



**ROCHESTER PUBLIC UTILITIES**

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[www.rpu.org](http://www.rpu.org)



# PARTNERING in Energy Solutions



**YOUR BUSINESS RESOURCE FOR ENERGY EFFICIENCY**



**CONSERVE & \$SAVE<sup>®</sup>**

# COMMERCIAL CUSTOMERS BENEFIT

## When They Become Energy PARTNERS with RPU

Today's business environment is full of challenges. Worrying about energy costs shouldn't be one of them. You can improve your bottom line by operating more efficiently. And energy efficiency not only helps your business, but helps the environment, too!

### How can you become an energy efficient business? Rochester Public Utilities (RPU) can help...

RPU wants to partner with you to help implement energy saving solutions for your business. By **PARTNERING in Energy Solutions**, you can reduce your energy use and save money. This program encourages an evaluation and inspection of your equipment to reduce maintenance costs, improve comfort, provide precise control, and extend equipment life. Only then can the most efficient changes and upgrades for your business be proposed to ultimately improve your bottom line.

Whether you are retrofitting your existing building or considering new construction, it makes sense to be sure your business is as energy efficient as possible. This is how our **PARTNERING in Energy Solutions** program can help. We make sure you are connected with people who will help you install or design a system that is energy efficient and eligible for **CONSERVE & \$AVE** rebates.

RPU designed **PARTNERING in Energy Solutions** to connect you with expert resources, or **Energy Solutions Partners (ESPs)**, to help ensure your business is operating efficiently. Your ESP will:

- Analyze your current energy usage and future needs.
- Propose cost-cutting changes in your energy use, as well as energy efficient upgrades to your equipment.
- Provide payback analyses of suggested improvements.
- Assist with the purchase and/or implementation of suggested improvements.
- List and apply for all available RPU **CONSERVE & \$AVE** rebates.

**Financing  
may be available  
for qualifying projects  
and/or certification costs.  
See page 18.**



**IBM**

ESP: Midwest Mechanical Systems  
Cooling Rebate: \$158,100  
Energy Savings: 47,040 kWh and 7.2 kW

## TRADE ALLIES BENEFIT When They Become ENERGY SOLUTIONS PARTNERS

With the increasing demand on energy supplies and natural resources, we need to work together as a community to improve energy efficiency and increase conservation efforts. Rochester Public Utilities (RPU) is partnering with area businesses to help them implement energy saving solutions and operate more efficiently, and we need your help.

We want you to become an **Energy Solutions Partner (ESP)**. RPU is looking to build our network of **ESPs** in category and service areas including but not limited to:

### ESP Categories:

- Appliance Vendors
- Architects
- Builders/Developers
- Electricians
- Engineers
- HVAC/Mechanical Contractors
- Lighting Vendors

### ESP Service Areas:

- Design Engineering
- Facility Energy Audits & Targeted Audits of Specific Systems
- Installation
- Power System Corrections
- Product Sales
- Service or Repair

**By becoming an ESP, you will be connected directly with RPU customers to:**

- Consult during the design and planning of new construction (*e.g., assess future energy use, assist in specifying energy efficient equipment*)
- Analyze the customer's current energy usage and future needs.
- Propose cost-cutting changes in their energy use, as well as energy efficient upgrades to their equipment.
- Provide payback analyses of suggested improvements.
- Assist with the purchase and/or implementation of suggested improvements.
- List and apply for all available RPU **CONSERVE & \$AVE** rebates.

**As an ESP, you'll receive the benefits of:**

- Inclusion in the **ESP** listing on the RPU website
- Customer leads
- Project financing options for mutual customers (*see page 18*)
- Recognition in advertising (*e.g. rebate check presentations, print ads*)

**CALL RPU AT 507.280.1500  
TO APPLY TODAY!**

## How PARTNERING Works

### ❑ Step One: **Customer Interest**

A customer decides to make a change at their business and wants to become more energy efficient. The customer contacts an RPU representative at 507.280.1500 who will work with the customer to identify an **Energy Solutions Partner (ESP)** who can help them. The customer may also work with a trade ally or vendor of their own choosing.

### ❑ Step Two: **Pre-Construction Consultation or Walk-Through of Existing Facility**

At the start of designing a new facility or other new construction projects, the **ESP** works with the customer to assess energy use and specify the installation of energy efficient equipment. This pre-planning not only guarantees that the customer's business will be operating efficiently, but ensures the new installations, if applicable, will be eligible for RPU's CONSERVE & SAVE® rebates (*see page 8*).

