



An Extended Guide · No. 1551

Trenching and the Wiring Run to the House

Getting the power
safely back underground

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! Read this first — two honest truths about ground-mount solar

Two honest truths before we start, because they surprise a lot of good folks. First, a ground-mounted solar array is a professional job. It takes a licensed installer, real foundation work in your yard, building and electrical permits, and your utility's approval to connect (that approval is called interconnection). This guide is here to help you understand, plan for, and evaluate a ground mount; it is not a do-it-yourself project, and I never want you digging footings, wiring an array, or opening an electrical panel. Second, a plain grid-tied solar system — roof or ground, without a battery — shuts itself off during a power outage, even in bright sunshine. That is a required safety feature, so the system cannot put electricity onto the lines while the crews are repairing them. If keeping the lights on during an outage matters to you, you will need a battery, and we will talk about that plainly. Getting the power from a ground array back to your house means a trench and a wiring run across the yard — a real part of the project, and one worth understanding before you begin.

Getting the power safely back to the house

Your panels will stand out in the yard, but your electrical panel is inside the house — so the power has to travel back. That underground trip is what this guide is about, in plain, unhurried English.

I'm Bill, and I run Bill's Home Tech here in Portage County. For a ground mount, the wiring almost always runs underground, inside protective pipe called conduit, through a trench dug from the array to your house. It's routine work for a good installer, but it helps to know what's involved so you can plan the spot and follow the quote.

None of this is a do-it-yourself job — there's digging near buried lines, electrical work, and permits. My aim is simply to make you a confident, well-informed homeowner who knows what to ask.

★ Wondering where your trench would run?

Tell me where your panel is and where the sunniest spot sits, and I'll help you picture the run and what it might involve — calmly, with nothing to sell. Call or text me at (330) 200-8042.

The trench run in 60 seconds

If you read just one page, read this one.

- ❑ The wiring usually runs underground, in conduit, through a trench.
- ❑ It travels from the array back to your home's electrical panel.
- ❑ Always call 811 first so buried utilities get marked — for free.
- ❑ It's buried to a depth your local code sets; nobody should guess it.
- ❑ The farther the array, the longer the trench and the heavier the wire.
- ❑ Your installer restores the lawn once the trench is filled back in.
- ❑ It's licensed, permitted, professional work — never a DIY dig.

✓ Distance is the big cost lever

If two sunny spots would both work, the one closer to your electrical panel usually means a shorter trench and a lower cost. Weigh that against which spot gets the best, most shade-free sun.

What the trench and wiring run actually is

Let's start with the plain picture of what gets built between your array and your house.

A ground array makes electricity out in the yard, and that electricity has to reach your electrical panel — the gray box where your home's circuits live. To carry it, the installer runs wires inside conduit (sturdy plastic or metal pipe) and buries that conduit in a trench, a narrow channel dug across the ground.

Think of it as a protected underground path for the power. The trench keeps the wiring safe from mowers, shovels, frost, and time, and the conduit keeps the wire tidy and shielded. Once it's filled back in, you'd hardly know it's there.

How long that path is depends on where your array sits relative to the house. A spot near the panel is a short, simple run; a far corner of the property is a longer one. We'll come back to that, because distance drives much of the cost.

✓ Conduit is just protective pipe

When your installer says conduit, picture a length of stout pipe with the wires threaded through it. It guards the wiring underground and makes any future service far easier.

Why underground, and why in conduit

You'll occasionally see wiring strung overhead, but underground in conduit is the usual, tidier way — and here's why.

Buried conduit keeps the wiring out of the weather and out of harm's way. There's nothing overhead to sag, ice up, or come down in a storm, and nothing at ground level to trip over or catch a mower. It's cleaner to look at and safer to live with.

The conduit also protects the wire from the soil itself and gives it a smooth path, which matters over a long run. And should the system ever need service or an upgrade, having the wire in conduit makes the job far easier than if it were buried bare.

