Susan Combs
Texas Comptroller of Public Accounts

Facility Preliminary Energy Assessments and Recommendations

Edcouch Elsa ISD

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SECO
State Energy Conservation Office

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1.0 EXECUTIVE SUMMARY

Edcouch-Elsa 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 building energy retrofit projects identified in this preliminary analysis are summarized below. Individual building projects are summarized in Section 7.0 of this report.

Implementation Cost Estimate:	$1,502,100
Annual Energy Cost Savings:	$179,700
Simple Payback:	8.4

Recommendations and information of interest to the District are provided in this report regarding Energy Consumption and Performance (Section 3.0), Energy Accounting (Section 4.0), Energy Legislation Overview (Section 5.0), Recommended Maintenance & Operation Procedures (Section 6.0), Retrofit Opportunities (Section 7.0), Capital Improvement Projects (Section 8.0), Energy Management Policy (Section 9.0), and Funding Options for Capital Energy Projects (Section 10.0). 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 / Ms. Juline Ferris	TEESI / Saleem Khan
(512) 936-9283	(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.

Group 1: High School

Buildings:	High School
Stories:	Single story buildings
Area:	183,890 SF
Bldg. Components:	Brick buildings, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Air-cooled chiller, chilled water system and gas boiler heating, Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 2: Truan Junior High School

Buildings:	Truan Junior High School
Stories:	Single story building
Area:	126,564 SF
Bldg. Components:	Brick building, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 3: Ybarra Middle School

Buildings:	Ybarra Main, New Addition
Stories:	Single story building
Area:	109,652 SF
Bldg. Components:	Ybarra Main – Masonry walls, pitched metal roof, slab on grade New Addition – Tilt wall, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX units
Controls:	Standard thermostats

Group 4: Santiago Garcia Elementary

Buildings:	Garcia Main, Daycare center for Teen Mothers
Stories:	Single story building
Area:	86,438 SF
Bldg. Components:	Garcia Main – Brick building, flat built-up roof, slab on grade Daycare center for Teen Mothers – Wood siding, pitched asphalt shingle roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Garcia Main – Packaged rooftop units (RTUs), Split-DX units Daycare center for Teen Mothers – Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 5: Ruben C. Rodriguez (RCR) Elementary

Buildings:	RCR Main, RCR Classrooms
Stories:	Single story building
Area:	82,345 SF
Bldg. Components:	RCR Main – Brick building, flat built-up roof, slab on grade RCR Classrooms – Brick building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	RCR Main – Packaged rooftop units (RTUs), Split-DX units RCR Classrooms – Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 6: John F. Kennedy Jr. (JFK) Elementary

Buildings:	JFK
Stories:	Single story building
Area:	87,619 SF
Bldg. Components:	Brick building, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Packaged rooftop units (RTUs), Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 7: Lyndon B. Johnson (LBJ) Elementary

Buildings:	LBJ Main, New Addition
Stories:	Single story building
Area:	85,977 SF
Bldg. Components:	Brick building, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	LBJ Main – Split-DX units New Addition – Air-cooled chiller, chilled water system and gas boiler heating
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 8: SAIL Facility

Buildings:	SAIL
Stories:	Single story building
Area:	17,131 SF
Bldg. Components:	Brick building, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Packaged rooftop units (RTUs)
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 9: Early Childhood Center (ECC)

Buildings:	ECC
Stories:	Single story building
Area:	76,215 SF
Bldg. Components:	Brick building, pitched asphalt shingle roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 10: Administration

Buildings:	Administration
Stories:	Single story building
Area:	10,250 SF
Bldg. Components:	Brick building, pitched clay tile roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

Group 11: Performing Arts

Buildings:	Performing Arts
Stories:	Single story buildings
Area:	32,602 SF
Bldg. Components:	Metal and glass facade, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Air-cooled chiller, chilled water system
Controls:	Standard Thermostats

Group 12: HS Technology

Buildings:	HS Technology
Stories:	Single story building
Area:	25,830 SF
Bldg. Components:	Masonry walls, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX units
Controls:	Standard thermostats

Group 13: HS Old Field House

Buildings:	Old Field House
Stories:	Single story buildings
Area:	13,230 SF
Bldg. Components:	Brick buildings, flat built-up roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX units
Controls:	Energy Management System (EMS), Manufacturer: Tour Andover Controls (TAC)

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 942,000 square feet.

Annual electric and gas invoices for the buildings surveyed were $1,554,642 for the 12-month period ending February 2010. 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 as thousand BTU's 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 performance for selected facilities are listed below:

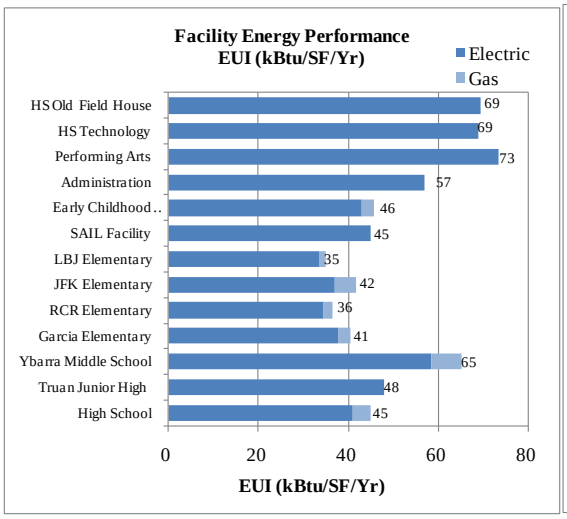
Energy Cost and Consumption Benchmarks

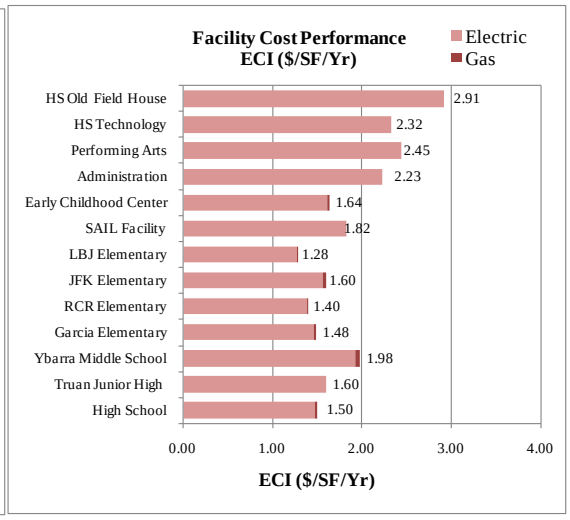
		Electric			Natural Gas			Total	Total	EUI	ECI	
	Building	KWH/Yr	MMBTU/Yr	$Cost/Yr	MCF/Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF*
1	High School	2,212,918	7,553	270,853	706	727	5,276	276,129	8,280	45	1.50	184,000
2	Truan Junior High	1,784,700	6,091	202,728	0	0	0	202,728	6,091	48	1.60	127,000
3	Ybarra Middle School	1,887,840	6,443	211,706	709	730	5,701	217,407	7,174	65	1.98	110,000
4	Garcia Elementary	964,840	3,293	126,985	233	240	2,180	129,165	3,533	41	1.48	87,000
5	RCR Elementary	836,928	2,856	114,938	160	165	1,416	116,354	3,022	36	1.40	83,000
6	JFK Elementary	956,412	3,264	137,713	405	417	3,409	141,122	3,682	42	1.60	88,000
7	LBJ Elementary	844,992	2,884	108,815	125	128	1,260	110,076	3,012	35	1.28	86,000
8	SAIL Facility	224,480	766	30,938	0	0	0	30,938	766	45	1.82	17,000
9	Early Childhood Center	957,768	3,269	122,566	207	214	1,710	124,276	3,482	46	1.64	76,000
10	Administration	183,560	626	24,548	0	0	0	24,548	626	57	2.23	11,000
11	Performing Arts	710,640	2,425	80,695	0	0	0	80,695	2,425	73	2.45	33,000
12	HS Technology	524,880	1,791	60,436	0	0	0	60,436	1,791	69	2.32	26,000
13	HS Old Field House	284,720	972	40,768	0	0	0	40,768	972	69	2.91	14,000
		KWH/Yr	MMBTU/Yr	$Cost/Yr	MCF/Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
		12,374,678	42,235	1,533,690	2,546	2,623	20,952	1,554,642	44,858	48	1.65	942,000

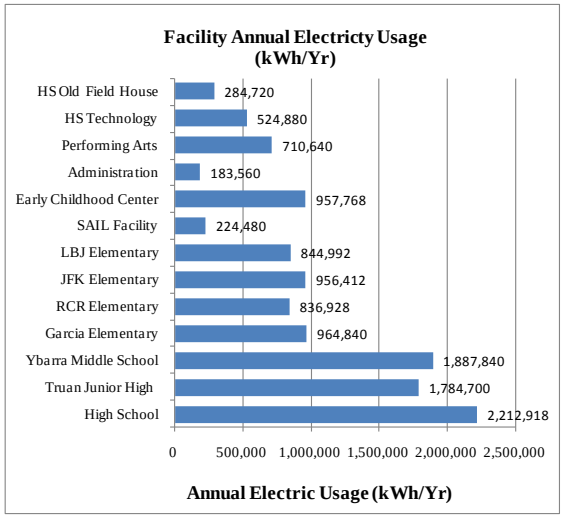
* Facility Square footages are based on estimates.

