Susan Combs
Texas Comptroller of Public Accounts

Facility Preliminary Energy Assessments and Recommendations

United ISD

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Laredo, Texas 78041

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SECO
State Energy Conservation Office

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SECO - Schools & Local Government Energy Management Program
United ISD
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Laredo, TX 78041
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Phone: 956-473-7930

1.0 EXECUTIVE SUMMARY

United Independent School District, now referred to as the District, requested that Texas Energy Engineering Services, Inc. (TEESI) perform a Preliminary Energy Assessment (PEA) of their facilities. This report documents that analysis.

This service is provided at no cost to the District through the Schools Energy Management and Technical Assistance Program as administered by the Texas Comptroller of Public Accounts, State Energy Conservation Office (SECO). This program promotes and encourages an active partnership between SECO and Texas schools for the purpose of planning, funding, and implementing energy saving measures, which will ultimately reduce the District's annual energy costs.

The annual cost savings, implementation cost estimate and simple payback for all Utility Cost Reduction Measures (UCRM's) identified in this preliminary analysis are summarized below. Individual UCRM's are summarized in Section 10.0 of this report.

Est. Implementation Cost Estimate:	$2,353,600
Est. Annual Energy Saving (MMBTU/Yr):	8,325
Est. Annual Greenhouse Gas Emissions Reduction (Metric Tons CO_2e/Yr):	1,471
Est. Annual Energy Cost Savings:	$317,400
Simple Payback (Yrs):	7.4

This report includes a summary of the facilities surveyed along with energy consumption and costs, opportunities for energy savings, and information regarding energy management and options for funding retrofit projects. A follow-up visit to the District will be scheduled to address any questions pertaining to this report, or any other aspect of this program.

SECO is committed to providing whatever assistance the District may require in planning, funding and implementing the recommendations of this report. The District is encouraged to direct any questions or concerns to either of the following contact persons:

SECO / Mr. Stephen Ross
(512) 463-1770

TEESI / Saleem Khan
(512) 328-2533

2.0 FACILITY DESCRIPTIONS

This section provides a brief description of the facilities surveyed. The purpose of the onsite survey was to evaluate the major energy consuming equipment in each facility (i.e. Lighting, HVAC, and Controls Equipment). A description of each facility is provided below.

Building:	**Prada Elementary**
Stories:	Single story
Area (estimated):	86,355 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Roosevelt Elementary**
Stories:	Single story
Area (estimated):	84,084 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Trane Tracer (DOS based)

Building:	**Kennedy / Zapata Elementary**
Stories:	Single story
Area (estimated):	68,348 SF
Bldg. Components:	Brick building, flat top roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Trane Tracer (DOS based)

Building:	**Gutierrez Elementary**
Stories:	Two story
Area (estimated):	76,460 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Clark Elementary**
Stories:	Single story
Area (estimated):	73,000 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Air Cooled Chilled Water System with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Finley Elementary**
Stories:	Single story
Area (estimated):	70,828 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Air Cooled Chilled Water System with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Trautmann Elementary**
Stories:	Single story
Area (estimated):	69,308 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Trane Tracer Summit

Building:	**Salinas Elementary**
Stories:	Single story
Area (estimated):	61,372 SF
Bldg. Components:	Brick building, built up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Packaged rooftop units with electric heat
HVAC Controls:	Trane Tracer Summit

Building:	**Perez Elementary**
Stories:	Single story
Area (estimated):	72,253 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Air Cooled Chilled Water System with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**United South Middle School**
Stories:	Single story
Area (estimated):	103,684 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split-DX units with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Salvador Garcia Middle School**
Stories:	Single story
Area (estimated):	92,100 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Trane Tracer (DOS based)

Building:	**Washington Middle School**
Stories:	Single story
Area (estimated):	92,100 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Trane Tracer Summit

Building:	**Trautmann Middle School**
Stories:	Single story
Area (estimated):	92,100 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Gonzalez Middle School**
Stories:	Single story
Area (estimated):	101,260 SF
Bldg. Components:	Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Split DX systems with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**LBJ High School**
Stories:	Two story
Area (estimated):	293,407 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Air Cooled Chilled Water System with electric heat
HVAC Controls:	Trane Tracer Summit

Building:	**United South High School**
Stories:	Single story
Area (estimated):	309,611 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Air Cooled Chilled Water System with electric heat
HVAC Controls:	Schneider Electric I/A system

Building:	**Alexander High School**
Stories:	Single story
Area (estimated):	293,497 SF
Bldg. Components:	Brick building, metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts High Intensity Discharge (HID) fixtures in gym
HVAC:	Air Cooled Chilled Water System with electric heat
HVAC Controls:	Schneider Electric I/A system

3.0 ENERGY CONSUMPTION AND PERFORMANCE

A site survey was conducted at several of the District's facilities. The facilities surveyed comprised a total gross area of approximately 2,042,767 square feet. However, annual electric invoices were analyzed for the entire District totaling approximately 4,730,675 square feet, and were $7,081,012 for the 12-month period ending August 2010, as shown below. A summary of annual utility costs is provided in **Appendix C**, Base Year Consumption History.

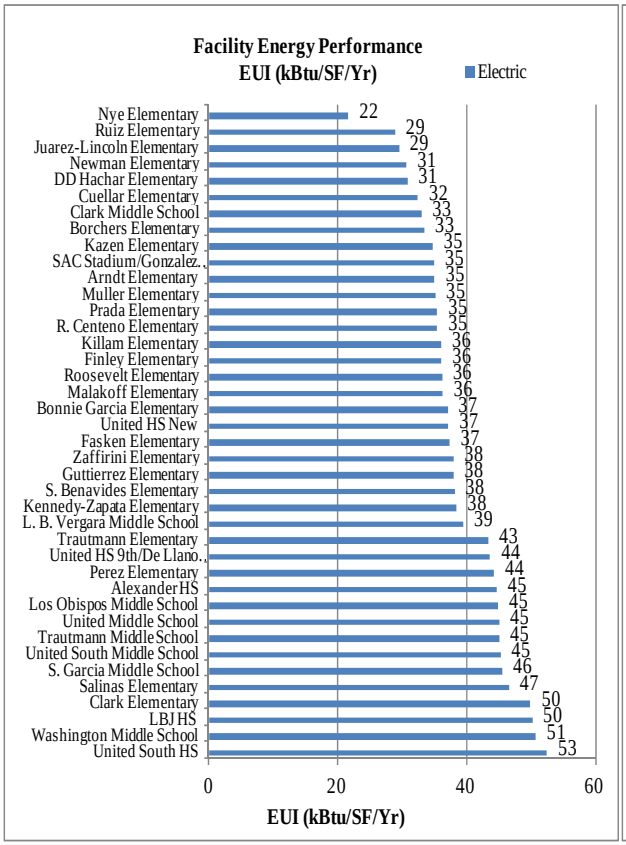
To help the District evaluate the overall energy performance of its facilities TEESI has calculated their Energy Utilization Index (EUI) and Energy Cost Index (ECI). The EUI represents a facility's annual energy usage per square foot; it is measured in thousands of BTUs per square foot per year (kBTU/SF/Year). Similarly, ECI is measured as cost per square foot per year ($/SF/Year). The EUI and ECI for selected facilities are listed below:

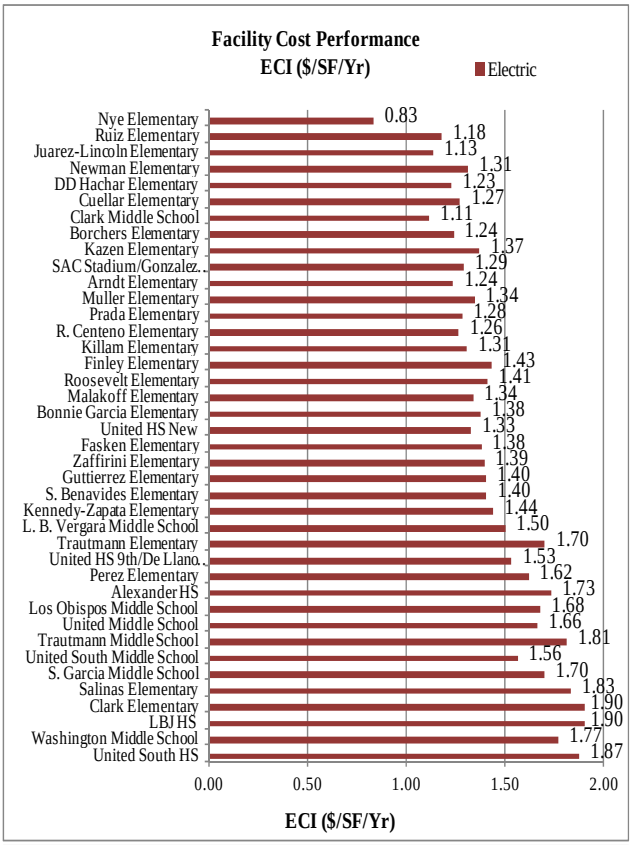
Energy Cost and Consumption Benchmarks									
		Electric				Total	EUI	ECI	
	Building	kWh/Yr	MMBTU/Yr	kWh/SF	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
1	Juarez-Lincoln Elementary	629,244	2,148	8.64	82,661	2,148	29	1.13	72,856
2	Nye Elementary	662,056	2,260	6.34	86,895	2,260	22	0.83	104,376
3	Kazen Elementary	686,816	2,344	10.18	92,457	2,344	35	1.37	67,450
4	Arndt Elementary	929,552	3,173	10.27	111,964	3,173	35	1.24	90,481
5	Borchers Elementary	909,360	3,104	9.79	114,962	3,104	33	1.24	92,880
6	Prada Elementary*	928,896	3,170	10.40	114,554	3,170	35	1.28	89,355
7	Kennedy/Zapata Elementary*	769,920	2,628	11.26	98,401	2,628	38	1.44	68,348
8	Muller Elementary	931,680	3,180	10.30	121,533	3,180	35	1.34	90,481
9	Newman Elementary	577,540	1,971	8.97	84,471	1,971	31	1.31	64,350
10	Roosevelt Elementary*	891,072	3,041	10.60	118,537	3,041	36	1.41	84,084
11	Ruiz Elementary	654,720	2,235	8.46	91,217	2,235	29	1.18	77,393
12	Cuellar Elementary	860,400	2,937	9.51	115,121	2,937	32	1.27	90,481
13	R. Centeno Elementary	965,760	3,296	10.40	117,365	3,296	35	1.26	92,880
14	Gutierrez Elementary*	850,500	2,903	11.12	107,245	2,903	38	1.40	76,460
15	Zaffirini Elementary	1,006,400	3,435	11.12	125,998	3,435	38	1.39	90,481
16	Fasken Elementary	1,017,978	3,474	10.96	128,008	3,474	37	1.38	92,880
17	Bonnie Garcia Elementary	1,007,920	3,440	10.85	127,765	3,440	37	1.38	92,880
18	Malakoff Elementary	987,120	3,369	10.63	124,257	3,369	36	1.34	92,880
19	Clark Elementary*	1,068,480	3,647	14.64	138,743	3,647	50	1.90	73,000
20	Finley Elementary*	749,376	2,558	10.58	101,189	2,558	36	1.43	70,828
21	Trautmann Elementary*	880,000	3,003	12.70	117,887	3,003	43	1.70	69,308
22	United HS New	4,762,800	16,255	10.89	579,994	16,255	37	1.33	437,349
23	S. Benavides Elementary	1,036,800	3,539	11.16	130,478	3,539	38	1.40	92,880
24	Salinas Elementary*	836,736	2,856	13.63	112,417	2,856	47	1.83	61,372
25	DD Hachar Elementary	672,768	2,296	9.03	91,435	2,296	31	1.23	74,499
26	Alexander HS*	3,841,104	13,110	13.09	508,103	13,110	45	1.73	293,497
27	Perez Elementary*	936,940	3,198	12.97	116,873	3,198	44	1.62	72,253
28	Killam Elementary	980,736	3,347	10.56	121,344	3,347	36	1.31	92,880
29	United South Middle School*	1,375,200	4,694	13.26	161,869	4,694	45	1.56	103,684
30	United Middle School	2,438,400	8,322	13.19	307,428	8,322	45	1.66	184,827
31	S. Garcia Middle School*	1,228,320	4,192	13.34	156,485	4,192	46	1.70	92,100
32	Clark Middle School	1,005,722	3,433	9.67	115,937	3,433	33	1.11	104,008
33	Washington Middle School*	1,370,160	4,676	14.88	162,772	4,676	51	1.77	92,100
34	Los Obispos Middle School	1,211,060	4,133	13.15	154,596	4,133	45	1.68	92,100
35	Trautmann Middle School*	1,216,080	4,150	13.20	166,840	4,150	45	1.81	92,100
36	SAC Stadium/Gonzalez Middle School*	1,036,800	3,539	10.24	130,478	3,539	35	1.29	101,260
37	L. B. Vergara Middle School	1,122,480	3,831	11.56	145,661	3,831	39	1.50	97,117
38	United HS 9th/De Llano Elementary	3,834,480	13,087	12.80	458,800	13,087	44	1.53	299,499
39	LBJ HS*	4,315,200	14,728	14.71	558,280	14,728	50	1.90	293,407
40	United South HS*	4,762,800	16,255	15.38	579,994	16,255	53	1.87	309,611
		kWh/Yr	MMBTU/Yr	kWh/SF	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
		55,949,376	190,955	11.83	7,081,012	190,955	40	1.50	4,730,675

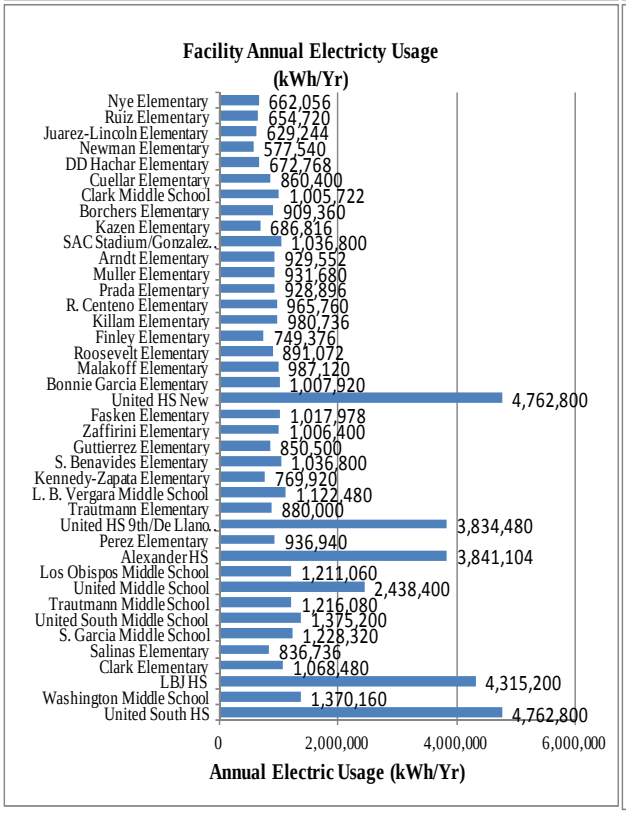
* Included in preliminary energy assessment scope.

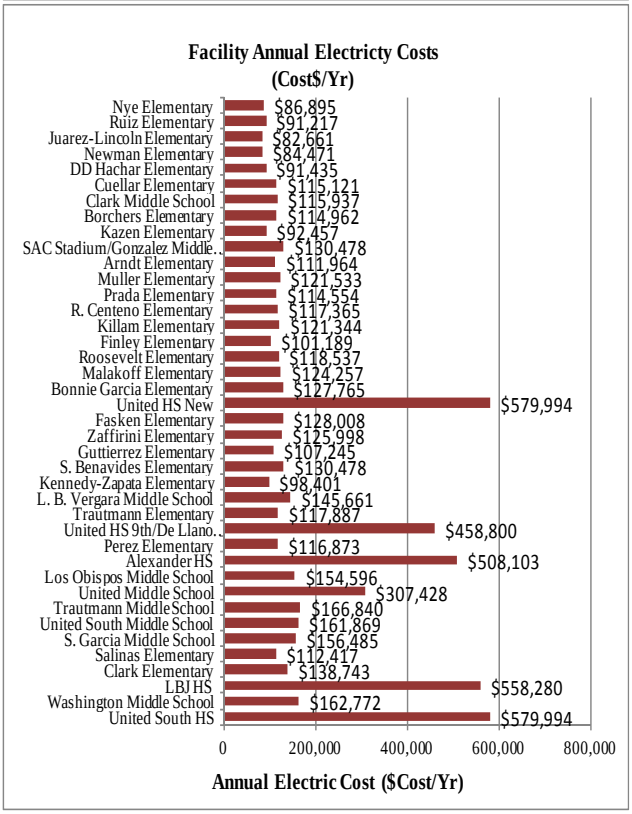
The EUI and ECI of each facility help the District evaluate its overall energy performance. In addition, the District's EUI's were compared to TEESI's database of Texas schools. **Appendix D** shows how the EUI's of these facilities compare to those of other schools in Texas.

The following charts summarize the data presented in the previous table. See **Appendix C** for further detail.

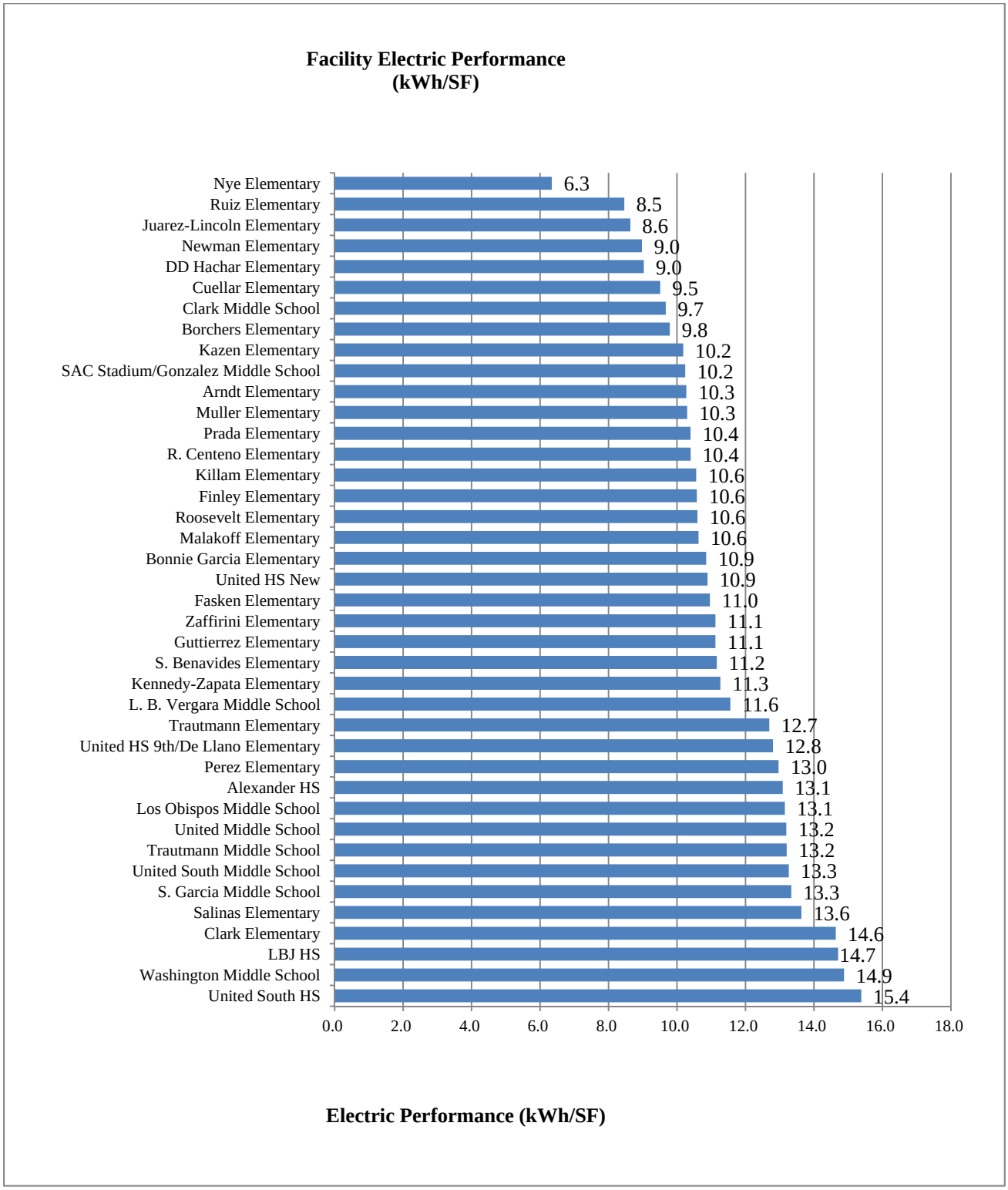




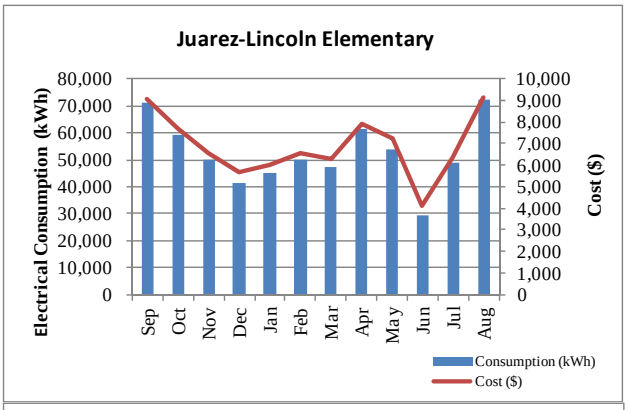


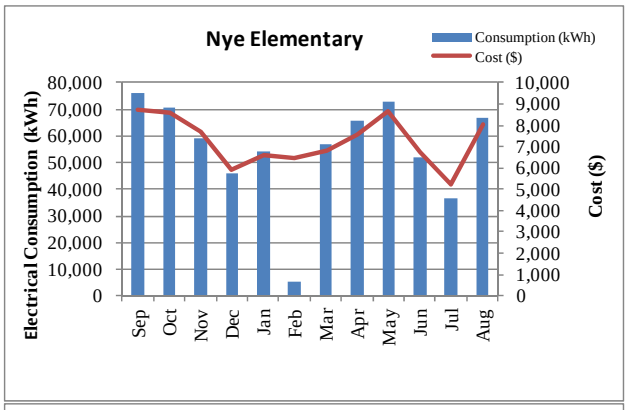


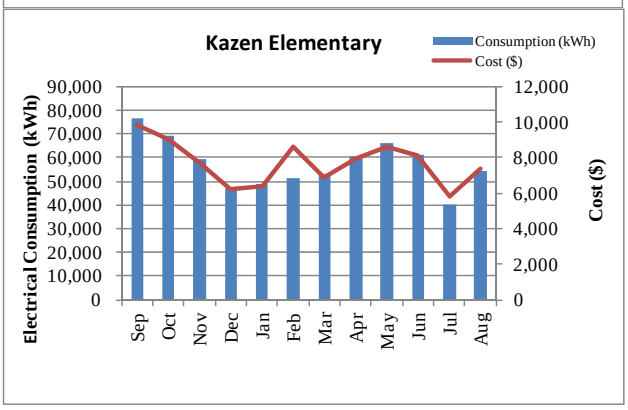
The following chart summarizes the campus' kWh/SF (Billing Period September 2009 through August 2010).

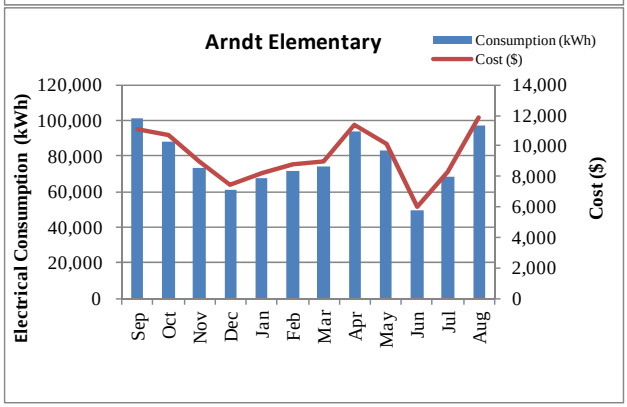


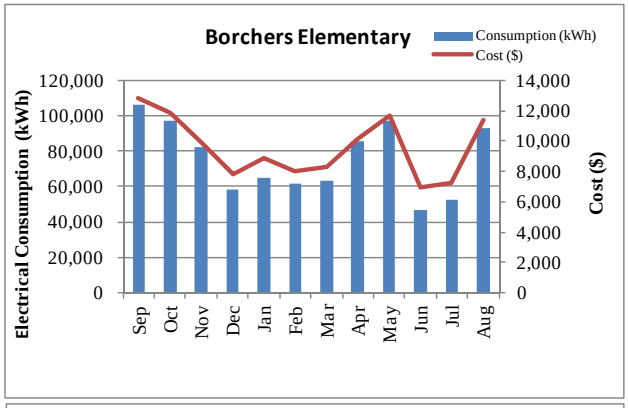
The following charts summarize each campus' monthly utility data. See **Appendix C** for further detail.

