



Susan Combs
Texas Comptroller of Public Accounts

Facility Preliminary Energy Assessments and Recommendations

San Vicente ISD

195 Escuela Vista Dr.
Big Bend National Park, Texas 79834

Prepared by:

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Schools & Hospitals Energy Management Program

San Vicente ISD

195 Escuela Vista ISD

Big Bend National Park, TX 79834

Contact Person: Shirley M. Coleman, Superintendent

Phone: 432.477.2220

1.0 EXECUTIVE SUMMARY

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

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

The annual cost savings, implementation cost estimate and simple payback for all building energy retrofit projects identified in this preliminary analysis are summarized below. Individual building projects are summarized in Section 7.0 of this report.

Implementation Cost Estimate:	\$13,200
Annual Energy Cost Savings:	\$1,500
Simple Payback:	8.8

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), Energy Legislation Overview (Section 5.0), Recommended Maintenance & Operation Procedures (Section 6.0), Retrofit Opportunities (Section 7.0), Facility Improvement Measures (Section 8.0), Energy Management Policy (Section 9.0), and Funding Options for Capital Energy Projects (Section 10.0). A follow-up visit to the District will be scheduled to address any questions pertaining to this report, or any other aspect of this program.

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

SECO / Ms. Juline Ferris
(512) 936-9283

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.

Group 1: Administration/Classrooms

Buildings:	Superintendent Office, Receptionist Office, 4 th and 5 th grade classrooms
Stories:	Single story
Area (estimated):	1,120 SF
Bldg. Components:	Metal building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Bard heat pumps
Controls:	Standard thermostats

Group 2: 6th-8th Grade Classrooms

Buildings:	6 th , 7 th , and 8 th grade classrooms
Stories:	Single story
Area (estimated):	960 SF
Bldg. Components:	Metal building, pitched metal roof, pier and beam foundation
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Bard heat pump
Controls:	Standard thermostats

Group 3: Business Manger Office/Classrooms

Buildings:	Business Manger Office, kindergarten and 1 st grade classrooms
Stories:	Single story
Area (estimated):	1000 SF
Bldg. Components:	Metal building, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts
HVAC:	Split-DX system, window unit
Controls:	Standard thermostats

Group 4: Library/Classrooms

Buildings:	Library, workroom, meeting room, 2 nd and 3 rd grade classrooms
Stories:	Single story
Area (estimated):	5,680 SF
Bldg. Components:	Concrete masonry walls, pitched metal roof, slab on grade
Typical Lighting Fixtures:	T8 fluorescent fixtures with electronic ballasts T12 fluorescent fixtures with magnetic ballasts
HVAC:	Bard heat pump
Controls:	Standard thermostats

Group 5: Ramada

Buildings: Ramada
Stories: Single story
Area (estimated): 320 SF
Bldg. Components: Metal building, pitched metal roof, slab on grade
Typical Lighting Fixtures: T8 fluorescent fixtures with electronic ballasts
HVAC: Split-DX Unit
Controls: Standard thermostats

Group 6: Multi-Purpose

Buildings: Gymnasium/Physical Education Facility
Stories: Single story
Area (estimated): 1,350 SF
Bldg. Components: Metal building, pitched metal roof, slab on grade
Typical Lighting Fixtures: T8 fluorescent fixtures with electronic ballasts
HVAC: Packaged unit
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 10,430 square feet.

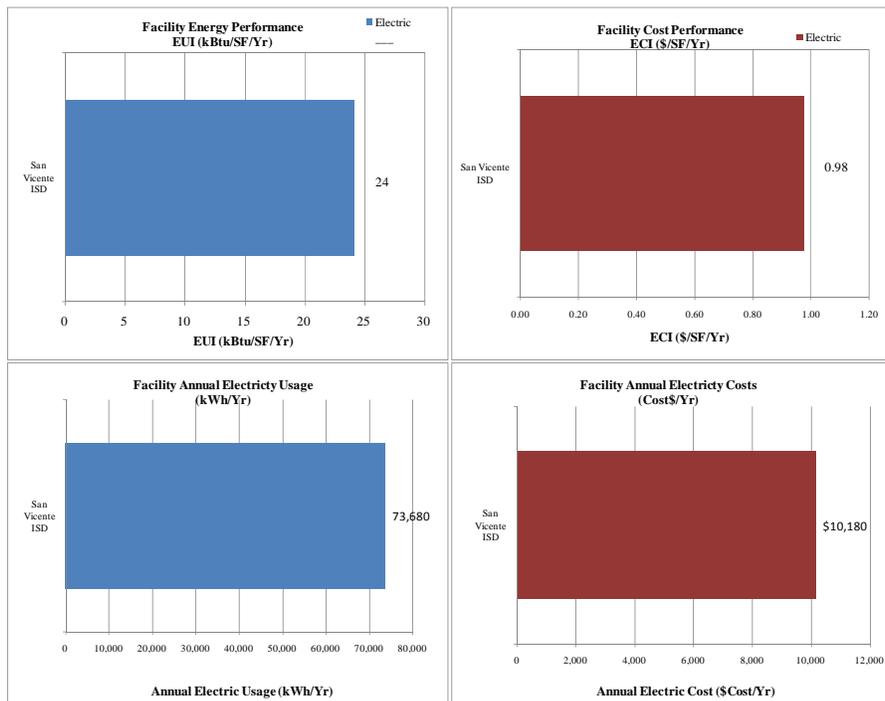
Annual electric invoices for the buildings surveyed were \$10,180 for the 12-month period ending April 2010. A summary of annual utility costs is provided in **Appendix C**, Base Year Consumption History.

