Energy Conservation Update

Texas Facilities Commission

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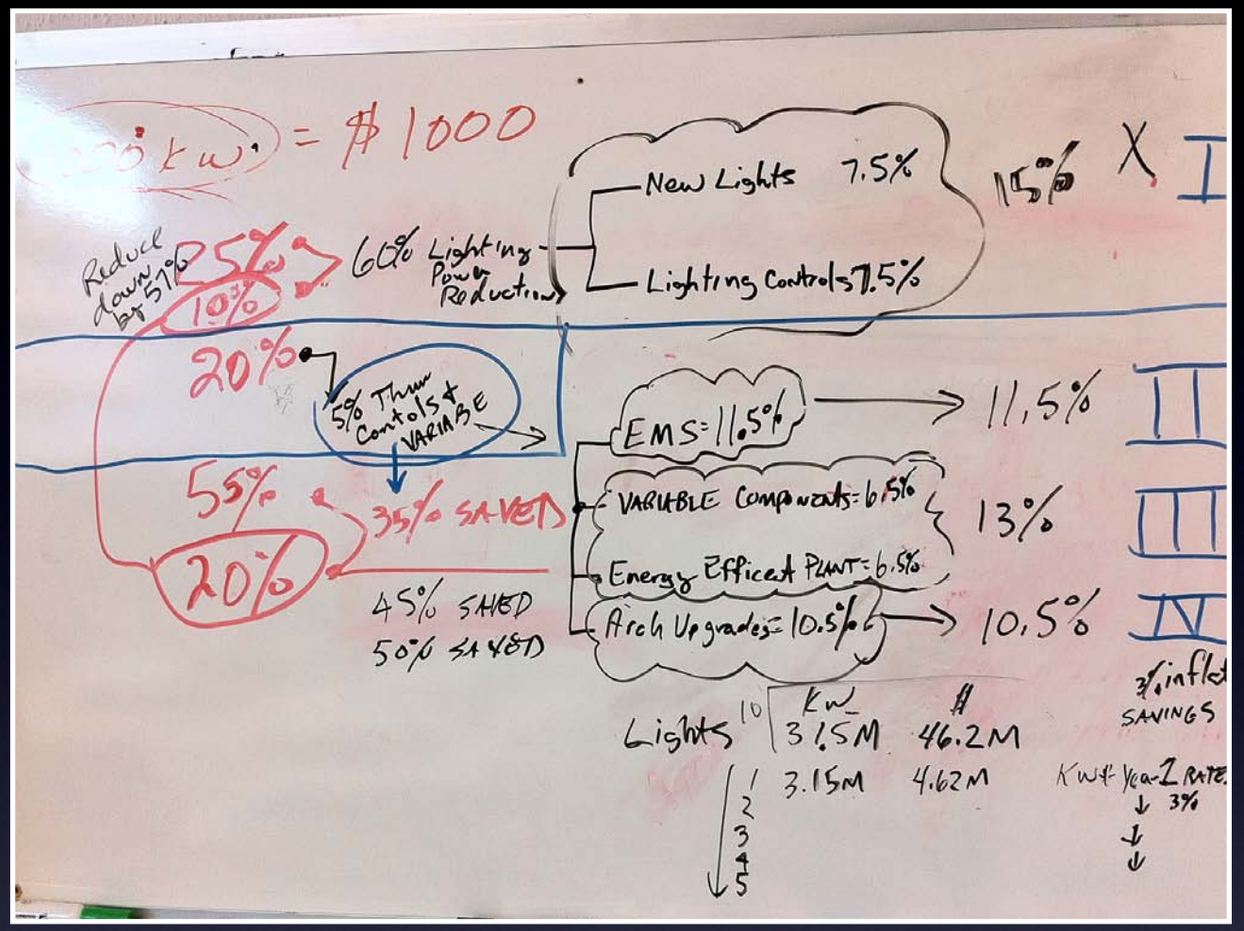
March thru May Highlights

Energy:

Facilities & Energy Engineering worked closely with Operations, Automation, Project Managers, Design & Construction personnel on several DM projects over the last year which are reaching completion.

The result of this joint effort yields approximately $222.5k of electric utility and $26.7k of gas utility expenses for the 3 month period ending May 2011. This number is significant because it represents a reoccurring savings estimated to be $889K (+/- 15%) annually.

Many of the project scopes contributing to these savings did not originally have energy enhancement directives. TFC personnel refined scopes, created bid alternates to capitalize on soft pricing in current economic conditions and collaborated across divisions to implement energy enhancements while still maintaining original budgets.



Research and continuous improvement processes provides a solid foundation for the energy management program...

Research Topics

- LED Lighting
- Heat Recovery Systems
- System Variability
- Emerging Technologies
- Awareness

Many of the energy calculations and comparisons were made based on common Austin Energy rates which may be low than other rates encountered in the State of Texas. Equipment performance testing was conducted for climate zones within Texas. The parameters should be adjusted appropriately for varying utility costs and climate zones.

LED Lighting

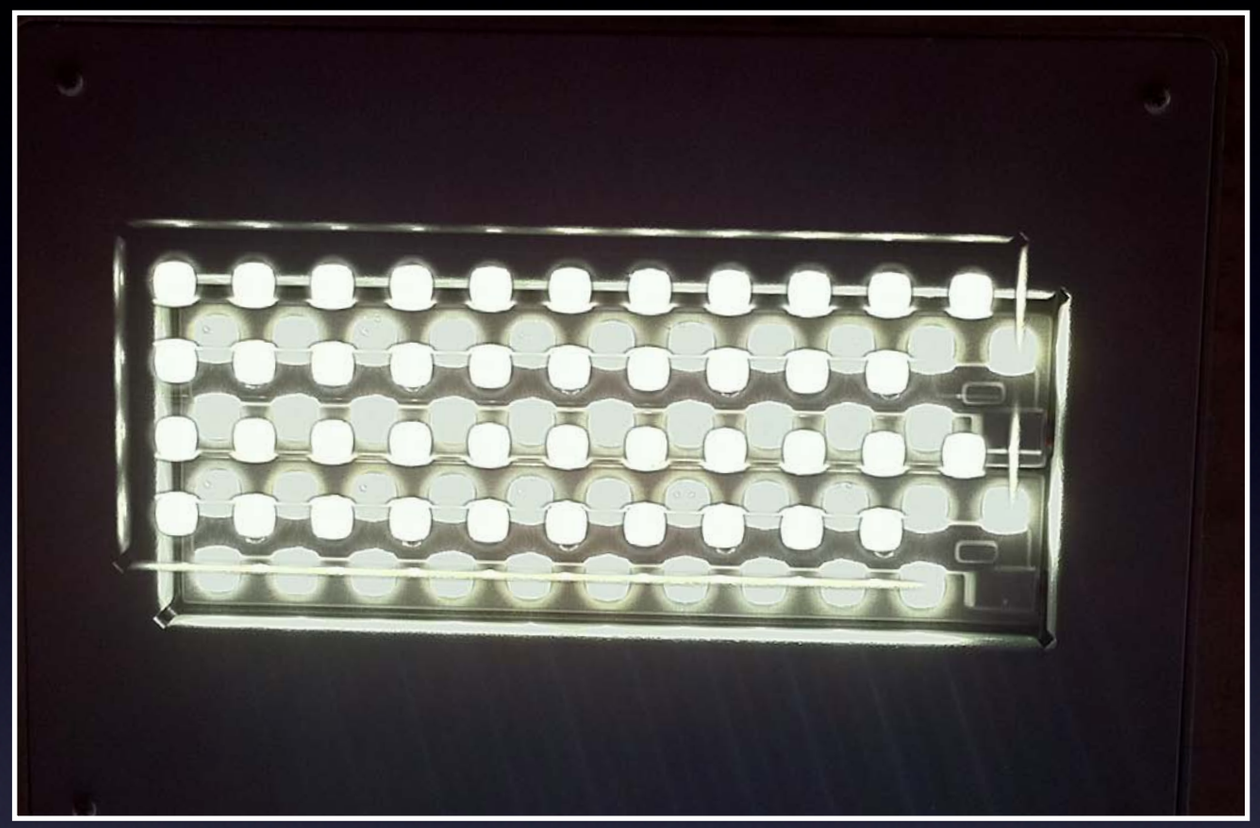
Interior LED Lighting

- 4' LED lamps costs range from $50 to $125 each

- 2x4 LED Fixtures range costs range from $200 to $450 each

- Encountered paybacks with rebates and maintenance range from 7.5 to 15 years, $0.075/KWH, $11.5/KW

