Log Homes Council of the National Association of Home Builders

Appraising Log Homes

An overview of the log home industry and log home appraisals

Revisions by the Log Homes Council
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Introduction

While log homes appeal to many home buyers, determining their value presents a challenge for appraisers and lenders. Log homes comprise a specialized segment of the housing market, making valuation and comparisons with other types of housing difficult. Because many appraisers and lenders have limited experience with log construction, they turn to comparable value properties to establish value. But, a comparable value approach can be misleading unless the appraiser understands how to select comparables.

In cases where the appraiser or lender is uncertain, the final appraisal may be over conservative. As a result, the potential home buyer may be unable to meet mortgage or construction loan requirements. Not only do homeowners lose an opportunity to own the type of house they desire, the lender loses a potential loan, the log manufacturer loses a potential sale, and the local construction industry loses job and material sales opportunities.

This booklet is designed to familiarize you, the appraiser or lender, with log homes included styles, construction and cost variables, market trends and points of comparison with other types of housing. It is designed to help you accurately establish the value of log homes.

Home Market

Many people are drawn to log homes, and the appeal of log homes has fueled the development of a modern log home industry. Over 400 manufacturers, ranging from small sawmill operations to sophisticated, full service housing companies, serve this growing market.

Log Homes have been a part of America's housing heritage since colonial days. Abundant forests and the availability of large trees made log shelters an easy solution to housing demand. Because early log homes or cabins were often used as temporary structures or interim residences, they were often hastily constructed, poorly sealed and ill-maintained. Working with minimal tools and primitive knowledge, almost anyone could build serviceable shelter that would last the few years necessary until a "proper" house could be built. Later, from the vantage point of that "proper" house, many who started life in a log cabin looked back with nostalgia on the rustic structure.

Today, few people start life in a log home (although there are probably more today who can claim a log home heritage than at any time in the last few generations). The appeal of logs has become one of nostalgia for simpler times, a more "natural" lifestyle, and perhaps breathing room after a day spent battling modern technology. Log home living today is not just about housing, it's about lifestyle. This has important implications for valuing the structure and its marketability.

The log home market of today can trace its beginnings to the late 1960s or early 1970s when a "back-to-the-land" ethic inspired many to look toward self sufficient lifestyles. Until then, log cabins occupied the niche of "vacation homes," seasonal dwellings, constructed inexpensively with only basic amenities. Suddenly, more people were looking for a permanent residence they could construct (or at least participate in construction) themselves. As log homes shifted from seasonal to permanent dwellings, they increased in size and were filled with the same amenities as conventional homes.

Several characteristics of log home enthusiasts contribute to the overall high quality and value of log homes. First, log homes are usually built as someone's dream home. Second, log home shoppers usually spend considerable time researching the product before they buy. It is not uncommon for a log home purchaser to spend several years and amass large amounts of information before actually purchasing a home. Third, occasionally log homeowners become involved in supervising or actually participating in construction of their home. The homeowner is sometimes responsible for the actual design of the house. As a result, the quality of the home may reflect the owner's design, management, or construction skills (or lack thereof). Since most homeowners take great pride in their homes and spend considerable time preparing to build, quality tends to be higher than in conventionally built homes.

A final characteristic of log home enthusiasts is their dedication to owning a log home. Most are not interested in another type of housing and will purchase a conventional home only if circumstances prevent them from owning a log structure. They are prepared to pay the same or more for their log home dream. A study by the National Association of

Home Builders confirmed this by finding no difference in re-sale value of log homes when compared to other types of housing.

Appraising Log Homes

Appraisers and lenders face two types of log home appraisal: (1) appraisal of a home to be constructed, (2) appraisal of an existing home. Appraising a log home guided only by blueprints is difficult, especially for someone not familiar with log construction. Existing log homes are easier to appraise because there is a tangible product to evaluate. Other variables, however, are introduced, such as quality of construction.

The comparable value approach is made difficult because of wide variation in style and design. Also, some of the features in a log home appeal to log home buyers, but not necessarily the mass home buying market.

These don't actually lower the value of the home (they may in fact increase it), they simply change its market position. Not everyone likes the rough hewn look of certain types of log homes, but those that do are prepared to pay as much, or more, for a conventional home of similar design.

Traditionally, appraisers and lenders based comparisons on homes of similar construction and design. This often made it impossible to appraise a log home simply because no similar home existed in the market area. Fannie Mae addressed this problem in Announcement 91-28 which stated "We have no requirement that one or more of the comparable sales must be of the same design and appeal as the property being appraised … If recent comparable sales of the same design and appeal as the property that is being appraised are not available, but the appraiser is able to determine sound adjustments for the differences between the comparables that are available and subject property and to demonstrate the marketability of the property-based on older comparable sales, comparables sales in competing neighborhoods, the existence of similar properties in the market area, and other reliable market data – the mortgage is acceptable to Fannie Mae."

