BILL'S HOME TECH
Home & Small Business Tech Solutions

BILL'S COMPLETE MANUALS

Wi-Fi to the Garage, Barn or Backyard

Outdoor access points, mesh placement and point-to-point bridges — explained in plain English, from simplest to most involved

A plain-English guide to getting Wi-Fi out to your outbuildings

Measure first, then fix — testing can't hurt a thing

Written for you by Bill — Bill's Home Tech

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For any home network · facts current November 2026

What's Inside

This is your guide to getting Wi-Fi out to a garage, barn, shed or backyard. Read it in any order and at your own pace. It starts with why the signal fades and how to measure it with your phone, then works from the simplest, cheapest fixes up to buried cable and point-to-point bridges. Products are named only as examples, and prices change often, so check before you buy.

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PART 1

Getting Started

Why your Wi-Fi gives up somewhere between the back door and the barn, the handful of words you'll meet along the way, and every option laid out from simplest to most involved.

CHAPTER 1

A Note from Bill

Hello, and welcome. Out here in Portage County, a lot of us have something worth connecting beyond the back door: a detached garage with a workbench, a pole barn, a horse barn, a chicken coop, a shed, a patio where you'd like to listen to the ballgame, or a camera keeping an eye on the driveway. And almost everyone tells me the same thing: the Wi-Fi is fine in the kitchen and gone by the time you reach the barn door.

I'm Bill. For more than 30 years I've helped people make their technology work for them, and getting a signal out to an outbuilding is one of the most satisfying jobs there is. It's also one where people waste a lot of money on the wrong gadget. I wrote this guide so you can understand your choices before you buy anything, in plain English, one step at a time.

What this guide covers

- **Why outdoor Wi-Fi is hard**: distance, walls, metal siding, trees and weather.
- **Measuring first** with nothing more than your phone, so you know what you're fixing.
- **The simple fixes**: moving the router, a mesh unit in a window, extenders and powerline adapters.
- **Outdoor-rated equipment**: weatherproof mesh units and access points, what the ratings mean, and how to mount them.
- **Running a cable**: outdoor and direct-burial network cable, conduit, calling 811, and PoE.
- **Point-to-point bridges** for a barn hundreds of feet away.
- **Living with it**: power at the outbuilding, lightning and surges, network names, cameras, smart gadgets, security and scams.

WHAT THIS DOES FOR YOU

What this guide does for you

By the end you'll know why the signal fades, how to measure it, which of the six or seven common fixes fits your property, roughly what each one costs, and which parts are a safe weekend job and which belong to an electrician or an installer. You'll be able to buy the right thing once, instead of the wrong thing twice.

The honest promise

Testing your signal, running a speed test, moving a mesh unit to a window, or trying a pair of powerline adapters can't hurt a thing. Most of this guide is that kind of low-risk

experimenting. A few jobs are different, and I'll flag them clearly: anything involving **new electrical wiring**, **digging a trench**, **climbing a ladder to mount gear high up**, or **grounding equipment against lightning**. Those deserve a professional, and I'll tell you when.

> **STAY SAFE**
>
> **Electricity is not a DIY project here**
>
> This guide never asks you to open an electrical panel, add an outlet or run power to a building. If your garage or barn needs power, or more power, that's a job for a licensed electrician. Everything I describe plugs into an outlet that's already there.

And you're never stuck alone. If you'd like a hand working out the best way to reach your garage or barn, call me at **(330) 200-8042**. I'm happy to walk the property with you and give you an honest opinion.

— Bill

CHAPTER 2

Why Wi-Fi Struggles to Reach Outbuildings

Wi-Fi is a radio signal, like a very short-range radio station. Your router sends it out in all directions, and every foot it travels and every thing it passes through makes it a little weaker. Indoors the distances are short. Outdoors, a garage 80 feet away or a barn 400 feet away asks far more of it than any home router was designed to give.

The four big signal-stealers

What gets in the way	Why it matters
Distance	The farther away, the weaker the signal. Home routers are built to cover a house, not a farmyard.
Walls	The signal has to get out of the house *and* into the outbuilding. Exterior walls are the thickest ones: brick, stone, block, and siding with foil-backed insulation.
Metal	Metal siding, metal roofs, steel garage doors and pole-barn steel are very hard for Wi-Fi to pass through. A metal building can act almost like a cage around the signal.
Trees and water	Leaves hold water, and water soaks up Wi-Fi. A link that works in January can weaken in June when the trees fill in, and a heavy rain can make it worse.

What Apple says about materials

Apple publishes a simple ranking of how much common materials interfere with Wi-Fi. Wood, glass and most plastics interfere **little**. Water, brick and marble are in the **middle**. Plaster and concrete interfere a **lot**. And **metal** is at the very top of the list. Apple also notes that a metal-reinforced concrete floor or wall between your router and your device can cause poor Wi-Fi.

GOOD TO KNOW

Why the window can be the weak spot, or the way out

Ordinary window glass lets Wi-Fi through easily, which is why a mesh unit in a window often helps (Chapter 9). Some energy-saving windows have a very thin metallic coating, though, and installers and forum users report that this coating can weaken the signal. If a window spot disappoints, the glass may be part of the reason.

2.4 GHz and 5 GHz: the long-distance lane and the fast lane

Most routers send out two kinds of Wi-Fi at once, called **bands**. The **2.4 GHz** band travels farther and gets through walls better, but it's slower. The **5 GHz** band is faster but fades more quickly with distance and walls. Newer equipment may add a **6 GHz** band, which is faster still and shorter-reaching still. At the far end of the yard, it's usually the 2.4 GHz band that's still hanging on, which is one reason a phone in the barn may show a bar or two but feel painfully slow.

TIP

Bars aren't the whole story

One bar of Wi-Fi can still be usable for a smart plug or a text message, but not for video. In Chapter 6 we'll measure actual speed, which tells you far more than the bars do.

CHAPTER 3

The Words You'll See

Shopping for outdoor Wi-Fi throws a lot of jargon at you. Here are the words that matter, in plain English. You don't need to memorize them; come back here whenever one trips you up.

Word	What it means
Router	The box that creates your home's Wi-Fi and connects it to your internet service.
Mesh system	Several matching Wi-Fi units that work together as one network, with one name and password. eero, TP-Link Deco and Google Nest Wifi are examples.
Node, satellite or point	One of the extra units in a mesh system.
Extender	A single plug-in gadget that repeats your router's signal farther out.
Access point	A unit that makes Wi-Fi from a network cable. Outdoor access points are built to live outside.
Backhaul	The connection a mesh unit uses to talk back to the main unit. It can be wireless or a cable ("wired backhaul"), and a cable is faster and steadier.
Ethernet	An ordinary network cable with a plug like a wide phone plug. Also called Cat5e, Cat6 or "network cable."
Direct-burial cable	Network cable made to be buried in the ground, with a tougher jacket and water-blocking inside.
Conduit	A plastic or metal pipe that protects cables underground or along a wall.
PoE (Power over Ethernet)	Sending electricity and internet down the same network cable, so an outdoor unit needs only one cable.
Powerline adapter	A pair of plugs that send internet through your home's electrical wiring.
Point-to-point bridge	Two small outdoor radios, one at each building, aimed at each other to link them like an invisible cable.
Line of sight	A clear, straight view between two points, with no buildings, hills or trees in the way.
IP rating	A two-number code (like IP65) that says how well a device keeps out dust and water.
Mbps	Megabits per second: the usual unit for internet speed. Bigger is faster.
SSID	The technical name for your Wi-Fi network's name.

