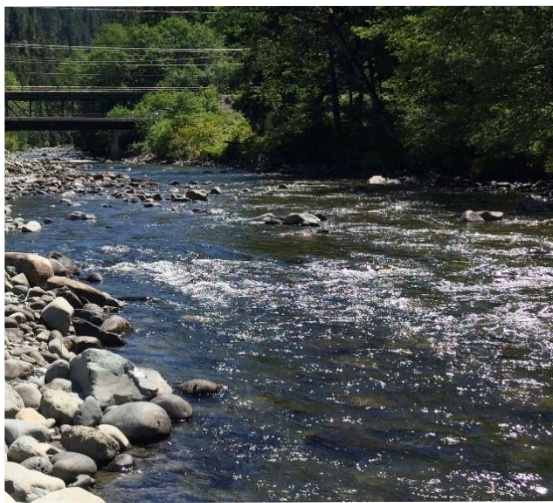




BC Clean Energy Projects: Investment, Job Creation and Community Contributions

Clean Energy Association of BC

April 2016



Prepared by:



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EXECUTIVE SUMMARY

The Clean Energy Association of British Columbia ("Clean Energy BC") represents companies, First Nations and organizations whose primary activities involve the generation and sale of clean and renewable electricity in the province of British Columbia ("BC")¹. For the purpose of this report, these entities are referred to as Clean Power Producers, and exclude companies that sell power back to the provincial grid as a secondary line of business (such as companies which are engaged primarily in mining, forestry or other activities).

Clean Energy Projects ("CEPs") undertaken by Clean Power Producers generate electricity using a variety of technologies, including run-of-river (small hydro), wind power, thermal power (e.g. biogas, biomass, natural gas) and solar power. CEPs are located throughout the province, and provide economic and social benefits for local communities near which they operate.

Clean Energy BC engaged MNP LLP ("MNP") to study the investments made in existing and planned CEPs in BC.

The key findings of the study are:

- CEPs that are currently in operation are estimated to account for approximately 14 percent of BC Hydro's domestic supply of electricity.
- Clean Power Producers have invested a cumulative total of approximately \$6.0 billion² in CEPs that are currently in operation and supplying power to BC Hydro. CEPs currently under development are projected to generate additional investment of approximately \$2.6 billion³.
- According to data obtained from BC's Major Projects Inventory, the projected \$2.6 billion capital investment in CEPs currently under development is more than one and a half times the total projected capital investment in BC port and harbour facilities (\$1.5 billion), and more than double the projected capital investment in BC mining projects (\$1.0 billion).
- The development of a CEP consists of four phases: Pre-Planning, Planning, Construction and Operations. Pre-planning and planning activities associated with CEPs currently in operation are estimated to have supported 642 direct⁴ full-time equivalent ("FTE") person years of employment. Pre-planning and planning of CEPs currently in development is expected to support an additional 219 direct FTE person years of employment.
- Construction activities associated with CEPs currently in operation are estimated to have supported 15,970 direct FTE person years of employment. The construction of CEPs currently in development is expected to support an additional 4,543 direct FTE person years of employment.
- Operational activities associated with CEPs currently in operation are estimated to support 641 direct FTEs annually. The operation of CEPs currently in development is expected to support an additional 165 direct FTEs annually.
- Substantial spending on CEPs occurs in the local communities near which they operate. Approximately 25 percent of spending during pre-planning and planning, and 40 to 55 percent of spending during construction is estimated to occur in local communities. When in operation, approximately 70 percent of spending is estimated to occur in local communities.
- CEPs also provide additional economic and social benefits to local communities. In particular, many CEPs provide benefits to local First Nations communities, through equity ownership, impact benefit agreements, and employment and procurement opportunities.

¹ CEBC as an industry association also represents many supply chain companies (e.g. engineering, environmental services, legal and GIS) that support the development and operation of clean energy projects.

² Estimated cumulative total of investments in nominal dollars.

³ This estimate includes only projects that have Electricity Purchase Agreements with BC Hydro, and is expressed in current dollars.

⁴ Employment figures reported in this study represent direct employment only. Indirect and induced employment are not included.

INTRODUCTION

BACKGROUND AND STUDY PURPOSE

Clean Energy BC represents companies, First Nations and organizations whose primary activities involve the generation and sale of clean and renewable electricity in BC. For the purpose of this report, these entities are referred to as Clean Power Producers, and exclude companies that sell power back to the provincial grid as a secondary line of business (such as companies which are engaged primarily in mining, forestry or other activities).

Clean Energy Projects ("CEPs") generate electricity using a variety of technologies, including run-of-river (small hydro), wind power, thermal power (e.g. biogas, biomass, natural gas) and solar power. Investments in CEPs, which are located throughout the province, result in economic and social benefits for local communities near which they operate.

Clean Energy BC engaged MNP to study the investments, employment and community contributions of CEPs undertaken by Clean Power Producers. The scope of the study included:

- Data collection and secondary research related to CEPs currently in operation or under development.
- Assessment of spending and employment characteristics of CEPs.
- Documentation of the involvement of First Nation communities in CEPs.
- Documentation of other social and community contributions of CEPs.

Please note that the employment considered in this study represents only direct employment associated with CEPs. Indirect and induced employment impacts arising from CEPs have not been included.

Similarly, the study does not include estimates of gross domestic product (GDP), provincial or federal government tax revenues, or other types of economic impacts arising from CEPs. A comprehensive economic impact assessment was not included within the scope of the study.

OUR APPROACH

In preparing this report, MNP carried out the following activities:

- Collected data from a sample of CEPs, through a data collection template distributed by Clean Energy BC.
- Conducted secondary research on project costs and employment by accessing publicly available data, articles and reports.
- Summarized the data and information collected related to the economic and social contributions of CEPs currently in operation or under development in BC.

REPORT LIMITATIONS

This report is not intended for general circulation, nor is it to be published in whole or in part without the prior written consent of MNP LLP ("MNP"). The report is provided for information purposes and is intended for general guidance only. It should not be regarded as comprehensive or a substitute for personalized business or investment advice.

We have relied upon the completeness, accuracy and fair presentation of all information and data obtained from the Clean Energy Association of BC and public sources, believed to be reliable. The accuracy and reliability of the findings and opinions expressed in the presentation are conditional upon the completeness, accuracy and fair presentation of the information underlying them. As a result, we caution readers not to rely upon any findings or opinions expressed for business or investment purposes, and disclaim any liability to any party who relies upon them as such.

Additionally, the findings and opinions expressed in the presentation constitute judgments as of the date of the presentation, and are subject to change without notice. MNP is under no obligation to advise of any change brought to its attention which would alter those findings or opinions.

