



Over the years, we've posted lots of great tips and answers to customers' questions on our blogs and podcasts. Now we've compiled and edited all the posts dealing with spring maintenance into a single resource. We've included links to the videos and podcasts that first appeared with these articles. Enjoy!

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SPRING MAINTENANCE THAT WILL SAVE YOU MONEY

I came across a recent article in *Money* magazine titled "[8 Spring Home Maintenance Projects That Will Save You Money](#)" and was not surprised to see that scheduling routine HVAC maintenance was #2 on their list! Before the cooling season, having your central air conditioner professionally tuned-up will not only prevent major malfunctions in your AC unit (which as we all know can be costly *and* uncomfortable!), but will prolong the life of your equipment and help your unit run more efficiently, thus saving money in electrical costs. But did you know that the two most important spring maintenance tasks can be done by you?

1. **Clean or replace the air filters** every 3 months or as recommended by the manufacturer. Do



not run the air conditioner while you have the air filter removed. If you have the kind that can be washed and re-inserted – such as an electrostatic air cleaner – make sure it is completely dry before re-installing it. If you have spring and summer allergies, buy the air filters with the highest MERV rating you can find, as they will filter out more pollens, mold and dust particles, and give you higher quality indoor air.

2. **Clean in and around the outdoor condenser unit.** Every month, remove leaves and debris that often gather around the unit, and trim any bushes or vegetation so there is adequate clearance – at least 2 feet – on all sides of the unit. When mowing the lawn, keep grass clippings away from the unit. If you covered the outdoor unit during the winter months to prevent snow and ice from getting in, be sure to uncover the unit before turning on the air conditioner!



3. **Get a tune-up.** A thorough spring maintenance check by a professional will check the fan grill and blades, clean the condenser coils, check and lubricate the fan motor, check the thermostat operation, verify all the safety mechanisms are operating and that the condensate drain is clear, and so much more!



The height of the summer heat is no time to try to be handling a maintenance issue, especially if it could have been prevented. Use the advice of *Money* magazine to schedule a spring HVAC maintenance check so you can save money while remaining cool this summer.

PRE-SUMMER CHECKUP - SPRINGTIME TIPS



After a long, cold winter, spring's bright sun and warm temperatures are more than welcomed in Middle Tennessee. But the hot summer weather is just a few weeks away and you can bet by then air conditioning repair technicians will be plenty busy! It seems if your air conditioner is going to go out, it will do so when you need it most – on one of the hottest days of the year! Want to save money and all the hassle of an outage? Have a pre-season check-up! That means getting your spring maintenance visit scheduled in March or April, and getting your Fall Maintenance visit in

Sept. or Oct. To remember to schedule your pre-season check-ups, plan them around the time changes in the spring and fall.

Things You Can Do

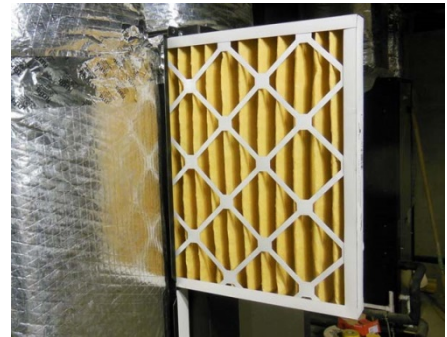
Of course, there is really no substitute for a professional HVAC inspection, as some things a homeowner just cannot do for themselves when it involves air conditioning. For example, refrigerants can be sold and installed only by certified technicians. Testing voltages and pressures within the equipment requires special gauges, etc. But there are a number of very important things a homeowner CAN do for themselves.

5 Springtime Tips:

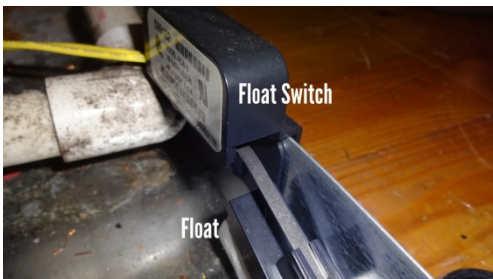
1. Check and replace your air filters.

There are several types from which to choose, depending on your needs. We recommend buying the highest MERV rated filters to cut down on spring allergy symptoms. Turn off the power to the unit before pulling out the filter so the blower doesn't come on and blow dust throughout the system.

Vacuum up any dust in the air duct. Orient the filter according to the instructions printed on it. Replace the filter at least every 90 days, but check it monthly and if it looks dark or clogged, change it. If you have pets, you may need to change your filters more frequently. Not replacing filters is one of the main reasons HVAC equipment begins to fail.



