

If you spend enough time around construction sites in Orange County, certain noises become familiar. The backup beeper of a skid steer in Santa Ana. A jackhammer breaking up a driveway in Mission Viejo. And, every so often, the sound nobody wants to hear: a sharp hiss followed by shouting, or the pop and flash of a cut electrical line.

I have walked onto projects where the crew was already scrambling to clamp a damaged service, neighbors were without power, and the GC was on the phone with a utility's emergency line and their insurance carrier at the same time. In nearly every case, the root cause traced back to one thing: someone treated "calling before you dig" as optional, or they assumed the paint on the ground told the whole story.

Utility locating is the step that avoids those scenes. It is not red tape. It is risk management, cost control, and basic safety. In Orange County, with dense development and layered infrastructure, it is non-negotiable if you want to dig with any confidence.

This is a practical guide, grounded in how utility locating actually works in Southern California, what it does and does not cover, and how to make smart decisions about public versus private utility locating on your projects or your home.

What is utility locating?

Utility locating is the process of finding and marking underground pipes and cables before you dig or drill. That includes electric lines, gas pipes, water and reclaimed water, sewer, communication and fiber optic cables, and, on private property, things like irrigation, landscape lighting, and private sewer laterals.

Utility locating, at its best, answers three basic questions before excavation starts:

1. What is buried in this area?
2. Where is it, both horizontally and vertically?
3. How confident are we in that information?

On a residential remodel in Irvine, the answer might be "a gas service crossing the front yard, a water line to the house, and a shallow communications drop." On a commercial redevelopment site in Costa Mesa, it might be a tangle of abandoned and live lines from several generations of projects. The locator's job is to sort that out without guessing.

What does a utility locator do?

A professional utility locator is part detective, part technician. Their work is much more than walking around with a wand and spraying paint.

On a typical Orange County job, a locator will:

- Review records and maps when available. That might include city as-builts, utility company maps, previous subsurface utility engineering (SUE) data, or old plans the property owner has in a drawer. These are starting points, not gospel.
- Visually inspect the site. They look for utility indicators: meter boxes, valve lids, transformer pads, risers, conduit stubs, communication pedestals, irrigation controllers, septic cleanouts, and so on. In older neighborhoods like parts of Orange or Fullerton, these surface clues matter a lot because records are often incomplete.

- Connect to known utilities. Where possible, they attach a transmitter to an accessible portion of a line, for example a water meter, a gas riser, or an electrical panel feed. That transmitter sends a signal down the metallic line.
- Trace the path with a receiver. Using an electromagnetic (EM) receiver, they follow the signal on the ground, marking the approximate alignment and adjusting for interference from nearby utilities, rebar, or other metal.
- Supplement with ground penetrating radar (GPR) and other tools. For unknown lines, non-conductive pipes, or congested corridors, they sweep with GPR or add induction clamps, sondes, or cameras.
- Mark and document. They mark the utilities on the ground using standard utility marking colors, then often provide a sketch, photos, or CAD/GIS data, depending on the project's level of detail.

Good locators also communicate uncertainty. If they say "I have a strong, clean signal and I am confident within 12 to 18 inches" that means something very different from "I am picking up a weak, indirect signal and I would pothole before trusting this mark."

Public vs private utility locating: why both matter

Many people only discover there is a difference the first time they call 811 and then hit an unmarked irrigation main or a power feed to a detached garage.

Here is the basic distinction:

- Public utility locating covers the facilities owned and maintained by public utilities, typically from the street or main line up to the meter or service point. In Orange County, when you call 811, the utilities that are members of the One-Call system will send their own locators (or contractors) to mark their public lines at no cost to you.
- Private utility locating covers lines on the customer's side of the meter or service point, or lines that are not owned by a public utility company at all. Think of everything inside a property that the gas, water, electric, or telecom provider does not maintain.

So when you ask, "Does 811 locate private lines?" the honest answer is no, with very limited exceptions. The public utility locator will typically stop at:

- The gas meter outlet
- The water meter outlet or property line connection
- The electrical meter or service lateral end
- The communication demarcation point

After that, it is on you as the owner, contractor, or developer to deal with private utilities.

