

# Irrigation 2013

## Rates are set for the 2013 irrigation season

Dawson Public Power District's Board of Directors voted to approve new irrigation rates for 2013.

The rate changes are made in response to a 3.75% increase in wholesale power costs from NPPD and rising costs to maintain the power system and provide customer service.

The demand charges are due April 25. Energy charges are due on November 25.

**If you don't plan to use the service...**

The standby option is available when an electric service will not

be used during the 2013 irrigation season but it may be used again in the future. If an irrigation service is no longer needed, please contact Dawson PPD to have it removed.

### Power factor correction equipment

All irrigation services of 10 or more horsepower are required to have power factor correction equipment installed. If this equipment

is not installed, an adjustment will be made to the bill. The adjustment is equal to 10% of the uncontrolled charge multiplied by the horsepower of the irrigation system.

Option	Demand rate	Energy rate
Six-day control	\$28.22/horsepower	5.52¢/kilowatt-hour
Four-day control	\$33.72/horsepower	7.02¢/kilowatt-hour
Three-day control	\$38.72/horsepower	7.62¢/kilowatt-hour
Two-day control	\$43.72/horsepower	8.22¢/kilowatt-hour
One-day control	\$48.72/horsepower	8.82¢/kilowatt-hour
Uncontrolled	\$53.72/horsepower	9.42¢/kilowatt-hour
Standby	\$22.50/horsepower	

## LM control days are assigned as needed

Irrigation customers can select the number of days per week that they are willing to participate in load management. However, there is no guarantee that producers will be able to choose the days of the week that

they want to be controlled.

Dawson PPD must balance the amount of horsepower

available for control for each day and each load management option.



## Load control season may start early in 2013

Drought conditions and the use of pivot irrigation systems have many farmers considering earlier application of water to crops. It may also create a need to control irrigation systems earlier in the season than normal.

"In 2012, we had control days on May 17 and 18. The electrical demand was higher when compared to typical readings for the month of May. Load control helped us with our power costs and save money for our customers," explained Rob Ecklund, Manager of Engineering.

If load control is necessary in May, it is likely to last only a few days. The traditional start of load control season is June 1.

Dawson PPD anticipates that farmers will begin watering crops early in the 2013 growing season. Early load control is possible. Early load management messages will be sent by text message and email only.

### Holidays and Sundays

Load control may be needed on the July 4th holiday and some Sundays during irrigation season. Sunday load control is only used in emergency situations.

During the regular irrigation season, load control information will be broadcast on KRVN 880 AM radio, and sent via text message and email. It can also be found on [www.dawson-power.com](http://www.dawson-power.com).

# Answering questions about your irrigation system

## Why is the horsepower rating on my electric motor's nameplate different than what is billed?

"It is commonly thought that the nameplate rating is the amount of horsepower that the motor uses," said Bernie Svoboda, Energy Services Specialist. "However, that is not the case."

The amount of work or load the motor is rated for is measured in output horsepower (hp). The mechanical output of an electric motor is identified on the nameplate.

As an electric utility company, Dawson PPD bills for energy flowing into the electric motor, known as input. The kilowatts (kW) are converted into input horsepower and billed accordingly. Also, pivot irrigation systems will have an added load from the tower drive motors, resulting in an increased overall demand.



## Why isn't the amount of input horsepower the same as output horsepower?

The input energy is converted from electrical power to output mechanical power. During this process, some energy is changed to heat due to mechanical friction and electrical resistance in the motor. The energy that is converted to heat does not contribute to the mechanical output energy (horsepower).

"The efficiency of the motor is determined by the percentage of input power that is converted into output power at the shaft," Svoboda said. "The design efficiency of the motor is printed on the nameplates of modern motors."

## How am I billed for my electric energy use?

Years ago, meters were used to record the kilowatt hours used and linemen would "clock" an electric meter during the season to determine the amount of electric input (kW) needed to run the electric motor. The number was converted into horsepower and billed accordingly.



Dawson PPD's electric meters measure demand in kW units and energy in kWh units. The demand is then converted to horsepower for billing purposes.

"This method was inconsistent," Svoboda said. "Some electric motors were measured when the irrigation systems were running at their peak and others were measured on days when the

electric motor had less load."

Today, meters accurately measure both the demand (kW) and the energy (kilowatt hours) used at each service. The highest 15 minutes of block electrical demand used during the season is recorded in kW. In the spring, the kW register in the meter is set back to zero in preparation for the next season.

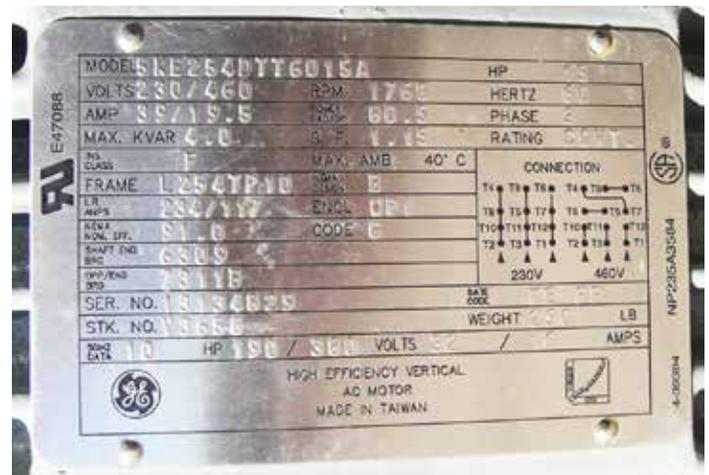
This number is then converted to the input horsepower equivalent using the formula:

$$.746 \text{ kW} = 1 \text{ hp}$$

Dawson PPD measures the highest amount of energy used to ensure that its equipment, such as the power lines and transformer, is adequate for the electric motor.

