

They say I can't replace the electric heaters in my Mom's house.

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Shawn from Nepean, Ontario writes: "My mother wants to replace all of her baseboard heaters but has been told that all new heaters are 220v and her home has only 110v. My question to you Jon is how can I tell for sure if Mom's home is 110v and if so, what can we do to replace her baseboard heaters if all they sell are 220v appliances?"First of all you need to be careful when working with electricity not only to prevent shocks to yourself but to prevent the possibility of setting up the conditions for a future fire. If you are not sure about what you are doing, have a licensed professional in to do the job. But the person you were talking to was certainly not a professional, because all homes in Canada have 240 volt service, that is the only way Hydro delivers it, and 120v baseboard heaters certainly do exist, although they are not common and will have to be special ordered. The first graphic shows you how the electrical distribution system works. The higher the voltage, the easier and more economical it is to transport the electricity. When it finally leaves the hydro pole and comes into your house it comes in as what we call a "3 wire" system. The two coloured wires have 240v between them and in the middle is a neutral wire that will give you 120v to either of the coloured mains wires. Hence inside the circuit breaker box, or the fuse box, if you connect an appliance to the two main bus bars, you will get 240v. If you connect an appliance to one of the main bus bars and the neutral, you get 120v. Some appliances, like the clothes dryer and the stove have all three wires (plus the ground wire) which gives them 240v for their heating elements and 120v for the lights and timers. For the same reason that Hydro uses high voltages to carry large quantities of power, baseboard electric heaters are usually fed with 240v. It simply requires a smaller and cheaper wire to carry the electricity from the mains box to the heater. But you can get the same heat with a heater designed to run at 120v. It is the wattage rating that determines how much heat it will put out. So, any electrical supply store can order just about any size and wattage of 120v heater if that is what you really need, or you could upgrade to 240v, using the same wires if you have someone connect them differently at the mains box. (Remember the 120v wires are larger than the 240v wires for the same wattage, that is why you can use the same wire when moving the voltage up.) The more important question could be, is her mains supply box large enough to handle this electrical heating? Very old houses had 30 amp or 60 amp service (amperage is the total amount of power available, voltage has to do with how that power is delivered). That was in the days when all electricity was used for was lighting. For a long time now 100 amp service has been the standard because of our many electrical appliances and electrically heated homes commonly have 150 or even 200 amp service today. All of that means that the wires from the Hydro pole are larger and larger, and then the distribution box is also larger with more circuits available. This may be what is limiting the electrical heating in your mother's house. However, assuming that the initial baseboard heaters were safely installed, they can be safely replaced with the same voltage and wattage heaters, and they do exist. Don't you just love stores clerks that tell you: "If we don't sell it, it doesn't exist." Click here for information on the LEGALITY OF DIY ELECTRICAL WORK.

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