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Wisconsin's Focus on Energy

Existing Apartment & Condo  
Efficiency Services

## Introduction to Focus on Energy

- ✓ Public/private partnership
- ✓ Offers STATEWIDE programs
- ✓ Eligibility based on electric and natural gas utility participation

# Existing Buildings Program

- **All buildings assessed must contain 4 or more units.**
- **Buildings range from market rate luxury condos, to low income housing.**
- **Savings are determined through utility bill analysis, existing HVAC and DWH assessment, and contractor bid evaluation.**
- **We do not specify equipment, we objectively quantify the potential savings of installing proposed equipment.**
- **All incentives are paid to the building owners upon completion of the projects.**

# Boiler Incentives

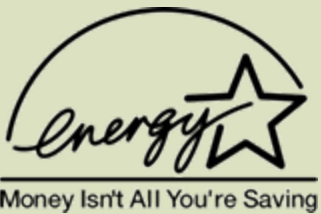
- **Boiler incentives are based on the efficiency of the equipment as well as the comprehensiveness of the building projects.**
- **High Efficiency Sealed Combustion, Condensing, Modulating (HESCCM) Boilers received higher incentives than non-condensing boilers.**
- **Any boilers less than 90% AFUE are acceptable as non-condensing boilers.**

## **High Efficiency Sealed Combustion, Condensing, Modulating Boilers (HESCCM)**

**The boilers installed in these multifamily buildings were all HESCCM boilers, but they are not all from the same manufacturer.**

**The boilers installed through the program during this three year span (July 2001-June 2004) were:**

- **Hamilton Engineering- Evolution**
- **Heat Transfer Products- Munchkin**
- **NTI- Trinity**
- **Peerless- Pinnacle**
- **Weil McLain- Ultra**



# Existing Buildings 3 Year Program Savings

**HESCCM Boilers With Indirect Water Heating  
Estimated Savings  
105,840 therms**

**HESCCM Boiler Estimated Savings  
74,714 therms**

**Electric Heat to HESCCM Boiler Estimated Savings  
652,146 kWh                      94 KW                      -(18,793 therms)  
Net Benefit \$53,280.33-\$17,233.18= \$ 36,047.15 \***

\*2004 average Electric cost for Comm. = \$0.0817/kWh  
2004 average Natural Gas cost for Comm. = \$0.917/therm  
Source EIA

# 1800 E Olive Boiler & DWH Replacement

Before...



After...



# 1800 E Olive Boiler & DWH Replacement

Before...



After...





# 1800 E Olive Apartments- Savings Calculation

## BOILER & INDIRECT DWH REPLACEMENT

Money Isn't All You're Saving

Estimated therms saved	2,224
Cost per therm	<u>x.78</u>
Dollars per year in energy savings:	\$1,734.72

Estimated Therms saved	2,224
Incentive per Therm	<u>X .80</u>
Focus on Energy Incentive	\$1,779.20

Estimated Payback (Cost/Savings)	
Cost of Project (provided by Heating Contractor)	\$16,209.00
Minus Focus on Energy Incentive	<u>-\$1,779.20</u>
Out of pocket costs	\$14,429.80

Out of Pocket cost ÷ Savings per year = 8.3 years payback



Money Isn't All You're Saving

# 1800 E Olive Apartments

## BOILER & INDIRECT DWH REPLACEMENT

### New System

Read Date	Days	Metered Therms	Deg Days	Therms/DD
01/17/04	28	1,439	1,453	0.990
02/20/04	35	1,147	1,111	1.032
03/16/03	33	745	956	0.779
04/13/03	30	492	646	0.762
05/14/03	28	317	387	0.819
06/16/03	32	202	125	1.616
07/15/03	30	103	6	17.167
08/16/03	29	108	1	108.000
09/17/03	33	113	128	0.883
10/15/03	30	308	427	0.721
11/15/03	29	587	742	0.791
12/18/04	30	1,132	1,161	0.975
		<b>6,693</b>	<b>7,143</b>	<b>0.937</b>

### Old System

Read Date	Days	Metered Therms	Deg Days	Therms/DD
1/19/03	33	2,152	1,236	1.741
2/27/02	29	1,429	965	1.480
3/28/02	29	1,483	1,036	1.431
4/29/02	32	1,032	547	1.886
5/29/02	30	639	406	1.573
6/27/02	29	233	94	2.478
7/29/02	32	125	5	25.000
8/27/02	29	118	12	9.833
9/25/02	29	125	84	1.488
10/24/02	29	582	477	1.220
11/22/02	29	1,048	778	1.347
12/27/02	35	1,834	1,304	1.406
		<b>10,800</b>	<b>6,944</b>	<b>1.555</b>



