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# Boiler Tune-Ups, Steam Traps and Steam Eye

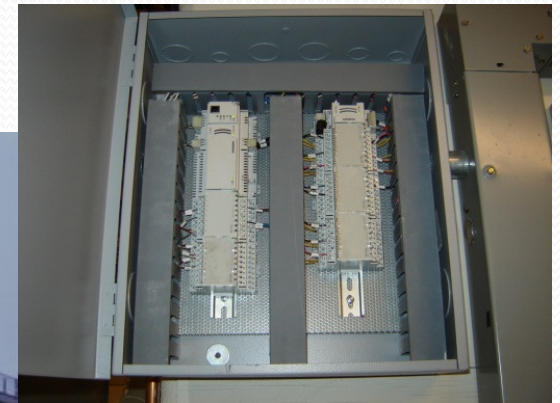
Incentive	Project	Cost	Savings	Payback Period
Prescriptive	Boiler Tune-ups	\$10,100.00	\$34,240.00	< 1 year
Prescriptive	Steam Traps	\$138,385.77	\$60,356.00	2.5 years



# Keller Building

Utility	Incentive	Project	Incentive	Savings
DTE	Custom	HVAC Controls	\$2,708.80	\$6,887.12
CE	Custom	HVAC Controls	\$5,132.72	\$5,450.12

**Cost: \$33,900.00**  
**Payback: 4.3 years**



# Keller Incentive Project Description

## DTE Custom Incentive Worksheet

Grand Valley State University

Keller Building – New HVAC Controls Project

### Item 1

The specific building that this incentive worksheet has been submitted is for the Grand Valley State University Keller Engineering Building that is located at 301 W. Fulton St, Grand Rapids Michigan. The problem with the building was the HVAC and building management system controls. The NOVAR system was installed when the building was built and for the purpose to match the controls of another GVSU building located in the same vicinity. Unfortunately the NOVAR controls software has not been upgraded in many years to stay current with new technology. An example of short comings of this proprietary software was the incapability to provide night setbacks for temperature control or operating time frames. So essentially, the building HVAC systems are operating with little or no opportunity for reduction on unoccupied hours.

The plan was to install new Siemens controls throughout the building. This included new controls for the two (2) boilers, two (2) Air Handling units and twenty (20) Variable Air Volume boxes. Once installed the intent was to take advantage of the system controls and on unoccupied hours, weekends and holidays. With new controls capabilities the goal was to reduce the operating times for the HVAC equipment along with adjusting temperatures for corresponding adjustments.

This incentive is for the annual mcf savings only but the electrical kWh savings was combined for the total payback calculation. The new controls were installed in August and September 2009. The attached spreadsheets provide a more detailed explanation of the energy reduction.

The annual kWh total savings from electric was  $64,119 \text{ kWh} \times \$0.08/\text{kWh} = \$5,132.72$ . This was submitted to Consumers Energy incentive program.

For the DTE incentive please see the attached spread sheets, pages 1-6. Specifically the boxes on page 2 and 5 have the values for the annual ccf savings. The converted annual mcf savings from the temperature setback ability was 81.3 mcf (page 2). The annual supply air temperature reset savings was 596 mcf (page 5). The total annual savings is 677.3 mcf (page 2). The total dollar savings is  $677.2 \text{ mcf} \times \$4/\text{mcf} = \$2,708.08$ .

The simple payback for this project is calculated by taking the cost of the project divided by the electrical and the gas savings.  $\$33,900 / (\$5,132.72 + \$2,708.08) = 4.3 \text{ years}$ .

# Keller Incentive Project Description

DCFM	LF												
34500	0.7												
% Load	RA	OA	SA	OA	RA%	OA%	CFM	OA CFM	% of Hours	Hours	Annual BTU's		
0.1	68	50	55	50	0.278	0.722	24150	17441.667	0.047	213	72221058		
0.2	68	47	55	47	0.381	0.619	24150	14950	0.086	395	133931070		
0.3	68	42	55	42	0.500	0.500	24150	12075	0.126	578	195980148		
0.4	68	39	55	39	0.552	0.448	24150	10825.862	0.146	667	226157022		
0.5	68	36	55	36	0.594	0.406	24150	9810.938	0.034	154	52216164		
0.6	68	33	55	33	0.629	0.371	24150	8970	0.034	155	52555230		
0.7	68	30	55	30	0.658	0.342	24150	8261.842	0.088	403	136643598		
0.8	68	27	55	27	0.683	0.317	24150	7657.317	0.118	537	182078442		
0.9	68	23	55	23	0.711	0.289	24150	6976.667	0.158	723	245144718		
1	68	19	55	19	0.735	0.265	24150	6407.143	0.163	745	252604170		
										Total Hours	4570	15495.3162	CCF

% Load	RA	OA	SA	OA	RA%	OA%	CFM	OA CFM	% of Hours	Hours	Annual BTU's		
0.1	68	50	60	50	0.556	0.444	24150	10733.333	0.047	213	44443728		
0.2	68	47	60	47	0.619	0.381	24150	9200	0.086	395	82419120		
0.3	68	42	60	42	0.692	0.308	24150	7430.769	0.126	578	120603168		
0.4	68	39	60	39	0.724	0.276	24150	6662.069	0.146	667	139173552		
0.5	68	36	60	36	0.750	0.250	24150	6037.5	0.034	154	32133024		
0.6	68	33	60	33	0.771	0.229	24150	5520	0.034	155	32341680		
0.7	68	30	60	30	0.789	0.211	24150	5084.211	0.088	403	84088368		
0.8	68	27	60	27	0.805	0.195	24150	4712.195	0.118	537	112048272		
0.9	68	23	60	23	0.822	0.178	24150	4293.333	0.158	723	150858288		
1	68	19	60	19	0.837	0.163	24150	3942.857	0.163	745	155448720		
										Total Hours	4570	9535.5792	CCF

CCF Saved  
5959.737

Setback savings	Load Percent	Day Percent	Total Percent	CCF Savings
Heat Usage CCF	0.216	0.208	0.045	812.817
18029.2				

	CCF
Setback Savings	812.8165
SA Temperature Reset savings	5959.737
<b>Total</b>	<b>6772.5535</b>



# Value of DTE Incentive Program

- 1) Helps offset project cost
- 2) Encourages implementing energy projects

## Overall Experience With Program

- 1) Easy to work with program and assigned personnel
- 2) Would like to see a broader spectrum