SCHOOLS/LOCAL GOVERNMENT ENERGY MANAGEMENT PROGRAM

For

MIDLAND INDEPENDENT SCHOOL DISTRICT Midland, Texas

An Energy Efficient Partnership Service
of

COMPTROLLER of the STATE of TEXAS
STATE ENERGY CONSERVATION OFFICE
111 E. 17th Street
Austin, Texas 78774

Professional Engineering Services By:

ESA ENERGY SYSTEMS ASSOCIATES, Inc
100 East Main Street, Suite 201
Round Rock, Texas 78664
(512) 258-0547

May 20, 2009

James W. Brown, P.E.
Texas Registration # 51926

ESA-Energy Systems Associates, Inc.
F-4882

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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**.

State Energy Conservation Office

Program Administrator:	Glenda Baldwin
Phone:	512-463-1731
Address:	State Energy Conservation Office 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 March 2009, **SECO** received a request for technical assistance from ***Mr. James Riggen,*** Executive Director of School Plants for Midland 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 heating and cooling 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 **Midland 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 Appendix IV of this report.

Following the utility analysis and a preliminary consultation with Ms Jill Hallmark, Energy Manager for Midland ISD, 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 **$111,372** may be saved annually if all recommended projects are implemented. The estimated installed cost of these projects should total approximately **$758,400**, yielding an average simple payback of **6-3/4** years.

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 should be even faster than noted within these calculations.

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 on-site visit was conducted by the professional engineering firm contracted by SECO to provide service within that area of the state. 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. ESA then toured the facilities to evaluate changes in maintenance, operations and/or equipment which would produce potential savings in energy consumption and cost.

3.0 CAMPUS DESCRIPTIONS:

Midland ISD consists of thirty-five separate campuses located throughout the city. The schools include two 5A High Schools, one 4A High School, an alternative high school, two freshman High Schools, four Middle Schools, and twenty-five Elementary Schools. Midland ISD selected seven campuses representative of all of the campuses in their district to be reviewed during the survey. The following schools were surveyed:

General District-wide Considerations
In general, most of the campus lighting systems consist primarily of T12 linear fluorescent fixtures. The maintenance staff has begun to replace T12 components with energy efficient T8 components as the fixtures fail. *We recommend the district complete campus-wide renovations to retrofit the existing T12 fixtures with T8 lamps and electronic ballasts.* The new lighting system will produce about 20% more light output from the fixtures while consuming approximately 18% less energy to perform the work. The project will also assist the district in meeting lighting renovation requirements included in house Bill HB3693, passed in June, 2007.

This recommendation should be considered applicable to all schools described in the specific descriptions below unless otherwise noted. Other lighting system energy savings considerations available at each campus will be delineated in the specific school descriptions as well.

One question that is often asked when performing a campus-wide retrofit from T12 to T8 components is what to do with the random fixtures that were already converted to T8 by the school maintenance staff. There are two solutions for this dilemma:

1. Allow the Contractor to completely retrofit all fixtures, even if already T8, so that there remains no question as to warranty responsibility for the Contractor when lamps, ballasts, or fixtures fail. If the Contractor is instructed to bypass all existing T8 fixtures and a fixture fails, it is inevitable for the Contractor to claim it was not one of their fixtures that failed and the school usually believes that it is the Contractor's responsibility to repair it under warranty.
2. With proper documentation, usually a reflected ceiling of the entire campus that has been marked for fixtures that were already T8 at the time of the renovation and signed by both the Contractor and a district representative, it is possible to allow the Contractor to skip fixtures that have already been renovated and still maintain proper responsibility for repair when something fails.

Scharbauer Elementary School - Originally constructed in 1985 with a gym addition in 1993 and a bond referendum addition in 2007, the building is single story brick clad structure which has single pane windows and a pitched metal roof. Some of the weatherstripping at the exterior doors was found to be in poor condition during the survey. We recommend that the district consider replacing the weatherstripping to prevent infiltration of unwanted air and contaminants.

The building is conditioned with a central chilled water system. The two air-cooled rotary chillers (Trane RTAA080) are approximately two years old. The chilled water is circulated to multi-zone air handling units located throughout the facility. A system of space heating boilers provides heating water to the air handling units. All HVAC equipment is in good operating condition. The air handling units are controlled with wall mounted temperature sensors connected to a district wide Energy Management Control System (EMCS).

The cafeteria has 54 each 4-lamp T12 fixtures and produces an average of 20-24 footcandles on the table tops. Cafeterias are recommended to have 30fc on the table tops by the Illumination Engineering Society of North America (IESNA). The 20% gain in light level output that will be produced by the renovation to T8 system components will raise the light levels at the cafeteria to the right level.

The gymnasium currently utilizes 12 each 250-watt metal halide fixtures and due to the slow re-strike problem inherent with metal halide fixtures, they leave the gym lights on during school occupancy hours, even if no class is occurring in the gym at the time. *We recommend the district consider replacing the metal halide fixtures with new T5HO linear fluorescent fixtures.* These fixtures produce a higher quality of light than the metal halide fixtures and with no re-strike issues, can be turned off when the gymnasium is unoccupied.

Scharbauer Elementary School Summary

Lighting Project: Retrofit all T12 linear fluorescent fixtures with new T8 lamps and electronic ballasts. Replace the metal halide fixtures in the gymnasium with new T5 high bay linear fluorescent fixtures.

Estimated Installed Cost	=	$ 36,250
Estimated Energy Cost Savings	=	$ 6,042
Simple Payback Period	=	6 Years

Carver Center for Gifted & Talented - The school was originally constructed in 1957 with several additions added through the years. This facility is a single story brick clad structure with single pane windows. The facility is conditioned by a two year old air-cooled chiller and gas-fired heating boilers that circulate chilled and hot water to several air handling units and fan coil units located throughout the facility. The units are controlled with wall mounted temperature sensors which communicate with the district wide energy management system.

While the new gymnasium has metal halide fixtures that are less than 2 years old, the older gymnasium currently utilizes 30 each 300-watt incandescent fixtures. Incandescent fixtures are the least efficient type of light fixtures and *we recommend the district consider replacing the metal halide fixtures with new T5HO linear fluorescent fixtures.* This renovation will significantly reduce the electrical consumption required to illuminate this area.

Carver Center School Summary

Lighting Project: Retrofit all T12 linear fluorescent fixtures with new T8 lamps and electronic ballasts. Replace the incandescent fixtures in the gymnasium with new T5 high bay linear fluorescent fixtures.

Estimated Installed Cost	=	$ 60,100
Estimated Energy Cost Savings	=	$ 10,927
Simple Payback Period	=	5-1/2 Years

Abell Middle School - Originally constructed in 1993, this single story brick clad structure has single pane windows and a pitched metal roof. The facility is conditioned by a central chilled water system with VAV air handling units and is approximately 15 years old. The heating system is gas-fired heating coils located in various air handling units that have all been replaced within the last 10 years. The units are controlled with a combination of programmable and conventional thermostats that are enabled by the energy management system. *We recommend the district plan to replace the 15 year old chiller within the next 3-5 years as it is nearing the end of its useful life expectancy.*

The school lighting system is primarily T12 linear fluorescent fixtures throughout the facility. The maintenance staff has begun to replace T12 components with energy efficient T8 components as the fixtures fail. Light levels are consistently meeting standards throughout the facility with the existing system in place, therefore the normal recommendation to simply retrofit the existing fixtures as described in the general district considerations could lead to an overlit condition in many areas. Over-lighting is a condition where excess energy is wasted by providing more light than is required in a given space, which can lead to glare and become distracting to some students. *We recommend the district complete a school-wide retrofit to replace the existing 4-lamp T12 fixtures with new 3-lamp T8 fluorescent fixtures. This will maintain current light levels and substantially improve the efficiency of the light fixtures.*
It was noted during the survey that all of the restroom doors in the restroom vestibules have been removed. We encourage the school to perform a test and balance of the HVAC systems in these areas to ensure that the door removal has not forced the restroom exhaust fans into exhausting or re-directing HVAC circulation for the building.

Abell Middle School Summary

Estimated Installed Cost	=	$ 93,750
Estimated Energy Cost Savings	=	$ 11,719
Simple Payback Period	=	8 Years

Goddard Middle School - Originally constructed in 1966, the facility is two story brick clad structure has single pane windows and a flat built-up roof. The facility had a major addition in 2003 which already has efficient T8 lighting components. Similar to many other schools in MISD, the HVAC system consists of chilled and hot water being distributed to multi-zone air handling units throughout the facility, however, Goddard has a water cooled system and not air cooled chillers like the other surveyed campuses. During the inspection, the cooling tower was noted to be scaled up and the filters on the AHUs were dirty and needed to be replaced. Control of the HVAC equipment is accomplished with the district-wide EMCS.

The cafeteria lighting system is currently producing 52fc at the table tops. IESNA only requires 30fc in this area, therefore this space represents an opportunity to de-lamp or remove fixtures to produce only 30-35fc at the tabletops with the renovated lamps and ballasts. This should only be done as long as the cafeteria is used for eating activities only and no testing activities occur here. If testing is done, then the switching scheme should be adjusted so that 30fc can be provided for eating periods most of the time the cafeteria is used and 50fc can be produced when the need for testing activities arises.