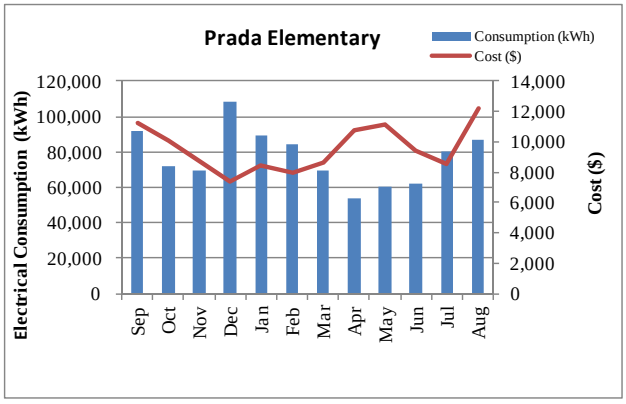


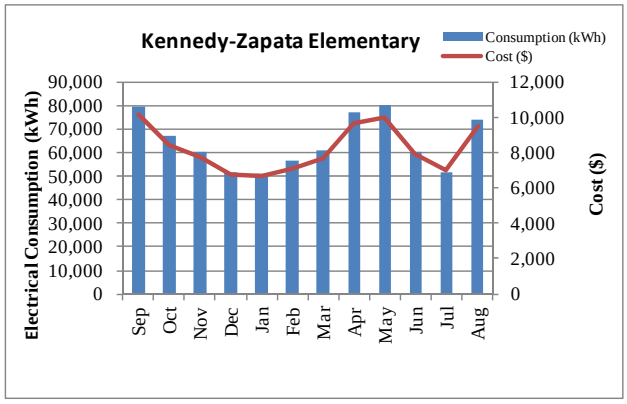


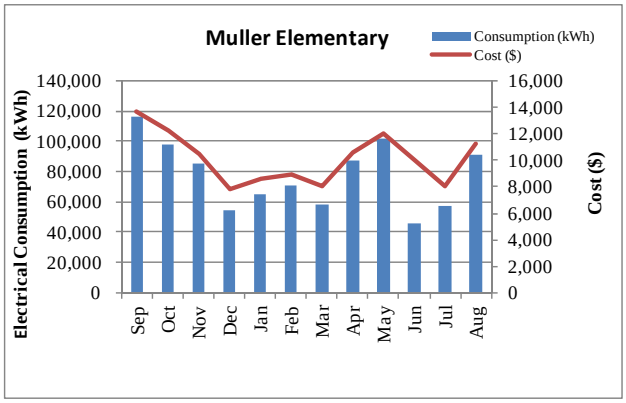


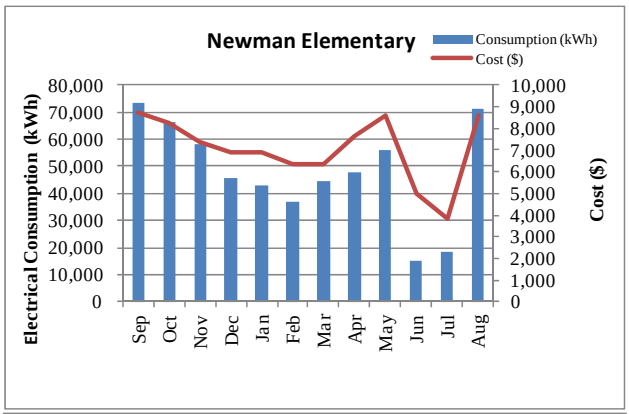


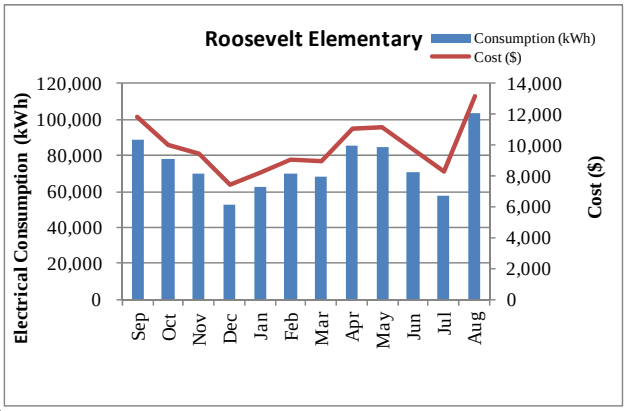


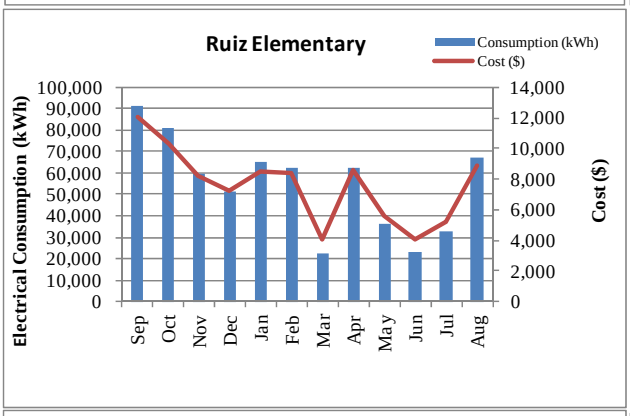


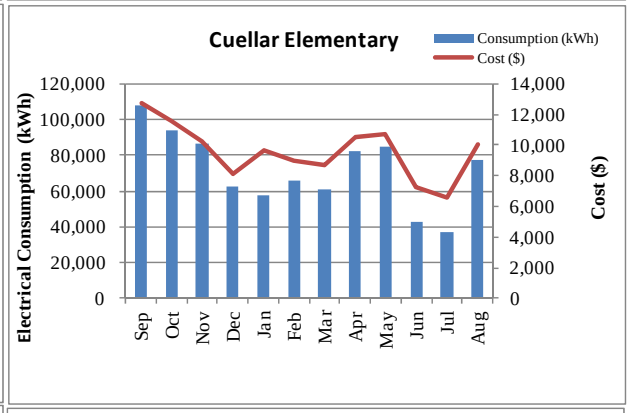


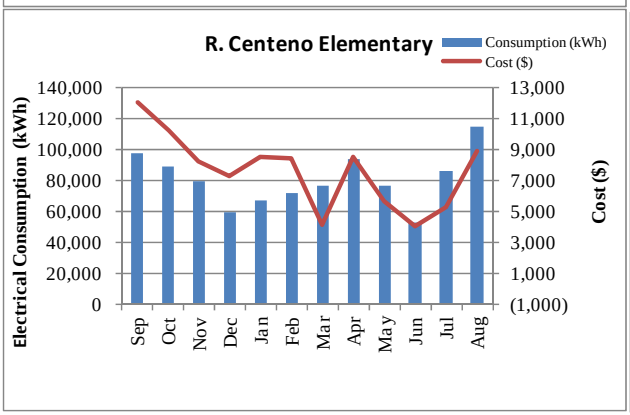


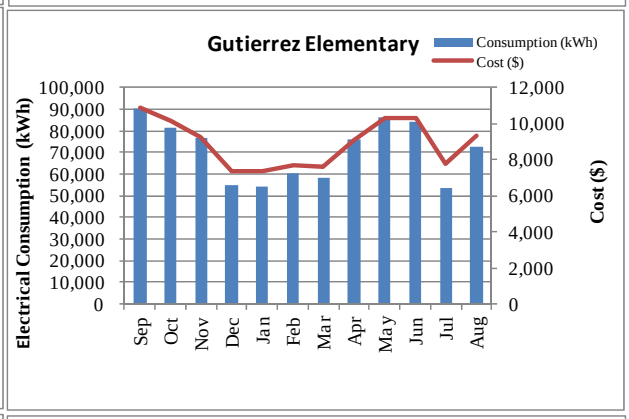

Newman Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
80,000 70,000 60,000 50,000 40,000 30,000 20,000 10,000 0
10,000 9,000 8,000 7,000 6,000 5,000 4,000 3,000 2,000 1,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

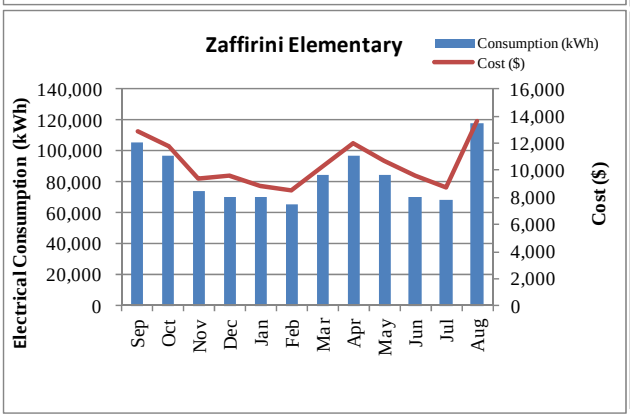

Roosevelt Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000 100,000 80,000 60,000 40,000 20,000 0
14,000 12,000 10,000 8,000 6,000 4,000 2,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

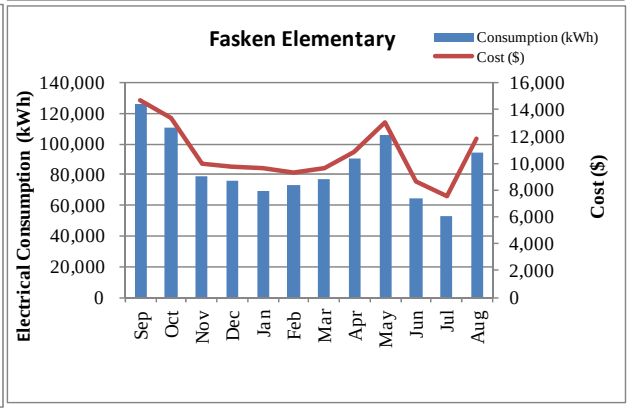

Ruiz Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
100,000 90,000 80,000 70,000 60,000 50,000 40,000 30,000 20,000 10,000 0
14,000 12,000 10,000 8,000 6,000 4,000 2,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

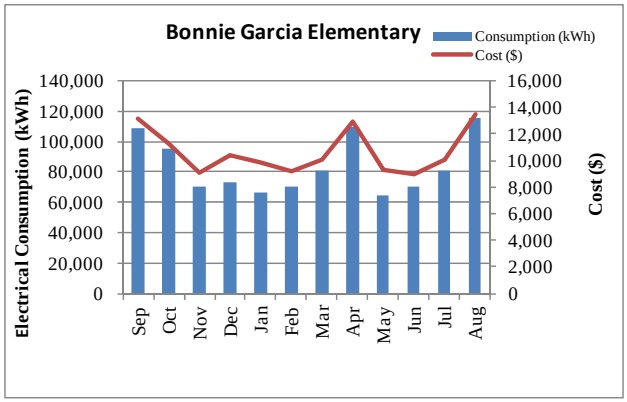

Cuellar Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000 100,000 80,000 60,000 40,000 20,000 0
14,000 12,000 10,000 8,000 6,000 4,000 2,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

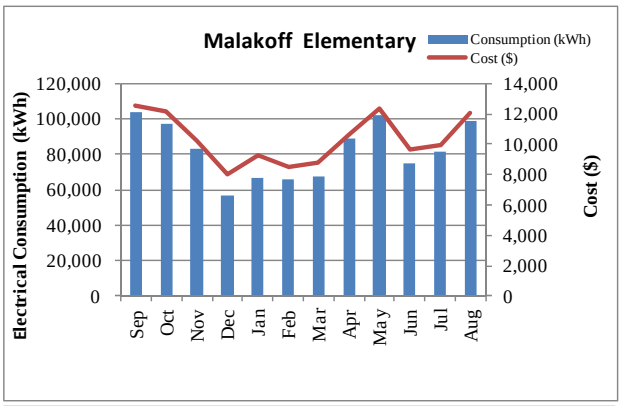

R. Centeno Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000 120,000 100,000 80,000 60,000 40,000 20,000 0
13,000 11,000 9,000 7,000 5,000 3,000 1,000 (1,000)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

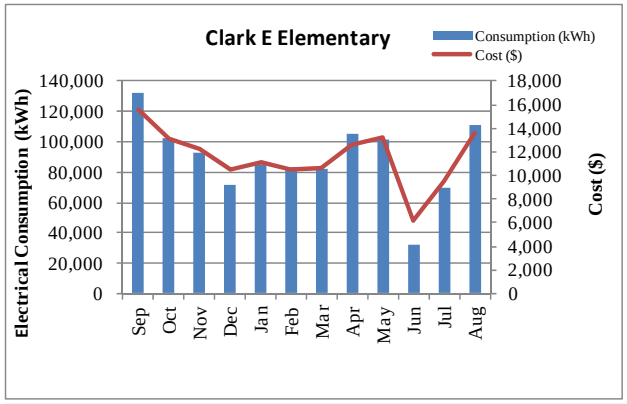

Gutierrez Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
100,000 90,000 80,000 70,000 60,000 50,000 40,000 30,000 20,000 10,000 0
12,000 10,000 8,000 6,000 4,000 2,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

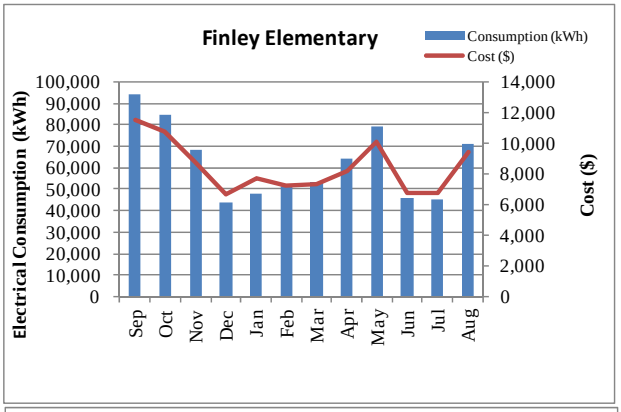

Zaffirini Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000 120,000 100,000 80,000 60,000 40,000 20,000 0
16,000 14,000 12,000 10,000 8,000 6,000 4,000 2,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

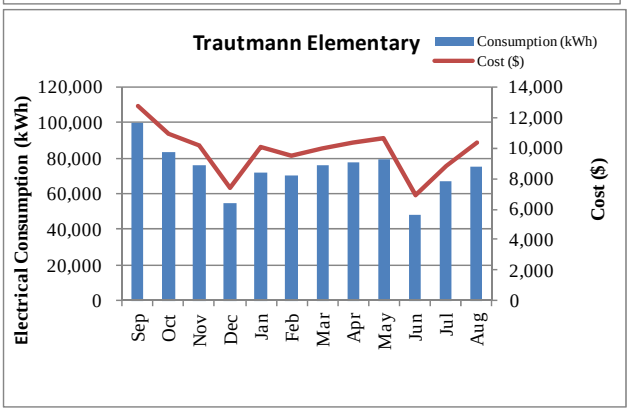

Fasken Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000 120,000 100,000 80,000 60,000 40,000 20,000 0
16,000 14,000 12,000 10,000 8,000 6,000 4,000 2,000 0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

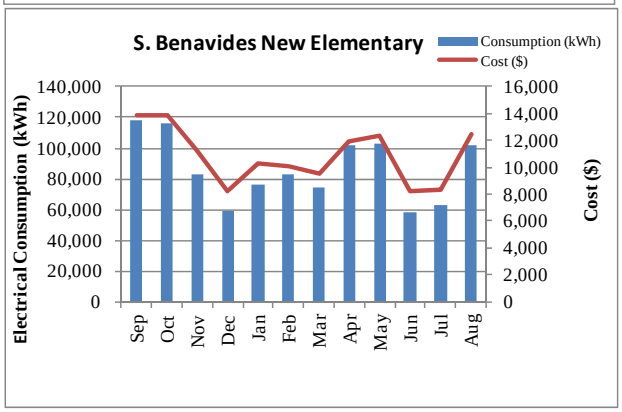

Bonnie Garcia Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

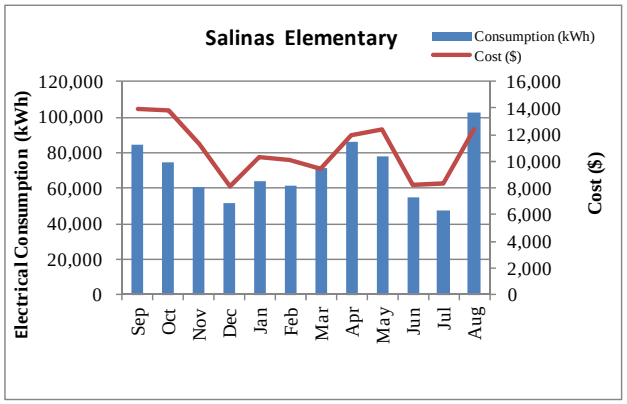

Malakoff Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

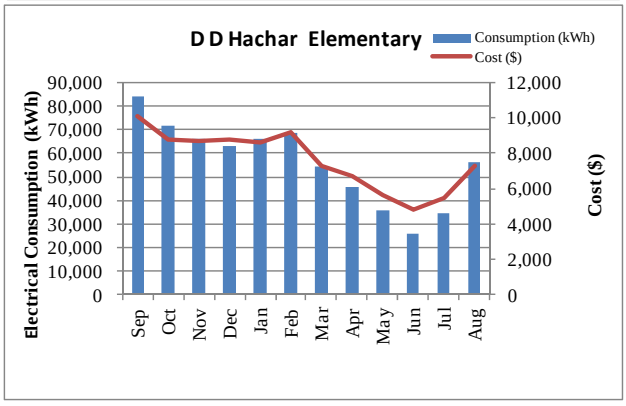

Clark E Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

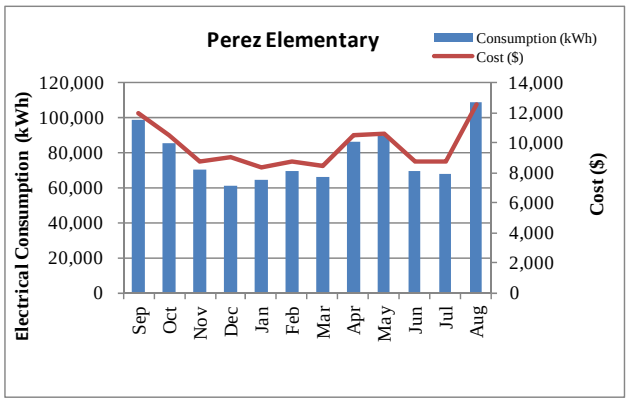

Finley Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

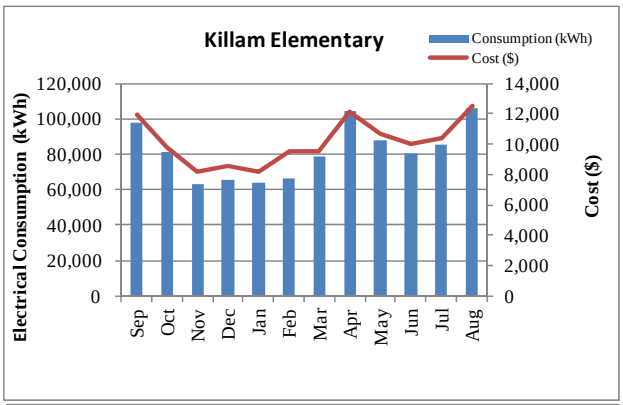

Trautmann Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

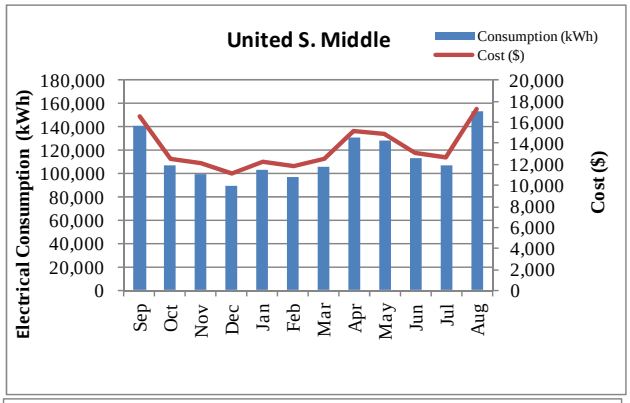

S. Benavides New Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

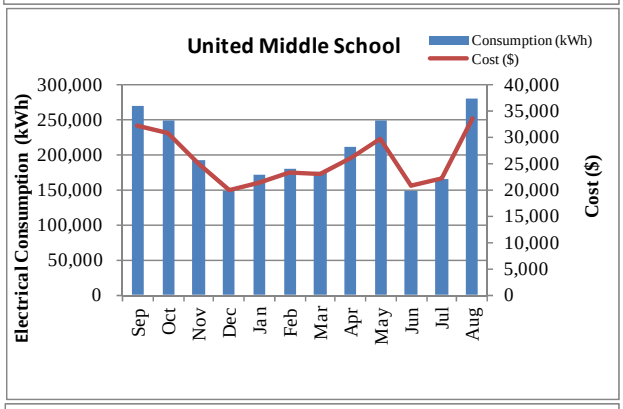

Salinas Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

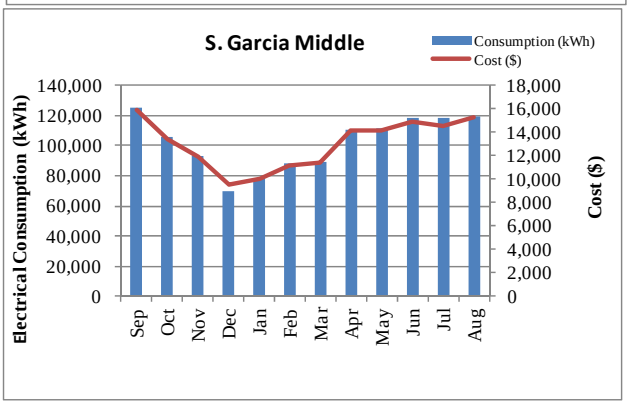

D D Hachar Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

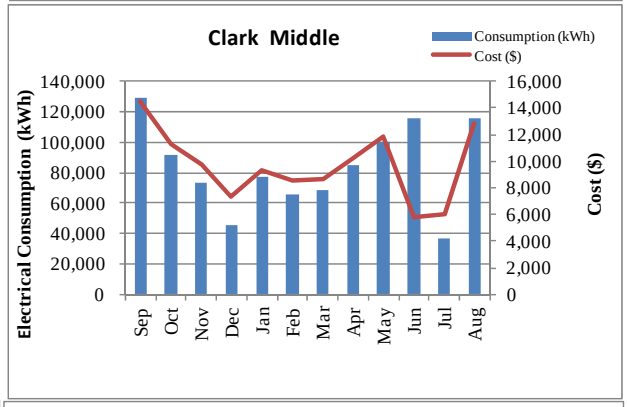

Perez Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

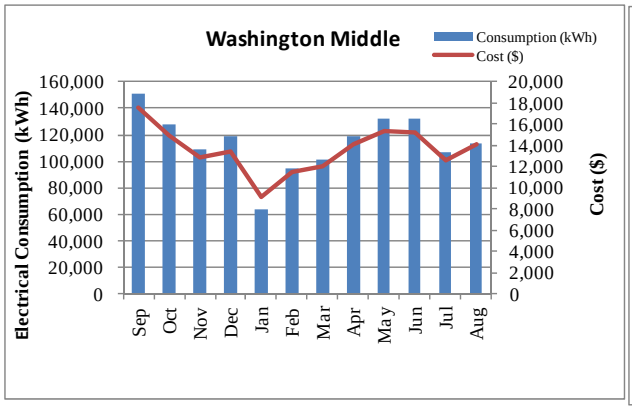

Killam Elementary
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
120,000
100,000
80,000
60,000
40,000
20,000
0
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

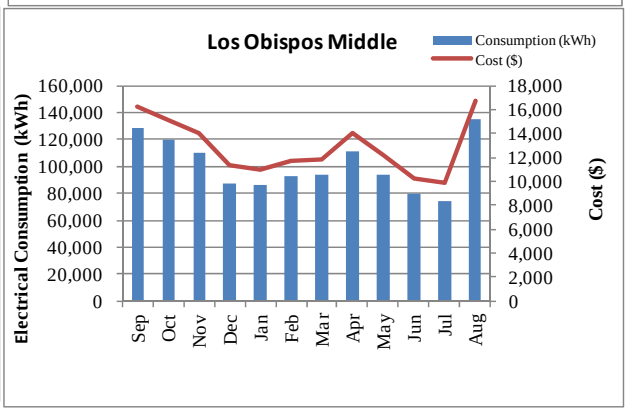

United S. Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

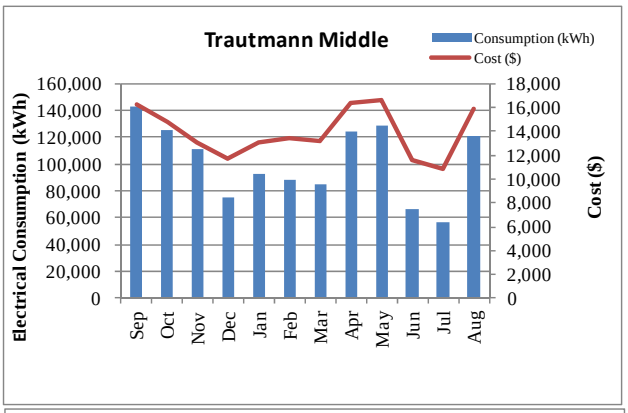

United Middle School
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
300,000
250,000
200,000
150,000
100,000
50,000
0
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

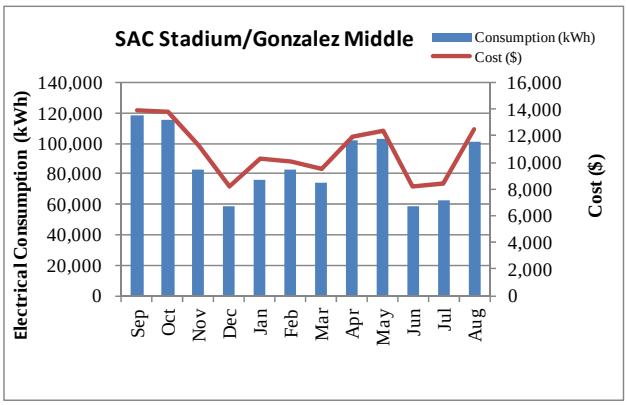

S. Garcia Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

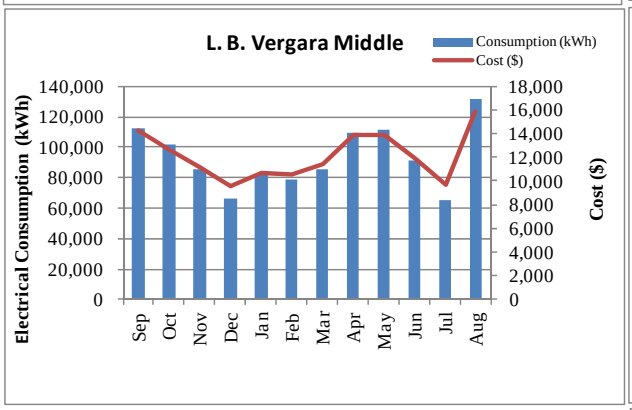

Clark Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

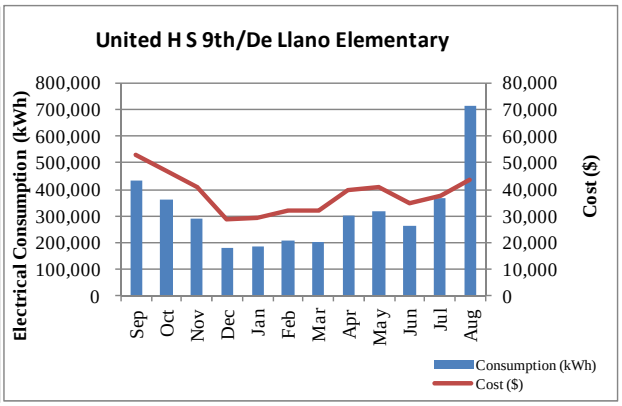

Washington Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

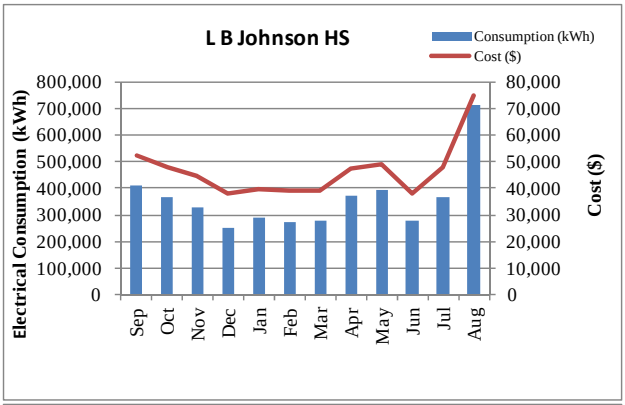

Los Obispos Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

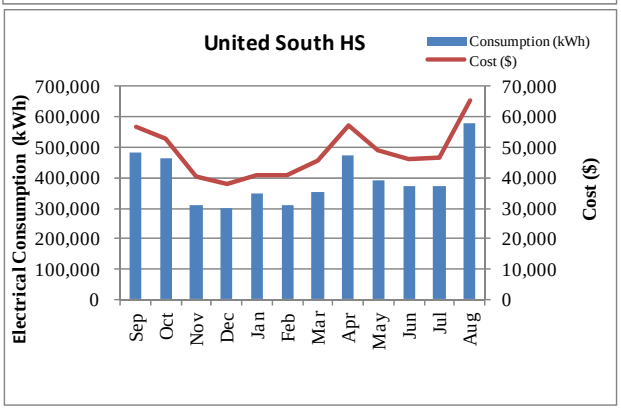

Trautmann Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

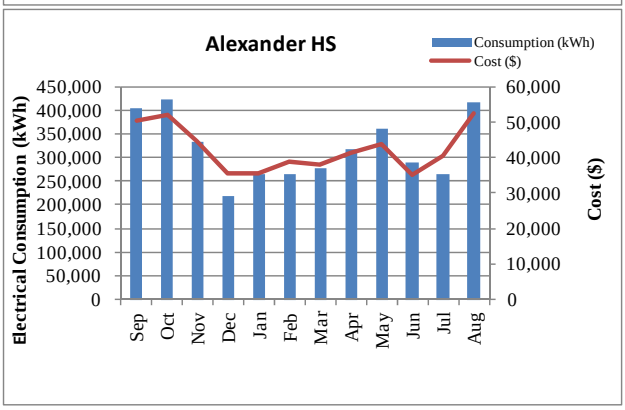

SAC Stadium/Gonzalez Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

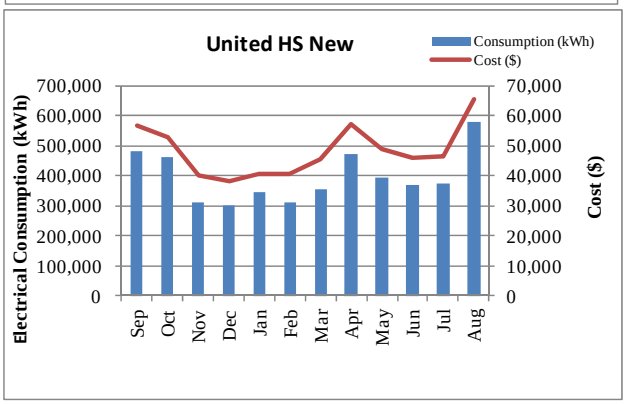

L. B. Vergara Middle
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug


United H S 9th/De Llano Elementary
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug
Consumption (kWh)
Cost ($)


L B Johnson HS
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug


United South HS
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug


Alexander HS
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug


United HS New
Consumption (kWh)
Cost ($)
Electrical Consumption (kWh)
Cost ($)
Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

4.0 ENERGY STAR PORTFOLIO MANAGER

The District's energy baseline can be developed in ENERGY STAR's Portfolio Manager. One of the key reasons for using ENERGY STAR Portfolio Manager is its ability to normalize the District's baseline according to several key factors (i.e. Weather, Square Feet, Hours of Operation, Number of Computers, etc.). It is also a free online resource available to all registered users, and is a user-friendly web-based tool.

