

# The Whole Story Behind Misleading Heating Equipment Efficiency Ratings



If your furnace or boiler was installed before 2000 government guidelines, and the entire heating industry, suggest it is most likely time to replace it. Changes in technology have improved efficiency. Significant reductions, 25% - 50% in fuel usage, are typical. Plus newer models can have dramatically lower pollution levels. Even if you need to finance your upgrade it is very likely that your fuel saving will cover the loan payments. As fuel prices increase payback time shortens and keeping your old unit will become an expensive mistake.

Typical homes with oil heat find switching to propane or natural gas makes financial sense. Gas burns clean so it burns fuel efficiently. This results in fewer repairs, lower maintenance costs and with Triangle Tube boilers you don't need annual cleanings. If there is additional expense to run gas lines, normally the savings quickly cover the cost. If you live near a natural gas line hookup is usually free and NG is the least expensive fuel for heating. Propane pricing is based on the volume you use. Your vendor generally will provide the tank at no charge or Solaris has certified tech's that can install a tank then you can price shop, having any vendor fill it, like is done with oil.

Your oil burner tech may tell you oil has more Btu's per gallon than gas. While this is true, operating costs are determined by equipment efficiency ratings and price per gallon. A good gas boiler is 95% efficient overall; with oil you are lucky to hit 80%. Propane in February 2014 was \$2.83 oil was \$3.64. Clearly the annual costs of heating with gas are significantly lower and has been for many years.

## The truth about efficiency ratings

AFUE combustion ratings tell the story of the percentage of your burning fuel the system turns into useable heat. With older equipment this is only a small part of the story. If the burner is dirty, you will not get the expected output. All the heat that is left in the chamber when the system shuts down is lost up the flue. Additional heat is lost through the jacket. In the non-heating months this really adds up, often you are wasting 75% of your fuel. If your system has no damper heat is constantly drawn up the chimney. If your technician gave you an efficiency rating but did not use a combustion analyzer, it was only a "best guess" of how well it burns fuel. Energy professionals will tell you systems rated at 85% efficiency are usually only turning 65% of the total fuel into usable heat. Without a hot water storage tank it is closer to 50% wasted fuel annually.

When properly installed high efficiency heating equipment has solved these problems. Plus these new units are small and wall hung. Since they do not require a chimney, just a PVC vent, they can be located anywhere. In new construction no chimney is a great cost savings. High efficiency condensing gas equipment commonly has efficiency ratings of 95% or more.



7/2014

## *Maine's PACE energy loan can help with the cost*

Efficiency Maine's energy loan programs can help fund weatherization, new heating equipment and solar energy systems up to \$40,000 @4.99%.  
[www.EfficiencyMaine.com](http://www.EfficiencyMaine.com)

[www.DsireUSA.org](http://www.DsireUSA.org) has summary info on all incentive programs

## Solaris favorites:

Boilers

[www.TriangleTube.com](http://www.TriangleTube.com)

[www.viessmannus.com/en/Residential/Products/gas.html](http://www.viessmannus.com/en/Residential/Products/gas.html)

IQ furnace

[www.Frigidaire.net](http://www.Frigidaire.net)

Extreme ducted heat pump, whole house

[www.bryant.com/products/heatpumps/extreme.shtml](http://www.bryant.com/products/heatpumps/extreme.shtml)

Room Heat Pump-Mini Split

<http://www.mitsubishicomfort.com/>

## What makes this new type of heating equipment so much better

With new high performance boilers and furnaces equipment the water or air makes multiple passes through the heat exchangers to gather and use all possible heat. In fact, the exhaust is so cool that it can be sent out via a PVC pipe. There is little heat left to be lost through the jacket and a damper protects from losses up the vent. Proper piping and programming is critical. Too often we have seen improper installations that cause efficiency to drop by 5% or more. Sometimes changes need to be made to the existing piping. Often the low price vendor does not re-plumb and properly program the variables.



### Modulating –

Many older units are either on or off. Automobile fuel costs would skyrocket if you only had on/off. Similarly always running a boiler or furnace at full on is not cost effective or necessary to maintain heat level. A modulating unit constantly monitors the heat load. To maintain temperature running at less than full output is cost efficient and creates tight temperature control plus it uses less fuel overall.

### Condensing –

The word “condensing” is used since the boiler reduces the residual heat temperature so thoroughly that it cools the water vapor to condensation. This means a condensing boiler has transferred all the heat into useful energy instead of sending 500 degree exhaust up the flue.

### PH levels –

Years ago there were concerns about the PH level of the condensed flue gas vapor. Today all the products we install properly deal with the fact that the remaining water may have a PH level issue. Stainless steel and proper plastics are used to stop corrosion. Years of operational experience and product refinement along with training to insure proper installation techniques have resolved these problems.

### Outdoor Reset & Cold Start –

These features are included in high efficiency boilers and often can be installed in older units. In general these upgrades pay for themselves within two years. Tankless coil boilers have horrible efficiency. The savings with cold start in the spring-fall are dramatic. Rather than maintaining the internal boiler reservoir at 180 degrees it is allowed to become “cold” unless there is a call for heat or the hot water storage tank needs reheating. With outdoor reset a temperature sensor outside tells the boiler how warm it is and monitors your heating loop. The system will know when it can provide lower temperatures into the baseboard and still meet your home’s heating needs. Generally for every 3 degrees you lower the heating system you save 1% on fuel. *If the heating system water temp drops from 180 to 150 you save 10%.*



*Call us today to find out how an upgrade or new high efficiency heating system can save you money.*

**207 797-0979**

Info@SolarisMaine.com

Solar energy • Heat pumps • High efficiency boilers, furnaces & gas conversions  
Heat pump hot water tanks & tankless on demand • Energy efficiency products



Efficiency Maine Qualified Partner for rebates. Commercial, Multi family energy efficiency