

BDPNN Meeting Minutes  
31 July 2014  
PG&E Electrical and Gas Safety  
Ron Delucchi

Norine Smith opened the meeting of approximately 40 people (about 1/3 of them newcomers) by announcing that the BDPNN had submitted the final paperwork for 501(c)3 non-profit status. Also, Norine indicated that a newsletter was forthcoming. Norine introduced the other members of the Board: Charlotte Nolan, Lee Taylor (the newest Board member), Lynn Zummo, Dave Peattie, Pam Grossman, and Sandy Miarecki. Norine also announced that the Network was pushing for more internet presence and continued work with the underrepresented groups in Berkeley. Any volunteers who can help with either project should contact the Board.

Then Norine introduced our guest speaker, Mr. Ron Delucchi. He is a retired PG&E representative that has worked in many areas of the company and at many levels, including Berkeley and surrounding areas. Now he volunteers to give talks about electrical and gas safety. Ron brought a demonstration table that was a miniature neighborhood with live power lines to show what can happen when you aren't careful around power lines and gas lines. He also brought some handouts for people to take home.

**ELECTRICAL SAFETY:**

- First, he discussed the types of power lines. The big towers carry the "transmission lines" which can have up to 500,000 volts.
- Then these high-powered lines travel to sub-stations in each city/town where the voltage is reduced to below 21,000 volts. The reduction depends upon how many houses/businesses the substation serves.
- Then these lines travel from the sub-station to the transformers scattered throughout each neighborhood. The transformers bring the voltage down to the distribution level of 240 volts. That is what goes into your house.
- The most important thing to know about all power lines is that they are NOT insulated for electricity. They are only insulated for weather. What this means is that, if you touch a live power line, the covering on the wire will NOT protect you from the shock. NEVER touch a live power line. NEVER touch a downed power line. Always assume all power lines are hot.
- Large appliances, such as refrigerators and furnaces, work on 220-240 volts. Everything else works on 110-120 volts. Even household current can kill you if you are not careful.
- The highest (first) line on the neighborhood poles will have the highest voltage. The second highest line will typically have the stepped-down voltage from the transformer. The third line is typically the phone line, and the fourth line is usually cable TV. However, if any of these lines are down, they can be crossed with high voltage lines, so you should always assume the downed line is fully charged up to 21,000 volts.
- Many trees in Berkeley must be trimmed regularly to keep them from interfering with the power lines. Call to have your trees trimmed if needed.
- Everyone at PG&E has a specialty for working with electricity and gas. Safety equipment is VERY involved and procedures are in place to keep everyone safe.
- Electricity is almost as fast as light and will always seek a "ground." If your body comes between the point of origin of the electricity and the ground, the electricity can kill you.
- Rubber-soled shoes will do almost nothing to protect you from 21,000 volt electricity. The rubber isn't thick enough.

- If power lines fall onto your car, stay inside the car and do not touch the car itself. The rubber tires are thick enough to insulate the car. If for some reason the power is able to flow into the ground, the car's chassis will carry the current. The interior will protect you.
- If you are trying to help someone in a car with downed power lines, you must stay FAR away because the power lines can spark from the downed line to the helper through the air.
- The general rule is 50-100 feet away from a downed power line to be safe. If the ground is wet, you should stay double that distance away (100-200 feet).
- Call EVERY TIME before you dig. Dial 811 to have someone mark the ground before you dig down even 6 inches.
- Solar powered houses have an auto shutoff feature to push them off the power grid during a major outage. That way, the PG&E workers will not be shocked by a solar-powered house when repairing the downed lines.
- The typical behavior of a downed power line (the top one with the highest voltage) is that it will spark and dance at first, then stop for a few seconds, then spark and dance again, then stop. This occurs because of automatic surge detection systems in the lines. What is happening is that the system detects a surge of power flowing through the downed power line. The system shuts off the power for 2-10 seconds. Many times, this surge was due to a bird or squirrel that accidentally touched the hot line and the ground line at the same time, frying the animal. Once the animal falls to the ground, there is no longer a short in the line. Therefore, the system will turn the power on one more time to see if the problem has cleared. If the system detects the surge from the downed line again, the system shuts off power and keeps the power off until a repair person can fix it. However, you cannot rely 100% that this will always happen with downed lines, which is why you treat every downed line as live at all times.
- There are devices that you can buy to detect a live power line from a distance. One is called "Hot Stick", which the fire departments use to ensure power lines are off before approaching them. A typical detection device runs \$50 to \$200.
- The biggest dangers with power lines are (1) ladders, (2) roof antennas, (3) long objects like poles. These objects can easily conduct electricity into the person and into the ground without even touching the power lines because the spark will travel great distances through the air if the lines are high voltage.

