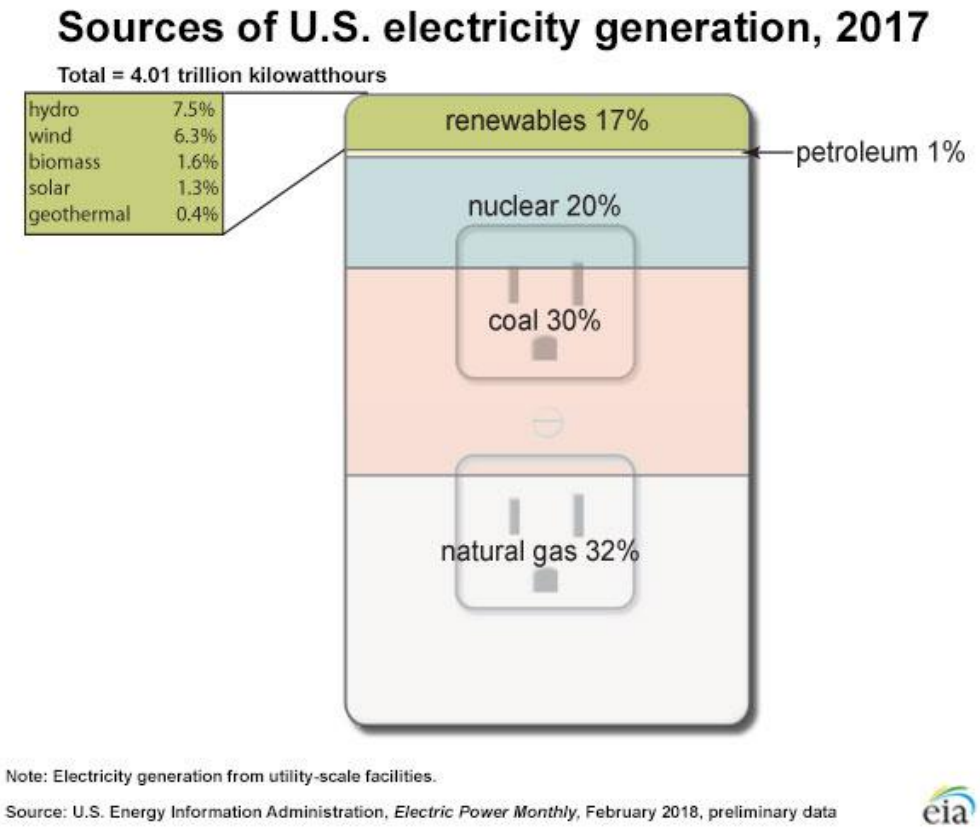
THE ENGINEER INSIDE OF YOU

Solving today's electrical power problem

WHAT IS THE ELECTRICAL POWER PROBLEM?