–OR–

The customer selects an **ESP** who visits the facility to discuss the specific details the customer wants to address. The **ESP** performs a walk-through of the facility and provides an estimate for an audit or assessment.

### ❑ Step Three: **Audit or Assessment**

Upon the customer's approval, the **ESP** completes the audit or assessment. The audits can be a targeted review of a specific system or a general audit of the entire facility.

*If there is a charge for the audit or assessment, RPU provides a CONSERVE & SAVE® rebate for 25 percent of the cost. See an Energy Audit Rebate Application for complete terms and conditions.*

### ❑ Step Four: **Project Proposal**

The **ESP** provides the customer with the audit or assessment results that include an energy saving analysis and a proposal to complete related improvement projects (if applicable). The **ESP** will include line items for CONSERVE & SAVE® rebate amounts in this proposal.

### ❑ Step Five: **Financing**

If needed, **Energy Efficiency Financing** may be available to qualified customers through RPU. Customers must contact an RPU Account Representative for pre-approval. Eligible projects must be completed by an **ESP** and qualify for a CONSERVE & SAVE® rebate.

After project completion, **Green Financing** may also be available to the customer through RPU to obtain a customer's building certification in Energy Star®, LEED® (Certified, Gold, Silver, or Platinum) or Green Globes.

### ❑ Step Six: **Project Completion and Applying for Rebates**

Upon the customer's approval, the project is completed.

**A)** The customer pays the **ESP** directly, and the **ESP** assists the customer in completing and submitting the appropriate RPU CONSERVE & SAVE® rebate application(s),

–OR–

**B)** If the project is financed, the **ESP** will provide RPU with the final invoice(s) along with the completed CONSERVE & SAVE® rebate application(s).

### ❑ Step Seven: **Start Saving Energy and Money!**

## Applying for CONSERVE & \$AVE® REBATES

Our rebates help offset the cost to improve the energy efficiency of businesses and ensure they get the most from their energy dollars. **For a current list of eligible appliances and equipment, visit our website at [www.rpu.org](http://www.rpu.org).** You can also download rebate applications that include qualifying efficiency requirements and rebate amounts. *Funding is limited, so apply today!*

- **ANTI-SWEAT HEATER CONTROLS**

Refrigerated glass display cases like those found in grocery and convenience stores contain heat strips to prevent moisture from forming on their glass and frames. Uncontrolled anti-sweat heaters typically operate continuously, yet they are needed only a fraction of the time. Anti-sweat control systems save energy and money (typically 70 to 90 percent on anti-sweat heating costs) by activating the heat strips only when the formation of condensation is detected.

- **COMPRESSED AIR LEAK CORRECTION**

It is estimated that average industrial customers waste 20 to 30 percent of their compressed air to leaks. Air loss of 143 cfm, which has an equivalent orifice size of only 3/8", could be costing your company more than \$12,000 annually! By routinely detecting and fixing air leaks, most companies can reduce leakage to 10 percent or less and realize large cost savings and almost immediate payback.

- **COOLING EQUIPMENT**

Cooling can be a significant part of your energy costs, particularly if you have old or inefficient equipment. Installing energy efficient cooling equipment could reduce your energy costs by 20 percent, while providing increased reliability, quieter operation, and the use of non-CFC based refrigerants.



**TOP SHOTS!**

ESP: Tonna Mechanical  
Anti-Sweat Heater Rebate: \$240  
Energy Savings: 1.79 kW and 15,673 kWh



**BRENTWOOD ON 2ND**

ESP: St. Cloud Refrigeration  
Cooling Rebate: \$2,397.36  
Energy Savings: 1.36 kW and 1,802 kWh

• **DATA CENTER EQUIPMENT**

According to the Environmental Protection Agency (EPA), data centers account for nearly three percent of the total U.S. electricity consumption. Rebates include desktop and integrated computers, thin clients, servers, and Personal Computer (PC) network management software.

• **ENERGY STAR® APPLIANCES & EQUIPMENT**

ENERGY STAR products use less energy than conventional ones. Purchasing ENERGY STAR qualified appliances and equipment not only saves money, but also helps save the environment. Qualifying items may include:

- Clothes Washers
- Dehumidifiers (*requires recycling of old, working unit*)
- Dishwashers
- Freezers
- Light Fixtures
- Refrigerators
- Room Air Conditioners

• **FOOD SERVICE EQUIPMENT**

Food preparation equipment accounts for 35 percent of a typical restaurant's energy expenses. Purchasing energy-efficient food service equipment to replace old equipment, or for new kitchen construction, can save significant money on utility bills. Qualifying energy efficient food service equipment may include:

