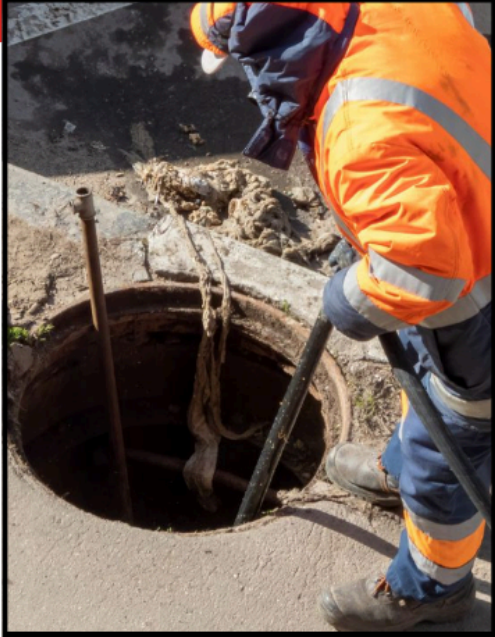


If you are planning to dig in Orange County, whether for a new pool, a block wall, or a commercial utility trench, you are dealing with one non-negotiable reality: there are buried lines under your feet, and hitting one can get very expensive, very fast.

**ORANGE COUNTY
UTILITY
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Utility locating is the process that keeps you out of trouble. Done well, it prevents service outages, injuries, fines, and project delays. Done poorly, it leaves you with a false sense of security and a backhoe bucket full of severed cable.

This guide walks through how utility locating actually works in Orange County, from that first call to 811 all the way to the paint and flags on the ground, and where private locating and subsurface utility engineering fit into the picture.

What is utility locating?

At its simplest, utility locating is the process of finding and marking underground infrastructure before you dig. That infrastructure includes:

- Electric power
- Gas
- Communications (fiber, phone, cable)
- Water
- Sewer and storm drains
- Private services like irrigation, fire lines, and private electrical feeds

Locating is half detective work and half physics. A utility locator uses records, maps, and different kinds of electromagnetic and radar equipment to infer exactly where lines run, how deep they might be, and what type of material they are made of.

When someone asks, "How accurate is utility locating?", the honest answer is: it depends on soil conditions, utility construction, record quality, and the tools being used. On a straightforward, well-installed primary electric line, a good locator can usually get within a few inches laterally. With old private water services snaking around tree roots, you may be in a range of 6 to 24 inches or more.

What does a utility locator do?

In the field, a locator is doing much more than just waving a wand over the ground.

They review utility maps, as-builts, and any available records. They look for visual clues at the surface: transformers, meters, valves, manholes, pedestals, and even changes in pavement or patchwork that suggest previous trenching.

They choose and set up their equipment: electromagnetic locators, ground penetrating radar, sonde transmitters, or sometimes just an old-fashioned probe rod for verification. They interpret the signals, cross-check them from multiple angles, and resolve conflicts when different records or signals disagree.

Finally, they mark what they have found with paint and flags, following color standards, and document the work so others can understand what was done and where.

When you see a neat set of red, yellow, blue, and orange lines leading into a dig site, that is the visible tip of several different skills combined.

Public vs private utility locating

Understanding the difference between public and private utility locating is crucial in Orange County, because it affects who you call, who pays, and what gets marked.

Public utility locating is what you get when you contact 811. In California, underground facility operators are required to participate in the DigAlert system. When you file a locate ticket, member utilities send their own locators (or contracted locators) to mark the facilities they own and maintain up to their demarcation point.

Private utility locating covers all the lines that fall on the owner's side of that demarcation. Think of:

- Power from your meter to a detached garage or ADU
- Water service from your meter to your building
- Fire sprinkler lines on private property
- Private sewer laterals beyond public responsibility
- Irrigation mains and control wires
- Private campus utilities at schools, business parks, and HOAs

That leads directly to two common questions:

Does 811 locate private lines?

No. By default, 811 locators do not mark privately owned lines. If a line is on the customer's side of the meter or is entirely within private property and not owned by a public utility, it usually will not be marked by 811 utilities.

