Insider's Guide to Home Inspection

Buying a House Built From 1920-1990

The Real Estate Inspection Company

Presented by
The Real Estate Inspection Co.
www.SDinspect.com

Table of Contents

Introduction

One of the most common questions we receive is “what issues should I be aware of when buying an older home?” This is a great question and brings up the fact that not all homes are the same. Just like a vehicle, technologies evolve over time as construction methods and safety codes are continuously improving. We have inspected lots of these homes only to find that the buyers are surprised at the findings in the inspection report.

One of the biggest disappointments in the home buying process is getting a home inspection report with tons of stuff you did not expect. Often it is not the severity of the items in the report, but the realization that an older home may be different from what you are used to. Older homes may have components that are, well, old. Your home inspector should identify certain components of the house even if they are functioning properly. They may be old, consist of old technology, or may not be sufficient for today's modern families.

This publication is not intended to dissuade you from purchasing an older home! They certainly have a unique charm that is not present in today’s houses. However, your expectations should match the reality of buying an older house. If you are considering buying a house that was built more than 30 years ago, there are some things you must consider so that you are not disappointed once you move in.

This publication will examine common components of older homes to be aware of depending on the year that the home was built. It is not an exhaustive comparison of the building codes from 30-100 years ago compared to today, but rather a general discussion of some of the things that you may find in an inspection report if you are buying a home built in that time period.

We hope that this publication will help make the home buying experience a little less daunting for you. Please know that our office is always happy to assist you in further understanding any of these concepts. To learn more about what should be included in a thorough inspection, please visit www.SDinspect.com or call us at (800) 232-5180.

Chapter 1: 1920/ 1930's

The 1920's and 30's marked a huge period of growth in Southern California. The 1915 Panama-California Exposition in Balboa Park brought in over 2 million visitors to San Diego. In 1917, the Navy purchased North Island and in 1919 they decided to make San Diego bay their home base. In 1919, the San Diego- Arizona railroad was completed which made the west coast more accessible. The population of San Diego doubled from 1910 to 1920 and again from 1920 to 1930.

The county of Orange was officially founded in 1889. The 20's and 30's were a major period of growth for this new county. There were major oil strikes in Huntington Beach and Placentia combined with the county's success in Valencia orange crops led to a prosperous region. With the addition of the Pacific Electric Railway and the first state highway to cross Orange county, smaller communities began to grow. For more information on the growth of Orange County, click here.[1]

With this tremendous growth in population, there were housing booms in both Orange county and San Diego. Homes built during this time period and region are often categorized as "Craftsman", "Spanish Colonial", "Mission", "Prairie" and "Tutor Revival". Many of the historically designated homes in Southern California come from this time period. Having a historically designated home can come with a significant tax break. For more information on this click here[2]. If you are interested in pursuing historic designation you can email us here[3].

During this time, we saw that not only did cars become more accessible to the average person with the Model T, but homes were also easier to purchase through the Sears Modern Home catalogue. From 1908-1940 you could purchase a prefabricated home through the Sears magazine that was significantly easier to put together. For more information on Sears Modern Homes click here.[4]

While homes from this era were built very well, they are now over 100 years old and that means that they will need some TLC. Your home inspector should identify certain components of the house even if they are functioning properly. They may be old, consist of old technology, or may not be sufficient for today's modern families.

[1] https://www.orangecountyhistory.org/
[2] http://www.sohosandiego.org/resources/designationmillsact.htm
[3] nyoakumconsulting@gmail.com
[4] http://www.searsarchives.com/homes/index.htm

Electrical Systems

While electricity had been around since the end of the nineteenth century, electricity in homes did not become widespread until this time period so it was common for a home to only have the electrical capacity for 40-60 amps. Families only used electricity for very basic things like lamps and so they had no need for a higher capacity.

Many homes built during this time period have received electrical upgrades to have sufficient outlets and electrical capacity, but if a home has not, that should be one of the first upgrades that you make. We do still see evidence of "California Coolers" in some homes from this time period. These are reminders of times in which electricity was so rare that people used the cool air to keep their larger perishable items from going bad. For more information on these please click here.[5] For more information on the spread of electricity click here.[6]

Knob & Tube

Most homes built during this time used knob & tube wiring. This wiring is no longer considered safe and should be replaced immediately. Houses with knob and tube wiring cannot be safely insulated and is a huge fire hazard. Keep in mind that just because there is evidence of this wiring in the house it does not mean that it has not been replaced. Some contractors will just leave the old wiring when they replace it. Your home inspector is required to report the presence of knob and tube wiring and determine if it is being used. For more information on knob & tube wiring click here.[7]

Service Panels

The main panel during this time period was a 30-amp fuse panel. Fuses[8] were the original safety feature which prevented house fires due to over-heated wires. While fuses are still a safe way to protect your home, they are costly, and you must keep a supply ready. Once the fuse "blows", it must be replaced. Most panels have been upgraded to circuit breakers, but if you find a home that still has fuses, you may want to consider this upgrade. To read more about the evolution of electrical circuit panels click here.[9]

[5] https://restoringhistory.com/california-coolers/
[6]https://www.nps.gov/edis/learn/kidsyouth/the-electric-light-system-phonograph-motion-pictures.htm#:~:text=In%201882%20Edison%20helped%20form,the%20U.S.%20have%20electric%20power.
[7] https://sdinspect.com/old-houses-2/knob-and-tube-wiring/
[8] They contain a thin wire inside that is designed to break if too much current is demanded on a circuit. This prevents the wire inside the wall from overheating.
[9]https://sdinspect.com/health-and-safety/afc-circuit-breakers-prevent-house-fires/

Capacity

The vast majority of homes from this period have had an electrical upgrade of some capacity. However, depending on when this occurred, it might be time for another upgrade. If it is less than 100 AMP's, you will likely want to upgrade the electric panel which can cost a couple thousand dollars or more.

Home inspectors often find poor and unsafe wiring modifications. You will want to ensure that no circuits are double tapped. Some people have done this instead of replacing the insufficient main panel. This is not to code and could be a fire hazard. Check the panel to see how many open circuits are remaining. This is important if you want to add a hot tub, an electric vehicle, air conditioning or more receptacles in the garage. You will also need space in the panel if you plan on installing solar panels, as the power generated by the panels must be fed back to your main panel.

Safety

An old electrical system will also not have the safety features of a modern system. Primarily, the system may not be grounded like a modern system. If you see two-prong receptacles in the house, the system is probably not grounded adequately. Proper grounding improves safety and without it you may have problems with sensitive electronic equipment. Again, if the home has two-prong receptacles you may need to budget for an upgrade of the electrical system.

GFCI

Another very important upgrade to an electrical system is the installation of GFCI receptacles.

GFCI stands for Ground Fault Circuit Interrupter. These devices monitor the flow of electricity and if they detect a difference in the supply and return of electricity, or a possible flow of electricity to ground, they will shut off the power. For example, if you touch a bad cord and a plumbing fixture, electricity will flow through you to the plumbing fixture – an electrocution hazard. A GFCI can protect you from this hazard. Although the seller is not required to install GFCI's where they were not required at time of construction, it is a good idea to install them for safety. You can read more about when and where GFCI receptacles are required here.[10]

AFCI

Arc Fault Circuit Interrupters (AFCIs) are special types of electrical outlets and circuit breakers designed to detect and respond to potentially dangerous electrical arcs in home branch wiring. These are required in newer homes (since 2004) and specifically protect people against fires caused by arcing or sparks. AFCIs function by monitoring the electrical waveform and promptly opening (interrupting) the circuit they serve if they detect changes in the wave pattern that are

[10] https://sdinspect.com/home-facts/when-and-where-are-gfci-receptacles-required/

characteristic of a dangerous arc. They also must be capable of distinguishing safe, normal arcs, such as those reated when a switch is turned on or a plug is pulled from a receptacle, from arcs that can cause fires. An AFCI can detect, recognize, and respond to very small changes in wave pattern. You can read more about when and where AFCI receptacles are required here.[11]

Things to Look For/ Questions to Ask

There have been many other technological improvements to electrical systems. Too many to list here, but the idea is that an old house may need an electrical upgrade. The most important things to keep in mind when viewing an older home are:

- When was the last time that the electrical was updated?
- Is there any knob and tube wiring still active within the home?
- Does the main panel have fuses or circuit breakers?
- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there GFCI receptacles?

Heating Systems

Due to the moderate climate in Southern California, we often see outdated furnaces in old houses. They may still be functional, but these old units are inefficient, noisy and they do not have the safety features of a new unit. Using our "old car" analogy, older models just do not have the safety features or efficiency of a newer model. Some of the features that are now standard safety items include over-heat protection and panel cover shut off switches to protect against fire and carbon monoxide hazards.

If the house you are buying has a furnace that is more than 20 years old, expect a recommendation for replacement – or at least a thorough safety check by a licensed heating contractor.

Efficiency

Most homes from the 20's and 30's will have a furnace that has been replaced, but depending on when, it could be time for another upgrade. Older furnaces will have a low efficiency by today's standards as they typically allow much of the heat to escape out of the flue. If they still have a standing pilot light that stays on year-round instead of electronic ignition, they will also use much more gas.