- Lamp failures are still common



Conclusion: interior lighting is still considered an emerging technology that has not yet settled into appropriate price points

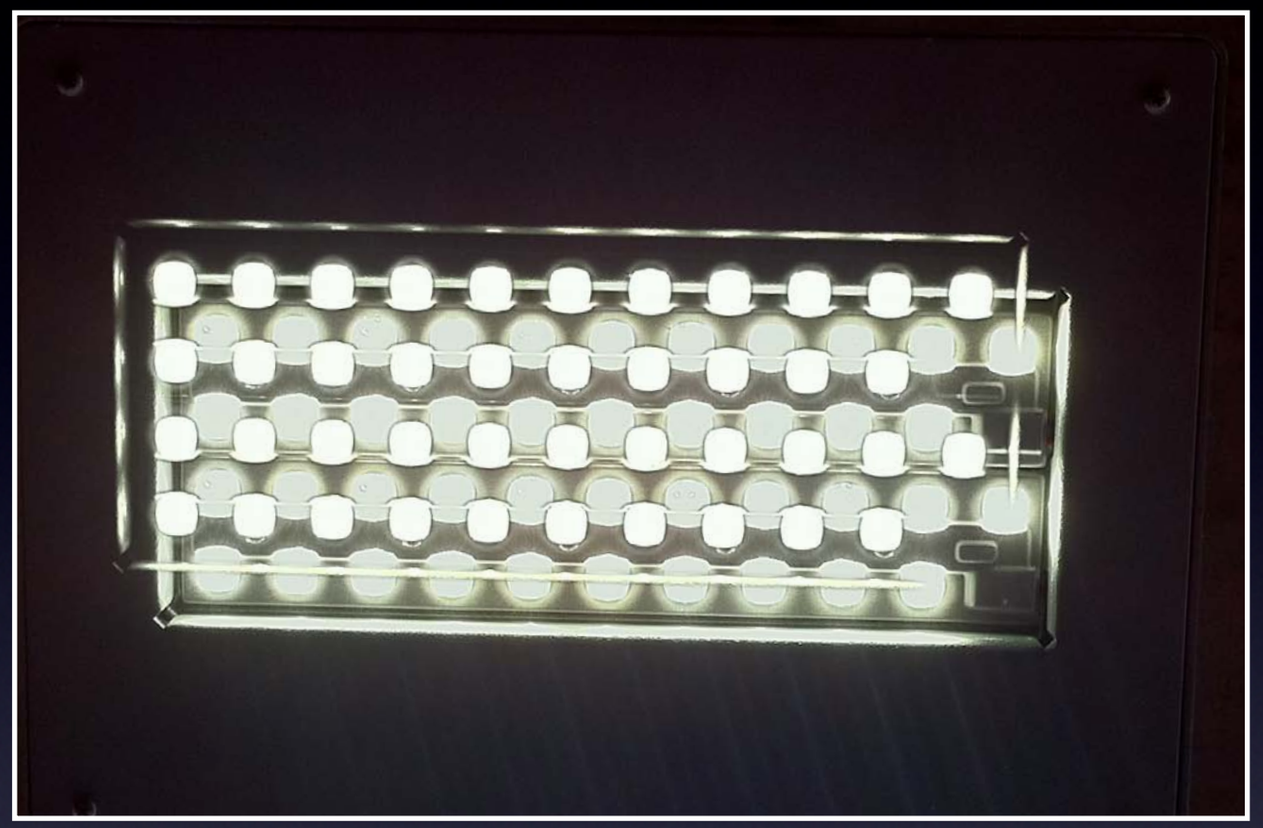
LED Lighting

Exterior LED Lighting

- Parking garage lighting may be an acceptable alternative with paybacks achieved in the 6.5 year range (compared to 175W MH)

- Although fixtures are still $400 to $600 each the fixture spacing allows for appropriate $'s/S.Ft. when compared to alternatives

- A 70% or better reduction in garage lighting energy consumption can be achieved while still adhering to IES suggested lighting levels



Conclusion: appropriate price points can be achieved through careful case by case analysis of each parking garage and capitalizing on the use of higher K (5500) in less sensitive areas to reduce fixture count

