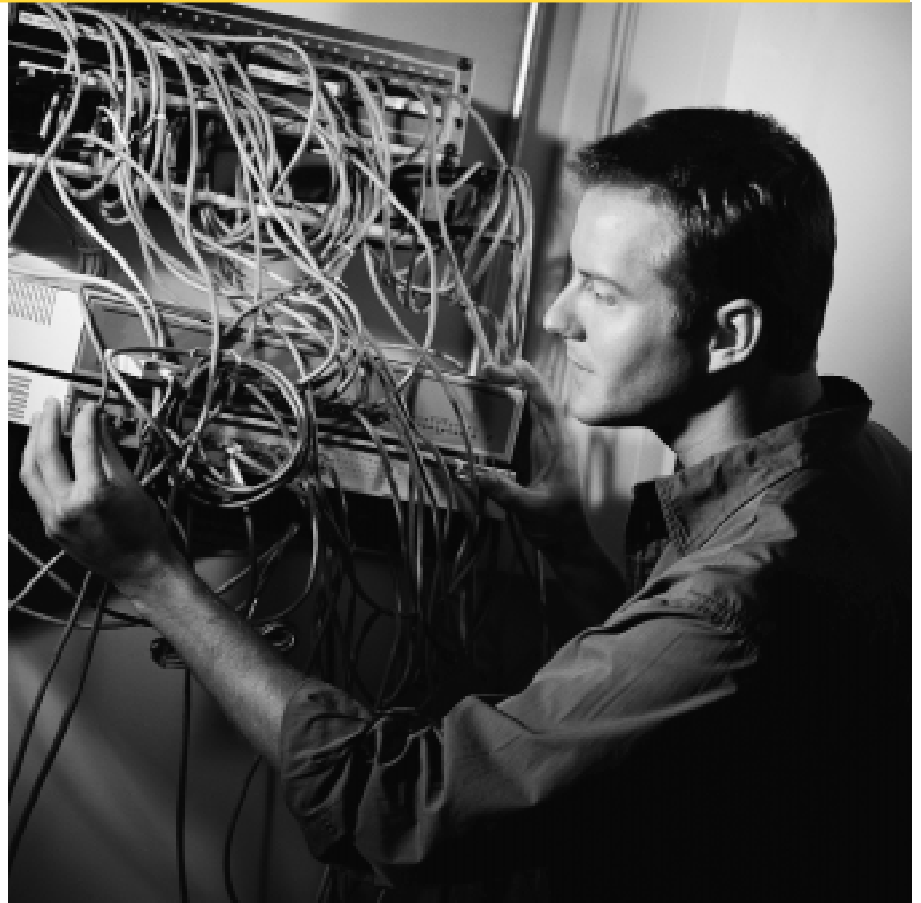


# POWER QUALITY SOLUTIONS FOR YOUR BUSINESS

“Power quality” refers to the overall state of the electrical power system, which includes not only the electricity produced and provided by Puget Sound Energy, but also the demands our customers place on the system.

Power quality varies for a number of reasons. A lightning strike at a generating station or transformer; trees falling on lines; severe wind, ice, or snow storms; even a vehicle collision with a utility pole can cause a power outage. These outages are unavoidable and, fortunately, rare.

It is much more likely, however, that the source of power quality problems lies within your business in the form of wiring deficiencies. If you notice that computers spontaneously reboot or the lights flicker when large equipment turns on (e.g., air conditioning compressors, refrigerators, copiers, etc.), that’s probably the cause. Through the Enliance Program, you have access to experienced electrical consultants who can help identify and correct those problems.



## COMMON POWER QUALITY PROBLEMS

The most common problems are:

- **SAGS** These short (less than one second) drops in normal voltage can be caused by motors starting, heaters in photocopiers or laser printers, and short circuits on the power lines. Sags do not usually damage computers but may cause them to restart or lock up.
- **TRANSIENT VOLTAGES OR SURGES** Similar to sags but more severe, transient voltages are electrical distortions caused by large motors or other appliances starting and stopping. They can damage the components of electronic appliances, cause computer damage, and corrupt data.

- **HARMONICS** Power supplies of some electronic appliances, especially personal computers and HVAC systems, cause harmonic distortion, which can overheat transformers, building wiring, motors, and electronic components.
- **OUTAGE** Complete loss of electricity, usually caused by severe weather or accidents.

## COMPUTERS ARE ESPECIALLY SENSITIVE

Today’s microchips are denser than older chips; transient voltages can literally melt, weld, pit, and burn them, causing temporary or permanent malfunctions. Suspect

transient voltages if you’re experiencing any of these computer problems:

- Data corruption or lost data
- Software damage
- Printer errors
- Resetting or occasional lockups
- Component damage
- Monitor goes blank
- Equipment failure

Electronic clocks, fax machines, microwave ovens, and stereo systems are also susceptible to damage from power variations.

## PROTECTING YOUR BUSINESS EQUIPMENT

Here are several actions you can take to help protect your business against power quality variations and the potential losses resulting from electrical damage.

**INSTALL SURGE PROTECTORS** These are devices between the electrical outlet and sensitive electronic equipment, such as computers, that shield them against electrical surge damage. Buy surge protectors that meet the Underwriters Laboratory (UL) 1449-2 standard. You should also use surge protectors on cable and telephone lines for modems, faxes, and answering machines.

### SIX STEPS TO SUCCESSFUL SURGE PROTECTION

- 1 Identify equipment that needs to be protected (computers, faxes, copiers).
- 2 Determine the amount of protection required.
- 3 Decide location for the surge protectors.
- 4 Choose whether hard-wired or plug-in type units are appropriate.
- 5 Select the failure mode of the protection device.
- 6 Call a licensed electrician for assistance.

**INSTALL AN UNINTERRUPTIBLE POWER SUPPLY (UPS)** A UPS provides continuous power to sensitive equipment during a power outage. There are several types of UPS equipment, but all include a charger, batteries, and an inverter. Some are small enough to be placed next to the computer. All require regular inspections and preventive maintenance to ensure reliability.

### HOW TO CHOOSE THE RIGHT UPS

- Determine the size and voltage required for proper equipment operation.
- Make sure the UPS is compatible with equipment being protected and the intended power source.

**ADD OUTLETS OR CIRCUITS** Large appliances (e.g., copiers, the lunchroom refrigerator) should always be on their own circuits. Computers on the same circuits may be affected as the appliances go on and off.

### SOLVING RECURRENT PROBLEMS

If you have recurrent problems with your electronic equipment, first make sure you have carefully followed the manufacturer's instructions for installation and operation. Check all of your appliances for loose or damaged plugs, outlets, and connections.

Then check the fuse box or breaker panels to make sure sensitive equipment isn't sharing a circuit with large appliances.

Next, call an Enliance-certified electrician to check your electrical system to ensure wiring and grounding are in good working order, and repair or replace any loose or damaged plugs, outlets, and connections.

## ENLIANCE CAN HELP YOUR BUSINESS

We are dedicated to helping you identify, install, and maintain the proper electrical equipment for your business. Enliance can connect you with qualified, reputable specialists in your area who can help with power quality problems.

Enliance professionals can provide these services for your business:

- Power quality assessments
- Equipment installation
- Corrective wiring and wiring installations
- Power requirement planning and profiles
- Site, wiring, and grounding surveys
- Equipment load demand assessment and monitoring
- Training

## REFERRALS

For referrals to financing services or to power quality specialists near you, please visit our website, [www.enliance.com](http://www.enliance.com), or call us at **1-800-562-1482**.