SCHOOLS AND HOSPITALS
ENERGY MANAGEMENT PROGRAM REPORT

For

PO Box 1129
Leakey, Texas 78873

Administered By:

SECO
State Energy Conservation Office

COMPTROLLER OF PUBLIC ACCOUNTS
STATE ENERGY CONSERVATION OFFICE (SECO)
LBJ State Office Building
111 E. 17th Street, Room 1114
Austin, Texas 78774
www.seco.cpa.state.tx.us

Prepared By:

Texas Energy Engineering Services, Inc. (TEESI)
1301 Capital of Texas Hwy, B-325
Austin, Texas 78746
www.teesi.com

ENERGY STAR PARTNER

April 2009

T8.03.38

TABLE OF CONTENTS

APPENDICES

Schools & Hospitals Energy Management Program
Leakey Independent School District
P.O. Box 1129
Leakey, Texas 78873
Contact Person: Fred McNiel, Superintendent
Phone: (830) 232-5595

1.0 EXECUTIVE SUMMARY

Leakey 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 and Hospitals 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 facility energy bills.

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:	$46,200
Annual Energy Cost Savings:	$5,860
Simple Payback:	7.9 years

Recommendations and information of interest to the District is provided in this report regarding Energy Consumption and Performance (Section 3.0), Energy Accounting (Section 4.0), Senate Bill 12 and House Bill 3693 Overview (Section 5.0), Recommended Maintenance & Operation Procedures (Section 6.0), Retrofit Opportunities (Section 7.0), Capital Improvement Projects (Section 8.0), Funding Options for Capital Energy Projects (Section 9.0), and Energy Management Policy (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. Glenda Baldwin	TEESI / Saleem Khan
(512) 463-1731	(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.

100 Wing - Library

Stories:	Single story building
Area:	3,550 SF
Bldg. Components:	Masonry walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps, Window units
Controls:	Programmable and standard thermostats

200 Wing – Admin., History, & Spanish

Stories:	Two story building
Area:	6,606 SF
Bldg. Components:	Stone brick walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps, Window Units
Controls:	Programmable and standard thermostats

300 Wing - Workroom

Stories:	Single story building
Area:	1,230 SF
Bldg. Components:	Masonry walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps, Window units
Controls:	Programmable and standard thermostats

400 Wing – Speech

Stories:	Single story building
Area:	1,368 SF
Bldg. Components:	Metal walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps
Controls:	Programmable thermostats

600 Wing – Gym, Locker Rooms and Concessions

Stories:	Single story building
Area:	12,441 SF
Bldg. Components:	Masonry walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts, Metal Halides fixtures in Gym
HVAC:	Ground source heat pumps, Window Units
Controls:	Programmable and standard thermostats

700 Wing – Science and Math

Stories:	Single story building
Area:	2,700 SF
Bldg. Components:	Masonry walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps
Controls:	Programmable Thermostats

800 Wing – English

Stories:	Single story building
Area:	1,344 SF
Bldg. Components:	Metal walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps, Window units
Controls:	Programmable and standard thermostats

900 Wing – JH Math

Stories:	Single story building
Area:	1,200 SF
Bldg. Components:	Masonry walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps
Controls:	Programmable thermostats

1000 and 1400 Wing – Cafeteria and Grades 3-5

Stories:	Single story building
Area:	9,840 SF
Bldg. Components:	Metal walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps, wall mount units, and packaged rooftop units
Controls:	Programmable and standard thermostats

2000 Wing – Pre K, Grades 1 – 2, and IT

Stories:	Single story building
Area:	6,304 SF
Bldg. Components:	Metal walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Packaged terminal air conditioner (PTAC) units
Controls:	Standard thermostats

Ag Building

Stories:	Single story building
Area:	5,082 SF
Bldg. Components:	Metal walls, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Ground source heat pumps
Controls:	Programmable thermostats

Band Hall

Stories:	Single story building
Area:	2,158 SF
Bldg. Components:	Wood Siding, composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Window Units
Controls:	Standard thermostat

Home Economics

Stories:	Single story building
Area:	1,553 SF
Bldg. Components:	Wood Siding, composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Window Units
Controls:	Standard thermostat

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 55,000 square feet.

Annual electric and natural gas invoices for the buildings surveyed were $67,453 for the 12-month period ending September 2008. 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:

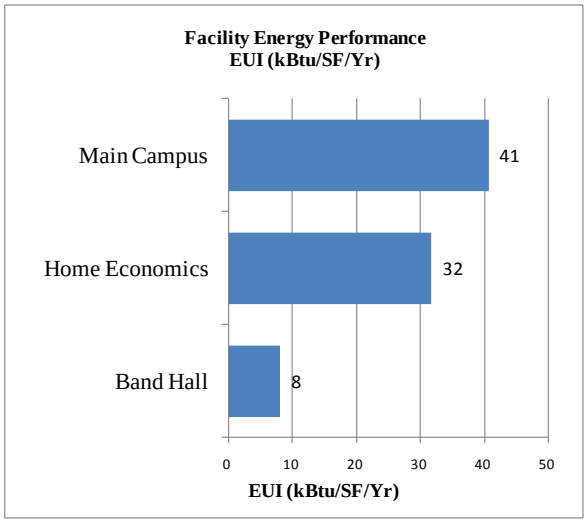
Energy Cost and Cosumption Benchmarks

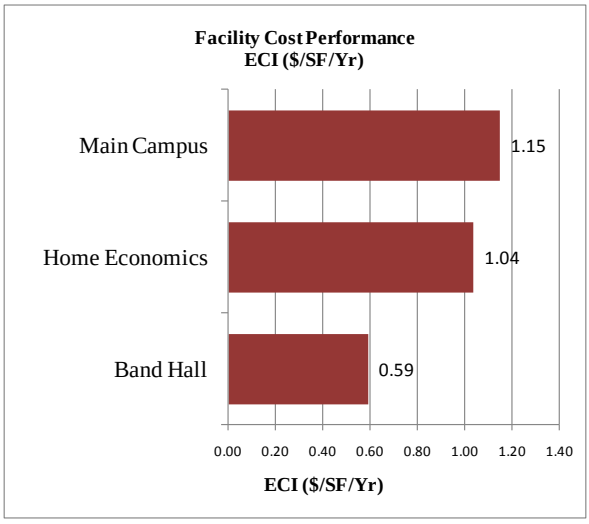
		Electric			Propane Gas			Total	Total	EUI*	ECI*	
	Building	KWH/Yr	MMBTU/Yr	$Cost/Yr	Gal./Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
1	Main Campus	439,000	1,498	46,063	6,719	605	13,223	59,285	2,103	41	1.15	51,665
2	Home Economics	14,492	49	1,610	0	0	0	1,610	49	32	1.04	1,553
3	Band Hall	5,166	18	1,273	0	0	0	1,273	18	8	0.59	2,158
4	Maintenance Shop	0	0	611	0	0	0	611	0	N/A	N/A	N/A
5	Tennis Courts	20,893	71	2,224	0	0	0	2,224	71	N/A	N/A	N/A
6	Stadium Gate / Concession Stand	19,760	67	2,450	0	0	0	2,450	67	N/A	N/A	N/A
		KWH/Yr	MMBTU/Yr	$Cost/Yr	Gal./Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
		499,311	1,704	54,230	6,719	605	13,223	67,453	2,309	39	1.12	55,376