2. Check and inspect the condensate drain.



The condensate drain line carries water condensation away from the evaporator coil, and if this becomes clogged or improperly connected to the rest of the drain system, your AC system can become flooded and you could have a very bad mess on your hands! A plugged drain can cause water damage in the house (see real story below) and will cause your system to stop working. Check the condensate tube to make sure it isn't clogged by sludge and algae, especially at the drain port. If it's a

flexible tube, it should be easy to pull off and clean. Clean it with a 50% bleach solution. Then, periodically throughout the season, pour a cup of bleach solution down the air-conditioner condensate drain to prevent buildup of mold and algae, which can cause a clog. Watch our video on [condensate drain maintenance here](#).

► **Real story:** We had one customer who had an air conditioning unit in the attic. One day she walked into the bedroom to find it “raining” from the ceiling! The condensate drain got plugged up and water overflowed, causing ceiling damage and requiring replacement of all the wet insulation in the attic. If that customer had installed a float valve and checked the condensate drain periodically, they could have prevented the damage. As the condensate pan fills with water, the float valve rises and shuts off the unit to prevent an overflow.

3. Clear vegetation around your AC compressor outside.

To work efficiently, the compressor needs good airflow. Prune any plant growth that could block it. Check to make sure there is at least two feet (24 – 36”) of clearance all around it. Weekly during spring, summer, and fall remove debris such as leaves, pollen, and twigs from the top and sides of the outdoor unit. Don’t allow the lawn mower to discharge grass clippings onto the unit. If the outdoor unit is crowded by a fence or shrubs, or if the bottom few inches of the coil is buried under mulch, airflow will be restricted, which decreases efficiency, reduces the life span, and damages the unit.



► **Tip:** When doing your spring planting, allow room for long-term growth, 5 to 10 years down the line. If building a fence, make sure it can be easily opened or removed. The unit needs to be serviced regularly, and the technician may need access to all sides of the unit.

4. Check the outdoor unit’s foundation.



Ensure that the outdoor air-conditioning unit is on firm and level ground. This is typically a concrete pad, but could also be plastic or rubber. Settling, erosion, flooding, or ice damage may occur throughout the year, causing the pad to crack, sink, or become unlevelled. This puts strain on coolant lines, and could bend or break copper or electrical lines, or cause water to puddle in the unit. Before trying to level the unit yourself, contact a technician to properly disconnect the unit. Make sure the pad raises the unit out of the dirt and that there is adequate drainage

around it, so that water does not pool near it during a hard rain.

5. Clean the condenser fins, coils and fan (the outside unit).

Dirty coils reduce the system's ability to cool your home and cause the system to run longer, increasing energy costs and reducing the life of the equipment. The fan inside the condenser coil sucks air through the fins, and as a result, pulls dirt and debris with it. Fins are the fine metallic blades that surround the unit. Clean the outdoor unit when the temperature is 60 degrees F or higher. Before cleaning it, be sure the power is turned off. There may be a 240-volt power box near the unit which can be unplugged or turned off, or you may need to turn the power off at the circuit breaker. Using a garden hose, spray water on and through the unit, washing the dirt and grime off the fan and coils, cleaning the fins, and removing any debris – like leaves or cut grass – that may have become lodged in the unit. If desired, you could also use a foaming coil cleaner (sold at most hardware



stores), following the directions on the can. Note: Compressors can be fragile and so require special start-up procedures. First, make sure your inside thermostat is set to “off” (not in the “cool” setting). Restore the power to the outdoor unit, either by plugging it in again or flipping the circuit breaker back on. Wait 10-30 minutes before turning the thermostat into the “Cool” position. Listen for odd noises.

► **Tip:** If you switch off the air conditioner (at the thermostat) at any time, wait at least five minutes before switching it back on. Once off, the compressor needs time to “decompress.” If you restart it too soon, you’ll stress the motor. Many thermostats have automatic time delays built into the circuitry to protect the compressor from this problem.

The Payoff

Few routine chores will pay off more handsomely, both in comfort and in dollars saved, than a simple air-conditioner cleaning. The payoff: Summertime comfort and lower cooling bills. You’ll also prolong the life of your air conditioner. Having a pre-season check-up is the best way to ensure your HVAC equipment is operating at peak performance, and the best way to prevent future problems and unwanted costs.

Spring Maintenance Check: Coil Cleaning & Hail Damage

Tim Panther, Interstate AC Service Technician, demonstrates cleaning coils and discusses hail damaged coils.



