

Chapter 7

Rural Utility Services

It's not like the big city

When you moved into your suburban or urban home, utility services like water, sewer, electric, and telephone are normally already connected and simply needed to be turned on. There is usually no need to be aware of how these services are attached to your home. The situation is entirely different with rural homes.

You will become familiar with water wells or rural water districts, septic systems, power lines, and rural telephone service. Each of these services is simple and reliable because of modern materials and techniques. They do, however, require periodic inspection and maintenance. Pumps in water wells eventually wear out. Trees can grow up and into power lines. Septic tanks must be pumped out periodically.

You need not be overly concerned about dealing with rural utility services though. People of all levels of education, skill sets, and intelligence live quite comfortably in rural settings. You will, no doubt, do just fine. The following paragraphs discuss utility service issues. Some, such as septic systems, electrical service, and wood heating are also discussed in greater detail in later chapters.

Electric service

Often companies called 'cooperatives' supply power to rural areas. These companies are actually owned by their customers. Becoming a customer automatically makes you part owner. Any profits made by the company beyond its operating costs are returned to its customers in rate reductions or direct payouts. Another common company type is the city or county owned utility. These companies are owned by local government agencies and operate under their control.

Rural electric companies are typically very easy to work with. They are usually small enough that their employees all know each other and can get you in contact with the right person to answer your questions very quickly. This is quite refreshing as compared with dealing with the bureaucracy found in the big utility companies in more populated parts of the country.

Talk to the people at the local power company to find out what their specific installation rules and procedures are. Armed with construction rules and prices from the electric company, you can estimate the costs and difficulty of new service installation or upgrade. In general, a high voltage distribution power line will be brought to within about fifty feet of your new house site. This will be in the form of wires strung along the top of power poles or a buried high voltage cable. A transformer will then be mounted on the closest power pole or in a ground mounted cabinet to transform the distribution high voltage down to the one hundred twenty volt and two hundred forty volt service needed for your appliances. Thick cables are run from the transformer to your house's circuit breaker panel.

An unfortunate thing occasionally happens when people begin considering having electric service brought onto their property. It is often the first expense encountered after they buy their property. Without the perspective of knowing the details and costs of house construction, the price can seem high. That cost is typically very minor compared to total construction costs. Some people will choose to build their house in a less desirable part of their property in an attempt to reduce this cost or to forgo commercial electric service entirely and go 'off the grid.'

The price for establishing electric service in Midwestern states is usually not high. It was about \$1200 to have underground service installed six hundred feet from the road on our property. That included trenching, buying the conduit, and the utility meter, connection, and cable fees. While this is probably about the lowest cost you could expect for this kind of installation, the cost of establishing electric service to a new house is usually only a few percent of the final construction price. Consider carefully before you compromise on your building site location or attempt to use solar or wind power instead of commercial electric service.

During house construction, electric service is necessary for running saws, compressors, and other tools. Portable gasoline powered electric generators and compressors can be used but commercial electric service is usually cheaper and easier to deal with. How this is usually handled with new construction is to mount a temporary meter box with an electrical outlet near the construction site. The electric company then connects that meter to a transformer. The utility construction

department will supply information on what you need for temporary construction service.

More details about of rural electric service issues in may be found in a following chapter.

Propane gas service

Many rural homes are all electric. Higher efficiency electric heating using heat pumps is popular. Some of us, though, prefer gas for heating and cooking. Gas for heating and cooking is usually propane instead of natural gas as typically found in cities. Propane is delivered as a liquid to a storage tank on your property. The propane tank is normally filled to only about eighty percent full so there is space over the propane liquid to allow it to evaporate into propane gas. Pipe is run from the top of the propane tank to your house. As propane gas is drawn off the top of the tank, liquid propane evaporates to maintain the tank gas pressure.

The normal scheme for propane service is for a propane delivery company to lease or sell you a propane tank that they place on your property. You are allowed to specify the location of the tank with the caveat that it must be easily reached by a large propane delivery truck. Also, of course, the length of pipe needed from the tank location to your house must not be outrageously long. Common lengths are thirty to fifty feet but you will have to check with the supplier for their exact requirements as they vary from company to company.

