Parliamentary Brief on a Just Transition: Creating a Fair and Equitable Transition to the Low-Carbon Economy

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About ECO Canada

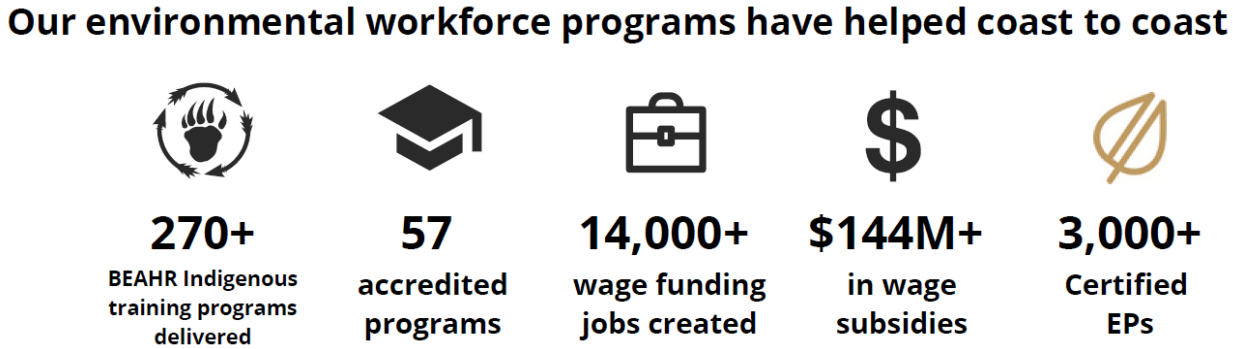
Environmental Careers Organization of Canada (ECO Canada) is a strategic partner to Canada's growing environmental workforce. For over 30 years, we've worked with industries, governments, academia, communities, workers, and students to deliver talent insights and solutions. We offer training, professional certification, HR services, labour market research, career and occupational information, and program accreditation to help connect people to jobs, and jobs to people.

Mission: *To ensure an adequate supply of people with the demonstrated skills and knowledge required to meet the environmental human resource needs of the public and private sectors.*

We promote and drive responsible, sustainable economic growth across all industries and regions and will continue to work alongside both government and policy makers as well as industry and academia to ensure Canada,

- Meets its commitments towards net-zero emissions by 2050,
- Continues to be a global authority in environmental innovation and jobs, and
- Meets its commitments towards diversity, equity, and inclusion at all levels.

Vision: *To build the world's leading environmental workforce.*



Green Growth, Green Jobs

The green economy and its workforce were born out of the need for a long-term, integrated approach to sustainable development and the importance of dissolving the original dichotomy of the environment versus the economy. This transition to viewing environmental work as an opportunity for job growth and business was a long time in the making.

Today, **broad, diverse, evolving, evergreen and multi-disciplinary**, are words that describe environmental work and workers. This is driven partly by the shifting nature and awareness of environmental and sustainability issues and priorities for businesses, governments and societies. These are now beyond emergence and can more appropriately be considered in the realm of prominence. In this way, the green economy has become a powerful driver of positive, long-lasting change through the growth of new industries, major technological advancements, and improved employment prospects.

How does ECO Canada define Green Jobs?

There are many pathways to defining environmental work and workers. From our perspective, the green economy and workforce is broad, spanning across industries and occupations that drive or support the goals of environmental protection, resource management, and sustainability. Our definition and research encompass two types of workers:

Any worker, regardless of industry, requiring environmental-specific competencies or training as defined within ECO Canada's competency standards and sector framework (e.g., an Environmental Engineer in a mining company or an Energy Policy Analyst working for government).

Direct employees of firms classified under the environmental goods and service (EGS) sector, regardless of occupation and whether roles require environmental-specific competencies (e.g., an Accountant and a Sustainability Specialist working in a solar panel manufacturing company).

For example, an Energy Auditor in an environmental consulting firm is both a core environmental and an EGS

Workers are also classified according to their environmental goal or specialization, as defined by ECO Canada's Sector Model.