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE). ENERGY STAR has developed Portfolio Manager, an innovative online energy management tool, designed to help organizations track and assess energy and water consumption of their facilities. Portfolio Manager helps organizations set investment priorities, identify under-performing buildings, verify efficiency improvements, and receive EPA recognition for superior energy performance.

Portfolio Manger is an energy performance benchmarking tool. Portfolio Manager rates a building's energy performance on a scale of 1–100 relative to similar buildings nationwide. The rating system is based on a statistically representative model utilizing a national survey conducted by the Department of Energy's Energy Information Administration. This national survey, known as the Commercial Building Energy Consumption Survey (CBECS), is conducted every four years, and gathers data on building characteristics and energy use from thousands of buildings across the United States. A rating of 50 indicates that the building, from an energy consumption standpoint, performs better than 50% of all similar-use buildings nationwide, while a rating of 75 indicates that the building performs better than 75% of all similar-use buildings nationwide.

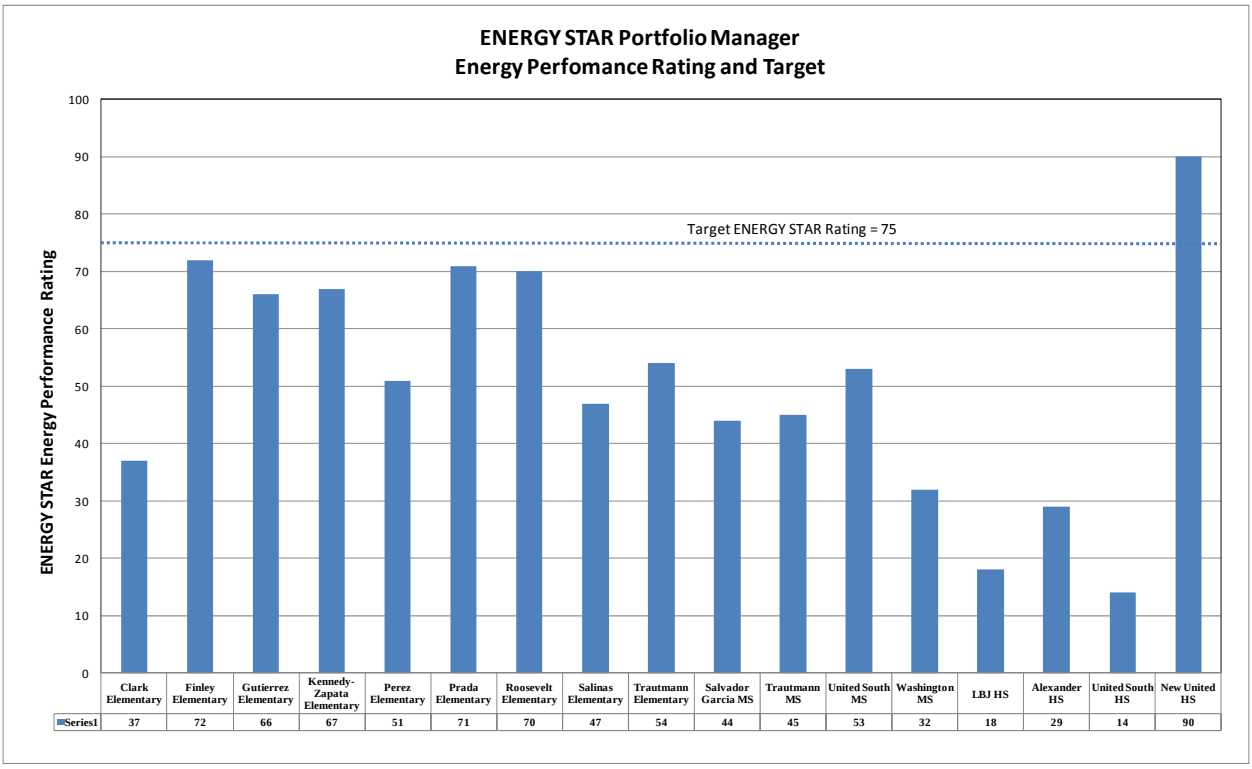
In addition, Portfolio Manager is used to generate a Statement of Energy Performance (SEP) for each building, summarizing key energy information such as site and source energy intensity, greenhouse gas emission, energy reduction targets and energy cost. The Statement of Energy Performance can help in applying for an ENERGY STAR Building label or satisfying LEED for Existing Buildings (LEED-EB) requirements. For example, one of the requirements to receive an ENERGY STAR Building Label is to achieve a minimum CBECS rating of **75**. A requirement to receive LEED-EB certification is an ENERGY STAR rating of **69**.

To develop the District's baseline, 12 months of utility consumption, cost data, and Building Space Use information will be required. The table on the following page is a sample of the Building Space Use data required by Portfolio Manager to generate the Energy Performance Rating. These inputs are critical and can significantly influence how Portfolio Manager computes the ENERGY STAR Rating. Many of these key inputs may vary over time and could influence the rating. **If an ENERGY STAR Label is pursued, these key inputs will need to be verified and certified by a Professional Engineer. Verification of this information is required when submitting the Statement of Energy Performance for ENERGY STAR's review.**

ENERGY STAR Portfolio Manager Example Space Use Data

Facility Type: K-12 School	
• 12 Months of Electric	• Presence of cooking facilities
• Gross Floor Area	• Percent Cooled
• Open Weekends (Y/N)	• Percent Heated
• # of PCs	• Months Open per Year
• # of Walk in refrigerators/freezers units	• High School (Y/N)

The District's schools included in the preliminary energy assessment scope were analyzed through ENERGY STAR Portfolio Manager (Gonzalez Middle School is currently not eligible for a rating, as it is currently metered with the Student Activity Center). In addition, the District's latest new construction project (New United High School) was also analyzed. **Default** values were used for the data in the table above except for utility bills and gross floor areas. *It is recommended the District update these to correct values for each facility in order to achieve appropriate ENERGY STAR ratings.* The chart below summarizes the preliminary results based on some default values. The target for eligible facilities is a rating of 75 or higher to qualify for ENERGY STAR. As previously noted, engineer verification is required to produce a Statement of Energy Performance (SEP) if applying for ENERGY STAR recognition.



While the data above only includes the ratings for District facilities included in the preliminary energy assessment scope and one new construction project, the District should consider inputting data for the remaining facilities if it plans to use Portfolio Manager in the future.

5.0 ENERGY ACCOUNTING

UTILITY PROVIDERS

AEP and Just Energy provide electric services to the District.

MONITORING AND TRACKING

Currently, the District has energy tracking in place. An effective energy tracking system is an essential tool by which an energy management program's activities are monitored. The system should be centralized and available for all engaged staff members to use in verifying progress toward established targets and milestones.

The District should continue consolidating the tracking and recording of all the District's utility accounts (i.e., Electricity, Natural Gas, Propane, Water, etc.) into an electronic spreadsheet similar to the chart shown on the following page. Along with total utility costs ($), utility consumption should be recorded as well (i.e., kWh, MCF, gallons, etc.). The District can use this data to track utility consumption patterns and budget utility expenses. **Preferably, the District should also consider an electronic database such as ENERGY STAR Portfolio Manager, which will provide a means of storing and tracking utility information.** Having this historical data improves the District's awareness of their energy performance and will help in tracking their energy reduction goals.

The steps below are essential for an effective energy management tracking system:

1. Perform regular updates. An effective system requires current and comprehensive data. Monthly updates should be strongly encouraged.

2. Conduct periodic reviews. Such reviews should focus on progress made, problems encountered, and potential rewards.

3. Identify necessary corrective actions. This step is essential for identifying if a specific activity is not meeting its expected performance and is in need of review.

In addition, having this historical utility data would facilitate **House** and **Senate Bill(s)** reporting requirements. Please see **Section 7.0** for additional information regarding these requirements.

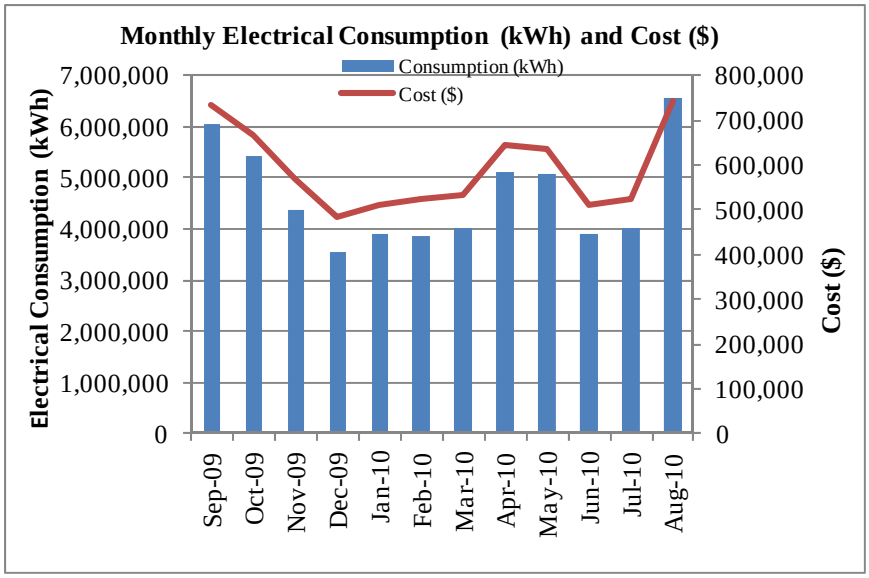
Furthermore, below is a sample format the District can customize to help summarize their overall utility usage and costs.

The data presented below is a summation of the data provided by the District. This data below includes only selected utility accounts and is for reference purposes only and does not represent the District's total utility data. See **Appendix C** for further detail regarding each utility account represented in the table below.

United ISD - Sample Utility Input Form

MONTH	ELECTRICITY		
	KWH	COST $	Avg. Rate $/KWH
Sep-09	6,058,072	732,787	$0.1210
Oct-09	5,434,284	667,109	$0.1228
Nov-09	4,388,932	568,217	$0.1295
Dec-09	3,557,614	485,805	$0.1366
Jan-10	3,914,768	512,793	$0.1310
Feb-10	3,879,344	524,658	$0.1352
Mar-10	4,029,960	532,059	$0.1320
Apr-10	5,129,024	643,343	$0.1254
May-10	5,072,120	637,979	$0.1258
Jun-10	3,889,684	510,877	$0.1313
Jul-10	4,021,372	523,787	$0.1303
Aug-10	6,574,202	741,598	$0.1128
Total	55,949,376	$7,081,012	$0.1266

Gross Building Area:	4,730,675	SF



6.0 POWER METERING

At present, the Student Activity Center and Gonzalez Middle School do not have separate electric meters in place. This makes it difficult to account for the electrical consumption (kWh) or demand (kW) of the individual buildings. It is possible to perform analysis and/or simulations to develop baseline energy consumption profiles for unmetered buildings, but separate Electric Meters should be installed for ongoing support of energy conservation and facility planning.

The three primary benefits of metering are:

- Benchmarking and identifying areas of high energy use.
- Assisting with measurement and verification of the implemented energy measures.
- Providing electric load profile data for future planning and renovations.

From an energy management perspective, access to the historical energy consumption data provides for better targeting of buildings for energy cost reduction measures. Following energy retrofits, metering helps with the measurement and verification process. In addition, a change in metered energy use can reveal a change in operating parameters, equipment efficiency, or control malfunction that may otherwise remain undetected.

From a facility management perspective, access to the historical peak power load will be available to planning and/or design teams. This will enable them to accurately determine if the existing power distribution equipment can accommodate a planned expansion or renovation, or if new or additional equipment will be required.

The budgetary cost estimate based on preliminary analysis for a comprehensive metering plan is approximately $7,500. Please note that a detailed assessment & engineering survey should be conducted in conjunction with the scope of the Utility Cost Reduction Measures (UCRMs) to determine the exact scope and associated costs.

This metering and associated costs are based on a Revenue Grade Energy and Demand Meter. A suitable meter could be implemented that uses the EMS system at each campus for remote access of data and ease of use.

Another option that could be investigated is contacting the serving electric utility company and determining if they have a program to install energy meters for this purpose (non-billing). This could be a simpler as well as a less expensive solution but also may have monthly fees associated with it making it more expensive in the long-term.

7.0 ENERGY LEGISLATION OVERVIEW

In 2007, the 80th Texas Legislature passed Senate Bill 12 (**SB12**) which among other things extended the timeline set by Senate Bill 5 (**SB5**). SB5, commonly referred to as the Texas Emissions Reduction Plan, was adopted in 2001 by the 77th Texas Legislature to comply with the federal Clean Air Act standards. Also in 2007, the 80th Texas Legislature passed House Bill 3693 (**HB3693**) which amended provisions of several codes relating primarily to energy efficiency.

In 2009, the 81st Texas Legislature passed Senate Bill 300 (**SB300**). This bill specifically addressed the requirements for Texas Schools. This bill repealed the requirements in HB3693 that school districts must establish a goal of reducing electric consumption by 5% each year for six years starting Fiscal Year (FY) 2007. SB300 instead requires that school districts establish a long-range energy plan to reduce the overall electricity use by 5% beginning FY 2008. Besides this change, other requirements set forth in SB12 and HB3693 applicable to schools still apply.

Following are key requirements established by the above energy legislation:

- Establish a Long-Range Energy Plan (SB300) to reduce the District's electric consumption by five percent (5%) beginning with the 2008 state fiscal year and to consume electricity in subsequent fiscal years in accordance with the plan. The Long-Range Energy Plan should include strategies in the plan for achieving energy efficiency that result in net savings or that can be achieved without financial cost to the district. The Plan should account for the initial, short-term capital costs and lifetime costs and savings that may occur from implementation of the strategy. Each strategy should be evaluated based on the total net costs and savings that may occur over a seven-year period following implementation of the strategy.

- Record electric, water, and natural gas utility services (consumption and cost) in an electronic repository. The recorded information shall be on a publicly accessible Internet Web site with an interface designed for ease of navigation if available, or at another publicly accessible location. To help with the utility reporting process, a sample input form can be found in **Appendix B** of this report.

- Purchase commercially available light bulbs using the lowest wattages for the required illumination levels.

- Install energy saving devices in Vending Machines with non-perishable food products. **Not required of School Districts, but highly recommended.**

Summary descriptions of SB12, HB3693, and SB300 are available in **Appendix A.**

8.0 SAMPLE SCREENSHOTS OF ENERGY MANAGEMENT SYSTEM (EMS)

During the preliminary walk-through, several images were captured from the facilities' Energy Management System (EMS) monitor. Each image is a snapshot of HVAC equipment readings and settings (Temperature Setpoints, Equipment On/Off Status, etc.). Trends are time-stamped snapshots of data accumulated by the EMS over a period of time. Below are example screenshots from the EMS.

While this information is only a brief sample of the operating conditions, it helps provide a general understanding of a facility's HVAC system operations. Since the HVAC system is the major energy consumer in most facilities, investigating these systems often reveals energy reduction opportunities. Below are some examples of the information obtained using the EMS. Please note that the following images were obtained during the month of November 2011.

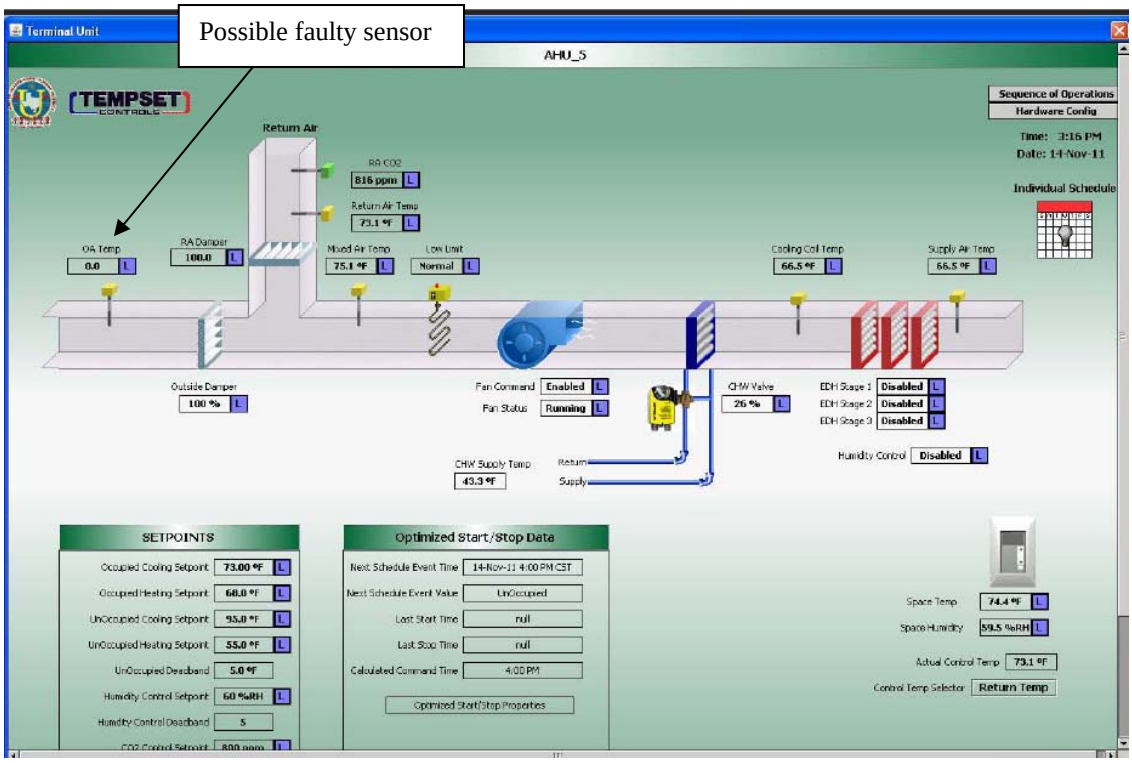


Figure 1: EMS Screenshot of Perez Elementary AHU.

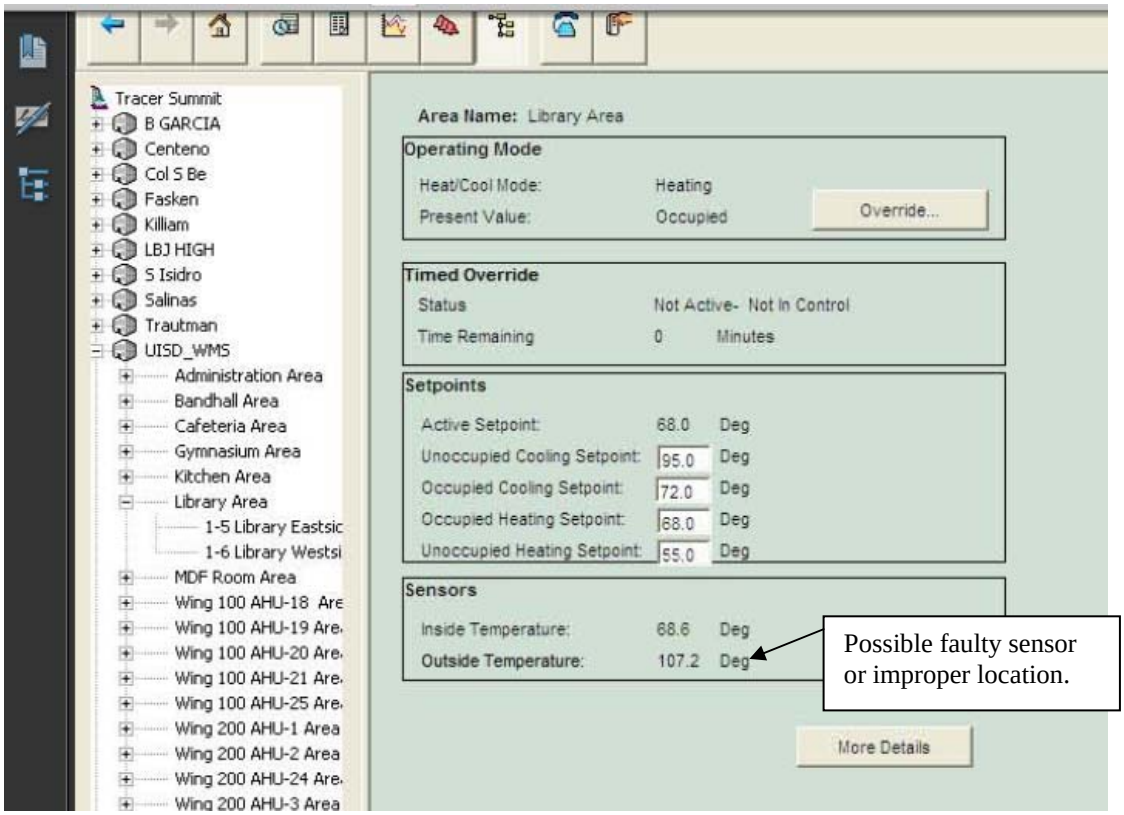


Figure 2: EMS Screenshot of Washington Middle School Library.

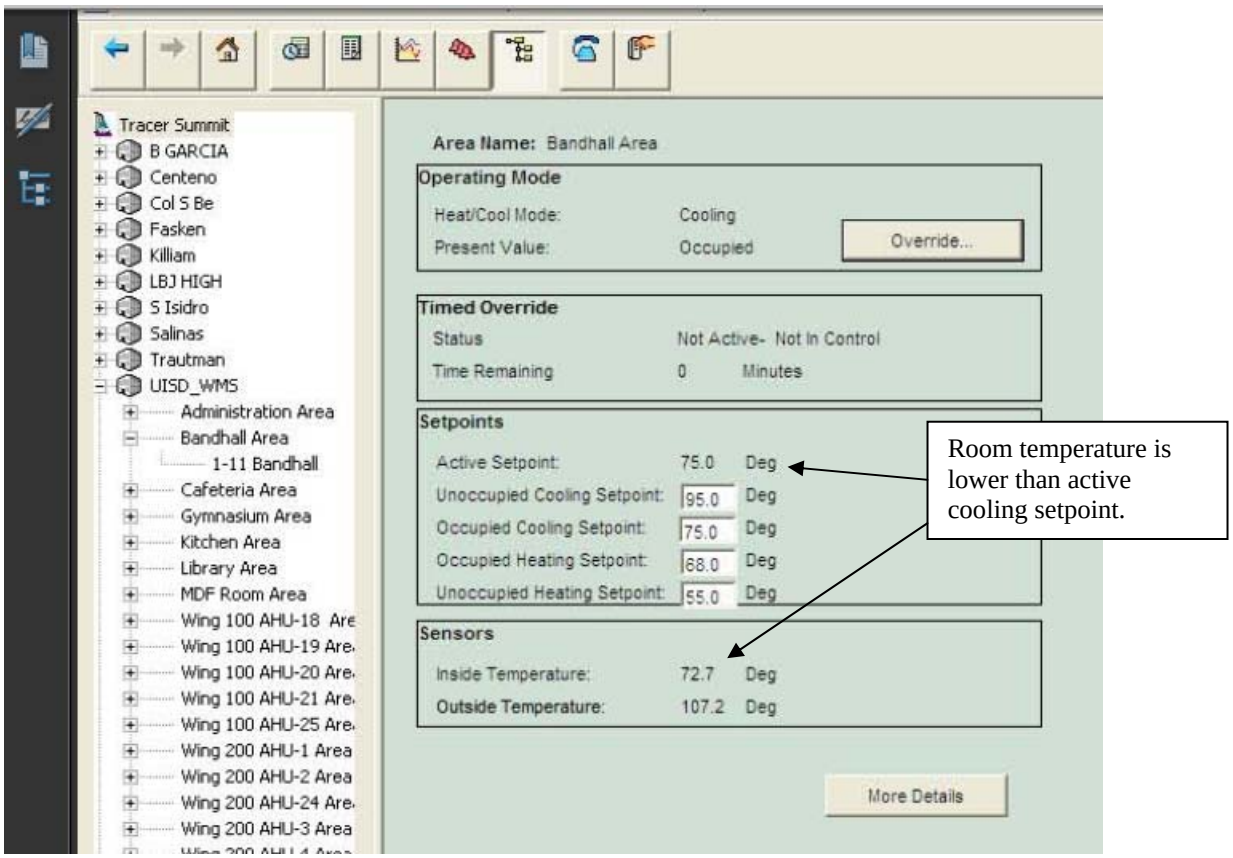


Figure 3: EMS Screenshot of Washington Middle School Band Hall.

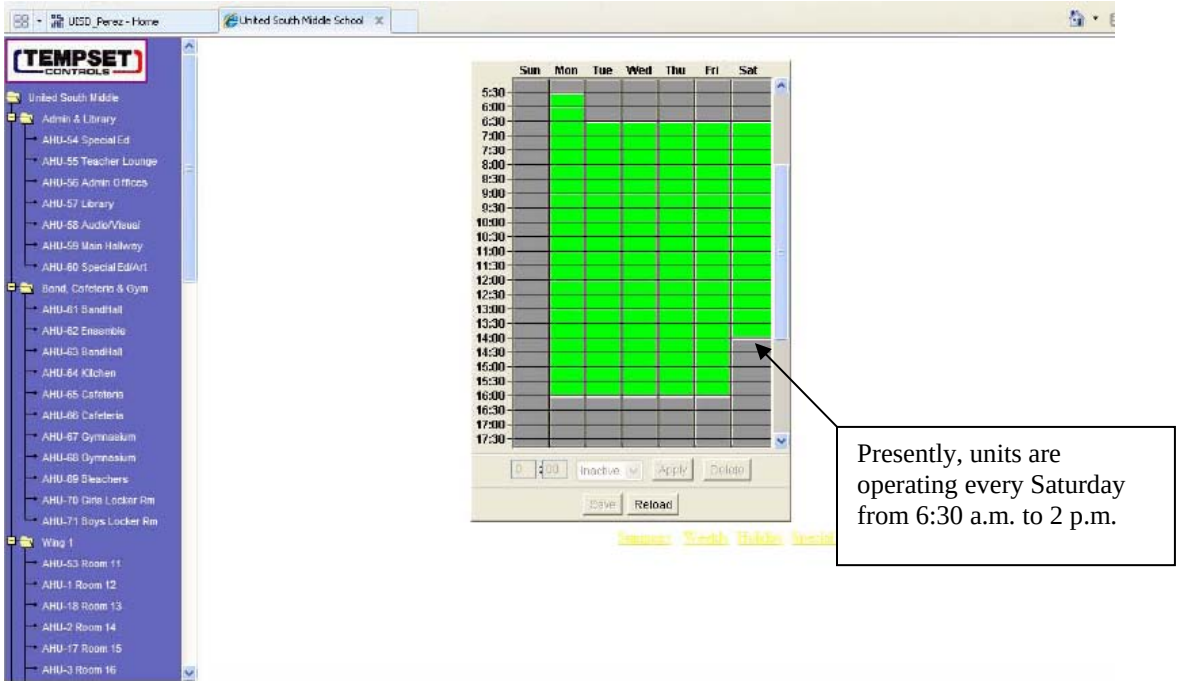


Figure 4: EMS Screenshot of operating schedule for Wing 3 of United South Middle School.

