

# Understanding Radon Electrical Provisions for Safer Homes

## Why Electrical Provisions Matter in Radon Mitigation

When I first started working in radon mitigation in Saint Louis, I assumed the hardest part would be dealing with the radon gas itself. And sure, sealing cracks in a basement floor and routing PVC piping through a crawlspace takes skill. But what often trips up homeowners and even some contractors is something much more mundane: the electrical provisions needed to make the whole system work. Radon mitigation systems, especially those using sub-slab depressurization, rely on a radon fan that runs continuously. That fan needs power, and the wiring must be done right. Over the years, I have seen systems fail because someone skipped the electrical planning or used the wrong setup. This article shares what I have learned about radon electrical provisions, so you can avoid those same mistakes.

In Saint Louis, where radon levels can vary block by block, a properly installed mitigation system is not a luxury. It is a necessity. The EPA recommends action when radon levels hit 4 picocuries per liter or higher. Many homes in this region test above that threshold. A standard mitigation approach involves a radon fan installed in an attic or outside, connected to a network of PVC piping that pulls radon gas from beneath the slab and vents it above the roofline. That fan needs a dedicated electrical circuit, often with a switch and sometimes a warning label. These radon electrical provisions are not complicated, but they are easy to overlook when you are focused on the soil suction and sealant work.



## What Are Radon Electrical Provisions?

In simple terms, [radon electrical provisions](#) refer to the wiring, outlets, switches, and disconnects required to power the radon fan and any monitoring equipment, such as a manometer. The manometer is a small gauge that shows whether the system is maintaining negative pressure under the slab. Without power, the fan does not run, and without the fan, the system does nothing. I have been on service calls where the fan was installed perfectly, but the electrical outlet was on the same circuit as a refrigerator or a sump pump. Every time the fridge cycled, the fan lost power. That is a system failure caused by poor electrical planning.

Professional radon contractors know that a dedicated circuit is the gold standard. The radon fan draws a modest amount of current, usually less than two amps, but the circuit should not share loads with other major appliances. The electrical provisions also include a visible disconnect switch, often required by building code, so that service technicians can safely isolate the fan during maintenance. In new construction, these radon electrical provisions can be roughed in during the framing stage, saving time and money. In existing homes, the electrician may need to run a new line from the panel, which adds cost but is well worth the reliability.

## **Lessons from the Field**

I remember a job in a 1950s ranch in south Saint Louis County. The homeowner had already tried a DIY mitigation kit from a big box store. He had run the PVC piping and installed the radon fan in the crawlspace, but he had plugged the fan into a nearby outlet using an extension cord. The extension cord ran behind a water heater and under a workbench. It was a fire hazard, and the cord was not rated for continuous use. When I arrived for the post-installation verification, the system was barely running. The manometer showed only a slight vacuum, and the fan was struggling because the voltage drop over that long cord was robbing it of power. We had to rip out the extension cord, install a new dedicated circuit, and hardwire the fan according to building code. That is a classic example of why radon electrical provisions should be part of the original plan, not an afterthought.

Another case involved a finished basement where the radon contractor had run the PVC piping through a dropped ceiling and installed the fan in an attic space. The electrical rough-in was done, but the switch was placed behind a bookshelf. The homeowner had no idea how to turn the system on or off, and when the fan needed servicing, the electrician could not find the disconnect. We ended up installing a new switch near the basement stairs, with a clearly labeled cover plate. Small details like that make the difference between a system that works for thirty years and one that gets abandoned.

## **Integration with Radon Testing and Verification**

Proper radon electrical provisions also affect radon testing. After system installation, the standard practice is to perform post-installation verification using a radon detector. The detector needs to run for at least 48 hours, often longer, and it should not be moved or disturbed. If the electrical system is flaky, the fan might cycle off during the test, skewing the results. I have seen test reports that showed borderline levels because the fan lost power overnight. The homeowner then had to pay for a retest and another visit from the radon contractor. All of that could have been avoided with a simple dedicated circuit and a properly installed disconnect.

Air Sense Environmental, where I trained early in my career, emphasized the importance of the electrical side of radon mitigation. They taught me that the radon fan is the heart of the system, and the electrical provisions are its circulatory system. If the wiring is not done to code, the whole system is compromised. That lesson has stuck with me through dozens of installations in Saint Louis and the surrounding areas.

## **Common Mistakes and How to Avoid Them**

Based on what I have seen in the field, here are the most common electrical mistakes homeowners and inexperienced contractors make:



- Using an existing outlet on a shared circuit without verifying the load. The fan can be starved for power when other appliances cycle on.
- Forgetting to install a visible disconnect switch near the fan. This makes servicing difficult and can violate local building code.
- Running the fan on a GFCI-protected circuit in a damp location without checking the manufacturer's recommendations. Some fans trip GFCIs repeatedly.
- Using extension cords or unapproved wiring methods. These are not rated for continuous, hidden use and create fire risks.
- Placing the electrical outlet or switch in an inaccessible location, such as behind stored items or in a tight crawlspace.

Avoiding these pitfalls starts with a conversation between the radon contractor and the electrician before any work begins. The radon electrical provisions should be documented in the system design, and the electrician should follow the fan manufacturer's specifications. It is also smart to install a manometer that includes a low-voltage alarm or a visual indicator. That way, if the fan loses power, the homeowner knows immediately, rather than discovering it months later during a radon test.

## **Working with Building Codes**

Building code requirements for radon mitigation systems vary by jurisdiction, but most follow the IRC or local amendments. In Saint Louis County, for example, the electrical work must be performed by a licensed electrician and inspected. The radon electrical provisions typically include a dedicated 120-volt circuit, a switch or disconnect within sight of the fan, and proper labeling on the panel. The wiring must be protected in conduit or armored cable if it runs through a crawlspace or unfinished area. These requirements are not meant to be burdensome. They exist because a radon mitigation system is a mechanical system that runs 24/7 for the life of the home, often twenty years or more. The electrical side must be robust enough to handle that continuous duty cycle.

I once worked on a house where the previous owner had installed a radon fan using a lamp cord and a wall plug. The system worked for about a year, then the cord melted at the plug connection. The fan stopped, and radon levels went back up. The new owners had no idea until they did a radon test before selling the house. That cost them thousands in remediation and delayed their closing. A few hundred dollars in proper electrical provisions would have saved all of that.

## **Final Thoughts**

If you are planning a radon mitigation system, whether it is for a new construction or an existing home, do not treat the electrical work as an afterthought. Talk to your radon contractor about the radon electrical provisions required for your specific setup. Make sure the fan has a dedicated circuit, a visible disconnect, and proper labeling. If you are hiring a radon contractor, ask them about their electrical installation process. A reputable contractor will either have a licensed electrician on staff or a trusted partner who understands the unique needs of radon systems.

In my experience, the homes that pass post-installation verification on the first try are the ones where the electrical provisions were planned from the start. The system installation goes smoother, the radon fan runs reliably, and the manometer stays steady. The homeowners get peace of mind, and the contractor gets a satisfied customer. That is the goal for everyone involved.