

Attachment C: **Proposed Work Plan for Potential GHG Reduction Measure**

Strategy Name: Total energy recovery applied to the air exhausted from all commercial and institutional buildings

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Summary: Current ASHRAE Standard 90.1 and additional standards under review require total energy recovery of exhaust air for many buildings. Little enforcement of this requirement exists so most buildings do not follow these guidelines. Essentially all “green buildings” do.

Other Involved Agencies: The Pennsylvania State code enforcement agencies could be involved in enforcement action. In addition, local code officials could be better trained regarding the intent of the 90.1 standard as well as the significant impact on the environment.

Possible New Measure(s): The State should require all new buildings to incorporate total energy recovery with at least a 70% efficiency where more than 2,000 cubic feet per minute of outdoor air is introduced to a building. Based on ASHRAE standards, this would involve buildings that are larger than approximately 8,500 square feet.

Implementing this requirement would not only benefit the environment but be profitable for building owners since the payback for this proven technology will often be less than one year.

This technology has been required on all buildings in Scandinavia for the past 20 years as well as much of Europe, in part, for the recognized contribution to global carbon emissions. We should learn from their example.

Potential GHG Reduction: Estimated 2 million tons/year for the US
A 2000 report completed for DOE as part of an ORNL sponsored research project estimated that the incorporation of desiccant based recovery systems could reduce 32×10^{12} btus annually in the US just looking at new buildings being constructed (not accounting for potential retrofits).

Outdoor air delivered to buildings requires a very high energy use if not done energy efficiently and represents a very high percentage of all energy used in buildings. As a result, it also has a major impact on the environment.

As an example, a new building being construction on the Carnegie Mellon Campus – the Gates Computer Science Institute – incorporates this technology. As a result, an estimated 400 tons of carbon emissions will be reduced over a conventional design without the recovery. Magee Research Center down the street from Carnegie Mellon also employs the technology and reduces carbon emissions by an estimated 1,200 tons annually.

Economic Cost: The beauty of this action is that there is no cost to the State other than the initiation of the requirement and the training of the local code officials. This action would simply follow practices suggested/required by the Green Building Council, but help with the implementation and acceptance in a more timely manner.

Implementation Steps: Careful review of current and pending ASHRAE and Green Building proposed energy standards. For a working group to determine lower airflow range for determination (recommended 2,000 cubic feet of outdoor air per minute). Initiate the change in code language requiring the technology in all new buildings.

Potential Overlap:
Current building codes and standards.