ENERGY-RELATED AGRICULTURAL BEST PRACTICES

Animal Waterers

For Livestock Farms

Farms can use less energy, save money, and be more resilient through equipment upgrades that pay for themselves

There are several measures and technologies available to help livestock farms reduce energy use and save money while maintaining or enhancing production. These recommendations were developed for cattle and swine operations and can benefit Other types of livestock farms, both very small farms with few animals and much larger operation with more than 1,000 animals.

Recommendations for Livestock Waterers

Livestock waterers come in various forms to supply animals with drinking water in all seasons. There are a variety of waterers on the market that are effective for different sizes of farms. Older systems tend to be inefficient and cost more to use during winter months than newer models.

Replacing older livestock waterers with energy-free livestock waterers can result in significant energy savings. Energy-free livestock waterers are insulated and plumbed so that water circulation and ground heat keep the water from freezing in most cases.

If additional heating elements are necessary, they must be properly installed and grounded to protect livestock and humans from electrical shock. Waterer heating will operate more efficiently when installed with a thermostatic control that will maintain water at a set temperature, turning heaters on and off automatically as needed. Note that removable heaters should not be left in waterers during warmer months to reduce maintenance due to sediment and bacteria build up.

Left: *A uninsulated 1,500-Watt heated tank that could be beneficial to replace with an energy-free waterer.* ***Right:*** *An energy-free waterer.*

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Energy-free Livestock Waterers	
Description	Well-insulated waterer with geotube. If heating is needed, include a thermostatically controlled heating element.
General Operational Requirements	Upgrading to energy-free livestock waterers has a reasonable payback if replacing existing units that require over 250 Watts to run.
Potential Energy Savings[1]	40-100%
Typical Simple Payback[2]	4-15 years
Possible Barriers	Cost; geotube is more difficult to install if existing waterer is on a concrete pad.
Non-Energy Benefits	Warmer water improves animal comfort and growth; labor savings if stock tanks had been filled manually; labor savings by avoiding electric coil maintenance that older waterers require.
Industry Information and Resources	MFEP 2012, Wisconsin Focus On Energy 2020 and 2015.

Table Notes:

*1. The row for **Potential Energy Savings** represents the potential savings as a percentage of the total energy use for each technology category. For example, if watering was 10% of a farmer's electricity usage, and the table showed a Potential Energy Savings of 30%, the net effect would be a 3% overall electricity energy savings. A farmer can then predict **Annual Cost Savings** by estimating 3% off their annual bill. If that farmer's annual electricity bill is $10,000, then the potential cost savings for implementing this measure would be $300 per year.*

*2. Simple Payback is the installation costs divided by the potential energy cost savings, showing how long it takes for annual cost-savings from an upgrade to pay for the initial costs. A farmer can use this information to predict the **Expected Implementation Cost** by taking the annual cost savings from note #1 and multiplying it by the Simple Payback for the technology being investigated. If the low- or no-energy waterer example had an annual cost savings of $300 and had a Typical Simple Payback of 3.0 years, then the estimated implementation cost for that upgrade would be $900.*

References:

- *Massachusetts Farm Energy Program (MFEP). 2012. Dairy Farms Best Practices: Dairy and Livestock Best Practices – Waterers. Massachusetts Department of Agricultural Resources, Amherst, MA. Pages 18-19. Available at: https://massfarmenergy.com/wp-content/uploads/2014/03/Dairy%20Farms%20Best%20Practices.pdf*
- *Wisconsin Focus on Energy. 2020. Energy Best Practices Guide: Agricultural Facilities. 2020. Madison, WI. Pages 51-53. Available at: https://www.focusonenergy.com/sites/default/files/inline-files/2020_Energy_Efficiency_Best_Practices_Guide-Agriculture.pdf*
- *Wisconsin Focus on Energy. 2015. Technical Reference Manual. Madison, WI. Available at: https://focusonenergy.com/sites/default/files/TRM%20Fall%202015%20_10-22-15.compressed2.pdf*

Resources

Energy efficiency resources are being developed for farmers by Cornell Cooperative Extension and the New York State Energy Research and Development Authority, in collaboration with topic-experts in NYS. Visit AgEnergyNY.org to find cost-saving resources for farms:

- Recommendations for energy-efficient technologies
- Conservation practices to optimize energy use
- Easy access to funding resources

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Ready to get started?

Visit AgEnergyNY.org to learn more and to get advice on energy efficiency and farm operations, learn about available grants and incentives, or obtain a free energy audit of your farm operations.

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