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Smoke Alarms are a Must

Your agent has alerted you to a vital fire safety deficiency in your home. Not only should you install smoke alarms prior to selling, you should have them for your own safety throughout your occupancy. According to the National Fire Prevention Association, less than one minute may elapse between the time a house is beginning to smoke until it is completely engulfed in flames. If you happen to be sleeping during that minute, you could miss out on the rest of your life.

The fact that you've never had a fire is no guarantee you never will. A set of properly positioned alarms can ensure that you or the buyer of your home will be awakened in time to seek safety.

Smoke alarm laws have been part of the building code for more than 20 years, yet are among the most frequently violated of home safety requirements. A significant number of homes either have no smoke alarms, have too few, have ones that are incorrectly placed, or which are simply inoperative. So let's take a quick look at the proper deployment of these imperative life-saving devices.

Smoke alarm requirements are not the same for every home. They vary according to local municipal standards and the age of a specific dwelling. For homes built prior to 1979, battery-powered smoke alarms are permissible. In newer dwellings, alarms must be powered by the electrical wiring. The problem with battery units is that people often neglect battery replacement. On the other hand, what good are wired-in smoke alarms if you have an electrical fire accompanied by a power outage? The safest arrangement, therefore, is to install wired-in alarms, equipped with battery back-up. This type of integrated alarm can be obtained at most hardware stores and is required for homes built as of 1993.

As to smoke alarm placement, requirements also vary according to the age of the dwelling. In older homes, most municipalities require alarms in the following locations: Within close proximity to all bedroom entrances, on each story of a multi-level home, and in basements. The latest standards, enacted in 1993, require that there be an additional alarm in each bedroom. Another practical location, although not required, is the garage.

Additionally, wherever smoke alarms are installed, ceilings are the best specific locations, primarily because smoke rises. However, it is permissible to install an alarm on a wall, as long as it is within 12 inches of the ceiling.

One final requirement involves homes that are remodeled or enlarged: When the cost of an addition or alteration exceeds \$1000, and whenever a permit is required, smoke alarms must be installed in compliance with the latest standards, regardless of the age of the building.

Above all, wherever you place your alarms and whatever kind of smoke alarms you use, be sure to test them regularly to ensure that they are operative at all times.

For further details regarding specific smoke alarm requirements in your area, it is advised that you consult your local fire department.

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General Toxicity/Asbestos Abatement

Asbestos is a naturally occurring mineral fiber processed into thousands of building materials before 1980, including "cottage cheese" type and acoustic tile ceilings, furnace and duct insulation, drywall taping and joint compound, textured paints and plasters, and linoleum and vinyl flooring. It was banned from use in most building materials in the 1970s after the EPA proved that inhaling asbestos fibers caused and/or increased the risk of developing incurable lung diseases, including lung cancer, asbestosis and mesothelioma. Asbestos exposure poses a health hazard when its fibers are released into the air where they could be inhaled. The most prevalent health risk is posed by the original acoustic ceiling spray found in residences built before 1978 because that can be disturbed so easily to release fibers into the air, on clothing and carpeting.

When disturbing or making repairs on materials made of asbestos or remodeling homes constructed with materials containing asbestos, a certified asbestos abatement contractor must properly remove all affected hazardous materials according to OSHA regulated practices. Outdoors, construction and other activities can also churn up naturally occurring asbestos to create a potential hazard and must also be properly handled.

Asbestos abatement (removal) must be handled by a licensed and certified hazardous material contractor. This process starts by removing furnishings and sealing the affected area with several area of plastic. Next, powerful fans (called negative air machines) are brought in to the pump air through High Efficiency Particulate Air (HEPA) filters and out of the work space. Workers must also wear protective suits and respirators equipped with HEPA filters while working. All hazardous materials must be placed in double-layered hazardous waste bags labeled for asbestos and washed before being carried out of the work area. Upon completion, they remove the plastic and dispose of it with the rest of the materials through a hazardous waste disposal company.

Certified hazardous material abatement companies may be hired for removal only, but most are also licensed general contractors equipped to complete the repair or remodeling project.

Molds and mildews growing in the home may pose health risks and/or signal water intrusion and damage that will only become more extensive-and expensive-as time goes on.

People can suffer respiratory ailments, headaches and dizziness from common molds and mildews growing in the wood, wall board, carpets, upholstery, air ducts and other areas in their homes. Even if not detected by sight or smell, molds can make people sick, especially during cold weather when windows and doors are kept closed and contaminated air recirculates through the house's heating system.

Having the air ducts professionally cleaned, installing an electrostatic air filter and hiring a professional service to clean all the carpet and upholstery will help to remove molds and mildews circulating through your heating system and prevent their return.

Licensed and certified water damage specialists are trained and equipped to remove the mold which can occur due to water leaks and make all repairs. Although each situation is unique, the following procedures are usually followed:

1. The leak or other source of water intrusion must be eliminated so that once the microorganisms are killed, they cannot grow back.
2. The microorganisms (mold or mildew) are removed and the affected areas are sanitized with antimicrobials.
3. The affected area must be thoroughly dried to prevent future growth. If building materials have been damaged from the micro-organisms they must be replaced.

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Attending Your Home Inspection

The California Real Estate Inspection Association (CREIA) encourages all potential homebuyers to personally accompany their professional inspector when considering a home to purchase. Maximum benefit is obtained from an inspection when you attend in person. Neglecting to do so can be a big mistake.

CREIA recommends that homebuyers and their agents always attend the inspection as this is an excellent way to gain firsthand information on the current condition of the property and what will be in the inspector's forthcoming report. Far more can be learned when the inspector explains the report than when you interpret it on your own.

By following your professional home inspector through the inspection, observing and asking questions, you will learn about your home and get some tips on general maintenance. This will also help clarify in your mind what the inspector saw, couldn't see, and what their opinion was regarding each and every item inspected, especially after you receive the inspector's written report. Only then can you have a good basic understanding of the home's overall current condition, which is vital in helping you make an informed purchasing decision.

Homebuyers are cautioned against inspecting the property themselves. Most homebuyers find it difficult to remain completely objective and unemotional about the property, and this may lead to

a poor assessment. A qualified professional inspector is familiar with general construction practices, maintenance and inter-relationships of a home's systems and components. A professional inspector's goal is to help you understand the overall current general condition of your new home. If you find items in your written inspection report that you fail to understand, call the inspector and ask for an explanation of the condition(s) in question. If you fail to find defects listed in your report that your inspector verbally noted to you during the inspection process, call the inspector and ask why they were left out. If you get a conflicting opinion from one of the agents involved in the transaction, call the inspector and ask them for the basis for their opinion. If you get a conflicting opinion from a contractor retained to perform corrective work on a defective system or component noted in the inspector's report, call the inspector and ask for further explanation; suggest the inspector speak to the contractor. If you find that the seller states that a certain item reported as defective or hazardous is not a problem and refuses to negotiate a price adjustment, it is the seller's legal right to not negotiate. Either accept the seller's position or look for another house.

