

Vancouver Island—Sunshine Coast Community Relations 2017 Annual Report

September 2017

View of Cowichan Bay from Mount Tzouhalem. Photo courtesy of Deana Nickerson, Field Service Administrator, Duncan and Ganges Line Department, BC Hydro.

Submarine cables integral to supplying electricity to Vancouver Island

At the speed of light, electricity generated from any one of BC Hydro's 30 generation facilities across the province will weave its way through hundreds of kilometres of transmission and distribution power lines and submarine cables to bring light and heat to homes on Quadra Street and Quadra Island.

About 40% of our power is generated on the Island, with the remainder supplied via two transmission submarine cable systems crossing the Strait of Georgia. The older of the two systems, built in the 1980s, crosses from the Sunshine Coast, over Texada Island and lands at Qualicum Bay. In 2008, new transmission cables replaced the 1950s cable system between Tsawwassen and Duncan. In addition to those two transmission crossings, over 250 km of distribution submarine cables provide power to islands off the Island, and to islands off islands off the Island.



A view from the barge – cable laying to Ahousaht.

The submarine cables threaded throughout the northern and southern gulf are planned and placed with precision. Careful consideration is given to tides, currents, undersea terrain, ecosystems and marine traffic. The on-shore work must be coordinated with extreme low tides, leaving construction timelines little or no wiggle room.

An outage on an overhead line can usually be determined by a patrol of the line and remedied with a crew and bucket truck. It's more challenging with a submarine cable as underwater cameras, special cable crews and test equipment, divers and barges are required for diagnosis and repairs. While strong currents have their impact over the years, a passing ship's



Working on the cable laying barge.



New cable floated from barge using airbags, near Ahousaht, and then directed to underground ducts by divers.

anchor dragged across the bottom is often the cause of serious damage to our cables.

This past April, the cables between Saturna Island and Pender Island were repaired when a ship's anchor ripped the lines from the ocean floor. Fortunately, power was restored quickly to the 2,100 residents of Pender Island because about ten years ago, we completed a loop connecting all the

southern Gulf Islands thereby lessening outage duration and impacts.

The completion of that loop was one of many improvements to the submarine cable systems linking all the islands to the grid. Since 2004, major improvements and emergency repairs have been completed on almost all of the submarine cable systems around the Island and islands. Cables to Denman Island have been replaced, new cables to Alert Bay were laid, and new cables to Quadra Island were energized just two years ago. In the summer of 2015, we replaced and added lines connecting the remote west coast communities of Ahousaht and Opitsaht. Planning for the replacement of cables to Protection Island, near Nanaimo, is underway.

Vancouver Island has more trees per kilometre of utility power line than any place else in North America; add to that the many kilometres of submarine cables that connect the Island and smaller islands to the provincial grid and it results in many challenges for our crews and planning engineers. We will never eliminate outages completely, but with the work we do above and below the water we can lessen the impacts on our customers.

Message from Chris O'Riley, President



BC Hydro is pleased to share the Community Relations annual reports with local elected representatives throughout the province. It's our responsibility to provide you with information about our operations and maintain open lines of communication.

We value working closely with you on the needs of the electrical system, sharing information about planned outages, reservoir levels, emergency management and various program offerings, as well as keeping you informed about our large and small capital projects.

As many of our power lines, substations, dams and generating stations were built between the 1960s and 1980s, they are in need of upgrades. Further, we have to ensure our system can respond to those times of the year when we experience peak demand, such as the record levels we faced this past winter.

That's why we're investing over \$2 billion annually to upgrade our aging facilities and build new infrastructure, so that communities continue to receive reliable and clean power.

Over the past five years, we have completed 540 capital projects in all parts of the province at a total cost of \$6.4 billion, and collectively under budget.

In the Vancouver Island–Sunshine Coast region, for example, we're continuing major upgrades to the more than 70-year-old John Hart Generating Station in Campbell River. Also, we've been replacing decades-old district offices with new buildings in Port Alberni, Campbell River, Nanaimo and Victoria that equal the industry's LEED Gold standards.

