

SCHOOLS AND HOSPITALS ENERGY MANAGEMENT PROGRAM REPORT

For



Home of the Bobkatz
and BobKittens

Moulton ISD

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Moulton ISD

500 North Pecan Street / P.O. Box C
Moulton, Texas 77975

Administered By:



SECO

State Energy Conservation Office

COMPTROLLER OF PUBLIC ACCOUNTS
STATE ENERGY CONSERVATION OFFICE (SECO)

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Prepared By:

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Schools & Hospitals Energy Management Program

Moulton Independent School District

500 North Pecan Street / P.O. Box C

Moulton, Texas 77975

Contact Person: Michael Novotry, Superintendent

Phone: (361) 596-4609

1.0 EXECUTIVE SUMMARY

Moulton 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:	\$37,500
Annual Energy Cost Savings:	\$7,260
Simple Payback:	5.2 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 Retrofit Projects (Section 8.0), Funding Options (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
(512) 463-1731

TEESI / Saleem Khan
(512) 328-2533

2.0 FACILITY DESCRIPTIONS

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

Cafeteria



Image Source: TEESI

Stories:	Single story building
Area:	1,867 SF
Year Built:	1950
Bldg. Components:	Wood siding exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Split-DX systems
Controls:	Standard Thermostats

Vocational Building



Image Source: TEESI

Stories:	Single story building
Area:	2,916 SF
Year Built:	1941
Bldg. Components:	Stone exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Window units
Controls:	Standard Thermostats

Band Hall



Image Source: TEESI

Stories:	Single story building
Area:	2,035 SF
Year Built:	1950
Bldg. Components:	Vinyl siding exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Split-DX system
Controls:	Standard Thermostats

Gymnasium



Image Source: TEESI

Stories:	Single story building
Area:	16,580 SF
Year Built:	1991
Bldg. Components:	Metal exterior, pitched metal roof, slab on grade foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts and HID fixtures
HVAC:	Packaged rooftop units
Controls:	Standard Thermostats

Elementary K-3



Image Source: TEESI

Stories: Single story building
Area: 8,968 SF
Year Built: 1955
Bldg. Components: Brick exterior, pitched metal roof, slab on grade foundation
Typical Lighting Fixtures: T12 fluorescent fixtures with magnetic ballasts
HVAC: Split-DX systems
Controls: Standard Thermostats

Elementary 4-6



Image Source: TEESI

Stories: Single story building
Area: 8,543 SF
Year Built: 1996
Bldg. Components: Brick exterior, pitched metal roof, slab on grade foundation
Typical Lighting Fixtures: T12 fluorescent fixtures with magnetic ballasts
HVAC: Split-DX systems
Controls: Standard Thermostats

High School



Image Source: TEESI

Stories:	Two story building
Area:	12,394 SF
Year Built:	1901
Bldg. Components:	Brick and masonry exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Split-DX systems
Controls:	Standard Thermostats

Technology and Science Building



Image Source: TEESI

Stories:	Single story building
Area:	3,348 SF
Year Built:	1946
Bldg. Components:	Wood siding exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Split-DX systems
Controls:	Standard Thermostats

Administration



Image Source: TEESI

Stories:	Single story building
Area:	1,867 SF
Year Built:	1941
Bldg. Components:	Stone exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Split-DX systems
Controls:	Standard Thermostats

Gymnasium/Auditorium



Image Source: TEESI

Stories:	Single story building
Area:	7,776 SF
Year Built:	1938
Bldg. Components:	Masonry exterior, pitched composite shingle roof, pier and beam foundation
Typical Lighting Fixtures:	HID fixtures
HVAC:	Propane space heaters
Controls:	Standard Thermostats

Elementary Workroom/Library



Image Source: TEESI

Stories:	Single story building
Area:	3,872 SF
Year Built:	1992
Bldg. Components:	Wood siding exterior, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T12 fluorescent fixtures with magnetic ballasts
HVAC:	Split-DX systems
Controls:	Standard Thermostats

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 79 thousand square feet.

Annual electric and natural gas invoices for the buildings surveyed were \$79,457 for the 12 month period ending July 2008. A summary of annual utility costs is provided in Appendix C, Base Year Consumption History.