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Grounds & Grading

Probably the most widespread problem we see in our inspections is poor grading and drainage. Water must be kept away from foundations in order to reduce the potential for structural and interior damage. Not only can seeping water cause interior damage, it can cause the foundation to move/crack. There are several potential causes for these conditions:

1. Lack of gutters and downspouts (downspouts should be piped either to the street or away from the foundation,
2. Lack of required slope away from the foundation. It is recommended that the ground or hardscaping slope away from the foundation for a minimum of six feet at the rate of 1/2" per foot.
3. Overwatering landscaping near the foundation.

When water has an opportunity to pond (stand), it can lead to severe exterior and interior damage to both finishes and furnishings. Water vapor can migrate through concrete as well as through cracks beneath the foundation. All "soils" should maintain a minimum vertical distance of 6 inches from finish floors (any portion of the wood floor that is subject to decay) to the top of the finished soil. The 6 inch distance can be reduced to 4 inches if the surface that surrounds the foundation is a hard surface, i.e. concrete, tile, or asphalt.

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Preventive Home Maintenance Checkup

Your home can't take care of itself. Your monthly budget should include money for routine maintenance and repair for the house and yard. Plan to set money aside for the large, irregular expenses that occur normally as a house ages. Large expenses include interior and exterior painting, repairs or replacement of heating and air conditioning units and appliances, floor coverings, and roof surfaces.

Housing experts recommend setting aside 1 to 3 percent of the market value of your house each year to pay for maintenance and repair costs. While all of these funds may not be needed if your home is new, the accumulated amounts will help you pay for large future expenses, such as re-roofing or replacing a heating unit.

Home maintenance helps provide a healthy, safe environment as it protects your growing financial investment. It is much easier to prevent the development of unsafe, unhealthy conditions and structural damage than to pay medical or repair bills or both.

Who is responsible for home maintenance? The home owner is responsible for what is owned. (Check your owner agreement if you live in a condominium or townhouse.)

Why should you do regular home maintenance?

- To maintain the value of the property.
- A well-maintained home usually sells more readily and usually brings a higher price.
- A well-maintained house is more comfortable.
- Regular care minimizes unexpected repair work and expense.
- Regular small repairs keep costs from becoming larger.
- A lender's agreement usually requires the owner to maintain the property to protect the lender's financial interest.

What is involved in home maintenance? Cleaning roof and gutters, cleaning or painting outside wall surfaces, cleaning floors and walls, vacuuming carpet, keeping sink and shower drains running freely, etc.

What is involved in home repair? Replacing broken glass in windows or doors, replacing warped or worn shingles, repairing a cracked or heaved sidewalk or driveway, replacing worn out faucets, repairing a broken stair rail, etc.

How often should you do maintenance and repairs? Maintenance and repairs should be done as soon as the need appears. This sooner-the-better practice helps prevent further damage and keeps repair costs down. At least once every 6 months, inspect your house and yard thoroughly to identify items needing work.

Who should do the maintenance and repairs? The home owner who does his or her own maintenance and repairs saves money. Use the following sources to learn how to do your own maintenance and repairs:

- Manufacturer's use and care booklet and care guides from repair and cleaning products used.
- Extension leaflets on maintenance and repairs.
- Do-it-yourself (DIY) publications often available free in builder supply or hardware stores.
- Home maintenance/repair books and videos in the public libraries or stores.
- An experienced neighbor or friend.

If you are not able to do the work, hire a qualified, experienced repair person. Ask friends for personal recommendations. Check the telephone book, neighborhood newspapers, or special advertisements to find a reputable repair person. Ask for written estimates, and do not pay in advance for maintenance or repair services.

Include a maintenance/repair category in your monthly budget. If you do not need the money in a particular month, put it in a savings account for the periodic, expensive repairs that will happen as a house ages.

Inspect your house regularly. Develop a system where you inspect one area per month to ensure regular inspection of each area. Start at the foundation of the house and work upward and inward. The following list of areas to check may help. For more information, see *Inspecting a House*.

FOUNDATIONS, BASEMENTS, and YARDS

Water that strikes the house or drips down from the roof should drain away from the foundation walls. The gutter and downspout system should keep water from pooling around the foundation where it can create a moisture problem. Be sure gutters and downspouts are kept open and in good repair.

Trim shrubs and bushes away from the foundation walls. Clearance space should be at least one foot. Check masonry foundation walls for cracks or weakened, crumbling mortar. Examine main support beams, support columns, and floor joists for evidence of bowing or warping. Check wood structural members, such as joists, beams, and columns, with a screwdriver or pocket knife to be sure wood is solid and free from decay. Check the inside and outside of all foundation walls and piers for termite damage. You may choose to have an insect-control company to do this each year.

Check that the crawl space vapor barrier is in good condition and placed correctly. A vapor barrier is usually a polyethylene material (6-mil) that covers 70 to 100 percent of the crawl space, depending on the severity of the moisture problem. Examine the inside of basement walls for dampness or water stains indicating seepage or a leak. Clean leaves and debris from around an outside heating/air conditioning condenser and trim back shrubs that may block air movement around the house.

Doorways, below grade window wells, and storm drains should be cleaned of debris or leaves. Driveways and walks should be checked for cracks, breaks, or erosion that may damage them. If asphalt surfaces need repairing, be certain you have the equipment and skill to do a lasting repair job. Otherwise, choose a reputable contractor. Unrepaired cracks in concrete can lead to further damage.

Fences, gates, and retaining walls should be checked for ease of operation, condition of structure, and materials. Make repairs as needed.

EXTERIOR WALLS, WINDOWS, and DOORS

Check bricks or blocks for cracked mortar or loose joints. Check siding for loose or missing pieces, lifting or warping, or any sign of mildew. Check painted surfaces for paint failure (peeling, chipping, blistering, chalking), water damage, or mildew. Examine all trim for tightness

of fit, damage, or decay. Check the condition of caulking where two different materials meet, such as where wood siding joins the foundation wall, at inside corners, and where window and door trim meets the siding. Check the windows for cracked or broken glass, loose putty around the glass panes, holes in screens, and evidence of moisture between pane and storm windows. Check that windows and doors close properly. Examine all hardware on windows and doors, and lubricate moving parts. Check weatherstripping on windows and doors for damage and tightness of fit. Make sure that all window and door locks work properly. Each exterior door should have a one-inch deadbolt lock for safety.

