



THE GREAT CANADIAN ELECTRICITY MAP

Canada has one of the most diverse energy systems in the world and is recognized as a world leader in the generation and use of renewable energy. More than 100,000 people work in Canada's electricity sector – a massive workforce that is the foundation of Canada's economy and quality of life. Of these 100,000 people, more than 80 per cent of these workers have graduated with Grade 12 math and science credits as a part of their high school diploma!

Electricity Human Resources Canada (EHRC) is Canada's trusted source for national labour market business intelligence, human resource programs, and tools for the electricity sector. EHRC's primary role is to strengthen the ability of Canada's electricity and renewable energy industry to meet current and future needs for our workforce, while ensuring it is an industry that is focused on safety, innovation, and inclusivity.

The Great Canadian Electricity Giant Floor Map highlights the diversity of energy sources in Canada and the complexity of energy production and transmission across the Canadian landscape. The Giant Floor Map also contains information about innovative careers in the electricity sector, from generation, transmission, and distribution, to energy efficiency, smart systems, manufacturing, and all levels of the supply chain.

The Canadian electricity sector is undergoing a demographic shift. As older workers begin to transition out of the workforce, gaps are forming across the sector in all areas of employment. It is crucial for today's youth to understand that they can become an integral part of Canada's energy sector – there is a place for everyone, no matter their personal interests or background. Many youth today are faced with climate anxiety; a career in green initiatives within the energy sector can be a form of nature-positive action and can help them face ongoing climate and environmental challenges head-on.

To support educators and youth learning about energy in Canada, and Canada's future as a leader in innovative energy solutions, the Great Canadian Electricity Giant Floor Map includes information about employers, stakeholders, and the current status of the electricity workforce, as well as activities that touch on industry research and actionable solutions. We hope that this resource inspires you and your students to take part in powering positive change for a greener future!

- The Canadian Geographic Education Team



CARTOGRAPHER'S MESSAGE

Electricity is part of virtually every moment in our modern lives. It lights our homes, powers our devices, and, increasingly, fuels our cars. It is so fundamental in our lives that, like many things that just “are,” we rarely take the time to consider where this seemingly magical energy comes from.

This Giant Floor Map shows the pathway of electricity from power plants through power lines to every city and town in the country. A generation ago, the forces that drove energy production were fewer than they are today. Burning coal, oil, and gas was the primary driver for turning turbines to create electricity, while harnessing the power of flowing water (hydroelectricity) was also an important energy source that could readily be converted into electricity. Splitting the atom to produce nuclear energy only became a reality in the mid-20th century. Today, we have found ways to harness energy from plants, the sun, wind, tides, and even from excess heat generated by industrial processes.

Each of these energy sources has advantages and disadvantages. Critically, we are now shifting away from fossil fuels and towards energy sources that release the least amount of carbon dioxide (CO₂). And while every energy source releases some CO₂ (such as in the construction of infrastructure for energy facilities), many energy sources do not emit CO₂ while they are actively generating electricity (e.g., solar, wind, and tidal). These same energy sources are also renewable, as there is a virtually infinite amount of sun, wind, and tides on planet Earth.

This Giant Floor Map shows clearly that these more environmentally friendly sources of power are growing in number and are being added to the electricity infrastructure across our country. Perhaps even more exciting than what is currently shown on the map is what might appear on the map a generation from now. Will all of the coal plants be gone? Will wind and solar facilities begin to compete with nuclear and hydropower plants to generate large amounts of electricity? Will there be nuclear fusion facilities in Canada, generating massive power with minimal harmful by-products? The content of this future map is up to you, the students of today, to become the driving forces and change-makers of the electricity landscape of Canada.

And how will the network of electrical transmission lines change in the future? There are important hints on this map already, in the form of proposed transmission lines in northern Ontario and the western coast of Hudson Bay. These proposed lines will (when built) connect remote Indigenous communities to the electricity grid, allowing them to draw power from the multiple sources of electricity we have in Canada, rather than relying on burning fuel oil within their communities. This will reduce our national CO₂ emissions, reduce local pollution, improve electricity reliability, and hopefully bring down the cost of electricity for many First Nations and Inuit communities in the North.

The future of how we generate and transmit energy in Canada is up to you. Hopefully this map will inspire some of you to get involved in creating a cleaner, greener electricity future for us all.

- Chris Brackley, Cartographer

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TABLE OF CONTENTS

VIDEOS

ACTIVITY 1 - ENERGY AND ELECTRICITY IN CANADA

Students will have the opportunity to explore the map using legends and activity cards with the purpose of better understanding energy sources, and electricity production and transmission in Canada.

ACTIVITY 2 - EXPLORING THE EVOLUTION OF ELECTRICITY IN CANADA

Students will engage in map-based activities that encourage them to make connections between historical events across Canada.

ACTIVITY 3 - ENERGY INNOVATION IN CANADA

Students will be challenged to evaluate their own understanding of the energy industry and will have the opportunity to reflect on how working in the sector can mean helping to solve climate change.

ACTIVITY 4 - CAREER IN THE CANADIAN OF ELECTRICITY INDUSTRY

Students will learn about careers through videos embedded in the map, discuss what professional skills and personal interests would be assets for different careers, and consider unique features about different job locations.

ACTIVITY 5 - INDIGENOUS LEADERSHIP FOR CANADA'S ENERGY FUTURE

Students will learn about and locate various Indigenous-led energy projects in Canada and will review the necessity and importance of Indigenous inclusion in Canada's energy future to ensure all communities in Canada have equal access to clean energy.

ACTIVITY 6 - CANADA'S ENERGY FUTURE

Students will learn how to define energy terms related to energy production and distribution, as well as learn about the challenges associated with energy conservation and efficiency.



VIDEOS

In the winter and spring of 2023, Electricity Human Resources Canada (EHRC) filmed 68 short videos profiling careers and organizations, and five videos highlighting interesting technology that are foundational to Canada's energy sector. These videos are classified into five categories according to program type and are colour-coded on the Giant Floor Map:

- **COLLEGE PROGRAMS**
- **UNIVERSITY PROGRAMS**
- **SKILLED TRADES**
- **CORPORATE**
- **SPECIAL PROJECTS**

It is important for youth to see themselves in the content they are learning and the resources they are using. These videos were filmed in the spirit of promoting diversity, equity, and inclusion in the energy workforce. Early-career and senior-level workers were interviewed, each with their own unique story, career path, skillset, level of ability, and educational background. Many individuals who self-identify as 2SLGBTQI+, immigrants, women in STEM, and/or Indigenous Peoples volunteered to share their stories in the hopes of inspiring the next generation of change-makers.

The videos can be viewed by scanning the associated QR codes with a smartphone or tablet. On your phone or tablet, open the built-in camera app. Point the camera at the QR code. Tap the banner that appears on your phone or tablet. Follow the instructions on the screen to open the video in YouTube.