# 1800 E Olive Apartments

## BOILER & INDIRECT DWH REPLACEMENT

### Savings

<b>Estimated Savings (12-months)</b>
<b>2,224 Therms * \$.78 per therm</b>
<b>\$ 1,734.72</b>
<b>Actual Savings (12-months)</b>
<b>4,107 Therms * \$.91 per therm</b>
<b>\$ 3,737.37</b>

# Campus Inn Boiler & DWH Replacement

Before...



After...



# Campus Inn DWH & Storage Tank Replacement

Before...



After...





# Campus Inn Apts - Savings Calculation

## BOILER & INDIRECT DWH REPLACEMENT

Money Isn't All You're Saving

Estimated therms saved	13,154
Cost per therm	<u>x.78</u>
Dollars per year in energy savings:	\$10,260.12

Estimated Therms saved	13,154
Incentive per Therm	<u>X .80</u>
Focus on Energy Incentive	\$10,523.20

Estimated Payback (Cost/Savings)	
Cost of Project (provided by Heating Contractor)	\$39,061.00
Minus Focus on Energy Incentive	<u>- \$10,523.20</u>
Out of pocket costs	\$28,537.80

Out of Pocket cost ÷ Savings per year = 2.8 years  
payback





Money Isn't All You're Saving

# Campus Inn Apts

## BOILER & INDIRECT DWH REPLACEMENT

### New System

Read Date	Days	Metered Therms	Deg Days	Therms/DD
02/17/04	28	3,061	1,318	2.322
01/20/04	35	2,999	1,334	2.248
12/16/03	33	2,254	933	2.416
11/13/03	30	1,335	558	2.392
10/14/03	28	580	311	1.865
09/16/03	32	379	24	15.792
08/15/03	30	184	12	15.333
07/16/03	29	580	38	15.263
06/17/03	33	537	275	1.953
05/15/03	30	1,024	501	2.044
04/15/03	29	2,044	703	2.908
03/18/04	30	2,177	872	2.497
		17,154	7,208	2.82

### Old System

Read Date	Days	Metered Therms	Deg Days	Therms/DD
02/14/03	29	5,824	1,372	4.245
01/16/03	35	5,317	1,256	4.233
12/12/02	31	4,450	1,064	4.182
11/11/02	31	2,719	675	4.028
10/11/02	29	466	164	2.841
09/12/02	30	414	20	20.700
08/13/02	29	379	5	75.800
07/15/02	33	480	23	20.870
06/12/02	29	1,086	276	3.935
05/14/02	29	1,543	487	3.168
04/15/02	32	4,153	856	4.852
03/17/03	31	5,401	1201	4.49
		32,232	7,149	4.35





# Campus Inn Apts

## BOILER & INDIRECT DWH REPLACEMENT

### Savings

<b>Estimated Savings (12-months)</b>
<b>13,154 Therms * \$.78 per therm</b>
<b>\$ 10,260.12</b>
<b>Actual Savings (12-months)</b>
<b>15,078 Therms * \$.91 per therm</b>
<b>\$ 15,720.98</b>

# Alshar Apts Steam Boiler Conversion & DWH Replacement

Before...



After...





# Alshar Apts - Savings Calculation

## BOILER & INDIRECT DWH REPLACEMENT

Money Isn't All You're Saving

Estimated therms saved	3,121
Cost per therm	<u>x.78</u>
Dollars per year in energy savings:	\$2,434.38

Estimated Therms saved	3,121
Incentive per Therm	<u>X .80</u>
Focus on Energy Incentive	\$2,496.80

### Estimated Payback (Cost/Savings)

Cost of Project (provided by Heating Contractor)	\$14,042.00
Minus Focus on Energy Incentive	<u>- \$2,496.80</u>
Out of pocket costs	\$11,545.20