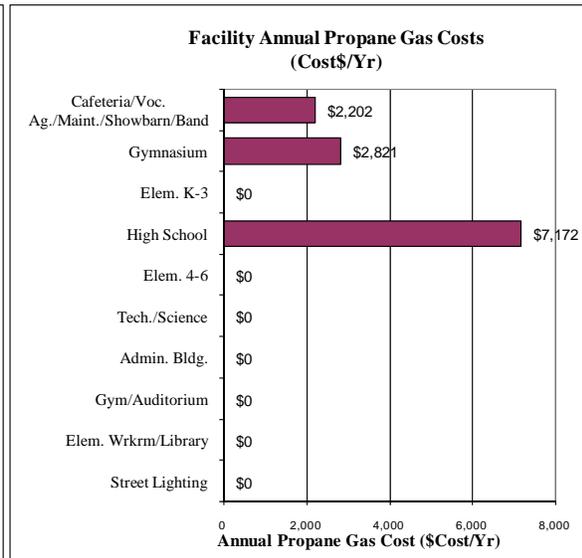
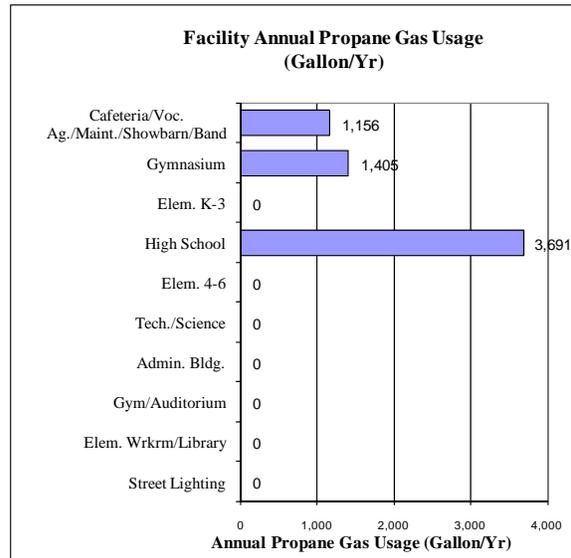
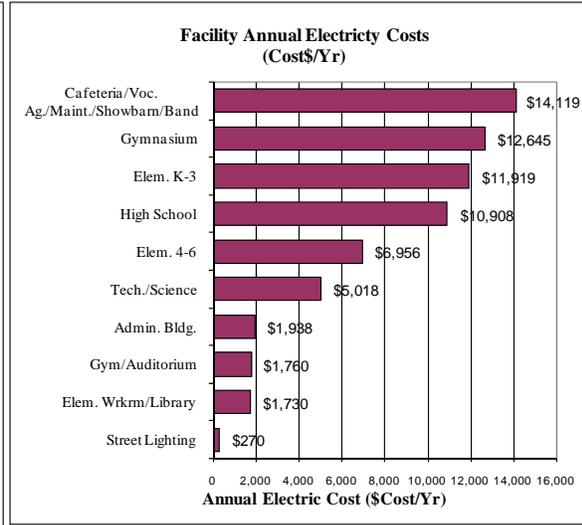
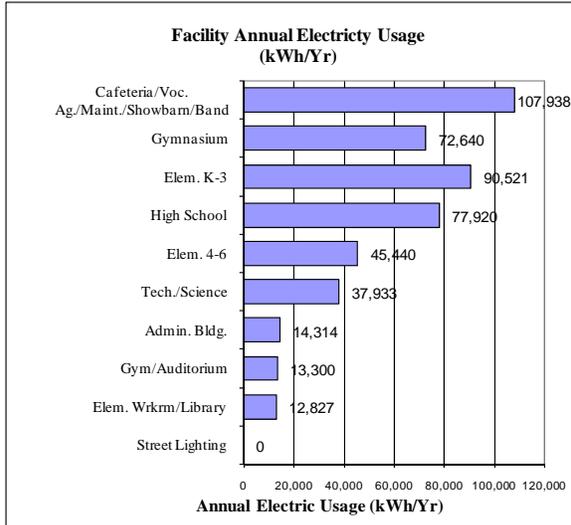
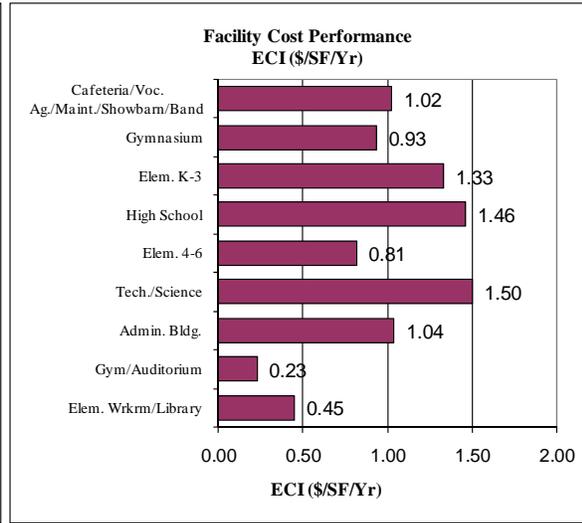
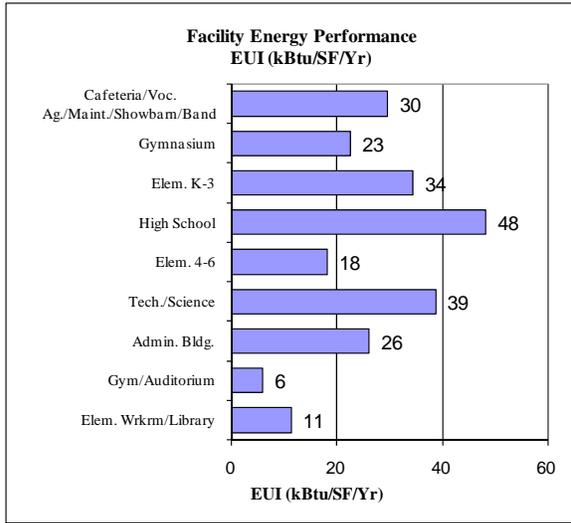
To help the District evaluate the overall energy performance of its facilities TEESI has calculated their Energy Utilization Index (EUI) and Energy Cost Index (ECI). The EUI represents a facility's annual energy usage per square foot, it is measured as thousand BTU's per square foot per year (kBTU/SF/Year). 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 Consumption Benchmarks										
Building	Electric		Propane Gas		Total		Total	EUI	ECI	SF
	KWH/Yr	\$Cost/Yr	Gal./Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr		
1*	Cafeteria/Voc. Ag./Maint./Showbarn/Band	107,938	14,119	1,156	2,202	16,321	478	30	1.02	15,927
2	Gymnasium	72,640	12,645	1,405	2,821	15,466	381	23	0.93	16,580
3	Elem. K-3	90,521	11,919	0	0	11,919	309	34	1.33	8,968
4	High School	77,920	10,908	3,691	7,172	18,080	617	48	1.46	12,394
5	Elem. 4-6	45,440	6,956	0	0	6,956	155	18	0.81	8,543
6	Tech./Science	37,933	5,018	0	0	5,018	129	39	1.50	3,348
7	Admin. Bldg.	14,314	1,938	0	0	1,938	49	26	1.04	1,867
8	Gym/Auditorium	13,300	1,760	0	0	1,760	45	6	0.23	7,776
9	Elem. Wrkrm/Library	12,827	1,730	0	0	1,730	44	11	0.45	3,872
10	Street Lighting	0	270	0	0	270	0	N/A	N/A	N/A
		KWH/Yr	\$Cost/Yr	Gal./Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr	SF
		472,833	67,262	6,252	12,195	79,457	2,208	27	1.00	79,275

* One electric meter serves multiple 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.

The following six (6) charts summarize the data presented in the previous table. See appendix C for further detail.



4.0 ENERGY ACCOUNTING

UTILITY PROVIDERS

Moulton Municipal Plant currently provides electric service to the District. In addition, the District currently utilizes three (3) Liquefied Propane Gas (LPG) storage tanks, which are refueled on an as needed basis.