TIP

Two words people mix up

An **extender** repeats the Wi-Fi it hears, so it can only be as good as the signal reaching it. An **access point** gets its internet from a cable, so it starts fresh at full strength. That difference explains a lot of the advice in this guide.

CHAPTER 4

Your Options at a Glance

Here's the whole menu, from the simplest and cheapest to the most involved. Most people should start at the top and stop as soon as something works. The distances are rough guides, not promises; what's in the way matters as much as how far it is.

Option	Typical distance	Rough cost	Who does it
Move the router or main mesh unit	Attached garage, patio	Nothing	You
Mesh unit in a window facing the building	Within about 50 ft of another unit (eero's guidance)	Low: one more unit of the system you own	You
Extender near the door	Attached garage, porch	Low	You
Powerline adapters	Garage on the same electrical panel	Low to moderate	You
Outdoor-rated mesh unit or access point	Yard, patio, nearby building	About $150 to $400 each	You or a pro
Buried network cable to an access point	Up to 328 ft of cable	Cable, conduit and labor vary widely	Usually a pro
Point-to-point wireless bridge	Hundreds of feet or more, in clear view	From about $100 a pair, up to several hundred	Handy owner or a pro

Dollar figures are rough U.S. prices from makers' stores and retailers as of November 2026. They change often, so check the current price before you buy. The chapters that follow explain each option, with honest notes on when it works and when it doesn't.

A quick way to choose

- **Attached garage or patio**: start with Chapters 8 to 10.
- **Detached garage within about 100 feet**: try a mesh unit in a window (Chapter 9) or an outdoor mesh unit (Chapter 12). Powerline is worth a try if the garage is fed from the house panel (Chapter 11).
- **Barn 150 to 300 feet away**: a buried cable (Chapter 16) or an outdoor unit with good sight lines.
- **Barn hundreds of feet away or more**: a point-to-point bridge (Chapter 19) is usually the answer.

FROM BILL

Measure before you spend

Before you buy any of it, spend ten minutes on the walk test in the next chapter. It costs nothing, and it's the best way I know to avoid buying the wrong gadget.

PART 2

Measure First

Ten minutes with your phone tells you more than any sales pitch: where the signal fades, how fast it really is out there, and how much you actually need.

CHAPTER 5

The Phone Walk Test

The simplest test of all is a slow walk from the house to the outbuilding with your phone in your hand. You're looking for one thing: **where the Wi-Fi gives up**. That spot tells you how far you need to carry the signal, and it's the single most useful fact for choosing a fix.

How to do it

1. Make sure your phone is connected to your **home Wi-Fi**. On an iPhone, open **Settings** and tap **Wi-Fi**; your network should have a check mark. On Android, open **Settings** and look under **Network & internet** or **Connections**.
2. Turn off **mobile data** (also called cellular data) for the test, so the phone can't quietly switch to the cell network and fool you. Remember to turn it back on afterward.
3. Stand next to the router and note the Wi-Fi symbol at the top of the screen: it's usually full.
4. Walk slowly toward the garage or barn, glancing at the Wi-Fi symbol every few steps.
5. Notice where it drops to two arcs, then one, then disappears. Stop at each spot and open a web page to see whether it still loads.
6. Go **inside** the outbuilding too. The signal often holds up to the door and then dies inside, especially in a metal building.

Write down what you find

Spot	Where it was
Full signal until	_____
Slow but working until	_____
No signal from	_____
Inside the building	_____

TIP

Pace it out

Counting your steps is close enough. An average adult step is a bit over two feet, so 40 steps is roughly 80 to 100 feet. You don't need a tape measure to choose between a window mesh unit and a point-to-point bridge.

GOOD TO KNOW

Test in summer and in winter if you can

Leaves on the trees can weaken a signal that works fine in winter. If your test is in January and the path runs through a tree line, expect the summer result to be a little worse.

CHAPTER 6

Speed Tests at the Barn Door

The Wi-Fi symbol tells you whether there's a signal. A **speed test** tells you whether that signal is good for anything. It's free, takes about half a minute, and gives you a number you can compare from spot to spot.

Running a test

1. Stand next to the router first. Open your phone's web browser and go to **speedtest.net** or **fast.com**. Type the address yourself rather than tapping an ad.
2. On speedtest.net, tap **Go**. Fast.com starts on its own.
3. Write down the **download** number, in Mbps. That's your baseline: the best you'll get anywhere.
4. Repeat the test at each spot from your walk test: the back door, halfway, the outbuilding door and inside.

Reading the results

Download speed out there	What it's good for
Nothing, or the test won't finish	Not usable. You'll need one of the fixes in this guide.
Under 5 Mbps	A text, an email, a smart plug. Video and cameras will struggle.
5 to 25 Mbps	Music, web pages, one camera, a video call that may stutter.
25 Mbps and up	Streaming video, several cameras, a laptop in the shop.

These are rough guides. What matters most is the difference: if you get 200 Mbps by the router and 3 Mbps at the barn door, the problem is the distance to the barn, not your internet plan.

HEADS UP

Don't blame the internet company for the barn

Your internet plan sets the speed coming into the house. Getting it out to the barn is a Wi-Fi job. Upgrading to a faster plan rarely fixes an outbuilding that's simply too far away.

TIP

Have a mesh system? Check its app too

Many mesh apps, including eero's, can run their own speed test. That test measures what reaches the house from your provider, not the Wi-Fi out at the barn. For the barn, test on the phone itself while you stand there. My eero manual explains the app's test.

SCAM ALERT

Look-alike speed test pages

Some search ads lead to pages that run a pretend test and then say your phone is "infected" or "needs a booster," with a number to call. A real speed test never asks for money, a phone call or a download. Close the page.

CHAPTER 7

What Do You Actually Need Out There?

Before you choose a fix, it helps to be clear about the job. A smart plug on a stock-tank heater needs very little. A security camera that records video around the clock needs a steady connection. A workshop where someone streams video or joins a video call needs real speed.

What's out there	What it needs	Notes
Smart plug, sensor, thermostat	Very little speed, but a steady signal	Many work only on 2.4 GHz Wi-Fi.
Security camera	Steady upload speed, all day	Cameras send video *out*, so upload speed matters.
Phone calls (Wi-Fi Calling)	Modest speed, steady signal	Handy where cell signal is weak.
Music or a radio app	Modest speed	Usually fine on a weak-but-steady signal.
TV, laptop, video calls	Real speed	Plan for an access point or a cable.