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

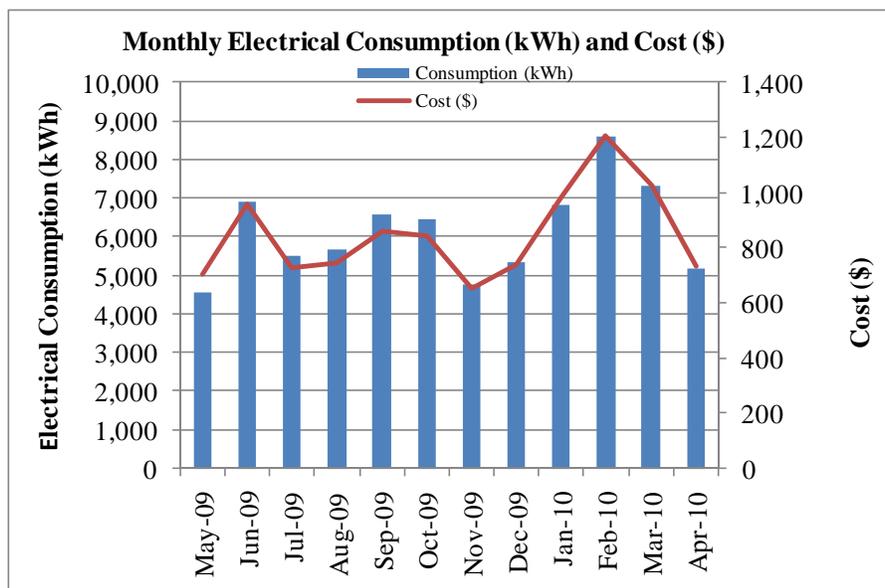
Energy Cost and Consumption Benchmarks									
		Electric			Total	Total	EUI	ECI	
	Building	KWH/Yr	MMBTU/Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr	SF
1	San Vicente ISD	73,680	251	10,180	10,180	251	24	0.98	10,430
		KWH/Yr	MMBTU/Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr	SF
		73,680	251	10,180	10,180	251	24	0.98	10,430

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

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



The following chart summarizes the District’s monthly utility data. See **Appendix C** for further detail.



4.0 ENERGY ACCOUNTING

UTILITY PROVIDERS

Rio Grande Electric Cooperative, Inc. provides electric service to the District.

MONITORING AND TRACKING

Currently, the District tracks and monitors their utility data in an electronic spreadsheet. Electronic spreadsheets are an effective energy tracking tool by which an energy management program's activities are monitored. 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.

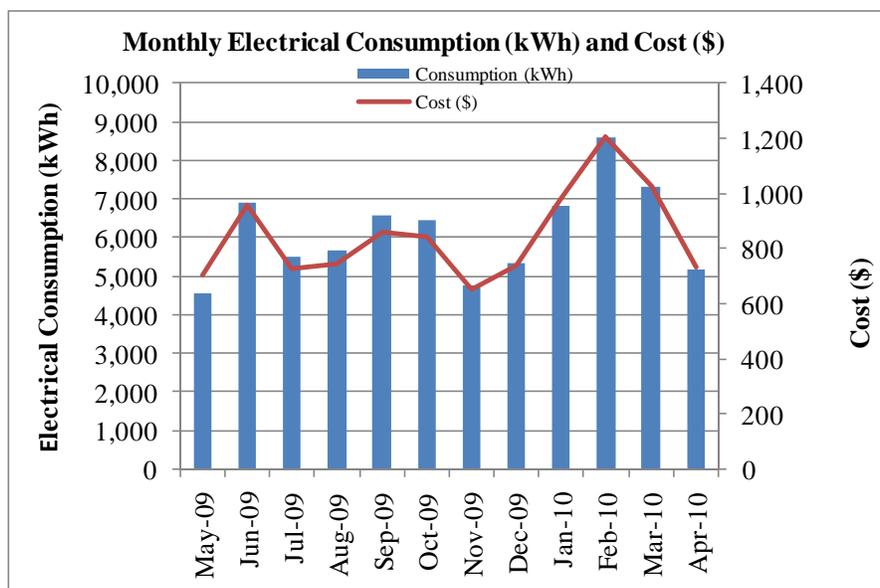
In addition, having this historical utility data helps comply with **House Bill 3693** and **Senate Bill 12** reporting requirements. Please see Section 5.0 for additional information regarding these requirements.