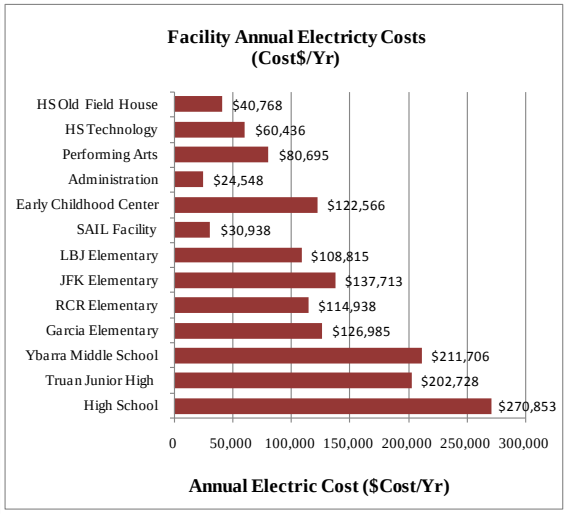
Knowing the EUI and ECI of each facility is useful to help determine the District's overall energy performance. In addition, the District's EUI was compared to TEESI's database of Texas schools. See **Appendix D** to determine how these facilities' EUI compared to other schools in Texas.

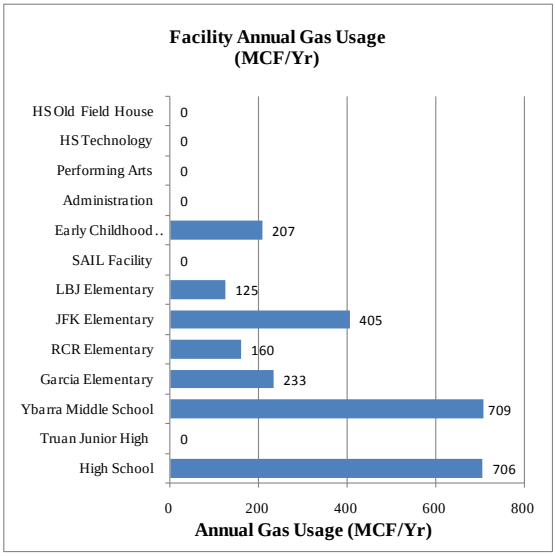
The following charts summarize the data presented in the previous table. See **Appendix C** for further detail.

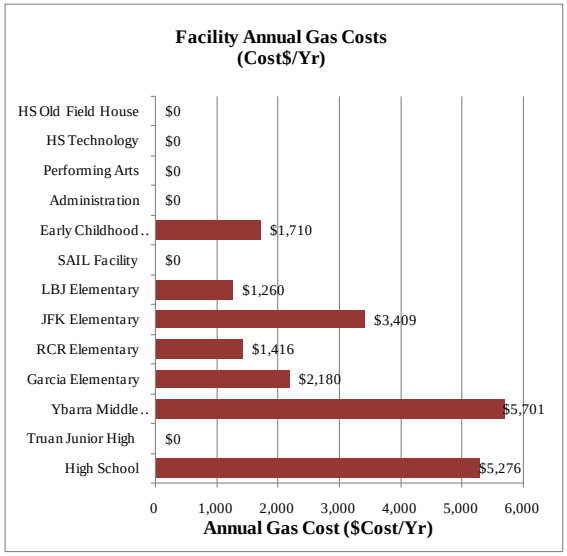












4.0 ENERGY ACCOUNTING

UTILITY PROVIDERS

Reliant Energy provides electric service and Texas Gas Service provides natural gas service to the District.

MONITORING AND TRACKING

Currently, the District does not have an energy tracking software or spreadsheet 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, milestones, and verify progress.

The District should consider consolidating the tracking and recording of all the Districts 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. **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 Bill 3693** and **Senate Bill 12** reporting requirements. Please see Section 5.0 for additional information regarding these requirements.

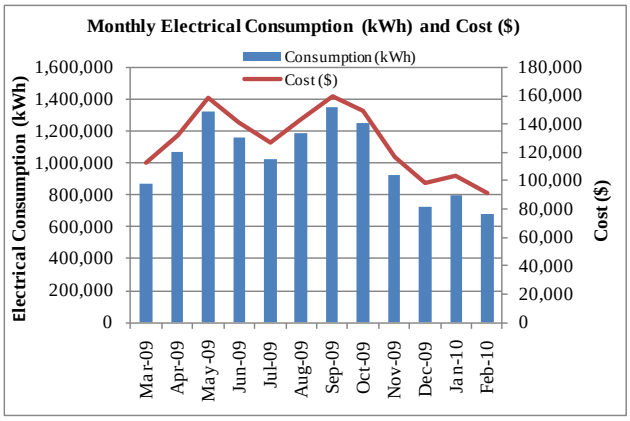
Furthermore, below is a sample format the District can customize to help summarize their overall utility usage and costs.

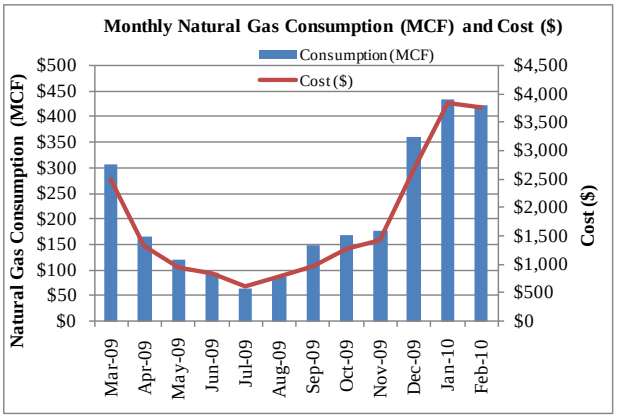
The data presented below is a summation of the data provided by the District. This data below includes only selected utility accounts and is for reference purposes only and does not represent the District's total utility data. See **Appendix C** for further detail regarding each utility account represented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

Edcouch Elsa ISD - Sample Utility Input Form

MONTH	ELECTRICITY			NATURAL GAS		
	KWH	COST $	Avg. Rate $/KWH	MCF	COST $	Avg. Rate $/MCF
Mar-09	872,136	112,192	$0.1286	$307	$2,494	$8.1
Apr-09	1,070,007	131,704	$0.1231	$165	$1,332	$8.1
May-09	1,322,948	158,403	$0.1197	$119	$937	$7.9
Jun-09	1,158,022	141,410	$0.1221	$96	$828	$8.7
Jul-09	1,028,167	127,216	$0.1237	$63	$611	$9.8
Aug-09	1,188,686	143,644	$0.1208	$86	$785	$9.2
Sep-09	1,352,851	159,666	$0.1180	$147	$963	$6.5
Oct-09	1,249,831	149,442	$0.1196	$168	$1,264	$7.5
Nov-09	925,549	116,582	$0.1260	$176	$1,426	$8.1
Dec-09	724,966	98,277	$0.1356	$361	$2,689	$7.4
Jan-10	801,160	103,451	$0.1291	$434	$3,852	$8.9
Feb-10	680,355	91,704	$0.1348	$424	$3,770	$8.9
Total	12,374,678	$1,533,690	$0.1239	2,546	$20,952	$8.2

Gross Building Area:	942,000	SF





5.0 ENERGY LEGISLATION OVERVIEW

In 2001, the 77th Texas Legislature passed Senate Bill 5 (SB5), also known as the Texas Emissions Reduction Plan, to amend the Texas Health and Safety Code. The legislation required ambitious, fundamental changes in energy use to help the state comply with the federal Clean Air Act standards. It applied to all political subdivisions within 38 designated counties, later expanded to 41 counties.

In 2007, the 80th Texas Legislature passed Senate Bill 12 (**SB 12**) which among other things extended the timeline set in SB 5 for emission reductions. In the same period, the 80th Texas Legislature passed House Bill 3693 (**HB 3693**) which amended provisions of several codes relating primarily to energy efficiency.

In 2009, the 81st Texas Legislature passed Senate Bill 300 (**SB 300**). This bill specifically addressed the requirement for Texas Schools. This bill repealed the requirement in HB 3693 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:

Per SB300, a district should establish a Long-Range Energy Plan 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.

Energy-efficient light bulbs for buildings, requires an institution to purchase commercially available light bulbs using the lowest wattages for the required illumination levels.

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

A summary description of SB 12, HB 3693 and SB300 are available in **Appendix A.**

6.0 RECOMMENDED MAINTENANCE & OPERATION PROCEDURES

Sound Maintenance and Operation procedures significantly improve annual utility costs, 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. Please note that some of the recommendations noted below are currently being practiced by the District. With this in mind, the following maintenance and operation procedures should be encouraged/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.

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.

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. For example, the pictures below provide examples of unnecessary lighting use.

Example 1 - Exterior Lights: The picture on the left is of exterior light on during daylight hours. Exterior lighting is typically controlled using light sensing photocells, timeclocks or manual switching. The first two control methods should be calibrated regularly (monthly) and scheduled appropriately (monthly to account for changing dawn/dusk hours). If a manual switch controls the exterior lighting it is recommended the latter two control options be considered since manual switching requires persistent monitoring which is prone to control fatigue.

Example 2 – Daylighting Opportunity: The second picture on the right below is good example of a day-lighting opportunity. The building's windows placed high above the main corridor help bring in sufficient natural light to illuminate the space during school hours. The District should consider reducing the amount of artificial lighting in areas where sufficient natural light is available.

Example 1 - HS Technology

Exterior lighting on during daytime hours.

Example 2 - HS Technology

Daylighting opportunity in corridors.

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.

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, boilers, chillers, building controls, pumps, fans, and electric motors, 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.

INSTALL ENERGY SAVING DEVICES ON VENDING MACHINE

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.

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 particular motor types that are in service at several locations.

High School Chilled Water Pump (CHWP)

Leaking chilled water pump in high school.
Good candidate for pump assembly replacement,
see Section 7.0.

BUILDING ENVELOPE AND HVAC SYSTEM VERIFICATION

During the preliminary assessment, the District staff indicated that some of the District's facilities were experiencing excessive humidity and having condensation problems. For example, the original section of the Ybarra Middle School has had a history of condensation building up on the interior surface of the building's exterior perimeter walls.