If you are asking yourself "Do I need a private utility locator?" consider whether any of these exist on your property: a pool, detached garage, ADU, outdoor kitchen, site lighting, private fire service, irrigation system, septic tank, leach field, or privately owned fiber between buildings. In Orange County, most improved commercial sites and a large share of custom homes have at least some private utilities.

Is calling 811 the law in California?

Yes. Calling 811 before you dig is not just a good idea, it is required by law in California.

The state's damage prevention law, primarily in California Government Code section 4216, requires anyone planning to excavate to contact the regional one-call center (DigAlert, which you reach by dialing 811) at least two

working days before digging, excluding weekends and holidays. This applies across Orange County, whether you are a contractor trenching for a new water service in Anaheim or a homeowner planting trees in Laguna Niguel.

If you are wondering “Is it illegal to dig without calling 811 in California?” the practical answer is yes if your work qualifies as excavation, which is defined broadly. Hand digging, augering for fence posts, stump grinding, and trenching all fall under that umbrella when they are deeper than a few inches and could reasonably contact buried utilities.

Skipping the call does not just expose you to repair bills. If you damage a line without an 811 ticket, you may be presumed negligent. That matters if someone is injured or a gas release forces evacuations.

Is utility locating free in California, and who pays?

Public utility locating through 811 is free to the excavator. Utilities fund that service because it is cheaper than repairing damage and dealing with emergencies.

Private utility locating is not free. The property owner, contractor, or project developer pays for private locating, just as they would pay for a survey or geotechnical investigation. If you are asking “Who pays for utility locating?” the answer is split: utilities cover their own public facilities, you pay for the private side.

For many Orange County projects, a smart workflow is to:

1. Call 811 and get all participating utilities marked.
2. Review the site and scope of work.
3. Bring in a private locator to find anything the public locators did not or could not mark.

On complex jobs, especially those involving subsurface utility engineering, private firms often coordinate both the 811 ticket and more detailed locating in a single package.

How much does utility locating cost in Orange County?

For public, 811-driven locating, there is no direct charge to you.

“How much does private utility locating cost?” in Orange County depends on a few factors: property size, congestion, how much of the site needs coverage, and what level of documentation you need.

Typical ranges as of the past few years:

- A straightforward residential private locate (irrigation, gas to a pool heater, power to a detached garage) might run around 250 to 450 dollars, especially if it can be done in a single visit of a couple of hours.
- A small commercial site with multiple services and some mapping deliverables might fall in the 600 to 1,500 dollar range.
- Larger or more complex facilities, campuses, and pre-design SUE work can run into several thousand dollars, especially when GPR grids and CAD deliverables are included.

The hourly rates in Southern California often land around 150 to 250 dollars per hour for a skilled locator with professional equipment, sometimes with minimum charges and trip fees.

As with most technical services, the cheapest option is not always the least expensive once you account for risk. A locator who misses a private gas line to a pool heater can cost you far more than the difference between bids.

How long does utility locating take?

The answer depends on both scheduling and field time.

Legally, public utilities in California generally have two working days after you contact 811 to respond and mark or clear your ticket. In practice, most Orange County locates fall within this window, though peak construction seasons can be tight.

On site, a simple residential 811 locate might be done in under an hour per utility. A thorough private locate on a quarter-acre lot might take two to four hours, especially if the locator uses both EM and GPR and chases multiple unknowns. Large commercial parcels, schools, and industrial sites can take a full day or more.

The critical point: do not back yourself into a corner by scheduling excavation the morning after you file an 811 ticket. For most digs, plan to call at least three to four working days before you need to break ground to allow for markings, follow-up questions, and any private locating.

How does utility locating work in the field?

Most utility locating relies on electromagnetic locating, ground penetrating radar, or a combination, supported by visual inspection and targeted exposure (potholing).

