

HOME MAINTENANCE IN PERSPECTIVE

Pillar To Post Continuing Education Program

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CHAPTER 1

Overview and Objectives



Overview and Objectives

Some home buyers don't know what to expect when it comes to the home inspection. We often find that buyers are surprised when the home inspector finds something that requires attention. Frankly, we're surprised that they are surprised! There is no such thing as a perfect house. There is always something that can be repaired or improved.

This presentation is designed to shed some light on home maintenance and how to put it in perspective for the home buyer. Perspective is the key and it's something every home inspector should provide along with the inspection.

Realtors can help out too by letting your clients know what to expect during an inspection. We hope that this resource will help us all "see the forest for the trees".

Learning Outcomes

During this course you will learn -

- how a home buyer may become fixated on problems
- how to provide perspective
- the 1%, 3% rule for home maintenance and repair
- how long various components of a home last
- how much it costs to repair various components
- how to use the Pillar to Post costing guide and internet resources



Chapter 2

This knowledge will –

- help you prepare your clients for the home inspection
- help the transaction move swiftly through the inspection process
- help you answer your client's questions about life cycles and costs and maintenance.
- help you reduce a client's fears about the home.
- help you demonstrate to your clients that you are a knowledgeable professional.

CHAPTER 2

Seeking Perfection

Chapter 2

Seeking Perfection

No home is perfect. We haven't found one yet. It's not that there is a major problem with every house but rather there is always something that can be repaired, maintained, updated or replaced. This is not a defect. It's called normal maintenance.

Some home buyers do not have the right mind-set for a resale home. Just as they expect that a new car should have nothing wrong with it, they expect the home they are buying to have nothing wrong with it. A resale home is not a new home and there will be things that need attention. All homes require ongoing maintenance. Even brand new homes do.

For example, consider a home inspection that uncovers that the heating system is old and requires replacement. A home buyer may see this as a huge problem. Let's go on and say that this is the only thing in the home that requires attention. If you look at this in perspective, this home is well above average. This is a really well maintained home!

The trick is to get the buyer to see the same perspective.



The distressed buyer

Some buyers are more stressed than others. An experienced home owner may take things in stride while a new home buyer may panic over every item on the home inspector's list. People are afraid of being taken advantage of or buying a "money pit".

Have you ever had a buyer walk away from a deal because of a seemingly insignificant item? These buyers were not in the right frame of mind to buy a resale home.

Realtors will have a better handle on whether your client is likely to be distressed over every little item that needs work on the house. The home inspector also has to be sensitive to the mood of the client.

Perspective

Home inspectors should provide perspective during the home inspection. For example, when a home inspector points out a condition with the house, the buyer sees this as "one strike against the house". Now if the inspector went a step further and explained that this same condition exists on almost every house, the buyer would not see it the same way.

Realtors can help too. Let your client know that the home inspector will discover things with the home. Let your client know that they should not focus on little items that exist with every home but rather wait until the end of the inspection and look at the big picture.

Things wear out

We will go into this in more detail in the next section but the first step to gaining perspective in home maintenance is to recognize that everything wears out. Wearing out is not a defect, it's normal. For example, the tires on a car will wear out even though they are not defective. Similarly, as asphalt shingle roof surface will wear out even though they are not defective.

Fortunately, things in the home don't wear out all at the same time. In fact, once the home is a few years old, it settles into a normal maintenance pattern. One year the roof surface will have to be replaced, another year the woodwork will have to be re-painted, another year the hot water tank will fail. Eventually you will come full circle and have to replace the roof surface again.

Chapter
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CHAPTER 3

Seeking Perspective

Chapter
3

Seeking Perspective

In the last section, we looked at –

- Normal maintenance pattern
- Perspective in home maintenance and repair

Some buyers need help with perspective and how to recognize what is normal for a resale home and what is not normal. For example, if the roof surface is worn out and the heating system is functional but near the end of its life cycle, is this normal or is it a “money pit”? In this section we will look at perspective more closely and discuss some tools that may help.

The 1% rule



The one percent rule postulates that normal maintenance on a home is about 1% of the value of the home per year.

For example, a \$250,000 home would require \$2,500 per year to maintain. This would be enough to replace the roof surface and then a few years later to replace a failed hot water tank and then a few years more until a new central air system is required.

