CHP 101: Making Your Own Power

Presented by

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Agenda

- What is CHP?
- Industry Terms
- Technologies
- Market Segments
- Incentives
Combined heat and power (CHP), also known as cogeneration, is the simultaneous production of electricity and heat from a single fuel source, such as: natural gas, biomass, biogas, coal, waste heat, or oil.
What is CHP (Cogeneration) My Definition!

- Cogeneration uses a piece of equipment that makes electricity.

- Fuel Cell, Reciprocating Engine, Microturbine, Steam Turbine, or Gas Turbine.

- During this process, a tremendous amount of heat is created. It is this heat that is captured and used for space heating, hot water heating, process loads, and indirect fired cooling.

- In all cases, a cogeneration system can be used as back-up to the electric utility. (where allowed)
Not by any other name?

- CHP
- Distributed Generation
- On Site Power
- CCHP
CHP Flow Chart

Water ➔ Heat Recovery Unit ➔ Steam or Hot Water ➔ Cooling/Heating

Fuel ➔ Engine or Turbine ➔ Generator ➔ Electricity ➔ Grid

Hot Exhaust Gases ➔ Engine or Turbine

Safety First and Always
Technologies:

- Reciprocating Engine
- Fuel Cell
- Microturbine
- Gas Turbine
- Steam Turbine
- Spark Spread
- Net Metering
- Interconnect
- APS- Alternative Portfolio Standard
- Grid Connect
- Dual Mode
Cogeneration will NOT be applicable if 3 metrics aren’t met:

**Spark Spread**- Potential customers all in electric Costs must be GREATER than all in natural gas costs.

**Heat Utilization**- Potential customers must be able to use the waste heat AT LEAST 70% of the year.

**65kw base load**- Potential customers must have a base electrical load of 65kw year round.
The 3 Legged Stool Rule of CHP

- **Efficiency Benefits**
  CHP requires less fuel to produce a given energy output, and avoids transmission and distribution losses that occur when electricity travels over power lines.

- **Reliability Benefits**
  CHP can be designed to provide high-quality electricity and thermal energy to a site regardless of what might occur on the power grid, decreasing the impact of outages and improving power quality for sensitive equipment.

- **Environmental Benefits**
  Because less fuel is burned to produce each unit of energy output, CHP reduces air pollution and greenhouse gas emissions.

- **Economic Benefits**
  CHP can save facilities considerable money on their energy bills due to its high efficiency and can provide a hedge against unstable energy costs.
Combined Heat and Power (not applications)
CHP APPLICATION POTENTIAL
Thank You!

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