

Round Rock Independent School District

Department of Energy Management

Energy Efficiency Report FY 2012

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RRISD Energy Discussion Background

1. Years of Improvements to Centralized HVAC Controls
2. LEED, CHPS, Austin Green Building Program, Energy Star, etc, etc
3. Legislature's 2007 decision regarding "ISD Goals" of Energy Use Reduction of 5% per year
4. Board of Trustees Resolution in Sept 2007
5. Design Basis since....

RRISD Department of Energy Management

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Utility Expenses

Prior Year Comparison

Building Area
Increased
348,500 sqft,
5.5%

Electrical

Fiscal Year	Usage kWh	\$ Expense
2011	67,640,269	\$ 7,536,847
<u>2012</u>	<u>63,732,468</u>	<u>\$ 7,061,987</u>
% Chg	-5.8%	-6.3%

Natural Gas

Fiscal Year	Usage CCF	\$ Expense
2011	339,451	\$ 219,665
<u>2012</u>	<u>209,543</u>	<u>\$ 128,788</u>
% Chg	-38.3%	-41.4%

Domestic Water

Fiscal Year	Usage kGal	\$ Expense
2011	224,368	\$ 910,088
<u>2012</u>	<u>256,181</u>	<u>\$ 1,217,168</u>
% Chg	14.2%	33.7%

Waste Water

Fiscal Year	Usage kGal	\$ Expense
2011	71,680	\$ 415,956
<u>2012</u>	<u>66,190</u>	<u>\$ 439,774</u>
% Chg	-7.7%	5.7%

Utility Expenses

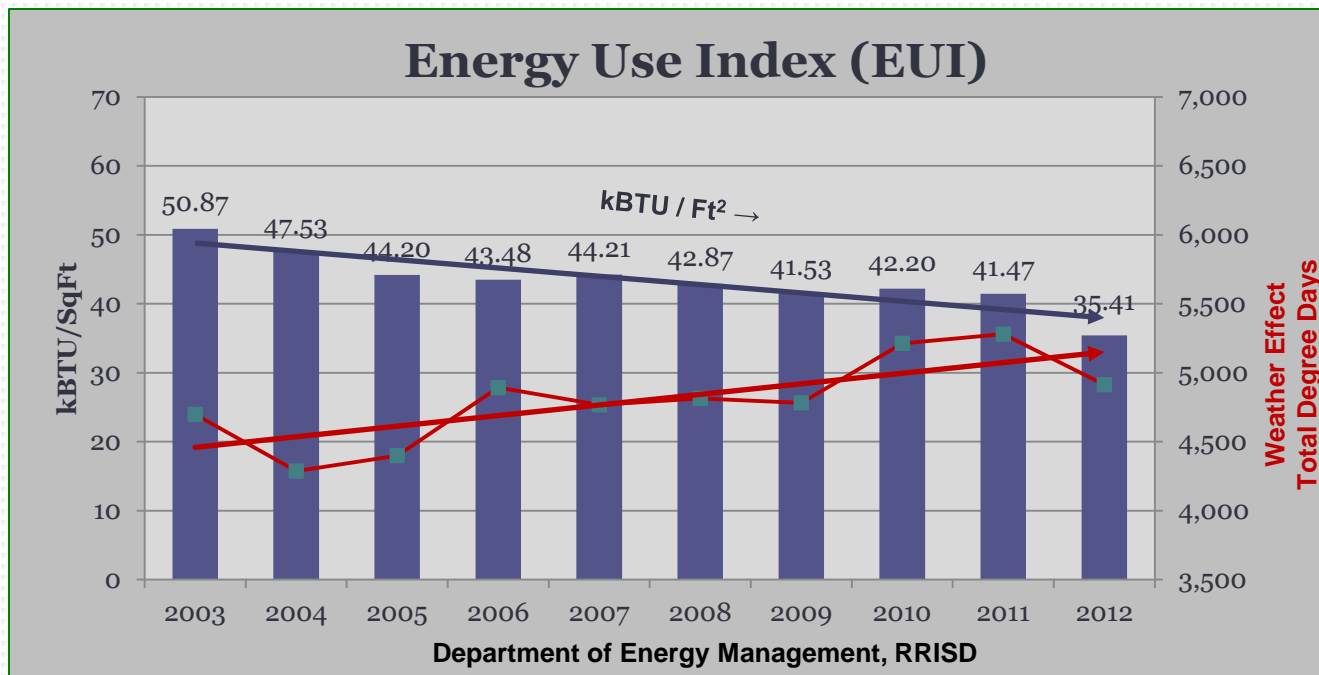
Prior Year Comparison

Building Area
Increased
348,500 sqft,
5.5%

<u>Electrical</u>			<u>Natural Gas</u>		
Fiscal Year	Usage kWh	\$ Expense	Fiscal Year	Usage CCF	\$ Expense
2011	67,640,269	\$ 7,536,847	2011	339,451	\$ 219,665
<u>2012</u>	<u>63,732,468</u>	<u>\$ 7,061,987</u>	<u>2012</u>	<u>209,543</u>	<u>\$ 128,788</u>
% Chg	-5.8%	-6.3%	% Chg	-38.3%	-41.4%
Total Energy Expenses Declined \$565,757 -7.29%			<u>Domestic Water</u>		
			<u>Waste Water</u>		
Fiscal Year	Usage kGal	\$ Expense	Fiscal Year	Usage kGal	\$ Expense
2011	224,368	\$ 1,217,168	2011	71,680	\$ 415,956
<u>2012</u>	<u>256,181</u>	<u>\$ 1,217,168</u>	<u>2012</u>	<u>66,190</u>	<u>\$ 439,774</u>
% Chg	14.2%	33.7%	% Chg	-7.7%	5.7%
			Total Water/Waste Expenses Increased \$330,898 24.95%		

Energy Efficiency Metric

Total Energy Consumption by Building Area



7.7% Energy Efficiency Improvement Over Last Year. RRISD's energy efficiency program began strongly in 2001. Our largest single year gain to date occurred last year with a 14.6% drop from the previous year or 7.7% net of climate change.

Three Major Elements of Energy Usage

1. Building Design
2. Energy Management & Maintenance
3. Weather

Building Design

RRISD has continuously improved its design of new facilities. All schools built after 2009 were LEED® designed, High Performance Buildings. The next slide shows that if RRHS, McNeil & Westwood were redesigned to LEED standards, energy costs would decline an estimated \$395,982 per year using CRHS as the basis of efficiency.

Energy Management & Maintenance

Our primary goal is to provide an exemplary learning and work environment. While doing so, our greatest impact on energy conservation is through re-commissioning, service, and preventive maintenance of existing facilities. The thermostat in every classroom and office in the District is automatically reset to 85° F when unoccupied.

Weather

The one variable for which we have no control is weather. The trends above show that we have been reducing our energy consumption while also experiencing increased energy demands. Weather accounted for a 6.9% energy reduction last year but increased by 23.1% over ten years through 2011.

LEED® Construction Design

Comparison to Conventional Design

Future Design Goals

CRHS was designed to LEED® Silver Certification standards. Comparing it's energy performance to the conventional designs for RRHS, McNeil, & Westwood reveals a potential savings of \$396K per year over the conventional design.

Summer, Teravista, and Callison Elementary Schools were completed in 2008. They were designed to high efficiency energy standards but not to LEED® standards which also includes architectural energy savings concepts along with HVAC and lighting.

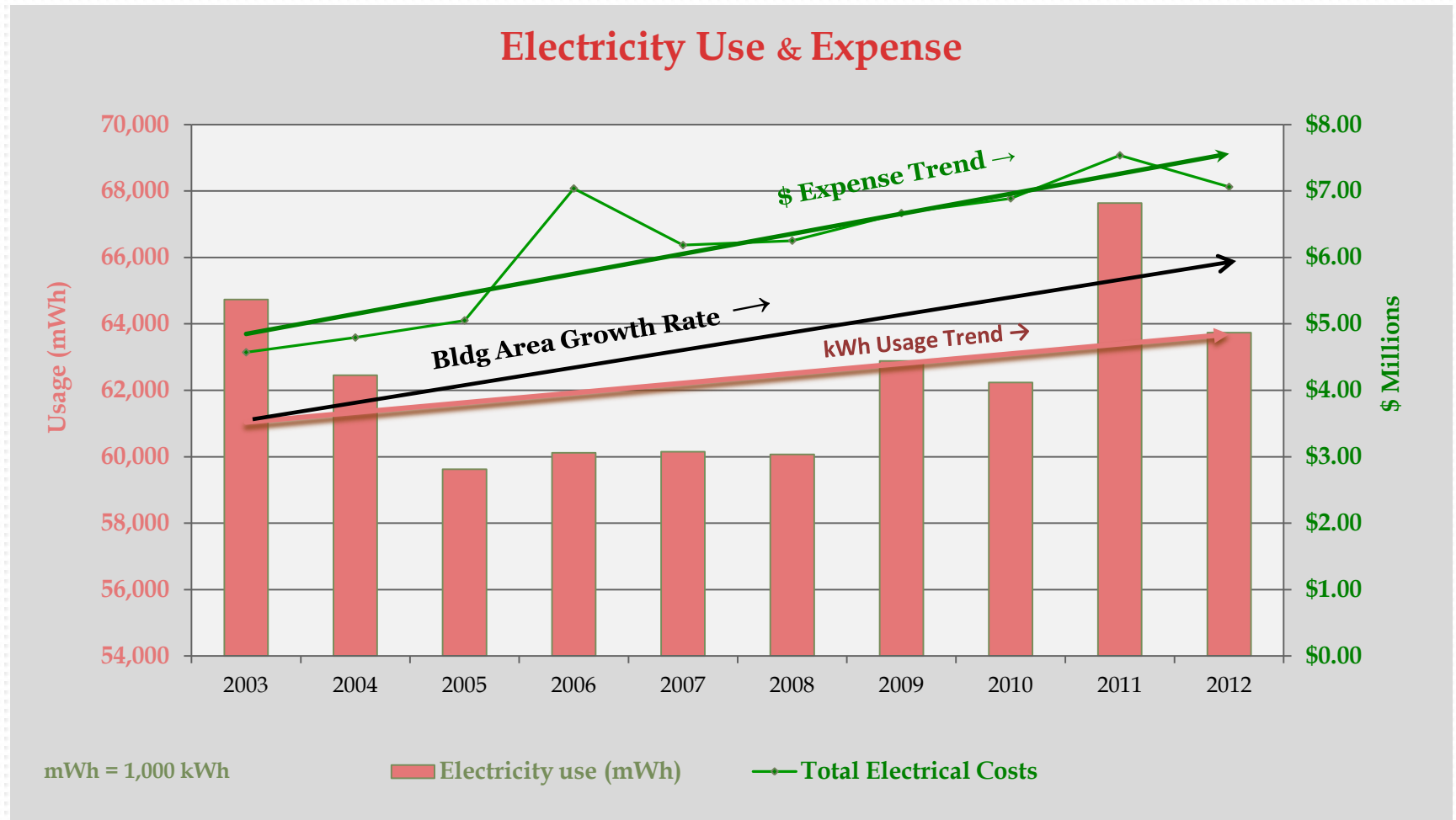
Chandler Oaks Elementary was constructed in 2010 to LEED® Silver standards. Using its design basis, the District could have saved an estimated, \$75.9k per year had Sommer, Teravista, and Callison also been designed to LEED® standards.

