Enhancing Profitability and Sustainability through Grow-Out Energy Efficiency

Sample Report

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Summary

The profitability of poultry grow-out operations can be significantly improved through minimizing energy inputs. Energy costs directly affect the bottom line of poultry integrators, particularly when they supply heating fuel to contract growers; however, it is not always obvious how to address or prioritize projects to reduce energy costs. As the leading agricultural energy efficiency consulting firm in the United States, EnSave conducts hundreds of energy audits for poultry operations throughout the United Sates annually. We have developed this report based on our poultry audit database to illustrate how a poultry integrator can increase profitability and support its sustainability initiative through benchmarking production efficiency and targeting energy efficiency improvements at grow-out facilities.

EnSave prepared a small sample dataset of energy audits completed for a major integrator over the past several years (Table 1). The energy audits in this dataset are from 19 broiler operations. All operations received energy audits from EnSave between 2012 and 2015.

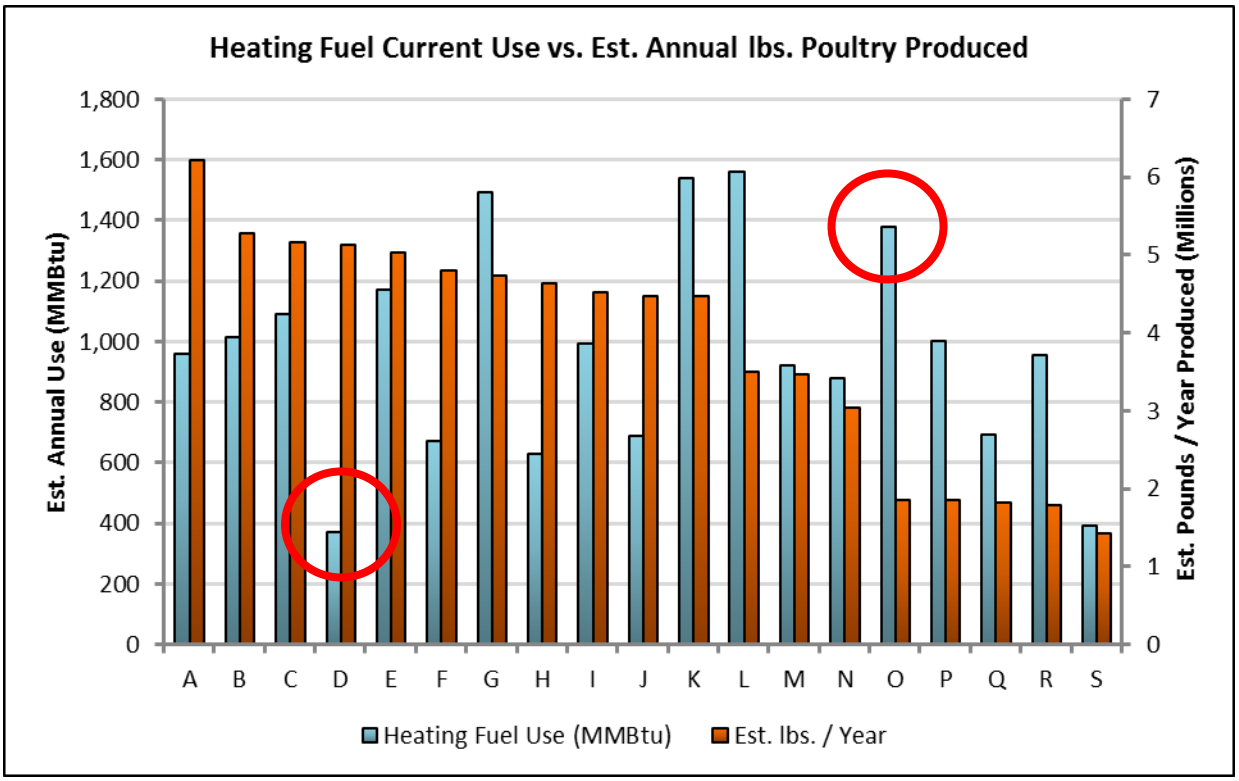
Table 1: Summary of Poultry Operation Statistics used in Analysis

Average Target Bird Weight at Catch	6.57 lbs.
Range of Target Bird Weight at Catch	5.6 - 8.75 lbs.
Total Estimated Annual Pounds of Poultry Produced, All Operations	73,203,475. lbs.
Average Estimated Annual Pounds Poultry Produced per Operation	202,779.71 lbs.
Range of Estimated Annual Pounds Poultry Produced per Operation	1,430,000 - 6,220,500 lbs.
Total Heating Fuel Consumed, All Operations	18,399 MMBtu
Average Annual Heating Fuel Consumption per Operation	968 MMBtu
Range of Annual Heating Fuel Consumption per Operation	371 - 1,560 MMBtu
Average Identified Annual Heating Fuel Savings by Percentage per Operation	28%
Maximum Identified Annual Heating Fuel Savings	60%
Average Heating Fuel Unit Cost, per Operation	$19 / MMBtu
Total Identified Annual Heating Fuel Cost Savings, All Operations	$97,452
Average Identified Annual Heating Fuel Cost Savings per Operation	$5,129
Maximum Identified Annual Heating Fuel Cost Savings	$13,357
Average Identified Annual Heating Fuel Cost Savings per 1,000 lbs. produced per Operation	$1.67
Maximum Identified Annual Heating Fuel Cost Savings per 1,000 lbs.	$6.32

Production Efficiency Benchmarking

When analyzing poultry grow-out operations, it is common to see houses that are relatively close to each other with substantial differences in production efficiency, measured as bird production per unit of fuel used. This efficiency gap can often be attributed to differences in energy management. Figure 1 shows heating fuel consumption versus the estimated annual total pounds of production.