Electromagnetic locating requires a conductive path. The locator attaches a transmitter to a metallic pipe or cable, or uses inductive methods to couple a signal onto it. The receiver then picks up that signal at the surface, and the locator tracks the strongest response. This technique excels with metallic water mains, gas lines with tracer wire, electrical conduits, and communication cables that contain metal.

The weakness of pure EM locating is non-conductive utilities: PVC water services with no tracer wire, plastic sewer laterals, and many irrigation lines. These are common in Orange County residential and light commercial work. To deal with them, locators often push a traceable rod, fish tape, or camera with a sonde down the pipe, then track that instead.

Ground penetrating radar is used when EM alone is not enough, or when you want a more holistic view. GPR sends pulses of radio waves into the ground and measures the reflections where different materials meet. Buried objects, voids, and [Orange County vacuum excavation](#) changes in soil or moisture content produce distinct reflections.

Experienced locators will switch tools as needed. On a job in Tustin, for example, we traced an electrical feed to a detached workshop with EM, then used a small GPR unit to confirm alignment where the signal got messy near a rebar-heavy driveway. The two methods together tightened our confidence and prevented an unnecessary exploratory trench.

What equipment do utility locators use?

Professional locators in Orange County typically carry:

- EM transmitters and receivers, often multi-frequency units that can switch between active and passive modes.
- GPR systems tuned for utility work, usually with antenna frequencies in the 250 to 900 MHz range.
- Sondes and traceable rods for non-metallic sewers or conduits.
- Inspection cameras to navigate sewer laterals or conduits and place sondes at specific points.
- Metal detectors and magnetometers for locating tanks, vault lids, and other ferrous objects.
- GPS or GNSS receivers to record utility positions for mapping.

Good gear helps, but the operator matters more. Two people can use the same EM unit and get very different results depending on how well they understand signal behavior, soil conditions, and interference sources.

How deep can utility locators detect, and how accurate is utility locating?

Depth and accuracy depend heavily on soil type, moisture, utility material, and equipment.

For EM locating, detection depth can exceed 10 feet under favorable conditions, but in many Orange County soils, practical working depths are often in the 0 to 8 foot range for reliable signals. GPR can sometimes “see” down to 10 or even 15 feet, but resolution decreases with depth, and clayey soils can attenuate the signal.

When people ask “How deep can utility locators detect?” what they usually care about is whether they can safely trench 2 to 4 feet for typical residential utilities or 4 to 6 feet for commercial work. In those common ranges, modern EM and GPR, in experienced hands, can typically locate key utilities with reasonable confidence.

“Is utility locating accurate?” is the next question. Industry practice is to treat locates as approximate unless verified. For many utilities, a tolerance zone of 18 to 24 inches each side of the mark is considered prudent, especially if there are no recent as-built records. Depth readings from EM are estimates based on signal behavior, not hard measurements. GPR can estimate depth based on assumed soil velocities, but those can vary.

On critical lines, especially high-pressure gas or major electrical feeds, the only way to truly confirm is to expose the line by hand or vacuum excavation. That targeted exposure is part of subsurface utility engineering at higher quality levels.

Can utility locators find plastic pipes?

Yes, but not as directly as metallic pipes.

PVC or HDPE pipes without tracer wire are invisible to standard EM locating. To locate them, a locator might:

- Insert a traceable rod or conductive cable into the pipe and then trace that with EM.
- Use a sonde pushed through the pipe and track that device.
- Sweep with GPR and interpret the hyperbolic signatures generated by the pipe’s presence.

For water services in Orange County, it is hit or miss whether tracer wire was installed, particularly on older residential systems. Many irrigation mains and laterals are untraceable without access points like valves or tees where a rod can be inserted.

Locators can often locate plastic pipes, but it usually takes more time and sometimes cannot achieve the same confidence as locating metallic lines.

What is ground penetrating radar used for, and how accurate is it?

Ground penetrating radar is used to locate non-metallic utilities, check for undocumented lines, and provide a broader picture of subsurface conditions. It is also heavily used in concrete scanning before coring or cutting.

In the context of utility locating, GPR helps:

- Find PVC water or sewer lines where EM has no direct path.
- Confirm or refute the presence of utilities in congested corridors.

