

Anyone who has spent time on Orange County job sites has a story about a near miss with an underground line. A bucket scraping over a gas main that was 2 feet off its “as-built” position. A homeowner trenching for a new irrigation valve who went dark because they sliced their own electrical lateral. The stakes are not abstract. They are safety, liability, schedule, and reputation.

Utility locating sits at the center of all of that. Done well, it turns the underground from a guess into a manageable risk. Done poorly, it becomes the first link in a very expensive chain of events.

This article looks at utility locating through the lens of real Orange County construction practice: how it works, what 811 does and does not give you, why private locating is often non-negotiable, what it costs, and how to approach it as a builder, engineer, or property owner.

What utility locating actually is

At its core, utility locating is the process of identifying, marking, and documenting the position and depth of buried utilities before you disturb the ground. That means electric, gas, communications, water, sewer, storm, and a growing list of private systems such as irrigation, site lighting, and fire lines.

When people ask, “What is utility locating?” they usually mean two related but distinct pieces of work.

First, there is public utility locating, typically triggered when someone calls 811. In California, operators that own public facilities in the public right of way or up to a service point must respond by marking their lines at the surface.

Second, there is private utility locating. This covers anything on the customer’s side of the meter or point of connection: parking lot lighting, private fire mains, yard gas lines feeding a pool heater, telecom ducts within a campus, and so on. No public utility has any obligation to mark those, and 811 will not do it for you.

Both rely on a mix of technologies and field judgment, but the scope and responsibility are very different.

What a utility locator actually does on site

If you have never walked a locate with a technician, it can look like magic. In practice, it is methodical work.

So, what does a utility locator do?

They start with information. That means record drawings, as-builts, utility maps from the city or utility owners, survey control, and any history from facility staff. In Orange County, older retail centers and coastal neighborhoods often have partial records at best, so a good locator treats every drawing as a hint, not a guarantee.

Next, they choose the best approach for each target:

- For metallic lines such as copper water services, steel gas mains, or conductive tracer wires, they hook up an electromagnetic transmitter and trace the line by inducing a signal onto it.
- For nonconductive utilities such as PVC water mains, plastic sewer laterals, or empty conduits, they may insert a traceable rod or sonde, or switch to ground penetrating radar.

As they work, they paint or flag the ground to show approximate path and, when possible, depth. Good locators also make a habit of explaining limitations: “This one is shallow and noisy, so treat it as a zone, not a tight line.”

Finally, for more complex construction, they document their findings in a CAD or GIS format as part of a broader subsurface utility engineering effort. That is where “What is subsurface utility engineering?” comes into play. SUE means not just painting lines on the pavement but classifying the quality of information, reducing conflicts in design, and often potholing critical lines to verify depth.

Public vs private utility locating in California

Orange County projects often stumble on one simple misunderstanding: the difference between public and private utility locating.

Public locating is what you get after you call 811. In California, 811 notifies member utilities that you intend to dig. Those utilities then send out their own locators or contractors to mark lines they own. This typically includes:

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- Gas mains and services up to the meter
- Electric mains and service laterals to the meter
- Public water mains and often the service to the meter or curb stop
- Public sewer mains and sometimes the lateral to the right of way line
- Communications cables in the public right of way up to the demarcation point

What does 811 not locate? Anything the public utility does not own. That includes the majority of what sits on private property: building laterals beyond the meter, private fire hydrant loops, parking lot lighting, site power distribution, private gas lines, irrigation, low voltage control lines, and campus telecom networks.

Does 811 locate private lines? No. They have neither the mandate nor the records for private facilities. That gap is where private utility locating companies operate.

So when people ask, "Do I need a private utility locator?", the answer depends on what and where you are digging. If you are trenching only in the public right of way and the work is limited and shallow, 811 marks may be enough, provided you maintain the required tolerance zone. If you are cutting a new footing across a commercial parking lot, trenching for a pool, or building an ADU behind an existing house, private utilities are almost guaranteed. In those settings, skipping private locating is gambling with your schedule and budget.