OVERVIEW OF THE CLEAN ENERGY SECTOR IN BC

DEVELOPMENT OF CLEAN ENERGY PROJECTS

As part of its role to ensure provincial electricity needs are met, BC Hydro⁵ purchases electricity from other energy producers, including Clean Power Producers, mining and forestry companies, municipalities, other utilities and customers. Power generating entities that develop and operate power supply projects which connect to BC Hydro's electrical grid are collectively referred to by BC Hydro as Independent Power Producers ("IPPs"). As of December 31, 2014, IPPs provided approximately 25 percent of BC Hydro's domestic supply of electricity.⁶

BC Hydro purchases power from IPPs through long-term Electricity Purchase Agreements ("EPAs"). As of May 1, 2015, BC Hydro had 101 EPAs with IPPs that supply power to BC Hydro. In addition, as of May 1, 2015, BC Hydro had another 27 EPAs with IPPs for projects in development. Clean Power Producers represent approximately half of the total electricity currently being supplied to BC Hydro by IPPs, and account for 97 percent of the total supply of IPP projects in development.⁷ At present, Clean Power Producers are estimated to represent approximately 14 percent of BC Hydro's total domestic supply of electricity.⁸

Clean Power Producers are estimated to represent approximately **14 percent** of BC Hydro's domestic supply of electricity.

The process and activities involved in developing a CEP are outlined in Figure 1, and consist of four phases:

- Pre-Planning.
- Planning.
- Construction.
- Operations.

The pre-planning phase includes the identification of the project site, an initial feasibility study, and preliminary design for the project. Ultimately, the pre-planning phase results in the submission of a bid to BC Hydro for an EPA. Since EPAs are generally awarded through a competitive bid process,⁹ bids submitted by Clean Power Producers may not necessarily result in a signed EPA.¹⁰

Upon award of an EPA, more detailed design plans are developed during the planning phase. Construction is commissioned following the receipt of the necessary approvals and, subsequent to successful testing and commissioning, the project begins operating and supplying power to BC Hydro.

⁵ A crown corporation responsible for the generation, transmission and distribution of power in BC.

⁶ BC Hydro. Retrieved from <https://www.bchydro.com/about.html>

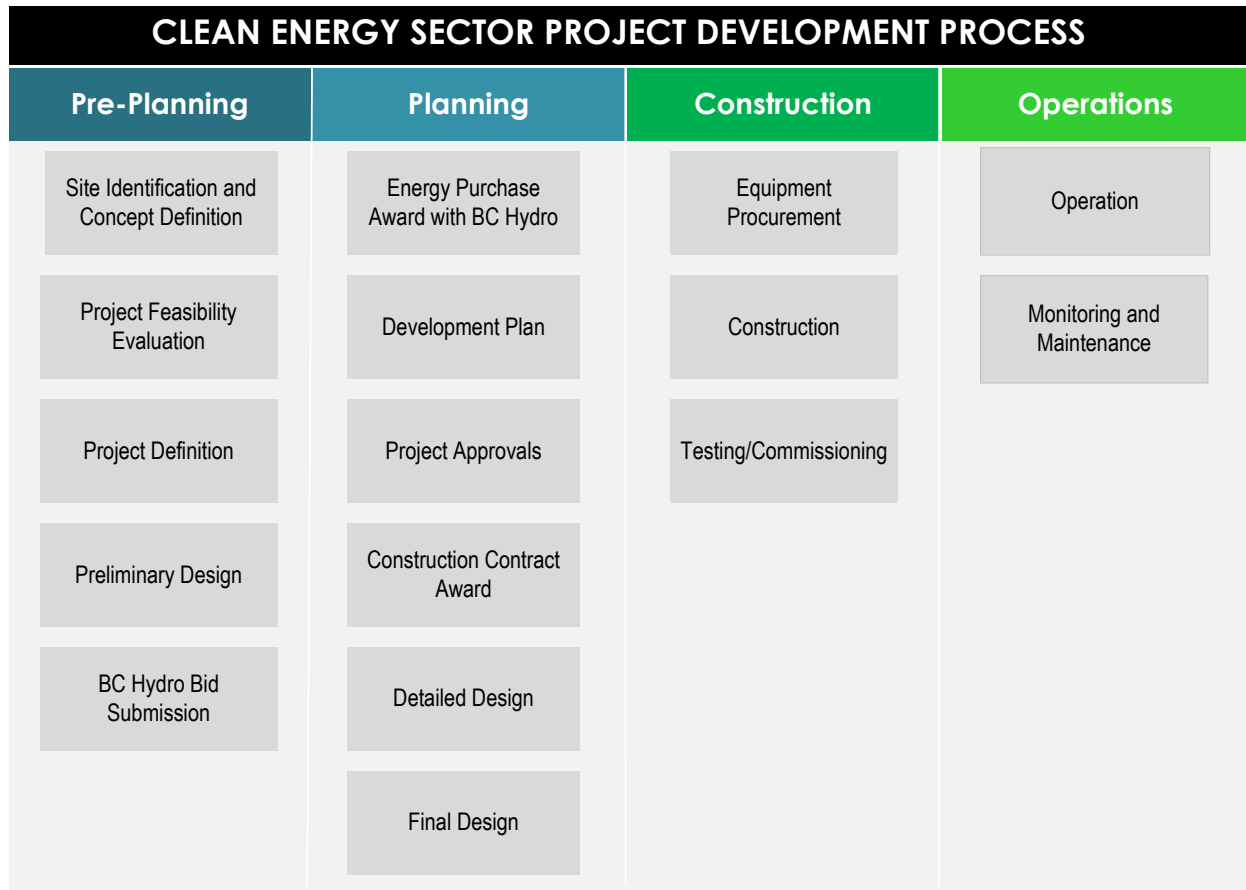
⁷ BC Hydro IPP Supply List. Retrieved from https://www.bchydro.com/energy-in-bc/acquiring_power/meeting_energy_needs/how_power_is_acquired.html

⁸ According to BC Hydro's 2015 Rate Design Application, BC Hydro's total installed generating capacity is 12,047 MW. The total generating capacity of all IPPs currently supplying to BC Hydro represent an additional 4,567 MW. Of this, Clean Power Producers represent 2,368 MW of generating capacity.