- Combination Ovens
- Convection Ovens
- Dishwashers
- Fryers
- Griddles
- Ice Makers
- Insulated Holding Cabinets
- Low-Flow Pre-Rinse Spray Valves
- Rack Ovens
- Refrigerators and/or Freezers (*Glass, Mixed, Solid Door*)
- Steam Cookers
- Ventilation Hood Controllers



**ZUMBRO VALLEY MENTAL HEALTH CENTER**

Data Center Equipment Rebate: \$215  
 Energy Savings: 2.08 kW and 11,610 kWh



**GOOD FOOD STORE**

ESP: St. Cloud Refrigeration  
 Food Service Rebate: \$100  
 Energy Savings: 0.16 kW and 1,383 kWh

• **GUEST ROOM MANAGEMENT SYSTEMS**

Forty to 80 percent of a hotel's energy costs result from heating and cooling guest rooms. Guest room energy management control systems can help manage guest room related heating and cooling costs. These systems use sensors to determine when a room is unoccupied, and then adjusts the HVAC system operations to an "unoccupied" setting. When guests return, the system readjusts to meet guest comfort requirements. In short, guest room energy management controls reduce the energy wasted by heating and cooling unoccupied rooms. Replacement or upgrades of existing occupancy-based guest room controls are not eligible for this rebate.

• **HEAT PUMP SYSTEMS**

Air source heat pumps, often used in moderate climates, use the difference between outdoor and indoor air temperatures to cool and heat your business. Air source heat pumps move heat rather than converting it from a fuel, like in combustion heating systems.

Ground source heat pumps are similar to ordinary heat pumps, but use the ground instead of outside air to provide heating, air conditioning and, in most cases, hot water. Because ground source heat pumps use the earth's natural heat, they are among the most efficient and comfortable heating and cooling technologies currently available. Though heat pumps can be more expensive to purchase up front, the cost difference will be paid back over time through lower energy bills.

• **LIGHTING**

Old lighting can use twice the energy of new systems. High-efficiency lighting products can reduce lighting bills by as much as 40 percent. New lighting systems are not only energy efficient but can be brighter and longer-lasting. Immediate and long-term savings are astounding. While most lighting rebates are for retrofit improvement projects, some are also available for new construction.

• **MOTORS**

Electric motor systems are estimated to consume more than half of all electricity used in America, and more than 70 percent in many industrial plants. The annual energy cost to run a motor can exceed the initial purchase cost by six times or more! RPU offers rebates for purchases of premium-efficiency motors of 1 to 200 horsepower. Higher horsepower motors may be eligible for rebates under our Custom Efficiency Rebate Program (*see page 17*).



**YE OLDE BUTCHER SHOPPE**

ESP: Capelle's Electric  
 Lighting/T12 Round Up Rebate: \$2,960  
 Energy Savings: 5.09 kW and 20,321 kWh



**SENECA FOODS**

ESP: Adair Electric  
 Motors/Drives Rebate: \$3,360  
 Energy Savings: 0.23 kW and 136,511 kWh.

• **SOLAR**

The solar rebate program makes it more affordable for you to install solar technologies on your business.

**Solar Electric:** Provides a one-time payment of \$1 per installed watt for grid connected solar electric systems (at least .5 kW and up to 10 kW).

**Solar Hot Water:** Provides a one-time payment of \$15 per sq ft NET aperture (up to \$1,200) for all-electric heat customers who install a new solar hot water system.

• **RENEWABLE ENERGY CREDIT**

RPU's Renewable Energy Credit Program is available to RPU customers to help offset their "carbon footprint" and to support renewable energy by purchasing renewable energy credits (REC). A renewable energy credit (REC, pronounced "rek") is a trackable, serialized credit that is attached to a megawatt-hour of energy from a qualifying resource, such as RPU's Lake Zumbro hydro facility. For each megawatt-hour generated by the qualifying resource, one REC is made available. The purchase of one REC will equal the offset of one metric ton of carbon dioxide (one REC equals one MWh, equivalent to 1,000 kWh, of renewable energy). RECs are offered on a first come, first serve basis.

• **VARIABLE SPEED DRIVES**

Processes in commercial and industrial facilities require varying motor speeds, but many motors run constantly at full tilt – resulting in wasted energy, inaccurate control, and shortened equipment life. Variable Speed Drives (VSDs) adjust motor speed to vary the amount of power delivered to fans or pumps, according to the work required, thereby using only the amount of energy needed. RPU offers rebates for purchases of VSDs of 1 to 200 horsepower installed on fans or pumps. Other equipment installations may be eligible for rebates under our Custom Efficiency Rebate Program (*see page 17*).