School Name	Energy Use Index kBTU/SqFt		Energy Cost Per Bldg Area \$/SqFt		Energy Cost Per Sudent \$	
LEED / High Performance Building Design (Actual Performance)						
Cedar Ridge High School	36.5		\$0.87		\$144	
Conventional Design (Actual Performance Relative to CRHS)						
McNeil High School	43.4	18.9%	\$0.97	11.5%	\$177	22.9%
Round Rock High School	45.7	25.2%	\$1.41	62.1%	\$316	119.4%
<u>Westwood High School</u>	<u>45.6</u>	<u>24.9%</u>	<u>\$1.03</u>	<u>18.4%</u>	<u>\$160</u>	<u>11.1%</u>
Potential Annual Savings if LEED Designed			\$ 395,982 Savings per Year			
LEED / High Performance Building Design (Actual Performance)						
Chandler Oaks Elementary	30.8		\$0.79		\$105	
Conventional Design (Actual Performance Relative to COES)						
Sommer Elementary	32.1	4.2%	\$0.83	5.1%	\$82	-21.9%
Teravista Elementary	32.7	6.2%	\$1.10	39.2%	\$155	47.6%
<u>Callison Elementary</u>	<u>34.8</u>	<u>13.0%</u>	<u>\$1.15</u>	<u>45.6%</u>	<u>\$142</u>	<u>35.2%</u>
Potential Annual Savings Based on Bldg Areas			\$ 75,878 per Year			

Data provided by CLEAResult, Inc. under the commission of
ONCOR's Educational Facilities Program

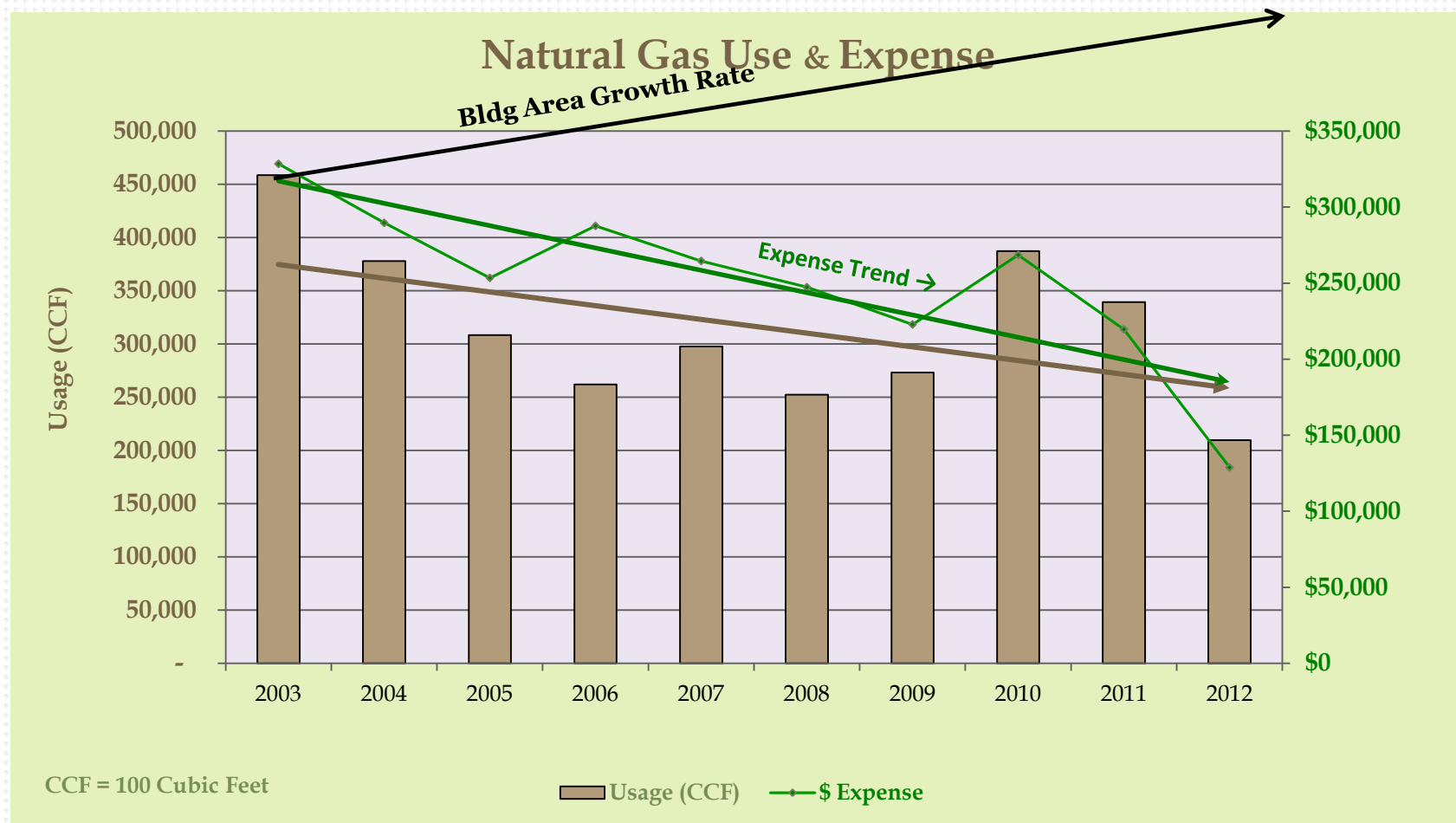
Utility Consumption & Expense

Historical Trend



Utility Consumption & Expense

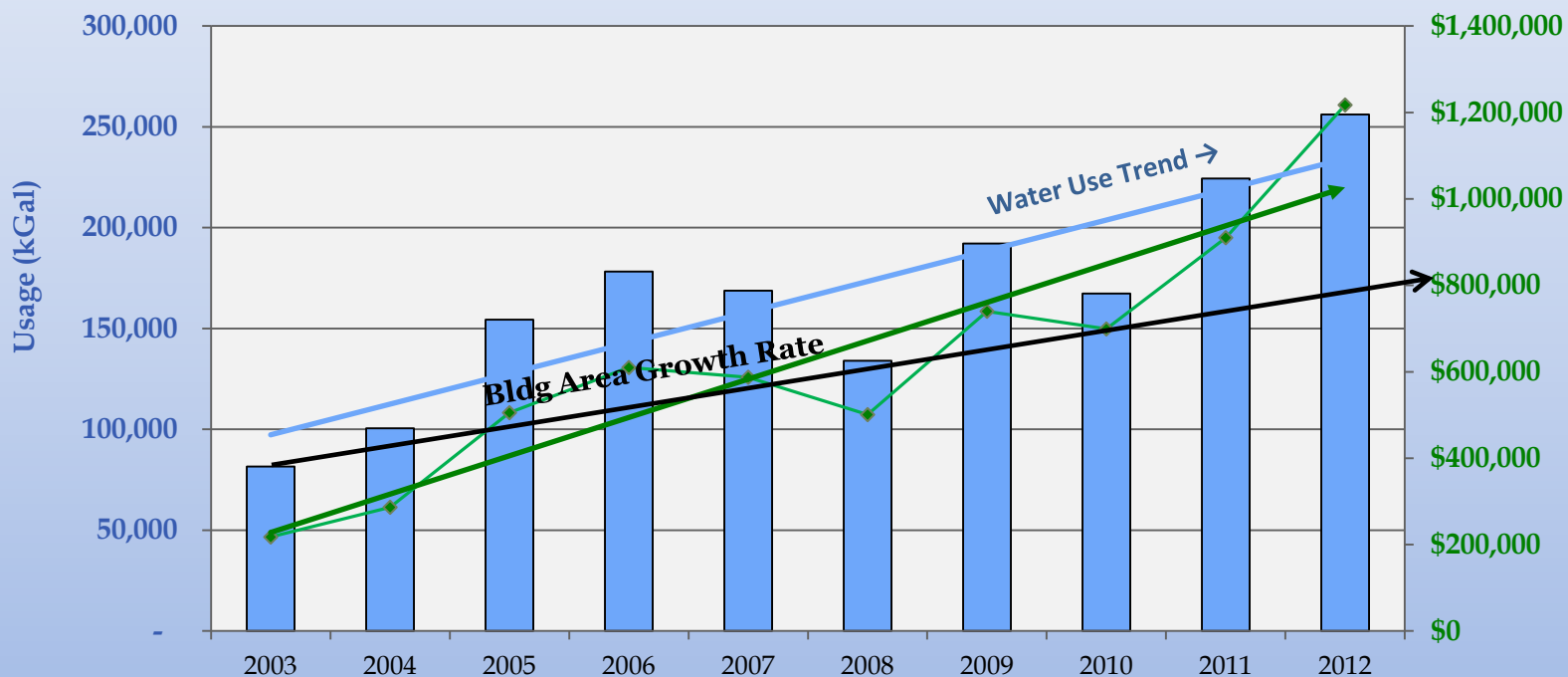
Historical Trend



Utility Consumption & Expense

Historical Trend

Domestic Water Use & Expense
(Includes Irrigation Water)