The school has an exterior walkway which is illuminated with 63 compact fluorescent fixtures 24 hours per day (see picture to the right). Much of the hallway is sufficiently illuminated with natural daylight and the fixtures are not necessary during daytime hours. *We recommend that these circuits be added to the control system for the other exterior lighting at the school and turned off during daylight hours.*

The MISD staff reported that many Middle School gymnasiums have been previously de-lamped from 400-watt metal halides to 250-watt metal halides and the resulting light levels were too low. At Goddard, in addition to this activity, there were also some fixtures removed. We recommend that the district renovate these fixtures with the new T5 high bay fluorescent fixtures to maintain the energy efficiency of the gymnasium lighting.

As can be seen in the picture to the right, the insulation on the hot water lines is missing. *We recommend that the district install insulation on the hot water lines as the majority of energy losses in a hot water system occur in the piping and not with the water stored in the tank.*

Goddard Middle School Summary

Estimated Installed Cost	=	$ 64,000
Estimated Energy Cost Savings	=	$ 10,660
Simple Payback Period	=	6 Years

Coleman High School (Alternative Learning) - Originally constructed in 1992, this single story brick clad structure has double pane windows and a pitched metal roof. The facility is conditioned by a central chilled water plant featuring an air-cooled McQuay chiller that provides chilled water to terminal fan coil units located throughout the facility. The chiller, however, has been a maintenance concern from the time it was installed. The district might consider an early replacement for this particular unit if it continues to be difficult to maintain. The central gas-fired heating plant provides hot water to the fan coil units. Units are controlled with wall-mounted temperature sensors which are connected to the district-wide EMCS system.

Coleman High School Summary

Estimated Installed Cost	=	$ 16,638
Estimated Energy Cost Savings	=	$ 2,775
Simple Payback Period	=	6 Years

Robert E. Lee High School - Originally constructed in 1961 with multiple additions over the years, this two story brick clad structure has single pane windows and a flat built-up roof. The school is conditioned with a central chilled water system. The facility has a large bank of instantaneous water heaters (pictured to the right) to supply hot water to the air handling units located throughout the facility. The units are controlled by wall mounted temperature sensors which are connected to EMCS.

Much of this facility has older T12 fixtures which are surface mounted to spline or sheetrock ceilings. Given the age and general condition of the existing fixtures, this is not a good condition for a general lamp and ballast retrofit. Therefore, we recommend that this campus be renovated with new 3-lamp T8 stem-mounted fixtures or lay-in fixtures with new acoustical tile ceilings similar to the renovation recently performed at the school cafeteria.

The school has an exterior walkway which is illuminated with 63 compact fluorescent fixtures 24 hours per day (see picture to the right). Much of the hallway is sufficiently illuminated with natural daylight and the fixtures are not necessary during daytime hours. *We recommend that these circuits be added to the control system for the other exterior lighting at the school and turned off during daylight hours.*

The gymnasium utilizes 16 each 1000-watt metal halide fixtures and measures 48 footcandles at center court. *We recommend that the gym be renovated to 24 each 6-lamp T5HO fixtures in order to improve the overall quality of light while reducing demand and allowing the fixtures to be turned off during unoccupied periods.* The fluorescent fixtures do not have the re-strike problem inherent to metal halide fixtures and therefore can be turned on and off as occupancy schedules change throughout the day.

Robert E Lee High School Summary

Estimated Installed Cost	=	$288,662
Estimated Energy Cost Savings	=	$ 36,083
Simple Payback Period	=	8 Years

Midland High School - Originally constructed in 1928 with many additions and renovations over the years, this two story brick clad structure has single pane windows and a flat roof. The facility is cooled by a 340 ton air cooled central chiller. The chiller is eight years and appears to be in good working order. Four each 18 year old 1,000,000 BTUH input boilers supply hot water to various air handling units located throughout the campus. In the near future, the district may consider replacing these units with instantaneous units similar to the installation recently performed at Midland Lee. The HVAC equipment is controlled by wall mounted temperature sensors which are connected the district-wide EMCS.

The old gymnasium utilizes 32 each 250-watt metal halide fixtures which *we recommend be replaced with 4-lamp T5HO high bay fluorescent fixtures that will allow the lights to be turned off during unoccupied periods of the day. The main gym has 20 each 400-watt metal halide fixtures which we recommend be replaced with 6-lamp T5HO high bay fluorescent fixtures.*

The cafeteria has T8 components in the existing fixtures, but the 16 each 4-lamp fixtures and 8 each 2-lamp fixtures are only producing 13 footcandles at the tabletops. Additional fixtures will likely be required to bring up the illumination levels to the IESNA recommended 30 footcandles at the time the rest of the T12 fixtures are renovated to T8 lamps and electronic ballasts.

Midland High School Summary

Estimated Installed Cost	=	$199,000
Estimated Energy Cost Savings	=	$ 33,166
Simple Payback Period	=	6 Years

LIGHTING RENOVATION PROJECT SUMMARY			
Facility	**Cost**	**Est. Savings**	**Simple Payback**
Scharbauer ES	$ 36,250	$ 6,042	6.0
Carver	$ 60,100	$ 10,927	5.5
Abell MS	$ 93,750	$ 11,719	8.0
Goddard MS	$ 64,000	$ 10,660	6.0
Coleman HS	$ 16,638	$ 2,775	6.0
Midland Lee HS	$ 288,662	$ 36,083	8.0
Midland HS	$ 199,000	$ 33,166	6.0
TOTAL	$ 758,400	$ 111,372	6.8

4.0 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 :

MIDLAND ISD

CAMPUS	ENERGY UTILIZATION	ENERGY COST

	INDEX (EUI) (Btu/sf-year)	INDEX (ECI) ($/sf-year)
2009 Lee High School Campus	**41,609**	**$1.29**
Region 18 2006 High School Average:	51,386	$0.87
2009 Midland High School Campus	**54,110**	**$1.46**
Region 18 2006 High School Average :	51,386	$0.87
2009 Goddard Junior High Campus	**46,971**	**$1.25**
Region 18 2006 Junior High Average:	42,080	$0.80
2009 Scharbauer Elementary Campus:	**42,023**	**$1.26**
Region 18 2006 Elementary Average:	44,314	$0.70
2009 Carver Center Campus:	**44,323**	**$1.00**
Region 18 2006 Elementary Average:	44,314	$0.70
2009 Abell Junior High Campus	**42,563**	**$1.37**
Region 18 2006 Junior High Average:	42,080	$0.80
2009 Coleman High School Campus	**39,319**	**$0.83**

Energy Performance Indices for MISD campuses not surveyed in this report may be found in Appendix IX.

Comparison to Average: From the **EUI** and **ECI** comparisons with other school facilities *within the region*, several energy related issues are apparent:

Reviewing the chart above, it is obvious that the EUIs for MISD facilities are close to the regional averages. However, it is also obvious that the ECIs are considerably higher than the regional averages. Part of the difference in cost is represented by the fact that the data for the regional average is 2006 data and does not account for energy price increases over the past two years, but an obvious fact remains clear; the ECI is above the regional average for MISD.

The Base Year Utilities Consumption History is included in Appendix III of this report.

5.0 RATE SCHEDULE ANALYSIS:

RETAIL ELECTRIC PROVIDER (REP): Reliant (GLO) [$0.092111 per kWh*]

***Effective May, 2010 New rate will be $0.0599 until 2013**

TRANSMISSION AND DISTRIBUTION (T&D): Oncor

Electric Rate: Secondary Service > 10 kW

I.	TRANSMISSION AND DISTRIBUTION CHARGES:		
	Customer Charge	=	$24.90 per meter
	Metering Charge	=	$16.65 per meter
	Transmission System Charge (Non-IDR Meter)	=	$1.19 per NCP kW
	Distribution System Charge	=	$3.55 per DS Billing kW
II.	SYSTEM BENEFIT FUND	=	$0.000655 per kWh
III.	TRANSITION CHARGES		
	Transition Charge 1	=	$0.171/kW
	Transition Charge 2	=	$0.266/kW
IV.	NUCLEAR DECOMMISSIONING CHARGE	=	$0.044 per DS Billing kW
V.	TRANSMISSION COST RECOVERY FACTOR	=	$0.338338/NCP kW
VI.	EXCESS MITIGATION CREDIT	=	expired 12-31-08
VII.	STATE COLLEGE DISCOUNT	=	not applicable
VIII.	COMPETITIVE METERING CREDIT	=	$3.15 per month

Average Savings for consumption = $0.09211/kWh + $0.000655/kWh = **$0.092765/kWh**

Average Savings for demand = $1.19 + $3.55 + $0.171 + $0.266 + $0.044 + $0.338338
= **$5.56/kW****

** This number is a generalization of average cost per kW because the rate schedule from Oncor utilizes three (3) different types of demand for the calculation of the utility bill:

1. NCP kW: Peak demand during 15 minute interval of current billing cycle
2. 4CP kW: Average demands of June, July, August and September of previous calendar year; usually only applied to IDR metered accounts
3. DS (Distribution System) Billing kW: Ratchet demand representing higher of two calculations: 80% of peak demand in last 11 months or current NCP kW

NATURAL GAS PROVIDER: Atmos
Rate Schedule Unavailable: Average cost per MCF determined from utility billings.
Total Cost of Natural Gas purchased for the surveyed campuses: $126,757
Total Quantity of Natural Gas purchased the surveyed campuses: 13,455 MCF
Cost / Quantity = Average Unit Cost
$ 126,757 / 13,455 mcf = **$9.42 per mcf of natural gas**

6.0 RECOMMENDATIONS:

A. MAINTENANCE AND OPERATIONS PROCEDURES

1. Weather-strip around movable portions of exterior door and operable window frames.

Stationary sections of window and door frames should be recaulked as needed.