✓ Tidy, protected, and out of sight

Underground conduit is the reason a finished ground mount looks so clean — no wires crossing the yard, just the array and the grass.

Call 811 before anyone puts a shovel in the ground

This is the one rule I want you to remember from the whole guide, even though your installer is the one who handles it.

Before any digging, someone must call 811 — the free 'call before you dig' service. You call, or your installer does, and within a couple of business days crews come out and mark where the buried utilities run: gas, electric, water, phone, and cable. Digging without that is how people hit a gas line or knock out the neighborhood's power.

A reputable installer always does this as a matter of course — it's the law and it's basic safety. But it's worth knowing about, because it's also the rule that applies to you for the rest of your life: any time you dig in your yard, even for a fence post or a tree, call 811 first.

! Never dig blind — 811 is free and required

Buried gas, electric, and water lines are invisible from the surface. Calling 811 to get them marked is free, required by law, and takes just a couple of days. Never let anyone — including yourself, later — dig without it.

How deep does the trench go?

Folks often ask me for a number here, and the honest answer is: it depends, and it isn't my number to give.

The wiring has to be buried deep enough to protect it and to satisfy the electrical code, and the required depth depends on the kind of conduit and wiring used and the rules your local building department follows. There's a right answer for your job — but it's set by code and confirmed by your installer and the inspector, not guessed from a guide.

So I won't print a depth here, because a wrong number is worse than none. What matters for you is understanding that it's buried to a real, code-set depth for good reasons, and that the inspection checks it was done right.

✓ Let the code set the number

When you hear a depth from your installer, it comes from the electrical code and your building department — exactly where it should. That's the number to trust.

Distance, and why a long run needs bigger wire

Here's a bit of plain electrical sense that explains why a far-off array costs more to wire.

When electricity travels a long way through a wire, a little of it is lost along the journey — electricians call this voltage drop. The longer the run, the more it adds up. To keep the loss small, the installer uses thicker wire for a longer trench, and thicker wire costs more.

This is why distance shows up twice in a quote: once for the extra trenching and once for the heavier wire. It isn't padding — it's making sure your array delivers its full power to the house. Your installer sizes the wire for your exact run, so there's no guessing involved.

✓ Bigger wire is a feature, not an upcharge

Upsizing the wire on a long run protects your production. If a quote for a distant array calls for heavier wire, that's a sign the installer is doing it right.

Disconnects and where the power lands

The wire doesn't just appear inside your panel — there are a few safety pieces along the way.

Where the run reaches the house, it ties into your electrical system through the proper equipment, including one or more disconnect switches — big, clearly labeled switches that let a person shut the solar off by hand. They're there for safety and service, and the utility and the fire department want to see them.

- A disconnect near the array or the house lets the system be shut off fast.
- The wiring lands in or beside your main electrical panel.
- Everything is labeled so an electrician or first responder can act quickly.
- Your installer places and labels all of it to code.

✓ Those labeled switches are your friends

You won't need to touch them day to day, but it's good to know where your solar disconnect is — just as you know where your main breaker is.

Two kinds of homes, two sets of needs

How far the power has to travel — and what it crosses on the way — looks pretty different in town than it does out on acreage.

If you live in town or the suburbs

On a smaller lot, the array is usually close to the house, so the trench is short. The catch is what's in the way: driveways, patios, sidewalks, sprinkler lines, and a neighbor's yard close by.

- The run is often short, which keeps trenching and wire costs down.
- It may have to cross a driveway, walk, or patio — ask how.
- Buried sprinkler and cable lines are easy to nick — 811 matters.
- Tight spaces mean careful digging and a neat lawn repair.

If you are out in the country on a well

Out in the country, the sunniest spot may sit well away from the house — across a pasture or past a barn. That means a longer trench, heavier wire, and a bit more planning, but usually open, easy ground to dig.