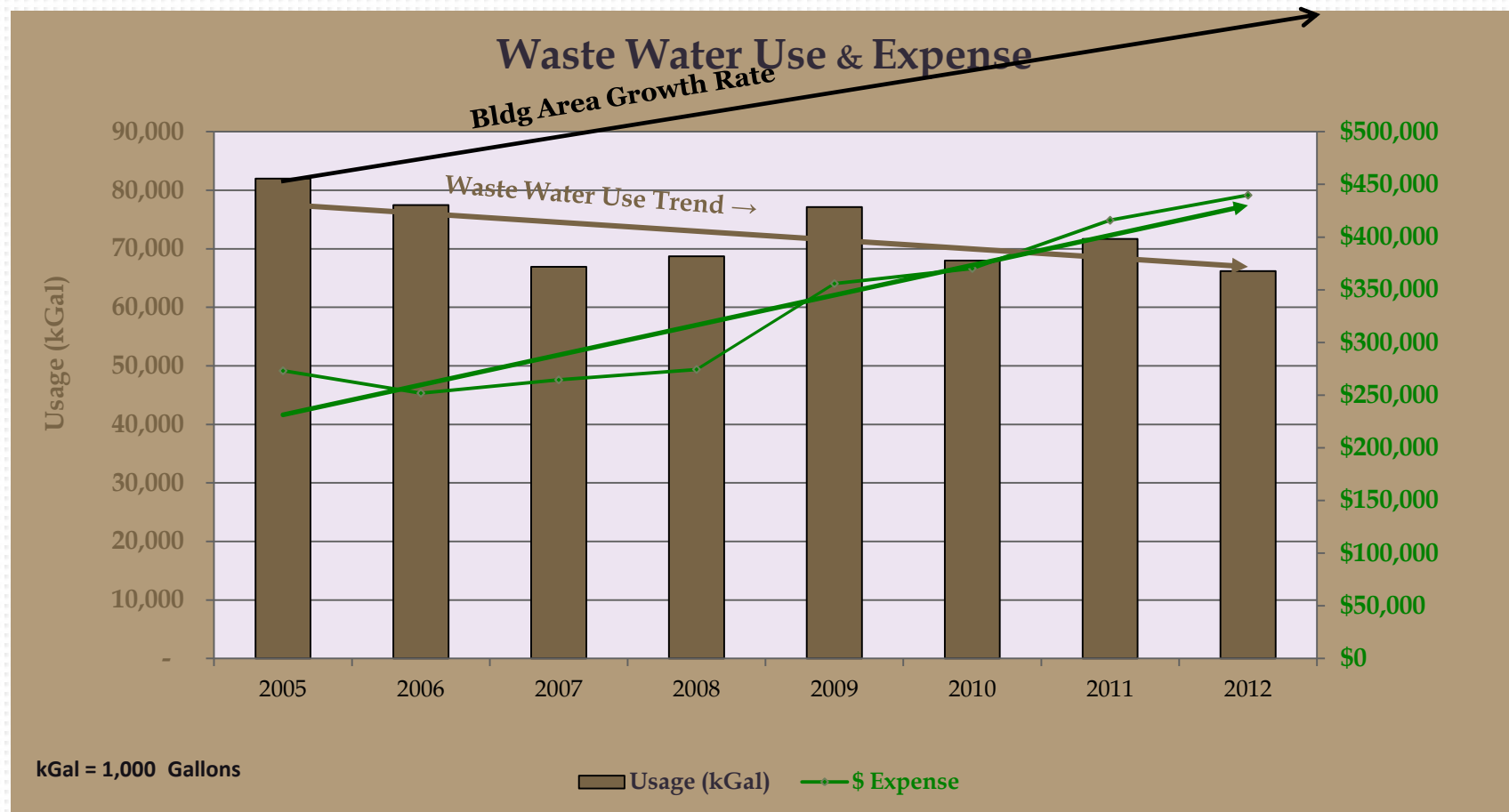


kGal = 1,000 Gallons

Usage (kGal) \$ Expense

Utility Consumption & Expense

Historical Trend



2012 Highlights

- 1. Improved District Energy Efficiency** 7.7% net
 - Reduced EUI from 41.47 kBTU/sqft to 35.41 kBTU/sqft
 - Total Reduction was 14.6%, 6.9% attributed to climate change
- 1. CLEAResult Inc./ONCOR Benchmark Study**
 - FY2012 Annual Savings over base year 2006 \$1,414,000
 - Annual Savings over median Central Texas district \$ 556,000
 - Performance better than median EUI in same region 20.3%
 - *Median EUI = 43.4 kBTU/sqft*
 - *Includes thirteen Central Texas School Districts*
 - Reduced Energy Cost per SqFt. over base year 22.4%
 - *\$1.47 in 2006 to \$1.14*
 - *Median school district \$1.19*
- 2. Increased EPA Energy Star Score** 21.1%
 - District Score of 71 in 2006 to 86 in 2012
- 1. Returned \$ to General Funds** \$ 328,880
 - Budget \$9.706M, Expenses \$9.376M

Executive Summary

This executive summary below is meant to provide a snapshot of your district's performance in this energy benchmarking analysis.

- The table to the left provides various metrics for your entire district as well as your rank against other local districts.
- The table to the upper right compares your energy usage to the local area median: 1) across the entire district, 2) at schools using less energy per square foot than the median (savings realized), 3) at schools using more energy per square foot than the median (savings potential).
- The table to the lower right compares your energy usage to the base year: 1) across the entire district, 2) at schools using less energy per square foot than the base year (savings realized), 3) at schools using more energy per square foot than the base year (savings potential).

Round Rock ISD

Category	Base Year	Current Year	Current Rank (Out of 13 Districts)
Schools	41	47	12
Students	39,072	44,078	13
Square Footage	4,957,828	6,584,992	13
Electricity Usage (kWh)	60,054,621	66,815,593	14
Electricity Cost (\$)	\$7,008,572	\$7,340,103	13
Natural Gas Usage (therms)	260,833	235,087	11
Natural Gas Cost (\$)	\$284,642	\$148,958	9
Total Cost (\$)	\$7,293,214	\$7,489,061	13
Electricity Use (kBtu/Sq.ft)	41.3	34.6	5
Natural Gas Use (kBtu/Sq.ft)	5.3	3.6	2
Energy Use (kBtu/Sq.ft)	46.6	38.2	2
Energy Cost (\$/Sq.ft)	\$1.47	\$1.14	3
Energy Cost per Student	\$187	\$170	3

Multi-Year Benchmarking Analysis

Current Year Performance vs. Local Area Median

	Current vs. Median		Savings Realized		Savings Potential	
	# Schools	Dollars (\$)	# Schools	Dollars (\$)	# Schools	Dollars (\$)
All Energy	49	\$556,000 ↑	42	\$611,000 ↑	7	-\$55,000 ↓
Electricity	49	\$382,000 ↑	42	\$435,000 ↑	7	-\$54,000 ↓
Natural Gas	49	\$175,000 ↑	48	\$176,000 ↑	1	-\$1,000 ↓

Energy dollars better than Median ↑ Energy dollars worse than Median ↓

Current Year Performance vs. Base Year

	Current vs. Base Year		Improving Schools		Declining Schools	
	# Schools	Dollars (\$)	# Schools	Dollars (\$)	# Schools	Dollars (\$)
All Energy	49	\$1,401,000 ↑	48	\$1,414,000 ↑	1	-\$13,000 ↓
Electricity	49	\$1,333,000 ↑	48	\$1,343,000 ↑	1	-\$10,000 ↓
Natural Gas	49	\$68,000 ↑	44	\$71,000 ↑	5	-\$3,000 ↓

Energy dollars better than Base Year ↑ Energy dollars worse than Base Year ↓

Executive Summary

This executive summary below is meant to provide:

- The table to the left provides various metrics
- The table to the upper right compares your performance per square foot than the median (savings realized)
- The table to the lower right compares your performance per square foot than the base year (savings realized)

RRISD Realized \$611,000 Energy Savings Over the Median School District in the Central Texas Region

CleaResult/Oncor Educational Facilities Program

Round Rock ISD

Multi-Year Benchmarking Analysis

Category	Base Year	Current Year	Current Rank (Out of 13 Districts)
Schools	41	47	12
Students	39,072	44,078	13
Square Footage	4,957,828	6,584,992	13
Electricity Usage (kWh)	60,054,621	66,815,593	14

48 Schools Improved & Contributed \$1,414,000/yr Savings over Base Year

Energy Use (kBtu/Sq.ft)	46.6	38.2	2
Energy Cost (\$/Sq.ft)	\$1.47	\$1.14	3
Energy Cost per Student	\$187	\$170	3

Current Year Performance vs. Local Area Median

	Current vs. Median		Savings Realized		Savings Potential	
	# Schools	Dollars (\$)	# Schools	Dollars (\$)	# Schools	Dollars (\$)
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Energy dollars better than Median ↑ Energy dollars worse than Median ↓

