Solar Ventilation Pre-heat for Turkey Barns

PROJECT GOALS
Design, construction and demonstration of a solar transpired air heating system at a turkey production facility to create greater awareness of this appropriate technology and the role it can play in stabilizing energy costs for a substantial sector of the Minnesota agricultural landscape.

COMMUNITY IMPACTS
The project will introduce the technological solution to at least 1,000 people within the poultry sector and related stakeholders in the first year of on-site operation. Greater awareness of the role that solar can play in stabilizing energy costs for this Minnesota agricultural sector is a community benefit.

ENVIRONMENTAL IMPACTS
Environmentally, the project will demonstrate the potential for dramatic greenhouse gas emissions reduction through the great deployment of transpired air. Poultry production facilities are often far from the natural gas grid. As a result, such facilities are dependent on more expensive and energy intensive heating fuels such as propane. The proposed system could reduce upwards of 7 tons of CO2 generation annually. However, as the emerging application and associated technology becomes more broadly embraced, the annual reduction in greenhouse gas emissions in the long-term could easily be on the order of 1,000+ times the project specific carbon reduction. Limiting dependence on delivered fuels such as propane will have significant, long-term environmental benefits for the region.

ECONOMIC IMPACTS
The project has the potential benefit of increasing both food and energy security. If turkey producers have the ability to better withstand the oscillating cost of delivered heating fuels, the region will socially benefit in the form of increased regional food production and regional energy production.

When Central Minnesota producers can reduce long term operating costs, the regional economy benefits, and there are positive economic impacts. When agricultural producers can harvest better margins, more money remains in the regional economy and ripples throughout. This project has the potential to displace up to $5,000 in annual propane costs at one site. Savings will increase annually over time as the cost of delivered fuels like propane escalates.

COMMUNICATION AND REACH
Project partners are the MN Project, CERTs, UMN Extension, the MN Turkey Grower’s Association, and Rural Renewable Energy Alliance (RREAL).

The project will build healthy and sustainable communities by increasing food and energy security, reducing greenhouse gas emissions, enhancing economic opportunities through the stabilization of energy costs and by building broader awareness of technological solutions to the variable cost of energy.

CRSDP INVESTMENT
$30,000