- Long runs across open land are common and very doable.
- Expect heavier wire and more trenching for a distant array.
- Watch for buried water lines to the barn or the well — 811 first.
- A spot handy to the house saves real money if the sun is still good.

★ Not sure how far is too far?

Distance is the biggest lever on a trench's cost, and every property is different. Tell me your layout and I'll help you weigh the sunny spot against the shorter run. Call (330) 200-8042.

Crossing driveways, gardens, and roots

Sometimes the straightest path from the array to the panel runs right through something solid. That's usually solvable.

If the trench has to cross a driveway or a sidewalk, the installer can often bore underneath it rather than tear it up, or plan the route around it. Gardens and flower beds can be crossed and replanted. Big tree roots are worked around, to protect the tree and the wire alike.

These crossings can add a little to the job, so it's worth pointing out anything you care about — a prized garden, a new driveway, a septic field — when the installer walks your property. A good one will plan the route to spare what matters to you.

✓ **Speak up about what you treasure**

On the site walk, mention your garden, your drain field, your favorite tree. The route can usually bend to protect them if the installer knows they're there.

Putting your yard back together

A trench sounds messier than it ends up being. Here's what to expect once the digging's done.

After the conduit is laid and inspected, the trench gets filled back in and the surface restored — soil tamped down, grass reseeded or sod replaced. For the first season you may see a green line where the trench ran, but it settles and blends in as the lawn recovers.

Ask your installer how they handle restoration, and whether reseeded is included. Most do a tidy job, because a torn-up yard is bad for their reputation too. A little patience and some watering does the rest.

✓ A faint line for a season is normal

Don't be alarmed if the trench line shows for a while — fresh grass comes in a touch different at first. Within a season or so it usually disappears.

What the trench does to your cost

I won't put a dollar figure on trenching — that's for a real quote — but I can tell you honestly what moves it up or down.

The big driver is distance. A short run near the house means less digging and standard wire; a long run to a far field means more trenching, heavier wire, and more time. Hard crossings — a driveway, ledge rock, a lot of tree roots — can add to it as well.

None of that is a reason to avoid a ground mount; it's just a reason to weigh the location. Sometimes a spot a little closer to the house, with slightly less-than-perfect sun, comes out ahead once you count the shorter trench. Your installer can price a couple of options so you can see the trade honestly. Our cost-versus-roof guide frames the bigger picture without guessing figures.

✓ Ask for two spots priced

If you're torn between a closer spot and a sunnier-but-farther one, ask your installer to quote both. Seeing the trench difference next to the sun difference makes the choice clear.

Picking a spot that keeps the run sensible

The best place for your array balances two things: the finest sun, and a reasonable path back to the house.

In a perfect world the sunniest, most shade-free patch would sit right beside your electrical panel. In the real world it's a balance. A truly great sun spot can be worth a longer trench; a marginal one usually isn't, if a closer spot is nearly as good.

This is where trenching and siting meet. Our siting guide goes deep on finding the sunniest, most sensible patch; this guide is about getting the power back from it. Read them together and you'll weigh sun and distance the way a good installer does.

✓ Sun first, distance close behind

Never sacrifice good sun to save a few feet of trench — but between two equally sunny spots, the closer one wins. That's the whole balancing act in a sentence.

Whose job is all this?

Short answer: licensed professionals, from the first shovel to the final connection.

Trenching near buried utilities, running electrical conduit, sizing wire, and tying into your panel are all skilled, licensed work — and much of it is inspected. A solar installer coordinates it, often with a licensed electrician, and pulls the permits. It is not a weekend project, and I would never want you or a helpful relative attempting it.

- Locating buried lines: 811, before any digging.
- Digging and conduit: the installer's crew, to code.
- Wiring and the panel tie-in: a licensed electrician.
- Permits and inspection: handled by the installer.

! Please don't dig or wire this yourself

Hitting a buried gas or power line, or wiring an array wrong, can be deadly and can void your coverage. This is licensed, permitted, inspected work. Your job is to understand and evaluate it — not to build it.