2. Implement SECO's Watt Watcher program to turn lights off in unoccupied areas.
   The Watt Watcher program gets the students involved with helping to have lights turned off when not in use. Refer to Appendix VII for more information on the Watt Watcher Program.
3. *De-scale cooling tower at Goddard to improve operational efficiency of tower.*
4. *Relocate kiln at Carver from inside classroom to separate closet to prevent heat build-up in classroom space.*

B. CAPITAL EXPENSE PROJECTS

Complete lighting system renovations in all campuses from existing T12 fluorescent systems to T8 system components with one to one retrofit of the existing fixtures using T8 lamps and electronic ballasts or, in the case that a simple retrofit is contraindicated, replacing the existing fixtures with new units.

Estimated Installed Cost	=	$758,400
Estimated Energy Cost Savings	=	$111,372
Simple Payback Period	=	6-3/4 Years

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.

In-House Funding	=	$ 758,400		
10 year commercial loan principal	=	$ 758,400		
10 year commercial loan interest (5%) paid	=	$ 206,881		
10 year commercial loan TOTAL	=	$ 965,281		
Commercial Loan Annual Payment	=	$ 8,044/month	=	$ 96,520/yr
Total Annual Payment Minus Annual Energy Cost Savings = $96,520 – 111,372			=	$ -14,844
Annual Savings to ISD (without considering Maintenance Cost Reduction)			**=**	**$ 14,844**

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

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

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 Theresa Sifuentes of SECO (512-463-1896) 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 Theresa Sifuentes of State Energy Conservation Office, (SECO), at 512-463-1896 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

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How to Finance Your Energy Program *continued*

project, including the base date (the date to which all future costs are discounted), the service date (the date when the new system will be put into service), the study period (the life of the project or the number of years over which the investor has a financial interest in the project), and the discount rate. When two or more design alternatives are compared (or even when a single alternative is compared with an existing design), these variables must be the same for each to assure that the comparison is valid. It is meaningless to compare the LCC of two or more alternatives if they are computed using different study periods or different discount rates.

Decision makers in both the public and private sectors have long used LCC analysis to obtain an objective assessment of the total cost of owning, operating, and maintaining a building or building system improvement over its useful life. Nevertheless, an LCC analysis does require a good understanding of acceptable alternatives, useful life, equipment efficiencies, and discount rates.

Selecting the "Best" Alternatives

Generally, all project alternatives should be screened using simple payback analyses. A more detailed and costly LCC analysis should be reserved for large projects or those improvements that entail a large investment, since a detailed cost analysis would then be a small part of the overall cost. Both simple payback and LCC analyses will allow you to set priorities based on measures that represent the greatest return on investment. In addition, these analyses can help you select appropriate financing options:

- Energy-efficiency measures with short payback periods, such as one to two years, are economically very attractive and should be implemented using operating reserves or other readily available internal funds, if possible.
- Energy-efficiency measures with payback periods from three to five years may be considered for funding from available internal capital investment monies, or may be attractive candidates for third-party financing through energy service companies or equipment leasing arrangements.
- Frequently, short payback measures can be combined with longer payback measures (10 years or more) in order to increase the number of measures that can be cost-effectively included in a project. Projects that combine short- and long-term paybacks are recommended to avoid "cream-skimming" (implementing only those measures that are highly cost effective and have quick paybacks) at the expense of other worthwhile measures. A selected set of measures with a combination of payback periods can be financed either from available internal funds or through third party alternatives.

If simple payback time is long, 10 or more years, economic factors can be very significant and LCC analysis is recommended. In contrast, if simple payback occurs within three to five years, more detailed LCC analysis may not be necessary, particularly if price and inflation changes are assumed to be moderate.

Weighing Non-Cost Impacts

Some factors related to building heating, air conditioning, and lighting system design are not considered in either simple payback or LCC analyses. Examples include the thermal comfort of occupants in a building and the adequacy of task lighting, both of which affect productivity. A small loss in productivity due to reduced comfort or poor lighting can quickly offset any energy cost savings.

Conventional cost/benefit analyses also normally do not consider the ancillary societal benefits that can result from reduced energy use (e.g., reduced carbon emissions, improved indoor air quality). In some cases, these ancillary benefits can be assigned an agreed upon monetary value, but the values to be used are strongly dependent on local factors. In general, if societal benefits have been assigned appropriate monetary values by a local utility, they can be easily considered in your savings calculations. However, your team should discuss this issue with your local utility or with consultants working on such values in your area.

Finally, in any cost analysis, it can be very important to include avoided cost as part of the benefit of the retrofit. When upgrading or replacing building equipment, the avoided cost of maintaining existing equipment should be considered a cost savings provided by the improvement.

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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

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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*

infrastructure (such as lighting) to a complete package of measures for multiple buildings and facilities. Generally, the service provider will guarantee savings as a result of improvements in both energy and maintenance efficiencies. Flat-fee payments tend to be structured to maintain a positive cash flow to the customer with whom the agreement is made. With the increasing deregulation of conventional energy utilities, several larger utilities have formed unregulated subsidiaries that offer a full range of energy-efficiency services under performance agreements.

An energy performance contract must define the methodology for establishing the baseline costs and cost savings and for the distribution of those savings among the parties. The contract must also specify how those savings will be determined, and must address contingencies such as utility rate changes and variations in the use and occupancy of a building. While several excellent guidance documents exist for selecting and negotiating energy performance contracts, large or complicated contracts should be negotiated with the assistance of experienced legal counsel.

Utility Incentives

Some utilities still offer financial incentives for the installation of energy-efficient systems and equipment, although the number and extent of such programs appears to be decreasing as utility deregulation proceeds. These incentives are available for a variety of energy-efficient products including lighting, HVAC systems, energy management controls, and others. The most common incentives are equipment rebates, design assistance, and low-interest loans.

In general, the primary purpose of utility incentives is to lower peak demand; overall energy-efficiency is an important, but secondary consideration. Incentives are much more commonly offered by electric utilities than by natural gas utilities.

Additional Financing Sources and Considerations

State and Federal Assistance. Matching grants, loans, or other forms of financial assistance (in addition to those listed above) may be available from the Federal government or state governments. If your community is considering energy-efficiency improvements for public or assisted multifamily housing, your program could be eligible to receive assistance through various programs of the U.S. Department of Housing and Urban Development. A variety of state-administered programs for building efficiency improvements may also be available, some of which are funded through Federal block grants and programs. Federal assistance available through states include Federal block grants and State Energy Conservation Program funds. An example of individual state programs is the Texas LoanSTAR program, which provides low-interest loans for state agencies and schools.

Utility Assistance

Equipment Rebates. Some utilities offer rebates on the initial purchase price of selected energy-efficient equipment. The amount of the rebate varies substantially depending on the type of equipment. For example, a rebate of $.50 to $1 may be offered for the replacement of an incandescent bulb with a more efficient fluorescent lamp, while the installation of an adjustable speed drive may qualify for a rebate of $10,000 or more.

Design Assistance. A smaller number of utilities provide direct grants or financial assistance to architects and engineers for incorporating energy-efficiency improvements in their designs. This subsidy can be based on the square footage of a building, and/or the type of energy-efficiency measures being considered. Generally, a partial payment is made when the design process is begun, with the balance paid once the design has been completed and installation has commenced.

Low-Interest Loans. Loans with below-market rates are provided by other utilities for the purchase of energy-efficient equipment and systems. Typically, these low-interest loans will have an upper limit in the $10,000 to $20,000 range, with monthly payments scheduled over a two- to five-year period.

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

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APPENDIX II

ELECTRIC UTILITY RATE SCHEDULE

Tariff for Retail Delivery Service
Oncor Electric Delivery Company

6.1.1 Delivery System Charges Sheet: 3
Applicable: Entire Certified Service Area Page 1 of 2
Effective Date: January 1, 2004 Revision: One

6.1.1.3 - Secondary Service Greater Than 10 kW

AVAILABILITY

This schedule is applicable to Delivery Service for non-residential purposes at secondary voltage with demand greater than 10 kW when such Delivery Service is to one Point of Delivery and measured through one Meter.

TYPE OF SERVICE

Delivery Service will be single or three-phase, 60 hertz, at a standard secondary voltage. Delivery Service will be metered using Company's standard meter provided for this type of Delivery Service, unless Retail Customer chooses a competitive meter provider. Any meter other than the standard meter provided by Company, will be provided at an additional charge. Where Delivery Service of the type desired is not available at the Point of Delivery, additional charges and special contract arrangements may be required prior to Delivery Service being furnished, pursuant to Section 6.1.2.2 of this Tariff.

MONTHLY RATE

I. Transmission and Distribution Charges:		
Customer Charge	$24.90	per Retail Customer per Month
Metering Charge	$16.65	per Retail Customer per Month
Transmission System Charge		
Non-IDR Metered	$ 1.19	per NCP kW
IDR Metered	$ 1.47	per 4CP kW
Distribution System Charge	$ 3.55	per Distribution System billing kW
II. System Benefit Fund:	$0.000655	per kWh, See Rider SBF
III. Transition Charge:	See Rider TC	
IV. Nuclear Decommissioning Charge:	$0.044	per Distribution System billing kW, See Rider NDC
V. Transmission Cost Recovery Factor:	See Rider TCRF	
VI. Excess Mitigation Credit:	See Rider EMC	
VII. State Colleges and Universities Discount:	See Rider SCUD	
VIII. Competitive Metering Credit:	See Rider CMC	
IX. Other Charges or Credits:		
Not Applicable		

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Tariff for Retail Delivery Service
Oncor Electric Delivery Company

6.1.1 Delivery System Charges Sheet: 3
Applicable: Entire Certified Service Area Page 2 of 2
Effective Date: January 1, 2004 Revision: One

COMPANY SPECIFIC APPLICATIONS

At company's option, locations where the electrical installation has multiple connections to company's conductors, due to company facilities limitations or design criteria, may be considered one Point of Delivery for billing purposes.