[11] https://sdinspect.com/house-technology/what-is-an-arc-fault-circuit-interruptor/

Wall Furnace

Many older houses have a wall furnace instead of a forced air system. This type of heater does not have a fan to blow the heated air throughout the house. Instead, it relies on convection current to heat the house. Air around the wall heater is heated and rises, and then cool air flows in to take the place of the heated air. This creates a circulation of air, but the house is heated unevenly. The rooms at the outer edge of the house are not heated well, and the interior space where the heater is located often becomes too hot.

Floor Furnace

Some homes will still have floor furnaces. If you have or plan to have small kids or pets, this is something that you will want to plan to replace quickly as they are very hot to the touch.

Fireplaces

Many homes used fireplaces as their primary heating system. Over the years the masonry can deteriorate so should be inspected. You should also ensure that the chimney is lined before using it, otherwise carbon dioxide could come back in. For more information on fireplace safety please click here.[12]

Asbestos

Old heating systems may include components that contain asbestos. Asbestos was used to wrap the ducts and to insulate the system as it was and still is an effective fire-retardant material. Exposure to asbestos dust is not likely unless people enter the attic. The EPA considers asbestos dangerous when it becomes airborne. This happens when the asbestos is disturbed or damaged. If you will be working in the attic, be sure not to touch, break or otherwise disturb the asbestos-containing material.

Determining the presence of asbestos is beyond the scope of a home inspection. But your home inspector should have the knowledge to recognize components that may contain asbestos. Replacing ducting that contains asbestos can incur added costs.

Things to Look For/ Questions to Ask:

- When was the furnace last replaced?
- What type of furnace does the home have?
- If there is a fireplace, is it lined?

[12] https://sdinspect.com/health-and-safety/fireplace/

Plumbing

By 1920 most homes in central areas had indoor plumbing and 1 bathroom. However, if your home is more remote, it could have been 1930 before indoor plumbing came to your area. In 1930 we began to see the push for 2 bathrooms in new homes. Keep in mind that bathrooms in homes from this time period are much smaller than bathrooms by today's standards.

Galvanized Steel Pipes

Older homes were plumbed with galvanized steel pipes which do rust over time. When these pipes rust, it is like having clogged arteries. You may notice reduced pressure and rust colored water when valves are first opened. Galvanized water systems should be replaced with copper to avoid leaks.

Drainpipes

Prior to the 1950's most drain lines were made up of clay pipe sections. They were laid end-to-end in a trench. Overtime, settlement can cause the clay pipes to crack or to separate at the joints and allow roots to enter.

Upgrading the drainage system can be costly. Digging up and replacing rusted cast iron or clay drain lines can cost between $5,000 - $15,000 depending on the distance, landscaping and hardscape. The new standard material for drain lines is ABS plastic. This new material is black plastic that does not rust, and since the joints are glued together like PVC pipes, roots are less likely to find their way inside the pipes. Do your research about drain line replacement. It can be an unpleasant surprise if you are unprepared to do it. For more information click here.[13]

Mold/Mildew

It was not until 1940 that shower heads came out on the market. While this might not seem like a big deal as they are an easy addition, it does mean that the bathroom walls and floor were not originally designed for shower water to be spraying. You should look for lumpy tiles as this is an indication that water has gotten under the tile and mold or mildew could be present.

Water Pressure

A large contributing factor to failed plumbing systems is high water pressure. The street pressure in many parts of Southern California is very high – as high as 130 psi. To keep the pressure below the max of 80 psi and around the recommended 55-60 psi, a pressure regulator is installed at the main water line. These pressure regulators should be replaced every 6-10 years, or they can fail. When failure does occur water pressure in the house can exceed 80 psi which puts tremendous stress on faucets, plumbing, toilet fill valves, etc. For more information on pressure, please click here.[14]

[13] https://sdinspect.com/health-and-safety/a-colonoscopy-for-your-house/
[14] https://sdinspect.com/home-facts/water-pressure/

Cleanout

Some homes from the 20's and 30's do not have a cleanout. If a home does not have a cleanout it makes snaking or unclogging pipes very difficult. While not a necessary addition, it is one that will make future plumbing issues much easier to rectify.

Things to Look For/ Questions to Ask:

- Have the original pipes been replaced?
- Has the drainpipe been replaced?
- Are there any "lumpy" tiles that might indicate water damage?
- What is the water pressure?
- When was the pressure indicator last replaced?
- Does the house have a cleanout?

Insulation

Older homes in moderate climates might not have insulation because it was not required and it was expensive, so it was reserved for more affluent homes. Insulation has been required since the 1960's, but thousands of houses in Southern California still don't have adequate insulation. Even if the attic has been insulated, the walls likely do not have insulation. The good news is that attic insulation is not very difficult to add, and energy rebates exist for improving the insulation in a house.

A well- insulated home will save money and be far more comfortable than an uninsulated home. Without insulation, you will have more dramatic differences in temperature, and will use more energy to heat and maintain a comfortable temperature, than a well-insulated house. Cold spots in a house can lead to moisture related problems including mold when condensation forms on cold walls.

Blown in vs. Batt

In Southern California there are generally two types of insulation: blown-in and batt (below). Blown-in insulation is the quickest way to insulate the attic. It is blown into the attic like snow through a large hose. Batt insulation comes in rolls or long panels of fiberglass. Performance for batt and blown-in insulation is very good. However, you will probably find that having blown-in insulation installed professionally is very competitive, and may be cheaper, and certainly faster, than installing batt insulation.

Wall Insulation

If the attic does not have insulation, the walls almost certainly do not have it either. Getting insulation inside the walls is a little more challenging. Holes will have to be drilled between each of the wall studs to allow insulation to be blown into the walls. After filling the walls, the holes will have to be patched and painted.

Updates Needed

Depending on when the insulation was installed it might contain asbestos. Materials such as Rock Wool (a dark grey fluffy material) or Vermiculite would have to be tested to see if it contains asbestos. Older insulation is often R-19 or about 4 inches of insulation. Today's standard in Southern California is R-30 or about 9 inches of insulation. Adding insulation to improve the thermal efficiency of your house is relatively easy and not too expensive.

Things to Look For/ Questions to Ask:

- Does the home have insulation in the attic and in the walls?
- Does the insulation need to be replaced due to asbestos or updated to a higher standard?

Roof

A roof is one of the most expensive components of a home. Hundreds of different materials have been used as roofing material from sticks to plastic, and grass to glass. When you are looking for a home you need to know what type of roofing material was installed, if it was installed correctly and its current condition. A thorough home inspection will include a detailed evaluation of the roof. A roof in poor condition can be a deal breaker, so here are some things to look for that can give you a heads-up about the condition of a roof.

Underlayment

All roofs have an underlayment commonly referred to as tar paper, yes even tile roofs have this. This underlayment lasts 20-25 years depending on installation and sun exposure. If you have a clay tile roof you can often reuse the original tiles after replacing the tar paper underneath. Otherwise, you will have to replace the roofing as well as the underlayment.

Asphalt Shingle

The most common roof material we see in Southern California is the three-tab composite asphalt shingle roof. Asphalt shingles are a replacement for old tar and-gravel roof[15] coverings. Asphalt shingles are made of oil-

[15] While tar was the water-proofing material, gravel was added to protect the tar from the deteriorating effects of the sun. If the gravel was washed away, or brushed off by low hanging branches, the tar quickly deteriorated resulting in a leak.

impregnated fiberglass material, with an aggregate (which looks like kitty litter) pressed into the surface. The aggregate adds color, but its primary purpose is to protect the shingles from UV exposure. Once the aggregate is worn, the shingle deteriorates rather quickly and can cause leaks. For more on roof leaks click here.[16]

Most of these roofs are rated for 20-30 years. If the roof looks worn it is likely in need of replacement. Look around the perimeter of the house for evidence that the aggregate is washing off the roof. If you see piles of gritty material around the perimeter of the house which is the same color as the roof, you will know that the roof is deteriorating. For more information identifying roof problems click here.[17]

Layer Limits

In San Diego, a house can only have three layers of roofing material. If a house built in 1920 has had a new layer of roofing installed every 20 years without a tear-off, it may already have three layers on it. When the current roof material wears out a complete tear-off will be needed. Your home inspector should alert you to this.

Shake Roofs

Shake roofs are made of wood shingles. Most have been replaced at this point due to the~~ir~~ fire danger in Southern California. If you tour a house that still has a wood shingle roof plan on replacing it quickly as it can be difficult to get homeowners insurance in some parts of California.

Things to Look For/ Questions to Ask:

- What kind of roof does the house have?
- What is the repair history of the roof?
- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

Wood Windows

Original windows from this time period will be double hung with counterweights or wood casement. While the wood used will typically be old growth wood that is more durable than wood used today, it will still have its issues.

These windows can often be drafty and are not energy efficient especially if you plan on using an AC or heating system. There can also be rotted sections if the windows were not kept up as well as sections

[16] https://sdinspect.com/video/smarter-san-diego-roof-leaks/
[17] https://sdinspect.com/diy-tips/home-inspector-roof-type/

that are painted shut. The counterweight sashes will need to be replaced at some point to keep them opening smoothly.