Typically, humidity problems can be attributed to any of the following conditions: high infiltration of unconditioned humid air, deficient dehumidification performance of the HVAC system and/or deficiencies in the building's envelope. Condensation can occur when the interior wall surface temperature falls below the dew-point temperature of the space's surrounding air. To reverse this relationship, the wall surface temperatures must be raised (such as improve insulation) and/or the dew-point temperature (moisture content) of the surrounding air must be lowered (improve dehumidification).

High humidity levels and condensation problems can lead to unnecessary energy usage, comfort issues and poor indoor environmental quality. The District should consider evaluating the building's envelope and HVAC systems to determine the factors causing the high humidity levels and condensation build-up. A thermal imaging scan can help identify possible breaks in insulation, air leaks or conductive bridging in the building's envelope. Data-logging equipment may also be useful to monitor the performance of the HVAC and dehumidification sequence.

HAIL GUARDS ON CONDENSING 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 or other hazards. Damage to the condensing unit heat exchangers reduces the efficiency of the units. It is recommended that if any existing unit(s) have damaged condensing coil fins the condensing fins should be straightened using a fin comb.

Garcia Elementary (Packaged Rooftop Unit)

Example of damaged condensing coil fins

7.0 RETROFIT OPPORTUNITIES

Energy retrofit 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 replacing existing 32-watt T8 Fluorescent lamps with lower wattage lamps (where applicable). Changing to a lower wattage T8 Lamp is a relatively straightforward process however, lower wattage T8 lamps do have limitations and are only suitable for certain applications. Lower wattage T8 lamps have reduced lighting levels therefore, it is important to ensure recommended lighting levels are maintained. Lighting levels should be verified prior to and after 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 only a lighting level drop near 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 (if existing are incompatible) or reduced lamps (if existing lighting levels are above recommended levels). Estimated costs 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.

LOW WATTAGE T8 FLUORESCENT LIGHTING RETROFIT			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Simple Payback (years)**
High School	$33,100	$17,400	1.9
Truan Junior High	$22,900	$11,500	2.0
Ybarra Middle School	$19,800	$9,400	2.1
Garcia Elementary	$15,700	$6,800	2.3
RCR Elementary	$14,900	$7,100	2.1
JFK Elementary	$15,800	$7,500	2.1
LBJ Elementary	$15,500	$6,700	2.3
SAIL Facility	$3,100	$1,300	2.4
Early Childhood Center	$13,700	$6,000	2.3
Administration	$2,000	$1,100	1.8
Performing Arts	$4,500	$1,800	2.5
HS Technology	$4,700	$2,200	2.1
HS Old Field House	$2,500	$1,000	2.5
TOTAL	**$168,200**	**$79,800**	**2.1**

*Detailed lighting level analysis and ballast compatibility must be verified prior to any lamp change out.

INSTALLATION OF OCCUPANCY SENSORS FOR INDOOR LIGHTING CONTROL

It is recommended the District 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 following table below provides an estimated cost and energy saving for the installation of these types of sensors. Please note this estimation is based on a preliminary assessment; exact sensor location, 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 (i.e. hallways, specific classrooms, administration office, break rooms, etc.).

MOTION SENSOR INSTALLATION			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Simple Payback (years)**
High School	$29,300	$5,600	5.2
Truan Junior High	$25,100	$4,300	5.8
Ybarra Middle School	$24,600	$4,300	5.7
Garcia Elementary	$15,600	$2,800	5.6
RCR Elementary	$17,200	$3,000	5.7
JFK Elementary	$15,800	$2,800	5.6
LBJ Elementary	$17,600	$3,000	5.9
SAIL Facility	$4,000	$700	5.7
Early Childhood Center	$14,700	$2,600	5.7
Administration	$5,500	$900	6.1
Performing Arts	$4,800	$800	6.0
HS Technology	$4,200	$600	7.0
TOTAL	**$178,400**	**$31,400**	**5.7**

REPLACE HVAC SYSTEMS

Replace existing HVAC units with new high efficiency units at the facilities indicated in the table below. The existing systems are inefficient and are beyond their useful life (15 plus years). Units to be replaced at the High School consist of 30 Split-DX systems totaling approximately 101.5 tons. Units to be replaced at Truan Junior High consist of 33 Split-DX systems totaling approximately 206.5 tons. Units to be replaced at Garcia Elementary consist of 2 Split-DX systems totaling approximately 17.5 tons and 23 rooftop units (RTUs) totaling approximately 179 tons. Units to be replaced at LBJ Elementary consist of 31 Split-DX systems totaling approximately 93 tons. Units to be replaced at the Administration building consist of 6 Split-DX systems totaling approximately 24.5 tons. The table below summarizes the estimated cost and savings for replacing the units indentified in each school.

HVAC REPLACEMENT			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Simple Payback (years)**
High School	$162,400	$9,300	17.5
Truan Junior High	$330,400	$18,200	18.2
Garcia Elementary	$314,400	$17,000	18.5
LBJ Elementary	$148,800	$8,000	18.6
Administration	$39,200	$2,100	18.7
TOTAL	**$995,200**	**$54,600**	**18.2**

REPLACE CHILLED WATER PUMPS

It is recommended the District replace the chilled water pumps at the High School. The existing chilled water pumps require extensive maintenance and are inefficient. During the site visit, it was noted that the pumps were not functioning properly since they were leaking significantly. The table below summarizes the estimated cost and savings for replacing the pumps.

CHILLED WATER PUMP REPLACEMENT			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Simple Payback (years)**
High School	$18,000	$2,300	7.8
TOTAL	**$18,000**	**$2,300**	**7.8**

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 for Ybarra MS, the Performing Arts Building and the High School Technology Building. 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. Presently the HVAC systems are controlled using standard thermostats; installing an EMS will improve control and performance. The EMS systems proposed in the estimation below will have basic functions such as remote access capabilities, multiple scheduling, optimum start/stop features. The table below summarizes the estimated cost and saving for these projects.

EMS INSTALLATION			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings ($/yr)**	**Simple Payback (years)**
Ybarra Middle School	$82,300	$6,900	11.9
Performing Arts	$37,500	$3,000	12.5
HS Technology	$22,500	$1,700	13.2
TOTAL	**$142,300**	**$11,600**	**12.3**

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)**	**Simple Payback (years)**
LOW WATTAGE T8 FLUORESCENT LIGHTING RETROFIT	$168,200	$79,800	2.1
MOTION SENSOR INSTALLATION	$178,400	$31,400	5.7
HVAC REPLACEMENT	$995,200	$54,600	18.2
CHILLED WATER PUMP REPLACEMENT	$18,000	$2,300	7.8
EMS INSTALLATION	$142,300	$11,600	12.3
TOTAL:	**$1,502,100**	**$179,700**	**8.4**

The above projects implementation costs and annual savings are estimated based on a preliminary examination of the facilities. Furthermore, maintenance cost 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.

8.0 CAPITAL IMPROVEMENT PROJECTS

This section is intended to describe capital improvement projects that have energy saving opportunities but cannot be justified solely based on the potential energy savings alone. The following are a capital improvement projects recommended for the District.

REPLACE HVAC SYSTEMS NEAR THE END OF USEFUL LIFE

Within the next 3 to 5 years, replace existing HVAC units that are between 10 to 13 years old with new high efficiency units at the facilities indicated in the table below. The existing systems units are nearing the end of their useful life. Units to be replaced at the High School consist of 6 Split-DX systems totaling approximately 60 tons. Units to be replaced at Truan Junior High consist of 12 Split-DX systems totaling approximately 79 tons. Units to be replaced at RCR Elementary consist of 33 Split-DX systems totaling approximately 128 tons and 7 rooftop units (RTUs) totaling approximately 105 tons. Units to be replaced at JFK Elementary consist of 3 Split-DX systems totaling approximately 14.5 tons and 46 rooftop units (RTUs) totaling approximately 239 tons. Units to be replaced at LBJ Elementary consist of 1 Split-DX system totaling approximately 15 tons. The table below summarizes the estimated cost and savings for replacing the units indentified in each school.

CAPITAL RETROFIT - HVAC REPLACEMENT	
Project Description	**Estimated Implementation Cost**
High School	$96,000
Truan Junior High	$126,400
RCR Elementary	$372,800
JFK Elementary	$405,600
LBJ Elementary	$24,000
TOTAL	**$1,024,800**

REPLACE GAS FIRED BOILER

Replace one (1) 2,500 MBH gas fired boiler with a new high efficiency unit at the high school. The existing boiler has reached its useful life and requires extensive service. According to District staff, the gas boiler is no longer operational and has been removed from service. Therefore, it is not used during the heating season. The new high efficiency boiler will improve the HVAC system's performance and allow for heating for the areas served by the two-pipe system.

CAPITAL RETROFIT - BOILER REPLACEMENT	
Project Description	**Estimated Implementation Cost**
High School	$102,500
TOTAL	**$102,500**

9.0 ENERGY MANAGEMENT POLICY

By requesting this study, the District has demonstrated interest in taking a more aggressive approach to energy management. In order to establish an effective Energy Management Program it 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. A formal Energy Management Policy can be as simple as a two-page document that clearly states the District's energy management objectives. The policy should cover items such as:

- who is accountable for energy management
- what your energy savings targets are
- how you will monitor, review and report on progress
- staffing and training to support the policy
- criteria for energy management investment
- working energy efficiency into new capital investments

Along with a clear energy **policy,** an energy management **plan** should be developed to ensure sustained energy savings. The energy management plan is a document that details roles, responsibilities, and objectives. Following are key items that should be included in an energy management plan:

1. ESTABLISH ROUTINE ENERGY TRACKING AND REPORTING PROCEDURES Establishing a procedure to monitor energy usage and cost will help identify energy use patterns. The data will also help determine the effectiveness of the Energy Management Program.