Propane companies manage delivery schedules in a variety of ways. Monthly stops by a delivery truck to check your propane tank liquid level and refill as necessary is commonly available. The more common way is for you to monitor your own tank level and contact a propane company as needed to schedule a refill. Check with local propane delivery companies for other options.

Propane liquid level is displayed on a small gauge located on the top of the tank. The gauge will normally be calibrated in percent with one hundred percent being full to the top. It is easy to calculate how many gallons are remaining in a tank at any given moment. Simply divide the tank's maximum capacity by one hundred and multiply the results by the percentage reading. A fifty percent reading on a five hundred gallon tank with indicate that there is two hundred fifty gallons remaining in the tank.

Space is needed in the top of the tank for propane gas collection. As mentioned above, tanks are normally filled to only eighty percent indication. Thus the common

three hundred twenty gallon tank actually is filled to a maximum of two hundred fifty six gallons and five hundred gallon tank to only four hundred gallons.

Propane delivery companies prefer that each delivery be larger than some minimum number of gallons. This varies from company to company but is usually in the one hundred gallon range. Refilling are usually done when tank when the level drops below about thirty percent.

If you are moving into an existing home with propane heating, figuring out how many gallons of propane you will need each winter is not difficult. You can check with the previous owners for past delivery amounts. If you are building a new home, it may not be so easy.

New homes are usually better insulated than older homes. Houses designed to make best use of a woodstove are often easier to heat because of better air circulation. Your personal preference for thermostat settings impacts your propane usage. These things add up to a large uncertainty in your annual propane purchase amounts. A propane delivery company can help you with an estimate but remember that it is just an estimate.

Your annual propane use estimate determines how large a tank you will need. You obviously do not want a tank so small that you could run out of gas while waiting for your next delivery. Also, if you are using a high gas demand rate appliance such as a propane furnace, you must have a tank with a large enough liquid surface area to allow propane gas evaporation to keep up with your demand. Don't get stressed about selecting a propane supplier or the correct propane tank size. Tanks can be swapped out if larger tanks are needed.

There is a safety issue with propane. Unlike natural gas, propane is heavier than air. Minor natural gas leaks tend to rise and dissipate with the normal house air infiltration. That is not the case with propane. Propane sinks in the air and collects in low spots. Even a small leak can result in a potentially explosive gas accumulation. Any propane leak, no matter how tiny, must be considered a dangerous problem. Fortunately, modern gas appliances and piping methods are very reliable if professionally installed.

Household water supply

As you might guess, most rural areas do not have public water service available. You will likely have to get your household water from a well. This is not always a simple thing. In western states where even finding underground water can be difficult,

you might find that your property was sold with deeded access to a common well located on some other property. Make sure you understand the water situation for a property before you buy it.

The simplest scheme is probably like what is common in the Midwest. In many areas of the Midwest, wherever you dig a well you will hit water, though it might be quite deep. You would contact a local well drilling company. They would come out and help you select a location for the well and drill it, line it, and install a pump. Costs depend upon local conditions and how deep the hole must be drilled. Common well drilling costs here in the Ozarks are in the \$3000 to \$5000 range. (2005 prices)

Check with professional well drilling companies in the area to find out what the typical prices, problems, and likely water flow rates they would expect for your situation. These companies keep records and maps that allow them to provide a fairly accurate prediction of what you can expect for required drilling depth and available water flow rate for a well on your property.

There are two main types of household water systems for wells. The first and most common is the pressure demand type. The well pump is turned on and off by a switch in a holding chamber. The switch is attached to an air bladder that is compressed by water pressure. When the pressure drops, the pump is turned on. When the pressure returns to normal, the pump is turned back off. The pressure set point is determined by how much air pressure you put in the bladder.

The second type is used when it is possible to have a water tank somewhat above the house elevation such as on a hillside or water tower. A water level switch in the tank controls the pump. This system is somewhat more expensive to install than the pressure demand type because of the cost of the water tank but allows its stored water to be available during power outages.

Any water well system requires periodic maintenance and repair. Pumps are occasionally damaged by lightning strikes on nearby power lines. Pumps wear out. Wells go dry. However, most rural folks get by just fine with wells for water.

If you are lucky, as we were, you could have a rural county water district water pipe running along the front of your property. We were able to hook up to this pipe for our household water supply. Instead of cost of drilling a well and installing a pump, we paid to have pipe and a meter installed. This makes for a relatively inexpensive, low maintenance water supply system.