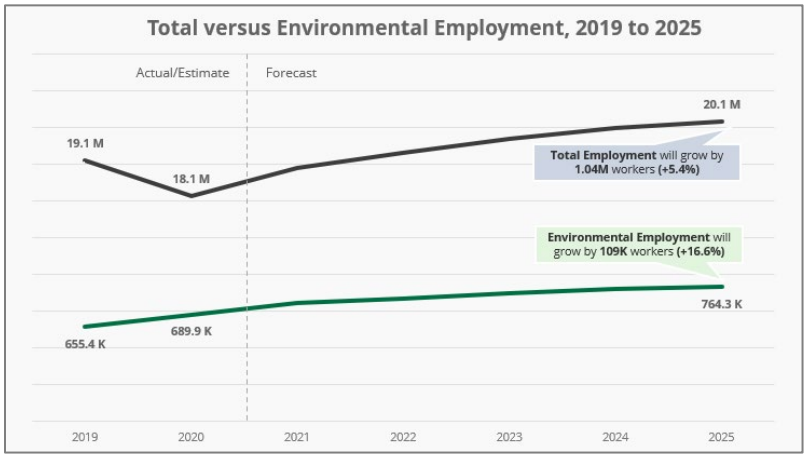
Protecting the health of humans & the ecosystem through pollution prevention, waste minimization, remediation, rehabilitation, and reclamation in the areas of air, water and land. This sector also includes human health and safety, where these are dependent on the quality of the environment.

Integrating environmental and economic decisions with principles of stewardship in the use and management of natural resources. This sector deals with integrating biological and ecological aspects of the environment with the social and economic needs of society.

Promoting a healthy environment, for the benefit of society. These activities centre on developing, disseminating and applying knowledge in support of the other two sectors.

Highlights from our latest research:

- While Canada's employed labour force shrank in 2020, the green economy **added 35K net new jobs**.
- About **690K (or 3.8% of all) workers** in Canada was in a green job in 2020.
- Green employment could increase by 17% to 2025, compared to 5% for Canada overall.



- **Job growth and retirements will account for 173K net green job openings by 2025**—or 25% of 2020 employment levels. Green job opportunities will exist in,
    - all regions, led by ON (66K jobs), AB (35K), BC and QC (27K each)
    - all industries, led by the Professional, scientific & technical services sector (53K jobs)
    - all job families, with over 40% of all openings (69K jobs) are within occupations mapped to natural & applied sciences and management.
    - a variety of environmental subsectors, with the greatest needs occurring in: Sustainability (79K jobs), Natural Resource Management (69K), and Energy (69K)
- About 37% of net hiring (108K jobs) will be for core environmental workers.
- **Occupations projected to experience a shortfall** of environmental workers:

- Employers are facing talent constraints as economic and job recovery takes hold and workers adjust to a new normal. Reported challenges include labour and skill shortages, employee engagement/productivity, compensation expectations, absenteeism, turnover, and worker health & safety.

Environmental sector-specific research highlights:

ENERGY EFFICIENCY: The building sector has been acknowledged as Canada's "lowest-hanging fruit" when it comes to the cost of achieving significant carbon reduction. Canada's transition to an energy efficient building stock will require our building sector to grow and evolve, along with its workforce. The individuals who design, construct, commission, manage and retrofit our buildings are, therefore, in a prime position to bring about changes that will make a lasting impact.

Unfortunately, Canada's building sector workforce does not have the widespread experience or skills required to perform their roles in a manner that achieves energy efficiency goals. A "building-as-a-system" approach is integrated, collaborative, multi-disciplinary and requires a combination of technical and soft skills typically acquired through experience or cross-training. As workers are increasingly called upon to function within multi-disciplinary teams, soft skills such as collaboration and facilitation become essential. This approach will involve a workforce culture shift, as individuals in various occupations will need to work together throughout the building life cycle.