Many homebuyers will plan on replacing all windows to newer double paned windows which can be quite costly. Keep in mind that if you are looking to pursue historic designation, you will need to restore not replace the original windows that are visible from the street. For more information on the evolution of windows please click here.[18]

Safety Glass

Original windows and glass doors in older homes most likely do not have "Safety Glass". Instead, they are regular plate glass which can shatter into large, sharp pieces. Many injuries and even deaths are caused each year from human impact with glass. These most often occur at sliding glass doors or floor to ceiling windows but can also occur in bathrooms with glass doors at the tub/shower, at stairwell landings, and adjacent to doors.

Old sliding glass doors are considered so unsafe that many municipalities such as Los Angeles require that these doors get replaced or at least upgraded with safety film upon sale of the house. If you will be renting out your house, please be aware that courts have upheld liability claims against landlords for injuries caused by unsafe shower doors and windows.

Reciting the entire building code goes beyond the scope of this publication. It is simply to inform you that houses built in the 1920's most likely do not have any safety glass, and it poses a hazard. An alternative to replacing all the original glass is to have safety film applied to it. For more information on safety glazing, click here.[19]

Things to Look For/ Questions to Ask:

- Have the original wood windows been replaced?
- Are the windows single or double paned?
- Do the windows open easily?
- Are any of the wood frames rotting or painted shut?
- Do the windows, sliders and glass doors have safety glass or film?

Asbestos

Houses built during this time may have asbestos in one or more materials. Asbestos was widely used in products to make them fire-resistant. In older homes asbestos was found in everything from roof material, linoleum flooring, hard-board siding shingles, heating system components, flues, "popcorn" ceiling texture, and insulation. Some early cloth-wrapped wiring even had asbestos.

[18] https://sdinspect.com/house-technology/windows/
[19] http://www.texasinspector.com/files/SafetyGlazingArticle07.pdf

Asbestos poses a hazard when it is disturbed and becomes airborne. Therefore, the EPA only considers damaged material dangerous, so do not touch it. Of course, it is always up to the buyer to satisfy their concerns about asbestos by having the house tested. Taking samples and testing for asbestos is not part of a home inspection but should be performed if remodeling will be done such as removing textured ceiling material. For more information on asbestos please click here.[20]

Things to Look For/ Questions to Ask:

- Is there asbestos in rooms that you plan to remodel?

Structure

A lot of homes from this time period were built on a raised foundation. This was cheaper than pouring a concrete slab and made it easy for plumbing to be installed under the house. The typical design included a perimeter foundation of concrete with wood beams and joists supported by wood posts. Today we see many of these "post and pier" systems that are showing the effects of time.

Occasionally the dirt beneath the concrete pier has settled and the post no longer provides adequate support. If you notice "springy" floors in the house, settlement may have occurred, and new or additional posts might be needed. Home Inspectors often report on posts that are no longer in alignment or have been poorly repaired. You should expect some comments regarding the floor structure and the condition, along with an evaluation of any repairs. For more information on settlement click here.[21]

You should also be made aware that old houses were not built to withstand earthquakes. They were not bolted to the foundation, and as a result they can shift of off the foundation when an earthquake jolts the house to the side. Houses can be retrofitted for seismic stability. This can include metal fasteners or diagonal bracing to add rigidity to the floor structure.

Things to Look For/ Questions to Ask

- What type of foundation does the house have?
- Has the foundation undergone any repairs?
- Are there "springy" floors or any other signs of settlement?
- Has there been any seismic reinforcement added?

[20] https://sdinspect.com/health-and-safety/asbestos-awareness/
[21] https://sdinspect.com/home-facts/slab-cracks/

1920's/ 1930's Home Buyers Guidebook

While this guidebook does not encompass every scenario that you might run into with an older home, these are some key things to have in mind when you are looking at a home.

Electrical Systems

- When was the last time that the electrical was updated?
- Is there any knob and tube wiring still active within the home?
- Does the main panel have fuses or circuit breakers?
- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there GFCI receptacles?

Heating Systems

- When was the furnace last replaced?
- What type of furnace does the home have?
- If there is a fireplace, is it lined?

Plumbing

- Have the original pipes been replaced?
- Has the drainpipe been replaced?
- Are there any "lumpy" tiles that might indicate water damage?
- What is the water pressure?
- When was the pressure indicator last replaced?
- Does the house have a cleanout?

Insulation

- Does the home have insulation in the attic and in the walls?
- Does the insulation need to be replaced due to asbestos or updated to a higher standard?

Roof

- What kind of roof does the house have?
- What is the repair history of the roof?
- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

- Have the original wood windows been replaced?
- Are the windows single or double paned?
- Do the windows open easily?
- Are any of the wood frames rotting or painted shut?
- Do the windows, sliders and glass doors have safety glass or film?

Asbestos

- Is there asbestos in rooms that you plan to remodel?

Structure

- What type of foundation does the house have?
- Has the foundation undergone any repairs?
- Are there "springy" floors or any other signs of settlement?

Chapter 2: 1950's/ 1960's

Post WWII and the Great Depression, Southern California saw a large increase in population and another housing boom. During WWII California stepped up and staked its claim as a valuable port state. This brought not only military families but also those looking to get in on the new growth that was occurring in California. With the beginning of the Santa Ana (I-5) Freeway and water being brought into California from the Colorado river, the population of California almost doubled from 1940 to 1950. With wartime industries booming, people were financially stable and ready to move into new homes.

It was also during this time that California decided to invest in their educational system to make their public Universities top in the US. Television made its debut in Southern California as NBC and CBS set up shop in Hollywood with the film industry and Disneyland opened its doors in Anaheim. For more information on the history of California please click here.[22]

During this time period we saw the transition of homes from being simply practical to fun. Similar to the Chevy Corvette that was introduced during this time and marketed as the first American sports car, electrical appliances and televisions became more prevalent and were marketed as ways to make life better. While the corvette and household appliances are still with us, both have evolved a great deal since the 50's.

Homes from this time period have a quaint charm and are filled with history, however like any older home they will require some TLC. Your home inspector should identify certain components of the house even if they are functioning properly. They may be old, consist of old technology, or may not be sufficient for today's modern families.

[22] https://faculty.washington.edu/gregoryj/California%20History.htm

Electrical Systems

It was in the 1950's that electricity really became a staple component in the everyday home. Prior to the 1950's the only appliances that most homes had were a gas range and maybe a gas furnace. Electricity had been primarily used for lighting which is why there were so few receptacles installed in those houses. That all changed in the 50's when electric appliances became widely popular.

Clothes washers, televisions, electric ovens, percolators, - even electric clocks (no more winding) - were all promoted heavily to make life "better". Many people also felt that electricity was a safer option than gas due to a concern for fires. This was fueled by heavy marketing by manufacturers and the electric utility companies.

Service Panels

There were many electrical upgrades made in the 1950's to supply enough electricity to these new machines safely. Bigger appliances draw enough power to require a dedicated circuit that is not shared with the lighting circuit. The biggest risk with drawing too much current through a wire is that it will overheat and cause a fire. Fuses[23] were the original safety feature which prevented house fires due to over-heated wires. While fuses are still a safe way to protect your home, they are difficult to replace and most have been upgraded with circuit breakers. To read more about the evolution of electrical circuit panels click here.[24]

Capacity

According to today's standards the upgrades that were made to electrical panels in the 1950's are just not enough to keep up with our modern use of electricity. Homes these days have several TV's, computers, kitchen gadgets, electric cars, air conditioning, pools etc. If the capacity is less than 100 AMP's, you will likely want to upgrade the electric panel which can cost a couple thousand dollars or more.

Home inspectors often find poor and unsafe wiring modifications. You will want to ensure that no circuits are double tapped. Some people have done this instead of replacing the insufficient main panel. This is not to code and could be a fire hazard. Check the panel to see how many open circuits are remaining. This is important if you want to add a hot tub, air conditioning, electric cars or more receptacles in the garage. You will also need space in the panel if you plan on installing solar panels, as the power generated by the panels must be fed back to your main panel.

[23] They contain a thin wire inside that is designed to break if too much current is demanded on a circuit. This prevents the wire inside the wall from overheating.

[24] https://sdinspect.com/health-and-safety/afc-circuit-breakers-prevent-house-fires/

Safety

An old electrical system will also not have the safety features of a modern system. Primarily, the system may not be grounded like a modern system. If you see two-prong receptacles the system is probably not grounded adequately. Proper grounding improves safety and without it you may have problems with sensitive electronic equipment. Again, if you have two-prong receptacles you may need to budget for an upgrade of the electrical system.

GFCI

Another very important upgrade to an electrical system is the installation of GFCI receptacles.

