The Heat Efficiency through Applied Technology (HEAT) Act

The Heat Efficiency through Applied Technology (HEAT) Act will improve business competitiveness, enhance our nation's energy security and supply, and reduce pollution by making efficient use of heat recovery technologies. Specifically, the HEAT Act encourages the deployment of combined heat and power (CHP) and waste heat to power (WHP), both of which strengthen local economies and support national energy policy goals. CHP technologies utilize a variety of fuels, both fossil- and renewable-based, and WHP uses waste heat as the energy source. Both can be employed in industrial, large commercial and institutional applications to reduce the operating costs for facilities by increasing their energy productivity.

A joint study from the Department of Energy (DOE) and the Environmental Protection Agency (EPA) estimated that by achieving the national goal of deploying 40 gigawatts of new CHP technology by 2020, the U.S. would save energy users $10 billion a year and reduce carbon emissions by a quantity equivalent to taking more than 25 million cars off the road.

Complex regulatory barriers are a serious impediment to fully realizing America's CHP and WHP potential. The HEAT Act addresses these regulatory barriers by establishing a federal framework to help states develop solutions for meeting growing energy demands efficiently and economically through the use of CHP and WHP technologies. The HEAT Act achieves this affordably and without any mandates.

The HEAT Act Addresses Three Major Regulatory Barriers

- **Updated Interconnection Procedures and Tariff Schedule**
  - Maximizing the benefits of CHP and WHP requires integration with the utility grid for backup and supplemental power needs. However, the current lack of uniformity in application fees and interconnection standards makes it difficult for equipment manufacturers to design and produce modular packages. Moreover, non-uniform interconnection standards and fees reduce economic incentives for onsite generation.
  - The HEAT Act directs DOE and the Federal Energy Regulatory Commission (FERC) to develop a standard set of interconnection procedures and associated fees that reflect current best practices to encourage the use of CHP and WHP, while also ensuring the safety and reliability of distribution and transmission networks.
  - The model standards are voluntary; states are not required to adopt them.

- **Supplemental, Backup and Standby Power Fees**
  - Facilities with CHP and WHP systems usually require standby, backup or supplemental service from the utility to provide power when the system is down due to routine maintenance or unplanned outages. Fee programs that recognize the value of grid reliability that CHP and WHP provide to the utility and to ratepayers will encourage the use of these technologies
  - The HEAT Act directs DOE and FERC to establish model rules and procedures for determining supplemental, backup and standby power fees for CHP and WHP systems that allow for adequate cost recovery for utilities.
  - The model standards are voluntary; states are not required to adopt them.

- **Updating Output-Based Emissions Standards**
  - Many U.S. and state environmental regulations have established emission limits based on heat input or exhaust concentrations. These input-based standards do not recognize the higher efficiency offered by CHP and WHP, nor do they account for the pollution prevention benefits of heat recovery systems.
  - The HEAT Act directs EPA to create a voluntary grant program to encourage states to update local air permitting procedures to incorporate Output-Based Standards (OBS). OBS relates air emissions to the productive output of a process and encourages use of fuel conversion efficiency as an air pollution prevention measure.

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Effectively and Efficiently Transforming Heat to Power

Combined Heat and Power (CHP)

- CHP systems, also known as cogeneration, generate electricity and useful thermal energy in a single, integrated system.
- Heat that is normally wasted in conventional power generation is recovered to provide needed heating and/or cooling. This allows for an improvement in overall fuel efficiency, and lowers both costs and CO_2 emissions.
- CHP is extremely reliable and has been employed for many years, mostly in industrial, large commercial and institutional applications.