- Identify abandoned lines or structures that might affect design.
- Support subsurface utility engineering by creating a more complete map of what lies between known points.

"How accurate is ground penetrating radar?" depends on soil conditions and operator skill. In dry, sandy or granular soils like parts of coastal Orange County, GPR performs well and can often locate utilities within a foot or two laterally. In more clay-rich or highly conductive soils, performance degrades. Depth estimates usually carry a margin of error, often 10 to 20 percent, due to assumptions about soil velocity.

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GPR is not an X-ray. It produces radargrams that must be interpreted. Misinterpretation is possible, so GPR findings should be cross-checked with known utility records and, when critical, validated with potholing.

What do utility marking colors mean?

Those streaks of paint and rows of flags you see before a dig are not random. In the United States, including Orange County, utility marking colors follow the APWA (American Public Works Association) color code.

Here is a compact reference to the most common questions:

- What does red paint mean on the ground? Red marks electric power lines, cables, conduit, and lighting cables.
- What do orange utility flags mean? Orange indicates communication, alarm or signal lines, cables, or fiber optics.
- Blue marks potable water.
- Green marks sewer and drain lines, including many storm drains.
- Yellow identifies gas, oil, steam, petroleum, or other gaseous materials.
- Purple is used for reclaimed water, irrigation, or slurry.

- White paint outlines the proposed excavation area and is often required before you call 811. When you ask “What is the white paint on the ground for?” the answer is that it shows where you intend to dig so locators know what to cover.

If you see markings that do not fit your expectations, ask. On one project in Huntington Beach, a contractor assumed a green line was an abandoned landscape drain and found out the hard way that it was a live force main. A five-minute conversation with the locator could have avoided an expensive spill.

How do you locate buried water, gas, sewer, and other lines?

The methods shift slightly based on the utility type:

For buried water lines, locators try to attach an EM transmitter to a metallic main, a meter, or a valve. If the water service to the building is metallic or has tracer wire, it can usually be traced. Plastic services without tracer wire may require GPR or a rod pushed through the line if accessible.

To locate a buried gas line, the gas company’s own locator will handle the public side after you call 811. They generally attach to a known point and trace with EM. On the private side, a locator can often clip to the outlet of the gas meter and follow the line to pool heaters, outdoor kitchens, or other appliances, provided the line is metallic or has tracer wire. Plastic gas lines with no tracer wire are harder; sometimes alternative strategies or potholing are warranted.

Sewer lines present their own challenges, because gravity sewers are often non-metallic and unpressurized. A common private locating approach is to send a camera with a sonde up the sewer from a cleanout or manhole, then track that sonde at the surface. That is how you “locate a sewer line” or “locate a septic tank” in practice: trace the lateral until it reaches the tank, then mark the outline based on signal changes and probing. Many older properties in unincorporated parts of Orange County still rely on septic systems, and inaccurately placed tanks can surprise even experienced contractors.

To find a buried electrical line on private property, locators usually connect to the circuit in the panel or at an accessible junction and trace it with EM. For low-voltage systems like landscape lighting, the signals are weaker, but still traceable in many cases.

Locating a fiber optic cable depends on whether it has metallic shielding or tracer wire. For public fibers, the communication utility locator handles that after an 811 request. On private fibers between buildings on a campus, a private locator may clip to metallic components or use specialized cable locators. For all communication lines, those orange flags or paint are your first warning to avoid casual digging.

Subsurface utility engineering: going beyond simple marking

Subsurface utility engineering (SUE) is a more formal, engineering-grade approach to understanding underground utilities, typically used in design and major infrastructure projects. Instead of just marking the ground, SUE aims to produce reliable maps, often in CAD or GIS, and to assign quality levels to each utility based on how the information was obtained.

At the highest level, quality level A, utilities are physically exposed and surveyed. That means vacuum excavation at critical points, then measuring exact positions and depths. Design teams in Orange County lean on SUE when they are planning new streetscapes, widening arterials, or reconstructing major intersections where you cannot afford surprises beneath the asphalt.

