

Electrical & Electronics Engineers

A guide for newcomers to British Columbia



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1. Working as an Electrical or Electronics Engineer [NOC 2133]

Job Description

Electrical and electronics engineers design, manufacture and test electrical and electronic equipment and systems.

You may perform the following duties:

- conduct research into the feasibility, design, operation and performance of power systems, electrical machinery and electronic communications, instrumentation and control systems, including the individual equipment and components
- prepare material cost and timing estimates, reports and design specifications for electrical and electronic systems and equipment
- design electrical and electronic circuits, components, systems and equipment, such as systems that transmit voice, video and data over copper wires, fibre optics or microwave networks
- supervise and inspect the installation, modification, testing and operation of electrical and electronic systems and equipment

These engineers may specialize in

- electrical design for residential, commercial or industrial installations
- electrical power generation and transmission
- instrumentation and control systems

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- development of electronics and nanoelectronics, such as solar cells, thin film display, quantum computers, high-speed communications systems, optics and optoelectronics, and medical electronics.

Source:

WorkBC Career Profile for Electrical & Electronics Engineers (NOC 2133)

<https://www.workbc.ca/careers/2133>

Industry Overview

Most job openings in the Electrical and Electronics engineering field are expected to result from replacing retiring workers.

Electric, gas, telephone and other utility companies are typical provincial employers that will likely experience increased need in the near future. Since firms increasingly obtain electronic engineering expertise from consulting and service companies, most employment growth will be in these non-manufacturing firms.

The aerospace, oil and high voltage power system industries may provide opportunities for larger electronic and electrical engineering companies to work on international contracts.

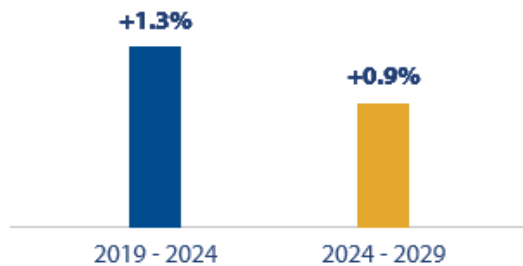
Source: WorkBC <https://www.workbc.ca/careers/2133>

Electrical Engineers NOC 2133 Employment Outlook

B.C. Labour Market Outlook (2019-2029)

Provincial outlook

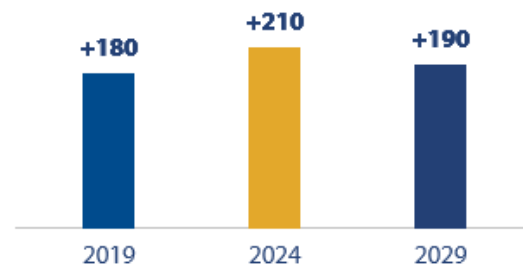
Forecasted average employment growth rate



Source: B.C. Labour Market Outlook

Job openings

10 year expected job openings: **2,020**



Source: B.C. Labour Market Outlook

Composition of job openings

Replacement of retiring workers:
62.4%
1,260 openings



New jobs due to economic growth:
37.6%
760 openings

Source: B.C. Labour Market Outlook

You can learn more about the engineering sector from:

- **WorkBC Career Profile for Electrical & Electronics Engineers (NOC 2133)**
<https://www.workbc.ca/careers/2133>
- **Career Cruising – Profiles for Electrical Engineer and Electronics Engineer**
<http://www.vpl.ca/digital-library/career-cruising>

Types of Employers

Electrical and electronics engineers work for:

- electrical utilities
- communications companies
- manufacturers of electrical and electronic equipment
- government agencies
- professional, scientific, and technical services firms (consulting firms)
- a wide range of manufacturing, processing and transportation industries

You may work in a more specialized field if you have a master's degree. If you obtain a doctoral degree, you can contribute to the field through research and teaching at the post-secondary level, or you may find employment in a large firm in your area of specialization.

Salary

In BC, the median annual salary is \$76,794. Your salary depends on a number of factors, including experience, level of education, employer, and specialization.

In addition to a salary, most full time engineers also receive benefits such as health and dental insurance, paid sick leave and vacation time. You may also receive further benefits, including performance-based bonuses, use of a company car, and pension plan contributions.

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In its 2016 Report on Members' Compensation and Benefits, Engineers & Geoscientists British Columbia (formerly APEGBC) provided these salary figures:

	Mean	Lower Quartile	Median	Upper Quartile
Engineering Consulting – Electrical/Electronics	\$104,561	\$80,000	\$100,000	\$119,000
Industry – Electric power & gas utilities incl. BC Hydro	\$105,873	\$80,000	\$103,000	\$125,272
Bachelor's degree – Base salary – Electrical/Electronics	\$104,425		\$96,500	

Source: Engineers & Geoscientists British Columbia

<https://www.egbc.ca/Careers/Compensation-Survey>

In BC regions you can expect to make:

Electrical & Electronics Engineers NOC 2133 - Hourly Wages

Community/Area	Wages (\$/hour)		
	Low	Median	High
British Columbia	28.85	38.46	52.88
Canada	26.92	43.27	64.90
Cariboo Region	28.85	38.46	52.88
Kootenay Region	N/A	N/A	N/A
Lower Mainland–Southwest Region	28.85	40.29	52.88
Nechako Region	N/A	N/A	N/A
North Coast Region	N/A	N/A	N/A
Northeast Region	N/A	N/A	N/A
Thompson–Okanagan Region	28.85	38.46	52.88
Vancouver Island and Coast Region	28.85	38.46	52.88

Source: Job Bank, Wage Report <https://www.jobbank.gc.ca/marketreport/summary-occupation/17815/BC>

Working Hours

You usually work a standard 40-hour week. However, you may occasionally be expected to work longer hours in order to meet project deadlines.

