

HOMEOWNER'S  
GUIDE

HOMEOWNER'S

# GUIDE

**To Choosing the Right Contractor,  
Heating & Cooling System,  
Plumbing System,  
Home Services & More ...**



HOME

Create an ENVIRONMENT your FAMILY will THRIVE in.

About  
THIS GUIDE

**Y**our home comfort system, household plumbing, water heating, and water purification systems are comprised of many different components. They can consume up to 80% of your monthly energy bills and are what you depend upon to keep your family comfortable, healthy, safe, and secure while minimizing your expenses to do so. Therefore, you don't want just anybody installing, maintaining and servicing these important systems. These systems and appliances are not like other appliances you have in your home and can't just be plugged in and forgotten about. The cooling, heating and plumbing equipment installed in your home acts like a heart to give you the comfort and hot water efficiently when you need it, much like your heart gives your body vital nutrients when you need it. This equipment and the integrated ducting, piping, and electrical systems connected and associated with the equipment require experienced professionals to do the necessary work to operate properly and efficiently to obtain complete comfort, safety and energy usage.

*So how do you know how to choose the right company?*

This guide provides you with some key areas to check so you can be confident in your company of choice. In addition, this will give you important criteria for making wise product and service choices for your home.



Create an ENVIRONMENT your FAMILY will THRIVE in.

## Score your SERVICE COMPANY

“Selecting a Service Company and Contractor is one of the most important decisions you make for your family.”

Hiring a service company can be a very risky and challenging process unless you know what to look for and what questions to ask. Not all service companies approach their business the same. Making sure you hire a quality contractor that’s going to do a good job when they come to your home can affect your safety, comfort, pocket book and ultimate satisfaction with your purchase and overall happiness with the total experience, as you get what you pay for. The following questions will help you score your current or potential heating, cooling and plumbing company to determine if they are a quality organization or not.



### SERVICE COMPANY QUIZ

Read the following questions and write **0** for No and **1** for Yes:

(quiz continues on following pages)

1	Has the company been in business for at least 10 years or long enough to develop an established record of accomplishment and dependability?
2	Is the company locally owned and independently operated with accessible ownership?
3	Does the company have an office and its own equipment and materials warehouse or work out of a house, garage, or its trucks?
4	Is the company licensed and bonded? Do they apply for the proper permits and necessary 3rd party inspections? Ask to see their credentials.
5	Does the company only hire highly competent, caring, disciplined, responsible, conscientious and dedicated people with a commitment to quality and excellence, teamwork and the service of its customers?
6	Does the company perform criminal background checks and registered sex offender inquiries on all their employees as a part of the hiring process?
7	Do coworkers undergo at hire as well as random drug testing with a zero tolerance policy?
8	Are the technicians licensed and EPA and NATE certified? Ask to see their credentials.
9	Are the technicians continuing their education and improving their skill set with ongoing training?
10	Does the company forbid the use of sub-contractors for installations and service except as required by scope of work or by licensing, permit, code and inspections?

## Score your SERVICE COMPANY

11	Are the company's phones answered by a live representative?
12	Does the company use electronically dispatched trucks with GPS tracking for optimized customer service efficiency?
13	Does the company offer multi-point precision tune-ups and professional cleanings of all mechanical systems to optimize performance?
14	Does the company offer planned, preventative maintenance and full-service agreements to provide protection and savings with product and service discounts?
15	Does the company maintain a service history on your equipment and problems?
16	Does the company have a separate division dedicated to deliver prompt, efficient service or do they cross-utilize people without the proper skills or tools?
17	Are the company's workers covered by worker's compensation insurance while working on your premises and does the company have a \$2 million (min.) liability policy? Ask for copies of documents.
18	Are their trucks, uniforms and I.D. badges identifiable with the company name/logo?
19	Is the company computerized and employing the latest technology?
20	Is the company committed to quality and excellence backed by a family name?
21	Do first class equipment manufacturers back the company?
22	Does the company offer service at night, weekends, and holidays with no overtime charges for warranty and Service Partner customers as well as 24 hour emergency service for everyone?
23	Will the company be around in the many years to come to support your needs, especially with equipment and installation warranties that may last the lifetime of your system? Up to 80% of contractors are out of business within 10 years.
24	Is the company recognized as a regional and industry leader?
25	Are trucks clean and service techs dressed in a professional manner?
26	Does the company have straightforward "no haggle--no hassle" flat rate service repair pricing with "No Surprises-No Compromises" that is quoted before any work is begun? Ask to see their pricing menu.
27	Does the company conduct a Customer Comfort Survey and customize a Complete Comfort, Air Quality & Energy Management Indoor Environmental Solution before quoting replacement or upgrade options to ensure issues are properly and completely addressed?
28	Does the company offer a pre-printed guaranteed straightforward "no haggle--no hassle" investment guide with menu pricing with "No Surprises-No Compromises" after you agree to the quote? Ask to see their menu pricing.
29	Does the company perform Manual J load calculations and Manual D duct design as recommended by ACCA, AHRI, GAMA, EPA, DOE and Consumer Reports to ensure your comfort and energy efficiency?

