Estimating the Required Global Warming Offsets to Achieve a Carbon Neutral Synthetic Field Turf System Installation

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In June 2006 Upper Canada College (UCC), Toronto took the initiative to offset the greenhouse gas (GHG) emissions related to the life cycle of the artificial turf field installed on their campus. Athena Institute provided UCC with an estimate of the GHGs emitted during the life cycle of the synthetic turf system as opposed to a natural grass surface. A life cycle approach (from raw material acquisition through manufacturing, transportation, use and maintenance, and end-of-life disposal) was followed to determine the boundaries and elements attributable to each of the synthetic and baseline natural turf systems. Comparison between baseline and project systems is made on the basis of the same reference unit, a 9,000-m2 field over a 10-year period. Total GHG emissions factor of the baseline and project are estimated respectively to (-16.9) and (55.6) tonnes CO2e. GHG emissions offset is estimated to be (-72.6) tonnes CO2e. The tree planting offset requirements to achieve a 10-year carbon neutral synthetic turf installation is estimated to be 1861 trees. The sensitivity analysis of the most significant issues identified is determined as per ISO/FDIS 14044: 2006. At the end, the overall uncertainty was estimated and reported for each element and the final result.