

2023 ENERGIZING EFFICIENCY CASE STUDY

Fairfax County Energy Retrofits: Cub Run & South Run Recreation Centers

The **Fairfax County Park Authority** aims to inspire a passion for parks, healthy lifestyles, and stewardship by providing a sustainable, dynamic, and inclusive park system to support a thriving community. Fairfax County's Recreation Centers are an essential part of this mission – including Cub Run and South Run. These two locations are of differing size and age, but the pools, fitness rooms, indoor gathering spaces, and outdoor activity facilities are an invaluable resource to the residents of the county, making them prime candidates for energy efficiency improvements and cost savings.



In 2020, the County's **Office of Environmental & Energy Coordination** engaged energy service company **CMTA** to conduct **Technical Energy Audits** at multiple locations. These audits include an inspection of the building envelope and roof, as well as the air distribution, heating, cooling, and lighting equipment. As a result, multiple **energy conservation measures (ECMs) were identified and prioritized** by maximizing energy savings and cost effectiveness, while minimizing disruption to the centers' day-to-day operations.

THE CHALLENGE

Natatoriums, or buildings that house indoor pools, are intrinsically energy intensive due to pool water heat and evaporation losses along with the associated need to treat indoor air, making them the focus of the projects at both Rec Centers. Before the project, Cub Run Rec Center had an EUI of 502 kBtu/sf/year with an estimated 1,062 kBtu/sf/year for the natatorium. Similarly, South Run Rec Center had a pre-implementation EUI of 327 kBtu/sf/year, with 669 kBtu/sf/year at the natatorium.



THE SOLUTION

The Fairfax County Park Authority also worked with the **Washington Gas Business Energy Solutions: Virginia Program** to apply for incentives to replace their old boilers. Washington Gas offers financial incentives to help customers in Virginia **offset the upfront cost** of purchasing

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and installing energy efficient gas equipment, such as boilers, water heaters, furnaces, programmable thermostats, and commercial kitchen equipment.

Four **high-efficiency large boilers**, exceeding a 94% thermal efficiency rate and projected to save an estimated 25,000 therms per year, were installed at the Cub Run recreational facility, earning the Park Authority **\$27,000 in financial incentives**.



Additionally, two **high-efficiency large boilers** exceeding a 94% thermal efficiency rate, projected to save an estimated 20,000 per year, were installed at the South Run recreational facility, earning a **financial incentive of \$15,000**. At Cub Run, the **pool heat recovery system was upgraded** to capture waste heat and utilize it to heat water or the facility, **hot water boilers were replaced** with new condensing technology, and the **building automation system was optimized** to save energy and reduce peak demand. At South Run, improvements were made to the pool **dehumidification systems** that had reached the end of their useful life, **air distribution systems were converted from constant volume to variable air volume**, and a new **Direct Digital Controls system was implemented** to integrate new and existing equipment and optimize the building schedule.

THE RESULTS

In the six months since the project's completion in November 2022, **Cub Run has realized over 50% savings** (8,000,000 kBtu reduction in energy consumption) and **South Run is at 45% savings** (3,295,000 kBtu reduction) compared to the same period in the previous year. Cub Run and South Run Rec Centers are **on track to exceed the guaranteed energy reductions** of 30% and 15% and achieve energy use intensities of 355.9 and 278.3 respectively.

These improvements **save not only energy and money but also ensure a comfortable environment** for Fairfax County residents in any activities they choose to take part in. Given the successes realized at these locations, similar projects have since started at other county Rec Centers.

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