



Electrical Generation

PROGRAMME: ICP

CENTRE: Point Fortin

COURSE: ELECTRICAL INSTALLATION LEVEL # 1

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LESSON OBJECTIVES

At the end of the lesson, the students will be able to:

- Explain the process of electrical generation.
- Explain the process of electrical transmission.
- Explain the process of electrical distribution

LESSON OBJECTIVES

At the end of the lesson, the students will be able to:

- List the three (3) processes of electrical generation.
- Describe what is a transformer.
- Describe the step-up process using transformers.
- Describe the step-down process using transformers.

Video on Electrical Generation



What is Electrical Generation?

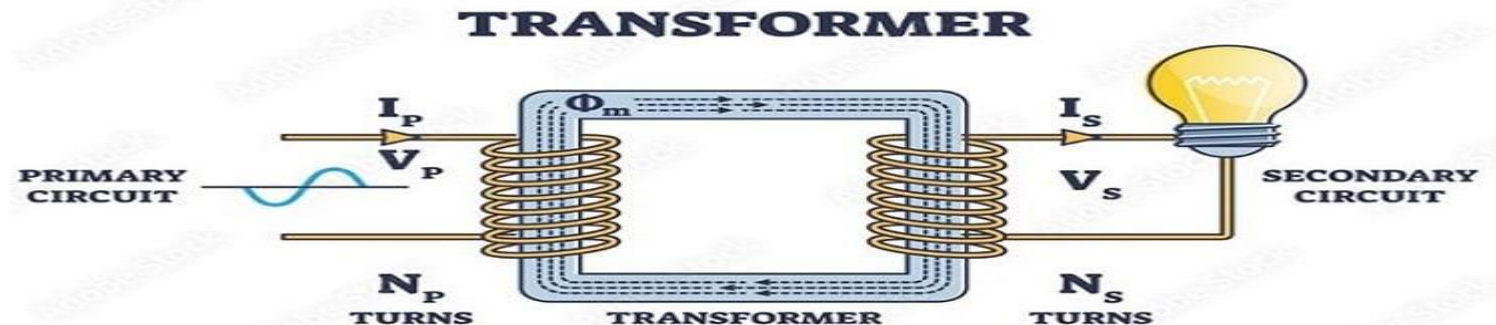
- Electrical generation is the process of converting various energy sources (chemical, nuclear, kinetic, or solar) into electrical energy for use in electrical grids, homes, and devices.
- Raw materials for generating electrical energy include both non-renewable resources (fossil fuels, nuclear fuel) and renewable resources (water, wind, solar, biomass).

How Electrical Energy is Generated?

- Electrical energy is generated in power plants by converting mechanical energy (via turbines) into electricity, stepped up to high voltage for long-distance transmission, and then stepped down via substations for localized, safe distribution to homes and businesses (Eia, n.d.).

What is a Transformer?

- A transformer is a static electrical device that transfers energy between circuits through electromagnetic induction, primarily used to increase (step-up) or decrease (step-down) alternating current (AC) voltage levels without changing frequency



(Global Spec, n.d.)

Generation

- Method: Power plants (using coal, natural gas, nuclear, hydro, wind, or solar) turn large turbines, which rotate generators to produce electricity.
- Voltage: Generators typically produce electricity at medium voltages.

Transmission

- Step-Up: To reduce energy loss over long distances, transformers at the generating station increase the voltage to high levels (e.g., 138kv to 765kv).
- Infrastructure: High-voltage electricity travels through transmission lines on tall, metal towers, often spanning hundreds of miles (Western power, 2025).

Distribution

- Step-Down: The high-voltage electricity reaches a substation, where transformers decrease the voltage to a lower, safer level.
- Local Delivery: Distribution lines (on utility poles or buried underground) carry the electricity to residential, commercial, and industrial customers.
- Final Step: Local transformers (often found on poles) reduce the voltage further for safe use in appliances (typically 120/240 volts) (Western power, 2025).

Generation

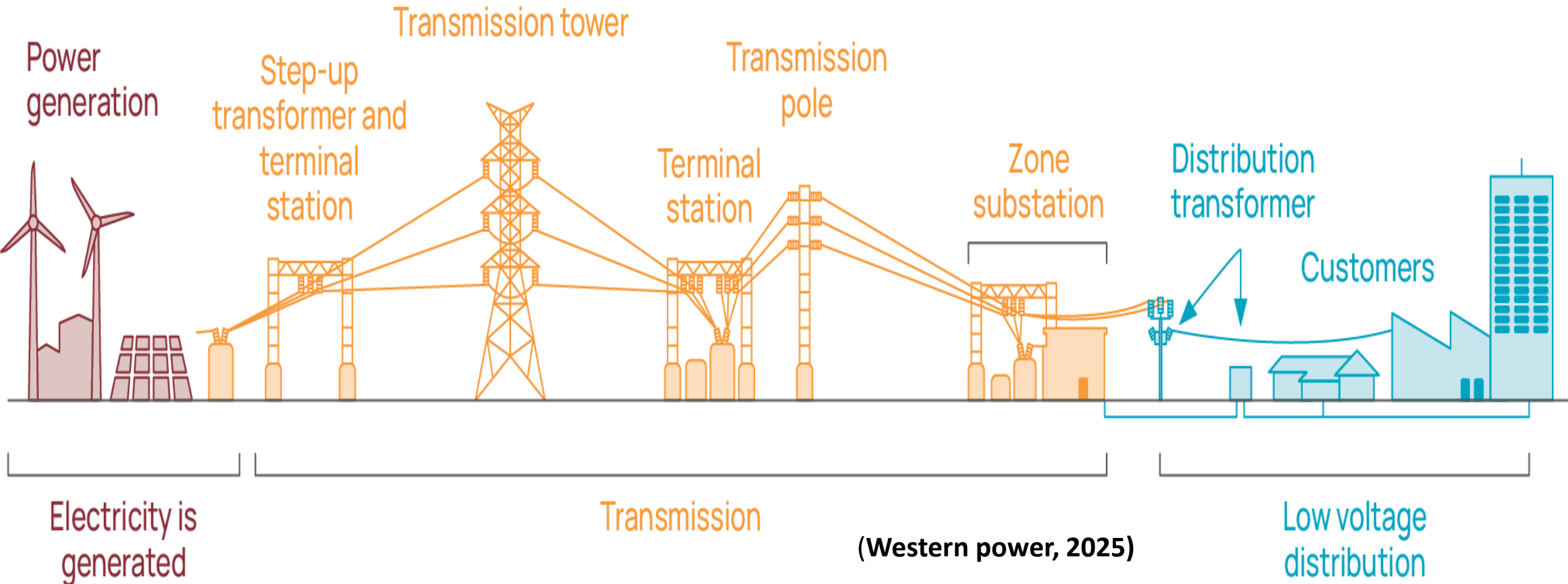
Production of electricity

Transmission

Movement of electricity

Distribution

Delivery of electricity



Review Questions

1. List the three [3] processes of creating electrical energy.
2. Define the purpose of a transformer.
3. State where electrical energy is generated.
4. Give two [2] raw materials used to generate electrical energy.

REFERENCES

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**THANK YOU
FOR YOUR
ATTENTION**