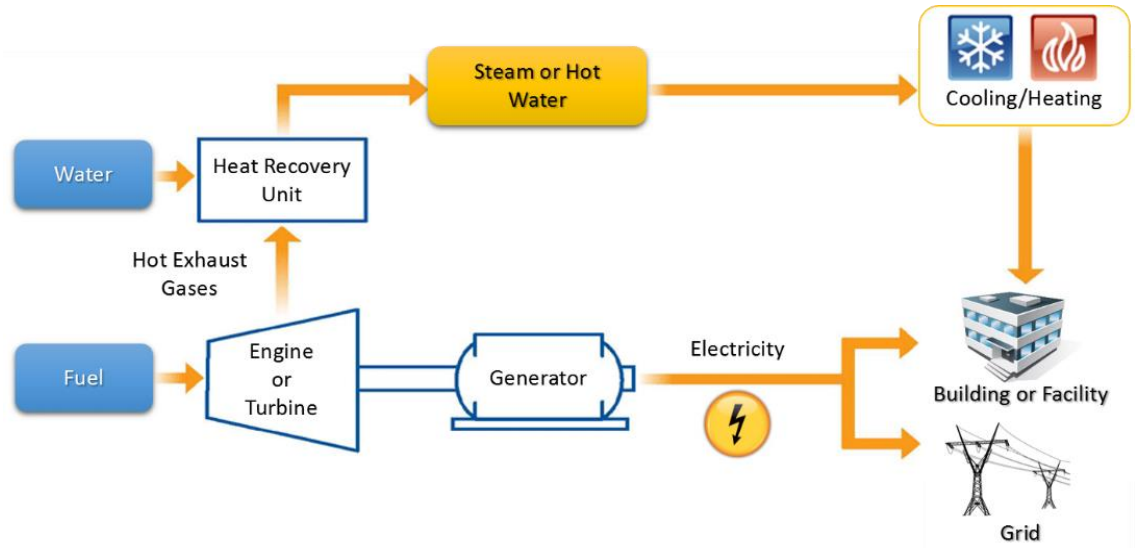

Figure Above: Example of a gas turbine- or internal combustion engine-based CHP system

Waste Heat to Power (WHP)

- WHP is the process of using recovered waste heat to generate power with no combustion and no emissions.
- Anywhere there is an industrial process that involves transforming raw materials into useful products —steel mills, paper plants, refineries, chemical plants, oil and gas pipelines and general manufacturing —heat is generated as a byproduct.
- By capturing heat that would otherwise be wasted, WHP helps reduce energy costs for industrial prosesses, allowing users to route the power somewhere else in the facility or sell it to the grid.

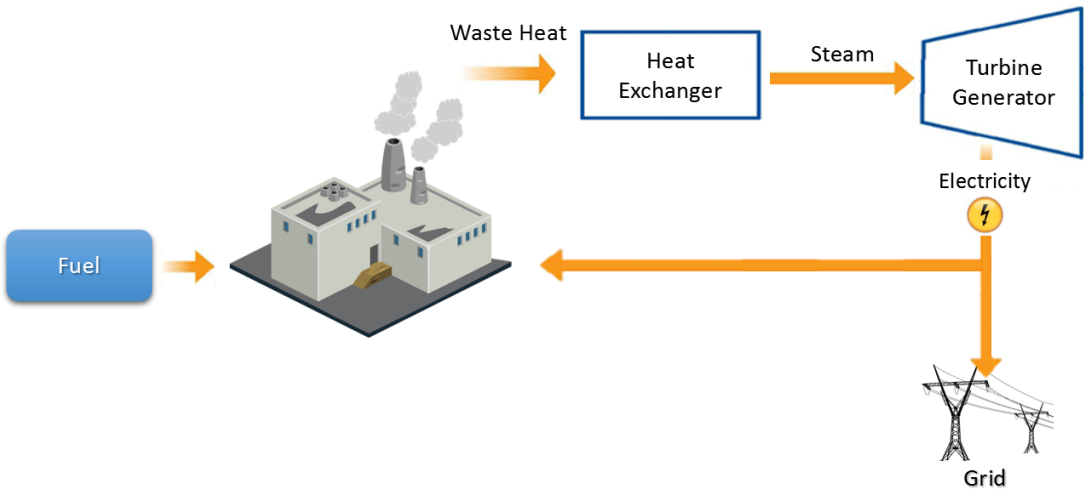

Figure Above: Example of a WHP system