Susan Combs
Texas Comptroller of Public Accounts

Facility Preliminary Energy Assessments and Recommendations

Prepared by:

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Meyersville Independent School District

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ESA-Energy Systems Associates, Inc.
F-4882

SECO
State Energy Conservation Office

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1.0 EXECUTIVE SUMMARY:

This **Energy Efficient Partnership Service** is provided to public school districts and hospitals as a portion of the state's ***Schools/ Local Government Energy Management Program***; a program sponsored by the **State Energy Conservation Office (SECO)**, a division of the **State of Texas Comptroller of Public Accounts**.

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LBJ State Office Building
111 E. 17th Street
Austin. Texas 78774

The service assists these public, non-profit institutions to take basic steps towards energy efficient facility operation. Active involvement in the partnership from the entire administration and staff within the agencies and institutions is critical in developing a customized blueprint for energy efficiency for their facilities.

In January 2010, **SECO** received a request for technical assistance from *Laura Whitson*, Superintendent for Meyersville I.S.D. **SECO** responded by sending ESA **Energy Systems Associates, Inc.**, a registered professional engineering firm, to prepare this preliminary report for the school district. This report is intended to provide support for the district as it determines the most appropriate path for facility renovation, especially as it pertains to the energy consuming systems around the facility. It is our opinion that significant decreases in annual energy costs, as well as major maintenance cost reductions, can be achieved through the efficiency recommendations provided herein.

This study has focused on energy efficiency and systems operations. To that end, an analysis of the utility usage and costs for **Meyersville ISD,** (hereafter known as MISD) was completed by ESA **Energy Systems Associates, Inc**., (hereafter known as *Engineer*) to determine the annual energy cost index (ECI) and energy use index (EUI) for each campus or facility. A complete listing of the Base Year Utility Costs and Consumption is provided in Section 3.0 of this report.

Following the utility analysis and a preliminary consultation with *Mrs. Whitson,* a walk-through energy analysis was conducted throughout the campus. Specific findings of this survey and the resulting recommendations for both operation and maintenance procedures and cost-effective energy retrofit installations are identified in Section 6.0 of this report.

We estimate that as much as **$3,700** may be saved annually if all recommended projects are implemented. The estimated installed cost of these projects should total approximately **$20,500**, yielding an average simple payback of **5-1/2** years.

SUMMARY:	IMPLEMENTATION COST	ESTIMATED SAVINGS	SIMPLE PAYBACK
Lighting ECRM #1	$ 12,000	$2,000	6 Years
Lighting ECRM #2	$8,500	$1,700	5 Years
TOTAL PROJECTS	$20,500	$3,700	5-1/2 Years

The total utility cost for MISD in 2009 was $29,003. The projected savings of $3,700 would represent a decrease in utility expenditures for the district of 13%. Although additional savings from reduced maintenance expenses are anticipated, these savings projections are not included in the estimates provided above. As a result, the actual Return of Investment (ROI), for this retrofit program has been calculated and shown in Section 7.0 of this report.

Our final "summary" comment is that **SECO** views the completion and presentation of this report as a beginning, rather than an end, of our relationship with **MISD**. We hope to be ongoing partners in assisting you to implement the recommendations listed in this report. Please call us if you have further questions or comments regarding your Energy Management Issues.

*ESA Energy Systems Associates, Inc. James W. Brown (512) 258-0547

2.0 ENERGY ASSESSMENT PROCEDURE:

Involvement in this on-site analysis program was initiated through completion of a Preliminary Energy Assessment Service Agreement. This PEASA serves as the agreement to form a "partnership" between the client and the State Energy Conservation Office (SECO) for the purposes of energy costs and consumption reduction within owned and operated facilities. After receipt of the PEASA, an initial visit was conducted by the professional engineering firm contracted by SECO to provide service within that area of the state to review the program elements that SECO provides to school districts and determine which elements could best benefit the district. A summary of the *Partner's* most recent twelve months of utility bills was provided to the engineer for the preliminary assessment of the Energy Performance Indicators. After reviewing the utility bill data analysis and consultation with SECO to determine the program elements to be provided to MISD, ESA returned to the facilities to perform the following tasks:

1. Analyzing systems for code and standard compliance in areas such as cooling system refrigerants used, outside air quantity, and lighting illumination levels.
2. Develop an accurate definition of system and equipment replacement projects along with installation cost estimates, estimated energy and cost savings and analyses for each recommended project.
3. Develop a prioritized schedule for replacement projects.
4. Assist in the development of guidelines for efficiency levels of future equipment purchases.
5. Preparing guidelines and assistance in developing long-range energy plans (per Senate Bill 300) for public entities.

3.0 ENERGY PERFORMANCE INDICATORS:

In order to easily assess the *Partner's* energy utilization and current level of efficiency, there are two key "Energy Performance Indicators" calculated within this report.

1. Energy Utilization Index

The Energy Utilization Index (EUI) depicts the total annual energy consumption per square foot of building space, and is expressed in "British Thermal Units" (BTU's).

To calculate the EUI, the consumption of electricity and gas are first converted to equivalent BTU consumption via the following formulas:

ELECTRICITY Usage

[Total KWH /yr] x [3413 BTUs/KWH] = _____ BTUs / yr

NATURAL GAS Usage

[Total MCF/yr] x [1,030,000 BTUs/MCF] = _____ BTUs / yr

After adding the BTU consumption of each fuel, the total BTU's are then divided

by the building area.