Whether your water supply is a well or a water district, your water pipes must be buried deep enough that the water in them does not freeze during the winter. In the

Ozarks, that depth is about 3 feet. In more northern areas, that depth could be much greater. It is a very big nuisance to have the water supply to your house cut off because of a frozen pipe. Even worse is a frozen pipe or valve will often split causing a leak. Digging in frozen ground to fix a broken pipe to get water into your house is an adventure well worth avoiding. Fortunately my only broken pipe, so far, was easy to shut off. Our barn was without water until the ground thawed in the spring but that was only a minor inconvenience. I waited until the weather was more comfortable to dig down and repair the pipe. I wouldn't have had that choice if it were the pipe to our house.

Rural sewer service

New rural residential sewer systems are almost always septic tank – absorption field systems. There are several alternatives but that is the most common type. The installation and operation of septic systems are more complex than for things like electric and water supply. There is a later chapter covering this subject in detail.

In any event, you will be hiring a qualified contractor for your septic system work. While conceptually simple, septic system installation is a job for a trained and experienced person. Homeowner constructed septic systems usually fail quickly. It is definitely more expensive to have your septic system replaced than having it done correctly the first time.

Telephone service

In most states, local telephone companies are required to supply telephone service to households when requested. In Missouri, the telephone company must provide service within thirty days of a request or explain to the state public utilities commission why they were unable to comply. They must eventually provide service. That is the good news.

The bad news is that the service provided may not be comparable to that available in cities. Rural telephone service quality is often impacted by the distances the telephone wires must be run. Noise and hum is common on rural telephone circuits. Service tends to be less reliable from falling tree limbs, lightning strikes, and farm machinery digging up cables.

Services such as DSL may not be available. Obtaining more than one telephone line for your home may not be possible. In some areas, party lines are still used.

In residential settings, Internet based telephone provides an alternative to the local telephone company. This is generally not available in rural situations. Though satellite based internet service is usually available for rural users, the inherent speed of light delay associated with the transmissions to and from the satellites prevents the Internet based telephone service from working correctly.

Rural telephone lines present a potential hazard during lightning storms. Electrical surges from lightning strikes can travel along your telephone line and damage your telephone and shock anyone touching non-cordless telephone. Computer modems, and even the computers they are connected to, can be damaged.

In general, it is a good idea to disconnect your computer modem from a rural telephone line during a heavy lightning storm. Any telephone call you make during the storm should be made using a cordless phone. Even if the base unit of your cordless phone is damaged by a lightning strike, user of the handset will be isolated from the electrical surge.

Internet service

Most households these days have Internet service. It is safe to say that you will want that in your rural home. As with telephone service, your options for Internet service will likely be more limited than in a city.

Many of us in rural locations are still using dial-up modems for Internet service. This kind of service, as you might expect, is slow and often unreliable. If you are retired and have plenty of spare time, this kind of service may be perfectly adequate.

DSL service is often not available on remote rural telephone lines but is getting better every year. The allowed length of the telephone line running from the telephone office to your home is limited. Beyond some distance, depending upon a number of factors, DSL communications becomes unreliable. This distance is seldom more than a few miles and sometimes much less.

Terrestrial microwave base service such as WiFi and others is also unlikely to be available. These services normally have limited ranges. Population density is often too low for service providers to be interested in installing equipment for rural users. If your house happens to be on a ridge or mountain with a view of a nearby city, though, you might have luck with this kind of service.

High-speed satellite based Internet service is a possibility for rural folks these days. These services use a small satellite dish to both send and receive data through a

synchronous orbit satellite. All that is usually needed is a fairly clear view of the sky southward from your home. Satellite Internet service can provide fairly good response time when browsing the web or with e-mail. There are some kinds of things like Voice Over Internet Protocol (VOIP) or real time equipment control that do not work well.

Synchronous satellites are in an orbit about twenty three thousand miles above the earth. A data packet sent by your computer to an Internet server must travel up to the satellite and back to the ground or about forty six thousand miles. The acknowledgement for that packet must also travel up to the satellite and back adding another forty six thousand miles. Light travels at about one hundred eighty six thousand miles per second. That means there is a minimum delay of one half second for a round trip for data and acknowledgments. When that data is something like a telephone conversation, the delay becomes very difficult to deal with.

