



2021

CASE STUDY:

CPV Power Plant Design Cuts Emissions, Waste and Water Use

Competitive Power Ventures' (CPV) mission of modernizing U.S. power generation means developing, constructing and operating the most efficient, economic and environmentally responsible power projects in the world. Displacing older fossil generation with new renewable and natural gas-fired facilities helps reduce environmental impacts while improving reliability.

Key environmental impacts CPV considers when developing a new power plant include rates of greenhouse gas emissions, impacts to local air and water quality, and water usage and consumption. Modern combined-cycle natural gas-fired facilities are far more efficient, using less fuel than other

types of fossil fuel generation while producing fewer emissions.

CPV's Woodbridge Energy Center (CPV Woodbridge), a natural gas-fired power generation plant in Woodbridge, NJ, came online in January 2016 after a 28-month construction period and is equipped with advanced and efficient technology. By using the best available technology, CPV Woodbridge helps provide low cost power while reducing the environmental impact of power generation. CPV Woodbridge's advanced technology allows it to quickly ramp up and down, adjusting electric output, and facilitates the integration of more intermittent renewable resources onto the grid.



The Woodbridge Energy Center

CPV Woodbridge is a state-of-the-art, combined-cycle, gas-fired plant. Below are some key facts about the facility and how CPV designed it to minimize emissions and water consumption:

- Capable of generating **725** megawatts, enough to power more than **700,000** New Jersey homes.
- Uses an advanced General Electric 7FA.05 turbine, one of the very first commercial units brought online in 2015. The plant has a peak **59.5%** efficiency rating, far higher than **33%** for coal and **30%** for simple-cycle gas plant efficiency.
- Uses advanced emissions control technology, including ammonia injection and dry low-emission burners to reduce total nitrogen oxides (NOx) emissions.
- Emits less than 2 ppm of NOx, the Lowest Achievable Emission Rate (LAER) recognized by the EPA.
- Continually monitors stack emissions by utilizing a Continuous Emissions Monitoring System certified by New Jersey Department of Environmental Protection.
- Since beginning commercial operations, CPV Woodbridge has helped society avoid an estimated 5,303,426 million tons of CO2 emissions as of June 2019 by operating at a higher efficiency than other regional power plants — the equivalent of taking more than [1.2 million passenger cars off the road](#) for a year. The plant has also avoided nearly 9 thousand tons of both SO2 and NOx.
- Located in a Brownfield Development Area (BDA), construction overseen by CPV included the cleanup and conversion of a site that had been contaminated by an abandoned chemical plant.
- Provides Middlesex County around **\$790,000** a year for the greywater it sends to CPV Woodbridge. This benefits the environment by recycling and reusing wastewater that would otherwise be discharged into the Raritan River and helps minimize demands on local freshwater supplies.

