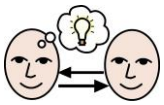
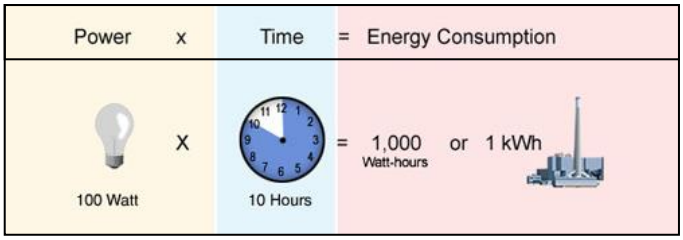
Georgetown Utility Systems (GUS)
Electric Demand

- Electric demand is the flow of electricity used by a customer
- Peak demand is the maximum amount of electricity required by a customer at any point in time during the billing cycle
  - It is measured in kilowatts (kW) by an electric demand meter and is set back to 0 after each reading
  - Demand is charged at a rate of $7.45 per kW, with a minimum monthly amount of $372.50

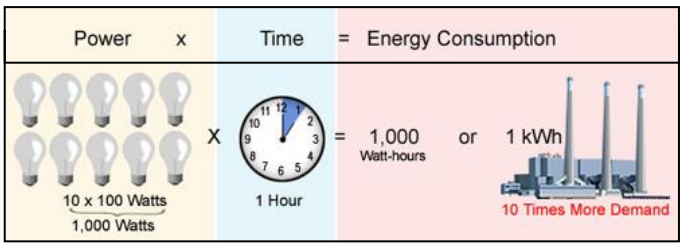


Understanding Electric Demand

- One 100-watt light bulb burning for 10 hours consumes 1,000 watt-hours or 1 kWh
  - The entire time it is on, it requires or "demands" 100 watts or 0.1 kW from the utility
  - That means the utility must have that 0.1 kW ready whenever the customer turns the lamp



- *Similarly***,** ten 100-watt light bulbs burning for 1 hour consume 1,000 watt-hours or 1 kWh
  - Note that in both examples, the **consumption is 1 kWh**, however, look how differently the second situation impacts the utility from a demand perspective
  - The serving utility must now be prepared to provide **ten times as much 'capacity'** in response to the "demand" of the 10 light bulbs operating all at once



- If both of these customers are billed for their consumption only, both will get the same bill for 1 kWh of energy (and that is the way most residential customers are billed)
  - But the requirement for the utility to meet this energy requirement is very different

- In the second case, the utility has to have **10 times** more 'capacity' to provide the second customer's brief high demand for power compared to the first case

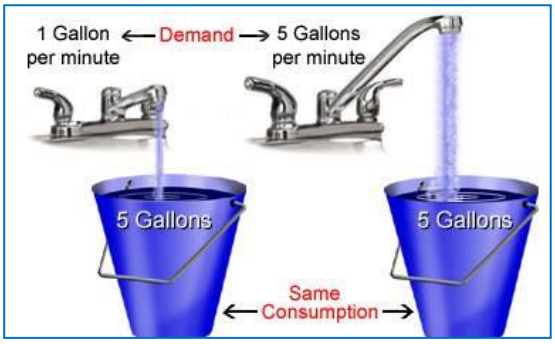
Commercial and industrial customers are often billed for their hourly consumption patterns and their peak demand for energy

Another way of understanding demand and consumption is with the following analogies:

Analogy #1 "Filling the Bucket"

- Suppose you want to fill a 5 gallon bucket with water
  - You can use an inexpensive hose connection to your sink providing 1 gallon per minute to do it, and it will take 5 minutes
- Or you can use a more expensive large faucet that provides 5 gallons per minute
  - In this case, the bucket will fill in just one minute
- The flow rate in this example is the equivalent to **demand**, and the 5 gallons of water used are equivalent to **consumption**

In this example, filling both buckets has the same "consumption" but very different "demands."



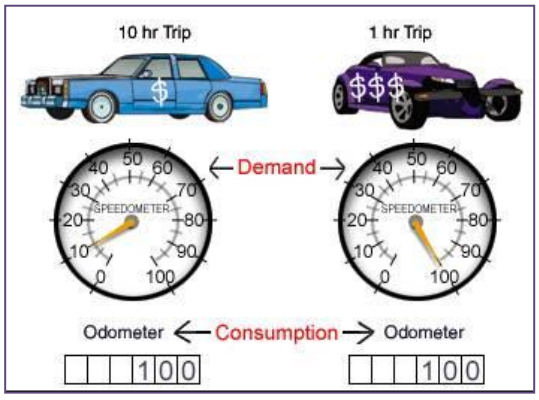
The same is true of electricity. While you may be able to accomplish the same thing by operating a small wattage appliance for many hours as operating something of higher wattage for just a few, the higher wattage piece of equipment will create a higher demand on the utility.

Using our analogy, you are asking for a larger pipe, and that costs more. If time is of the essence, it might be worth having the more expensive high flow rate or wattage. This is why utilities often charge some customers for both demand and consumption. A customer that necessitates a high demand requires more services from the utility--additional generating plant capacity, and more expense in lines, transformers and substation equipment.

Analogy #2 "The Automobile"

The car's **speedometer** is like the **demand** meter and the **odometer** is like a **consumption** meter.

- Two cars could travel the same 100 mile road, one at 10 miles per hour for 10 hours and the other at 100 miles per hour for 1 hour
- It takes a much more capable and expensive engine to power the car at 100 miles per hour than it does to power the one going only 10 miles per hour



How to read a Digital Demand Meter

Georgetown Utility System's digital demand meters have a display that alternates between seven different sets of information, one of which is the peak demand, or peak kW reading

This screen is indicated by MAX KW in the lower left corner of the screen. The peak kW will always have a decimal, and is reset to 00.00 after each monthly reading is taken

- For some meters, the actual amount of energy used is too large to be registered and the meter displays a fraction of the actual use
  - …these meters require a multiplier to determine the actual demand and consumption
- If there is a multiplier used to calculate your demand and consumption
  - …it will be indicated on the meter, and on your utility bill
- In the case of a meter multiplier
  - …the kWh and kW reads would be multiplied by the multiplier to determine the total kWh and kW billed

Example: *1.34* *(kW read)*
X 200 *(multiplier)*
268 *actual kW*

Some tips for lowering your demand:

- Minimize the simultaneous operation of high-wattage equipment, and consider alternating cycling of high-energy use equipment
- Have equipment inspected and services, if necessary, so that your system runs with maximum efficiency
- Turn off lights, personal computers, copiers, etc. when they are not being used for extended periods of time
- Install energy-saving, high-efficiency and low-wattage lighting