2. ESTABLISH AN ENERGY MANAGEMENT STEERING COMMITTEE The Energy Management Steering Committee will include representatives from a cross section of the District. The steering committee will serve as a review board to evaluate all energy management recommendations before adoption and implementation. The steering committee will meet **quarterly or semiannually** to review the District's energy cost and consumption. Regular meetings will ensure the Districts goals are being met prior to the end of the year.

3. PROMOTE ENERGY AWARENESS The energy management steering committee members shall establish a program to publicize the District's energy goals and progress on a **quarterly or semiannually** basis. For example, student drawn posters of the District's energy savings can be placed in hallways. This will encourage student involvement and act as an educational tool. Continuous promotion of the District's goals will ensure the sustainability of the energy management program and help achieve further energy savings.

4. ESTABLISH ACCEPTABLE EQUIPMENT PARAMETERS Establish a District-wide uniform temperature set point for all HVAC units. Having a standard setpoint will help keep HVAC runtimes to a minimum. The following are some suggested temperature settings, however, the district will need to monitor and ensure that other building parameters (humidity levels etc.) are within acceptable limits. Also, areas with special equipment (MDF/IDF, server rooms, etc.) or materials (wood flooring, paper storage, etc.) shall be maintained at the equipment supplier's recommended settings and settings appropriate to the material.

Occupied Cooling Temperature Setpoints:

Instructional Areas	73 F – 76 F
Admin Areas	72 F – 74 F

Unoccupied Cooling Temperature Setpoints:

Instructional Areas	85 F
Admin Areas	85 F

Occupied Heating Temperature Setpoints:

Instructional Areas	67 F – 69 F
Admin Areas	67 F – 69 F

Unoccupied Heating Temperature Setpoints:

Instructional Areas	55 F
Admin Areas	55 F

5. STAFF INCENTIVES AND RECOGNITION PROGRAM Establishing a student, staff, and campus incentive and recognition program would help promote and encourage support from staff and custodial members. The District may consider implementing a staff incentive and recognition program. Following are some program examples.

- The energy accounting system can be used to monitor cost savings and compare it to the base year consumption. An energy incentive plan consisting of a 50-50 sharing with the school campus and the Energy Management Program could be employed. The school would get 50% of the savings resulting from energy cost reduction. The school would be free to use the money for educational programs such as materials, supplies, etc. The other 50% would be used for continuing energy management efforts. The following is an example of the Building savings summary report.

EXAMPLE:

High School - Annual Total Electric Cost

Baseline (2006 - 07)	Current (2007 - 08)	Savings	50% Savings
$248,483	$240,483	$8,000	$4,000

In this example, the High School saved $8,000 where 50% ($4,000) will be assigned to the school. This money would be paid in October of the following fiscal year.

- An energy flag program will be implemented. There will be three energy flags, one flag per each grade level. This energy flags will be awarded to the schools exhibiting the greatest percentage reduction in energy costs. Energy flags will be awarded on a rotating basis each summer. In order to provide motivation, maintain enthusiasm, and recognize individuals doing their part to save the District taxpayers money through the Energy Management Program, the local media (including district newsletters) will be informed of the energy flag results. The energy flag will be awarded in January and August of each year based on the energy consumption of the previous four months.

- The successes of the program should also be communicated to the public through the media to show what the District is doing to reduce costs to taxpayers.

6. NEW BUILDING AND CONSTRUCTION Ensure proper maintenance and operation of energy using equipment in new buildings by required adequate documentation of all systems and control strategies, specifying minimum content of M&O manuals; specifying contractor requirements for cleaning and adjusting equipment prior to occupancy; specifying on-site vendor training for M&O staff; and requiring as-built drawings.

7. ESTABLISH A WATER MANAGEMENT PROGRAM Along with saving energy the District shall establish a program to reduce water consumption. The following conservation measures should be employed.

   a. Investigate the use of water conserving faucets, showerheads, and toilets in all new and existing facilities.
   b. Utilize water-pervious materials such as gravel, crushed stone, open paving blocks or pervious paving blocks for walkways and patios to minimize runoff and increase infiltration.
   c. Employ Xeriscaping, using native plants that are well suited to the local climate, that are drought-tolerant and do not require supplemental irrigation.
   d. Utilize drip irrigation systems for watering plants in beds and gardens.
   e. Install controls to prevent irrigation when the soil is wet from rainfall.
   f. Establish a routine check of water consuming equipment for leaks and repair equipment immediately.

10.0 FUNDING OPTIONS FOR CAPITAL ENERGY PROJECTS

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 (512/463-1080).

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 budgets 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 of the State's utilities 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, AEP provides incentives for efficiency measures such as installation of high efficiency equipment and lighting upgrades. These energy efficiency programs' incentives typically cover $150/kW of verifiable demand reductions. For further information, contact your utility provider to determine what programs are available in your area.

APPENDICES

APPENDIX A

ENERGY LEGISLATION
(SB 12, HB 3693 AND SB 300)

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:

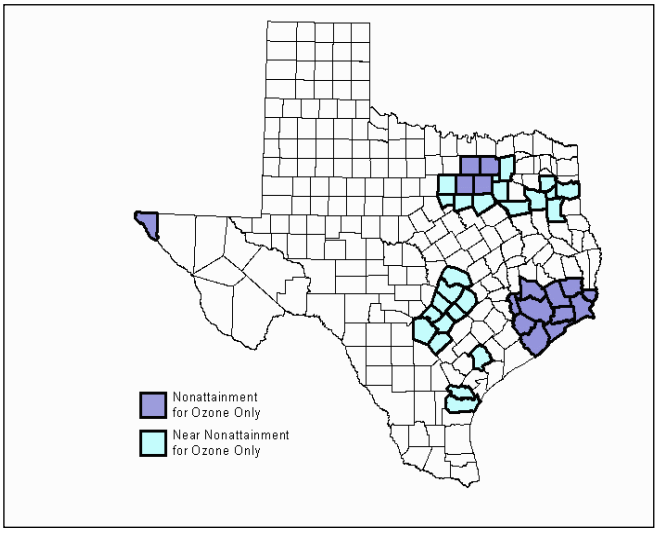
• installation of insulation and high-efficiency windows and doors • modifications or replacement of HVAC systems, lighting fixtures and electrical systems • installation of automatic energy control systems • installation of energy recovery systems or renewable energy generation equipment • building 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:
Theresa Sifuentes - 512-463-1896
Theresa.Sifuentes@cpa.state.tx.us

Schools Partnership Program:
Glenda Baldwin - 512-463-1731
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Engineering (Codes / Standards):
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Energy / Housing
Partnership Programs:
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Alternate Fuels / Transportation:
Mary-Jo Rowan - 512-463-2637
Mary-Jo.Rowan@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.

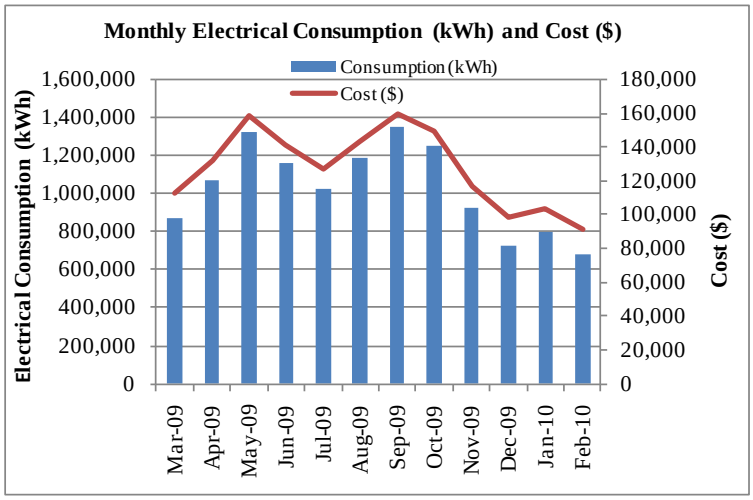
SECTION 7. Effective date: upon passage or September 1, 2009.

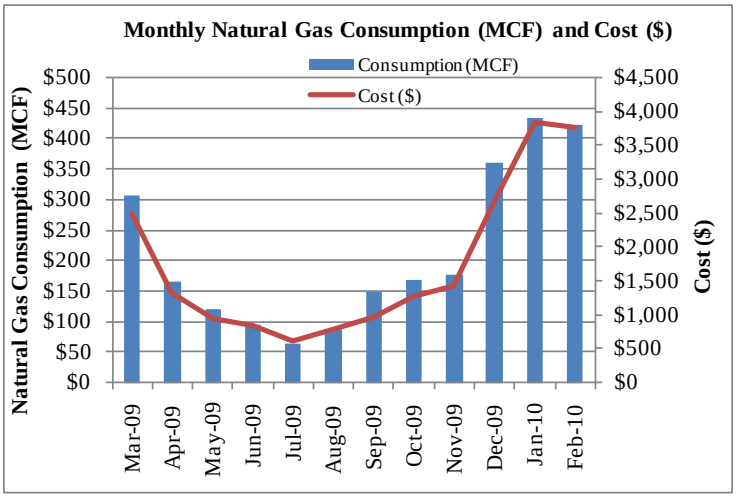
APPENDIX B

SAMPLE UTILITY DATA REPORTING FORM

Edcouch Elsa ISD - Sample Utility Input Form

MONTH	ELECTRICITY			NATURAL GAS		
	KWH	COST $	Avg. Rate $/KWH	MCF	COST $	Avg. Rate $/MCF
Mar-09	872,136	112,192	$0.1286	$307	$2,494	$8.1
Apr-09	1,070,007	131,704	$0.1231	$165	$1,332	$8.1
May-09	1,322,948	158,403	$0.1197	$119	$937	$7.9
Jun-09	1,158,022	141,410	$0.1221	$96	$828	$8.7
Jul-09	1,028,167	127,216	$0.1237	$63	$611	$9.8
Aug-09	1,188,686	143,644	$0.1208	$86	$785	$9.2
Sep-09	1,352,851	159,666	$0.1180	$147	$963	$6.5
Oct-09	1,249,831	149,442	$0.1196	$168	$1,264	$7.5
Nov-09	925,549	116,582	$0.1260	$176	$1,426	$8.1
Dec-09	724,966	98,277	$0.1356	$361	$2,689	$7.4
Jan-10	801,160	103,451	$0.1291	$434	$3,852	$8.9
Feb-10	680,355	91,704	$0.1348	$424	$3,770	$8.9
Total	12,374,678	$1,533,690	$0.1239	2,546	$20,952	$8.2