ROOF

Trim back tree branches that scrape against or overhang the roof. Keep branches away from chimney to avoid fire hazard and allow proper draft for safe and efficient chimney operation. Check for curled, damaged, loose, or missing shingles. Check the lower edge of roof sheathing for water damage. Examine all roof flashing and the flashing around chimneys, vent stacks, roof edges, dormers, and skylights. Make sure that the chimney cover (cap) is in good condition, and that it is tall enough to prevent creosote build-up. Check vents and louvers for free air movement. Clean screens and remove bird nests, spiders, insects, and dust. If there are wind turbines on the roof, check ball bearings. Clear gable vents of bird's nests and other obstructions. Check for damaged gutters, downspouts, hangers, and strainers. If needed, clean out gutters and downspouts. Make sure they are free from leaks and rust. Check the condition of paint on gutters. Examine television antenna guy wires and support straps.

INTERIOR SURFACES

Check all ceilings and walls for cracks, loose or failing plaster, signs of leaks or stains, dirt, and finish damage. Check for cracks where ceilings join walls and where moldings attach to ceilings and walls. Check for odor or visible evidence of mildew or mold. Check for finish damage around cabinet pulls. Examine all joints in ceramic tiles and laminated plastics for adequate caulking. Have any of the tiles cracked or become discolored? Check caulking around sinks, bathtubs, and showers. Some types of caulking become brittle with age, and therefore useless as a water seal. Replace with a long-lasting resilient caulking material, such as silicone or latex. Check all floors for wear and damage. Are the floors level, bowed, or do they squeak when you walk on them? Particularly check where one type of flooring material meets another, such as where carpet or wood joins tile. Check stairs for loose treads, handrails, or carpeting, and repair as needed.

ELECTRICAL SYSTEMS and FIXTURES

Check the condition of lamp cords, extension cords, and plugs. Also examine the appliance cords and plugs of vacuums, irons, mixers, washers, and dryers. Check for exposed wires and signs of wear in the "service box." If you have a fuse that blows often or a circuit breaker that trips frequently, call an electrician to determine the cause and make the repair. Mark each circuit so that you will know what outlets or appliances are included on each. If you experience a slight tingling shock when handling or inspecting any appliance or lamp, disconnect the appliance and repair it. Check places where wiring is exposed, such as in the attic. Look for exposed wires and wires with cracked insulation. Replace those in poor condition. If you have ground fault circuit interrupters (GFCIs) in outlets near sinks, the laundry, the shop, and the garage, check the GFCIs monthly and after an electrical storm. Check that all appliance cords are in good condition.

HEATING and COOLING SYSTEMS

Have heating and cooling systems checked by a qualified serviceperson once a year or according to the manufacturer's warranty and service recommendations. Failure to do manufacturer-recommended servicing may void warranties. Clean or replace filters. Check your owner's manual for recommended procedures. Some filters should be replaced as often as once a month. Clean dirt and dust from around furnaces, air grills, and ducts. Regularly clean out fireplace ash pit. Have the chimney checked each fall before you use it. A build up of creosote and soot can be very dangerous. If you use your fireplace or woodstove regularly, a yearly cleaning is recommended. Seek help from professional fire fighters or chimney inspectors if you have any doubt about the chimney safety. Check the attic to be sure that insulation or other material is not blocking free air flow through soffit vents, gable vents, or other attic vents. If light from the outside shines through each vent into a darkened attic, then the vents are clear.

PLUMBING SYSTEMS

Check faucet and hose connections under sinks and toilets. Look for leaks at shut-off valves at sinks, toilets, laundry equipment, and main water shut-off valve. Is the water pressure adequate? Do all the drains run freely? In a basement or crawl space house, pull back floor insulation to check for leaks and wood damage around water supply pipes, drains, and water closet. Check sinks, tubs, and showers for proper drainage. Remove hair from drains. When necessary, use a snake or plumber's friend to unstop drains--or call a plumber. Check the pressure relief valve on the water heater. Open it to see that it is working. Check for signs of leaking or rusting. Some manufacturers recommend that a small amount of water be drained periodically from the tank.

SAFETY SYSTEMS

Test smoke alarm and heat alarm systems at least monthly. Replace old batteries. Keep a fire extinguisher handy for use in kitchen and near any wood-burning stove or fireplace. Check the extinguisher gauge for proper pressure. Keep flashlight(s) handy and in operating condition. Keep outside security lighting in good repair. Lighting exterior grounds helps discourage prowlers.

SUMMARY

Regular inspection and maintenance of your home will help you keep the house in good condition and maintain its value. Doing maintenance and repair as the need arises also keeps small problems from becoming bigger, more costly problems. Having and following a plan for home maintenance and repair will make the job easier. And finally, a well-maintained house will be more comfortable.

The checklist below can help you identify areas where work may be needed. Make note of anything that needs work. When the work is completed, add the cost and date. For information on how to make repairs or handle maintenance, contact your county extension center.

INSPECTION CHECKLIST

INSIDE

- Structure
- Floors
- Stairs
- Plumbing

OUTSIDE

- Foundation
- Stone or Brickwork
- Siding
- Paint

- Heating/Cooling System
- Hot Water Heater
- Electrical
- Kitchen
- Bathroom(s)
- Windows
- Doors
- Walls/Ceilings
- Attic
- Basement /Crawlspace
- Porch(es)
- Windows/Screens
- Storm Windows/Doors
- Roof
- Chimney
- Gutters/Downspouts
- Garage
- Drainage
- Steps/Railing

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Maintenance of Your Stucco Home

Your home requires certain maintenance items to be completed to ensure that the stucco will perform properly. Various books have been published to provide homeowners with a maintenance guide which helps them in understanding how to care for their homes. We endorse the standards and guidelines as stated in the publication titled “California Building Performance Guidelines for Residential Construction” published by The Building Standards Institute. A careful reading and following of the above referenced book will help each homeowner to understand and provide the needed maintenance for their home.

Stucco Cracks. It is the nature of stucco to experience some cracking. Small stucco cracks are normal and do not require any maintenance or repair. If a crack exceeds 1/8 inch in width then the crack should be repaired. Repairing of stucco cracks is made by adding a small amount of stucco to the crack. Do not put caulking into cracks. If you experience cracks that are over 1/8 inch in width, you should contact your builder so that the proper resolution can be determined.

