(1) Overview of Power Systems:

Deliver power to consumers.

(2) (Reliably, efficiently, safe, clean)

1. Easy to generate.
   
   Hydro, oil, solar, geothermal, nuclear, tidal, wind, coal, gas, biomass, fuel cell...
   
   (Sustainable)

2. Easy to transmit.

3. Convertible to different forms of energy.
   
   (Mechanical, light, thermal, chemical)
Challenges:
1/ Safety. (Dangerous).
2/ Reliability. (Protection).
3/ Environmental (Pollution).
4/ Costs
5/ Balance supply & demand.
   → Storage.
Power System:

1. Generation
2. Transmission & Distribution
3. Loads

Generation:
- Hydro
  - Run through the river power plants
  - Dams (storage)
- Thermal
  - Steam turbine [coal, nuclear, natural gas]
  - Combustion turbine (gas)
  - Combined cycle
Renewable:
- Solar (photovoltaic)
- Wind turbines (farms)
- Geothermal
- Fuel cells
Run through the river

Base load

Thermal Coal

Demand Response