APPENDIX C

BASE YEAR CONSUMPTION HISTORY

Energy Cost and Consumption Benchmarks

		Electric			Natural Gas			Total	Total	EUI	ECI	
	Building	KWH/Yr	MMBTU/Yr	$Cost/Yr	MCF/Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF*
1	High School	2,212,918	7,553	270,853	706	727	5,276	276,129	8,280	45	1.50	184,000
2	Truan Junior High	1,784,700	6,091	202,728	0	0	0	202,728	6,091	48	1.60	127,000
3	Ybarra Middle School	1,887,840	6,443	211,706	709	730	5,701	217,407	7,174	65	1.98	110,000
4	Garcia Elementary	964,840	3,293	126,985	233	240	2,180	129,165	3,533	41	1.48	87,000
5	RCR Elementary	836,928	2,856	114,938	160	165	1,416	116,354	3,022	36	1.40	83,000
6	JFK Elementary	956,412	3,264	137,713	405	417	3,409	141,122	3,682	42	1.60	88,000
7	LBJ Elementary	844,992	2,884	108,815	125	128	1,260	110,076	3,012	35	1.28	86,000
8	SAIL Facility	224,480	766	30,938	0	0	0	30,938	766	45	1.82	17,000
9	Early Childhood Center	957,768	3,269	122,566	207	214	1,710	124,276	3,482	46	1.64	76,000
10	Administration	183,560	626	24,548	0	0	0	24,548	626	57	2.23	11,000
11	Performing Arts	710,640	2,425	80,695	0	0	0	80,695	2,425	73	2.45	33,000
12	HS Technology	524,880	1,791	60,436	0	0	0	60,436	1,791	69	2.32	26,000
13	HS Old Field House	284,720	972	40,768	0	0	0	40,768	972	69	2.91	14,000
		KWH/Yr	MMBTU/Yr	$Cost/Yr	MCF/Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
		12,374,678	42,235	1,533,690	2,546	2,623	20,952	1,554,642	44,858	48	1.65	942,000

* Facility Square footages are based on estimates.

Version 1

10032789428316740
10032789463852420

District: Edcouch Elsa ISD

ACCOUNT# _____ Electric
910402426 Gas

BUILDING: High School

FLOOR AREA: 184,000 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 ($)
March	2009	165,828		576		20,694	80	629
April	2009	181,848		624		22,442	68	491
May	2009	233,301		699		27,573	36	248
June	2009	194,661		597		23,483	30	218
July	2009	183,537		559		22,124	29	221
August	2009	215,030		659		26,189	38	274
September	2009	238,438		703		28,045	65	357
October	2009	237,804		725		28,028	71	474
November	2009	191,648		660		23,433	69	504
December	2009	117,797		522		15,596	57	412
January	2010	136,122		472		16,929	76	671
February	2010	116,904		456		16,318	88	777
TOTAL		2,212,918				270,853	706.3	5,276

Annual Total Energy Cost = 276,129 $/year

Total KWH/yr x 0.003413 = 7,552.69 MMBTU/year
Total MCF/yr x 1.03 = 727.49 MMBTU/year
Total Other x_____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 8,280 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) = 1.50 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789411404881 Electric

Gas

BUILDING: Truan Junior High

FLOOR AREA: 127,000 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 ($)
March	2009	134,400		442		15,854	0	0
April	2009	176,400		480		19,686	0	0
May	2009	213,000		488		22,957	0	0
June	2009	168,300		463		18,824	0	0
July	2009	131,100		360		15,145	0	0
August	2009	169,200		435		18,597	0	0
September	2009	204,300		486		22,131	0	0
October	2009	186,600		479		20,520	0	0
November	2009	141,900		465		16,480	0	0
December	2009	82,200		365		10,547	0	0
January	2010	96,600		350		11,710	0	0
February	2010	80,700		319		10,277	0	0
TOTAL		1,784,700				202,728	0.0	0

* Natural Gas service not included in this summary.

Annual Total Energy Cost = 202,728 $/year

Total KWH/yr x 0.003413 = 6,091.18 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 6,091 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 48 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.60 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

ACCOUNT# 10032789422940565 Electric
910582258 Gas

District: Edcouch Elsa ISD

BUILDING: Ybarra Middle School

FLOOR AREA: 110,000 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 ($)
March	2009	149,040		425		16,945	120	909
April	2009	163,440		448		18,266	22	181
May	2009	210,960		481		22,722	17	131
June	2009	185,760		454		20,273	14	117
July	2009	159,120		347		17,709	7	80
August	2009	163,440		442		18,156	5	66
September	2009	209,520		463		22,390	17	120
October	2009	185,040		501		20,573	23	175
November	2009	126,720		445		14,976	34	261
December	2009	108,000		426		13,150	165	1,186
January	2010	115,200		374		13,451	160	1,379
February	2010	111,600		345		13,096	127	1,095
TOTAL		1,887,840		5151		211,706	709.2	5,701

Annual Total Energy Cost = 217,407 $/year

Total KWH/yr x 0.003413 = 6,443.20 MMBTU/year
Total MCF/yr x 1.03 = 730.48 MMBTU/year
Total Other x _____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 7,174 MMBTU/year

Energy Use Index:
Total site BTU's/Yr ÷ Total Area (SF) = 65 kBTU/SF/year

Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = 1.98 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789422940565 Electric

910582258 Gas

BUILDING: Ybarra Middle School

FLOOR AREA: 110,000 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 ($)
March	2009	149,040		425		16,945	120	909
April	2009	163,440		448		18,266	22	181
May	2009	210,960		481		22,722	17	131
June	2009	185,760		454		20,273	14	117
July	2009	159,120		347		17,709	7	80
August	2009	163,440		442		18,156	5	66
September	2009	209,520		463		22,390	17	120
October	2009	185,040		501		20,573	23	175
November	2009	126,720		445		14,976	34	261
December	2009	108,000		426		13,150	165	1,186
January	2010	115,200		374		13,451	160	1,379
February	2010	111,600		345		13,096	127	1,095
TOTAL		1,887,840				211,706	709.2	5,701

Annual Total Energy Cost = 217,407 $/year

Total KWH/yr x 0.003413 = 6,443.20 MMBTU/year

Total MCF/yr x 1.03 = 730.48 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 7,174 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 65 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 1.98 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789498873740 Electric
10032789498873742
10032789498873741
910381752 Gas

BUILDING: Garcia Elementary

FLOOR AREA: 87,000 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 ($)
March	2009	63,479		0		8,817	14	138
April	2009	83,028		1		11,149	11	110
May	2009	101,656		1		13,511	9	90
June	2009	103,838		3		13,578	8	82
July	2009	95,517		2		12,536	4	65
August	2009	99,753		2		12,729	6	73
September	2009	105,208		0		13,394	10	86
October	2009	88,684		2		11,411	10	100
November	2009	72,110		1		9,416	12	114
December	2009	47,626		1		6,558	26	215
January	2010	56,327		1		7,426	63	565
February	2010	47,614		0		6,459	61	542
TOTAL		964,840				126,985	233.2	2,180

Annual Total Energy Cost = 129,165 $/year

Total KWH/yr x 0.003413 = 3,293.00 MMBTU/year
Total MCF/yr x 1.03 = 240.20 MMBTU/year
Total Other x_____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 3,533 MMBTU/year

Energy Use Index:
Total site BTU's/Yr ÷ Total Area (SF) = 41 kBTU/SF/year

Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = 1.48 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789463422141 Electric

910543022 Gas

BUILDING: RCR Elementary

FLOOR AREA: 83,000 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 ($)
March	2009	57,408		277		8,196	23	194
April	2009	63,744		320		8,728	15	128
May	2009	81,600		343		11,313	14	110
June	2009	77,376		315		10,678	8	81
July	2009	69,120		267		9,541	4	59
August	2009	86,976		339		11,527	11	96
September	2009	95,232		344		12,498	8	70
October	2009	87,552		339		11,601	15	117
November	2009	55,296		283		7,673	15	124
December	2009	53,184		296		7,490	17	140
January	2010	59,904		397		8,639	13	127
February	2010	49,536		290		7,055	18	170
TOTAL		836,928				114,938	160.4	1,416

Annual Total Energy Cost = 116,354 $/year

Total KWH/yr x 0.003413 = 2,856.44 MMBTU/year

Total MCF/yr x 1.03 = 165.21 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 3,022 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) = 1.40 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789469968888 Electric
10032789497187771
10032789437710421
910672095 Gas

BUILDING: JFK Elementary

FLOOR AREA: 88,000 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 ($)
March	2009	66,671		251		9,716	43	354
April	2009	86,261		284		12,104	20	170
May	2009	111,521		312		15,128	17	134
June	2009	95,001		297		13,090	18	145
July	2009	87,111		274		12,106	13	119
August	2009	103,161		325		13,767	12	112
September	2009	106,091		312		14,052	16	115
October	2009	96,721		312		12,937	16	138
November	2009	66,821		248		9,256	17	153
December	2009	41,241		818		9,118	62	447
January	2010	52,561		204		8,773	89	779
February	2010	43,251		163		7,666	84	743
TOTAL		956,412				137,713	405.3	3,409