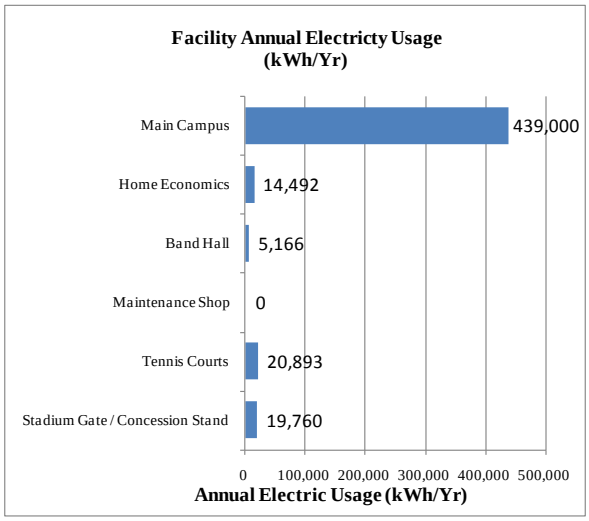
* EUI and ECI only includes buildings.

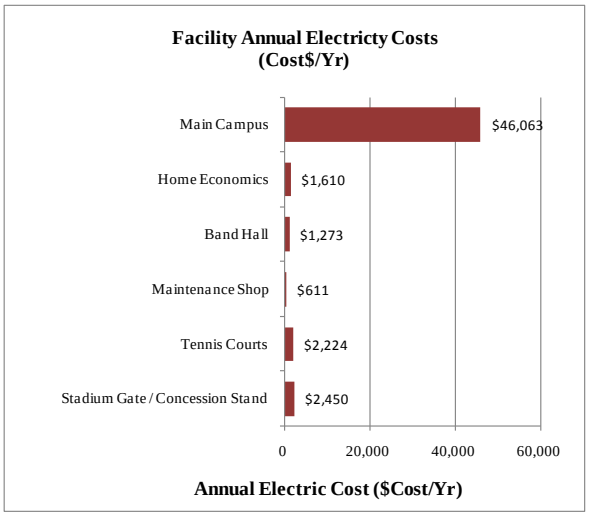
Knowing the EUI and ECI of each facility is useful to help determine the District's overall energy performance. In addition, the District's EUI was compared to TEESI's database of Texas schools. See Appendix D to determine how each facility ranked. Also, please see Appendix E to determine the utility account grouping.

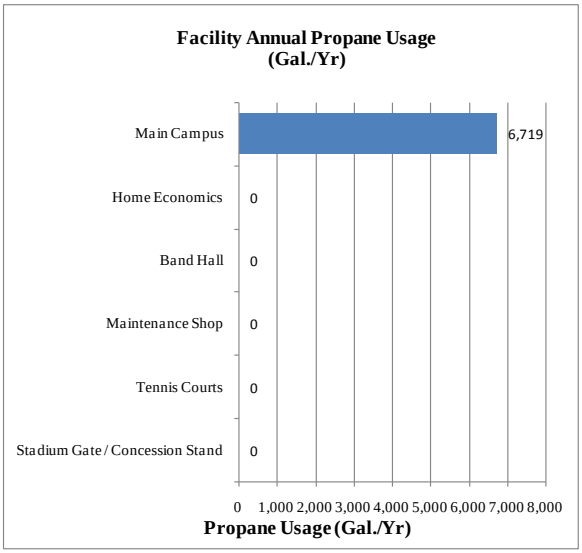
The following charts summarize the data presented in the previous table. See appendix C for further detail.

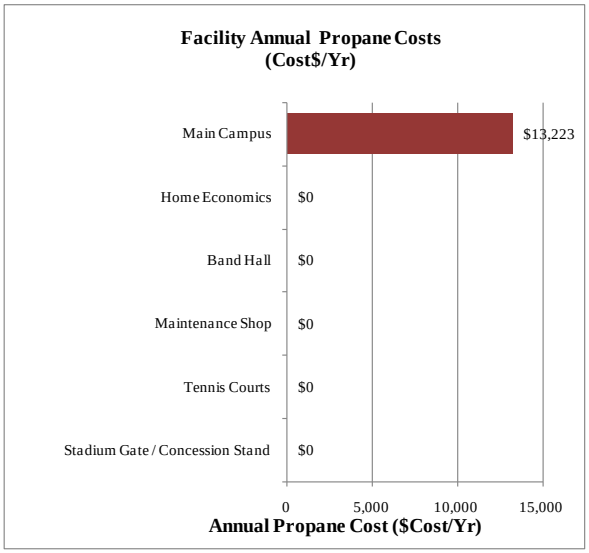












4.0 ENERGY ACCOUNTING

UTILITY PROVIDERS

Bandera Electric Cooperative currently provides electric service to the District. In addition, the District currently utilizes four (4) propane storage tanks, which are refueled on an as needed basis.

MONITORING AND TRACKING

An effective energy tracking system is an essential tool by which an energy management program's activities are monitored. Electronic spreadsheets are an effective tool to help establish an energy tracking system. These spreadsheet can be used to track all utilities consumption and cost (i.e. Electric kWh & Cost$, Propane Gallons & Cost$) on a monthly basis. 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.

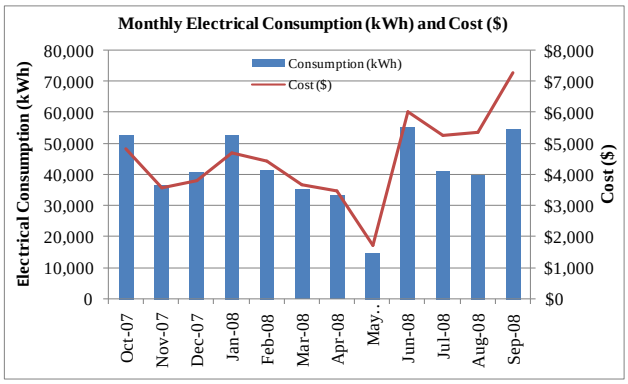
Furthermore, the following page is a sample format the District can customize to help summarize their overall utility usage and costs.