EUI = [Electricity BTU's + Gas BTU's] divided by [Total square feet]

2. Energy Cost Index

The Energy Cost Index (ECI) depicts the total annual energy cost per square foot of building space.

To calculate the ECI, the annual costs of electricity and gas are totaled and divided by the total square footage of the facility:

ECI = [Electricity Cost + Gas Cost] divided by [Total square feet]

These indicators may be used to compare the facility's current cost and usage to past years, or to other similar facilities in the area. Although the comparisons will not provide specific reasons for unusual operation, they serve as indicators that problems may exist within the energy consuming systems.

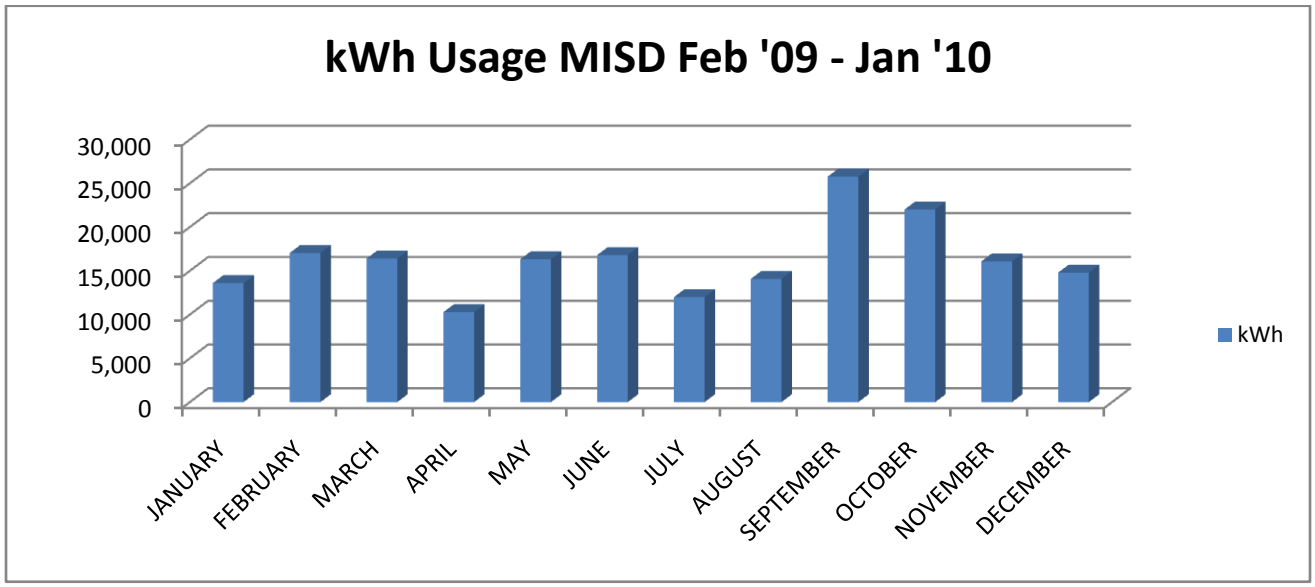
THE CURRENT ENERGY PERFORMANCE INDICATORS FOR :

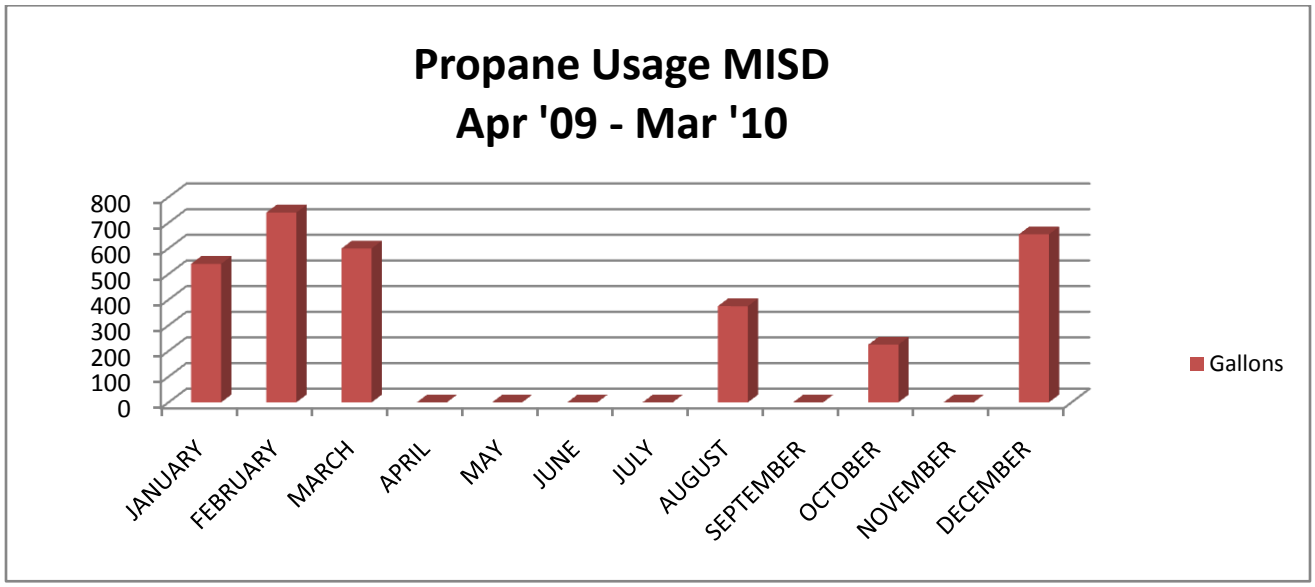
Meyersville ISD

CAMPUS	ENERGY UTILIZATION INDEX (EUI) (Btu/sf-year)	ENERGY COST INDEX (ECI) ($/sf-year)
2010 Meyersville K-12:	**36,703**	**$1.10**

The electricity and propane consumption charts for Meyersville K-12 facilities area as follows:

MEYERSVILLE ISD K-12





The EUI and ECI for MISD are excellent for a K-12 school district in this region of the State. Occupants are doing a good job keeping lights and equipment off when the rooms are unoccupied and the district utilizes natural ventilation when conditions allow which keeps the HVAC equipment off. A copy of the schedule and applicable riders is included in Appendix II.

