

Florida Cooperative Extension Service

Fact Sheet EES-55 July 1991



Manufactured Housing: Consumers' Guide to Selection and an Energy Efficient Lifestyle¹

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The purpose of this factsheet is to provide the energy-conscious manufactured home owner or potential buyer with information on:

- what to look for when buying a mobile home.
- how to select an energy-efficient manufactured home site.
- how to select a manufactured home park conducive to an energy-efficient lifestyle.
- what can be done to improve the energy efficiency of an existing manufactured home.

The term "manufactured home" is used somewhat synonymously with a mobile home or house trailer. A mobile home is a dwelling built in a factory on an integral chassis that can be transported in one or more sections. Each section is between 8 and 14 feet wide, and can be up to 76 feet long (Tables 1 and 2). In 1986, one-quarter of all new, single family homes sold in America were manufactured homes. Many manufactured homes are used as permanent residences; most are never moved. Their wheels, installed at the factory, are used as a means of transportation to the home site, at which point they are usually removed.

Some modular homes are also built in factories. The main difference between manufactured and modular homes is the building code that applies to them. Manufactured homes are built to federal standards and inspected by federally certified agencies. Modular homes are built to state and local codes.

FEDERAL STANDARDS

All manufactured homes built since the middle of 1976 conform to the National Manufactured Home Construction and Safety Standards established by They are administered by the U.S. Congress. Department of Housing and Development. Every manufactured home has a red and silver seal certifying it was built in compliance with the federal code. This code regulates minimum standards with respect to design and construction, strength and durability, fire resistance, and energy efficiency. Heating, air conditioning, plumbing and electrical systems are also regulated under this standard. It should be pointed out that these standards generally are not as rigorous as state and local standards applied to site-built homes. However, some mobile home manufacturers do exceed these federal standards or offer special upgrade packages for additional cost.

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Table 1. Manufactured home purchase trends.

Manufactured Homes	length	width	1984	1985	1986
Single Section	48' to 76'	12' to 14'*	71%	67%	63%
Multisection	36' to 70'	24' to 28'	29%	33%	37%
* There are some 16-foot-wide, single-section homes produced in limited market areas.					

Table 2. Manufactured home purchase prices.

	19	85	1986		
Type of Home	Retail \$	Average \$	Retail \$	Average \$	
Single Section	8,400 to 37,000	17,800	8,400 to 37,000	17,800	
Multisection	15,000 to 70,000	30,100	15,000 to 70,000	30,800	

WHAT TO LOOK FOR WHEN BUYING A MANUFACTURED HOME

Shop around for the manufactured home of your choice. Compare cost, floor plan design, energy efficiency, and interior and exterior decor. Don't hesitate to find out the details of its construction methods and materials. A reliable dealer will be happy to explain them to you. Be sure that all warranty and appliance instruction booklets, and homeowner and setup manuals are in the home. Beware of a new manufactured home that does not display a label certifying code compliance. (All single family manufactured homes must bear a certification label which is displayed on the rear of the home. A label is required for each section of the home.)

Other common standard and optional features available from most manufacturers are listed. While not every feature is available from each manufacturer, most are. Check with your dealer to see what his manufacturer offers.

Typical Standard Features

These include 2" x 4" exterior stud walls at 16" O.C.; 2" x 3" interior stud walls at 16" O.C.; solid 2" x 6" transverse floor system; structurally engineered, full-length I-beams; plywood floor decking; certified truss rafters; shingle roof; pre-finished siding; 20gallon water heater; 100-amp electric panel; carpet with pad throughout (except kitchen and utility); smoke detectors; vapor barrier at roof; drapes, curtains and rods; R 7-7-14 insulation (floor-wallsroof); silent light wall switches; gas furnace; 30" range with hood; refrigerator; egress windows in all bedrooms and bathrooms; 90" sidewall height; detachable hitch; copper wiring throughout; overhangs; exterior receptacles with GFI; exterior lights at all exits.

Typical Options

These include insulation upgrades; insulated windows; infiltration barrier; appliance upgrades; overhead ducts; heat pump system; furniture packages; wood entry door; interior finish upgrades; exterior finish upgrades.

Energy Efficient Options

Energy options should be selected on the basis of effectiveness, comfort, and aesthetics. To be cost effective, a simple payback should be achieved in approximately six years. To determine payback, the estimated annual energy savings should be divided into the total cost of installation. If this value is six or less, then it is a wise investment. The estimated savings of the energy option may be obtained from the manufacturer, sales staff, or utility company -usually as a service at no cost.

Generally speaking, insulation upgrades, appliance upgrades, and more efficient heating, water heating, and air conditioning systems are wise investments. In Florida, installing insulated windows may not be cost effective; however, installation of tinted glass, solar screens, or awnings on the east and west windows may be a good investment and also improve comfort.

