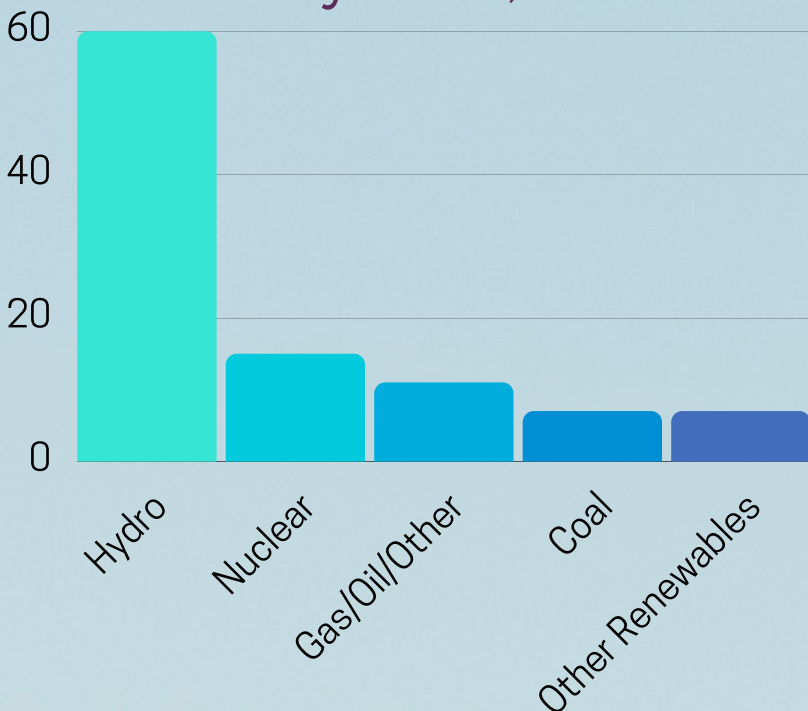


Grids Explained

Utility Grids, Micro Grids, and Nano Grids



The Utility Grid

- Large-scale centralized power production
- Vast networks of transmission lines
- The adjacent graph shows Canada's energy mix

Drawbacks of Large-scale Power Production

- **Transmission Losses:** Energy is dissipated as it travels through the distribution network
- **Cost of Delivery:** Consumers pay for these losses as a proportion of their electricity bills
- Power can be shut-down for maintenance or if lines are damaged at any point on the grid



Micro-Grid

- An electrical grid powered by distributed energy sources
- Serves a small area like a campus or neighbourhood

Nano-Grid

- Essentially a small micro-grid serving a single customer
- Enables user to have total control over their energy source



Advantages of a Micro and Nano-Grids

- Both can operate connected to the utility grid or as standalone "islands"
- Can serve remote areas more effectively
- Increased energy security due to short transmission lines and greater control



Key Terms:

Microgeneration

The harvesting of energy from a renewable resource used to contribute to the electricity usage of a single-dwelling or nano-grid. See [here](#) for more info!

Distributed Energy Resources

Electricity Producing resources connected within a micro or nano-grid for use by those connected to it. Check out this [infographic](#) for the advantages of DER's.

Grid-Tied

A microgeneration system that can send power to the grid and draw power from it when production does not meet demand.

Off-Grid

A microgeneration system not connected to the utility grid. Also known as a behind-the-meter system.

See these sources for more detail: [Transmission Losses](#) [Microgrids](#) [Canada's Energy Mix](#) [Cost of Delivery](#)