<http://www.youtube.com/embed/b-FtcosXZaM?autoplay=1>

Always have a spring maintenance check before the hot weather. This will avoid having your system fail on the really hot days. Cleaning your air conditioner’s outside unit coils is very straightforward. First, spray coil cleaner carefully on all four sides of the coil’s fins. Wait until you can see the cleaner foam. The foam is removing the dirt on the coils. Next, use a hose with an adjustable pressure nozzle and carefully wash the foam off. The foam and dirt will quickly dissipate on the ground leaving the coils clean. While cleaning the coils, Tim inspects for hail damage. Some units have hail guards so hail damage is not a problem. But if there are no hail guards then it is important to inspect all four sides for damage to the fins. If the damage is minimal, a fin straightener tool can be used. If the damage is severe, the coils will need to be replaced.

Keep the area around your outside unit clean from dirt and grass clippings. Dirty coils reduce the cooling power of your system requiring more “on” time, more load on the compressor, and can lead to total failure of the system. For more info, check out: [Why Air-Conditioners Fail on Hot Days](#).

AN UPDATE ON THE REFRIGERANT R-22

Tony Anderson, Partner, provides an update on the phasing out of the refrigerant R-22, and talks about 422D, its replacement.



<https://www.youtube.com/embed/ycR8V7YE7ZA>

Last October, Bill Richards posted [R22 Refrigerant: Six Things You Should Know](#). There is now some good news to report. R-22 has been the refrigerant of choice for heat pumps and air-conditioning systems for more than four decades. But it is bad for the environment because it contributes to ozone depletion and greenhouse gases. The government has mandated a steady decline in production of R-22 until 2020, when all production must cease. Though that may seem like a long time from now, the target for 2015 was to cut production by 90%, so R-22 is already in very short supply. Because R-22 is less readily available, the price has skyrocketed.

Using 422D as a Replacement

As R-22 has been phased out, non-ozone-depleting alternative refrigerants, such as 422D, are being introduced. 422D is called a “drop in” replacement because the old R-22 can simply be removed, and the new refrigerant installed without having to change the oil in the compressor or anything else (in most cases). If you have a leak in your system now, it is best to repair the leak and recharge the system with 422D. Not only is it good for the ozone, but it will be a lot cheaper! Typically, 422D is \$10-\$15 per pound cheaper than R-22, and it could be more, depending on how scarce R-22 becomes. If you have a big unit that has 50 pounds of refrigerant in it, you’re going to save a lot of money by using it. If you have a smaller unit, you’ll still save, though it won’t be quite as much, but it will be good for the long haul. We’ve been using 422D for over a year now, and the performance has been great; we’ve had no problems with it at all.

► **Important Tip:** If you use 422D, make sure there is label affixed to your unit that says this, in case another service technician comes back behind, to make sure they don’t put R-22 in a 422D unit.

FIX THE REFRIGERANT LEAK NOW !



<https://www.youtube.com/embed/Sc2gq0x4bAE>

It’s summer and it’s hot, and with the humidity it’s way uncomfortable! Your air conditioning may not seem to be cooling as well as it used to, or it seems it’s having to work overtime to get it cool. Well, you figure, it’s nothing that a shot of Freon can’t fix... how expensive can that be? Unfortunately, a lot!

Costs have soared

You see, the federal regulations phasing out the “old” Freon – known as R-22 – means that there is a very limited supply of it. Like anything driven by supply and demand, as the supply of R-22 has become more restricted and the demand has gone up, the costs have soared. A shot of Freon a couple of years ago that cost you only about \$50 could cost close to \$400 now! Some folks have even nick-named R-22 “Liquid Gold.” Plus, once 2020 rolls around, R-22 production will be phased out entirely, and will be illegal to import or export.

Get to the source of the problem

But there's a bigger issue here. The refrigerant R-22 exists in a closed loop constantly being recirculated inside your system. It is not consumed by the system, so, it should never need replacement. If your system is running low on refrigerant, that means you have a leak! Rather than continuing to pay the increased costs to replenish the leaking R-22, the better solution is to find a qualified heating and cooling company to find and repair the leak, wherever it may be.

After the HVAC technician has inspected your system thoroughly, you'll know whether it makes sense to continue investing in your existing system (fixing the source of the leak and replacing the R-22) or whether it makes better sense to purchase a new system. New systems no longer use R-22 as a refrigerant – they use the more environmentally-friendly R-410A, which is a LOT cheaper! Plus, new systems have been mandated by the government to be more energy efficient, so you'll save money in the long run.

