

Ask any contractor who has clipped a buried line in Orange County, and you will hear the same two regrets: not calling 811 early enough, and assuming plastic or non-metallic utilities “weren’t a big deal.” They are, both for safety and for your budget.

Plastic water services, PVC irrigation, PE gas lines, fiber optics in non-metallic conduits, and private sewer laterals are everywhere under Orange County yards, streets, and parking lots. They often do not show on old plans, and traditional metal detectors cannot see them at all. Yet they can leak, explode, or cost tens of thousands of dollars to repair if you hit them.

The short answer: yes, many plastic pipes and non-metallic lines can be located, but not by every locator and not with a single tool. It takes the right equipment, the right approach, and realistic expectations about accuracy.

This guide walks through how utility locating actually works here in Orange County, what 811 does and does not cover, and when you need a private utility locator to track down those hard-to-see plastic and non-metallic utilities.

What is utility locating and why it matters before you dig

Utility locating is the process of identifying and marking the position of underground utilities before excavation. That sounds simple. In practice, it is a mix of physics, detective work, and risk management.

On a typical site, you may have:

- Electric, gas, water, sewer, communications, and reclaimed water mains in the public right of way.
- Service laterals and private systems running through the property to buildings, equipment, outbuildings, pools, and irrigation zones.

The goal of utility locating is not just to “find pipes” but to reduce the risk of:

First, personal injury or death from contact with energized electrical lines or pressurized gas.

Second, service outages to neighbors, tenants, or critical facilities.

Third, expensive repair work and project delays.

In California, and especially in dense areas like Orange County, the subsurface is crowded. Multiple generations of infrastructure overlap, often with poor record keeping. That is why state law requires notification to 811 before digging and why responsible contractors treat private locating as part of their standard pre-construction checklist.

What does a utility locator actually do?

From the outside, it looks like someone walking around waving an odd-looking wand and spraying colorful paint on the ground. There is more going on.

A professional locator typically:

Reads **Orange County Utility Locating** any available records and as-builts. City maps, utility plans, and prior surveys are a starting point, not a guarantee.

Scans the site with electromagnetic locating equipment. For metallic pipes and cables, they use transmitters and receivers to induce and trace an electrical signal.

Switches to ground penetrating radar, sondes, or other methods for non-metallic utilities. This is the part that matters most for plastic pipes.

Marks findings on the ground using the standardized color code and sketches or maps the results.

Explains limitations. Honest locators will tell you where they are confident and where the data is weak, such as deep plastic sewer laterals under reinforced concrete.

The quality of the locate depends as much on the operator's judgment as on the tools. I have seen the same GPR unit produce an excellent sewer map in the hands of a seasoned locator and a confusing mess when run by someone rushing the job.

How does utility locating work?

Most locating methods fall into three broad categories: electromagnetic, radar, and direct tracing.

Electromagnetic locating is the workhorse for metallic utilities. A transmitter sends a signal onto a conductive line, and a receiver picks up the induced current. It works very well on copper, steel, and tracer-wire-equipped plastic lines, less so on poorly grounded or broken conductors.

Ground penetrating radar (GPR) sends high-frequency radio waves into the ground and measures the reflections from changes in material, such as the boundary between soil and pipe. With the right frequency and soil conditions, you can see plastic, clay, and even voids. In Orange County's mixed soils - sandy coastal areas, clay pockets, and urban fill - GPR performance varies from excellent to marginal.

Direct tracing and sondes use an inserted device. For example, a small transmitter can be pushed through a sewer or duct; the locator tracks that live signal above ground to map the route of a non-metallic line.

Locators often combine these methods. You might see them trace a metallic water main with EM, then switch to GPR and a sonde to follow a plastic service line to a home.

Public vs private locating: who finds what?

Understanding what 811 covers is crucial before you worry about plastic pipes.

Public utility locating refers to facilities owned by public utilities and operators such as Southern California Edison, SoCalGas, AT&T, Spectrum, and local water and sewer agencies. Their responsibility typically stops at the meter, point of service, or easement boundary.

Private utility locating covers anything beyond that public responsibility point. Common private lines include:

Irrigation and landscape water lines.

Private fire lines and hydrants on commercial campuses or HOAs.

Electrical feeds from the main service to detached garages, pools, signs, and EV chargers.

Private sewer laterals from the building to the municipal main, and on-site septic systems.

Gas lines feeding outdoor kitchens, pool heaters, or secondary structures.

Public utility locators dispatched through 811 will not usually mark private systems. That is where a private locator comes in.

Is calling 811 the law in California?

Yes. Under California Government Code section 4216, anyone who plans to excavate must notify the regional notification center, which is 811. This applies to contractors, homeowners, and anyone else disturbing the ground with power equipment, not just big construction firms.

