

SDG&E® Lightning Mitigation in Urban Neighborhoods Explained



Did you know?

Our grounding approach meets or exceeds national and state code standards to safely accept and dissipate lightning surges.

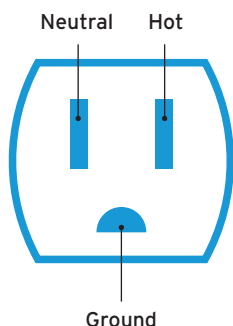


Figure 1- Typical home outlet

The safety and reliability of our infrastructure for our customers are our highest priorities. Although lightning strikes are not common in our service territory, SDG&E® has lightning mitigation measures to safeguard electric infrastructure. Our grounding approach meets or exceeds national and state code standards to safely accept and dissipate lightning surges.

When lightning strikes

Fortunately, the San Diego region has some of the lowest cloud-to-ground lightning strikes in the nation. When lightning does strike a powerline, the electric currents from the lightning will follow the path of least resistance to ground. SDG&E's facilities, including poles, are designed to provide a low resistance path to ground. Although the mechanisms for diverting lightning surges vary, the goal is the same – to have the lightning flow through our equipment and not yours.

Mitigating or “arresting” lightning

Lightning does occasionally strike utility lines. To prevent currents generated by lightning from damaging electrical equipment at our facilities and in our customers' homes, the lightning surge path must be interrupted. This interruption is called arresting. Utilities arrest lightning and other surges by routing the electricity through dedicated paths called grounds. This is very similar to the way appliances like your television or computer are grounded, but on a much larger scale. If



you have ever experienced an interruption of service or seen your lights flicker during a lightning storm, utility-designed lightning arrestation has likely occurred.

Grounding approach

A key component to lightning arrestation is grounding. The approach to grounding varies depending on the type of equipment (transmission, distribution, telecommunications, substation) and how many lightning strikes are anticipated for that location in any given year. Although the approach varies, the purpose of grounding is the same: to provide a safe path to dissipate electrical surges.

For steel transmission and distribution structures, a pole and two dedicated ground rods act as the grounding system to dissipate the surge. For wood transmission and distribution structures, a ground wire extends from the equipment at the top of the pole to the ground rods to dissipate the lightning surge.

Designing according to the latest standards

Our grounding standards meet or exceed national and state standards. These include, but are not limited to:

- United States Department of Agriculture Rural Utility System Bulletin 1724E-200 - Design Manual for High Voltage Transmission Lines
- California's General Order No. 95 - Rules for Overhead Electric Line Construction
- Institute of Electrical and Electronic Engineers - 2017 National Electrical Safety Code

Why is the wood pole in front my house being replaced by a steel pole?

Structures are replaced for many reasons, including maintenance, end of lifecycle and the need to bring structures up to the latest safety standards. In many cases, aging wood poles will be replaced with new steel poles that meet our latest design standards. Steel poles perform better than wood poles in lightning, as steel is an excellent conductor of electricity.

Steel poles, in combination with dedicated grounding rods, provide better protection from damage by lightning compared to wood poles.

Will my circuit breaker protect my house against lightning?

Circuit breakers and electrical panels are not SDG&E-owned equipment. Although we do our best to arrest lightning surges, lightning can affect your home. Most circuit breakers have a single job, to prevent wiring inside your house from catching fire. Most circuit breakers do not protect against lightning strikes. Whole-house surge protection systems are available to protect your home from lightning surges. Please contact a qualified electrician for purchase and installation.

There are wires on the ground. What should I do?

Although rare, storms that produce lightning can be accompanied by powerful winds that knock down power lines. If you see downed power lines or other electric emergencies, **call 911 or SDG&E at 800-411-7343**. Never touch a downed electric line as it could cause serious injury or death.

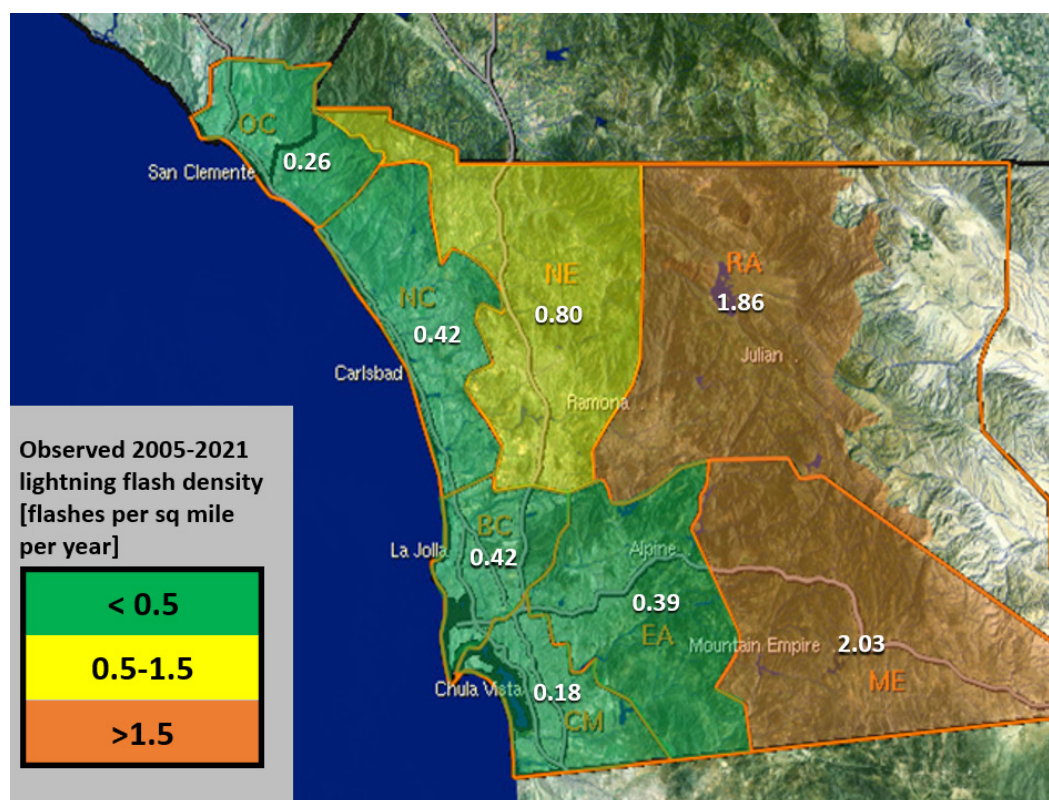


Figure 2- Lightning strike per square mile in SDG&E service territories (source: SDG&E)



Online
sdge.com/electrical-safety



Phone
1-800-411-SDGE