



How is Power Generated?

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Major Energy Sources

- Hydropower
- Natural Gas
- Nuclear
- Wind

Electromagnetic Induction
(*Spinning*)

- Solar → Photovoltaic Effect



Hydroelectricity at Hoover Dam



Solar Power at Origis Energy Solar 1 Project

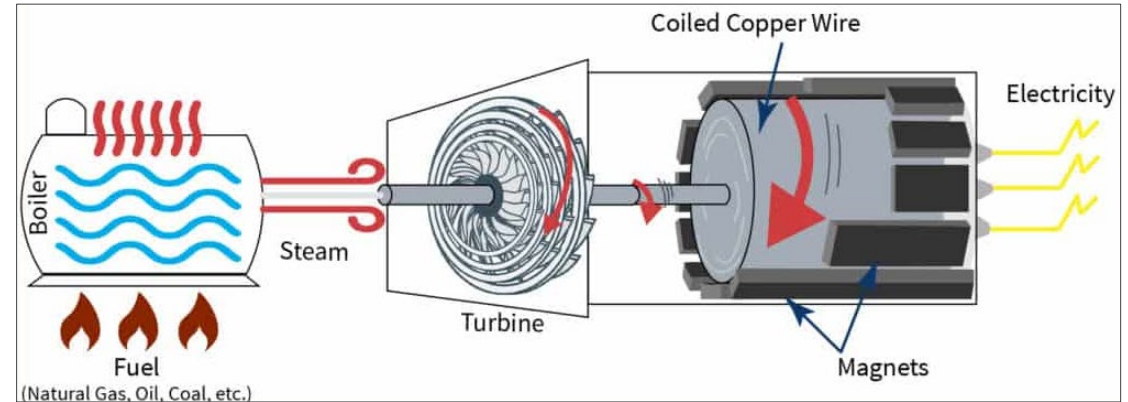


Hydroelectricity at New Waddell Dam

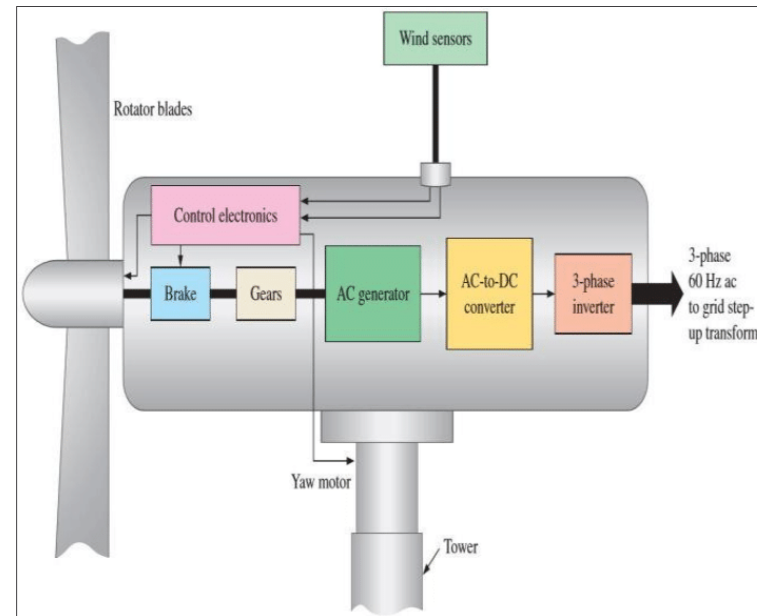
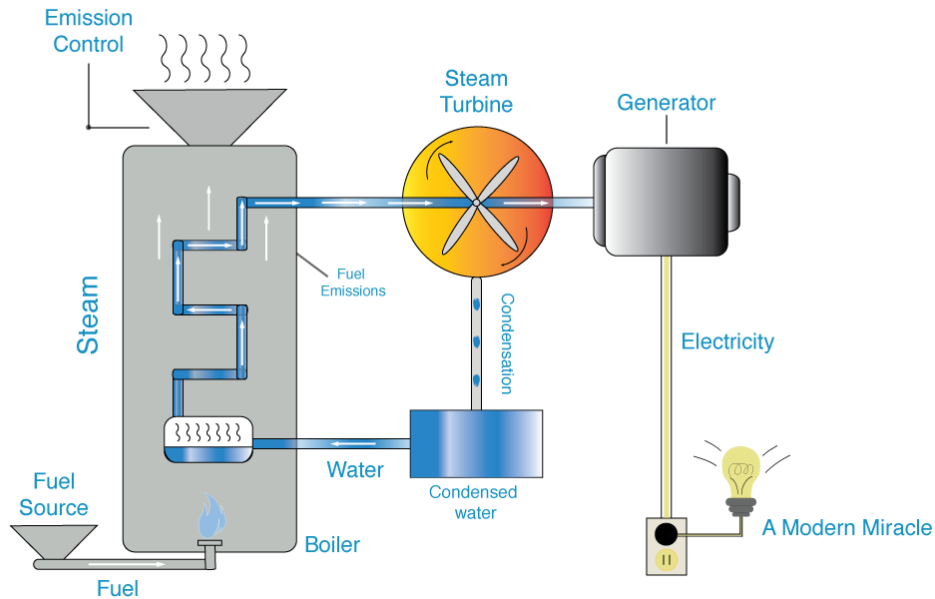
Electromagnetic Induction

