

INTRODUCTION TO NOVA SCOTIA'S ELECTRICITY SYSTEM



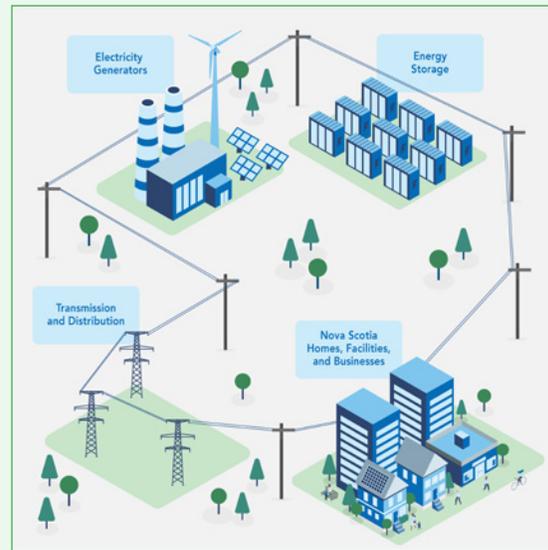
Nova Scotia's electricity system is a network of components that generates, transmits and consumes electricity.

Generators: Mostly fossil fuels (like coal and natural gas) shifting to renewables (like wind and solar owned by independent power producers) by 2030.

Transmission: High-voltage wires for long-distance electricity transport.

Distribution: Lower-voltage wires delivering electricity to homes and businesses

Consumers: Homes, businesses, industries using electricity.



Key players in the electricity system

Provincial government: Creates laws, energy goals, climate change goals and policies and programs.

Nova Scotia Energy Board: Independent regulator of rates, electricity plans and performance.

Utilities: Generate and delivers electricity to customers and conserves energy consumption. Nova Scotia Power is a privately owned company that that supplies most (up to 99%) of the electricity in the province. Five municipal electric utilities provide the remaining electricity. Efficiency Nova Scotia helps people save energy and money.

Independent Electricity System Operator: System operator and planner that is responsible for managing how energy flows in the system.

Independent power producers: Private companies who build and operate clean energy projects (e.g., wind farms).

Moving to clean electricity

- Electricity use in Nova Scotia is highest on cold winter evenings when most people are home, the heat and lights are on, and people are running appliances like stoves, dishwashers, dryers, etc.
- Most of our electricity currently still comes from coal and the electricity system emits the largest portion of Nova Scotia's greenhouse gas emissions (GHGs) at around 40%. Transportation and buildings are the next biggest emitters.
- Nova Scotia will be off coal and have 80% clean electricity by 2030. New, clean sources of energy like wind and solar will help the province make this transition.
- Other fuel sources will make up the other 20% to make sure our electricity supply is secure, reliable and resilient.
- Other efforts to make sure electricity is secure, reliable and resilient include investments in storage like batteries, new Wasoqonatl Reliability Intertie with New Brunswick, fast-acting backup generators, and piloting new and innovative solutions to reduce energy demand and make the most of existing technologies.

TECHNICAL TERMINOLOGY:

Power is measured in watts based on how much it uses or consumes.



Watt (W)

- The smallest unit of power.
- Example: A standard LED lightbulb uses 10 watts.



Kilowatt (kW) = 1,000 watts

- Commonly used to measure the power use of household appliances.
- Example: A typical home might use 1–2 kW at any given moment.



Megawatt (MW) = 1,000 kilowatts

- Used to describe the power of larger systems like wind turbines, solar farms, or power plants.
- Examples: A large wind turbine might generate up to 7 MW.



Gigawatt (GW) = 1,000 megawatts

- Used for very large power systems, like total electricity capacity across a province or country.
- Examples: Nova Scotia's total electricity system is about 2.8 GW.



Terawatt: 1,000 gigawatts (or 1 trillion watts)

- This is a national or continental scale of measurement — very large systems.
- Examples: The entire world's electricity demand at any moment is roughly 3–4 TW.



Electricity consumption or production is measured over time in kilowatt hours (kWh) or megawatt hours (MWh).

- **Consumption:** In one hour, your average refrigerator may consume 1–2 kilowatts. An average Nova Scotia household consumes 10 MWh per year.
- **Production:** A wind turbine or solar panel's production can vary depending on the size of the technology and how windy or sunny it is during that hour. One 5 MW wind turbine can produce about 17,500 MWh per year or enough to meet the electricity needs of 1,750 households, this is about the number of households in North Preston.



Electricity power lines are measured in volts or kilovolts.

It measures electrical pressure or power strength that moves electricity from one place to another through wires, like water pressure in a pipe. Transmission lines (345 kV) are like wide, long highways for electricity, carrying large amounts of power over long distances, while distribution lines (69 kV) are smaller local roads that deliver electricity to your home or business.