⁹ There has not been a competitive bid process in BC since the Clean Power Call in 2008, awarded in 2010. There is a Standing Offer Program (SOP) with a per project limit of 15 MWs and a micro-SOP (up to 1MW per project) available to developers who can meet prescribed standing criteria. There is an annual maximum limit of 150 GWhs that BC Hydro will purchase in any year. Available via BC Hydro, https://www.bchydro.com/energy-in-bc/acquiring_power/current_offerings/standing_offer_program.html

¹⁰ For example, while the 2010 Clean Power Call awarded 25 EPAs for 18 proponents, 43 proponents with 68 projects had submitted proposals to BC Hydro. Available at: https://www.bchydro.com/energy-in-bc/acquiring_power/closed_offerings/clean_power_call.html?WT.mc_id=rd_cleanpowercall

Figure 1. Clean Energy Sector Project Development Process



Adapted from *Independent Power Production in BC: An Inter-agency Guidebook for Proponents*, Ministry of Agriculture and Lands (2008). Retrieved from: <http://www.bcenergyblog.com/uploads/file/IPP%20Guidebook.pdf>

CLEAN ENERGY PROJECTS IN BC

There are 106 CEPs currently in operation or under development in BC. As shown in the map in Figure 2, these projects are present in all development regions of BC. The majority of projects currently supplying power to BC Hydro are located in the Mainland/Southwest and Vancouver Island/Coast regions, while of the projects under development, the majority are located in the Mainland/Southwest and Thompson Okanagan regions.

As shown in Figure 3, a large majority of CEPs currently in operation are run-of-river projects, which use natural stream flows and elevation differences to create energy. Other types of Clean Energy projects are thermal generation (e.g. biogas, biomass and natural gas), storage hydro, wind, energy recovery generation and generation from municipal solid waste.

Run-of-river projects also comprise the majority of CEPs that are currently in development, with 15 projects in development as of May 2015. In addition, there are four wind projects, three thermal projects, one large hydro and one solar project currently in development.

Figure 2. Clean Energy Projects in BC (as of May 2015)

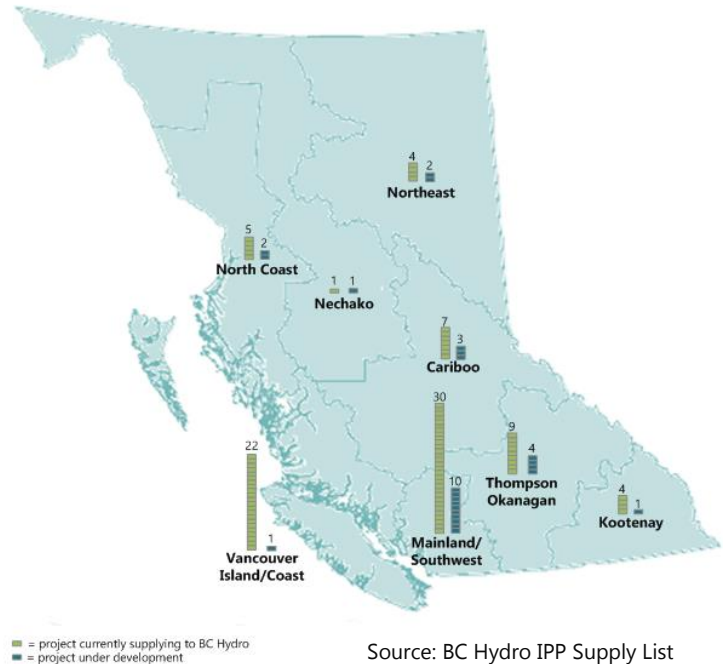
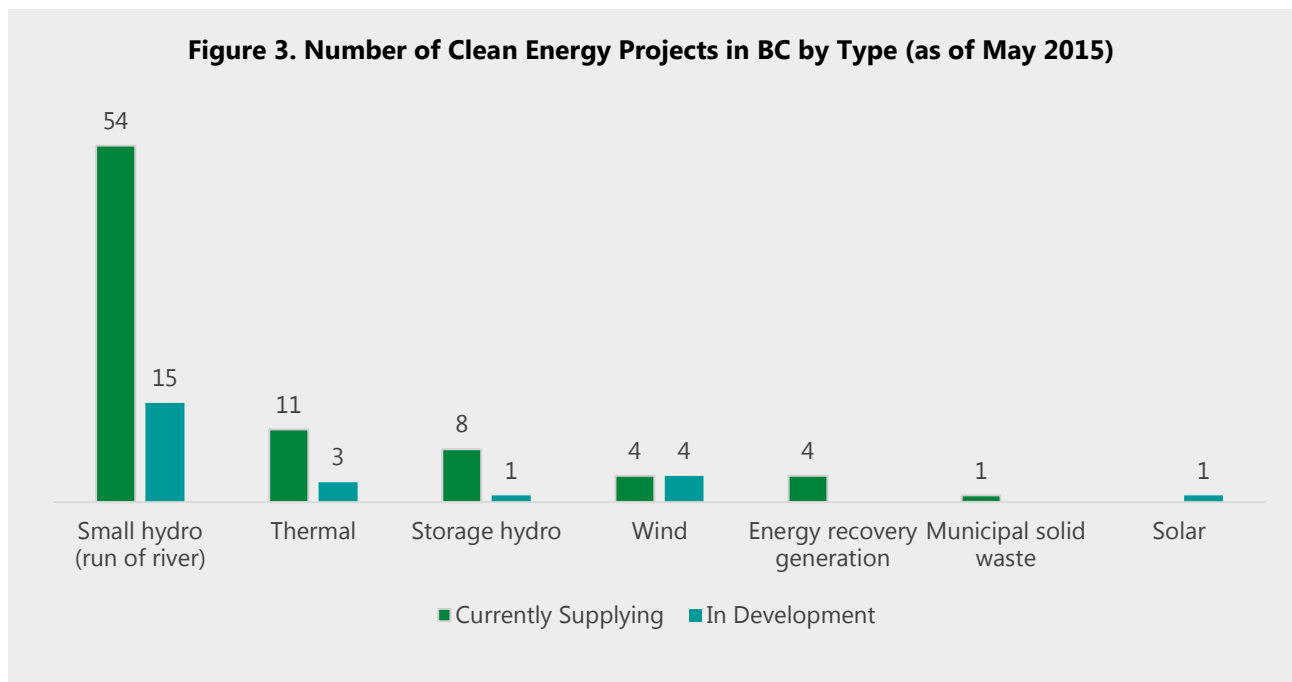


Figure 3. Number of Clean Energy Projects in BC by Type (as of May 2015)



ECONOMIC AND SOCIAL CONTRIBUTIONS

INVESTMENT AND JOB CREATION

Investment in a CEP begins during the project's pre-planning and planning phases. Clean Power Producers report¹¹ that the costs associated with the pre-planning and planning phases are typically equivalent to between 3 to 5 percent of total construction costs.

Based on data obtained as part of this study, we estimate CEPs currently supplying energy to BC Hydro to have supported a cumulative total of 642 direct FTE person years of employment during the pre-planning and planning phases, while projects currently in development are projected to support an additional 219 direct FTE person years of employment during pre-planning and planning¹².

