BACKGROUNDER

About the Waste Management & Education Centre building and its features

Oxford County prides itself on being a leader in sustainable growth. In 2015, the County adopted the Future Oxford Community Sustainability Plan and committed to achieving 100% renewable energy and zero waste. The new Waste Management & Education Centre was constructed with these goals in mind.

The building was designed with the goal of creating a cutting edge, net-zero energy facility to replace the former farmhouse office. The new, fully-electric building includes a solar photovoltaic system that generates as much, or more, electricity than the building consumes on a yearly basis. By incorporating a solar energy system onsite, the annual electrical operating cost for this building is reduced to the fixed charges to remain connected to the electrical grid.

Building performance is designed to meet the 71.5 kWh/m^2 requirement of the New Building Institute's Zero Net Energy criteria. To take things one step further, it was decided that the entire site including not just the newly built facility, but the landfill itself would become a net zero electricity consumer. Ongoing building performance monitoring will make sure we continue to optimize performance, and will provide valuable energy performance data that will be used to further inform future building designs.

The entire solar photovoltaic system constructed has a designed size of 120 kilowatts, with 24 kilowatts being required to net-zero the building's energy use.

In addition to utilizing solar energy to achieve net zero, the building itself is designed with energy efficiency in mind. The visually impactful rammed earth walls are 22 inches thick and contain 8 inches of insulation with an R-value of 55. In addition to the heavily insulated walls, there is significant insulation below the floor and in the roof to minimize the amount of electric heating and cooling required.

The building also features triple-pane windows designed to reduce heat loss in the winter, and heat gain in the summer, while allowing natural daylight to reduce the amount of electricity required to power lighting. The building uses highly efficient HVAC equipment for heating and cooling, including two Energy Recovery Ventilators to recover heat energy from the building's exhaust air and is used to heat the incoming fresh air supply from outside.

The Oxford County Waste Management & Education Centre is a real-world example of how buildings can be sustainably constructed and operated in order to minimize negative environmental impacts.