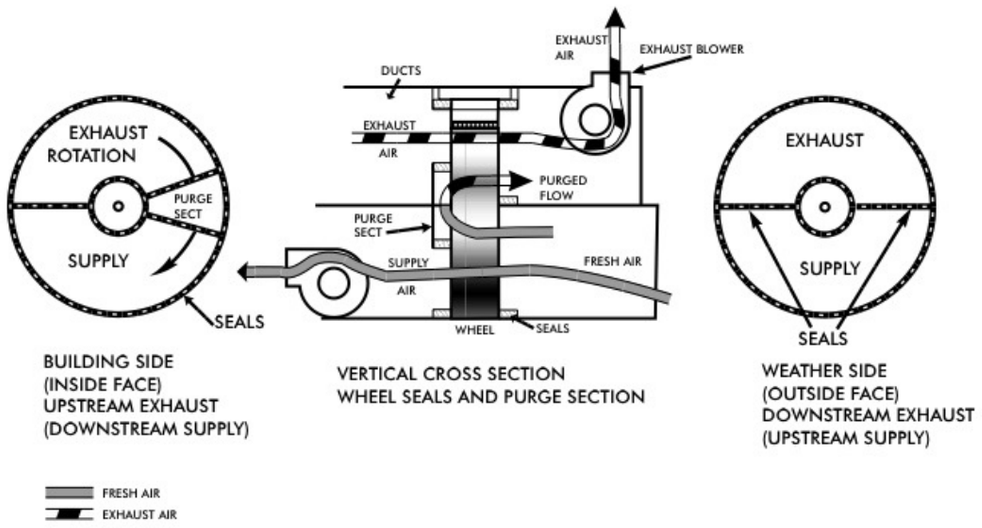
Heat Recovery

- 3 basic types
- Wheels
- Plates
- Pipes

Heat Recovery

FIGURE 2

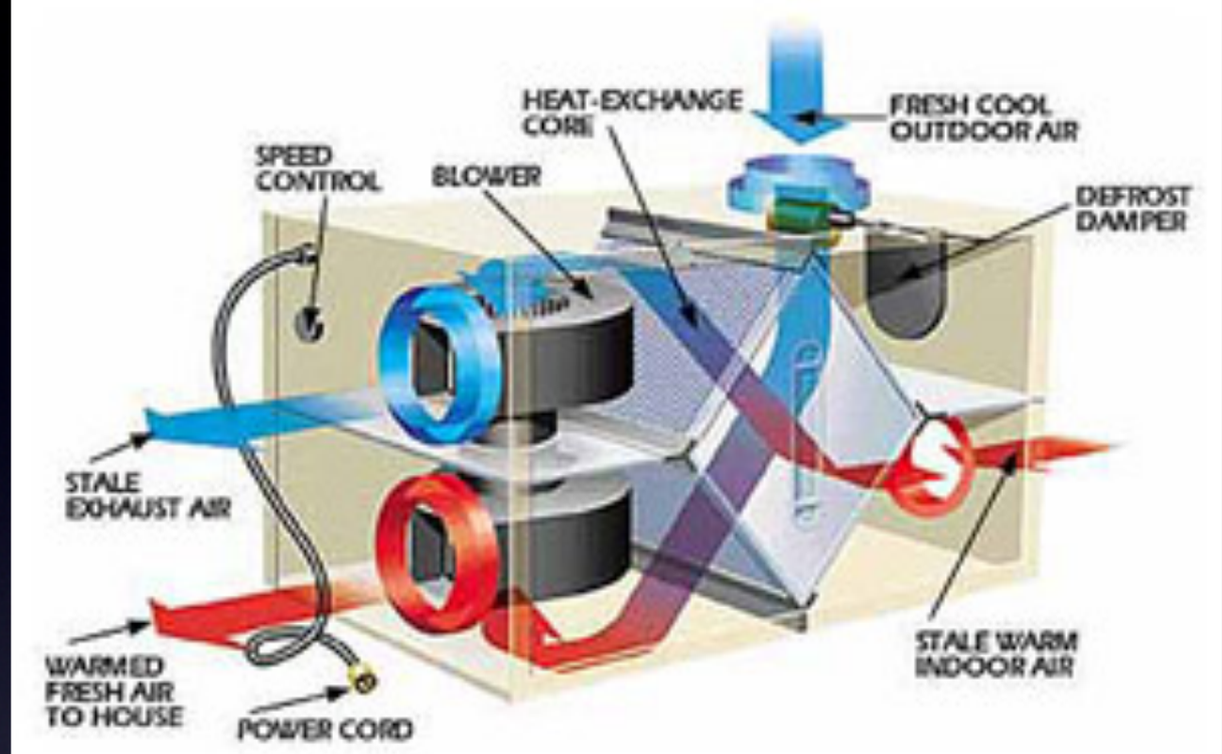
SCHEMATIC OF ENERGY RECOVERY WHEEL



BUILDING SIDE
(INSIDE FACE)
UPSTREAM EXHAUST
(DOWNSTREAM SUPPLY)

VERTICAL CROSS SECTION
WHEEL SEALS AND PURGE SECTION

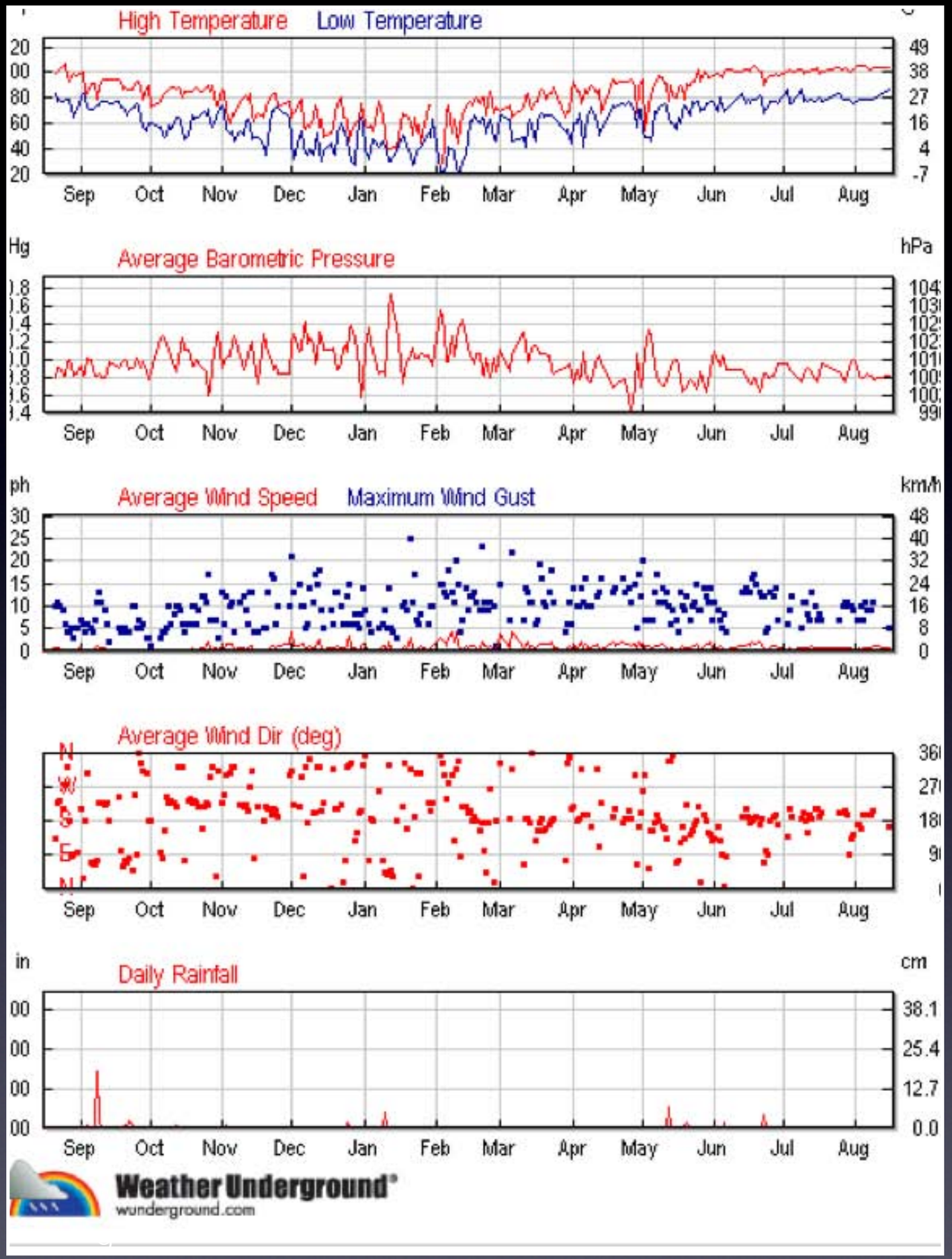
WEATHER SIDE
(OUTSIDE FACE)
DOWNSTREAM EXHAUST
(UPSTREAM SUPPLY)



- Typical heat recovery systems without preheat or cooling average $7/CFM, with preheat & cooling these systems range in cost from $10 to upwards of $40/CFM
- Significant fan energy is added to overcome pressure drops introduced by heat recovery media and additional filters in both the exhaust and supply air streams
- Heat recovery frequently affects building pressure

Heat Recovery

- A temperature difference must exist across the heat recovery media in order for heat recovery to take place
- Indoor or exhaust air temperatures typically average 75F for most office or classroom facilities
- Fan energy added to heat recovery ventilators require an average temperature delta of 8.5F to be completely offset



- Average temperature in Austin is 81F
- Average humidity in Austin is 60%

Heat Recovery

- Peak cooling days usually start below the required delta T that would offset the extra fan energy a heat recovery unit requires to push air across the heat recovery media thus heat recovery system for 24 hour facilities are even worse performers

