Madison County, New York

Government

Bundled Energy Systems

Energy Performance Contract

THE CHALLENGE

Madison County, located in Central New York, partnered with SmartWatt to complete a bundled energy systems optimization project throughout its campus in Wampsville, NY. The mix of different building types included a jail, a maintenance garage, a courthouse and several county office buildings. The primary reasons the county was interested in completing this project, included:

- **Maintenance Burden:** The jail's boilers, hot water heaters, and water source heat pumps were energy intensive, inefficient and past their recommended lifespan. Because of this, the county was investing a significant amount of time and capital to maintain and operate the antiquated equipment.

- **Occupant Comfort:** The buildings throughout the campus included building envelope issues, allowing for unconditioned outside air to enter the building in areas surrounding entrance doors and windows. This resulted in uneven temperatures, staff discomfort, and unnecessary overuse of HVAC equipment.

Additionally, the large number of windows throughout the county office, veterans and social services buildings allowed excessive glare and heat from the sunlight, and privacy concerns for offices located on the ground floor of the building.

- **Sustainability:** The County had recently installed a solar PV system and was seeking a solution that would help them reduce their overall energy consumption. Coupling the energy systems optimization project with the solar project helped the county achieve its goal of net zero status and reduce its overall environmental impact.

"It has been a pleasure working with SmartWatt. The project was run very smoothly and efficiently, and the results have been phenomenal."

- Kevin Loveless, Building Maintenance Supervisor

THE SOLUTION

To reduce maintenance, enhance occupant comfort and achieve sustainability goals, the county implemented a bundled energy systems optimization project. The project was funded through an energy performance contract, requiring no up-front capital and the ability to use guaranteed energy savings to pay for the project.

- **Mechanical Systems:** The failing and outdated boilers, domestic hot water heaters and water source heat pumps were replaced with new efficient equipment that require less energy to operate and maintain. Additionally, the systems were equipped with open-protocol controls and tied back to the county's existing energy management system, allowing for more granular control and scheduling of the systems to achieve deeper energy savings.

- **Building Envelope:** All entrance doors, windows, rooftop ventilators, and roof/wall joints were properly sealed and caulked to increase thermal resistance of the building envelope and enhance occupant comfort.

- **Window Tinting:** Window tinting film was added to windows to three buildings, resulting in reduced heat during summer months, reflection of radiant heat into the building during winter months, and enhanced privacy for ground level offices, while still allowing staff to keep blinds open and have exposure to sunlight.

- **Lighting Systems:** The existing fluorescent and metal halide fixtures were replaced with high efficiency LED fixtures throughout interior and exterior areas, reducing lighting-related energy consumption, while providing a higher quality of light and increased security at night.

- **Energy Management System:** The County's existing energy management system was optimized to include building startup and shutdown scheduling based on building temperatures, actual and expected occupancy, and temperature and ventilation set points.

Other upgrades included replacing existing transformers, and installing electronically commutated motors in walk-in coolers and freezers. All equipment installed included a five year warranty, which will result in zero maintenance resources from the county during this period.

THE IMPACT

This energy systems optimization project resulted in reduced maintenance, enhanced occupant comfort, and a positive impact on the local community.

Financial Impact

$0 / County contribution

Total project cost: **$2.95M**

Community Impact

1,082 Tons / CO_2 reduction

By removing this quantity of CO_2 from the atmosphere, this project will have the same effect on the local community as:

Powering **104 homes** for one year

Planting **929 acres** of trees