What trench day looks like

So you know what to expect, here's the usual rhythm of the day the trench goes in.

- The buried-utility marks from 811 are already down and checked.
- A trencher or small machine cuts a neat channel toward the house.
- Conduit is laid in, and the wire is pulled through it.
- An inspector may check the open trench before it's covered.
- The trench is filled, tamped, and the lawn is restored.

It's usually quicker and tidier than folks fear — often quick work on a normal run, and longer only for a long trench or a hard crossing. You don't need to do anything but stay clear of the work and point out anything you're worried about.

✓ Let the inspection do its job

On many jobs an inspector looks at the trench while it's still open, so the depth and conduit can be verified. That open-trench check is a good thing — it's proof the hidden work was done right.

Planning ahead while the trench is open

A trench is dug once. It's worth a thought about tomorrow while it's open today.

If you might add more panels later, or a battery down the road, this is the moment to mention it. An installer can sometimes size the conduit, or lay a spare one, now while the ground is open — so a future addition doesn't mean digging all over again. It's cheap insurance compared with a second trench.

You don't have to decide your whole future today. But if expanding or adding backup is even a maybe, say so, and let the installer plan a little headroom. Our expanding-and-batteries guide walks through thinking ahead without over-buying.

✓ Dig once, if you can help it

Adding capacity to an open trench costs far less than opening a new one later. If there's any chance you'll grow the system, plan for it now.

A short run and a long run, side by side

The same array can be an easy job or a bigger one, depending mostly on how far it sits from the house.

	Short run	Long run
Distance	Near the house	Far corner
Trenching	Less digging	More digging
Wire	Standard size	Upsized
Crossings	Often none	More likely
Cost	Lower	Higher

Neither is better or worse — it's just what your property calls for. The point is to go in knowing that distance is the main lever, so you can weigh a farther, sunnier spot against a closer, simpler run with clear eyes.

Questions to ask your installer

Bring these to your site walk so the trench holds no surprises.

Q: Where would the trench run, and how long is it?

You want to see the route on your property and understand its length, since distance drives both the trenching and the wire size.

Q: Will it cross my driveway, garden, or any buried lines?

Ask how crossings are handled — boring under a driveway, routing around a garden — and confirm 811 will mark buried utilities first.

Q: How will you restore my lawn afterward?

A good installer explains how they backfill and reseed or re-sod, and whether that's included. A tidy yard is part of the job.

✓ A clear answer is a good sign

An installer who can walk your yard and describe the route, the crossings, and the cleanup off the top of their head is one who's done this many times.

Living with a buried run for years to come

Once it's in, a good trench run asks nothing of you — with one lifelong exception.

Buried conduit is out of sight and out of mind. It doesn't need cleaning, adjusting, or worrying about. Just remember that there is now a live electrical line running underground between your array and your house, on top of the gas, water, and power lines you already had.

So the rule you learned on install day stays with you: any time you or anyone else plans to dig in the yard — a fence, a tree, a garden, a mailbox post — call 811 first and get everything marked. It's free, it's fast, and it keeps a fun project from turning into a dangerous one.

! Call 811 every time you dig, for good

Your solar line joins the buried utilities under your yard. Before any future digging, by you or anyone, call 811 and let them mark it. Free, fast, and it could save a life.

A few honest worries, eased

Here are the concerns I hear most about the trench, and why they're usually smaller than they seem.

'My whole yard will be torn up.'

A trench is a narrow channel, not a bulldozed field. It's dug, filled, and reseeded, and within a season the lawn usually heals over. Careful installers keep the mess to the route itself.

'A long run means it isn't worth it.'

A longer trench costs more, but it's rarely a deal-breaker on open rural ground. If the far spot has clearly better sun, the extra wire and digging can pay for themselves. Price both and see.