Over my 25 years at BC Hydro, I've been fortunate to meet with many of you on a variety of topics and look forward to continuing our work with you.

If you have any questions, please contact our Community Relations representatives in your region.

Yours sincerely,

Chris O'Riley

President

BC Hydro

Quick Facts

PROVINCE-WIDE:

4 million customers

Electricity is delivered through a network of:

- 79,000 kilometres of transmission and distribution lines
- 300 substations
- 1 million utility poles
- 334,000 transformers

Capital investments of more than \$2 billion a year

VANCOUVER ISLAND–SUNSHINE COAST SUPPLY:

John Hart	126 MW
Strathcona	64 MW
Ladore	47 MW
Puntledge	24 MW
Ash	28 MW
Jordan	170 MW
Clowhom	33 MW

Others:
IPPs 1067 MW

MW = megawatt

IPPs = Independent Power Producers



BC Hydro responds to wildfire emergency

As wildfires raged across the province this summer, BC Hydro employees took action to restore power to affected communities.

For the first time since 2003, a province-wide state of emergency was declared in July due to significant wildfire activity in several regions across the province. It became B.C.'s worst wildfire season on record.

At the peak, more than 200 fires were burning in the Central and Southern Interior, causing significant damage to our infrastructure. Almost 56,000 customers lost power, primarily in the 100 Mile House, Williams Lake and Cache Creek areas.

Over 300 people – crews, contractors and support staff – worked around the clock to make repairs and restore power to affected communities. Crews from all over the province packed their gear to join the work, and support staff from every corner of B.C. provided their expertise.

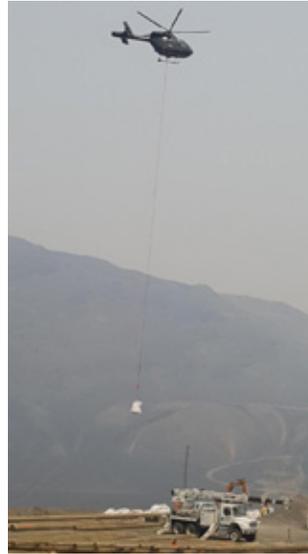
As of early September, we had replaced 480 distribution poles, 159 cross arms, 262 spans of wire, 52 transformers and 59 transmission structures.



Our crews worked closely with fire officials, accompanying them into affected areas to de-energize power lines so firefighters could work safely. Then, once it was safe to do so, we took escorted trips into the fire zones, patrolling the lines on the ground and by helicopter to assess damage.

Once we had a clear idea of the extent of the damage and what work needed to be done, we created restoration plans. We assembled power poles and wire, specialized trucks, crews, designers and other experts that were needed to help restoration efforts. Finally, with approval from fire officials, crews could go into the affected areas, make repairs and restore power. In most cases, we repaired damaged infrastructure and restored power before evacuation orders had been lifted and customers returned home.

In the early days of the wildfires, due to the extensive damage to our electrical infrastructure, it was difficult to determine with a high degree of certainty the exact duration that specific areas had been without power. However, once repairs were made and smart meters could be returned to service, we had access to detailed consumption data.



Meanwhile, hundreds of additional employees were working to support the communities affected, putting into action an emergency response plan we have practiced for many different scenarios.

We established a Regional Emergency Operations Centre (REOC) to coordinate our wildfire response. The centre brought together experts in operations, damage assessment, contracts, materials, aircraft operations,

logistics, safety, environment, vegetation, vehicle fleet and communications.

The Community Relations team had an information and liaison role in the REOC, and we provided daily updates on the progress of restoration efforts to local communities and the media.

This wasn't the first time wildfires have impacted our province, and it certainly won't be the last. Each time we kick into emergency mode, we learn new ways to make the response smoother and gain experience that we can apply in the future.



BC Hydro responding to Elephant Hill fire in the Southern Interior.

Regional information

Capital projects

JOHN HART GENERATING STATION REPLACEMENT PROJECT ACHIEVES SIGNIFICANT MILESTONE

The John Hart facility, located in Campbell River, has been in operation since 1947 and currently generates enough power to supply about 74,000 homes annually. To ensure it continues to deliver clean, reliable energy for years to come, it's being modernized.