## Score your SERVICE COMPANY

30	Does the company perform an airflow analysis by testing your duct system for capacity, leakage and thermal loss before quoting a solution, make the proper modifications, test after installation and compare it to calculated required airflow to ensure your comfort and energy efficiency and provide written guarantees for both?
31	Will the company provide manufacturer Certified Performance Ratings certificates?
32	Can the company perform a computerized Energy Analysis to illustrate the cost of operating a new system versus your current system, return on investment, and the payback period?
33	Does the company offer 100% consumer financing and accept all major credit cards?
34	Is the company active in local chapters and national trade associations representing the heating and cooling industry?
35	Do company employees wear floor-saving surgical booties and protective gloves, utilize drop cloths, and clean their workspace?
36	Does the company conduct customer satisfaction calls on all service and installation work and perform a 33-point post install quality assurance audit?
37	Will the company perform a combustion efficiency test to fine tune your heating system to meet the requirements of your home?
38	Can the company perform an infrared duct system video inspection to verify the cleanliness, health and safety of your duct work?
39	Can the company perform a heat exchanger integrity test with ultraviolet dye, black light, and infrared video inspection to ensure safe operation, as well as ensure there are no hazardous carbon monoxide leaks?
40	Can the company provide assurance and 3rd party certification that your installation is in the top 10% of all installations in the country?
41	Does the company offer an unmatched repair warranty on all service work?
42	Does the company provide written guarantees and warranties for up to 10 years full coverage and remove the system within 30 days of your request and refund 100% of your investment if you are not satisfied with the installation for up to one year from the date of completion?
43	Can the company supply favorable references from customers/Better Business Bureau?
<b>TOTAL SCORE</b>	

*If your current company does not score a perfect 100%, consider switching to a more qualified company for all your heating, cooling and plumbing needs. Some decisions are just too important to leave to chance!*

## Choosing a CONTRACTOR

“Most people take for granted the comfort provided by their central air conditioner, heat pump or furnace until something goes wrong and the unit needs to be serviced or replaced.”

### A Quality Contractor:

- Follows state/local codes and regulations, carries business and workers' compensation insurance.
- Is prompt, courteous and provides fast, reliable service.
- Has the skill and knowledge to not only service your equipment, but if necessary, to design and install the right system for you.
- Is up-to-date on the newest developments in equipment, technology and design.
- Is licensed, certified, pulls required permits and has necessary inspections on all work.



A heating, ventilating and air conditioning system is designed to suit your needs. Your contractor selects each part of the system individually so that everything works at top efficiency to provide optimal comfort. All the system components are matched—the furnace, the condensing unit, fans and blowers, air conditioning coil, the duct work, filtration, air purifier, humidifier, dehumidifier, ventilation, and controls—to produce a heating and cooling system that will work best for you. You will only be as safe, comfortable, healthy and energy efficient as the weakest link in your complete system, so it pays to take a whole house and total system approach.

- ✓ A quality contractor listens to your problems and cares about your comfort.
- ✓ A quality contractor can help determine if your home or building has or is prone to indoor air pollution problems.
- ✓ A quality contractor is concerned about protecting the environment.
- ✓ A quality contractor will show you how to care for your system.
- ✓ If a new system is necessary, a quality contractor will perform a load calculation, duct analysis and airflow diagnostic procedure.
- ✓ A quality contractor offers planned, preventative maintenance service.
- ✓ A quality contractor will follow-up with you to make certain that you are satisfied with the service and with your new system.

### Consulting an HVACR Contractor:

- Ask for references and license number. Technicians should be drug free, randomly drug tested, and have a clean criminal record.
- Ask if the technicians are NATE certified, proving their ability to work on old and new systems.
- Ask about Air Conditioning Contractors of America membership. ACCA members have access to the latest technical information regarding HVAC systems.
- Ensure that the contractor will perform your installation to meet the ACCA Quality Installation Specifications.
- Ask about ENERGY STAR qualified heating and cooling equipment.
- Check with the Better Business Bureau to verify their current standing and complaint file.
- Ask if they are active members and adhere to installation and maintenance standards of the National Comfort Institute (NCI).



