

# Residential Power Quality

## >> Protect your sensitive electronic equipment from spikes, sags, swells and flickers.

The uses we have for electricity are dramatically different than several years ago. We use home electronics daily, including computers, televisions, DVD players and more. Plus, many appliances such as refrigerators, clothes washers and dryers, ovens, stoves and microwave ovens now rely on sensitive electronics so they can offer special features.

NYSEG and RG&E are proud to provide reliable, essential electricity service. Occasionally, events occur that are beyond our control, including storms, vehicles hitting utility poles or other incidents that can create power fluctuations or interruptions. Even if the power flows continuously, a momentary change can disrupt your more sensitive electronic equipment. One way to easily tell if you've had a power fluctuation is when you see your electronic clocks flashing.

### Power Disturbances

There are several different kinds of voltage fluctuations; electronic devices that use components designed to operate within a narrow voltage range may be affected by momentary voltage fluctuations. These devices are called "sensitive."

Voltage disturbances that you can experience in your home include:

#### Dip (Sag)

A **dip** or **sag** is a drop in voltage lasting a fraction of a second. Typical household appliances will continue operating, but lights may flicker. Sensitive equipment may be more noticeably affected. For example, digital clocks may begin flashing or computers may lose data. The causes of dips include the starting of major appliances, circuit faults or the operation of utility equipment used to control power within the electricity delivery system.

#### Transient (Spike)

A **transient** or **spike** is an increase in voltage lasting a few thousandths of a second. Spikes may adversely affect sensitive programmable equipment, like computers and microwave ovens, by damaging electronic circuit components. Two common causes of spikes are lightning and utility switching devices.



#### Swell

A **swell** is an increase in voltage; not as high as a spike but longer lasting. Some causes include vehicles striking utility poles and crossed wires due to tree damage during storms.

#### Flicker

A **Flicker** is a repetition of sags and/or surges often characterized by fluctuating brightness of light. Flicker can be caused by rapidly switching large amounts of energy on and off in your home or even in a neighbor's home.

#### Momentary Power Interruptions

##### Momentary power interruptions

occur when power is completely cut off for a fraction of a second or for several minutes. They occur when sensors on a utility's electric distribution system allow a temporary power problem to safely correct itself.

For example, protection equipment would reroute power if a tree limb temporarily caused two power lines to come together. This kind of intentional, but brief interruption prevents potentially lengthy power interruptions.

Voltage surges, sags and momentary power interruptions have many causes. Keep in mind that electricity usually travels a great distance to your home, and many obstacles can be encountered along the way. There are also causes inside your home that can create power disturbances such as:

- Faulty or loose electrical wiring.
- Faulty circuit breakers.
- Poor or improper grounding of electrical appliances.
- Appliance motors, copiers, printers, air compressors, small electric heaters, and coffee pots cycling on and off.



## What You Can Do

The best time to consider protection measures for your sensitive equipment is before you purchase it. Manufacturers now produce a variety of appliances with built in protection devices built into the units. Take advantage of these features when you can.

You can protect your electronic equipment to prevent voltage fluctuations or momentary interruptions. Here's how:

- Install UL 1449-listed, plug-in surge suppressors on the outlets. Surge suppressors come in single- or multiple-outlet styles. They're designed to protect against transient (spike) fluctuations. Put surge suppressors to work to protect your computer, garage door opener, microwave oven, home security unit, refrigerator/freezer with microprocessor and all stereo system components. Combination surge suppressors are also available, including surge suppressors that provide a power line connection and a connection for your TV cable, satellite wire or telephone line.
- Ask a qualified licensed electrician about having a surge suppressor installed at your electric panel. These panel-based surge suppressors provide effective protection for electrical wiring and large appliances, such as pool pumps, heating and air conditioning systems, well pumps, electric water heaters, trash compactors and garbage disposals. Plug-in surge protectors are still recommended at outlets to protect sensitive electronic equipment. An electrician can also check your home for faulty and loose wiring connections, faulty circuit breakers and improper grounding.
- Obtain an uninterruptible power supply (UPS) device. A UPS provides an alternate source of power for up to several minutes in the event of a power interruption. This alternate power source will permit an orderly shutdown of computer equipment and eliminate the possible loss of data. All UPS devices come with a rechargeable battery between the electronic equipment and power supply source.



- Put your sensitive electronic equipment on a separate circuit. Your computer or microwave should be plugged into a household circuit that does not provide electricity to motor-driven appliances such as a refrigerator or an air conditioner.
- Most protective devices may be purchased at electronic supply or computer stores. To make a quality purchase, ensure the device has been laboratory-tested for performance. For example, products that bear the Underwriter's Laboratory (UL) symbol have been checked for safety.
- Make sure all equipment is properly grounded. Using a three-prong adapter in a two-hole electrical socket is not proper grounding.



## Ensuring Power Quality

At NYSEG and RG&E, we strive to keep momentary interruptions and voltage fluctuations to an absolute minimum, while enhancing service reliability and power quality. Because of the complexity of our electricity delivery system, we cannot guarantee that all electrical problems can be prevented.

We have a comprehensive program to constantly upgrade and maintain the equipment on our electricity delivery system. In addition, because tree limb contact is the most frequent cause of service interruptions, we have a vegetation management program designed to keep tree branches safely away from power lines.



*This information is based on industry publications and on NYSEG's and RG&E's experience with techniques that have been effective in preventing problems from power disturbances. However, NYSEG and RG&E do not guarantee that use of these recommendations will prevent problems resulting from power disturbances.*

## Important Contact Information



**Electricity interruptions or emergencies:**

[nyseg.com](http://nyseg.com) or **1.800.572.1131**  
(24 hours a day, every day)

**Natural gas odors or emergencies:**

**1.800.572.1121** (24 hours a day, every day)  
or call **911**

**Customer relations center: 1.800.572.1111**

**Hearing- and speech-impaired:**

Dial **711** (New York Relay Service)

[nyseg.com](http://nyseg.com)



**Electricity interruptions or emergencies:**

[rge.com](http://rge.com) or **1.800.743.1701**  
(24 hours a day, every day)

**Natural gas odors or emergencies:**

**1.800.743.1702** (24 hours a day, every day)  
or call **911**

**Customer relations center: 1.800.743.2110**

**Hearing- and speech-impaired: Dial 711**

(New York Relay Service) or **1.800.962.3293**

[rge.com](http://rge.com)