Core and Growing Occupations and Skills Needed for Energy Efficient Buildings

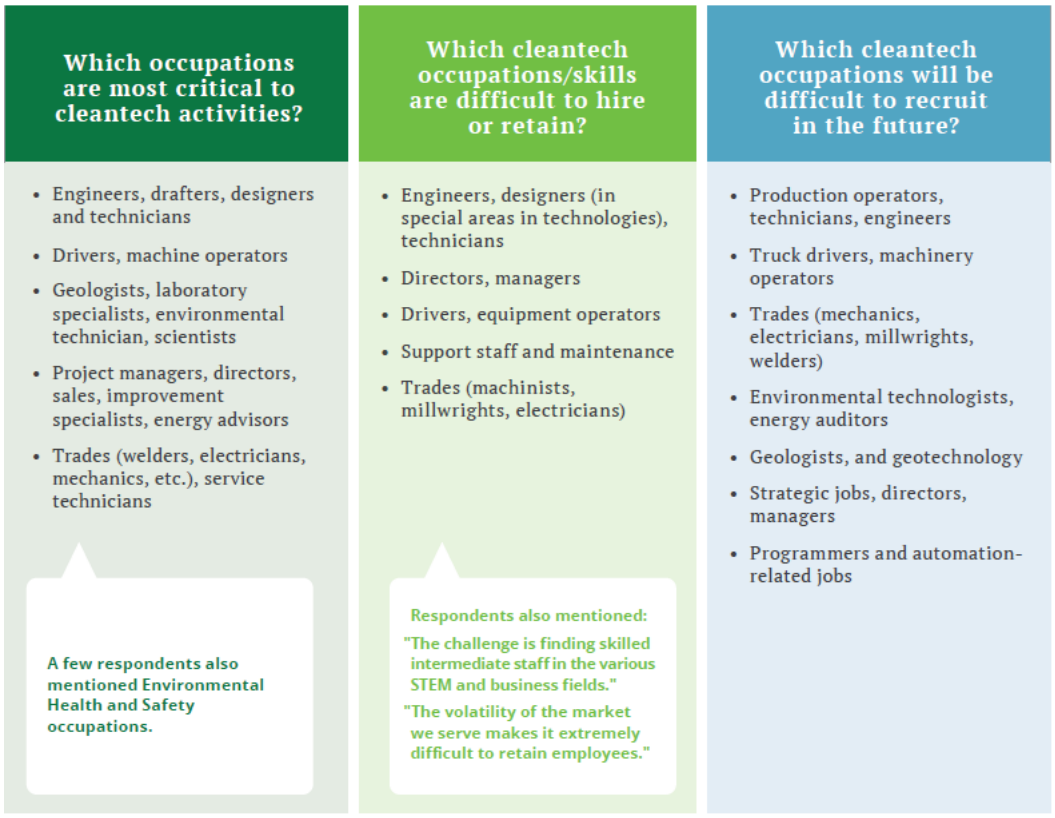
- Architect
- Building Automation Technician
- Building Envelope Specialist
- Building Environmental Systems Operations
- Building Operation & Facility Manager
- Building Operator & Maintenance Technician
- Building Performance Specialist
- Building Regulator/Official
- Building Science
- Building Systems Analysis
- CNC Programmer/ Operator
- Commercial Real Estate Manager
- Commissioning Specialist
- Construction Trades
- Construction Assembler/Installer
- Digital Skills (e.g., BIM, digital twinning, Augmented Reality/Virtual Reality, telematics, Artificial Intelligence/Machine Learning, Unmanned Aerial Vehicles, data analytics, software development)
- Energy Manager/ Modeller/ Analyst
- Engineer/Design Professional
- HVAC-R Trades & Technician
- IDP Facilitation
- Life Cycle Assessment
- Mass Timber Technician
- Mechatronics Engineering
- Passive House Design
- QA/QC Specialist
- Quantity Surveyor
- Recommissioning Specialist
- Sustainability Professional
- Systems Design & Integration
- Thermal Energy Engineering/Design

ELECTRIFICATION: This shift may translate to a change in skill sets for workers, such as electrical mechanics instead of typical mechanics, which could require some additional training of existing workers. Further electrification in industrial areas such as manufacturing, heavy construction, mining, etc. may require more electricians and electrical engineers and fewer industrial mechanics and millwright. Some employers noted that a blend of skill sets would be advantageous, such as millwrights with additional training on electrical equipment and components.

CLEANTECH: Interest and investment in the cleantech sector have been growing. While opportunities exist in Canada's market, these are smaller in comparison to the sizable opportunities presented at an international level (the global export market for cleantech products & services was $1.15 trillion in 2015). Canada only ranked 16th globally, contributing 1.43% of the total market share in 2015. And yet, Canada demonstrated strength in cleantech investment and early-stage entrepreneurship and in 2017, ranked 1st in the world in terms of funding from multiple levels of government and venture capital (late-stage investment is also very strong).