Inside, outside or both?

Think about where you'll actually use it. Covering the **inside** of a barn usually means putting equipment **in** the barn, because the walls (especially metal ones) block a signal coming from outside. Covering the **yard** between the house and the barn is a job for an outdoor unit on the side of the house or the barn. Some people need both.

Questions to answer before you shop

- Roughly how far is it, and what's in between: open lawn, a driveway, trees, another building?
- Is the building metal-sided or metal-roofed?
- Is there **electricity** in the building already, and where are the outlets? (Chapter 22)
- What brand of router or mesh system do you have now? Staying with the same family usually makes the addition simpler.
- Do you need Wi-Fi inside the building, in the yard, or both?
- Will you be running cameras out there?

FROM BILL

Bring these answers to the store, or to me

With these six answers, the right choice is usually obvious, whether you're talking to a store clerk, an installer, or me on the phone.

PART 3

Simple Fixes First

Before you buy outdoor gear: moving what you already have, a mesh unit in a window, an extender for an attached garage, and powerline adapters that use your electrical wiring.

CHAPTER 8

Move the Router or Main Unit

It sounds too simple, but it's free and it sometimes works. Many routers sit wherever the internet cable happened to come into the house: a basement corner, a closet, the far side of the house from the garage. Every wall between the router and the outbuilding costs you signal.

What to try

- **Get it up off the floor.** A shelf or the top of a bookcase is better than the floor or a cabinet.
- **Get it out of the closet** and away from metal: filing cabinets, a refrigerator, a metal desk.
- **Move it toward the garage side** of the house if the internet line allows. Your internet company can often move the outlet, sometimes for a fee, and a longer network cable from the modem to the router is another way.
- **Mesh owners:** make sure the unit nearest the garage is actually on that side of the house, near an outside wall or window that faces the building.

HEADS UP

Leave the modem where it is

The **modem** (the box your internet company's line plugs into) has to stay where the line comes in. What you can move is the **router**, by connecting it to the modem with a longer network cable. If they're one combined box, ask your internet company before moving it.

Does it help? Test again

After any move, give the router a few minutes to start up fully, then repeat your speed test at the same spots as before (Chapter 6). If the attached garage or patio now works, you're done, and it cost nothing.

TIP

My Home Wi-Fi & Routers manual goes deeper

If you'd like to understand your router, its lights and its settings in more detail, my Home Wi-Fi & Routers manual walks through it from the beginning.

CHAPTER 9

A Mesh Unit in a Window

If you already have a mesh system, or are thinking about one, this is the first thing to try for a detached garage or a nearby shed. The idea is simple: put one mesh unit as close to the outbuilding as you can while keeping it indoors, ideally in a window that faces the building. Glass lets the signal out far more easily than an outside wall does.

How far apart can mesh units be?

eero's own guidance for indoor units is to space them about **20 to 30 feet apart, and no more than 50 feet** from another eero. Other mesh brands give similar advice. Outdoors, with open air instead of walls, a unit can reach farther, but the 50-foot figure is a sensible starting point.

Two ways to use the window trick

Setup	What it does
A unit in the house window	Covers the patio and the yard near the house, and may reach a garage close by. The garage itself still has to let the signal in.
A unit inside the garage too	Put one mesh unit in a house window and a second one inside the garage, in a window facing the house. The two units talk to each other window to window, and the garage unit fills the inside of the building. This is often the best low-cost answer for a detached garage within about 50 to 100 feet.

1. Plug the new mesh unit into an outlet near a window facing the outbuilding.
2. Add it to your network in the mesh system's app, the way the app describes (for eero, my eero manual has the steps).
3. Let the app check the connection. Many apps tell you if the unit is too far from the others.
4. Run your speed test again at the outbuilding door and inside.

HEADS UP

Indoor units stay indoors

An ordinary mesh unit isn't built for rain, frost or summer heat. A garage that's shut and dry is fine; an open porch or a barn with livestock dust and moisture is not. For those, look at an outdoor-rated unit (Chapter 12).

GOOD TO KNOW

Garages get cold and hot

An unheated garage in a Northeast Ohio January, or a closed-up one in July, can go beyond what an indoor unit is designed for. Check the operating temperature on the box or the maker's specification page. If your garage gets extreme, an outdoor-rated unit is the safer choice.

TIP

More on mesh

My Mesh Wi-Fi manual covers choosing, setting up and placing a mesh system in detail.

CHAPTER 10

Extenders for an Attached Garage or Porch

A **Wi-Fi extender** is a single gadget that plugs into an outlet, picks up your Wi-Fi, and repeats it farther out. For an **attached** garage, a breezeway or a covered porch, an extender near the door can be enough, and it's one of the cheapest fixes.

Where extenders fall short

- An extender can only repeat what it hears. Placed where the signal is already weak, it repeats a weak signal.
- Speeds through an extender are usually lower than the router's own.
- Many extenders create a second network name, so your phone may cling to the wrong one as you walk between the house and the garage.
- Ordinary extenders are indoor gadgets. Don't plug one into an outdoor outlet or leave it on a porch exposed to the weather.

Getting the placement right

Put the extender **halfway** between the router and the area you want to cover, at a spot where the Wi-Fi is still strong. If your phone shows full bars and a decent speed test at a spot near the garage door, that's a good place to try.

FROM BILL

When an extender is the wrong tool

For a detached garage or a barn, an extender is usually a disappointment. A mesh unit, an outdoor unit or a cable will serve you much better. My Wi-Fi Extenders & Dead Zones manual covers extenders in detail if you'd like to try one indoors.

CHAPTER 11

Powerline Adapters to the Garage

Powerline adapters come in pairs and send your internet through the electrical wiring. One plugs into an outlet near the router and connects to it with a network cable. The other plugs into an outlet in the garage. Some models make Wi-Fi at the far end; others give you a network jack for a camera, a computer or another Wi-Fi unit.

When powerline can work for an outbuilding

The key question is how the garage gets its electricity. TP-Link, one of the biggest makers, says its newer **AV2** adapters can communicate across different circuit breakers **as long as they're on the same main electrical panel**. Older AV models work best when both adapters are on the same circuit.

Your situation	What to expect
Attached garage, fed from the house panel	Good chance it works. Worth trying.
Detached garage fed from the house panel	May work, depending on distance and wiring. Buy from a store with an easy return policy.
Barn or garage with its own panel	Often doesn't connect, especially at a distance. TP-Link's community forum has reports of exactly this failing.

What gets in the way

TP-Link warns that outlets and breakers with **surge, ground-fault (GFCI) or arc-fault (AFCI) protection** can interfere with or block powerline signals, and it doesn't recommend powerline in those situations. Garage and outdoor outlets are often GFCI-protected, so this matters for outbuildings. TP-Link also says to plug adapters **straight into a wall outlet**, never a power strip, extension cord or surge protector.