The data presented below is a summation of the data provided by the District. See **Appendix C** for further detail regarding the utility account represented in the table below.

San Vicente ISD - Sample Utility Input Form

MONTH	ELECTRICITY		
	KWH	COST \$	Avg. Rate \$/KWH
May-09	4,560	706	\$0.1548
Jun-09	6,920	957	\$0.1383
Jul-09	5,520	726	\$0.1315
Aug-09	5,680	747	\$0.1314
Sep-09	6,560	859	\$0.1310
Oct-09	6,440	844	\$0.1310
Nov-09	4,760	653	\$0.1371
Dec-09	5,320	740	\$0.1392
Jan-10	6,840	980	\$0.1433
Feb-10	8,600	1,206	\$0.1402
Mar-10	7,320	1,030	\$0.1407
Apr-10	5,160	732	\$0.1418
Total	73,680	\$10,180	\$0.1382

Gross Building Area:	10,430	SF
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5.0 ENERGY LEGISLATION OVERVIEW

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

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

Following are key requirements established by the above energy legislation:

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

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

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

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

A summary description of SB12, HB3693, and SB300 are available in **Appendix A**.

6.0 RECOMMENDED MAINTENANCE & OPERATION PROCEDURES

Sound Maintenance and Operation procedures significantly improve annual utility costs, equipment life, and occupant comfort. Generally, maintenance and operation procedural improvements can be made with existing staff and budgetary levels. Below are typical maintenance and operations procedures that have energy savings benefits. Please note that some of the recommendations noted below are currently being practiced by the District. With this in mind, the following maintenance and operation procedures should be encouraged/continued to ensure sustainable energy savings.

PUBLICIZE ENERGY CONSERVATION

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

MANAGE SMALL ELECTRICAL EQUIPMENT LOADS

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

ESTABLISH HVAC UNIT SERVICE SCHEDULES

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

IMPROVE CONTROL OF INTERIOR & EXTERIOR LIGHTING

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

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. For example, the picture below is an example of an exterior door with a slight gap underneath the door. Adjusting the threshold or adding additional weather stripping will help seal the door. In addition, the following picture is of the single pane windows found in the Library and 2nd & 3rd grade classroom. Due to the age of the windows and loss of weather-seals, these windows can be another source of unnecessary air infiltration. It is the District plan to replace these windows. Doing so will help improve the occupant comfort and improve the energy performance of this building. Further discussion regarding the window system is provided in Section 8.0.



Example Source of Air Infiltration – Gap underneath exterior door in Administration Office.



Picture of Single Pane Windows in Bldg 4 – Library, Wrkrm, and 2nd & 3rd Grade

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. No vending machines were found in the District, however any vending machines installed in the future should be equipped with these type of devices.

HAIL GUARDS ON CONDENSING AND PACKAGED ROOFTOP UNITS

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

7.0 RETROFIT OPPORTUNITIES

Energy retrofit projects identified during the preliminary analysis are detailed below. Project cost estimates include complete design and construction management services.

REPLACE EXISTING T8 FLUORESCENT LAMPS WITH LOWER WATTAGE LAMPS

Low-wattage T8 fluorescent lamps are available in 30, 28 and 25-watt versions. It is recommended replacing existing 32-watt T8 Fluorescent lamps with lower wattage lamps (where applicable). Changing to a lower wattage T8 Lamp is a relatively straightforward process however, lower wattage T8 lamps do have limitations and are only suitable for certain applications. Lower wattage T8 lamps have reduced lighting levels therefore, it is important to ensure recommended lighting levels are maintained. Lighting levels should be verified prior to and after lamp replacement. In addition, compatibility with existing ballasts, local codes and other requirements must be verified prior to retrofitting. Nevertheless, if suitable for the application, switching to lower wattage T8 lamps will have sustainable energy savings with minimal impact. For example, replacing a 32-watt T8 lamp with a 28-watt T8 lamp will approximately have a 12% lighting energy reduction with only a lighting level drop near 4%. The estimated costs and savings noted below are based on replacement of the existing 32-watt T8 lamps. Please note prior to replacing the T8 fluorescent lamps the District should test a sample set of fixtures to ensure complete compatibility with existing ballasts and lighting fixtures.

