

# Take a look: Power factor is printed on your bill



A new piece of information has been added to the irrigation energy billing - power factor. This is a guideline that shows customers how equipment is operating.

Capacitors and variable frequency drives can correct power factor. The goal is to have a power factor between 90 to 100 percent.

A capacitor problem, such as incorrect sizing or lightning damage, could be reasons why power factor may be less than 90%. Likewise, a poor reading on a VFD corrected service may require reprogramming or replacement.

## How does this affect me and my bottom line?

If power factor is recorded at less than 90% at the time of the maximum demand usage in 2021, then the horsepower billing will be adjusted for the spring of 2022. Giving power factor information to customers in fall of 2020 provides an opportunity to consider options.

### Example:

Current Service Detail	
Horse Power 100.7	Rate 37.14
Hours Operated 816	
POWER FACTOR	86.27%

Original demand from the example:  
**100.7 HP = 75.1 KW demand**

Dawson PPD bills the demand part of the irrigation rate in horsepower. Demand information is collected from the meter in kilowatts and converted to horsepower for the bill.

To convert horsepower to kilowatts demand, multiply the number by 0.7457. To convert from KW to HP, divide by 0.7457.

### Example:

75.1 KW demand / 86.27% power factor = 87.05 KVA x .90 = 78.35 KW demand

The result of 86.27% power factor in the example:

**78.35 KW = 105.1 Adjusted HP**

“The customer makes the decision if they want to make improvements,” explains Cole Brodine, Dawson PPD Manager of Engineering. “If the power factor is close to 90% or the horsepower is small, the cost of upgrades may outweigh any additional charges on their electric bill. If the power factor is very poor, it may be worth the investment to make upgrades.”

A power factor below the optimal range will result in an increased adjusted demand (kW or horsepower). If the power factor is low, it will increase the demand reading used to calculate the bill in spring 2022, which will increase operating costs. This power factor adjustment formula is the same one used in Dawson PPD’s Commercial, Large Power and Industrial rates.

### POWER FACTOR ADJUSTMENT FORMULA

$$KW / PF = KVA \times .90 = \text{Billing Demand}$$

KW - Maximum demand measured by the District

PF - Power factor measured by the District

KVA - Customer’s KVA calculated by using the power factor and demand as measured by the District

### POWER FACTOR TIMELINE

**Fall 2020** - Power factor data is provided to irrigation customers. Optimal power factor is between 90% and 100%.

**Winter 2020** - Dawson PPD hosts meetings for irrigation techs and customers. We will share practical and technical information about power factor.

**Summer 2021** - Power factor data will be calculated based on the peak demand of the irrigation service. The information will be given to customers in the fall.

**Spring 2022** - If your power factor is less than 90%, the demand used for billing will be adjusted.

**THERE'S AN EASIER WAY TO DO THIS...**

Use the calculator on our website:

[dawsonpower.com/calculator](http://dawsonpower.com/calculator)

# IRRIGATION BILLING METHOD CHANGING

## OLD WAY



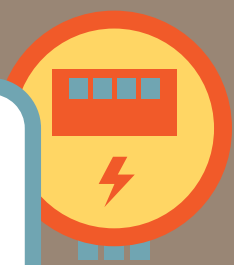
Does this site have a capacitor or VFD?

Yes

No

Penalty for not having equipment - 10% of the uncontrolled rate, not less than \$59.14

## NEW WAY IN 2022



Power Factor is \_\_\_%

Power Factor

90-99% - No additional charge

89.9% or less - Dawson PPD will adjust the billing demand to reach 90%

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## Power factor: Using technology for more precision

Power factor is a measurement of how effectively electricity is being used. Currently, Dawson PPD requires power factor correction on irrigation services. This can be a capacitor, a variable frequency drive (VFD) or a high efficiency irrigation motor. Soon, there will be information that shows how effective these devices are.



Cole Brodine  
Engineering Manager

“Dawson PPD cares about power factor because the collective group of irrigators can affect the power factor for our whole system,” explains Cole Brodine, Engineering

Manager. “Nebraska Public Power District requires us to have a power factor of 90% or greater, so that’s the standard we set for our customers. Dawson PPD pays more to NPPD for wholesale power if our power factor is below 90%.”

### TECHNOLOGY MAKES IT POSSIBLE

Metering technology has improved. Twenty years ago, irrigation horsepower was calculated by a lineman using a stopwatch and a math formula. Fifteen years ago, Dawson PPD transitioned to meters that would

record the peak demand for the season. Currently, linemen visit each irrigation service and look for a capacitor or VFD, but there is no measurement about their effectiveness. Now, electric meters are capable of recording information about power factor.

A power factor less than 90% will result in an adjusted demand. This will affect the demand fixed charges.

Using preliminary data, Brodine estimates that about two-thirds of irrigation services have a power factor of 80% or better. He says that the customer will need to decide if upgrades would be cost effective in

their situation.

“Because this change to using actual power factor data could cause increases for some irrigators, Dawson PPD wants to give customers, electricians and technicians time to make improvements, if needed,” Brodine says.

The present requirement for power factor correction equipment on services 10 horsepower or larger will remain in effect through the 2021 irrigation season. The power factor adjustment, based on meter readings, will go into effect with the demand billing in the spring of 2022.



**IRRIGATION MEETING:** Due to the uncertainty of the Covid-19 pandemic, plans for irrigator meetings have not been finalized. While we would like to host in-person sessions across Dawson PPD’s territory, it may be necessary to change to an online format. Email invitations will be sent to customers subscribed to SmartHub online billing. Summary information from the meeting will be available in the 2021 irrigation newsletter.