Last updated: February 14, 2020

Engineers work mostly in offices or labs. These spaces tend to be clean and comfortable. Those who work in manufacturing may spend time on the factory floor. They may need to wear protective gear, steel-toed boots and helmets.

- **Career Cruising – Profiles for Electrical Engineer and Electronics Engineer**
<http://www.vpl.ca/digital-library/career-cruising>
Available from the VPL Digital Library | Explore our Digital Library page

2. Skills, Education and Experience

Skills

- a strong aptitude for math and science,
- good written and oral communication
- strong computer skills
- critical thinking and problem solving
- logical and detail oriented
- leadership
- teamwork
- project management

Education and Experience

- Bachelor's degree in electrical or electronics engineering or in a related engineering discipline
- licensing by the Engineers & Geoscientists British Columbia EGBC, <https://www.egbc.ca/> (formerly the Association of Professional Engineers & Geoscientists BC -APEGBC) in order to practise as a *Professional Engineer (P.Eng)*
- Master's degree or doctorate in a related engineering discipline **may be** required

Qualifications

This occupation is regulated in British Columbia.

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You must be licensed by **Engineers & Geoscientists British Columbia** (formerly APEGBC) to use the title *Professional Engineer* in BC.

However, you can work in engineering, even if you haven't been licensed by a professional engineering association, as long as you are working under the direct supervision of a professional engineer (P.Eng) or professional geoscientist licensed in the province or territory in which you are working.

Only licensed engineers are permitted to undertake and assume responsibility for engineering projects in BC. Licensing is required to approve engineering drawings and reports, and to practise as a Professional Engineer (P. Eng.)

In order to become a registered member of **Engineers & Geoscientists British Columbia** you require:

- graduation from an accredited educational program
- four years of satisfactory supervised work experience in engineering, *at least one of these years must be gained in a Canadian environment*
- passing a professional practice examination
- completion of the law and ethics seminar

For more information:

- **Engineers & Geoscientists British Columbia - Become a Member**
<https://www.egbc.ca/Become-a-Member/How-to-Apply>

For more information:

- **Engineers & Geoscientists British Columbia Online Resource for Internationally Trained Engineers and Geoscientists :**
 - Self-assessment tool: <http://engtechnbc.ca/>
 - Job Mentoring Programs:
<https://www.egbc.ca/Member-Programs/Mentoring-Program>
- **A Roadmap to Engineering in Canada. Engineers Canada**
<http://newcomers.engineerscanada.ca/>

- **International agreements between professional engineering associations**

<https://engineerscanada.ca/become-an-engineer/agreements-on-international-mobility>

3. Finding Jobs

You'll find job advertisements in local newspapers, trade journals, and electronic sources, as well as through professional associations' publications.

Local Newspapers

You can look at the *Vancouver Sun & the Province* at Vancouver Public Library for free. Check the job postings daily, the careers section in the *Vancouver Sun* on Wednesdays and Saturdays and in *The Province* on Sundays.

Job White Pages

JOB Freeway.com

Available in print at the Central Library or online at

JOB Freeway.com

<http://www.vpl.ca/digital-library/jobfreewaycom>

Available from the VPL Digital Library | Explore our Digital Library page

NOTE: Access at VPL locations only

Online Job Postings

- **BC Hydro (provincial electrical utility)**
<http://www.bchydro.com/careers/>
- **Engineer Jobs.com**
<https://www.engineerjobs.com/jobs/canada/british-columbia/>
- **Engineering Central**
<http://engcen.com/>
- **Indeed.com**
<http://ca.indeed.com/>
- **T-Net British Columbia**
<http://www.bctechnology.com/tech-careers.cfm>
- **Neuvoo.ca** <http://neuvoo.ca>

- **BC JobConnect**

<https://www.bcjobconnect.ca> **must have permanent resident number**

newcomers can post their skills, education and work experience to BC employers looking for workers

Professional Associations' Career Resources

- **Association of Consulting Engineering Companies British Columbia (ACEC)**

<https://www.acec-bc.ca/resources/job-postings.aspx>

- **Engineers & Geoscientists BC – Career Listings**

<https://www.egbc.ca/Careers/Career-Listings>

- **Engineering Institute of Canada**

<http://www.engineeringcareers.ca/>

- **BC Electrical Association**

<http://www.bcea.bc.ca/jobs.php>

Identifying the Right Position

When you browse job advertisements, you'll find a range of different job titles that are relevant.