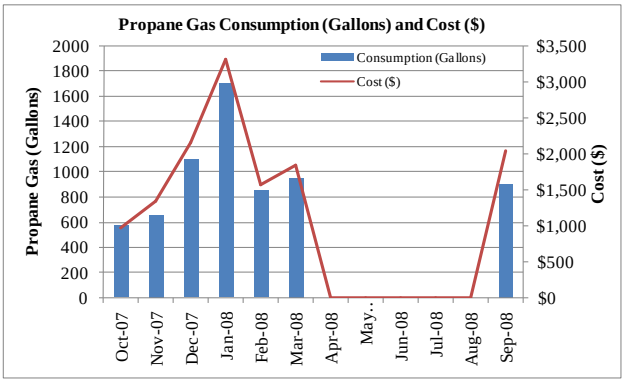
The data presented below is a summation of the data provided by the District. This data below includes only selected utility accounts and is for reference purposes only and does not represent the District's total utility data. See **Appendix C** for further detail regarding each utility account represented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

Leakey ISD - Sample Utility Data Input Form

MONTH	ELECTRICITY			PROPANE GAS			WATER		
	KWH	COST $	$/KWH	GAL.	COST $	$/GAL.	GAL	COST $	$/GAL
Oct-07	52,913	$4,832	$0.09	575.9	$973	$1.69			
Nov-07	36,734	$3,573	$0.10	652.3	$1,337	$0			
Dec-07	40,790	$3,805	$0.09	1093.4	$2,153	$1.97			
Jan-08	52,711	$4,715	$0.09	1696.7	$3,317	$1.96			
Feb-08	41,425	$4,452	$0.11	850.2	$1,564	$1.84			
Mar-08	35,377	$3,687	$0.10	950.3	$1,834	$1.93			
Apr-08	33,311	$3,482	$0.10	0.0	$0	$0.00			
May-08	14,650	$1,723	$0.12	0.0	$0	$0.00			
Jun-08	55,502	$6,036	$0.11	0.0	$0	$0			
Jul-08	41,248	$5,260	$0.13	0.0	$0	$0			
Aug-08	39,883	$5,373	$0.13	0.0	$0	$0			
Sep-08	54,767	$7,294	$0.13	900.1	$2,043	$2.27			
Total	499,311	$54,230	$0.11	6,719	$13,223	$1.97			

Gross Building Area:	55,376	SF





5.0 SENATE BILL 12 AND HOUSE BILL 3693 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 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.

The Bill requirements that are most relevant to this program are as follows:

Establish a goal of reducing electric consumption by five percent (5%) each state fiscal year for six (6) years, beginning on September 1, 2007.

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.

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 and HB 3693 is available in Appendix A. Further detail regarding each bill can be found in the Texas Legislature website (http://www.capitol.state.tx.us/Home.aspx).

To help with the utility reporting process a sample input form can be found in Appendix B of this report.

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. With this in mind, the following maintenance and operation procedures are recommended.

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. Also, considering implementing WattWatchers, a SECO sponsored program, which encourages teacher and student involvement in energy awareness, see Appendix F for further information.

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, parking lots during daylight hours, etc. One or two friendly reminders for minor infractions will usually result in lower electric bills. The pictures below are examples of lights being left on during unoccupied periods or during daylight hours.

Gym Lights on During
Unoccupied Periods

Exterior Lights On
During Daylight Hours

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.

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.

REPLACE INCANDESCENT LAMPS WITH COMPACT FLUORESCENTS

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

ENERGY STAR POWER MANAGEMENT

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

INSTALL ENERGY SAVING DEVICES ON VENDING 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.

WATT WATCHER PROGRAM

Watt Watchers of Texas is a FREE energy conservation program for Texas schools sponsored by the Texas State Energy Conservation Office/ Comptroller of Public Accounts and the Department of Energy. The program is designed for K-12 classrooms the help energy conservation awareness. The program encourages student and staff participation to help schools reduce energy waste. Information regarding this program in is found in Appendix F.

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.

RETROFIT INTERIOR LIGHTING

Replace T-12 fluorescent lamps and magnetic ballasts with high efficiency T-8 fluorescent lamps and electronic ballasts at the Band Hall building. Typical four-foot, two-lamp magnetic ballast fixtures require 80 watts, while electronic ballasts and T-8 lamps in the same fixture configuration require only 50 watts. Please note, the Band Hall presently has eight-foot T12 lamps, the District may replace them with tandem mounted four-foot T8 lamps. This lamp replacement will save energy and help improve lighting levels. The cost and savings noted below are based on preliminary observations of the facilities. Exact cost and quantities can be identified through a detailed energy audit.

LIGHTING RETROFIT			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings**	**Payback (years)**
Band Hall	$1,200	$240	5.0
TOTAL	$1,200	$240	**5.0**

INSTALL NETWORKED THERMOSTATS

Install web-based networked thermostats to provide improved control of the air-conditioning systems. Installing web-based networked thermostats will allow for multiple schedule routines, provide remote monitoring capabilities, facilitate scheduling campus-wide, and enhance maintenance procedures. The thermostats would be connected to the District's network and can be controlled and monitored from a central location. The networked thermostats shall be installed on all HVAC units that can accommodate these types of controls (such as Geothermal Units and PTAC Units). Please note, some HVAC units such as the "Bard" through-the-wall units and window units may not be compatible with these types of controls. The cost and savings below are based on preliminary observations of the facilities. Exact cost and quantities can be identified through a detailed energy audit.

NETWORKED THERMOSTATS			
Building	**Estimated Implementation Cost**	**Estimated Annual Savings**	**Payback (years)**
Leakey ISD	$45,000	$5,620	8.0
TOTAL	**$45,000**	**$5,620**	**8.0**

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

SUMMARY OF ENERGY COST REDUCTION MEASURES			
Project Description	**Estimated Implementation Cost**	**Estimated Annual Savings**	**Payback (years)**
LIGHTING RETROFIT	$1,200	$240	5.0
NETWORKED THERMOSTATS	$45,000	$5,620	8.0
TOTAL:	**$46,200**	**$5,860**	**7.9**

The above project implementation costs and annual savings are estimated based on a preliminary examination of the facilities. 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 solely justified based on the potential energy savings. However, these projects may be considered essential to ensure optimum system performance, enhance occupant comfort and to improve overall building efficiency. Capital improvement projects identified during the preliminary analysis are detailed below. Project cost estimates include complete design and construction management services.

GROUND SOURCE HEAT PUMPS (GSHP) REPAIR/REPLACEMENT

The primary HVAC systems serving the majority of the District's buildings are Ground Source Heat Pumps (GSHP) or commonly referred to as "Geothermal Heat Pumps". During the preliminary walkthrough, it was noted that approximately 26 of the 56 identified GSHP are non-functional. To compensate for the non-functioning GSHPs the District installs either Window Units or Packaged Terminal Air Conditioning (PTAC) units. In general, a fully functional GSHP system is capable of operating at higher efficiencies than conventional systems such as window or PTAC units. Therefore, the District may consider repairing the existing units or replacing them with a comparable system. However, in order to sustain a high system efficiency it is important to have the required resources and expertise available to properly service any HVAC system. The GSHP system is a potentially valuable long-term asset if it can be rehabilitated.

The GSHP system should be thoroughly reviewed by a qualified professional engineer to determine the extent of the inadequacies of the system. Below is a suggested sequence of investigations. At each step in the investigation, the cost of repairing any inadequacy discovered should be compared with the cost of a complete system replacement before continuing to the next investigation step. An engineer should direct the testing and/or select a qualified service contractor. Some tasks may be within the expertise of the in-house maintenance staff.

Recommended GSHP System Investigation Steps:

1) **Verify Ground Loop Capacity** - Determine if amount of ground loop piping is adequate for the cooling requirements. This entails determining the depth of the wells, the type and size of the pipe, and the characteristics of the ground and the borehole backfill. If the well depth is not known, it can be determined from the well-head by measuring the volume of water in the vertical pipes and the interior diameter of the pipes. Determine the cost of providing any additional well capacity required, if that may be feasible.

