



Montclair State University Energy Master Planning CCHP Plant Design

PROJECT INFORMATION

CONCORD DIVISION
Power & Infrastructure

PROJECT LOCATION
Montclair, NJ

MARKET
Higher Education

SERVICES
Energy Master Planning

CONSTRUCTION COST
\$84 Million

REFERENCES

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PROJECT SUMMARY

MSU selected Concord to develop an energy/infrastructure master plan on the heels of a new facility master plan. This project is a model of utilizing public/private partnerships to turn the opportunity for energy efficiency and environmental stewardship into reality.

PROJECT HIGHLIGHTS

- Performed energy evaluation of all buildings' heating, air conditioning and lighting systems on campus. This included detailed energy audits for over 1.4 million SF. The study provided a comprehensive assessment of all deficiencies, upgrades and recommendations.
- Economic evaluations were analyzed to provide over \$20 million in upgrades and \$2 million in annual savings. In order to properly manage its growth, improve energy efficiency, and increase reliability the University decided to replace its aging Solar Centaur based combined heat and power plant and steam distribution system.
- Concord designed new cogeneration plant and distribution system sized to meet the growing energy needs of the University.
- Plant consists of a dual fuel 5.6 MW Solar Taurus 60 combustion gas turbine, with a supplementary fired natural gas heat recovery steam generator plus a dual fuel boiler.
- The turbine has over 30% more capacity and produces less than 50% of the emissions than the existing unit. In addition, the new unit is 20% more efficient and increases the combined heat and power system efficiency by over 40%.
- The new central plant also includes a central cooling plant. The initial installation includes a hybrid system comprising a 2000-ton steam turbine driven chiller and a 2000-ton electric centrifugal chiller. The plant was designed for an additional 2500 tons of capacity to be added when the campus cooling demand increases as more buildings are added to the central chilled water loop. Not only is this new central chilled water technology over 25% more efficient than the current local building chillers. The system is also able to help fully utilize the waste heat from the combined heat and power system.
- New chilled water distribution system that connects the major buildings of the central campus core to the new chilled water distribution system. The new steam system design is a 100% replacement of the existing steam system.
- The goal of this project was to enter into an agreement with a third-party private developer to lease the land & undertake the finance, construction, maintenance, and operation of the CCHP Plant as prescribed by the New Jersey Economic Stimulus Act.