Legal obligations: 811 and California law

Being clear on the legal side matters, because it ties directly into liability when something goes wrong.

Is calling 811 the law in California? Yes. Under California Government Code 4216, anyone who plans to excavate must notify the regional notification center, which is 811, before digging. The law defines "excavation" broadly: augering fence posts, using a skid steer to scrape soil, directional drilling, even some deep landscaping.

Is it illegal to dig without calling 811 in California? In most practical terms, yes. Failing to call 811 can expose you to civil penalties, and if a utility is damaged, that failure almost always weighs heavily against you in any investigation.

Who do I call before digging in Orange County? You start with 811. The service is uniform statewide. Once you open a ticket, it is valid for a defined period, typically 14 working days from your start date, after which you must renew if work continues or expands.

How far in advance do you need to call before digging? California generally requires at least 2 working days notice, not counting the day of your call. On busy weeks, or in dense corridors, smart contractors add buffer time, especially if the project needs private locating and permits as well.

A common question from homeowners is simple: Is utility locating free in California? The 811 call and associated public utility locating are free to the excavator. The cost is borne by the participating utilities as part of their operating expenses. Private utility locating is not free, because those providers are working for you, not under a statutory obligation.

Who pays for utility locating and what it costs in Orange County

On a typical Orange County project, the cost split looks like this:

Public locating: The utility companies absorb this cost. You do not pay for the markings triggered by your 811 ticket.

Private locating: This is paid by the party requesting the work, usually the general contractor, the owner, or sometimes the engineer as part of design. So who pays for utility locating? Public owners pay for their records and public marking obligations. You pay for whatever additional clarity you need beyond that.

How much does utility locating cost in Orange County? Rates vary depending on scope, technology, and access. As rough **Orange County Utility Potholing** ranges based on recent projects:

- Simple residential private locate with standard electromagnetic tools might fall in the \$400 to \$900 range, depending on lot size and the number of targets.
- Commercial or industrial sites often work on a day rate. A crew with EM locators and ground penetrating radar might bill \$1,500 to \$2,500 per day, plus deliverables if mapping is included.
- For design-level subsurface utility engineering, budgets can run from a few thousand dollars for a small frontage improvement to tens of thousands on a complex campus, but the work also avoids change orders

that are often several times higher.

How much does private utility locating cost when the owner wants a comprehensive map of a large site? Expect the upper end of those ranges, plus additional fees for CAD integration and vacuum potholing of critical lines.

When stacked against the cost to repair a line and the lost time from a shutdown, locating looks very cheap.

How much does it cost to repair a damaged utility line? Numbers move quickly:

- Nicking a small communication cable on private property might cost a few thousand dollars and delay your schedule by a day or two.
- Severing a primary electrical feeder or high capacity fiber optic cable can quickly run into the tens of thousands in direct repair, plus lost revenue claims from those affected.
- Rupturing a gas main in a street, with fire department response, evacuations, and road closures, can produce six figure claims, not counting regulatory scrutiny.

Most of those bills land on whoever is found negligent in their excavation practices.

Liability: what happens if you hit a utility line

Who is liable if I hit a utility line? In practice, investigators look at several factors:

- Did you call 811 and wait for responses before digging?
- Did you respect the tolerance zone around marked lines and use hand digging or vacuum excavation where required?
- Did the utility owner accurately mark their facilities based on their records and locate standards?

If you hit a line that was unmarked and you can show a valid ticket and appropriate care, liability may shift partly or wholly to the utility owner or their locator. If you dig without a ticket or ignore markings, the responsibility almost always sits on you.

What happens if you cut a utility line goes beyond costs. Depending on the line, you may trigger:

- Service outages for neighbors or businesses
- Emergency response from fire and police
- Project shutdown until the area is safe and repaired
- Reporting obligations to regulatory agencies

What happens if I dig without calling 811? If you are lucky, nothing. If you are not, you face damages, fines, and a difficult conversation with your insurer, who may ask pointed questions about whether you followed standard practice.