✓ Most trench fears fade once it's in

The finished run is invisible and maintenance-free. The disruption is brief and fixable; the benefit lasts for decades.

Common Questions

The questions folks ask me most about trenching and the wiring run.

Q: Does the wiring have to be underground?

Not always, but underground in conduit is the usual, tidiest, and safest way — nothing overhead to storm-damage and nothing at ground level to trip a mower. Your installer recommends what suits your site.

Q: How deep will it be buried?

To a depth your local electrical code sets, based on the wiring and conduit used. I won't guess a number, because the code and your inspector set the right one for your job.

Q: Does a longer trench really cost more?

Yes — more digging and heavier wire to protect the power over the distance. That's why a spot closer to your panel is generally cheaper, if the sun there is nearly as good.

Q: Do I have to call 811, or does the installer?

Your installer handles it before they dig. But remember it for yourself too: any time you dig in your yard for anything, ever, call 811 first. It's free and required.

★ Still have a trench question?

There's no such thing as a silly question about this. Call or text me at (330) 200-8042 and I'll walk you through your particular yard — no charge to ask.

You don't have to do this alone

You just have to remember that a friendly, patient person is one call away.

I hope this guide made the trench and wiring run to your house feel a little less daunting and a lot more doable. Keep it in a drawer with your other home papers, come back to a page whenever you need it, and don't worry about memorizing anything.

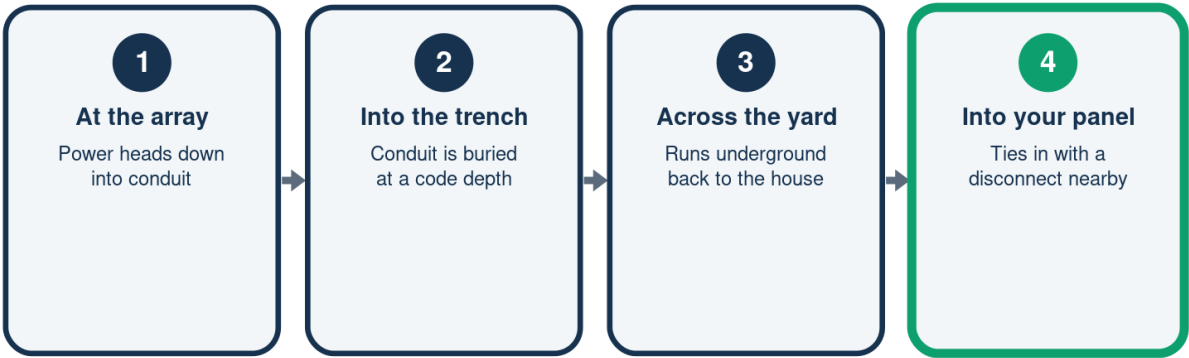
When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat \$99, and for the parts that don't need me on-site I can often help right on your screen for \$49. Every visit comes with a 30-day, come-back-free guarantee. I don't sell solar and I don't do the licensed electrical work or the install itself — I help you understand it all, ask the right questions, and line up a trustworthy local solar installer, so you never feel talked into anything.