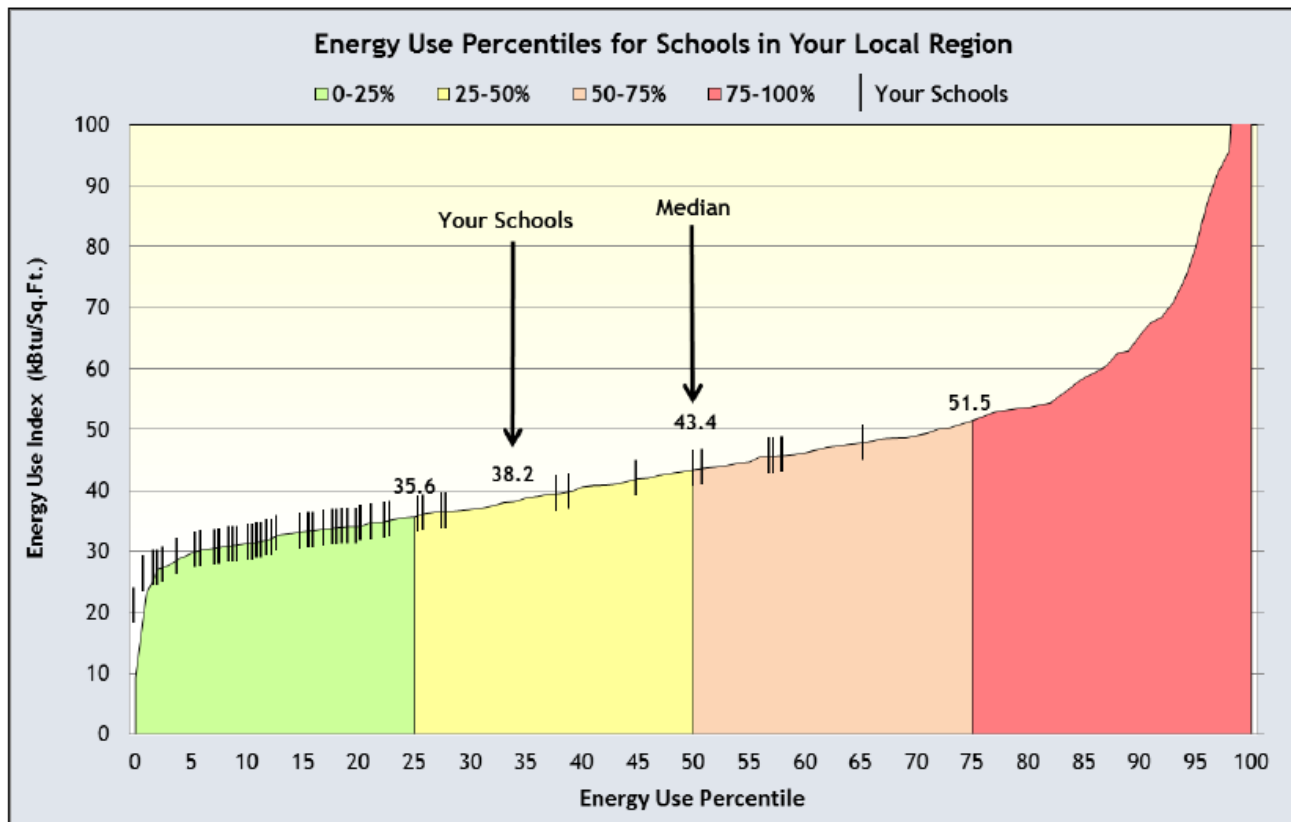
Current Year Performance vs. Base Year

	Current vs. Base Year		Improving Schools		Declining Schools	
	# Schools	Dollars (\$)	# Schools	Dollars (\$)	# Schools	Dollars (\$)
All Energy	49	\$1,401,000 ↑	48	\$1,414,000 ↑	1	-\$13,000 ↓
Electricity	49	\$1,333,000 ↑	48	\$1,343,000 ↑	1	-\$10,000 ↓
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Energy dollars better than Base Year ↑ Energy dollars worse than Base Year ↓

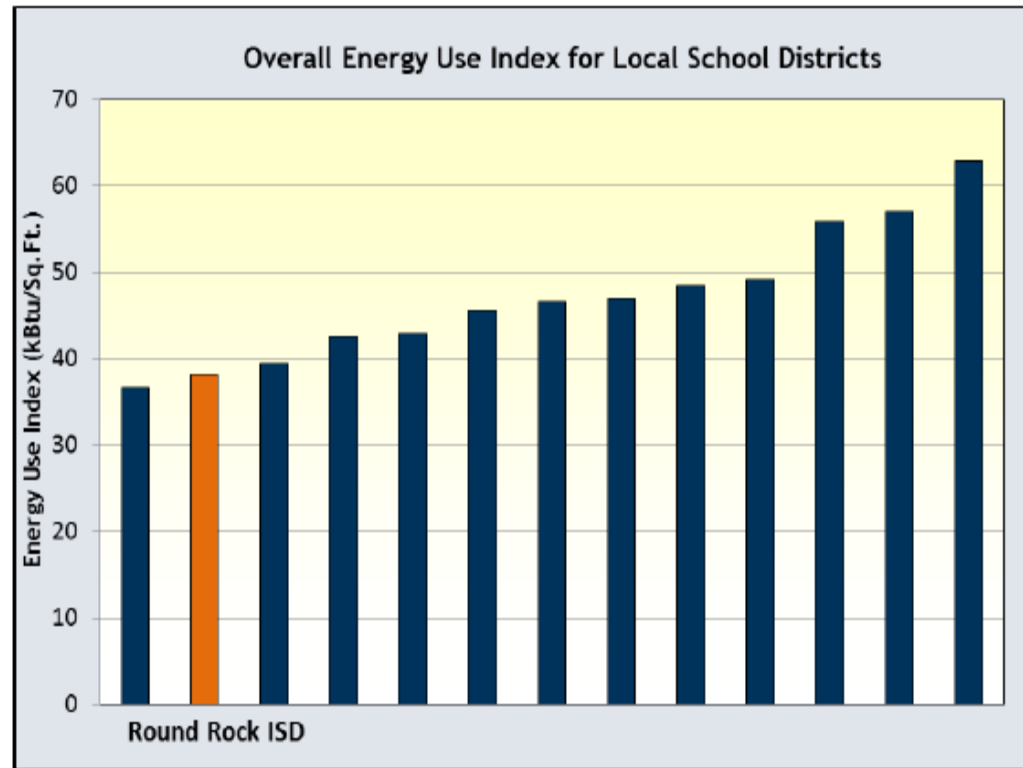
Percentiles of Schools in Local Region

A percentile indicates where one point falls among an entire distribution. The chart below illustrates your schools' percentiles with respect to energy use (kBtu/sq.ft) compared to all other schools in climate regions like yours. Unlike subsequent charts, this chart shows all schools, and does not differentiate between school type (e.g. elementary, middle, and high) and heat source (e.g. gas, electric). Higher percentiles reflect schools with greater energy use (i.e. red portion of chart on right). The black lines show where your schools fall on the continuum.

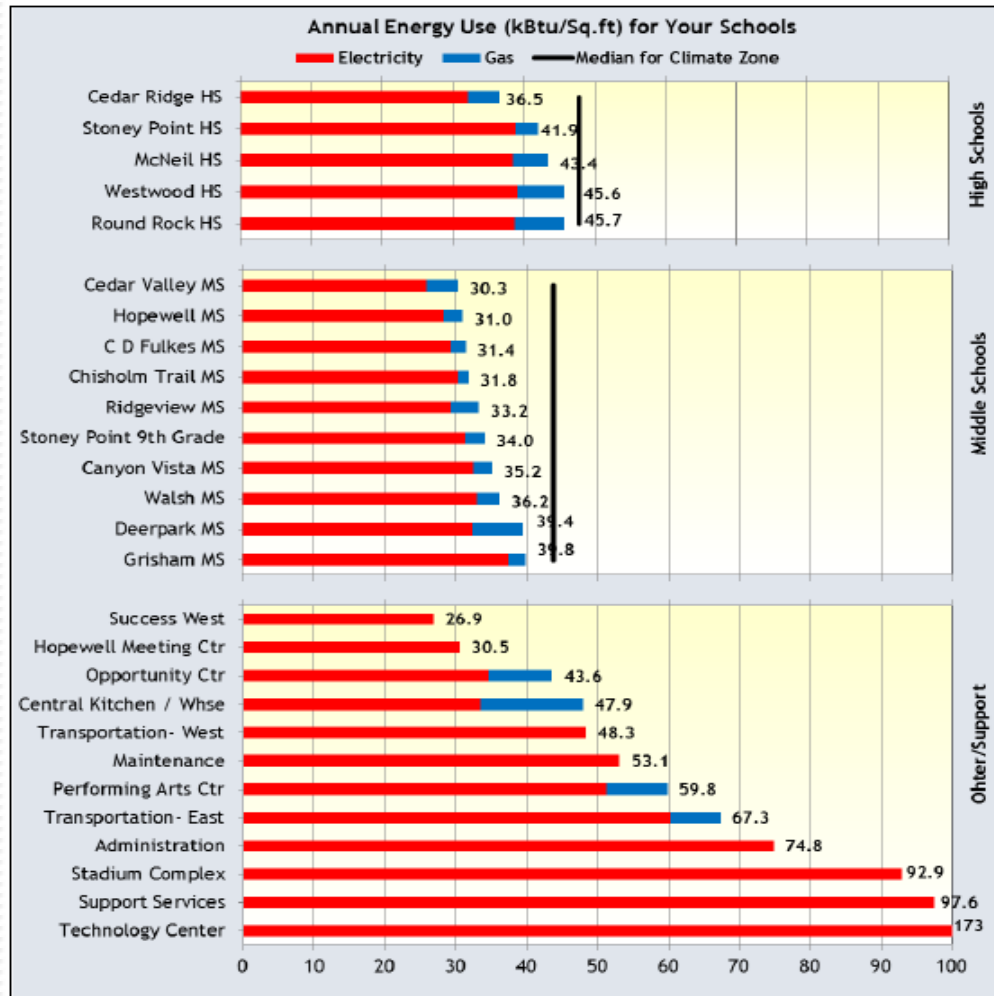


Comparison with Local School Districts

The bar graph below compares your school district's overall energy use (kBtu/sq.ft) to other districts in your immediate local area *only*. Your district's overall Energy Use Index (EUI) is highlighted in orange. Lower EUI bars indicate lower energy use / better performance.



