



CHP
TECHNICAL ASSISTANCE
PARTNERSHIPS

Dublin Community Recreational Center

248 kW CHP Unit

Project Overview

Opened in 1996 in Dublin, Ohio, the Dublin Community Recreation Center (DCRC) offers classes, provides athletic equipment, hosts sporting events, and showcases local events for the community of 43,000. As of 2015, the 110,000 square-foot complex is heated and powered by a combined heat and power (CHP) system. The 248 kilowatt (kW) system installed at the DCRC will generate over half of the



Dublin Community Recreation Center views
with the star locating the CHP unit
PHOTO COURTESY OF IGS GENERATION

center's electricity as well as the thermal energy to heat parts of the building, the three on-site pools, and to provide domestic hot water. The project began as part of a sustainability initiative by the city of Dublin. This initiative includes plans to reduce per capita energy consumption, promote alternative and renewable fuels to increase affordability and resiliency, protect natural resources to mitigate eco-system vulnerabilities, increase municipal energy efficiency, and to create sustainable neighborhoods to improve residents' quality of life.

Quick Facts

LOCATION: Dublin, Ohio
MARKET SECTOR: Recreational Facilities
FACILITY SIZE: 110,000 square feet
GENERATING CAPACITY: 248 kW
THERMAL LOAD: 1.5 MMBTU per hour
SYSTEM EFFICIENCY: 90%
EQUIPMENT: (1) MTU Onsite Energy 12V400 GS reciprocating engine
FUEL: Natural Gas
IMPLEMENTATION COST: At no cost to the facility as the result of a power purchase agreement
PROJECTED SAVINGS: \$385,000 in cost savings over 15 years
THERMAL APPLICATION: Heating for three swimming pools, domestic hot water,

CHP System Overview

In 2014 the City of Dublin began working with local firms, IGS Generation and Hull and Associates, to identify CHP as a solution that could financially benefit the DCRC, improve the environment, and provide needed energy resiliency to the community. The development team worked with W.W. Williams to design and install 248 kW CHP system utilizing a MTU 12V400 GS reciprocating engine from MTU Onsite Energy, a division of the Rolls Royce Company. The unit is designed to operate 24/7 for an estimated 8,232 operational hours annually and produce approximately 60% of the building's power needs (2,000,000 kWh). The available waste heat from the engine provides 1.5 Million BTU (MMBtu) of thermal energy to be used for heating for the site's three pools, space heating, and,



The CHP unit
PHOTO COURTESY OF IGS GENERATION

through a hot water heat exchanger, provide domestic hot water. This captured energy saves the facility from having to use primary-fueled boilers, which helps reduce operational costs. Additionally, the DCRC saved an estimated \$80,000 in first-cost for a replacement boiler.

Energy Resiliency

By incorporating features such as islanding mode and blackstart capability, the CHP system is able to provide energy resiliency and reliability to the Community Center and to the City of Dublin as a whole, with the ability to operate independently of the electric grid. Should the local electric utility, AEP Ohio, go offline, the CHP system is able to disconnect from the electric grid and function as an emergency generator, providing power and thermal energy for the Community Center. This resiliency feature directly benefits the local community as the DCRC can now become a shelter of refuge during an emergency situation when grid power is unavailable. As an added benefit, the new CHP system saved the DCRC approximately \$75,000 by reducing the need for an additional back-up electric generator.

Financing Sustainability

To facilitate the development of this project, the CHP system was provided and installed at no cost to the City of Dublin. In exchange, the city entered into a 15 year power purchase agreement (PPA) with project developer, Dublin Advanced Energy Partners (DAEP). Formed by two local firms, IGS Energy and Hull and Associates, DAEP used the DCRC CHP project as a demonstration site to expand this funding concept. Under the 15 year PPA the DCRC purchases the electricity and thermal energy generated by the CHP system and also purchases the natural gas consumed by the MTU On-Site Energy engine. During the first five years of the agreement, the electric rate is set at \$0.0804/kWh. Years 6-15 of the agreement would include an annual escalating increase of 3%. The contract assumes a base CHP operation of 8,232 hours. Should the equipment not operate for the full 8,232 hours anticipated or at the capacity estimated, the DAEP would issue a capacity adjustment against the affected year's invoice at the end of the year. At the conclusion of the 15-year lease, the City has the option to purchase the system, extend the lease or

request that the equipment be removed at the DAEP's expense. During this time, the DAEP is responsible for all operation, and maintenance costs for the system.

According to Brian Ashford, Director of Facilities Management for the city of Dublin, the CHP system is predicted to save the DCRC \$260,000 on their utility bills by protecting them against rising energy costs over the next 15 years. When avoided equipment costs are included, this venture is projected to save DCRC over \$385,000 over the full 15-year term of the contract.

“We are very happy with the CHP system. It allows the City of Dublin to save money while providing increased energy resiliency and reliability. And all at no initial cost to the city or taxpayers”
-Brian Ashford
Director of Facilities Management
City of Dublin

Due to the CHP system's high fuel use efficiency, its capacity to reduce greenhouse gases, its energy cost savings, and its ability to provide energy resiliency, this system is recognized as a key contributor in meeting the goals outlined in Dublin's sustainability framework. The city estimates that the through the CHP system alone, over 900 tons of CO₂ equivalent has been removed from the air annually since 2015.

For More Information

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