MONITORING AND TRACKING

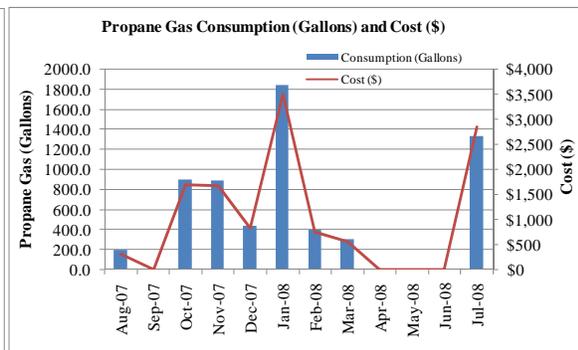
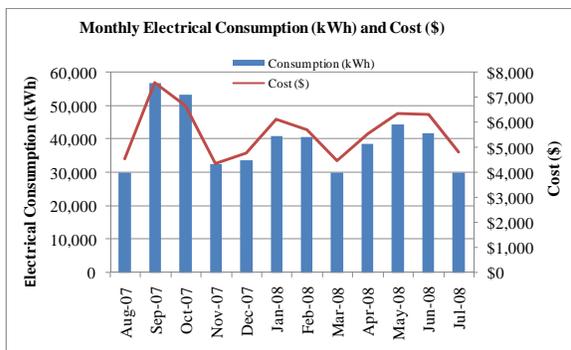
It is recommended the District record and track their utility data in an electronic format similar to the example shown below. The District can use this data to track utility consumption patterns and budget utility expenses. Having this historical data improves the District’s awareness of their energy performance and will help in tracking their energy reduction goals.

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 which the District can customize to help summarize their overall utility usage and costs.

Moulton ISD - Sample Utility Data Input Form

MONTH	ELECTRICITY			PROPANE GAS			WATER		
	KWH	COST \$	\$/KWH	GAL.	COST \$	\$/GAL.	GAL	COST \$	\$/GAL
Aug-07	30,005	\$4,542	\$0.151	190.0	\$304	\$1.60			
Sep-07	56,717	\$7,602	\$0.134	0.0	\$0	\$0			
Oct-07	53,480	\$6,683	\$0.125	890.0	\$1,700	\$1.91			
Nov-07	32,478	\$4,351	\$0.134	880.6	\$1,682	\$1.91			
Dec-07	33,683	\$4,788	\$0.142	435.0	\$831	\$1.91			
Jan-08	40,837	\$6,116	\$0.150	1836.0	\$3,506	\$1.91			
Feb-08	40,754	\$5,690	\$0.140	390.0	\$745	\$1.91			
Mar-08	29,986	\$4,458	\$0.149	300.0	\$568	\$1.89			
Apr-08	38,568	\$5,539	\$0.144	0.0	\$0	\$0			
May-08	44,489	\$6,370	\$0.143	0.0	\$0	\$0			
Jun-08	41,934	\$6,306	\$0.150	0.0	\$0	\$0			
Jul-08	29,902	\$4,818	\$0.161	1330.0	\$2,859	\$2.15			
Total	472,833	\$67,262	\$0.142	6,252	\$12,195	\$1.95			

Gross Building Area: 79,275 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.

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. In addition, periodic checks (monthly) of existing lighting controls (i.e. time-clocks settings, photo-sensors) should be established. The pictures below are examples of exterior lights on during daylight hours.



Interior Lights On – Gym/Auditorium



Exterior Light On - High School

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.

CONTROL OUTSIDE AIR INFILTRATION

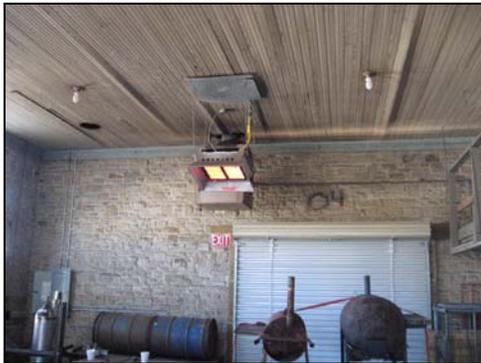
Conduct periodic inspections of door and window weather-stripping, and schedule repairs when needed. Additionally, make sure doors and windows are closed during operation of HVAC systems (heating or cooling). Unintended outside air contributes to higher energy consumption, shorter equipment life, and 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. During the preliminary walkthrough, it was observed there was a mix of Incandescent lamps and CFLs. Below are examples of both types of lamps. The District should encourage and continue replacing Incandescent lamps with CFLs as they burn out.



Example of CFLs in Voc. Bldg.



Incandescent Lamp in Cafeteria

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 E.

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 throughout the District's facilities listed below. 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. The table below indicates the facilities where T-12 fluorescent lamps were observed during the preliminary walkthrough. 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.

T12 LIGHTING RETROFIT			
Building	Estimated Implementation Cost	Estimated Annual Savings	Payback (years)
Admin. Bldg.	\$900	\$160	5.6
High School	\$4,400	\$800	5.5
Cafeteria/Voc. Ag./Showbarn/Band Hall	\$6,200	\$1,200	5.2
Elem. 4-6	\$5,500	\$1,000	5.5
Tech./Science	\$2,100	\$400	5.3
Elem. K-3	\$5,800	\$1,100	5.3
Elem. Wrkrm/Library	\$1,800	\$320	5.6
Gymnasium	\$2,300	\$400	5.8
TOTAL	\$29,000	\$5,380	5.4

INSTALL PROGRAMMABLE THERMOSTATS

Install programmable thermostats at the locations noted in the table below to provide improved control of the air-conditioning systems. Installing programmable thermostats will establish an operating schedule more suited to the occupancy patterns of the building. At minimum the programmable thermostat should have the following system features: seven (7) day scheduling, holiday scheduling, push button override (1-2 hrs), set point temperature limit (min/max), keypad lockout, unoccupied temperature settings, and be EnergySTAR rated.

INSTALL PROGRAMMABLE THERMOSTATS			
Building	Estimated Implementation Cost	Estimated Annual Savings	Payback (years)
Admin. Bldg.	\$400	\$100	4.0
High School	\$2,400	\$600	4.0
Cafeteria/Band Hall	\$1,100	\$200	5.5
Elem. 4-6	\$1,500	\$300	5.0
Tech./Science	\$400	\$100	4.0
Elem. K-3	\$1,900	\$400	4.8
Elem. Wrkrm/Library	\$400	\$80	5.0
Gymnasium	\$400	\$100	4.0
TOTAL	\$8,500	\$1,880	4.5

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

SUMMARY OF ENERGY COST REDUCTION MEASURES			
Project Description	Estimated Implementation Cost	Estimated Annual Savings	Payback (years)
T12 LIGHTING RETROFIT	\$29,000	\$5,380	5.4
INSTALL PROGRAMMABLE THERMOSTATS	\$8,500	\$1,880	4.5
TOTAL:	\$37,500	\$7,260	5.2

The above projects 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 do have energy savings opportunities but cannot be justified solely 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.