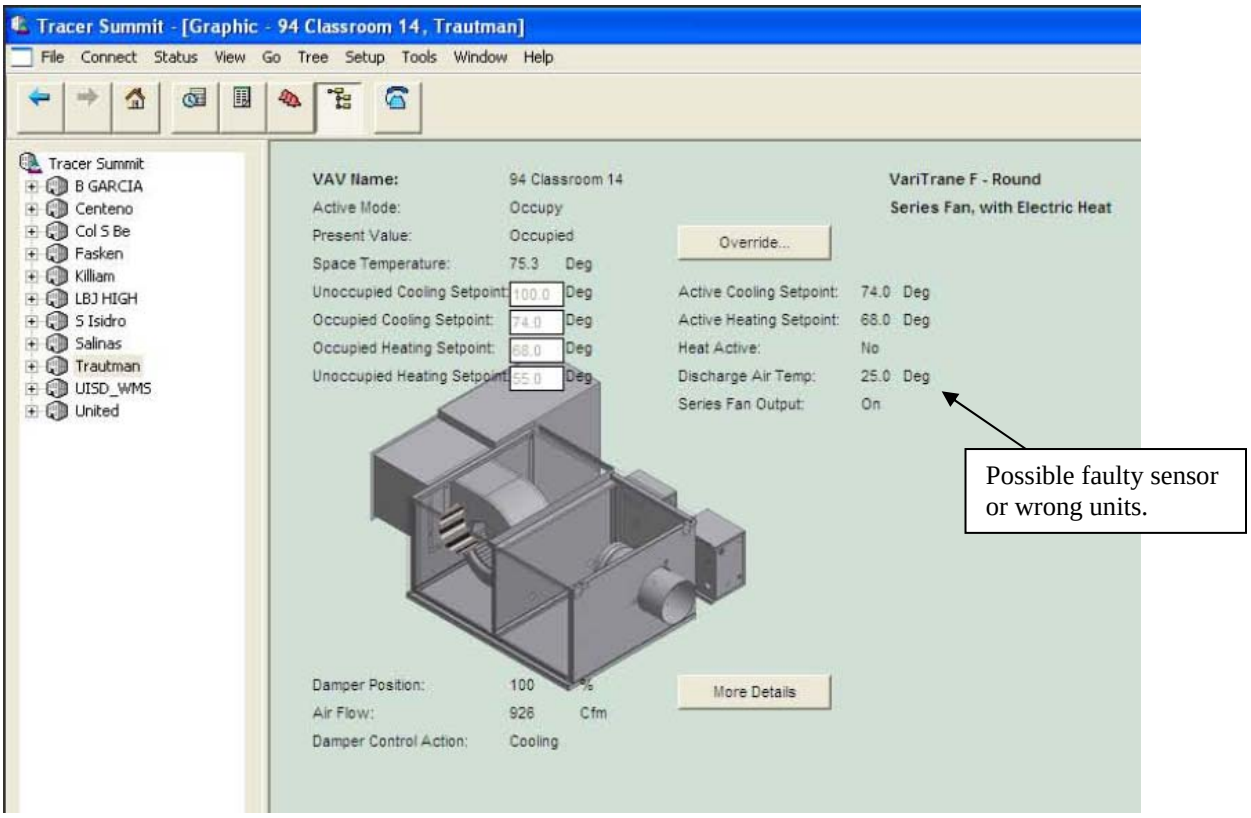


Figure 5: EMS Screenshot of Trautmann Elementary.

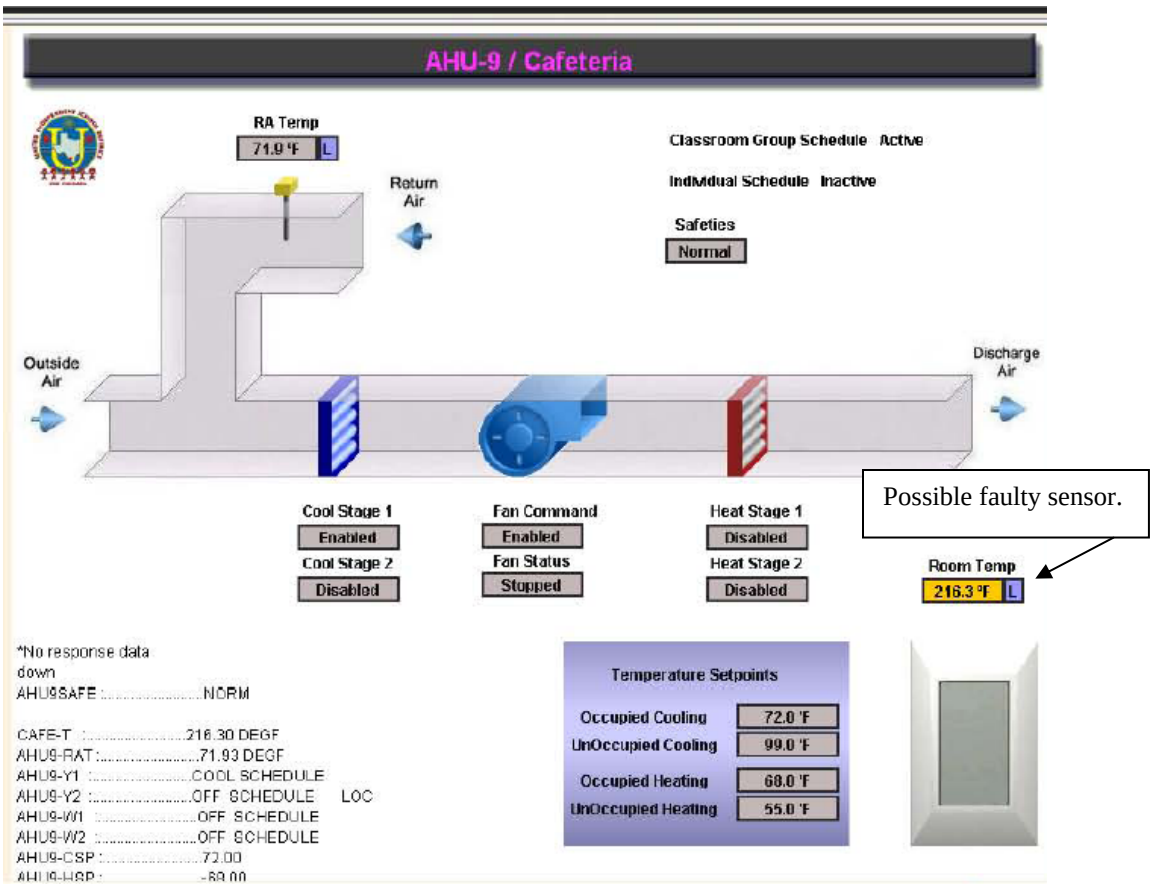


Figure 6: EMS Screenshot of Prada Elementary.

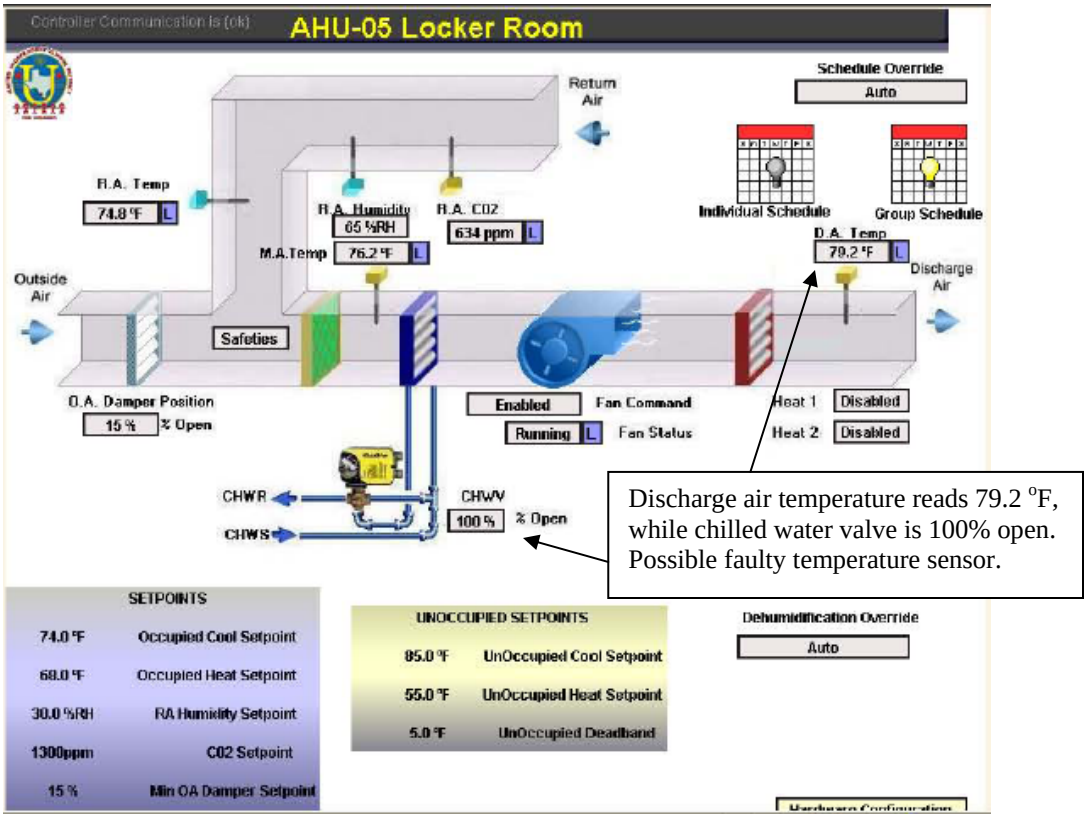


Figure 7: EMS Screenshot of Alexander HS.

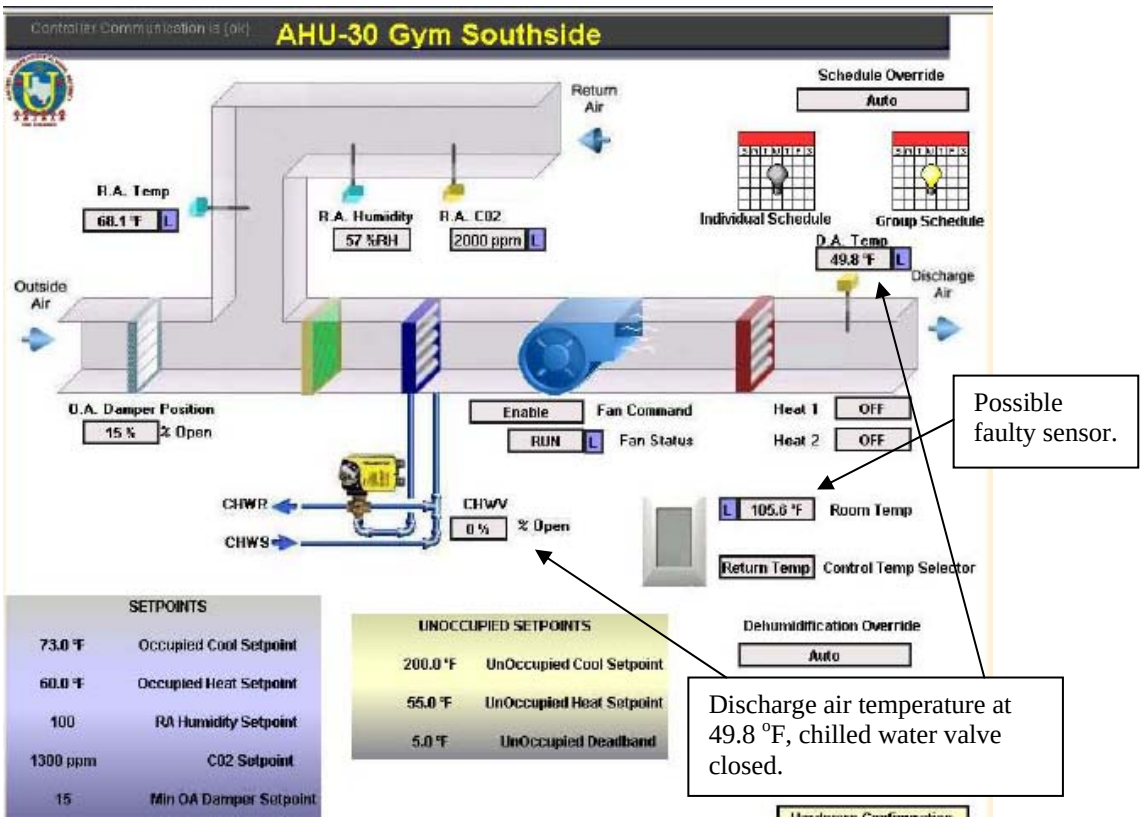


Figure 8: EMS Screenshot of Alexander HS.

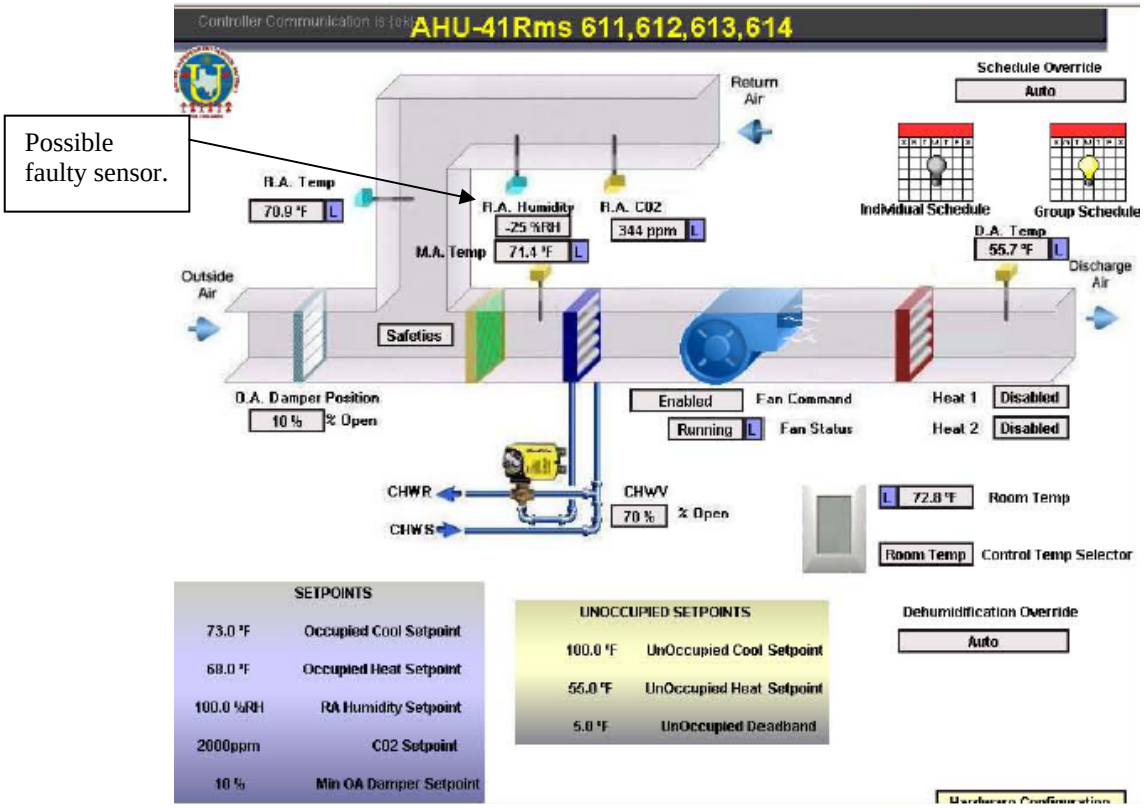


Figure 9: EMS Screenshot of Alexander HS.

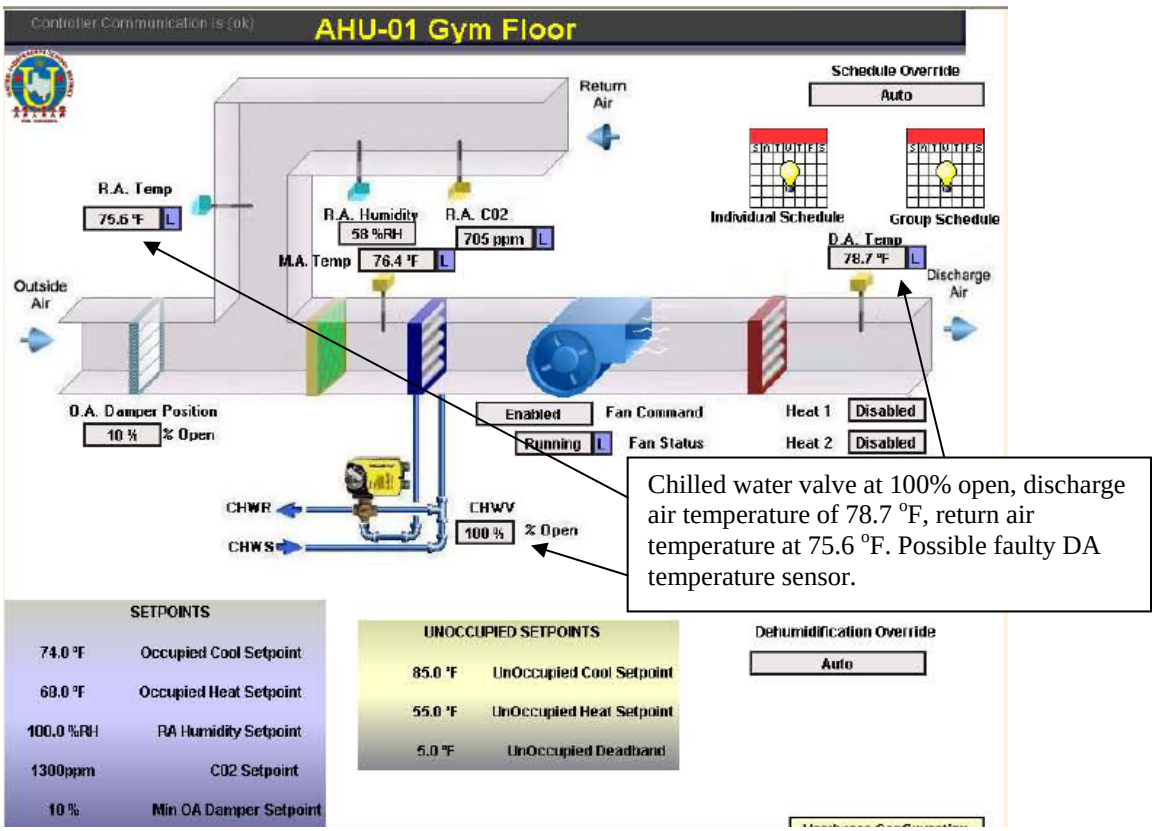


Figure 10: EMS Screenshot of Alexander HS.

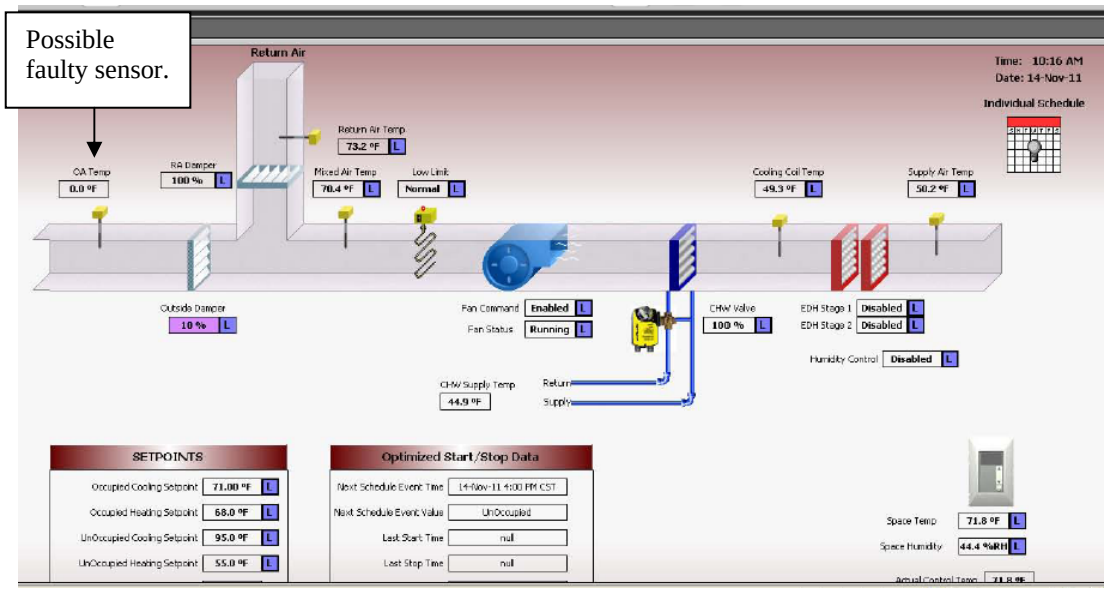


Figure 11: EMS Screenshot of Finley Elementary.

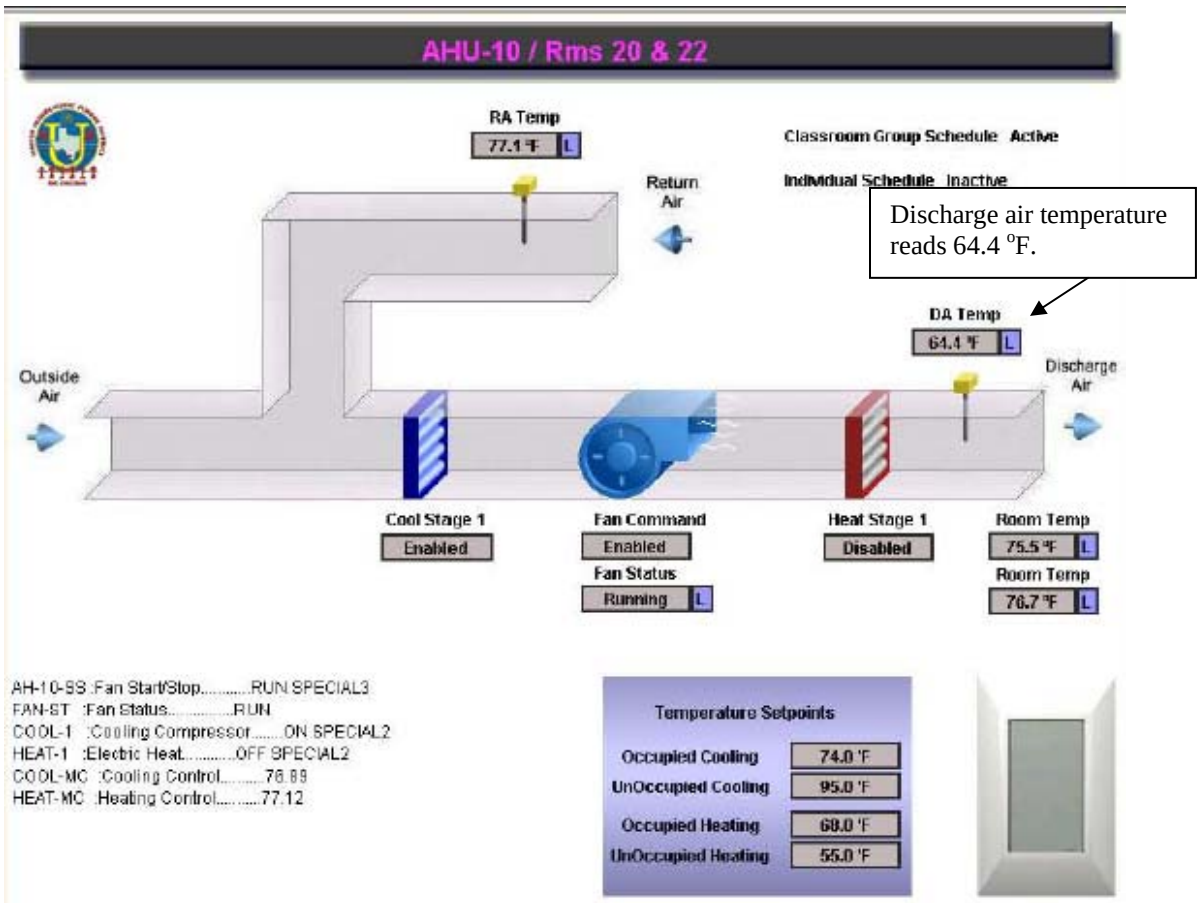


Figure 12: EMS Screenshot of Gutierrez Elementary.

9.0 RECOMMENDED MAINTENANCE & OPERATION PROCEDURES

Good Maintenance and Operation procedures significantly improve operating economy, equipment life, and occupant comfort. Generally, maintenance and operation procedural improvements can be made with existing staff and budgetary levels. Below are typical maintenance and operations procedures that have energy savings benefits. The District may already be following some of the recommendations noted below. The following maintenance and operation procedures should be encouraged and continued to ensure sustainable energy savings.

PUBLICIZE ENERGY CONSERVATION

Promote energy awareness at regular staff meetings, on bulletin boards, and through organizational publications. Publicize energy cost reports showing uptrends and downtrends.

MANAGE SMALL ELECTRICAL EQUIPMENT LOADS

Small electrical equipment loads consists of small appliances/devices such as portable heaters, microwaves, small refrigerators, coffee makers, stereos, cell phone chargers, desk lamps, etc. The District should establish a goal to reduce the number of small appliances and to limit their usage. For example, the use of small space heaters should be discouraged; hence, all space heating should be accomplished by the District's main heating system. In addition, many small devices such as radios, printers, and phone chargers can consume energy while not in use. To limit this "stand-by" power usage these devices should be unplugged or plugged into a power strip that can act as a central "turn off" point while not in use. With an effective energy awareness campaign to encourage participation, managing small electrical loads can achieve considerable energy savings.

ESTABLISH HVAC UNIT SERVICE SCHEDULES

Document schedules and review requirements for replacing filters, cleaning condensers, and cleaning evaporators. Include particulars such as filter sizes, crew scheduling, contract availability if needed, etc. Replace filters with standard efficiency pleated units. Generally, appropriate service frequencies are as follows -- filters: monthly; condensers: annually; evaporators: 5 years.

PRE-IDENTIFY PREMIUM EFFICIENCY MOTOR (PEM) REPLACEMENTS

Pre-identify supply sources and PEM stock numbers for all HVAC fan and pump motors so that as failures occur, replacement with PEM units can take place on a routine basis. As funding allows, pre-stock PEM replacements according to anticipated demand, i.e., motors in service more than 10 years, motors in stressful service, and at least one motor of each size and type that are in service at numerous locations.

IMPROVE CONTROL OF INTERIOR & EXTERIOR LIGHTING

Establish procedures to monitor use of lighting at times and places of possible/probable unnecessary use: Offices and classes at lunchtime, maintenance shops, closets, exterior and parking lots during daylight hours, etc. Encouraging staff (i.e. Teacher, Custodial, maintenance, and students) to participate in the District's efforts to limit unnecessary lighting use would help improve this effort.

EXTERIOR SECURITY AND SITE LIGHTING RETROFIT

Some areas in the District utilize High Intensity Discharge (HID) fixtures for exterior lighting. It is recommended that the District replace the existing HID fixtures with a combination of Pulse Start Metal Halide (MH), Light-Emitting Diode (LED), Induction and Compact Fluorescent (CFL) fixtures suitable for the applications. Care should be used when developing a retrofit/replacement strategy so that minimum security lighting levels are not sacrificed when the retrofit is complete. Therefore, lighting levels should be calculated to determine if the post-retrofit levels are acceptable. In addition, compatibility with existing ballasts, local codes and other requirements must be verified prior to retrofitting. Nevertheless, if suitable for the application, switching to lower wattage lamps with greater lumen maintenance can have sustainable energy savings with minimal impact. The following table lists several retrofit possibilities.

SECURITY/SITE LIGHTING RETROFIT STRATEGY

Existing Fixture	Existing Example Lamp Type and Wattage	Retrofit Scope	Retrofit Lamp Type and Wattage
Pole Light (*)	400W HID	Lamp/Ballast Replacement	320W MH
Pole Light, Short (*)	250W HID	Lamp/Ballast Replacement	200W MH
Security Wall Pack	150W/175W HID	LED Security Wall Pack Fixture Replacement	56W LED
Security Wall Pack, Low	70 HID	LED Security Wall Pack Fixture Replacement	26W LED
Security Wall Pack, Flood	250 HID	Lamp/Ballast Replacement	200W MH
Surface Mount	150W/175W HID	LED Surface Mount Fixture Replacement	56W LED
Recessed	70 HID	Lamp Replacement with CFL	50W CFL
Incandescent Wall	100W Incandescent	Lamp Replacement with CFL	26W CFL

(*) Replacing outdoor MH fixtures with LED and/or Induction fixtures is increasingly cost effective as more choices become available at lower prices. Check pricing at decision time.

SEPARATELY SCHEDULE TEMPERATURE CONTROL AND VENTILATION

It is typically necessary to start equipment and establish temperature control an hour or more before occupancy. Except perhaps in very mild weather, however, fresh air intake should not begin until the occupants are due to arrive. Otherwise, fresh air is heated or cooled needlessly. In hot, humid weather, the outside air also raises the indoor humidity at a time when the cooling load is too low to produce sufficient dehumidifying effect from the cooling system.

TYPICAL EQUIPMENT MAINTENANCE CHECKLISTS

Effective operation and maintenance of equipment is one of the most cost effective ways to achieve reliability, safety, and efficiency. Failing to maintain equipment can cause significant energy waste and severely decrease the life of equipment. Substantial savings can result from good operation and maintenance procedures. In addition, such procedures require little time and cost to implement. Examples of typical maintenance checklists for common equipment including are provided in **Appendix E**. These checklists from the Federal Energy Management Program (FEMP), a branch of the Department of Energy (DOE), are based on industry standards and should supplement, not replace those provided by the manufacturer.