2) **Leak/Pressure Test Ground Loop** - Test buried piping for leaks or restrictions. If leaks are found to existing piping, it may be necessary to determine whether they are in horizontal piping or in the wells. Estimate cost of repairs.

3) **Diagnose Indoor GSHP Unit Failure Points** - Determine the nature and cause of the GSHP unit failures to see if system corrections will reduce the risk of future failures. Project the cost of refurbishing or replacing failed or defective equipment.

The table below provides an estimated cost to replace the existing GSHP system. The costs are based on replacing the complete GSHP system identified to total approximately 85 tons. To the extent the existing ground loops can be re-used, the cost of installing new ground loops can be avoided.

Ground Source Heat Pump (GSHP) System Replacement Costs			
Equipment Type	**Estimated Implementation Cost[1]**	**Positive**	**Negative**
GSHP System		Capable of very high efficiencies. Sustainable energy savings with proper maintenance schedules.	Existing or Replacement GSHP indoor units will need to be equipped with ventilation air. Requires specialized service and maintenance.
a. Ground Loop Installation	$85,000 - $255,000	Existing ground loops may be reused, therefore eliminating the cost for new loops.	Contingent upon any ground loop repair costs identified upon further system investigation.
b. New Indoor Units	$200,000	Newer units can be equipped to handle ventilation air if applicable.	
c. Complete GSHP System	$285,000 - $455,000		

1) Costs based on a complete system of individual units totaling 85 tons.

Furthermore, the table below provides costs of two alternative HVAC systems. The District may consider replacing the existing GSHP system with PTAC units or Split-DX systems. Each alternative HVAC system along with the GSHP system have individual design issues and positive/negative attributes. Each table shown above and below provide general positive/negative attributes of each system. It is recommended that any system replacement should be designed by a qualified professional engineering team, due to the number of design issues. For example, fresh air intake may be required for certain areas. In addition, if a Split-DX system is considered, the locations for the condensers should not compromise the historic buildings and or excessively fill the limited peripheral space. To mitigate this, the condensers can be placed on the roofs of some buildings if necessary, contingent upon a structural analysis. Replacement of all existing units may be justified for uniformity of appearance and comfort, for simplicity of maintenance, and for better integration with a building energy management and control system. The District my find these tables useful when budgeting future HVAC upgrades.

HVAC System Replacement Alternatives			
Equipment Type	**Estimated Implementation Cost[1]**	**Positive**	**Negative**
PTAC	$130,000	Lower initial cost.	Separate ventilation equipment may be required. Limited control capabilities. Lower efficiencies.
Split-DX	$170,000	Ventilation can be accomplished by each unit. Qualified service representatives available locally. High efficiency units available.	Requires ducting, mechanical closets, and refrigerant piping penetrations. Limited area for condensing units, location should be visually appealing as to not compromise historic buildings.

1) Costs based on a complete system of individual units totaling 85 tons.

Please note Packaged Rooftop Units (RTUs) were not included as an HVAC system replacement alternative due to possible roof load implications. The application of packaged rooftop units, specifically in wood frame structures, may impose additional roof loads that may require structural support. If packaged rooftop units are considered, the District should consult a structural engineer.

9.0 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 current interest rate of 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: Theresa Sifuentes (512/463-1896).

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, certain utility providers provide incentives for efficiency measures such as installation of high efficiency equipment, lighting upgrades, and building commissioning. These energy efficiency programs' incentives typically cover $0.06/kWh and $175/kW of verifiable energy and demand reductions, respectively. For further information, contact your utility provider to determine what programs are available in your area.

10.0 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 procedures 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. **In addition, considering participating in the SECO sponsored WattWatchers program will help accomplish this task, see Appendix F for further information regarding this program.**

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.) shall be maintained at equipment supplier recommended settings.

Occupied Cooling Temperature Setpoints:

Instructional Areas	74 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	68 F – 70 F
Admin Areas	68 F – 70 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 will be paid on 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 on 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 a establish a program to reduce water consumption. The following conservation measures shall be employed.

   a. Investigate the use of water conserving faucets, showerheads, and toilets in all new and existing facilities.
   b. Utilize water-previous materials such as gravel, crushed stone, open paving blocks or previous 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.

11.0 ANALYST IDENTIFICATION

Texas Energy Engineering Services, Inc.
Capital View Center, Suite B-325
1301 Capital of Texas Highway
Austin, Texas 78746
(512) 328-2533

M. Saleem Khan, P.E., CxA
David Rocha, LEED-AP

APPENDICES

APPENDIX A

SENATE BILL 12 AND HOUSE BILL 3693 SUMMARY

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:

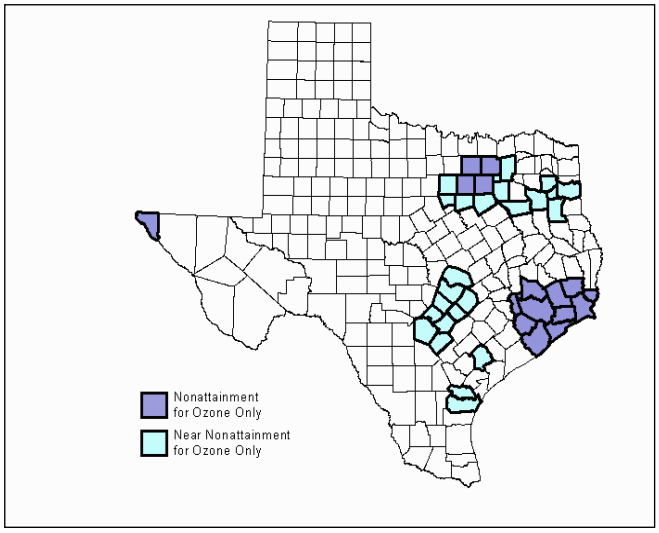
• installation of insulation and high-efficiency windows and doors • modifications or replacement of HVAC systems, lighting fixtures and electrical systems • installation of automatic energy control systems • installation of energy recovery systems or renewable energy generation equipment • building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

Engineering (Codes / Standards):
Felix Lopez - 512-463-1080
Felix.Lopez@cpa.state.tx.us

Innovative / Renewable Energy:
Pamela Groce - 512-463-1889
pam.groce@cpa.state.tx.us

Energy / Housing
Partnership Programs:
Stephen Ross - 512-463-1770
Stephen.Ross@cpa.state.tx.us

Alternate Fuels / Transportation:
Mary-Jo Rowan - 512-463-2637
Mary-Jo.Rowan@cpa.state.tx.us