5.0 RATE SCHEDULE ANALYSIS:

ELECTRICITY PROVIDER:

ELECTRICITY PROVIDER: **Guadalupe Valley Electric Cooperative**

Electric Rate: 66 G-3 THREE PHASE UNDER 250 kW

I. SERVICE AVAILABILITY CHARGE = $50.00 per meter

II. DEMAND CHARGE = $3.75 per kW

Note: Billing demand is highest maximum kW load in any 15 minute period in billing cycle, or 70% of the highest billing demand reading in the past 11 months (Demand Ratchet)

III. ENERGY CHARGE = $0.00889 per kWh

IV. POWER FACTOR

The cooperative will measure the power factor for the consumer at the customer meter. If the measurement indicates power factor of less than 95%, the coop may require the district to install power factor correction equipment (at the Owner's expense) OR may charge power factor correction according to the following formula:

Adjusted Billing Demand = (Billing Demand x .95) / Actual Power Factor

V. GENERATION AND TRANSMISSION CHARGES:

Current Charge (May be amended as required) = $0.067 per kWh

Average Savings for consumption = $0.00889/kWh + $0.067/kWh = **$0.07589/kWh**

Average Savings for demand **= $3.75/kW**

PROPANE PROVIDER: **Rath Propane Gas**
202 S Esplanade
Cuero, Texas 77954

Rate Schedule Not Applicable: Average cost per gallon determined from utility billings.
Total Cost of Propane purchased for Meyersville ISD: $6,917
Total Quantity of Propane purchased for Meyersville ISD: 3,135 Gallons

Cost / Quantity = Average Unit Cost = $6,917 / 3135 gallons =$ 2.21 per gallon

5.0 CAMPUS DESCRIPTIONS:

Meyersville **ISD** consists of one K-8 campus located in Meyersville, Texas, 14 miles south of Cuero. High School students in the area attend Cuero High School. There are three main classroom buildings that were constructed in 1958, a gymnasium built in 1987, a Library/Administration building built in 1999, and some single classroom buildings on campus. The Administrative area is open all year, and portions of the facility are occupied by the maintenance/custodial staff throughout the summer. The district records indicate the school district operates 26,303 square feet of facility and serves 132 students.

The 1958 classroom buildings have sidewalls that were originally 100% windows and endwalls that are CMU block. The roofs are flat built-up gravel covered. Approximately ½ of the windows have been painted to eliminate solar heat gain in the spaces. The windows are operable single pane units, but are shaded with 6' roof overhangs. The classroom doors open directly to the exterior walkway; many are in need of maintenance to ensure they close tightly and/or replace the missing or damaged weatherstripping.

The 1999 building is a brick structure with low sloping metal roofs and a minimum number of double pane windows. The building utilizes T8 lighting and the HVAC system consists of three split systems. The units are in excellent condition and the staff reports no issues with these systems.

HVAC System Description:

All of the classroom buildings utilize window units for heating and cooling of the space. By themselves, window units are not as efficient as other HVAC systems, but these units are less than two to three years old and are well controlled. Each unit is a Friedrich QuietMaster Model KM21L30-A. It provides up to 20,600 BTUh of cooling capacity and has a sleep setting and money saver setting, both of which are turned on at the unit. The anticipated EER for the unit (when new) is 9.9. The re-usable foam filters are dirty, but the district has scheduled maintenance on the filters for the upcoming summer.

Overall, the district operates 27 of the window units. With the low energy costs the district received from Guadalupe Valley Electric Coop and the tight control the district has on equipment operating hours, it is likely that replacing the window units with split systems would result in higher energy costs for the district and an extremely long payback period. *We therefore recommend the district continue to maintain and operate these units as they have in the past, until such time that these favorable energy rates or ability to control the units well changes.*

Control System Description:

The district has conventional thermostats for the window units, but the operating hours are controlled by an electronic timeclock system (See Figure #2 to right). The staff reports that the timeclock system also prohibits the lighting system from operating after normal occupancy hours.

Figure 2: Window Unit Controls

Lighting System Description:

All buildings, except for the 1999 Library and Administration building, utilize T12 fluorescent light fixtures. The 1999 building has T8 fixtures installed. *We recommend the district renovate all of the T12 fixtures with T8 lamps and electronic ballasts.* The T8 system produces approximately 18% more light, but requires about 20% less energy to operate. The project would also allow MISD to comply with the requirements of Senate Bill 300 which requires school districts to install the most energy efficient lamps and ballasts in their existing fixtures as possible.

The exterior light fixtures are controlled by timeclock or photocell and were all off during the daytime hours at the time of the survey. It was noted during the survey that some of the light fixtures in the classroom storage rooms were on while not in use. We recommend replacing the wall switch with a rotary timer that will allow teachers to access the closets for materials, but not have to turn off the light when their hands are full and they leave.