Fannie Mae's guideline leaves more flexibility in choosing comparables, but the appraiser or lender is still left with the challenge of choosing realistic comps. Because log homes are usually sold and delivered as packages, there has been a natural tendency to label them as a type of prefabricated home for which cost comparison data is more readily available. There is some prefabrication involved in log home construction, including pre-cutting and pre-drilling logs. As with custom conventional construction, a bulk of the log home materials must be assembled on the site. However, the uniqueness of log homes can often call for skills beyond those of conventional carpentry, making a finished log home truly a work of custom craftsmanship. Given the intricacies in construction, a log home can be compared to any custom home.

When comparing log homes with conventional ("stick-built") homes it is important to recognize that log homes are usually highly customized both in design and materials. They often include features considered upgrades in other types of housing.

These include:

- Open beamed ceilings
- Cathedral ceilings
- Solid wood wall coverings
- Solid wood siding
- Custom wood stairs and railings
- Custom wood trim
- Custom or solid wood interior doors
- Solid wood floors
- Custom wood cabinetry
- Masonry fireplaces
- Energy efficient windows
- Cedar shake, metal or slate roofs
- Set on large, often secluded lots
- Porches and decks

When comparing a log home to a similar sized custom conventional home that does not include these features, the value contributed to a conventional home can be added to give a more realistic picture of the value of the log home.

Because of their custom features, log homes are often more expensive to construct than basic tract-built stick homes. This can be seen by comparing the construction process as in the following table:

Stage	Conventional	Log
Excavation	Typical	Typical
Foundation	Typical	Typical
Structural shell	Typical	Higher labor costs for log erection; timbered roofs
Interior framing	Typical	Higher cost due to construction details required in framing to accommodate log shape and settling
Mechanical systems	Typical	Typical to higher cost depending on system
Roofing	Typical	Typical to higher cost depending on owner preference
Trim	Typical	Typical to higher cost if custom trim is used; custom cabinetry, stairs and rails common
Painting, varnishing	Typical	Typical to higher, usually more stained and varnished areas, may be done by

		homeowner
Exterior	Typical	Higher cost to trim and seal because of logs

Types of Log Homes

HAND-CRAFTED

These are one-of-a-kind homes built by a log home specialist known as a hand-crafter. Working with raw logs, which he has either purchased or cut himself, the hand-crafter prepares logs individually using powered or manually operated hand tools. Corner joints are measured, marked, and cut individually. Logs are cut to length and numbered. Usually, the shell of the house is pre-assembled without seals or fasteners at the hand crafter's logyard, individual pieces are number, and the shell disassembled for shipment to its final destination. There it is re-assembled and finished.

Handcrafted homes are usually distinguished by the large logs used and the chinking (1" or larger bands of white or colored grout) that fills and seals spaces between logs. Hand-crafters often include other custom features such as hand-cut timber framed trusses, stairs, and railings. Sometimes hand crafters embellish timber components with decorative carving.

Hand crafters may be responsible for erection of the log structure only or they may finish the house entirely. The quality of the structure is dependent on the skills of the hand crafter and the design chosen by the home buyer.

The cost of a hand-crafted log home ranges from moderately to substantially more expensive when compared to a conventionally framed home. A great deal more hand work, requiring time and specialized skill, goes into the construction of a hand-crafted log house.

MANUFACTURED OR MACHINE MILLED

Manufactured log homes are based on logs that have been shaped with milling machinery. The manufacturing process varies from simply removing bark to milling the log into a variety of profiles that may include interlocking tongues and grooves, corner notches and slots from splines. Some manufacturing processes include manual operations similar to handcrafting.

Log home manufacturers sell their product as "packages" or "kits." Minimally, a kit consists of logs, fasteners and sealants that form the log wall system. Many manufacturers also include other components of the house structure, including windows, doors, shingles, dimensional lumber, porch and deck material, stairs and trim. Often manufacturers offer their packages in several levels of completeness.

Log home manufacturers are often further distinguished according to whether they offer pre-cut or random length logs in their packages. Pre-cut logs are cut to length and

numbered according to a master "cut sheet" that is used to guide assembly of the wall system. Random length logs are supplied in bundles that have not been cut to a specific length. Measuring and cutting is done by the carpenters or erection crew on the job site.