Insulated skirting is also considered a reasonably good investment because it can:

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- improve the energy efficiency of the home by diminishing heat transfer through the floor.
- assist in preventing the water pipes from freezing in the winter, particularly in north Florida.

Prior to installing the skirting, place a plastic vapor barrier that is six millimeters thick on the ground under the mobile home, and then install the insulated skirting. This will prevent water vapor from migrating up through the ground and floor of the mobile home.

If possible, the air conditioning system should have a Seasonal Energy Efficiency Ratio (SEER - an indicator of efficiency) equal to or greater than 8.5. The efficiency of a heat pump is based on a Coefficient of Performance (COP) -- the higher the COP, the more efficient the system. A COP of 2.5 or greater should be considered.

If possible, natural gas heating and water heating should be selected over other options because of the low energy cost and rapid heat available in these systems. Natural gas cooking is also a wise energy and convenience option. Natural gas is considerably less expensive than liquid petroleum gas (LPG) such as propane or butane. A heat pump with a COP of 2.5 or greater is more cost efficient than a LPG system. Water heaters should have extra insulation wrapped around them to improve their thermal integrity.

PRICES, FINANCING, INSURANCE, CONTRACTS, AND FEES

Prices

There are many sources for financing your manufactured home in addition to dealer financing. Shop around for the best finance and insurance plan, as costs will vary. Prices of manufactured housing vary significantly depending upon size, quality of construction, options chosen, and manufacturer. Prices can range anywhere from \$12,000 to \$60,000. Table 3 provides a comparison of costs between manufactured housing and site-built homes from 1982 through 1986.

Financing

Banks, credit unions, and savings and loan associations are now making loans for mobile homes. Mobile homes can also be purchased under the Federal Housing Authority (FHA) or Veterans Administration (VA) loan guarantee programs. Down payments range from no down payment under VA regulations to 20-30% under a chattel mortgage plan. Mortgage lengths vary, but are generally between 10 and 15 years, depending upon the type of home and financing.

The Federal Truth in Lending Law requires the lender to disclose the annual percentage rate you are being charged. Get this in writing.

Insurance

If you finance your mobile home, you must have fire and theft insurance. The buyer may also wish to secure personal belongings and life insurance coverage. Again, it is wise to shop around for the best insurance plans and to choose a reputable company.

Contracts

Be sure you understand which items on the contract are your responsibility, which items are the dealer's responsibility, and that all items are clearly defined. Do not leave any blank spaces on the contract, and be certain that ALL the items that you and the dealer have agreed to are covered by the contract. Do not rely on oral agreements. Read the entire contract before signing it, and be sure to save a completed copy for your records. If you place a deposit on a home and do not complete the sale, you may forfeit part of your deposit, depending on your contractual agreement. If the purchase is contingent upon the sale of your present home, this condition should be noted on all copies of the contract, and initialed by both parties. If the dealer is to retain the "running gear" from your home, this must also be stated on the contract.

Tag and Title

An annual state license fee is assessed by the Department of Highway Safety and Motor Vehicles, based upon the size of your mobile home. A license plate placed on the back bracket of your mobile home shows this fee is paid. Since the manufactured home may be treated as a motor vehicle, it requires a certificate of title as proof of ownership. There is a separate title document for each "section" of your manufactured home. If you manufactured home has been paid for in full, you will receive the title(s) from Tallahassee. If there is a lien on your home, the lien holder will receive the title, and hold it until the lien amount has been paid. If you own the land on which your manufactured home is located, you may declare

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Manufactured Homes	1982	1983	1984	1985	1986		
Average Sales	\$19,700	21,000	21,500	21,800	22,400		
(all lengths and widths)	(all lengths and widths)						
Cost per S.F.	19.70	20.29	20.48	20.57	20.18		
Average S.F.	1,000	1,035	1,060	1,060	1,110		
Single Section							
Average Sales	\$17,200	17,600	17,700	17,800	17,800		
Cost per S.F.	19.01	19.13	19.03	18.84	18.84		
Average S.F.	905	920	930	945	945		
Multisection							
Average Sales	\$28,400	30,500	30,450	30,100	30,800		
Cost per S.F.	21.52	22.59	22.30	21.97	22.08		
Average S.F.	1,320	1,350	1,364	1,370	1,395		
Site-Built Homes							
Average Sales	\$83,900	89,800	97,600	100,800	111,900		
Land Price*	16,780	17,960	19,520	20,160	22,380		
Price of Structure	67,120	71,840	78,080	80,640	89,520		
Cost per S.F.	39.25	41.65	43.87	45.18	49.05		
Average S.F.	1,710	1,725	1,780	1,785	1,825		
Source: U.S. Department of Commerce and John Whitney Assoc.							