CONTROL OUTSIDE AIR INFILTRATION

Conduct periodic inspections of door and window weather-stripping, and schedule repairs when needed. Additionally, make sure doors and windows are closed during operation of HVAC systems (heating or cooling). Unintended outside air contributes to higher energy consumption and increases occupant discomfort.

REPLACE INCANDESCENT LAMPS WITH COMPACT FLUORESCENTS

Replace existing incandescent lamps with compact fluorescent lamps as they burn out. Compact fluorescents use 50 to 75 percent less wattage for the same light output, with ten times the operating life of incandescents.

ENERGY STAR POWER MANAGEMENT

ENERGY STAR Power Management Program promotes placing monitors and computers (CPU, hard drive, etc.) into a low-power "sleep mode" after a period of inactivity. The estimated annual savings can range from $25 to $75 per computer. ENERGY STAR recommends setting computers to enter system standby or hibernate after 30 to 60 minutes of inactivity. Simply touching the mouse or keyboard "wakes" the computer and monitor in seconds. Activating sleep features saves energy, money, and helps protect the environment.

INSTALL ENERGY SAVING DEVICES ON VENDING MACHINES

Install energy saving devices on vending machines with non-perishable food items to reduce the equipment power usage. These devices shut the vending machines down during unoccupied periods. There are several commercially available devices that can be easily installed on existing vending machines. These devices typical have a motion sensor which powers down the equipment after periods of inactivity. For example if the motion sensor does not sense activity within 15 minutes the device will shutdown the vending machine and turn on once motion is sensed. These devices range in price from $100 to $250 and have a typical annual savings of $20 to $150 per vending machine.

HAIL GUARDS ON CONDENSING UNITS AND PACKAGED ROOFTOP UNITS

When an HVAC unit is replaced the District should ensure the new unit be specified with hail guards. The hail guards protect the condensing unit's heat exchanger coils from hail damage. Damage to the condensing unit heat exchangers reduces the efficiency of the units. If any existing unit(s) have damaged condensing coil fins, the fins should be straightened using a fin comb.

MAINTAIN INSULATION ON SPLIT DX UNIT REFRIGERANT LINES

During the site visit, worn insulation was noted on Split DX unit refrigerant lines at Kennedy-Zapata Elementary School, as depicted in the following picture. It is recommended these lines be checked periodically and the insulation be maintained and replaced where necessary to eliminate unnecessary energy losses and condensation damage. The black foam insulation (commercially called "elastomeric insulation") that is commonly used on such lines should not be exposed to sunlight unless coated with a UV barrier and/or covered with an aluminum jacket or aluminized tape made for the purpose. Only the vapor suction line (larger, cold line) needs insulation; the smaller (liquid) line should remain bare.

Condensing unit refrigerant lines serving Kennedy-Zapata Elementary School

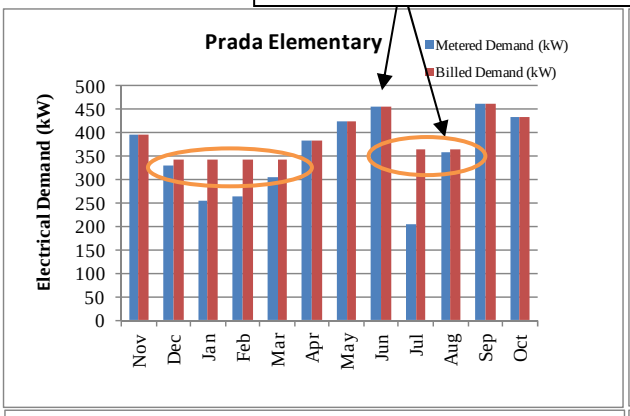
10.0 ELECTRICAL DEMAND & POWER FACTOR ANALYSIS

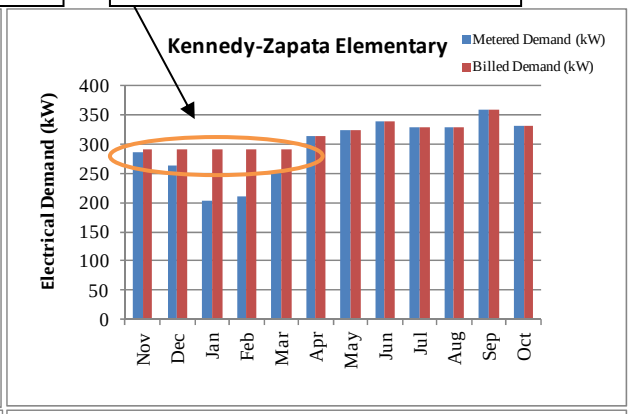
Demand (kW) charges stem from a facility's peak power draw during a billing period, as opposed to consumption (kWh) charges, which total the energy usage over this period. The campuses analyzed in this report include electric meters that record demand.

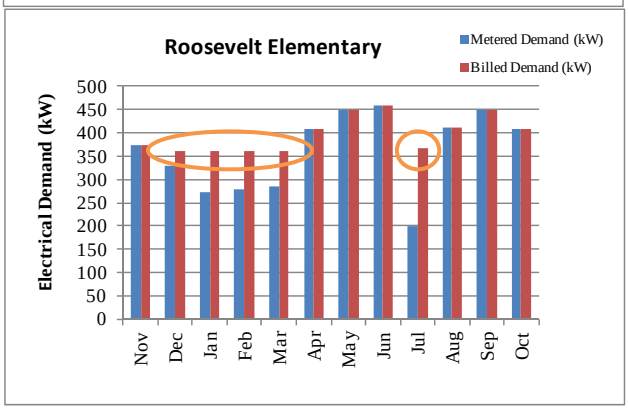
The District's energy data (metered and billed demand, power factor, consumption and costs) was made available. The plots below show the metered and billed demand over a 12-month period for selected campuses. A ratchet clause is in place, which sets the minimum demand billed for a month as 80% of the maximum demand established in the preceding 11 months. Notice periods of low metered demand where billed demand does not decrease. This is due to the demand ratchet. While the District is being metered at a lower kW, 80% of the peak demand is the amount billed.

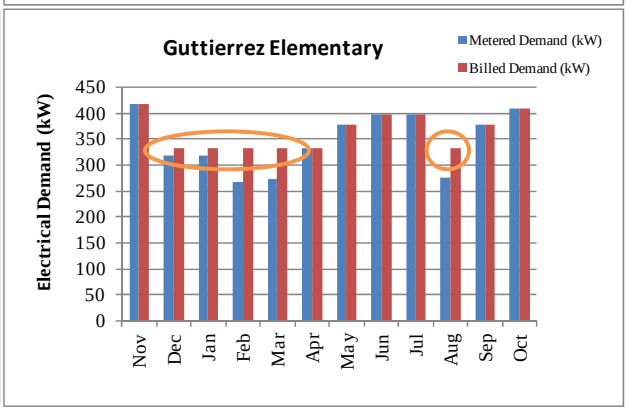
Billed demand for Jul. – Aug. 2011 is 80% of metered peak demand from Jun. 2011.

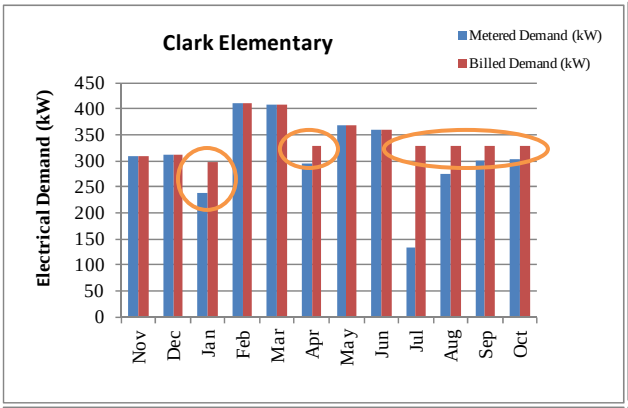
Billed demand for Nov. 2010 – Mar. 2011 is most likely determined from previous year peak demand.

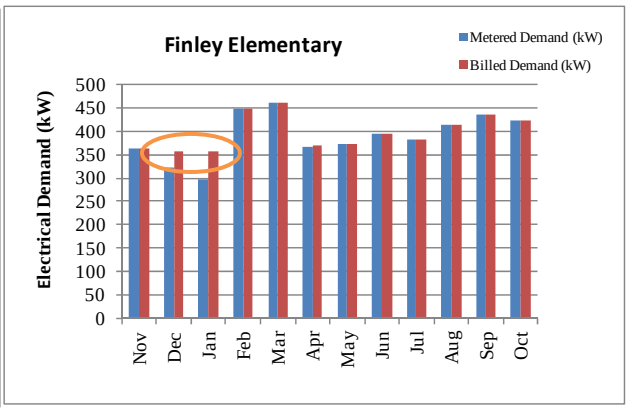


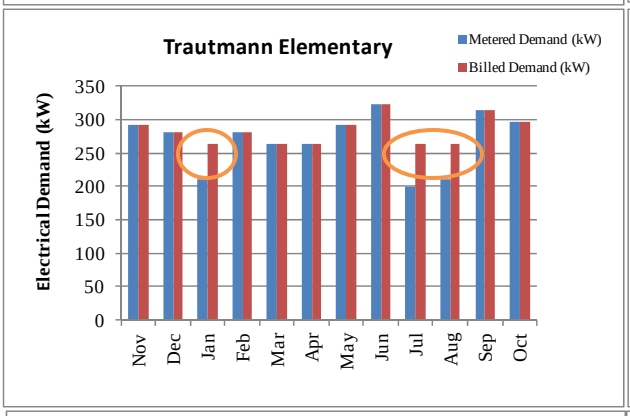


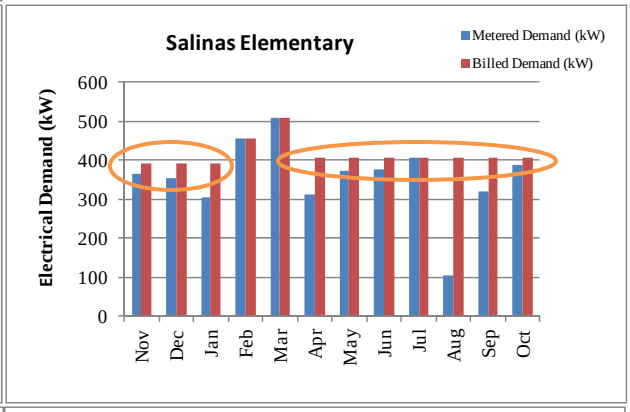





Clark Elementary
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
0 50 100 150 200 250 300 350 400 450
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct


Finley Elementary
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
0 50 100 150 200 250 300 350 400 450 500
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct


Trautmann Elementary
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
0 50 100 150 200 250 300 350
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct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Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
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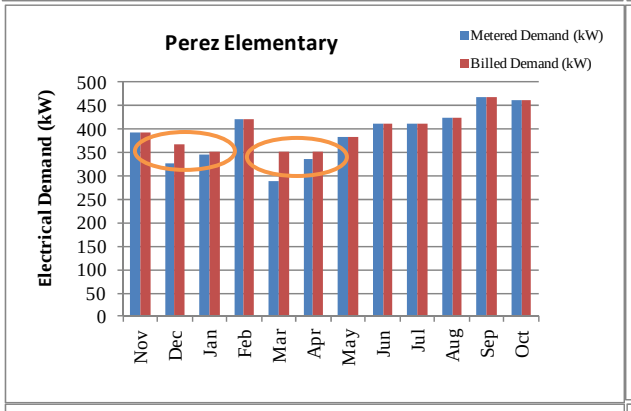
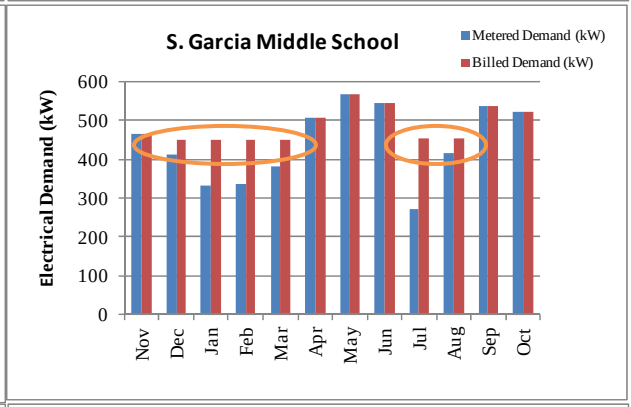
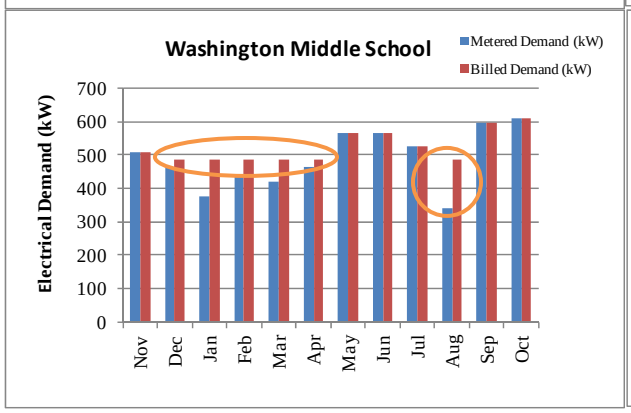
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct


Perez Elementary
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
0 50 100 150 200 250 300 350 400 450 500
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct


S. Garcia Middle School
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
0 100 200 300 400 500 600
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct


Washington Middle School
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
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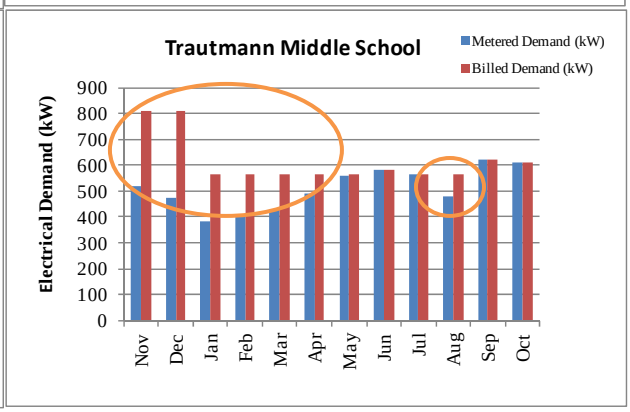
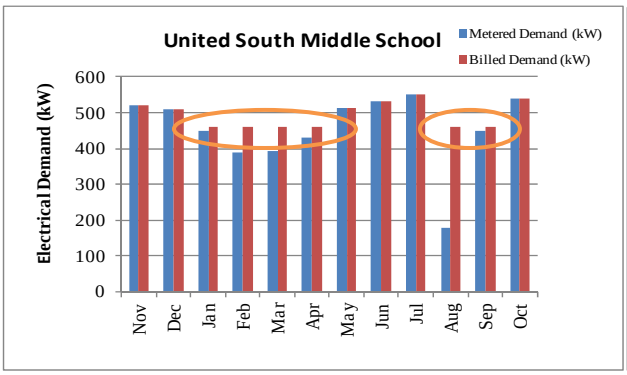
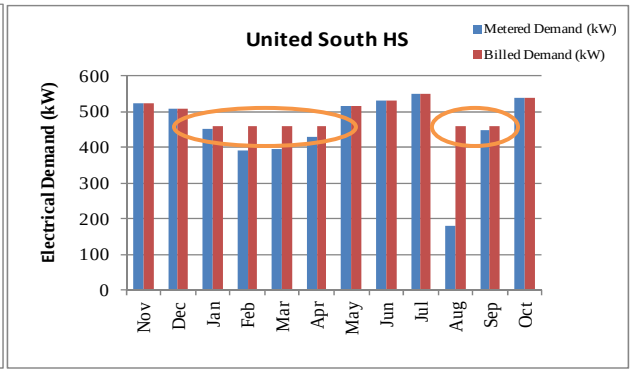
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct


Trautmann Middle School
Metered Demand (kW)
Billed Demand (kW)
Electrical Demand (kW)
0 100 200 300 400 500 600 700 800 900
Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct

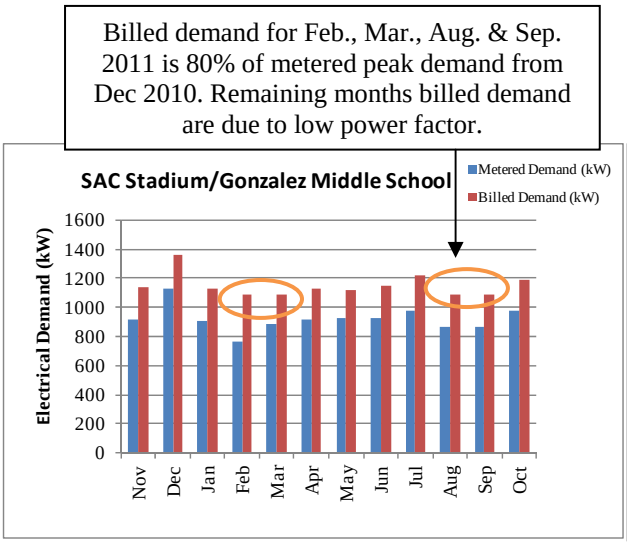


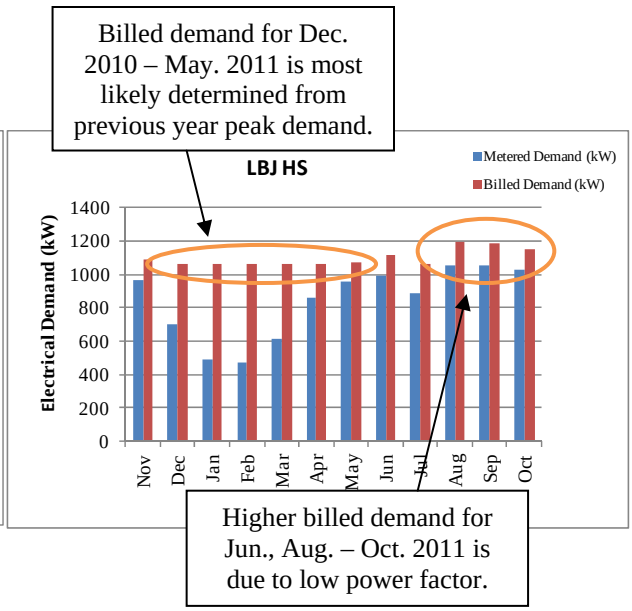


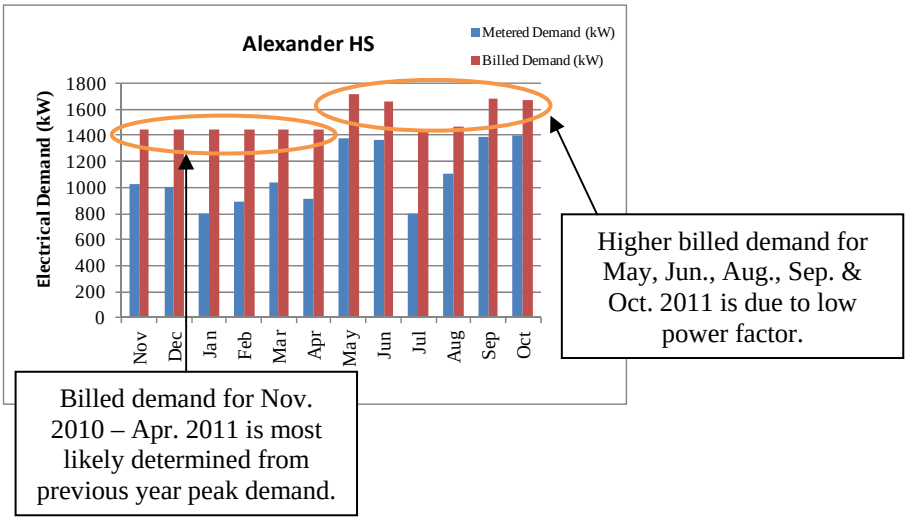
Some general recommendations for reducing demand costs include:

- Following up with utility provider to get a better understanding of actual billing structure.
- Staggering HVAC equipment start up utilizing control systems.
- Installing motion sensors for lighting control to prevent unnecessary lighting on at once (see Section 11.0).
- Increasing temperature setpoints in the summer and decreasing them in the winter to reduce unit cycle times.
- During equipment startup for upcoming school year in the months of August and September, be mindful of simultaneous equipment operation as it sets potentially higher demand costs for the next few months.

AEP also currently bills customers for low power factor where appropriate meters have been installed. This is presently reflected on the billed demand portion of the utility bill. If the power factor during the peak interval is less than 95 percent, the billed demand is multiplied by 95 percent, and then divided by the lower power factor. This would result in increased cost for the facility. The plots below show the monthly metered demand and billed demand for Gonzalez Middle School, LBJ High School and Alexander High School. The billed demand is consistently higher than the metered demand throughout the year. This is due to a combination of the ratchet clause (described above) and low power factor. The District is charged the greater value between ratcheted billed demand and low power factor penalty each month.







One method of improving power factor is installing power factor correction capacitors. *For information on improving power factor, see section 11.0.*

11.0 UTILITY COST REDUCTION MEASURES

Utility Cost Reduction Measures (UCRMs) projects identified during the preliminary analysis are detailed below. Project cost estimates include complete design and construction management services.

REPLACE EXISTING T8 FLUORESCENT LAMPS WITH LOWER WATTAGE LAMPS

Low-wattage T8 fluorescent lamps are available in 30, 28 and 25-watt versions. It is recommended the District replace existing 32-watt T8 Fluorescent lamps with lower wattage lamps in most cases. However, lower wattage T8 lamps have reduced lighting levels, so it is important to ensure that recommended lighting levels are maintained. Lighting levels should be verified prior to lamp replacement. In addition, compatibility with existing ballasts, local codes and other requirements must be verified prior to retrofitting. Nevertheless, if suitable for the application, switching to lower wattage T8 lamps will have sustainable energy savings with minimal impact. For example, replacing a 32-watt T8 lamp with a 28-watt T8 lamp will approximately have a 12% lighting energy reduction with a lighting level drop of only about 4%.

The estimated costs and savings noted below are based on replacement of existing 32-watt T8 lamps and does not account for ballast replacements. Estimates are based on a preliminary walkthrough of the facilities. A detailed lighting analysis will be required to determine exact cost, quantities and configuration to maximize the energy savings and lighting performance. The cost and savings calculations below are based on 48" F28T8, extended life linear fluorescent lamps. Lamp recycling is included in the cost estimates.

LOW WATTAGE T8 FLUORESCENT LIGHTING RETROFIT				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
Prada Elementary	$22,300	$4,100	113	5.4
Kennedy-Zapata Elementary	$17,100	$3,100	83	5.5
Roosevelt Elementary	$21,000	$3,800	97	5.5
Guttierrez Elementary	$19,100	$3,500	95	5.5
Clark Elementary	$18,300	$4,100	108	4.5
Finley Elementary	$17,700	$3,200	81	5.5
Trautmann Elementary	$17,300	$3,500	89	4.9
Salinas Elementary	$15,300	$3,100	79	4.9
Perez Elementary	$18,100	$3,600	98	5.0
United South Middle School	$25,900	$5,800	168	4.5
S. Garcia Middle School	$23,000	$5,100	137	4.5
Washington Middle School	$23,000	$5,100	146	4.5
Trautmann Middle School	$23,000	$5,100	127	4.5
Gonzalez Middle School	$25,300	$4,600	125	5.5
LBJ HS	$73,400	$16,300	430	4.5
United South HS	$77,400	$17,200	482	4.5
Alexander HS	$73,400	$16,300	420	4.5
TOTAL	**$510,600**	**$107,500**	**2,878**	**4.7**

Note: If in detailed analysis it is determined that current ballasts are not compatible with new lower wattage T8 lamps, an alternative option would be to replace lamps with 25 watt lamps and install new, more efficient ballasts.

REPLACE GYMNASIUM HID LIGHTING WITH FLUORESCENT LIGHTING

Gymnasiums in the District utilize High Intensity Discharge (HID) fixtures to light the Gyms. It is recommended that the District replace the existing HID fixtures with T5HO fluorescent fixtures suitable for gym applications. Fluorescent fixtures offer improved control, reduced energy consumption and improved lighting levels. Unlike HID fixtures which have long warm-up times and even longer re-strike times, fluorescent fixtures can be switched off and on at will. This allows them to operate fewer hours, saving energy and extending lamp life. The cost and savings estimates below are based on preliminary observations and analysis. Note that fixtures selected for unheated spaces or where subject to abuse (like gyms) will require special features.

HID TO FLUORESCENT LIGHTING RETROFIT				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
Prada Elementary	$5,800	$700	19	8.3
Kennedy-Zapata Elementary	$5,800	$700	19	8.3
Roosevelt Elementary	$5,800	$700	18	8.3
Guttierrez Elementary	$5,800	$700	19	8.3
Clark Elementary	$5,800	$800	21	7.3
Finley Elementary	$5,800	$700	18	8.3
Trautmann Elementary	$5,800	$700	18	8.3
Salinas Elementary	$5,800	$800	20	7.3
Perez Elementary	$5,000	$700	19	7.1
United South Middle School	$6,900	$900	26	7.7
S. Garcia Middle School	$6,900	$900	24	7.7
Washington Middle School	$6,900	$1,000	29	6.9
Trautmann Middle School	$6,900	$900	22	7.7
Gonzalez Middle School	$6,900	$900	24	7.7
LBJ HS	$27,300	$4,200	111	6.5
United South HS	$27,300	$3,900	109	7.0
Alexander HS	$27,300	$3,900	101	7.0
TOTAL	**$167,800**	**$23,100**	**617**	**7.3**

INSTALL OCCUPANCY SENSORS FOR INDOOR LIGHTING CONTROL

The District should consider installing occupancy sensors to improve control of interior lighting. Occupancy sensors will help ensure lights are only on when the space is occupied. The table below provides estimated costs and energy savings for the installation of these sensors. Please note these estimates are based on a preliminary assessment. Exact sensor locations, technology (Infrared, Ultrasonic, and Dual Technology) and quantity can be determined during a detailed energy assessment or design phase. In general, enclosed areas with intermittent use are typically good candidates for occupancy sensors (e.g. classrooms, offices, break rooms and conference rooms). The costs below reflect ceiling mounted occupancy sensors.

MOTION SENSOR INSTALLATION				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
Prada Elementary	$11,200	$1,600	44	7.0
Kennedy-Zapata Elementary	$4,800	$700	19	6.9
Roosevelt Elementary	$10,600	$1,500	38	7.1
Guttierrez Elementary	$8,800	$1,300	35	6.8
Clark Elementary	$8,800	$1,800	47	4.9
Finley Elementary	$9,000	$1,300	33	6.9
Trautmann Elementary	$9,000	$1,600	41	5.6
Salinas Elementary	$8,100	$1,400	36	5.8
Perez Elementary	$10,300	$1,900	52	5.4
United South Middle School	$11,200	$2,000	58	5.6
S. Garcia Middle School	$9,200	$1,700	46	5.4
Washington Middle School	$9,200	$1,700	49	5.4
Trautmann Middle School	$9,200	$1,700	42	5.4
Gonzalez Middle School	$11,000	$1,600	43	6.9
LBJ HS	$20,700	$4,100	108	5.0
United South HS	$22,900	$4,600	129	5.0
Alexander HS	$21,600	$4,300	111	5.0
TOTAL	**$195,600**	**$34,800**	**931**	**5.6**

INSTALL VFD AT CHILLED WATER PUMP

Install Variable Frequency Drive (VFD) and controls on chilled water (CHW) pump which presently operate at constant volume. The constant flow arrangement will be converted to variable primary flow. The VFD will reduce the energy consumption of the pump by maintaining precise control of CHW requirements to the air handler coils. This ECRM requires installation of appropriate VFD, differential pressure transducer and integration into EMS. For this measure to work effectively, replace all three way controls valves at the air handlers with two way except for one or two valves at each floor to ensure minimum flow through chiller.

INSTALL VFDs AT CHILLED WATER PUMPS				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
LBJ High School Wing Addition	$16,500	$2,400	63	6.9
TOTAL	**$16,500**	**$2,400**	**63**	**6.9**

INSTALL VFD AT AIR HANDLING UNITS

Install new variable frequency drives (VFD) & associated controls on existing air handler units (AHU) at United South and Alexander High Schools (approx. 355 HP total). The VFDs will provide precise and positive control of airflow rates based on return/supply air temperature. The units will act as a soft start device and help maintain humidity levels when needed, thereby reducing energy consumption and improving comfort. This feature will require custom programming.