Some people find it hard to imagine how this extrapolates to a very expensive house. Expensive houses require more expensive repairs. The roof surface will be a more expensive material, the windows will cost more to replace. In addition, the truth is, a contractor will quote higher in a more expensive neighborhood! Our experience is, the one percent rule is a fairly good starting point.

The 3% rule

Some say that you should plan on 3% in the first year of home ownership. You have to buy drapes and blinds and washers and stoves and maybe even a new roof surface.

Deferred Maintenance

Deferred maintenance means the owner has not spent 1% per year on the home. After a number of years, things pile up and you may find that some catch-up is required. If you happen to buy the house just as everything is about to become critical, you will spend significantly more than 1% per year for a few years until everything then settles back into a normal maintenance pattern again.

For example, consider a home that needs a new roof surface, has a furnace near the end of its life, and an air conditioning system that is near the end of its life and woodwork that needs painting and the deck is rotted. This home may need more like 3% per year for a few years.

Example – gutter overflow

This slide shows the corner of a front porch that has been damaged by water overflowing the gutter for several years. The buyer had a hard time getting past this.



In fact, there was little else wrong at this house and all of the systems had been upgraded including electrical, heating, roof and plumbing.

If you look at the big picture, this house is above average even though this repair may amount to about \$3,000 by the time you replace the decking, replace the front joist, replace the column base and then paint the whole thing.

If you use the 1% rule. This house comes out smelling like a rose!

I guess you could argue that a smart seller would have repaired this porch corner before listing the house.



Check Your Knowledge

Answer the questions below in the spaces provided

1. True or false? Nearly every component of the house will eventually wear out?

2. What is the 1% rule?

3. If a home has a heating system that is near the end of its life cycle (it's nearly worn out) but all other systems have been upgraded, is this house in a normal maintenance pattern?

Chapter 4

CHAPTER 4

How Long Does it Last?



Chapter 4

How Long Does it Last?

In the last section, we pointed out that every component of the home will eventually wear out but fortunately not all at once. This section looks at how long things do last.

Most components of the home have a fairly predictable life cycle. If we know the typical life cycle of a component and we know how old the component is, we can have a fairly good idea how much longer the component will continue to function.

For example, the typical life cycle of a high efficiency furnace is 15 to 20 years. What this means is that most high efficiency furnaces last between 15 and 20 years. Here are a few implications of this example—

- A two year old high efficiency furnace is not likely to fail in the next year
- A 15 year old high efficiency furnace is more likely to fail in the next year
- A 20 year old high efficiency furnace is very likely to fail soon
- A 20 year old high efficiency furnace may continue to function for a few more years
- It is possible, even for a 2 year old high efficiency furnace to fail in the next year it's just not very likely.

The point here is that it is a statistical thing. If you are the proud owner of a 15 year old high efficiency furnace, you don't have to change it if it is working fine. You may get a few more years out of it. You should be aware though that it may fail soon and you should not be taken by surprise. It would be a good idea to get a quote for a new

furnace so when it fails in the middle of winter you are ready. Let's face it; you will pay more if you are desperate.

Life cycles in a home inspection

In this section and those to follow, we will use the terms "life cycle" and "service life" interchangeably.

Home inspectors are required to let the buyer know if a component is significantly deficient or if it is near the end of its life cycle (service life). Here is an example of how a home inspector uses the life cycle concept during a home inspection:

Here is an air conditioning system. It looks well maintained and on testing it was working just fine.

From the data plate, we can see that this air conditioning condenser was manufactured in 1988.

The typical life cycle or service life of an air conditioning system (compressor) is about 12 to 15 years. In southern climates it's even less—about 10 years. This system is at the end of its service life. This is not a defect, it's just a warning.

Do you need to replace it right away? No. You may get a few more years even though this system is on borrowed time. If it fails, it's not an emergency unless you live in the hot south. On the other hand, new systems are much more efficient and you may choose to replace it proactively and start reaping the benefits now.

Let's look at the life cycles of some of the common components in the home.



Conventional furnace

A conventional gas furnace is a natural draft furnace that is not very efficient compared to the furnaces available today. Conventional gas furnaces are not made any longer but there are lots of them out there in service. The typical service life is about 25 years. There are some models that were known to fail early but most would last the 25 years.

The critical part of the furnace is the heat exchanger. Once the heat exchanger fails, the furnace gets replaced.