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The Run Back to the House

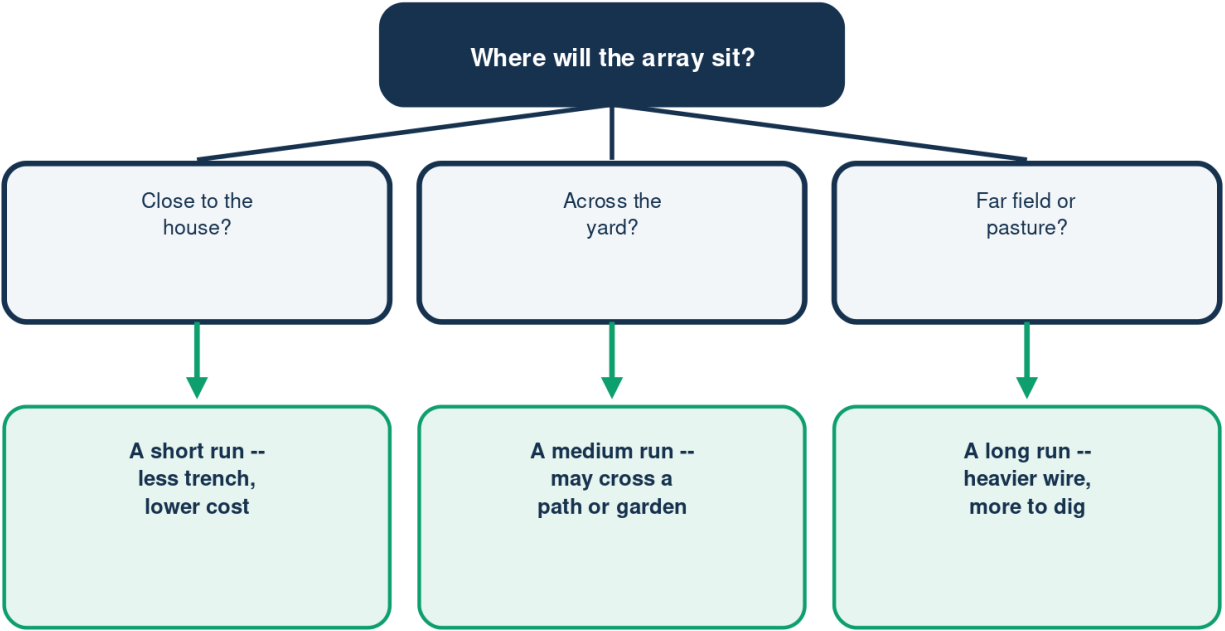
How your array's power gets home, underground



Always call 811 to locate buried lines before anyone digs.

How Far Is Your Trench?

Where the array sits sets the size of the job



Always call 811 to locate buried lines before anyone digs.

Illustration - a schematic, not to scale. Your setup may differ.

Short Run vs Long Run

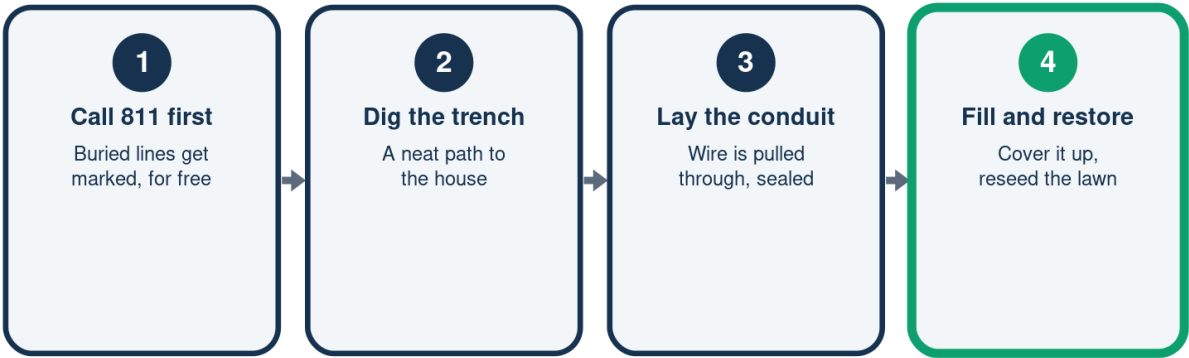
Distance is the main thing that changes

	Short run	Long run
Distance	Near the house	Far corner
Trenching	Less digging	More digging
Wire size	Standard	Upsized
Crossings	Often none	More likely
Cost	Lower	Higher

Closer is cheaper -- but the best, shade-free sun is worth some distance.

How a Trench Gets Done

The usual order of the day



Licensed, permitted, inspected work -- never a do-it-yourself dig.



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A Note From Bill

A quick note from Bill.

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— *Bill*



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