## All About DUCT WORK

“The air in your home is vented through a duct system that acts like a set of lungs. Its efficiency and design are crucial to your home’s comfort and your family’s health.”

### Duct Sealing & Cleaning

- Sealing and insulating ducts can help with common comfort problems such as rooms that are too hot or too cold.
- Sealing ducts can improve indoor air quality by reducing the risk of pollutants and dust entering ducts, which contributes to asthma and allergy problems.
- Sealing leaks minimizes the risk of gases like carbon monoxide being back drafted through the duct work into the living space.
- Sealing ducts reduces utility costs and increases efficiency by as much as 20%.
- Dirt, mold, bugs, mites, and other “stuff” are all living in your duct system. The Total Source Removal cleaning process rids ducts of dirt, mold, bugs, mites and other “stuff” living in your duct system. Through the use of remote video inspection cameras, you will be able to see how clean your duct system is when finished.



### Duct Repair, Modification, Maintenance and Design

Duct Maintenance directly contributes to Indoor Air Quality and total system efficiency, but the overall design and layout of your system also affects overall system efficiency, cost of operation and the comfort of individual rooms in your home. A certified contractor can run a Home Comfort Diagnostic Test on your duct work, measure actual airflow versus required airflow and analyze air balance to optimize airflow, comfort and total system efficiency. No matter what the system-rated efficiency may be, the equipment can only be as efficient as the duct system allows. Even the highest efficiency rated equipment connected to a poor duct system can be less efficient and cost more to operate than the lowest rated equipment connected to a properly designed and sealed duct system. To invest money in a new system without having the contractor perform pre-install and post-install airflow diagnostic tests and compare the required airflow as specified in the ACCA Manual J heat loss/heat gain load calculation is foolish. Indoor Air Quality is also affected by poor duct design and maintenance and can impact the health of occupants as well as degrade overall system performance.

Like a doctor checks blood pressure, a technician measures the amount of air coming out of each vent and returning in each grille with a Flow Hood. If duct modifications, enhancements, repairs, or sealings are made then adjustments can be made to modify air flow and create a comfortable temperature in every room to optimize system performance and minimize cost of operation.



## Choosing a COOLING SYSTEM

“A cooling system is one of the biggest purchases homeowners make. Today’s new high efficiency units deliver quality, economics and comfort when installed by a certified contractor.”



### Central Air Conditioning System

Central air conditioners are the best option for maintaining comfort in areas that experience high humidity and sustained high temperatures. Central AC Systems are rated according to Seasonal Energy Efficiency Ratio (SEER). This is the cooling output divided by the power input for a hypothetical average U.S. climate. The higher the SEER, the more efficient the air conditioner. To get the best performance and highest efficiency possible from your new system, consider the following:

- Air source cooling systems today are between 13.0 SEER and 23.0 SEER. ACEEE recommends a SEER of at least 14.5 at the ENERGY STAR level. This number may vary based on your location, home size and climate.
- Make sure indoor and outdoor units match. The refrigerant controls for new condenser units are incompatible with most pre-2006 indoor units. Installing a new outdoor unit without replacing the indoor coil and fan units is likely to result in an inadequate system capacity, low efficiency, and may lead to premature failure of the new compressor—the most important component.
- High electrical efficiency. Ask your contractor about a variable speed air handler, which will improve comfort and efficiency and allow continuous air filtering at minimum energy cost. Never use continuous ventilation when the air conditioner is in use, because it will degrade humidity control.
- Specify R-410a refrigerant. The refrigerant of an air conditioner is essential for operation. For decades residential air conditioners have used Freon, or R-22. Because R-22 released into the atmosphere causes long-term damage, R-22 is not allowed in new equipment as of January 2010, but will still be available for repairs. Manufacturers have shifted to R-410a for their products.
- Look for energy rebates through the Federal Government & Utility companies.