GFCI stands for Ground Fault Circuit Interrupter. These devices monitor the flow of electricity and if they detect a difference in the supply and return of electricity, or a possible flow of electricity to ground, they will shut off the power. For example, if you touch a bad cord and a plumbing fixture, electricity will flow through you to the plumbing fixture – an electrocution hazard. A GFCI can protect you from this hazard. Although the seller is not required to install GFCI's where they were not required at time of construction, it is a good idea to install them for safety. You can read more about when and where GFCI receptacles are required here.[25]

AFCI

Arc Fault Circuit Interrupters (AFCIs) are special types of electrical outlets and circuit breakers designed to detect and respond to potentially dangerous electrical arcs in home branch wiring. These are required in newer homes (since 2004) and specifically protect people against fires caused by arcing or sparks. AFCIs function by monitoring the electrical waveform and promptly opening (interrupting) the circuit they serve if they detect changes in the wave pattern that are characteristic of a dangerous arc. They also must be capable of distinguishing safe, normal arcs, such as those reated when a switch is turned on or a plug is pulled from a receptacle, from arcs that can cause fires. An AFCI can detect, recognize, and respond to very small changes in wave pattern. You can read more about when and where AFCI receptacles are required here.[26]

Things to Look For/ Questions to Ask:

- When was the last time that the electrical was updated?
- Does the main panel have fuses or circuit breakers?
- How many amps can the main panel handle?
- Is there any room in the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there GFCI receptacles?

[25] https://sdinspect.com/home-facts/when-and-where-are-gfci-receptacles-required/
[26] https://sdinspect.com/house-technology/what-is-an-arc-fault-circuit-interruptor/

Heating Systems

Due to the moderate climate in San Diego, we often see outdated furnaces in old houses. They may still be functional, but these old units are inefficient, noisy and they do not have the safety features of a new unit. Using our "old car" analogy, older models just do not have the safety features or efficiency of a newer model. Some of the features that are now standard safety items include over-heat protection and panel cover shut off switches to protect against fire and carbon monoxide hazards.

If the house you are buying has a furnace that is more than 20 years old, expect a recommendation for replacement – or at least a thorough safety check by a licensed heating contractor.

Efficiency

Most homes from the 50's will have a furnace that has been replaced, but depending on when, it could be time for another upgrade. Older furnaces will have a low efficiency by today's standards as they typically allow much of the heat to escape out of the flue. If they still have a standing pilot light that stays on year-round instead of electronic ignition, they will also use much more gas.

Wall Furnace

Many older houses have a wall furnace instead of a forced air system. This type of heater does not have a fan to blow the heated air throughout the house. Instead, it relies on convection current to heat the house. Air around the wall heater is heated and rises, and then cool air flows in to take the place of the heated air. This creates a circulation of air, but the house is heated unevenly. The rooms at the outer edge of the house are not heated well, and the interior space where the heater is located often becomes too hot.

Asbestos

Old heating systems may also include components that contain asbestos. Asbestos was used to wrap the ducts and to insulate the system as it was and still is an effective fire-retardant material. Exposure to asbestos dust is not likely unless people enter the attic. The EPA considers asbestos dangerous when it becomes airborne. This happens when the asbestos is disturbed or damaged. If you will be working in the attic, be sure not to touch, break or otherwise disturb the asbestos- containing material.

Determining the presence of asbestos is beyond the scope of a home inspection. But your home inspector should have the knowledge to recognize components that may contain asbestos-

containing material. Replacing ducting that contains asbestos can incur added costs. For more information on asbestos please click here.[27]

Things to Look For/ Questions to Ask:

- When was the heater last replaced?
- What type of furnace does the home have?

Plumbing

Another system that may be near the end of its useful life is the plumbing system. Older homes were plumbed with galvanized steel pipes which do rust over time. When these pipes rust, it is like having clogged arteries. You may notice reduced pressure and rust colored water when valves are first opened. Galvanized water systems should be replaced with copper to avoid leaks.

Drainpipes

On the drainage side of the plumbing system, cast iron pipes were used for the drainpipes. These heavy iron pipes have a life expectancy of 40 - 50 years. Simple math dictates that these pipes are near the end of their useful life. Often these pipes may look ok on the outside but are rusting on the inside. A drain line video inspection is highly recommended for cast iron drainpipes. It will show if the buried pipes are deteriorated, clogged, or rusted.

Upgrading the drainage system can be costly. Digging up and replacing rusted cast iron drain lines can cost between $5,000 - $15,000 depending on the distance, landscaping and hardscape. The new standard material for drain lines is ABS plastic. This new material is black plastic that does not rust, and since the joints are glued together like PVC pipes, roots are less likely to find their way inside the pipes. Do your research about drain line replacement. It can be an unpleasant surprise if you are unprepared to do it. For more information click here.[28]

Orangeburg Pipes

During the war, cast iron was heavily taxed and so a new type of pipes emerged. Orangeburg pipes were widely popular in the 50's and are BAD news. These pipes are essentially made of tar paper that deforms under pressure and easily disintegrates. If the house that you are looking at has it, expect to replace everything immediately.

[27] https://sdinspect.com/health-and-safety/asbestos-awareness/
[28] https://sdinspect.com/health-and-safety/a-colonoscopy-for-your-house/

Water Pressure

A large contributing factor to failed plumbing systems is high water pressure. The street pressure in many parts of Southern California is very high – as high as 130 psi. To keep the pressure below the max of 80 psi and around the recommended 55-60 psi, a pressure regulator is installed at the main water line. These pressure regulators should be replaced every 6-10 years, or they can fail. When failure does occur water pressure in the house can exceed 80 psi which puts tremendous stress on faucets, plumbing, toilet fill valves, etc. For more information on pressure, please click here.[29]

Things to Look For/ Questions to Ask:

- Have the original pipes been replaced?
- Are there any Orangeburg pipes in the house?
- Has the drainpipe been replaced?
- What is the water pressure?
- When was the pressure regulator last replaced?

Insulation

Older homes in moderate climates might not have insulation because it was not required, and it was expensive, so it was reserved for more affluent homes. Insulation has been required since the 1960's, but thousands and thousands of houses in Southern California still don't have insulation. Even if the attic has been insulated, the walls likely do not have insulation. The good news is that attic insulation is not very difficult to add, and energy rebates exist for improving the insulation in a house.

A well- insulated home will save money and be far more comfortable than an uninsulated home. Without insulation, you will have more dramatic differences in temperature, and will use more energy to heat and maintain a comfortable temperature, than a well-insulated house. Cold spots in a house can lead to moisture related problems including mold when condensation forms on cold walls.

Blown in vs. Batt

In Southern California there are generally two types of insulation: blown-in and batt (below). Blown-in insulation is the quickest way to insulate the attic. It is blown into the attic like snow through a large hose. Batt insulation comes in rolls or long panels of fiberglass. Performance for batt and blown-in insulation is very good. However, you will probably find that having blown-in insulation installed professionally is very

[29] https://sdinspect.com/home-facts/water-pressure/

competitive, and may be cheaper, and certainly faster, than installing batt insulation.

Wall Insulation

If the attic does not have insulation, the walls almost certainly do not have it either. Getting insulation inside the walls is a little more challenging. Holes will have to be drilled between each of the wall studs to allow insulation to be blown into the walls. After filling the walls, the holes will have to be patched and painted.

Updates Needed

Depending on when the insulation was installed it might contain asbestos. Materials such as Rock Wool (a dark grey fluffy material) or Vermiculite would have to be tested to see if it contains asbestos. Older insulation is often R-19 or about 4 inches of insulation. Today's standard in Southern California is R-30 or about 9 inches of insulation. Adding insulation to improve the thermal efficiency of your house is relatively easy and not too expensive.

Things to Look For/ Questions to Ask:

- Does the home have insulation in the attic and in the walls?
- Does the insulation need to be replaced due to asbestos or updated to a higher standard?

Roof

A roof is one of the most expensive components of a home. Hundreds of different materials have been used as roofing material from sticks to plastic, and grass to glass. When you are looking for a home you need to know what type of roofing material was installed, if it was installed correctly and the current condition. A thorough home inspection will include a detailed evaluation of the roof. A roof in poor condition can be a deal breaker, so here are some things to look for that can give you a heads-up about the condition of a roof.

Underlayment

All roofs have an underlayment commonly referred to as tar paper, yes even tile roofs have this. This underlayment lasts 20-25 years depending on installation and sun exposure. Many roofs that were installed in the 1950's are currently in need of having the underlayment replaced. If you have a clay tile roof you can often reuse the original tiles after replacing the tar paper underneath.

Asphalt Shingle The most common roof material we see in Southern California is the three-tab composite asphalt shingle roof. Asphalt shingles are a replacement for old tar-and-gravel roof[30] coverings. Asphalt shingles are made of oil-impregnated fiberglass material, with an aggregate

[30] While tar was the water-proofing material, gravel was added to protect the tar from the deteriorating effects of the sun. If the gravel was washed away, or brushed off by low hanging branches, the tar quickly deteriorated resulting in a leak.

(which looks like kitty litter) pressed into the surface. The aggregate adds color, but its primary purpose is to protect the shingles from UV exposure. Once the aggregate is worn, the shingle deteriorates rather quickly and can cause leaks. For more on roof leaks click here.[31]

Most of these roofs are rated for 20 or 30 years. If the roof looks worn it is likely in need of replacement. Look around the perimeter of the house for evidence that the aggregate is washing off the roof. If you see piles of gritty material which is the same color as the roof, you will know that the roof is deteriorating. For more information on roofing issues click here.[32]

Layer Limits

In San Diego, a house can only have three layers of roofing material. If a house built in 1950 has had a new layer of roofing installed every 20 years without a tear-off, it may already have three layers on it. When the current roof material wears out a complete tear-off will be needed. Your home inspector should alert you to this.