The Gymnasium has 32 each 2-lamp F96T12 fluorescent fixtures (See Figure #3 to right) that the district reports require a lot of maintenance expense for the district. We recommend the district replace these fixtures with 30 each 4-lamp high-bay T8 linear fluorescent fixtures. The fixtures may be dual switched so that ½ of the lamps can operate for general PE classes during the day when the rollup doors have been opened, and all of the lamps can be energized for nighttime events or times that weather prohibits the opening of the rollup doors. We also recommend including occupancy sensors with the new fixture installation to eliminate operation of the fixtures when no students are present.

Figure 3: Existing Gymnasium Lighting

6.0 RECOMMENDATIONS

A. MAINTENANCE AND OPERATIONS PROCEDURES

HVAC	•Wash filters at window units
Lighting	•Replace existing switches at storage rooms with rotary timers
Building Envelope	•Check weatherstrip at all exterior doors, replace as needed

Maintenance and Operation procedures are strategies that can offer significant energy savings potential, yet require little or no capital investment by the district to implement. Exact paybacks are at times difficult to calculate, but are typically less than one year. The difficulties with payback calculations are often related to the fact that the investigation required to make the payback calculation, (for example measuring the air gap between exterior doors and missing or damaged weather-stripping so that exact air losses may be determined), is prohibitive when the benefits of renovating door and weather-stripping are well documented and universally accepted.

HVAC M&O

The existing re-usable filters at the window units are dirty and require washing. Ensuring the filters are clean will maintain operating efficiency of the units

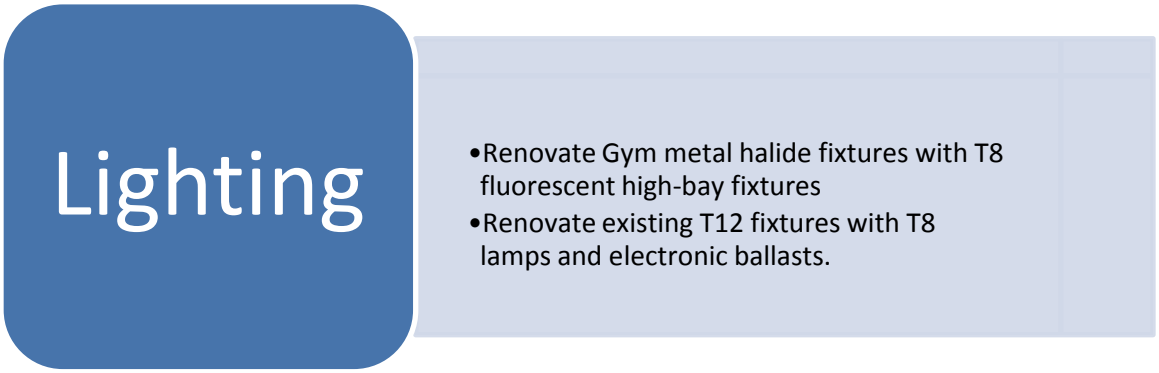
Lighting System M&O

Rotary timers eliminate the need for teachers to turn off lights as they secure items to or from the storage areas.

Envelope M&O

It was noted there were several exterior doors around the district that suffered from missing or absent weather-stripping and we recommend that these situations be addressed as the opportunity arises.

B. CAPITAL EXPENSE PROJECTS



LIGHTING ECRMs

ECRM #1: Retrofit Existing Gymnasiums Fixtures to T8 High Bay Fluorescent

Replacing the existing F96T12 fixtures with new T8 high-bay fixtures and dual switching will improve the quality of light in the gymnasium, eliminate the excessive maintenance costs associated with the existing fixtures by the staff, and offer energy savings to the existing system.

Estimated Installed Cost	=	$ 12,000
Estimated Energy Cost Savings	=	$ 2,000
Simple Payback Period	=	6 years

ECRM #2: Renovate the existing T12 fixtures with T8 lamps and electronic ballasts.

Renovate the existing fixtures with new T8 lamps and electronic ballasts.

Estimated Installed Cost	=	$ 8,500
Estimated Energy Cost Savings	=	$ 1,700
Simple Payback Period	=	5 years

SUMMARY TABLE:

The two lighting projects combined into one package would offer:

Estimated Installed Cost	=	$ 20,500
Estimated Energy Cost Savings	=	$ 3,700
Simple Payback Period	=	5-1/2 years

7.0 FINANCIAL EVALUATION

Financing of these projects may be provided using a variety of methods as Bond Programs, municipal leases, or state financing programs like the SECO LoanSTAR Program.

If the project was financed with in-house funds, the internal rate of return for the investment would be as follows:

Proposal:	Perform recommended ECRMs			
Assumptions:				
1. Equipment will last at least 15 years prior to next renovation				
2. No maintenance expenses for first five years (warranty period)				
3. $100 maintenance expense next 5 years				
4. $200 maintenance expense last 5 years				
5. Savings decreases 2% per year after year 5				
Cash Flow	**Project Cost**	**Project Savings**	**Maintenance Expense**	**Net Cash Flow**
Time 0	($20,500)		0	($20,500)
Year 1		$ 3,700	0	$3,700
Year 2		$ 3,700	0	$3,700
Year 3		$ 3,700	0	$3,700
Year 4		$ 3,700	0	$3,700
Year 5		$ 3,700	0	$3,700
Year 6		$ 3,626	($100)	$3,526
Year 7		$ 3,552	($100)	$3,452
Year 8		$ 3,478	($100)	$3,378
Year 9		$ 3,404	($100)	$3,304
Year 10		$ 3,515	($100)	$3,415
Year 11		$ 3,256	($200)	$3,056
Year 12		$ 3,182	($200)	$2,982
Year 13		$ 3,108	($200)	$2,908
Year 14		$ 3,034	($200)	$2,834
Year 15		$ 2,960	($200)	$2,760
			Internal Rate of Return	**15.04%**

More information regarding financial programs available to MISD can be found in:

APPENDIX I: SUMMARY OF FUNDING AND PROCUREMENT OPTIONS

APPENDICES

APPENDIX I - SUMMARY OF FUNDING AND PROCUREMENT OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

SUMMARY OF FUNDING OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

Several options are available for funding retrofit measures which require capital expenditures.