Annual Total Energy Cost = 141,122 $/year

Total KWH/yr x 0.003413 = 3,264.23 MMBTU/year
Total MCF/yr x 1.03 = 417.46 MMBTU/year
Total Other x_____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 3,682 MMBTU/year

Energy Use Index:
Total site BTU's/Yr ÷ Total Area (SF) = 42 kBTU/SF/year

Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = 1.60 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

10032789444473900
10032789434641715

District: Edcouch Elsa ISD

ACCOUNT# _____ Electric
910295578 Gas

BUILDING: LBJ Elementary

FLOOR AREA: 86,000 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 ($)
March	2009	59,136		178		8,038	12	117
April	2009	71,232		190		9,123	11	102
May	2009	85,056		243		10,533	9	92
June	2009	72,192		188		9,038	6	78
July	2009	63,168		154		8,066	0	0
August	2009	66,432		204		8,493	6	85
September	2009	84,288		219		10,204	13	100
October	2009	87,936		216		10,508	13	120
November	2009	61,440		188		8,233	12	121
December	2009	81,024		221		10,639	14	132
January	2010	57,792		140		8,077	13	142
February	2010	55,296		136		7,863	16	173
TOTAL		844,992				108,815	124.7	1,260

Annual Total Energy Cost = 110,076 $/year

Total KWH/yr x 0.003413 = 2,883.96 MMBTU/year
Total MCF/yr x 1.03 = 128.44 MMBTU/year
Total Other x_____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 3,012 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: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789426815660 Electric

Gas

BUILDING: SAIL Facility

FLOOR AREA: 17,000 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 ($)
March	2009	11,120		69		1,708	0	0
April	2009	19,280		77		2,682	0	0
May	2009	25,600		82		3,436	0	0
June	2009	21,920		68		2,980	0	0
July	2009	25,760		67		3,430	0	0
August	2009	23,120		75		3,025	0	0
September	2009	22,240		75		2,927	0	0
October	2009	23,360		84		3,077	0	0
November	2009	13,520		80		1,948	0	0
December	2009	13,440		96		2,012	0	0
January	2010	12,640		96		1,898	0	0
February	2010	12,480		83		1,817	0	0
TOTAL		224,480				30,938	0.0	0

Annual Total Energy Cost = 30,938 $/year

Total KWH/yr x 0.003413 = 766.15 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 766 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) = 1.82 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789492185840 Electric
10032789492185841 Gas
910124917

BUILDING: Early Childhood Center

FLOOR AREA: 76,000 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 ($)
March	2009	65,534		333		8,722	17	153
April	2009	82,814		354		10,420	18	151
May	2009	108,734		400		13,101	18	131
June	2009	91,454		393		11,524	13	108
July	2009	86,414		314		10,521	6	67
August	2009	102,974		396		12,502	8	80
September	2009	105,854		397		12,773	19	116
October	2009	100,094		405		12,336	19	140
November	2009	62,654		371		8,762	19	149
December	2009	49,694		255		7,095	20	159
January	2010	55,454		386		8,171	21	188
February	2010	46,094		197		6,640	31	269
TOTAL		957,768				122,566	207.3	1,710

Annual Total Energy Cost = 124,276 $/year

Total KWH/yr x 0.003413 = 3,268.86 MMBTU/year
Total MCF/yr x 1.03 = 213.52 MMBTU/year
Total Other x_____ = 0.0 MMBTU/year
Total Site MMBTU's/yr = 3,482 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) = 1.64 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789484120000 Electric

Gas

BUILDING: Administration

FLOOR AREA: 11,000 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 ($)
March	2009	8,480		44		1,262	0	0
April	2009	11,560		44		1,626	0	0
May	2009	15,040		45		2,037	0	0
June	2009	15,200		45		2,056	0	0
July	2009	18,840		53		2,497	0	0
August	2009	22,040		52		2,771	0	0
September	2009	18,880		48		2,409	0	0
October	2009	17,320		49		2,234	0	0
November	2009	11,760		45		1,598	0	0
December	2009	17,720		62		2,329	0	0
January	2010	14,800		62		1,971	0	0
February	2010	11,920		83		1,759	0	0
TOTAL		183,560				24,548	0.0	0

Annual Total Energy Cost = 24,548 $/year

Total KWH/yr x 0.003413 = 626.49 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 626 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 57 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 2.23 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789436880189 Electric

Gas

BUILDING: Performing Arts

FLOOR AREA: 33,000 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 ($)
March	2009	47,520		168		6,155	0	0
April	2009	70,560		165		8,000	0	0
May	2009	67,680		144		7,511	0	0
June	2009	60,480		148		6,886	0	0
July	2009	47,520		151		5,619	0	0
August	2009	71,280		167		7,706	0	0
September	2009	75,600		194		8,327	0	0
October	2009	62,640		140		6,831	0	0
November	2009	57,600		153		6,409	0	0
December	2009	39,600		125		4,783	0	0
January	2010	64,800		173		7,153	0	0
February	2010	45,360		156		5,314	0	0
TOTAL		710,640				80,695	0.0	0

Annual Total Energy Cost = 80,695 $/year

Total KWH/yr x 0.003413 = 2,425.41 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 2,425 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 73 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 2.45 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789419595387 Electric

Gas

BUILDING: HS Technology

FLOOR AREA: 26,000 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 ($)
March	2009	27,360		127		3,527	0	0
April	2009	40,320		127		4,663	0	0
May	2009	46,080		135		5,244	0	0
June	2009	41,760		130		4,814	0	0
July	2009	36,000		135		4,360	0	0
August	2009	38,880		123		4,488	0	0
September	2009	55,440		145		6,130	0	0
October	2009	50,400		145		5,695	0	0
November	2009	33,840		145		4,243	0	0
December	2009	51,840		145		5,814	0	0
January	2010	59,760		145		6,480	0	0
February	2010	43,200		139		4,980	0	0
TOTAL		524,880				60,436	0.0	0

Annual Total Energy Cost = 60,436 $/year

Total KWH/yr x 0.003413 = 1,791.42 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 1,791 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 69 kBTU/SF/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 2.32 $/SF/year

Electric Utility: Reliant Energy

Gas Utility: Texas Gas Service

District: Edcouch Elsa ISD

ACCOUNT# 10032789473167980 Electric

Gas

BUILDING: HS Old Fieldhouse

FLOOR AREA: 14,000 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 ($)
March	2009	16,160		130		2,558	0	0
April	2009	19,520		51		2,817	0	0
May	2009	22,720		131		3,337	0	0
June	2009	30,080		127		4,186	0	0
July	2009	24,960		119		3,562	0	0
August	2009	26,400		140		3,695	0	0
September	2009	31,760		156		4,384	0	0
October	2009	25,680		155		3,691	0	0
November	2009	30,240		145		4,157	0	0
December	2009	21,600		138		3,145	0	0
January	2010	19,200		126		2,775	0	0
February	2010	16,400		123		2,460	0	0
TOTAL		284,720		1541		40,768	0.0	0

Annual Total Energy Cost = 40,768 $/year

Total KWH/yr x 0.003413 = 971.75 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x_____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 972 MMBTU/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 69 kBTU/SF/year

Energy Cost Index:

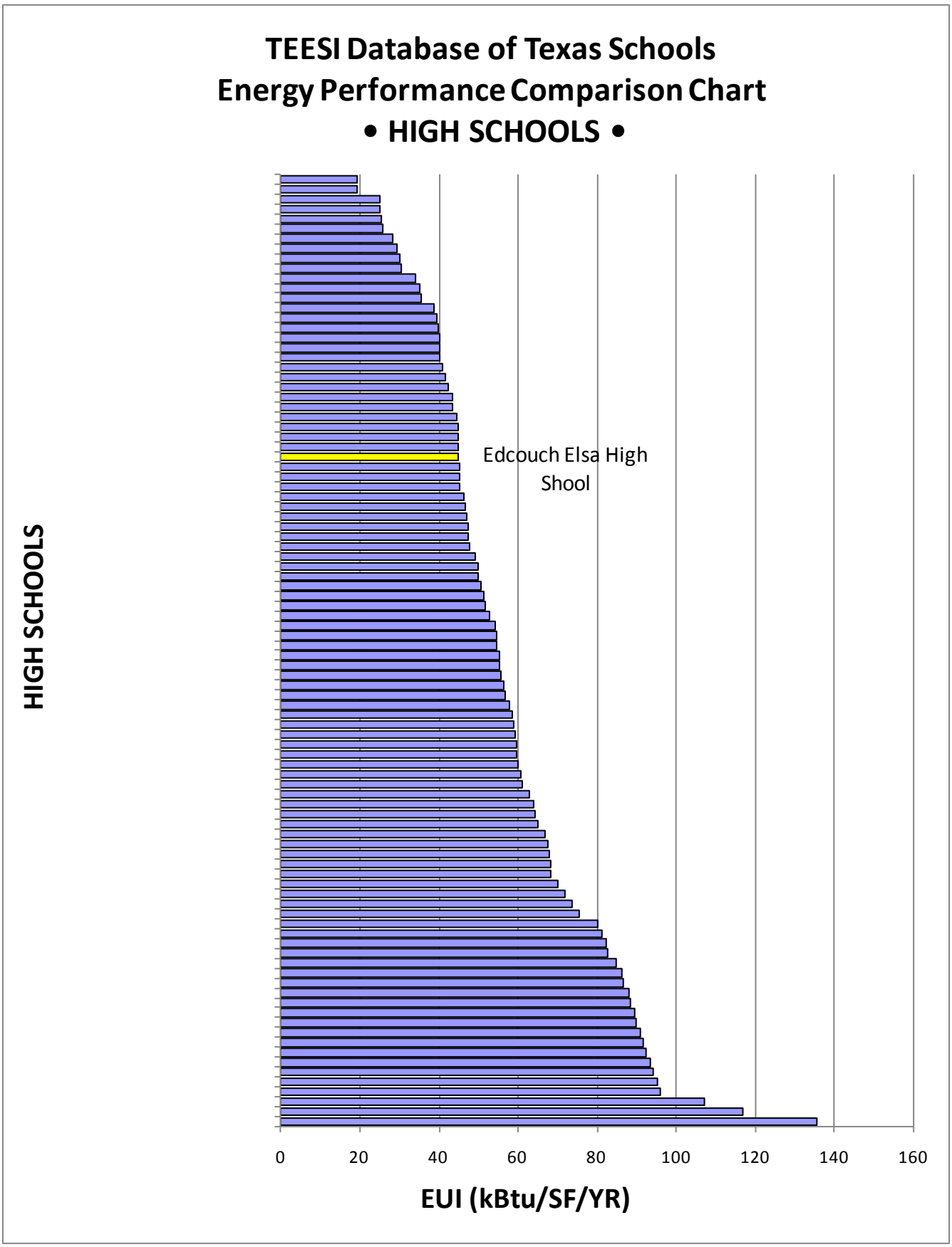
Total Energy Cost/Yr ÷ Total Area (SF) = 2.91 $/SF/year