Things to Look For/ Questions to Ask:

- What type of roof does the home have?
- What is the repair history of the roof?
- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

During the 1950's a lot of new products were introduced in the home-building industry. Among these were "modern" windows made of aluminum. These were considered a great improvement from the wood sash windows that had been installed prior to the 1940's. For more information on the evolution of windows please click here. [33]

Aluminum

The old wood windows were often built onsite and had large iron counterweights in the wall. New designs were introduced such as crank windows and Jalousie windows. These windows did away with the iron counterweights in the walls which were difficult to repair when the sash cords broke. The new aluminum windows were manufactured off site and were easy for the builder to install keeping the costs down and reducing construction time. While these window designs allowed for more air flow, they do not seal very well, and are not very secure.

[31] https://sdinspect.com/video/smarter-san-diego-roof-leaks/
[32] https://sdinspect.com/diy-tips/home-inspector-roof-type/
[33] https://sdinspect.com/house-technology/windows/

By today's standards the aluminum windows found in older homes are less secure, drafty, and do not provide the thermal efficiency of a double-pane window. Be sure to take a close look at the windows as see if they are acceptable to you. Many incentives and tax credits exist to upgrade windows. However, if you are interested in pursuing historic designation, you would need to ensure that all windows that can be seen from the street are original.

Safety Glass

Original windows and glass doors in older homes most likely do not have "Safety Glass". Instead, they are regular plate glass which can shatter into large, sharp pieces. Many injuries and even deaths are caused each year from human impact with glass. These most often occur at sliding glass doors or floor to ceiling windows but can also occur in bathrooms with glass doors at the tub/shower, at stairwell landings, and adjacent to doors.

Old sliding glass doors are considered so unsafe that many municipalities such as Los Angeles require that these doors get replaced or at least upgraded with safety film upon sale of the house. If you will be renting out your house, please be aware that courts have upheld liability claims against landlords for injuries caused by unsafe shower doors and windows.

Reciting the entire building code goes beyond the scope of this article. It is simply to inform you that houses built in the 1950's most likely do not have any safety glass, and it poses a hazard. An alternative to replacing all the original glass is to have safety film applied to it. For more information on safety film, click here.[34]

Things to Look For/ Questions to Ask:

- What type of windows does the home have?
- Do the windows open easily?
- Does the home have safety glass or safety film?

Asbestos

Homes built during this time may have asbestos in one or more materials. Asbestos was widely used in products to make them fire-resistant. In older homes asbestos was found in everything from roof material, linoleum flooring, hard-board siding shingles, heating system components, flues, "popcorn" ceiling texture, and insulation. Some early cloth-wrapped wiring even had asbestos.

Asbestos poses a hazard when it is disturbed and becomes airborne. Therefore, the EPA only considers damaged material dangerous, so do not touch it. Of course, it is always up to the buyer

[34] http://www.texasinspector.com/files/SafetyGlazingArticle07.pdf

to satisfy their concerns about asbestos by having the house tested. Taking samples and testing for asbestos is not part of a home inspection but should be performed if remodeling will be done such as removing textured ceiling material. For more information on asbestos please click here.[35]

Things to Look For/ Questions to Ask

- Is there asbestos in rooms that you plan to remodel?

Structure

A lot of homes from this time period were built on a raised foundation. This was cheaper than pouring a concrete slab and made it easy for plumbing to be installed under the house. The typical design included a perimeter foundation of concrete with wood beams and joists supported by wood posts. Today we see many of these "post and pier" systems that are showing the effects of time.

Occasionally the dirt beneath the concrete pier has settled and the post no longer provides adequate support. If you notice "springy" floors in the house, settlement may have occurred, and new or additional posts might be needed. Home Inspectors often report on posts that are no longer in alignment or have been poorly repaired. You should expect some comments regarding the floor structure and the condition, along with an evaluation of any repairs. For more information on settlement click here.[36]

You should also be made aware that old houses were not built to withstand earthquakes. They were not bolted to the foundation, and as a result they can shift of off the foundation when an earthquake jolts the house to the side. Houses can be retrofitted for seismic stability. This can include metal fasteners or diagonal bracing to add rigidity to the floor structure.

Things to Look For/ Questions to Ask

- What type of foundation does the house have?
- Has the foundation undergone any repairs?
- Are there "springy" floors or any other signs of settlement?
- Has there been any seismic reinforcement added?

[35] https://sdinspect.com/health-and-safety/asbestos-awareness/
[36] https://sdinspect.com/home-facts/slab-cracks/

1950's/ 1960's Home Buyers Guidebook

While this guidebook does not encompass every scenario that you might run into with an older home, these are some key things to have in mind when you are looking at a home.

Electrical Systems

- When was the last time that the electrical was updated?
- Does the main panel have fuses or circuit breakers?
- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there GFCI receptacles?

Heating Systems

- When was the heater last replaced?
- What type of furnace does the home have?

Plumbing

- Have the original pipes been replaced?
- Are there any Orangeburg pipes in the house?
- Has the drainpipe been replaced?
- What is the water pressure?
- When was the pressure regulator last replaced?

Insulation

- Does the home have insulation in the attic and in the walls?
- Does the insulation need to be replaced due to asbestos or updated to a higher standard?

Roof

- What type of roof does the home have?
- What is the repair history of the roof?
- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

- What type of windows does the home have?
- Do the windows open easily?
- Does the home have safety glass?

Asbestos

- Is there asbestos in rooms that you plan to remodel?

Structure

- What type of foundation does the house have?
- Has the foundation undergone any repairs?
- Are there "springy" floors or any other signs of settlement?
- Has there been any seismic reinforcement added?

Chapter 3: The 1970's

The 70's saw a continued population growth in California. Even with the wars and oil embargo happening in the background there was still a lot of growth in real estate. Temecula had a housing boom when real estate overtook cattle as the most sought-after commodity. For more information on the history of Temecula, please click here.[37]

While your first thought about renovating a "Brady Bunch" home built in the 70's is that the shaggy carpet and wood paneling will have to go, there is much more that you should be aware of. It was during this time that we began to see a large variation in homes and unique characteristics depending on neighborhoods. You will want to make sure that your home inspector is familiar with the anomalies found in the neighborhood that you are looking at. There were also major shifts in codes during this time as a result of the major LA earthquake in 1971. To read more about this click here.[38]

The 1970's were a transitional period both for homes and cars. During this time, we saw that cars finally had seat belts, some had fuel injection, and efficiency became a priority. But if you compare those cars to a new car, the safety cannot be compared. Take the Ford Pinto as an example, because of the placement of their gas tanks there were many rear collision crashes that ruptured the tank causing the car to explode. There are similar "safety features" in 1970's homes that in time proved to have their own issues.

Unless a house from the 1970's has been upgraded, many of the components in the house will be worn. These items include appliances, window components, plumbing fixtures, door hardware, appliances, roofing material, garage door openers, garage door springs, even switches and receptacles to name a few. It is important for your home inspector to identify certain components of the house even if they are functioning properly. They may be old, consist of old technology, or may not be suited for a modern family.

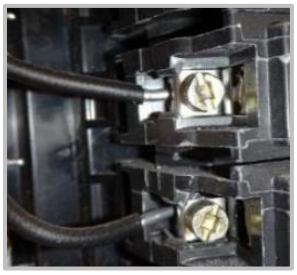
[37] https://www.temeculaca.gov/150/History-of-Temecula
[38] https://quake06.stanford.edu/centennial/tour/stop10.html

Electrical Systems

Generally speaking, electrical systems that were installed in the 1970's are considered "modern" electrical systems. They consist of circuit breakers (instead of fuses), the systems are grounded with three-prong receptacles and they are safer than older systems that were ungrounded. There will also be more receptacles than in older houses for convenience and safety. As with any industry certain technologies that appeared promising turned out to be less desirable with the clarity of hindsight (like the Pinto mentioned earlier). The 1970's were no exception.

Aluminum wiring

During the late 1960's through mid-1970's there was a worldwide shortage of copper - the preferred material used for house wiring. The industry turned to the next best conductor which is aluminum. It was readily available, less expensive than copper, and performs very well as a conductor. After a few years however, electrical fires began to occur in homes with aluminum wiring. Was the wire to blame? Not exactly. There is a chemical reaction that occurs when you connect two dissimilar metals together which causes corrosion.



When the industry switched to aluminum wires, they did not make any changes to the receptacles or light switches being used. Many of these had terminals that were copper or other metals that reacted with the aluminum wire connected to them. After a few years, the corrosion at these connections deteriorated the wires resulting in small gaps, or very thin sections of wire. As the wire's capacity to carry current decreased at these corroded sections, the result was an increase in heat or arcing which was the source of many house fires.

Aluminum wiring is still allowed on 30 and 40 AMP circuits which are used for electric ovens, AC condensers, clothes dryers, etc. These circuits usually are run directly from the panel to the appliance without any connections along the way and new connectors are compatible.