Time (CDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gus
12:53 AM	82.0 °F	84.9 °F	68.0 °F	62%	29.88 in	10.0 mi	South	4.6 mph	-
1:53 AM	81.0 °F	83.8 °F	68.0 °F	65%	29.87 in	10.0 mi	SSW	8.1 mph	-
2:53 AM	82.9 °F	86.5 °F	69.1 °F	63%	29.86 in	10.0 mi	SSW	10.4 mph	-

Show full METARS | METAR FAQ | Comma Delimited File

Time (CDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gus
3:53 AM	81.0 °F	84.4 °F	70.0 °F	69%	29.86 in	10.0 mi	SSW	6.9 mph	-
4:53 AM	79.0 °F	-	70.0 °F	74%	29.87 in	10.0 mi	South	3.5 mph	-
5:53 AM	78.1 °F	-	70.0 °F	76%	29.87 in	10.0 mi	South	4.6 mph	-
6:53 AM	77.0 °F	-	70.0 °F	79%	29.88 in	10.0 mi	South	4.6 mph	-
7:53 AM	79.0 °F	-	71.1 °F	77%	29.89 in	10.0 mi	SSW	4.6 mph	-
8:53 AM	82.9 °F	88.0 °F	72.0 °F	69%	29.91 in	10.0 mi	SSW	5.8 mph	-
9:53 AM	87.1 °F	92.0 °F	70.0 °F	57%	29.90 in	10.0 mi	SSW	9.2 mph	-
10:53 AM	91.0 °F	95.2 °F	68.0 °F	47%	29.91 in	10.0 mi	South	6.9 mph	-
11:53 AM	95.0 °F	97.9 °F	66.0 °F	38%	29.90 in	10.0 mi	South	9.2 mph	-
12:53 PM	96.1 °F	98.8 °F	64.9 °F	36%	29.88 in	10.0 mi	Variable	5.8 mph	-
1:53 PM	100.0 °F	103.0 °F	64.0 °F	31%	29.86 in	10.0 mi	South	10.4 mph	18.4

- Detailed 8760 hourly analysis indicates how energy is used between a 13 EER standard A/C unit and a 13 EER preheat and cooling heat recovery unit and

EQUIPMENT ENERGY CONSUMPTION
By Chris Mansour, PE TFC

Alternative: 1 No ERU No DCV Schd Vent 30%min fl

Equipment - Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Lights													
Electric (kWh)	3,861.0	3,490.5	4,056.0	3,705.0	3,958.5	3,900.0	3,763.5	4,056.0	3,705.0	3,958.5	3,802.5	3,763.5	46,020.0
Peak (kW)	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
MISC LD													
Electric (kWh)	1,485.0	1,342.5	1,560.0	1,425.0	1,522.5	1,500.0	1,447.5	1,560.0	1,425.0	1,522.5	1,462.5	1,447.5	17,700.0
Peak (kW)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Cooling Coil Condensate													
Recoverable Water (1000gal)	0.0	0.0	0.1	1.0	2.7	3.4	4.1	4.8	3.3	0.3	0.3	0.0	19.9
Peak (1000gal/Hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cpl 1: Cooling plant - 001 [Sum of dsn coil capacities=52.19 tons]													
RTU 13 EER [Clg Nominal Capacity/F.L.Rate=52.19 tons / 48.18 kW] (Cooling Equipment)													
Electric (kWh)	626.8	481.8	1,726.5	3,130.0	6,028.7	8,331.7	10,771.8	11,634.6	7,291.0	2,786.4	1,729.0	659.1	55,197.4
Peak (kW)	11.2	9.7	17.8	24.7	32.7	38.7	47.0	48.9	39.6	23.5	17.3	11.6	48.9
Condenser fan for MZ rooftop													
Electric (kWh)	99.6	78.2	254.6	443.3	828.0	1,105.4	1,378.9	1,485.1	980.4	396.1	255.8	103.9	7,409.1
Peak (kW)	1.7	1.5	2.6	3.4	4.2	4.8	5.4	5.5	4.9	3.3	2.5	1.8	5.5
Cntl panel & interlocks - 0.125 KW (Misc Accessory Equipment)													
Electric (kWh)	23.6	21.8	37.0	45.6	65.9	76.3	89.9	89.6	70.0	43.8	36.0	25.0	624.4
Peak (kW)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hpl 1: Heating plant - 002 [Sum of dsn coil capacities=448.5 mbh]													
Boiler - 001 [Nominal Capacity/F.L.Rate=448.5 mbh / 131.4 kW] (Heating Equipment)													
Electric (kWh)	16,002.6	15,230.8	4,126.5	149.4	0.0	0.0	0.0	0.0	0.0	1,143.6	3,507.6	14,053.6	54,214.0
Peak (kW)	105.6	104.2	91.7	3.2	0.0	0.0	0.0	0.0	0.0	15.2	78.5	100.8	105.6
Sys 1: System - 001													
FC Centrifugal var freq drv [DsnAirflow/F.L.Rate=22,594 cfm / 13.22 kW] (Main Clg Fan)													
Electric (kWh)	260.4	242.2	252.1	257.1	414.5	678.4	907.5	1,016.7	543.1	296.1	239.5	243.5	5,351.0
Peak (kW)	2.2	1.8	3.3	4.7	6.3	12.6	13.2	13.2	10.0	5.6	3.3	2.3	13.2

Total 122795

Project Name:
Dataset Name: State Energy Recovery.trc

TRACE® 700 v6.2.5 calculated at 02:46 PM on 11/07/2009
Alternative - 1 Equipment Energy Consumption report page 1 of 5

EQUIPMENT ENERGY CONSUMPTION
By Chris Mansour, PE TFC

Alternative: 2 Decoupled ERU DOAS W/ VAV 30per min flow

Equipment - Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Lights													
Electric (kWh)	3,861.0	3,490.5	4,056.0	3,705.0	3,958.5	3,900.0	3,763.5	4,056.0	3,705.0	3,958.5	3,802.5	3,763.5	46,020.0
Peak (kW)	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
MISC LD													
Electric (kWh)	1,485.0	1,342.5	1,560.0	1,425.0	1,522.5	1,500.0	1,447.5	1,560.0	1,425.0	1,522.5	1,462.5	1,447.5	17,700.0
Peak (kW)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Energy Recovery Parasitics													
Electric (kWh)	247.2	230.8	155.2	181.2	232.8	252.8	289.6	288.4	234.8	175.2	150.8	248.8	2,687.6
Peak (kW)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Cooling Coil Condensate													
Recoverable Water (1000gal)	0.0	0.0	0.0	0.2	0.7	0.8	0.9	1.0	0.7	0.1	0.0	0.0	4.3
Peak (1000gal/Hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cpl 1: Cooling plant - 001 [Sum of dsn coil capacities=49.15 tons]													
RTU 13 EER [Clg Nominal Capacity/F.L.Rate=49.15 tons / 45.37 kW] (Cooling Equipment)													
Electric (kWh)	571.2	426.2	1,623.5	3,088.1	5,543.4	7,527.8	9,446.3	9,960.2	6,492.8	2,781.4	1,596.0	598.4	49,655.2
Peak (kW)	11.2	9.7	18.1	24.7	30.3	36.7	40.4	42.2	35.3	24.4	17.6	11.7	42.2
Condenser fan for MZ rooftop													
Electric (kWh)	91.3	69.4	239.7	438.3	763.2	1,003.8	1,222.3	1,285.1	877.0	396.4	236.3	95.0	6,717.7
Peak (kW)	1.8	1.5	2.7	3.4	3.9	4.8	5.1	5.2	4.4	3.3	2.6	1.8	5.2
Cntl panel & interlocks - 0.125 KW (Misc Accessory Equipment)													
Electric (kWh)	45.0	35.6	40.5	56.6	72.8	79.0	80.5	90.1	73.4	49.1	39.4	47.5	719.5
Peak (kW)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hpl 1: Heating plant - 002 [Sum of dsn coil capacities=353.1 mbh]													
Boiler - 001 [Nominal Capacity/F.L.Rate=353.1 mbh / 103.5 kW] (Heating Equipment)													
Electric (kWh)	13,497.6	12,987.0	3,651.1	109.1	0.0	0.0	0.0	8.0	0.0	951.4	2,943.1	11,722.9	45,870.3
Peak (kW)	90.6	90.6	90.6	2.4	0.0	0.0	0.0	0.2	0.0	13.8	77.4	90.6	90.6
Sys 1: System - 001													
FC Centrifugal var freq drv [DsnAirflow/F.L.Rate=24,376 cfm / 14.26 kW] (Main Clg Fan)													
Electric (kWh)	294.5	270.9	289.9	298.0	472.3	748.5	974.2	1,085.1	613.1	149.0	280.0	275.6	5,951.1
Peak (kW)	3.2	3.7	4.4	5.0	6.8	13.6	14.2	14.2	10.8	6.0	3.9	2.7	14.2