Market opportunities also exist within Canada. On average, 1 in 10 enterprises used cleantech goods and services from 2015 to 2017. While enterprises were generally less likely to use cleantech than other types of advanced technologies, a few industries such as Pipeline transportation (38%), Utilities (36%), Rail and water transportation (22%), and Oil and gas extraction (20%) reported relatively high rates of cleantech use.

A 2019 survey of various industries revealed that employers were struggling to fill cleantech related roles, from engineers and scientists to trades and operators.



A People-centred Approach Toward Clean Growth and a Just Transition

Canada has set ambitious targets to rebuild a "greener, more innovative, more inclusive, and more competitive" economy. Federal, provincial, regional and municipal governments, businesses and communities are all working to achieve these goals.

Working towards sustainability or the "greening" of our economy will benefit Canadians and ensure decent jobs. However, while the idea of 'green jobs' often inspires visions of transitioning workers to work in and around large renewable energy projects, at present there are limited opportunities for clean energy jobs. Fewer workers are required to generate renewable energy, compared to fossil fuels. Most renewable energy related jobs are created during project development and construction phase, albeit temporarily.

- Much discourse has taken place regarding transitioning oil and gas workers to and from the renewable energy sector. Oil and geothermal energy are a natural pairing, with significant overlap in skillsets. Expertise in offshore oil and gas or offshore renewables can also be utilized in other areas, such as vessel crews for any offshore or marine activities. While transitioning workers between these sectors may require minimal retraining, transferability should be viewed more holistically to include other factors such as the nature of work, culture, and location. Similarly, environmental work within the oil and gas sector is growing, presenting opportunities for current workers to expand or pivot their roles within the sector.

- Oil & gas is an essential resource in Canada and the industry has seen a steep recovery along with increased environmental regulations and requirements. Companies use the Global Reporting Initiative (GRI) standards and complete sustainability reports to demonstrate their commitment to ESG practices to the public and investors. Companies have dedicated environmental departments for compliance and ensure a sustainable approach to resource development, water and waste management, and new emission control, including carbon capture and storage (CCS). The industry is also one of the largest investors and users of cleantech and despite increased emissions as an industry overall, per-barrel emissions have come down significantly over the past couple of decades.

- Primary research through participants in the mining industry also indicated a shift towards sustainability, new technologies and innovation as it moves into the green economy. There is an increased number of environmental regulations and reporting requirements for the industry. Companies are shifting to paperless operations and digital financial audits and improving energy efficiency at offices, process plants and mining operations. Water use, treatment and disposal are regulated, but there is an increased focus on responsible use. Larger companies use electric vehicles, and some have switched to autonomous vehicles. As the move into the green economy continues, the workforce will need environmental

awareness training; however, the need for digital literacy and training to operate these new vehicles and technologies is greater. Jobs were also noted in mining and mineral processing to support battery production as the demand for electric vehicles intensifies.

- As noted in NRCan's Just Transition discussion paper, Canada's commitment to "phasing out coal will impact families and communities in New Brunswick, Nova Scotia, Saskatchewan and Alberta, where coal is still an important part of their energy systems" -- and their livelihood. Helping these regions diversify or transform their economy and transition displaced workers is imperative.

The reality is that clean growth is best accomplished when traditional sectors such as Canada's energy, mining and forestry industries widely adopt clean technologies and other green solutions. For many individuals, this means the addition of new skills and experiences to their current roles or taking a new one altogether. Canada is also unique given the significant revenue and job potential in the sustainable blue economy. This deep association will influence how coastal regions and their jobs will become greener.

- **Technology and innovation are instrumental to green growth and talent needs.** Industries and companies will work independently and collaboratively to develop, adopt and adapt technologies to deploy green technologies in partnership with solution providers, accelerators and research and educational institutions.

- **Critical, growing and emerging green jobs and skills are needed.** There will be a heavy reliance on Science, Technology, Engineering, and Math (STEM) occupations such as energy auditors, sustainability advisors, engineers and technology experts across all industries. New jobs are also emerging within distinct sectors or specializations, such as waste auditors and renewable energy engineers. Current and future workers will be looked upon to develop cross-disciplinary skill sets. A few skills and attributes are in-demand, including carbon literacy, digital literacy and skills, innovation and entrepreneurship, project management, communications and public relations, and a sustainability mindset.