Your home inspector should check for aluminum wiring on 15 and 20 AMP circuits which provide electricity to receptacles and lighting. If aluminum branch wiring is found the inspector should recommend that a licensed electrician evaluate the entire electrical system of the house and make the necessary upgrades to decrease fire hazards. For more information, please click here.[39]

Electrical Panels

The minimum capacity for an electric panel installed in the 1970's is 100 AMP's which is adequate for most homes. It will accommodate multiple computers, TV's, ceiling fans, air conditioning, and many other modern items. In some cases, you may be limited if you want to add a hot tub, electrical vehicle charger, additional receptacles in the garage (for shop equipment), or a pool.

[39] https://inspectapedia.com/aluminum/Aluminum_Wiring_Hazards.php

Some houses built in the 1970's have electrical panels that are no longer considered safe. The two brands of panels that should be replaced were manufactured by Federal Pacific Electric (left) identified by distinctive, orange-tipped breakers, and Zinsco panels (right) which are typically horizontal, and have multi-colored breakers (right). Both of these brands of panels have a poor reputation and have been suspected of causing house fires by overheating, or breakers that fail to trip when overloaded. If you have either of these panels your inspector will likely recommend further evaluation by a licensed electrician to provide you either with peace of mind or an estimate for replacement. You can research FPE panels here.[40] and Zinzco panels here.[41]

Circuits

In the 1970's many kitchen appliances were still sharing one circuit – often with the countertop circuit. As building codes have evolved, more dedicated circuits are now required. Microwaves should have a dedicated circuit. You may need to install a new circuit if installing or replacing a microwave in the kitchen.

Likewise, a refrigerator should have a dedicated circuit. Sometimes it is possible for a home inspector to check if a refrigerator receptacle is on a circuit shared with the countertop receptacles but not always[42]. If a GFCI receptacle was installed to protect the countertop circuit, and the refrigerator is on the same circuit, the refrigerator will shut off when the GFCI is tripped. This could lead to food spoilage if the GFCI is not reset in a timely manner.

You will want to ensure that no circuits are double tapped. Some people have done this instead of replacing the insufficient main panel. This is not to code and could be a fire hazard You should take note to see if the panel is full or has additional capacity. This is important if you want to add a hot tub, air conditioning or more receptacles in the garage. You will also need space in the panel if you plan on installing solar panels, as the power generated by the panels must be fed back to your main panel. If the panel is full, a sub-panel may be required, or a new panel – both of which can cost hundreds or a couple thousand dollars.

[40] https://inspectapedia.com/fpe/FPE_Stab_Lok_Hazards.php

[41] https://inspectapedia.com/electric/GTE_Sylvania_Kearney_Zinsco_Failure.php

[42] Please note that it is not always possible for a home inspector to determine if a dedicated circuit exists if the panel is not labeled. Home inspectors do not map the wiring in a house or determine how many (or which) receptacles are on a particular circuit.

GFCI

Prior to 1975, GFCI (Ground Fault Circuit Interrupter) receptacles were only required around pools. These devices monitor the flow of electricity and if they detect a difference in the supply and return of electricity, or a possible flow of electricity to ground, they will shut off the power. Starting in 1975 they were required to be installed to protect receptacles in bathrooms and exterior receptacles. It was not until 1987 that the electrical code for where GFCI's were to be installed expanded to include receptacles in garages and any receptacle within 6 feet of a sink (kitchens, bars, bathroom, utility). Although the seller is not required to install GFCI's where they were not required at time of construction, it is a good idea to install them for safety. For a detailed list of requirements, please visit here.[43]

AFCI

Arc Fault Circuit Interrupters (AFCIs) are special types of electrical outlets and circuit breakers designed to detect and respond to potentially dangerous electrical arcs in home branch wiring. These are required in newer homes (since 2004) and specifically protect people against fires caused by arcing or sparks. AFCIs function by monitoring the electrical waveform and promptly opening (interrupting) the circuit they serve if they detect changes in the wave pattern that are characteristic of a dangerous arc. They also must be capable of distinguishing safe, normal arcs, such as those reated when a switch is turned on or a plug is pulled from a receptacle, from arcs that can cause fires. An AFCI can detect, recognize, and respond to very small changes in wave pattern. You can read more about when and where AFCI receptacles are required here.[44]

Note that it is not the seller's responsibility to upgrade the electrical system in any way. Your home inspector may (and should) recommend upgrades for your safety.

Things to Look For/ Questions to Ask:

- When was the last time that the electrical was updated?
- Is there any aluminum wiring on 15/20 AMP circuits? If so, check the rest of the house.
- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there dedicated circuits for the refrigerator and microwave?
- Are there GFCI receptacles?

[43] https://sdinspect.com/home-facts/when-and-where-are-gfci-receptacles-required/
[44] https://sdinspect.com/house-technology/what-is-an-arc-fault-circuit-interruptor/

Heating Systems

Due to the moderate climate in Southern California, home inspectors often see original or outdated furnaces in old houses. Furnaces here outlast the national industry standards because they simply are not used as much and have less wear and tear. Some of the furnaces from the 1970's are in serviceable condition but some are near or past the end of their useful life, especially those near the coast.

If the house you are buying has a furnace that is more than 20 years old, expect a recommendation for replacement – or at least a thorough safety check by a licensed heating contractor.

Efficiency

All furnaces manufactured in the 1970's will have low efficiency by today's standards. Many have standing pilots (always burning), and due to the aging of mechanical parts, efficiencies may well be below 70%. When you combine this with the poor quality of ducts installed at the time, much of the money you are spending on gas to heat the house will be wasted. If you are buying a house built in the 1970's, you should budget for a new furnace. Do not expect your home inspector to report on the efficiency of your furnace. Many inspectors will simply report whether the unit worked or not.

Fire Hazards

Of primary concern are horizontal furnaces that were manufactured by a furnace company named Consolidated Industries that is no longer in business. They manufactured furnaces that were sold under many private labels, most notably Premiere. Some of these horizontal furnaces were the subject of a recall due to poor design and the presence of small rods above the burners called "NOX Rods''. These rods were intended to reduce the nitrate emissions (and thus nitrous oxide) from the furnace in a similar way that a catalytic converter works in a car. But these rods overheated and fell onto the wood platforms under the furnace causing fires.

Without going into exhaustive detail in this paper, these furnaces are a fire hazard with or without the NOX rods. Not only are they old at this point, but they have design flaws which cause failure of the heat exchanger which can cause Carbon Monoxide to enter the house air. These furnaces should be replaced. For more information, please click here.[45]

[45] https://sdinspect.com/health-and-safety/consolidated-horizontal-furnace/

Things to Look For/ Questions to Ask:

- When was the furnace last replaced?
- If there is a horizontal furnace, was it manufactured by Consolidated Industries or any of its subsidiaries?

Plumbing

The majority of houses built in the 1970's have copper distribution pipes and ABS plastic drain lines which are both desirable materials.

Slab Leaks

The only problem with construction techniques at the time was the installation of copper pipes through the slab. The alkalinity of concrete deteriorated the copper pipes and was the cause of "slab leaks". There is no way to predict if a slab leak will occur until it happens. There is a higher probability for a slab leak when the copper pipes are run through the concrete.

Water Pressure

A large contributing factor to failed plumbing systems is high water pressure. The street pressure

in many parts of Southern California is very high – as high as 130 psi. To keep the pressure below the max of 80 psi and around the recommended 55-60 psi, a pressure regulator is installed at the main water line. These pressure regulators should be replaced every 6-10 years, or they can fail. When failure does occur water pressure in the house can exceed 80 psi which puts tremendous stress on faucets, plumbing, toilet fill valves, etc. For more information on pressure, please click here.[46]

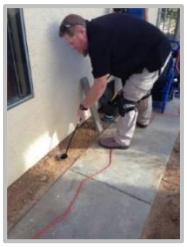
Angle Stop Valves

Original plumbing fixtures are likely in need of service or replacement. No components are more likely to fail and flood your house than angle stop valves. These are the small valves that are present under every sink and behind every toilet. If the builder used one-piece angle stop valves, with the riser pipe built into the valve, you should plan on upgrading these immediately. These were of poor quality when they were manufactured and can fail if you touch them. Home inspectors do not touch or operate angle stop valves for this reason. Change them.

[46] https://sdinspect.com/home-facts/water-pressure/

Drain Line

A drain line video inspection is highly recommended for houses with mature trees over drain lines. Even with ABS (black plastic) drainpipes, roots can lift and damage glue joints allowing root intrusion. The drain line video will show if the buried pipes are damaged, clogged, or filled with roots. This is important because replacing a damaged drain line between the house and the sewer can be expensive.



Digging up and replacing drain lines can cost between $5,000 - $15,000 depending on the distance, landscaping and hardscape. Do your research about drain line replacement. It can be an unpleasant surprise if you are unprepared to do it. For more information, please click here.[47]

Things to Look For/ Questions to Ask:

- Are the copper pipes run through the concrete slab?
- When was the water pressure regulator last replaced?
- What is the water pressure?
- Have the angle stop valves been replaced?
- Are there mature trees over the drain line?

Insulation

Most houses built in the 1970's have insulation although we have found houses in Southern California with no insulation through 1974. They typically have R-19 or about 4 inches of insulation. Today's standard in Southern California is R-30 or about 9 inches of insulation. Adding insulation to improve the thermal efficiency of your house is relatively easy and not too expensive.