REPLACE HVAC SYSTEMS

Replace existing HVAC units with new high efficiency units at the facilities indicated in the table below. The existing units are nineteen (19) years old and have reached their useful life. Replacing the existing units with new high efficiency units will help improve the system's efficiency, reliability and enhance occupant comfort.

Elementary K-3: Replace seven (7) Split-DX Heat Pump systems totaling approximately 20 tons.

Elementary Workroom/Library: Replace one (1) Split-DX Heat Pump systems totaling approximately 5 tons.

The table below summarizes the estimated cost and savings for replacing the units at the building listed below.

HVAC REPLACEMENT	
Building	Estimated Implementation Cost
Elem. K-3	\$38,000
Elem. Wrkrm/Library	\$9,500
TOTAL	\$47,500

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 Three percent (3%). 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.

10.0 ENERGY MANAGEMENT POLICY

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

By requesting this study the District has demonstrated a desire to take a more aggressive approach to energy management. The success of an energy policy largely depends on top management commitment and the development of an energy management plan to administer the policy's objectives. At a minimum, the energy management plan should address the following:

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 E 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

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

APPENDICES

APPENDIX A

SENATE BILL 12 AND HOUSE BILL 3693

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:

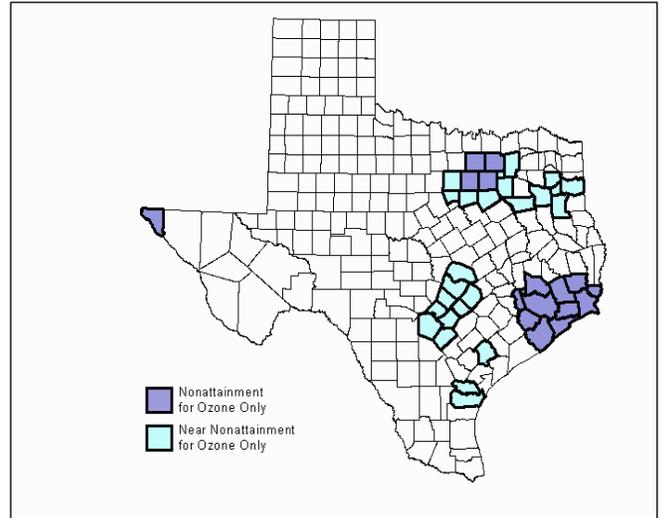
- installation of insulation and high-efficiency windows and doors
- modifications or replacement of HVAC systems, lighting fixtures and electrical systems
- installation of automatic energy control systems
- installation of energy recovery systems or renewable energy generation equipment
- building 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

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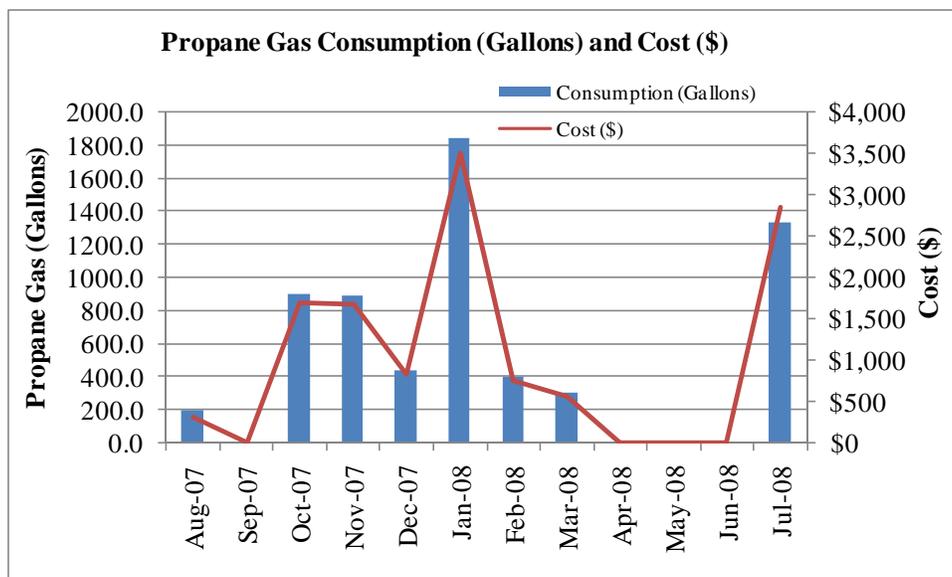
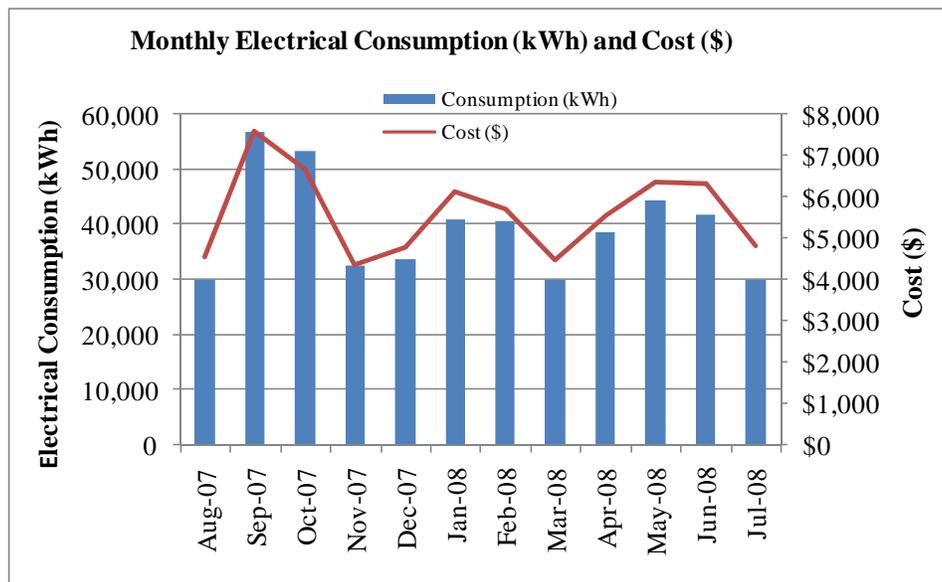
APPENDIX B