Items That Can Cause Stucco Damage

1. Improper clearance between weep screeds and the finished grade. The metal weep screed installed around the bottom of your home is to allow any water that gets past the stucco to safely exit. There should be a minimum clearance of 4 inches between the weep screed and the finished grade. If concrete walkways or some other hard surface is installed up to the foundation of your home, there should be a minimum clearance of 2 inches between the weep screed and such concrete or hard surface. Care should be taken to ensure that weep screeds are not covered by landscaping or concrete walkways.
2. Attaching items to stucco walls. The stucco on your home has been installed to stop water from penetrating into the wall. If incidental water does enter through the stucco, there is a weather resistant membrane (black paper) that has been installed behind the stucco. It is essential not to penetrate the stucco wall or the weather resistant membrane with nails, screws, staples or any other fastener. If it becomes necessary to mount something to the stucco walls, a professional craftsman should be hired in order to ensure that the proper fasteners are used.
3. Sprinkler systems directed toward your home. Sprinkler systems should direct water away from the stucco walls of your home. The continual spaying of water onto stucco

walls can cause damage to the stucco, damage to weep screeds, create stains and allow green algae to grow on stucco walls.

4. **Improper Slope of Finished Grades.** The area around your home should slope or drain away from your home at a 2% slope or more. You should be careful when doing any landscaping work to ensure the slope of your finished grade is not altered. If the finished grade drains back into the home it can cause water to seep under the foundation. Wet soil can swell and expand which can lift up your home, causing damage to the stucco as well as other areas of your home.
5. **Damaged Foam Projections.** Foam projections should be treated with care. Foam projections (add-ons) are purely decorative and should not be used to climb or stand on. When using a ladder, care should be taken not to make marks in foam projections
6. **Additions to your home.** Adding on to your home or attaching a sun screen or patio cover must be done by a professional craftsman using proper materials and procedures. Otherwise you can damage your stucco system and void your warranty. The stucco contractor.

Items That Require Maintenance

1. **Windows, doors and other wall penetrations.** Where stucco meets a window, door, electrical box, dryer vent or any other wall penetration you may notice a small expansion gap. Gaps are normal and should be expected since dissimilar materials will expand and contract at different rates thus causing slight separations. Such gaps can allow excessive amounts of water to get past the stucco and therefore should be caulked at least on an annual basis. The best method is to obtain a quality tube of caulking (25 year) from your local hardware store and squeeze the caulk directly into any gaps. You can use your finger or a putty knife to ensure that the caulking is pushed into the gaps.
2. **Window weep holes.** At the bottom of each windowsill you will find several small holes that allow water to exit from the windowsill track. With the passage of time, dirt, leaves or other items can clog these weep holes causing the water in the windowsill to leak over the windowsill track into the home. When you first move into your new home, all window weep holes should be carefully inspected to ensure that they are clean. Sometimes during construction window weep holes can be filled with stucco, paint, or other construction debris. Cleaning window weep holes can be easily performed with any small sharp object such as a pen or an extended paper clip.
3. **Stucco.** Stucco should be cleaned and inspected annually. Stucco can be cleaned with water, a brush and mild detergent. Each year stucco surfaces should be inspected for any holes, significant cracks or separations. If stucco repairs are needed, it is important that such repairs be completed on a timely basis before damage can be incurred to your home.

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ROOFING 101

There are a number of things to consider when selecting a new roof system. Of course, cost and durability head the list, but aesthetics and architectural style are important, too. The right roof system is the one that balances these four considerations.

Asphalt shingles—which possess an overwhelming share of the U.S. residential roofing market—can be reinforced with either organic or fiberglass materials. Although shingles reinforced with organic felts have been around much longer, fiberglass-reinforced products now dominate the market.

Organic shingles consist of a cellulose-fiber (i.e., wood) base that is saturated with asphalt and coated with colored mineral granules. To fight fungus growth in warm, wet climates, they are available with special algicide granules.

Fiberglass shingles consist of a fiberglass mat, top-and-bottom layers of asphalt, and mineral granules. Typically, a fiberglass mat offers greater durability, but its manufacture is important.

The fire resistance of asphalt shingles, like most other roofing materials, is categorized by Underwriters Laboratories Inc. (UL) Class A, B, or C. Class A is the most fire-resistant, while Classes B and C have less fire resistance. Generally, most fiberglass shingles have Class A fire ratings, and most organic shingles have Class C ratings. UL Class A fire ratings are available for certain products that incorporate a factory-applied, fire-resistant treatment.

A shingle's reinforcement will have little effect on its appearance. Both organic and fiberglass products are available in laminated (architectural) grades that offer a textured appearance. Zinc or copper-coated ceramic granules also can be applied to either organic or fiberglass products to protect against algae attack, a common problem in hot, humid climates. Both types of shingles also are available in a variety of colors.

Wood shingles and shakes are made from cedar, redwood, southern pine, and other woods. Shingles are machine-sawn; shakes are hand-hewn and rougher looking. Their natural look is popular in California, the Northwest, and parts of the Midwest. A point to consider: Some local building codes limit their use because of concerns about fire resistance. Many wood shingles and shakes only have a UL Class C fire rating (or no rating at all).

Tile—clay or concrete—is a durable but fairly expensive roofing material. "Mission-style" and "Spanish" round-topped tiles are used widely in the California, and flat styles also are available to create French and English looks. Tile is available in a variety of colors and finishes. Note: Tile is heavy. If you are replacing another type of roof system with tile, you will need to verify that the structure will support the load.

Slate is quarried in places such as Vermont, New York, Pennsylvania, Virginia, and Canada. It comes in different colors and grades, depending on its origin. Considered virtually indestructible, it is, however, more expensive than other roofing materials. In addition, its application requires skill and experience. Many old homes in the Northeast still are protected by this long-lasting roofing material.

Metal, primarily thought of as a commercial roofing material, has been found to be an attractive roofing alternative for home owners. There are a variety of metal shingles intended to simulate traditional roof coverings, such as wood shakes, shingles, and tile. Apart from metal roofing's longevity, metal shingles are relatively lightweight, typically have a Class A fire rating, have a greater resistance to adverse weather, and can be aesthetically pleasing.

Synthetic roof products simulate various types of traditional roof coverings, such as slate and wood shingles and shakes. A point to consider: Although synthetic roof products may simulate the appearance of traditional roof coverings, they do not necessarily have the same properties.

We recommend that you look at full-size samples of the proposed product, along with manufacturers' brochures, or visit a building that is roofed with that product before making a buying decision.