INSTALL VFDs AT AIR HANDLING UNITS				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
United South HS	$125,100	$13,900	389	9.0
Alexander HS	$128,700	$14,300	369	9.0
TOTAL	**$253,800**	**$28,200**	**758**	**9.0**

INSTALL ENERGY MANAGEMENT SYSTEM (EMS)

Install Direct Digital Control (DDC) Energy Management System (EMS) to provide optimum scheduling and precise temperature supervision for the HVAC systems throughout each facility listed in the table below. The facilities currently utilize antiquated DOS based controls. The EMS will minimize the run time of the units while maintaining comfort throughout the facility. Additionally, EMS can remotely diagnose and document HVAC maintenance problems. Installing an EMS will improve maintenance, management and performance. The EMS systems priced below will have basic functions such as remote access capabilities, multiple scheduling, space temperature reset, and optimum start/stop features. The table below summarizes the estimated cost and saving for each proposed EMS project.

EMS INSTALLATION				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
Kennedy-Zapata Elementary	$123,200	$10,300	275	12.0
Roosevelt Elementary	$138,600	$11,600	298	11.9
S. Garcia Middle School	$154,000	$14,000	375	11.0
TOTAL	**$415,800**	**$35,900**	**947**	**11.6**

COMMISSION (Cx) HVAC SYSTEMS

Detailed HVAC & Control system commissioning in an existing building involves analysis of existing systems to ensure compliance with original set-up/design conditions and, where feasible, analyzing the design to adjust operating parameters to enhance comfort and reduce energy consumption. Overall, the goal of commissioning is to deliver a system that operates optimally, meets the needs of the building owner and occupants, and is understood by the facility operators. To reach this goal it is necessary for the commissioning process to provide documentation and verification of the performance of all building equipment and systems. For the process to work successfully it is equally important to have good communications between all participants (owners, operators, and the commissioning agent) and to keep all parties involved and informed of all pertinent decisions. For general information on Commissioning, please refer to Appendix G.

HVAC Retro-commissioning (RCx) involves the optimization of an existing building's energy usage through testing and documentation. Typically, this procedure will review and improve a building's energy consumption levels by investigating staff and occupant observations as well as optimizing building systems to meet or surpass the original design goals. This process is especially appropriate for buildings that have not been commissioned recently.

Preliminary examination (utility data review, discussion with staff, EMS review, and walkthrough) of United ISD facilities indicate potential for energy cost savings primarily in the HVAC systems operations. *LBJ HS would greatly benefit by implementing a building Recommissioning program while United South HS and Alexander HS would benefit from full scale Retro-commissioning.* These programs ensure the optimization of HVAC systems for the building's existing conditions, works to improve the building air quality, increase comfort levels, and resolve any operating problems. The Commissioning program requires collaborative efforts between the commissioning engineers and the facility staff, and is an ongoing process that continues to both commission the building as well as train the facility staff.

The cost and savings estimates presented here are for a comprehensive commissioning program. The project implementation duration is typically 10 to 12 months. The following estimates are based on a preliminary walkthrough, available utility data analysis, and discussion with staff. The project, if authorized, would normally be accomplished by an organization/firm with engineers specializing in enhanced commissioning techniques and project implementation. The table below summarizes the implementation costs, annual savings, and payback for a comprehensive commissioning program at each campus. *Note: The table below includes an estimated budget for deferred maintenance items. The deferred maintenance budget is for repair items that the Owner needs to address (such as sensor replacement, damper repair, etc.) that may be identified by the commissioning team.*

BUILDING COMMISSIONING (Cx)				
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
LBJ HS (Recommissioning)	$52,800	$13,200	348	4.0
United South HS (RCx)	$139,300	$33,200	930	4.2
Alexander HS (RCx)	$132,100	$33,000	851	4.0
Deferred Maintenance/Repair Costs	$48,600	-	-	-
TOTAL	**$372,800**	**$79,400**	**2,130**	**4.7**

INSTALL POWER FACTOR CORRECTION CAPACITORS

Install capacitor banks at the electrical service entrance or particular loads at each of the following locations. The District is currently charged for low power factor, and installing a capacitor will condition the power and reduce additional costs. Capacitor banks vary in cost with the size required, which is dependent on the facility's electrical demand and the amount of power factor correction elected. If the source of low power factor is a few large motors that always have the same low power factors, it may be most cost effective to connect the capacitors to the system between the motor starter and the load, so that the correction is only applied to the system while the offending motors are enabled. The following estimated implementation costs refer to installing capacitors at the electrical service entrances, and are based off preliminary utility data review. Detailed analysis would determine actual size of capacitors. *It is recommended the District review power factor for other facilities to determine any potential benefit for additional power factor correction.*

INSTALL CAPACITORS			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Simple Payback (years)**
Gonzalez Middle School	$25,500	$2,100	12.1
LBJ HS	$11,100	$1,200	9.3
Alexander HS	$32,100	$2,800	11.5
TOTAL	**$68,700**	**$6,100**	**11.3**

The following table summarizes the implementation costs, annual savings and simple payback for the above projects:

SUMMARY OF ENERGY COST REDUCTION MEASURES				
Project Description	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Estimated Annual MMBTU Savings (MMBTU/yr)**	**Simple Payback (years)**
LOW WATTAGE T8 FLUORESCENT LIGHTING RETROFIT	$510,600	$107,500	2,878	4.7
HID TO FLUORESCENT LIGHTING RETROFIT	$167,800	$23,100	617	7.3
MOTION SENSOR INSTALLATION	$195,600	$34,800	931	5.6
INSTALL VFDs AT CHILLED WATER PUMPS	$16,500	$2,400	63	6.9
INSTALL VFDs AT AIR HANDLING UNITS	$253,800	$28,200	758	9.0
EMS INSTALLATION	$415,800	$35,900	947	11.6
BUILDING COMMISSIONING (Cx)	$372,800	$79,400	2,130	4.7
INSTALL CAPACITORS	$68,700	$6,100	-	11.3
CONSTRUCTION CONTINGENCY FUNDS	$250,000	-	-	-
DETAILED ENERGY ASSESMENT	$102,000	-	-	-
TOTAL:	**$2,353,600**	**$317,400**	**8,325**	**7.4**

The above projects implementation costs and annual savings are estimated based on a preliminary examination of the facilities. Furthermore, any project administration costs and maintenance savings are not included in this preliminary energy assessment. Final costs will be determined from detailed building assessments, engineering calculations, and contractor estimates

Project design (drawings and specifications), if authorized, would normally be accomplished by professional engineers. Project acquisition (competitive bidding) would be in accordance with District requirements, and construction management would be provided by the engineering group who prepared the drawings and specifications.

12.0 FACILITY IMPROVEMENT MEASURES

This section describes facility improvement measures that have energy savings opportunities but cannot be justified solely based on the potential energy savings. The following are the facility improvement measures recommended for the District.

REPLACE HVAC SYSTEMS NEARING END OF USEFUL LIFE

The District has several Split-DX and packaged rooftop air-conditioning units nearing the end of their useful life. Replace these systems with new high efficiency units will have energy savings and help reduce maintenance costs. The HVAC systems nearing the end of their useful life are detailed in the table below, as well as estimated cost for replacing the units. The costs include equipment replacement only, and excludes any professional service costs.

CAPITAL RETROFIT - HVAC REPLACEMENT					
Project Description	**Type of Units**	**Approximate Total Tonnage**	**Average Age (yrs)**	**Estimated Time of Replacement (yrs)**	**Estimated Implementation Cost**
Prada Elementary	Split-DX	300	17	1 - 2 years	$1,080,000
Kennedy-Zapata Elementary	Split-DX	423	16	1 - 2 years	$1,521,000
Roosevelt Elementary	Split-DX	290	16	1 - 2 years	$1,044,000
Salinas Elementary	Packaged Rooftop	259	16	1 - 2 years	$930,600
S. Garcia Middle School	Split-DX	705	16	1 - 2 years	$2,538,000
Washington Middle School	Split-DX	383	12	3 - 4 years	$1,377,000
Trautmann Middle School	Split-DX	365	12	3 - 4 years	$1,314,000
TOTAL	**-**	**2,724**	**-**	**-**	**$9,804,600**

13.0 ENERGY MANAGEMENT POLICY

In order to establish an effective Energy Management Program, the District should have support from top management. An Energy Management Policy adopted by the school board sends a strong signal that energy management is an institutional priority. **United ISD has an existing Board adopted energy management plan in place. It is recommended that the District periodically review the plan and update as needed to reflect current conditions.**

14.0 FUNDING OPTIONS FOR UTILITY REDUCTION MEASURES

Institutional organizations have traditionally tapped bond money, maintenance dollars, or federal grants to fund energy-efficient equipment change outs or additions such as energy-efficient lighting systems, high efficiency air conditioning units, and computerized energy management control systems. Today, a broader range of funding options are available. A number of these are listed below.

Texas LoanSTAR Program

The LoanSTAR (Saving Taxes and Resources) Program, which is administered by the State Energy Conservation Office, finances energy-efficient building retrofits at a low interest rate (typically 3 percent). The program's revolving loan mechanism allows borrowers to repay loans through the stream of cost savings realized from the projects. Projects financed by LoanSTAR must have an average simple payback of ten years or less and must be analyzed in an Energy Assessment Report by a Professional Engineer. Upon final loan execution, the School District proceeds to implement funded projects through the traditional bid/specification process. Contact: Eddy Trevino (512/463-1876).

Internal Financing

Improvements can be paid for by direct allocations of revenues from an organization's currently available operating or capital funds (bond programs). The use of internal financing normally requires the inclusion and approval of energy-efficiency projects within an organization's annual operating and capital budget-setting process. Often, small projects with high rate of return can be scheduled for implementation during the budget year for which they are approved. Large projects can be scheduled for implementation over the full time period during which the capital budget is in place. Budget constraints, competition among alternative investments, and the need for higher rates of return can significantly limit the number of internally financed energy-efficiency improvements.

Private Lending Institutions or Leasing Corporations

Banks, leasing corporations, and other private lenders have become increasingly interested in the energy efficiency market. The financing vehicle frequently used by these entities is a municipal lease. Structured like a simple loan, a municipal leasing agreement is usually a lease-purchase arrangement. Ownership of the financed equipment passes to the School District at the beginning of the lease, and the lessor retains a security interest in the purchase until the loan is paid off. A typical lease covers the total cost of the equipment and may include installation costs. At the end of the contract period the lessee pays a nominal amount, usually a dollar, for title to the equipment.

Performance Contracting with an Energy Service Company

Through this arrangement, an energy service company (ESCO) uses third party financing to implement a comprehensive package of energy management retrofits for a facility. This turnkey service includes an initial assessment by the contractor to determine the energy-saving potential for a facility, design work for identified projects, purchase and installation of equipment, and overall project management. The ESCO guarantees that the cost savings generated by the

projects will, at a minimum, cover the annual payment due to the ESCO over the term of the contract.

Utility Sponsored Energy Efficiency Incentive Programs

Many utilities in Texas offer energy efficiency incentive programs to offset a portion of the upfront cost associated with energy efficiency measures. The program requirements and incentives range from utility to utility. For example, CenterPoint Energy provides incentives for efficiency measures such as installation of high efficiency equipment, lighting upgrades, and building commissioning. These energy efficiency programs' incentives typically cover $0.06/kWh and $175/kW of verifiable energy and demand reductions, respectively. For further information, contact your utility provider to determine what programs are available in your area.

AEP Commercial Standard Offer Program

AEP provides incentives for installation of energy efficient measures for non-residential facility customers. One such program is their Commercial Standard Offer Program. It includes incentives for demand and energy savings. For more information on eligibility and participation details, please visit http://www.aepefficiency.com/cisop/intro/index.htm.

APPENDICES

APPENDIX A

ENERGY LEGISLATION
(SB12, HB3693 AND SB300)

How to comply with SB12 & HB 3693

What you need to know about Texas Senate Bill 12

The passage of Senate Bill 12 (SB12) by the 80th Texas Legislature signified the continuance of Senate Bill 5 (SB5), the 77th Texas Legislature's sweeping approach in 2001 to clean air and encourage energy efficiency in Texas. SB12 was enacted on September 1, 2007 and was crafted to continue to assist the state and its political jurisdictions to conform to the standards set forth in the Federal Clean Air Act. The bill contains energy-efficiency strategies intended to decrease energy consumption while improving air quality.

All political subdivisions in the 41 non-attainment or near non-attainment counties in Texas are required to:

*1) Adopt a goal to reduce electric consumption by 5 percent each year for six years, beginning September 1, 2007**

2) Implement all cost-effective energy-efficiency measures to reduce electric consumption by existing facilities. (Cost effectiveness is interpreted by this legislation to provide a 20 year return on investment.)

3) Report annually to the State Energy Conservation Office (SECO) on the entity's progress, efforts and consumption data.

*Note: The recommended baseline data for those reporting entities will consist of the jurisdiction's 2006 energy consumption for its facilities and based on the State Fiscal Year (September 1, 2006 to August 31, 2007).

What you need to know about Texas House Bill 3693

The passage of House Bill 3693 (HB3693) by the 80th Texas Legislature is intended to provide additional provisions for energy-efficiency in Texas. Adopted with an effective date of September 1, 2007, HB 3693 is an additional mechanism by which the state can encourage energy-efficiency through various means for School Districts, State Facilities and Political Jurisdictions in Texas.

HB 3693 includes the following state-wide mandates that apply differently according to the nature and origin of the entity:

Record, Report and Display Consumption Data
All Political Subdivisions, School Districts and State-Funded Institutes of Higher Education, are mandated to record and report the entity's metered resource consumption usage data for electricity, natural gas and water on a publically accessible internet page.
Note: The format, content and display of this information are determined by the entity or subdivision providing this information.

Energy Efficient Light Bulbs
All School Districts and State-Funded Institutes of Higher Education shall purchase and use energy-efficient light bulbs in education and housing facilities.

Who must comply?
The provisions in this bill will apply to entities including: Cities and Counties; School Districts; Institutes of Higher Education; State Facilities and Buildings.

How do you define energy-efficiency measures?

Energy-efficiency measures are defined as any facility modifications or changes in operations that reduce energy consumption. Energy-efficiency is a strategy that has the potential to conserve resources, save money** and better the quality of our air. They provide immediate savings and add minimal costs to your project budget.

Examples of energy-efficiency measures include:

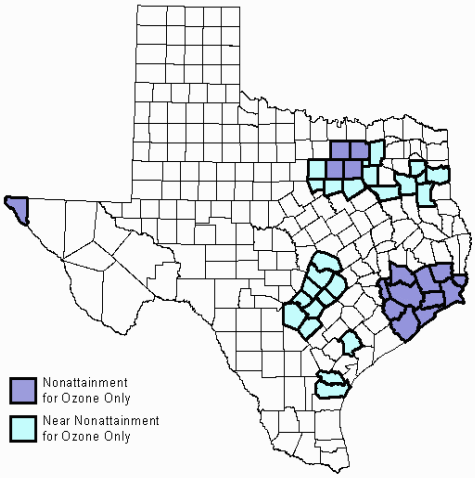
• installation of insulation and high-efficiency windows and doors • modifications or replacement of HVAC systems, lighting fixtures and electrical systems • installation of automatic energy control systems • installation of energy recovery systems or renewable energy generation equipment • building commissioning • development of energy efficient procurement specifications • employee awareness campaigns

***SECO's Preliminary Energy Assessment (PEA) program is an excellent resource for uncovering those energy-efficiency measures that can benefit your organization.*

What counties are affected?

All political jurisdictions located in the following Non-attainment and affected counties:

Bastrop Bexar Brazoria Caldwell Chambers Collin
Comal Dallas Denton El Paso Ellis Fort Bend
Galveston Gregg Guadalupe Hardin Harris Harrison
Hays Henderson Hood Hunt Jefferson Johnson
Kaufman Liberty Montgomery Nueces Orange Parker
Rockwall Rusk San Patricio Smith Tarrant Travis
Upshur Victoria Waller Williamson Wilson



What assistance is available for affected areas?

The Texas Energy Partnership is a partner with ENERGY STAR©, who partners across the nation with the goal of improving building performance, reducing air emissions through reduced energy demand, and enhancing the quality of life through energy-efficiency and renewable energy technologies.

To assist jurisdictions, the Texas Energy Partnership will:

- Present workshops and training seminars in partnership with private industry on a range of topics that include energy services, financing, building technologies and energy performance rating and benchmarking

- Prepare information packages – containing flyers, documents and national lab reports about energy services, management tools and national, state and industry resources that will help communities throughout the region

- Launch an electronic newsletter to provide continuous updates and develop additional information packages as needed

Please contact Stephen Ross at 512-463-1770 for more information.

SECO Program Contact Information

LoanSTAR;
Preliminary Energy Assessments:
Eddy Trevino – 512-463-1876
Eddy.Trevino@cpa.state.tx.us

Schools & Local Govt. Partnership Program:
Stephen Ross – 512-463-1770
Stephen.Ross@cpa.state.tx.us

Engineering (Codes / Standards):
Felix Lopez - 512-463-1080
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Innovative / Renewable Energy:
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Energy / Housing
Partnership Programs:
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Alternate Fuels / Transportation:
Venita Porter - 512-463-1779
Venita.Porter@cpa.state.tx.us

BILL ANALYSIS

Senate Research Center

S.B. 300
By: Patrick, Dan
Education
7/1/2009
Enrolled

AUTHOR'S / SPONSOR'S STATEMENT OF INTENT

Many independent school districts across Texas are reporting severe financial difficulties due to several factors, including the requirement to fulfill unfunded mandates. These mandates are particularly burdensome to fast-growth school districts. In a difficult economic climate and with dwindling resources, districts are forced to fulfill unnecessary mandates rather than focus on their basic mission, which is to educate students.

S.B. 300 amends current law relating to eliminating or modifying certain mandates on school districts.

RULEMAKING AUTHORITY

This bill does not expressly grant any additional rulemaking authority to a state officer, institution, or agency.

SECTION BY SECTION ANALYSIS

SECTION 1. Amends Section 11.1513(d), Education Code, as follows:

(d) Requires that the employment policy provide that not later than the 10th school day before the date on which a district fills a vacant position for which a certificate or license is required as provided by Section 21.003, other than a position that affects the safety and security of students as determined by the board of trustees, the district is required to provide to each current district employee notice of the position by posting the position on a bulletin board at certain locations or, rather than and, the district's Internet website, if the district has a website, and a reasonable opportunity to apply for the position.

SECTION 2. Amends Section 25.112, Education Code, by amending Subsection (d) and adding Subsections (e)-(g), as follows:

(d) Authorizes the commissioner of education (commissioner), on application of a school district (district), to except the district from the limit in Subsection (a) (relating to the prohibition of more than 22 students enrolled in an elementary school class) if the commissioner finds the limit works an undue hardship on the district. Provides that an exception expires at the end of the school year for which it is granted. Deletes existing text providing that an exception expires at the end of the semester for which it is granted, and prohibiting the commissioner from granting an exception for more than one semester at a time.

(e) Requires a district seeking an exception under Subsection (d) to notify the commissioner and apply for the exception not later than the later of October 1 or the 30th day after the first school day the district exceeds the limit in Subsection (a).

(f) Authorizes the commissioner, if a district repeatedly fails to comply with this section, to take any appropriate action authorized to be taken by the commissioner under Section 39.131 (Sanctions for Districts).

(g) Requires the Texas Education Agency, not later than January 1, 2011, to report to the legislature the number of applications for exceptions under Subsection (d) submitted by

each district and for each application indicate whether the application was granted or denied. Provides that this subsection expires February 1, 2011.

SECTION 3. Amends Section 34.0021, Education Code, by amending Subsections (a) and (b) and adding Subsection (c-1), as follows:

(a) Authorizes, rather than requires, each school district, pursuant to the safety standards established by the Department of Public Safety under Section 34.002, to conduct a training session for students and teachers concerning procedures for evacuating a school bus during an emergency.

(b) Provides that a school district that chooses to conduct a training session under Subsection (a) is encouraged to conduct the school bus emergency evacuation training session in the fall of the school year. Provides that the school district is also encouraged to structure the training session so that the session applies to school bus passengers, a portion of the session occurs on a school bus, and the session lasts for at least one hour. Deletes existing text requiring a school district to conduct the school bus emergency evacuation training at least twice each school year, with one training session occurring in the fall and one training session occurring in the spring. Deletes existing text requiring that a portion of the training session occur on a school bus and requiring the training session to last for at least one hour.

(c-1) Provides that a school district, immediately before each field trip involving transportation by school bus, is encouraged to review school bus emergency evacuation procedures with the school bus passengers, including a demonstration of the school bus emergency exits and the safe manner to exit.

SECTION 4. Amends Section 44.902, Education Code, as follows:

Sec. 44.902. New heading: LONG-RANGE ENERGY PLAN TO REDUCE CONSUMPTION OF ELECTRIC ENERGY. (a) Creates this subsection from existing text. Requires the board of trustees of a district to establish a long-range energy plan to reduce the district's annual electric consumption by five percent beginning with the 2008 state fiscal year and consume electricity in subsequent fiscal years in accordance with the district's energy plan. Deletes existing text requiring the board of trustees of a district to establish a goal to reduce the school district's annual electric consumption by five percent each state fiscal year for six years beginning September 1, 2007.

(b) Requires that the plan required under Subsection (a) include strategies for achieving energy efficiency that result in net savings for the district or can be achieved without financial cost to the district and for each strategy identified under Subdivision (1), the initial, short-term capital costs and lifetime costs and savings that may result from implementation of the strategy.

(c) Requires the board of trustees, in determining under Subsection (b) whether a strategy may result in financial cost to the district, to consider the total net costs and savings that may occur over the seven-year period following implementation of the strategy.

(d) Authorizes the board of trustees to submit the plan required under Subsection (a) to the State Energy Conservation Office for the purposes of determining whether funds available through loan programs administered by the office are available to the district.

SECTION 5. Repealer: Section 44.901(b) (regarding the requirement that the board of trustees establish a goal to reduce electric consumption by five percent each year for six years), Education Code.

SECTION 6. Provides that this Act applies beginning with the 2009-2010 school year.

SECTION 7. Effective date: upon passage or September 1, 2009.

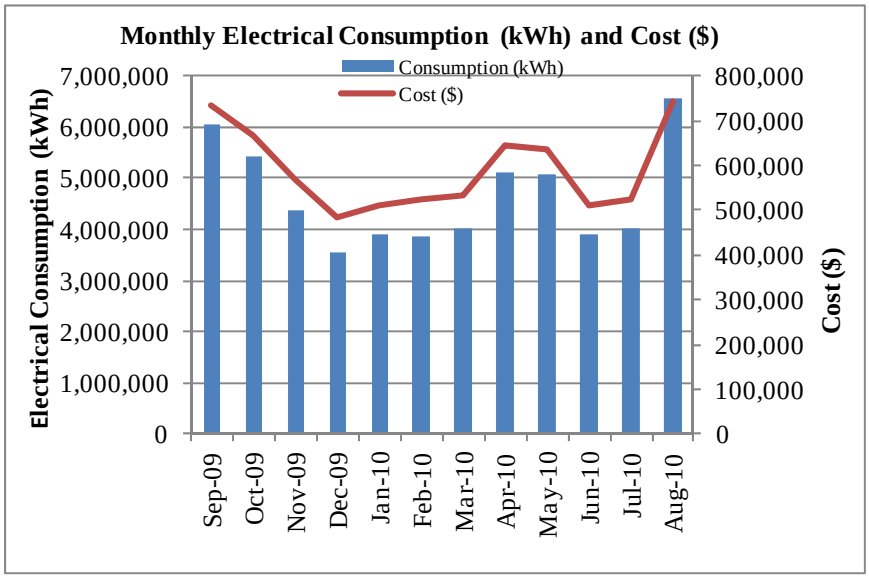
APPENDIX B

SAMPLE UTILITY DATA REPORTING FORM

United ISD - Sample Utility Input Form

MONTH	ELECTRICITY		
	KWH	COST $	Avg. Rate $/KWH
Sep-09	6,058,072	732,787	$0.1210
Oct-09	5,434,284	667,109	$0.1228
Nov-09	4,388,932	568,217	$0.1295
Dec-09	3,557,614	485,805	$0.1366
Jan-10	3,914,768	512,793	$0.1310
Feb-10	3,879,344	524,658	$0.1352
Mar-10	4,029,960	532,059	$0.1320
Apr-10	5,129,024	643,343	$0.1254
May-10	5,072,120	637,979	$0.1258
Jun-10	3,889,684	510,877	$0.1313
Jul-10	4,021,372	523,787	$0.1303
Aug-10	6,574,202	741,598	$0.1128
Total	55,949,376	$7,081,012	$0.1266

Gross Building Area:	4,730,675	SF



APPENDIX C

BASE YEAR CONSUMPTION HISTORY

Energy Cost and Consumption Benchmarks									
		Electric				Total	EUI	ECI	
	Building	kWh/Yr	MMBTU/Yr	kWh/SF	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
1	Juarez-Lincoln Elementary	629,244	2,148	8.64	82,661	2,148	29	1.13	72,856
2	Nye Elementary	662,056	2,260	6.34	86,895	2,260	22	0.83	104,376
3	Kazen Elementary	686,816	2,344	10.18	92,457	2,344	35	1.37	67,450
4	Arndt Elementary	929,552	3,173	10.27	111,964	3,173	35	1.24	90,481
5	Borchers Elementary	909,360	3,104	9.79	114,962	3,104	33	1.24	92,880
6	Prada Elementary*	928,896	3,170	10.40	114,554	3,170	35	1.28	89,355
7	Kennedy/Zapata Elementary*	769,920	2,628	11.26	98,401	2,628	38	1.44	68,348
8	Muller Elementary	931,680	3,180	10.30	121,533	3,180	35	1.34	90,481
9	Newman Elementary	577,540	1,971	8.97	84,471	1,971	31	1.31	64,350
10	Roosevelt Elementary*	891,072	3,041	10.60	118,537	3,041	36	1.41	84,084
11	Ruiz Elementary	654,720	2,235	8.46	91,217	2,235	29	1.18	77,393
12	Cuellar Elementary	860,400	2,937	9.51	115,121	2,937	32	1.27	90,481
13	R. Centeno Elementary	965,760	3,296	10.40	117,365	3,296	35	1.26	92,880
14	Gutierrez Elementary*	850,500	2,903	11.12	107,245	2,903	38	1.40	76,460
15	Zaffirini Elementary	1,006,400	3,435	11.12	125,998	3,435	38	1.39	90,481
16	Fasken Elementary	1,017,978	3,474	10.96	128,008	3,474	37	1.38	92,880
17	Bonnie Garcia Elementary	1,007,920	3,440	10.85	127,765	3,440	37	1.38	92,880
18	Malakoff Elementary	987,120	3,369	10.63	124,257	3,369	36	1.34	92,880
19	Clark Elementary*	1,068,480	3,647	14.64	138,743	3,647	50	1.90	73,000
20	Finley Elementary*	749,376	2,558	10.58	101,189	2,558	36	1.43	70,828
21	Trautmann Elementary*	880,000	3,003	12.70	117,887	3,003	43	1.70	69,308
22	United HS New	4,762,800	16,255	10.89	579,994	16,255	37	1.33	437,349
23	S. Benavides Elementary	1,036,800	3,539	11.16	130,478	3,539	38	1.40	92,880
24	Salinas Elementary*	836,736	2,856	13.63	112,417	2,856	47	1.83	61,372
25	DD Hachar Elementary	672,768	2,296	9.03	91,435	2,296	31	1.23	74,499
26	Alexander HS*	3,841,104	13,110	13.09	508,103	13,110	45	1.73	293,497
27	Perez Elementary*	936,940	3,198	12.97	116,873	3,198	44	1.62	72,253
28	Killam Elementary	980,736	3,347	10.56	121,344	3,347	36	1.31	92,880
29	United South Middle School*	1,375,200	4,694	13.26	161,869	4,694	45	1.56	103,684

Energy Cost and Consumption Benchmarks									
		Electric				Total	EUI	ECI	
	Building	kWh/Yr	MMBTU/Yr	kWh/SF	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
30	United Middle School	2,438,400	8,322	13.19	307,428	8,322	45	1.66	184,827
31	S. Garcia Middle School*	1,228,320	4,192	13.34	156,485	4,192	46	1.70	92,100
32	Clark Middle School	1,005,722	3,433	9.67	115,937	3,433	33	1.11	104,008
33	Washington Middle School*	1,370,160	4,676	14.88	162,772	4,676	51	1.77	92,100
34	Los Obispos Middle School	1,211,060	4,133	13.15	154,596	4,133	45	1.68	92,100
35	Trautmann Middle School*	1,216,080	4,150	13.20	166,840	4,150	45	1.81	92,100
36	SAC Stadium/Gonzalez Middle School*	1,036,800	3,539	10.24	130,478	3,539	35	1.29	101,260
37	L. B. Vergara Middle School	1,122,480	3,831	11.56	145,661	3,831	39	1.50	97,117
38	United HS 9th/De Llano Elementary	3,834,480	13,087	12.80	458,800	13,087	44	1.53	299,499
39	LBJ HS*	4,315,200	14,728	14.71	558,280	14,728	50	1.90	293,407
40	United South HS*	4,762,800	16,255	15.38	579,994	16,255	53	1.87	309,611
		kWh/Yr	MMBTU/Yr	kWh/SF	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
		55,949,376	190,955	11.83	7,081,012	190,955	40	1.50	4,730,675

* Included in preliminary energy assessment scope.

