



Selecting an Energy Efficient Rental Unit¹

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Utility costs commonly exceed one third of the rent expense for tenants. Renters who pay for utilities can significantly reduce overall monthly costs of renting by selecting an energy efficient unit with features described here.

Rental units may be broken into three main categories: 1) a house, duplex, or single story apartment; 2) a multistory apartment complex; and 3) mobile homes. In Florida there are several features common to all three.

ORIENTATION

Energy will be saved if the unit faces south. That is, the long axis or the side of the unit having the most windows should face the south. The next best orientation would be to face north. The narrower portions of the unit should face east and west. Facing south will provide some passive shading in the summer and passive heating in the winter. This occurs because of the sun's apparent migration to the north in summer and south in winter. East and west orientations are poor options in Florida.

The most efficient apartment type rental would be one that faces south and that has a unit over, under, and to each side. In other words, it will have the least area exposed to outside temperatures. Adjacent apartments will generally be near the same temperatures desired so that there is little energy loss. On the other hand, if the walls and ceilings are exposed to outside conditions, they will be subjected to temperatures over 95 degrees F in the summer and near freezing in the winter. The top southwest and

southeast units will be the least energy efficient because of solar radiation.

WINDOW DESIGN AND VENTILATION

Window design and ventilation are very important in Florida. Excessive window areas can waste tremendous amounts of energy, particularly if they face east or west. On a hot sunny afternoon, a window with an area of 1 square foot that faces west will admit more energy than an entire insulated wall. The best window design extends from about 3 to 6 feet from the floor. This allows viewing outside when either sitting or standing. Sliding glass doors waste large amounts of energy.

Windows also should be openable to allow ventilation, particularly cross ventilation when placed on opposite or adjacent walls provided they are not too close to each other. There are about 100 days a year when neither air conditioning nor heating is necessary if there is proper ventilation.

A whole house fan can augment natural ventilation by pulling in great quantities of outside air through windows and exhausting it through the ceiling. Ceiling fans can also provide a positive benefit both with or without natural ventilation.

SHADE

An energy saving feature common to all three rental types is shade. Shade trees and man made shade on the roof and walls help cool living areas. This is particularly important for mobile homes, which usually have much lower levels of insulation than

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either apartments or homes. Exterior shade at the windows is very important, in the form of trees or landscaping, awnings, Bahama shutters, and solar screens.

THERMAL INTEGRITY

Insulation should be the next feature to check. This is hard to determine, but the landlord should verify if the unit is reasonably well insulated. A high R-value in the ceiling and walls is important. For apartments and homes, R-19 in the ceiling and R-11 in the walls are considered good or above average. Radiant heat barriers will enhance conventional insulation significantly. A radiant heat barrier is usually a brightly reflective aluminum material designed to inhibit the transfer of infrared heat.

In addition to checking insulation levels, one should check the tightness of window and door closures by the dollar bill test. If a dollar bill moves freely through a closed window or door, energy will be wasted. Caulking and weather stripping around windows and doors will also save energy.

HEATING

The next feature that should be investigated is the heating and cooling equipment. Natural gas heating is generally more efficient and less expensive than other heating options. Usually, heat pumps are the next best choice for efficiency, supplying heat at a lower cost than oil or liquid petroleum gas. The efficiency of a heat pump is rated by its coefficient of performance, or COP. The higher the coefficient number the better. An efficient heat pump with a COP of 2.5 will supply two and one half times more heat than electric resistance heating using the same energy. Oil would be the next option, followed by liquid petroleum heat. Finally, electric resistance would be the last and most expensive heating option.

COOLING

In determining air conditioning efficiency, the landlord can be asked to provide from the nameplate on the unit or manufacturer's data the seasonal energy efficiency ratio (SEER) and the energy efficiency ratio (EER). The higher the number the better. Air conditioning units with an EER of 9 are almost 30 percent more efficient than those having an EER of 7.

WATER HEATING

Since water heating usually accounts for about 30 percent of the total energy bill, this system should be looked at closely. The water heater should be located in a sheltered non-air conditioned space and should have an insulated jacket for extra energy savings. Thermostats should be set at no higher than 140 degrees F if there is a dishwasher, and may be set as low as 105 degrees F. Solar water heating would probably be the most efficient water heating system, but since most rental units will not have this available, the next best option would be natural gas water heating. Heating water with natural gas will only cost about one third that of heating with electricity and is about one half of liquid petroleum gas (LPG) expense.

A heat recovery unit is also an attractive option. In the summer, a heat recovery unit supplies hot water at no extra cost every time the air conditioner or heat pump is operating. Heat pumps with a heat recovery system offer additional savings in the winter by providing hot water at about one half to one third the cost of an electric water heater. A heat pump water heater will provide hot water at about one third the cost of an electric water heater and will provide air conditioning at the same time. Water heated with oil or liquid petroleum gas is more efficient than electric resistance. (Liquid petroleum water heating is somewhat more dangerous than lighter than air natural gas. Liquid petroleum is heavier than air and leaks could accumulate near the floor, becoming a potential fire hazard.) Electric resistance water heating is the least efficient type.