SAMPLE ENERGY REPORTING FORM

Moulton ISD - Sample Utility Data Input Form

MONTH	ELECTRICITY			PROPANE GAS			WATER		
	KWH	COST \$	\$/KWH	GAL.	COST \$	\$/GAL.	GAL	COST \$	\$/GAL
Aug-07	30,005	\$4,542	\$0.151	190.0	\$304	\$1.60			
Sep-07	56,717	\$7,602	\$0.134	0.0	\$0	\$0			
Oct-07	53,480	\$6,683	\$0.125	890.0	\$1,700	\$1.91			
Nov-07	32,478	\$4,351	\$0.134	880.6	\$1,682	\$1.91			
Dec-07	33,683	\$4,788	\$0.142	435.0	\$831	\$1.91			
Jan-08	40,837	\$6,116	\$0.150	1836.0	\$3,506	\$1.91			
Feb-08	40,754	\$5,690	\$0.140	390.0	\$745	\$1.91			
Mar-08	29,986	\$4,458	\$0.149	300.0	\$568	\$1.89			
Apr-08	38,568	\$5,539	\$0.144	0.0	\$0	\$0			
May-08	44,489	\$6,370	\$0.143	0.0	\$0	\$0			
Jun-08	41,934	\$6,306	\$0.150	0.0	\$0	\$0			
Jul-08	29,902	\$4,818	\$0.161	1330.0	\$2,859	\$2.15			
Total	472,833	\$67,262	\$0.142	6,252	\$12,195	\$1.95			

Gross Building Area: 79,275 SF



APPENDIX C

BASE YEAR CONSUMPTION HISTORY

Energy Cost and Consumption Benchmarks										
		Electric		Propane Gas		Total	Total	EUI	ECI	
	Building	KWH/Yr	\$Cost/Yr	Gal./Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr	SF
1*	Cafeteria/Voc. Ag./Maint./Showbarn/Band	107,938	14,119	1,156	2,202	16,321	478	30	1.02	15,927
2	Gymnasium	72,640	12,645	1,405	2,821	15,466	381	23	0.93	16,580
3	Elem. K-3	90,521	11,919	0	0	11,919	309	34	1.33	8,968
4	High School	77,920	10,908	3,691	7,172	18,080	617	48	1.46	12,394
5	Elem. 4-6	45,440	6,956	0	0	6,956	155	18	0.81	8,543
6	Tech./Science	37,933	5,018	0	0	5,018	129	39	1.50	3,348
7	Admin. Bldg.	14,314	1,938	0	0	1,938	49	26	1.04	1,867
8	Gym/Auditorium	13,300	1,760	0	0	1,760	45	6	0.23	7,776
9	Elem. Wrkrm/Library	12,827	1,730	0	0	1,730	44	11	0.45	3,872
10	Street Lighting	0	270	0	0	270	0	N/A	N/A	N/A
		KWH/Yr	\$Cost/Yr	Gal./Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr	SF
		472,833	67,262	6,252	12,195	79,457	2,208	27	1.00	79,275

* One electric meter serves multiple buildings

ACCOUNT# 3069350

Electric
Gas

District: Moulton ISD

BUILDING: Cafeteria/Voc. Ag./Maint./Showbarn/Band

FLOOR AREA: 15,927

		ELECTRICAL				LPG GAS / FUEL*		
		DEMAND				TOTAL ALL		
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	8,320				1,099	190	304
September	2007	11,933				1,566	0	0
October	2007	12,246				1,471	190	363
November	2007	7,016				855	56	106
December	2007	7,472				909	135	258
January	2008	6,765				894	110	210
February	2008	10,928				1,444	90	172
March	2008	6,812				820	150	284
April	2008	8,034				1,075	0	0
May	2008	9,076				1,231	0	0
June	2008	10,797				1,507	0	0
July	2008	8,539				1,247	235	505
TOTAL		107,938				14,119	1,155.6	2,202

* Propane conversion based on EnergySTAR Target Finder conversion units. 1 gal. LPG = 90,005 Btu/gal.

Energy Use Index:
 Annual Total Energy Cost = 16,321 \$/year Total site BTU's/Yr ÷ Total Area (SF) = 30 kBTU/SF/year
 Total KWH/yr x 0.003413 = 368.39 MMBTU/year
 Total Gal./yr x 0.0900054 = 104.01 MMBTU/year
 Total Other x _____ = 0.0 MMBTU/year
 Total Site MMBTU's/yr = 472 MMBTU/year

Energy Cost Index:
 Total Energy Cost/Yr ÷ Total Area (SF) = 1.02 \$/SF/year

Electric Utility: Moulton Municipal Plants

Gas Utility: Propane Gas Refueling Service

ACCOUNT# 5049125 5049120

Electric
Gas

District: Moulton ISD

BUILDING: Gymnasium

FLOOR AREA: 16,580

		ELECTRICAL				LPG GAS / FUEL*		
		DEMAND			TOTAL ALL			
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	2,560		48		708	0	0
September	2007	9,840		45		1,472	0	0
October	2007	9,200		44		1,314	0	0
November	2007	5,600		42		939	100	191
December	2007	5,760		40		965	300	573
January	2008	6,080		36		1,095	430	821
February	2008	6,240		40		1,129	0	0
March	2008	4,480		29		877	0	0
April	2008	6,720		36		1,088	0	0
May	2008	8,000		46		1,279	0	0
June	2008	5,280		48		1,033	0	0
July	2008	2,880		39		747	575	1,236
TOTAL		72,640				12,645	1,405.0	2,821

* Propane conversion based on EnergySTAR Target Finder conversion units. 1 gal. LPG = 90,005 Btu/gal.