#### NATURAL GAS SAFETY:

- The natural gas transmission pipes come from as far as Canada and Texas into California. These lines have high pressure (above 60 pounds). The San Bruno line was a very high-pressure line (300 pounds). The only high-pressure line in Berkeley runs along the railroad tracks near 4th Street, along side the jet fuel line that runs from the Richmond refinery to the Oakland Airport. The lines are clearly marked with signs. An orange and white sign designates a high-pressure natural gas line.
- Medium-pressure gas lines run through different parts of the city of Berkeley, including one down Allston Way (to the University campus) and another one down 7th Street. Map on the PG&E website:  
<http://www.pge.com/en/safety/systemworks/gas/transmissionpipelines/index.page>
- Low-pressure gas lines are the ones that typically service individual homes and businesses. These are typically around 1 pound pressure.
- The gas inside a typical home is 1/4 pound.
- A gas meter can have as high as 60 pounds of pressure on the PG&E side, which is then reduced to 1/4 pound by the meter to go into the home. However, this pressure is highly unlikely unless there have been several failures in the system. To be safe, however, you should assume that this high pressure is available at the meter.

- When you turn off the gas at the meter, you can use any wrench that will turn the valve 90 degrees (1/4 turn). You can turn the valve in either direction to close the gas valve.
- Some gas valves can get rusty and stuck. You should have a licensed contractor test your system by turning off the gas and then turning it back on and resetting any pilot lights that you have. This will ensure your valve is working properly before the Big Quake comes.

#### EARTHQUAKE SAFETY:

- Never plug a portable generator into your household power supply (the circuit breaker panel). Every house is connected to the PG&E grid, and the power can back-feed into the city's power system and can kill a PG&E worker trying to repair the lines. Always use a portable generator independently, and plug only a few essential electrical devices directly into the generator.
- There is not much concern about electrical poles falling during earthquakes. They are pretty sturdy. The concern is with power lines snapping because the shaking of the poles will be out of sync, and lines can snap when stretched too far.
- PG&E recommends turning off the gas only if you smell gas or suspect a leak. However, in Berkeley, the temperature does not drop low enough, even in the winter, to require gas for survival (such as heat). It is up to each individual whether to turn off the gas to their home.
- If you turn off the gas, NEVER turn it back on until the entire system in your home has been fully inspected by a licensed inspector. And, always assume you have the full 60 pounds of pressure at your meter after a quake because you do not know what safety systems have failed.
- Earthquake valves and leak-detection valves can be installed on the house-side of the PG&E meter to automatically shut off the gas if an earthquake is detected at the meter above magnitude 5.2 (the usual setting of an earthquake valve) or the flow of gas goes above a set level (for a leak-detection valve, different for each home based upon gas usage). These special valves are installed by a plumber or contractor, not PG&E. However, you should also turn off the manual valve after a big quake to be sure the gas is turned off at your house.
- It is a city ordinance for your water heater to be belted and bolted to the wall stud. If the gas water heater falls over, it will break the gas line and the water line. Both of these are very bad things.