Electric Utility: Reliant Energy

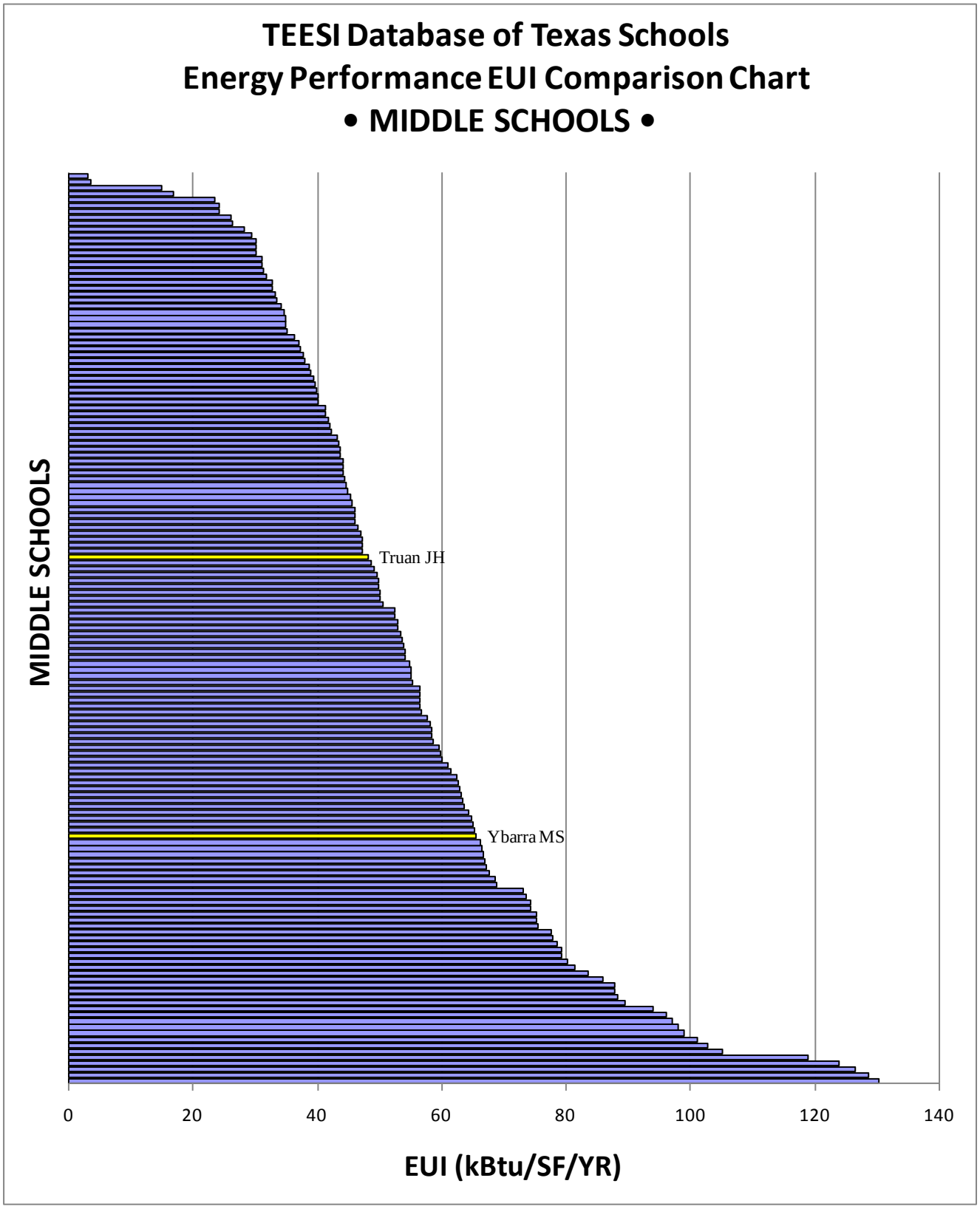
Gas Utility: Texas Gas Service

APPENDIX D

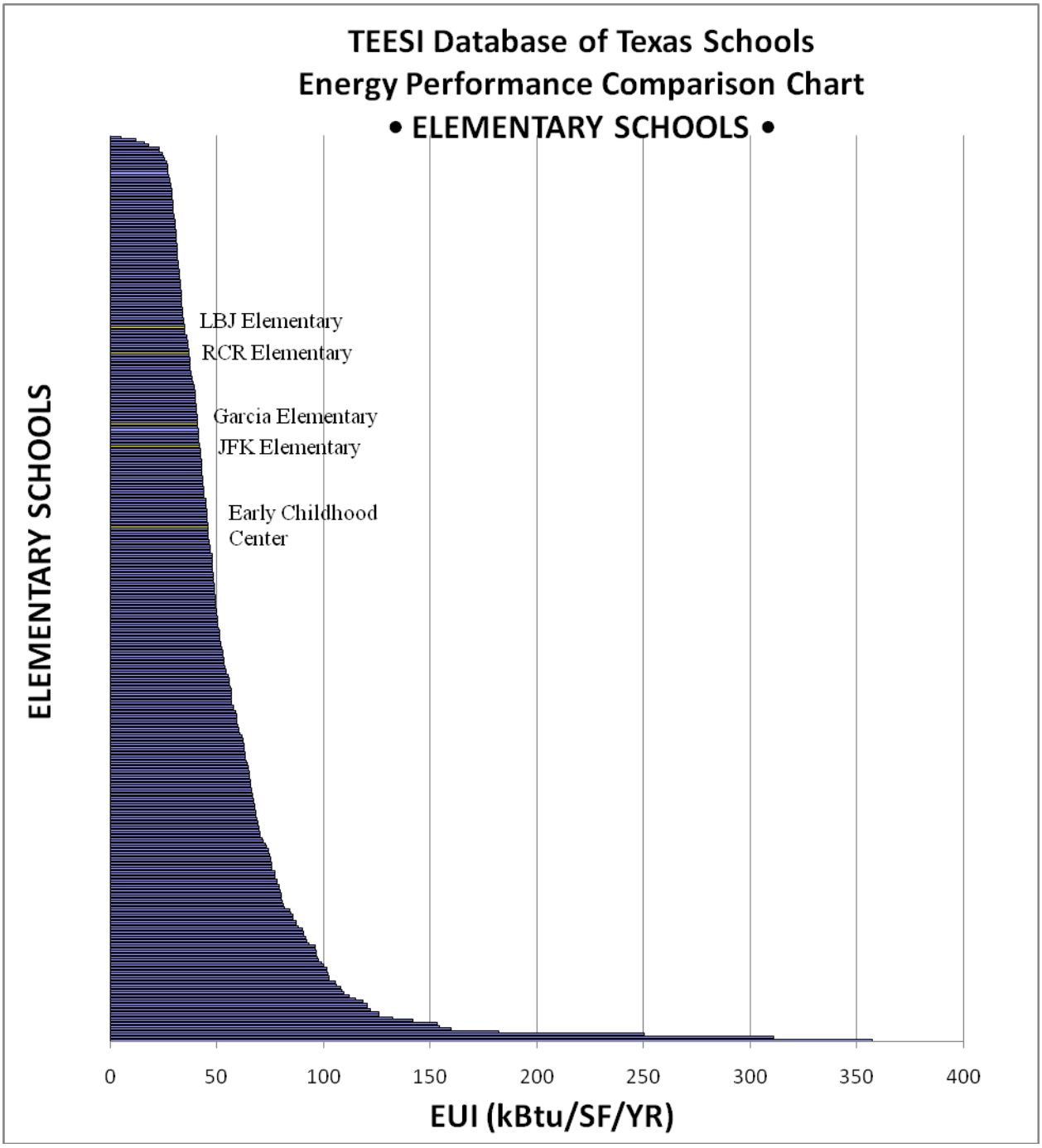
ENERGY PERFORMANCE COMPARISON CHARTS

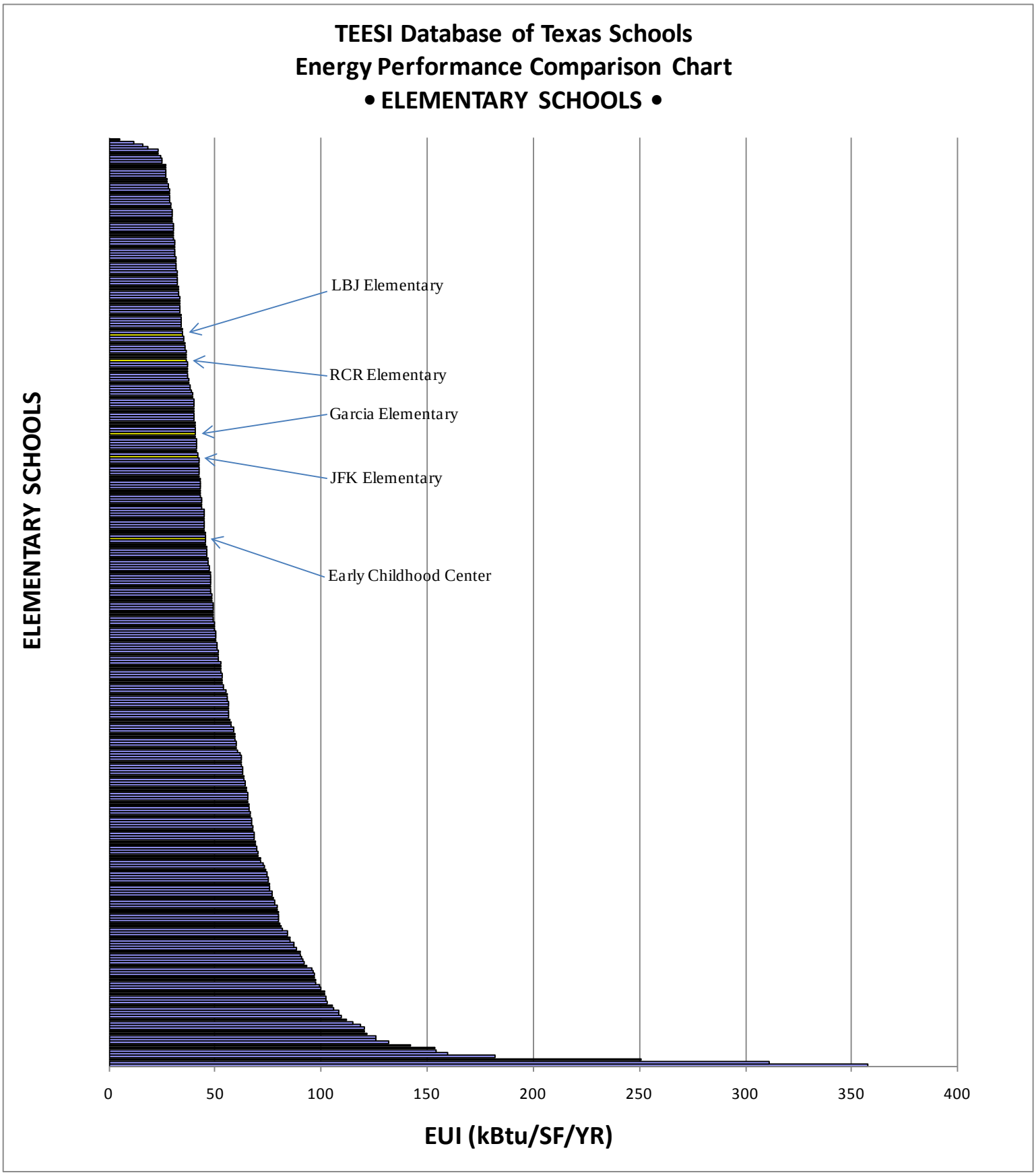


(The chart above is a comparison of EUIs based on sample data from TEESI's database of Texas Schools)



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


TEESI Database of Texas Schools
Energy Performance Comparison Chart
• ELEMENTARY SCHOOLS •
ELEMENTARY SCHOOLS
LBJ Elementary
RCR Elementary
Garcia Elementary
JFK Elementary
Early Childhood Center
0
50
100
150
200
250
300
350
400
EUI (kBtu/SF/YR)



(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

Boilers Checklist

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Monthly	Annually
Boiler use/sequencing	Turn off/sequence unnecessary boilers	X			
Overall visual inspection	Complete overall visual inspection to be sure all equipment is operating and safety systems are in place	X			
Follow manufacturer's recommended procedures in lubricating all components	Compare temperatures with tests performed after annual cleaning	X			
Check steam pressure	Is variation in steam pressure as expected under different loads? Wet steam may be produced if the pressure drops too fast	X			
Check unstable water level	Unstable levels can be a sign of contaminates in feedwater, overloading of boiler, equipment malfunction	X			
Check burner	Check for proper control and cleanliness	X			
Check motor condition temperatures	Check for proper function	X			
Check air temperatures in boiler room	Temperatures should not exceed or drop below design limits	X			
Boiler blowdown	Verify the bottom, surface and water column blow downs are occurring and are effective	X			
Boiler logs	Keep daily logs on: • Type and amount of fuel used • Flue gas temperature • Makeup water volume • Steam pressure, temperature, and amount generated Look for variations as a method of fault detection	X			
Check oil filter assemblies	Check and clean/replace oil filters and strainers	X			
Inspect oil heaters	Check to ensure that oil is at proper temperature prior to burning	X			
Check boiler water treatment	Confirm water treatment system is functioning properly	X			
Check flue gas temperatures and composition	Measure flue gas composition and temperatures at selected firing positions - recommended O2% and CO2% Fuel / O2 % / CO2% Natural gas / 1.5 / 10 No. 2 fuel oil / 2.0 / 11.5 No. 6 fuel oil / 2.5 / 12.5 Note: percentages may vary due to fuel composition variations		X		

Boilers Checklist (contd)

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Monthly	Annually
Check all relief valves	Check for leaks		X		
Check water level control	Stop feedwater pump and allow control to stop fuel flow to burner. Do not allow water level to drop below recommended level.		X		
Check pilot and burner assemblies	Clean pilot and burner following manufacturer's guidelines. Examine for mineral or corrosion buildup.		X		
Check boiler operating characteristics	Stop fuel flow and observe flame failure. Start boiler and observe characteristics of flame.		X		
Inspect system for water/ steam leaks and leakage opportunities	Look for: leaks, defective valves and traps, corroded piping, condition of insulation		X		
Inspect all linkages on combustion air dampers and fuel valves	Check for proper setting and tightness		X		
Inspect boiler for air leaks	Check damper seals		X		
Check blowdown and water treatment procedures	Determine if blowdown is adequate to prevent solids buildup			X	
Flue gases	Measure and compare last month's readings flue gas composition over entire firing range			X	
Combustion air supply	Check combustion air inlet to boiler room and boiler to make sure openings are adequate and clean			X	
Check fuel system	Check pressure gauge, pumps, filters and transfer lines. Clean filters as required.			X	