Hydropower, Natural Gas, Nuclear, Wind

- Spinning, Drives Generator
- Generator: Rotating Magnet Within Closed Conductor Loop – Creates Electricity



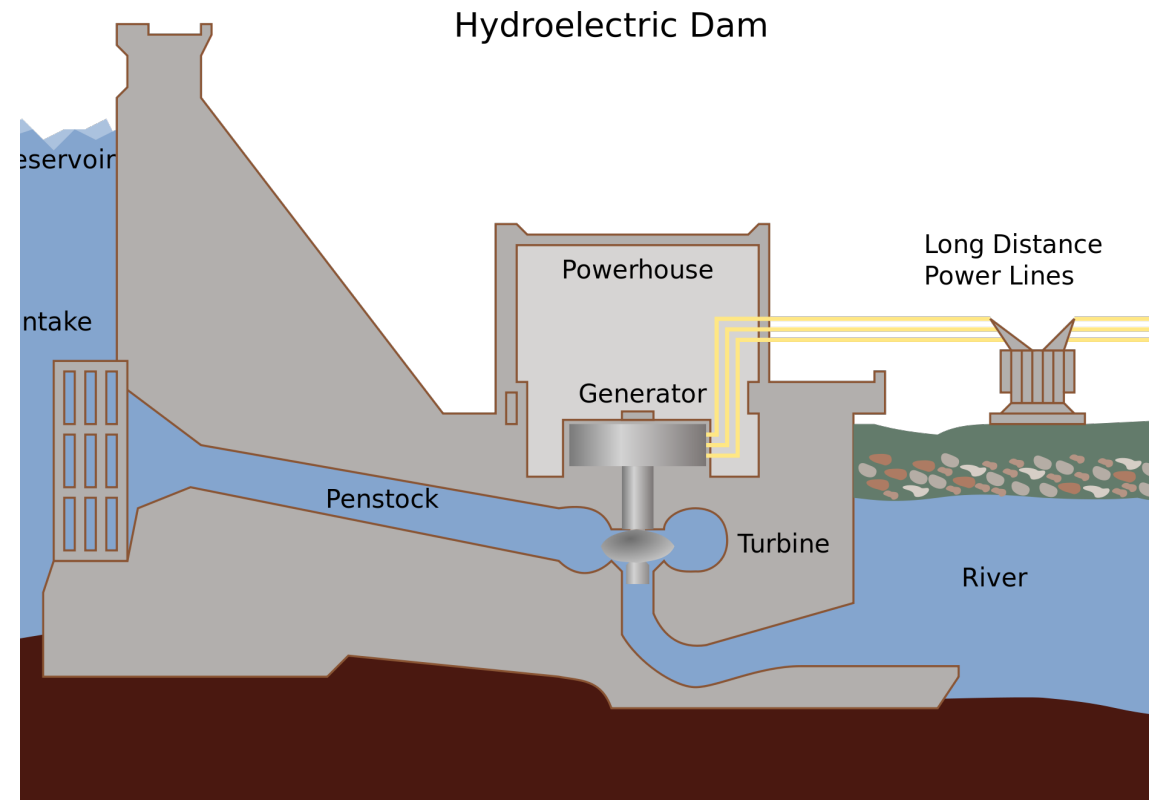
ELECTRICITY GENERATION



Hydropower

Example: Hoover and New Waddell Dams

- Limited Sites
- Easy to Ramp Up/Down to Match Demand
- Low Maintenance, High Capital Cost