What does 811 not locate?

811 does not locate privately owned electrical feeds, private water, irrigation piping, private gas lines between structures, septic systems, most storm drains on private property, low-voltage landscape lighting, or abandoned / unknown lines that are not on utility records.

This gap is where private utility locators operate.

Is calling 811 the law in California?

Yes. In California, calling 811 before you dig is not a courtesy, it is a legal requirement for excavations. The state's One-Call law applies to homeowners, contractors, and public agencies.

If you are asking "Is it illegal to dig without calling 811 in California?", the practical answer is that you may face:

- Liability for any damages to underground facilities
- Administrative penalties and fines
- Potential increased responsibility for injuries or service outages

For Orange County projects, "Who do I call before digging?" almost always means contacting Underground Service Alert **Orange County Utility Locating** of Southern California (DigAlert) by dialing 811 or filing an online ticket. That covers the public side. For private lines, you will still need to bring in a private utility locating company.

Who pays for utility locating?

On the public side, utility locating through 811 is free in California for the person requesting the locate. The utilities absorb the cost as part of their duty to protect their infrastructure. So if you ask, "Is utility locating free in California?", the answer is: yes, through 811, for public utilities.

Private utility locating is different. Here, the property owner, contractor, or project owner typically pays. That cost is minor compared with a damaged line, but it is real, and it needs to be budgeted.

How much does utility locating cost in Orange County?

Pricing varies based on scope, site complexity, and technology used, but typical ballparks for private utility locating in Orange County look something like this:

For a straightforward residential job with light complexity - such as marking private electrical to a detached structure, some irrigation, and a water service on a small lot - private utility locating might run in the range of \$300 to \$700.

For a more complex commercial or industrial site, where the locator needs to scan parking lots, multiple buildings, and overlapping utilities, including possible ground penetrating radar, the range is often \$800 to \$2,500 for a single mobilization.

Subsurface utility engineering (SUE) work that supports full design, with record research, surveying, and vacuum potholing to verify depths, is in a different category altogether. That can run into the tens of thousands on a large project, but it can save far more by avoiding design clashes and construction delays.

Different firms price differently: hourly, per trip, or per project. When you ask, "How much does private utility locating cost?", a locator will usually want to know project size, surface conditions (asphalt, concrete, landscaping), and what kind of accuracy or deliverables you need.

What equipment do utility locators use?

The visible magic of locating rests on a few key technologies.

Electromagnetic (EM) locators are the workhorse tools. They send a signal into a conductive line, then detect where that signal returns at the surface. A locator can clamp onto a cable, connect to a tracer wire on a plastic pipe, or induce a signal from the surface. EM tools are excellent for power, communications, and metallic pipelines.

Ground Penetrating Radar (GPR) is used where EM is not effective or where there is no conductive path, such as plastic pipes, unmarked utilities, and abandoned structures. GPR sends radar waves into the ground and listens for reflections from changes in material. It is particularly useful for locating non-metallic water lines, some sewer lines, and unknown structures like vaults or septic tanks.

So what is ground penetrating radar used for, in practical Orange County terms? Locating storm drains under parking lots, mapping rebar and post-tension cables in slabs, identifying plastic utility mains, and clearing drilling locations where “unknowns” would be too risky.

How accurate is ground penetrating radar? In good soils (dry sands, gravels), GPR can provide lateral accuracy in the range of a few inches and reasonably estimate depth. In clays or saturated soils, signal quality drops, and the locator may only be confident about the lateral position, with depth more approximate.

Other tools round out the picture:

- Sondes and tracing wires for pushing signals through small diameter pipes
- CCTV cameras for sewer laterals, to verify path and condition
- Magnetometers for ferrous objects like valve boxes or old steel tanks
- Utility maps, as-builts, and GIS data for background

The art is in choosing the right tool and trusting the results only as far as the conditions justify.

How deep can utility locators detect?