LoanSTAR Program:

The Texas LoanSTAR program is administered by the State Energy Conservation Office (SECO). It is a revolving loan program available to all public school districts in the state as well as other institutional facilities. SECO loans money at 3% interest for the implementation of energy conservation measures which have a combined payback of eight years or less. The amount of money available varies, depending upon repayment schedules of other facilities with outstanding loans, and legislative actions. Check with Eddy Trevino of SECO (512-463-1876) for an up-to-date evaluation of prospects for obtaining a loan in the amounts desired.

TASB (Texas Association Of School Boards) Capital Acquisition Program:

TASB makes loans to school districts for acquiring personal property for "maintenance purposes". Energy conservation measures are eligible for these loans. The smallest loan TASB will make is $100,000. Financing is at 4.4% to 5.3%, depending upon length of the loan and the school district's bond rating. Loans are made over a three year, four year, seven year, or ten year period. The application process involves filling out a one page application form, and submitting the school district's most recent budget and audit. Contact Cheryl Kepp at TASB (512-467-0222) for further information.

Loans On Commercial Market:

Local lending institutions are another source for the funding of desired energy conservation measures. Interest rates obtainable may not be as attractive as that offered by the LoanSTAR or TASB programs, but advantages include "unlimited" funds available for loan, and local administration of the loan.

Leasing Corporations:

Leasing corporations have become increasingly interested in the energy efficiency market. The financing vehicle frequently used is the municipal lease. Structured like a simple loan, a municipal leasing agreement is usually a lease-purchase agreement. Ownership of the financed equipment passes to the 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 a nominal amount, usually a dollar, is paid by the lessee for title to the equipment.

Bond Issue:

The may choose to have a bond election to provide funds for capital improvements. Because of its political nature, this funding method is entirely dependent upon the mood of the voters, and may require more time and effort to acquire the funds than the other alternatives.

SUMMARY OF PROCUREMENT OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

State Purchasing:
The General Services Commission has competitively bid contracts for numerous items which are available for direct purchase by school districts. Contracts for this GSC service may be obtained from Sue Jager at (512) 475-2351.

Design/Bid/Build (Competitive Bidding):
Plans and specifications are prepared for specific projects and competitive bids are received from installation contractors. This traditional approach provides the district with more control over each aspect of the project, and task items required by the contractors are presented in detail.

Design/Build:
These contracts are usually structured with the engineer and contractor combined under the same contract to the owner. This type team approach was developed for fast-track projects, and to allow the contractor a position in the decision making process. The disadvantage to the district is that the engineer is not totally independent and cannot be completely focused upon the interest of the district. The district has less control over selection of equipment and quality control.

Purchasing Standardization Method:
This method will result in significant dollar savings if integrated into planned facility improvements. For larger purchases which extend over a period of time, standardized purchasing can produce lower cost per item expense, and can reduce immediate up-front expenditures. This approach includes traditional competitive bidding with pricing structured for present and future phased purchases.

Performance Contracting:
Through this arrangement, an energy service company (ESCO) using in-house or third party financing to implement comprehensive packages of energy saving retrofit projects. Usually a turnkey service, this method includes an initial assessment of energy savings potential, design of the identified projects, purchase and installation of the equipment, and overall project management. The ESCO guarantees that the cost savings generated will, at a minimum, cover the annual payment due over the term of the contract. The laws governing Performance Contracting for school districts are detailed in the Texas Education Code, Subchapter Z, Section 44.901. Senate Bill SB 3035, passed by the seventy-fifth Texas Legislature, amends some of these conditions. Performance Contracting is a highly competitive field, and interested districts may wish to contact Felix Lopez of State Energy Conservation Office, (SECO), at 512-463-1080 for assistance in preparing requests for proposals or requests for qualifications.

Solution Center

How to Finance Your Energy Program

Cost and financing issues are pivotal factors in determining which energy-efficiency measures will be included in your final energy management plan. Before examining financing options, you need to have a reasonably good idea of the measures that may be implemented. For this purpose, you will want to perform cost/benefit analyses on each candidate measure to identify those with the best investment potential. This document presents a brief introduction to cost/benefit methods and then suggests a variety of options for financing your program.

Selecting a Cost/Benefit Analysis Method

Cost/benefit analysis can determine if and when an improvement will pay for itself through energy savings and to help you set priorities among alternative improvement projects. Cost/benefit analysis may be either a simple payback analysis or the more sophisticated life cycle cost analysis. Since most electric utility rate schedules are based on both consumption and peak demand, your analyst should be skilled at assessing the effects of changes in both electricity use and demand on total cost savings, regardless of which type of analysis is used. Before beginning any cost/benefit analyses, you must first determine acceptable design alternatives that meet the heating, cooling, lighting, and control requirements of the building being evaluated. The criteria for determining whether a design alternative is "acceptable" includes reliability, safety, conformance with building codes, occupant comfort, noise levels, and space limitations. Since there will usually be a number of acceptable alternatives for any project, cost/benefit analysis allows you to select those that have the best savings potential.

