

# Changes coming in farm lighting

By DANA PETERSEN

As the days grow longer in summer, lighting is less critical for day-to-day chores around the farmstead. Day or night, safety is arguably the most important benefit of good farm lighting, but cost and efficiency should also be taken into consideration.

Incandescent bulbs are inexpensive, but the energy required to power them is mostly wasted as heat, making them a costly lighting source. Developments in lighting technology have produced several energy-efficient alternatives, and the extinction of incandescent bulbs looms ever nearer.

When it comes to indoor lighting, it's no secret that incandescent bulbs will be phased out starting six months from now. I can already envision stockpiles of them in sheds, shops and garages, but delaying the inevitable is just that — a delay. You can buy them while they're still available and stockpile them if you want to, but incandescent bulbs will ultimately disappear from hardware shelves. The schedule to phase out incandescent bulbs at retail locations across the country is:

- 100 W — Jan. 12, 2012
- 75 W — Jan. 1, 2013
- 60 W and 40 W — Jan. 1, 2014

As you consider the alternatives, you may find that comparing the cost and efficiency of different lighting options re-



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quires you to put on your thinking cap. Get ready to get comfortable with fractions because the simple "100 W" label won't mean much when you're price-shopping for new lighting solutions.

### Lighting terminology

I've included a few terms from the ISU Farm Energy publication to light the way:

■ **Lumen.** Light that can be perceived by the human eye is measured in lumens, or lm. Some parts of the light spectrum are not visible to the naked eye, and therefore are not included in the lumen measurement. In this way, lumens allow us to quantify the power of the light we can see.

■ **Foot-candles.** The level of lighting at a working surface is measured in foot-candles. One foot-candle, or fc, is defined as the amount of illumination from a candle falling on a surface at a distance of 1 foot. Light meters typically measure light levels using foot-candles. One foot-candle is equal to one lumen per square foot, so a brightly lit desk may register approximately 100 fc, while a sunny day outdoors could be as much as 8,000 fc.

■ **Watt.** The amount of energy consumed or produced by something can be measured in watts. Most incandescent bulbs are rated using watts. The equivalent of one watt is  $1/746$  horsepower.

■ **Efficiency.** Lighting efficiency is measured in light produced per unit of electricity consumed. Units are lumens per watt, or lm/W. For example, 1,200 lumens from a 20-W bulb equals 60 lm/W.

■ **Average rated life.** This is the average number of hours for half the bulbs in a test batch to fail. Average rated life is measured under ideal laboratory conditions. Actual bulb life may be shorter, especially if the bulb is repeatedly exposed to dust, periods of extreme temperatures

or humidity, power surges, or constant on/off cycles.

### What about bulb life?

If you're chucking to yourself about farm lights being exposed to dust, power surges and extreme elements, you're not alone. Often "indoor" conditions for many farm buildings would be more accurately characterized as "outdoor" conditions in any other circumstance, especially considering temperature, humidity and dust throughout the year. Dirty bulbs and fixtures can substantially reduce light levels and diminish bulb life over time.

As explained above, bulbs are tested in a laboratory to measure "average rated life." So they rarely last as long as predicted when used in barns or confinement buildings. This is frustrating considering that CFLs and LEDs are more expensive than incandescent bulbs.

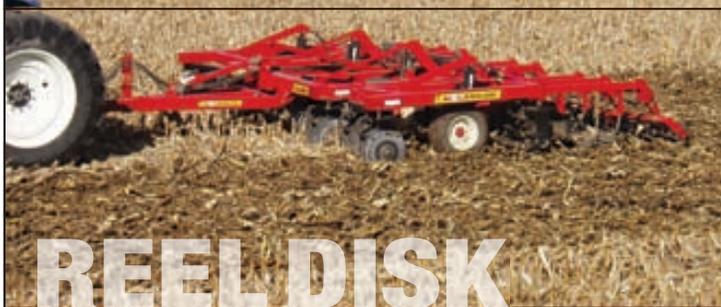
However, CFLs still last several times longer than incandescent bulbs and require less electricity, thereby lowering total cost.

Look for more information on farm lighting at the ISU Farm Energy website [farmenergy.exnet.iastate.edu](http://farmenergy.exnet.iastate.edu).

I'll be writing about a variety of farm lighting topics during the coming months, so stay tuned.

*Petersen is program coordinator for the ISU Farm Energy Initiative sponsored by the Iowa Energy Center.*

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