Project Name:
Dataset Name: State Energy Recovery.trc

Total: 121556

TRACE® 700 v6.2.5 calculated at 02:46 PM on 11/07/2009
Alternative - 2 Equipment Energy Consumption report page 2 of 5

EQUIPMENT ENERGY CONSUMPTION
By Chris Mansour, PE TFC

Alternative: 2 Decoupled ERU DOAS W/ VAV 30per min flow

Equipment - Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Sys 1: System - 001													
FC Centrifugal var freq drv [DsnAirflow/F.L.Rate=3,571 cfm / 3.20 kW] (Opt. Ventilation Fan)													
Electric (kWh)	833.5	765.7	781.2	731.4	848.7	895.2	961.1	1,027.4	814.5	798.8	719.9	780.4	9,957.7
Peak (kW)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

Project Name:
Dataset Name: State Energy Recovery.trc

TRACE® 700 v6.2.5 calculated at 02:46 PM on 11/07/2009
Alternative - 2 Equipment Energy Consumption report page 3 of 5

System Variability

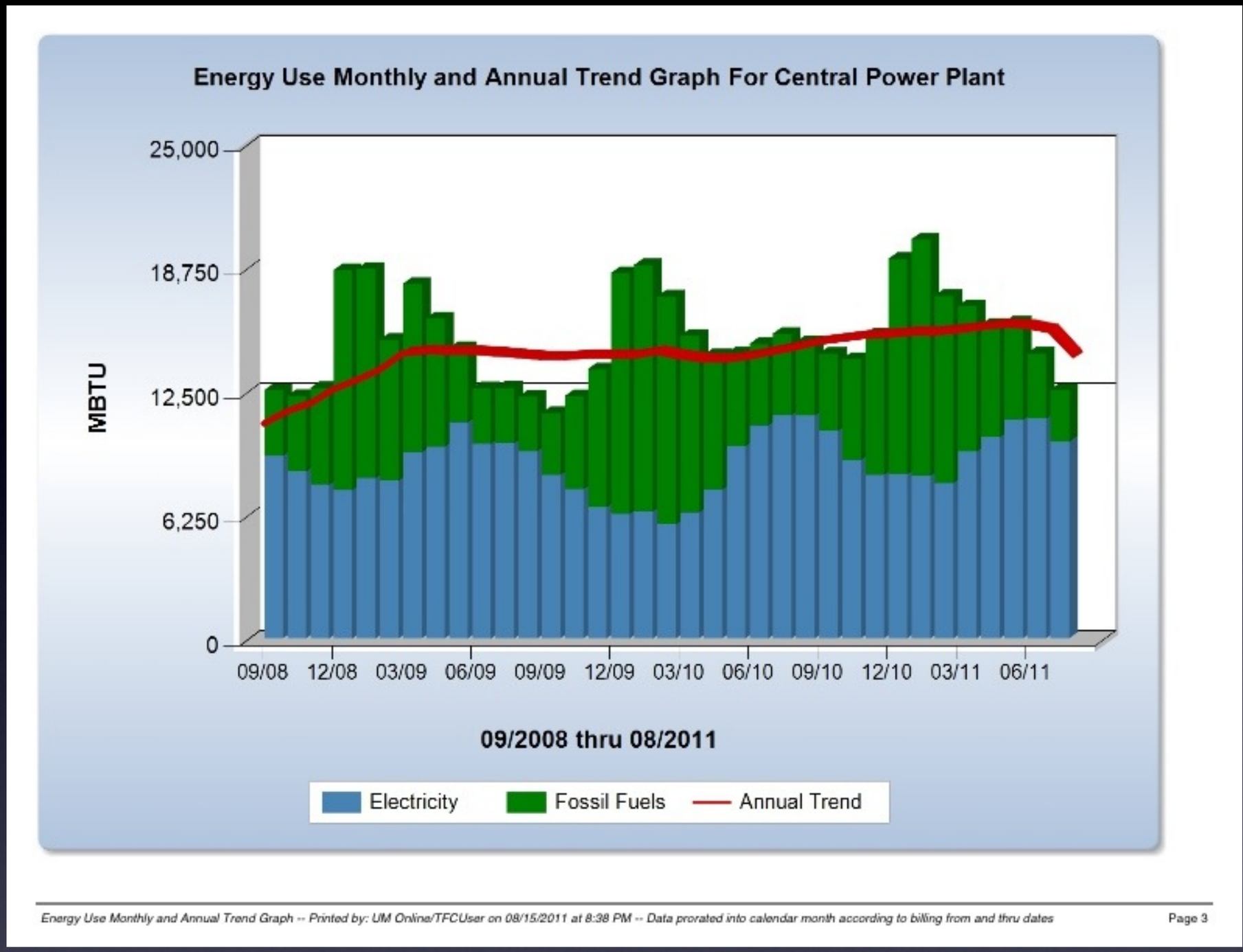
- "The best way to save energy is not to use it in the first place"
- Applying variable equipment such as VFDs, controls, investing in energy management systems, selecting high efficiency and highly variable components, and retro commissioning can minimize energy usage

System Variability

- **Central Power Plant** was transformed from a manual plant to a fully automated plant

- The plant received VFDs, a BMS enhancement toward an energy management system and other high efficiency components such as chillers