Milled logs are offered in a variety of profiles depending on customer preference and manufacturer capability. Some profiles result in log walls that are not even recognizable as solid log at a distance. For example, "clapboard" styled milled logs are sometimes used in subdivisions with covenants that restrict exterior appearance of the homes. Clapboard logs give the appearance of wood siding.

By mechanizing some of the processes involved in shaping logs and making joints, manufactured log systems offer potential cost advantages over hand-crafted homes. The greater uniformity possible using machine shaped logs can also reduce labor costs on the job site by reducing construction time and skill level of workers. However, high quality still requires the guidance of someone skilled in log construction.

Log Systems

Corner Systems

Corner systems vary in complexity and many manufacturers offer more than one style of corner. Corner type can affect final house cost by affecting both the labor and time required to construct log walls. Subtle variations in corners result from different manufacturers' methods of dealing with fastening and sealing corners. However, most log home corners fall into four basic categories.

Butt & Pass

Butt & Pass corners are the simplest and most widely used in log homes. Using this system, one log of a corner pair butts against the other log of the pair. The second log usually passes beyond the corner to overhang outside the corner of the house. Butt & pass logs alternate in successive log courses, creating a distinct pattern of alternating overhanging logs on the corner. The pattern is a desirable feature of many log home buyers because it instantly identifies the house as a log home.

Butt & pass corners are often modified to create a stronger or better sealed joint. For example, notches may be cut in the pass log into which fits a tongue cut in the end of the butt log (mortis & tennon). While these may increase strength or weather tightness of the corner, a basic butt and pass joint is still strong enough and can be made tight enough to handle the stresses imposed by the log system.

Dovetail

Dovetail joints require precision cutting machinery or a skilled hand-crafter. The joints are designed so that settling and normal log movement act to strengthen rather than loosen the joint. In a dovetail, the two logs that form the corners are each notched in a modified "V." The "V" holds the corner together and any movement in the log or settling tends to drive the logs tighter together. Dovetail

joints are characteristic of many handcrafted houses and are reminiscent of the early log homes built throughout the Appalachian Mountains.

Saddle-notch

Saddle notches often secure corners in a variety of log profiles. The basic joint is made by cutting a notch into one or both logs of a corner pair. One log fits into the notch in the other or, if both logs are notched, the two are interlocked. Like dovetails, saddle notches are cut using precision machinery or in the case of hand-crafters, by hand. Saddle notches simplify corner construction and may reduce labor costs. Like butt and pass corners, saddle-notched corners produce a distinctive appearance. A fully notched corner can have solid, rather than alternating overhangs on both sides of each corner. Overhangs may be cut in decorative patterns.

Post & Sill

Post & sill construction is distinguished by the presence of vertical posts at corners and periodically along walls. Actually not just a corner system, it represents a different method of log wall assembly. Usually posts are slotted allowing insertion of a tongue milled into the end of the log. As a result, post and sill houses are similar to timber frame homes. As logs settle, they simply slide down the slots in the posts. The frame does not settle.

LOG TYPE

A variety of wood species are used for the logs that make up a log home. Manufacturers and prospective log home owners invest much energy in defending one species or another. In fact, the preservatives, modern sealants and insect repellents that are part of modern log homes make differences in wood species less significant to the structural integrity of the house. Specific woods, however, have characteristics that may appeal to a particular buyer or offer a particular look. For example, oak has a very rich grain that appeals to some people; cedar offers a distinctive color and aroma that attracts others.

Selection of wood species affects the finished house costs. Pine and oak are usually less expensive than cedar. Cypress also carries a higher price tag.

In addition to solid log wall systems, an increasing number of manufacturers are offering “super-insulated” log systems. These originated as a means of meeting stringent energy code requirements in some areas. Super insulated systems consist of half-logs or log siding covering a core of insulated framing or structural insulated panels, both inside and out. The appearance is identical to a solid log house with manufacturers even including full log corners to maintain a traditional log home “look.” Interior construction is simplified because such homes do not require special features to control log settling. These homes offer a broader market appeal by combining many of the most desirable features of a log home with some of the positive features of a conventional home.

FASTENERS

Logs can be secured in the wall using a variety of fasteners. Three of the most common fasteners include spikes, lag screws, and through-bolts. Some manufacturers pre-drill the logs for the fasteners used to ensure proper placement, spacing, and vertical alignment. All three factors can affect the settlement of the log wall system and the integrity of its weather tight seals. Each log home manufacturer should provide details on the proper utilization of fasteners in their log wall system.