Projects in Operation:

\$6.0 billion

total capital investment in BC

CEPs typically require a large capital investment during the construction phase. Based on information obtained for this study, we estimate the total capital investment made during the construction of CEPs currently supplying energy to BC Hydro was approximately \$6.0 billion¹³. CEPs currently in development are projected to require an additional investment of approximately \$2.6 billion¹⁴. As a result, CEPs currently in operation or in development in BC are associated with a total estimated capital investment of approximately \$8.6 billion.

Projects in Development:

\$2.6 billion

total capital investment in BC

Based on data obtained as part of this study, we estimate CEPs currently supplying energy to BC Hydro to have supported a cumulative total of 15,970 direct FTE person years of employment during the construction phase, while projects currently in development are projected to support an additional 4,543 direct FTE person years of employment during construction.

Once a CEP is operational, Clean Power Producers invest in ongoing operations and maintenance. Clean Power Producers report¹⁵ that costs associated with the operations phase are typically equivalent to approximately one to two percent of total construction costs.

Based on data obtained as part of this study, we estimate that projects currently supplying to BC Hydro support 641 direct FTE positions annually during operations. Projects currently in development are projected to support an additional 165 direct FTE positions annually once operational.

¹¹ Information collected by MNP from Clean Energy BC members as part of this study.

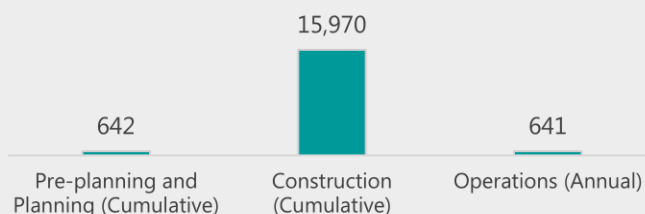
¹² To estimate the employment generated from pre-planning and planning activities, MNP calculated an average FTE created per MW from data collected on a sample of Clean Energy projects.

¹³ Estimated cumulative total of investments in nominal dollars. MNP estimated the capital investment with information obtained from Clean Power Producers through data collection templates supplemented by data from the BC Major Projects Inventory.

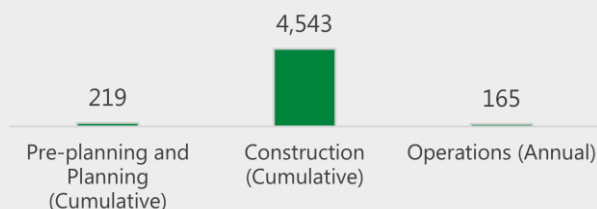
¹⁴ This estimate includes only projects that have Electricity Purchase Agreements with BC Hydro, and is expressed in current dollars. Based on information gathered from Clean Power Producers as part of the study, MNP identified that an additional \$500 million to \$600 million in investment is anticipated for projects that are currently in the pre-planning or planning phase.

¹⁵ Information collected by MNP from Clean Energy BC members as part of this study.

Direct Employment (FTE Person Years) Supported by CEPs in Operation



Direct Employment (FTE Person Years) Supported by CEPs in Development



SUPPORT AND DEVELOPMENT OF LOCAL COMMUNITIES

CEPs support individuals and suppliers in the local communities near which they operate. Clean Power Producers report¹⁶ that approximately 25 percent of pre-planning and planning spending, approximately 40 to 55 percent of construction spending¹⁷ and approximately 70 percent of operational spending occurs within local communities.

Examples of business sectors supported in local communities include:

- **Construction** (e.g. road and substation maintenance, heavy crane services steel erection, bridge construction and upgrades, collector/transmission line inspection and repairs).
- **Professional services** (e.g. engineering firms, consulting firms, biologists).
- **Electrical services** (e.g. switch yards, control system wiring, emergency and camp power generation, and communications array installation).
- **Transportation** (e.g. helicopters).
- **Accommodations** (e.g. hotels and restaurants in local communities, camp and camp services).
- **Other Suppliers** (e.g. drill suppliers and other equipment).

"Of the 175 suppliers [engaged for the project] more than 90% were from British Columbia and 78% of all monies spent remained in the Canadian supply chain."

– Clean Power Producer

CEPs can also help to diversify the economies of local communities by providing another source of employment in communities that may have traditionally relied on mining or forestry to provide the majority of local employment. According to Clean Power Producers, the skill sets required for the establishment and operation of CEPs share similarities with skill sets required in traditional industries, which allows workers to change employment positions while remaining in their local community.

¹⁶ Information collected by MNP from Clean Energy BC members as part of this study.

¹⁷ The share of construction spending that occurs in local communities varies by type of project and is summarized in more detail in Appendix A.

As well, CEPs may provide a local government with a stable source of revenue, thereby enabling it to undertake community economic development initiatives that require a long term government commitment.

DEVELOPMENT OF EXPERTISE IN CLEAN ENERGY AND RELATED SECTORS

Clean Power Producers report¹⁸ that the establishment of CEPs enables suppliers to develop expertise that can, in turn, be used to generate business opportunities with other projects within BC and in other jurisdictions. This may include opportunities provided for:

- **Construction companies and local contractors/operators** (e.g. exposure to new techniques and management methods that can be applied on other projects or sectors).
- **Professional services firms** (e.g. development of protocols, filed data measurement and collection processes, development and implementation of wildlife and avian monitoring programs, and spawning channel compensation that can be applied elsewhere).
- **Local colleges/education institutions** (e.g. development of new technician training programs).

According to Clean Power Producers, the establishment of new wind projects has helped create a greater general understanding of wind power developments, and small wind projects have promoted creativity and the establishment of baseline work, including environmental studies.

¹⁸ Information collected by MNP from Clean Energy BC members as part of this study.

INVOLVEMENT WITH FIRST NATIONS COMMUNITIES

First Nations are involved in CEPs through a variety of channels. These may include:

- **Equity ownership** in CEPs through investment in CEPs or by undertaking their own projects to supply clean energy.
- **Impact benefit agreements and revenue sharing agreements**, where First Nations share in the benefits of projects through employment, economic, community, environmental, financial and/or commercial provisions. These agreements may include capacity building measures such as social supports, skills training, education upgrading, and other tools that address socio-economic barriers to participation.
- **Employment and procurement.** This may include measures such as the procurement of goods and services from First Nations, and the employment of First Nations people.
- **Sharing of Crown resources and resource revenues.** Revenue sharing agreements, such as through the First Nations Clean Energy Business Fund, provide Aboriginal communities with a share of the land and water rent revenues the province derives from CEPs. Through the First Nations Clean Energy Business fund¹⁹ 50 percent of new incremental water and land rentals for any one project are deposited into the fund. A total of 75 percent of deposited funds are shared directly with First Nations whose territory may be impacted by a CEP, for a total of 37.5 percent of water and land rentals. The remainder of the funds (12.5 percent) remain in the fund to help support capacity building and equity grants.

