

# How do you spell CHP?

Combined  
Heat and  
Power (CHP)

Cogen

Onsite  
Generation

Microgrids

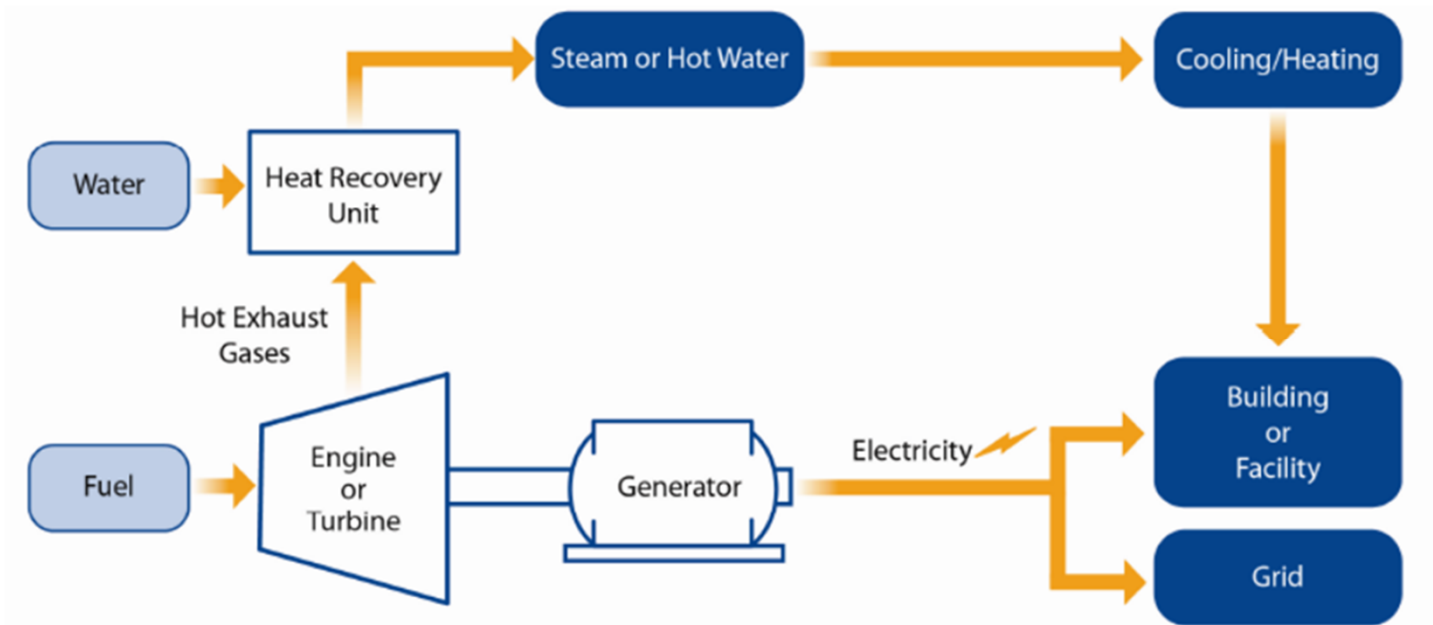
Distributed  
Generation  
(DG)

Trigen

Combined  
Cooling,  
Heat and  
Power  
(CCHP)