What is surprising about rural Internet service prices is that DSL, WiFi, and satellite service all cost roughly the same as low speed dial-up with a dedicated telephone line. Check with nearby office supply stores, computer stores, and Internet providers for information about what is available in your area.

Television service

With the availability of satellite television service, receiving television channels in rural areas has become much easier. In the past, receiving off-the-air signals was the only option. That was often difficult to do.

Rural homes often had tall antenna towers to raise their TV antennas high enough to receive distant transmissions. Towers fifty or a hundred feet high were not uncommon. Installing these antenna systems was expensive and sometimes dangerous. Some of these towers may still be in use today.

Check the TV antennas on homes near your rural location to see what height they are placed above the ground. If you find they are mostly mounted at roof level, receiving off-the-air signals should be fairly easy. If your neighbor's antennas are on the top of tall towers, you might just want to think seriously about satellite service.

Roof height antenna installation is not difficult for the average screw driver wielding homeowner. Check with local electronic stores for information on what kind of equipment you will need and how to install it.

One option often overlooked when low TV antenna heights are OK is to mount the antenna in your attic. As long as your roof is not metal, an attic mounted antenna will usually perform nearly as well as a roof mounted antenna. Snow and ice buildup on the roof could partially block TV signals but that is normally a problem only in areas where very heavy snow buildup is experienced. The advantage to mounting your antenna in the attic is that it is protected from the weather. It and its associated cables will last for a very long time. It is unlikely you will ever have to repair or replace them.

Remember, of course, that your TV antenna or satellite dish is a chunk of metal sitting out in the weather with an electrical cable leading into your house and hooked to your expensive entertainment equipment. Though relatively uncommon, lightning strikes or surges from nearby strikes can be conducted into your equipment on those cables. If lightning is hitting the ground around your house, your equipment will be much safer without outside connections.

Garbage and trash collection

Every household today produces trash that must be disposed of. This is unavoidable because of the packaging used for our food and other household items. Disposal of trash is sometimes a problem for rural properties because trash and garbage collection services may not be available.

Wherever trash disposal services are available, use them. It will be an ongoing monthly expense but the convenience will make the cost worthwhile. It is easy to keep your property neat and free of rubbish if all you have to do is collect trash and set it out to be hauled away each week.

When disposal services are not available, it is still possible to keep your property clean but a little extra planning and work is needed. An incinerator can be set up to burn paper and cardboard, if allowed in your area. Food waste can be left in a spot away from the house for the local wildlife, providing that attracting large predators or stray dogs is not a problem. Trash can be stored for periodic trips to a local legal disposal site.

A method of garbage and trash disposal often used in remote rural areas is a trash pit. A tractor is used to dig a large, and sometimes deep, pit. The dirt from the hole is left piled nearby. This pit is usually located well away from the house, as it does tend to attract wildlife. When the pit is nearly filled with trash, the dirt pile is pushed back over it and a new pit is dug.

A very useful upgrade to a trash pit is covering it with a platform with a hatch in the middle. Trash is dumped into the pit through the hatch. This prevents animals from dragging trash items out of the pit as well as adding a degree of aesthetic improvement to an otherwise ugly place. When a new pit is dug, the platform is pulled over it.

Fire and law enforcement

Though they are not strictly speaking utility services, fire department and police response are a concern for rural residents. If you are twenty minutes from the nearest town, response to a 911 call will probably take at least twenty minutes. Response from your local fire department will be delayed by the additional time it takes to for volunteers to be notified and respond to the fire station.

Rural law enforcement staffing is sparse. That is because of the low crime rate and low population density associated with rural areas. Same day service may be considered fast response for a call reporting a crime less serious than a capital offense. That is just the nature of rural life.

Once you move to your rural property, you must consider yourself your own first line of defense for fire and theft. You may be on your own handling a problem for an unknown and possibly long period of time. Get to know your neighbors and keep their phone numbers handy, as they will likely be your best chance for getting help quickly. Volunteer yourself for response to calls for help from your neighbors. That is how it works in rural areas.

