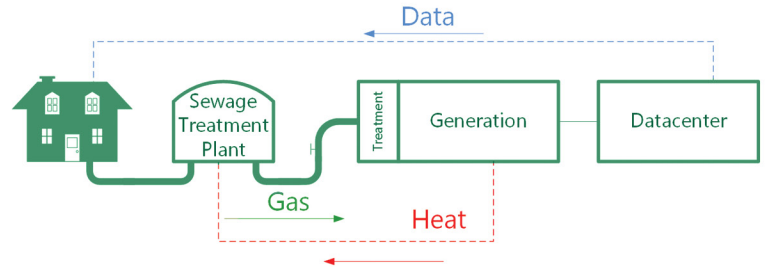# FUEL CELL PLANT USES RENEWABLE BIOGAS TO POWER CLOUD COMPUTING

Converting waste into renewable power, this fuel cell power plant operates on biogas from a wastewater treatment facility and generates zero-carbon power for a Microsoft datacenter in Cheyenne, Wyoming.

OPPORTUNITY

- **Dry Creek Water Reclamation Facility** generates methane, a greenhouse gas, as part of the wastewater treatment process.
- Venting the gas is harmful to the environment as methane is approximately 20x more hazardous than carbon dioxide; flaring the gas generates pollutants and wastes a potential fuel source.
- **Microsoft** is committed to being underlined carbon neutral globally – meaning net zero emissions from business air travel and the energy to power its datacenters, software development labs, and offices worldwide. A clean power generation process for its Wyoming datacenter supports Microsoft's goal to be carbon neutral, as well as its objective to transform the entire energy supply chain of its datacenters toward radically greater efficiency and reduced environmental impact.

SOLUTION

- **FuelCell Energy, Inc.** installed a fuel cell power plant at the wastewater treatment facility configured to utilize renewable biogas to generate 245 kilowatts (kW) of clean and zero-carbon electricity to power Microsoft's datacenter and the Dry Creek Water Reclamation facility.
- The renewable biogas from the wastewater treatment process is cleaned and used as a fuel source for the fuel cell plant.
- Via an electrochemical process, the power plant generates electricity that is virtually **absent of the pollutants** that cause smog (NOx), acid rain (SOx) or can aggravate asthma (PM[10]).
- **Siemens** worked with Microsoft and FuelCell Energy to engineer and install power monitoring equipment that interfaces with the fuel cell to meet the datacenter's power and control needs.

BENEFITS

- The fuel cells generate **continuous power** that is not dependent on the weather or time of day, supporting the around-the-clock operation of Microsoft's datacenter, even in the event of a grid outage.
- The on-site combined heat and power (CHP) application enables the power and heat generation to be sited directly where it is needed; **avoiding transmission** lines and costs.
- The excess electricity not utilized by the datacenter is supplied to the reclamation facility to reduce the facility's power costs. The usable heat is also captured and supplied to the reclamation facility to assist treatment processes and reduce natural gas consumption.

Organizations responsible for bringing the project to fruition include:
The **Cheyenne Board of Public Utilities, Cheyenne Light, Fuel and Power Company, Western Research Institute**, the **University of Wyoming**, the **Wyoming Business Council, Siemens, Cheyenne LEADS**, the economic development organization for Cheyenne and Laramie County, WY, **Microsoft** and **FuelCell Energy, Inc**.