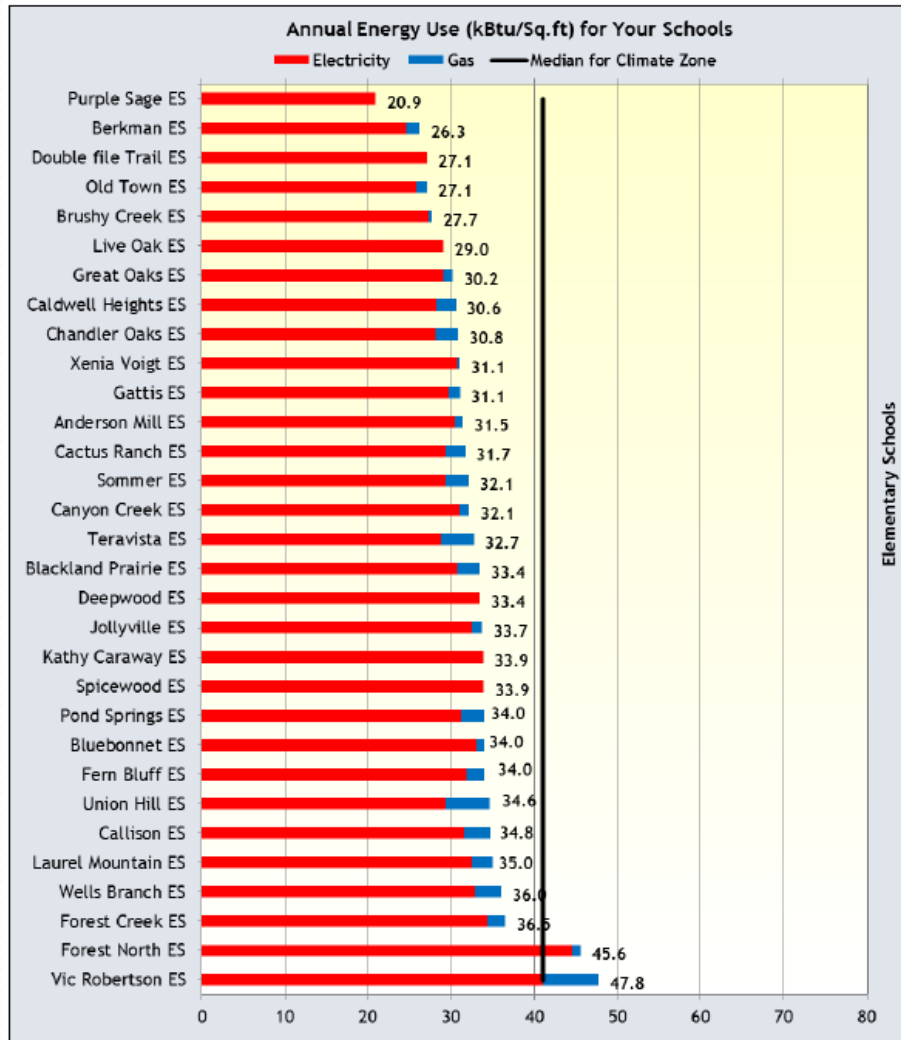
Round Rock ISD Energy Benchmarking Report



Round Rock ISD Energy Benchmarking Report

Comparison with Medians

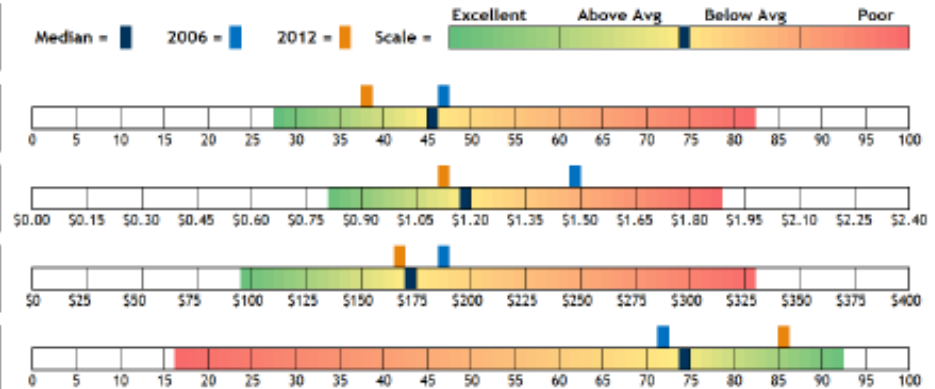
The following chart shows the energy use (kBtu/Sq.ft) for each of your K-12 schools. The red and blue bars signify the portions of overall energy use attributable to electricity & natural gas, respectively. The black line represents the median for the particular school type.



Energy Performance Benchmarking Analysis

District-Wide Summary / Round Rock ISD

CLEAResult Benchmarks	Median*	2006	2012
Energy Use Index (kBtu/sq.ft)	45.3	46.6	38.2
Energy Cost Index (\$/sq.ft)	\$1.19	\$1.47	\$1.14
Energy Cost per Student	\$171	\$187	\$170
EPA Portfolio Manager Score	74	71	86



* Median for a similar profile of K-12 schools in the Central TX climate region.

District Characteristics		2012 Monthly Utility Data						Annual Energy Use/Cost Summary		
		Month	kWh	kW	Cost	Therms	Cost	Category	2006	2012
Climate Region	Central TX	Apr-11	5,314,235	29,229	\$657,836	19,360	\$12,380	Usage- Electricity (kWh)	60,054,621	66,815,593
Type of School	All Schools	May-11	6,101,135	30,641	\$660,725	20,846	\$14,145	Usage- Gas (therms)	260,833	235,087
Type of Heating System	N/A	Jun-11	5,410,696	28,846	\$589,011	9,571	\$7,359	Usage- Electricity (MMBtu)	204,906	227,975
Year Built	N/A	Jul-11	4,662,276	26,582	\$470,538	4,209	\$4,243	Usage- Gas (MMBtu)	26,083	23,509
Floor Area (sq. ft.)	6,584,992	Aug-11	5,935,052	27,524	\$624,890	5,219	\$5,394	Usage- Total Energy (MMBtu)	230,990	251,484
Weekly Operating Hours	50	Sep-11	7,463,254	32,520	\$804,254	8,508	\$7,696	Usage- Electricity % of Total	89%	91%
Number of Students	44,078	Oct-11	7,016,483	31,493	\$722,846	11,310	\$8,797	Cost- Electricity (\$)	\$7,008,572	\$7,340,103
Number of PCs	14,307	Nov-11	5,765,031	28,289	\$625,251	15,929	\$11,136	Cost- Gas (\$)	\$284,642	\$148,958
On-Site Cooking?	N/A	Dec-11	4,943,553	26,239	\$555,158	34,494	\$21,437	Cost- Total Energy (\$)	\$7,293,214	\$7,489,062
Walk-In Refrigerators	N/A	Jan-12	4,437,619	26,250	\$500,419	40,932	\$23,393	Cost- Electricity % of Total	96%	98%
Percent Cooled	N/A	Feb-12	4,957,157	25,871	\$560,989	39,539	\$20,714	Electricity Cost per kWh	\$0.12	\$0.11
Percent Heated	N/A	Mar-12	4,809,103	26,482	\$568,187	25,169	\$12,264	Gas Cost per therm	\$1.09	\$0.63

Energy Performance Benchmarking Analysis

District-Wide Summary / Round Rock ISD

CLEAResult Benchmarks	Median*	2006	2012
Energy Use Index (kBtu/sq.ft)	45.3	46.6	38.2
Energy Cost Index (\$/sq.ft)	\$1.19	\$1.47	\$1.14
Energy Cost per Student	\$171	\$187	\$170
EPA Portfolio Manager Score	74	71	86



EUI Improved 18%
Excluding Facilities Built After 2006

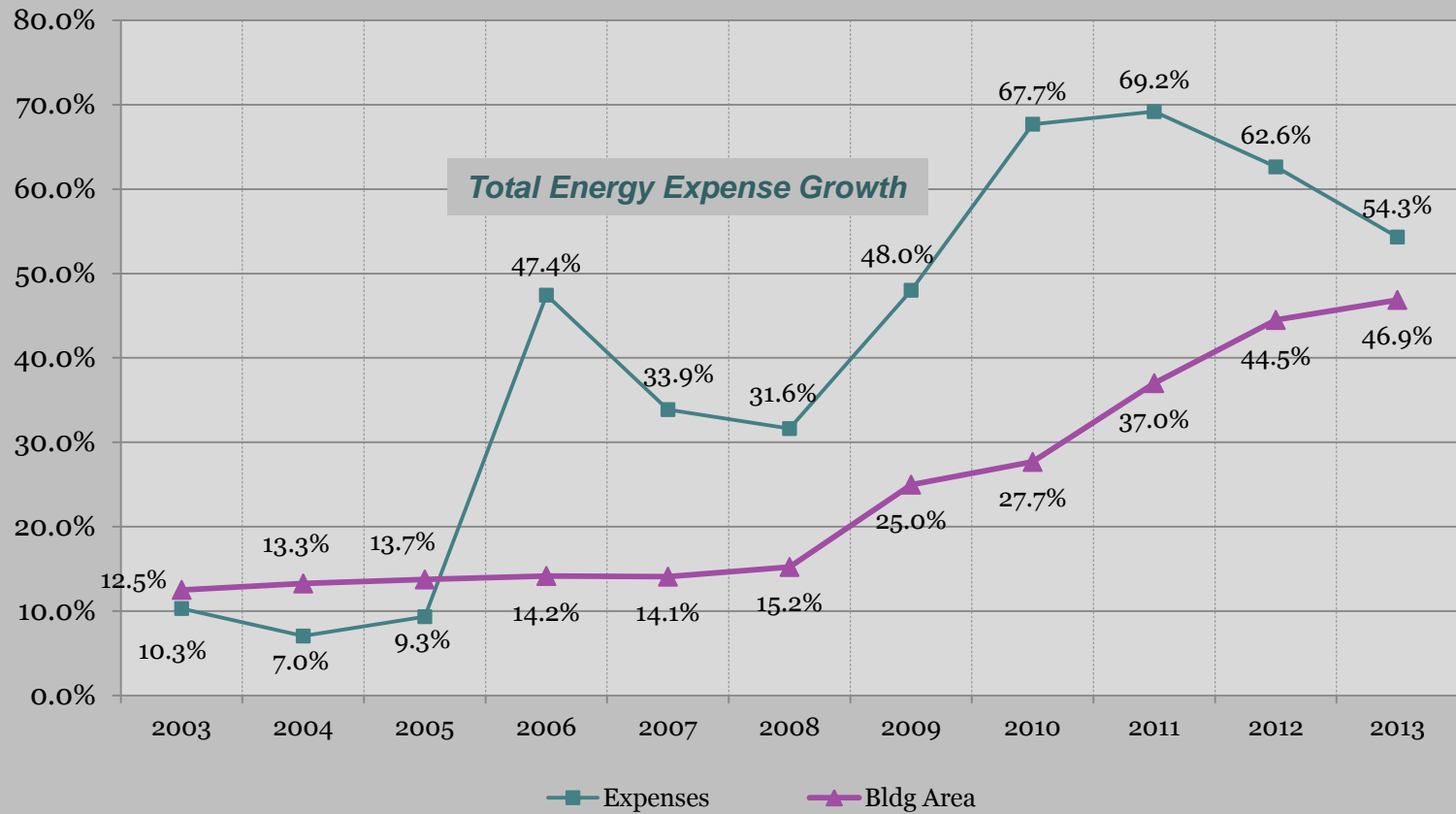
24.0%
All Facilities

* Median for a similar profile of K-12 schools in the Central Texas climate region.