LOW WATTAGE T8 FLUORESCENT LAMP REPLACEMENT			
Building	Estimated Implementation Cost	Estimated Annual Savings (\$/yr)	Simple Payback (years)
San Vicente ISD	\$1,500	\$400	3.8
TOTAL	\$1,500	\$400	3.8

INSTALLATION OF OCCUPANCY SENSORS FOR INDOOR LIGHTING CONTROL

It is recommended the District consider installing occupancy sensors to improve control of interior lighting. Occupancy sensors will help ensure lights are only on when the space is occupied. Please note exact sensor location (wall mounted or ceiling mounted), technology (Infrared, Ultrasonic, and Dual Technology) and quantity can be determined during a detailed energy assessment. In general, a motion sensing lighting control sensor should be installed in each classroom. The following table below provides an estimated cost and energy savings for the installation of these types of sensors.

MOTION SENSOR INSTALLATION			
Building	Estimated Implementation Cost	Estimated Annual Savings (\$/yr)	Simple Payback (years)
San Vicente ISD	\$1,700	\$200	8.5
TOTAL	\$1,700	\$200	8.5

AIR CONDITIONING UNIT REPLACEMENT

Replace the packaged air-conditioning unit serving the Gym/Physical Education Building with a new high efficiency unit. The existing system is inefficient and has reached its useful life. The unit to be replaced cooling capacity is approximately 4.5 tons. In addition, the new unit should be equipped with an economizer. When outdoor conditions are favorable, the economizer will modulate an outside air damper to introduce cool dry air into the space this in turn will help reduce the unit's cooling demand. The table below summarizes the estimated cost and savings for replacing this air-conditioning unit.

AIR CONDITIONING UNIT REPLACEMENT			
Building	Estimated Implementation Cost	Estimated Annual Savings (\$/yr)	Simple Payback (years)
Gym/Phys. Ed Bldg.	\$6,400	\$400	16.0
TOTAL	\$6,400	\$400	16.0

INSTALL NETWORKED THERMOSTATS

Install web-based networked thermostats to provide improved control of the air-conditioning systems throughout the campus. Installing web-based networked thermostats will allow for multiple schedule routines and allow remote scheduling. The thermostats would be connected to the District's network and can be controlled remotely and monitored from a central location.

NETWORKED THERMOSTATS			
Building	Estimated Implementation Cost	Estimated Annual Savings (\$/yr)	Simple Payback (years)
San Vicente ISD	\$3,600	\$500	7.2
TOTAL	\$3,600	\$500	7.2

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

SUMMARY OF ENERGY COST REDUCTION MEASURES			
Project Description	Estimated Implementation Cost	Estimated Annual Savings (\$/yr)	Simple Payback (years)
LOW WATTAGE T8 FLUORESCENT LAMP REPLACEMENT	\$1,500	\$400	3.8
MOTION SENSOR INSTALLATION	\$1,700	\$200	8.5
AIR CONDITIONING UNIT REPLACEMENT	\$6,400	\$400	16.0
NETWORKED THERMOSTATS	\$3,600	\$500	7.2
TOTAL:	\$13,200	\$1,500	8.8

The above projects implementation costs and annual savings are estimated based on a preliminary examination of the facilities. Furthermore, maintenance cost savings are not included in this preliminary energy assessment.

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 FACILITY IMPROVEMENT MEASURES

This section is intended to describe the Facility Improvement Measures (FIMs) that have energy savings opportunities but cannot be justified solely based on the potential energy savings alone. Please note the FIMs identified in this section are not an exhaustive list of all possible/foreseeable measures. The goal during the preliminary energy assessment walkthrough was to identify FIMs that have energy implications and can be resolved in a relatively effective manner. Following are the FIMs identified during the preliminary walkthrough.

REPLACE SINGLE PANE WINDOWS WITH NEW ENERGY EFFICIENT WINDOWS

Replace existing single pane windows found at the Library and 2nd & 3rd Grade Classroom with new energy efficient windows. The existing single pane windows are energy inefficient and are susceptible to unnecessary air infiltration due to degradation of the weather seals. Replacing these windows with new energy efficient windows will help improve the building envelope's thermal performance, reduce sound transmission and enhance occupant comfort. The new energy efficient windows shall meet ENERGY STAR qualifications. Please note that during the preliminary facility walkthrough the District was planning the replacement of these windows. Replacing these windows will have quantifiable energy savings in addition to improvements in occupant comfort ensuring a comfortable learning environment. Below is an estimated cost range to replace the windows surrounding this building.