Simple Payback Analysis

A highly simplified form of cost/benefit analysis is called simple payback. In this method, the total first cost of the improvement is divided by the first-year energy cost savings produced by the improvement. This method yields the number of years required for the improvement to pay for itself.

This kind of analysis assumes that the service life of the energy-efficiency measure will equal or exceed the simple payback time. Simple payback analysis provides a relatively easy way to examine the overall costs and savings potentials for a variety of project alternatives. However, it does not consider a number of factors that are difficult to predict, yet can have a significant impact on cost savings. These factors may be considered by performing a life-cycle cost (LCC) analysis.

Simple Payback

As an example of simple payback, consider the lighting retrofit of a 10,000-square-foot commercial office building. Relamping with T-8 lamps and electronic, high-efficiency ballasts may cost around $13,300 ($50 each for 266 fixtures) and produce annual savings of around $4,800 per year (80,000 kWh at $0.06/kWh). This simple payback for this improvement would be

$$\frac{\$13{,}300}{\$4{,}800/\text{year}} = 2.8 \text{ years}$$

That is, the improvement would pay for itself in 2.8 years, a 36% simple return on the investment (1/2.8 = 0.36).

Life-Cycle Cost Analysis

Life-cycle cost analysis (LCC) considers the total cost of a system, device, building, or other capital equipment or facility over its anticipated useful life. LCC analysis allows a comprehensive assessment of all anticipated costs associated with a design alternative. Factors commonly considered in LCC analyses include initial capital cost, operating costs, maintenance costs, financing costs, the expected useful life of equipment, and its future salvage values. The result of the LCC analysis is generally expressed as the value of initial and future costs in today's dollars, as reflected by an appropriate discount rate.

The first step in this type of analysis is to establish the general study parameters for the

continued

How to Finance Your Energy Program *continued*

Financing Mechanisms

Capital for energy-efficiency improvements is available from a variety of public and private sources, and can be accessed through a wide and flexible range of financing instruments. While variations may occur, there are five general financing mechanisms available today for investing in energy-efficiency:

- **Internal Funds.** Energy-efficiency improvements are financed by direct allocations from an organization's own internal capital or operating budget.
- **Debt Financing.** Energy-efficiency improvements are financed with capital borrowed directly by an organization from private lenders.
- **Lease or Lease-Purchase Agreements.** Energy-efficient equipment is acquired through an operating or financing lease with no up-front costs, and payments are made over five to ten years.
- **Energy Performance Contracts.** Energy-efficiency measures are financed, installed, and maintained by a third party, which guarantees savings and payments based on those savings.
- **Utility Incentives.** Rebates, grants, or other financial assistance are offered by an energy utility for the design and purchase of certain energy-efficient systems and equipment.

These financing mechanisms are not mutually exclusive (i.e., an organization may use several of them in various combinations). The most appropriate set of options will depend on the size and complexity of a project, internal capital constraints, in-house expertise, and other factors. Each of these mechanisms is discussed briefly below, followed by some additional funding sources and considerations.

Internal Funds

The most direct way for the owner of a building or facility to pay for energy-efficiency improvements is to allocate funds from the internal capital or operating budget. Financing internally has two clear advantages over the other options discussed below – it retains internally all savings from increased energy-efficiency, and it is usually the simplest option administratively. The resulting savings may be used to decrease overall operating expenses in future years or retained within a revolving fund used to support additional efficiency investments. Many public and private organizations regularly finance some or all of their energy-efficiency improvements from internal funds.

In some instances, competition from alternative capital investment projects and the requirement for relatively high rates of return may limit the use of internal funds for major, standalone investments in energy-efficiency. In most organizations, for example, the highest priorities for internal funds are business or service expansion, critical health and safety needs, or productivity enhancements. In both the public and private sectors, capital that remains available after these priorities have been met will usually be invested in those areas that offer the highest rates of return. The criteria for such investments commonly include an annual return of 20 percent to 30 percent or a simple payback of three years or less.

Since comprehensive energy-efficiency improvements commonly have simple paybacks of five to six years, or about a 12 percent annual rate of return, internal funds often cannot serve as the sole source of financing for such improvements. Alternatively, however, internal funding can be used well and profitably to achieve more competitive rates of return when combined with one or more of the other options discussed below.

Debt Financing

Direct borrowing of capital from private lenders can be an attractive alternative to using internal funds for energy-efficiency investments. Financing costs can be repaid by the savings that accrue from increased energy-efficiency. Additionally, municipal governments can often issue bonds or other long-term debt instruments at substantially lower interest rates than can private corporate entities. As in the case of internal funding, all savings from efficiency improvements (less only the cost of financing) are retained internally.

Debt financing is administratively more complex than internal funding, and financing costs will vary according to the credit rating of the borrower. This approach may also be restricted by formal debt ceilings imposed by municipal

How to Finance Your Energy Program *continued*

policy, accounting standards, and/or Federal or state legislation.

In general, debt financing should be considered for larger retrofit projects that involve multiple buildings or facilities. When considering debt financing, organizations should weigh the cost and complexity of this type of financing against the size and risk of the proposed projects.