If you are working on smaller private projects, you might not need formal SUE, but you can still borrow its mindset: gather records, insist on professional utility locating, and physically verify the most critical conflicts before you pour concrete or place foundations.

What happens if you cut or hit a utility line?

The immediate consequences depend on what you hit.

A severed communication cable can knock out internet service to multiple businesses and trigger contractual penalties. A cut water line might flood your trench and neighboring properties. A damaged gas line can lead to evacuations, fire, or worse.

From a liability standpoint, “Who is liable if I hit a utility line?” hinges on whether you called 811, whether the utility was properly marked, and how you excavated in the tolerance zone. In California, if you did not call 811 or you ignored markings and failed to use reasonable care near utilities, you are likely on the hook.

“How much does it cost to repair a damaged utility line?” ranges from a few hundred dollars for a small service repair to tens of thousands for a larger distribution line or complex communication bundle. Those numbers climb further when you add disruption costs, emergency response, and potential regulatory penalties.

If you do damage a line, immediately stop work, clear the area if there is gas, electrical hazard, or flooding, and contact the utility and emergency responders as appropriate. Document the scene, your 811 ticket, and your excavation practices. An honest, prompt response goes a lot further than trying to hide a problem.

What happens if you dig without calling 811 in Orange County?

If you dig without calling 811 and nothing bad happens, you might be tempted to believe the risk was overblown. That mindset is why utility strikes keep happening.

From a legal and practical standpoint:

- You are violating California’s excavation law if your work meets the definition of excavation.
- If you hit a line, you may face presumptions of negligence.
- Your insurance coverage might be affected if you are found to have deliberately ignored required safety practices.
- Regulators can pursue penalties in serious cases, especially where injuries or significant outages occur.

Contractors who get a reputation for ignoring 811 quickly find that sophisticated clients and public agencies do not want them on their projects. For homeowners, the risk is more personal: injuring yourself or a family member, or facing unexpected repair bills that dwarf the cost of your backyard project.

In Orange County, when you are asking “Who do I call before digging?” the answer is always 811 first, then your city or county building department if the work also needs permits.

Permits, DIY locating, and when to hire a pro

Whether you need a permit to dig in Orange County depends on what you are doing and where. Cities and the county generally require permits for:

- Work in the public right of way, such as driveways, curb cuts, or utility tie-ins.
- Excavations beyond certain depths or volumes.

- Structural work, pool construction, and significant grading.

Shallow landscaping on your own property may not trigger a permit, but that does not exempt you from 811 requirements. Always check with the local building department for your specific city.

“Can I locate my own underground utilities?” Many homeowners and small contractors try. Simple clues like meter locations, hose bibs, cleanouts, and utility boxes, combined with careful hand digging, can help you avoid obvious issues. There are consumer-grade locators on the market, but they have limitations and are easy to misuse.

If you are asking “How do I find underground utilities on my property?” but your work is limited to shallow planting or small fence posts, diligent 811 use, white lining, and cautious digging may be enough. Once you get into deeper trenches, structural footings, pools, or heavy equipment, the downside of guessing is simply too large.

“Should homeowners hire a utility locator?” For higher-risk residential projects like pools, additions, or significant hardscape work, the answer is usually yes, especially if the property is older, has been remodeled multiple times, or has extras like a guest house or detached garage.

As for “What is the best utility locating company in Orange County?” that is subjective and project dependent. Look for firms that:

- Have experienced, cross-trained field staff, not just entry level techs.
- Use both EM and GPR and can explain when each is appropriate.
- Carry proper insurance and can provide references from similar projects.
- Are comfortable working with both contractors and homeowners and can communicate uncertainty honestly.

Every dig in Orange County sits on top of a dense and varied network of utilities. Treating utility locating as a box to check, instead of a deliberate step in your planning, is where trouble starts. Calling 811, understanding what those free public marks do and do not cover, and bringing in a private locator when appropriate is not overkill, it is how you protect people, schedules, and budgets every time a shovel goes into the ground.

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