Why would the heat exchanger fail? It is subjected to high temperature and to thermal cycles. Eventually the metal fatigues and cracks.



Mid efficiency furnace

A mid efficiency furnace has an induced draft fan that sucks the combustion products through the heat exchanger and discharges into the flue. Because a mid efficiency furnace does not have to rely on natural draft, the heat exchanger can be made thinner and longer with smaller passageways for the combustion gasses.



The result is a furnace that is much more efficient than a conventional furnace. The downside is that this furnace will not last quite as long as a conventional furnace due to the thin heat exchanger metal. The thermal cycles will crack the heat exchanger.

The picture shows a heat exchanger crack in a mid efficiency furnace. This furnace has to be replaced.

The typical live cycle of a mid efficiency furnace is about 20 years.



High efficiency furnace

A high efficiency furnace has an even shorter life cycle than a mid. While there are no good statistics for high efficiency furnaces, they are likely to last about 15 years. There are a few good reasons why a high efficiency furnace will not last as long as a mid—

- It has two heat exchangers and thus more opportunity for failure.
- The furnace has to deal with a corrosive condensate.
- Dust collection on the secondary heat exchanger causes overheating of the system.



The dust and dirt on the secondary heat exchanger is a big problem because the secondary heat exchanger is not readily accessible. The furnace has to be taken apart to get at it.

Here are two photographs illustrating the dirt collection issue. The first photograph shows the primary and secondary heat exchanger in a high efficiency furnace. The primary heat exchanger is on the right hand side of the photograph. The secondary heat exchanger is the thing that looks like a car radiator.

The second shot shows the underside of the secondary heat exchanger and the dust and dirt that has accumulated there.

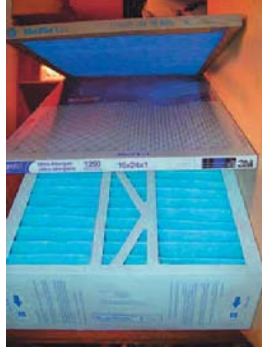


Making a high efficiency furnace last longer

The secret to a long lasting high efficiency furnace is a good filter and regular filter replacement. The standard filter that many furnaces have is no where near good enough to protect the equipment, never mind filter the air for the house.

The filter on the right is useless. Many technicians call this a rock filter because it will filter out large particles only such as rocks.

The filter in the middle is a direct upgrade and will fit in the same space as the rock filter but it's a much better filter. The filter material is pleated. This filter traps more dust but you will also have to replace the filter much more often, one a month is ideal or every second month at the outside.



The filter on the left is even better because it is much thicker and has much more filter surface area. You will trap lots of dust but you don't have to replace it every month. Every three months would be ideal but many people only change them twice per year.

Hydronic heat

Hydronic heating is a system that heats the house by circulating hot water. The heating unit is called a boiler, even though it does not actually boil the water. So if you have a forced air system it's called a furnace; if you have a forced hot water system, it's called a boiler.

Like forced air furnaces, the critical component is the heat exchanger. Once it fails, the boiler has to be replaced. There are two different types of heat exchangers used in boilers for residential homes, copper tube and cast iron.

Copper tube boilers last about 15 years and cast iron boilers last about 30 years. So why would anyone buy a copper tube boiler? They are much less expensive to install.



Air conditioning system

Air conditioning systems last about 14 to 15 years. This is the baseline life cycle. If you live in a very hot climate such as Florida or Texas, the air conditioning system gets much more severe use and will have a life cycle of about 10 to 12 years. In coastal regions where there may be a salt spray factor, the life cycle is less again at about 8 to 10 years.

These numbers are maintenance dependent. A poorly maintained system may have a reduced life cycle.



Other mechanical equipment

Here is a short list of additional mechanical equipment and the life cycles:

Hot water heater	12 years
Sink garbage disposal	10 years
Well pump	10 to 15 years
Garage door opener	10 to 15 years

Roof Surfaces

There are many different types of roof surfaces. Here are the life cycles of the most common:

Asphalt shingles	12 to 20 years
High end asphalt shingles	20 to 30 years
Cedar shingles	20 to 35 years
Slate	50 to 150 years
Modified bitumen flat roof	20 to 25 years

Different types of shingles have different failure modes. Asphalt deteriorates with exposure to the sun (UV radiation) so the south and the west sides wear out more quickly than the north and east.