BC Hydro and the project contractor, InPower BC, successfully achieved another significant milestone in the project. The recent accomplishment is completion of drilling and blasting for what's called the tailrace tunnel.

The tunnel, at 10.7 metres in height and about six metres wide, runs about 600 metres from the underground powerhouse to the tailrace outlet where the water will re-enter the Campbell River. The excavation milestone was achieved at the end of April 2017.

The tunnel was excavated in two stages by removing an upper rock heading and then the lower bench. The last section of the upper heading broke through at the end of March, and the lower rock bench was fully excavated by the end of April. It aligned with the concrete tailrace outlet work that was already in place.

The concrete form work at the tailrace outlet was completed months ago and includes the steel stop logs that were placed in position. Looking ahead, the solid rock plug that keeps the Campbell River water from entering the tunnel work area is planned to be removed with one controlled blast towards the end of 2017.

The John Hart project remains on schedule for the new facility to be in-service in fall 2018, providing enough power for about 80,000 homes. For more information, please select bchydro.com/johnhart.



View inside the John Hart powerhouse cavern – 10 stories high – where three new turbines/generators and a water bypass facility are being constructed.



Artist rendering of Nanaimo District Office.

OUR NEW DISTRICT OFFICES ON VANCOUVER ISLAND

A good number of our district offices on Vancouver Island were built decades ago, to modest standards, within limited budgets, not for the long-term and certainly not ready for the “big one”. Signs of aging, lack of compliance with modern building codes, and issues relating to operational functionality, safety, security, reliability, ability to help business continuity, lack of flexibility for expansion, and ability to meet industry best practices meant something had to be done.

Since 2010, Port Alberni, Campbell River and Nanaimo have seen new district offices replace the old. By late fall 2017, Victoria's new 75,000 square-foot structure, with an anticipated lifespan of 75 years, will be ready for the 160 employees to serve their 360,000 customer base.

All sites are planned and designed to maximize every inch of the building site inside and out. With crews coming and going, special consideration is given to safe flow of traffic.



Aerial view of Campbell River District Office at Quinsam Crossing completed in late 2015.

Yards are configured so that poles, transformers, wires, ropes and wire guards are strategically placed to ensure maximum time efficiency when crews load up before heading out.

When it comes to energy efficiency, we know we must lead by example. Our new operation centres are designed and built to equal the industry’s LEED Gold standards.

Safety is always our top priority for the public and our employees, and one critical component of our new buildings. After the “big one” hits (when, not if), BC Hydro must be ready to respond. These new facilities will accommodate our regional emergency command centres. All are built to post-disaster seismic standard, which is 50% above the normal seismic standard in the BC Building Code. Our buildings are required to protect the safety of our employees and maintain business continuity to assist the region in disaster recovery. Having the electrical grid up and functioning as quickly as possible will be critical to any rebuilding efforts in impacted communities across the region.

Reliability performance



We recognize how important the reliable supply of electricity is to our customers. We’ll continue to improve, reinforce and maintain the electrical system.

The information below provides a comparison between Fiscal 2016 and Fiscal 2017 for communities in the Vancouver Island–Sunshine Coast region. These statistics include interruptions due to planned outages.

Community	Fiscal 2016 Average customer interruption duration (hours)	Fiscal 2017 Average customer interruption duration (hours)	Fiscal 2016 Average number of interruptions per customer	Fiscal 2017 Average number of interruptions per customer
Campbell River	3.02	3.64	2.91	3.21
Courtenay	2.54	3.28	2.98	4.86
Duncan	2.18	3.02	3.83	5.15
Gulf Islands	6.06	3.79	6.17	8.86
Nanaimo	1.95	2.09	0.76	1.04
Parksville	1.65	1.32	0.46	0.34
Port Alberni	2.09	1.82	4.14	2.97
Port Hardy	3.78	4.45	6.20	5.19
Powell River	3.04	2.51	1.83	1.83
Qualicum Beach	1.94	2.44	3.01	4.69
Sechelt	2.64	3.38	5.18	3.92
Victoria	1.67	2.15	0.95	0.47

Supporting communities

Tree and vegetation management

Our distribution system is complex and highly efficient, with more than 48,000 kilometres of overhead distribution power lines throughout the province. Our vegetation management program controls a \$50 million annual maintenance budget for distribution and transmission lines, which helps to provide safe, reliable power to our customers.