Examples of First Nations involvement in CEPs in BC are presented in the regional profiles section of this report.

Contracts for construction of the Quality Wind project in Tumbler Ridge were awarded to six Aboriginal companies, including a construction company owned by McLeod Lake Indian Band which built roads, excavated the land and prepared the foundations for the project.¹³ Long Term Community Benefits Agreements are also in place for the life of the project.¹⁴

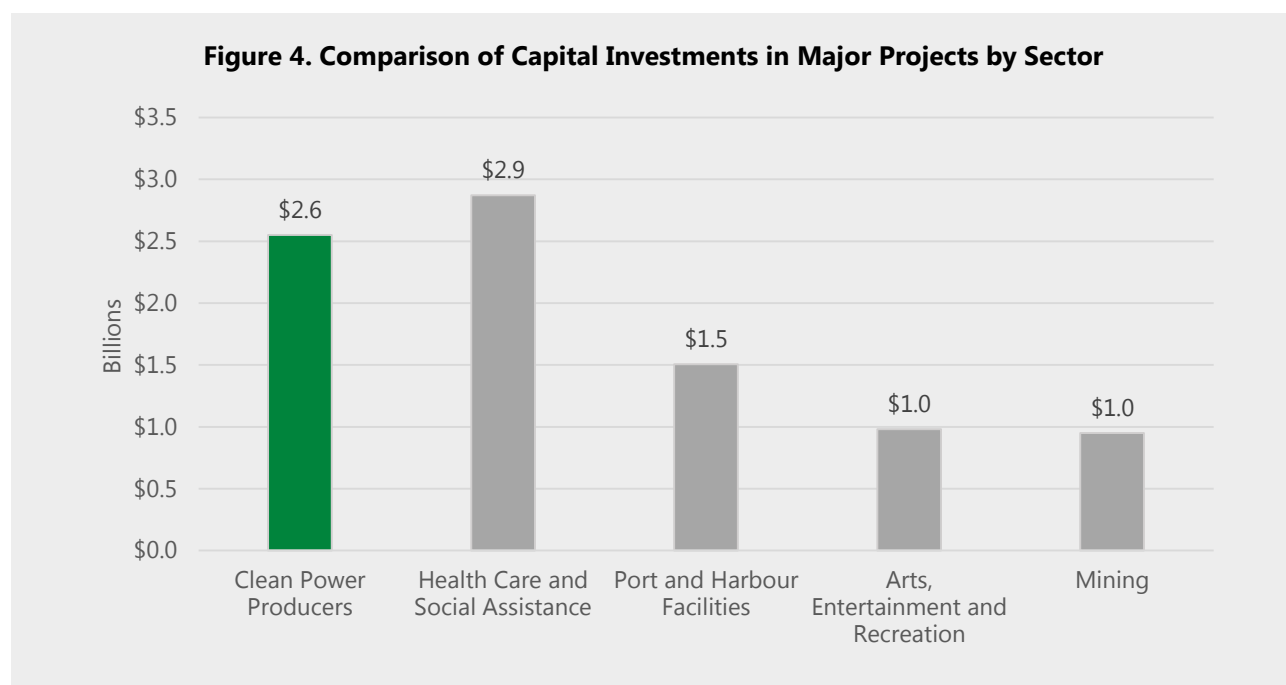
¹⁹ Government of British Columbia, *First Nations Clean Energy Business Fund*, Accessed on March 8, 2016. Available here: <http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-clean-energy-business-fund>

²⁰ Retrieved from <https://www.capitalpower.com/generationportfolio/CA/QualityWind/Quality%20Wind%20Photo%20Essay.pdf>

²¹ Retrieved from <https://www.cleanenergybc.org/wp-content/uploads/2015/10/Generate-2014-Operations-Workshop-Quality-Wind.pdf>

COMPARISON WITH OTHER SECTORS

To provide perspective on the size of the capital investments in CEPs, it is useful to compare them with those in other sectors of the BC economy. Using data from BC's Major Projects Inventory, as of June 2015²², the \$2.6 billion in capital investment associated with CEPs under development is comparable with the capital investment of projects in development in BC's health care and social assistance sector (\$2.9 billion). The capital investment associated with CEPs under development is substantially larger than the total projected investment in port and harbour facilities (\$1.5 billion), and more than double the projected investment in the arts, entertainment and recreation sector (\$1.0 billion) and the mining sector (\$1.0 billion).



²² Source: BC Major Projects Inventory as of June 2015. Retrieved from: <http://www2.gov.bc.ca/gov/content/employment-business/economic-development/industry/bc-major-projects-inventory>

Note that the BC Major Projects Inventory only accounts for projects in BC that are over \$15 million in capital cost, or \$20 million in capital cost in the Lower Mainland-Vancouver area. For this comparison, we have only included projects that are in development (that is, classified by the BC Major Projects Inventory as "Construction started").

REGIONAL PROFILES

MAINLAND/SOUTHWEST

Projects in Operation:

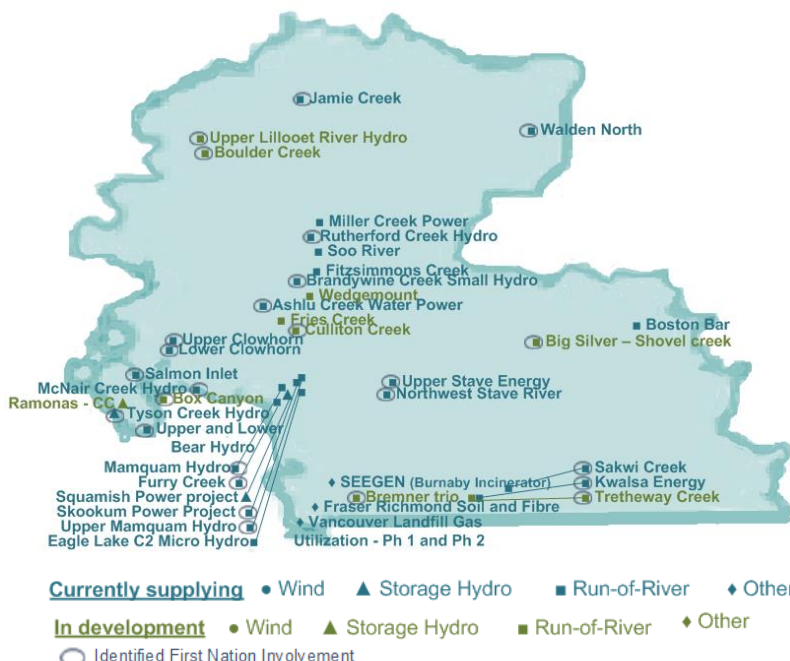
\$1.5 billion

total capital investment

Projects in Development:

