



Case Study

Miami-Dade County Miami, FL



PROJECT SCOPE: Miami-Dade County Cooling Loop Interconnection Energy Savings Performance Contract

Challenge: Miami-Dade County is the 8th largest county in the US with 2.4 million citizens. The County owns two separate district cooling, or chilled water, loops in downtown Miami. One loop was aged and no longer capable of meeting the growing cooling needs of the downtown area; the other was new and under-utilized. The challenge was to expand the County's new chilled water plant operated by ConEdison Solutions (CES) and interconnect it, via underground piping, with the older chilled water plant. The objective was to create a more robust, reliable and energy-efficient chilled water system serving a variety of commercial and institutional customers.

Solution: ConEdison Solutions designed and implemented a cooling plant expansion and an interconnection of the two separate district cooling loops. The new combined plant is much more energy-efficient and has a capacity of 16,200 tons of cooling capacity and 51,820 ton-hours of thermal storage capacity. ConEdison Solutions operates and maintains the plant for the County. The project was undertaken using an energy savings performance contract.

PROJECT HIGHLIGHTS

Environmental Benefits

400 tons of harmful greenhouse gas emissions reduced annually

Equivalent to:

- Conserving 765.7 barrels of oil each year
- Preserving 2.7 acres of forest from deforestation

Capital Costs

\$20,314,700

Annual Savings

\$1,551,646

Schedule Compliance

Completed on time

Budget Compliance

Completed within budget

Start Date:
February 2011

End Date:
October 2012

Loops connect as shown by red line

Modernize Central Support Loop

Expand North Plant Loop



"ConEdison Solutions brought to us a solution that allowed us to take a problem and turn it into progress."

Jerry S. Hall
Miami-Dade General Services Administration
Director of Facilities and Utility Management
Miami, FL



Case Study Background



In November 2008, the Miami-Dade County (County) amended its long-established Service Agreement with CES to authorize the performance of additional services by CES, including the management, oversight and a partial expansion of the newer cooling plant to meet the increasing load of its customers.

In addition to the newer loop, the County owns and operates a second, older, chilled water loop that currently serves eleven County buildings. The County issued a solicitation for the award of a project consisting of the interconnection of the two loops in order to meet an impending growth in chilled water demand on the older loop that will be created by the addition of the Children's Courthouse and two office towers at the Overtown Metrorail Station.

Under the Service Agreement with the County government, CES manages, maintains, administers, and provides engineering support for the newer plant and loop. This loop provides district cooling services to two commercial customers: the American Airlines arena (where the Miami Heat play) and the Terremark building, an internet server hub connecting North America with Central and South America. The County's contracts with its two customers generate the revenues necessary to fund operations, service the County's debt payments for the new loop, and cover the modifications required to expand the plant and eventually connect it to the County's downtown facilities.

CES was selected for this project and provided the design, engineering, construction management, implementation, measurement and verification, and maintenance services, as well as assisted the County in arranging third-party financing for the project. This was an extremely challenging project that was successfully implemented.



Installation of ice cells



A few of the challenges met were:

- Adding 50% capacity to the plant serving the retail customers without disruption of service. In fact, while the Miami Heat were competing for the 2012 NBA championship, ConEdison Solutions was constructing the project.
- Engineering a system design that would accommodate the needs of two cooling loops serving buildings requiring different cooling criteria.
- Interconnecting the two loops 25 feet below the surface of the roadway. Micro-tunneling had to be employed to meet the project requirements without interfering with the existing utilities and traffic flow, and while dealing with the water table under Miami.

This project increased cooling capacity and delivery, while reducing the energy consumed. In fact, the district system cools 16% more load while actually saving 1% in overall energy annually.

"This project allows us to meet our increased capacity requirements while reducing our energy consumption, which is kind of amazing, and actually funding significantly the project with the savings that we derived from the reduced energy consumption."

George Burgess - Former County Manager
Miami-Dade County, Miami, FL