DETERMINATION OF BILLING DEMAND FOR TRANSMISSION SYSTEM CHARGES

DETERMINATION OF NCP kW

The NCP kW applicable under the Monthly Rate section shall be the kW supplied during the 15 minute period of maximum use during the billing month.

DETERMINATION OF 4 CP kW

The 4 CP kW applicable under the Monthly Rate section shall be the average of the Retail Customer's integrated 15 minute demands at the time of the monthly ERCOT system 15 minute peak demand for the months of June, July, August and September of the previous calendar year. The Retail Customer's average 4CP demand will be updated effective on January 1 of each calendar year and remain fixed throughout the calendar year. Retail Customers without previous history on which to determine their 4 CP kW will be billed at the applicable NCP rate under the "Transmission System Charge" using the Retail Customer's NCP kW.

DETERMINATION OF BILLING DEMAND FOR DISTRIBUTION SYSTEM CHARGES

DETERMINATION OF BILLING kW

The Billing kW applicable to the Distribution System Charge shall be the higher of the NCP kW for the current billing month or 80% of the highest monthly NCP kW established in the 11 months preceding the current billing month (80% ratchet). The 80% ratchet shall not apply to retail seasonal agricultural customers, as determined by the utility.

NOTICE

This rate schedule is subject to the Company's Tariff and Applicable Legal Authorities.

APPENDIX III

UTILITIES CONSUMPTION HISTORY

OWNER:	Midland ISD				BUILDING:	Lee High School		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	233,164	1,096	1,096	8,362	29,838	802	$9,234
FEBRUARY	2009	240,276	1,164	1,164	8,467	30,602	574	$6,865
MARCH	2009	235,801	1,216	1,216	8,497	30,218	283	$3,498
APRIL	2008	275,740	1,350	1,350	8,260	33,658	153	$3,879
MAY	2008	349,626	1,603	1,603	9,041	41,621	39	$1,183
JUNE	2008	204,909	1,241	1,241	18,590	37,464	8	$372
JULY	2008	188,324	1,307	1,307	8,242	25,589	7	$231
AUGUST	2008	380,012	1,492	1,492	8,332	43,333	34	$591
SEPTEMBER	2008	323,788	1,347	1,347	8,425	38,249	29	$515
OCTOBER	2008	374,741	1,337	1,337	9,170	34,570	90	$1,458
NOVEMBER	2008	248,538	1,139	1,139	9,165	32,057	288	$4,580
DECEMBER	2008	212,902	1,056	1,056	8,293	27,906	891	$11,201
TOTAL		3,267,821	15,348	15,348	112,844	$405,105	3,198	$43,607
					Energy Use Index:			
Annual Total Energy Cost =		$448,712	Per Year		Total Site BTU's/yr		41,609	BTU/s.f.yr
					Total Area (sq.ft.)			
Total KWH x 0.003413 =		11,153.07	x 106					
Total MCF x 1.03 =		3,293.94	x 106		Energy Cost Index:			
Total Other x ____			x 106		Total Energy Cost/yr		$1.29	$/s.f. yr
Total Site BTU's/yr		14,447.01	x 106		Total Area (sq.ft.)			
Floor area:		347,212	s.f.					
Electric Utility		Account #	Meter#		Gas Utility	Account #		
Reliant/Oncor		Multiple	Multiple		Atmos	293243		

OWNER:	Midland ISD				BUILDING:	Midland High School		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	283,832	1,317	1,317	8,798	34,941	1,024	$6,545
FEBRUARY	2009	291,841	1,450	1,450	9,544	21,977	861	$5,603
MARCH	2009	301,173	1,285	1,285	8,753	36,494	572	$3,781
APRIL	2008	302,041	1,306	1,306	8,739	36,557	158	$4,001
MAY	2008	380,874	1,469	1,469	9,489	44,569	104	$1,646
JUNE	2008	341,908	1,281	1,281	9,037	40,528	12	$320
JULY	2008	354,478	1,470	1,470	9,719	42,370	7	$203
AUGUST	2008	383,585	1,516	1,516	7,939	43,837	12	$245
SEPTEMBER	2008	354,280	1,562	1,562	10,171	43,228	120	$942
OCTOBER	2008	351,651	1,451	1,451	9,409	41,798	398	$3,015
NOVEMBER	2008	278,311	1,304	1,304	8,711	34,347	590	$4,931
DECEMBER	2008	248,401	1,261	1,261	9,261	32,143	1,036	$7,344
TOTAL		3,872,375	16,672	16,672	109,570	$452,789	4,894	$38,576
					Energy Use Index:			
Annual Total Energy Cost =		$491,365	Per Year		Total Site BTU's/yr		54,110	BTU/s.f.yr
					Total Area (sq.ft.)			
Total KWH x 0.003413 =		13,216.42	x 106					
Total MCF x 1.03 =		5,040.82	x 106		Energy Cost Index:			
Total Other x ____			x 106		Total Energy Cost/yr		$1.46	$/s.f. yr
Total Site BTU's/yr		18,257.24	x 106		Total Area (sq.ft.)			
Floor area:		337,411	s.f.					
Electric Utility		Account #	Meter#		Gas Utility	Account #		
Reliant/Oncor		Multiple	Multiple		Atmos	293243		

OWNER:	Midland ISD			BUILDING:	Goddard Junior High		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	85,572	406	406	2,489	10,371	379	$2,419
FEBRUARY	2009	84,210	425	425	2,584	10,341	259	$1,690
MARCH	2009	88,500	423	423	2,597	10,749	121	$862
APRIL	2008	96,498	439	439	2,584	11,473	104	$1,451
MAY	2008	86,760	418	418	2,490	10,481	37	$567
JUNE	2008	83,052	437	437	2,565	10,215	14	$247
JULY	2008	65,658	355	355	2,226	8,274	17	$267
AUGUST	2008	134,994	432	432	2,019	14,453	21	$288
SEPTEMBER	2008	117,936	443	443	2,652	13,515	33	$312
OCTOBER	2008	96,270	426	426	2,581	11,448	92	$757
NOVEMBER	2008	89,772	411	411	2,497	10,767	193	$1,618
DECEMBER	2008	65,412	355	355	2,216	8,241	345	$2,443
TOTAL		1,094,634	4,970	4,970	29,500	$130,328	1,615	$12,921

				Energy Use Index:			
Annual Total Energy Cost =		$143,249	Per Year	Total Site BTU's/yr		46,971	BTU/s.f.yr
				Total Area (sq.ft.)			
Total KWH x 0.003413 =		3,735.99	x 106				
Total MCF x 1.03 =		1,663.45	x 106	Energy Cost Index:			
Total Other x ____			x 106	Total Energy Cost/yr		$1.25	$/s.f. yr
Total Site BTU's/yr		5,399.44	x 106	Total Area (sq.ft.)			
Floor area:		114,952	s.f.				
Electric Utility		Account #	Meter#	Gas Utility	Account #		
Reliant/Oncor		Multiple	Multiple	Atmos	293243		

OWNER:	Midland ISD			BUILDING:	Scharbauer Elementary		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	63,000	216	216	1,505	7,308	116	$775
FEBRUARY	2009	62,550	231	231	1,526	7,288	115	$778
MARCH	2009	57,750	287	287	1,846	7,165	39	$299
APRIL	2008	64,050	264	264	1,705	7,605	33	$498
MAY	2008	75,600	308	308	1,897	8,861	21	$348
JUNE	2008	42,300	243	243	1,580	5,476	6	$136
JULY	2008	56,100	225	225	1,569	6,737	4	$93
AUGUST	2008	73,200	296	296	1,489	8,231	15	$189
SEPTEMBER	2008	68,700	266	266	1,701	8,029	25	$214
OCTOBER	2008	62,850	264	264	1,652	7,441	37	$317
NOVEMBER	2008	51,000	233	233	1,512	6,209	44	$410
DECEMBER	2008	58,350	221	221	1,502	6,877	95	$707
TOTAL		735,450	3,054	3,054	19,484	$87,227	550	$4,764

				Energy Use Index:			
Annual Total Energy Cost =		$91,991	Per Year	Total Site BTU's/yr		42,023	BTU/s.f.yr
				Total Area (sq.ft.)			
Total KWH x 0.003413 =		2,510.09	x 106				
Total MCF x 1.03 =		566.50	x 106	Energy Cost Index:			
Total Other x ____			x 106	Total Energy Cost/yr		$1.26	$/s.f. yr
Total Site BTU's/yr		3,076.59	x 106	Total Area (sq.ft.)			
Floor area:		73,212	s.f.				
Electric Utility		Account #	Meter#	Gas Utility	Account #		
Reliant/Oncor		Multiple	Multiple	Atmos	293243		

