

Finding energy payback period

As you prepare to close the books on 2011, it's never too soon to start planning for next year. When you look around the farmstead, how many "projects" can you see?

Farm projects are a lot like utility meters, always turning. Whether your plans include new construction, replacing motors or equipment, or upgrading



Farm Energy

By DANA PETERSEN

lighting systems, now is the time to make decisions about where to reinvest your

farm business dollars. Safeguarding yourself against rising energy prices can start with comparing the simple payback for energy-related farm projects.

"Saving money today by purchasing equipment with a lower initial cost and higher energy demands puts the buyer at risk when energy prices rise in the future," says Mark Hanna, ISU Extension ag engineer.

"This can potentially negate the savings associated with the low purchase price."

Calculating the payback period for a purchase means dividing the initial cost by the projected annual energy savings. For example, if the cost for new equipment is \$3,600 and the projected annual energy savings at current energy prices is \$900, the initial cost is repaid through energy savings after four years ($\$3,600/\$900 = 4$).

DEKALB® Revs Up 100th Anniversary Celebration with Custom Chopper

Featuring an antique board-tracker design and the famous DEKALB® brand winged ear logo, the DEKALB 100th Anniversary custom Chopper is now touring the U.S. to help celebrate the brand's 100th anniversary.

The DEKALB commemorative bike will make up to 20 appearances across the country, including county fairs, farm shows and other agriculture-related events. An online auction will kick off on January 20, 2012 to align to the actual birth date of DEKALB® and conclude in April 2012, with all proceeds going to support the American Red Cross.

The tour schedule, auction and other anniversary news can be followed at www.dekalb.com/100, leading up to the 2012 Farm Progress Show in Boone, Iowa, where the bike will be presented to the winning bidder. Since the brand's humble beginnings in 1912, when a group of northern Illinois farmers, bankers and local officials formed the DeKalb County Soil Association to raise the bar on corn yields, the DEKALB corn brand has been committed to delivering performance and innovation to American farmers. To mark its 100th anniversary, DEKALB teamed up with another high performance brand – Paul Junior Designs of Discovery Channel's "American Chopper: Senior vs. Junior," which featured the bike on its Oct. 17 and Oct 24 episodes.

With its vintage design, the DEKALB Chopper has been creating a lot of buzz on its tour across the country. Other antique design elements include nickel-plating to reflect motorcycle construction of the early 1900s instead of modern-day chrome, wood-themed detailing to represent wooden agricultural crates of that era and an antique tractor seat. The wheel spokes are formed from the iconic DEKALB winged ear logo, and in a further tribute to American agriculture, the bike itself is powered with E-85 fuel.

"It really showcases 100 years of history," says Paul Teutul Jr. "We modeled this bike to appeal to farmers so they could relate to it. Farmers have kept DEKALB around for 100 years, and we really wanted them to appreciate this project. I have a lot of respect for farmers and what they do."

Jason Hoag, DEKALB Marketing Manager, says the brand is also proud to join forces with the American Red Cross. "Since 1912, DEKALB brand has been a leading provider of corn seed to the American farmer, and since 1881, the American Red Cross has been the nation's premier provider of emergency relief. We are both strongly rooted in the support of American communities and dedicated to providing food and resources for people nationwide and abroad."



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Comparing purchases

Simple payback is typically helpful for comparing purchases with relatively short payback periods. However, this method does not account for continued energy savings (return on investment) after a project reaches its breakeven point. To do this, you need reliable information about the equipment's useful life. Some examples illustrating the benefits and limitations of the simple payback method are available in the latest ISU Farm Energy fact sheet, "Estimating Payback for Energy Efficiency," PM 2089S, at farmenergy.exnet.iastate.edu.

■ **Lighting.** Initial cost to replace bulbs in a livestock facility is \$400, but the projected annual electrical savings is \$2,000. The simple payback period is 0.2 years ($\$400/\$2,000$) with a savings of \$1,600 in year one and \$2,000 in year two. Estimated bulb life for the project is two years, so return on investment is \$3,600 over two years. Extra labor costs may be incurred to make the switch to new light bulbs or fixtures, but consider if the energy savings from the upgraded, energy-efficient lighting will cover labor and installation costs.

■ **10-horsepower electric motor.** A 10-hp electric motor is being used 10 hours per week to grind feed. A new replacement motor is estimated to save 1 kilowatt of energy during each hour of operation, saving 10 kWh each week, or 520 kWh annually. Assuming electricity costs 10 cents per kWh, annual cost savings are \$52. If replacement cost for a 10-hp motor is \$1,000 on average, the simple payback is 19.2 years ($\$1,000/\52). Thus, if economics are the only factor, replacement would likely be delayed until the end of the motor's life.

■ **Pickup truck.** The existing farm truck has an estimated fuel efficiency of 15 mpg, but a late-model truck gets about 25 mpg and is available for \$15,000, plus trade-in. Assuming 18,000 annual mileage, the newer truck would consume 720 gallons (18,000/25) of fuel versus 1,200 gallons (18,000/15) for the existing truck. At fuel prices of \$3 per gallon, the extra 480 gallons of fuel conserved equals \$1,440 annually. The simple payback period is 10.4 years ($\$15,000/\$1,440$). However, at increased fuel costs of \$4 per gallon, the simple payback is 7.8 years ($\$15,000/\$1,920$).

As shown, simple payback is helpful for estimating how long it will take to recoup your investment, but it doesn't show profitability. When only energy costs are considered, purchases with a long payback may not pay for themselves until they're nearly worn out. Unless your goal is to quickly recoup funds and put them to work again, look beyond the simple payback. Consider the total cost, useful life, maintenance and energy savings of a purchase to determine if it's a wise investment.

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