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:

- Use computer programs to design products, components, or electrical systems
- Estimate quantities and cost of materials, equipment, and labour needed for projects
- Develop maintenance and operating standards
- Supervise manufacturing process
- Test systems and equipment to make sure they perform as required
- Prepare contract documents and evaluate tenders for construction or maintenance
- Supervise technicians, technologists, programmers, analysts and other engineers
- You may specialize in a number of areas including electrical design for residential, commercial or industrial installations, electrical power generation and transmission, and instrumentation and control systems

Source: WorkBC  http://workbc.ca/Careers [Search NOC 2133 or electrical engineer]
**Industry Overview**

Qualified and experienced electronic and electrical engineers are in demand in B.C. But a shortage of entry level positions is making it difficult for recent graduates to gain valuable on the job experience and additional skills.

Graduates with co-op or internship experience and experienced skilled immigrants with current technology knowledge in this field may have an advantage when job searching.

Future employers include: electric, gas, telephone and other utility companies; alternative and renewable energy resources sector; and business participating in activities in aerospace, oil and high voltage power system industries.

Source: WorkBC [NOC 2133]

**Job Outlook in BC**

<table>
<thead>
<tr>
<th>1.1% Expected annual demand growth</th>
<th>1,970 Job openings [2015-2025]</th>
</tr>
</thead>
<tbody>
<tr>
<td>rate (2015-2025)</td>
<td></td>
</tr>
</tbody>
</table>

Occupation Outlook for B.C.:

- % of job openings from replacement: 68%
- % of job openings from expansion: 32%

Chart from WorkBC
WorkBC provides job openings in BC regions from 2015-2025:

<table>
<thead>
<tr>
<th>Region</th>
<th>Expected # of Job Openings</th>
<th>Average Annual Employment Growth</th>
<th>Expected Increase in Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vancouver Island</td>
<td>140</td>
<td>0.5%</td>
<td>20</td>
</tr>
<tr>
<td>Lower Mainland / Southwest</td>
<td>1,650</td>
<td>1.2%</td>
<td>545</td>
</tr>
<tr>
<td>Thompson-Okanagan</td>
<td>150</td>
<td>1.7%</td>
<td>65</td>
</tr>
</tbody>
</table>

You can learn more about the engineering sector from:

- **WorkBC Career Profile**, [http://workbc.ca/Careers](http://workbc.ca/Careers) [search NOC 2133]
- **Career Cruising** database [profiles for Electrical Engineer and Electronics Engineer]
  Available from the VPL Digital Library | Explore our Digital Library page

**Types of Employers**

Electrical and electronics engineers work for:

- electrical utilities
- communications companies
- manufacturers of electrical and electronic equipment
- government
- 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 $83,424. 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.

Sources: WorkBC & Career Cruising

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

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Lower Quartile</th>
<th>Median</th>
<th>Upper Quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Consulting –</td>
<td>$104,561</td>
<td>$80,000</td>
<td>$100,000</td>
<td>$119,000</td>
</tr>
<tr>
<td>Electrical/Electronics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry – Electric power &amp;</td>
<td>$105,873</td>
<td>$80,000</td>
<td>$103,000</td>
<td>$125,272</td>
</tr>
<tr>
<td>gas utilities incl. BC Hydro</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree – Base</td>
<td>$104,425</td>
<td></td>
<td>$96,500</td>
<td></td>
</tr>
<tr>
<td>salary – Electrical/Electronics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Engineers & Geoscientists British Columbia

https://www.egbc.ca/Careers/Compensation-Survey
In BC regions you can expect to make:

<table>
<thead>
<tr>
<th>Location</th>
<th>Low</th>
<th>Median</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>20.00</td>
<td>38.46</td>
<td>59.49</td>
</tr>
<tr>
<td>Lower Mainland - Southwest Region</td>
<td>20.00</td>
<td>38.46</td>
<td>59.49</td>
</tr>
<tr>
<td>Thompson–Okanagan Region</td>
<td>20.00</td>
<td>38.46</td>
<td>59.49</td>
</tr>
<tr>
<td>Vancouver Island and Coast Region</td>
<td>20.00</td>
<td>38.46</td>
<td>59.49</td>
</tr>
</tbody>
</table>


**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.

Source: WorkBC Career Exploration,
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
- leadership
- teamwork
- project management

**Education and Experience**

- Bachelor's degree in electrical or electronics engineering or in a related engineering discipline
- licensing by the Association of Professional Engineers and Geoscientists 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.