Energy Use Index:
 Annual Total Energy Cost = 15,466 \$/year Total site BTU's/Yr ÷ Total Area (SF) = 23 kBTU/SF/year

Total KWH/yr x 0.003413 = 247.92 MMBTU/year
 Total Gal./yr x 0.0900054 = 126.46 MMBTU/year

Energy Cost Index:
 Total Other x _____ = 0.0 MMBTU/year Total Energy Cost/Yr ÷ Total Area (SF) = 0.93 \$/SF/year
 Total Site MMBTU's/yr = 374 MMBTU/year

Electric Utility: Moulton Municipal Plants

Gas Utility: Propane Gas Refueling Service

ACCOUNT# 5049136 5049130

Electric
Gas

District: Moulton ISD

BUILDING: Elem. K-3

FLOOR AREA: 8,968

		ELECTRICAL				LPG GAS / FUEL*		
		CONSUMPTION	DEMAND		TOTAL ALL ELECTRIC	CONSUMPTION	TOTAL	
			METERED	CHARGED				COST OF DEMAND (\$)
MONTH	YEAR	KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	6,934		23		889		
September	2007	10,446		28		1,302		
October	2007	9,432		28		1,103		
November	2007	6,060		20		751		
December	2007	6,118		24		783		
January	2008	7,667		30		1,039		
February	2008	6,423		20		862		
March	2008	6,090		26		874		
April	2008	7,971		24		1,059		
May	2008	9,038		30		1,214		
June	2008	7,783		26		1,056		
July	2008	6,559		30		986		
TOTAL		90,521				11,919		

Annual Total Energy Cost = 11,919 \$/year

Energy Use Index:
Total site BTU's/Yr ÷ Total Area (SF) = 34 kBTU/SF/year

Total KWH/yr x 0.003413 = 308.95 MMBTU/year
 Total Gal./yr x 0.0900054 = 0.00 MMBTU/year
 Total Other x _____ = 0.0 MMBTU/year
 Total Site MMBTU's/yr = 309 MMBTU/year

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

Electric Utility: Moulton Municipal Plants

Gas Utility: N/A

ACCOUNT# 5049112

Electric
Gas

District: Moulton ISD

BUILDING: High School

FLOOR AREA: 12,394

		ELECTRICAL				LPG GAS / FUEL*		
		DEMAND			TOTAL ALL			
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	4,000		36		643	0	0
September	2007	9,760		43		1,257	0	0
October	2007	8,000		38		962	700	1,337
November	2007	5,280		28		664	725	1,385
December	2007	5,120		64		883	0	0
January	2008	10,720		72		1,542	1,296	2,475
February	2008	6,240		59		674	300	573
March	2008	4,640		37		725	150	284
April	2008	5,920		37		902	0	0
May	2008	7,360		40		1,031	0	0
June	2008	6,720		38		980	0	0
July	2008	4,160		25		645	520	1,118
TOTAL		77,920				10,908	3,691.0	7,172

* Propane conversion based on EnergySTAR Target Finder conversion units. 1 gal. LPG = 90,005 Btu/gal.

Energy Use Index:
 Annual Total Energy Cost = 18,080 \$/year Total site BTU's/Yr ÷ Total Area (SF) = 48 kBTU/SF/year

Total KWH/yr x 0.003413 = 265.94 MMBTU/year
 Total Gal./yr x 0.0900054 = 332.21 MMBTU/year

Energy Cost Index:
 Total Other x _____ = 0.0 MMBTU/year Total Energy Cost/Yr ÷ Total Area (SF) = 1.46 \$/SF/year
 Total Site MMBTU's/yr = 598 MMBTU/year

Electric Utility: Moulton Municipal Plants

Gas Utility: Propane Gas Refueling Service

ACCOUNT# 5049115

Electric
Gas

District: Moulton ISD

BUILDING: Elem. 4-6

FLOOR AREA: 8,543

		ELECTRICAL				LPG GAS / FUEL*		
		CONSUMPTION	DEMAND		TOTAL ALL ELECTRIC COSTS (\$)	CONSUMPTION GALLON	TOTAL COSTS (\$)	
			METERED KW	CHARGED KW				COST OF DEMAND (\$)
MONTH	YEAR	KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	2,480		24		414		
September	2007	5,760		34		793		
October	2007	5,040		30		650		
November	2007	3,200		25		459		
December	2007	3,520		30		520		
January	2008	4,800		60		878		
February	2008	3,840		33		610		
March	2008	3,200		23		487		
April	2008	4,000		26		586		
May	2008	4,320		33		672		
June	2008	3,760		34		636		
July	2008	1,520		10		249		
TOTAL		45,440				6,956		

Annual Total Energy Cost = 6,956 \$/year

Total site BTU's/Yr ÷ Total Area (SF) = 18 kBTU/SF/year

Total KWH/yr x 0.003413 = 155.09 MMBTU/year

Total Gal./yr x 0.0900054 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 155 MMBTU/year

Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = 0.81 \$/SF/year

Electric Utility: Moulton Municipal Plants

Gas Utility: N/A

ACCOUNT# 3069400

Electric
Gas

District: Moulton ISD

BUILDING: Tech./Science

FLOOR AREA: 3,348

		ELECTRICAL				LPG GAS / FUEL*		
		CONSUMPTION	DEMAND		TOTAL ALL ELECTRIC COSTS (\$)	CONSUMPTION GALLON	TOTAL COSTS (\$)	
			METERED KW	CHARGED KW				COST OF DEMAND (\$)
MONTH	YEAR	KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	2,543				337		
September	2007	4,750				624		
October	2007	5,090				612		
November	2007	2,422				297		
December	2007	2,367				290		
January	2008	1,630				217		
February	2008	2,782				370		
March	2008	2,012				273		
April	2008	2,800				376		
May	2008	3,344				455		
June	2008	4,495				628		
July	2008	3,698				539		
TOTAL		37,933				5,018		

Annual Total Energy Cost = 5,018 \$/year

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

Total KWH/yr x 0.003413 = 129.47 MMBTU/year
 Total Gal./yr x 0.0900054 = 0.00 MMBTU/year
 Total Other x _____ = 0.0 MMBTU/year
 Total Site MMBTU's/yr = 129 MMBTU/year

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

Electric Utility: Moulton Municipal Plants

Gas Utility: N/A

ACCOUNT# 3069400 Electric

District: Moulton ISD

Gas

BUILDING: Admin. Bldg.