- While greening Canada's economy will stimulate growth and drive demand for critical or emerging green jobs across traditional and new sectors (e.g., energy modelers, climate change specialists, water and wastewater treatment operators, etc.), **most of the transformation will occur within the existing workforce, particularly in occupations not traditionally viewed as green (e.g., trades and labourers)**. This transition is best supported through upskilling, reskilling or coskilling.

The transferability of workers within and between industries should take place as demand warrants; a just transition is best supported through comprehensive labour market research

and skill development supports, such as training to address both shifting skill requirements and labour gaps.

Strategies to move forward:

In 2020, we consulted with green economy stakeholders representing industry associations and employers, governments, academia and other labour supply organizations to identify key workforce challenges and priorities going forward. Beyond more labour market research, these stakeholders came up with twelve action items/solutions *(refer to the Appendix A to view the Strategic Framework)*.

Strategic Priorities

1. New or underutilized talent sources
    - Under-representation of select groups
    - Transitioning workers within and from declining sectors
    - Industry-wide attraction and recruitment strategies
2. Workforce retention and development
    - Improved retention and productivity
    - Career development and pathways
    - Succession planning/ knowledge retention
3. Longer-term/structural shifts (future of work)
    - Learning and development that meets future demand
    - Assessing and recognizing competency/ transferability
    - Career and industry awareness

Key Action Items/Solutions

1. Provide end-to-end support to remove the barriers around the supply, attraction, integration, and retention of underrepresented workers (e.g., matchmaking, wage and training subsidies, day care, etc.)
2. Address workplace barriers (e.g., culture, amenities needed, work environment) to improve inclusiveness
3. Offer career development programs and pathway information for diverse groups to increase representation throughout career levels, improve integration and advancement to leadership roles
4. Elevate the profile of the environmental sector, professionals and careers through broad-based and targeted awareness campaigns to enhance perception
5. Map and assess competency requirements and demand by experience/role level to develop capacity and recognize the value of experience within the sector
6. Engage, reintegrate and retain individuals taking maternity or parental leaves
7. Support employees requiring unplanned personal emergencies and leave requirements
8. Develop experiential learning opportunities for career and job seekers and support capacity building among employers while identifying emerging jobs, future skills, and developing a

skills transition framework to support industry, academia, and the workforce transition to a cleaner economy.

9. Increase capacity within the education system to support in-demand and growing occupations and environmental specializations (e.g., micro-credential/up-skilling or program expansion)
10. Remove educational barriers through financial supports to attain credentials and PSE (e.g., micro loans)
11. Develop new or enhance existing environmental competency or occupational standards for career awareness, competency assessment and recognition, and professional development (to help workers stay relevant)
12. Promote talent management best practices, tools and resources for capacity building among small and medium-sized enterprises (SME's) and develop, implement, and support programs for helping SME's diversify and transition to a low-carbon, clean economy.

We have supported these priorities through collaborative partnerships with industries, federal, provincial and territorial governments, and academia.

When first established, ECO Canada was one of several human resources sector councils established under the Sector Council Program. While this program has folded or shifted to new streams, ECO Canada has continued to partner with ESDC's Sectoral Initiatives Program (SIP) and other ESDC programs as a trusted delivery partner. The following current programs support a Just Transition strategy:

- Sectoral Workforce Solutions Program
- Student Work Placement Program
- Youth Employment and Skills Strategy Program (Including Science Horizons and Green STIP)
- Future Skills Centre
- Skills for Success
- Foreign Credential Recognition Program
- Worker Transferability Resources and Career Resources (various funders) - *refer to Appendix B for a sample transferability resource*

Appendix A: A Green Talent Strategy Framework

SOLUTIONS	STRATEGIC PRIORITIES								
	New or underutilized talent sources			Workforce retention and development			Longer-term/structural shifts		
	Under-representation of select groups	Transitioning workers	Industry-wide attraction and recruitment strategies	Improved retention and productivity	Career development and pathways	Succession planning/ knowledge retention	Learning and development that meets future demand	Assessing and recognizing competency/ transferability	Career and industry awareness
#1 End-to-end support	•		•	•					
#2 Workplace barriers	•	•	•	•	•				
#3 Career development and pathway information	•			•	•	•			
#4 Awareness campaigns	•	•	•						•
#5 Map competency requirements and demand by experience level		•	•	•	•	•		•	•
#6 Supports for maternity and parental leavers				•	•	•			

