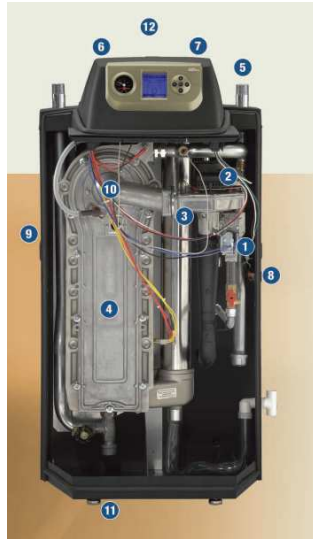
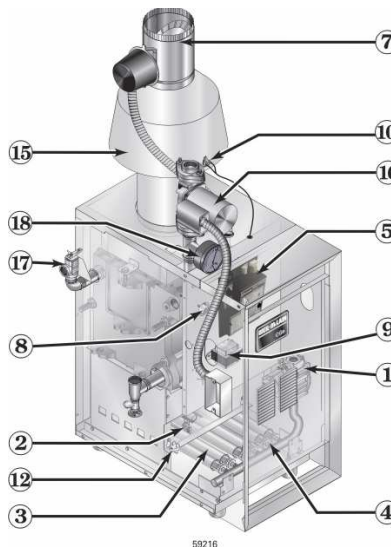


BOILER ENERGY AUDIT

FOR BOBBY JO KRAMER



MODULATING CONDENSING



NON-CONDENSING

A BOILER PAYBACK ANALYSIS OF INSTALLING A 90% AFUE RATED MODULATING CONDENSING BOILER COMPARED TO EXISTING NON-CONDENSING BOILER INSTALLED IN NOVEMBER 2004



29 YEAR OLD BOILER EFFICIENCY & CONSUMPTION

Please select country of residence:

Current boiler fuel type:

Would you like to compare gas and oil?:

Cost of gas in \$/therm:

City:

How large is your home (in square feet?):

When was your home built?:

When was your boiler installed?:

FY 2004

Current Boiler
(obtain the efficiency and capacity from your boiler rating plate, or use default.)

Annual Fuel Utilization Efficiency (AFUE):

Energy Cost:

Energy Consumption:

BOILER EFFICIENCY & CONSUMPTION COST COMPARED TO OLD BOILER AFTER EXISTING BOILER INSTALLED

Please select country of residence:

Current boiler fuel type:

Would you like to compare gas and oil?:

Cost of gas in \$/therm:

City:

How large is your home (in square feet?):

When was your home built?:

When was your boiler installed?:

FY 2005

Current Boiler
(obtain the efficiency and capacity from your boiler rating plate, or use default.)

Annual Fuel Utilization Efficiency (AFUE):

Initial Cost per Unit (estimated retail price):

Use with programmable thermostat?:

Calculate Now

Annual and Life Cycle Cost Comparisons

	Current Boiler	CGa-S
Energy Cost	\$817.50	\$672.00
Energy Consumption	1460 Therms	1200 Therms
Annual Savings		\$145.50

*** NOTICE - See AHRI Press Release. AHRI, the independent ratings association for the Heating and Cooling industry, is in the process of modifying their industry testing parameters for residential modulating condensing boilers sold in North America. As such, Weil-McLain has temporarily defaulted our AFUE ratings to 90% (as requested by AHRI) until such time that a new rating and test procedure can be established and approved by the Department of Energy. We anticipate new published ratings by the end of the December. Please note that this does not affect any changes or reliability of the products themselves, only the published ratings. Published Weil-McLain website 2013.

THE ANALYSIS

This energy audit has been performed to analyze capital investment and payback time to determine if it is feasible to replace the existing non-condensing boiler (installed in November 2004) with a 90% AFUE modulating condensing boiler.

To accomplish this, analyzations of some Enstar natural gas bills were surveyed during the course of the 8 years the existing boiler was installed. These numbers were compared to the AFUE rating of the old boiler as if it had not been replaced. The appropriate AFUE ratings were decreased as the years went by for both boilers to arrive at estimated savings. E.g. 2012 rating: Old Boiler 63% Existing boiler 75%

With no historical annual fuel consumption available, annual billings costs were used as the basis for this audit. The estimated payback cost savings for the existing boiler are conservative due to limited historical information on some years. The numbers for FY 2005 and 2012 are adequate due to having exact annual billings costs but they are also somewhat inaccurate due to budget billing deferred payments. However, using this approach the billing costs show an indication there has been payback savings for the existing boiler.