Sealing Systems

Each manufacturer includes a sealing system designed to prevent air and water infiltration at joints. A variety of materials are used and new sealants frequently appear on the market. Sealants may be solid foam or compressible material such as butyl rubber, liquid foam, and caulk. Some systems use splines and adhesives instead of, or in addition to, foam and caulk sealants. Solid foams are supplied in rolls or sheets and are designed to be compressed between logs. They may be adhesive although some are not. Liquid foams are supplied in cans or bottles and are injected into holes or grooves. They are designed to expand, sealing spaces around them. Caulk is designed to be injected into joints and is often used to seal log home exteriors and interiors. Depending on a variety of factors, reapplying caulk may be a part of routine maintenance of a log home. It is important to properly maintain a log home to prolong its life and beauty.

Roof Systems

A variety of roof systems are used in log homes. The specific roof system used in a home depends on owner preference, budget, and availability from the manufacturer. Many manufacturers offer more than one roof system. The type of roof system affects both the cost of the finished home and its perceived value.

Conventional

Conventional roofs are made from dimensional lumber assembled just as in conventionally framed houses. Roof framing material consists of either dimensional lumber rafters or pre-fabricated trusses. The framing is covered by plywood sheathing, felt paper, and shingles. The roof is insulated using fiberglass, foam batts, or blown-in-fibers. Roof ventilation is required just as for conventional houses. Because materials and construction are similar, the cost of a conventional roof is no different than in a conventional home. This is usually the least expensive roofing option for a log home.

Built-Up

Built-up roofs offer wooden (usually) ceiling coverings and exposed beams, both features sought after by many log home customers. A built-up roof is built by erecting a framework of timber rafters. Purlins, timbers set horizontally, paralleling the ridge line, may also be used. Solid wood decking, usually of tongue and groove pine or cedar, is secured to the top of the roof framework. Rigid insulation is placed over the decking and covered with a layer of sheathing. Some systems add a layer of sleepers before the sheathing or use two layers of sheathing separated by sleepers to create an airspace for ventilation.

Because they use large timbers and tongue and groove decking and require more labor to construct, built-up roofs can cost several times as much as conventionally framed roofs. The look created, however, adds significantly to the lodge-like atmosphere many buyers are seeking which can add significantly to the value of the home.

ROOF COVERINGS

Roof coverings used on log homes are similar to those used in conventional homes. Fiberglass or composition shingles are the basic coverings offered by most manufacturers (when they include roof coverings in their package). Other popular coverings include cedar shakes, slate and metal. These add significantly to the cost of a home, just as they would with conventional construction.

TRIM

Log homes usually have more trim, particularly on the exterior, than conventional homes. The quality of trim and its installation can affect the perceived quality of a completed log home. Because log home packages, styles, and owner preferences vary, there is no standard for trim. Also, since home owners often install trim themselves, it may reflect their abilities rather than the quality of the structure itself. It is important to not judge all log homes by the quality of trim work found in some.

Log home trim varies from plain dimensional lumber (usually pine or cedar), to the same pre-fabricated trim used in conventional housing, to custom made trim from a variety of woods. Trim may be supplied ready to install or may arrive from the manufacturer as dimensional lumber to be cut and shaped on the job site. Log home interior trim is often stained and varnished rather than painted, a feature that would add considerably to the value of a conventional home.

Maintenance

While not a factor in appraising a log home to be constructed, maintenance plays a role in evaluating existing houses. Like conventional homes, log homes require periodic maintenance. As with conventional housing, neglecting maintenance affects the appearance and perceived value of the home. Log home manufacturers and builders stress the importance of maintaining a water resistant wood preservative on the exterior log surfaces with UV protection or inhibitors. Failure to do so may result in a gray weathered appearance that some people find attractive but many do not. While this may affect the perceived value of the house, the condition is not usually serious and is easily remedied by simply pressure washing or bleaching the exterior and applying a sealant. While the condition may look serious, it is usually no more serious than a conventional home in need of re-painting.

Shrinkage and Settlement

Settlement occurs in all types of houses, but the nature of log construction can make them susceptible to greater settlement than other systems. How settlement is handled by manufacturers, carpenters, and homeowners can all affect the quality of a log home.

Shrinkage (the dimensional change) of logs occurs as they acclimate to the inside environment of the home. The amount of shrinkage per log (and ultimately the whole wall system) may differ due to a variety of factors.

Settlement results primarily from the shrinkage and/or compaction of logs after construction of a home. Shrinkage affects logs differently, depending on the average moisture content of the logs and the construction system used. Usually, logs settle as they shrink, slightly reducing the overall height of a log wall.