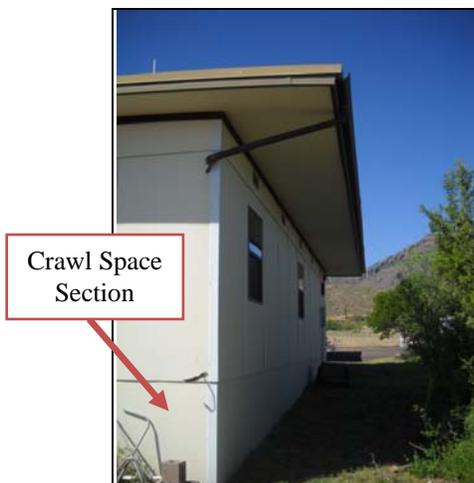


Typical view of Single Pane Windows at 2nd
& 3rd Grade Classroom

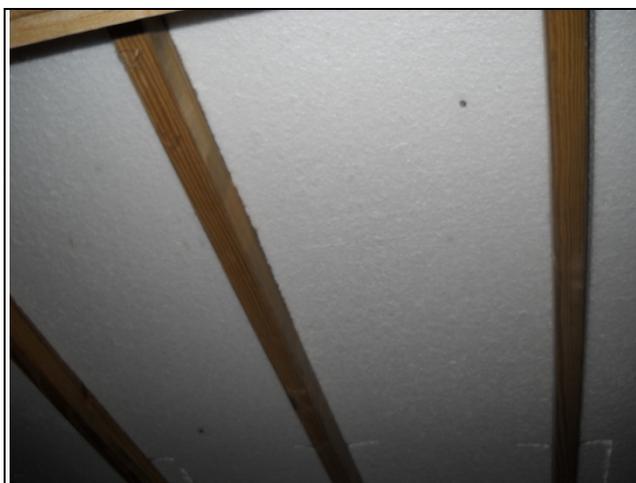
FACILITY IMPROVEMENT MEASURES (FIM)	
Project Description	Estimated Implementation Cost
Installing New High Efficiency Window in 2nd & 3rd Grade Bldg.	\$25,000 - \$30,000

INSTALL ADDITIONAL INSULATION IN CRAWL SPACE

The picture below is of Building #2 (6th – 8th Grade Classrooms). This building has an above grade crawlspace. Discussions with staff indicated that during the winter months the building experiences significant temperature swings especially during windy conditions. It is recommended additional insulation be installed in the crawl space to help improve the building thermal envelope. Adding additional insulation will help improve the energy performance as well as improving the thermal comfort ensuring comfortable learning environment.



Typical view of 6th – 8th Grade Classroom showing crawlspace section.

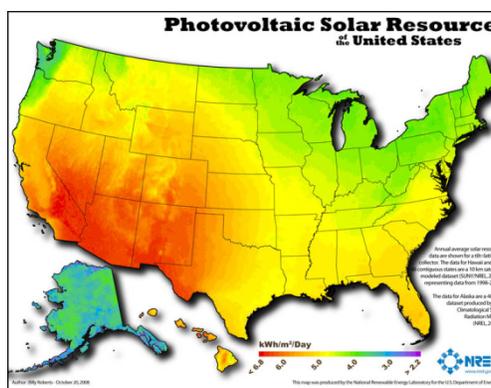


View showing the flooring underside as seen from Building's Crawlspace

FACILITY IMPROVEMENT MEASURES (FIM)	
Project Description	Estimated Implementation Cost
Install Additional Insulation (6th - 8th Grade Classrooms)	\$1,200

INSTALL SOLAR PHOTOVOLTAIC (PV) PANELS

Texas ranks high in the nation in regards to its solar resource potential. The Solar Energy Resource map below illustrates the availability of solar energy throughout the U.S. In particular, by review of the image below, the West Texas Area (i.e. Big Bend) has ample solar energy resources. The District may consider installing a Solar PV system. A Solar Photovoltaic (PV) system converts the suns energy into useful renewable electrical energy. The District has significant obstruction free areas suitable for a Solar PV installation. For example, the District can install a 20 kW roof mounted solar PV system. The system would require approximately 2,000 – 2,500 square foot of roof area. In addition based on typical solar energy resources available in the area a 20 kW PV system is capable of producing close to 33,000 kWh annually. This is equivalent to 50% of the Districts annual electrical energy consumption. The table below provides an estimated cost to install a 20 kW solar PV system at the District.



U.S. Solar Resource Map
Source: National Renewable Energy Laboratory (NREL)

INSTALL SOLAR PHOTOVOLTAIC (PV) SYSTEM	
Project Description	Estimated Implementation Cost
Solar PV System (20kW)	\$140,000 - \$150,000

For additional information, please visit the website links below:

Texas State Energy Conservation Office's (SECO) solar energy portal
<http://infinitepower.soltrex.com/>

PVWatts Solar PV Energy Calculator Website
<http://www.pvwatts.org/>

9.0 ENERGY MANAGEMENT POLICY

By requesting this study, the District has demonstrated interest in taking a more aggressive approach to energy management. In order to establish an effective Energy Management Program it should have support from top management. An Energy Management Policy adopted by the school board sends a strong signal that energy management is a priority. A formal Energy Management Policy can be as simple as a two-page document that clearly states the District's energy management objectives. At a minimum, the energy management policy should address the following:

- Establish an energy steering committee to review energy cost and consumption on a regular basis.
- Outline energy cost reduction measures and implementation strategies.
- Assign energy manager duties to existing staff positions, with defined roles and responsibilities.
- Establish acceptable equipment operating parameters and schedules, such as HVAC space heating and cooling set points, etc.
- Promote awareness of energy conservation by publishing goals and progress of energy conservation measures.