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	New or underutilized talent sources			Workforce retention and development			Longer-term/structural shifts		
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#1 End-to-end support	•		•	•					
#2 Workplace barriers	•	•	•	•	•				
#3 Career development and pathway information	•			•	•	•			
#4 Awareness campaigns	•	•	•						•
#5 Map competency requirements and demand by experience level		•	•	•	•	•		•	•
#6 Supports for maternity and parental leavers				•	•	•			

Appendix B: Sample Workforce Transferability Resources

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SKILLS TRANSFERABILITY

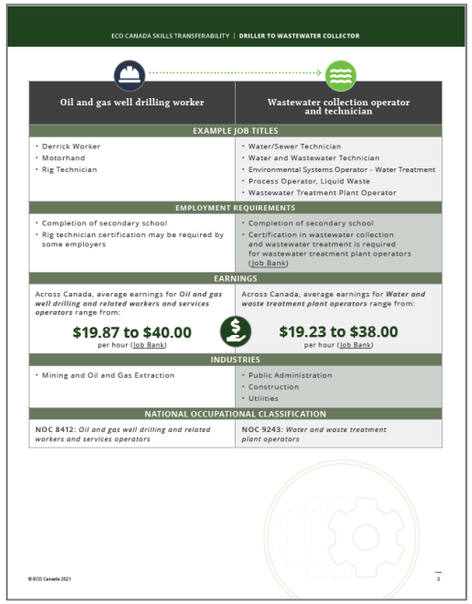
Driller to Wastewater Collector

Are you an oil & gas well drilling worker?
Are you looking for a new employment opportunity?

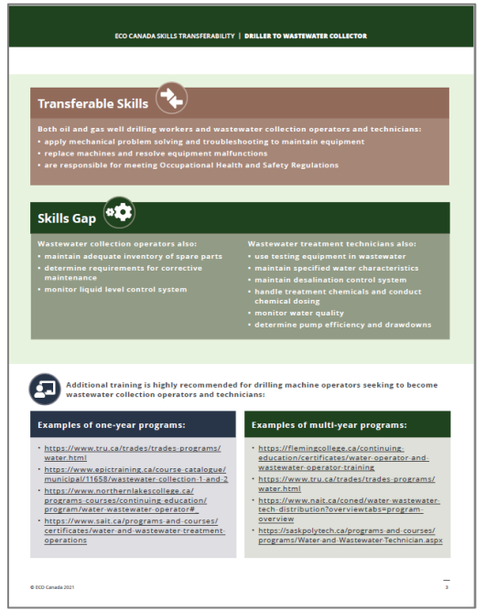
You have skills and experience that can provide a jumping-off point to a career in water and wastewater collection and treatment.

Take a look at the information below to see how you could leverage your skills and, with some additional training, transition into this growing occupation.

Oil and gas well drilling worker	Wastewater collection operator and technician
OVERVIEW	
Oil and gas well drilling workers are intermediate members of a rig crew who operate drilling and service rig machinery. They are employed by drilling contractors and by petroleum producing companies. These jobs are often seasonal, with long hours during the drilling season.	Wastewater collection operators are responsible for skilled tasks in the construction, maintenance, and repair of wastewater system facilities. Wastewater technicians work on storage and storm sewer systems, specifically piping, pumping, and lift stations (this occupation requires certifications). These jobs are often full-time, full-year unionized jobs.



Oil and gas well drilling worker	Wastewater collection operator and technician
EXAMPLE JOB TITLES	
• Derrick Worker • Motorhand • Rig Technician	• Water/Sewer Technician • Water and Wastewater Technician • Environmental Systems Operator - Water Treatment • Process Operator, Liquid Waste • Wastewater Treatment Plant Operator
EMPLOYMENT REQUIREMENTS	
• Completion of secondary school • Rig technician certification may be required by some employers	• Completion of secondary school • Certification in wastewater collection and wastewater treatment is required for wastewater treatment plant operators (Job Bank)
EARNINGS	
Across Canada, average earnings for *Oil and gas well drilling and related workers and services operators* range from: **$19.87 to $40.00** per hour (Job Bank)	Across Canada, average earnings for *Water and waste treatment plant operators* range from: **$19.23 to $38.00** per hour (Job Bank)
INDUSTRIES	
• Mining and Oil and Gas Extraction	• Public Administration • Construction • Utilities
NATIONAL OCCUPATIONAL CLASSIFICATION	
NOC 8412: *Oil and gas well drilling and related workers and services operators*	NOC 9243: *Water and waste treatment plant operators*