• **VENDING MISER®**

Vending machines typically use electricity 24 hours per day even if no one is around to use them. VendingMisers control vending machines by detecting motion while maintaining the temperature of the product. They save 24 to 36 percent of vending machine electricity consumption. They also lower maintenance costs and extend vending machine life by reducing lamp use and compressor cycles. One unit can be used to control up to four vending machines that are located near each other.



**HIGH POINTE SENIOR COMMUNITY**

Solar Rebate: \$33,600  
Energy Savings: 43,196 kWh



**BOWMAN TOOL & MACHINE**

ESP: Chosen Valley Electric  
Variable Speed Drives Rebate: \$600  
Energy Savings: 10,802 kWh



• **WATER EFFICIENT APPLIANCES & EQUIPMENT**

Water efficient products provide the same performance and quality, but with the added benefit of significant water savings. For example, businesses can save up to 4,500 gallons per year by updating a bathroom with a WaterSense® labeled toilet. Using pop-up sprinkler spray heads with rotating nozzles can save up to 6,600 gallons of water per nozzle over a 5-year period. Restaurants can save up to 45,000 gallons of water per year by installing low-flow pre-rinse spray valves. Qualifying items may include:

- Clothes Washers
- Pre-Rinse Spray Valves
- High Efficiency Toilets
- High Efficiency & Waterless Urinals
- Rain Barrels
- Rotating Sprinkler Nozzles
- Weather-Based Irrigation Controllers

• **CUSTOM EFFICIENCY**

ESPs customize energy solutions plans to fit the specific conservation and unique energy needs of businesses. Therefore, some of the proposed changes or upgrades may not be eligible for a standard CONSERVE & SAVE® rebate. However, they may be eligible through our Custom Efficiency Rebate Program. Equipment that may be eligible include, but is not limited to:

- Air Compressor Improvements
- Efficient Refrigeration
- Variable Air Volume Systems
- Process Technologies
- Heat Recovery Systems
- Thermal Storage
- Energy Management Systems

**For Custom Efficiency Rebates, please contact us before you start your project. PRE-APPROVAL IS REQUIRED. Not all projects are eligible for rebates!**



**CASCADE MEADOW WETLANDS & ENVIRONMENTAL SCIENCE CENTER**

ESP: Himec Mechanical  
 Water Rebate: \$690  
 Water Savings: 98,146 gallons



**EASTWOOD BANK**

ESP: Himec Mechanical  
 Custom Rebate: \$923.49  
 Energy Savings: 20,522 kWh

## Applying for FINANCING

There are two types of financing available through RPU: **Energy Efficiency Financing** and **Green Financing**. Customers must contact an RPU Account Representative for pre-approval.

### Energy Efficiency Financing

Energy Efficiency Financing is available for improvement projects. Eligible projects must be completed by an Energy Solutions Partner (ESP) and qualify for a CONSERVE & SAVE® rebate.

### Green Financing

Green Financing is available for costs to obtain a customer's building certification in Energy Star®, LEED® (Certified, Gold, Silver, or Platinum) or Green Globes. The Green Financing program is only available for projects that are completed by an ESP.

All financing is based on availability of funds. Monthly payments for the financed amount are based on the total project amount: balances under \$5,000 are limited to 12 months and balances over \$5,001 are not to exceed 24 months. Maximum amount financed per project is \$25,000. No interest fee is required on the payment. Payments are collected as part of the customer's monthly utility bill. An administration fee in the form of a check payable to RPU will be collected when the paperwork is submitted (\$300 for projects under \$5,000 and \$500 for projects \$5,001-\$25,000).



#### HISTORY CENTER OF OLMSTED COUNTY

ESP: Nietz Electric  
Lighting/T12 Round Up Rebate: \$1,012  
Energy Savings: 0.42 kW and 1,484 kWh

### Step One: Customer Interest

**Energy Efficiency Financing:** A customer wants to make energy efficient improvements at their business and contacts an RPU Account Representative for financing pre-approval. Eligible projects must be completed by an ESP and qualify for a CONSERVE & SAVE® rebate.

–OR–

**Green Financing:** A customer wants to obtain building certification in Energy Star®, LEED® (Certified, Gold, Silver, or Platinum) or Green Globes, and contacts an RPU Account Representative for financing pre-approval. Eligible projects must be completed by an ESP.

*If customer qualifies for financing, they proceed to Step 2.*

### Step Two: Availability of Funds

RPU informs the customer or ESP of the availability of financing funds. ESP submits required paperwork, documentation, and administration fee.