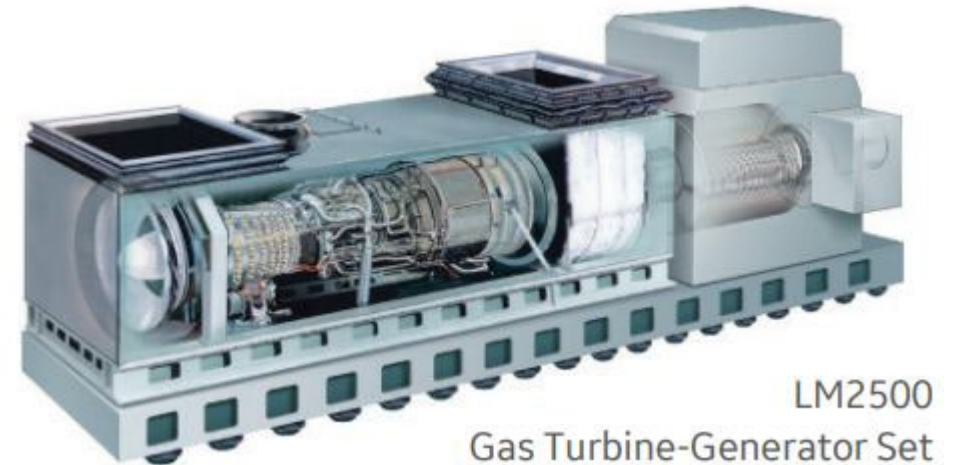
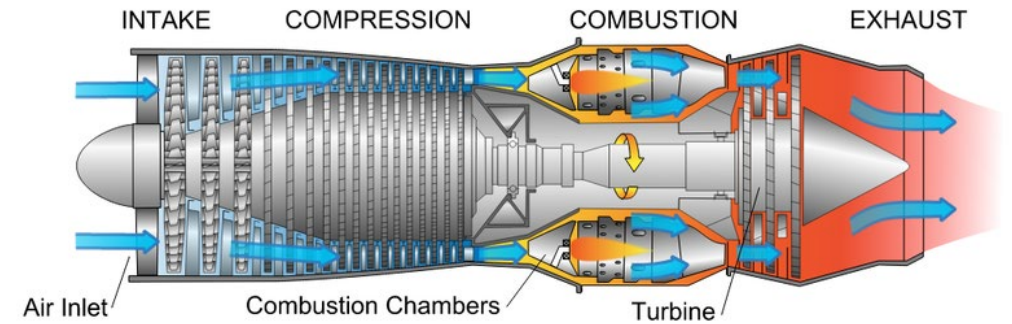


Natural Gas

Example:

Gila River Power Station (2,212 MW)
Ocotillo Power Station (918 MW)

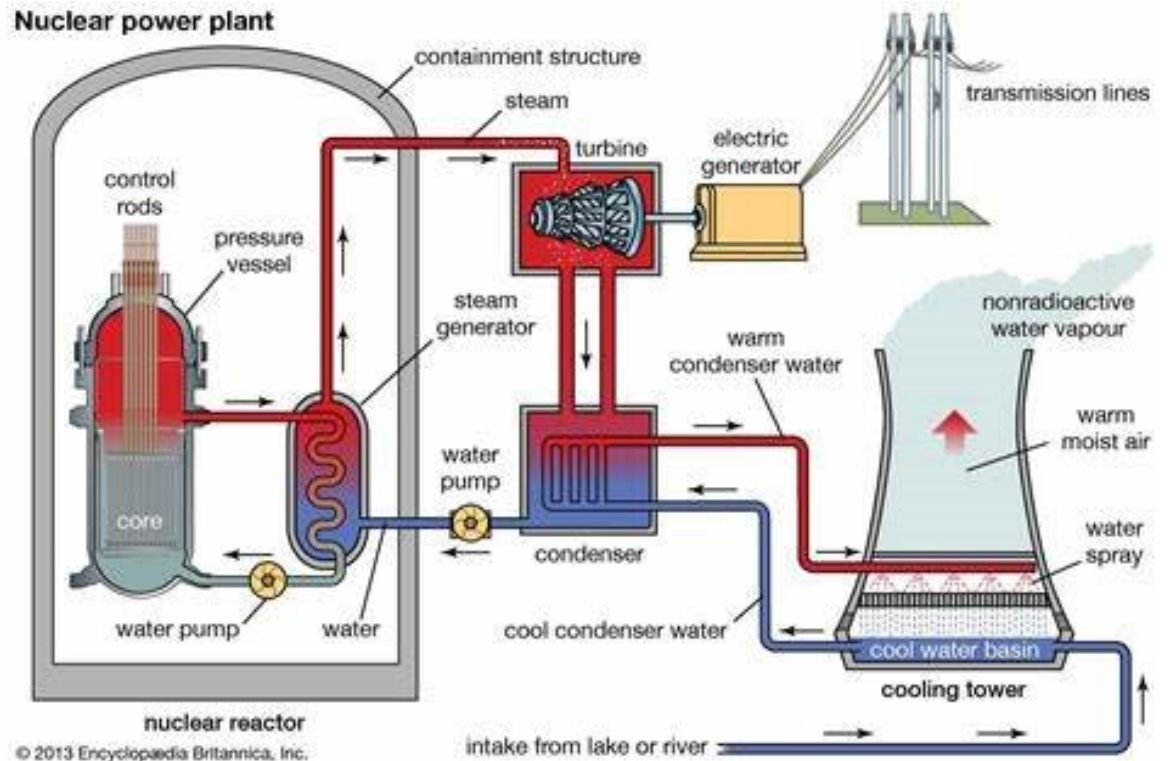
- Smaller Modular Footprint
- Easy to Ramp Up/Down to Match Demand
- Low Maintenance, Lower Capital Cost