FLOOR AREA: 1,867

		Electrical				TOTAL ALL	LPG GAS / FUEL*	
		DEMAND				ELECTRIC		
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	COSTS (\$)	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)		GALLON	COSTS (\$)
August	2007	1,265				170		
September	2007	1,373				184		
October	2007	1,306				161		
November	2007	695				89		
December	2007	1,118				139		
January	2008	1,060				143		
February	2008	1,563				210		
March	2008	864				120		
April	2008	771				107		
May	2008	970				135		
June	2008	1,742				246		
July	2008	1,587				234		
TOTAL		14,314				1,938		

Annual Total Energy Cost = 1,938 \$/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 26 kBTU/SF/year

Total KWH/yr x 0.003413 = 48.85 MMBTU/year

Total Gal./yr x 0.0900054 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

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

Energy Cost Index:

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

Electric Utility: Moulton Municipal Plants

Gas Utility: N/A

ACCOUNT# 3069375

Electric
Gas

District: Moulton ISD

BUILDING: Gym/Auditorium

FLOOR AREA: 7,776

		ELECTRICAL				LPG GAS / FUEL*		
		DEMAND			TOTAL ALL			
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	487				68		
September	2007	1,344				180		
October	2007	1,820				222		
November	2007	1,463				181		
December	2007	1,393				173		
January	2008	922				125		
February	2008	1,772				237		
March	2008	1,114				153		
April	2008	1,257				171		
May	2008	1,217				168		
June	2008	369				56		
July	2008	142				25		
TOTAL		13,300				1,760		

Annual Total Energy Cost = 1,760 \$/year

Energy Use Index:
Total site BTU's/Yr ÷ Total Area (SF) = 6 kBTU/SF/year

Total KWH/yr x 0.003413 = 45.39 MMBTU/year

Total Gal./yr x 0.0900054 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 45 MMBTU/year

Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = 0.23 \$/SF/year

Electric Utility: Moulton Municipal Plants

Gas Utility: N/A

ACCOUNT# 5049135

Electric
Gas

District: Moulton ISD

BUILDING: Elem. Wrkrm/Library

FLOOR AREA: 3,872

		ELECTRICAL				LPG GAS / FUEL*		
		DEMAND			TOTAL ALL			
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	1,416				190		
September	2007	1,511				202		
October	2007	1,346				166		
November	2007	742				94		
December	2007	815				103		
January	2008	1,193				160		
February	2008	966				132		
March	2008	774				108		
April	2008	1,095				150		
May	2008	1,164				161		
June	2008	988				142		
July	2008	817				123		
TOTAL		12,827				1,730		

Annual Total Energy Cost = 1,730 \$/year

Energy Use Index:

Total site BTU's/Yr ÷ Total Area (SF) = 11 kBTU/SF/year

Total KWH/yr x 0.003413 = 43.78 MMBTU/year

Total Gal./yr x 0.0900054 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 44 MMBTU/year

Energy Cost Index:

Total Energy Cost/Yr ÷ Total Area (SF) = 0.45 \$/SF/year

Electric Utility: Moulton Municipal Plants

Gas Utility: N/A

ACCOUNT# 5049113

Electric
Gas

District: Moulton ISD

BUILDING: Street Lighting

FLOOR AREA: N/A

		ELECTRICAL				LPG GAS / FUEL*		
		DEMAND			TOTAL ALL			
MONTH	YEAR	CONSUMPTION	METERED	CHARGED	COST OF	ELECTRIC	CONSUMPTION	TOTAL
		KWH	KW	KW	DEMAND (\$)	COSTS (\$)	GALLON	COSTS (\$)
August	2007	0				23		
September	2007	0				23		
October	2007	0				23		
November	2007	0				23		
December	2007	0				23		
January	2008	0				23		
February	2008	0				23		
March	2008	0				23		
April	2008	0				23		
May	2008	0				23		
June	2008	0				23		
July	2008	0				23		
TOTAL		0				270		

Annual Total Energy Cost = 270 \$/year

Total KWH/yr x 0.003413 = 0.00 MMBTU/year

Total Gal./yr x 0.0900054 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

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

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

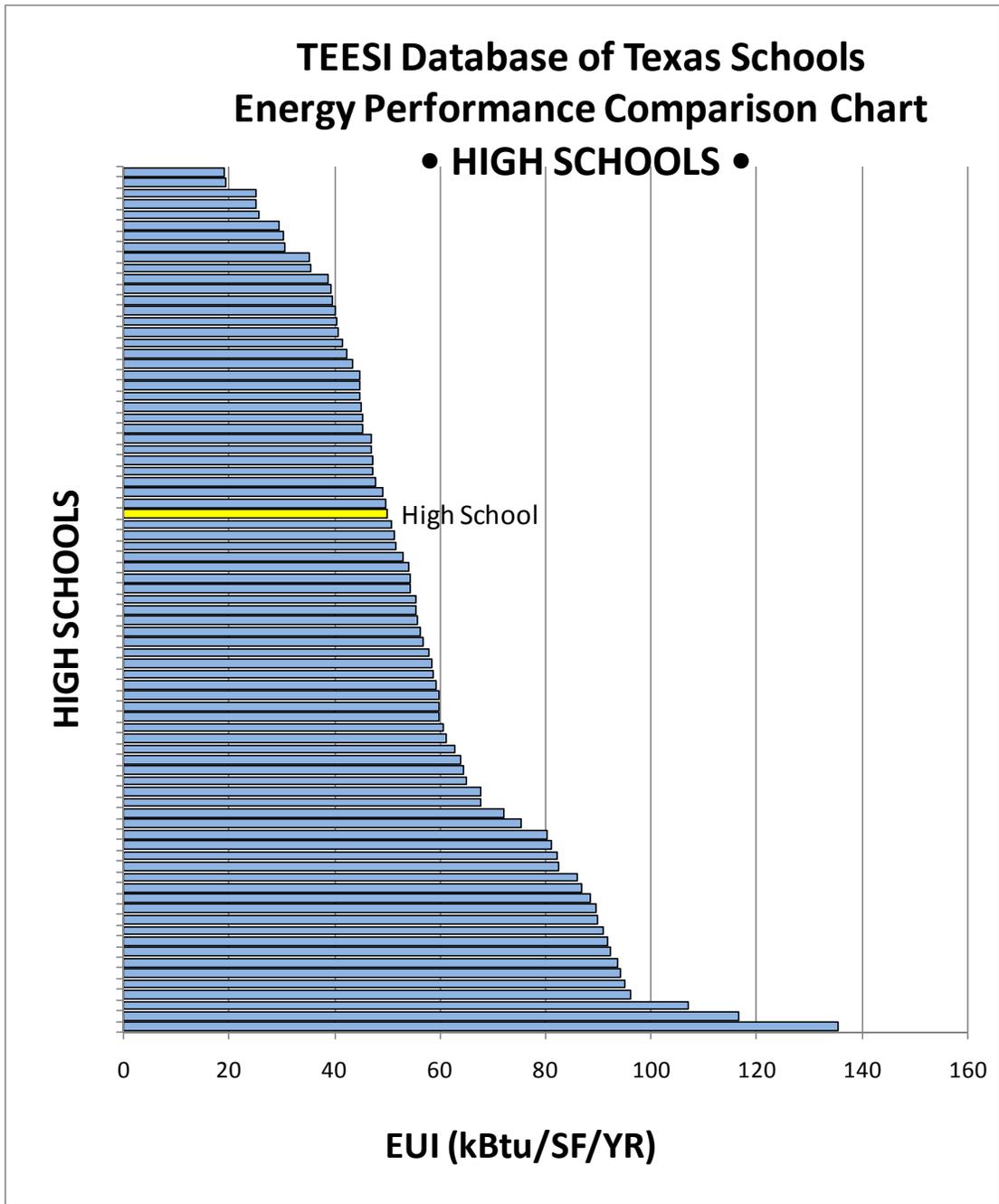
Energy Cost Index:
Total Energy Cost/Yr ÷ Total Area (SF) = N/A \$/SF/year