Figure 1. Heating Fuel Current Use vs. Est. Annual lbs. Poultry Produced

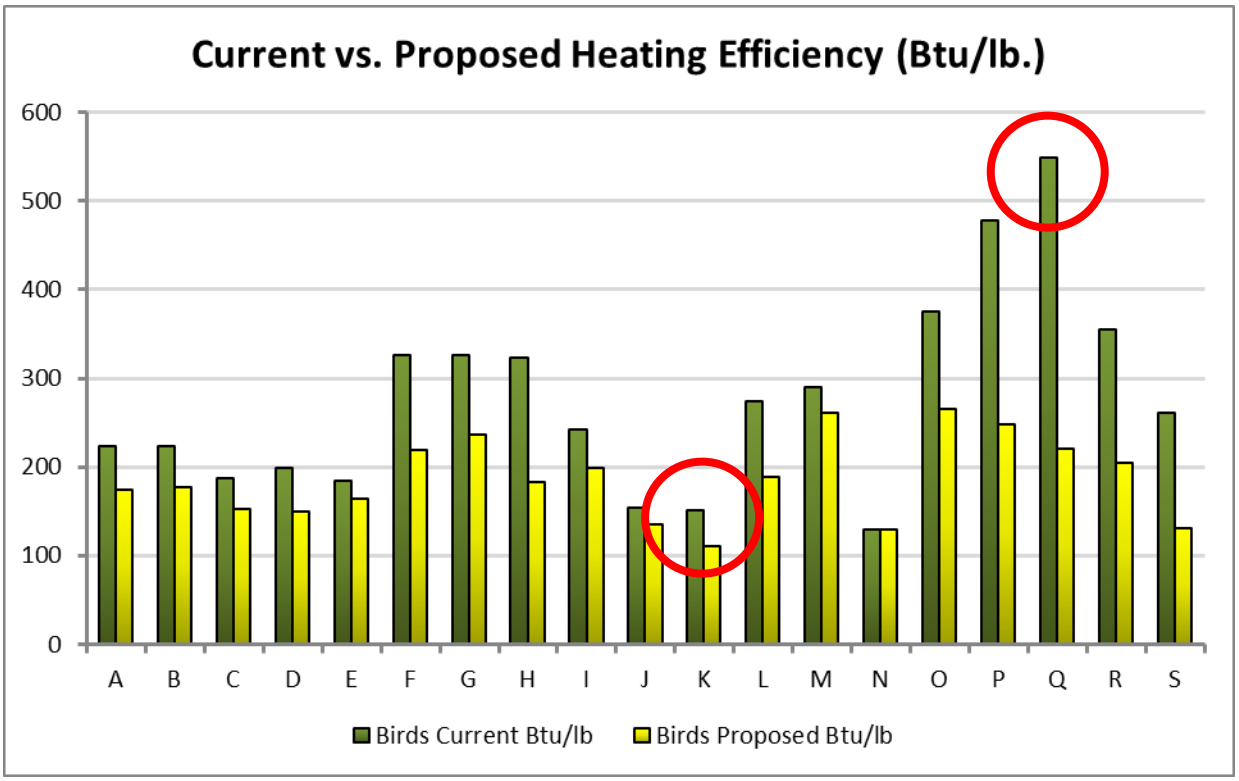


In this case study, Operations C, D, and E have roughly the same level of production, but Operation D uses approximately 60-70% less fuel. Similarly, Operations O, P, and Q have similar production levels, but Operation O uses 35-50% more fuel.

These examples illustrate opportunity for improving production efficiency, which translates into greater profitability for both the integrator and the contract grower through reduced fuel costs.

Figure 2 shows the current efficiency of the heating systems (in Btus per pound of bird produced) versus potential heating efficiency if all recommended energy savings measures identified in energy audits were implemented. The savings in heating fuel can be significant, and 18 of the 19 operations analyzed show potential for heating efficiency improvements, contributing on average $1.67 in savings per thousand pounds of poultry produced, and as much as of $6.32 in savings per thousand pounds produced.

Figure 2. Current vs. Proposed Heating Efficiency (Btu/lb.)



The example above demonstrates that even very efficient grow-out operations (such as Operation K) can benefit from implementing energy efficiency improvements, while inefficient operations (such as Operation Q) can benefit greatly from following recommendations identified through an energy audit.

Conclusion

The analysis we provided in this sample report highlights opportunities to improve the profitability and environmental sustainability of the integrator, and its contract growers through addressing the energy efficiency of poultry grow-out operations. The data presented shows variation in energy use among poultry growers, even when looking at similar operations. Knowing which operations are most inefficient and how they can be improved can provide a roadmap for controlling costs, thereby enhancing its triple bottom line.

Aside from the immediate cost savings, energy efficiency data analytics also help to address increased demand for transparency and environmental sustainability within the poultry industry. EnSave's consulting services and corresponding data analysis can provide an accurate analysis of the energy efficiency gains made by the poultry industry, as well as identify areas for improvement.

Business Opportunities

EnSave provides a variety of consulting services to assist integrators in enhancing profitability, including:

- Production efficiency benchmarking
- Energy auditing for grow-out operations, processing plants, feed mills, hatcheries, and other facilities
- Assistance in leveraging State and Federal financial assistance for energy audits and improvements
- Training workshops for energy efficiency and corporate sustainability
- Corporate sustainability planning and reporting
- Competitive loans for poultry house energy efficiency improvements

To learn more about using EnSave to identify areas for energy efficiency opportunity, contact Kyle Clark, Vice President of Business Development, at (802) 434-1827.