## Why is the billed horsepower different this year than years past?

There are a number of variables that can affect the load on the irrigation system motor each year including lift, system pressure and flow rates.



## Looking at my statement, it appears that my motor was producing more horsepower than the nameplate rating. How is this so, and will this damage my motor?

Remember that the nameplate horsepower is rated as output horsepower and the billing demand is converted to input horsepower, which will be higher. The service factor is a safety factor, or how much the motor can exceed its rating expressed in percentage for short periods of time.

"The efficiency of the motor is a large variable to consider," Svoboda said. "To help determine how efficiently an electric motor is using energy, it is good to understand the efficiency and service factor ratings on the motor nameplate."

# tems' energy use

Motors are 60-95 percent efficient by design. Some energy will be converted into friction and heat instead of mechanical output energy (horsepower). The highly efficient motor nameplate in the above graphic indicates that the service factor is 1.15, which means that the motor's output horsepower can exceed the rated horsepower by 15 percent for short periods of time.

The motor nameplate above is rated at 15 hp and has a 91 percent efficiency rating. This motor would use 16.5 hp of input electrical energy and could have intermittent loads up to 18.9 input horsepower with no reduction in motor life.

An older, less efficient 75 hp motor rated at 70 percent efficiency, when fully loaded, would have a measured electric input of 107 hp. With a service factor of 1.15, this motor could occasionally produce output mechanical energy of 123 hp with no damage to the motor from overheating.

The best way to determine if the motor is overloaded is to read the amperage on the motor wires and compare the readings to the "amps" printed on the electric motor's nameplate.

It is also important to understand rated horsepower. The definition of rated horsepower for a motor is the amount of mechanical energy that can be produced when working in ambient temperatures without causing damage by overheating. The motor may do more work than rated but the life of it will be shortened the more it is overheated.

## In conclusion...

The motor nameplate rating is commonly thought to represent the amount of electrical horsepower a motor uses. In reality, the horsepower input and horsepower output are two different things. Dawson PPD bills for the electrical energy going into the motor.

The efficiency of the motor helps determine how much input electrical energy is needed to produce the output required of the motor. Variables such as lift, system pressure and flow rates can affect an irrigation system's input horsepower use from year to year.



## For your information...

### No power? Try a reset

Dawson PPD is asking customers to check their irrigation service before calling to report electrical problems.

If your irrigation service has one of the large, grey meter boxes near the road, please try turning the switch on the box before you call to report a problem with your service. Sometimes the switch can trip and simply needs to be reset.



If resetting the switch does not work, please call us at 308-324-2386 or 800-752-8305.

### Policy addresses load management switch tampering and bypass

Customers, their employees and the contractors they hire are not allowed to bypass or alter Dawson PPD's load management switches.

"Please contact us if you need to have a service taken off load control for a few hours while you make repairs to your irrigation system," explains Rob Ecklund, Manager of Engineering.

"If a customer finds that someone has altered a controller, they need to report it to Dawson PPD immediately," he says.



If tampering or a bypass of the load management switch are detected by Dawson PPD personnel, the account will be moved to the uncontrolled rate for both demand and energy charges. The customer will be responsible for the additional costs, plus mileage and labor costs associated with the investigation. In addition, the irrigator may be prohibited from participation in the load management program in the future.

### Keep DPPD employees safe when ag chemicals are used

If you have your fields sprayed with a chemical that requires a Restricted Entry Interval, please remember that Dawson PPD employees will not enter the field until it is safe. Please let us know if your field has been recently sprayed so that we can alert our linemen of the hazard.



Photo credit: istockphoto/stevarts



# Make safety a priority.

Irrigation season can be busy and stressful, but it is no time to put safety on the back burner. Here are some reminders to help you and your employees stay safe:

- Make sure that irrigation system wiring is properly grounded. Before the start of each irrigation season, have a qualified electrician check the pump and wiring.
- If fuses continually blow or circuit breakers repeatedly trip, have a professional check the wiring. This could indicate a potential electrical hazard.
- Store unused irrigation pipe far away from power lines or electrical equipment. If the irrigation pipe was lifted into the power line, the person holding the pipe could be fatally injured.
- Position the water jet streams so that there is no chance of them spraying onto power lines. If this happens, the entire system could become energized, creating a danger for anyone nearby.
- Always shut off and lock the master electrical control switch before servicing the machine.
- Take some time to survey your surroundings before moving equipment. Look up and around you; note any power lines that could be close enough to come into contact with equipment—and stay away.



PO Box 777  
Lexington NE 68850