### Tips for Increasing the Efficiency of Your Current System

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- Install ceiling fans
  - Maintain duct work
  - Change filters monthly
  - Check airflow efficiency
  - Keep your unit tuned up
  - Change your unit’s refrigerant
  - Improve your home’s insulation
  - Install a programmable thermostat
  - Close drapes on South & West windows
  - Replace inefficient appliances that give off heat

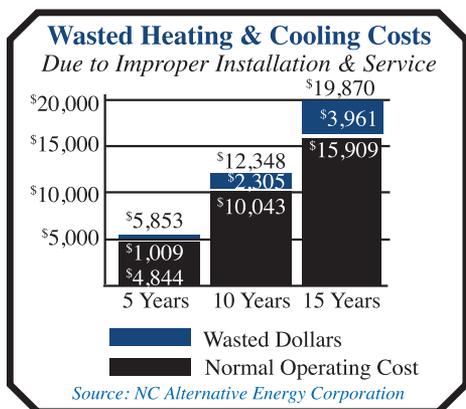
# Choosing a HEATING SYSTEM

“Heating Systems have come a long way. Modern units are efficient, safe, reliable and compact when installed by a certified contractor. The selection today is substantial.”



## Central Heating System

The efficiency of new furnaces is measured by the annual fuel utilization efficiency (AFUE), a measure of seasonal performance. Furnaces today are between 78% AFUE and 96% AFUE. Consider the following:



- Condensing Models.** ACEEE strongly recommends a condensing furnace (AFUE 90% or higher to meet the Energy Star level), unless you live in a warm climate. In this case, you may want to consider retrofitting your system with a heat pump instead.
- High Electrical Efficiency.** A furnace can use a significant amount of electricity, mostly to power the fan motor. Variable speed fan motors are generally more efficient than standard “PSC” motors and may save you hundreds of dollars per year. Electrically efficient furnaces

can be found on the Gas Appliance Manufacturers Association’s website ([www.gamanet.org](http://www.gamanet.org)).

- Proper Sizing.** Make sure the heating capacity of the furnace is not too high for your home. Most furnaces are substantially oversized. Insist that your contractor do an “ACCA Manual J” ([www.acca.org](http://www.acca.org)) or better heat loss analysis.

## Air Source Heat Pumps

Central heat pumps operate much like a central air conditioner except that they can reverse the cycle in the winter to deliver heat to the house. They are much more energy efficient than an electric furnace or electric baseboards and provide both heating and cooling. Heat pumps are rated according to SEER on the cooling side and Heating Seasonal Performance Factor (HSPF) on the heating side ranging from 7.7 to 11.0 HSPF. ACEEE recommends a heat pump with a 14.5 SEER and 8.2 HSPF to meet the ENERGY STAR specifications. This number may vary based on your location, home size and climate.

## Geothermal

Geothermal heating and cooling systems tap into the constant, moderate 55 degree temperature found just a few feet below the earth’s surface to offer the finest in home comfort conditioning. This Geothermal Energy is FREE, clean and environmentally friendly. Geothermal systems capture this free energy from the earth by using a well water system or a series of pipes called an earth loop that is buried in the ground. Geothermal systems are the most efficient way to heat and cool your home and can take care of all your domestic hot water needs as well.



# Maintaining Your HEATING & COOLING SYSTEM

“There is nothing better for your heating and cooling system than annual maintenance. It enables your system to work at peak efficiency and experience fewer breakdowns.”

## Annual Maintenance

Annual maintenance virtually eliminates the need for you to pay for costly repairs. You’ll enjoy peace of mind in knowing that your system is saving you money on your utility bills every time it comes on. In some instances, the energy savings are enough to pay the cost of the planned annual maintenance.

## Maintenance Plan Tune-Ups

A thorough Planned Maintenance Program should include:

Check evaporator coil	Lubricate fan motor	Set manifold pressure
Monitor expansion valve	Check start and run capacitors	Test fan limit switch
Clean evaporator drain	Check start and run delays	Clean blower wheel
Adjust bypass dampers	Monitor refrigerant level	Inspect valves
Clean or replace filters	Adjust operating pressures	Check flue
Tighten electrical connections	Measure voltage differences	Check flame baffle
Evaluate safety controls	Measure amperage draw	Clean combustion chamber
Measure temperature difference	Clean and adjust burners	Clean heat exchanger
Clean condenser coil	Evaluate vent system	Test thermocouple
Adjust thermostat calibration	Set burner adjustment	Check combustion air
Check fan blades for tightness	Measure gas input	Combustion efficiency analysis
Carbon monoxide test	Heat exchanger integrity safety inspection	

All about

# INDOOR AIR QUALITY



*“Now that homes are tightly sealed to reduce energy cost, the air inside your home is fundamentally more important. Indoor air is more prone to pollution, allergens and other problems”*

## Sick Home Syndrome

Today’s tightly sealed homes are predisposed to more humidity and airborne pollutants, which causes longer life spans and more productive cycles of microbial activity within the home such as mold, germs, bacteria and viruses. This greater activity and concentration of these airborne contaminants equates to more allergic reactions and sickness within families for longer periods of time.



