

Executive Summary

The objective of this report is to review the possible implementation of a hybrid ventilation system focused around the buildings courtyard.

The first option was to use automated windows between the work spaces and the courtyard to allow additional outdoor air into the office building. The idea was that the temperate climate of Lancaster, Pa would provide some chances to reduce energy consumption by using outdoor air.

The second option was more of an addition to the first. There already exists a water feature in the courtyard. The second option was to use water feature (likely a different one) as an air cleaner to normalize the air quality of the courtyard. To aid the water feature grey water would be collected and stored in a subgrade cistern until it achieved ground temperature. Once it reaches ground temperature the water would be pumped to the water feature.

Ina addition to mechanical changes the effects of the system on the electrical system and construction costs were considered. It was found the system could be easily implemented into the buildings electrical systems. However, the construction costs reached an estimated \$261,479.

The cost of the construction of the hybrid system, in the proposed fashion proved to be too high. The generally accepted payback period range of 3 to 5 five years was far exceeded.

The final recommendation of this report was to not implement the proposed system, but to consider a less automated system that relies on the occupants and operable windows.