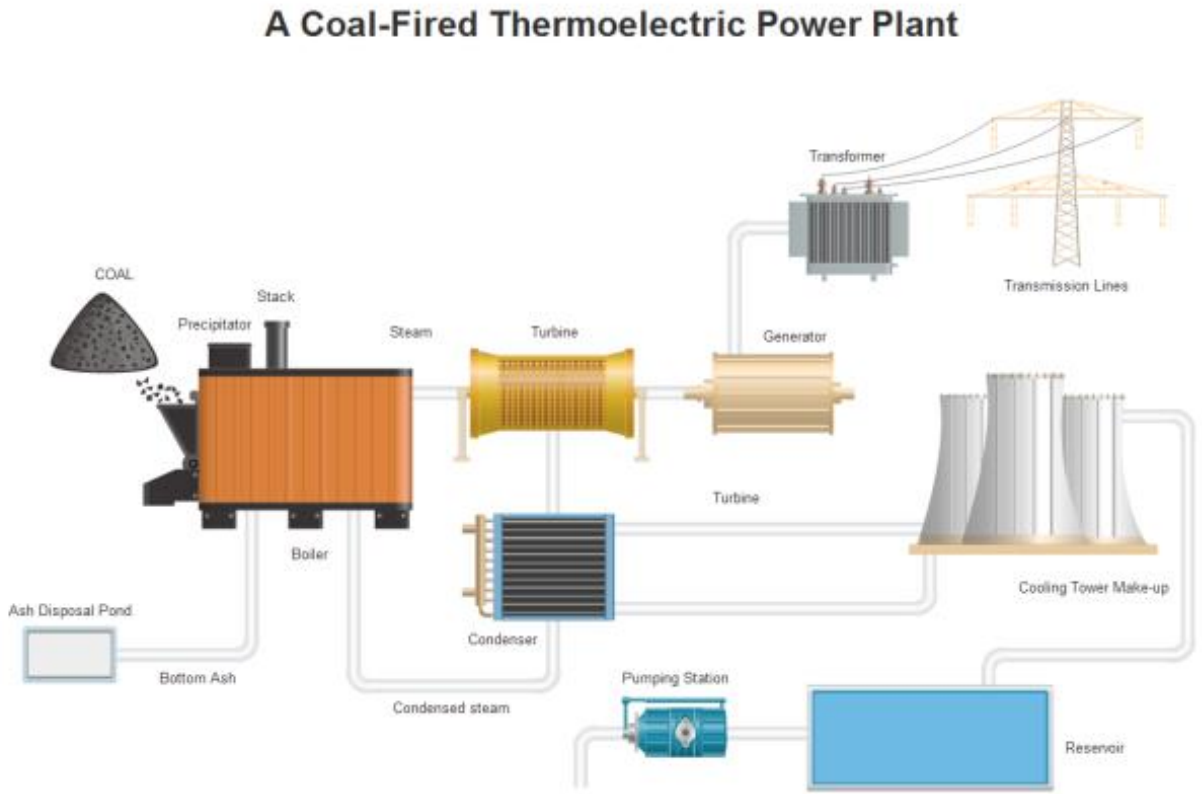
- We use so much electrical power that sometimes there is not enough to go around (blackouts, and brownouts)
- Our use of electrical power keeps growing each year because of population growth and due to increased use of devices that need power.
- Electrical power comes from the "Power Grid" where energy comes from lots of different sources
  - Most of our electrical power (85%) comes from using natural resources that cannot be replaced(fossil fuels).
    - Natural Gas (34%), Coal(30%), Nuclear(20%), Petroleum(1%)
  - Electrical power from the solar farms is very small (<1%)
- We need to find other ways to make electricity, otherwise we will use up all of our natural resources

SOURCES OF ELECTRICITY GENERATION IN USA



A MINIATURE POWER GRID

- Most of our electrical power comes from a generator
- The generator makes electricity using an energy source that turns the generator.
  - As long as generator turns, electricity is produced
  - Energy source volunteer
- Today's energy sources include the following
  - Natural Gas and Coal (steam turbine), Wind (propeller), waterfalls(hydroelectric turbines)
  - Your arm is the energy source in our power grid (same as coal in picture)
- Which requires more energy?
  - An LED? , a motor?, a motor with gear box and a shaft?, an LED light bulb?



WE NEED BETTER SOURCES OF ENERGY AND ENGINEERS TO DO THE WORK

- Renewable energy sources under development
  - Solar Cells(photovoltaic panels on rooftops)
  - Solar Thermal (Sun's heat with steam engine)
  - Fuel Cells (Hydrogen)
- Engineers do this work by the following
  - Using inventions that are already made
  - Learning about different topics (education)
  - Networking with others that can help you
  - Making small prototypes to see if your ideas are possible
  - Being persistent and inspiring others to participate

IS THERE AN ENGINEER INSIDE OF YOU?

- What is your idea for solving our electrical power problem?
  - By learning the basic ideas of the power grid and the problems we now face, you are halfway to solving the electrical power problem
- See me about how to make your own miniature power grid and where to get started in becoming an engineer.
- Questions and Responses