Transferable Skills

Both oil and gas well drilling workers and wastewater collection operators and technicians:

- apply mechanical problem solving and troubleshooting to maintain equipment
- replace machines and resolve equipment malfunctions
- are responsible for meeting Occupational Health and Safety Regulations

Skills Gap

Wastewater collection operators also:

- maintain adequate inventory of spare parts
- determine requirements for corrective maintenance
- monitor liquid level control system

Wastewater treatment technicians also:

- use testing equipment in wastewater
- maintain specified water characteristics
- maintain desalination control system
- handle treatment chemicals and conduct chemical dosing
- monitor water quality
- determine pump efficiency and drawdowns

Additional training is highly recommended for drilling machine operators seeking to become wastewater collection operators and technicians:

Examples of one-year programs:

- https://www.tru.ca/trades/trades-programs/water.html
- https://www.epictraining.ca/course-catalogue/municipal/11658/wastewater-collection-1-and-2
- https://www.northernlakescollege.ca/programs-courses/continuing-education/program/water-wastewater-operator#.
- https://www.sait.ca/programs-and-courses/certificates/water-and-wastewater-treatment-operations

Examples of multi-year programs:

- https://flemingcollege.ca/continuing-education/certificates/water-operator-and-wastewater-operator-training
- https://www.tru.ca/trades/trades-programs/water.html
- https://www.nait.ca/coned/water-wastewater-tech-distribution?overviewtabs=program-overview
- https://saskpolytech.ca/programs-and-courses/programs/Water-and-Wastewater-Technician.aspx

Employment Outlook

Approximately 9,000 job openings ***are forecasted for Utilities equipment operators and controllers*** **over the period 2022-2028 (Canadian Occupational Projection System).**

The employment outlook for *Water and waste treatment plant operators* for the 2019-2021 period is GOOD in British Columbia, Saskatchewan, Quebec and New Brunswick and FAIR in Alberta, Ontario, Nova Scotia and Newfoundland and Labrador (Job Bank).

Certification is required for wastewater treatment plant operators. For more information on provincial requirements:

- **BC** https://eocp.ca/certified-operators/how-to-become-an-operator/
- **AB** http://www.abccert.org/abc_certification_program/operator_certification.asp
- **SK** https://saskocb.ca/certification/
- **MB** https://www.gov.mb.ca/wd/apprenticeship/discover/mbtrades/waterwastewatertech.html
- **ON** https://www.ontario.ca/page/licensing-guide-wastewater-operators
- **NS** https://novascotia.ca/nse/water.operator.certification/
- **PE** www.princeedwardisland.ca/en/information/environment-water-and-climate-change/obtaining-water-and-wastewater-operator-certificate
- **NT** https://www.maca.gov.nt.ca/en/services/drinking-water-nwt/operator-certification-and-training

Do you want to learn more about wastewater collection operators and technicians?

- **ECO Canada's career profile:** https://www.eco.ca/training/career-profiles/wastewater-collection-and-treatment-operator/
- **2005 National Occupational Guidelines for Canadian Water and Wastewater Operators:** https://www.eco.ca/research/report/national-occupational-guidelines-2005/
- **The Canadian Water and Wastewater Association (CWWA):** https://cwwa.ca/memberships/
- **BC Water & Waste Association:** https://www.bcwwa.org/
- **Alberta Water & Waste Operators Association:** https://www.awwoa.ca/
- **Manitoba Water & Wastewater Association:** https://www.mwwa.net/
- **Ontario Onsite Wastewater Association:** https://www.oowa.org/
- **Réseau Environnement/The Environmental Network (Quebec):** https://www.reseau-environnement.com/
- **La fondation rivières/The Rivers Foundation (Quebec):** https://fondationrivieres.org/

Canada Alberta

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