* National Association of Home Builders Research Foundation

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the home to be "real property" (RP) and have it placed on the tax rolls of your county. Your taxes would then be paid in the same way as conventional home taxes are paid. If you rent the land, or do not wish to declare your home as RP, you must purchase and display a decal each year for each section of your manufactured home.

SELECTING A DEALER

If you purchase a new manufactured home, the dealer must be licensed with the Division of Motor Vehicles. Used manufactured homes may be sold by licensed dealers, real estate brokers (if the land is included in the sale), or the owner, just as with sitebuilt homes.

The choice of a manufactured home dealer is as important as the selection of your home, since you will be relying on his judgement and expertise, not only in the selection of a home, but in any future service that may be required. Ask your dealer for the names of former customers, and talk to them about their purchases. Also check with the Division of Consumer Services (1-800-342-2176) and your local Division of Motor Vehicles office to see if complaints have been filed against the business and if so, how they were resolved.

Service

Florida law requires both the dealer and the manufacturer to warrant a new manufactured home for one year from the date of delivery. If your home needs service during this time, contact your dealer. He will arrange for repairs, either with his own employees, or if the work is the manufacturer's responsibility, he can assist you in notifying them. If you feel that the dealer and/or manufacturer is not responsive, you may file a written complaint with the Division of Motor Vehicles in Tallahassee. They have the authority to require that repairs be made to your home so that it will be in compliance with HUD standards.

HOW TO CHOOSE A PARK

Placing or Siting the Mobile Home for Energy Efficiency

Placement of the mobile home on a site can be very important in terms of saving energy. The mobile home should be placed on a site so that the long axis runs east and west and the home faces south or north. This type of placement can be as much as 20% more energy efficient than other placement. Exposure of the home's walls to the harsh sun is thus minimized. If possible, the home should also be situated so that trees provide shade. Many mobile home parks offer attractive, shaded lots. Mobile homes are particularly susceptible to radiant heat gain from the sun, therefore any kind of shading is an attractive option.

Other options to consider would be placement of an overhang or a patio area on the south and west sides of the home. Also, awnings or solar screens placed on the east and west windows provide comfort and additional energy savings. Before investing in a manufactured home, be sure you have a place to put it.

If you are considering residence in a manufactured home community, visit various communities and compare what they have to offer. Among the choices are:

- renting the lot,
- purchasing the lot,
- living in condominium or cooperative communities.

Prior to agreeing to anything, be sure you read and understand the terms of the lease and the rules and regulations of the community. You will have to abide by them. Talk with some of the community residents about their experiences with the community and its management. If leasing the lot, find out the amount of rent, what it includes, and how often it is raised.

Under Florida law, the park must notify the tenants in writing of any changes in fees, charges, or

rules or regulations at least 30 days prior to the implementation date. The Florida Mobile Home Landlord and Tenant Act (FMHLTA) applies to tenancies in which a manufactured home is placed upon a rented lot in a manufactured home community of 10 or more lots. The FMHLTA addresses the rights and responsibilities of both homeowners and community owners and is available as a public service from the Division of Consumer Services, Department of Agriculture, Mayo Building, Tallahassee, FL 32399-0800, (1-800-342-2176).

Energy Efficient Lifestyle

Many mobile home parks provide their dwellers with amenities that are conducive to an energyefficient lifestyle. These include convenience stores located on the premises, shopping areas, malls, affordable restaurants, and medical facilities located nearby. The more sophisticated parks offer nursing facilities; recreational facilities such as tennis courts, golf courses, swimming pools, and spas; and clubhouses for dances, bridge, meetings, and other social functions. Parks with these facilities provide an energy-efficient lifestyle because most of them can be reached by walking. Minimizing use of an automobile saves time and gas, and provides exercise.

Adding Energy Efficient Features to an Existing Home

There are several things an energy-conscious mobile home occupant can do to improve energy A low-cost and reasonably highperformance. payback option that will improve not only the energy performance of the home but also the appearance of the site is the use of energy-efficient landscaping. Planting fast-growing trees on a bare site can provide savings in just a few years. Evergreens located on the north and northwest of a mobile home are a barrier against cold winds. Shrubbery can be strategically planted to channel prevailing summer breezes into the home, or it can be placed close to the home on the north side to reduce infiltration and the effect of the north wind. These strategies save energy that would otherwise be need for heating. Your county cooperative extension agent will be able to advise you as to the type and location of trees and shrubbery best suited for your needs.

Patios and porches are options that provide shade and may improve the value of your mobile home. Placement of the porch on the south, east, or west side of the mobile home will provide shade from the sun and a place for relaxation and comfort. Shading the east and west windows can also provide considerable savings and improve your comfort in the rooms having those windows.