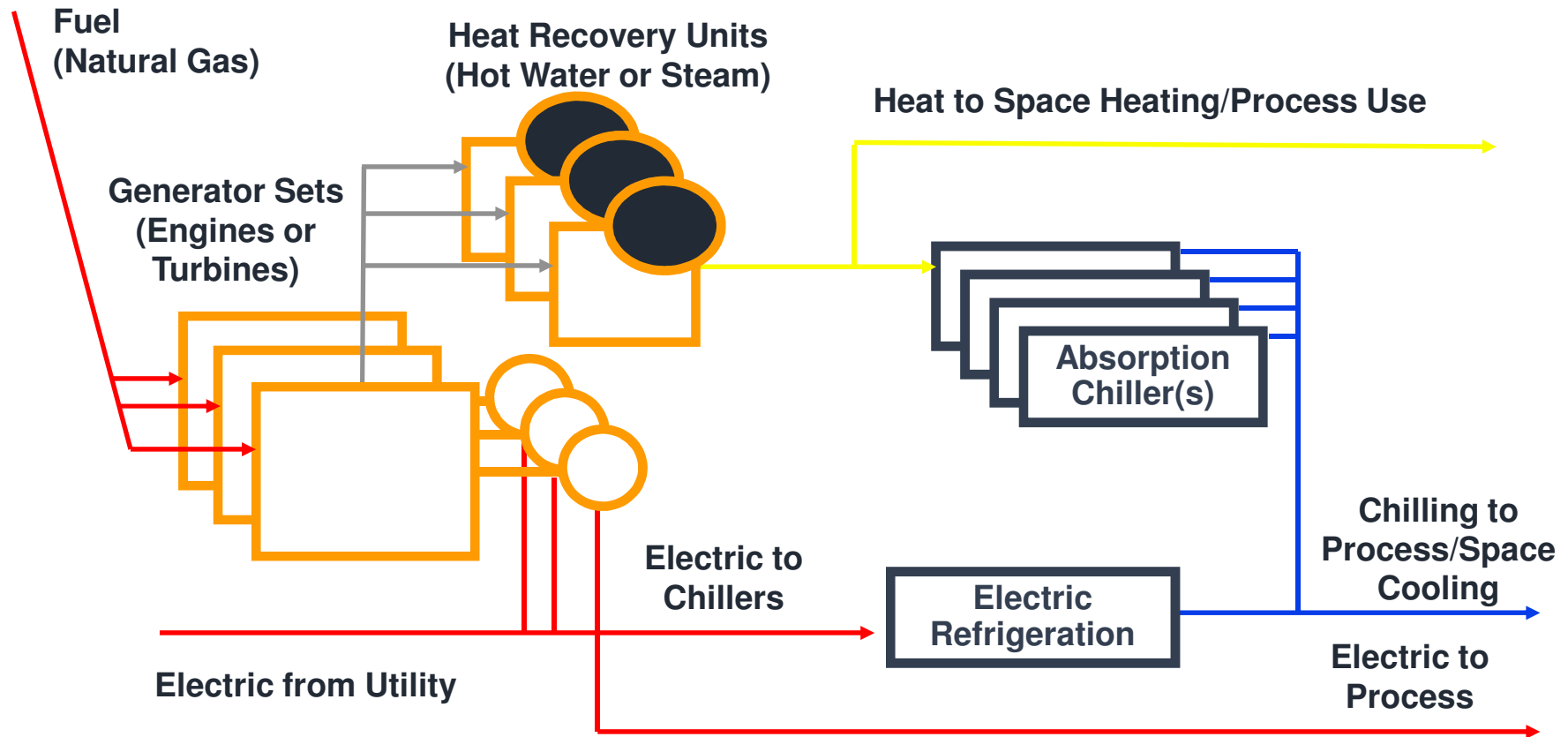
Brad Markley & Mark Fennell

# What is CHP?



- Highly efficient system to provide power & heat with a single fuel input source (generally natural gas)
- Recovered heat (by-product of fuel combustion) is used for cooling or heating makes CHP systems typically achieve 60% to 80% in efficiency
- Facilities can use CHP to produce both electricity and heat on-site instead of obtaining separately electricity from the grid and producing heat from a boiler in a Separate Heat Power (SHP) configuration

# How does CHP work?



# Why CHP?

- Efficient use of energy
  - Conventional electrical system – 33% to 39%
  - Conventional boiler systems – 65% to 75%
  - CHP systems – Greater than 80%
- Reliability, Redundancy, and Resiliency
- Economics, driven by thermal utilization
- Utility cost stabilization
- Supports “The Triple Bottom Line”

# CHP Efficiency Explained

CHP: combined heat & power, electricity and heat are both generated from on fuel  
SHP: separate heat & power, electricity is purchased outside & boilers generate heat

CHP efficiency: 75%  
SHP efficiency: 51%  
An efficiency gain of 24%  
**That yields 32% energy savings**

Conventional system is SHP