\$0.9 billion

total capital investment



The Mainland/Southwest region has the highest concentration of CEPs with 30 projects currently supplying to BC Hydro and an additional 10 under development. Many of these projects have had an impact on local municipalities and First Nations communities, some of which are highlighted below:

- In 2015, six CEPs in the Mainland/Southwest region (Ashlu, Fitzsimmons, Northwest Stave, Miller Creek, Rutherford, and Upper Stave), generated just over \$2.2 million in property tax revenues for local municipalities.²³ Four projects under construction (Boulder, Big Silver, Upper Lillooet, Tretheway) generated an additional \$800,000 in property tax revenues for the same year.²⁴
- In December 2015, it was announced that the Cayoose Creek Indian Band and Innergex entered into an agreement for the joint acquisition of the Walden North project near Lillooet, BC.²⁵ According to the Innergex news release, the Cayoose Creek Indian Band owns 49 percent of the project which is expected to have revenues of about \$2.2 million in 2016.
- Provincial revenues from the Jamie Creek Hydroelectric Project near Downton Lake will be shared with the Bridge River Indian Band, the N'quatqua First Nation and the T'it'q'et Nation.²⁶ According to a news release by the Ministry of Aboriginal Relations and Reconciliation, once the project is fully operational, revenue-sharing is forecasted to reach \$60,000 per year over the life of the project.

²³ Provided by Innergex by email correspondence.

²⁴ Ibid.

²⁵ Innergex News Release, Retrieved here: <http://www.innergex.com/wp-content/uploads/press-release-Walden-acquisition-ENG.pdf>

²⁶ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved here: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014arr0026-001239.htm

- Two First Nations signed revenue-sharing agreements for the Skookum Creek power Project. Tsleil-Waututh First Nation and Squamish Nation are forecast to receive approximately \$17,000²⁷ and \$78,000²⁸ respectively per year over the life of the project.
- Tsleil-Waututh First Nation²⁹ and Squamish Nation³⁰ have both signed clean energy agreements that will allow them to share provincial revenue from the Culliton Cree run-of-river project located in Squamish.
- In 2012, Lil'wat Nation signed, a participation agreement with Innergex for the Lillooet hydroelectric project.³¹ According to the Innergex website, benefits to the Nation from the agreement include revenue-sharing, procurement and employment opportunities, ongoing environmental compliance monitoring and reflection of the Lil'wat cultural values in the project's design. Still according to Innergex, a similar agreement between Lil'wat and Innergex is expected to be signed for the Boulder Creek hydroelectric project. In 2014, Lil'wat signed a revenue-sharing agreement with the province for both projects.³²

²⁷ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved here: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014ARR0019-001108.pdf

²⁸ BC Gov News Release, *Squamish Nation Shares Clean-Energy Revenues*, Retrieved here: <https://news.gov.bc.ca/stories/squamish-nation-shares-clean-energy-revenues>

²⁹ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_tsleil_signed_may_8_2014_culliton.pdf

³⁰ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_squamish_signed_mar_25_2014_culliton.pdf

³¹ Innergex, *It begins with People*, Retrieved here: <http://www.innergex.com/en/in-review/2012-edition/it-begins-with-people/>

³² BC Gov News Release, *Clean energy revenues flow to Lil'wat First Nation*, Retrieved here: <https://news.gov.bc.ca/stories/clean-energy-revenues-flow-to-lilwat-first-nation>

NORTHERN BC

(NORTH COAST, NECHAKO AND NORTHEAST DEVELOPMENT REGIONS)

Projects in Operation:
\$2.3 billion
total capital investment

Projects in Development:
\$1.0 billion
total capital investment



There are 10 CEPs currently supplying power in Northern BC, and another five in development. Many of these projects have had an impact on local municipalities and First Nations communities, some of which are highlighted below:

- Tumbler Ridge, previously known as a coal mining town, was awarded a Clean Energy award in 2015 for its support of wind energy projects in the region including Quality Wind, and now Meikle Wind.³³
- The Tahltan Central Council, Tahltan Band and Iskut Band signed three Impact Benefit Agreements (IBAs) with AltaGas for the Northwest Projects which included the Forrest Kerr Hydro, Volcano Creek and McLymont Creek projects.³⁴ Some of the benefits mentioned for the Tahltan Central Council include revenues, the use of Tahltan businesses and joint venture companies as well as jobs and training in the community. Furthermore, the Tahltan Central Council signed revenue sharing agreements with the Province of BC in 2013 and 2014 for the Forrest Kerr hydroelectric project³⁵ and the Volcano Creek hydroelectric Project respectively.³⁶ For the Forrest Kerr Hydroelectric project, the Tahltan Nation's portion of provincial revenue sharing from water rentals and land rentals is forecast to be \$2.5 million per year each year for the term of the EPA.³⁷
- The Nisga'a Nation signed a revenue sharing agreement with the province of BC in 2014 for the Long Lake Hydro Project.³⁸ Revenues from this agreement are forecasted at \$123,820 per year over the life of the project.³⁹

³³ Tumbler Ridge News, Retrieved here: <http://tumbleridgenews.com/tumbler-ridge-receives-clean-energy-award/>

³⁴ Aboriginal Business and Investment Council, *Tahltan Central Council and AltaGas Ltd.* Retrieved here: <http://www.bcabc.ca/content/tahltan-central-council-and-altagas-ltd>

³⁵ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_tahltan_forrest_kerr.pdf

³⁶ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_tahltan_signed_volcano_creek_rotated.pdf

³⁷ Government News Release, Retrieved from <https://news.gov.bc.ca/stories/agreements-strengthen-relationship-between-bc-and-tahltan-nation>

³⁸ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_nisgaasigned_cascade_river_rotated.pdf

³⁹ BC Government News Release, Retrieved here: <https://news.gov.bc.ca/stories/new-agreements-confirm-benefits-of-nisgaaself-government>

- The Pine Creek Hydro project is wholly owned by the Taku River Tlingit First Nation⁴⁰. The Nation also signed a revenue sharing agreement with the province with forecasted revenues for the Nation of \$6,000 per year over the life of the project.⁴¹
- The Brown Lake Project provided over \$90,000 in property tax revenues in 2015.⁴²

⁴⁰ Indigenous and Northern Affairs Canada, A Green Energy Dream Comes True, Retrieved here: <https://www.aadnc-aandc.gc.ca/eng/1312203781673/1312203873606>

⁴¹ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved here: http://www2.news.gov.bc.ca/news_releases_2013-2017/2013arr0059-001876.htm

⁴² Provided by Innergex by email correspondence.

