# REO & HPIR (HUD Property Inspection Report)
# Electrical Inspections – Safety, Codes & Standards

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**The Purpose of this Document**

The purpose of this is to deliver fact based technical information, safety information, regulatory compliance ramifications, and code requirements. This is not a “how to guide” to properly and safely energize a premises wiring system (home or other) which should be left to “qualified” electrical workers.

This author has sadly been directly involved in literally hundreds and hundreds of electrically related fatalities in his multi decade career with OSHA. What’s even sadder in these cases are the family members and loved ones left behind. Consequently the intent here is to hopefully save some lives of hard working home inspectors who might unwittingly be following bad information out there.

Perhaps a better title for this document would be “Don’t Believe Everything You See and Read on the Internet”!

**The Problem**

It has recently come to my attention that there is a widespread, nationwide practice of what is called “charging a house” for the purpose of performing an electrical inspection. This approach uses a portable generator connected to the house electrical system using a double ended male plug extension cord adapter plugged into a branch circuit or alternatively hard wired into the property electrical service panel, for the purpose of electrically energizing the premises wiring system.

These methods of energizing or “charging a house” are:

1. Unsafe,
2. In Violation of National Fire Protection Association (NFPA) Codes and Standards including the National Electrical Code (NEC®), as well NFPA 70E Standard for Electrical Safety in the Workplace (yes, OSHA conducting inspections at a residential property is considered the workplace in this instance).
3. In Violation of OSHA (Occupational Safety and Health Administration) Standards.
4. In violation of U.L. (Underwriters Laboratories) safety standards, which is why they are not a product that is manufactured and produced, but must be homemade.

Most of what is purported or assumed to be acceptable practices is flat out hazardous. Some of the prescribed methodologies can present an immediate electrocution hazard to the inspectors. Some other teachings in the online training videos can also pose a fire hazard to properties as a result of some of these recommended practices of charging a house.

Further the contractors as well as sub-contractors are subject to OSHA fines (serious classifications or higher) if they are performing these tasks as they are shown in many cases in posted online videos. An OSHA fine for a “serious citation” can range from $3,000 to $7,000 (without any penalty adjustments). If OSHA shows up and finds an unsafe act or unsafe condition and you know it’s wrong from the get-go and still did it anyway then the serious citations could become “willful” citations (up to $70,000 per each citation).

**Why this (charging a house) doesn’t work or accomplish the objective**

“Charging a house” for the purpose of simply observing if light bulbs are illuminated in their fixtures or fan motors run does not establish that the branch circuit wiring is up to code or is in fact wired safely including the appliances and electrical fixtures.
Lights and appliances may function but there can still be serious hazards present as well as code violations present in the wiring. In order to ascertain that the property electrical wiring is in compliance with codes and standards, electrical test equipment must be used. Also training in the safe use of such equipment as well as wiring and the standard requirements is necessary. Not only is such training necessary it’s required by both NFPA codes and OSHA Standards.

**Some of the Specifics & Standards**

Let’s get specific and talk about some codes, standards, equipment and work practices. Double ended male plug extension cord adapters. These are unsafe and dangerous. These devices are in violation of the Law 29 USC 654 and are prohibited by numerous OSHA standards. This adapter can be cited under OSHA’s 29CFR1910.305(j)(2)(i), 29CFR1910.303(a), 29CFR1910.403(a) just to name a few, and additionally these are also in violation of the NEC Article 406.7(A&B), and Article 110.2.

If any type of cord connector or attachment plug (cord cap) is installed on a cable assembly or flexible cord as opposed to a listed and recognized cordset the applicable violated codes and standards include 29CFR1910.303(b)(2), 29CFR1926.403(b)(2), and NEC Article 110.3(B). "Qualified" electrical workers as well as safety professionals have historically referred to this type of cord as a "suicide cord" and also a "widow maker", which should also provide some insight as to the seriousness of the safety concerns.

Some inspectors are being coerced to perform this specific practice by their GC (general contractor) and are also being told that it's a HUD requirement. While it is not possible to prove a negative, a thorough search of HPIR (HUD Property Condition Report) requirements has turned up no such mandates by HUD. There have been no HUD requirements found that specifically mandate any unsafe acts or standard violations of any kind.

Suggestions outlined in private company policy documents suggest that contractors use "alternative means to conduct the systems and appliance functionality testing". Companies cannot mandate unsafe or illegal practices. The phrase "alternative means does NOT equate to this specific approach ("suicide cord"/"widow maker"). It means some other approach that is safe. I suspect that these same persons would now attempt to interpret the NEC code references as well as the OSHA references in this document in some feeble attempt to somehow negate or diminish them. To those people I would refer them to the code requirements that specifically states, "This Code is not intended as a design specification or an instruction manual for untrained persons". To all those self-proclaimed electrical and regulatory experts, certainly you know where to find that code reference.