Lease and Lease-Purchase Agreements

Leasing and lease-purchase agreements provide a means to reduce or avoid the high, up-front capital costs of new, energy-efficient equipment. These agreements may be offered by commercial leasing corporations, management and financing companies, banks, investment brokers, or equipment manufacturers. As with direct borrowing, the lease should be designed so that the energy savings are sufficient to pay for the financing charges. While the time period of a lease can vary significantly, leases in which the lessee assumes ownership of the equipment generally range from five to ten years. There are several different types of leasing agreements, as shown in the sidebar. Specific lease agreements will vary according to lessor policies, the complexity of the project, whether or not engineering and design services are included, and other factors.

Energy Performance Contracts

Energy performance contracts are generally financing or operating leases provided by an Energy Service Company (ESCo) or equipment manufacturer. The distinguishing features of these contracts are that they provide a guarantee on energy savings from the installed retrofit measures, and they provide payments to the ESCo from the savings, freeing the customer from any need of up-front payments to the ESCo. The contract period can range from five to 15 years, and the customer is required to have a certain minimum level of capital investment (generally $200,000 or more) before a contract will be considered.

Under an energy performance contract, the ESCo provides a service package that typically includes the design and engineering, financing, installation, and maintenance of retrofit measures to improve energy-efficiency. The scope of these improvements can range from measures that affect a single part of a building's energy-using

Types of Leasing Agreements

Operating Leases are usually for a short term, occasionally for periods of less than one year. At the end of the lease period, the lessee may either renegotiate the lease, buy the equipment for its fair market value, or acquire other equipment. The lessor is considered the owner of the leased equipment and can claim tax benefits for its depreciation.

Financing Leases are agreements in which the lessee essentially pays for the equipment in monthly installments. Although payments are generally higher than for an operating lease, the lessee may purchase the equipment at the end of the lease for a nominal amount (commonly $1). The lessee is considered the owner of the equipment and may claim certain tax benefits for its depreciation.

Municipal Leases are available only to tax-exempt entities such as school districts or municipalities. Under this type of lease, the lessor does not have to pay taxes on the interest portion of the lessee's payments, and can therefore offer an interest rate that is lower than the rate for usual financing leases. Because of restrictions against multi-year liabilities, the municipality specifies in the contract that the lease will be renewed year by year. This places a higher risk on the lessor, who must be prepared for the possibility that funding for the lease may not be appropriated. The lessor may therefore charge an interest rate that is as much as 2 percent above the tax-exempt bond rate, but still lower than rates for regular financing leases. Municipal leases nonetheless are generally faster and more flexible financing tools than tax-exempt bonds.

Guaranteed Savings Leases are the same as financing or operating leases but with the addition of a guaranteed savings clause. Under this type of lease, the lessee is guaranteed that the annual payments for leasing the energy-efficiency improvements will not exceed the energy savings generated by them. The owner pays the contractor a fixed payment per month. If actual energy savings are less than the fixed payment, however, the owner pays only the small amount saved and receives a credit for the difference.

How to Finance Your Energy Program *continued*

Bulk Purchasing. Large organizations generally have purchasing or materials procurement departments that often buy standard materials in bulk or receive purchasing discounts because of the volume of their purchases. Such organizations can help reduce the costs of energy-efficiency renovations if their bulk purchasing capabilities can be used to obtain discounts on the price of materials (e.g., lamps and ballasts). While some locales may have restrictions that limit the use of this option, some type of bulk purchasing can usually be negotiated to satisfy all parties involved.

Project Transaction Costs. Certain fixed costs are associated with analyzing and installing energy measures in each building included in a retrofit program. Each additional building, for example, could represent additional negotiations and transactions with building owners, building analysts, energy auditors, equipment installers, commissioning agents, and other contractors. Similarly, each additional building will add to the effort involved in initial data analysis as well as in tracking energy performance after the retrofit. For these reasons, it is often possible to achieve target energy savings at lower cost by focusing only on those buildings that are the largest energy users. One disadvantage with larger buildings is that the energy systems in the building can be more difficult to understand, but overall, focusing on the largest energy users is often the most efficient use of your financial resources.

Direct Value-Added Benefits. The primary value of retrofits to buildings and facilities lies in the reduction of operating costs through improved energy-efficiency and maintenance savings. Nevertheless, the retrofit may also directly help address a variety of related concerns, and these benefits (and avoided costs) should be considered in assessing the true value of an investment. A few examples of these benefits include the improvement of indoor air quality in office buildings and schools; easier disposal of toxic or hazardous materials found in energy-using equipment; and assistance in meeting increasingly stringent state or Federal mandates for water conservation. Effective energy management controls for buildings can also provide a strong electronic infrastructure for improving security systems and telecommunications.

Economic Development Benefits. In addition to direct savings on operating costs and the added-value benefits mentioned above, investments in energy-efficiency can also support a community's economic development and employment opportunities. Labor will typically constitute about 60 percent of a total energy investment, and about 50 percent of equipment can be expected to be purchased from local equipment suppliers; as a result, about 85 percent of the investment is retained within the local economy. Additionally, funds retained in urban areas will generally be re-spent in the local economy. The Department of Commerce estimates that each dollar retained in an urban area will be re-spent three times. This multiplier effect results in a three-fold increase in the economic benefits of funds invested in energy-efficiency, without even considering the savings from lower overall fuel costs.

For more information contact the Rebuild America Clearinghouse at 252-459-4664 or visit www.rebuild.gov

Rebuild America
U.S. Dept. of Energy

APPENDIX II - ELECTRIC UTILITY RATE SCHEDULES

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gvec ELECTRIC TARIFF

SECTION III Rate Schedules	APPROVAL DATE 8/23/05	EFFECTIVE DATE 09/23/05	PAGE NO. 11

G-3 THREE-PHASE UNDER 250 KW

MINIMUM CHARGE

The minimum monthly charge shall be the highest one of the following charges as determined for the Consumer in question:

A. The Service Availability Charge plus the Demand Charge, or
B. The minimum monthly charge specified in the contract for service.