All roof systems have six basic components:

- Roof structure: the rafters and trusses constructed to support the sheathing.
- Deck/sheathing: the boards or sheet material that are fastened to the roof rafters to cover a house.
- Underlayment: a sheet of asphalt-saturated material used as a secondary layer of protection for the roof deck.
- Roof covering: shingles, tiles, etc., that protect the sheathing from weather.
- Drainage: the features of the roof system's design, such as shape, slope, layout, etc., that affect its ability to shed water.
- Flashing: sheet metal or other material laid into the various joints and valleys of a roof system to prevent water seepage.

VENTILATION IS KEY One of the most critical factors in roof system durability is proper ventilation. Without it, heat and moisture buildup in the attic area combine to cause rafters and sheathing to rot, roof shingles to buckle, and insulation to lose its effectiveness.

Therefore, it is important never to block off sources of roof ventilation, such as louvers, ridge vents, or soffit vents, even in winter. Proper attic ventilation will help prevent structural damage caused by moisture, increase the life of the roofing material, reduce energy consumption, and enhance the comfort level of the rooms below the attic.

In addition to the free flow of air, insulation plays a key role in proper attic ventilation. An ideal attic has:

- A gap-free layer of insulation on the floor to protect the house below from heat gain or loss.
- A vapor retarder under the insulation next to the warm ceiling below to stop moisture from rising into the attic.
- Enough open, vented spaces properly located to allow air to pass in and out freely.
- A minimum of 1 inch (more space is preferred) between the insulation and roof sheathing.

The requirements for proper attic ventilation may vary greatly, depending on where the home is located, as well as the home site's conditions, such as exposure to the sun, shade, and atmospheric humidity. Nevertheless, the general formula is based on the length and width of the attic. NRCA recommends a minimum of 1 square foot of free vent area for each 150 square feet of attic floor—with vents placed proportionately at the eaves (i.e., soffits) and near the ridge.

EVEN ROOFS HAVE ENEMIES

Sun: Heat and ultraviolet rays cause roofing materials to deteriorate over time. The deterioration can occur faster on the sides facing west or south.

Rain: When water gets underneath shingles, shakes, or other roofing materials, it can work its way to the deck and cause the roof structure to rot. The extra moisture encourages mildew and rot elsewhere in the house, including damaged walls, ceilings, insulation, and electrical system.

Wind: High winds can lift the edges of shingles (or other roofing materials) and force water—and debris—underneath them. Very high winds can do extensive damage.

Snow and ice: Melting snow often refreezes at the roof's overhang (where the surface is cooler), forming an ice dam and blocking proper drainage into the gutter. Instead, the water backs up under the shingles and seeps into the interior. During the early melt stages, gutters and downspouts can be the first to fill with ice and be damaged beyond repair or torn off the house.

Condensation: Condensation can result from the buildup of relatively warm, moisture-laden air. Moisture in a poorly ventilated attic promotes decay of the wood sheathing and rafters, possibly destroying the roof structure. The solution may be to increase attic ventilation through the use of larger or additional vents so the attic air temperature will be closer to the outside air temperature.

Moss and algae: Moss can grow on wood shingles and shakes if they are kept moist by poor sunlight conditions or bad drainage. Once it grows, moss holds even more moisture to the roof surface, causing rot, and its roots actually work their way into the wood. Algae also grows in damp, shaded areas on wood or asphalt shingle roof systems. Besides creating an ugly black-green stain, algae can retain moisture, causing rot and deterioration. Trees and bushes should be trimmed away from the house to eliminate damp, shaded areas, and gutters should be kept clean to ensure good drainage.

Trees and leaves: Tree branches touching the roof will scratch and gouge roofing materials as they are blown back and forth by the wind. Falling branches from overhanging trees can damage—or even puncture—shingles and other roofing materials. Leaves on the roof system's surface retain moisture and cause rot, and leaves in the gutters block drainage.

Missing or torn shingles: The key to a roof system's effectiveness is complete protection. When shingles are missing or torn off, the roof structure and interior of the home are vulnerable to water damage and rot. The problem is likely to spread—nearby shingles are easily ripped or blown away. Missing or torn shingles should be replaced as soon as possible.

Shingle deterioration: When shingles get old and worn out, they curl, split, and lose their waterproofing effectiveness. Weakened shingles are easily blown off, torn, or lifted by wind gusts. The end result is structural rot and interior damage. A deteriorated roof system only gets worse with time, and it should be replaced as soon as possible.

Flashing deterioration: Many apparent roof leaks really are flashing leaks. Without good, tight flashings around chimneys, vents, skylights, and wall/roof junctions, water can sneak into the house and cause damage to the walls, ceilings, insulation, and electrical system. Flashings should be checked as part of a twice-yearly roof inspection and gutter cleaning.

CHOOSING A ROOFING CONTRACTOR Buying a new roof system is an important investment. Before you spend your money, spend some time learning how to evaluate the roofing contractor who may be doing the work. You should insist on working with a professional roofing contractor. National Roofing Contractors Association wants to assist you in getting the kind of results you expect—a quality roof system at a fair price. All roofing contractors are not alike, and NRCA recommends you prequalify your roofing contractor to get the job done right the first time. The following guidelines will help in your decision: Check for a permanent place of business, telephone number, tax identification number, and, where appropriate, a business license.

Don't hesitate to ask the roofing contractor for proof of the insurance he carries. In fact, insist on seeing copies of his liability and workers' compensation insurance certificates. Make sure the coverages run through the duration of the job. Many building and home owners have been dragged into litigation involving uninsured roofing contractors. Also, if a contractor is not properly insured, the owner may be liable for accidents that occur on the property.

Check to see if the roofing contractor is properly licensed or bonded. Some states have specific licensing requirements, and others do not. Your state's Department of Professional Regulation or Licensing Board will have this information.

Make sure the contractor is financially stable. A professional roofing contractor can provide current financial information about his company.

Look for a company with a proven track record that readily offers client references and a list of completed projects. Call these clients to find out if they were satisfied.

Insist on a detailed written proposal and examine it for complete descriptions of the work and specifications, including approximate starting and completion dates and payment procedures.

Have your contractor list the roofing manufacturers with which his firm has licensed or approved applicator agreements. Most materials require special application expertise to achieve a quality roof system that will last.

Have the contractor explain his project supervision and quality-control procedures. Request the name of the person who will be in charge, how many workers will be required, and the estimated time of completion.

Check to see if the contractor is a member of any regional or national industry association, such as NRCA.

Call your local Better Business Bureau or Department of Professional Regulation to check for possible complaints filed against the contractor.

