

### Energy Management For Dairy Farm Facilities

Sources: [www.eia.gov/oog/info/ngw/ngupdate.asp](http://www.eia.gov/oog/info/ngw/ngupdate.asp)  
[www.xcelenergy.com/](http://www.xcelenergy.com/)  
[www.energystar.gov/](http://www.energystar.gov/)

A typical Dairy Farm Facilities energy usage is as follows in the U.S.A.

Milk cooling	25%
Vacuum pumps	17%
Manure handling	4%
Feed equipment	3%

Sub total 49%

Ventilation	22%
Water heating	4%

Sub total 26%

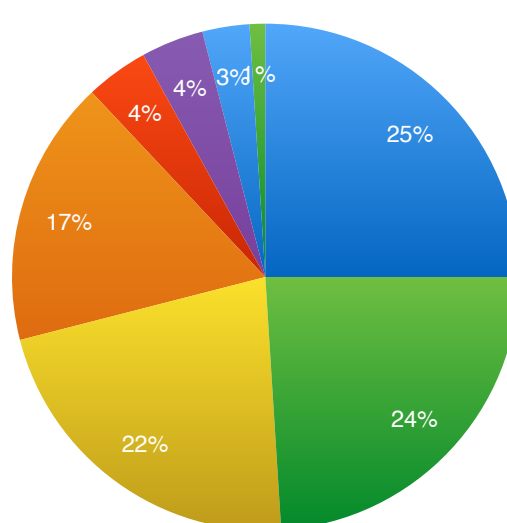
Lighting	24%
Other	1%

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Ventilation	22%
Vacuum Pumps	17%
Water heating	4%
Manure Handling	4%
Feeding Equipment	3%
other	1%

1000

Sub total 25%

Total 100%



- Milk cooling
- Lighting
- Ventilation
- Vacuum Pumps
- Water heating
- Manure Handling
- Feeding Equipment
- Other

Dairy Farm Facilities in the U.S. use on average

(800 to 1200) Kilowatt-hours (kWh) / Cow / year  
Based on \$ .10 / kWh

(\$80.00 to \$120.00) / Cow / year  
(2700 to 4000) kBtu / Cow/ year

#### No- and low-cost energy saving tips

Many dairy farm facilities can benefit from low- or no-cost measures to reduce energy consumption.

#### **TURNING THINGS OFF**

- \* **Lights.** Turn off lights during the night when they're not in use.
- \* **Fans.** Cows typically begin to get heat stress at 74 Fahrenheit with a 75% humidity level, so shut off fans when temperatures get below 70 Fahrenheit.

#### **TURNING THINGS DOWN**

- \* **Reduce light levels.** In spaces where natural lighting is available, dim lights in proportion to the availability of sunlight.
- \* **Reduce pressure on compressors.** Drop the pressure on your compressors to a level that meets your needs.
- \* **Reduce water heater temperatures.**

#### **CLEANING AND MAINTENANCE**

- \* **Clean heat exchanger coils.** The heat exchangers in milk-cooling system are designed to be opened and cleaned on a quarterly basis.
- \* **Clean fans.** Failure to clean fans and shutters, which provide ventilation and circulation, can reduce ventilation efficiencies by as much as 40% and will increase the possibility of fire hazard.
- \* **Keep lights clean.**
- \* **Check water heaters.** Minimizing corrosion can boost water heater efficiency.
- \* **Conserve water.** Another effective way to reduce water heating costs is through water conservation.
- \* **Check pumps.** Pumps should be cleaned and maintained periodically to sustain good operating performance.
- \* **Replace pump and fan belts.**

#### **REFRIGERATION**

- \* **Scroll Compressors.** Dairy farms have traditionally used reciprocating compressors for milk-cooling systems, but in the last 10 years, they have started to utilize scroll compressors, which can reduce compressor energy costs by as much as 20% when compared to traditional reciprocating compressors.
- \* **Refrigeration heat-recovery systems.** Heat-recovery systems reduce energy costs by recovering waste heat that typically gets discarded by the milk-cooling condenser units.
- \* **Water-cooled precoolers.** Using well-water heat exchangers to precool milk before it enters the refrigerated milk tank can reduce milk-cooling costs by up to 60% because heat exchangers can drop the milk's temperature by as much as 30F.

#### **LIGHTING**

Energy-efficient lighting is a simple solution to reducing energy costs, especially when the technique of long-day lighting - in which lights are left on for 18 hours a day to increase milk production - is implemented.