Check belts and packing glands	Check belts for proper tension. Check packing glands for compression leakage.			X	
Check for air leaks	Check for air leaks around access openings and flame scanner assembly.			X	
Check all blower belts	Check for tightness and minimum slippage.			X	
Check all gaskets	Check gaskets for tight sealing, replace if do not provide tight seal			X	
Inspect boiler insulation	Inspect all boiler insulation and casings for hot spots			X	
Steam control valves	Calibrate steam control valves as specified by manufacturer			X	
Pressure reducing/regulating valves	Check for proper operation			X	

Boilers Checklist (contd)

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Monthly	Annually
Perform water quality test	Check water quality for proper chemical balance			X	
Clean waterside surfaces	Follow manufacturer's recommendation on cleaning and preparing waterside surfaces				X
Clean fireside	Follow manufacturer's recommendation on cleaning and preparing fireside surfaces				X
Inspect and repair refractories on fireside	Use recommended material and procedures				X
Relief valve	Remove and recondition or replace				X
Feedwater system	Clean and recondition feedwater pumps. Clean condensate receivers and deaeration system				X
Fuel system	Clean and recondition system pumps, filters, pilot, oil preheaters, oil storage tanks, etc.				X
Electrical systems	Clean all electrical terminals. Check electronic controls and replace any defective parts.				X
Hydraulic and pneumatic valves	Check operation and repair as necessary				X
Flue gases	Make adjustments to give optimal flue gas composition. Record composition, firing position, and temperature.				X
Eddy current test	As required, conduct eddy current test to assess tube wall thickness				X

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

Electric Motors Checklist

Description	Comments	Maintenance Frequency			
		Daily	Weekly	Monthly	Annually
Motor use/sequencing	Turn off/sequence unnecessary motors	X			
Overall visual inspection	Complete overall visual inspection to be sure all equipment is operating and safety systems are in place	X			
Motor condition	Check the condition of the motor through temperature or vibration analysis and compare to baseline values		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 alignment	Aligning the motor coupling allows for efficient torque transfer to the pump			X	
Check mountings	Check and secure all motor mountings			X	
Check terminal tightness	Tighten connection terminals as necessary			X	
Cleaning	Remove dust and dirt from motor to facilitate cooling			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
Check for balanced three-phase power	Unbalanced power can shorten the motor life through excessive heat build up				X
Check for over-voltage or under-voltage conditions	Over- or under-voltage situations can shorten the motor life through excessive heat build up				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) 463-1080

APPENDIX G

REQUEST FOR ENERGY ASSISTANCE

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 Edcouch-Elsa 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: Frances Rocha

Date: January 13, 2010

Name (Mr./Ms./Dr.) Mrs. Frances Rocha

Title: Interim Superintendent

Organization: Edcouch-Elsa ISD

Phone: (956) 262-6000

Street Address: 920 W. Santa Rosa Ave. Edcouch, TX

Fax: (956) 262-6032

Mailing Address: P.O. Box 127 Edcouch, TX 78538

E-Mail: frocha@eeisd.org

County: Hidalgo

Contact Information:

Name (Mr./Ms./Dr.): Mr. Frank Perez

Title: Asst. Supt. for Human Resources

Phone: (956) 262-6000

Fax: (956) 262-6032

E-Mail: fperez@eeisd.org

County: Hidalgo

Please sign and mail or fax to: Glenda Baldwin, Schools and Hospitals Program Administrator, State Energy Conservation Office, 111 E. 17th Street, Austin, Texas 78774. Phone: 512-463-1731. Fax 512-475-2569.

Fax sent by : 9562626032 EDCOUCH ISD 01-22-10 09:29a Pg: 2/2