Carefully read and understand any roof warranty offered, and watch for provisions that would void it. (See NRCA's Consumer Advisory Bulletin Roofing Warranties for detailed information about this subject.)

Choose a company committed to the safety and education of its workers. Ask the contractor what kind of safety training he provides for his workers and what industry education programs they have attended. The best roofing contractor is only as good as the workers who actually install the roof system.

Keep a healthy skepticism about the lowest bid. If it sounds too good to be true, it probably is. Many fly-by-night contractors seem attractive with their below-cost bids but often are uninsured and perform substandard work. Remember, price is only one of the criteria for selecting a roofing contractor. Professionalism and quality workmanship also should weigh heavily in your decision.

SEVEN COMMONLY ASKED QUESTIONS

Q. How can I know when a roof system has problems?

A. All too often, roof system problems are discovered after leaking or other serious damage occurs. Periodic (twice-a-year) inspections often can uncover cracked, warped or missing shingles; loose seams and deteriorated flashings; excessive surface granules accumulating in the gutters or downspouts; and other visible signs of roof problems. Indoors, look for cracked paint, discolored plasterboard, and peeling wallpaper as signs of damaged roof areas.

Q. What are my options if I decide to re-roof?

A. You have two basic options: You can choose a complete replacement of the roof system, involving a tear-off of the old roof, or a re-cover over the existing roof, involving only the installation of a new membrane and surfacing. If you've already had one re-cover over your original roof, check with a professional roofing contractor to see if your deck can support a second re-cover.

Q. My roof leaks. Do I need to have it totally replaced?

A. Not necessarily. Leaking can result because some flashings have come loose or a section of the roof system has been damaged. A roof system failure, however, generally is irreversible and results from improper installation or choice of materials or from the installation of a roof system inappropriate for the building.

Q. Can't I just do the work myself?

A. Most work should not be do-it-yourself. Professional roofing contractors are trained to safely and efficiently repair or replace a roof system. Novices can harm a roof with improper roofing techniques and severely injure themselves by falling off or even through a roof in need of repair or replacement.

Home owner maintenance should be confined to roof system inspections in the fall and spring to check for cracked or curling shingles and to cleaning rain gutters filled with dead leaves and other debris. If you must see the roof for yourself, use a firmly braced or tied-off ladder equipped with rubber safety feet. Wear rubber-soled shoes and stay on the ladder (and off the roof), if possible.

Q. How long can I expect my roof system to last?

A. The condition and lifespan of your roof system will depend on the type of roof system you have, the effects of your local environment, and the maintenance the roof system has received. According to the American Society of Home Inspectors, asphalt shingles generally last 15 to 20 years; wood shingle/shakes, 10 to 40 years; clay/concrete tiles, 20+ years; slate, 30 to 100 years; and metal roofing, 15 to 40+ years.

Roofing product manufacturers offer a variety of warranties on their products. Take a close look at those warranties to see what responsibilities and financial obligations they will assume if their products fail to reach their expected lifetimes.

Q. What will a new roof system cost?

A. The price of a new roof system varies widely, depending on the material selected, the contractor doing the work, the home itself, location of the home or building, local labor rates, time of year, and more. To get a good idea of the cost for your roof system, get three or four estimates from reputable contractors in your area. Keep in mind that cost is only one factor, and it must be balanced with the quality of the materials and workmanship.

For each roofing material, there are different grades—and corresponding prices. Plus, there are a variety of styles and shapes. You need to look at the full product range and make a choice based on your budget and needs.

Within the roofing profession, there are different levels of expertise and craftsmanship. Pick a contractor who is committed to quality work.

Q. How can I determine my annual cost?

A. When mulling over your roofing options, the following formula may help:

Total Cost (materials and labor) ÷ Life Expectancy of Roof (in years) = Annual Cost

WORDS YOU SHOULD KNOW

- **Deck/sheathing:** The surface—usually plywood or oriented-strand board (OSB)—to which roofing materials are applied.
- **Dormer:** A small structure projecting from a sloped roof, usually with a window.
- **Drip edge:** An L-shaped strip (usually metal) installed along the edges of the roof to allow water runoff to drip clear of the deck, eaves, and siding.
- **Eave:** The horizontal lower edge of a sloped roof.
- **Fascia:** A flat board, band, or face located at the outer edge of the cornice.
- **Felt/underlayment:** A sheet of asphalt-saturated material used as a secondary layer of protection for the roof deck.
- **Fire rating:** UL system for classifying the fire resistance of various materials. Roofing materials are rated "Class A," "B," or "C," with "A" materials having the highest resistance to fire originating outside the structure.

- **Flashing:** Sheet metal used to prevent the seepage of water around any intersection or projection in a roof, such as vent pipes, chimneys, valleys, and the joints at vertical walls.
- **Louvers:** Slatted devices installed in the gable or soffit (the underside of the eaves) to ventilate the space below the roof deck and equalize air temperature and moisture.
- **Oriented-strand board (OSB):** Roof deck panels (4 feet x 8 feet) made of narrow bits of wood, laid down lengthwise and crosswise in layers, held together with a resin "glue." Often used as a substitute for plywood sheets.
- **Penetrations:** Vents, pipes, stacks, chimneys—anything that sticks up through the roof deck.
- **Rafters:** The supporting framing to which the roof deck is attached.
- **Rake:** The inclined edge of a roof over a wall.
- **Ridge:** The top edge of two intersecting, sloping roof surfaces.
- **Sheathing:** The boards or sheet materials that are fastened to the roof's rafters to cover the house.
- **Slope:** Measured by rise in inches for each 12 inches of horizontal run: A roof with a 4-in-12 slope rises 4 inches for every foot.
- **Square:** The common measurement for roof area is—100 square feet (10 feet x 10 feet).
- **Truss:** The engineered components that have supplemented rafters in many newer houses. They are designed for specific applications and cannot be cut or altered in any way.
- **Valley:** The angle formed at the intersection of two sloping roof surfaces.
- **Vapor Retarder:** A material designed to restrict the passage of water vapor through a roof system or wall.

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Programmable and Automatic Thermostats

In our modern, high-tech society, we don't think much about some of the electronic gadgets in our homes. Take, for example, the ever-present thermostat--a staple of American households for decades. It usually takes the shape of an unassuming box on the wall, but that modest device controls the comfort of your family on the coldest day in January and the hottest day in July.

What is a Thermostat?