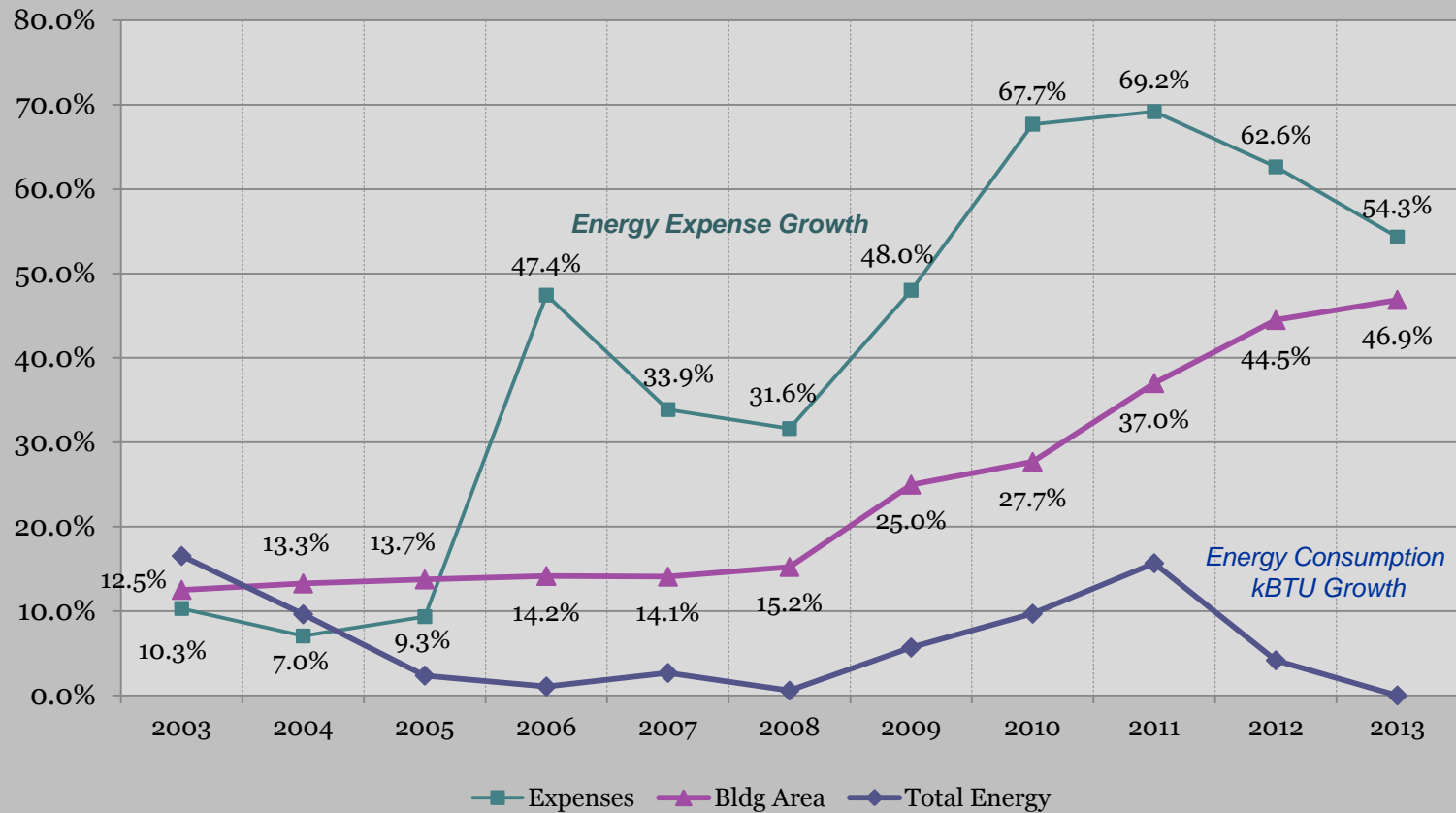
District Characteristics		2012 Monthly Utility Summary						Summary	
		kWh	kW	Cost	Therms	Cost	Category	2006	2012
Climate Region		9,360		\$12,380			Usage- Electricity (kWh)	60,054,621	66,815,593
Type of School		8,846		\$14,145			Usage- Gas (therms)	260,833	235,087
Type of Heating System		571		\$7,359			Usage- Electricity (MMBtu)	204,906	227,975
Year Built		209		\$4,243			Usage- Gas (MMBtu)	26,083	23,509
Floor Area (sq. ft.)		219		\$5,394			Usage- Total Energy (MMBtu)	230,990	251,484
Weekly Operating		508		\$7,696			Usage- Electricity % of Total	89%	91%
Number of Students		310		\$8,797			Cost- Electricity (\$)	\$7,008,572	\$7,340,103
Number of PCs		5,929		\$11,136			Cost- Gas (\$)	\$284,642	\$148,958
On-Site Cooking?	N/A	Dec-11	4,943,553	26,239	\$555,158	34,494	Cost- Total Energy (\$)	\$7,293,214	\$7,489,062
Walk-In Refrigerators	N/A	Jan-12	4,437,619	26,250	\$500,419	40,932	Cost- Electricity % of Total	96%	98%
Percent Cooled	N/A	Feb-12	4,957,157	25,871	\$560,989	39,539	Electricity Cost per kWh	\$0.12	\$0.11
Percent Heated	N/A	Mar-12	4,809,103	26,482	\$568,187	25,169	Gas Cost per therm	\$1.09	\$0.63

Energy Star Score
Increased
71 to 86

Round Rock Independent School District Bldg. Area Growth vs. Energy Expenses



Round Rock Independent School District Bldg. Area Growth vs. Energy Expense & Consumption



Recap What We Accomplished!

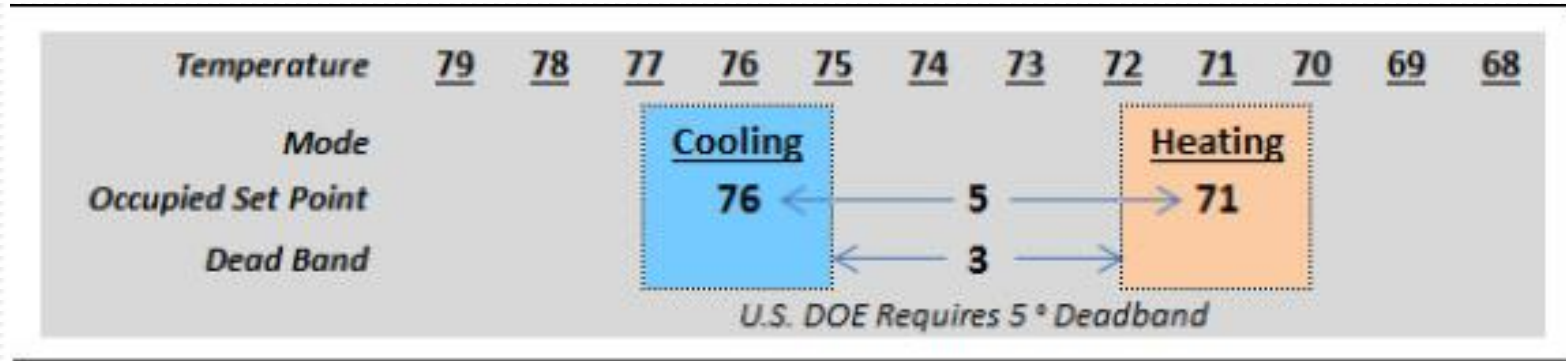
- **District Wide EUI (kBtu/SF)** **38.6**
- **District Energy Star Score** **86**
- **Cost Avoidance per Year**
 - **2012 Utility Expense** **\$ 7,190,775**
 - **2003 EUI @ Current Rates** **\$ 10,330,876**
 - **From Base Year** **\$ 3,140,101**
 - **30.4%**
- **Annual GHG Emissions Reduction** **39,353 metric tons**
 - **Passenger Cars** **7,525**

How We Did It!

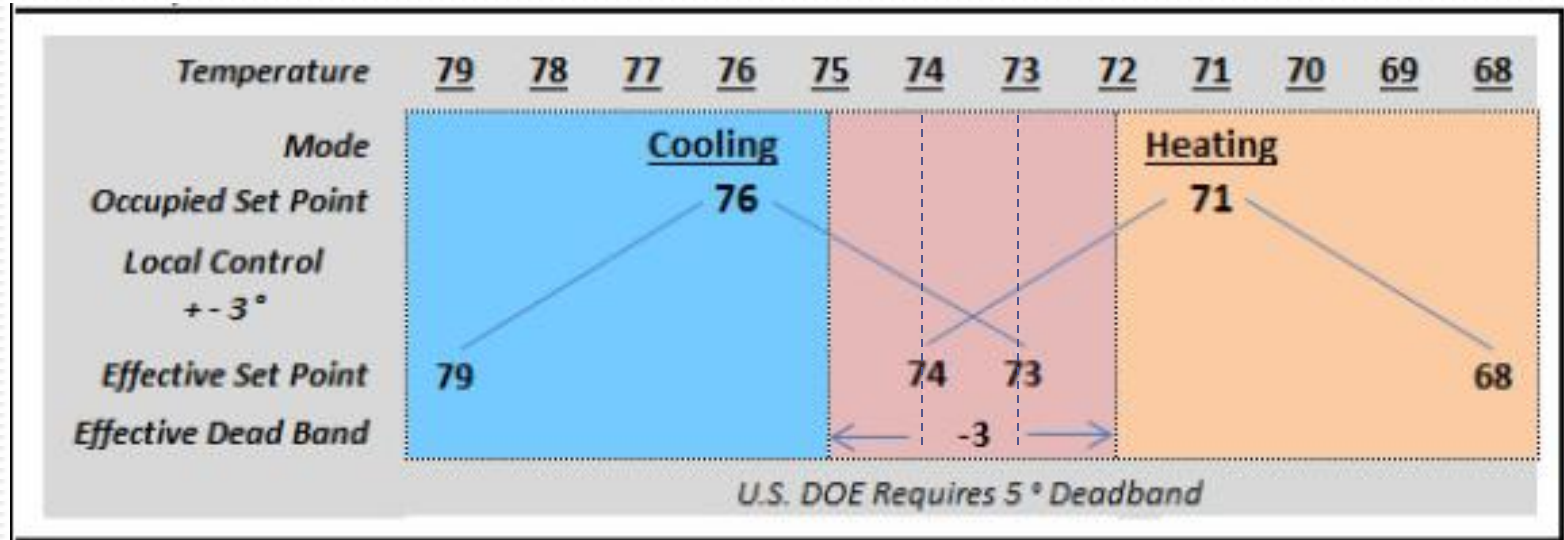
- Building Automation Controls
 - Centralized Space Temperature Control
 - Occupied 76/68 ± 3 , Unoccupied 85/55
 - Positive Effective Dead Band
 - After-hours Scheduling
 - Demand Ventilation
 - Service Diagnostics for Optimum Performance
- Lighting Retrofit
- High Efficient HVAC Equipment
- LEED[®] Design