This is why experienced contractors in Orange County treat utility locating as a non-negotiable first step, not an optional line item to cut when budgets tighten.

How utility locating works in the field

Modern utility locating combines physics, pattern recognition, and a healthy dose of skepticism.

Most crews use some mix of electromagnetic (EM) locating and ground penetrating radar (GPR). When someone asks, "How does utility locating work?", they are usually asking about those two tools.

EM locators work by inducing or detecting a current on a conductive line. The locator interprets the resulting magnetic field and points the user along the path. This is highly effective on metallic pipes or cables with a continuous conductor. It struggles with discontinuous paths, multiple parallel lines at similar depths, and nonconductive materials without tracer wires.

Ground penetrating radar sends pulses of radio frequency energy into the ground and listens for reflections at material boundaries. What is ground penetrating radar used for in utility work? It finds differences in subsurface materials that indicate pipes, ducts, tanks, and other structures, especially when they are not conductive.

Can utility locators find plastic pipes? Often, yes. EM can trace a tracer wire buried with a plastic pipe, and GPR can image the pipe itself when soil conditions are favorable. However, success depends heavily on moisture content, soil type, pipe size, and depth.

How deep can utility locators detect? EM depth is limited by signal strength, line characteristics, and surrounding interference. GPR penetration in Southern California soils often ranges from 4 to 8 feet for high frequency antennas used in utility locating, sometimes deeper in dry, homogeneous ground. Claims of 20 foot detection may be technically possible with lower frequencies but usually involve trade offs in resolution and reliability. For most construction work, 0 to 10 feet is the critical band.

How accurate is utility locating in general? When conditions are good, and the locator has a clear target, horizontal accuracy can be within a few inches. Depth estimation is often within 10 to 20 percent of the actual depth. When conditions are poor, those numbers degrade. A seasoned locator will tell you when they are confident and when they are not.

How accurate is ground penetrating radar? In the Orange County context, with mixed fill, old utilities, and variable moisture, GPR is best understood as a probability tool, not a tape measure. It can very reliably say, "Something is here" and "Here is how it runs." Exact size and depth may require verification by potholing.

Equipment professional utility locators use

What equipment do utility locators use on a typical Orange County project? The toolbox usually includes:

1. Electromagnetic locators with multiple frequencies and both active and passive modes, for tracing metallic lines and cables.
2. Ground penetrating radar units with cart mounted antennas, tuned for the depth and resolution range needed around utilities.
3. Sondes and traceable rods that can be pushed through conduits, sewer laterals, or ducts to turn a nonconductive path into a traceable target.
4. GPS and survey gear to capture utility positions in a coordinate system for integration into design models.
5. Test equipment such as multimeters, clamp meters, and pipe locators to verify continuity and connectivity to specific facilities.

That mix changes with site conditions. In a downtown Santa Ana street lined with utilities, EM often suffers from congestion and coupling, so GPR and selective vacuum potholing become more important. On a hillside residential lot in Laguna Niguel with sparse services, EM may be the workhorse.

Interpreting utility marking colors in the field

Those splashes of spray paint and fluttering flags are not random graffiti. They follow a standard color code that helps everyone on site stay aligned.

Someone inevitably asks, “What do the colors mean for utility marking?” or “What does red paint mean on the ground?” Here is the shorthand that applies in Orange County as elsewhere in the United States:

1. Red marks electric power lines, lighting cables, and related systems. If you see red paint or flags, assume there are energized conductors within the tolerance zone.
2. Yellow is reserved for gas, oil, steam, and other flammable materials. Yellow lines deserve extra respect simply because the consequences of a strike are often severe.
3. Orange utility flags or paint indicate communication lines, such as telephone, cable TV, and fiber optic. “What do orange utility flags mean?” usually means, “Do I really need to worry about these?” The answer is yes, because fiber cuts can be very expensive.
4. Blue denotes potable water. That can be public mains, services, or private supply lines, depending on who marked them.
5. Green means sewer and drain lines, usually gravity systems, including storm drains.