It is a temperature-sensitive switch that controls a space conditioning unit or system, such as a furnace, air conditioner, or both. When the indoor temperature drops below or rises above the thermostat setting, the switch moves to the "on" position, and your furnace or air conditioner runs to warm or cool the house air to the setting you selected for your family's comfort. A thermostat, in its simplest form, must be manually adjusted to change the indoor air temperature.

General Thermostat Operation

You can easily save energy in the winter by setting the thermostat to 68 degrees F (20 degrees C) when you're at home and awake, and lowering it when you're asleep or away. This strategy is effective and inexpensive if you are willing to adjust the thermostat by hand and wake up in a chilly house. In the summer, you can follow the same strategy with central air conditioning, too,

by keeping your house warmer than normal when you are away, and lowering the thermostat setting to 78 degrees F (26 degrees C) only when you are at home and need cooling.

A common misconception associated with thermostats is that a furnace works harder than normal to warm the space back to a comfortable temperature after the thermostat has been set back, resulting in little or no savings. This misconception has been dispelled by years of research and numerous studies. The fuel required to reheat a building to a comfortable temperature is roughly equal to the fuel saved as the building drops to the lower temperature. You save fuel between the time that the temperature stabilizes at the lower level and the next time heat is needed. So, the longer your house remains at the lower temperature, the more energy you save.

Another misconception is that the higher you raise a thermostat, the more heat the furnace will put out, or that the house will warm up faster if the thermostat is raised higher. Furnaces put out the same amount of heat no matter how high the thermostat is set--the variable is how long it must stay on to reach the set temperature. In the winter, significant savings can be obtained by manually or automatically reducing your thermostat's temperature setting for as little as four hours per day. These savings can be attributed to a building's heat loss in the winter, which depends greatly on the difference between the inside and outside temperatures. For example, if you set the temperature back on your thermostat for an entire night, your energy savings will be substantial. By turning your thermostat back 10 degrees F to 15 degrees F for 8 hours, you can save about 5% to 15% a year on your heating bill -- a savings of as much as 1% for each degree if the setback period is eight hours long. The percentage of savings from setback is greater for buildings in milder climates than for those in more severe climates.

In the summer, you can achieve similar savings by keeping the indoor temperature a bit higher when you're away than you do when you're at home. But there is a certain amount of inconvenience that results from manually controlling the temperature on your thermostat. This includes waking up in a cooler than normal house in the winter and possibly forgetting to adjust the thermostat (during any season) when you leave the house or go to bed.

Thermostats with Automatic Temperature Adjustment

To maximize your energy savings without sacrificing comfort, you can install an automatic setback or programmable thermostat. They adjust the temperature setting for you. While you might forget to turn down the heat before you leave for work in the morning, a programmable thermostat won't! By maintaining the highest or lowest required temperatures for four or five hours a day instead of 24 hours, a programmable thermostat can pay for itself in energy saved within four years. Programmable thermostats have features with which you may be unfamiliar. The newest generation of residential thermostat technologies is based on microprocessors and thermistor sensors. Most of these programmable thermostats perform one or more of the following energy control functions: They store and repeat multiple daily settings, which you can manually override without affecting the rest of the daily or weekly program. They store six or more temperature settings a day. They adjust heating or air conditioning turn-on times as the outside temperature changes. Most programmable thermostats have liquid crystal temperature displays. Some have back-up battery packs that eliminate the need to reprogram the time or clock in case of a power failure. New programmable thermostats can be programmed to accommodate life style and control heating and cooling systems as needed

Types of Automatic and Programmable Thermostats

There are five basic types of automatic and programmable thermostats: electromechanical, digital, hybrid, occupancy, and light sensing. Most range in price from \$30 to \$100, except for occupancy and light sensing thermostats, which cost around \$200.

Electromechanical (EM) thermostats, usually the easiest devices to operate, typically have manual controls such as movable tabs to set a rotary timer and sliding levers for night and day temperature settings. These thermostats work with most conventional heating and cooling systems, except heat pumps. EM controls have limited flexibility and can store only the same settings for each day, although at least one manufacturer has a model with separate settings for each day of the week. EM thermostats are best suited for people with regular schedules.

Digital thermostats are identified by their LED or LCD digital readout and data entry pads or buttons. They offer the widest range of features and flexibility, and digital thermostats can be used with most heating and cooling systems. They provide precise temperature control, and they permit custom scheduling. Programming some models can be fairly complicated; make sure you are comfortable with the functions and operation of the thermostat you choose. Remember-- you won't save energy if you don't set the controls or you set them incorrectly. Hybrid systems combine the technology of digital controls with manual slides and knobs to simplify use and maintain flexibility. Hybrid models are available for most systems, including heat pumps.

Occupancy thermostats maintain the setback temperature until someone presses a button to call for heating or cooling. They do not rely on the time of day. The ensuing preset "comfort period" lasts from 30 minutes to 12 hours, depending on how you've set the thermostat. Then, the temperature returns to the setback level. These units offer the ultimate in simplicity, but lack flexibility. Occupancy thermostats are best suited for spaces that remain unoccupied for long periods of time. Light sensing heat thermostats rely on the lighting level preset by the owner to activate heating systems. When lighting is reduced, a photocell inside the thermostat senses unoccupied conditions and allows space temperatures to fall 10° below the occupied temperature setting. When lighting levels increase to normal, temperatures automatically adjust to comfort conditions. These units do not require batteries or programming and reset themselves after power failures. Light sensing thermostats are designed primarily for stores and offices where occupancy determines lighting requirements, and therefore heating requirements.

Choosing a Programmable Thermostat

Because programmable thermostats are a relatively new technology, you should learn as much as you can before selecting a unit. When shopping for a thermostat, bring information with you about your current unit, including the brand and model number. Also, ask these questions before buying a thermostat:

Does the unit's clock draw its power from the heating system's low-voltage electrical control circuit instead of a battery? If so, is the clock disrupted when the furnace cycles on and off? Battery-operated back-up thermostats are preferred by many homeowners. Is the thermostat compatible with the electrical wiring found in your current unit? Are you able to install it yourself, or should you hire an electrician or a heating, ventilation, and air conditioning (HVAC) contractor? How precise is the thermostat? Are the programming instructions easy to understand

and remember? Some thermostats have the instructions printed on the cover or inside the housing box. Otherwise, will you have to consult the instruction booklet every time you want to change the setback times? Most automatic and programmable thermostats completely replace existing units. These are preferred by many homeowners. However, some devices can be placed over existing thermostats and are mechanically controlled to permit automatic setbacks. These units are usually powered by batteries, which eliminates the need for electrical wiring. They tend to be easy to program, and because they run on batteries, the clocks do not lose time during power outages.