10.0 FUNDING OPTIONS FOR CAPITAL ENERGY PROJECTS

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

Texas LoanSTAR Program

The LoanSTAR (Saving Taxes and Resources) Program, which is administered by the State Energy Conservation Office, finances energy-efficient building retrofits at a low interest rate (typically 3 percent). The program's revolving loan mechanism allows borrowers to repay loans through the stream of cost savings realized from the projects. Projects financed by LoanSTAR must have an average simple payback of ten years or less and must be analyzed in an Energy Assessment Report by a Professional Engineer. Upon final loan execution, the School District proceeds to implement funded projects through the traditional bid/specification process. Contact: Eddy Trevino (512/463-1080).

Internal Financing

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

Private Lending Institutions or Leasing Corporations

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

Performance Contracting with an Energy Service Company

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

Utility Sponsored Energy Efficiency Incentive Programs

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

APPENDICES

APPENDIX A

ENERGY LEGISLATION (SB12, HB3693 AND SB300)

How to comply with SB12 & HB 3693

What you need to know about Texas Senate Bill 12

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

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

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

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

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

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

What you need to know about Texas House Bill 3693

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

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

Record, Report and Display Consumption Data

All Political Subdivisions, School Districts and State-Funded Institutes of Higher Education, are mandated to record and report the entity's metered resource consumption usage data for electricity, natural gas and water on a publically accessible internet page.

Note: *The format, content and display of this information are determined by the entity or subdivision providing this information.*

Energy Efficient Light Bulbs

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

Who must comply?

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

How do you define energy-efficiency measures?

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

Examples of energy-efficiency measures include:

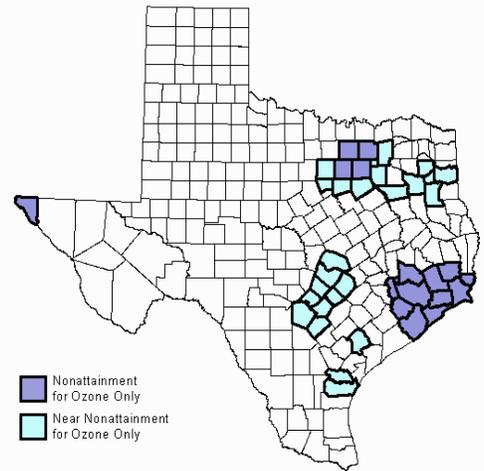
- installation of insulation and high-efficiency windows and doors
- modifications or replacement of HVAC systems, lighting fixtures and electrical systems
- installation of automatic energy control systems
- installation of energy recovery systems or renewable energy generation equipment
- building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

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

What counties are affected?

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

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



What assistance is available for affected areas?

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

To assist jurisdictions, the Texas Energy Partnership will:

- Present workshops and training seminars in partnership with private industry on a range of topics that include energy services, financing, building technologies and energy performance rating and benchmarking
- Prepare information packages – containing flyers, documents and national lab reports about energy services, management tools and national, state and industry resources that will help communities throughout the region
- Launch an electronic newsletter to provide continuous updates and develop additional information packages as needed

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

SECO Program Contact Information

**LoanSTAR;
Preliminary Energy Assessments:**
Felix Lopez - 512-463-1080
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BILL ANALYSIS

