

UTILITIES

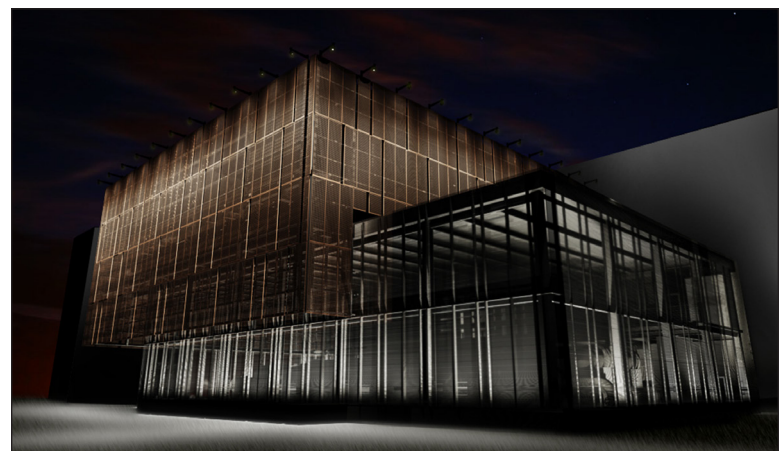
McCRACKEN POWER PLANT

McCracken Power Plant was built in three phases starting in 1918, undergoing several renovations and fuel changes throughout the years. McCracken provides steam, hot water, and chilled water for campus consumption, generating 80% of the heating requirements of the main campus. Steam produced at the plant supplies space and water heating, absorption air conditioning, autoclaves, distillation units, food service, soil sterilization at some of the greenhouses, humidification, and laboratories. The average steam load during the summer is approximately 125,000 lbs/hr. The peak winter load is 520,000 lbs/hr, and the average winter load is 350,000 lbs/hr.

Boilers McCracken Power Plant has six boilers:

#	FUEL	STEAM CAPACITY (lb/hr)	STEAM PRESSURE (psig)	TEMP °F
1	Gas, #2 Fuel Oil	150,000	200	660
3	Gas, #2 Fuel Oil	150,000	200	660
5	Gas, #2 Fuel Oil	220,000	600	750
6	Gas, #2 Fuel Oil	150,000	200	660
7	Gas, #2 Fuel Oil	150,000	200	660
8	Gas, #2 Fuel Oil	150,000	200	650

There is storage capacity for 480,000 gal (a 7-day supply) of #2 fuel oil and 30,000 gallons of diesel fuel located in a tank farm behind the plant. A 600 psig coal-fired boiler was decommissioned in 2005, replaced by a gas/oil unit in November 2014 to support the Wexner Medical Center expansion. The 200 psi boilers supply a 200 psig loop header system that operates at 185 psig/650°F and feeds 6 campus main steam lines and auxiliary plant loads. The #5 boiler supplies 600 psig steam to a pressure-reducing valve that feeds the 200 psig steam header. The 600



psig steam turbine generators were decommissioned and removed after the coal boiler shutdown, and the plant no longer operates turbines for continuous electrical generation. New gas turbine cogeneration and combined heat and power options are under consideration. The plant has standby diesel-driven electrical generators for emergency power outage situations.

Chilled Water One 1850-ton electrical centrifugal chiller, one 2000-ton electric centrifugal chiller, five 2000-ton dual compressor electric centrifugal chillers, two 775-ton electric centrifugal chillers, and 19 cooling towers have been installed to supply 36 campus buildings from the McCracken chilled water system. Thirty-inch mains supply chilled water at 42°F and return it at 58°F. The system utilizes variable speed pumping at the consumer buildings. In addition to comfort cooling, the chilled water system provides cooling for research lasers, cooling, and dehumidification for clean rooms and a heat sink for the refrigerators and freezers at The Blackwell Inn.



DISTRICT CHILLED WATER PLANTS

South Campus Central Chiller Plant The South Campus Central Chiller Plant has eight 2500-ton chillers. This plant started operation in August 2012, supplying chilled water to the Wexner Medical Center. It is the source of chilled water to 8 buildings, including the new James Cancer Center and Solove Research Institute. Connections to additional buildings are underway, and the plant will eventually supply the entire 12th Avenue corridor. The South Campus Central Chiller Plant operates automatically and is monitored from McCracken Power Plant.

East Regional Chiller Plant The East Regional Chiller Plant has five 2500-ton chillers. It began operation in May 2014 and supplies buildings in the Academic Core North and north residential district. It operates automatically and is monitored from McCracken Power Plant.

ELECTRICAL POWER SYSTEM

There are three 138 kV feeders from American Electric Power that supply the main campus through both the OSU and West Campus Substations. The OSU Substation was purchased in 2000 from Columbus Southern Power. West Campus Substation was constructed on Kenny Road in 2013 to meet the growing campus electrical demand. Peak demand on the campus grid was 107 MVA set in 2014. Approximately 25% of campus power is sourced



from wind under a purchase power agreement. From the two main substations, electrical power is distributed at 13.2 kV through underground feeders to Smith Substation (adjacent to McCracken) and to campus. Most campus buildings have two power feeders to increase reliability. This redundant radial distribution system supports construction and maintenance outages without impact to building service.

Generators There are 3 diesel generators that provide standby power to McCracken Power Plant. One 1500-kW and two 2250-kW diesel generators feed the plant loads in case of a power outage. Two 2800-kW autostart/autoload diesel generators have been installed north of McCracken Power Plant to supply emergency power to the South Campus Central Chiller Plant for critical life safety systems at the Wexner Medical Center.