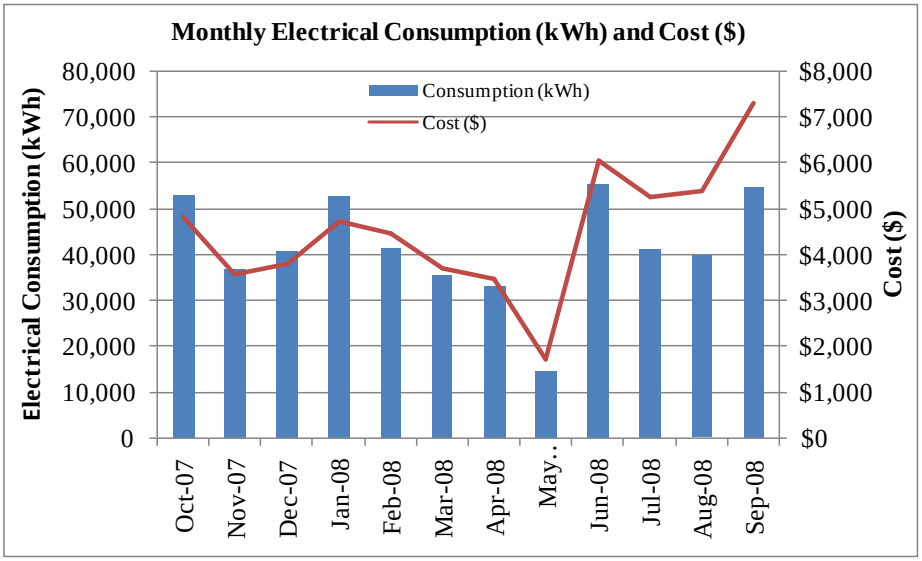
APPENDIX B

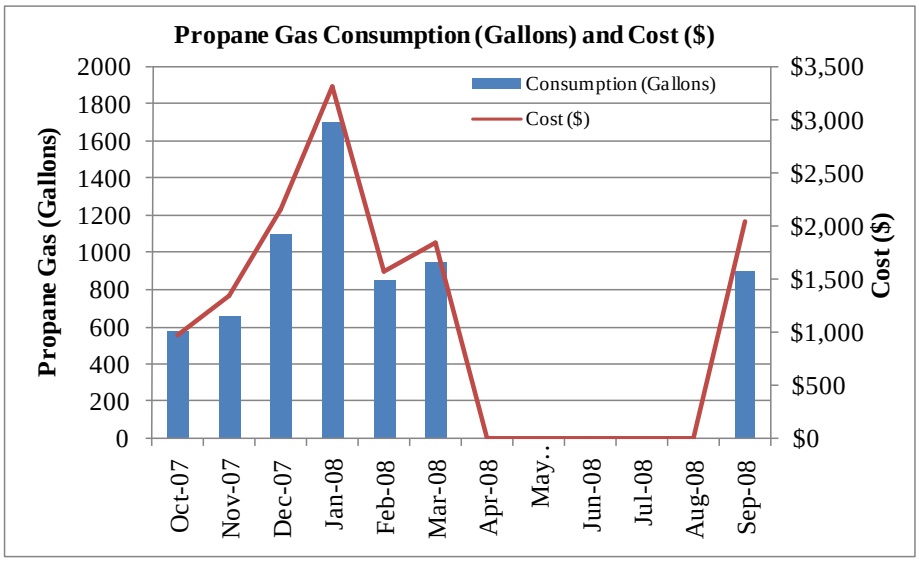
SAMPLE UTILITY DATA REPORTING FORM

Leakey ISD - Sample Utility Data Input Form

MONTH	ELECTRICITY			PROPANE GAS			WATER		
	KWH	COST $	$/KWH	GAL.	COST $	$/GAL.	GAL	COST $	$/GAL
Oct-07	52,913	$4,832	$0.09	575.9	$973	$1.69			
Nov-07	36,734	$3,573	$0.10	652.3	$1,337	$0			
Dec-07	40,790	$3,805	$0.09	1093.4	$2,153	$1.97			
Jan-08	52,711	$4,715	$0.09	1696.7	$3,317	$1.96			
Feb-08	41,425	$4,452	$0.11	850.2	$1,564	$1.84			
Mar-08	35,377	$3,687	$0.10	950.3	$1,834	$1.93			
Apr-08	33,311	$3,482	$0.10	0.0	$0	$0.00			
May-08	14,650	$1,723	$0.12	0.0	$0	$0.00			
Jun-08	55,502	$6,036	$0.11	0.0	$0	$0			
Jul-08	41,248	$5,260	$0.13	0.0	$0	$0			
Aug-08	39,883	$5,373	$0.13	0.0	$0	$0			
Sep-08	54,767	$7,294	$0.13	900.1	$2,043	$2.27			
Total	499,311	$54,230	$0.11	6,719	$13,223	$1.97			

Gross Building Area:	55,376	SF





APPENDIX C

BASE YEAR CONSUMPTION HISTORY

Energy Cost and Cosumption Benchmarks

		Electric			Propane Gas			Total	Total	EUI*	ECI*	
	Building	KWH/Yr	MMBTU/Yr	$Cost/Yr	Gal./Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
1	Main Campus	439,000	1,498	46,063	6,719	605	13,223	59,285	2,103	41	1.15	51,665
2	Home Economics	14,492	49	1,610	0	0	0	1,610	49	32	1.04	1,553
3	Band Hall	5,166	18	1,273	0	0	0	1,273	18	8	0.59	2,158
4	Maintenance Shop	0	0	611	0	0	0	611	0	N/A	N/A	N/A
5	Tennis Courts	20,893	71	2,224	0	0	0	2,224	71	N/A	N/A	N/A
6	Stadium Gate / Concession Stand	19,760	67	2,450	0	0	0	2,450	67	N/A	N/A	N/A
		KWH/Yr	MMBTU/Yr	$Cost/Yr	Gal./Yr	MMBTU/Yr	$Cost/Yr	$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	$/SF/Yr	SF
		499,311	1,704	54,230	6,719	605	13,223	67,453	2,309	39	1.12	55,376

* EUI and ECI only includes buildings.

District: Leakey ISD

ACCOUNT# 1212750-001, 1212750-02, 1212750-003 Electric

Gas

BUILDING: Main Campus FLOOR AREA: 51,665

		Electrical					PROPANE GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	GALLONS	COSTS ($)
October	2007	47,880		66		4,249	576	973
November	2007	32,560		56		3,014	652	1,337
December	2007	35,960		57		3,195	1,093	2,153
January	2008	42,440		63		3,667	1,697	3,317
February	2008	34,240		58		3,545	850	1,564
March	2008	30,240		54		3,012	950	1,834
April	2008	30,320		53		3,006	0	0
May	2008	13,040		53		1,539	0	0
June	2008	50,320		63		5,297	0	0
July	2008	37,960		39		4,651	0	0
August	2008	34,720		41		4,502	0	0
September	2008	49,320		65		6,385	900	2,043
TOTAL		439,000		668		46,063	6,718.9	13,223

Energy Use Index:

Annual Total Energy Cost = 59,285 $/year

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

Total KWH/yr x 0.003413 = 1,498.31 MMBTU/year

Total Gal./yr x 0.090054 = 604.74 MMBTU/year

Energy Cost Index:

Total Other x _____ = 0.0 MMBTU/year

Total Energy Cost/Yr ÷ Total Area (SF) = 1.15 $/SF/year

Total Site MMBTU's/yr = 2,103 MMBTU/year

Electric Utility: Bandera Electric

Gas Utility: Propane Refueling Service

District: Leakey ISD

ACCOUNT# 1212750-14 Electric

Gas

BUILDING: Home Economics FLOOR AREA: 1,553

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
October	2007	852				93	0	0
November	2007	639				75	0	0
December	2007	1,604				154	0	0
January	2008	3,499				308	0	0
February	2008	1,983				212	0	0
March	2008	1,291				139	0	0
April	2008	549				71	0	0
May	2008	271				28	0	0
June	2008	1,199				144	0	0
July	2008	720				108	0	0
August	2008	832				126	0	0
September	2008	1,053				154	0	0
TOTAL		14,492				1,610	0.0	0

