

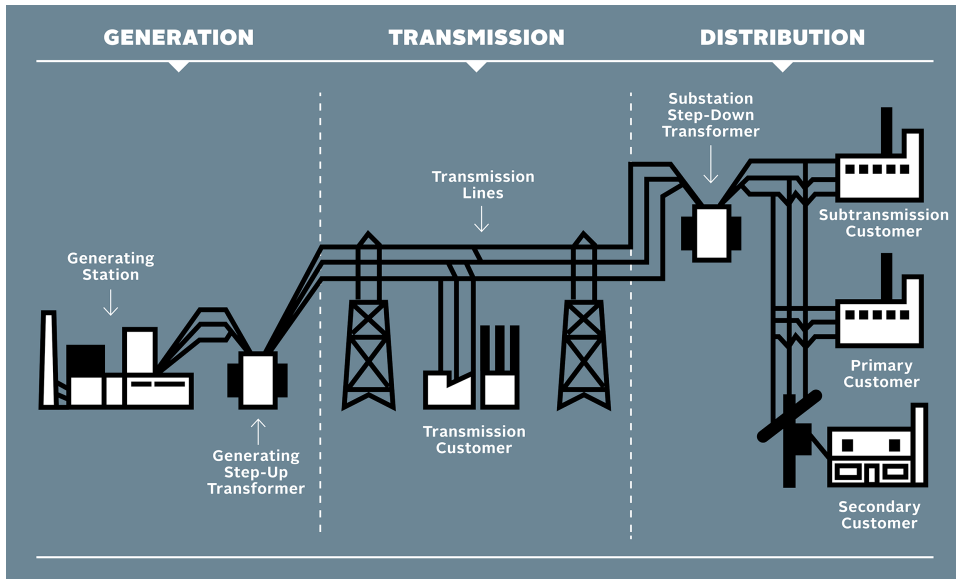
# EEE 102 Basic Electrical Engineering

## Lecture 6: The Grid

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# The Grid



# Why We need Transmission?

What if we all put a generator on our roof-tops?

A Back-of-the-Envelope Calculation on How Green EV Charging Actually Is:  
A fight between efficiencies.

# Why We use High Voltage?

Three expressions of Power in Watt.

- ▶ Power

$$P = VI$$

- ▶ For constant electric power, higher the voltage, lower is the current
- ▶ Power loss due to Joule's heating

$$P_{\text{heating}} \propto I^2$$

- ▶ So, power is transmitted over long distances at high voltage to minimize power losses **due to Joule's heating**.

# How should we decide Electricity Subsidy? If we have to

- ▶ Concept of Load Elasticity
- ▶ Tariffs and Business Sustainability
- ▶ Power Market

## Market Prices