Trying a pair

1. Plug the first adapter into a wall outlet near the router and connect it to a spare port on the router with a network cable.
2. Plug the second adapter into a wall outlet in the garage.
3. If they don't pair by themselves, press the **Pair** button on each, within the time the leaflet gives.
4. Wait for the powerline light to come on. Then test speed at the garage end.

5. If it won't connect, try a different garage outlet, or one closer to the house.

> **STAY SAFE**
>
> **Never use an extension cord as permanent wiring**
>
> If the only power in the garage is an extension cord run from the house, powerline won't work well, and more importantly that cord isn't a safe permanent setup. Have an electrician look at proper power for the building (Chapter 22).

PART 4

Outdoor Wi-Fi Gear

Weatherproof mesh units and access points that live outside, what IP65 and IP66 actually mean, and how to choose a good spot before anyone drills a hole.

CHAPTER 12

Outdoor Mesh Units and Access Points

Several makers now sell Wi-Fi units built to live outdoors, sealed against rain and dust and rated for freezing winters and hot summers. Mounted on the side of the house, a barn or a pole, one of these can cover a yard, a patio, a pasture gate or the space between two buildings.

Some current examples

Model	Works with	Weather rating	Power	Rough price
eero Outdoor 7	Any eero system	IP66; -40°F to about 130°F	PoE+ (adapter included in retail packs)	About $350 to $400
TP-Link Deco X50-Outdoor	Other Deco units	IP65; -22°F to 140°F	PoE (802.3at) or an AC power cord	About $150
TP-Link Deco BE65-Outdoor	Other Deco units	IP65	PoE or AC	Check current price
Ubiquiti U7 Pro Outdoor	Ubiquiti UniFi systems	IPX6; IP67 with a cable-gland kit; -22°F to 140°F	PoE+	$279 at Ubiquiti's store

These are examples, not recommendations, and prices change often. Other brands make outdoor units too. Whatever you look at, check four things: that it works with the system you already have, its weather rating, its operating temperature range, and how it gets power.

Stay in the family you have

The easiest path is almost always to add an outdoor unit from the **same brand** as your indoor mesh. An eero Outdoor 7 joins an eero network; a Deco outdoor unit joins a Deco network. You manage it in the same app, and your phone moves between indoors and outdoors on one network name. Mixing brands is possible but usually means two networks and two apps.

GOOD TO KNOW

Ubiquiti is a different kind of system

Ubiquiti's UniFi equipment is excellent and popular on farms and in workshops, but it's built to be run from Ubiquiti's own UniFi system rather than a simple phone app, and some UniFi products can't be set up on their own without a UniFi console. It's a great fit if you already have UniFi, or if someone sets it up for you. For most households starting fresh, an outdoor unit from their existing mesh brand is simpler.

Wired or wireless connection back to the house

An outdoor mesh unit can connect back to your other mesh units **wirelessly**, or through a **network cable**. eero says the Outdoor 7 can be wired or wirelessly connected to any eero system. Wireless is easier; a cable is faster and steadier, especially at a distance. If you mount the unit on the house, you'll usually run a short cable through the wall anyway for power (Chapter 18), and that same cable can carry the connection.

TIP

Covering the inside of a metal barn

An outdoor unit on the side of a metal barn covers the **outside** nicely, but the steel walls still block the signal from getting **in**. To cover the inside, put a unit inside the barn too, or mount the outdoor unit near a large open door. Chapter 21 covers this.

CHAPTER 13

The eero Outdoor 7, Up Close

Because eero is so common in local homes, and because I have a separate eero manual, here's a closer look at eero's outdoor unit. Other brands' outdoor units follow a similar pattern.

Feature	What eero says
What it is	A weatherproof, dual-band Wi-Fi 7 unit that joins any eero network, wired or wireless.
Weather	Rated **IP66**, and rated to run from **-40°F to about 130°F**.
Power	Needs **PoE+** (also written 802.3at) or better. Ordinary PoE (802.3af) isn't enough. Retail packs include an outdoor 30-watt PoE+ adapter; eero says it also works with any PoE+ switch or injector using Cat5e or better cable.
Mounting	eero's guide covers walls of wood, fiber cement, vinyl siding and stucco. It can go on a metal pole, but a pole strap isn't included.
Grounding	eero says grounding is optional, depending on your local electrical code.
Price	Listed at about $400, and often on sale for less. Check the current price.

Test the spot before you drill

eero's app has a **placement test** that checks the Wi-Fi signal at the spot where you plan to mount the unit, before anyone drills a hole. It's a genuinely useful step.

1. Open the **eero app** on your phone and go to the **Home** tab.
2. Tap the blue **plus** button in the top-right corner.
3. Tap **Add outdoor eero**.
4. Power the unit with its PoE+ adapter. When the light next to the network port changes from blinking white to blue, the app adds it to your network, or prompts you to add it.
5. Follow the app to run the **placement test** at the spot you have in mind, holding the unit there temporarily.
6. If the result is good, set the location in the app, unplug the unit, and mount it. The app links to eero's installation videos.

TIP

If the app misbehaves

eero suggests making sure the app is up to date, then closing it completely and opening it again.

STAY SAFE

Ladders and high mounting

The best spot is often high up under an eave. If that means a tall ladder, please get help. A fall from a ladder is a far bigger risk than anything electrical in this project.

CHAPTER 14

Reading Weather Ratings

Outdoor gear carries an **IP rating**, short for Ingress Protection. It's an international code (the standard is called IEC 60529) with two digits. The **first digit** is about dust and solid objects; **6** means dust-tight. The **second digit** is about water.

Rating	Dust	Water
IP65	Dust-tight	Protected against water sprayed from a nozzle from any direction, like rain and a garden hose.
IP66	Dust-tight	Protected against stronger, heavier jets of water.
IP67	Dust-tight	Protected against brief immersion, typically up to about 1 meter for 30 minutes.
IPX6	Not rated for dust	The "X" means that part wasn't tested. Water protection as IP66.

What that means for you

- For a unit under an eave or on a barn wall, **IP65 or IP66** is what you want to see.
- An IP67 rating isn't automatically "better" for rain; the immersion test and the spray tests are different tests. A device can be rated for both, written like IP66/IP67.
- A rating only holds if the unit is installed the way the maker says: covers closed, cables sealed, and the right way up.
- Indoor gear has no rating at all. Never put an indoor router or extender outside, even under cover.

Temperature matters as much as water

Check the **operating temperature** too. Northeast Ohio winters can drop well below zero, and a south-facing wall in July gets very hot. The eero Outdoor 7 is rated from -40°F, and TP-Link's Deco X50-Outdoor from -22°F, to well over 100°F. Indoor units are typically rated for room temperatures only.

TIP

Shade helps

Mounting under an eave or on a north- or east-facing wall keeps a unit out of direct afternoon sun and the worst of the rain and snow.

CHAPTER 15

Choosing Where to Mount an Outdoor Unit

Where you put an outdoor unit matters more than which brand you buy. A good spot can cover a whole yard; a poor one wastes a few hundred dollars.