YEAR @ GAS\$	ESTIMATED PAYBACK SAVINGS
2005@.56	\$145.00
2006@.67	201.00
2007@.87	217.00
2008@.85	206.00
2009@1.04	239.00
2010@.88	204.00
2011@.86	197.00
2012@.85	178.00
Subtotal	\$1,587.00
-10%	\$1,428.00

Based on the above assumptions with a conservative payback of \$1,428. and escalating natural gas prices, it can be assumed that there is a 14 year payback balance left which is under the lifetime of the existing boiler versus installing a new 90% modulating condensing boiler with a 60+ year payback.

BOILER PAYBACK ANALYSIS OF INSTALLING A 90% BOILER COMPARED TO EXISTING BOILER

Please select country of residence:

Current boiler fuel type:

Would you like to compare gas and oil?:

Cost of gas in \$/therm:

City:

How large is your home (in square feet?):

When was your home built?:

When was your boiler installed?:

FY 2013

Current Boiler
(obtain the efficiency and capacity from your boiler rating plate, or use default.)

Annual Fuel Utilization Efficiency (AFUE):

Initial Cost per Unit (estimated retail price):

Calculate Now

Annual and Life Cycle Cost Comparisons

	Current Boiler	Ultra-105
Energy Cost	\$1,205.20	\$1,002.80
Energy Consumption	1310 Therms	1090 Therms
Energy Costs	\$16,379.06	\$13,628.38
Purchase price for one (1) unit		\$12,189
Total	\$16,379.06	\$25,817.38
Annual Savings		\$202.40
Simple payback of initial cost (years)		60.2

THIS PRICE INCLUDES AN INDIRECT HOT WATER HEATER, IN WHICH FOR THIS APPLICATION THE EXISTING CHIMNEY WOULD HAVE TO BE USED FOR VENTING DUE TO CODE AND MANUFACTURE'S RECOMMENDATION AND OTHER RESTRICTIONS. THE PRICE QUOTED IS FROM A MAJOR MECHANICAL CONTRACTOR IN ANCHORAGE DOCUMENTED FOR A SIMILAR APPLICATION IN 2009.

IT IS TO BE NOTED THAT 90% HIGH EFFICIENCY BOILERS ARE POTENTIALLY HIGH MAINTENANCE DUE TO THE EXTRA PARTS AND PIECES TO MAKE THEM OPERATE, e.g. EXTRA CIRCULATORS AND MICROPROCESSORS/MICRO CONTROLLERS. THERE ARE QUESTIONS TO THE LONGEVITY OF MODULATING CONDENSING BOILERS USED FOR HIGH MASS APPLICATIONS.



WEIL-McLAIN ULTRA 90% EFFICIENT CONDENSING GAS BOILER

ESTIMATED ANNUAL GAS CONSUMPTION & COST LESS HOT WATER HEATER



29 YEAR OLD BOILER, WITH OVERSIZED UNIT HEATER
LIFETIME 1975-2004

ESTIMATED ANNUAL GAS CONSUMPTION & COST LESS HOT WATER HEATER



THE CGA BOILER'S NORMAL LIFE SPAN IS 25-30 YEARS OR MORE WITH PROPER MAINTENANCE. THE CAST IRON BOILER HAS MINIMUM PARTS AND PIECES THAT MAKES FOR LESS MAINTENANCE AND HAS BEEN AND STILL IS A PROVEN WORK HORSE FOR A HOME OWNER

NEW WEIL-McLAIN BOILER INSTALLED NOVEMBER 2004

Disclaimer: The Boiler Efficiency and Energy Calculator provided by Weil-McLain produces results which are based on simplifying assumptions, primarily with respect to fuel composition, and are only intended for general information purposes. It is based on one that was developed by the U.S. EPA and U.S. DOE and is provided for estimating purposes only. Actual energy savings may vary based on use and other factors.