You may also see purple for reclaimed water or irrigation, and pink for temporary survey markings. White paint on the ground is distinct. What is the white paint on the ground for? It marks proposed excavation limits or features, allowing locators to focus within that footprint rather than an entire property.

Knowing these colors and treating them seriously is part of standard job site culture. It also answers questions such as “How do you find underground utilities on my property?” The process begins with records and locating, but once marked, the colors give the crew a readable map on the surface.

Locating specific types of buried lines

Different utilities demand different tactics.

How do you locate a buried water line? If it is metallic, EM with a direct connection is ideal. If it is PVC with a tracer wire, the wire gets traced. On older sites with unmarked plastic lines, GPR and strategic potholing may be needed. Listening devices can sometimes pinpoint leaks, but that is a different specialty.

How do you locate a buried gas line? Public gas mains are typically located by the utility after an 811 call. A private gas line feeding a pool heater or barbecue island often uses yellow PE pipe with a tracer wire. If there is no tracer, GPR combined with knowledge of typical routing from the meter to the load is used, then verified with test holes.

How do you locate a sewer line? Many sewer laterals are nonconductive. Locators often insert a sonde or traceable rod through a cleanout or manhole and then track its position with EM. GPR can spot larger mains. If you ask, “Can you locate a septic tank?”, the answer is usually yes, with GPR and sometimes with probing, because tanks create distinct radar signatures and soil conditions.

How do you find a buried electrical line? For conductors in use, EM locators pick up the energized line passively, or a direct connect can be used if there is safe access. In private parking lots, on site lighting circuits are a frequent surprise when trenching for new EV chargers or signage.

How do you locate a fiber optic cable? Fiber itself is nonconductive, but almost all buried fiber in the region is installed with a metallic tracer tape or wire in the same trench. That tape can be located with EM. GPR can also identify duct banks that carry fiber. The risk profile for a fiber strike is significant enough that many owners require design level SUE along fiber routes.

Project planning: permits, timing, and homeowner questions

On many Orange County projects, planning for utility locating dovetails with permitting and schedule.

Do I need a permit to dig in Orange County? For minor landscaping or shallow hand digging, often not, but each city has its own thresholds. Any substantial excavation, especially in the public right of way or for structural work like foundations, retaining walls, or pools, will require permits from the city or county building and public works departments. Utility agencies may also require encroachment permits when working near their assets.

From a timing standpoint, plan for at least three layers: the 811 response window, private utility locating, and any follow up potholing or survey. For small residential projects, this may compress into a week if everyone is aligned. For larger commercial work, utility coordination can occupy several weeks or longer in the preconstruction phase.

Homeowners often ask, “Can I locate my own underground utilities?” and “Should homeowners hire a utility locator?” You can do limited self locating for your own awareness, for example by spotting visible meters, valves, and cleanouts, and by reviewing your site plan with the city or HOA. Consumer grade locators exist, but without training they often provide false confidence. For any work that involves mechanized excavation or gets near likely service routes, hiring a professional private locator is a safer, usually cheaper, path than learning through a line strike.

Why utility locating is not optional in Orange County construction

The question in the title is “Why is utility locating important before excavation?”, particularly in Orange County.

The short answer from those of us who have been on the wrong side of a surprise is simple. The combination of dense development, aging infrastructure, redevelopment of existing sites, and patchy records means that what is on paper rarely matches what is in the ground. Calling 811 is required and gives you part of the picture. Engaging a skilled private locator and, where appropriate, pursuing subsurface utility engineering fills in the gaps.

For a contractor, that means fewer change orders, fewer claims, and a safer site. For an engineer, it means designing around what actually exists rather than idealizing it. For a homeowner, it means your backyard project does not end with utility crews in your driveway and your neighbors asking why the internet is down.

The best utility locating company in Orange County is the one that tells you honestly what they can see, what they cannot, and how confident they are in each mark, then works with your team to manage the residual risk. When you treat their work as an integral part of your excavation planning, not an afterthought, the odds move strongly in your favor.