THERMOSTAT SETPOINT with DEAD BAND

2010 Setting

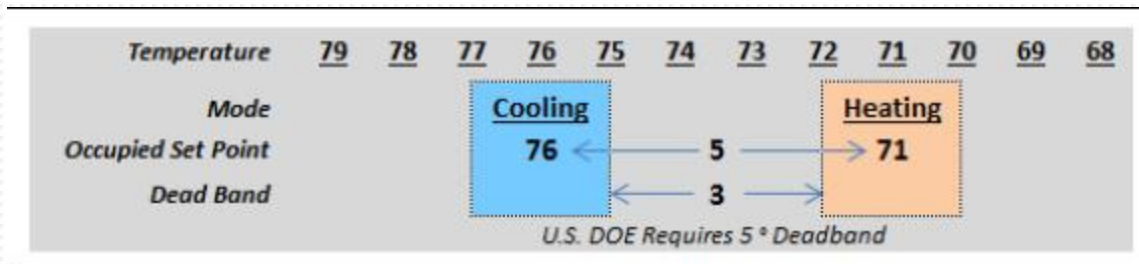


Effective Dead Band Due to Local T'stat Control Option and with Hysteresis



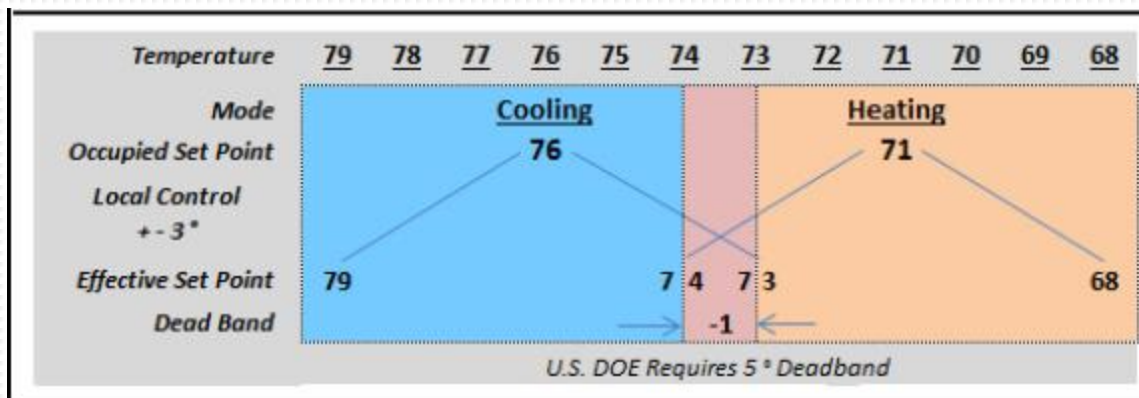
THERMOSTAT SETPOINT with DEAD BAND

Assumed Dead Band
2010 Setting



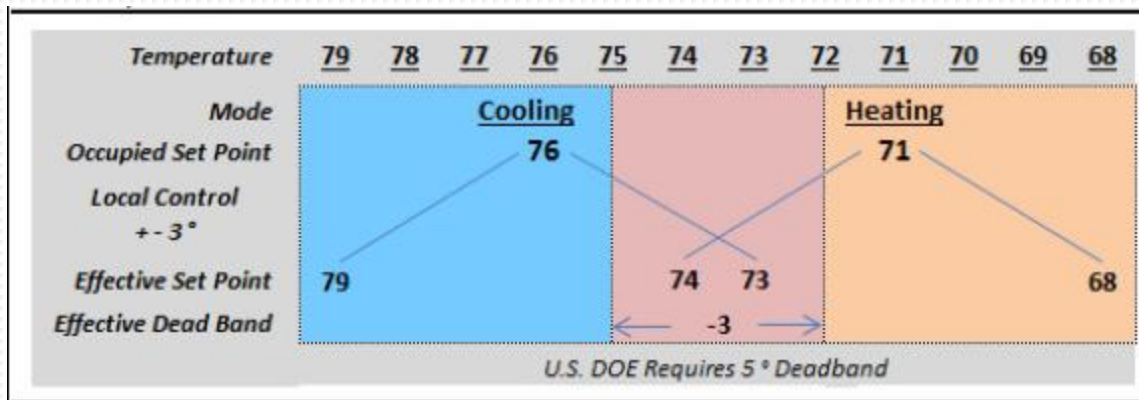
Effective Dead Band

Effective Dead Band Due to
Occupants having $\pm 3^\circ$ Control
at T'stats



Actual Effective Dead Band with Hysteresis Control

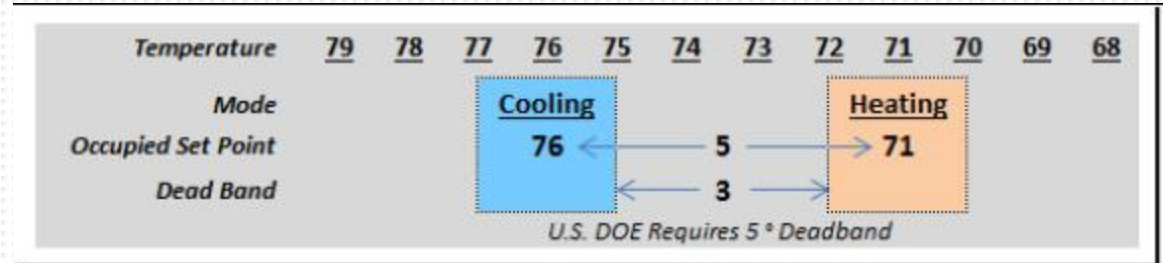
BAS Control with 1 degree
Hysteresis: Cooling setpoint = 73
Heating = 74. HVAC cools down to
72 and heats up to 75, 1 degree
above and below setpoints.
Effective dead band = -3°



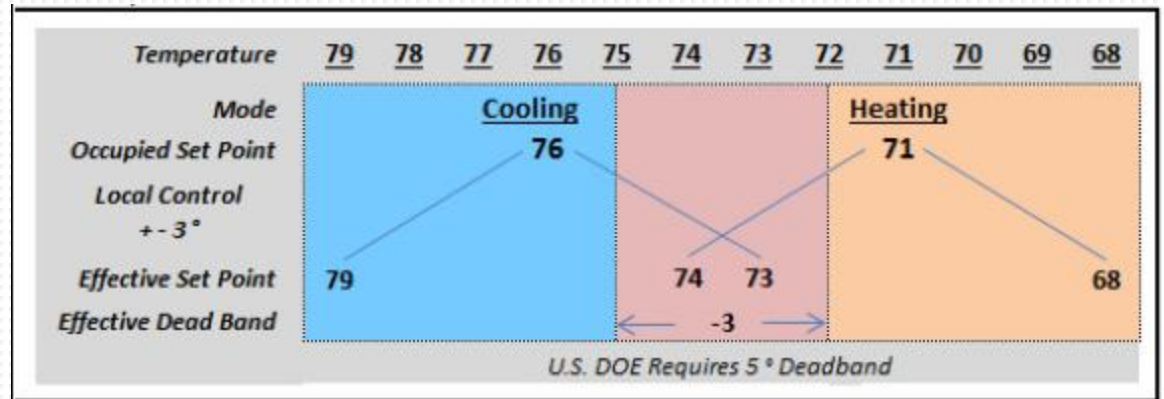
THERMOSTAT SETPOINT with DEAD BAND

2010 Setting

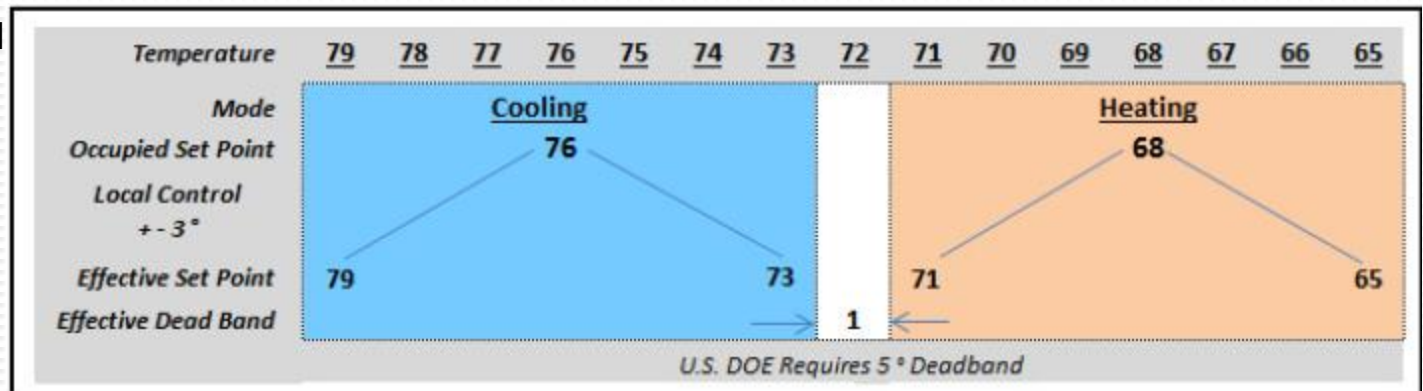
Dead band District thought was in place



Actual Effective Dead Band



Current Dead Band



Round Rock ISD

- Moving Forward!