Some of the materials used in the 1970's could have asbestos. Materials such as Rock Wool (a dark grey fluffy material) or Vermiculite would have to be tested to see if it contains asbestos.

Things to Look For/ Questions to Ask:

- Is there insulation?
- Does the insulation need to be replaced due to asbestos or updated to a higher standard?

[47] https://sdinspect.com/health-and-safety/a-colonoscopy-for-your-house/

Roof

A roof is one of the most expensive components of a home. Hundreds of different materials have been used as roofing material from sticks to plastic, and grass to glass. When you are looking for a home you need to know what type of roofing material is installed, if it was installed correctly and the current condition. A thorough home inspection will include a detailed evaluation of the roof. A roof in poor condition can be a deal breaker, so here are some things to look for that can give you a heads-up about the condition of a roof.

Underlayment

Everything in a house will wear out and the roof is no exception. All roofs have an underlayment commonly referred to as tar paper, yes even tile roofs have this. This underlayment lasts 20-25 years depending on installation and sun exposure. Many roofs that were installed in the 1970's are currently in need of having the underlayment replaced. If you have a clay tile roof you can often reuse the original tiles after replacing the tar paper underneath.

If the paper was replaced in the 1990's, you may want to add "bird-stop" flashing to enclose the open ends of the tile if it was not installed at that time. It is difficult to determine if some or all of the underlayment has been replaced. Sometimes only the lower portion of the underlayment is replaced as it deteriorates more rapidly. The seller should be asked about the repair history since home inspectors do not lift any tiles. For more information click here.[48]

Asphalt Shingle

An asphalt shingle roof is also likely at the end of its life. It is made of oil-impregnated fiberglass material, with an aggregate (which looks like kitty litter) pressed into the surface. The aggregate adds color, but its primary purpose is to protect the shingles from UV exposure. Once the aggregate is worn, the shingle deteriorates rather quickly. Most of these roofs are rated for 20 or 30 years. Do the math. If the roof looks worn it is likely in need of replacement. For more information click here.[49]

Things to Look For/ Questions to Ask:

- What is the repair history of the roof?
- When was the roof and tar paper last replaced?
- Does the roof look worn?

[48] https://sdinspect.com/video/smarter-san-diego-roof-leaks/
[49] https://sdinspect.com/diy-tips/home-inspector-roof-type/

Windows

Most windows installed in the 1970's have aluminum frames, and some are still single paned. If you are interested in being energy efficient you should expect to pay several thousand dollars to upgrade the windows. For more information on the evolution of windows please click here.[50]

The most common problem we see with older windows consists of worn glides or rollers. This makes the windows difficult to slide which can be a hazard. The added force required to slide these windows could cause the window to be slammed shut resulting in broken glass.

Things to Look For/ Questions to Ask:

- Are the windows single or double paned?
- Do the windows open easily?

Asbestos

Houses built through 1978 may have asbestos in one or more materials. Asbestos was widely used in products to make them fire-resistant. In older homes asbestos was found in everything from roof material, linoleum flooring, hard-board siding shingles, heating system components, flues, "popcorn" ceiling texture, and insulation. Some early cloth-wrapped wiring even had asbestos.

Materials that might have asbestos in a house from the 1970's are usually limited to the "popcorn" ceiling texture, Transite flues at furnaces and water heaters, and some ducts. Asbestos poses a hazard when it is disturbed and becomes airborne. Therefore, the EPA only considers damaged material dangerous, so do not touch it. Of course, it is always up to the buyer to satisfy their concerns about asbestos by having the house tested. Taking samples and testing for asbestos is not part of a home inspection but should be performed if remodeling will be done such as removing textured ceiling material. For more information on asbestos please click here.[51]

Things to Look For/ Questions to Ask:

- Is there asbestos in rooms that you want to renovate?

[50] https://sdinspect.com/house-technology/windows/
[51] https://sdinspect.com/health-and-safety/asbestos-awareness/

Ducts

In the 1970's most heating systems consisted of forced air systems. A central source of heat distributed heated air through rigid metal ducts which were wrapped in insulation. This was a big improvement over wall heaters found in most pre-1960 houses, but rigid ducts were difficult to install and were not sealed well.

Semi-rigid fiberglass ducts with no metal liner were also used in houses built in the late 1960's and 1970's. These ducts were used on heating systems. If these ducts are still present, they should be upgraded especially if AC has been added to the system. Since these ducts are un-lined, condensation from cold air can lead to mold growth at the interior of these ducts. In addition, these ducts cannot be cleaned as any conventional cleaning methods would shred the ducts.

Things to Look For/ Questions to Ask:

- When were the ducts installed?
- Do they have a metal liner?

Below Grade Vapor Barriers

When a house was built with some portion of the structure below grade, a waterproof membrane of some sort is required to keep water out. In the 1970's this was often done with tar (like roof tar) and/or tar paper. We often find moisture intrusion issues on these older houses simply because the membrane or water proofing material has deteriorated. Evaluation and repair of this situation can be complex due to the concealed nature of the material. Excavation of the area is often required not only to view it, but to install a new water barrier. This evaluation requires specialized knowledge, and if your home inspector detects moisture on the interior of a below grade wall a foundation contractor or waterproofing specialist may need to be hired.

Things to Look For/ Questions to Ask:

- Is there any moisture on the interior of a below grade wall?

1970's Home Buyers Guidebook

While this guidebook does not encompass every scenario that you might run into with an older home, these are some key things to have in mind when you are looking at a home.

Electrical Systems

- When was the last time that the electrical was updated?
- Is there any aluminum wiring on 15/20 AMP circuits? If so, check the rest of the house.
- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there dedicated circuits for the refrigerator and microwave?
- Are there GFCI receptacles?

Heating Systems

- When was the furnace last replaced?
- If there is a horizontal furnace, was it manufactured by Consolidated Industries or any of its subsidiaries?

Plumbing

- Are the copper pipes run through the concrete slab?
- When was the water pressure regulator last replaced?
- What is the water pressure?
- Have the angle stop valves been replaced?
- Are there mature trees over the drain line?

Insulation

- Is there insulation?
- Does the insulation need to be replaced due to asbestos or updated to a higher standard?

Roof

- What is the repair history of the roof?
- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

- Are the windows single or double paned?
- Do the windows open easily?

Asbestos

- Is there asbestos in rooms that you want to renovate?

Ducts

- When were the ducts installed?
- Do they have a metal liner?

Below Grade Vapor Barriers

- Is there any moisture on the interior of a below grade wall?

Chapter 4: 1980's/90's

Most of the Country experiences building booms every 20 - 30 years. This happened right after World War II with all the GI's returning from the war, and again in the 1980's. Our last building boom took place in the early 2000's and continued until about 2007. This section focuses on houses built in the 1980 – 1990 time frame. Even though most of us do not think of the 1980's as that long ago, it has been over 40 years!

Many large, planned communities were built during this time period. Some of the largest growth areas were Carmel Mountain Ranch in Rancho Bernardo, The San Diego Country Estates in Ramona, and other developments throughout northern San Diego County. We are familiar with many of the anomalies found in these neighborhoods.

We love to use the car analogy. Every year cars get better. New safety features are developed, better materials are used, and techniques that proved to be inferior are eliminated. This is the case with homes, too. Just like the changes that we saw in the Chrysler K car, there were many changes made when building new homes in the 80's and 90's like the elimination of asbestos and lead paint.

If you are considering buying a house that was built 40 years ago there are some things you must consider so that you are not disappointed once you move in. It is important for your home inspector to identify certain components of the house even if they are functioning properly. They may be old, consist of old technology, or may not be what you expect – such as single pane windows or wood tilt-up garage doors.

Electrical Systems

Generally speaking, electrical systems that were installed in the 1980's/90's are considered "modern" electrical systems. They consist of circuit breakers (instead of fuses), the systems are grounded with three-prong receptacles, conductors are copper, and they are much safer than older systems of the 1970's or earlier. There will also be far more receptacles than in older houses for convenience and safety.

GFCI

It was during the 1980's that the use of Ground Fault Circuit Interrupters

(GFCI's) began in areas of the house other than the bathrooms and garage. Prior to 1987 they were not required in kitchens, which is a question that is often asked. For a complete list of where and when GFCI receptacles were required, please click here.[52]

AFCI

Arc Fault Circuit Interrupters (AFCIs) are special types of electrical outlets and circuit breakers designed to detect and respond to potentially dangerous electrical arcs in home branch wiring. These are required in newer homes (since 2004) and specifically protect people against fires caused by arcing or sparks. AFCIs function by monitoring the electrical waveform and promptly opening (interrupting) the circuit they serve if they detect changes in the wave pattern that are characteristic of a dangerous arc. They also must be capable of distinguishing safe, normal arcs, such as those reated when a switch is turned on or a plug is pulled from a receptacle, from arcs that can cause fires. An AFCI can detect, recognize, and respond to very small changes in wave pattern. You can read more about when and where AFCI receptacles are required here.[53]

Capacity

The standard capacity for an electric panel installed in the 1980's is 100 AMP's which is adequate for most homes. It will accommodate multiple computers, TV's, ceiling fans, and many other modern items. In some cases, you may be limited if you want to add a hot tub, additional receptacles in the garage (for shop equipment), or a pool.