- TFC is moving this plant toward a fully variable plant



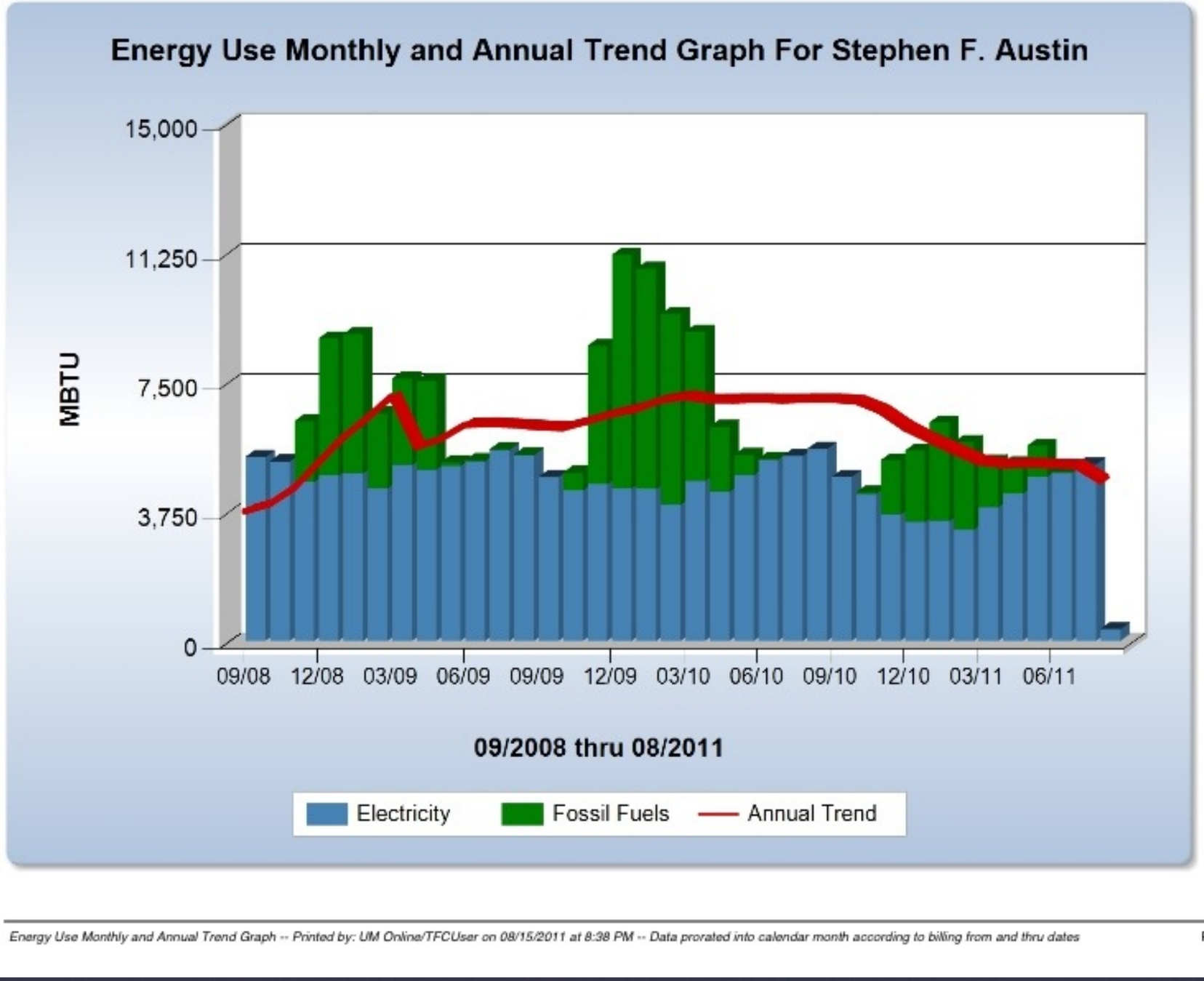
System Variability

- **Stephen F Austin** central plant was transformed from a manual to fully automated plant

- This plant also received many of the upgrade that the Central Power Plant received

- 5 floors of the SFA facility received a major remodel which included updated air handlers, air termnal boxes and high efficiency T8 lighting fixtures

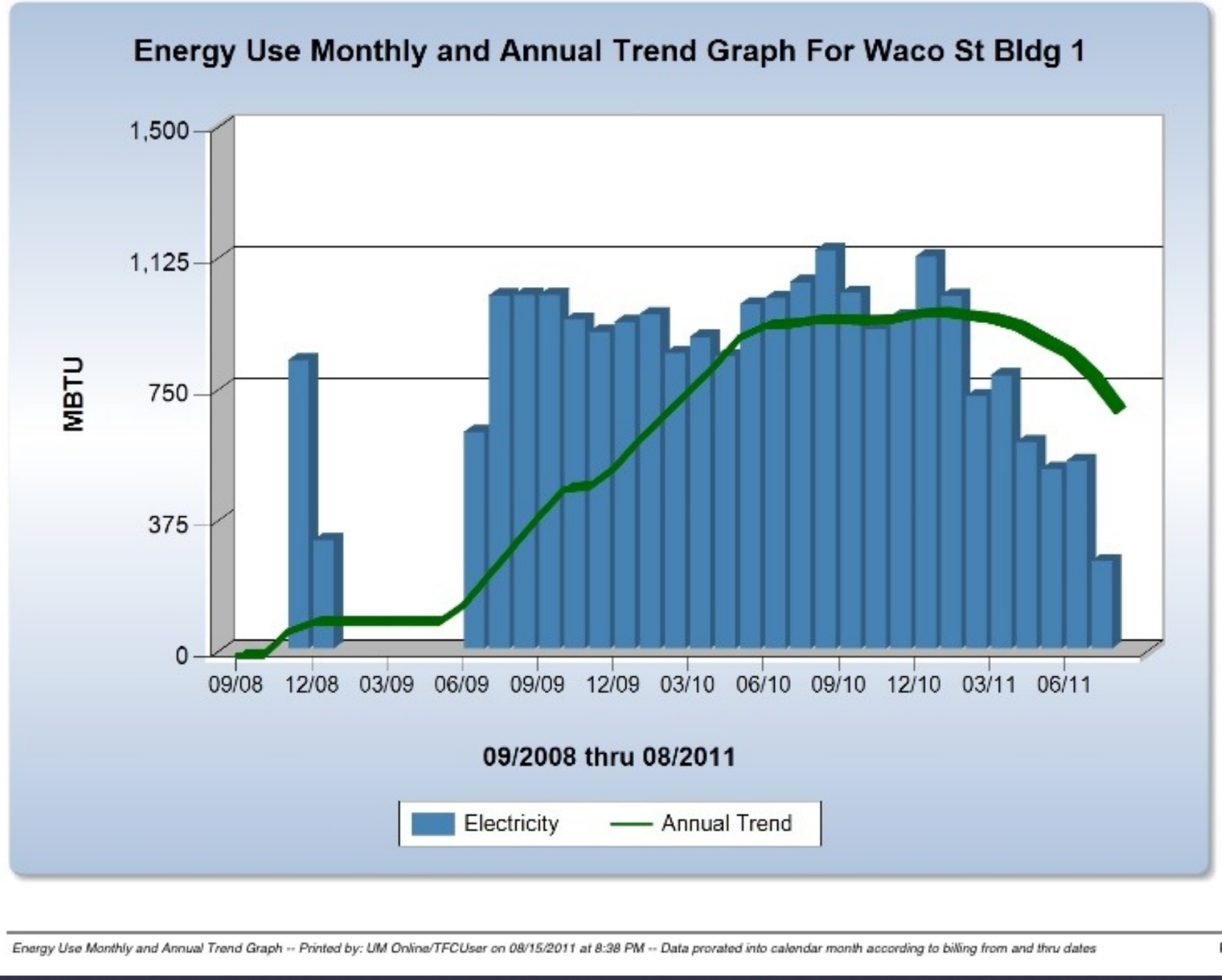
- Occupancy demand A/C and ventilation was also applied to several floors



System Variability

- **WACO State Office Building** received new high efficiency chillers, drives, pumps, air terminal boxes, new BMS, and a dedicated data room cooling system

- The dedicated data room cooling system is leveraged to shut down the main central plant after hours, dramatically reducing the electrical consumption