Nuclear

Example:
Palo Verde NGS, APS
3,300 MW

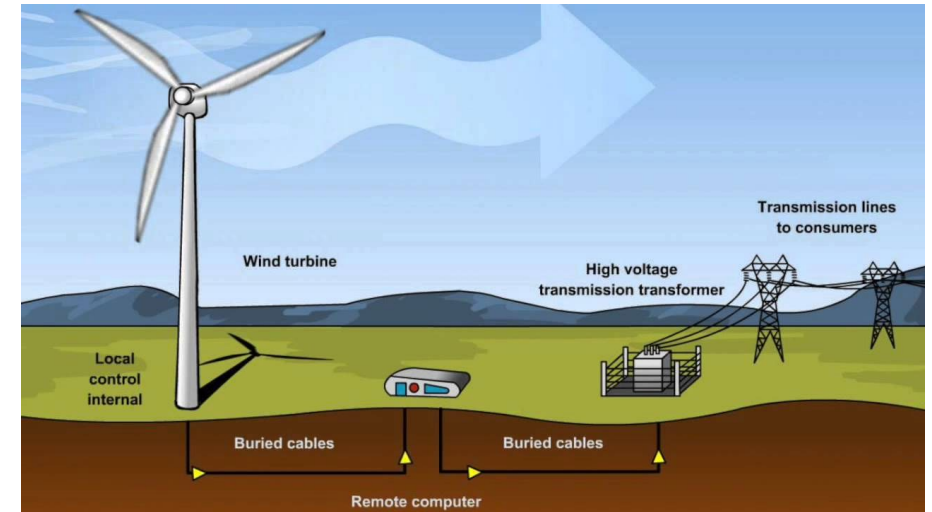
- High Capital Cost, Low Operational Cost
- No Fossil Fuel Use, Zero Carbon
- Used Fuel Storage and Disposal



Wind

Example:
Perrin Ranch Wind, Williams AZ (99 MW)
Poseidon Wind, Snowflake AZ (65MW)

- Limited Locations
- Low Maintenance, Lower Capital Cost
- Variable Energy Generation



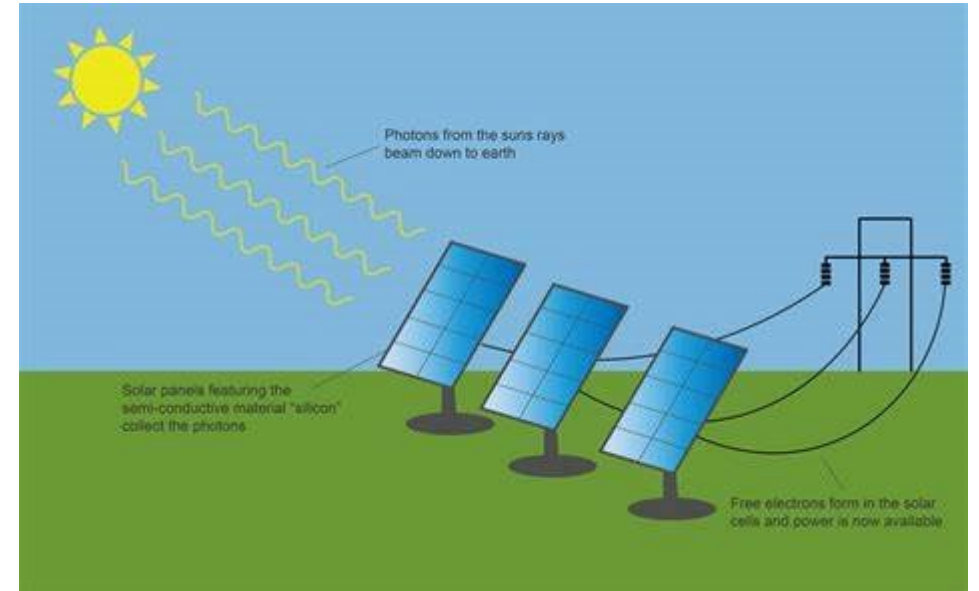
Solar Energy – Photovoltaic Effect

Generation of voltage and electric current in a material upon exposure to light

Example:

AZ Solar 1 and 2 (Salome, AZ)

- Abundant Locations in AZ
- Low Maintenance, Lower Capital Cost
- Variable Energy Generation



Key Takeaways

- Majority of Energy Generated by Rotating a Generator
- Solar is Unique, No Moving Parts
- Each Energy Source Has Pros and Cons
- Today, CAP Uses Many Sources to Balance Our Needs