Out of Pocket cost ÷ Savings per year = 4.7 years payback



Money Isn't All You're Saving

# Alshar Apts

## BOILER & INDIRECT DWH REPLACEMENT

### New System

Read Date	Days	Metered Therms	Deg Days	Therms/DD
01/23/04	36	1,178	1,453	0.811
02/23/04	31	1,119	1,111	1.007
03/22/04	28	732	801	0.914
04/21/04	30	494	539	0.917
05/21/04	30	431	324	1.330
06/22/04	32	362	100	3.620
07/21/04	29	222	19	11.684
08/19/04	29	176	48	3.667
09/20/04	32	144	66	2.182
10/19/04	29	234	369	0.634
11/17/04	29	295	675	0.437
12/20/04	33	732	1,161	0.630
		6,119	6,666	0.918

### Old System

Read Date	Days	Metered Therms	Deg Days	Therms/DD
01/21/03	35	1,996	1,455	1.372
02/19/03	29	1,834	1,334	1.375
03/21/03	30	1,468	942	1.558
04/20/03	31	1,582	617	2.564
05/20/02	30	1,303	410	3.178
06/19/02	29	120	153	0.784
07/18/02	29	89	5	17.800
08/16/02	29	89	9	9.889
09/18/02	33	119	30	3.967
10/16/02	28	364	358	1.017
11/14/02	29	1,007	683	1.474
12/17/02	33	1,694	1,081	1.567
		11,665	7,077	1.648



Money Isn't All You're Saving

# Alshar Apts

## BOILER & INDIRECT DWH REPLACEMENT

### Savings

<b>Estimated Savings (12-months)</b>
<b>2,885 Therms * \$.78 per therm</b>
<b>\$ 2,250.30</b>
<b>Actual Savings (12-months)</b>
<b>5,546 Therms * \$.91 per therm</b>
<b>\$ 5,046.84</b>



Money Isn't All You're Saving

# Front-end Boiler Replacement

Before...



After...



# Boiler Only Replacement

Before...



After...



# Orchard Court Apts Electric To Gas Conversion



# Orchard Court Apts Electric To Gas Conversion



- Two (36) unit buildings with electric baseboard heat and (4) 18 KW electric water heaters.
- Owner pays all utilities.
- Added thermostats and copper fin baseboard to the apartments.
- Went from a industrial rate to a commercial rate and rid themselves of demand charges.

# New Construction Program

- **Professional second look design assistance (At no cost)**
- **20-30 % Operating efficiency over code**  
(Without Adding Cost to Construction Budget)
- **Value added to owner by reduced energy cost/consumption and increasing long-term property value\***
- **Value added to tenant by reduced energy cost/consumption and comfort\***

**\*Depends on who pays the utility cost**

# **Second Look Design Assistance**

- **We look at the architect/developers plans and make recommendations to decrease the potential energy use of the finished building.**
- **We use REM, TREAT, eQuest, and Trane Traits software on a case by case basis to model the proposed buildings.**
- **HESSCM boilers w/ indirect water heating have yielded the best savings.**
- **Currently working on 46 projects representing \$1.0 Billion dollars in construction costs.**

# **New Construction 3 Year Program** **Savings**

## **HESCCM Boilers With Indirect Water Heating** **Estimated Savings**

**40,710 therms**

**\$ 37,331.07**

## **HESCCM Boiler Estimated Savings**

**11,521 therms**

**\$ 10,564.76**

\* 2004 average Natural Gas cost for Comm. = \$0.917/therm  
Source EIA



Money Isn't All You're Saving

# Ellsworth Case Study

## Ellsworth Town Homes

Homeworks/West CAP built a 24-unit affordable housing development in NW Wisconsin.



### Annual Savings (est.)

4,500 Therms

13,000 kWh

4 kW

### Rewards

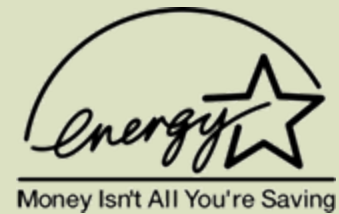
\$6,800

### Installed Measures

- High efficiency, fully modulating, condensing boilers with outdoor reset controls
- Indirect domestic water heaters.
- ENERGY STAR refrigerators and dishwashers
- Efficient fluorescent lighting
- Unit sub-metering of hot water, radiant heating

# Summary

- In summary, HESCCM boilers save energy in multifamily buildings no matter the size or current fuel source because they are versatile in their installed applications.
- The best savings occurred when indirect water heaters are incorporated into the project.
- As more contractors become familiar with the product, the more competitive the market will become. More HESCCM boiler sales will save more energy for multifamily buildings.



# How to contact me ...

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