PROJECT PROFILE

MID-ATLANTIC CHP TECHNICAL ASSISTANCE PARTNERSHIPS

Capitol Power Plant

7.5 MW CHP System

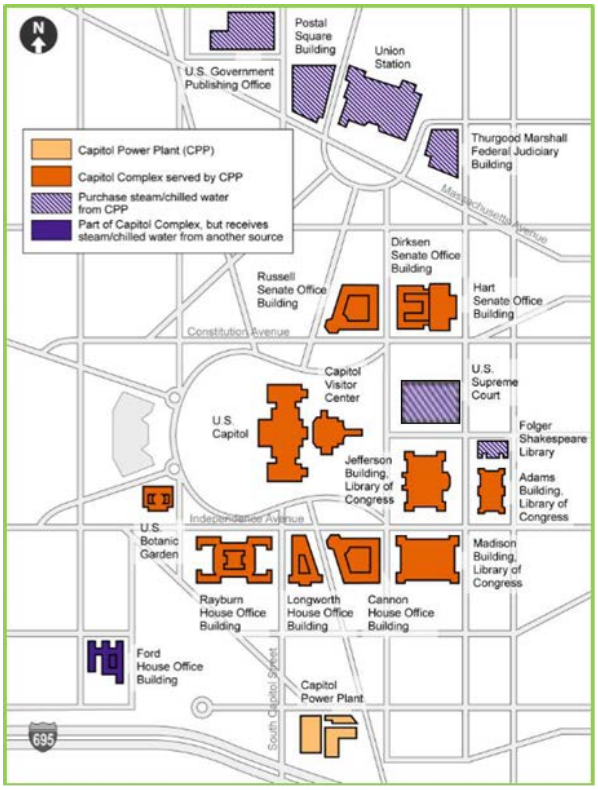
Quick Facts

LOCATION: Washington, D.C.
MARKET SECTOR: District Energy & Federal Facility
FACILITY SIZE: 7.5 megawatts (MW) Combustion Turbine
FACILITY PEAK LOAD: 7.5 MW
EQUIPMENT: Combustion Turbine
FUEL: Natural Gas (w/ Fuel Oil Backup)
USE OF THERMAL ENERGY: Power (backpressure steam turbine), Heating, Domestic Hot Water and Reheat
CHP TOTAL EFFICIENCY: 75%
ENVIRONMENTAL BENEFITS: Reduce greenhouse gases and air pollutants
TOTAL PROJECT COST: $57 million
YEARLY ENERGY SAVINGS: $3.5 million
PAYBACK: 20 years
CHP IN OPERATION SINCE: 2018

Site Description

Located in southeast D.C., the Architect of the Capitol, Capitol Power Plant (CPP) was built in 1910 under the terms of an act of Congress passed on April 28, 1904. Originally constructed to supply steam for heating and electricity to the U.S. Capitol, the CPP added a refrigeration plant to provide chilled water for air conditioning in the 1930s and stopped producing electricity altogether in 1951. The addition of the Rayburn House Office Building, the House and Senate subway systems, the U.S. Capitol's East Front extension, and several other new projects in the late 1950s, 1960s and 1970s, necessitated several major upgrades to the plant's equipment and infrastructure, including the addition of the West Refrigeration Plant and the administration building.

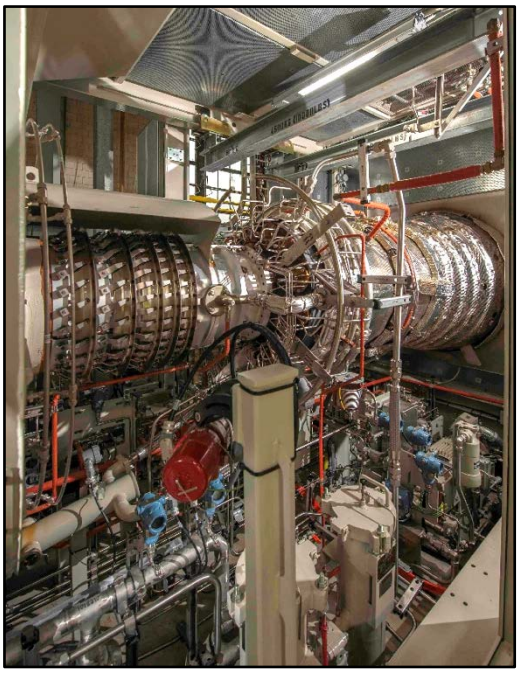
Today, the CPP produces steam and chilled water to heat and cool the 17 million square feet of building space of the 23 facilities in the Capitol complex using nine electric-driven chillers, seven steam boilers and one new combined heat and power (CHP) system capable of burning natural gas with fuel oil as back-up.



Reasons for CHP

CHP is a reliable, cost-effective, energy-efficient and environmentally friendly solution. To ensure the Capitol Power Plant is able to meet steam demand at its peak, and that it upholds its mission to provide heat to congressional buildings 365 days a year, 24 hours a day, the Architect of the Capitol is using CHP to address the serious and urgent need to replace aging boilers.

CHP Equipment, Configuration and Operation



The 7.5 MW Combustion Turbine Prime Mover
PHOTO COURTESY OF THE ARCHITECT OF THE CAPITOL

The CHP project includes one (1) combustion turbine (CT) rated at 7.5 megawatts (MW) and one (1) Heat Recovery Steam Generation (HRSG) units rated at approximately 100,000 lb/hr.

> ***"Our mission is continuous service and to always be here for the United States Congress to do their job. We're actually very rarely seen, but what we do is experienced by everyone on the Hill. The CHP plant is taking our energy production into a new century."***
>
> **Christopher Potter**
> **Director, Utilities and Power Plant Operations**

Lessons to Share

- Utilize best practices to emphasize the importance of safety throughout the team on a frequent and recurring basis.
- Develop and implement a formal risk assessment and mitigation strategy involving all key stake holders.
- Establish the protocols for an issue resolution process between the Owner and Contractor early in the project.
- Ensure that all activities associated with major equipment deliveries (crane plan, schedule, traffic pattern plans, etc.) are submitted and reviewed with sufficient time to prepare for the delivery.
- Maintaining good communication with the contractor, especially in regards to schedule and mitigation strategies, is critical to a well-executed project.

For More Information

U.S. DOE MIDATLANTIC CHP TECHNICAL ASSISTANCE PARTNERSHIP (CHP TAP)
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