes

Performed energy retrofits on existing buildings:

Yes

Built or are building new LEED Gold or other "Green" buildings:

Yes

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from buildings:

We engaged our employees in saving energy by implementing employee conservation campaigns offered through BC Hydro's Workplace Conservation Awareness program, including:

- * Conducting space heater audits to try to reduce their use,*
- * Closing office blinds during spring, summer and fall,*
- * Closing loading bay doors at field sites,*
- * Turning off power to electricity outlets during weekends and holidays ,*
- * Turning lights off at night after janitorial servicing, and*
- * Participating in Earth Hour 2015.*

2) Mobile Sources (Fleet, Off-road/Portable Equipment) Fuel Combustion:

Indicate which actions your PSO took in 2015:

Have put in place an operations policy/program to support systematic reductions in fleet related emissions:

(e.g., program to convert fleet to renewable fuels)

No

If Yes, please describe:

(No response)

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel):

Yes

Replaced existing vehicles with hybrid or electric vehicles:

Yes

Took steps to drive less than previous years:

No

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from fleet combustion:

We are improving fleet fuel efficiency by regularly replacing vehicles with newer, more efficient models and performing regular maintenance on all of our vehicles. Hybrid and electric vehicles are incorporated into our vehicle fleet as part of the regular vehicle replacement process, where cost-effective and appropriate based on the expected vehicle operating context and the available vehicle capabilities and capacities.

3) Supplies (Paper):

Indicate which actions your PSO took in 2015:

Have put in place an operations policy/program to facilitate a systematic reduction in paper-related emissions:

(e.g., policy to purchase 100% Recycled Content; default to double-sided printing)

Yes

If yes, please describe:

Our network printers and photocopiers are set to double-sided printing by default. We continue to internally promote the use of paper with 100% post-consumer recycled content. Four out of every five packages of paper purchased in 2015 contained 100% recycled content.

Have put in place an operations policy/program to facilitate behavioural changes from paper use:

(e.g. awareness campaign to reduce paper use):

No

If yes, please describe:

(No response)

Used only 100% recycled paper:

No

Used some recycled paper:

Yes

Used alternate source paper:

(e.g., bamboo, hemp, wheat etc.)

No

Please list any other actions, programs or initiatives that your organization has introduced that support emissions reductions from paper supplies:

We continue to promote paperless billing to our customers, with almost 40% of our customers subscribed to paperless billing at the end of 2015. We have recently made it even easier for customers to pay their bills by providing the option of detailed bill notifications by email, including the bill amount, due date and a summary of electricity usage.

4) Other Sustainability Actions:

Please note that this section is optional

Business Travel

Created a low-carbon travel policy or travel reduction goal:

(low-carbon = lowest emission of greenhouse gas per kilometer per passenger)

No

Encouraged alternative travel for business:

(e.g. bicycles, public transit, walking)

Yes

Encouraged or allow telework/working from home:

Yes

Other:

(No response)

Education Awareness

Have a Green/Sustainability/Climate Action Team:

No

Supported green professional development:

(e.g. workshops, conferences, training)

No

Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials:

Yes

Other:

(No response)

Adaptation Planning for Climate Risks

Have assessed whether increased frequency of extreme weather events and/or long term changes in climate will affect your organization's infrastructure, its employees and/or its clients:

Yes

Have incorporated these anticipated changes in climate into your organization's planning and decision making:

No

Other:

We are mindful of the effects that climate change may have on our assets and operations. We continue to collaborate and undertake research with the Pacific Climate Impacts Consortium to improve our understanding of the potential effects climate change in British Columbia may have upon electricity demand and upon the operation of our assets. We also participate in the development of an energy, water and climate change scenario by the Western Electricity Coordinating Council to assess potential impacts to the reliability of the electricity grid in the Western Interconnection.

Other Sustainability Actions

Established a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models:

No

Have put in place an operations policy/program to facilitate the reduction and diversion of building occupant waste stream from landfills or incineration facilities:

(e.g., composting, collection of plastics, batteries)

Yes

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase:

(e.g., office furniture, carpeting, etc.)

Yes

Incorporated lifecycle costing into new construction or renovations:

No

Please list any other sustainability actions your organization has taken not listed above:

(No response)