- Lighting Retrofit Completion
- Real Time Energy Monitoring
 - Demand Limiting
 - Peak Load Offset
 - ERCOT EILS, Electrical Interruptible Load Service
 - Plug Load Monitoring
- Power Factor Correction
- Personal Appliance Policy
- Auto Control PC Schedules
- Improve Preventive Maintenance Program
- Provide Continuous Re-Commissioning Process

RRISD Energy Discussion Background

Additional Slides for Discussion

Current Energy Use Tables

Energy Performance by School Type

The following tables show four energy performance indicators for each school— three calculated benchmarks (Energy Use Index, Energy Cost Index, Energy Cost per Student) and its EPA Portfolio Manager Rating. The table below shows these energy performance indicators *grouped by school type*, and then sorted from lowest to highest Energy Use Index.

Energy Performance Indicators Grouped by School Type

Buildings are ranked by Energy Use Index within each school type.

School Name	EUI (kBtu/Sq.ft.)	ECI (\$/Sq.ft.)	Energy Cost per Student	ENERGY STAR® Score
HIGH SCHOOLS- GAS HEAT				
Cedar Ridge High School	36.5	\$0.87	\$144	97
HIGH SCHOOLS- GAS HOT WATER				
McNeil High School	43.4	\$0.97	\$177	94
Westwood High School/RR Higher Ed.	45.6	\$1.03	\$160	92
Round Rock High School	45.7	\$1.41	\$316	95
HIGH SCHOOLS- HEAT PUMP				
Stoney Point High School	41.9	\$1.40	\$223	93
MIDDLE SCHOOLS- GAS HEAT				
Chisholm Trail Middle School	31.8	\$1.15	\$145	80
Canyon Vista Middle School	35.2	\$0.88	\$121	73
Grisham Middle School	39.8	\$1.06	\$158	77
MIDDLE SCHOOLS- HEAT PUMP				
Cedar Valley Middle School	30.3	\$0.92	\$122	87
Hopewell Middle School	31.0	\$1.02	\$215	90
C D Fulkres Middle School	31.4	\$1.19	\$219	92
Ridgeview Middle School	33.2	\$1.05	\$146	87
Stoney Point 9th Grade Center (Herna)	34.0	\$1.11	\$176	89
Walsh Middle School	36.2	\$1.17	\$175	61
Deerpark Middle School	39.4	\$0.90	\$134	76
OTHER SCHOOLS- HEAT PUMP				
Round Rock Opportunity Center	43.6	\$1.27	\$670	55

Round Rock ISD Energy Benchmarking Report

Energy Performance Indicators Grouped by School Type (Cont'd)

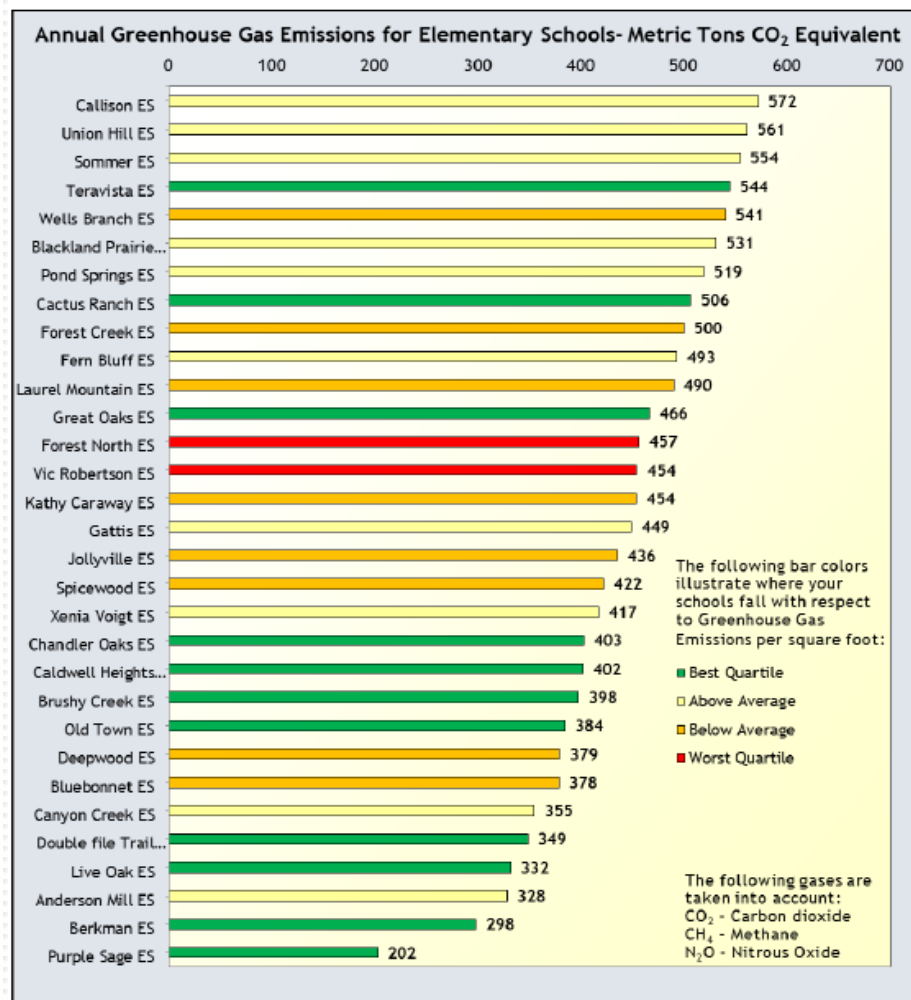
Buildings are ranked by Energy Use Index within each school type.

School Name	EUI (kBtu/Sq.ft.)	ECI (\$/Sq.ft.)	Energy Cost per Student	ENERGY STAR® Score
ELEMENTARY SCHOOLS- ELECTRIC HEAT				
Chandler Oaks Elementary School	30.8	\$0.79	\$105	82
Union Hill Elementary School	34.6	\$1.09	\$143	80
Callison Elementary School	34.8	\$1.15	\$142	71
Forest North Elementary School	45.6	\$1.14	\$183	71
ELEMENTARY SCHOOLS- GAS HOT WATER				
Wells Branch Elementary School	36.0	\$1.36	\$145	89
Vic Robertson Elementary School	47.8	\$1.53	\$171	81
SUPPORT FACILITIES- ELECTRIC HEAT				
Stadium Complex	92.9	\$2.69	N/A	N/A
Technology Center	179.3	\$5.38	N/A	N/A
SUPPORT FACILITIES- GAS HEAT				
Performing Arts Center	59.8	\$1.36	N/A	N/A
Support Services/Notch	97.6	\$3.15	N/A	10
SUPPORT FACILITIES- HEAT PUMPS				
Success West	26.9	\$0.90	\$70	N/A
Hopewell Meeting Center	30.5	\$2.04	N/A	N/A
Central Kitchen / Warehouse	47.9	\$1.14	N/A	N/A
Transportation- West	48.3	\$1.04	N/A	N/A
Maintenance	53.1	\$1.76	N/A	N/A
Transportation- East	67.3	\$2.35	N/A	N/A
Administration	74.8	\$2.55	N/A	49

Energy Performance Indicators Grouped by School Type (Cont'd)

Buildings are ranked by Energy Use Index within each school type.

School Name	EUI (kBtu/Sq.ft.)	ECI (\$/Sq.ft.)	Energy Cost per Student	ENERGY STAR® Score
ELEMENTARY SCHOOLS- GAS HEAT				
Sommer Elementary School	32.1	\$0.83	\$82	76
Teravista Elementary School	32.7	\$1.10	\$155	77
Kathy Caraway Elementary School	33.9	\$0.71	\$87	75
Laurel Mountain Elementary School	35.0	\$0.93	\$110	86
ELEMENTARY SCHOOLS- HEAT PUMPS				
Purple Sage Elementary School	20.9	\$0.63	\$112	98
Berkman Elementary School	26.3	\$0.91	\$115	97
Double File Trail Elementary School	27.1	\$1.10	\$118	93
Old Town Elementary School	27.1	\$1.06	\$109	96
Brushy Creek Elementary School	27.7	\$1.16	\$127	91
Live Oak Elementary School	29.0	\$0.91	\$112	88
Great Oaks Elementary School	30.2	\$1.11	\$116	87
Caldwell Heights Elementary School	30.6	\$1.08	\$141	92
Xenia Voigt Elementary School	31.1	\$1.18	\$137	94
Gattis Elementary School	31.1	\$1.21	\$144	86
Anderson Mill Elementary School	31.5	\$0.87	\$115	92
Cactus Ranch Elementary School	31.7	\$1.06	\$109	86
Canyon Creek Elementary School	32.1	\$0.89	\$127	85
Blackland Prairie Elementary School	33.4	\$1.16	\$123	83
Deepwood Elementary School	33.4	\$1.36	\$228	79
Jollyville Elementary School	33.7	\$0.82	\$126	79
Spicewood Elementary School	33.9	\$1.00	\$103	80
Bluebonnet Elementary School	34.0	\$1.28	\$131	88
Pond Springs Elementary School	34.0	\$0.89	\$131	80
Fern Bluff Elementary School	34.0	\$1.22	\$138	88
Forest Creek Elementary School	36.5	\$1.28	\$130	79

Greenhouse Gas Emissions³

³ The information in this section on greenhouses gases was derived in large part from *Local Government Operations Protocol for the quantification and reporting of greenhouse gas emissions inventories*. http://www.theclimateregistry.org/downloads/2008/03/LGO_Protocol.pdf

Round Rock ISD Energy Benchmarking Report