As a side note frankly I'm perplexed how a "functionality test" of something such as illuminated light bulbs in a fixture equates to compliance with the NEC (or alternatively to determine NEC code violations) absent testing with instruments. Light bulbs will still illuminate in a light fixture (called luminaire by the codes) however there can still be unsafe wiring conditions that do not meet the code such as "reverse polarity" or "open ground" just to name two. Additionally the bulb may light and the metal housing of the luminaire (light fixture) could be energized which constitutes what safety professionals call an "imminent danger" condition. Someone touching the energized housing is likely to be electrocuted. There are more electrocutions annually in the U.S at 120 volts than any other voltage. Yes even 120 volts is lethal!

The other approach promoted out there in cyberspace as an alternative to the double ended male cord adapter is "hard wiring" one end of the cable directly to the main electrical lugs in the "service panel" or circuit breaker panel. Let me be clear here, only qualified electrical workers are permitted to open electrical enclosures of any type including electrical panels. When this task is performed by qualified electrical workers they are required by standards to use appropriate electrical Personal Protective Equipment (PPE) and verify deenergization of the circuit (and additionally lockout and tagout electrical hazards that are present). Qualified

electrical workers are required to have specific training in the hazards associated with electricity in order to be able to recognize and protect themselves against these hazards. There are training requirements, PPE requirements, and safe work practice requirements in OSHA's Electrical Safety Related Work Practice Standard that applies here as well as NFPA 70E. By the way all of the training requirements under these codes and standards do not permit the required electrical safety training to be of the online or computer based type. OSHA and other standards require that electrically rated insulated gloves (meeting other ASTM manufacturing and electrical testing standards) be worn while electrical testing/diagnostics are performed using a meter to test voltages. Additionally, these workers doing this must be electrically "qualified" and trained per the standards.

Forgetting about the myriad wiring and electrical conditions that could result in an exposure to an electrical hazard, how many fundamental electrical hazards are there? I'll give you a hint 6 or an argument for possibly 7 can be made. If you don't know what they are you are either not qualified or lacking some required electrical safety training. Either way you should not be opening electrical panels and definitely shouldn't be loosening or disconnecting any electrical terminations inside. There are specific requirements for torqueing those connections and what about the anti-oxidizing compounds that are frequently applied to those terminations to avoid high resistance connections. Resistance in an electrical circuit, drops voltage, limits current and produces heat and heat causes fires!

Electrically opening (disconnecting/shutting off) a main breaker does not interrupt or open the neutral. Neutrals do carry currents and can become energized under certain conditions.

Far too many utility workers have been electrocuted when homeowners have connected a generator to the premises wiring (frequently using a suicide cord). The power to the premises from a portable generator can be "backfed", back to the utility and stepped up to high voltages in excess of 20,000 volts, exposing utility workers to lethal electrocution from circuits thought to be deenergized or "dead". This is called "backfeed" and is responsible for a great many utility worker electrocutions.
The frequency and magnitude of this hazardous and dangerous occurrence has prompted some States to create laws making the practice of connecting generators to a premises a criminal felony (with jail time) if this is not done by a licensed electrician or licensed electrical contractor.

All this talk about connecting to the premises wiring system we have not even discussed the generator itself. What are the code requirements for grounding of generators, the GFCI requirements, the neutral bonding requirements, etc. etc.? I have already published a monograph titled "Portable Generators and OSHA Construction Regulations" which is posted on my website for free download.

Beyond the OSHA and NFPA Standards referenced in this document there are other Consensus Standards for conducting “Property Condition Assessments” which recognize the need for augmenting the field observer with specialty consultants or contractors. This means trained, qualified electrical specialists who possess in-depth knowledge of electrical codes including, installation specification standards and appropriate electrical safety related work practices.

**Some Key Points to Remember**

Electricity and electrical hazards are very serious and should not be treated casually. Having trained OSHA inspectors and safety professionals (as well as private sector, electricians, “qualified” electrical workers, etc.) for decades and continuing to do so, I remind them that the “*hazards of electricity cannot be seen and must always be presumed to be present”* when you arrive on the scene. Respect it!

Don’t work on or with electrical circuits or enclosures unless you are a “qualified” electrical worker as defined in the standards and don’t open any electrical enclosures or attempt to energize a premises wiring system (charge a house) from a generator unless you are a “qualified” electrical worker as defined in the standards and know how to do it safely and correctly. I have not yet seen any online video presentations that meet this criteria. Ideally the premises should be energized by the utility company providing the service.