VANCOUVER ISLAND/COAST

Projects in Operation:

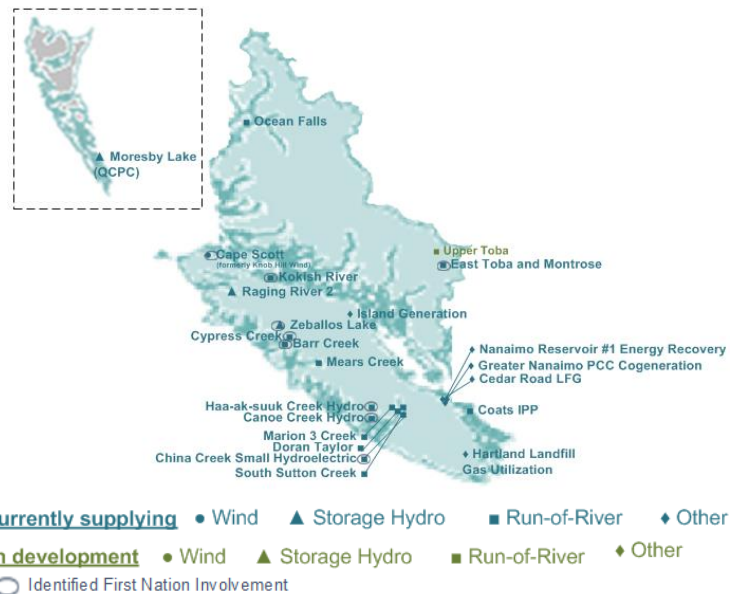
\$1.6 billion

total capital investment

Projects in Development:

\$0.2 billion

total capital investment



Twenty-two CEPs are currently supplying power in the Vancouver Island/Coast region, and one project is currently in development. Many of these projects have had an impact on local municipalities and First Nations communities, some of which are highlighted below:

- The Cape Scott project (formally Knob Hill Wind) paid approximately \$800,000 in property taxes in 2015.⁴³
- The 'Namgis First Nation signed a revenue sharing agreement in 2014⁴⁴ with forecasted provincial revenues of about \$165,000 to \$192,000 per year for the life of the Kokish River project.⁴⁵ 'Namgis is a minority partner in the project owning 25 percent of the hydro facility.⁴⁶ Furthermore, the Kokish River project contributed just over \$1 million in property taxes in 2015.⁴⁷
- Tla-O-Qui-Aht First Nations (TFN)⁴⁸ is the majority owner in two run of river projects near Tofino. According to the Aboriginal Business and Investment Council, TFN owns 75 percent and 85 percent of the Canoe Creek Hydro and Haa-ak-suuk Creek Hydroelectric projects, respectively. In 2013, TFN also signed a revenue sharing agreement with the Province of BC for the Haa-ak-suuk Creek Hydroelectric Project.⁴⁹
- The Klahoose First Nation and Plutonic Power Corporation signed an IBA in 2007 for the East Toba River and Montrose Project.⁵⁰ According to a news release by Alterra Power Corp, benefits for Klahoose from the IBA include royalty payments for 50 years and opportunities for Klahoose owned companies to participate in the construction and operation of the project. Klahoose is also expected to benefit from a

⁴³ Provided by GDF SUEZ by email correspondence.

⁴⁴ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_namgis_signed_final_kokish.pdf

⁴⁵ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved here: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014ARR0021-001132.htm

⁴⁶ Ibid.

⁴⁷ Provided by Brookfield Renewables by email correspondence.

⁴⁸ Aboriginal Business and Investment Council, *Tla-o-qui-aht First Nation and Swift Water Power Corporation*, Retrieved here: <http://www.bcabc.ca/content/tla-o-qui-aht-first-nation-and-swift-water-power-corporation>

⁴⁹ Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_tlaquiaht.pdf

⁵⁰ Alterra Power Corp News Release, Plutonic Power Finalizes Impact Benefits Agreement with Klahoose First Nation, Retrieved here: <http://www.alterrapower.ca/news/Press-Release/News-Releases-Details/2007/Plutonic-Power-Finalizes-Impact-Benefits-Agreement-with-Klahoose-First-Nation/default.aspx>

revenue sharing agreement with the Province of BC for the Jimmie Creek Hydro Project which is expected to reach about \$214,000 annually over the life of the project.⁵¹

- The Mowachaht-Muchalaht First Nation signed a Revenue Sharing Agreement with the Province of BC for the Cypress Creek run-of-river project.⁵² The agreement is expected to provide Mowachaht with an estimated \$30,000 in revenue annually once the project is operating at full-capacity.⁵³

⁵¹ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved from: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014ARR0021-001132.htm

⁵² Revenue Sharing Agreement, Retrieved here: http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/consulting-with-first-nations/agreements/fncebf_rsa_mowachaht_signed_mar_25_2014_cypress.pdf

⁵³ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved from: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014ARR0021-001132.htm

BC INTERIOR

(KOOTENAY, THOMPSON OKANAGAN AND NORTHEAST DEVELOPMENT REGIONS)

Projects in Operation:

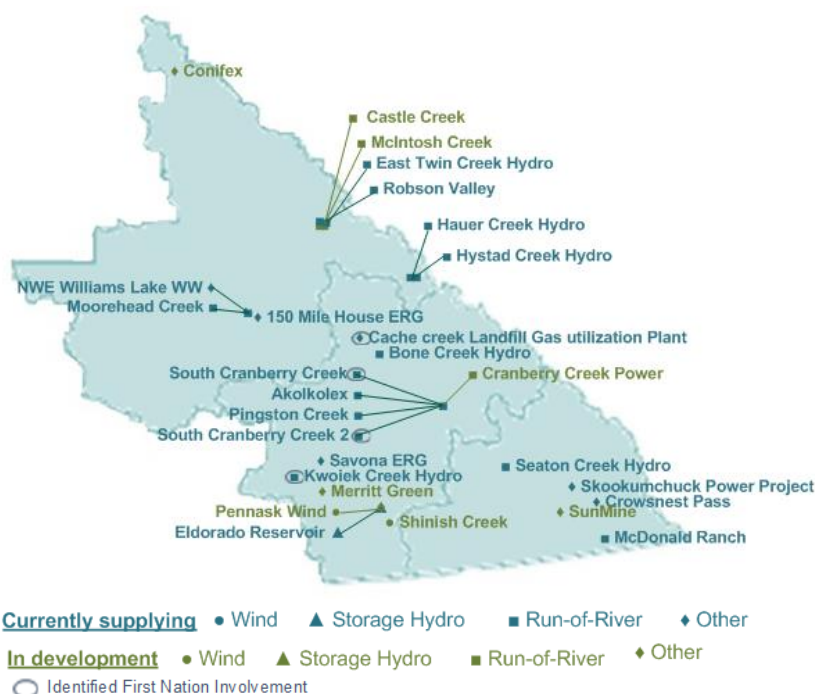
\$0.7 billion

total capital investment

Projects in Development:

\$0.4 billion

total capital investment



BC's Interior region holds 20 CEPs currently supplying power with an additional eight projects in development. Many of these projects have had an impact on local municipalities and First Nations communities, some of which are highlighted below:

- The Kwoiek Creek Resources LP, the developer of Kwoiek Creek project, is an equal partnership between the Kanaka Bar Indian Band and Innergex.⁵⁴ The construction of the project created 250 construction jobs of which 40 percent were filled by First Nations and the Kanaka Bar Indian Band is entitled to 50 percent of the proceeds of the project for the next 40 years.⁵⁵ Five communities now have revenue sharing agreements with the Province for the Kwoiek project⁵⁶: Skuppah Indian Band, Shackan Indian Band, Kanaka Bar Indian Band, Boston Bar First Nation and the Ashcroft Indian Band. Furthermore, tax revenues to local government for the Kwoiek Creek project exceeded \$700,000 in 2015.⁵⁷
- Protocol and benefit sharing agreements were signed between the Bonaparte and Ashcroft Indian Bands and Belcorp Environmental Services for the Cache Creek Landfill Gas Utilization Plant.⁵⁸ According to the project description for the Cache Creek project, benefits from the agreements include revenues, capacity building opportunities, and support of cultural programs.
- Splotsin First Nation signed a revenue sharing agreement for the South Cranberry Creek Hydroelectric project which is to provide revenue sharing over the life of the project.⁵⁹

⁵⁴ Kwoiek Creek Hydroelectric Project, *Partnership*, Retrieved here: <http://www.kwoiekcreekhydro.com/partnership.php>

⁵⁵ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved from: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014arr0015-000948.htm

⁵⁶ According to the list of First Nations Clean Energy Business Fund Revenue Sharing Agreements as of March 2016, Available here: <http://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-negotiations/first-nations-clean-energy-business-fund-revenue-sharing-agreements>

⁵⁷ Provided by Innergex by email correspondence.

⁵⁸ Cache Creek Landfill Extension, Project Description, Retrieved here: https://a100.gov.bc.ca/appsdata/epic/documents/p334/1220396390410_8e248a8d30d9d6a26942c1a44a90848dff52afa2078c.pdf

⁵⁹ Ministry of Aboriginal Relations and Reconciliation News Release, Retrieved from: http://www2.news.gov.bc.ca/news_releases_2013-2017/2014arr0025-001238.htm

APPENDIX A – SPENDING AND EMPLOYMENT PROFILES

The following tables present a spending and employment summary for a “typical” or representative CEP. Data is based on a number of sources, including data collected on individual projects from Clean Energy BC and publicly available data and information.⁶⁰ The spending and employment profiles were also reviewed by Clean Energy BC through discussions with representative companies.

Table A-1: Spending and Employment Profile for Run-of-River Projects

Phase 1 & 2: Pre-Planning and Planning	Phase 3: Construction	Phase 4: Operations
Spending		
• Equivalent to about 3% to 5% of construction costs • Approx. 35% spent in local community	• Approx. \$3.3 million per MW • Approx. 67% spent in local community	• Annually equivalent to about 1% to 2% of construction costs • Approx. 80% spent in local community
Jobs		
• 0.22 jobs per MW • Approx. 9% of labour from local First Nations communities • Approx. 18% of labour from non-First Nations local communities	• 5.8 jobs per MW • Approx. 30% of labour from local First Nations communities • Approx. 45% of labour from non-First Nations local communities	• 0.08 jobs per MW • Approx. 40% of labour from local First Nations communities • Approx. 43% of labour from non-First Nations local communities

⁶⁰ For a summary of job factors related to Clean Energy projects, please see the Pembina Institute (2015) British Columbia Clean Energy Jobs Map Methodology Backgrounder, available at <http://www.pembina.org/reports/bc-clean-jobs-map-methodology-backgrounder-27042015.pdf>

Table A-2: Spending and Employment Profile for Wind Projects

Phase 1 & 2: Pre-Planning and Planning	Phase 3: Construction	Phase 4: Operations
Spending		
• Equivalent to about 3% to 5% of construction costs • Approx. 15% spent in local community	• Approx. \$2.8 million / MW • Approx. 10% spent in local community	• Annually equivalent to about 1% to 2% of construction costs • Approx. 50% spent in local community
Jobs		
• 0.36 jobs per MW • Approx. 15% of labour from local First Nations communities • Approx. 35% of labour from non-First Nations local communities	• 1.8 jobs per MW • Approx. 15% of labour from First Nations communities • Approx. 35% of labour from non-First Nations local communities	• 0.18 jobs per MW • Approx. 0% of labour from First Nations communities • Approx. 90% of labour from non-First Nations local communities

Table A-3: Spending and Employment Profile for Other CEPs (biomass, biogas, solar, etc.)

Phase 1 & 2: Pre-Planning and Planning	Phase 3: Construction	Phase 4: Operations
Spending		
• Equivalent to about 3% to 5% of construction costs • Approx. 15% to 35% spent in local community	• Approx. \$2.1 million / MW • Approx. 20% to 60% spent in local community	• Annually equivalent to about 1% to 2% of construction costs • Approx. 50% to 80% spent in local community
Jobs		
• About 0.2 to 0.4 jobs per MW • Approx. 30% to 50% of labour from local First Nations and non-First Nations communities	• 12.2 jobs per MW • Approx. 50% to 75% of labour from local First Nations and non-First Nations communities	• 0.7 jobs per MW • Approx. 80% to 90% of labour from local First Nations and non-First Nations communities

APPENDIX B – ABOUT MNP

MNP is one of the leading chartered accountancy and business advisory firms in Canada. Founded in 1945, MNP has grown from a single office in Manitoba to more than 75 offices and 3,000 team members across Canada. MNP is a member of Praxity AISBL, a global alliance of independent firms, which enables us to access a broad range of industry specific expertise worldwide.



About MNP's Economics and Research Team

MNP's Economics and Research practice consists of a team of dedicated professionals that have a successful track record of assisting clients with a wide variety of financial and economic studies. Its work has encompassed a wide range of programs, industries, company operations and policy initiatives, and has helped clients with decision-making, communication of economic and financial contributions, documentation of the value of initiatives and activities and development of public policy.