OWNER:	Midland ISD				BUILDING:	Carver Center		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	36,936	132	132	2,064	5,466	496	$3,150
FEBRUARY	2009	36,234	196	196	1,270	4,607	343	$2,220
MARCH	2009	44,964	194	194	1,268	5,409	192	$1,268
APRIL	2008	43,452	242	242	1,455	5,458	111	$1,541
MAY	2008	16,380	89	89	571	2,080	56	$827
JUNE	2008	24,246	50	50	509	1,648	10	$185
JULY	2008	42,318	208	208	5,179	9,077	4	$86
AUGUST	2008	28,638	247	247	7,035	9,673	12	$163
SEPTEMBER	2008	56,286	213	213	1,190	6,374	29	$245
OCTOBER	2008	22,374	193	193	3,461	5,521	68	$540
NOVEMBER	2008	35,244	174	174	1,209	4,456	203	$1,699
DECEMBER	2008	34,434	129	129	1,925	5,097	528	$3,712
TOTAL		421,506	2,067	2,067	27,136	$64,866	2,052	$15,636

					Energy Use Index:			
Annual Total Energy Cost =		$80,502	Per Year		Total Site BTU's/yr		44,323	BTU/s.f.yr
					Total Area (sq.ft.)			
Total KWH x 0.003413 =		1,438.60	x 106					
Total MCF x 1.03 =		2,113.56	x 106		Energy Cost Index:			
Total Other x ____			x 106		Total Energy Cost/yr		$1.00	$/s.f. yr
Total Site BTU's/yr		3,552.16	x 106		Total Area (sq.ft.)			
Floor area:		80,142	s.f.					
Electric Utility		Account #	Meter#		Gas Utility	Account #		
Reliant/Oncor		Multiple	Multiple		Atmos	293243		

OWNER:	Midland ISD				BUILDING:	Abell Junior High		
MONTH / YEAR		ELECTRIC					NAT'L GAS / FUEL	
			DEMAND					
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	$
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	COSTS
JANUARY	2009	134,703	725	725	3,700	16,116	207	$1,765
FEBRUARY	2009	152,931	697	697	3,649	17,735	182	$1,581
MARCH	2009	123,725	671	671	3,606	15,002	50	$470
APRIL	2008	158,575	682	682	3,793	18,399	46	$869
MAY	2008	171,320	880	880	4,620	20,400	2	$89
JUNE	2008	88,591	604	604	3,817	11,977	1	$50
JULY	2008	69,060	721	721	4,098	10,459	1	$50
AUGUST	2008	181,831	846	846	3,514	20,262	1	$51
SEPTEMBER	2008	164,667	794	794	4,297	19,464	1	$51
OCTOBER	2008	152,860	743	743	4,091	18,171	42	$452
NOVEMBER	2008	124,482	653	653	3,892	15,358	86	$978
DECEMBER	2008	113,413	687	687	3,572	14,019	158	$1,506
TOTAL		1,636,158	8,703	8,703	46,649	$197,362	777	$7,912

					Energy Use Index:			
Annual Total Energy Cost =		$205,274	Per Year		Total Site BTU's/yr		42,563	BTU/s.f.yr
					Total Area (sq.ft.)			
Total KWH x 0.003413 =		5,584.21	x 106					
Total MCF x 1.03 =		800.31	x 106		Energy Cost Index:			
Total Other x ____			x 106		Total Energy Cost/yr		$1.37	$/s.f. yr
Total Site BTU's/yr		6,384.52	x 106		Total Area (sq.ft.)			
Floor area:		150,000	s.f.					
Electric Utility		Account #	Meter#		Gas Utility	Account #		
Reliant/Oncor		Multiple	Multiple		Atmos	293243		

OWNER:	**Midland ISD**				**BUILDING:**	**Coleman High School**		
MONTH / YEAR		**ELECTRIC**					**NAT'L GAS / FUEL**	
			DEMAND					
		CONSUMPTION	**METERED**	**CHARGED**	**COST OF**	**TOTAL ALL ELECTRICAL**	**CONSUMPTION**	**$**
MONTH	**YEAR**	**KWH**	**KW/KVA**	**KW/KVA**	**DEMAND**	**COSTS $**	**MCF**	**COSTS**
JANUARY	2009	28,845	139	139	885	3,542	84	$573
FEBRUARY	2009	27,270	134	134	881	3,393	66	$469
MARCH	2009	31,725	140	140	861	3,783	27	$219
APRIL	2008	34,470	142	142	901	4,076	21	$331
MAY	2008	24,300	146	146	901	3,139	10	$183
JUNE	2008	21,398	146	146	1,408	3,379	4	$103
JULY	2008	18,495	151	151	1,915	3,618	2	$75
AUGUST	2008	19,665	172	172	848	2,659	8	$126
SEPTEMBER	2008	41,130	175	175	891	4,679	13	$138
OCTOBER	2008	33,210	141	141	4,623	7,682	25	$226
NOVEMBER	2008	24,795	141	141	879	3,163	35	$337
DECEMBER	2008	23,085	136	141	876	3,003	74	$561
TOTAL		**328,388**	**1,763**	**1,768**	**15,869**	**$46,116**	**369**	**$3,341**

					Energy Use Index:			
Annual Total Energy Cost =		$49,457	Per Year		Total Site BTU's/yr		56,381	BTU/s.f.yr
					Total Area (sq.ft.)			
Total KWH x 0.003413 =		1,120.79	x 106					
Total MCF x 1.03 =		380.07	x 106		**Energy Cost Index:**			
Total Other x ____			x 106		Total Energy Cost/yr		$1.86	$/s.f. yr
Total Site BTU's/yr		1,500.86	x 106		Total Area (sq.ft.)			
Floor area:		26,620	s.f.					
Electric Utility		**Account #**	**Meter#**		**Gas Utility**	**Account #**		
Reliant/Oncor		Multiple	Multiple		Atmos	293243		

APPENDIX IV

ENERGY POLICY

ENERGY POLICY

[Name of Institution]

Recognizing our responsibility as Trustees of ______________________________, we believe that every effort should be made to conserve energy and natural resources. As a result, we are establishing this Energy Management Policy which shall be implemented within each of our facilities. We believe that this policy will be beneficial for taxpayers and community residents in the prudent management of our financial and energy resources.

The fulfillment of this policy shall be the joint responsibility of the trustees, administrators, staff and support personnel. The success of the policy is dependent upon total cooperation from all levels within the system.

The board will designate an Energy Manager to coordinate and implement the overall Energy Policy. The Energy Manager will also maintain accurate records of energy consumption and cost on a monthly and annual basis. Energy audits will be conducted annually at each facility and recommendations will be made for updating and improving the energy program. Energy efficiency guidelines and procedures will be reviewed and accepted or rejected by the board. In addition, the procedures required for implementation of the program, and the results achieved from its administration, will be published for administrative and staff information.

Adopted this________day of ________________________, 200 .

____
President, Board of Trustees

Attest: ______________________________
Secretary, Board of Trustees

APPENDIX V

Preliminary Energy Assessment Service Agreement

MAY-13-2009 09:14 From:MAINTENANCE 1 432 689 1548 To:#915123883312 P.2/3

Preliminary Energy Assessment Service Agreement

SECO State Energy Conservation Office

Investing in our communities 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 MIDLAND 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 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 and recommendations to key decision makers.

Acceptance of Agreement

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

Signature: [signature] Date: 5-12-09
Name (Mr./Ms./Dr.): James Riggen Title: Executive Director of School Plant
Organization: Midland ISD Phone: 432-689-1503
Street Address: 801 S. Moran Fax: 432-689-1548
Mailing Address: Midland, TX 79701 EMail: jriggen@esc18.net
County: Midland

CONTACT INFORMATION:

Name (Mr./Ms./Dr.): Jill Hallmark Title: Operations Supervisor / Energy Manage
Phone: 432-689-1505 Fax: 432-689-1548
E-Mail: jhallmar@esc18.net County: Midland
cell 432-238-4026

Please sign & FAX or mail to Glenda Baldwin at State Energy Conservation Office. **FAX: 512-475-2569**
Address: LBJ State Office Building, 111 E. 17th Street, Austin, Texas 78774. Phone: 512-463-1731
AND also, please fax a copy to your SECO Contractor: ESA Energy Systems Associates, Inc.; Attn: Yvonne Huneycutt **FAX: 512-388-3312** Phone: 512-258-0547 x124

APPENDIX VI

AMORTIZATION SCHEDULE

Loan Amortization Schedule

	Enter values
Loan amount	$ 758,400.00
Annual interest rate	5.00 %
Loan period in years	10
Number of payments per year	12
Start date of loan	7/1/2009
Optional extra payments	$ -

	Loan summary
Scheduled payment	$ 8,044.01
Scheduled number of payments	120
Actual number of payments	120
Total early payments	$ -
Total interest	$ 206,881.04