APPLIANCES AND LIGHTING

Appliances and lighting account for about 20-30% of the monthly energy bill, and a refrigerator uses more energy than other appliances. The older manual defrost models are more energy efficient than self defrosting, although some new self defrosting models give better performance. Refrigerator coils beneath or behind the refrigerator should be clean. Washer and dryers should be in a non-air conditioned, naturally ventilated space. Gas stoves generally cook more efficiently than electric ones. The stove should be provided with a ventilated hood so that heat and cooling vapors can be removed.

Finally, bathrooms should have exhaust fans and be used during and after bathing to prevent moisture

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buildup and mildew problems, and fluorescent lights use only about one third the energy of incandescent lights of the same wattage.

The following tables are check off lists for the type of rental unit under consideration. Point values for each energy characteristic are in parentheses and should be entered at the right and finally totaled.

Rental Energy Evaluation/Checklist for House, Duplex, Single Story Apartment, or Mobile Home

1. Orientation _____
 Faces south (6); Faces north (4); Faces east/west (0)

2. Shade* _____
 Shade on both east and west windows and roof 8
 Shade on east and west windows/glass, not roof 6
 Shade on either east or west wall only 3
 No significant shade 0

*Exterior shade: solar screen, Bahama shutters, reflective glass, trees (not curtains or venetian blinds)

3. Heating System	<u>North FL</u>	<u>Central FL</u>	<u>South FL</u>	_____
Natural gas	10	6	4	
Heat pump COP 2.87	8	5	3	
Heat pump COP 2.2-2.7	7	4	2	
Heat pump COP 2.2	6	3	1	
Oil	5	3	2	
LPG	4	2	1	
Electric	0	0	0	

4. Cooling System _____
 EER 9 (10); EER 8-9 (8); EER 7-8 (6); EER 6-7 (4); EER 6 (0)

5. Water Heater _____
 Solar (10); Heat recovery or heat pump water heater (6)
 Natural Gas (8); LPG (4); Electric (0)
 Insulated Jacket (add 2 points)

6. Insulation	<u>Frame Const.</u>	<u>Block Const.</u>	_____
Ceiling R-19, walls R-11	10	14	
Ceiling R-11 - 18, walls R-6 - 10	5	9	
Ceiling R-10, walls R-5	0	4	

(Block may be 4 values lower for walls)

7. Radiant Barrier _____
 Attic and walls (5); Attic only (3); None (0)

8. General Tightness, Weatherstripping, Caulking _____
 Good (6); Fair (3); Poor (0)

9. Ventilation _____
 Whole house fan (4); Ceiling fan in bedroom and living room (3)
 Cross-ventilation in bedroom and living room (2)

10. Lighting: kitchen, living room, bedrooms _____
 Fluorescent (1); Incandescent (0)

Total Points _____

Energy Rating	North Florida Points	Central Florida Points	South Florida Points
Excellent	60-74	57-71	55-69
Good	45-59	42-56	40-54
Fair	30-44	27-41	25-39
Poor	0-29	0-26	0-24

Rental Energy Evaluation/Checklist for Apartment More Than Two Stories

1. Location _____
 South or north unit with units above and to each side (14)
 South or north top floor with units to each side (9)
 NW, SW, NE, or SE unit with units above (5)
 W or E unit with units above and to each side (7)

2. Natural or man made shade _____
 East/west glass exposures are shaded or apartment has only north or south facing glass (4)

3. Heating System

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Natural gas	10	6	4
Heat pump COP 2.87	8	5	3
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Heat pump COP 2.2	6	3	1
Oil	5	3	2
LPG	4	2	1
Electric	0	0	0

4. Cooling System _____
 EER 9 (10); EER 8-9 (8); EER 7-8 (6); EER 6-7 (4); EER 6 (0)

5. Water Heater _____
 Solar (10); Heat recovery or heat pump water heater (6)
 Natural Gas (8); LPG (4); Electric (0)
 Insulated Jacket (add 2 points)

6. Insulation

	<u>Frame Const.</u>	<u>Block Const.</u>
Ceiling R-19, walls R-11	6	10
Ceiling R-11 - 18, walls R-6 - 10	4	8
Ceiling R-10, walls R-5	0	4

 (Block may be 4 values lower for walls)

7. Radiant Barrier _____
 Attic and walls (5); Attic only (3); None (0)

8. General Tightness, Weatherstripping, Caulking _____
 Good (6); Fair (3); Poor (0)

9. Ventilation _____
 Whole house fan (4); Ceiling fan in bedroom and living room (3)
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