Senate Research Center

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

AUTHOR'S / SPONSOR'S STATEMENT OF INTENT

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

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

RULEMAKING AUTHORITY

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

SECTION BY SECTION ANALYSIS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

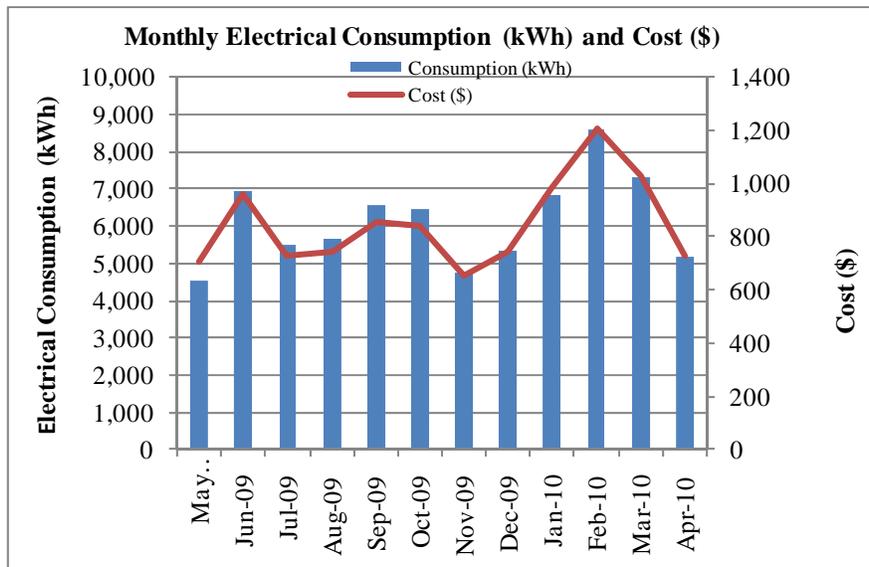
APPENDIX B

SAMPLE UTILITY DATA REPORTING FORM

San Vicente ISD - Sample Utility Input Form

MONTH	ELECTRICITY		
	KWH	COST \$	Avg. Rate \$/KWH
May-09	4,560	706	\$0.1548
Jun-09	6,920	957	\$0.1383
Jul-09	5,520	726	\$0.1315
Aug-09	5,680	747	\$0.1314
Sep-09	6,560	859	\$0.1310
Oct-09	6,440	844	\$0.1310
Nov-09	4,760	653	\$0.1371
Dec-09	5,320	740	\$0.1392
Jan-10	6,840	980	\$0.1433
Feb-10	8,600	1,206	\$0.1402
Mar-10	7,320	1,030	\$0.1407
Apr-10	5,160	732	\$0.1418
Total	73,680	\$10,180	\$0.1382

Gross Building Area:	10,430	SF
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APPENDIX C

BASE YEAR CONSUMPTION HISTORY

Energy Cost and Consumption Benchmarks												
		Electric			Natural Gas **			Total	Total	EUI	ECI	
	Building	KWH/Yr	MMBTU/Yr	\$Cost/Yr	MCF/Yr	MMBTU/Yr	\$Cost/Yr	\$Cost/Yr	MMBTU/Yr	kBTU/SF/Yr	\$/SF/Yr	SF*
1	Main Campus	73,680	251	10,180	0	0	0	10,180	251	24	0.98	10,430

Version 1

District: San Vicente ISD

ACCOUNT# _____ Electric
 _____ Gas

BUILDING: Main Campus FLOOR AREA: 10,430 estimated

MONTH		YEAR		Electrical			NATURAL GAS / FUEL		
				CONSUMPTION	DEMAND		TOTAL ALL	CONSUMPTION	TOTAL
					METERED	CHARGED	COST OF		
KWH	KW	KW	DEMAND (\$)	COSTS (\$)					
May	2009	4,560		0		706	0	0	
June	2009	6,920		0		957	0	0	
July	2009	5,520		0		726	0	0	
August	2009	5,680		0		747	0	0	
September	2009	6,560		0		859	0	0	
October	2009	6,440		0		844	0	0	
November	2009	4,760		0		653	0	0	
December	2009	5,320		0		740	0	0	
January	2010	6,840		0		980	0	0	
February	2010	8,600		0		1,206	0	0	
March	2010	7,320		0		1,030	0	0	
April	2010	5,160		0		732	0	0	
TOTAL		73,680				10,180	0.0	0	

Energy Use Index:

Annual Total Energy Cost = 10,180 \$/year Total site BTU's/Yr ÷ Total Area (SF) = 24 kBTU/SF/year

Total KWH/yr x 0.003413 = 251.47 MMBTU/year

Total MCF/yr x 1.03 = 0.00 MMBTU/year

Total Other x _____ = 0.0 MMBTU/year

Total Site MMBTU's/yr = 251 MMBTU/year

Energy Cost Index:

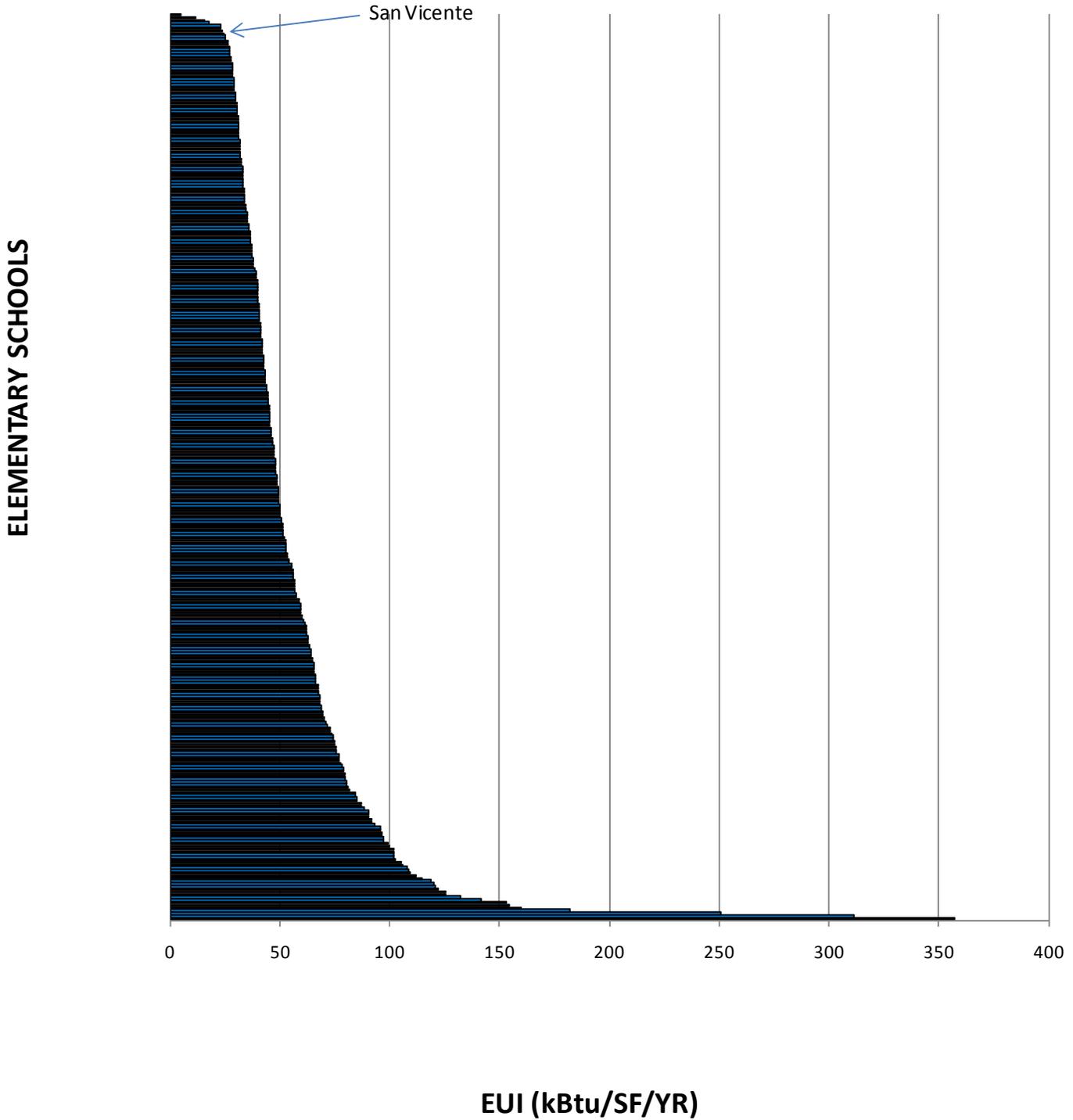
Total Energy Cost/Yr ÷ Total Area (SF) = 0.98 \$/SF/year

Electric Utility: Rio Grande Electric Cooperative, Inc. Gas Utility: _____

APPENDIX D

ENERGY PERFORMANCE COMPARISON CHARTS

**TEESI Database of Texas Schools
Energy Performance Comparison Chart
• ELEMENTARY SCHOOLS •**



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

APPENDIX E

LOANSTAR INFORMATION

Texas LoanSTAR Program

FACTS ABOUT LoanSTAR

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

ELIGIBLE PROJECTS

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

PROGRAM REQUIREMENTS

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

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

SAVINGS VERIFICATION

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

For additional information regarding the LoanSTAR program, please contact:

Eddy Trevino
SECO, LoanSTAR Program Manager
(512) 463-1080

APPENDIX F

REQUEST FOR ENERGY ASSISTANCE



Public Schools, Colleges and Non-Profit Hospitals
Preliminary Energy Assessment
Service Agreement

*no PEA or
report*

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

Description of the Service

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

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

Principles of the Agreement

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

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

Acceptance of Agreement

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

Signature: Shirley M. Coleman

Date: 2/18/10

Name (Mr./Ms./Dr.): Shirley M. Coleman

Title: Superintendent

Organization: San Vicente ISD

Phone: 432 477 2220

Street Address: 195 Escuela Vista Dr.

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Mailing Address: Box 195

E-Mail: scoleman@svisd.com

Big Bend National Park, TX 79834

County: Brewster / TEGS 1

Contact Information:

Name (Mr./Ms./Dr.): Shirley M. Coleman

Title: Superintendent

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County: Brewster

Please sign and mail or fax to: Juline Ferris, Schools and Education Program Administrator, State Energy Conservation Office, 111 E. 17th Street, Austin, Texas 78774. Phone: 512-936-9283. Fax 512-475-2569.