The bad news

Unfortunately, you can't just put the new refrigerant (R-410A) into an old system designed for R-22. They operate at different pressures, and your existing evaporator and condenser were not designed to operate at these increased pressures. Plus, R-410A systems require a different type of oil and expansion valve. So, it comes back to the age-old ["repair or replace" question](#).

System leaks can not only harm the environment, but also result in increased operation and maintenance costs. So, don't sink a few hundred dollars into Freon that will just leak back out! *Get that leak fixed now!*

WHAT'S YOUR SEER? DOES IT MATTER?

SEER stands for **S**easonal **E**nergy **E**fficiency **R**atio. This is a rating given to air conditioners that measures their relative efficiency. The higher the SEER rating, the more efficient the unit is. To find the SEER of a particular air conditioning unit, the Air Conditioning, Heating, and Refrigeration Institute looks at the cooling output during a typical cooling season divided by the total electric energy input during the same period. This is measured as the ratio of cooling in British thermal units (BTUs) to the energy consumed in watt-hours.



Does it matter what the SEER rating is of your air conditioner?

It does if you are cost-conscious! No one wants to see huge electric bills in the summer as the heat and humidity rises here in Tennessee. The SEER rating can help you compare the cost of operating two seemingly identical units (units having same BTU output). It lets you spend your money more wisely. It lets you invest in a unit that will actually save you money because it will cost less to operate.

Comparisons and Standards

One variation of the SEER is the EER, the **E**nergy **E**fficiency **R**atio. The EER is a more realistic measurement of energy efficiency in warmer climates due to the high demand and higher cost of peak hour electricity. It is measured as the ratio of output cooling (in BTUs) to input electrical power (in Watts) at a given operating point, usually 95°F and 50% humidity outside. SEER rating more

accurately reflects overall system efficiency on a seasonal basis and EER reflects the system's energy efficiency at one specific operating condition. Both ratings are useful when choosing products, but the same rating must be used for comparisons. As of January 2015, all residential air conditioners sold in Tennessee must have a SEER of at least 14. Today, it is rare to see systems rated below SEER 10 in the U.S., and if yours is, you should replace it with a new, higher efficiency unit.

Savings Can Be Substantial

Substantial energy savings can be obtained from more efficient systems. For example by upgrading from SEER 9 to SEER 14, the power consumption is reduced by 30% which can translate into energy savings up to \$300 per year (depending on the cost of electricity). In 5 years, that comes to an extra \$1500 in your pocket without lifting a finger! And, the longer the cooling season and the longer you keep your system, the more important the SEER rating is to your pocketbook! Here in Tennessee, the savings can easily be much more because of our long cooling season and high humidity. This is reflected by the U.S. Dept. of Energy's elevated minimum standards for split system central air conditioners installed in the Southeastern Region of the U.S. which must be at least 14 SEER starting January 1, 2015.

Choosing a System

Today there are mini-split (ductless) air conditioner units available with SEER ratings in the 25 to 28 range, and geothermal (or ground-source) units may have SEER ratings up to 75. Even replacing your 10-year-old central air conditioning unit with a new one can save you 30-40% in electricity costs. And now that the old refrigerants are being phased out, there's no better time to make a switch! When choosing a new system, be sure to compare their respective SEERs.

THINK BIGGER IS BETTER? NOT WHEN IT COMES TO COOLING!



Many people have the misconception that a bigger unit is better for the heating and cooling system in their home. Or worse yet, they bought an extra-big HVAC system thinking it will cool the house better and now they think it must be faulty because it doesn't seem to be cooling very well. What you actually want is the "right size" HVAC system for the area you wish to heat and cool. If the system is too small or *too big*, it will not cool effectively.

Here's why bigger is not better: If you oversize the cooling system in your house, it will only operate in short bursts, so it doesn't have the opportunity to dehumidify the air in your home. The main way air conditioning makes you feel comfortable is that it controls the humidity in the air. Here in Tennessee, we sure get our share of humid summers! When the cooling system is the proper size, it runs a little bit

longer every time it turns on, and during this longer running period it provides cooling and will dehumidify the air, thus providing better comfort in the home.

Sizing a system: When sizing a system, it's not just about the number of square feet in your home. Things that affect sizing include the geography (where you live), amount of use (the number of heating and cooling hours), the number of windows and whether they face north or south, and the height of the ceilings. When sizing a cooling system, keep in mind that *it's better to undersize than to oversize*. A smaller system may run a bit more often, but it will cost less to operate. A larger system will cost more to operate, in addition to being inefficient, which will cost more money in the long run.