Every year, vegetation maintenance coordinators inspect our overhead system to identify vegetation issues, such as trees situated close to power lines, and dead, dying or diseased trees that could fall on the lines. Vegetation management contractors then prune or remove trees and vegetation in areas where the lines may be impacted. What's more, when an area experiences reliability issues, we assess the local distribution lines for potential tree-related causes. Even with a proactive management program, more than half of all outages in B.C. are related to trees. For more information, please select bchydro.com/trees.



Community ReGreening Program



Nanaimo Old City Association volunteers, with help from the City of Nanaimo, planted 50 ornamental plum, cherry, red maple and Katsura trees in April 2016. The planting was made possible through BC Hydro funding.

Trees don't just make a community more sustainable, they make them healthier and more beautiful. Our Community ReGreening Program helps fund urban tree planting that's related to visual aesthetics and environmental enhancements. We pay for seedlings, medium and large trees in cities and towns across the province. Over the past two decades, we've funded the planting of more than 300,000 trees.

We partner with local communities and Tree Canada to help make sure appropriate trees are planted around power lines, while enhancing open spaces. The program is intended for small-scale community projects and is open to municipalities served by BC Hydro. All applications need to be received by January 31, to be eligible for funding within the same year. For more information, please select bchydro.com/regreening.

Over the past year, we provided over \$32,000 in funding for greening projects in the region.

Beautification fund

We provide financial assistance to municipal governments for conversion of overhead electrical distribution lines to underground facilities, and for help with decorative wraps on our existing service kiosks. The purpose of our contributions towards beautification projects is to assist municipalities in achieving their objectives related to environmental concerns and visual aesthetics. Applications need to be submitted by October 1, for consideration in the following year. For more information, please select bchydro.com/beautification.

Decorative wrap policy

We allow decorative wraps to be installed on our pad-mounted equipment. Municipal governments, strata councils, property managers and well-established community groups (i.e. Business Improvement Associations, Kinsmen, Lions or Rotary Clubs, Neighbourhood Associations) or businesses (established for five years or more) are eligible to apply. Requests from individual homeowners or renters aren't being accepted at this time. For more information about the policy and installation guidelines, please select bchydro.com/wrap.

Successful applicants, over the past year, included:

- City of Courtenay
- Town of Port McNeill
- District of Sechelt

Fish & Wildlife Compensation Program



Near Sayward in fall 2016, 700 native trees and shrubs were planted in an area previously overrun with invasive Scotch Broom. Pictured is Shawn Lukas with Vancouver Island Conservation Land Management Program. Photo courtesy of Karen Barry.

The Fish & Wildlife Compensation Program (FWCP) is a partnership of BC Hydro, the B.C. Government, Fisheries and Oceans Canada, First Nations, and public stakeholders, to conserve and enhance fish and wildlife impacted by BC Hydro dams.

In 2016–2017, the FWCP funded 16 projects on Vancouver Island, in the Campbell, Puntledge and Jordan River watersheds, for a total of just over \$475,000. They included releasing captive bred, and wild born, Vancouver Island Marmots on Mount Washington; restoring riparian and wetland habitat in the Salmon River Conservation Area; delivering spawning gravel into Elk Canyon in Campbell River using the new “cable skyline” system that the FWCP helped fund last year; and conserving riparian and wetland habitat in the Puntledge River watershed.

Since 1999, there’s been more than \$32 million invested in fish and wildlife projects in the Coastal region (which includes Vancouver Island) through the FWCP. For more details, please select fwcp.ca.

BC Hydro working in your community



Grants-in-lieu

We pay net property tax and grant payments to local governments. The grant program is a provincial government initiative and the amounts paid are determined under the current legislation. Listed below are the grants paid to each community in the Vancouver Island–Sunshine Coast region as of June 30, 2017.