Before you buy a programmable thermostat, chart your weekly habits including wake up and departure times, return home times, and bedtimes, and the temperatures that are comfortable during those times. This will help you decide what type of thermostat will best serve your needs.

Nighttime Heating: Using a programmable thermostat, you can automatically turn down your heat at night or when you are not at home.

Nighttime Cooling: In the summer, you can save money by automatically turning your air-conditioning up at night.

Other Considerations

The location of your thermostat can affect its performance and efficiency. Read the manufacturer's installation instructions to prevent "ghost readings" or unnecessary furnace or air conditioner cycling. Place thermostats away from direct sunlight, drafts, doorways, skylights, and windows. Also make sure your thermostat is conveniently located for programming.

Some modern heating and cooling systems require special controls. Heat pumps are the most common and usually require special setback thermostats. These thermostats typically use special algorithms to minimize the use of backup electric resistance heat systems.

Electric resistance systems, such as electric baseboard heating, also require thermostats capable of directly controlling 120 volt or 240 volt line-voltage circuits. Only a few companies manufacture line voltage setback thermostats.

A Note for Heat Pump Owners

When a heat pump is in its heating mode, setting back a conventional heat pump thermostat can cause the unit to operate inefficiently, thereby canceling out any savings achieved by lowering the temperature setting. Maintaining a moderate setting is the most cost-effective practice. Recently, however, some companies have begun selling specially designed setback thermostats for heat pumps, which make setting back the thermostat cost effective. In its cooling mode, the heat pump operates like an air conditioner; therefore, manually turning up the thermostat will save you money.

A Simpler Way to Control Your Environment

The best thermostat for you will depend on your life style and comfort level in varying house temperatures. While automatic and programmable thermostats save energy, a manual unit can be

equally effective if you diligently regulate its setting--and if you don't mind a chilly house on winter mornings. If you decide to choose an automatic thermostat, you can set it to raise the temperature before you wake up and spare you some discomfort. It will also perform consistently and dependably to keep your house at comfortable temperatures during the summer heat, as well.

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Common Thermal Replacement Window Questions

Many of us are familiar with the ubiquitous advertising "deals" on thermal replacement windows. They tell us that replacement windows will save us money on energy and maintenance. They tell us our home will be cozier. They tell us our home will be more valuable. We wonder whether any of what they say is true. We ask questions and get some hi-tech double talk about low-E glass and argon gas. They might as well be talking Chinese.

So what is the truth about thermal replacement windows?

Here are straight answers to the most commonly asked questions about windows:

Q. What's the difference between the windows I have now and thermal replacement windows?

A. You may already have thermal replacement windows. The easiest way to check is to see if there is more than one sheet of glass between you and the outdoors. Thermal windows are always double- or triple-paned. Traditional windows are single-paned. Thermal replacement windows allow far less heat to escape your home in the winter and less heat to get in during the summer, lowering your fuel bills considerably. Most thermal windows also eliminate the need for painting.

Q. Do thermal windows really save enough energy to pay for themselves?

A. Windows and doors are typically responsible for about 40 percent of your home's heating bill. Thermal windows are typically two to four times more efficient than older single pane windows. That means you can expect your winter heating bills to drop on average about 20 percent to 30 percent. The bigger your fuel bills and the draftier your old windows, the quicker your new windows will pay for themselves.

Q. Are the replacement window telemarketing firms that call me legitimate?

A. Both legitimate firms and shady firms use telemarketing as a way to get business, so it's hard to generalize. Although telemarketing is annoying, it does not necessarily mean the company is crooked. Most telemarketers set up appointments for free estimates. Expect to be put under considerable pressure to buy during the free estimate. Never buy windows without getting more than one estimate. Whenever hiring any home service firm, use a contractor referral service or thoroughly interview references and check records with area consumer agencies.

Q. I've seen some pretty good deals on windows at a local home center store. Is that a good way to get windows?

A. Sometimes you can get a good price at a home center, but there are several pitfalls to watch for. First of all, the best prices are typically for "bargain" windows that may not be built well and may not last long. Second, it is difficult to get a pro to install windows you buy from a home center. Most pros realize that if something goes wrong and it is due to a shortcoming in the window, they will likely shoulder the blame. That means either you or a handyman will have to do the installation. If thermal windows are not installed exactly plumb and square, with all the appropriate insulation, you may get little or no energy savings.

Q. What is "low-E glass"?

A. Low-E glass has a special coating that blocks certain kinds of light that we can't see. The result is that it looks like normal glass but insulates better.

Q. What is argon gas?

A. Argon is one of the most popular gasses used to fill the space between the two (or three) panes of glass in a thermal window. Argon is a good insulator.

Q. With all the technical terms, how can the average homeowner make comparisons?

A. The best way to compare windows is to check for a rating from the National Fenestration Rating Council (NFRC). Most major brands of windows have a sticker on them that lists their NFRC rating. The lower the number the better. To achieve a low score the manufacturer has to build the window carefully and incorporate a variety of energy saving features.

Q. Are "maintenance-free" windows really maintenance-free?

A. Most thermal replacement windows are made of wood, vinyl or a combination of the two. Vinyl windows require no painting, inside or out. Windows are the most difficult and expensive part of any painting project, so by eliminating the need to paint windows, homeowners can usually save a huge amount of money. Switching to "maintenance-free" vinyl windows may cut your painting bills by 50 percent. Vinyl windows still have to be cleaned, so they are not completely maintenance free.

Q. Is it a good idea to buy one of the well-known brands of windows I see advertised on television and in magazines?

A. All the well-known brands make at least one line of highly rated windows. The problem is that the well-known companies may also make other lower quality lines of windows -- including some of the so-called bargain windows that are built to be cheap. This means that you have to look beyond brand name. Many contractors install what are called "no-name" windows. Actually, the windows have a brand, just a brand no one has heard of. If you are working with a truly reputable contractor, he is not going to steer you towards a bad window -- after all, his reputation is on the line. There are many well-made no-name windows that offer consumers bang for their buck.

Q. Is window replacement a big project?

A. In terms of dollars, it's a big project. Doing the whole house may run many thousands of dollars. However, the work itself is pretty straightforward. A whole house can be done in as little as a day or two, with little disruption to interior spaces and household routines.

Q. Given the high cost of windows, does it make sense to borrow the money?

A. Borrowing to replace windows makes a lot of sense. You get your cozier, better-looking windows now, and the energy savings and maintenance savings will help offset your monthly payments. For most homeowners, a loan can be arranged wherein the interest costs are tax deductible, yielding additional savings. The savings will continue long after the payments have been completed.

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