So heed this warning: Don't get oversold on systems that are much more expensive than they need to be simply due to their size. A properly-sized piece of equipment that's not too large is going to work much more efficiently in maintaining better and more even comfort in your home. Because sizing is so important in a home's air conditioning, determining the "right size" is crucial. So the bottom line is, bigger is not always better.

HEALTH BENEFITS OF AIR CONDITIONING



An air conditioner is often thought of as a luxury, but the impact air conditioning can have on your overall health is often overlooked. Cool air is essential for the very young and very old to help get through our hot and sticky days. It is easy for people in these age groups to overheat or suffer from more serious heat-related health issues. Certain medications and how hydrated you are can also affect how quickly you are affected by overheating. It seems each year, at the height of the summer's heat, there are many deaths due to overheating where people did not have air conditioning, only fans. An air conditioner will keep the

temperature in your home safe and comfortable for people of all ages.

Perhaps the most important thing an air conditioner does is improve indoor air quality. By keeping doors and windows closed, you are not going to get exposed to as much pollen, mold, or car exhaust fumes. This is especially important for people that suffer from allergies and other respiratory illnesses. Air conditioning acts as a de-humidifier, thus reducing the growth of molds and mildews in your home. According to the EPA, potential health concerns associated with mold exposures include allergic reactions, asthma, and other respiratory complaints. Their recommendation to control mold is to control moisture in the home. Moisture can easily be controlled with an air conditioner.



In short, adding air conditioning to your home will not only give you comfort, but also a healthier home to live in.

TAKE THE BITE OUT OF SUMMER UTILITY BILLS!



Your home's heating and air conditioning systems account for about 48% of your utility bills. Here are a few tips to keep air conditioning from draining you financially that *do not* involve raising the set temperature.

1. **Keep the sun out.** Use drapes, blinds or shades to block the sunlight, especially during the hottest part of the day. Use reflective window films that reflect heat before it can come through the glass (these are transparent, so you can still see out). Or use mesh solar screens especially on east- and west-facing windows and doors (these also keep the bugs out!). Plant trees close to your home to provide shade. This can boost air conditioning efficiency by up to 10%.
2. **Use a programmable/smart thermostat.** Why pay to cool the house when no one is home? By setting the temperature up a few degrees when you're not at home and at night, you can lower your bills by 15% or more. At night, there's no need to cool the entire house when you're spending the next 8 hours in only one room. Use a fan in the bedroom and chill pillow (pillow filled with cooling gel) to keep you cool, while setting the temperature up a few degrees.
3. **Circulate the air.** Use a fan to keep the air moving, especially on an upper floor. Moving air causes faster evaporation from the skin and has a cooling effect - making it feel up to 8 degrees cooler - even without changing the air temperature. Ceiling fans are a great idea for both summer and winter; make sure the switch is pointed the right way.
4. **Migrate to lower floors.** Because heat rises, spend more time on the lower floors of your house. If you have a basement, use it! Not only is it the lowest floor of your house, but it likely has fewer windows (keeps the sun out) and is at least partly (or entirely) underground, providing a "geothermal" effect.
5. **Smart cooking.** Decrease indoor heat by using a microwave oven, rather than your thermal oven or stove, for cooking whenever possible. Better yet, eat foods like salads that do not require cooking. If you must boil or bake, do so in the evening when it's cooler.
6. **Use exhaust fans wisely.** After a shower, turn on the exhaust fan so the humidity can escape. But be sure to turn the exhaust fan off as soon as the majority of the heat and humidity has left, so you are not exhausting cold air to the outside!
7. **Proper maintenance.** Things you can do to maintain optimum air conditioning efficiency include: keep all doors and windows closed and make sure they're well-sealed, make sure all supply and

return vents are open and unblocked, insulate your attic, make sure there is no debris blocking the outdoor unit, and most importantly, *make sure your air filters are clean!*

8. **Get a tune-up or update.** Money Magazine and Good Housekeeping Magazine both advise getting regular maintenance inspections of your HVAC systems by a professional. This ensures it is running at optimum efficiency and will address potential failures, thus saving you money in the long-run. If your HVAC system is more than 15 years old, you can cut your utility bills by up to half if you switch it out for one of the new high EER (energy efficiency ratio) units. Or use some of the newer technologies, like a mini-split, in certain areas. Think of it like doing a technology update: you wouldn't use a 10-15-year-old computer, so why would you use 15 year-old HVAC technology?
9. **Light colors.** Just as wearing light-colored clothing helps keep you cooler, painting the exterior of your house a lighter color and having a white roof will keep the home cooler, and save 10-20%. Although your house won't absorb as much heat in the winter, the U.S. Dept. of Energy showed that the net energy savings in summer far exceed the energy penalty in the winter, especially in our region of the country.