Municipality/District	School Taxes*	Grants	Other Taxes	Total Payments
Regional District of Alberni–Clayoquot	0	\$53,271.00	0	\$53,271.00
Village of Alert Bay	\$3,574.96	\$8,004.98	0	\$11,579.94
City of Campbell River	\$2,413,711.84	\$840,916.93	0	\$3,254,628.77
Capital Regional District	0	\$323,435.00	0	\$323,435.00
District of Central Saanich	\$308,898.10	\$236,416.30	\$5,818.71	\$551,133.11
City of Colwood	\$39,704.20	\$120,723.67	0	\$160,427.87
Town of Comox	\$36,059.40	\$107,961.58	0	\$144,020.98
Regional District of Comox Valley	0	\$45,661.00	0	\$45,661.00
City of Courtenay	\$192,250.40	\$405,525.99	-0.07	\$597,776.32
Village of Cumberland	\$10,063.40	\$29,530.23	0	\$39,593.63
City of Duncan	\$8,294.60	\$54,452.55	0	\$62,747.15
Township of Esquimalt	\$168,786.40	\$255,403.94	0	\$424,190.34
Town of Gibsons	\$52,556.14	\$59,217.63	\$550.50	\$112,324.27
Village of Gold River	\$10,532.40	\$19,890.65	0	\$30,423.05
District of Highlands	\$88,744.18	\$23,767.11	0	\$112,511.29
Town of Ladysmith	\$61,987.01	\$105,278.86	0	\$167,265.87
Town of Lake Cowichan	\$26,550.76	\$33,458.51	\$240.00	\$60,249.27
City of Langford	\$194,896.30	\$310,914.38	0	\$505,810.68
District of Lantzville	\$103,433.26	\$50,006.62	\$14.00	\$153,453.88
District of Metchosin	\$58,757.66	\$48,252.70	0	\$107,010.36
City of Nanaimo	\$718,798.46	\$1,740,983.72	0	\$2,459,782.18
District of North Cowichan	\$849,955.48	\$1,088,334.44	\$1,077.01	\$1,939,366.93
District of North Saanich	\$107,217.05	\$157,610.90	\$1,986.53	\$266,814.48
District of Oak Bay	\$34,652.40	\$123,723.65	0	\$158,376.05
City of Parksville	\$39,101.20	\$121,162.53	0	\$160,263.73
City of Port Alberni	\$174,762.69	\$667,214.34	\$68.27	\$842,045.30
Village of Port Alice	\$6,508.17	\$16,844.89	0	\$23,353.06
District of Port Hardy	\$65,151.38	\$115,978.53	0	\$181,129.91
Town of Port McNeill	\$9,473.80	\$37,757.40	0	\$47,231.20
City of Powell River	\$160,067.32	\$464,419.98	\$2,104.45	\$626,591.75
Town of Qualicum Beach	\$96,624.50	\$142,362.67	\$27.87	\$239,015.04
District of Saanich	\$930,509.73	\$1,488,772.40	\$4,867.94	\$2,424,150.07
Village of Sayward	\$2,599.60	\$3,220.55	0	\$5,820.15
District of Sechelt	\$66,128.58	\$122,431.59	\$32.23	\$188,592.40
Indian Govt District Sechelt	\$6,110.40	\$26,135.78	0	\$32,246.18
Town of Sidney	\$21,364.56	\$111,090.20	0	\$132,454.76

*Local governments collect school taxes which are then forwarded to the provincial government to help fund school districts.

Grants-in-lieu continued

Municipality/District	School Taxes*	Grants	Other Taxes	Total Payments
District of Sooke	\$100,297.66	\$131,411.98	0	\$231,709.64
Regional District of Strathcona	0	\$121,764.00	0	\$121,764.00
Regional District of Sunshine Coast	0	\$62,784.00	0	\$62,784.00
Village of Tahsis	\$17,229.72	\$18,776.45	0	\$36,006.17
District of Tofino	\$10,291.20	\$40,195.55	0	\$50,486.75
District of Ucluelet	\$11,497.20	\$32,695.28	0	\$44,192.48
City of Victoria	\$569,138.76	\$1,351,972.55	\$252.01	\$1,921,363.32
Town of View Royal	\$117,535.42	\$128,230.51	0	\$245,765.93
Village of Zeballos	\$1,893.42	\$3,576.06	0	\$5,469.48

*Local governments collect school taxes which are then forwarded to the provincial government to help fund school districts.