Mold is the main culprit. According to the World Health Organization (WHO), 60% of Indoor Air Quality (IAQ) problems and allergies may be mold related. Some IAQ diagnosticians and practitioners today say the figure may be as high as 80%. The increased usage of air conditioning systems almost directly parallels the increase of allergies and IAQ problems. Additionally, mold creates a troublesome maintenance problem. Its activity results in dirty coils,

a loss of air-flow, loss of heat exchange efficiency, dirty and sometimes plugged drain pans, and excessive energy use.

## Solutions

- General maintenance of your heating and cooling system are key, including changing air filters and humidifier filters monthly, getting an annual system tune-up and having your ducts sealed and cleaned.
- Mold is best addressed by thorough cleaning and the installation of an Ultraviolet (UV) Germicidal light system. Ultraviolet light in the “C” band (UVC) has been used for more than 65 years to kill microorganisms in hospitals, barber shops, laboratories, pharmaceutical plants, and at the nation’s Center for Disease Control. Residential ultraviolet units have been independently tested and proven to be effective in the constantly moving air environments of heating and cooling systems, killing mold and bacteria quickly and effectively.



## All About ENERGY & SAFETY

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*Energy saving and safety often go hand in hand. An efficient and well designed energy system keeps your family safe as well as comfortable.”*

### Energy Issues

Highly efficient, well maintained systems are the best investment you can make. Your heating and cooling unit is usually the most energy demanding appliance in your home.



### Digital Setback Thermostat

These simple thermostats save energy with virtually no effort at all. A digital setback thermostat is designed for people with fixed schedules that take them in and out of the home. With it, you can program the temperature to ‘set-back’ when you are not at home. This feature keeps you comfortable when you’re home and saves you money when you’re not by reducing the energy needs to heat and cool your home. Digital setback thermostats are available in what are called 5+2 day configurations and 7-day configurations. The difference is flexibility. A 5+2 day configuration allows you to set Monday through Friday as a group setting with up to four different time settings. This configuration also allows you to set Saturday and Sunday as a separate group with up to four different time settings per day. There are also thermostats for people with special needs.



### Carbon Monoxide Monitors

Carbon Monoxide is a colorless, odorless, deadly gas. It is a by product of combustion. Low Level CO Monitors can detect this gas at levels as low as 5 parts per million (ppm). Infants, children, the elderly, or those with respiratory or heart ailments are provided little or no protection from deadly CO with standard alarms. Long-term exposure to low level CO above 15 ppm can cause illness and even permanent disabilities. Ask your NCI-Certified Contractor how a professionally installed monitor can help keep your home safe and healthy today!



## All about COMFORT

“Even a well installed system can need some additional work to provide optimal comfort. A humidifier or extra heating/cooling zones may be just what you need for added comfort.”

### System Humidifiers

With the proper level of humidity in your home, you will feel more comfortable and breathe easier. You can eliminate that dry eye, nose and throat feeling you have when you wake up in the morning. Humidity also reduces or eliminates static electricity. It protects the investment in your home and your furniture because proper humidity prevents wood from cracking and peeling.

A flow-through humidifier can be easily added to any forced air heating system. The advantage with this type of humidifier is that it provides humidity without breeding or spreading mold or mildew. This is in contrast to the humidifiers that use a reservoir where water can stagnate—a perfect environment for mold and mildew growth. A flow-through humidifier is easy to maintain. It has no moving parts and is designed to operate with no mineral or mold buildup.

### Temperature Zoning Systems

Imagine if every time you turned on a light switch every electrical device in your home came on, or if every time you went to wash your hands every faucet, shower, tub and toilet opened up. That would be crazy! So why is it that when you need heating in one room the entire house heats up? Now you can zone your heating and cooling so that you don't have to heat or cool your entire home when you don't need to.

Home zoning systems are specially designed to allow your entire family to be comfortable, regardless of where they are in your home. Now you can divide your home's duct work into specific zones that can be controlled independently, whether heating or cooling.

### Duct Work Modifications

Sometimes your system just needs some duct work modification to achieve optimal comfort in all rooms. Improperly sized or designed duct work is the most common reason people are not comfortable in their own homes. An NCI Certified Contractor can evaluate your system.