Even if money is not your prime concern, think of this: Summer is the time when the energy grid is stressed the most. When you lower your bills using these techniques, you are also helping the environment. This is because most electricity is produced by coal-fired power plants.

LED LIGHTING LOWERS HVAC COSTS



As we enter the summer months, high air-conditioning bills seem just as inevitable as death and taxes. Something most people don't think about is that incandescent and halogen bulbs act as miniature space heaters, dumping over 90% of the energy they consume into heat... heating up your already-hot home. This means your air-conditioning has to work harder to keep you cool.

LED lighting uses a fraction of the energy consumed by traditional light sources. They generate very little heat (3 BTUs/hr vs. 85 BTUs/hr for incandescent bulbs) and remain cool during operation, thus easing the burden on your air conditioning system during hot weather and reducing your overall energy costs. For every 60W incandescent (traditional) light bulb, you're spending about \$13.86 more in cooling costs per year (based on [Nashville/TVA's current electricity rate](#) of 10.252 cents per kilowatt-hour) versus an equivalent LED bulb, so it can quickly add up! Even when you consider the initial cost of LED bulbs (currently about \$2.48 for a 60W equivalent bulb, compared to about \$1.00 for a traditional 60W bulb), **the payback period is just 6 months** for a light that stays on 8 hours per day.. The savings come from reduced electricity to produce the light as well as the reduced cooling costs.

And just in case you're thinking that the heat generated from traditional lighting might be beneficial in the winter to help keep you warm, it's an extremely inefficient heat source, costing over 5 times as much as the typical gas furnace to generate the equivalent amount of heat.

Many Advantages

Compact fluorescent light bulbs (CFLs) were promoted as an energy-saving alternative, but they're no match for LED lighting, and are falling out of favor. LED stands for light-emitting diode. The light is generated by a semiconductor, creating an effect known as electroluminescence.

Residential Advantages

- LEDs do not contain mercury or toxic materials. However, CFLs contain mercury, which makes them hazardous to handle and to dispose of.
- LEDs are much more durable than incandescent bulbs because they will not shatter when jarred or hit, and are not sensitive to humidity. Both CFLs and incandescent lights are fragile.
- LEDs have a longer life than any other lighting source on the market. This means reduced hassle and inconvenience of replacing burned-out light bulbs. You would need 42 incandescent bulbs (changing the bulb 41 times!) to equal the typical 50,000 hr lifespan of an LED bulb.
- Because LEDs run so much cooler than other bulbs, they are safer. Lighting a holiday tree or other lighting decorations using incandescent lights presents a fire hazard due to the extreme concentrated heat they produce. Plus LEDs won't overload wall sockets by stringing multiple strands together.
- LEDs are available in a range of hues, from remarkably bright white, to warm golden, to cool blue.
- LEDs offer design flexibility, and are available in unique styles and shapes.
- LEDs are an easy retrofit. LEDs can be run with a dimmer (not true of most CFLs), which allows you to adjust the light level to suit your needs and create mood lighting.

Industrial Lighting Advantages



For industrial lighting applications such as warehouses, high ceiling environments, parking garages, traffic lights, etc. — the conversion to LED lighting would save many thousands of dollars in operating costs due to reduced electricity consumption, reduced need for

bulb changes, ability to withstand shock, vibrations, and impact, and reduced demand on cooling. Plus, they are “instant on” (don't have to warm up before emitting a bright light, quiet (no “hum” typical of high-powered fluorescent lights), and don't require ballasts.



A Green Solution

LEDs are a “green” solution, due to their vastly reduced energy consumption, reduced waste, and reduced toxic hazards — a win-win for health, safety, and the environment. Why make your air conditioning work harder than it needs to? LEDs provide significant long-term cost savings and help you keep cool.

If you are looking for ways to reduce your utility bills, increase the energy efficiency of your home and business with aesthetically pleasing lighting solutions, LEDs are currently an outstanding solution.

CONTROLLING INDOOR HUMIDITY



Here in Middle Tennessee, our summers are known for their extreme humidity, making breathing harder and making us feel sticky and sweaty. Humidity refers to the amount of water vapor in the air, and in Middle Tennessee, we live in an area where water sources are plentiful (lakes, streams, rivers, and rainfall) and the land is contoured like a basin (low areas surrounded by hills) making it easy for damp air to stagnate.