Dedicated Breakers

Many of the 100 AMP panels also had limited space for breakers. As the building code evolved, more dedicated circuits were required. A new house will have many more dedicated circuits such as one for the microwave, one for the refrigerator, one for the dishwasher, etc. In the 1980's many of these appliances were still sharing one circuit.

Home inspectors often find poor and unsafe wiring modifications. You should take note to see if the panel is full or has additional capacity as well as ensuring that no circuit is double tapped.

[52] http://sdinspect.com/home-facts/when-and-where-are-gfci-receptacles-required/
[53] https://sdinspect.com/house-technology/what-is-an-arc-fault-circuit-interruptor/

This is important if you want to add a hot tub, electric vehicle or more receptacles in the garage. If the panel is full, a sub-panel may be required, or a new panel – both of which can cost hundreds or a couple thousand dollars.

Electrical Panels

Some houses built in the early 1980's have electrical panels that are no longer considered safe.

The two brands of panels that should be replaced were manufactured by Federal Pacific Electric (left) identified by distinctive, orange-tipped breakers, and Zinsco panels (right) which are typically horizontal and have multi-colored breakers.

Both of these brands of panels have a poor reputation and have been suspected of causing house fires by overheating or breakers that fail to trip when overloaded. If you have either of these panels your inspector will likely recommend further evaluation by a licensed electrician to provide you either with peace of mind or an estimate for replacement.

Things to Look For/ Questions to Ask:

- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there dedicated circuits for the refrigerator and microwave?
- Are there GFCI receptacles?

Heating Systems

Due to the moderate climate in Southern California, we often see original furnaces in old houses. Furnaces here outlast the national industry standards because they simply are not used as much and have less wear and tear. Most of the furnaces from the 1980's are in serviceable condition but some are nearing the end of their useful life, especially those by the beach.

If the house you are buying has a furnace that is more than 20 years old, expect a recommendation for replacement – or at least a thorough safety check by a licensed heating contractor.

Fire Hazards

Of primary concern are horizontal furnaces that were manufactured by a furnace company named Consolidated Industries that is no longer in business. They manufactured furnaces that were sold under many private labels, most notably "Premiere". Some of these horizontal furnaces were the subject of a recall due to poor design and the presence of small rods above the burners called "NOX Rods". These rods were intended to reduce the nitrate emissions (and

thus nitrous oxide) from the furnace in a similar way that a catalytic converter works in a car. But these rods overheated and fell onto the wood platforms under the furnace causing fires.

Without going into exhaustive detail in this paper, these furnaces are a fire hazard with or without the NOX rods. Not only are they old at this point, but they have design flaws which cause failure of the heat exchanger which can cause carbon monoxide to enter the house air. These furnaces should be replaced. For more information, please click here.[54]

Things to Look For/ Questions to Ask:

- Has the heater been replaced?
- If there is a horizontal furnace, was it manufactured by Consolidated Industries or any of its subsidiaries?

Plumbing

Polybutylene

In the 1980's and 90's many of the large housing developments used a new type of plumbing to save money. It was a plastic product called Polybutylene (or Qwest) that was supposed to be the answer to many traditional plumbing problems like corrosion. The plastic plumbing system was easier to install than copper and required no soldering. Because the plastic tubing is flexible, long runs could be installed quickly. The sections of tubing were fastened together using plastic connectors (much like a drip system) and crimps to hold the tubing onto the various connectors.

Unfortunately, many of these plumbing systems failed causing property damage. Although an exact cause could not be determined, it is expected that the chlorine in water caused the fittings to fail. In some early installations with aluminum crimps, the crimps failed due to thermal expansion. A huge class action lawsuit was settled with the manufacturers of the Polybutylene which paid to repair or replace plumbing systems which had failed.

Many of the early systems were repaired by replacing the plastic fittings with brass or copper fittings and copper crimps (as shown in this picture). These upgrades were considered satisfactory, but these systems still can fail. If the house you are buying has Polybutylene plumbing, you should obtain a quotation for a whole house re-pipe prior to the end of your contingency period, as you will want to have the plumbing system upgraded.

[54] https://sdinspect.com/health-and-safety/consolidated-horizontal-furnace/

Pressure

A large contributing factor to failed plumbing systems is high water pressure. The street pressure in many parts of Southern California is very high – as high as 130 psi. To keep the pressure below the max of 80 psi and around the recommended 55-60 psi, a pressure regulator is installed at the main water line. These pressure regulators should be replaced every 6-10 years, or they can fail. When failure does occur water pressure in the house can exceed 80 psi which puts tremendous stress on faucets, plumbing, toilet fill valves, etc. For more information on pressure, please click here.[55]

Things to Look For/ Questions to Ask:

- Does the home have Polybutylene or Qwest plumbing?
- What is the water pressure?
- When was the pressure regulator last replaced?

Roof

A roof is one of the most expensive components of a home. Hundreds of different materials have been used as roofing material from sticks to plastic, and grass to glass. When you are looking for a home you need to know what type of roofing material was installed, if it was installed correctly and the current condition. A thorough home inspection will include a detailed evaluation of the roof. A roof in poor condition can be a deal breaker, so here are some things to look for that can give you a heads-up about the condition of a roof.

Underlayment

Everything in a house will wear out and the roof is no exception. All roofs have an underlayment commonly referred to as tar paper, yes even tile roofs have this. This underlayment lasts 20-25 years depending on installation and sun exposure. Many roofs that were installed in the 1980's are currently in need of having the underlayment replaced. If you have a clay tile roof you can often reuse the original tiles after replacing the tar paper underneath.

Asphalt Shingle

An asphalt shingle roof is also likely at the end of its life. It is made of oil-impregnated fiberglass material, with an aggregate (which looks like kitty litter) pressed into the surface. The aggregate adds color, but its primary purpose is to protect the shingles from UV exposure. Once the aggregate is worn, the shingle deteriorates rather quickly. Most of these roofs are rated for 20 or 30 years. Do the math. If the roof looks worn it is likely in need of replacement. For more information click here.[56]

[55] https://sdinspect.com/home-facts/water-pressure/
[56] https://sdinspect.com/diy-tips/home-inspector-roof-type/

Things to Look For/ Questions to Ask:

- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

Most windows installed in the 1980's/90's have aluminum frames. Higher-end houses may have double pane windows but not all will as double pane windows were considered an upgrade. If you are interested in being energy efficient you should expect to pay several thousand dollars to upgrade the windows. For more information on the evolution of windows please click here.[57]

The most common problem we see with older windows consists of worn glides or rollers. This makes the windows difficult to slide. This is considered a hazard. The added force required to slide these windows could cause the window to be slammed shut resulting in broken glass.

Things to Look For/ Questions to Ask:

- Are the windows single or double paned?
- Do the windows open easily?

Ducts

In the 1960's forced air units distributed heated air through rigid ducts which were wrapped in insulation. This was a big improvement over wall heaters found in most pre-1960 houses, but rigid ducts were difficult to install and leaked at connections.

In the mid 1970's the industry began to use flexible ducts. These new ducts help speed the installation of heating systems and allow the installer more flexibility to route the ducts around structural components.

The only problem with early flexible ducts is that the outer plastic shell was not UV stable. When exposed to sunlight, it deteriorated and caused the ducts to fall apart. This occurs even from the small amount of light that enters an attic through vents. These ducts require repair or replacement if UV damaged.

Things to Look For/ Questions to Ask:

- When were the ducts installed?

[57] https://sdinspect.com/house-technology/windows/

1980's/ 1990's Home Buyers Guidebook

While this guidebook does not encompass every scenario that you might run into with an older home, these are some key things to have in mind when you are looking at a home.

Electrical Systems

- How many amps can the main panel handle?
- Is there any room on the panel for additional circuit breakers?
- Are any of the circuits double tapped?
- Are there dedicated circuits for the refrigerator and microwave?
- Are there GFCI receptacles?

Heating Systems

- Has the heater been replaced?
- If there is a horizontal furnace, was it manufactured by Consolidated Industries or any of its subsidiaries?

Plumbing

- Does the home have Polybutylene or Qwest plumbing?
- What is the water pressure?
- When was the pressure regulator last replaced?

Roof

- When was the roof and tar paper last replaced?
- Does the roof look worn?

Windows

- Are the windows single or double paned?
- Do the windows open easily?

Ducts

- When were the ducts installed?

Conclusion: What should you do?

Hopefully this guide will help set your expectations of what to expect from a home inspection performed on an older home. We do not want you to be surprised with the items in the report. You should ask the seller if any upgrades have been performed. If not, you may need to budget for upgrades after you move in. Of course, this guide cannot cover every scenario as each house is unique. Hopefully it illustrates some things that you may find and will help you choose the right house at the right price for your budget.

About the author: Philippe Heller is the CEO of The Real Estate Inspection Company. His multi-inspector firm performs thousands of inspections a year in San Diego County, South Riverside County and South Orange County. The company uses state-of-the-art testing equipment and the best reporting system available. To learn more about what should be included in a thorough inspection, please visit www.SDinspect.com or call us at (800) 232-5180.