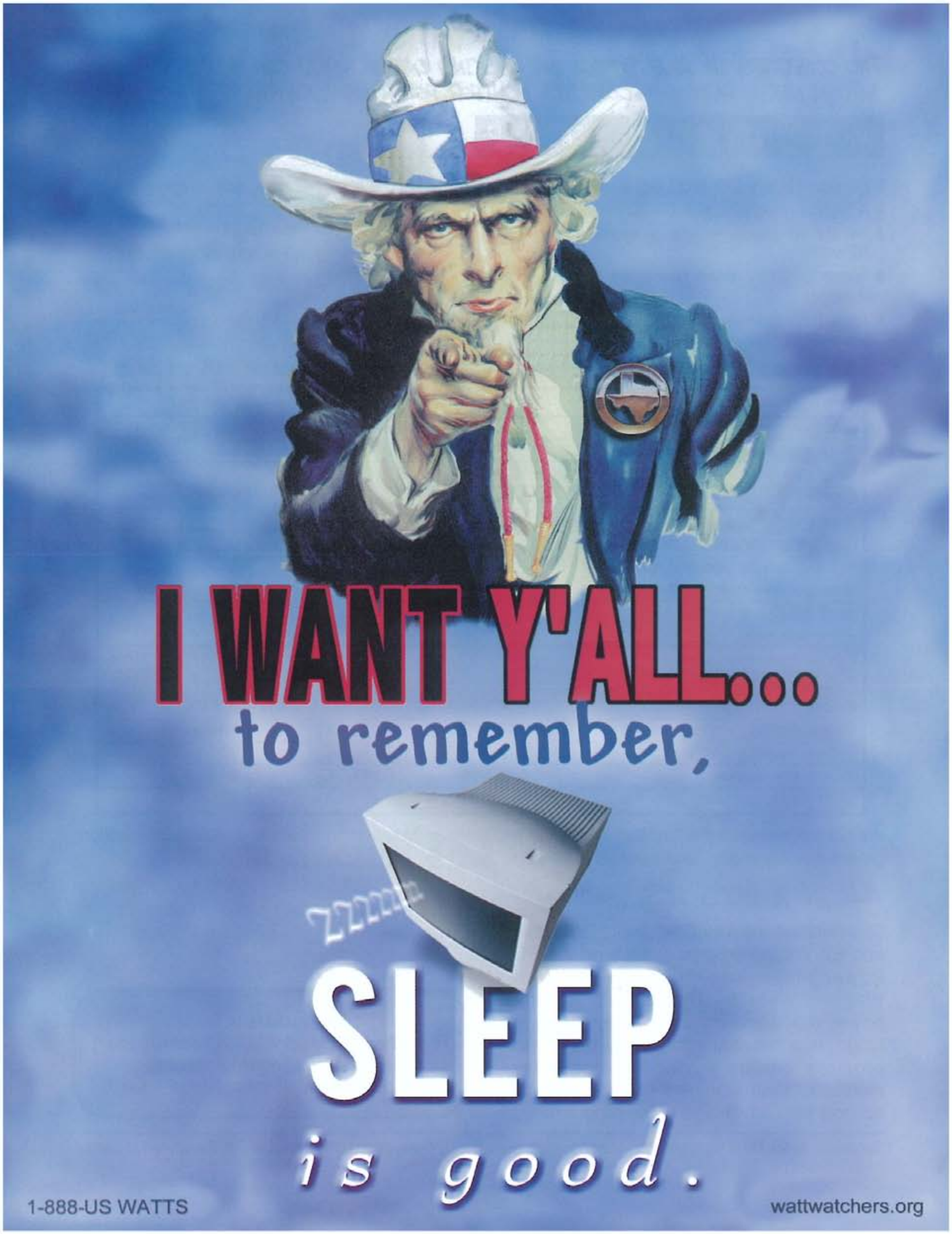
Lender name:

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance	Cumulative Interest
1	8/1/2009	$ 758,400.00	$ 8,044.01	$ -	$ 8,044.01	$ 4,884.01	$ 3,160.00	$ 753,515.99	$ 3,160.00
2	9/1/2009	753,515.99	8,044.01	-	8,044.01	4,904.36	3,139.65	748,611.63	6,299.65
3	10/1/2009	748,611.63	8,044.01	-	8,044.01	4,924.79	3,119.22	743,686.84	9,418.87
4	11/1/2009	743,686.84	8,044.01	-	8,044.01	4,945.31	3,098.70	738,741.53	12,517.56
5	12/1/2009	738,741.53	8,044.01	-	8,044.01	4,965.92	3,078.09	733,775.61	15,595.65
6	1/1/2010	733,775.61	8,044.01	-	8,044.01	4,986.61	3,057.40	728,789.00	18,653.05
7	2/1/2010	728,789.00	8,044.01	-	8,044.01	5,007.39	3,036.62	723,781.61	21,689.67
8	3/1/2010	723,781.61	8,044.01	-	8,044.01	5,028.25	3,015.76	718,753.36	24,705.43
9	4/1/2010	718,753.36	8,044.01	-	8,044.01	5,049.20	2,994.81	713,704.15	27,700.23
10	5/1/2010	713,704.15	8,044.01	-	8,044.01	5,070.24	2,973.77	708,633.91	30,674.00
11	6/1/2010	708,633.91	8,044.01	-	8,044.01	5,091.37	2,952.64	703,542.54	33,626.64
12	7/1/2010	703,542.54	8,044.01	-	8,044.01	5,112.58	2,931.43	698,429.96	36,558.07
13	8/1/2010	698,429.96	8,044.01	-	8,044.01	5,133.88	2,910.12	693,296.08	39,468.19
14	9/1/2010	693,296.08	8,044.01	-	8,044.01	5,155.28	2,888.73	688,140.80	42,356.93
15	10/1/2010	688,140.80	8,044.01	-	8,044.01	5,176.76	2,867.25	682,964.05	45,224.18
16	11/1/2010	682,964.05	8,044.01	-	8,044.01	5,198.33	2,845.68	677,765.72	48,069.86
17	12/1/2010	677,765.72	8,044.01	-	8,044.01	5,219.98	2,824.02	672,545.74	50,893.89
18	1/1/2011	672,545.74	8,044.01	-	8,044.01	5,241.73	2,802.27	667,304.00	53,696.16
19	2/1/2011	667,304.00	8,044.01	-	8,044.01	5,263.58	2,780.43	662,040.43	56,476.59
20	3/1/2011	662,040.43	8,044.01	-	8,044.01	5,285.51	2,758.50	656,754.92	59,235.10
21	4/1/2011	656,754.92	8,044.01	-	8,044.01	5,307.53	2,736.48	651,447.39	61,971.57
22	5/1/2011	651,447.39	8,044.01	-	8,044.01	5,329.64	2,714.36	646,117.75	64,685.94
23	6/1/2011	646,117.75	8,044.01	-	8,044.01	5,351.85	2,692.16	640,765.90	67,378.10
24	7/1/2011	640,765.90	8,044.01	-	8,044.01	5,374.15	2,669.86	635,391.75	70,047.95
25	8/1/2011	635,391.75	8,044.01	-	8,044.01	5,396.54	2,647.47	629,995.20	72,695.42
26	9/1/2011	629,995.20	8,044.01	-	8,044.01	5,419.03	2,624.98	624,576.17	75,320.40
27	10/1/2011	624,576.17	8,044.01	-	8,044.01	5,441.61	2,602.40	619,134.57	77,922.80
28	11/1/2011	619,134.57	8,044.01	-	8,044.01	5,464.28	2,579.73	613,670.28	80,502.53
29	12/1/2011	613,670.28	8,044.01	-	8,044.01	5,487.05	2,556.96	608,183.24	83,059.49
30	1/1/2012	608,183.24	8,044.01	-	8,044.01	5,509.91	2,534.10	602,673.32	85,593.58
31	2/1/2012	602,673.32	8,044.01	-	8,044.01	5,532.87	2,511.14	597,140.45	88,104.72
32	3/1/2012	597,140.45	8,044.01	-	8,044.01	5,555.92	2,488.09	591,584.53	90,592.81
33	4/1/2012	591,584.53	8,044.01	-	8,044.01	5,579.07	2,464.94	586,005.46	93,057.74
34	5/1/2012	586,005.46	8,044.01	-	8,044.01	5,602.32	2,441.69	580,403.14	95,499.43
35	6/1/2012	580,403.14	8,044.01	-	8,044.01	5,625.66	2,418.35	574,777.48	97,917.78
36	7/1/2012	574,777.48	8,044.01	-	8,044.01	5,649.10	2,394.91	569,128.37	100,312.69
37	8/1/2012	569,128.37	8,044.01	-	8,044.01	5,672.64	2,371.37	563,455.73	102,684.05
38	9/1/2012	563,455.73	8,044.01	-	8,044.01	5,696.28	2,347.73	557,759.46	105,031.79
39	10/1/2012	557,759.46	8,044.01	-	8,044.01	5,720.01	2,324.00	552,039.45	107,355.78
40	11/1/2012	552,039.45	8,044.01	-	8,044.01	5,743.84	2,300.16	546,295.60	109,655.95
41	12/1/2012	546,295.60	8,044.01	-	8,044.01	5,767.78	2,276.23	540,527.82	111,932.18
42	1/1/2013	540,527.82	8,044.01	-	8,044.01	5,791.81	2,252.20	534,736.01	114,184.38
43	2/1/2013	534,736.01	8,044.01	-	8,044.01	5,815.94	2,228.07	528,920.07	116,412.45
44	3/1/2013	528,920.07	8,044.01	-	8,044.01	5,840.18	2,203.83	523,079.90	118,616.28
45	4/1/2013	523,079.90	8,044.01	-	8,044.01	5,864.51	2,179.50	517,215.39	120,795.78
46	5/1/2013	517,215.39	8,044.01	-	8,044.01	5,888.94	2,155.06	511,326.44	122,950.84
47	6/1/2013	511,326.44	8,044.01	-	8,044.01	5,913.48	2,130.53	505,412.96	125,081.37
48	7/1/2013	505,412.96	8,044.01	-	8,044.01	5,938.12	2,105.89	499,474.84	127,187.26
49	8/1/2013	499,474.84	8,044.01	-	8,044.01	5,962.86	2,081.15	493,511.98	129,268.40
50	9/1/2013	493,511.98	8,044.01	-	8,044.01	5,987.71	2,056.30	487,524.27	131,324.70
51	10/1/2013	487,524.27	8,044.01	-	8,044.01	6,012.66	2,031.35	481,511.61	133,356.05
52	11/1/2013	481,511.61	8,044.01	-	8,044.01	6,037.71	2,006.30	475,473.90	135,362.35
53	12/1/2013	475,473.90	8,044.01	-	8,044.01	6,062.87	1,981.14	469,411.03	137,343.49
54	1/1/2014	469,411.03	8,044.01	-	8,044.01	6,088.13	1,955.88	463,322.90	139,299.37
55	2/1/2014	463,322.90	8,044.01	-	8,044.01	6,113.50	1,930.51	457,209.41	141,229.88
56	3/1/2014	457,209.41	8,044.01	-	8,044.01	6,138.97	1,905.04	451,070.44	143,134.92
57	4/1/2014	451,070.44	8,044.01	-	8,044.01	6,164.55	1,879.46	444,905.89	145,014.38
58	5/1/2014	444,905.89	8,044.01	-	8,044.01	6,190.23	1,853.77	438,715.66	146,868.16
59	6/1/2014	438,715.66	8,044.01	-	8,044.01	6,216.03	1,827.98	432,499.63	148,696.14
60	7/1/2014	432,499.63	8,044.01	-	8,044.01	6,241.93	1,802.08	426,257.70	150,498.22
61	8/1/2014	426,257.70	8,044.01	-	8,044.01	6,267.93	1,776.07	419,989.77	152,274.30
62	9/1/2014	419,989.77	8,044.01	-	8,044.01	6,294.05	1,749.96	413,695.72	154,024.25
63	10/1/2014	413,695.72	8,044.01	-	8,044.01	6,320.28	1,723.73	407,375.44	155,747.99
64	11/1/2014	407,375.44	8,044.01	-	8,044.01	6,346.61	1,697.40	401,028.83	157,445.38
65	12/1/2014	401,028.83	8,044.01	-	8,044.01	6,373.06	1,670.95	394,655.77	159,116.34