What makes a good spot

- **A clear view** of the area you want to cover, and of the building you're trying to reach.
- **Within good range of your other units**, if it connects wirelessly. Run the placement test or a speed test at the exact spot first.
- **Reachable by a cable** for power, usually through the wall from inside the house or barn.
- **Up high**: under an eave or near the roof line, above people, vehicles and animals.
- **Out of the worst weather**: under an overhang, out of the path of roof runoff.
- **Away from big metal objects** such as gutter downspouts, metal sheds and parked equipment.

Before anyone drills

1. Hold the unit (or have a helper hold it) at the planned spot and run the app's placement test or a speed test.
2. Check where the cable will go inside. A short run through an exterior wall to a spot with an outlet is ideal.
3. Read the maker's mounting guide for your wall type. Most include a wall and pole bracket.
4. Seal any hole through the wall against weather and insects, as the maker or installer recommends.

HEADS UP

Point the cable down

Outdoor units are designed for their cable to come in from below, so water runs off rather than following the cable inside. Follow the maker's diagram, and leave a small downward loop (a "drip loop") in the cable before it enters the wall.

FROM BILL

This is where I can help

Picking the mounting spot is the part of an outdoor install where experience counts most. I'm glad to walk the property with you, test a few spots, and help you decide before anything is drilled.

PART 5

Running a Cable

The most reliable link of all: a network cable from the house to the garage or barn. How far it can go, which cable to use, calling 811 before anyone digs, and how one cable can carry power too.

CHAPTER 16

Running Ethernet to the Garage or Barn

If the building is within a few hundred feet, a **network cable** from the house is the most dependable way to get internet there. It doesn't care about trees, rain, metal siding or what the neighbors' Wi-Fi is doing. At the far end, you plug in a Wi-Fi unit and the building gets full-strength Wi-Fi of its own.

How far a network cable can go

The standard limit for an ordinary network (Ethernet) cable run is **100 meters, about 328 feet**, and that includes the short patch cords at each end. Cable makers also note that very hot conditions can shorten the usable length. If your building is farther than that, a point-to-point bridge (Chapter 19) is usually the better answer, though a pro can extend a wired run with extra equipment or fiber-optic cable.

What the finished setup looks like

1. At the house, the cable plugs into a spare port on your router or main mesh unit (or a small network switch next to it).
2. The cable leaves the house through a sealed hole, runs underground in conduit or as burial-rated cable, and comes up into the garage or barn.
3. In the building, it plugs into a mesh unit, an access point, or a small switch that feeds several things: a Wi-Fi unit, a camera, a computer.
4. If the far-end unit uses PoE, the same cable can also carry its power (Chapter 18).

Why mesh owners love a cable

Most mesh systems, including eero and Deco, let a unit connect back to the others through a cable instead of over the air. That's called **wired backhaul**. A mesh unit in the barn with a cable back to the house behaves almost as well as one in the living room, because it isn't fighting the distance through the air. My Mesh Wi-Fi manual explains wired backhaul in more detail.

> **FROM BILL**
>
> **Is it worth the trouble?**
>
> Trenching a cable is more work up front than any wireless option. But once it's in, it just works, year after year. If you're already digging for water, power or a fence, ask about adding conduit for a network cable at the same time. It's the cheapest moment to do it.

CHAPTER 17

Outdoor Cable, Conduit and Calling 811

Not every network cable can go outside. The cable you'd use behind a desk will break down in sunlight and soak up water underground. Outdoor cable comes in a few types, and the labels matter.

Cable type	What it means
Outdoor-rated	A tougher, sunlight-resistant jacket for running along a wall or overhead. Some outdoor cables are specifically **not** rated for burial.
Direct-burial	Made to go straight into the ground, with extra protection and often a water-blocking gel inside. Check the label says **direct burial**.
Shielded	Has a metal foil or braid inside. Sometimes recommended for long outdoor runs; the installer will know if your situation calls for it.
Category (Cat5e, Cat6, Cat6A)	The speed grade. Cat6 or Cat6A is a sensible choice for a new run.

Why conduit is worth it

Conduit is a protective pipe the cable runs through. Even with burial-rated cable, conduit protects it from shovels, rodents and frost, and makes it possible to pull a new cable through later without digging again. Ask your installer about pulling a spare string through it for the future. How deep it must go and what kind of pipe to use depend on local code, so that's a question for the installer or your local building department.

STAY SAFE

Call 811 before anyone digs

Ohio law requires anyone digging, including homeowners, to contact **OHIO811** at least **48 hours** (and no more than 10 working days, not counting weekends and legal holidays) before digging. Call **8-1-1** or **1-800-362-2764**, or file a request online. It's **free**. Utilities then mark their buried lines with paint or flags. Keep the reference number they give you.

Through the walls

- Where the cable enters a building, the hole should be sealed against water and insects, and the cable should dip down before entering (a drip loop).
- Low-voltage network cable isn't the same as electrical wiring, but keep it away from power cables and never run it through the same holes or boxes as electrical wires.
- Inside, a weatherproof box or a wall plate makes a neat, durable end.

HEADS UP

A buried copper cable can carry a surge

A long copper network cable between two buildings can carry an electrical surge from a nearby lightning strike into the equipment at both ends. Chapter 23 covers protection. If lightning is a real worry, ask an installer about fiber-optic cable, which doesn't conduct electricity.

CHAPTER 18

PoE: One Cable for Power and Internet

Power over Ethernet, or **PoE**, sends electricity down the same network cable as the internet. It's the reason an outdoor Wi-Fi unit or camera can be mounted high on a wall with only one thin cable going to it, and no outlet nearby.

How it works

1. Indoors, near an ordinary outlet, sits a small box called a **PoE injector** (or a **PoE switch** if you have several devices).
2. A network cable from your router goes **into** the injector.
3. A second network cable comes **out** of the injector, carrying both internet and power, and runs to the outdoor unit.
4. The outdoor unit powers up from that one cable. No outlet is needed outside.

The kinds of PoE

Type	What it means
PoE (802.3af)	The original standard, for small devices.
PoE+ (802.3at)	More power. Many outdoor Wi-Fi units need at least this; the eero Outdoor 7 and Deco X50-Outdoor both list it.
"Passive" PoE	An older, simpler kind used by some point-to-point radios. It isn't interchangeable with the standard kinds, so use the power supply made for the device.

HEADS UP

Match the power to the device

Plugging a device into the wrong kind of PoE can mean it won't start, or in the case of passive PoE, possibly damage something. Use the injector that came with the device, or one the maker lists as compatible.

TIP

Good news for barns without power where you need it

PoE lets you put an outdoor unit or a camera at the best spot on the building, not just where an outlet happens to be. Only the injector needs an outlet, and it can sit indoors where it's dry.

PART 6

Bridges for Faraway Barns

When the barn is hundreds of feet away, a pair of small outdoor radios aimed at each other can carry your internet across the yard like an invisible cable.