The use of solar screens with a shading coefficient of 0.5 or less is desirable for single- and double-hung windows. The shading coefficient indicates how much radiant heat from the sun is allowed to enter the home. A shading coefficient of 0.5 will only allow 50% of the sun's energy to enter a home; a shading coefficient of 0.3 will allow 30% of the radiant energy to enter the home. If a mobile home has awning windows, the use of solar screens is not as effective because they can be placed only on the inside of the glass. A shade should be placed on the outside. Use of solar film may be more appropriate on awning windows. Again, this film should be placed on the exterior of the glass for maximum effectiveness, and should have a shading coefficient of 0.5 or lower.

The use of Bahama or Bermuda shades, or awnings can also be effective for windows on the east and west exposures. In addition, these shades and awnings protect against wind damage from storms.

In the winter, plastic may be cut to fit around the window screens. Normally these screens can be removed. By wrapping them in plastic film, an effect similar to adding storm windows will be achieved. This is a low cost option that will also assist in preventing cold wind from entering through cracks around the window. Your county extension agent has factsheets that address improving thermal performance of windows, including this particular option.

The addition of insulated skirting for mobile homes or manufactured housing built off-grade is an attractive energy saving option that improves the appearance of the homesite. Prior to installing the skirting, a vapor barrier should be placed directly on the ground. This barrier will prevent moisture from migrating into the mobile home through the floor. Insulated skirting will reduce heat loss during the winter and heat gain during the summer that normally comes through the floor. It will also assist in preventing water pipes from freezing in the winter.

Employment of oscillating fans and, where clearances allow, ceiling fans should be considered. Ceiling or oscillating fans can provide comfort, even when the temperatures are relatively high (in the range of 83-85°F), thus delaying the use of the more energy consuming air conditioning units.

Water heaters should be wrapped with extra insulation. Many utility companies provide insulated blankets for water heaters at no additional cost. Even if they have to be purchased, the cost will usually pay for itself through savings within a few months. If a water heater is old and needs to be replaced, replace it with a more energy-efficient type. If natural gas is available, this should be considered over electric water heaters.

If the air conditioning unit needs to be replaced, consideration should be given to upgrading the efficiency of the replacement model to an air conditioner rated with an SEER of 8.5 or higher. Properly sizing an air conditioner system is very important also. If the air conditioning is oversized, it tends to cool the air to the desired temperature quickly, without removing the water vapor. This can create high humidity and mildew problems. Properly sized units provide the longer running times necessary to lower the humidity.

If your mobile home or manufactured home has a heat pump, consider a replacement model with a COP of 2.5 or better.

Natural gas heating provides the quickest and least expensive form of heating. If your mobile home or manufactured home is currently equipped with LPG heating, or water heating systems, consider modifying these units to accept natural gas, if available. Payback for this conversion is very quick, usually less then a month. Unfortunately many areas of Florida, particularly rural areas, do not have natural gas available.

Using electric blankets during the winter can provide localized comfort, enabling the mobile home owner to lower the thermostat setting at night. Instead of heating the whole home, only the bed and occupants are heated by the electric blanket. Considerable energy can be saved by this strategy. For convenience, a setback thermostat may be purchased. This thermostat can be automatically set so that the temperature setting is lowered after the occupants are in bed and then is returned to normal prior to them waking, providing a nice cozy home.

Portable heaters can also provide localized comfort. Before purchasing wood stoves or portable gas, electric, or oil heaters, careful consideration should be given to the safety and efficiency of this equipment. Most of the newer portable heaters and stoves have extensive safety features built in, as required by federal regulations. Efficiencies vary from model to model so these should be evaluated on a cost versus energy savings basis.

TIE-DOWN REQUIREMENTS

All manufactured homes are required to be tied down in accordance with the specifications provided by the manufacturer. The home purchase price generally includes transportation and installation on the homesite. In the case of a used home, and in the absence of the manufacturer's tie-down instructions, the home must be tied down in accordance with the specifications developed by the Department of Highway Safety and Motor Vehicles, rule 15C-1.10. Each county is responsible for assuring compliance with the tie-down regulations.

To help answer some of the questions prospective buyers might have, buyers can pick up a free copy of "How To Buy A Manufactured Home" from local retailers. The booklet is published by the Manufactured Housing Institute (MHI) in cooperation with the Federal Trade Commission's Office of Consumer and Business Education.

The "How-to" book is a complete guide to buying a manufactured home -- taking the home buyer through the processes of selecting the home; choosing a location for the home; preparing the homesite; transporting and installing the home; and finally, inspecting the home and understanding warranties. This 24-page guide also includes a checklist for the home buyer to follow step-by-step through the purchase and installation process.

In addition to being available from local manufactured home retailers, copies of "How To Buy A Manufactured Home" are also available for a small handling fee from the Consumer Information Center, Department 453P, Pueblo, CO 81009.

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