With EM locating, the depth range is often more about practicality than physics. In urban Orange County settings, most active lines are within 0 to 8 feet of the surface. EM tools can detect conductive utilities deeper than that, but accuracy decreases with depth, especially for crowded corridors where signals overlap.

GPR depth depends heavily on soil. In dry, sandy soils, you may see meaningful returns to 8 to 12 feet. In wet clays, you might be limited to 2 to 4 feet before the signal is absorbed. So when someone asks, “How deep can utility locators detect?”, the honest answer is: often within the first few feet very well, and sometimes much deeper if conditions allow, but no locator should promise perfect detection at any depth.

Can utility locators find plastic pipes?

Yes, but not in the same way as metal pipes or cables.

Plastic water or gas pipes with tracer wire are typically located by connecting an EM transmitter to that tracer wire. Where there is no tracer wire, locators may insert a traceable rod or cable in small pipes, or rely on GPR to detect the pipe as a void or material change.

Conditions matter. In uniform soils, GPR can pick up 4-inch PVC fairly reliably. In heavily reinforced concrete or highly conductive clays, the same pipe can be almost invisible. This is why good locators temper expectations when

it comes to locating every last plastic service, especially on older properties that were never built with tracing in mind.

Utility marking colors: what the paint and flags mean

If you walk past a job site in Orange County and see a rainbow of lines, there is a method to the colors. The utility marking colors come from the APWA standard, which is widely followed.

Here is what those colors mean in practice:

Marking color	What it typically indicates
Red	Electric power lines, conduits, and lighting cables
Yellow	Gas, oil, steam, petroleum, or other gaseous materials
Orange	Communications, alarm, signal, cable TV, fiber
Blue	Potable (drinking) water
Green	Sewer and drain lines
Purple	Reclaimed water, irrigation, slurry
Pink	Temporary survey markings
White	Proposed excavation limits or route

When you ask, “What does red paint mean on the ground?”, the answer is: electric. If you see orange utility flags, those are usually communications or fiber optic cable.

White paint is different. “What is the white paint on the ground for?” It is used by excavators to outline where they plan to dig. This “white-lining” helps utility owners see the exact work area so they can focus their locates and avoid missing anything.

Step-by-step: how utility locating works in Orange County

From the moment you decide to dig, there is a predictable sequence that should happen on any responsible project. This is the core of how utility locating works, day to day.

1. You define the scope of work

Before any calls, you identify exactly where you will dig, how deep, and what methods you will use. This is when you sketch the area, note nearby utilities and structures, and decide whether you might need private locating or SUE, not just basic 811 marks.

2. You file an 811 ticket (DigAlert)

For Orange County, you contact 811 at least 2 working days, but not more than 14 calendar days, before you start digging. By law, you must provide location, description of work, start date, and contact information. The system notifies all member utilities in your area.

3. Utilities review and respond

Each utility decides whether they have facilities in your described area. If they do, they either send a locator or respond with “no conflict” if their lines are far away. Locators visit your site, interpret maps, locate their utilities, and mark them in color on the ground, often with an identifying abbreviation.

4. You assess what was marked - and what was not

This is where many homeowners and even some contractors stop too early. You walk the site and compare what is marked with what you see and what you know exists. If you have a detached garage with power and you see no red marks, that tells you public locating did not capture your private feed. If there is a pool with lights but no red or yellow near it, again, those are likely private lines.

5. You bring in a private utility locator, if needed

If any portion of your work area includes likely private lines, or if the risk of hitting unknowns is high (commercial sites, schools, older properties, hospitals), you hire a private locator. They coordinate with the existing marks, add their findings in matching colors or with a legend, and often provide a sketch or CAD background.

6. You clarify conflicts and, where appropriate, pothole

When utilities stack on top of one another in a narrow corridor, or when record depths do not feel trustworthy, a prudent excavator will pothole with vacuum excavation to physically expose the line. This is standard practice in subsurface utility engineering. For critical crossings, no responsible professional relies on marks alone.

