Understanding Demand and Energy

Understanding your Rochester Public Utilities (RPU) bill can lead to lowering your bottom line and providing you with important information such as managing and conserving your energy, operating more efficiently, and identifying savings opportunities. Commercial customers with monthly demand of over 75 kW have two primary electric billing components: Energy and Demand. Starting in 2023, this billing structure will be applied to commercial customers with monthly demand of over 25 kW.

**Power Demand – kW**
- Measured in kilowatts (kW) and represents the rate at which electricity is consumed.
- Billed based on maximum, or peak demand recorded in 15 minute intervals during the billing cycle.

**Energy Consumption – kWh**
- Measured in kilowatt-hours (kWh) and represents the amount of electricity that has been consumed over a certain time period.
- Billed based on total usage of energy consumed per hour during the billing cycle.

**Why does RPU charge businesses for demand?**

To remain reliable, RPU has to have capacity readily available, and must be prepared to meet the highest cumulative peak on the grid at all times, thus providing the maximum amount of electricity “on demand” by customers at any given time. In addition, transmission and distribution systems must be sized accordingly to handle the delivery of electricity at a constant level. This costs money, therefore, electric utilities tend to charge demand to help meet the cost, which is spread across commercial customers who need this capacity to meet their building operations.

Peak demand is defined as the single point at which the maximum rate of energy is used during the billing cycle, measured in 15 minute intervals. Knowing exactly when and how customers’ energy is being used in their buildings is essential to reducing demand, decreasing consumption and emissions, and ultimately lowering energy costs for RPU and for our customers.

**Demand Profile of Various Load Management Methods**

**RPU’s energy costs are highest during peak hours**

- **Residential** – Peak is in the afternoon/evenings, when people come home and everything gets turned on simultaneously.
- **Commercial** – Peak hours are highly dependent on production and operation hours.

Energy is most expensive to purchase during peak time, thus we promote various strategies of conservation:

- **Energy Efficiency** – Conserve via installing newer, more efficient equipment
- **Demand Limiting** – Equipment which shuts off once a set demand threshold is reached
- **Demand Shedding** – Turning equipment off during peak hours or running a generator (consumption less, demand less)
- **Demand Shifting** – Moving work tasks from peak-hours to off-peak hours (consumption same, demand less)
HOW TO READ YOUR RPU BILL ELECTRICITY CHARGES

1. Electric Usage Charge is the total metered kilowatt-hours (kWh) used. The rate per kWh is then multiplied by the kWh used for the current billing period.

   NOTE: Two energy charges may appear during the transition between summer (Jun–Sep) and non-summer (Oct–May) rates or when any changes to our rates occur (Dec–Jan).

2. Clean Air Rider covers the bond payments for the Emission Reduction Project (ERP). All residential, commercial, and industrial electric customers are impacted by the charge. The amount you pay on the Clean Air Rider is dependent on your electric usage. The rate of the Clean Air Rider will change each year depending on the debt service payment schedule. The payments are scheduled to be complete by 2030.

3. Power Cost Adjustment is charged if the cost to supply the electricity needed for your customers exceeds projections. This adjustment is made in cases such as high fuel costs, higher market pricing for electricity, or the load is higher than projected. This adjustment is based on your electric usage and varies.

4. Current Power Factor gauges how efficiently delivered energy is used. It can be viewed as relationship between the amount of useful energy (kW) and the amount of non-working energy (kVAR). A good power factor (above .95) is the result of devices that utilize close to 100% of the delivered electricity with no energy being wasted. Measured power factor below .95, will result in an adjusted billed demand, and can become costly to both customers and RPU.

5. Ratchet is the minimum demand billed in the months of Oct–May. It is established during the summer months (Jun–Sep) and set at 50% of the highest demand measured during those months.

6. Demand is measured as the maximum amount of energy (kW) used at single point during a billing period and is also referred to as peak demand, and used to calculate a demand charge.

   NOTE: Two demand charges may appear during the transition between summer (Jun–Sep) and non-summer (Oct–May) rates or when any changes to our rates occur (Dec–Jan).

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**CONSERVE & SAVE® rebates** from RPU can help offset the initial equipment cost.

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**Electricity** Metric

- **Medium General Service Electric**

<table>
<thead>
<tr>
<th>Meter #</th>
<th>00000000000000000000000000000000</th>
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<tbody>
<tr>
<td>Oct 8</td>
<td>18400 Actual Reading</td>
</tr>
<tr>
<td>Sep 9</td>
<td>18171 = 229 X 60 Mult = 13740 kWh</td>
</tr>
<tr>
<td>Medium General Service Cons Winter</td>
<td>3790.34 kWh @ $0.05650/kWh</td>
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<tr>
<td>Medium General Service Cons Summer</td>
<td>9949.66 kWh @ $0.05650/kWh</td>
</tr>
<tr>
<td>Clean Air Rider @ $0.0019/kWh</td>
<td></td>
</tr>
<tr>
<td>Power Cost Adjustment</td>
<td>$20.24</td>
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</tbody>
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**KVARH**

| Oct 8   | 5245 Actual Reading               |
| Sep 9   | 5169 = 76 X 80 Mult = 4560 kvarh  |

**Demand**

| Oct 8   | 0.737 X 60 Mult = 44.22 kW       |
| Min. Power Factor: 0.94910 |                                  |
| Ratchet: 26.46 kW |                                  |
| Demand Charge Winter | $127.17                          |
| Demand Charge Summer | $771.12                           |
| Subtotal - Metered Charges | $1,942.66                      |
| Total - Electricity | $1,842.86                        |