CHAPTER 19

Point-to-Point Bridges, Explained

A **point-to-point bridge** is a matched pair of small outdoor radios. One mounts on the house, the other on the barn, and they're aimed straight at each other. Because each radio has a focused, directional antenna, the pair can link buildings much farther apart than any ordinary Wi-Fi could, often hundreds or thousands of feet, as long as they can "see" each other.

What a bridge does, and doesn't do

- It **carries your internet** from the house to the barn, like a long network cable through the air.
- It **doesn't** make Wi-Fi for your phone by itself. At the barn end, you plug in a Wi-Fi unit, a switch, a camera or a computer (Chapter 21).
- It needs a **clear line of sight** between the two ends (Chapter 20).
- Each end needs **power**, usually PoE from a small injector indoors.

Some current examples

Example	What it is	Listed range	Rough price
Ubiquiti NanoStation 5AC Loco	Compact 5 GHz radio; you buy two and set them up as a pair	Retailers list 10 km (about 6 miles) or more	$49.00 each at Ubiquiti's store; power supply sold separately
TP-Link CPE210 / CPE510	Outdoor radios (2.4 GHz / 5 GHz); you buy two	CPE510: TP-Link lists 15 km+	CPE210 about $40 to $52 each at retailers
Ubiquiti UniFi Building Bridge XG	A pre-paired 2-pack, 60 GHz with 5 GHz backup	500 m (about 1,640 ft)	Higher-end; check current price. Needs a UniFi console.

Treat range figures as the very best case, with perfect line of sight and careful aiming. For a barn a few hundred feet away, even the smallest of these has plenty of reach; what matters is a clear path and a good setup.

GOOD TO KNOW

Bridges are set up, not just plugged in

Most bridge radios are business-grade equipment. Each one has to be set up through a web page or an app: one as the sending end and one as the receiving end, with matching settings, then aimed. Pre-paired kits like the Building Bridge make this easier, but they cost more. A handy person can do it with patience; many people would rather have it done.

TIP

eero and Deco outdoor units as a bridge?

Some people use two outdoor mesh units, one on each building, as a simple wireless link. It can work for moderate distances with a clear view, and it keeps everything in one app. For long distances, a dedicated point-to-point bridge with directional antennas is the more reliable tool.

CHAPTER 20

Line of Sight and Aiming

A bridge is only as good as the path between its two ends. The rule is simple: **if you can't see the barn from where the house radio will be, the radio can't either**.

Checking the path

1. Stand where you'd mount the radio on the house, at that height if you safely can (an upstairs window often works).
2. Look toward the barn. You want to see the spot where the barn radio will go, with nothing solid in between.
3. Note anything in the way: trees, a hill, another building, a silo, a grain bin.
4. Think about summer. Bare branches in winter become a wall of leaves in June.

Getting over obstacles

- **Go higher.** Mounting both radios up near the roof line, or on a short mast, often clears fences, vehicles, livestock and low trees.
- **Go around.** Sometimes a different corner of the house or barn has a clear view when the obvious one doesn't.
- **Hop.** If a hill or building blocks the direct path, a third radio on a building in between can relay the signal.
- **Leave room.** The radio signal travels in a fat, cigar-shaped beam, not a thin laser line. Even if you can just see the barn past a tree, branches close to the line can weaken the link.

Aiming

Bridge radios have to be pointed at each other. Most have signal lights on the back or a signal meter in their app or setup page. The usual method is to aim roughly by eye, then have one person slowly turn one radio a little at a time while watching the signal reading, lock it in at the strongest point, and then do the same at the other end.

STAY SAFE

Two people and a steady ladder

Aiming means working on a ladder with your hands busy. Never do it alone, never in wind or wet weather, and never near overhead power lines. If the mounting spot is high, this is a job to hand to an installer.

HEADS UP

Don't aim across power lines

If the straight path crosses overhead power lines, pick a different mounting spot. Never mount a mast or antenna where it could fall into a line.

CHAPTER 21

What Goes at the Barn End

Once internet reaches the barn, by cable or by bridge, you decide how to use it there. This is where the barn gets Wi-Fi of its own.

Plug in	What you get
A mesh unit from your system	Plug it in as a wired unit. Your phone sees the same network name as the house, and the app manages it like any other unit.
An outdoor access point	Covers the barnyard, paddock or yard outside the building.
A small network switch	Lets one incoming cable feed several things: a Wi-Fi unit, a wired camera, a computer in the shop.
A wired camera	A PoE camera can plug straight into a PoE switch and get its power and internet from one cable.

Inside a metal building

Metal walls that keep signal out also keep it in. That's good news once you have internet in the building: a Wi-Fi unit **inside** a metal barn will cover the inside well. If you also want coverage outside, add an outdoor unit on the barn wall, or place the indoor unit near a big door that's usually open.

HEADS UP

Barns are hard on electronics

Dust, moisture, livestock ammonia, mice and temperature swings shorten the life of indoor equipment. Keep indoor gear in a closed, dry room such as a tack room or shop, up off the floor, or use outdoor-rated equipment in the open barn.

TIP

Label both ends

Put a simple label on each end of the cable and each power supply: "Barn Wi-Fi, do not unplug." It saves a lot of puzzled phone calls when someone needs an outlet for a heat lamp.

PART 7

Living with Outdoor Wi-Fi

Power at the outbuilding, lightning and surges, one network name or two, cameras and smart gadgets, keeping it all secure, and the scams that prey on weak Wi-Fi.

CHAPTER 22

Power at the Outbuilding, and When to Call an Electrician

Every option in this guide needs electricity somewhere. Indoor gear needs an outlet in the building; an outdoor unit needs an outlet within cable reach for its PoE injector; a bridge needs power at both ends. Before you buy anything, look at what power you actually have.

What you can check yourself

- Is there an outlet in the building already? Where, and is it inside or on an outside wall?
- Does it have **TEST** and **RESET** buttons? That's a ground-fault (GFCI) outlet, a safety device common in garages and outdoors. If it trips often, mention that to an electrician.
- Is it a proper outlet, or is power coming from an extension cord run from the house?
- Does the power stay on, or is the barn circuit switched off from the house at times?

STAY SAFE

Call a licensed electrician if...

...the building has no power, the only power is an extension cord, outlets keep tripping, you see scorch marks or feel warm plugs, you need a new outlet where the equipment will go, or you're thinking about a whole-home surge protector. Adding or changing electrical wiring, trenching for power, and anything inside an electrical panel is electrician's work. It's also often subject to permits and inspection, and it protects your insurance.

Safe basics you can do

- Plug Wi-Fi equipment into an existing outlet, indoors and dry.
- Keep power supplies and injectors off the floor and away from water troughs, hoses and animal stalls.
- Use a good surge protector for indoor equipment (Chapter 23), but not for powerline adapters (Chapter 11).
- Never use an indoor extension cord outdoors, and never as permanent wiring.