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance	Cumulative Interest
66	1/1/2015	394,655.77	8,044.01	-	8,044.01	6,399.61	1,644.40	388,256.16	160,760.74
67	2/1/2015	388,256.16	8,044.01	-	8,044.01	6,426.27	1,617.73	381,829.89	162,378.47
68	3/1/2015	381,829.89	8,044.01	-	8,044.01	6,453.05	1,590.96	375,376.84	163,969.43
69	4/1/2015	375,376.84	8,044.01	-	8,044.01	6,479.94	1,564.07	368,896.90	165,533.50
70	5/1/2015	368,896.90	8,044.01	-	8,044.01	6,506.94	1,537.07	362,389.96	167,070.57
71	6/1/2015	362,389.96	8,044.01	-	8,044.01	6,534.05	1,509.96	355,855.91	168,580.53
72	7/1/2015	355,855.91	8,044.01	-	8,044.01	6,561.28	1,482.73	349,294.63	170,063.26
73	8/1/2015	349,294.63	8,044.01	-	8,044.01	6,588.61	1,455.39	342,706.02	171,518.65
74	9/1/2015	342,706.02	8,044.01	-	8,044.01	6,616.07	1,427.94	336,089.95	172,946.60
75	10/1/2015	336,089.95	8,044.01	-	8,044.01	6,643.63	1,400.37	329,446.32	174,346.97
76	11/1/2015	329,446.32	8,044.01	-	8,044.01	6,671.32	1,372.69	322,775.00	175,719.66
77	12/1/2015	322,775.00	8,044.01	-	8,044.01	6,699.11	1,344.90	316,075.89	177,064.56
78	1/1/2016	316,075.89	8,044.01	-	8,044.01	6,727.03	1,316.98	309,348.86	178,381.54
79	2/1/2016	309,348.86	8,044.01	-	8,044.01	6,755.06	1,288.95	302,593.81	179,670.50
80	3/1/2016	302,593.81	8,044.01	-	8,044.01	6,783.20	1,260.81	295,810.61	180,931.30
81	4/1/2016	295,810.61	8,044.01	-	8,044.01	6,811.46	1,232.54	288,999.14	182,163.85
82	5/1/2016	288,999.14	8,044.01	-	8,044.01	6,839.85	1,204.16	282,159.30	183,368.01
83	6/1/2016	282,159.30	8,044.01	-	8,044.01	6,868.34	1,175.66	275,290.95	184,543.67
84	7/1/2016	275,290.95	8,044.01	-	8,044.01	6,896.96	1,147.05	268,393.99	185,690.72
85	8/1/2016	268,393.99	8,044.01	-	8,044.01	6,925.70	1,118.31	261,468.29	186,809.03
86	9/1/2016	261,468.29	8,044.01	-	8,044.01	6,954.56	1,089.45	254,513.73	187,898.48
87	10/1/2016	254,513.73	8,044.01	-	8,044.01	6,983.53	1,060.47	247,530.20	188,958.95
88	11/1/2016	247,530.20	8,044.01	-	8,044.01	7,012.63	1,031.38	240,517.57	189,990.33
89	12/1/2016	240,517.57	8,044.01	-	8,044.01	7,041.85	1,002.16	233,475.71	190,992.49
90	1/1/2017	233,475.71	8,044.01	-	8,044.01	7,071.19	972.82	226,404.52	191,965.30
91	2/1/2017	226,404.52	8,044.01	-	8,044.01	7,100.66	943.35	219,303.86	192,908.65
92	3/1/2017	219,303.86	8,044.01	-	8,044.01	7,130.24	913.77	212,173.62	193,822.42
93	4/1/2017	212,173.62	8,044.01	-	8,044.01	7,159.95	884.06	205,013.67	194,706.48
94	5/1/2017	205,013.67	8,044.01	-	8,044.01	7,189.79	854.22	197,823.88	195,560.70
95	6/1/2017	197,823.88	8,044.01	-	8,044.01	7,219.74	824.27	190,604.14	196,384.97
96	7/1/2017	190,604.14	8,044.01	-	8,044.01	7,249.82	794.18	183,354.32	197,179.15
97	8/1/2017	183,354.32	8,044.01	-	8,044.01	7,280.03	763.98	176,074.28	197,943.13
98	9/1/2017	176,074.28	8,044.01	-	8,044.01	7,310.37	733.64	168,763.92	198,676.77
99	10/1/2017	168,763.92	8,044.01	-	8,044.01	7,340.83	703.18	161,423.09	199,379.95
100	11/1/2017	161,423.09	8,044.01	-	8,044.01	7,371.41	672.60	154,051.68	200,052.55
101	12/1/2017	154,051.68	8,044.01	-	8,044.01	7,402.13	641.88	146,649.55	200,694.43
102	1/1/2018	146,649.55	8,044.01	-	8,044.01	7,432.97	611.04	139,216.58	201,305.47
103	2/1/2018	139,216.58	8,044.01	-	8,044.01	7,463.94	580.07	131,752.64	201,885.54
104	3/1/2018	131,752.64	8,044.01	-	8,044.01	7,495.04	548.97	124,257.61	202,434.51
105	4/1/2018	124,257.61	8,044.01	-	8,044.01	7,526.27	517.74	116,731.34	202,952.25
106	5/1/2018	116,731.34	8,044.01	-	8,044.01	7,557.63	486.38	109,173.71	203,438.63
107	6/1/2018	109,173.71	8,044.01	-	8,044.01	7,589.12	454.89	101,584.59	203,893.52
108	7/1/2018	101,584.59	8,044.01	-	8,044.01	7,620.74	423.27	93,963.85	204,316.79
109	8/1/2018	93,963.85	8,044.01	-	8,044.01	7,652.49	391.52	86,311.36	204,708.30
110	9/1/2018	86,311.36	8,044.01	-	8,044.01	7,684.38	359.63	78,626.98	205,067.93
111	10/1/2018	78,626.98	8,044.01	-	8,044.01	7,716.40	327.61	70,910.58	205,395.55
112	11/1/2018	70,910.58	8,044.01	-	8,044.01	7,748.55	295.46	63,162.04	205,691.01
113	12/1/2018	63,162.04	8,044.01	-	8,044.01	7,780.83	263.18	55,381.20	205,954.18
114	1/1/2019	55,381.20	8,044.01	-	8,044.01	7,813.25	230.76	47,567.95	206,184.94
115	2/1/2019	47,567.95	8,044.01	-	8,044.01	7,845.81	198.20	39,722.14	206,383.14
116	3/1/2019	39,722.14	8,044.01	-	8,044.01	7,878.50	165.51	31,843.64	206,548.65
117	4/1/2019	31,843.64	8,044.01	-	8,044.01	7,911.33	132.68	23,932.31	206,681.33
118	5/1/2019	23,932.31	8,044.01	-	8,044.01	7,944.29	99.72	15,988.02	206,781.05
119	6/1/2019	15,988.02	8,044.01	-	8,044.01	7,977.39	66.62	8,010.63	206,847.66
120	7/1/2019	8,010.63	8,044.01	-	8,010.63	7,977.25	33.38	0.00	206,881.04

APPENDIX VII

SECO PROGRAM CONTACTS
WATT WATCHERS OF TEXAS


I WANT Y'ALL...
to remember,
Zzzzzz
SLEEP
is good.
1-888-US WATTS
wattwatchers.org

THE COMPUTERS IN YOUR SCHOOL ARE WASTING ENERGY. YOU CAN HELP YOUR SCHOOL SAVE MONEY. IMPLEMENT COMPUTER MONITOR POWER MANAGEMENT.

