Explanation of Demand Charges

Depending on how they use electricity, electric utility customers are charged for different electric services. Along with a basic customer charge – which is a set fee paid monthly or seasonally – most customers pay for the energy they use (measured in kilowatt-hours, abbreviated kWh). Larger users of electricity are also charged for something called **demand** (measured in kilowatts, abbreviated kW).

In order to explain electric demand, we can look at a similar kind of situation. Suppose we want to find out the maximum amount of water that will be flowing in a stream in the coming month. We can hang a flat board in the stream and fasten it in such a way as to swing up when more water is flowing. Then we figure out a way to get the board to "hang up" so it won't swing back down when the water level drops back down. This will give us an idea of the highest flow since we last let the board swing down. The board measures the peak flow of the stream.

The electric utility uses demand meters that measure flowing electricity as the board in the above example measures flowing water. Demand meters register the highest rate of electrical flow (or current) during a billing period. It's actually a little more complicated than that, because the meter records an average flow for every 15 minute interval. The customer is billed for the highest average 15 minute flow during the billing period.

So how does the demand affect the customer's electric bill? The demand charge will be a large part of the bill if the customer uses a lot of power over a short period of time, and a smaller part of the bill if the customer uses power at a more or less constant rate throughout the month. Let's look at two examples:

1. A customer runs a 50 horsepower (hp) irrigation pump for only five hours during July[1]:

Demand Charge = 50 hp x .746 kW/hp x $8.03/kW = $299.52
Energy Charge = 50 hp x .746 kW/hp x 5 Hr x $0.034/kWh = $6.34

2. The same customer runs a 50 hp irrigation pump constantly through the entire month of July:

Demand Charge = 50 hp x .746 kW/hp x $8.03/KW = $299.52
Energy Charge = 50 hp x .746 kW/hp x 744 Hr x $0.034/kWh = $943.54

As you can see, the demand charge portion of the customer's power bill does not change, whether the pump runs fifteen minutes or all month. However, the energy charge portion of the power bill *does* depend on the amount of time the pump runs. So a customer who is careful and doesn't run the pump more hours than necessary will save money on the energy bill.

How can you save money on your demand charge?

- Make sure your motor is the correct size for your pump. An oversized motor could be increasing your demand and costing you money. It's also possible that a newer, more efficient pump and motor combination may be available that would save on demand and energy.

- Make sure your pump and motor combination is the correct size for your system. If you are using a 75 hp pump when a 50 hp pump would do the job, you are wasting 25 hp or 18.7 kW of demand. (25 hp x .746 kW/hp = 18.7 kW)

- Make sure that worn pumps, motors, nozzles, and leaks are not increasing flow to the point where demand has increased. You can get an idea of what your demand should be by multiplying the total connected horsepower on your meter by .746 kW/hp. This should be approximately the demand amount on your utility bill. Be aware that your pivot drive and the end gun booster pump will increase your demand.

- Be aware of when your meter is read each month. If you only run your pump for a day or two during a billing period (for example, at the beginning or end of the year) your demand cost could far exceed your energy cost.

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[1] These examples assume a rate of $8.03 for every kW of demand and also assume a rate of $0.034 per kWh of electricity. The actual charges on your power bill may differ.