7. You dig with care, honoring tolerance zones

Marks are not a license to drop a backhoe bucket 6 inches away. California recognizes a tolerance zone (typically 24 inches either side of the mark) where you must use hand tools or vacuum excavation until the utility is found. You avoid undermining, excessive vibration, or aggressive ripping in the vicinity of any marked line.

This entire chain, from white paint to final excavation, may sound elaborate, but in practice it becomes routine. On even a modest residential project, these steps can reduce your risk profile by an order of magnitude.

How long does utility locating take?

On the public side, 811 in California requires utilities to mark within 2 working days of a valid ticket, not counting the day you called. In Orange County, you should plan for that 2-day window. Inspections during peak construction seasons can push locators close to their deadlines.

Private utility locating schedules depend on company workload and the complexity of your site. For a typical residential job, many locators can respond within 2 to 5 business days. For large commercial or SUE projects, scheduling may stretch into 1 to 3 weeks, especially if survey, traffic control, or coordination with multiple trades is required.

The field work itself can take anywhere from an hour for a small home project to several days for a large campus. When time is tight, it helps to provide site plans, previous utility drawings, and clear limits of work to avoid wasted effort.

Locating specific buried utilities

Different utilities behave differently underground. Understanding how they are usually found will help you evaluate whether your site has been adequately cleared.

How do you locate a buried water line?

Public mains are usually metallic or have tracer wire, so EM locating from valves or hydrants works well. Private water services may be plastic without tracer wire. Locators start from the meter, look for shutoff valves and hose bibs, and use GPR or tracing rods where possible. In older Orange County neighborhoods, records can be sparse, so verification by probing or potholing is often wise.

How do you locate a buried gas line?

Active gas lines typically have tracer wire and distinct above-ground appurtenances. Utilities mark public mains and services to the meter through 811. Private gas lines (for example, from meter to pool heater or outdoor

kitchen) are more problematic. Locators may clip EM equipment onto metallic pipe or tracer wire, or use GPR and visual clues. Because of the risk, any uncertainty around gas should trigger a very conservative approach to digging.

How do you locate a sewer line?

Public sewer mains are often mapped and can be located through manholes and EM on CCTV push cameras or sondes. Private sewer laterals, especially older cast iron or clay, can be less predictable. Locators often introduce a sonde or a traceable push rod into the cleanout and track it as it moves down the line. Plastic sewer lines without tracer wire are prime candidates for GPR and sonde methods.

Can you locate a septic tank?

Yes, usually, but it can take a combination of GPR, probing, and sometimes sewer camera work. Septic tanks show up as large discrete objects in GPR data, and their inlets and outlets give away the connected piping. In rural or older pockets of the county where records were never filed, this process can feel like archaeological work.

How do you find a buried electrical line or fiber optic cable?

For electric, EM locating from panels, transformers, or junction boxes is the standard method. Fiber optic cables have no inherent conductivity, but most are installed with metallic armor or tracer wires that can carry a signal. GPR helps confirm path, depth, or find unusual installations. Good locators also look at the age of the infrastructure, the type of duct banks likely used, and past repair records.

How accurate is utility locating, realistically?

Utility locating is not a magic X-ray of the earth. It is a set of tools and judgments subject to limits.

Accuracy is usually best laterally, that is, the left-right position of a line on the surface. Depth estimates from EM or GPR should always be treated as estimates, not guarantees. Large ducts or multiple lines in the same trench can shift the apparent center. Poor soil conditions or corroded tracer wires can weaken signals.

On top of that, construction did not always follow plan. In older parts of Orange County, it is not unusual to find gas or water services looping around tree roots or running through unrecorded spurs.

This is why subsurface utility engineering exists. Higher-level SUE work (often classified as ASCE Quality Levels B and A) combines records, geophysics, and physical potholing to reach design-grade accuracy. If you are designing new utilities in an already crowded corridor, SUE is often the only rational approach.

What happens if you hit a utility line?

From the field side, the sequence is very consistent when someone cuts a line.

Immediate safety comes first. Work stops. People clear the area. For gas, you move upwind and wait for the utility's emergency response. For electric, you keep everyone away from equipment and the damaged area until utilities confirm it is de-energized. For fiber or communications, the hazard is rarely physical, but the financial impact can be severe.