When it comes to humidity inside, symptoms such as itching, sneezing, and coughing, are often due to allergic reactions to the organisms that thrive in humidity. Humidity promotes bacteria, fungus, and mold growth, and attracts bugs, especially dust mites. All are significant indoor allergens and can set off allergic sensitivity, trigger rhinitis, eye or skin irritation, wheezing, asthma and other respiratory conditions. High humidity can cause a house to rot, promotes paint peeling, and can damage both the interior and exterior of your house. It also attracts pests (even snakes!) who are always looking for water.

The ideal indoor humidity is 35-50%. Mold thrives in humidities of 65% and above. Although lower humidity will result in lower mold and dust mite growth, drying out too much causes other problems, such as skin irritation, difficulty breathing and static electricity. Low indoor humidity is a bigger issue in winter months, and high indoor humidity can be a big issue during the summer. A hygrometer can tell you the exact relative humidity, and some smart thermostats today may even have a hygrometer built-in.

Tips for Lowering Indoor Humidity

Because lowering indoor humidity is essential to your whole household, we've compiled some important tips for you here:

1. **Air Conditioning.** Air conditioning makes you feel comfortable by helping to control the humidity. But [if your air conditioner is over-sized](#), it may not be running long enough to decrease the humidity. As air conditioners pull out moisture from the air, the condensate must have a place to go, so make sure your air conditioner's drain is not plugged up (see our blog post about this [here](#)).
2. **Ventilation and Exhaust Fans.** Vent the areas that create moisture, like the shower, bathroom, kitchen, and laundry room. Make sure you turn on the vent fans, and turn them off when the moisture has dissipated. Running them too long in the summer wastes air conditioning, which itself serves as a dehumidifier. If you do not have exhaust fans, consider installing some.
3. **Room Fans.** If air is not circulating in your home, humidity levels will rise. Use ceiling fans or room fans when possible. This will also help your air conditioner to be more efficient.
4. **Home Décor.** Carpet can trap moisture and is one of the favorite homes of humidity-loving dust mites. Steam cleaning carpets is best done in winter months when humidities are naturally lower. Some house plants can extract water from the air, thus helping to lower indoor humidity levels: Boston Fern, Peace Lilly, Reed Palm, English Ivy, Tillandsia (air plants), and small cacti plants are some examples.
5. **Proper Construction.** If you don't build properly, moisture can condense inside walls and cause rot, or on the inside of the house causing fogging of windows. Gutters and downspouts should be extended to carry rainwater away from the foundation, and the grade should be sloped away from the foundation to shed water away from the house. A buried exterior drainage system can be installed to take care of water near the base of the house, or near a concrete slab. House wrap, such as Tyvek and Typar, allows moisture to pass through but not air (making the house

more energy efficient). Some house wraps and siding don't allow for the house to dry out, and once the insulation is wet, it loses its thermal qualities. Some areas – such as crawl spaces or basements – require sealing the ground with a moisture barrier.

6. **Dehumidifiers.** This is an appliance that extracts the water from the air in your home, and stores it in a tank (which must be emptied) or drains into a sink or house drain. Some are self-regulating in that they come on or off based on the humidity level. Although portable dehumidifiers are the most common, there are also ducted (to an outside wall) and stationary units available. Be sure to place the dehumidifier in an open area, that it is appropriately sized for the room, and that you check and clean the filters often. Installing a dehumidifier may be the best solution for a musty basement.

SOLVING MOISTURE ISSUES WITH A CENTRAL DEHUMIDIFIER



In Tennessee, the humidity can be stifling, especially in the summer! The average morning relative humidity in [Nashville during the months of May through October is 85-90%](#), yet the optimal comfort zone, as published by ASHRAE, is 30-60%. We're taught to seal up cracks and tighten up our homes so as not to waste energy, but tighter homes can also trap moisture, creating an unhealthy environment. Excessive humidity encourages the growth of mold, mildew, dust mites and bacteria, which in turn worsens allergies and respiratory ailments. In

addition, excess moisture can lead to wood rot or warping of floors, beams, cabinets and molding, and cause paint to peel and wallpaper to curl. If your windows are wet with condensation or you're having to run your air conditioner so much that you need to sleep with a blanket in the summer, then dehumidification may be necessary.

Portable vs. Central Dehumidifiers



Portable dehumidifiers treat the air in just one room and have a reservoir that needs to be emptied daily in most cases. Central dehumidifiers are connected to your home's heating and cooling system and treat the whole house. A central dehumidifier pulls air from every room in your home through the return ducts, removes the moisture, and then sends dry air back throughout your home. Unlike a portable dehumidifier, a central dehumidifier is located out-of-sight, is quiet, and hassle-

free because you never have to empty a reservoir – it is attached directly to your house plumbing. A central dehumidifier is up to 4-times more energy-efficient than the leading portable dehumidifier (look for ones that are Energy Star rated). Portable systems can remove 5-7 gallons of moisture per day, while a central system can remove 40+ gallons per day.