Entry level engineering positions do not require professional designation in BC.

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 supervised by a professional engineer (P.Eng).

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 supervised work experience in engineering
- 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
Internally trained engineers:

If you have completed your P. Eng application process you may qualify as a “Provisional Member” with Engineers & Geoscientists British Columbia. This designation provides member status to internationally trained engineering graduates who have completed the academic, experience, professionalism, character, and residency requirements.

For more information:

- Engineers & Geoscientists British Columbia Online Resource for Internationally Trained Engineers and Geoscientists:
  - Self assessment tool: [http://engtechinbc.ca/](http://engtechinbc.ca/)
  - Job Mentoring Programs: [https://www.egbc.ca/For-Members/Mentoring-Program](https://www.egbc.ca/For-Members/Mentoring-Program)

- A Roadmap to Engineering in Canada. Engineers Canada
  [http://newcomers.engineerscanada.ca/](http://newcomers.engineerscanada.ca/)

- International agreements between professional engineering associations
  [http://www.engineerscanada.ca/mobility-international](http://www.engineerscanada.ca/mobility-international)

- Introduction to Engineering in BC – Langara College
  These courses are designed to provide you with industry specific skills in order to find employment in an engineering environment. They also help you gain a good understanding of Canadian workplace culture.
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 from the VPL Digital Library | Explore our Digital Library page

  *Access at VPL locations only*

**Online Job Postings**

- **BC Hydro (provincial electrical utility)**
  

- **Engineering Central Canada**
  
  [http://www.engcen.ca/](http://www.engcen.ca/)

- **Indeed.com**
  
  [http://ca.indeed.com/](http://ca.indeed.com/)

- **Skilled Workers.com**
  

- **T-Net British Columbia**
  
Professional Associations’ Career Resources

- **Association of Consulting Engineering Companies British Columbia (ACEC)**
  [https://www.acec-bc.ca/resources/job-postings.aspx](https://www.acec-bc.ca/resources/job-postings.aspx)

- **Engineers & Geoscientists British Columbia Employment Centre**
  [https://www.egbc.ca/Careers/Career-Listings](https://www.egbc.ca/Careers/Career-Listings)

- **Engineering Institute of Canada**
  [http://www.engineeringcareers.ca/](http://www.engineeringcareers.ca/)

- **BC Electrical Association**
  [http://www.bcea.bc.ca/jobs.php](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

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 British (ACEC-BC),**
  Directory of CEBC Member Firms

- **Engineers & Geoscientists British Columbia**
  [https://www.egbc.ca/Member-Directories](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

- **Canadian Company Capabilities**
  Search by “civil engineering” or NAICS Code “541330” [Engineering Services]

- **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
  "civil engineer" and click LOOKUP. 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)
  http://www.sitebc.ca/

- Society of Punjabi Engineers and Technologists of British Columbia
  http://www.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:
  

- **Electronic Products & Technology**
  
  Available online at: [http://www.ept.ca/](http://www.ept.ca/)

- **Electrical Business**
  
  Available at VPL Central Library, 338.47 E3831E and online at:
  

- **Electrical Line**
  
  Available at VPL Central Library, 621.305 E3831 and online at:
  

- **Innovation** / Journal of Engineers & Geoscientists British Columbia
  
  Available at VPL Central Library, 650.5 B86 and online at:
  

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/](http://skilledimmigrants.vpl.ca/).