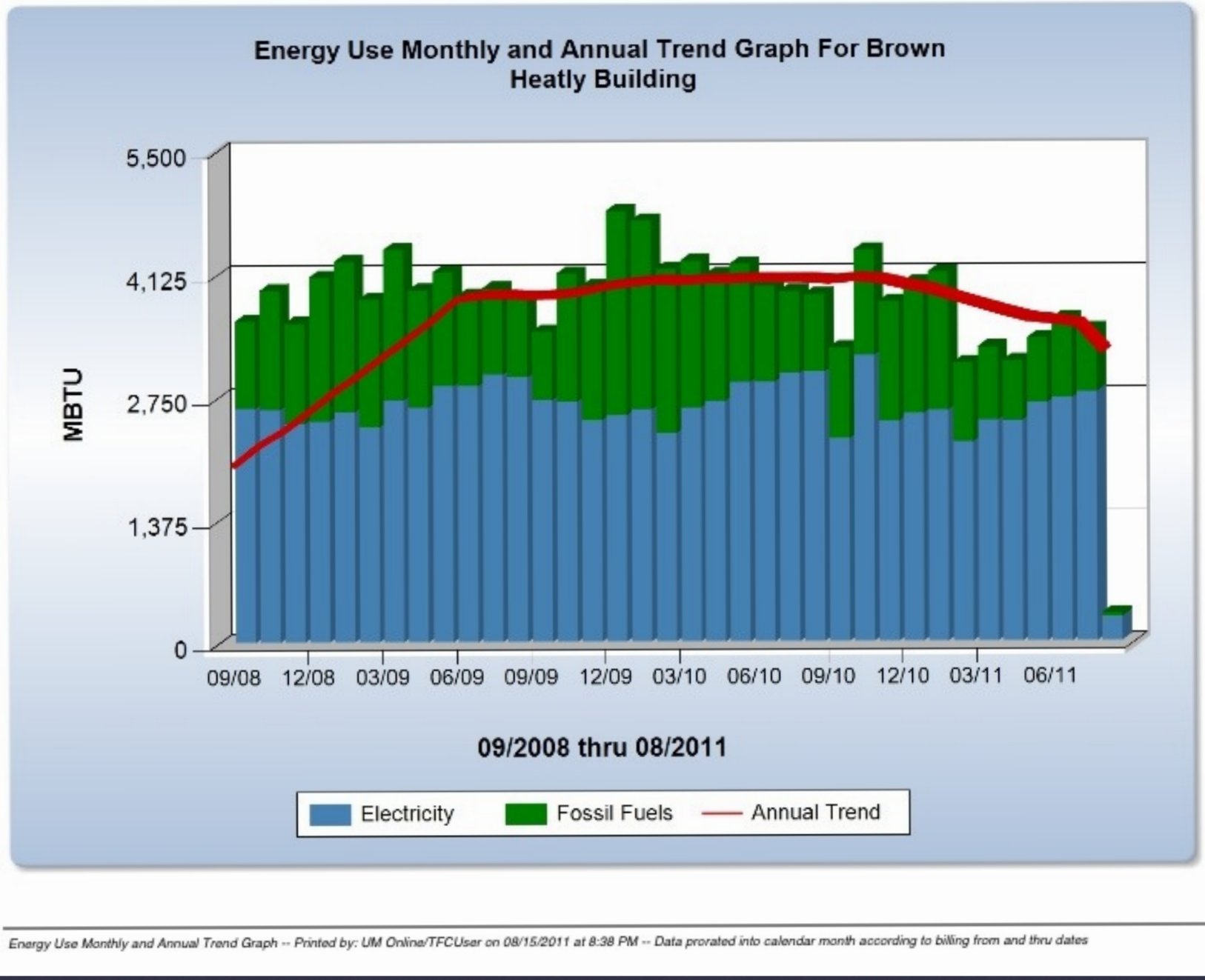
Energy Use Monthly and Annual Trend Graph -- Printed by: UM Online/TFCUser on 08/15/2011 at 8:38 PM -- Data prorated into calendar month according to billing from and thru dates Page 7

Emerging Technologies

- **Brown Heatly Building** parking gargage received an LED lighting upgrade for 550 MH fixtures

- The upgrade reduced parking garage lighting by 70%

- Considering rebates from Austin Energy this enhancement is on track for a 6.5 year payback



Emerging Technology

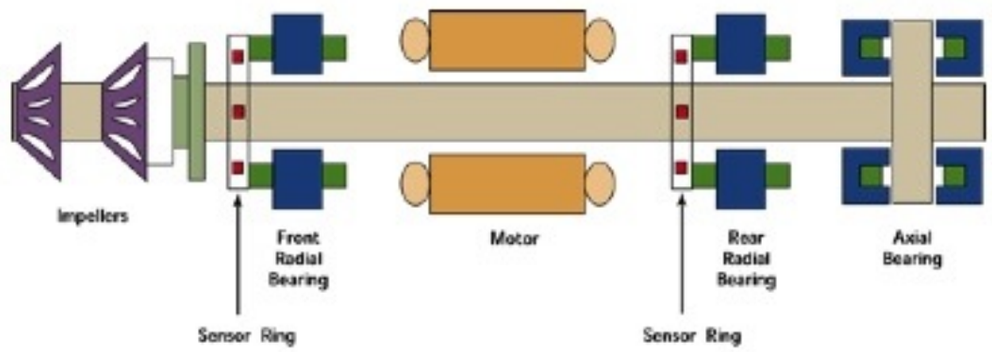
- **Magnetic Centrifugal Oil and Bearing Free Compressor**

- Capitalizes by using multiple smaller VFD controlled compressors and a enhanced VFD control panel that maximizes energy savings

- Gains efficiency from the inherent design advantages of centrifugal over other compressor types

- Gains and Maintains efficiency with the removal of oil from the refrigerant circuit

Magnetic Bearing Centrifugal Compressor – System Integrity – Turbocor synonymous with "Copeland"



Magnetic bearing centrifugal compressors are oil free.

Eliminates additional power for moving oil

Eliminates fouling the evaporator lines with oil residue

Eliminates failure due to oil return

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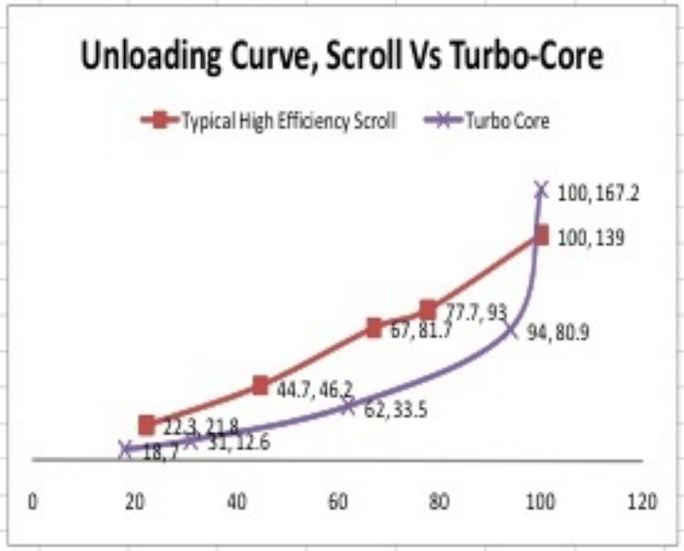
Emerging Technology

- **A word of warning,** the magnetic compressor will spike energy usage above that of traditional compressors if allowed to approach loading levels above approximately 90%