A few key points specific to Orange County:

You must call (or submit an online ticket) at least two working days, but not more than 14 calendar days, before digging.

811 tickets are free to the excavator. The cost is borne by the member utilities.

Skipping 811 can expose you to civil penalties, liability for damages, and potential criminal charges if negligent excavation leads to injury or major utility interruptions.

Hand digging is sometimes treated differently, but you should not assume that "I am only planting a tree" is an exemption. Hitting a shallow service line with a manual post-hole digger still causes damage.

For homeowners in Orange County: if you are doing anything deeper than a few inches with tools that could damage a line, treat 811 as mandatory, not optional.

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Is utility locating free in California?

Public locating through 811 is free. The member utilities pay for their locators to identify and mark their lines in the public right of way and up to their point of responsibility on your property.

Private utility locating is not free. You hire a private utility locating company, and they bill you directly. This is where many people are surprised. They assume "811 will find everything," then learn at the last minute that their irrigation, private electrical feeds, or fire lines are unmarked.

In Orange County, the division between public and private can change from one property to the next. For example, some water districts own the service line to the meter at the curb, others to the house wall. Never assume. Ask the utility or a knowledgeable locator to clarify.

How much does utility locating cost in Orange County?

Prices vary by scope, access, and complexity, but typical private utility locating costs in Orange County range along these lines:

For a straightforward residential locate of private utilities around a single-family home, you may see flat fees in the range of a few hundred dollars, often around 300 to 600 dollars.

For commercial properties, parking lots, or multifamily complexes, locators often charge hourly. Rates commonly fall between 175 and 350 dollars per hour with minimum call-out times.

More complex surveys that include detailed mapping, CAD deliverables, or subsurface utility engineering (SUE) levels of service will cost more and may be priced per day, not per hour.

As for "How much does private utility locating cost overall," think in terms of scale. A half-day survey of a small retail pad is one thing; a full campus or industrial site may run into the thousands. Compared with the cost of repairing a major damaged utility, those numbers are usually modest.

Public 811 locates cost you nothing, but they only cover public facilities and often do not provide detailed depth information or mapping.

How long does utility locating take?

On a typical single-family residential property in Orange County, a combined 811 plus private locate can be completed on site in one to three hours, depending on:

Number of buildings, outbuildings, and hardscape features.

Extent of private systems such as irrigation, pools, gas to outdoor kitchens, or detached garages.

Surface conditions, including heavy landscaping, vehicles, or structures blocking access.

Larger commercial properties can take a full day or more. The actual "duration" from your perspective also includes:

The 811 ticket window: utilities are required to respond within two working days.

Scheduling a private locator, which in busy seasons can mean booking several days out.

The key is planning ahead. Calling 811 a week before your planned start and booking private locating for shortly after the 811 marks appear tends to keep projects moving.

Can utility locators find plastic pipes and non-metallic lines?

They can often find them, but not with the same ease or certainty as metallic lines, and not every locator has the right tools or experience.

Plastic and non-metallic utilities fall into a few categories.

Plastic with tracer wire. Many newer plastic gas and water lines are installed with an adjacent wire specifically to allow electromagnetic locating. In those cases, locators will treat the tracer wire like a metallic conductor and trace it with traditional gear.

Unmarked plastic pipes such as older irrigation lines, PVC conduits, or some sewer pipes. These are invisible to electromagnetic locators because they are not conductive.

Fiber optics in non-metallic conduit. The cable itself is glass; the conduit is often PVC. Unless a tracer wire was installed, EM methods will not detect it.

For those non-metallic cases, locators typically rely on ground penetrating radar, sondes, and experience reading subtle patterns.

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

Ground penetrating radar is used in utility locating to:

Detect non-metallic utilities such as plastic water and sewer lines.

Confirm the depth and position of known utilities where electromagnetic data is weak or conflicting.

Identify voids, abandoned structures, and in some cases underground tanks or large buried objects.

In Southern California soils, GPR accuracy depends heavily on conditions:

Dry, sandy or uniform soils, such as some coastal areas, tend to produce clearer images and more reliable depth estimates.

Clayey, highly conductive, or saturated soils can attenuate the radar signal and limit depth or clarity.

Reinforced concrete, rebar mats, and dense urban fill complicate interpretation.

When used by an experienced operator, GPR can often place a target within a few inches horizontally and provide a depth estimate that is accurate to within 10 to 20 percent. That is a general range, not a guarantee. Locators will usually phrase it as "estimated depth" rather than a precise number.

For deep utilities, GPR may not see as far as electromagnetic methods. Practical detection depths for utility-grade GPR in Orange County soils are often in the 3 to 8 foot range, occasionally deeper in ideal conditions. Shallow utilities, which are often the ones you are most likely to hit, are generally easier to see.