Community grants

By supplying electricity to the people and businesses of this province, we provide an essential and important service. We also believe in doing more than that: we offer two types of grants to support non-profit organizations and registered charities that are making a difference in their communities. Last year, we supported over 60 community-based projects across every region of the province.

Our grants are given out in three focus areas: building the workforce of tomorrow, safety education and developing smart energy ideas. When planning for your project, please keep in mind that our grants have set criteria and application deadlines. To learn more, please select bchydro.com/grants.

Some of the organizations that we supported in the Vancouver Island-Sunshine Coast region this past year included:

Organization	Project	Community	Grant
Southern Gulf Islands Community Resources Society	Building Pender Island's economy through edu-tourism	Pender Island	\$1,000
Friends Uniting for Nature Society	FUN camps	Greater Victoria	\$2,000
Steelhead Society of BC – Comox Valley Chapter	Chum carcass distribution in the upper Puntledge watershed	Comox Valley	\$1,000
Coast Rogue Arts Society	Rogue Arts Festival workshop series	Gibsons	\$1,500
Qualicum Beach Historical & Museum Society	Powerhouse Discovery Centre – relative energy display	Qualicum Beach	\$2,000
Friends of the Dominion Astrophysical Observatory Society	Expanding science outreach at the observatory	Greater Victoria	\$2,000
Powell River Salmon Society	Power Our Fish 2017 educational programs	Powell River	\$2,000
North Island Emergency Preparedness	Regional Emergency Support Services Director's Workshop	Campbell River	\$2,000
Vancouver Island Sustainable Technology Association	Vista Expo	Campbell River	\$1,500
Habitat Acquisition Trust	Goldstream Chums program	Greater Victoria	\$5,000

BC Hydro Community Relations

At BC Hydro we build strong relationships to support the unique needs and strengths of the communities we serve. Our Community Relations team does this by listening, providing information and working together with communities. Community Relations is the point of contact for local government, media, local business and community groups. Whether it's for capital projects, corporate initiatives and programs, local BC Hydro activities, significant planned outages, emergency response or unplanned power outages, we work hard to meet the needs of our stakeholders and ensure communities are kept informed.

Vancouver Island–Sunshine Coast

If you have questions or comments for us, please contact:

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BC Hydro guide for local governments

Quick access to key information on bchydro.com

My Hydro and Energy Savings initiatives	
bchydro.com/myhydro/	Log in to manage your account.
Energy savings programs bchydro.com/energysavings	Learn how you can be smart with your power. Take advantage of rebates and programs.
Smart Meters bchydro.com/smartmeters	Find out how smart meters help us better manage our electricity grid, and improve service and reliability.
Projects	
Capital Projects bchydro.com/projects	We're investing more than \$10 billion in our province over the next five years. Learn more about projects taking place in your region.
Programs	
Beautification program bchydro.com/beautification	Our beautification fund assists municipal governments in achieving their objectives related to environmental concerns and visual aesthetics. Learn more about the program and the principal considerations that should be included in a proposal.
Community ReGreening Program bchydro.com/regreening	The regreening program assists municipalities with urban tree planting while helping to make sure appropriate trees are planted around power lines.
Community Giving	
Grants for community groups bchydro.com/grants	Learn about our funding opportunities and how to apply for them.
Scholarships & Endowments bchydro.com/scholarships	We look to build the next generation of engineers, electricians, and many other key roles who will help us deliver clean energy for generations. Learn about our scholarship and endowment opportunities.
Report an outage	
How to report a power outage bchydro.com/outages	Check the outage map or list to see if we know your power is out. If not, call us at 1 800 BCHYDRO (1 800 224 9376) or *HYDRO (*49376) on your mobile phone to report it.

Get info on energy savings initiatives, our projects, important announcements, outages and more.

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Power smart