Cedar fails because of rot and splitting. The north and the east sides fail more quickly than the sunny sides.



Slate roofs may fail because of surface damage or because of failure of flashings and fasteners holding the slates in place.

Plumbing System

Modern copper plumbing should last indefinitely. Localized failure is always possible such as pipe wear in a hot water recirculation loop or localized damage.

Galvanized steel piping was used many years ago. There are still some houses with galvanized steel piping either throughout the house or at least in some areas. Galvanized steel pipe has a service life of about 40 years and it has not been used in well over 40 years. So if you've got galvanized steel pipe, you are on borrowed time.



Exterior paint on woodwork

Exterior paint will wear out. Once it's worn, the wood underneath is un-protected. The service life of paint on wood depends on the weather conditions it's exposed to and the quality of the paint job. A typical service life is 10 years.

CHAPTER 5

How Much Does it Cost?

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How Much Does it Cost?

The final piece of the puzzle is, how much does it cost to replace a component. Costing depends on where you live, competition and the availability of trades etc. For our purposes, a rough estimate is close enough.

Pillar to Post cost guides

Pillar to Post maintains a cost guide area on the web site. This is a great resource. Go to www.pillartopost.com then go to the Real Estate Professionals area and select the Cost Guide.

Pillar to Post also has a brochure version of the cost guide. Contact your local Pillar to Post inspector for a copy.



With these resources you will be able to provide your client with a range of costs associated with replacements and maintenance within the home. If you do not have a Pillar To Post Cost Guide brochure contact your local Pillar To Post home inspector and he/she can supply you with a copy of this useful resource.

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Example – Roof surface

Let's step through a sample cost estimate.

Consider a sloped roof surface with asphalt shingles. The roof surface area is 2,000 square feet.

From the cost guide we find that to strip and re-shingle costs between \$2.50 and \$3.50 per square foot. The low end of the range is thus \$5,000 and the high end is \$7,000. The roof will cost between \$5,000 and \$7,000 to strip and re-surface with asphalt shingles.



Check Your Knowledge

Answer the questions below in the spaces provided

1. True or false? Service life and life cycle refer to the same thing?
2. True or false? An eight year old high efficiency furnace is near the end of its service life?
3. If a system is functioning well but it's near the end of its service life, is this a defect?
4. A heating system that circulates hot air is called a furnace. A heating system that circulates hot water is called a



Chapter
6

CHAPTER 6
CEP Quiz

CEP Quiz – Home Maintenance in Perspective

Name _____

1. What is the 1% rule and the 3% rule?

2. True or false? Deferred maintenance means the homeowner has not kept up with normal maintenance and the house is not in a normal maintenance pattern.

3. What is the life cycle of a high efficiency furnace?

- a. 8 to 12 years
- b. about 15 years
- c. 20 to 25 years
- d. 30 to 40 years

4. What is the critical component of a furnace or boiler?

- a. compressor
- b. condenser
- c. pipe exchanger
- d. heat exchanger

5. True or false? If home owners were more diligent about changing their furnace filters, high efficiency furnaces would have a longer service life.

6. True or false? Air conditioning systems last longer in southern climates than in cooler climates.
7. What is the life cycle of high end asphalt shingles?
 - a. 8 to 12 years
 - b. 20 to 30 years
 - c. 30 to 40 years
 - d. 40 to 50 years
8. True or false? All galvanized steel water supply piping in residential homes is on borrowed time.
9. True or false? The south and west faces of an asphalt shingle roof wear out more quickly than the north and east surfaces.

Chapter 6

CHAPTER 6 Presentation Evaluation

Presentation Evaluation – Home Maintenance in Perspective

TECHNICAL CONTENT

	Excellent	Average	Poor	No Opinion
Presenter's knowledge of subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to keep you interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discussion / overview / recap	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How well did this course meet your expectations?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:				

ORAL PRESENTATION

	Excellent	Average	Poor	No Opinion
Explanation of objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voice (volume, clarity, speed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answers question clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:				

VISUAL PRESENTATION

	Excellent	Average	Poor	No Opinion
Voice (volume, clarity, speed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answers question clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effectiveness of visual aids	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presenter's eye contact	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:				

MATERIAL HANDOUTS

	Excellent	Average	Poor	No Opinion
Effectiveness of handouts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Comments:				

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