Features, Functions, and Savings

A central dehumidifier measures the condition of your home's air to decide when to run and is automatically controlled. The desired humidity level can be set to a fixed percentage for a constant comfortable humidity, regardless of how the outside air increases or decreases in humidity. Although the method of control varies depending on the model and manufacturer, many whole-house dehumidifiers have user-friendly digital controls or remote controls. By using a dedicated central dehumidifier along with air conditioning, you can save energy because you'll be able to increase your thermostat in the summer by at least 3 degrees and be more comfortable. Many dehumidifiers also provide ventilation and/or air purification, thus greatly increasing the quality of your indoor air and helping allergy sufferers.

The Downside

- Central dehumidifiers can be expensive, ranging from \$400 for a 1200 sq.ft. space, to \$16,000 for a 2500 sq.ft. home.
- Installation requires specific tools, electrical wiring and plumbing. It generally is not a do-it-yourself task. A trained HVAC technician would need to install it.
- Because central dehumidifiers are built into the ductwork of your home, when you move, they will need to be left behind.

Moisture can lead to costly renovations or mold remediation, so a central dehumidifier may be a wise choice. But even the best dehumidifier may not work effectively if too much outside moisture seeps into your home from leaky ductwork, a damp crawlspace or basement, improper drainage around your home, or an [improperly-sized HVAC unit](#). You'll want to investigate and fix these issues before spending money on a whole-house dehumidifier.

EXCESS HUMIDITY: CAUSES & SOLUTIONS

In Tennessee, the humidity can be unbearable at times, making air-conditioning a necessity. Air-conditioning removes the excess humidity and thus makes us feel more comfortable. But signs your home suffers from excess humidity include: mold, mildew, dust mites, bacteria, rotting or warping wood inside your home (cabinets, wall beams, floors, furniture), or peeling paint; plus, the moisture attracts pests (even snakes!). What can be done? Perhaps you've contemplated getting a dehumidifier, but even the best dehumidifier may not work effectively if too much outside moisture is seeping into your home.



<https://www.youtube.com/embed/LurTyp5PjEk>

Humidity Checklist

Before making an expensive dehumidifier purchase, be sure you have investigated these issues:

- Check that gutters aren't clogged and that downspouts are directing rainwater at least 3 feet away from the house. Grade your property so that rainwater flows away from the foundation.
- Keep the duct for your clothes dryer properly vented to the outside, making sure that it isn't clogged or leaking.
- Run an exhaust fan when showering, and squeegee or wipe down shower walls afterward.
- When cooking, use a range hood or exhaust fan that vents outdoors.
- Use ceiling fans and room fans to keep the air circulated. This will help your air-conditioner be more efficient.

- Look for leaks in your existing ductwork that need to be repaired. Leaks let cool air escape into the attic or crawl space. That air loss creates negative pressure inside, causing it to suck in humid air through cracks. See about getting your ducts tested and sealed.
- Check your plumbing for leaks and condensation, especially in the basement, and insulate pipes.
- If you have extensive water or drainage problems, it may require a sump pump and installing drains outside.

Basements & Crawlspaces are the Most Problematic

Most HVAC systems naturally pull air from the lower areas of your home upwards throughout the living space; thus a damp basement or crawlspace can affect your whole house. Crawlspaces, while they may have fewer cubic feet due to the lower ceiling height are actually harder to dehumidify because they require more airflow (air pressure) to circulate air. This is why a good crawlspace dehumidifier costs more than an average home dehumidifier. Waterproof your crawlspace and basement, and ensure it is properly insulated. Fill holes and cracks in concrete block with hydraulic cement and paint the concrete block with a water-proof coating like Dry-Lok. If your crawlspace has a dirt floor, create a vapor barrier to reduce the continual evaporation of moisture from the ground.

Is your HVAC to Blame?

Lastly, your HVAC system itself may be to blame for your excessive moisture problem! If you oversized your system thinking it would make you cooler and not run as hard in the summer, think again! Air conditioners only dehumidify when they are running, and an oversized unit may not be running long enough to remove the moisture from the air (it cycles off too quickly). Check out our blog on [right-sizing your system](#). After you've addressed these causes of excess humidity, then you can see if a dehumidifier is needed. If so check out our blog about [central dehumidifiers](#).

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