Energy Use Index:

Annual Total Energy Cost = 1,610 $/year

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

Total KWH/yr x 0.003413 = 49.46 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Energy Cost Index:

Total Other x _____ = 0.0 MMBTU/year

Total Energy Cost/Yr ÷ Total Area (SF) = 1.04 $/SF/year

Total Site MMBTU's/yr = 49 MMBTU/year

Electric Utility: Bandera Electric

Gas Utility: N/A

District: Leakey ISD

ACCOUNT# 1212750-013 Electric

Gas

BUILDING: Band Hall FLOOR AREA: 2,158

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
October	2007	410				55	0	0
November	2007	231				89	0	0
December	2007	428				106	0	0
January	2008	640				122	0	0
February	2008	665				138	0	0
March	2008	446				110	0	0
April	2008	233				89	0	0
May	2008	150				27	0	0
June	2008	447				116	0	0
July	2008	116				88	0	0
August	2008	625				156	0	0
September	2008	775				176	0	0
TOTAL		5,166				1,273	0.0	0

Energy Use Index:

Annual Total Energy Cost = 1,273 $/year

Total site BTU's/Yr ÷ Total Area (SF) = 8 kBTU/SF/year

Total KWH/yr x 0.003413 = 17.63 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 18 MMBTU/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 0.59 $/SF/year

Electric Utility: Bandera Electric

Gas Utility: N/A

District: Leakey ISD

ACCOUNT# 1212750-012 Electric

Gas

BUILDING: Maintenance Shop FLOOR AREA: N/A

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
October	2007	0				53	0	0
November	2007	0				53	0	0
December	2007	0				54	0	0
January	2008	0				53	0	0
February	2008	0				56	0	0
March	2008	0				53	0	0
April	2008	0				52	0	0
May	2008	0				8	0	0
June	2008	0				54	0	0
July	2008	0				56	0	0
August	2008	0				59	0	0
September	2008	0				59	0	0
TOTAL		0				611	0.0	0

Energy Use Index:

Annual Total Energy Cost = 611 $/year

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

Total KWH/yr x 0.003413 = 0.00 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 0 MMBTU/year

Energy Cost Index:

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

Electric Utility: Bandera Electric

Gas Utility: N/A

District: Leakey ISD

ACCOUNT# 1212750-011 Electric

Gas

BUILDING: Tennis Courts FLOOR AREA: N/A

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
October	2007	1,291				130	0	0
November	2007	1,584				155	0	0
December	2007	1,558				150	0	0
January	2008	4,212				366	0	0
February	2008	3,017				312	0	0
March	2008	2,200				222	0	0
April	2008	1,449				153	0	0
May	2008	829				84	0	0
June	2008	1,176				141	0	0
July	2008	652				99	0	0
August	2008	1,866				256	0	0
September	2008	1,059				155	0	0
TOTAL		20,893				2,224	0.0	0

Energy Use Index:

Annual Total Energy Cost = 2,224 $/year

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

Total KWH/yr x 0.003413 = 71.31 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Energy Cost Index:

Total Other x _____ = 0.0 MMBTU/year

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

Total Site MMBTU's/yr = 71 MMBTU/year

Electric Utility: Bandera Electric

Gas Utility: N/A

District: Leakey ISD

ACCOUNT# 1212750-005 1212750-006 Electric

Gas

BUILDING: Stadium Gate / Concession Stand FLOOR AREA: N/A

		ELECTRICAL					NATURAL GAS / FUEL	
			DEMAND			TOTAL ALL		
		CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
MONTH	YEAR	KWH	KW	KW	DEMAND ($)	COSTS ($)	MCF	COSTS ($)
October	2007	2,480				251	0	0
November	2007	1,720				187	0	0
December	2007	1,240				145	0	0
January	2008	1,920				199	0	0
February	2008	1,520				188	0	0
March	2008	1,200				151	0	0
April	2008	760				111	0	0
May	2008	360				37	0	0
June	2008	2,360				283	0	0
July	2008	1,800				258	0	0
August	2008	1,840				274	0	0
September	2008	2,560				365	0	0
TOTAL		19,760				2,450	0.0	0

Energy Use Index:

Annual Total Energy Cost = 2,450 $/year

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

Total KWH/yr x 0.003413 = 67.44 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Energy Cost Index:

