

Energy Conservation Opportunities in Poultry Production in Arkansas

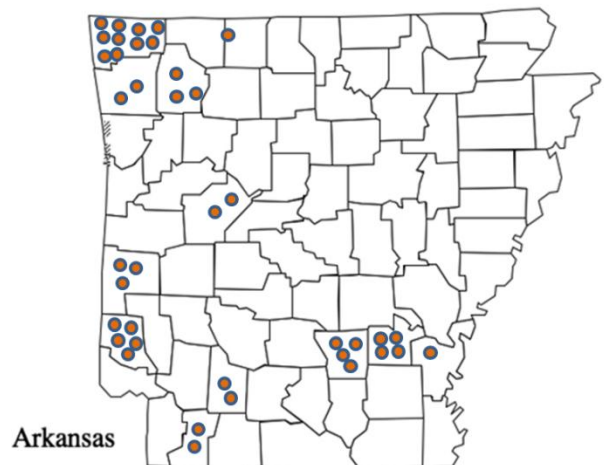
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- Arkansas is the nation's second largest chicken producer with about 3.93 billion pounds of meat or 5.3 billion pounds live bird weight in 2011 (USDA).
- A large portion of production costs (almost 60% of a typical contract broiler grower's variable production costs) is for heating, lighting and running small motors. Typical chicken houses in Arkansas use propane or natural gas for heating; a leaky house or poorly insulated ceilings and walls will use more fuel due to air infiltration during cold days.
- The rate of energy cost has been continually increasing (approximately four times more now since year 2000), thus, remains a concern to poultry growers.
- Energy utilization for heating and lighting poultry houses impacts profitability and stability of poultry business in the state.

Farm Energy Audit

Poultry farm energy audit identifies building envelop deficiencies and equipment performance in chicken houses that cause high energy consumption. An energy audit report presents energy conservation opportunity (ECO) projects and the potential energy savings if such ECOs are implemented. Such report is provided to the grower for consideration for adoption of the ECO recommendations in retrofitting the chicken houses. Energy audit performed on 40 poultry farms shown on the right (or a total of 225 houses) in Arkansas showed a potential average energy savings of approximately 28% for fuel and electricity usage. The potential energy savings for the combined 40 farms audited is equivalent to 27,652 million Btu; or approximately 226,231 gal of propane and 2.4 million kWh of electricity. Figure 1



shows the 40 farms audited indicating the annual average fuel and electricity usage (million Btu) and the potential energy savings. The potential energy savings from poultry operations can be enormous for the

entire state. The additional benefit of some ECO projects includes improved productivity and increased profit for the growers.

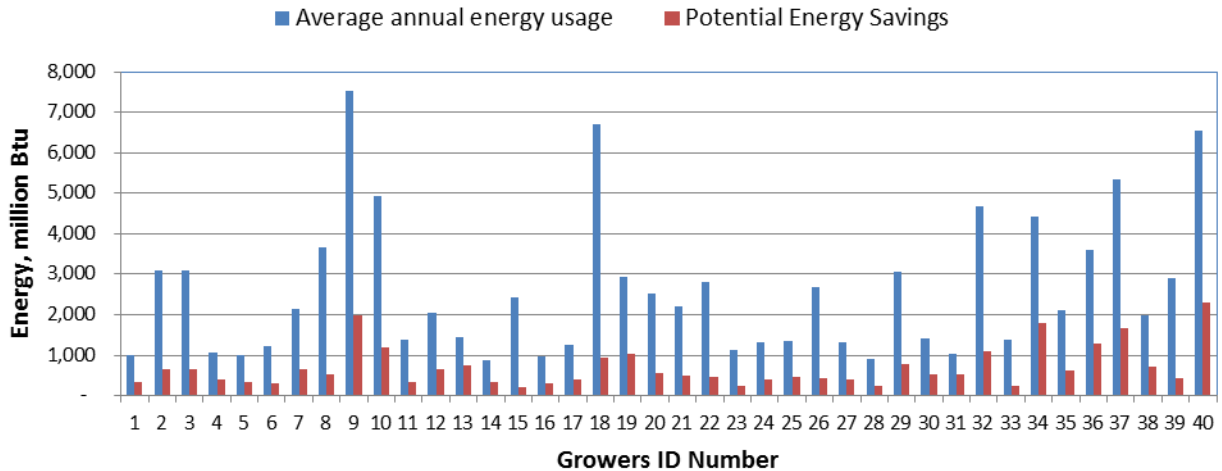


Figure 1. Farm energy audits on 40 chicken farms in Arkansas indicated a potential energy savings of 27,652 million Btu if energy conservation opportunities recommended are adapted in retrofitting chicken houses using energy efficient lighting, heating, and improving house tightness and insulation.

Growers saves energy with audit recommendations adaption

A case in focus: A grower in Lincoln County, Arkansas

Year farm built: 1996	House dimension: 40 ft. wide x 500 ft. long
Number of houses: 4	
Annual chicken production: 544,400 bird (3.3 Million pounds live bird weight)	
Annual propane usage: 7,643 gallons (cost: \$12,316)	
Annual electricity usage: 84,329 kWh (cost: \$7,676)	

Renovation—adaption of recommended energy conservation opportunities

- Energy efficient light bulbs, LED
- Air circulation fans underneath the ceilings to improve heating efficiency
- Infiltration/conduction improvement using roll up seal doors to replace double sliding doors
- Radiant brooders

Benefits:

- Savings on propane: 1,836 gallons (\$2,956)/year; or 24% of annual gas usage
- Savings on electricity: 24,812 kWh (\$2,258)/year; or 29% of annual electricity usage