Then the bessutility.com Orange County Utility Potholing questions start:

Who is liable if I hit a utility line?

Liability hinges on whether 811 was called, whether marks were present and accurate, whether you respected the tolerance zone, and whether private utilities were reasonably addressed. If you dug without calling 811 in

California, you are usually on very thin ice. If a utility failed to mark or mis-marked their line, they may share or carry liability, but that often requires investigation.

How much does it cost to repair a damaged utility line?

Repair costs range widely. A simple residential water service repair might be under \$2,000. A severed primary power cable in a busy street can reach tens of thousands. Cutting a major fiber backbone that feeds businesses or hospitals can run into six figures after you factor in emergency restoration, lost service claims, and overtime.

What happens if I dig without calling 811?

Apart from legal risk, your insurance company may not support you fully if you ignored the law. Regulators can issue penalties. Utilities can pursue cost recovery more aggressively. In short, skipping the call does not just save you an hour; it potentially multiplies your exposure.

When damage happens despite a valid locate and careful work, documentation is everything: photos of marks, pre-dig notes, ticket records, and as-built drawings. Professional excavators treat this as part of their standard risk management.

Should homeowners and small contractors hire a private utility locator?

On a small backyard fence replacement, with post holes staying shallow and far from any known services, 811 marks may be sufficient. On the other hand, any project that involves mechanical excavation deeper than a couple of feet inside a property with multiple structures deserves a harder look.

Here is a straightforward way to think about that decision:

1. If your dig area is within 5 to 10 feet of obvious private infrastructure - like a detached garage, guest house, pool equipment, or large irrigation manifolds - the odds of private lines are high.
2. If the project budget is significant relative to the cost of locating, the risk-reduction is usually worth the fee.
3. If hitting a line would create more than an inconvenience, such as disabling power to a business, damaging a shared HOA main, or disrupting a school, err on the side of private locating.
4. If plans or past permits for the property show multiple undocumented alterations, figure that at least some utilities may not be where record drawings claim.

For many homeowners in Orange County, spending a few hundred dollars on a private utility locator is a sensible insurance policy, particularly for pools, retaining walls, large footings, and major landscaping.

Permits, timing, and doing your own locating

Do you need a permit to dig in Orange County?

It depends on what you are digging. Structural foundations, pools, and retaining walls normally need building permits. Trenching in the public right-of-way usually requires encroachment permits. Many small landscape projects on private property do not, but the one-call requirement still applies regardless of permits.

Can you locate your own underground utilities?

You can do basic detective work: tracing visible conduits, reviewing plans, probing cautiously, or using consumer-grade detectors. But you should not treat DIY efforts as a substitute for 811 or professional locating.

Cheap metal detectors and smartphone apps cannot distinguish between a service lateral and a buried fence post, and they do not satisfy legal requirements.

How far in advance do you need to call before digging?

For public utilities, 811 in California requires at least 2 working days before you dig. For a well coordinated project in Orange County, a good rule of thumb is:

- 3 to 5 business days for 811 marks to be completed and verified on site
- 5 to 10 business days to schedule and complete private locating
- Longer lead times for complex SUE involving surveying and potholing

Trying to compress all of that into a day or two before the excavator mobilizes is where corners get cut.

Why utility locating matters before excavation

Ultimately, subsurface utility engineering and basic locating are tools to manage risk.

The ground beneath Orange County is not empty. It holds high-pressure gas, high-voltage electric, fiber that carries entire business districts, and water and sewer networks that communities rely on. Hitting one line is not just an inconvenience. It can black out a block, shut down emergency services routing, or contaminate groundwater.

When you understand how utility locating works from call to marks, what 811 covers and what it does not, and how public and private locating complement each other, you can structure projects that are safer, more predictable, and less likely to turn into emergency repair jobs at midnight.

That knowledge does not eliminate risk, but it narrows the unknowns. For excavation in Orange County, that is about as close to peace of mind as you can reasonably get.