How to set up a low-radiation phone system when there is no landline

Landline telephones are disappearing. What to do if you have electrical sensitivity (EHS), or simply want to lower your exposure to microwave radiation? We show how.

Keywords: low radiation, mobile phone, cell phone, electrical sensitivity

Landlines are disappearing

In 2009, the American telephone giant AT&T asked the U.S. Federal Communications Commission to set a “sunset date” for all traditional landline service in the United States. The request was denied, but the writing was on the wall that landlines were dying out.

By 2017, half of the households in the United States no longer had a landline phone. The phone utilities have steadily lost customers since, making maintaining their landline systems less and less profitable.
Some telephone companies have announced they will no longer repair broken lines. Newly built homes and apartments usually do not have telephone cables in the walls. Some companies won’t extend their landlines anymore.

In some cities telecom firms have replaced the old copper wires with fiber optic cables that carry television, telephone, and internet into the homes. They are likely here to stay.

But in smaller towns and rural areas, the only option will soon be wireless.

What should people who get sick from wireless radiation do? Or people who don’t want to irradiate their heads and bodies with microwaves that may give them cancer?

**Fixed wireless**

A fixed wireless system can solve the dilemma. It is a system that is stationary, with an ordinary telephone handset attached to it. Most of them are designed so the transmitter part is separate and can be placed well away from the person using the phone, thereby greatly reducing the exposure.

To the mobile network, it looks like a basic cell phone that just never moves, and can’t receive texts.

To the user, it looks like an ordinary landline phone. In fact, you can use your old landline phone, which is plugged directly into the fixed wireless transmitter, using a standard telephone extension cord (preferably a long one).

In the United States, telecom provider Verizon has offered their Home Phone Connect system for several years. The firm StraightTalk also offers one.

They are quite small. One is shown to the left in the picture at the top of this article. It has a small antenna that sticks up, and newer models have a little status display. It is very easy to use.

**How much does it radiate?**

The transmitter is like a basic talk-only mobile phone. When it is on, but not used for a call, it radiates very little. About every fifteen minutes it will send a wireless message to the nearest tower, to make sure the tower knows where it is.
When there is an active call, it transmits continuously, just like any other mobile phone. During calls is the most important time to keep a distance from the transmitter.

**Sound quality**

The sound quality is as “good” as with a mobile phone. It depends on how busy the tower is and the strength of the signals, etc. Also, mobile phone signals are chopped up in little pieces, 217 times a second, and then reassembled on the other end. Some of those little pieces may get lost.

Even under optimal conditions, the sound is not quite as good as for a good landline. To a few people, this does make a difference in how well they tolerate the phone, even though it is hard to really notice the difference. Perhaps it is similar to those audiophiles who prefer analog vinyl records to digital sound from CDs and MP3 files.

**How far does the transmitter need to be from you?**

In general, the further, the better. But it doesn’t make sense to go too far if there is a lot of radiation from other sources anyway.

If you live in an apartment where the neighbors use mobile phones and wireless networks, they will soon drown out your own transmitter as you move away from it.

Perhaps 20 feet (7 meters) will be a good compromise. More is always better. Less may be all you need, depending on your level of sensitivity.

**Where to place the transmitter**

The transmitter can be placed almost anywhere. You’d want it to be away from where you spend a lot of time when not using the phone, as it does send out a brief microwave burst every fifteen minutes or so to inform the cellular network that it is still there. Its internal electronics also radiate a little, like all electronics do, but that doesn't reach far.

In homes with phone wires in the walls, it may be a good idea to place it next to a phone outlet, or the main phone box. That way the existing phone outlets can be used around the house, instead of using a loose cable.

The transmitter uses electricity, so it is best to place it near an outlet.

If there is a garage, that may be an excellent place to put the transmitter.
It can also be placed in the yard, which we’ll discuss later.

**Metal houses**

The transmitter should not be placed anywhere inside a metal house, as the metal walls will reflect back the radio waves like a mirror. That means the radiation will bounce around the whole house; therefore, the radiation will no longer be less when moving away from the transmitter. Where the “hot spots” in the house will be is unpredictable.

Since the metal walls make it hard for the transmitter to reach the base station (tower) outside the house, it will also transmit more powerfully, further increasing the radiation inside the house.

A metal house is one that has large metal surfaces, especially metal walls. These can be siding made of steel or aluminum. Or they can be walls covered with aluminum foil wallpaper, including RF shielding materials.

A house that just has steel studs in the walls is not a metal house. The openings between the studs are so big the radio waves have no difficulty getting through the walls if they are made of glass, wood, or gypsum panels.

We are not sure whether a metal roof alone makes much of a difference.

**Placing the transmitter in the attic**

The attic may be a good place for the transmitter, unless the roof is metal.

The people will be below the transmitter, and there is no need for the signal to go that way. That means you can put an RF shield below the transmitter. It could simply be a plate of steel or aluminum, or even some layers of heavy-duty aluminum foil or copper mesh.

We haven’t seen anyone do this, but a shield that is about three feet (one meter) on each side, should reduce the downwards radiation quite a bit.

