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## **Ask the electrician: Power surges: Are they a big deal? - by John Sloane**

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John Sloane,  
Interstate Electrical Services

You might not be aware of this, but the power your business receives from the power company is probably not as “clean” as you think. By clean power, I am not referring to wind, solar or other forms of renewable energy. I am talking about surges, lags and spikes in power coming in from the street.

Street power is only guaranteed at plus or minus 10%. When you're dealing with 480 volts, that's a variation of 48 volts, and that's drastic. That can potentially damage motors on rooftop units, the air conditioning, and all of the equipment that is not designed to run with such wide swings in power. The life expectancy of the equipment may drop from ten years to two years.

Power companies generate power based on demand. If demand suddenly shifts – if the factory down the street goes to lunch and pauses production, for example – that can create surges in other places before the power company is able to readjust the supply. In the summer, when the air conditioning loads get high, power companies slowly reduce voltage a couple of percentage points at a time to maintain power to large areas. Instead of getting power at 480 volts, you may end up getting 450 or 460 volts. Likewise, if your electricity is 120 volts, it may drop to 110. As a consequence, your equipment ends up working harder and its life expectancy is reduced. A typical motor is designed to handle a maximum of 5% swings in power. Any more than that, and they can't handle it. It is designed to be powered at 120 volts, and you want your electricity at 120 volts.

Recently, Interstate Electrical Services worked on a \$250,000 turnkey project for a customer that enabled them to prevent outages and surges. We did the concrete pad, the gas piping to the generator, the generator, the uninterruptible power supply (UPS) and the power distribution. As a worldwide company, one single 4-8 hour outage could cost them the same amount of money. By the time an outage was over and they reestablished power, not only would the IT department be running around like crazy trying to recover data from the servers and other equipment, they would be frantically trying to get everybody back up online all around the world, with employees across the globe wondering, “What just happened?” You also have to take into account the fact that the

lifespan of the business's electronic equipment has been shortened by the power spikes caused by the outage.

It's important to take precautions to ensure you're getting the cleanest power possible.

Next month in this column, we'll discuss how a UPS can help you protect your equipment.

John Sloane, vice president, central and southern New England service divisions, Interstate Electrical Services, Billerica, Mass.

New England Real Estate Journal - 17 Accord Park Drive #207, Norwell MA 02061 - (781) 878-4540