

# Combined Heat + Power Technology

## Benefits

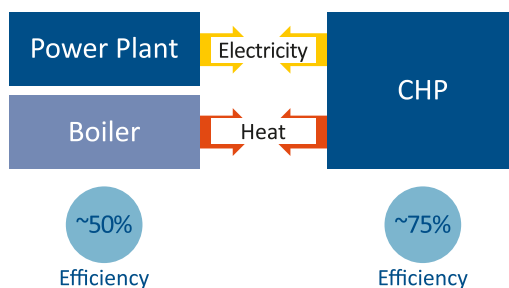
- Independence from the power grid
- 45% reduction in CO2 emissions
- 70% reduction in NOx emissions
- Decreased energy costs + operating expenses
- Improved energy resilience
- Enhanced economic competitiveness
- Eliminated dependence on volatile electricity prices

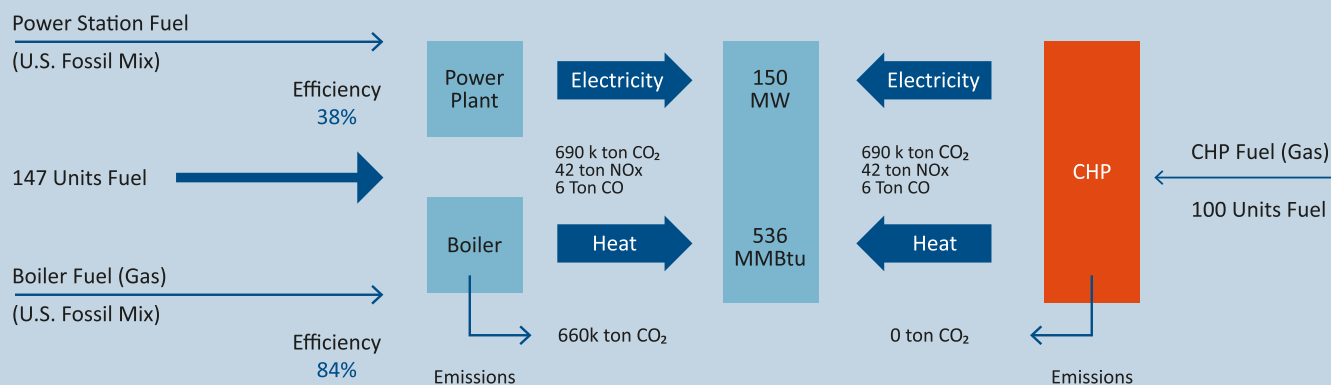
## Reliable power island technology for emissions reduction

Combined heat and power (CHP) technology is a reliable, cost-effective source for generating reduced-emissions power for the world's energy infrastructure. By converting waste heat to energy, the Audubon Companies CHP technology maximizes every drop of fuel to deliver power that improves sustainability and boosts operations.

Our gas-turbine generator is specially designed to meet the needs of energy producers at lower than grid unit cost. The system runs as a power island—independent from the power grid—and utilizes waste heat for central gathering, while remaining thermal energy is used to co-generate additional power via an organic Rankine cycle—without steam, additional fuel, combustion, or emissions. The CHP system's modular design enables seamless integration into most energy applications.

From enhanced reliability to reduced carbon emissions, CHP provides significant economic, environmental, and operational benefits. With electrical and thermal energy coming from the same fuel source, Audubon's CHP technology minimizes the primary fuel needs of processing infrastructure.





1,350 TPY CO <sub>2</sub>	<b>Total emissions</b>	690 TPY CO <sub>2</sub>	48% reduction
154 TPY NO <sub>x</sub>		42 TPY NO <sub>x</sub>	72% reduction
120 TPY CO		6 TPY CO	95% reduction

## Reduced CO<sub>2</sub> emissions

The CHP system forgoes fired heaters to deliver the same amount of energy—translating to reduced CO<sub>2</sub> emissions. Operators can expedite air quality permitting, and some projects can even avoid Title V permitting.

## Enhanced fuel efficiency

CHP technology is designed to balance energy efficiency and cost—a must in the energy transition. The table below summarizes optimal CHP configurations based on various processing capacities. Depending on your capacity level, Audubon's CHP system combined with a waste heat recovery unit (WHRU) can save up to \$500 million over 15 years in electricity and fuel costs.

	CHP + WHRU	CHP + WHRU	CHP + WHRU	Grid power + hot oil gas + fired heater
Total facility processing capacity	400 MMSCFD	800 MMSCFD	1200 MMSCFD	
Total facility electrical demand	50 MW	100 MW	150 MW	
Total facility thermal demand	179 MMBTU/hr	375 MMBTU/hr	536 MMBTU/hr	\$2.00/MMBTU
Number of turbines required	1	2	3	
Total power cost (fuel/OPEX included)	3.1 c/kWh	3.0 c/kWh	2.9 c/kWh	5.0 c/kWh
Annual electricity savings	\$8.5 MM	\$17.7 MM	\$27.4 MM	
Annual fuel savings (fired heater)	\$3.7 MM	\$7.4 MM	\$11 MM	
CAPEX payback period	3.8 yrs	3.5 yrs	3.2 yrs	