Place a thick piece of wood or plastic in the center of the shield. Then put the transmitter on top. A little distance between the shield and the antenna makes the shield more effective (less likely to be saturated).
Placing the transmitter outdoors

If you live in a metal house, your household has multiple electrically sensitive people, or you simply want the transmitter further away, consider installing it in the yard, a balcony, a detached garage, or a non-metallic garden shed.

This is often rather simple to do. Buy a cooler large enough to hold the equipment. Put a couple of bricks inside to weigh it down. Drill holes for a telephone wire and electric cable. You are almost there.

It is best to bury the wires. Wires can be above ground, but then make sure to wrap the wires in protective sleeves (sold at auto parts stores). Otherwise, rodents can chew on them. The electrical cable should be resistant to ultraviolet light, such as those long orange extension cords used by contractors.

Some coolers are not designed to withstand rain. Look at the lid; it should fully cover the top. You may need to build some sort of “hat” for the cooler if water still gets in.

Solar powered transmitter

The transmitter can be powered by the sun (this is what we do). Then there is just a phone cable going to the house, and no dirty electricity.

You’ll just need a small solar panel, a basic charge controller, and a 12-volt battery. Depending on what voltage the transmitter needs, you may also need a DC-DC converter (check the label on the power supply).

The solar panel should be nominally 12 volts. A power rating of 20 watts should cover all situations (except the Arctic).

A 12-volt lithium battery of about 10 amp-hours should work well. If you want to use a flooded lead-acid battery it must be in a separate cooler, as the acid fumes will otherwise corrode the electronics in the transmitter.

You’ll need a small solar charge controller, like the one shown in the photo. Make sure it is suitable for the type of battery.

Such a solar system may add about a hundred dollars to the overall cost. It can be set up by a handy person in a couple of hours.
Fixed wireless

Components for a solar-powered fixed wireless phone system that can be placed well away from the house. The shown Home Phone Connect device needs electricity at 5 volts, so a 12-to-5 volt USB converter is also shown in the picture.

Unheated space

The fixed wireless transmitters are generally designed to sit indoors. They may not work in unheated spaces when it is extremely cold.

There may be problems early in the morning, while it works when it warms up during the day.

It may help to even out the daily temperature swing by housing the transmitter in a cooler with a thawed ice pack (the ice pack won’t burst if freezing).

If heating is necessary, a 5-watt heating element should be plenty for an insulated cooler. A lamp that consumes 5 watts could work. If on solar, a larger battery is needed (at least 40 Ah @ 12 volt) and a power resistor rated at 30 ohms and a heat rating of at least 10 watts.
**Turn it off**

If you have the transmitter inside your home, you may want to turn it off sometimes. For instance, so an electrosensitive person can sit next to it.

Unfortunately, the models we are familiar with do not have switches. They are intended to be kept on all the time. And they have a backup battery, so they can still work in case of a power outage.

It may work to remove the backup battery, and then turn the transmitter off by removing power (such as with a power strip).

However, some models won’t work if there is no backup battery. Dumb design! In that case you’ll need to also install a switch on the battery. Or perhaps, use a worn-out battery.

**Optional ferrites**

This optional feature only makes sense for a household away from other transmitters.

Very weak radio waves may travel along the telephone wire from the transmitter to where the phone is. They might be a problem for extremely electrosensitive people.

They can be dampened by inserting ferrites on the telephone cable. The ferrites should be placed well away from the transmitter, perhaps halfway to the phone.

Ferrites are low-cost non-electric rings that are designed for this purpose. They are ceramic and very durable. They do not rust or decay.

They are designed to dampen different frequency bands (currently you’ll need about 900 MHz to 2500 MHz). The clamp-on types are less effective than the solid ones. Even more effective are solid rings large enough that the phone cable can be wrapped around it a few times, as shown in the picture.
Optional ferrites placed on the cable between the transmitter and the telephone to absorb dirty electricity. Multiple loops of the cable around each ferrite is best. This is an illustration, for best effect make the loops tight around the ferrites.

Use multiple ferrites, but keep them spaced at least a couple of inches apart (if close together, the microwaves may jump across and thus bypass the ferrites).

Avoid the contract

Some of these fixed wireless devices are given away for “free,” but with a required multi-year service contract. It may be better to buy the same device used and then sign up for a monthly service instead. That gives you a lot more flexibility, and may save the sales commission.

Case story: canyon dweller

We know a woman with MCS and EHS who has lived in an Airstream trailer for years. She camped for several months in a remote canyon in Arizona. The transmitter had to be placed high up on the canyon wall to get a signal. She used a high-quality 400-foot (130 meter) phone cable down to her trailer.
The author’s own system

Our system was first installed in 2010, and has been upgraded since. We are now on the third model transmitter. When it was built, the towers were so far away we had to install an external antenna to boost the signal.

This system is more complicated than described in this article. You’ll need someone with serious engineering skills to build something like it. It is described in more detail in a separate article available via the link below.

More information

For more articles about low-radiation telephones, go to: www.eiwellspring.org/telephone.html