TIP

If the barn power goes off, so does the barn Wi-Fi

Some barns are on a circuit that gets switched off, or lose power in storms more often than the house. Cameras and smart devices out there will go offline when it does. A small battery backup (UPS) for the barn Wi-Fi equipment can ride through short outages. My Surge Protectors & Battery Backups manual explains how to choose one.

CHAPTER 23

Weather, Lightning and Surge Protection

Outdoor networking adds two risks that indoor Wi-Fi doesn't have: weather, which slowly wears equipment out, and lightning, which can destroy it in a moment. A little planning goes a long way.

Lightning and long cables

A long copper cable between buildings, or a metal mast on a roof, gives a nearby lightning strike a path into your equipment. Surge damage can travel along network cables as well as power lines. Nothing makes equipment lightning-proof, but you can reduce the risk considerably.

Layers of protection

Layer	What it does
Point-of-use surge protectors	The Federal Alliance for Safe Homes (FLASH) recommends surge protectors at the outlet, and multi-port ones (with jacks for cable or network lines) for equipment that has more than a power cord.
Ethernet surge protectors	Small devices placed on a network cable where it enters a building, such as Ubiquiti's ETH-SP-G2. They divert a surge to ground, so they **must be properly grounded** to work.
Whole-home surge protection	Installed at the main electrical panel by an electrician. FLASH recommends this as a layer of protection.
Grounding outdoor gear	Metal masts and outdoor equipment may need to be bonded to your electrical ground, depending on local code. eero, for example, says grounding its outdoor unit is optional depending on local code.

STAY SAFE

Grounding is a job for a pro

Connecting equipment or a mast to your home's electrical ground has to be done correctly to help rather than hurt. Have a licensed electrician or a qualified installer do it, following local code.

Weather wear

- Check outdoor units once or twice a year: cables still sealed, brackets tight, nothing chewed by squirrels or mice.

- After a big storm, look for anything knocked out of aim (bridges especially) and test the speed at the barn.
- Ice and snow can build up on a unit; mounting under an eave helps.
- Wasps like to nest in outdoor enclosures and brackets. Take a look in spring.

TIP

Unplug before a big storm? It helps

If a severe thunderstorm is coming and the barn link isn't critical, unplugging the injectors and power supplies at both ends is the surest protection. Don't go out to the barn in a storm to do it.

CHAPTER 24

One Network Name or Two?

When you extend Wi-Fi to an outbuilding, you have a choice: make it part of your **main network**, with the same name and password as the house, or give the barn its own **separate network**.

	Same network name	Separate barn network
How it feels	Your phone moves between house and barn without you doing anything.	Your phone may hang on to the weak house network as you walk out.
Setting up devices	One password everywhere.	Two passwords to keep track of.
Best for	Mesh systems and outdoor mesh units from the same brand.	Mixed brands, a bridge with a separate router at the barn, or keeping barn gadgets apart.

For most families with a mesh system, **one name** is the simplest choice, and it's what happens automatically when you add an outdoor unit or a wired unit from the same brand.

A separate network for gadgets and guests

Many routers and mesh systems can also run a **guest network** alongside the main one. Devices on the guest network get internet but can't see your computers, printers or each other. It's a tidy place for visiting family, hired help in the barn, or a farm-store smart plug you're not sure about.

Turning on eero's guest network

1. Open the eero app and tap **Settings**.
2. Tap **Guest wifi network**.
3. Turn on **Enable guest network**.
4. Change the guest network name and password if you like. The name must be different from your main network.
5. Tap **Save** in the top-right corner.

HEADS UP

Some gadgets need the main network

Devices on a guest network are kept apart, so a camera on guest Wi-Fi may not be reachable from some apps, and you can't cast to a TV from it. If a gadget won't work on the guest network, put it on the main one.

CHAPTER 25

Cameras and Smart Gadgets in Outbuildings

Often the whole reason for barn Wi-Fi is a camera on the driveway, a camera in the calving pen, a sensor that warns when the shop gets too cold, or a smart plug on a stock-tank heater. These gadgets are less demanding than a TV, but they have needs of their own.

What cameras need

- **Steady upload speed.** Cameras send video *out* to the internet. A camera at the edge of your Wi-Fi may connect but keep dropping, or record choppy video.
- **A good signal where the camera is**, not just where you are. Most camera apps show the camera's Wi-Fi strength; check it there.
- **Power.** Plug-in, battery, solar or PoE. Battery cameras save wiring, but cold weather shortens battery life.

The 2.4 GHz question

Many smart plugs, sensors and older cameras work **only on 2.4 GHz Wi-Fi**. That's fine; it's also the band that reaches farthest. Most modern routers and mesh systems run both bands under one name and sort it out automatically. If a gadget refuses to connect, check its instructions for a 2.4 GHz requirement before blaming the barn signal.

Options that skip Wi-Fi

Option	When it fits
Wired PoE cameras	One cable for power and video. The most reliable choice when you're running cable to the barn anyway.
Cellular cameras	Some cameras use the cell network instead of Wi-Fi, with a monthly data plan. Useful where there's cell signal but no practical way to get Wi-Fi out.
Long-range smart-home gadgets	Some sensor systems use their own long-range radio rather than Wi-Fi to reach a hub in the house.

TIP

Make calls from the barn

If cell signal is weak in the barn but you now have Wi-Fi there, turn on **Wi-Fi Calling** on your phone. Your calls go over the internet instead. On an iPhone it's in **Settings** > **Apps** > **Phone** > **Wi-Fi Calling**; on Android, search Settings for "Wi-Fi Calling." Your carrier has to support it, and you'll be asked to confirm your address for 911.

GOOD TO KNOW

Cameras and your privacy

Point outdoor cameras at your own property. Many camera apps let you mask out a neighbor's yard or windows. Keep camera apps and the camera itself updated, and use a strong, unique password.

CHAPTER 26

Keeping It Secure

Extending Wi-Fi to the barn also extends it to anyone standing near the barn. A few simple habits keep your network yours.

The essentials

1. **Use a strong Wi-Fi password**, at least 12 characters, and don't use the one printed on the sticker if you can change it. A short sentence that's easy for you to remember works well.
2. **Use the newest security setting your equipment offers.** On most current routers that's WPA3, or WPA2/WPA3 for older gadgets. Mesh apps such as eero's handle this for you.
3. **Change any default admin password** on business-grade gear such as bridges and access points. The login that came in the box is the first thing a snoop would try.
4. **Keep everything updated.** Mesh systems usually update themselves. Bridges and access points may need you (or your installer) to check for firmware updates.
5. **Use the guest network** for visitors, hired help and gadgets you're not sure about (Chapter 24).
6. **Check what's connected** now and then in your router's or mesh system's app. Remove anything you don't recognize, and change the Wi-Fi password if you're worried.

HEADS UP

Physical security matters too

An outdoor unit or bridge on the side of a barn is within reach of anyone who walks up to it. Mount it high, run its cable inside where possible, and don't leave a spare network jack live on the outside of a building.