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Juarez-Lincoln Elementary

FLOOR AREA: 72,856 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	71,232				9,091	0	0
Oct	2009	59,216				7,716	0	0
Nov	2009	49,920				6,582	0	0
Dec	2009	41,068				5,654	0	0
Jan	2010	45,312				6,008	0	0
Feb	2010	50,112				6,524	0	0
Mar	2010	47,040				6,279	0	0
Apr	2010	61,248				7,923	0	0
May	2010	53,760				7,248	0	0
Jun	2010	29,184				4,128	0	0
Jul	2010	48,768				6,386	0	0
Aug	2010	72,384				9,122	0	0
TOTAL		629,244				82,661	0.0	0

Annual Total Energy Cost = 82,661 $/year

Total KWH/yr x 0.003413 = 2,147.61 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,148 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 29 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.13 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Nye Elementary

FLOOR AREA: 104,376 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	75,840				8,732	0	0
Oct	2009	70,656				8,578	0	0
Nov	2009	59,328				7,678	0	0
Dec	2009	46,080				5,886	0	0
Jan	2010	54,144				6,590	0	0
Feb	2010	5,224				6,443	0	0
Mar	2010	56,640				6,795	0	0
Apr	2010	65,856				7,528	0	0
May	2010	72,960				8,662	0	0
Jun	2010	51,840				6,750	0	0
Jul	2010	36,480				5,206	0	0
Aug	2010	67,008				8,047	0	0
TOTAL		662,056				86,895	0.0	0

* Natural Gas service not included in this summary.

Annual Total Energy Cost = 86,895 $/year

Total KWH/yr x 0.003413 = 2,259.60 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,260 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 22 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 0.83 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Kazen Elementary

FLOOR AREA: 67,450 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	76,800				9,804	0	0
Oct	2009	68,928				9,045	0	0
Nov	2009	59,136				7,672	0	0
Dec	2009	46,656				6,228	0	0
Jan	2010	48,768				6,395	0	0
Feb	2010	51,456				8,641	0	0
Mar	2010	52,992				6,856	0	0
Apr	2010	60,480				7,989	0	0
May	2010	66,048				8,600	0	0
Jun	2010	61,280				8,086	0	0
Jul	2010	40,128				5,793	0	0
Aug	2010	54,144				7,348	0	0
TOTAL		686,816				92,457	0.0	0

Annual Total Energy Cost = 92,457 $/year

Total KWH/yr x 0.003413 = 2,344.10 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,344 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 35 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.37 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Arndt Elementary

FLOOR AREA: 90,481 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	101,184				11,072	0	0
Oct	2009	87,936				10,710	0	0
Nov	2009	73,536				8,956	0	0
Dec	2009	61,248				7,460	0	0
Jan	2010	67,584				8,231	0	0
Feb	2010	72,000				8,769	0	0
Mar	2010	73,728				8,980	0	0
Apr	2010	93,504				11,388	0	0
May	2010	83,520				10,172	0	0
Jun	2010	49,344				6,010	0	0
Jul	2010	68,624				8,358	0	0
Aug	2010	97,344				11,856	0	0
TOTAL		929,552				111,964	0.0	0

Annual Total Energy Cost = 111,964 $/year

Total KWH/yr x 0.003413 = 3,172.56 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,173 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 35 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.24 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Borchers Elementary

FLOOR AREA: 92,880 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	106,560				12,785	0	0
Oct	2009	97,200				11,850	0	0
Nov	2009	82,080				9,908	0	0
Dec	2009	58,320				7,845	0	0
Jan	2010	64,800				8,893	0	0
Feb	2010	61,920				8,047	0	0
Mar	2010	63,360				8,257	0	0
Apr	2010	85,680				10,172	0	0
May	2010	97,200				11,641	0	0
Jun	2010	46,800				6,914	0	0
Jul	2010	52,560				7,262	0	0
Aug	2010	92,880				11,390	0	0
TOTAL		909,360		0		114,962	0.0	0

Annual Total Energy Cost = 114,962 $/year

Total KWH/yr x 0.003413 = 3,103.65 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,104 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 33 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.24 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Prada Elementary

FLOOR AREA: 89,355 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	91,776				11,233	0	0
Oct	2009	72,384				10,073	0	0
Nov	2009	69,120				8,738	0	0
Dec	2009	108,672				7,346	0	0
Jan	2010	89,664				8,407	0	0
Feb	2010	84,480				7,994	0	0
Mar	2010	69,888				8,654	0	0
Apr	2010	53,952				10,771	0	0
May	2010	60,096				11,135	0	0
Jun	2010	62,208				9,419	0	0
Jul	2010	80,064				8,530	0	0
Aug	2010	86,592				12,254	0	0
TOTAL		928,896				114,554	0.0	0

Annual Total Energy Cost = 114,554 $/year

Total KWH/yr x 0.003413 = 3,170.32 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,170 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 35 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.28 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Kennedy-Zapata Elementary

FLOOR AREA: 68,348 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	79,680				10,120	0	0
Oct	2009	67,008				8,441	0	0
Nov	2009	60,480				7,708	0	0
Dec	2009	51,456				6,755	0	0
Jan	2010	51,264				6,635	0	0
Feb	2010	56,256				7,122	0	0
Mar	2010	61,056				7,704	0	0
Apr	2010	77,184				9,637	0	0
May	2010	79,872				9,951	0	0
Jun	2010	60,096				7,869	0	0
Jul	2010	51,648				7,003	0	0
Aug	2010	73,920				9,458	0	0
TOTAL		769,920				98,401	0.0	0

Annual Total Energy Cost = 98,401 $/year

Total KWH/yr x 0.003413 = 2,627.74 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,628 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 38 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.44 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Muller Elementary

FLOOR AREA: 90,481 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	116,640				13,680	0	0
Oct	2009	97,920				12,243	0	0
Nov	2009	85,680				10,446	0	0
Dec	2009	54,720				7,809	0	0
Jan	2010	64,800				8,553	0	0
Feb	2010	70,560				8,917	0	0
Mar	2010	58,320				8,023	0	0
Apr	2010	87,120				10,540	0	0
May	2010	101,520				12,047	0	0
Jun	2010	46,080				10,023	0	0
Jul	2010	56,880				8,020	0	0
Aug	2010	91,440				11,230	0	0
TOTAL		931,680				121,533	0.0	0

Annual Total Energy Cost = 121,533 $/year

Total KWH/yr x 0.003413 = 3,179.82 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,180 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 35 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.34 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Newman Elementary

FLOOR AREA: 64,350 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	73,140				8,743	0	0
Oct	2009	66,240				8,227	0	0
Nov	2009	58,240				7,400	0	0
Dec	2009	45,840				6,885	0	0
Jan	2010	43,040				6,895	0	0
Feb	2010	37,120				6,339	0	0
Mar	2010	44,800				6,339	0	0
Apr	2010	48,000				7,629	0	0
May	2010	55,840				8,567	0	0
Jun	2010	15,200				5,021	0	0
Jul	2010	18,640				3,841	0	0
Aug	2010	71,440				8,584	0	0
TOTAL		577,540				84,471	0.0	0

Annual Total Energy Cost = 84,471 $/year

Total KWH/yr x 0.003413 = 1,971.14 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 1,971 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 31 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.31 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Roosevelt Elementary

FLOOR AREA: 84,084 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	88,512				11,792	0	0
Oct	2009	77,760				10,046	0	0
Nov	2009	69,696				9,401	0	0
Dec	2009	52,416				7,470	0	0
Jan	2010	62,400				8,246	0	0
Feb	2010	70,080				9,096	0	0
Mar	2010	68,160				8,997	0	0
Apr	2010	85,248				11,092	0	0
May	2010	84,864				11,194	0	0
Jun	2010	71,040				9,741	0	0
Jul	2010	57,600				8,334	0	0
Aug	2010	103,296				13,127	0	0
TOTAL		891,072				118,537	0.0	0

Annual Total Energy Cost = 118,537 $/year

Total KWH/yr x 0.003413 = 3,041.23 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,041 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 36 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.41 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Ruiz Elementary

FLOOR AREA: 77,393 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	91,008				12,035	0	0
Oct	2009	80,640				10,279	0	0
Nov	2009	59,904				8,237	0	0
Dec	2009	51,072				7,285	0	0
Jan	2010	64,896				8,516	0	0
Feb	2010	62,592				8,392	0	0
Mar	2010	22,656				4,081	0	0
Apr	2010	62,208				8,540	0	0
May	2010	36,480				5,636	0	0
Jun	2010	23,424				4,076	0	0
Jul	2010	32,640				5,240	0	0
Aug	2010	67,200				8,901	0	0
TOTAL		654,720				91,217	0.0	0

Annual Total Energy Cost = 91,217 $/year

Total KWH/yr x 0.003413 = 2,234.56 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,235 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 29 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.18 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Cuellar Elementary

FLOOR AREA: 90,481 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	108,000				12,694	0	0
Oct	2009	94,320				11,597	0	0
Nov	2009	86,400				10,264	0	0
Dec	2009	62,640				8,155	0	0
Jan	2010	57,600				9,662	0	0
Feb	2010	65,520				8,941	0	0
Mar	2010	61,200				8,668	0	0
Apr	2010	82,800				10,508	0	0
May	2010	84,960				10,713	0	0
Jun	2010	42,480				7,227	0	0
Jul	2010	37,440				6,613	0	0
Aug	2010	77,040				10,080	0	0
TOTAL		860,400				115,121	0.0	0

Annual Total Energy Cost = 115,121 $/year

Total KWH/yr x 0.003413 = 2,936.55 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,937 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 32 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.27 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: R. Centeno Elementary

FLOOR AREA: 92,880 estimated

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	97,360				11,966	0	0
Oct	2009	89,440				10,761	0	0
Nov	2009	79,680				9,627	0	0
Dec	2009	59,760				7,933	0	0
Jan	2010	66,800				8,496	0	0
Feb	2010	72,240				8,945	0	0
Mar	2010	76,400				9,363	0	0
Apr	2010	93,600				11,477	0	0
May	2010	76,720				9,963	0	0
Jun	2010	52,560				7,114	0	0
Jul	2010	86,240				8,640	0	0
Aug	2010	114,960				13,080	0	0
TOTAL		965,760				117,365	0.0	0

Annual Total Energy Cost = 117,365 $/year

Total KWH/yr x 0.003413 = 3,296.14 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,296 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 35 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.26 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Guttierrez Elementary

FLOOR AREA: 76,460

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	90,300				10,933	0	0
Oct	2009	81,300				10,124	0	0
Nov	2009	77,100				9,281	0	0
Dec	2009	55,200				7,378	0	0
Jan	2010	54,600				7,385	0	0
Feb	2010	60,600				7,691	0	0
Mar	2010	58,200				7,614	0	0
Apr	2010	76,200				9,100	0	0
May	2010	86,100				10,298	0	0
Jun	2010	84,300				10,282	0	0
Jul	2010	53,700				7,789	0	0
Aug	2010	72,900				9,368	0	0
TOTAL		850,500				107,245	0.0	0

Annual Total Energy Cost = 107,245 $/year

Total KWH/yr x 0.003413 = 2,902.76 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,903 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 38 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.40 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Zaffirini Elementary

FLOOR AREA: 90,481

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	105,840				12,841	0	0
Oct	2009	97,200				11,735	0	0
Nov	2009	74,160				9,369	0	0
Dec	2009	70,560				9,616	0	0
Jan	2010	69,840				8,871	0	0
Feb	2010	65,520				8,549	0	0
Mar	2010	84,960				10,310	0	0
Apr	2010	96,480				12,048	0	0
May	2010	84,960				10,750	0	0
Jun	2010	70,560				9,560	0	0
Jul	2010	68,240				8,725	0	0
Aug	2010	118,080				13,625	0	0
TOTAL		1,006,400				125,998	0.0	0

Annual Total Energy Cost = 125,998 $/year

Total KWH/yr x 0.003413 = 3,434.84 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,435 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 38 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.39 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Fasken Elementary

FLOOR AREA: 92,880

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	126,336				14,685	0	0
Oct	2009	110,208				13,316	0	0
Nov	2009	78,528				9,900	0	0
Dec	2009	76,410				9,718	0	0
Jan	2010	69,312				9,644	0	0
Feb	2010	72,768				9,257	0	0
Mar	2010	77,184				9,622	0	0
Apr	2010	90,048				10,818	0	0
May	2010	105,600				13,024	0	0
Jun	2010	64,320				8,643	0	0
Jul	2010	53,376				7,531	0	0
Aug	2010	93,888				11,849	0	0
TOTAL		1,017,978				128,008	0.0	0

Annual Total Energy Cost = 128,008 $/year

Total KWH/yr x 0.003413 = 3,474.36 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,474 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 37 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.38 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Bonnie Garcia Elementary

FLOOR AREA: 92,880

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	108,400				13,142	0	0
Oct	2009	95,680				11,272	0	0
Nov	2009	70,720				9,120	0	0
Dec	2009	73,440				10,443	0	0
Jan	2010	66,800				9,803	0	0
Feb	2010	70,720				9,153	0	0
Mar	2010	80,720				10,060	0	0
Apr	2010	109,520				12,941	0	0
May	2010	64,880				9,272	0	0
Jun	2010	70,720				9,007	0	0
Jul	2010	80,640				10,036	0	0
Aug	2010	115,680				13,516	0	0
TOTAL		1,007,920				127,765	0.0	0

Annual Total Energy Cost = 127,765 $/year

Total KWH/yr x 0.003413 = 3,440.03 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,440 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 37 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.38 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Malakoff Elementary

FLOOR AREA: 92,880

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	103,680				12,571	0	0
Oct	2009	97,200				12,198	0	0
Nov	2009	83,520				10,248	0	0
Dec	2009	56,880				8,067	0	0
Jan	2010	66,960				9,315	0	0
Feb	2010	65,520				8,495	0	0
Mar	2010	67,680				8,768	0	0
Apr	2010	88,560				10,582	0	0
May	2010	102,240				12,316	0	0
Jun	2010	74,880				9,681	0	0
Jul	2010	81,360				9,959	0	0
Aug	2010	98,640				12,056	0	0
TOTAL		987,120				124,257	0.0	0

Annual Total Energy Cost = 124,257 $/year

Total KWH/yr x 0.003413 = 3,369.04 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,369 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 36 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.34 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Clark Elementary

FLOOR AREA: 73,000

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	131,712				15,575	0	0
Oct	2009	102,528				13,039	0	0
Nov	2009	93,120				12,276	0	0
Dec	2009	72,000				10,553	0	0
Jan	2010	84,672				11,068	0	0
Feb	2010	83,520				10,510	0	0
Mar	2010	81,792				10,683	0	0
Apr	2010	105,408				12,596	0	0
May	2010	101,184				13,186	0	0
Jun	2010	32,064				6,169	0	0
Jul	2010	69,888				9,537	0	0
Aug	2010	110,592				13,550	0	0
TOTAL		1,068,480				138,743	0.0	0

Annual Total Energy Cost = 138,743 $/year

Total KWH/yr x 0.003413 = 3,646.72 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,647 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 50 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.90 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

Gas

BUILDING: Finley Elementary

FLOOR AREA: 70,828

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	94,464				11,522	0	0
Oct	2009	84,672				10,768	0	0
Nov	2009	68,544				8,731	0	0
Dec	2009	43,776				6,646	0	0
Jan	2010	47,808				7,713	0	0
Feb	2010	51,264				7,190	0	0
Mar	2010	53,568				7,360	0	0
Apr	2010	63,936				8,232	0	0
May	2010	79,488				10,103	0	0
Jun	2010	46,080				6,789	0	0
Jul	2010	44,928				6,730	0	0
Aug	2010	70,848				9,404	0	0
TOTAL		749,376				101,189	0.0	0

Annual Total Energy Cost = 101,189 $/year

Total KWH/yr x 0.003413 = 2,557.62 MMBTU/year
Total MCF/yr x 1.03 = 0.00 MMBTU/year
Total Other x_____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 2,558 MMBTU/year

Energy Use Index:
Total site BTU's/Yr ÷ Total Area (SF) = 36 kBTU/SF/year

Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = 1.43 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Trautmann Elementary

FLOOR AREA: 69,308

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	99,840				12,741	0	0
Oct	2009	83,120				10,930	0	0
Nov	2009	76,320				10,202	0	0
Dec	2009	54,800				7,429	0	0
Jan	2010	72,000				10,082	0	0
Feb	2010	70,240				9,454	0	0
Mar	2010	75,760				9,998	0	0
Apr	2010	77,920				10,309	0	0
May	2010	79,600				10,632	0	0
Jun	2010	48,000				6,861	0	0
Jul	2010	66,880				8,861	0	0
Aug	2010	75,520				10,388	0	0
TOTAL		880,000				117,887	0.0	0

Annual Total Energy Cost = 117,887 $/year

Total KWH/yr x 0.003413 = 3,003.44 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,003 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 43 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.70 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: United HS New

FLOOR AREA: 437,349

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	481,800				56,543	0	0
Oct	2009	463,800				52,725	0	0
Nov	2009	310,200				40,239	0	0
Dec	2009	302,400				38,013	0	0
Jan	2010	346,800				40,900	0	0
Feb	2010	310,200				40,918	0	0
Mar	2010	355,200				45,774	0	0
Apr	2010	474,600				57,379	0	0
May	2010	393,000				49,183	0	0
Jun	2010	372,000				46,243	0	0
Jul	2010	373,200				46,553	0	0
Aug	2010	579,600				65,526	0	0
TOTAL		4,762,800				579,994	0.0	0

Annual Total Energy Cost = 579,994 $/year

Total KWH/yr x 0.003413 = 16,255.44 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 16,255 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 37 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.33 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: S. Benavides Elementary

FLOOR AREA: 92,880

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	118,080				13,923	0	0
Oct	2009	115,920				13,836	0	0
Nov	2009	82,800				11,308	0	0
Dec	2009	59,040				8,169	0	0
Jan	2010	76,320				10,277	0	0
Feb	2010	82,800				10,081	0	0
Mar	2010	74,160				9,488	0	0
Apr	2010	102,240				11,962	0	0
May	2010	102,960				12,399	0	0
Jun	2010	58,320				8,209	0	0
Jul	2010	62,640				8,376	0	0
Aug	2010	101,520				12,449	0	0
TOTAL		1,036,800				130,478	0.0	0

Annual Total Energy Cost = 130,478 $/year

Total KWH/yr x 0.003413 = 3,538.60 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,539 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 38 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.40 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Salinas Elementary

FLOOR AREA: 61,372

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	84,480				11,028	0	0
Oct	2009	74,880				9,695	0	0
Nov	2009	60,672				8,268	0	0
Dec	2009	51,456				7,990	0	0
Jan	2010	64,128				8,849	0	0
Feb	2010	61,056				8,633	0	0
Mar	2010	71,424				9,404	0	0
Apr	2010	86,400				11,043	0	0
May	2010	77,952				10,176	0	0
Jun	2010	54,912				7,713	0	0
Jul	2010	47,232				6,829	0	0
Aug	2010	102,144				12,789	0	0
TOTAL		836,736				112,417	0.0	0

Annual Total Energy Cost = 112,417 $/year

Total KWH/yr x 0.003413 = 2,855.78 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,856 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 47 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.83 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: DD Hachar Elementary

FLOOR AREA: 74,499

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	84,288				10,084	0	0
Oct	2009	72,000				8,777	0	0
Nov	2009	66,432				8,681	0	0
Dec	2009	62,784				8,812	0	0
Jan	2010	66,240				8,627	0	0
Feb	2010	68,352				9,159	0	0
Mar	2010	54,336				7,333	0	0
Apr	2010	45,696				6,680	0	0
May	2010	35,712				5,684	0	0
Jun	2010	25,728				4,782	0	0
Jul	2010	34,752				5,516	0	0
Aug	2010	56,448				7,300	0	0
TOTAL		672,768				91,435	0.0	0

Annual Total Energy Cost = 91,435 $/year

Total KWH/yr x 0.003413 = 2,296.16 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,296 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 31 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.23 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Alexander HS

FLOOR AREA: 293,497

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	405,840				50,359	0	0
Oct	2009	423,648				52,210	0	0
Nov	2009	334,320				44,655	0	0
Dec	2009	219,888				35,527	0	0
Jan	2010	265,344				35,355	0	0
Feb	2010	263,472				38,945	0	0
Mar	2010	277,296				38,046	0	0
Apr	2010	316,224				41,393	0	0
May	2010	360,864				43,885	0	0
Jun	2010	290,688				34,977	0	0
Jul	2010	265,536				40,392	0	0
Aug	2010	417,984				52,359	0	0
TOTAL		3,841,104				508,103	0.0	0

Annual Total Energy Cost = 508,103 $/year

Total KWH/yr x 0.003413 = 13,109.69 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 13,110 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 45 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.73 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Perez Elementary

FLOOR AREA: 72,253

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	98,880				11,924	0	0
Oct	2009	85,440				10,496	0	0
Nov	2009	70,080				8,784	0	0
Dec	2009	61,440				9,048	0	0
Jan	2010	64,320				8,343	0	0
Feb	2010	69,120				8,723	0	0
Mar	2010	66,240				8,459	0	0
Apr	2010	86,400				10,488	0	0
May	2010	89,260				10,556	0	0
Jun	2010	69,120				8,770	0	0
Jul	2010	68,160				8,748	0	0
Aug	2010	108,480				12,534	0	0
TOTAL		936,940				116,873	0.0	0

Annual Total Energy Cost = 116,873 $/year

Total KWH/yr x 0.003413 = 3,197.78 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,198 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 44 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.62 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Killam Elementary

FLOOR AREA: 92,880

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	97,536				11,903	0	0
Oct	2009	81,216				9,772	0	0
Nov	2009	62,784				8,179	0	0
Dec	2009	65,472				8,601	0	0
Jan	2010	63,552				8,141	0	0
Feb	2010	66,624				9,492	0	0
Mar	2010	78,912				9,481	0	0
Apr	2010	104,448				12,148	0	0
May	2010	88,128				10,711	0	0
Jun	2010	80,832				10,036	0	0
Jul	2010	85,248				10,405	0	0
Aug	2010	105,984				12,478	0	0
TOTAL		980,736				121,344	0.0	0

Annual Total Energy Cost = 121,344 $/year

Total KWH/yr x 0.003413 = 3,347.25 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,347 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 36 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.31 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: United South Middle School

FLOOR AREA: 103,684

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	141,120				16,532	0	0
Oct	2009	106,560				12,569	0	0
Nov	2009	99,360				12,070	0	0
Dec	2009	90,000				11,142	0	0
Jan	2010	102,960				12,196	0	0
Feb	2010	97,200				11,784	0	0
Mar	2010	105,840				12,539	0	0
Apr	2010	130,320				15,134	0	0
May	2010	128,160				14,835	0	0
Jun	2010	113,040				13,119	0	0
Jul	2010	107,280				12,653	0	0
Aug	2010	153,360				17,296	0	0
TOTAL		1,375,200				161,869	0.0	0

Annual Total Energy Cost = 161,869 $/year

Total KWH/yr x 0.003413 = 4,693.56 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 4,694 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 45 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.56 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: United Middle School

FLOOR AREA: 184,827

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	270,000				32,173	0	0
Oct	2009	249,000				30,781	0	0
Nov	2009	192,000				24,789	0	0
Dec	2009	148,800				19,812	0	0
Jan	2010	171,600				21,274	0	0
Feb	2010	179,400				23,374	0	0
Mar	2010	174,600				22,986	0	0
Apr	2010	211,200				26,091	0	0
May	2010	249,000				29,657	0	0
Jun	2010	148,200				20,813	0	0
Jul	2010	164,400				22,122	0	0
Aug	2010	280,200				33,556	0	0
TOTAL		2,438,400				307,428	0.0	0

Annual Total Energy Cost = 307,428 $/year

Total KWH/yr x 0.003413 = 8,322.26 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 8,322 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 45 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.66 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: S. Garcia Middle School

FLOOR AREA: 92,100

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	125,280				15,867	0	0
Oct	2009	105,840				13,465	0	0
Nov	2009	92,880				11,875	0	0
Dec	2009	69,840				9,578	0	0
Jan	2010	78,480				10,077	0	0
Feb	2010	87,840				11,111	0	0
Mar	2010	89,280				11,461	0	0
Apr	2010	110,880				14,133	0	0
May	2010	111,600				14,154	0	0
Jun	2010	118,800				14,960	0	0
Jul	2010	118,080				14,500	0	0
Aug	2010	119,520				15,304	0	0
TOTAL		1,228,320				156,485	0.0	0

Annual Total Energy Cost = 156,485 $/year

Total KWH/yr x 0.003413 = 4,192.26 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 4,192 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 46 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.70 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Clark Middle School

FLOOR AREA: 104,008

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	129,488				14,511	0	0
Oct	2009	91,968				11,266	0	0
Nov	2009	73,328				9,719	0	0
Dec	2009	45,352				7,334	0	0
Jan	2010	76,736				9,288	0	0
Feb	2010	65,368				8,507	0	0
Mar	2010	69,000				8,650	0	0
Apr	2010	85,328				10,251	0	0
May	2010	100,760				11,814	0	0
Jun	2010	115,448				5,789	0	0
Jul	2010	36,852				6,016	0	0
Aug	2010	116,094				12,791	0	0
TOTAL		1,005,722				115,937	0.0	0

Annual Total Energy Cost = 115,937 $/year

Total KWH/yr x 0.003413 = 3,432.53 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,433 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 33 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.11 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Washington Middle School

FLOOR AREA: 92,100

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	150,480				17,518	0	0
Oct	2009	128,160				14,920	0	0
Nov	2009	109,440				12,858	0	0
Dec	2009	118,800				13,373	0	0
Jan	2010	63,360				9,110	0	0
Feb	2010	94,320				11,437	0	0
Mar	2010	100,800				12,029	0	0
Apr	2010	119,520				14,130	0	0
May	2010	132,480				15,421	0	0
Jun	2010	132,480				15,269	0	0
Jul	2010	106,560				12,585	0	0
Aug	2010	113,760				14,122	0	0
TOTAL		1,370,160				162,772	0.0	0

Annual Total Energy Cost = 162,772 $/year

Total KWH/yr x 0.003413 = 4,676.36 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 4,676 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 51 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.77 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Los Obispos Middle School

FLOOR AREA: 92,100

		ELECTRICAL				NATURAL GAS / FUEL		
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	128,880				16,274	0	0
Oct	2009	120,240				15,140	0	0
Nov	2009	110,160				14,062	0	0
Dec	2009	87,120				11,338	0	0
Jan	2010	85,680				10,962	0	0
Feb	2010	92,880				11,763	0	0
Mar	2010	93,600				11,883	0	0
Apr	2010	110,880				13,990	0	0
May	2010	93,600				12,240	0	0
Jun	2010	79,200				10,264	0	0
Jul	2010	74,180				9,898	0	0
Aug	2010	134,640				16,780	0	0
TOTAL		1,211,060				154,596	0.0	0

Annual Total Energy Cost = 154,596 $/year

Total KWH/yr x 0.003413 = 4,133.35 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 4,133 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 45 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.68 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: Trautmann Middle School

FLOOR AREA: 92,100

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	142,560				16,259	0	0
Oct	2009	125,280				14,746	0	0
Nov	2009	111,600				13,080	0	0
Dec	2009	75,600				11,726	0	0
Jan	2010	92,880				13,036	0	0
Feb	2010	87,840				13,415	0	0
Mar	2010	84,960				13,181	0	0
Apr	2010	123,840				16,328	0	0
May	2010	128,160				16,678	0	0
Jun	2010	66,240				11,632	0	0
Jul	2010	56,160				10,817	0	0
Aug	2010	120,960				15,942	0	0
TOTAL		1,216,080				166,840	0.0	0

Annual Total Energy Cost = 166,840 $/year

Total KWH/yr x 0.003413 = 4,150.48 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 4,150 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 45 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.81 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: SAC Stadium/Gonzalez Middle School