Total Other x _____ = 0.0 MMBTU/year

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

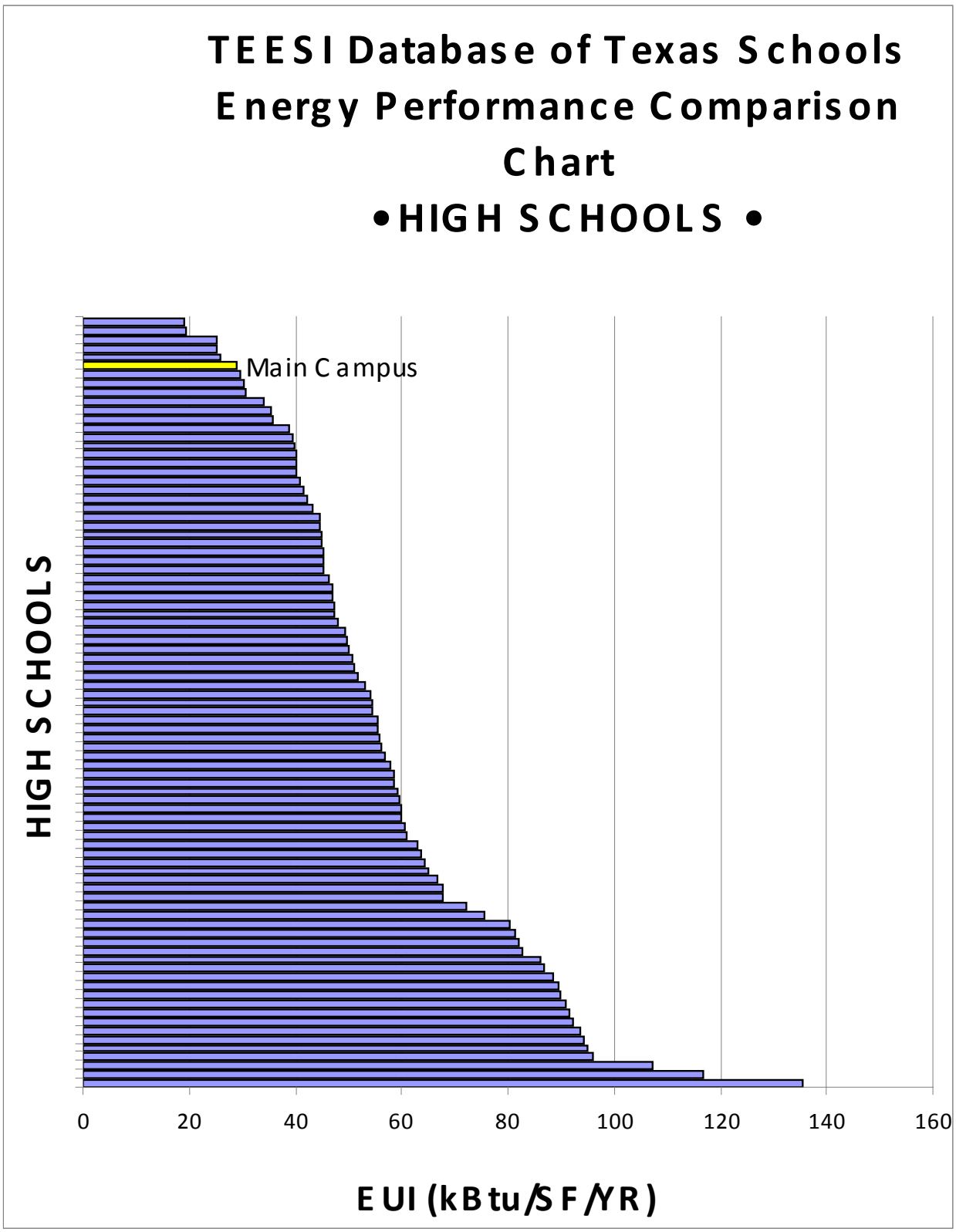
Total Site MMBTU's/yr = 67 MMBTU/year

Electric Utility: Bandera Electric

Gas Utility: N/A

APPENDIX D

ENERGY PERFORMANCE COMPARISON CHARTS



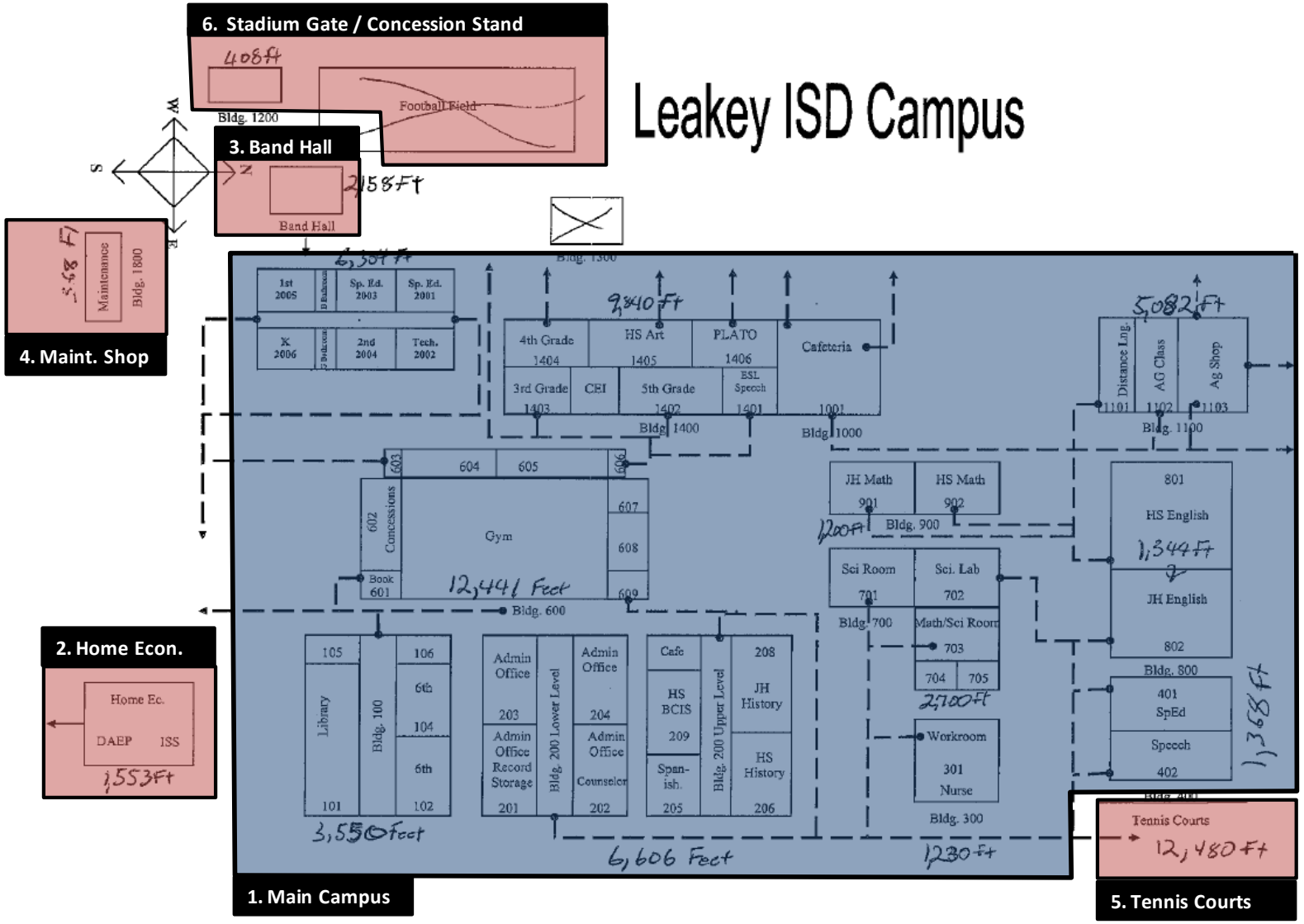
For a general reference comparison, the EUI of all the Main Campus buildings was compared to a database of High School EUIs. Please note all utility meters serving the Main Campus buildings were grouped together. The Main Campus Group includes K-12 classrooms and Admininstration excluding Band Hall, Home Economics, Maint. Shop, Stadium and Tennis Courts (see Appendix E for grouping).

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

APPENDIX E

UTILITY DATA GROUPING CAMPUS MAP

UTILITY DATA GROUPING CAMPUS MAP



APPENDIX F

WATT WATCHERS PROGRAM

Watt Watchers of Texas

Saving Energy in Texas Schools

1-888-US WATTS

or

1-888-WATTEAM

Watt Watchers of Texas is a free, state sponsored program to help schools save energy and money by getting students involved. Students patrol their school looking for empty classrooms with the lights on. They turn out the lights and leave a ticket for the teacher. It may sound trivial but...when the teacher forgets to turn out the lights an extra 2 hours per day, at lunch and after school, for example - it costs the district $50 every year.

Get your students involved.
Save energy, save money,
and prevent pollution.

Sign Up for a free kit today.

Watt Watchers of Texas
University of Texas at El Paso – Energy Center
PO Box 68660
El Paso, Texas 79968
http://wattwatchers.org

Watt Watchers of Texas is sponsored by the Texas State Energy Conservation Office/Comptroller of Public Accounts and the U.S. Department of Energy

APPENDIX G

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:

Theresa Sifuentes
SECO, LoanSTAR Program Manager
(512) 463-1896

APPENDIX H

DESCRIPTION OF SECO PROGRAMS

Texas State Energy Conservation Office (SECO)

The Texas State Energy Conservation Office (SECO) helps Texas make the most of domestic energy, reduce state and local government energy costs and promote cost-effective, clean-energy technologies. SECO's mission is to maximize energy efficiency while protecting the environment.

