

# Recommendations for Maryland CHP Program

May 3, 2018  
Jack Lewnard



# What is Combined Heat and Power (CHP)



Conventional electricity generation is ~30-60% efficient. “Unused” energy dissipated as waste heat

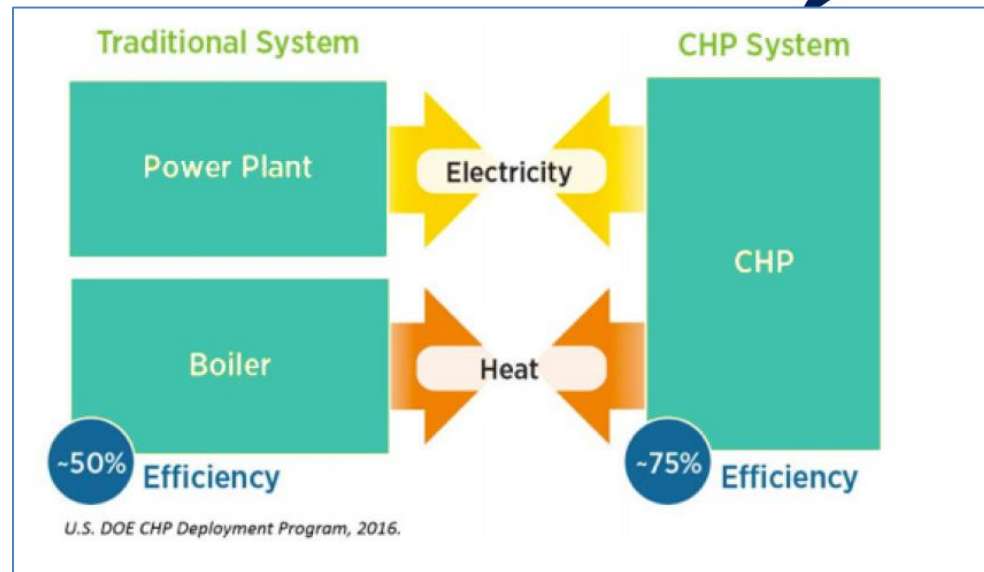
CHP “harvests” this energy as steam, hot water, or chilled water

Can use many types of engines

Can use many types of fuel

Can be integrated with many types of host sites

Was deployed in the first power plant



Technology	Recip engine	Turbine	Micro-turbine	Fuel Cell
Availability	96-98%	93-96%	98-99%	>95%
Size (MW)	0.1-50	2-1000	0.1-5	0.1-25
Typical Fuel	Diesel, LPG, natural gas, biogas	Diesel, LPG, refinery gas, natural gas, biogas	Diesel, LPG, natural gas, biogas	Diesel, LPG, natural gas, biogas, hydrogen

# Why Combined Heat and Power (CHP)



- **Efficiency**
  - 60-85%
- **Environmental Benefits**
  - Reduced inputs – fuel, water
  - Reduced emissions
- **Economic development – business attraction/retention**
  - Lower energy costs impact bottom line
  - Supports sustainability objectives
- **Resiliency**
  - On-site generation provides redundancy to host site and the grid in event of natural disaster, cyber attack, etc
  - Avoiding power outages critical in many facilities
- **Multiple business models**
  - Host site, utility, or 3<sup>rd</sup> party can own/operate
- **Economics**
  - Sum of the above

# Challenges

---



- Economics
  - Need adequate “spark spread”
  - Inconsistent, and generally fewer/lower incentives than renewables
  - Other value propositions (ie resiliency) may not be properly credited
  
- Stand-by rates
  - Potentially inconsistent
  - Rates assume outages at worst times
  - Ratchets amplify charges
  
- Interconnect standards
  - Evolving, but may be difficult for smaller utilities
  
- Not core business/competency for many host sites

# Recommendations

---



- MD program gets high praises
  - Many best practices noted by industry trade groups, consultants
  
- State goals
  - Expand CHP targets beyond investor-owned utilities to include all utilities
  - Include CHP as part of IRP process
  - Integrate CHP into resiliency programs, including microgrids
  
- CHP Incentive Program
  - Expand net metering from CHP to 10 MW, open to more customers
  - Expand state contracting for CHP systems/PPA's
  
- CHP support
  - Continue involvement with DOE TAP program, esp. "CHP Catalog"
  - Outreach to smaller utilities to provide technical support for CHP projects

# Eight Flags CHP

