

Office Power Troubleshooting FAQ

You don't need to be an electrician to understand the basics of electricity in your office. Most electrical problems result from internal wiring or grounding issues, while the remainder are related to something external, such as lightning or a car hitting a power pole.

Avoiding power problems

To reduce potentially damaging spikes or power surges at the office, keep in mind this basic rule: Isolate sensitive electronic devices like computers and modems from power-hungry devices like HVAC systems, space heaters, microwaves and laser printers whenever possible. Surge protectors and uninterruptible power supplies can help.

Questions & Answers

Q. Our office has fluorescent lights with electronic ballasts that seem to be failing too soon. What should I do?

The average lifespan of an electronic ballast is 50,000 hours, so expect only half of the ballasts to work after this time and some to fail each year. Electronic ballasts are generally rated to operate within a range of plus or minus 10 percent of the standard voltage.

PGE normally maintains your voltage within a range of plus or minus 5 percent, so minor voltage changes should not affect their life. Equipment failure due to a power surge is a common customer concern. Minor power surges occur frequently and most of them originate inside a building. Surge protection is the only good defense.

Q. My HID lighting turns off every time the compressor starts. What can PGE do to help me?

When the voltage drops below the minimum operating voltage for HID lighting, the lamp goes out and must cool down before it can re-start. In some cases, this can take several minutes.

The average life of the high-pressure sodium lamp used in most HID lighting is 24,000 hours. If the lamp is approaching the end of its life expectancy, the minimum voltage needed can increase to a level where minor voltage sags may turn it off. Two of the least costly solutions

PGE Business Services

For outages, repair or any power problems, contact your PGE representative or call the Business Services Team:

- Portland: 503-228-6322
- Salem: 503-399-7717
- Elsewhere: 800-822-1077

Definitions

Electrical fault

An abnormal connection causing current to flow from one conductor to ground or to another conductor. A fault may be corrected automatically or may lead to a voltage sag or power outage.

Power surge or spike

A sudden, sharp increase in the voltage or current lasting less than one cycle.

Surge protector or protector

A protective device for limiting surge voltages on equipment by discharging or bypassing the surge current to ground.

Voltage sag

A short-term decrease in voltage lasting anywhere from milliseconds up to a few seconds.

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include replacing the lamps or installing a constant voltage transformer to serve your HID lighting load. If you believe your voltage is lower than it should be, call your PGE representative or PGE Business Services.

Q. I have power problems that seem to be related to nearby construction. Who can I call at PGE to verify this?

During construction it is sometimes necessary for PGE to interrupt the power at some locations. Call your PGE representative or PGE Business Services.

Q. Some of my equipment was recently damaged by a power surge. What can PGE do to prevent surge damage?

We have surge protectors on our equipment that limit the magnitude of some surges, but can't fully prevent them or protect your equipment. The best way to protect yourself is to install surge protection equipment in your office.

Q. We experienced a power problem at our office, and an elevator motor failed as a result. PGE said the problem took place because our location was "single phased." What does that mean and how can PGE prevent this?

"Single phased" means one phase of your three-phase service was not available. This can occur if our protection system opens only one phase, and you still have power available on the other two phases. Should this occur, the other phase of a three-phase motor will draw too much current. If the motor's overload protection does not open quickly enough, the motor will be damaged. Single phasing is a rare occurrence, and protection from this type of disturbance is not included with the standard motor control system. The best solution is to install a "single phasing" sensing relay. A good single-phasing sensing relay should be calibrated for the location where it will be used. Improper calibration of the relay can result in nuisance tripping problems.

Q. My electrician told me our voltage is too low. Who should I call to get this repaired?

PGE attempts to maintain your voltage within 5 percent of the standard voltage (between 114 and 126 volts for locations with 120/208 volt, three-phase service). If you believe the voltage at your location is below this range, call your PGE representative or PGE Business Services.

Q. Our recently installed computer network doesn't work reliably. We suspect this is related to our electrical system. What can PGE do to help?

Many office buildings aren't wired to support today's computer loads. Even new buildings wired according to code may not adequately support sensitive loads like a computer. Networked computers are likely to operate unreliably without the installation of enhanced wiring and grounding. Contact a network consultant or a PGE-certified electrical contractor.

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Q. We have a computer-operated machine that keeps locking up. The technician said it was due to power disturbances and suggested we call PGE. Could PGE help determine what's wrong with our power?