How deep can utility locators detect utilities?

For metallic utilities with good access using electromagnetic methods, locators can often detect lines at depths of 10 feet or more, and sometimes deeper, though interpretation becomes harder and precision decreases.

For non-metallic utilities using GPR, practical detection often tops out around 6 to 8 feet in many Orange County soils. Very shallow plastic pipes, such as sprinkler lines a foot or so below grade, can be tricky because they sit in the radar's "near surface" zone where clutter is strongest, yet good operators can often still infer their presence by pattern and repetition.

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Locators will usually flag an area as “congested” or “inconclusive” rather than guess when data is weak. That is your signal to dig carefully, pothole by hand or vacuum excavation, and adjust construction plans where needed.

How accurate is utility locating overall?

When utilities are metallic, accessible, and separated from other lines, electromagnetic locating can be very accurate. In those best-case scenarios, I have seen depths verified to within an inch or two and lateral locations within a few inches horizontally.

Accuracy drops when:

Utilities are bundled together or cross at shallow angles.

Tracer wires are broken or poorly bonded.

Records are wrong, and assumptions creep in.

For non-metallic utilities with GPR and sondes, accuracy is more variable. A good locator will give you context, not just a paint mark. Expect phrases like “probable alignment,” “approximate depth,” and “confidence is moderate” when conditions are challenging.

The safest mindset is that utility locating greatly reduces risk but does not replace careful excavation practices. Vacuum potholing or hand digging to physically expose critical utilities at conflict points remains best practice.

What do the utility marking colors mean?

You have probably seen streaks of bright paint and little flags dotting Orange County streets and lawns. Those are standardized utility marking colors.

Here is a compact reference for the most common colors you will see:

1. Red paint or flags mark electric power lines, lighting cables, and related structures. If you see red, stop and reassess before you dig deeper.
2. Yellow indicates gas, oil, steam, or other flammable or gaseous materials. Yellow marks deserve maximum respect; a damaged gas service can shut down a street or more.
3. Orange utility flags or paint show communications, alarm, or signal lines, including phone, cable TV, and many fiber optic routes.
4. Blue is for potable water. Darker or lighter shades may vary by brand of paint, but blue means drinking water mains and services.
5. Green indicates sewer and drain lines, including storm drains and gravity sewers.

You may also see purple for reclaimed water, pink for temporary survey markings, and white chalk or paint showing the proposed excavation limits. That white paint essentially answers “what is the white paint on the ground for” - it is your responsibility as the excavator to outline where you intend to dig so locators know where to focus.

How do you locate specific buried utilities?

Different utilities call for different tactics.

Buried water lines. If they are metallic or have a tracer wire, electromagnetic locating works well. For plastic services without tracer wire, GPR and sometimes acoustic methods (listening for flow) can help, but results vary. Locators often start at the meter or valve box and work toward the structure.

Gas lines. Public gas mains and most newer services are usually well mapped and equipped with tracer wire. Private gas lines to pools or outdoor kitchens can be trickier. They may be plastic without tracer wire, so GPR and careful site investigation are important.

Sewer lines. Gravity sewers, particularly PVC or clay, are classic candidates for sondes. A locator can feed a transmitter through a cleanout and trace its path. GPR can complement this, especially when there is no practical access for a sonde. Yes, this is also how you can locate a septic tank: by following the lateral outward and looking for the tank signature on GPR.

Buried electrical lines. Metallic conductors respond very well to electromagnetic locating. For shallow, lightly loaded feeders, locators might also use clamp-on methods to avoid direct connections.

Fiber optic cables. If they include a metallic strength member or tracer wire, EM works. For fiber in non-metallic conduit without any conductive elements, accurate locating depends on the presence of tracer wires, previous markings, or high-end methods. Damage to fiber can be extremely expensive to repair, so it is a prime candidate for cautious excavation and, when possible, vacuum potholes.

Who is liable if you hit a utility line?

Liability in California tends to revolve around whether you followed reasonable procedures.

If you called 811, respected the marking time window, and dug carefully, your risk is reduced. If you ignored 811 or disregarded marks, you are more likely to be held responsible for:

The direct cost to repair the damaged line.

Associated property damage, such as flooding from a broken water main.

Indirect costs, such as lost service to customers, traffic control, or environmental cleanup in a fuel spill.

Repair costs vary dramatically. A simple residential electrical service repair might cost a few hundred to a couple thousand dollars. Severing a major communications duct bank or a medium-pressure gas main can climb into the tens or even hundreds of thousands, especially when road closures and emergency response are involved.

“What happens if I dig without calling 811” in Orange County is more than a theoretical question. You may face fines from the state, invoices from utilities, and serious civil liability if someone is hurt. It is also effectively illegal to excavate without a one-call notification in most circumstances, so you invite legal trouble on several fronts.