FLOOR AREA: 101,260

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	118,080				13,923	0	0
Oct	2009	115,920				13,836	0	0
Nov	2009	82,800				11,308	0	0
Dec	2009	59,040				8,169	0	0
Jan	2010	76,320				10,277	0	0
Feb	2010	82,800				10,081	0	0
Mar	2010	74,160				9,488	0	0
Apr	2010	102,240				11,962	0	0
May	2010	102,960				12,399	0	0
Jun	2010	58,320				8,209	0	0
Jul	2010	62,640				8,376	0	0
Aug	2010	101,520				12,449	0	0
TOTAL		1,036,800				130,478	0.0	0

Annual Total Energy Cost = 130,478 $/year

Total KWH/yr x 0.003413 = 3,538.60 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,539 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 35 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.29 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: L. B. Vergara Middle School

FLOOR AREA: 97,117

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	112,320				14,311	0	0
Oct	2009	101,520				12,630	0	0
Nov	2009	85,680				11,113	0	0
Dec	2009	66,240				9,553	0	0
Jan	2010	82,800				10,721	0	0
Feb	2010	79,200				10,530	0	0
Mar	2010	85,680				11,479	0	0
Apr	2010	109,440				13,910	0	0
May	2010	111,600				13,867	0	0
Jun	2010	91,440				11,923	0	0
Jul	2010	64,800				9,705	0	0
Aug	2010	131,760				15,919	0	0
TOTAL		1,122,480				145,661	0.0	0

Annual Total Energy Cost = 145,661 $/year

Total KWH/yr x 0.003413 = 3,831.02 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,831 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 39 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.50 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: United HS 9th/De Llano Elementary

FLOOR AREA: 299,499

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	436,200				52,938	0	0
Oct	2009	363,600				46,710	0	0
Nov	2009	289,800				40,734	0	0
Dec	2009	180,000				28,851	0	0
Jan	2010	189,000				29,133	0	0
Feb	2010	207,600				32,259	0	0
Mar	2010	204,000				31,968	0	0
Apr	2010	299,400				39,678	0	0
May	2010	321,000				40,887	0	0
Jun	2010	264,600				34,653	0	0
Jul	2010	366,864				37,466	0	0
Aug	2010	712,416				43,521	0	0
TOTAL		3,834,480				458,800	0.0	0

Annual Total Energy Cost = 458,800 $/year

Total KWH/yr x 0.003413 = 13,087.08 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 13,087 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 44 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.53 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: LBJ HS

FLOOR AREA: 293,407

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	412,656				52,415	0	0
Oct	2009	363,936				47,860	0	0
Nov	2009	329,184				44,509	0	0
Dec	2009	248,928				38,196	0	0
Jan	2010	288,384				39,919	0	0
Feb	2010	273,360				39,059	0	0
Mar	2010	279,168				39,224	0	0
Apr	2010	370,416				47,444	0	0
May	2010	394,032				49,139	0	0
Jun	2010	275,856				37,903	0	0
Jul	2010	366,864				47,887	0	0
Aug	2010	712,416				74,724	0	0
TOTAL		4,315,200				558,280	0.0	0

Annual Total Energy Cost = 558,280 $/year

Total KWH/yr x 0.003413 = 14,727.78 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 14,728 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 50 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.90 $/SF/year

Electric Utility: AEP & Just Energy

Gas Utility: N/A

District: United ISD

ACCOUNT# _____ Electric

_____ Gas

BUILDING: United South HS

FLOOR AREA: 309,611

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
Sep	2009	481,800				56,543	0	0
Oct	2009	463,800				52,725	0	0
Nov	2009	310,200				40,239	0	0
Dec	2009	302,400				38,013	0	0
Jan	2010	346,800				40,900	0	0
Feb	2010	310,200				40,918	0	0
Mar	2010	355,200				45,774	0	0
Apr	2010	474,600				57,379	0	0
May	2010	393,000				49,183	0	0
Jun	2010	372,000				46,243	0	0
Jul	2010	373,200				46,553	0	0
Aug	2010	579,600				65,526	0	0
TOTAL		4,762,800				579,994	0.0	0

Annual Total Energy Cost = 579,994 $/year

Total KWH/yr x 0.003413 = 16,255.44 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 16,255 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 53 kBTU/SF/year

Energy Cost Index:

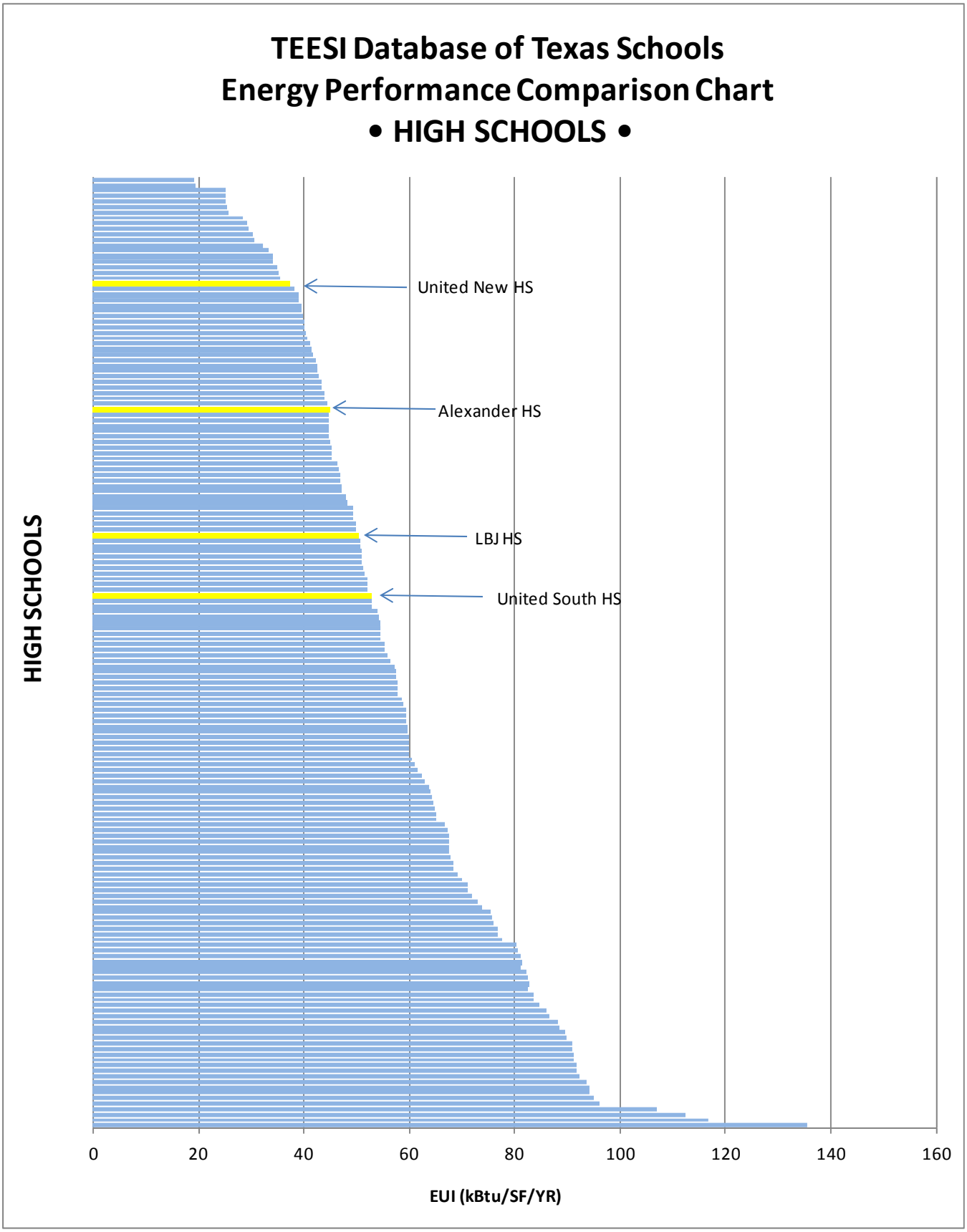
Total Energy Cost/Yr ÷ Total Area (SF) = 1.87 $/SF/year

Electric Utility: AEP & Just Energy

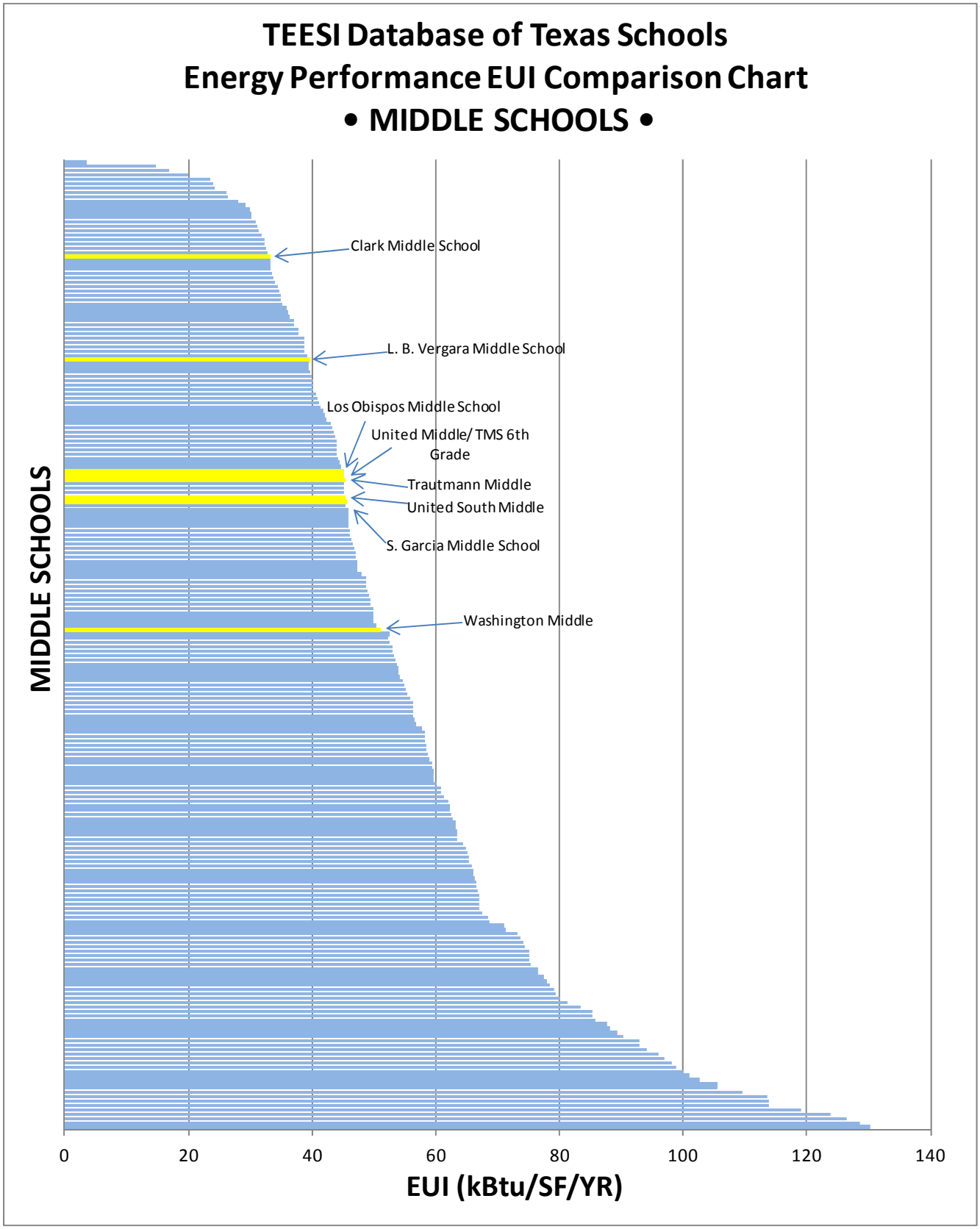
Gas Utility: N/A

APPENDIX D

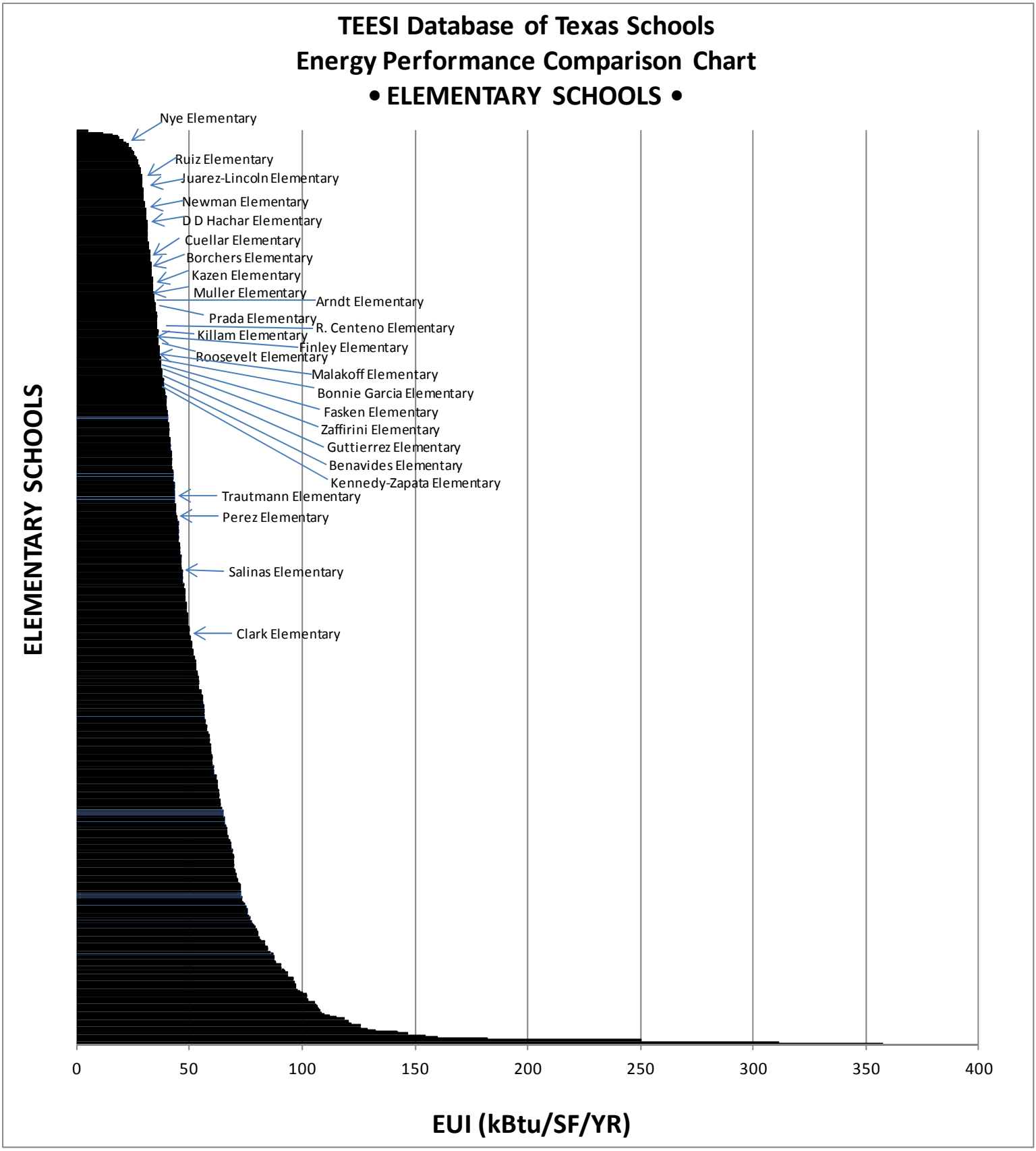
ENERGY PERFORMANCE COMPARISON CHARTS



(The chart above is a comparison of EUIs based on sample data from TEESI's database of Texas Schools)



(The chart above is a comparison of EUIs based on sample data from TEESI's database of Texas Schools)



(The chart above is a comparison of EUIs based on sample data from TEESI's database of Texas Schools)

APPENDIX E

TYPICAL EQUIPMENT MAINTENANCE CHECKLISTS

Chillers Checklist

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Semi-Annually	Annually
Chiller use/sequencing	Turn off/sequence unnecessary chillers	X			
Overall visual inspection	Complete overall visual inspection to be sure all equipment is operating and safety systems are in place	X			
Check setpoints	Check all setpoints for proper setting and function	X			
Evaporator and condenser coil fouling	Assess evaporator and condenser coil fouling as required		X		
Compressor motor temperature	Check temperature per manufacturer's specifications		X		
Perform water quality test	Check water quality for proper chemical balance		X		
Leak testing	Conduct leak testing on all compressor fittings, oil pump joints and fittings, and relief valves		X		
Check all insulation	Check insulation for condition and appropriateness		X		
Control operation	Verify proper control function including: • Hot gas bypass • Liquid injection		X		
Check vane control settings	Check settings per manufacturer's specification			X	
Verify motor load limit control	Check settings per manufacturer's specification			X	
Verify load balance operation	Check settings per manufacturer's specification			X	
Check chilled water reset settings and function	Check settings per manufacturer's specification			X	
Check chiller lockout setpoint	Check settings per manufacturer's specification				X
Clean condenser tubes	Clean tubes at least annually as part of shutdown procedure				X

Building Controls Checklist

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Semi-Annually	Annually
Overall visual inspection	Complete overall visual inspection to be sure all equipment is operating and safety systems are in place	X			
Verify control schedules	Verify in control software that schedules are accurate for season, occupancy, etc.	X			
Verify setpoints	Verify in control software that setpoints are accurate for season, occupancy, etc.	X			
Time clocks	Reset after every power outage	X			
Check all gauges	Check all gauges to make sure readings are as expected		X		
Control tubing (pneumatic system)	Check all control tubing for leaks		X		
Check outside air volumes	Calculated the amount of outside air introduced and compare to requirements		X		
Check setpoints	Check setpoints and review rational for setting		X		
Check schedules	Check schedules and review rational for setting		X		
Check deadbands	Assure that all deadbands are accurate and the only simultaneous heating and cooling is by design		X		
Check sensors	Conduct thorough check of all sensors - temperature, pressure, humidity, flow, etc. - for expected values			X	
Time clocks	Check for accuracy and clean			X	
Calibrate sensors	Calibrate all sensors: temperature, pressure, humidity, flow, etc.				X

Pumps Checklist

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Monthly	Annually
Pump use/sequencing	Turn off/sequence unnecessary pumps	X			
Overall visual inspection	Complete overall visual inspection to be sure all equipment is operating and safety systems are in place	X			
Check lubrication	Assure that all bearings are lubricated per the manufacture's recommendation			X	
Check packing	Check packing for wear and repack as necessary. Consider replacing packing with mechanical seals.			X	
Motor/pump alignment	Aligning the pump/motor coupling allows for efficient torque transfer to the pump			X	
Check mountings	Check and secure all pump mountings			X	
Check bearings	Inspect bearings and drive belts for wear. Adjust, repair, or replace as necessary.				X
Motor condition	Checking the condition of the motor through temperature or vibration analysis assures long life				X

Fans Checklist

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Monthly	Annually
System use/sequencing	Turn off/sequence unnecessary equipment	X			
Overall visual inspection	Complete overall visual inspection to be sure all equipment is operating and safety systems are in place	X			
Observe belts	Verify proper belt tension and alignment			X	
Inspect pulley wheels	Clean and lubricate where required			X	
Inspect dampers	Confirm proper and complete closure control; outside air dampers should be airtight when closed			X	
Observe actuator/linkage control	Verify operation, clean, lubricate, adjust as needed			X	
Check fan blades	Validate proper rotation and clean when necessary			X	
Filters	Check for gaps, replace when dirty - monthly			X	
Check for air quality anomalies	Inspect for moisture/growth on walls, ceilings, carpets, and in/outside of duct-work. Check for musty smells and listen to complaints.			X	
Check wiring	Verify all electrical connections are tight				X
Inspect ductwork	Check and refasten loose connections, repair all leaks				X
Coils	Confirm that filters have kept clean, clean as necessary				X
Insulation	Inspect, repair, replace all compromised duct insulation				X

APPENDIX F

LOANSTAR INFORMATION

Texas LoanSTAR Program

FACTS ABOUT LoanSTAR

The State of Texas LoanSTAR (Saving Taxes and Resources) Program finances energy efficient facility up-grades for state agencies, public schools, institutions of higher education, local governments, municipalities, and hospitals. The program's revolving loan mechanism allows participants to borrow money and repay all project costs through the stream of **cost savings** produced.

ELIGIBLE PROJECTS

Up-grades financed through the program include, but are not limited to, (1) energy efficient lighting systems; (2) high efficiency heating, ventilation and air conditioning systems; (3) energy management systems; (4) boiler efficiency improvements; (5) energy recovery systems; (6) building shell improvements; and (7) load management projects. The prospective borrower hires a Professional Engineer to analyze the potential energy efficient projects that will be submitted for funding through the Loan STAR Program. All engineering costs are covered under the program.

PROGRAM REQUIREMENTS

Once the projects are analyzed and the prospective borrower agrees with the recommended projects, the engineer prepares an Energy Assessment Report (EAR) with the project descriptions and calculations. The EAR must be prepared according to the LoanSTAR Technical Guidelines. The EAR is reviewed and approved by the State Energy Conservation Office (SECO) technical staff before project financing is authorized. Projects financed by LoanSTAR must have an average simple payback of ten years or less. Borrowers do, however, have the option of buying down paybacks to meet the composite ten-year limit.

To ensure up-grade projects are designed and constructed according to the EAR, SECO performs a review of the design documents at the 50% and 100% completion phases. On-site construction monitoring is also performed at the 50% and 100% completion phases.

SAVINGS VERIFICATION

To ensure that the Borrower is achieving the estimated energy savings, monitoring and verification is required for all LoanSTAR funded projects. The level of monitoring and verifications may range from utility bill analysis to individual system or whole building metering depending on the size and type of retrofit projects. If whole building metering is required, metering and monitoring cost can be rolled into the loan.

For additional information regarding the
LoanSTAR program, please contact:

Eddy Trevino
SECO, LoanSTAR Program Manager
(512) 463-1876

APPENDIX G

BUILDING COMMISSIONING INFORMATION

BUILDING COMMISSIONING GENERAL INFORMATION

Commissioning is common in all types of building systems, including heating, ventilating, and air-conditioning (HVAC), lighting, electric, and safety controls such as fire protection and security.

Commissioning is available in many forms, the first of which is new construction commissioning. This type aims to construct a facility that obtains the performance and operation requirements of its occupants and owner, and begins during the pre-design portion of the project. If it is comprehensive commissioning, the process starts with the criteria for the facility's functionality, and constantly verifies this in all parts of the facility's creation, including design, construction, and building operation. Construction phase commissioning occurs when the Owner does not include commissioning requirements in the original design, and begins when construction is already underway.

The second form is existing building commissioning, which is identified by two types. Retro-commissioning involves buildings that have never before been commissioned, and involves documenting methods to improve the building's systems and reach the original design intentions. It is an involved process starting with obtaining utility bills, talking to the building's occupants, performing diagnostic tests on the building, and preparing the information for the owner. The second type is re-commissioning, which is different from retro-commissioning in that the building's systems have previously had commissioning performed at some point, whether in the design or construction phases. However, it is similar to retro-commissioning because it arises from system performance problems or inadequacies.

A more specific form of HVAC systems commissioning for existing building is Continuous Commissioning® (CC®). Unlike the other forms, Continuous Commissioning ensures the optimization of HVAC systems for the building's existing conditions. It also works to improve the building air quality, increase comfort levels, and resolve any operating problems. When implemented, Continuous Commissioning can decrease energy usage by 20% on average[1]. It is a joint effort between the commissioning engineers and the facility staff, and is an ongoing process that continues to both commission the building as well as train the facility staff.

All of these forms of commissioning can be used to meet several of the requirements under the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system. The LEED rating system considers building commissioning to be an essential step towards sustainability. This is evident by the fact that many of the LEED rating systems (LEED-EB, LEED-NC, etc) require building commissioning as a pre-requisite.

The scope of commissioning can involve a wide range of building systems, selectable by the building owner. Mechanical systems including HVAC systems, plumbing, piping, boilers, heaters, and valves can be commissioned. Electrical systems such as lighting, transformers, and lighting control is often included, as well as other systems like fire safety, security, and standby power systems.

The costs of commissioning to the owner vary between forms, as well as from building to building. The cost per square foot (SF) of the facility to be commissioned may vary from

[1] *Continuous Commissioning Guidebook for Federal Energy Managers* (Energy Systems Laboratory at Texas A&M University)

$.40/SF to $2.00/SF. However, for typical new construction or renovation projects, the following lists the commissioning costs as percentages of each system cost.

- 2% to 3% of mechanical cost for Mechanical Systems (HVAC and controls)[2]
- 1% to 2% of electrical cost for Electrical Systems[3]
- 0.5% to 1.5% of construction cost for HVAC, controls, and light electrical

There are many benefits to commissioning for the designer, the building's owner, and its occupants.

- HVAC systems simultaneously operate adequately, resulting in less expense during construction and after occupancy. Satisfied occupants also lead to increased productivity.
- Commissioning reviews decrease errors in the design phase, which ultimately reduces callbacks for the engineer.
- More efficient scheduling and design coordination reduce construction errors for the contractor, and thus reduces cost and keeps the project on schedule.
- Documentation helps prevent assumptions made during design, which reduces unnecessary expenditures.

Selecting a commissioning service provider is a vital step in the process. First, the provider should be a certified commissioning professional by an industry accepted certification body (see sample certification bodies below). Next, the owner makes a formal request of the provider's qualifications in commissioning. An independent, third party commissioning provider is mostly recommended because they can objectively perform the work using practical experience. Other requirements for the provider include documentation, communication, and organization skills. This ensures the commissioning process is performed effectively. In addition, the earlier the commissioning authority can be implemented into the facility's construction or design, the more effective the process will be.

END

[2] Wilkison, R. (2000) Establishing Commissioning Fees, ASHRAE Journal 42 (4): 41-47
[3] PECI, 2000. The National Conference of Building Commissioning Proceedings, Portland Energy Conservation Inc. OR.

APPENDIX H

REQUEST FOR ENERGY ASSISTANCE

SECO
State Energy Conservation Office

Public Schools, Colleges and Non-Profit Hospitals

Preliminary Energy Assessment
Service Agreement

Investing in our public schools, colleges and non-profit hospitals through improved energy efficiency in public buildings is a win-win opportunity for our communities and the state. Energy-efficient buildings reduce energy costs, increase available capital, spur economic growth, and improve working and living environments. The Preliminary Energy Assessment Service provides a viable strategy to achieve these goals.

Description of the Service

The State Energy Conservation Office (SECO) will analyze electric, gas and other utility data and work with United ISD., hereinafter referred to as Partner, to identify energy cost-savings potential. To achieve this potential, SECO and Partner have agreed to work together to complete an energy assessment of mutually selected facilities.

SECO agrees to provide this service at no cost to the Partner with the understanding that the Partner is ready and willing to consider implementing the energy savings recommendations.

Principles of the Agreement

Specific responsibilities of the Partner and SECO in this agreement are listed below.

- ✓ Partner will select a contact person to work with SECO and its designated contractor to establish an Energy Policy and set realistic energy efficiency goals.
- ✓ SECO's contractor will go on site to provide walk through assessments of selected facilities. SECO will provide a report which identifies no cost/low cost recommendations, Capital Retrofit Projects, and potential sources of funding. Portions of this report may be posted on the SECO website.
- ✓ Partner will schedule a time for SECO's contractor to make a presentation of the assessment findings key decision makers.

Acceptance of Agreement

This agreement should be signed by your organization's chief executive officer or other upper management staff.

Signature: _____ Date: 6-2-11

Name (Mr./Ms./Dr.) Cesar O. Trevino Title: Director of Energy.

Organization: United ISD. Phone: (956) 473-7930

Street Address: 3501 E. Saunders. Fax: (956) 473-7997

Mailing Address: 78041 E-Mail: ctrevino@uisd.net.

Same as above County: Webb.

Contact Information:

Name (Mr./Ms./Dr.): _____ Title: _____

Phone: _____ Fax: _____

E-Mail: _____ County: _____

Please sign and mail or fax to: (A) Stephen Ross, **Schools and Education** Program Administrator, State Energy Conservation Office, 111 E. 17th Street, Austin, Texas 78774. Phone: 512-463-1770. **Fax 512-475-2569. OR** (B) Saleem Khan, Texas Energy Engineering Services, Inc. 1301 Capital of TX HWY, B-325, Austin, TX 78746. **FAX 512-328-2533**