Work out plans for dealing with various kinds of fires. Install fire extinguishers in easily accessible locations in your home, garage, shop, and storage buildings. Keep garden hoses in locations that make them easy to use for light duty firefighting around your house and outbuildings.

Mail delivery

Mail delivery varies from location to location. Check the roads near your rural property for mailboxes. If you find no mailboxes, it is possible mail delivery is not available in your area. Check with the local post office for their recommendation. It may be necessary to rent a post office box. This may be a nuisance but people have been getting by with this kind of mail service for a very long time.

If you see individual mailboxes scattered along the road that runs by your property, it is likely that all you will have to do install your own near the entrance to

your driveway. You will have to check with the local post office to find out what the local standard is for labeling mailboxes but as you will no doubt notice, those standards are usually followed in a very casual way.

Another situation seen is clustered mailboxes on a main road. This is done to relieve the mail carrier from having to drive up and down dead end roads. If that is the case in your area, you will be installing your mailbox on or near this cluster of mailboxes. Avoid moving any existing mailboxes. Those boxes are private property. Both the mailbox owner and the mail carrier are used to the existing mailbox locations. Choose one end or the other of the cluster to install your own mailbox.

Now, an important consideration is what kind of mailbox to install and how to install it. Some areas may have very specific requirements but that will usually be obvious from looking at other mailboxes along your road. In general you can use any of the mailboxes you can buy in the local hardware store. These boxes are normally built to meet post office guidelines.

The best choice for a mailbox is one that is relatively cheap. Rural mailboxes are exposed to a number of sources of damage. Rural mailboxes are located at the side of the road, close enough to allow the mail carrier to reach into it from the seat of the delivery vehicle. Snow plows, road graders, construction equipment, and farm machinery can hit them. Members of the local high school baseball team and their friends will attempt batting practice on mailboxes while riding by in the back of a pickup truck.

There is no end to the level of ingenuity you will observe in how people mount their mailboxes so as to minimize the risk of damage. A small number of these schemes may even work. Your best bet is to install your mailbox so it is easily repaired or replaced. That includes the post the mailbox is mounted on.

An idea worth considering is to set your mailbox post in a five-gallon bucket or similar container filled with concrete. The concept is to allow the post to be knocked over without breaking. Another idea is to use two or three chunks of metal reinforcing bar (rebar) as your post. Rebar bends easily and can be straightened back to vertical if the mailbox is pushed over.

Your mailbox should be well labeled with your name and address. It is often the only way visitors and delivery people can find your property. Just hand painting your street number on your mailbox may get your mail delivered OK as mail carriers get pretty good at figuring out the mailboxes on their routes but it will not be quite as useful for other people.

Package delivery

Package delivery by UPS, FedEx, or DHL is not always available in rural locations. These companies set limits on travel distances and road quality that may preclude drivers from reaching your rural home. Check with your rural neighbors about delivery to your area. Common alternatives to front door delivery are constructing package delivery huts near the road by your driveway or picking packages up from the delivery company's office.

Avoiding junk buildup

Junk buildup is a problem in rural settings. The availability of open space allows us to keep damaged or obsolete equipment and vehicles if we wish. Gradually, an accumulation of items of dubious possible future use can occur. Thus, the common sight of a front yard decorated with junk cars and a busted washing machine develops.

It takes a conscious effort to prevent junk from accumulating. You can sometimes cut up smaller items to be hauled away with normal trash collection. Haul larger stuff to a landfill as soon as it becomes trash. Don't let it sit in your front yard.

If you must keep stuff, find someplace other than your front yard to store it. Even moving items to the back corner of your property shows that you are attempting to keep things neat.

Lessons learned about rural utility services

- 1. Rural utility services are usually small operations. You usually get friendly, personal service when you have to deal with them.*
- 2. Plan on leaving a Christmas card with money for your mail carrier every year. A personal check for about \$10 is considered standard in our area. It not a requirement to pay this money but it helps ensure that oversized packages will be delivered to your house and not under your mailbox at the edge of the road.*
- 3. Newspaper delivery can be a bit irregular. You should expect occasional delayed delivery. Our newspapers usually show up within a day or two of the printing date.*
- 4. A lightning storm is not just a convenient substitute for 4th of July fireworks. It is serious stuff. Include surge suppressors in your electrical and telephone wiring.*