TIP

Write down the bridge logins

If an installer sets up a bridge or access point, ask for the admin login and keep it with your other important papers. Without it, nobody can update or fix the equipment later without resetting it.

CHAPTER 27

Scams and Sales Pitches to Watch For

Poor Wi-Fi is frustrating, and frustration is exactly what scammers and pushy sellers look for. Here are the patterns to know.

SCAM ALERT

The "miracle booster" ad

Ads and news-style articles promise a little plug-in gadget that will multiply your speed or "reach anywhere on your property." A real extender can carry Wi-Fi *somewhat farther*; nothing you plug into a kitchen outlet will reach a barn 300 feet away, and nothing can make your internet faster than the plan you pay for.

SCAM ALERT

Fake tech support

The Federal Trade Commission warns that pop-ups telling you to call a number about a computer or network problem are a sign of a scam, and that real companies don't do this. Don't call the number. Never give remote access to your computer or phone to someone who contacted you out of the blue. Report it at **ReportFraud.ftc.gov**.

SCAM ALERT

The "your router has been hacked" call

A caller says they're from your internet company or "the network department," that your router is outdated or hacked, and that they can fix it now for a fee, or need you to install an app. Hang up and call your provider on the number on your bill. The FTC says to hang up on unexpected calls about computer problems.

SCAM ALERT

Fake "router update" links

A text, email or pop-up says your router or mesh system needs an urgent update and gives a link. Real updates happen inside the system's own app or settings page, or automatically. Don't tap the link.

Pushy sales, not scams

- Be cautious of anyone who insists you need the most expensive option before they've looked at the property or tested the signal.
- Get a written quote for any trenching or installation, with what's included.
- Ask what equipment they're installing, and that you'll be given the admin logins.
- Make sure anyone digging calls 811 first (Chapter 17).

FROM BILL

Ask before you buy

If an ad or a salesperson has you tempted, give me a call first. I'll tell you honestly whether it's likely to help on your property.

PART 8

Help and Your Cheat-Sheet

What I look at when I come out to a property, an honest word about when a hand is worth it, and a one-page summary.

CHAPTER 28

What Bill Checks on a Visit

If you ask me out to help with Wi-Fi for a garage, barn or yard, here's what I'll look at. You can use the same list yourself, or have it ready for any installer.

At the house

- What internet service you have and the speed actually arriving at the router.
- What router or mesh system you have, how old it is, and whether it can take an outdoor or wired unit.
- Where the router sits, and whether moving it or a mesh unit is an easy first win.
- Spare network ports, and whether a small switch is needed.

Between the buildings

- The distance, paced or measured.
- Line of sight: trees, hills, other buildings, power lines.
- Possible cable routes, and whether there's existing conduit or a trench planned for something else.
- Good mounting spots on both buildings, and how high they are.

At the outbuilding

- What it's built of, especially metal siding or roofing.
- Power: where the outlets are, whether they're GFCI, and whether an electrician should look at anything.
- Where the Wi-Fi is needed: inside, outside, or both, and what devices will use it.
- Dust, moisture, animals and temperature, and where equipment can live safely.

What you get from the visit

A plain-English recommendation, usually with a simplest option and a best option, rough costs for each, and a clear note on any part that needs an electrician or a trenching contractor. If it's something I can set up, I'll tell you what's involved. If it isn't, I'll tell you that too.

FROM BILL

Speed tests before and after

Whatever we do, I run speed tests at the same spots before and after, so you can see the difference in numbers, not just take my word for it.

CHAPTER 29

When to Call Bill

I've written this guide so you can understand your options and handle the simpler fixes yourself. But part of being helpful is being honest about when a hand saves you time, worry or money, so here's my straight advice, with no pressure.

Times it's well worth a call

- **You're not sure which option fits your property.** A walk-around and a few speed tests usually settle it, and can save you buying the wrong equipment.
- **Adding a mesh unit or outdoor unit** to your existing system, and getting it in the best spot.
- **Setting up a point-to-point bridge**, or checking one that someone else installed.
- **Cameras or smart gadgets in the barn** that keep going offline.
- **Sorting out network names**, guest Wi-Fi and passwords so everything connects.
- **A call, ad or pop-up you're not sure about.** Ask before you pay or click.

When to call someone else

- **A licensed electrician** for new outlets, power to a building, tripping breakers, whole-home surge protection and grounding.
- **A trenching or low-voltage contractor** for long buried cable runs, after OHIO811 has marked the utilities.
- **Your internet provider** if the speed arriving at the house is far below what you pay for.

What working with me is like

I work at your pace: no rushing, no talking down, and no jargon. I explain what I'm doing in plain words, and I'll tell you honestly when a gadget isn't worth your money, or when a cheaper fix will do. I serve Portage County, Ohio, and I bring more than 30 years of professional experience to every visit.

FROM BILL

How to reach me

Call or text **(330) 200-8042**, or book a time at **billshometech.com/book**. Help is **$49 remote · $99 in your home**. If I'm with another customer, my AI receptionist, Sophie, will answer and make sure I get back to you. No question is too small.

Thank you for letting me help. There's something very satisfying about walking out to the barn and having the music, the camera and the phone all just work. I hope this guide gets you there.

— Bill

CHAPTER 30

Your Outdoor Wi-Fi Cheat-Sheet

Print just this page and keep it by the back door. The whole guide, boiled down.

Which fix, roughly

Your situation	Start with
Attached garage or patio	Move the router; a mesh unit or extender near the door.
Detached garage, under about 100 ft	Mesh unit in a house window, plus one in a garage window; or an outdoor mesh unit.
Garage on the house's electrical panel	Powerline adapters are worth a try (plug straight into the wall).
Barn up to about 300 ft	Buried network cable to a Wi-Fi unit in the barn (328 ft cable limit).
Barn farther, or no cable possible	Point-to-point bridge with a clear line of sight.

Everyday moves

To do this	Do this
Test the signal	Walk out with your phone, mobile data off, and watch the Wi-Fi symbol.
Test the speed	Type **speedtest.net** or **fast.com** yourself; compare house vs. barn.
Guest Wi-Fi on eero	eero app > Settings > Guest wifi network > Enable guest network.
Calls in the barn	Turn on Wi-Fi Calling (iPhone: Settings > Apps > Phone > Wi-Fi Calling).
Before digging	Call **8-1-1** (OHIO811) at least 48 hours ahead. It's free.

Keep handy

Item	
My Wi-Fi name and password	_____
My router or mesh brand and app	_____
Barn equipment and its admin login	_____
Who installed it, and their number	_____

Item	
My electrician	_____

Safety, in three lines

- Indoor gear stays indoors; outdoor gear needs an IP65 or better rating.
- New wiring, grounding and anything in the electrical panel is an electrician's job. Call 811 before digging.
- Never call a number from a pop-up, and never give remote access to someone who called you.

WHAT THIS DOES FOR YOU

You've got this

You now know why the signal fades, how to measure it, and which fix fits your garage, barn or backyard. When you'd like a hand, call (330) 200-8042.