

ROSE & THORN HOME INSPECTION

May 2018

Typical options for an air conditioning system.

MINI SPLIT

WINDOW UNIT

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Keeping your COOL these sweltering summer nights!

Air conditioning and SEER!

What is available, what does SEER mean.

How to decide what works for you and your budget.

First, SEER. What does this mean, and how will it affect your choice of air conditioning unit.

Definition of SEER - Seasonal Energy Efficiency Ratio

SEER stands for "Seasonal Energy Efficiency Ratio. This is a measure of the energy efficiency of the air conditioning system. SEER ratings permit consumers to compare operating costs of various cooling systems and products.

$$\text{SEER} = \frac{\text{[Total Cooling Output Over the Cooling Season]}}{\text{[Total Electrical Energy Input Over the Cooling Season]}}$$

Higher air conditioning SEER rating means more efficient, or in other words lower energy cost to cool the building. Older air conditioning systems are likely to have a lower SEER (perhaps 5 or 6) than a newer more efficient system (perhaps SEER=16 plus).

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Mini split (typical)

What is a Mini Split?

Consisting of an outdoor unit and one or more indoor units, mini splits can be utilized as a standalone system, supplemental system, or for dedicated rooms. Their ductless design provides flexible and compact installations making them ideal for almost any application.

Mini Splits are perfect even for homes without ductwork as a complete cooling solution.

Inverter technology in mini split systems.

An air conditioner inverter is used to control the speed of the compressor motor to drive variable refrigerant flow in an air conditioning system to regulate the conditioned-space temperature. By contrast, traditional air conditioners regulate temperature by using a compressor that is periodically either working at maximum capacity or switched off entirely. (Wikipedia.)

SEER vs operational cost?

Estimating the annual savings between 18 and 24 SEER

A one ton unit will cool a room of around 500 square feet.

A one ton (12,000 BTU) mini split, **18 SEER**. Running for 1500 hours per year. 1500 hours per year is equal to approximately 187- 8 hours per day or night of operation.

$\text{BTU's of system/SEER} \times 1500 = \text{number of Watt-hours used annually}/1000 = \text{kWh used per year.}$

At \$0.35 per kWh = \$350 per year

A one ton (12,000 BTU) mini split, **24 SEER**. Running for 1500 hours per year.

$\text{BTU's of system/SEER} \times 1500 = \text{number of Watt-hours used annually}/1000 = \text{kWh used per year.}$

At \$0.35 per kWh = \$263 per year

Operational cost savings of \$87 per year.

It is difficult to estimate the cost of the 18 and 24 SEER packages, as there are so many options.

Sound levels could be important to you, the lower the decibel (Sound) Rating number, written as dBA. The less sound the unit will make. Estimated dBA of 24. Noise level is very quiet.

The indoor air handling unit will have washable air filter behind the front cover. These will need cleaning on a regular basis. This will help keep a good air flow and protect the cooling system within the unit from dirt and dust build up to maintain your cooling efficiency.



In summary for a mini split system, the higher the SEER rating, the lower the operating cost will be.

Be sure to fully evaluate the installation costs.

Keep the air filters clean.

Maintain the insulation (if exposed to sunlight) in good order.

Typical window AC unit.



A one ton (12,000) BTU window unit will cool about the same size of a room as a mini split (500 square feet).

This unit will draw just under 1kW per hour. At \$0.35 per kWh that is \$2.8 per 8-hour operational time. If you run for the 187 days as estimated in the mini split system. The estimated operating cost would be \$524.

Just a little more expensive to operate.

This unit has a noise rating of 52dBA.

Noise level is about equal to a dishwasher in the next room.

Installation of these can be very easy, however, fitting in a jalousie window can be difficult as the window vanes may have to be removed.

Potable air conditioning units are also available, these stand-alone units require venting the hot exhaust air to the outside. Check the product information, as some are not recommended for regions that have high humidity. These units may also have a condensate catch pan/bucket that will require emptying.



Keep your cool this summer. Please let me know if you would to see a topic in the newsletter.

Rose & Thorn Home Inspection is available to serve your clients inspection needs.

Please contact me at 708-278-8592.