- Usually compressors are oversized due to the fact that loads usually lay between compressor sizes and manufacturers must provide the larger compressor to ensure loads are met

air-cooled Scroll Vs Magnetic Centrifugal Efficiency – Performance

Air Cooled Chiller Performance			
York Unloading		TurboCore	
Percent	KW	Percent	KW
22.3	21.8	18	7
44.7	46.2	31	12.6
67	81.7	62	33.5
77.7	93	94	80.9
100	139	100	167.2



Typical Office Building Profile				
Percent Load	Cooling	KW York	KW Turbo	% Hours
Design	Tons	at tons	at tons	5221 Hr/year
5	13.6	43.6	14	15%
10	27.2	43.6	14	12%
20	54.4	43.6	14	15%
30	81.5	68	28	19%
40	108.7	88	39.2	15%
50	135.9	140	53.06	7%
60	163.1	152	62	8%
70	190.3	174	98	5%
80	217.4	188	132	3%
90	258.2	246	156	1%
100	271.8	278	334.4	1%
		133.1636	85.87818	

Avg York KW/Ton/Yr/%Hr/%Loaded	83.352	KW
Avg TurboCore KW/Ton/Yr/%Hr/%Loaded	37.0662	KW

The Turbo-Core Vs Scroll air-cooled Chiller Analysis is based on Waco State Office Building: 98,000 Square feet, 250 tons of cooling, (2) 125 ton chillers, 16 hour, 5 day week operations, Variable primary distribution, Estimated $0.10/KWH, $10/KW demand (summer & winter); these rates are thought to be conservative; it should be acknowledged that the control system for the Turbocor is performing KW limiting to enhance energy savings through part load operations.

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Emerging Technologies

- Chiller manufacturers offering magnetic centrifugal compressors are able to limit and UL list the compressors on their efficiency curve at the limiting point- it is highly recommended that this programming and listing is applied

SYSTEM LOAD PROFILES

By Chris Mansour, PE TFC

YLAA0141HE
System - 001

Percent Design Load	---- Cooling Load ---- Cap. (Tons)	Hours (%)	Hours	---- Heating Load ---- Cap. (Btuh)	Hours (%)	Hours	---- Cooling Airflow ---- Cap. (Cfm)	Hours (%)	Hours	---- Heating Airflow---- Cap. (Cfm)	Hours (%)	Hours
0 - 5	13.6	15	766	-106,358.5	20	537	5,530.8	10	901	2,049.2	0	223
5 - 10	27.2	12	607	-212,717.1	17	452	11,061.7	11	567	4,098.5	11	312
10 - 15	40.8	5	267	-319,075.6	16	434	16,592.5	5	293	6,147.7	9	246
15 - 20	54.4	6	320	-425,434.2	7	186	22,123.3	5	295	8,197.0	6	156
20 - 25	68.0	4	194	-531,792.7	9	237	27,654.2	4	227	10,246.2	7	176
25 - 30	81.5	15	762	-638,151.3	11	287	33,185.0	2	104	12,295.4	7	183
30 - 35	95.1	9	462	-744,509.8	7	190	38,715.8	2	97	14,344.7	7	203
35 - 40	108.7	6	311	-850,868.3	1	20	44,246.7	1	74	16,393.9	3	95
40 - 45	122.3	3	175	-957,226.9	1	40	49,777.5	2	127	18,443.1	3	86
45 - 50	135.9	4	204	-1,063,585.4	1	34	55,308.3	22	1,197	20,492.4	4	112
50 - 55	149.5	3	154	-1,169,943.9	1	24	60,839.2	5	294	22,541.6	5	146
55 - 60	163.1	5	243	-1,276,302.5	1	19	66,370.0	6	341	24,590.9	2	54
60 - 65	176.7	4	219	-1,382,661.0	1	28	71,900.9	6	343	26,640.1	6	163
65 - 70	190.3	3	151	-1,489,019.5	1	21	77,431.7	3	150	28,689.3	8	229
70 - 75	203.8	2	110	-1,595,378.1	0	0	82,962.5	2	133	30,738.6	0	0
75 - 80	217.4	2	93	-1,701,736.6	4	100	88,493.4	2	83	32,787.8	0	0
80 - 85	231.0	2	105	-1,808,095.1	2	64	94,024.2	0	20	34,837.0	1	21
85 - 90	244.6	1	28	-1,914,453.8	0	0	99,555.0	1	45	36,886.3	1	19
90 - 95	258.2	0	15	-2,020,812.3	0	0	105,085.9	0	20	38,935.5	0	0
95 - 100	271.8	0	0	-2,127,170.8	0	0	110,616.7	0	0	40,984.8	11	290
Hours Off	0.0	0	3,539	0.0	0	6,085	0.0	0	3,369	0.0	0	6,042

Load profile estimates the chiller plant would operate at 75% or better capacity

*Notice the percent of time the system operates as 75% load or better

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Emerging Technology

- Paybacks of 3 years for air cooled and 6 years for water cooled are regularly encountered

Other Evaluations on Payback:

Navy Techval

The Table below presents a synopsis of the data collected for these two proje

Project Site	Project Type	Site Characteristics	$/kWH	Tons	Annual Kwh savings	Annual Energy $ Savings	% Savings	Cost	$/ton	Payback years
San Diego April/May 2005	Compressor Retrofit	Year round cooling, old compressors screw	$0.121	150	129,600	$21,000	41%	$136,716	$907	6.5
San Diego January 2005	Add 3rd compressor and Condensing water reset	Year round cooling, old compressors screw	$0.121	240	139,000	$23,232	47%	$176,087	$744	7.7
San Diego April 2005	Add 3rd compressor and Condensing water reset	Year round cooling, old compressors screw	$0.121	240	210,240	$25,228	47%	$178,802	$744	7.1
Newport Sept/Nov 2005	New Chiller	Year round cooling, old chiller recip	$0.115	80	227,200	$26,192	67%	$100,703	$1250	3.8

NEVADA SURE BET PROGRAM

Offered By: NV Energy
Administered By: KEMA Services, Inc

Turbocor Variable-Speed, Magnetic Bearing Chiller

Project Results

	Total
Demand Reduction	16 kW
Annual Energy Savings	51,000 kWh
Annual Energy Cost Savings	$5,230
Project Cost (Approximate)	$17,000
Sure Bet Incentive	$3,130
Simple Payback Period	2.7 Years

This information is posed on DOE's website and listed as an effective emerging technology for energy savings.

AIR-COOLED TURBOCOR

RETROFIT OF AN AIR-COOLED CHILLER WITH AN OIL-LESS CENTRIFUGAL COMPRESSOR

EAST COUNTY FAMILY RESOURCE CENTER
COUNTY OF SAN DIEGO

December 2005

Implementation Costs	
Compressor Retrofit	$ 50,000
Reciprocating Compressor Cost	$ (12,800)
Incentive	$ (14,715)
Total Installed Cost	$ 22,485
Est. Annual Energy Savings	$ 8,000
Simple Payback (yrs)	2.8

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Emerging Technology

- Comparable costs for air cooled are roughly 100% for air cooled and about 15% for water cooled
- TFC is employing this technology on a current project and will continue to report data as it becomes available

Magnetic Bearing Centrifugal air-cooled Chiller Equipment Costs

- New air-cooled chillers:$1000 to $1100 per ton
- Magnetic bearing compressor: $32,000
- Water-cooled retrofits: $240 to $370/ton
- Air-cooled retrofits: $50,000 to $65,000 per compressor

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Awareness

- "The best way to save energy is not to use it in the first place"
- Leverage building managers to pass the word, look out for improper operations and make suggestions based on occupant usage and their experiences with the facility
- Report results of the efforts of others, give recognition
- ERCOT and TFC

Questions?

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