You can be cited by OSHA for violation of these standards. Pretty much all electrical hazards are serious and result in serious citations. If you know you’re not supposed to be doing something and do it anyway that could result in a willful citation. If someone is injured or killed while doing something unsafe and you know it’s unsafe, OSHA has the ability to refer the case to the U.S. Justice Department for criminal prosecutions. OSHA has done this in the past and there have been prosecutions of the principals (presidents, CEO’s, etc.) of companies with jail time imposed.

Under OSHA’s Multi-Employer policy, citations could be issued to the GC (General Contractor) as well as onsite subcontractors involved. This could be easily accomplished by OSHA especially if a GC specifically mandates or coerces its subs to carry out unsafe practices in violation of standards.

**What Can I Do?**

Be safe and use your best judgment. If it looks dangerous it probably is. Do not expose yourself or any of your employees to any hazards.

Don't do any work you are not trained for or qualified to do. This not only means electrical but other potentially hazardous work as well which might require fall protection or other types of PPE (Personal Protective Equipment) as well as training.

Know your rights and don't be intimidated or swayed by loose rhetoric. Present this monograph to anyone who attempts to intimidate or coerce you to do anything unsafe. If they still persist try this: *"You know, you may be right and I could be entirely wrong here, let's call OSHA right now, together, to see what they have to say regarding this matter, so we can put this issue to rest"!*

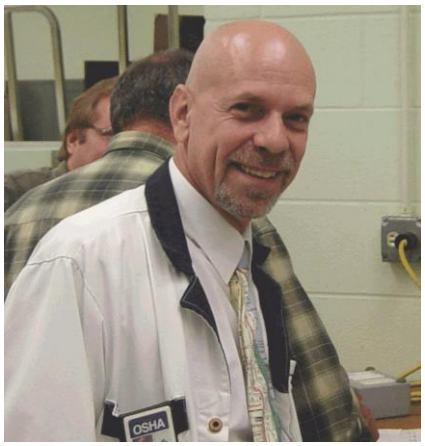
Following these first three steps can help protect you as a subcontractor, from receiving a citation under OSHA's Multi-employer citation policy.
As a last resort remember that employees can submit a complaint to OSHA if their employer directs them to perform anything that is unsafe and in violation of OSHA Standards.

If you are responsible for completing the HPIR (HUD Property Inspection Report) and the property does not have any electrical utility supply, a simple statement which has been successfully used is: *"Alternative Testing could not be completed due to safety concerns, OSHA Standard requirements, and restrictions under local or state building codes"*.

OSHA has mailed citations to employers (without any site visit) based entirely on photographs in newspapers were the employer is clearly identified in the paper. I suspect that this regulatory technique could also be employed based on internet video posts as well.

**The Final Word from the code**

To all those self-proclaimed electrical regulatory code experts out there, may I remind you that despite what your interpretations of the standards and codes may be, "the authority having jurisdiction for enforcement of the Code has the responsibility for making interpretations of the rules, for deciding on the approval of equipment and materials". "The authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority". Labor Department, yes that would be OSHA!

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**"Grizzy"**, as he likes to be called has been recognized by OSHA's National Office in Washington D.C. as both a National Electrical Code (NEC®) historian as well as "the best electrical safety trainer in the country!" Certainly at the very least Grizzy has been OSHA's electrical safety "go-to guy" and has been instrumental in shaping and interpreting OSHA policy and regulations for several decades.

Grizzy has trained OSHA compliance officers, appeared as OSHA's electrical expert, and guided literally hundreds and hundreds of electrical fatality investigations. Grizzy continues to train OSHA compliance officers and personnel coast to coast, as well as still providing investigative assistance to the Agency on fatality investigations and significant cases. His electrical expertise has not only shaped OSHA policy but also the OSHA Electrical Standard's. Grizzy is currently a **member of the ASTM F-18 Committee** which writes the **"Electrical Protective Equipment for Workers"** standards.

**Licensed by the Department of Education,** and prior to his OSHA career, Grizzy had been both an **educator and administrator** for various public and private schools and held the position of Electronic Department Chairman and Director of Education at a New York City proprietary school.

In addition to being a **professional speaker** and **nationally recognized seminar leader** with **over 40,000 hours of platform experience**, Grizzy has lectured at numerous colleges and universities all across the US and has numerous published works in video and print which have assisted safety professionals and helped workers for decades.

Recognized nationally as **preeminent in regulatory electrical safety training**, Grizzy conducts training all across the country providing insight into navigating the complex regulatory requirements.

Grizzys passion for electricity and decades of collecting rare electrical artifacts which he is now exhibiting and demonstrating in spectacular high voltage keynote presentations at major conventions affords attendees of his events a unique opportunity to actually see a "slice of history". In fact his events have been characterized by attendees: "It's like watching the History Channel, only live!"