When equipment does not operate correctly and the lockups do not correlate to a disturbance on PGE's system, the problem is very likely due to an internal wiring and grounding issue. You'll need to have a qualified electrical contractor track down the problem.

Q. Several times this year our lights blinked. Even these minor disturbances cause my equipment to restart. Can PGE improve my service so this doesn't happen?

PGE strives to provide you with safe, reliable service day in and day out but it's not possible to prevent all disturbances. If this issue continues, contact your customer representative or PGE Business Services. You should also consider purchasing UPS devices or surge protection equipment for extra protection.

Q. I recently bought an uninterruptible power supply device. Now it beeps frequently during the day. What should I do?

There are many reasons that can cause a UPS to beep, but most are the result of equipment cycling on and off. The most common sources of disturbance to a UPS include a laser printer or copy machine connected to the same branch circuit as the UPS, or a large motor load such as the HVAC system or air compressor serviced from the same electrical panel as the UPS.

The best solution for this type of problem is to move the UPS devices to another circuit. If you cannot serve the large motor loads from a different electrical panel, you may be able to change the sensitivity of the UPS and still protect your equipment from power disturbances.

If your UPS beeps only once or twice a week, it may mean it's detecting a minor disturbance within your facility or on PGE's system. In either case, the UPS is protecting your load.

Q. There are several different types of UPS devices available. I would like to get one, but do not want to pay more than necessary. What type and size of UPS should I buy?

There are three main types of "plug and play" UPS devices. The device that works best for you depends on the type of loads and the length of time you want to support them. Read about how to choose a UPS device that is right for you.

Q. I want to protect my office from possible surge damage. What should I install?

All offices can benefit from the installation of surge protection at the main electrical service. A high quality unit should handle almost anything coming through PGE's distribution system, even a direct lightning strike. We also recommend additional stages of protection at electrical panels

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serving critical loads. The price of surge protection can vary widely depending on the brand and model. In general, the higher the cost of surge protection, the higher the protection. It pays to consult an electrical contractor or your PGE representative.

Q. My computer monitor screen wiggles. Is there something PGE can do to fix this?

The most likely reason a screen wiggles is exposure to a magnetic field, known as electromagnetic interference. Often the source of the problem is close by. Is your monitor near an electrical panel or a transformer, possibly on the other side of the wall? Generally, moving your monitor away from the suspected source of the magnetic field can solve the problem.

Electromagnetic interference may also be a result of wiring errors in your building. An engineering company specializing in EMI issues may be needed to identify and solve this type of problem.

For more information on EMI issues see [Electric & Magnetic Fields](#) page

Wiring and grounding issues

If your building isn't wired to support office equipment, you're likely to encounter power quality problems over time. In general, all electronic products and sensitive equipment benefit from dedicated branch circuits that are sized and installed to meet sensitive load recommendations.

Is your equipment vulnerable to these common power quality culprits?

Q. Has your building's wiring been modified over the years by electrical contractors?

Wiring errors are the most common source of power quality problems. Most result from a violation of the National Electric Code.

Q. Have ground conductors been routed from the electrical panel to each outlet?

The National Electric Code allows use of the conduit system as ground reference for office equipment. But over time, the conduit connections deteriorate, which causes equipment to operate unreliably. Ground conductors minimize the problem.

Q. Are the circuits that serve your computers also used to operate foot warmers, space heaters, microwave ovens or photocopiers?

These items draw a lot of electricity, causing problems with computers.

Q. Does the heating, ventilation and air conditioning system use the same electrical panel as your computers?

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Your risk of problems is even greater if you use a UPS because the UPS will react to the voltage changes caused by frequent cycling of this equipment. This runs the UPS battery down, reducing your protection.

Q. Have you located your office equipment more than 50 feet from your electrical panel without increasing circuit conductor size?

You may have lower voltages than normal.

Q. Do you use extension cords longer than 6 feet to power office equipment?

You should directly connect all equipment to a receptacle. Extension cords reduce available voltage.

Q. Do you have an elevator or use an air compressor in your office environment?

Electrical loads for elevators and air compressors should be separated from other office equipment.

Q. Do you have light dimmers or overhead fluorescent lights (electrical ballast) powered from the same electrical panel as office equipment?

They should be on separate panels.

Q. Do more than 50 percent of your office's electrical loads come from office equipment such as copy machines, laser printers, computers or fluorescent lights?

This type of office equipment can distort voltage, resulting in equipment problems. Add additional branch circuits to serve these loads.

Q. Do tenants in other parts of your building operate industrial process equipment?

Industrial equipment can cause power quality problems.