GENERATION AND TRANSMISSION CHARGE

For now .046700 (Subject to change)

The charge for each kilowatt-hour of energy sold by the Cooperative shall be calculated as follows:

The Cooperative shall compute the total cost of generation and transmission services by combining the total cost of generation and transmission and other relevant costs and factors, and dividing it by the number of kilowatt-hours sold as deemed appropriate by the Cooperative. The generation and transmission charge shall be held constant and be billed each month subject to the following provision:

Each month the Cooperative shall compute the current cost of generation and transmission services. Should such computations indicate that continued use of the generation and transmission charge would result in a substantial under or over recovery of the current generation and transmission costs, the Cooperative may modify the existing charge to recover such costs more appropriately.

BILLING ADJUSTMENTS

The foregoing charges shall be adjusted in accordance with the provisions on Sheets No. 5.

TERMS OF PAYMENT

Each bill for electric service(s), regardless of the nature of the service(s), is due 16 days after issuance unless such day falls on a holiday or weekend, in which case payment is due on the next work day. If full payment is not received in the office of the Cooperative on or before the date such bill is due, a past due charge may apply and the Consumer's account will be considered delinquent and subject to disconnection in accordance with the Cooperative's Service Rules and Regulations.

gvec ELECTRIC TARIFF

SECTION III Rate Schedules	APPROVAL DATE 8/23/05	EFFECTIVE DATE 09/23/05	PAGE NO. 10

G-3 THREE-PHASE UNDER 250 KW

AVAILABILITY

Available to three-phase Consumers under 250 KW of average annual Demand.

TYPE OF SERVICE

Three-phase, 60 Hertz, at one of the Cooperative's standard secondary voltages, or at primary voltage with the consent and agreement of both the Cooperative and the Consumer. Frequency and voltage shall be subject to reasonable variation.

RATE

Service Availability Charge:	$50.00 per meter per month
Demand Charge	$3.75 per KW
Energy Charge	$0.00889 per kWh

DETERMINATION OF BILLING DEMAND

The billing demand shall be the maximum kilowatt load used by the Consumer for any (15) minute interval during the month for which the bill is rendered as indicated or recorded by a demand meter and adjusted for the power factor hereafter specified, but in no event less than 70% of the highest demand established in the preceding eleven (11) months.

POWER FACTOR

If the power factor of the consumer's load is found to be less than 95% lagging as measured at the consumer's meter, the Cooperative may require the consumer to arrange for the installation of appropriate equipment on the consumer's side of the meter necessary to maintain a power factor of not less than 95% lagging as measured at the consumer's meter.

Until the power equipment has been installed to correct the power factor problem, the consumer's Billing Demand may be adjusted according to the following formula:

Adjusted Billing Demand = (Billing Demand X .95) ÷ by Actual Power Factor

APPENDIX III - PRELIMINARY ENERGY ASSESSMENT SERVICE AGREEMENT

SECO
State Energy Conservation Office

Public Schools, Colleges and Non-Profit Hospitals

Preliminary Energy Assessment Service Agreement

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

Description of the Service

The State Energy Conservation Office (SECO) will analyze electric, gas and other utility data and work with Meyersville 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: Laura Whitson
Date: 04-13-10
Name (~~Mr./Ms./Dr.~~) Laura Whitson
Title: Superintendent
Organization: Meyersville ISD
Phone: 361.277.5817
Street Address: 1897 Meyersville Rd
Fax: 361.275.5034
Mailing Address: PO Box 1
E-Mail: misdpanthers@yahoo.com
Meyersville, TX 77974
County: De Witt

Contact Information:

Name (~~Mr./Ms./Dr.~~): Laura Whitson
Title: Superintendent
Phone: 361.275.3639
Fax: 361.275.5034
E-Mail: misdpanthers@yahoo.com
County: De Witt

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.

AND fax to the SECO Contractor for this service, **Yvonne Huneycutt**, ESA Energy Systems Associates, Inc. Phone: 512-258-0547, x124. **Fax: 512-388-3312.**

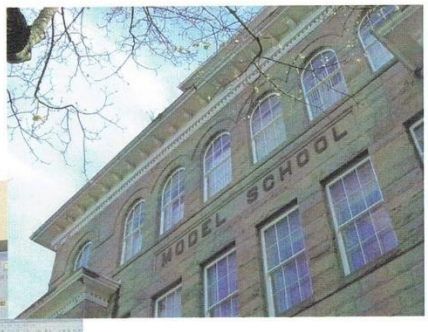
APPENDIX IV - TEXAS ENERGY MANAGERS ASSOCIATION (TEMA)

ANNOUNCING!

TEMA

TEXAS ENERGY MANAGERS ASSOCIATION

A PROFESSIONAL ASSOCIATION FOR THOSE RESPONSIBLE FOR ENERGY MANAGEMENT IN TEXAS PUBLIC FACILITIES



- Networking
- Sharing Knowledge and Resources
- Training Workshops
- Regional Meetings
- Annual Conference
- Certification
- Legislative Updates
- Money-Saving Opportunities

WWW.TEXASEMA.ORG

Check the website for Membership and Association information.

SECO
State Energy Conservation Office

APPENDIX VI - UTILITY CHARTS ON CD