### Step Three: Project Pre-Inspection

RPU performs a pre-inspection verification of the project. Financing funds will be held up to 90 days. If the project is not completed within those 90 days, funds may be released to other pending projects.

### Step Four: Project Completion

Upon project completion, ESP submits final paperwork and the ESP's invoice(s) to RPU for payment on the financed amount. For **Energy Efficiency Financing**, the ESP also submits the CONSERVE & SAVE® rebate application(s) and ESP's invoice to the customer for unfinanced amounts.

### Step Five: Post-Inspection & Payments

RPU pays the ESP for the financed amount and the customer begins repaying RPU the financed amount via their utility bill.

**Energy Efficiency Financing:** RPU performs a post-inspection verification of the project. RPU pays the customer their rebate(s) as a credit to the financed amount. Customer pays ESP the remaining unfinanced amount for the project.

–OR–

**Green Financing:** The customer or ESP is required to provide RPU with proof of certification once obtained. If certification is denied, the balance of the financed amount is due immediately.

# Energy CONVERSION Factors

- |   |                                     |
|---|-------------------------------------|
| 1 kW = 1,000 W  | 1 pound of coal = 1 kWh             |
| 1 MW = 1,000 kW                                       | 1 ton of coal = 25,000,000 BTUs     |
| 1 kWh = 1,000 Watt-hours                              | 1 gallon of gasoline = 125,000 BTUs |
| 1 kWh = 3,412 BTUs                                    | 1 gallon #2 fuel oil = 140,000 BTUs |
| 1 MWh = 1,000 kWh                                     | 1 gallon LP gas = 95,000 BTUs       |
| 1 GWh = 1,000 MWh                                     |                                     |
| 1 CF (Cubic Feet) = 1,000 BTUs                        |                                     |
| 1CCF = 100 CF = 1 Therm                               |                                     |
| 1 Therm = 100,000 BTUs = 100 CF = 0.1 MCF             |                                     |
| 10 Therms = 1 MCF = 1 Dkt = 1 MMBTU                   |                                     |
| 1 MCF = 1 Million BTUs = 1,000 CF = 10CCF = 10 Therms |                                     |

## POWER FACTOR

Power factor (PF) is the ratio of the true power or watts (kW) to the apparent power or volt-amperes (kVA). Identical only when I and E are in phase.

### TO FIND THE POWER FACTOR:

- when watts, volts, and amperes are known  
in single phase circuits:  $PF = W / (E \times I)$
- when watts, volts, and amperes are known  
in three phase circuits:  $PF = W / (E \times I \times 1.732)$

## WATTS

Watts = Volts x Amperes ( $W = E \times I \times PF$ )

### TO FIND THE WATTS:

- when the amperes and the ohms are known:  $W = I^2 \times R$
- when the volts and ohms are known:  $W = E^2 / R$
- in single phase circuits when the volts, amperes, and power factor are known:  $W = E \times I \times PF$
- in three phase circuits when the volts, amperes, and power factor are known:  $W = E \times I \times PF \times 1.732$

### TO CHANGE WATTS TO BTU PER HOUR:

- $BTU/h = 3.412 \times W$
- $BTU/h = 3.412 \times I^2 \times R$
- $BTU/h = 3.412 \times E^2 / R$

## KILOWATTS

### TO FIND THE KILOWATTS:

- when the volts and amperes are known:  $kW = (E \times I \times PF) / 1000$
- in single phase circuits:  $kW = (E \times I \times PF) / 1000$
- in three phase circuits:  $kW = (E \times I \times PF \times 1.732) / 1000$

## DEMAND

The amount of electricity a customer requires from the system at a certain time. Demand is measured in kilowatts. The average demand is determined by dividing the total number of kilowatt-hours by the hours in the time interval.

## PERFORMANCE RATIOS

### Measuring Efficiency by Using the Coefficient of Performance (COP):

- Cooling COP = Rate of Net Heat Removal / Total Energy Input
- Heating, Heat Pump COP = Rate of Useful Heat Delivered / Total Energy Input

### Measuring System Efficiency Using the Energy Efficiency Ratio (EER):

- $EER = \text{Cooling Output in BTU} / \text{Electrical Input in kWh}$

### CONVERTING kW/TON TO COP OR EER:

(Ex: if a chiller's efficiency is rated at 1 kW/ton, COP = 3.5 and EER = 12)

- $kW/ton = (12) / EER$
- $kW/ton = (12) / (COP \times 3.412)$
- $EER = (12) / (kW/ton)$
- $EER = COP \times 3.412$
- $COP = (EER) / 3.412$
- $COP = (12) / (kW/ton) / 3.412$

# NOTES

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