Do I need a permit to dig in Orange County?

If you are working in the public right of way, such as a street, sidewalk, or public easement, you almost certainly need an encroachment or excavation permit from the relevant agency, whether that is the City of Irvine, Anaheim, Santa Ana, or the County of Orange itself for unincorporated areas.

On private property, building or grading permits may be required for certain types of work, such as pools, retaining walls, or major grading. The requirement does not replace the 811 notification; they are separate processes.

If you are unsure, a quick call to your city's public works or building department before mobilizing equipment can save you expensive stop-work orders.

Can I locate my own underground utilities?

You can attempt some limited locating yourself, but there are clear limits.

Most hardware-store "stud finder"-style locators or metal detectors can pick up shallow metal objects but are poor tools for reliable utility locating. They will not see plastic and may mislead you around congested areas.

For very small DIY projects such as planting shrubs, visually inspecting for meter boxes, cleanouts, valve boxes, and conduit pathways is helpful, but it is not a substitute for proper locating.

If you plan any meaningful excavation, especially with mechanical equipment, treat 811 and, where appropriate, private locating as essential. The question "Should homeowners hire a utility locator" usually answers itself after you weigh the cost of a professional locate against the potential cost of a damaged gas, water, or electrical line.

When should you hire a private utility locator in Orange County?

You should seriously consider a private utility locator when:

Your project extends beyond the simple frontage or driveway area and includes yards, back lots, or campuses with unknown improvements.

You know or suspect private systems exist, such as irrigation mains, private fire lines, electrical feeds to signs or outbuildings, or on-site septic systems.

You see limited or incomplete 811 marks, or you receive responses like "company has no facilities in this area," but you know you have service.

You are working for risk-sensitive clients: hospitals, data centers, schools, or high-value commercial sites.

Private locators are also who you call when you specifically ask "Can utility locators find plastic pipes" and you need a real answer on your property, not just a general statement. Make sure you pick a company that can describe which equipment they use - GPR, EM, sondes - and how experienced their operators are in local Orange County soil conditions.

A simple pre-dig checklist for Orange County projects

Here is a compact, practical sequence that covers most small to medium projects:

1. Outline your planned excavation area with white paint or chalk on the ground.
2. Contact 811 at least two working days before digging and get a ticket number.
3. Once public utilities are marked, walk the site and note areas with no marks where you know services exist.
4. Hire a private utility locator for those unmarked or private areas, asking specifically about non-metallic and plastic utilities.
5. Plan to pothole by hand or vacuum excavation at all major utility crossings before heavy equipment digs.

This simple process dramatically reduces surprises, especially around non-metallic and private lines.

What is subsurface utility engineering, and when is it worth it?

Subsurface utility engineering, often shortened to SUE, goes beyond basic locate and mark. It is a formal process used mainly on larger civil and infrastructure projects to systematically identify, qualify, and map underground utilities to defined levels of accuracy.



ORANGE COUNTY UTILITY LOCATING





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At the higher levels, SUE includes:

Comprehensive records research and field locating.

Utility quality levels (A through D) that describe how reliable each piece of information is.

Survey-grade mapping, plan integration, and, in some cases, vacuum potholing to physically verify depth and position.

In Orange County, you will most often see SUE on public works, transportation, and large private developments where unknown utilities can derail design and construction. For such projects, SUE is not just about avoiding strikes; it allows better design decisions, such as routing new utilities and structures around existing networks.

For smaller projects, a good private utility locating firm that can provide sketches or simple CAD files is often sufficient. The important thing is that someone with the right tools has hunted for both metallic and non-metallic lines before shovels hit the dirt.

Why careful locating of plastic and non-metallic lines is worth the effort

Non-metallic utilities are not optional background noise. Plastic gas services, PVC fire lines, fiber optics in plastic conduit, and PVC sewer laterals can be as critical as any steel pipe, just harder to see.

In Orange County's mix of older neighborhoods, new developments, and constantly upgraded communications networks, the subsurface is full of plastic and other non-metallic lines. Relying only on 811 or on metal detectors leaves dangerous blind spots.

If you remember nothing else, keep three points in mind:

811 in California is mandatory for excavation and free to call, but 811 does not usually locate private lines.

Most plastic and non-metallic utilities can be found or at least reasonably inferred when a skilled locator uses the right combination of EM, GPR, and sondes.

The cost of a thorough locate is almost always small compared with the direct and indirect costs of a damaged utility, particularly gas and high-value communications.

Before you dig in Orange County, treat plastic and non-metallic lines with the same respect you give the big metallic mains. They are there, they matter, and with the right expertise, you can find them before your backhoe does.