For electrical & electronics engineers, look at these related job titles (NOC 2133):

- Avionics Engineer
- Control Systems Engineer
- Design Engineer, Electrical
- Distribution Planning Engineer, Electrical
- Electrical Network Engineer
- Instrumentation and Control engineer
- Process Control Engineer, Electrical
- Test Engineer, Electronics

Source: NOC <http://noc.esdc.gc.ca/English/noc/QuickSearch.aspx?ver=16&val65=2133>

Creating a List of Potential Employers

You can use directories to produce lists of potential employers in the electrical and electronics industries. Contact them directly to find out if they're hiring.

- **Association of Consulting Engineering Companies Canada (ACEC),**
Directory of CEBC Member Firms
https://www.acec.ca/membership/business_sector/business_sector.html
- **Engineers & Geoscientists British Columbia,** Member Directory
<https://www.egbc.ca/Member-Directories>
- **Business in Vancouver. Book of Lists.**
Biggest Engineering Firms in BC
Available at the Central Library 338.9711 B97b and online at
<http://www.biv.com/lists>
<https://biv.com/datatables/biggest-engineering-firms-bc-2019>
- **Reference Canada**
<http://www.vpl.ca/digital-library/reference-canada>
Click on "Start Search" beside Canadian Businesses, then select the "Advanced Search" button. Select both "Keyword/SIC/NAICS" under Business Type and "City" under Geography. In the top search box enter "electrical engineer" **OR** "electronic engineer" and click SEARCH. Select the appropriate headings. Lower down, select the Province, choose the cities, and click the "View Results" button.
Available from the VPL Digital Library | Explore our Digital Library page

NOTE: *You can access this database from a Library computer. If you are using a computer from outside the Library, you will need a Vancouver Public Library card to login to this database. After clicking on the database name, you will be asked to enter your library card number and PIN (usually last four digits of your telephone number).*

4. Applying for a Job

In Canada, employers usually expect to receive a resume or curriculum vitae and a cover letter that identifies the position you are applying for and summarizes your relevant experience.

Use the library catalogue, <http://vpl.bibliocommons.com/> to find books on writing resumes and cover letters specific to your industry.

To learn about applying for jobs in Canada, use the following pathfinders which are available in print at the Central Library or online at <http://skilledimmigrants.vpl.ca/>.

- **Writing Resumes and Cover Letters**
Go to <http://skilledimmigrants.vpl.ca>
[Search Writing Resumes and Cover Letters]
- **Getting Canadian Work Experience**
Go to <http://skilledimmigrants.vpl.ca>
[Search Getting Canadian Work Experience]
- **Networking for Employment**
Go to <http://skilledimmigrants.vpl.ca>
[Search Networking for Employment]
- **Learn More About Working in BC and Canada**
Go to <http://skilledimmigrants.vpl.ca>
[Search Learn More About Working in BC and Canada]

5. Getting Help from Industry Sources

Industry Associations

Associations for professional and electrical & electronics engineers in BC and Canada provide information and assistance. Registration and fees are required for membership.

- **Association of Consulting Engineers Companies of British Columbia**
<http://www.acec-bc.ca/>

- **Engineers & Geoscientists British Columbia**
<https://www.egbc.ca/>
- **Engineering Institute of Canada (EIC)**
<http://www.eic-ici.ca/>
- **Engineers Canada, Canadian Council of Professional Engineers (CCPE)**
<http://www.engineerscanada.ca/>
- **Society of Internationally Trained Engineers of British Columbia (SITE)**
<https://sitebc.ca/>
Society of Punjabi Engineers and Technologists of British Columbia
<http://speatbc.org/>
- **IEEE (Institute of Electrical & Electronics Engineers) Canada**
<http://www.ieee.ca>
- **IEEE Vancouver Section**
<http://vancouver.ieee.ca/>

Industry Journals

Search the Vancouver Public Library catalogue for journals related to your profession. Examples include:

- **Canadian Consulting Engineer** / Association of Consulting Engineers of Canada. ACEC news
Available at VPL Central Library, 620.5 C212 and online at:
<http://www.canadianconsultingengineer.com/>
- **Electronic Products & Technology**
Available online at: <http://www.ept.ca/>
- **Electrical Business**
Available at VPL Central Library, 338.47 E3831E and online at:
<http://www.ebmag.com/>
- **Electrical Line**
Available at VPL Central Library, 621.305 E3831 and online at:
<http://electricalline.com/>
- **Innovation** / Journal of Engineers & Geoscientists British Columbia
Available at VPL Central Library, 650.5 B86 and online at:

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<https://www.egbc.ca/Resources/News-and-Publications/Innovation-Magazine>

<https://www.egbc.ca/Resources/News-and-Publications/Innovation-Magazine/Innovation-Past-Issues>

***Questions? Please ask the Information Staff in the Central Library,
Vancouver Public Library or telephone 604-331-3603.***

*Please note that the information in this guide is also available online through the
Skilled Immigrant InfoCentre website at <http://skilledimmigrants.vpl.ca/> .*



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