Because log systems vary widely, there is no standard for treatment of shrinkage/settlement that applies to all. The Log Homes Council of the National Association of Home Builders specifies that its members must either utilize a non-settling log system or have some method for accommodating settlement, but leaves the engineering details to the individual manufacturers.

Each Log Home Council Member manufacture has defined specifics on how they address the settlement issue with their "settling" or "non-settling log system."

Energy Efficiency

Log homes have a deserved reputation for energy efficiency. Tests performed by the federal government found a log structure to perform as well or better than other types of construction, including an R-11 insulated 2x4 framed wall structure, even though the nominal R-value of the log wall was less than nine.

Experts attribute the energy efficiency of log homes to thermal mass of the solid wood walls. In addition, a well-sealed and maintained log home does not exhibit the energy loss due to convection or air infiltration that is characteristic of framed wall construction.

Although log homes have inherent energy efficiency, this can be offset by poor construction or maintenance. Log home manufacturers provide specific construction details and maintenance guidelines to ensure that homeowners realize the full benefit of log construction. If these guidelines are not followed, the result may be high utility bills.

Summary

Just as with frame construction, log homes show wide variation in design, style and quality. Determining the value of a log home involves analyzing these characteristics, not only in relation to the conventional housing market, but as they relate to the log home market, too. Since log home buyers represent a unique market segment, they often desire qualities not sought by conventional home buyers. For many, the more a log home approaches a conventional one (drywall interior partitions and ceiling, painted trim) the less interested they are. In addition, many of the features sought by log home buyers would be considered expensive upgrades in a conventional house. For example, cathedral ceilings, hardwood floors, solid wood, custom cabinetry, exposed beam

ceilings, fireplaces, wood wall and ceiling coverings, stained and varnished trim, porches and decks are considered "standard" amenities in many log homes.

The nature of the construction process also contributes to the high quality of log homes. Despite the pre-packaging of materials, there is very little pre-fabrication in a log home. Even with milled, pre-cut logs, assembly is usually labor intensive, requiring craftsman-like skill. The result is a unique, highly customized home that carries a cost typical of custom craftsmanship.

Log home buyers also contribute to the value of their home. Log homes are rarely built as "spec" or tract homes. Most construction originates as "dream" homes for log home buyers. Thus the home often receives far more attention from their original owners. Most log home owners spend an extended period researching their home. One to three years spent selecting a log home is not uncommon. Home buyers are usually well versed in construction technology and log home characteristics. The home owner usually directs the design of the home and monitors construction carefully. Most log home owners are very attentive to maintenance.

As a result of the materials used in log homes and the methods used in their assembly, log homes usually cost more to build than conventional homes. Although manufactured log homes began as an inexpensive housing alternative, with advertising aimed at the "do-it-yourself-and-save" market, the market has changed. Log home buyers expect higher quality form a log home than from a conventional home, with additional amenities. They occasionally participate in construction and may act as their own contractor. As a result, log homes are truly custom homes, with appeal to a growing, specialized market.

Marshall& Swift

For those new to the residential building market, Marshall& Swift is one of the authorities serving the appraisal industry. Marshall& Swift prides itself on providing appraisers with the necessary cost data to complete evaluations of residential properties across the country. It has served the industry for more than 75 years.

Seeing the unique fit the log homes market has within the residential industry, Marshall& Swift turned to the Log Homes Council in 1997 to learn how to more accurately capture the value of log homes in appraisals. The LHC assisted in developing "The Log Home Appraisal Training Guide" which was designed to be a companion text to the Residential Cost Handbook, a standard publication for Marshall& Swift.

The Log Homes Council encourages anyone interested in log home appraisal to utilize this resource to learn more about the designs, components, and customization of today's modern log homes. Topics in the Marshall & Swift Guide are similar to those contained in this document (energy efficiency, sealing systems, maintenance, etc.). Most sought-after is the guide's analysis on appraisals of conventional versus log homes.

About the Author

Jim Cooper is an experienced log home builder who has also written a book on log home construction for the novice, *Log Homes Made Easy / Contracting and Building Your Own Log Home*. Jim also writes articles about log home construction and design for leading consumer magazines devoted to log homes and log home lifestyles.

About the Log Homes Council

The Log Homes Council is part of the Building Systems Councils, an umbrella organization of the National Association of Home Builders. Members of the Log Homes Council are log systems manufacturers. The Council is dedicated to promoting excellence in log wall construction by contributing to the standards and codes that affect the quality of log homes built in the United States. Members of the Log Homes Council produce model code complying building, and are committed to professional and fair business practices.