LoanSTAR Revolving Loan Program: has saved taxpayers more than $224.6 million through energy-efficiency projects for state agencies, institutions of higher education, school districts, county hospitals and local governments. Borrowers repay loans through cost savings generated by the projects. LoanSTAR-funded projects have also prevented the release of 7,781 tons of nitrogen oxides (NOx), 2.3 million tons of carbon dioxide (CO2) and 5,339 tons of sulfur dioxide (SO2).

Schools/Local Government Energy Program: has helped more than 3,500 schools and other units of local government set up and maintain effective energy-efficiency programs. SECO provides facility preliminary energy assessments, energy management training workshops, technical support in designing new facilities and on-site training for student energy awareness projects. Clean energy technologies are demonstrated at public facilities and school districts to increase awareness and address air quality at the community level. Texas schools also employ the computer power management software that puts monitors to "sleep" when not in use. Over 136,000 school computers now use this software, saving 42 million kWh and reducing energy costs by $3 million annually.

Energy Education Program: promotes energy conservation and efficiency through education. The program strives to lay the foundation for environmental stewardship in teachers and students through critical-thinking and problem-solving investigations in Texas Education Agency approved workshops. Over 2,500 teachers have attended these workshops and utilized the materials in their classrooms reaching over 375,000 students. The program also supports fuel cell technical training curriculum development at the college level.

State Agencies/Higher Education Program: ensures that new facilities are designed and built with energy efficiency and water conservation in mind. Projects include administration and maintenance of the Energy and Water Conservation Design Standard for new state buildings and major renovation projects. Other initiatives include development of statewide employee energy awareness through workshops on how energy efficiency and employee behavior can reduce energy use. The program provides educational materials on how to use energy more efficiently through product procurement, innovative technologies and sustainable design practices. This program also provides education and outreach on residential and commercial energy codes statewide. The goal is to demonstrate the clear benefits of energy codes and standards in improving the quality of life, the environment and the safety and health of communities.

Alternative Fuels Program: demonstrates the positive environmental impact, technical feasibility and energy efficiency of domestically-produced alternative fuels. The Alternative Fuels Program is designed to assist state agencies, school districts, local government and private fleets to operate more of their fleets on alternative fuels. Initiatives include support for the Clean Cities Program, Clean School Bus USA Program, Mechanics Education Outreach and Air Quality Demonstration Projects.

Energy Management Services: a comprehensive energy management program designed to significantly reduce energy and utility expenditures in state-owned facilities. The State of Texas spent over $216 million in energy and utility expenditures in 2006. Program components include construction of a state-of-the-art energy and utility information management system, a comprehensive analysis of historic and future utility bills, energy procurement at the lowest possible rates and best available terms, and owner's representative services on ongoing and future energy-conservation projects. Institutions of higher education, state university systems and local governments are eligible to participate in the program.

Innovative Energy Program: promotes the use of renewable energy and sustainable building practices through technology demonstration, hands-on instruction and renewable energy education. Renewable energy has significant economic, security and reliability benefits and opportunities for Texas communities and individuals as they develop and use these resources. SECO increases public awareness of Texas' vast renewable energy resources and provides the public better access to vendors, financing options, and renewable energy incentives through its educational web site, The Infinite Power of Texas, at www.infinitepower.org.

Housing Partnership Program: promotes the efficient use of energy in low-to-moderate-income housing through partnerships among nonprofit organizations, community action agencies, local governments, utility companies, public housing authorities and social service organizations. The program encourages community and residential involvement in energy-efficiency projects such as housing retrofits, model demonstration projects, technical training assistance and energy education workshops and seminars.

Pollution Mitigation Program: assists political subdivisions in the 41 non-attainment counties to reduce electric consumption in their facilities by implementing cost-effective energy efficiency projects. SECO provides technical support and guidance through the Texas Energy Partnership, a joint initiative involving SECO, the U. S. Department of Energy and ENERGY STAR®. Information, planning tools and electronic reporting are offered at www.texasenergypartnership.org.

Pantex Program: The Pantex Nuclear Weapons plant, located in Carson County, is responsible for assembling and disassembling nuclear weapons. The U.S. Department of Energy funds the Texas Agreement in Principle, which SECO has administered since 1990. SECO contracts with a variety of state and local governments to ensure that human health and safety, and the environment, are protected around the plant. The Pantex Program also administers a DOE grant to train local emergency responders along routes that have shipments of radioactive waste going to the Waste Isolation Pilot Plant near Carlsbad, New Mexico, and eventually shipments of spent fuel tentatively scheduled to go to Yucca Mountain in Nevada.

State Energy Conservation Office
111 East 17th Street
Austin, TX 78774-1440
Phone: (512) 463-1931
Fax: (512) 475-2569
www.seco.cpa.state.tx.us

APPENDIX I

REQUEST FOR ENERGY ASSISTANCE

REQUEST FOR ENERGY ASSISTANCE

Energy efficiency is increasingly important for our local communities and the state of Texas. It reduces costs, increases available capital, spurs economic growth, improves working, learning and living environments and preserves precious resources. The State Energy Conservation Office (SECO) offers a number of **free and cost shared** programs and services to help public agencies establish and achieve their energy efficiency goals.

SECO through its engineering consultants offers public agencies the following free or cost shared energy management services:

• On-Site Energy Assessments Of Facilities	Free
• Senate Bill 12 and House Bill 3693 Assistance	Free
• On-Site Training For Maintenance And Operations Personnel	Free
• Workshops For Energy Managers, Maintenance Personnel And Administrators	Free
• Energy Efficiency Programs For Students and Teachers	Free
• Energy Master Planning	50% Cost Shared
• Energy Management Policy Development And Implementation	Free
• Assistance In Identifying Energy Retrofit Funding Sources	Free

Specific responsibilities of the partner and SECO in this agreement:

- Partner will select a contact person to work with SECO and its engineering consultant to establish an energy policy and set realistic energy efficiency goals.
- SECO's contractor will contact partners to assess their energy management needs.
- SECO will provide a report, which identifies no cost/low cost recommendations, capital retrofit projects, potential sources of funding and other needs and opportunities.
- Partner will schedule a time for SECO's contractor to present its findings and recommendations to key decision makers.
- Partner pledges that it is ready and willing to consider implementing the energy saving recommendations.

Acceptance Of Agreement And Request For Energy Management Assistance

Signature: [signature] Date: 2-9-09

Name (Mr./Ms./Dr.): Mr Fred McNiel Title: Superintendent

Organization: Lenkey ISD Phone: 830 232 5595

Address: P.O. Box 1129 Fax: 830 232 5535

Lenkey, TX 78873 E-mail: fmcniel@lenkey.isd.net

Assigned Program Person:

Name: Fred McNiel Title: Superintendent

Phone: 830 232 5595 County: Real

Fax: 830 232 5535 E-Mail: fmcniel@lenkey.isd.net

Please complete and mail or fax to the following SECO Consultant : Texas Energy Engineering Services, Inc. (TEESI), ATTENTION: Saleem Khan, P.E., 1301 Capital Of Texas Highway #B-325, Austin, TX. 78746, Phone 512-328-2533, **Fax 512-328-2544.** If you need to contact the State Energy Conservation Office, please call **Glenda Baldwin** At **512-463-1731** or you may write to her at: Comptroller Of Public Accounts, State Energy Conservation Office, 111 E. 17th Street, Austin, Texas 78774.