“Your home’s plumbing, piping, and fixtures are much like the arteries and veins in your body responsible for delivering and removing vital fluids in your home. Plumbing and drainage problems tend to occur at the worst time. Luckily, there are things you can do to avert a plumbing crisis and keep your drains flowing smoothly.”

### Video Drain Inspection

New video technology helps plumbers locate blockages within your system, identify them and determine the best solution. Eliminating guesswork means faster, more efficient work, which saves you money. Your technician can also recommend drain products that keep your drains open without all those poisonous components.

Today’s technology allows for sewer lines to be replaced by a new trenchless method. This saves your yard, porch, patio and landscaping considerable damage.



*Plumbing is not a do-it-yourself project. Consult a professional!*

### Water Filtration Systems

You and your family can enjoy purer, better tasting water with water filtration systems that stay out of sight and require little maintenance. For pennies a day, these systems remove undesirable chemicals which may be present in the water supply, along with lead, sediment, chlorine and sources of other tastes and odors. Options range from whole-house filtration systems to those which reside under your kitchen sink and are tapped at a separate faucet. There are also UV

Process Filters which disinfect water, preventing living organisms from reproducing where other types of filtration simply remove undesirable non-living contaminants.



### Hot Water Recirculation Systems

If you demand a lot of hot water with minimal waiting on your hot water heater, a hot water recirculation system may be the solution for you. The system consists of a small pump mounted near the bottom of your water heater along with a swing check valve and return line from your farthest fixture. The cost of operating such a system can be minimized using new energy efficient pumps and incorporating a timer and/or thermostat to program the system to turn off when it detects ample hot water or during times of day when the demand for hot water is reduced.

# All about WATER HEATERS

“It’s easy to take hot water for granted—until you are startled by a hot water heater failure in the middle of a shower. New water heaters offer all kinds of new options for the homeowner.”

## Tank Water Heater

A single-family storage water heater offers a ready reservoir, from 20 to 80 gallons, of hot water. It operates by releasing hot water from the top of the tank when you turn on the hot water tap. To replace that hot water, cold water enters the bottom of the tank, ensuring that the tank is always full. Conventional storage water heater fuel sources include natural gas, propane, fuel oil, and electricity. Because water is constantly heated in the tank, energy can be wasted even when a hot water tap isn’t running—called standby heat loss. However, many storage water heater models with heavily insulated tanks reduce standby heat losses. Look for models with tanks that have a thermal resistance (R-Value) of R-12 to R-25.



## Tankless Water Heater

A tankless coil water heater uses a heating coil or heat exchanger installed in a main furnace or boiler. Whenever a hot water faucet is turned on, the water flows through the heat exchanger. These water heaters provide hot water on demand without a tank, like a demand water heater, but because they rely on the furnace or boiler to heat the water directly, tankless coil water heaters work most efficiently during cold months when the heating system is used.

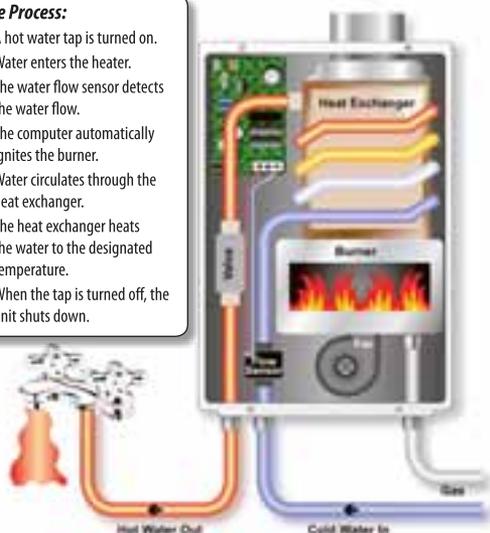
## Indirect water heaters

Indirect water heaters offer a more efficient choice for most homes even though they require a storage tank. An indirect water heater uses the main furnace or boiler to heat a fluid that’s circulated through a heat exchanger in the storage tank. The energy stored by the water tank allows the furnace to turn off and on less often, which saves energy. Therefore, when used with a high-efficiency boiler and well-insulated tank this can be the least expensive means of providing hot water.

### How Does a Tankless Water Heater Work?

#### The Process:

1. A hot water tap is turned on.
2. Water enters the heater.
3. The water flow sensor detects the water flow.
4. The computer automatically ignites the burner.
5. Water circulates through the heat exchanger.
6. The heat exchanger heats the water to the designated temperature.
7. When the tap is turned off, the unit shuts down.



# PHIOMER

Create an ENVIRONMENT your FAMILY will THRIVE in.