Electric Utility: Moulton Municipal Plants

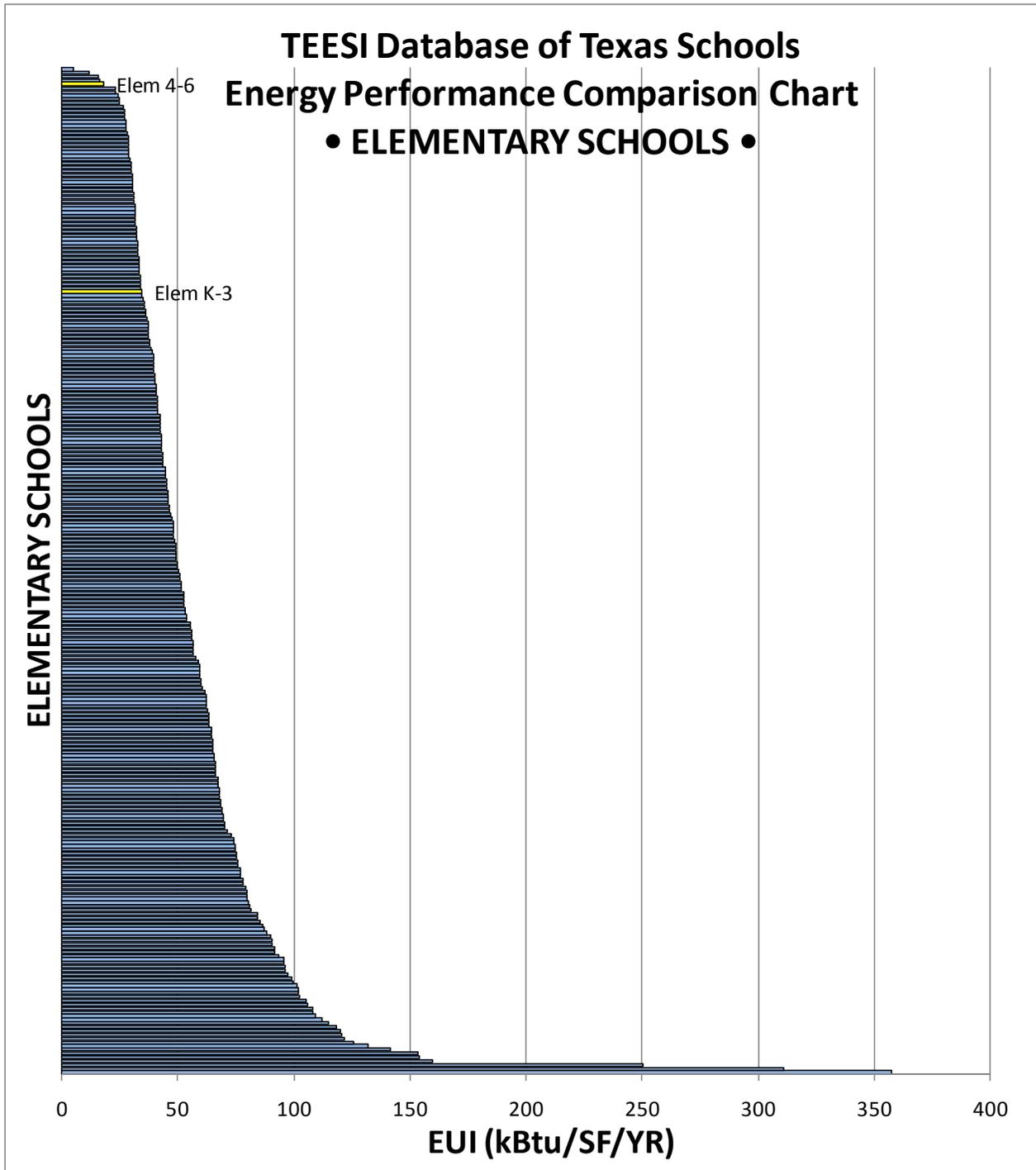
Gas Utility: N/A

APPENDIX D

ENERGY PERFORMANCE COMPARISON CHARTS



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



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

APPENDIX E

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 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:

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

APPENDIX G

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 (NO_x), 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 H
UTILITY METER MAP

MOULTON ISD – UTILITY METER LOCATION MAP



ELECTRIC METER LIST*

METER	ACCT #	BLDG.
1	93797822	3
2	831756981	1
3	742030454	2
4	55675376	4
5	6468584	6, 7, 10, 12
6	1258881	8B
7	716163378	5
8	35016958	8A
9	79304101	8A
10	13971224	11
11	91167622	9

MOULTON ISD BUILDING LIST

ID	BUILDING
1	HIGH SCHOOL
2	GYM / AUDITORIUM
3	ADMINISTRATION
4	VOC / AG
5	TECH / SCIENCE
6	CAF / SPECIAL ED
7	BAND HALL
8A	ELEM K-3
8B	ELEM 4-6
9	GYMNASIUM
10	MAINT.
11	ELEM WKRM / LIBRARY
12	SHOWBARN

* Electric Meter locations and buildings served based on preliminary observation. The District should contact Utility Provider for verification.

Image Source: Google Maps

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: Michael T. Nowatny
 Name (Mr./Ms./Dr.): Michael Nowatny
 Organization: Moulton ISD
 Address: PO Box C
Moulton, TX 77975

Date: 12/17/08
 Title: Superintendent
 Phone: 361-596-4609
 Fax: 361-596-7578
 E-mail: nowatny@moultonisd.net

Assigned Program Person:

Name : _____
 Phone: _____
 Fax: _____

Title: _____
 County: _____
 E-Mail: _____

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.