WHAT Y'ALL NEED TO REMEMBER:

- Screen savers **DO NOT** save energy!
- A typical monitor uses 60-90 watts
- While in sleep mode a monitor uses 2-10 watts
- Your Energy Star features may not be enabled
- Use free Energy Star software to capture savings
- Utilize your network, put all monitors to sleep at once
- Turn off your monitor at night
- Save energy, save money, prevent pollution

SOME ACTUAL EXAMPLES FROM DISTRICTS THAT ALREADY SET THEIR MONITORS TO SLEEP:

	District A	District B	District C
# of computers	3,000	10,000	15,000
% of monitors enabled	55	0	50
% of monitors enabled after mandate	100	100	100
Cost of electricity	7.5¢	5.8¢	6.0¢
Hours monitors are used per week	9	9	9
Days monitors are used per week	5	5	5
% of monitors that are turned off at night and weekends	35	35	35
% of monitors turned off after mandate	65	65	65
Current energy use	953,620 kWh	5,522,790 kWh	5,087,745 kWh
Future energy use	349,479 kWh	1,164,930 kWh	1,747,395 kWh
Energy savings	**604,141 kWh**	**4,357,860 kWh**	**3,340,350 kWh**
Current energy costs	$71,522	$320,322	$305,265
Future energy costs	$26,211	$67,566	$104,844
Monetary savings	**$45,311**	**$252,756**	**$200,421**
% of savings	63	79	65

If all of the estimated 1.2 million computer monitors in Texas schools were enabled for monitor power management, Texas would save up to **$20.5 MILLION EACH YEAR!**

ALL IN A DAY'S REST...

To download the free Energy Star EZ Save and EZ Wizard programs, click on the PC Power Management link on the Watt Watchers Website. The computer monitor power management campaign, Sleep is Good, is a national effort by EPA/DOE to promote energy savings in computer monitors. Watt Watchers is helping Texas schools take advantage of the program.

Watt Watchers of Texas
Phone/Fax 1-888-US WATTS (1-888-879-2887)
e-mail info@wattwatchers.org
Visit our website http://wattwatchers.org

Sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy.


I WANT Y'ALL
FOR WATT WATCHERS
1-888 US WATTS
wattwatchers.org
SPONSORED BY THE TEXAS STATE ENERGY CONSERVATION OFFICE

-IT'S FREE!-IT'S SIMPLE!-IT WORKS!-

START YOUR PROGRAM TODAY!

Watt Watchers of Texas is a FREE energy efficiency program for Texas schools sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy. The program is designed to help school districts save energy and money by getting students involved. It is simple and effective! Students patrol the halls of the schools reducing energy waste by turning off lights and leaving "tickets" for empty classrooms with the lights on. Turning out the lights in a classroom during two unoccupied hours per day (lunch & after school) can save $50 over a school year.

GET STARTED

Call 1-888-USWATTS or

Sign up for a free kit. ~~Call 1-800-USWATTS or~~ go on-line at http://wattwatchers.org to enroll. You will receive a free kit which includes a set of 4 Watt Watchers binders, 4 name badges and 4 name tags with 4 lanyards, 4 pencils, a complete instruction manual on CD-ROM, plus a supply of forms, sample tickets and thank you notes. Everything you need — open your kit and get started today! Not only will your school be provided with all of the materials listed above (approximately a $25 value), Watt Watchers will provide free support for the program, including:

- *WATTS NEWS* — Quarterly 20 page Newspaper
- Toll Free Phone & Toll Free Fax support line
- Website and e-mail support
- E-Mail Update – Monthly news for Watt Watchers
- Workshops – Watt Watchers sponsors regional workshops
- Conferences – Watt Watchers attends educational conferences – see you there.
- CD-ROM with all the materials – 0ver 450MB!
- Five Year Lapel Pins for dedicated Watt Watchers sponsors
- Watt Watchers Certificates for participation and Zero Hero Awards

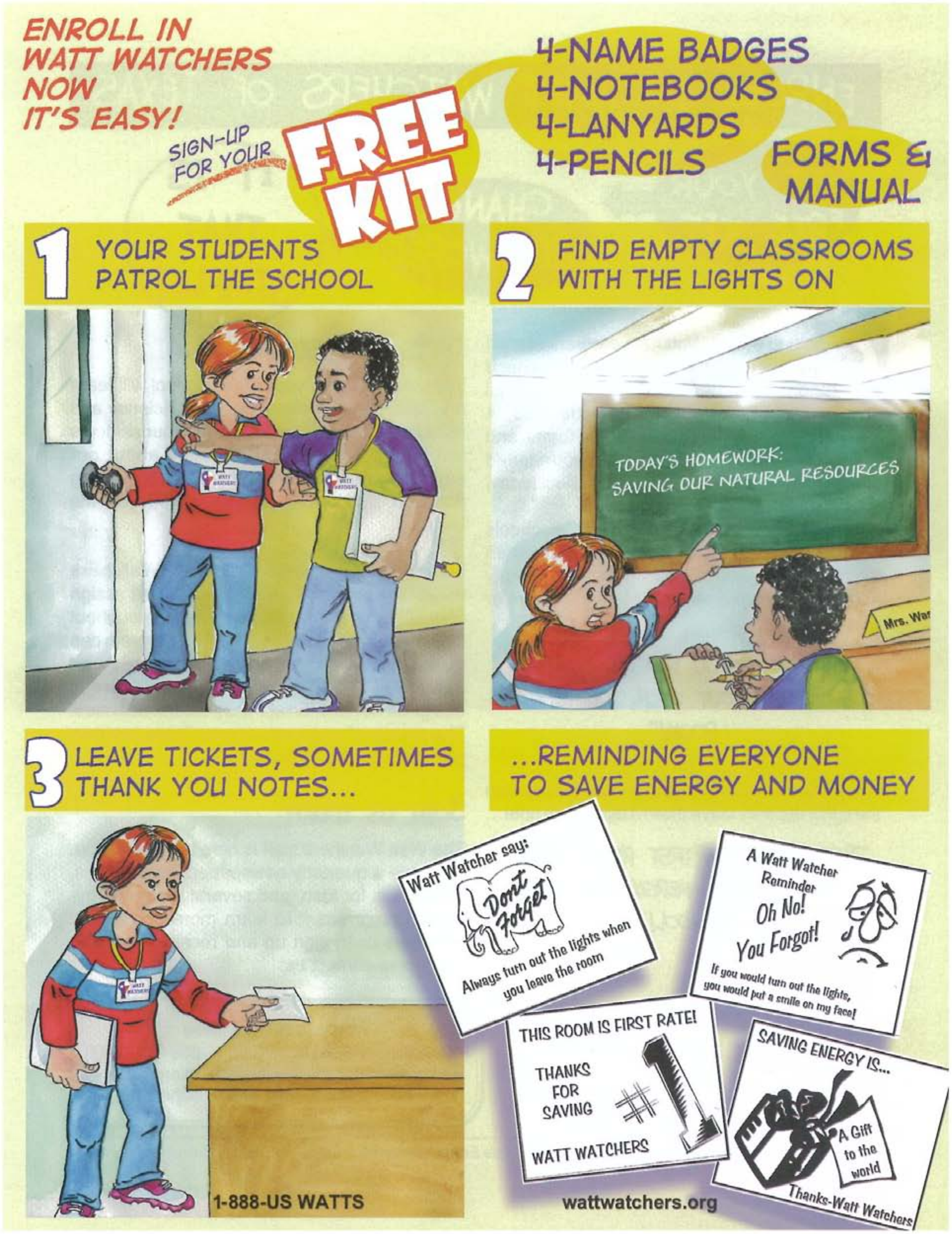
BUT THAT'S NOT ALL, Y'ALL!

In addition to student energy patrols that find waste and raise awareness, Watt Watchers also has additional programs for your school:

- Traveling Energy Exploration Stations – free loans of hands-on kits for classes
- Knowledge is Power – an energy efficiency curriculum supplement
- Sleep Is Good – a computer monitor power management program
- Junior Solar Sprint – a model solar race car project
- Energy Encounter – a one day workshop for high school students
- District Energy Council – students assisting energy managers
- The Weatherization Project – a residential community energy project
- Benchmarking – compare your school district energy use nationally

Watt Watchers of Texas
Phone/Fax 1-888-US WATTS (1-888-879-2887)
e-mail info@wattwatchers.org
Visit our website http://wattwatchers.org

Sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy.


ENROLL IN
WATT WATCHERS
NOW
IT'S EASY!
SIGN-UP FOR YOUR
FREE KIT
4-NAME BADGES
4-NOTEBOOKS
4-LANYARDS
4-PENCILS
FORMS & MANUAL
1 YOUR STUDENTS PATROL THE SCHOOL
2 FIND EMPTY CLASSROOMS WITH THE LIGHTS ON
TODAY'S HOMEWORK:
SAVING OUR NATURAL RESOURCES
3 LEAVE TICKETS, SOMETIMES THANK YOU NOTES...
...REMINDING EVERYONE TO SAVE ENERGY AND MONEY
Watt Watcher say:
Don't Forget
Always turn out the lights when you leave the room
A Watt Watcher Reminder
Oh No! You Forgot!
If you would turn out the lights, you would put a smile on my face!
THIS ROOM IS FIRST RATE!
THANKS FOR SAVING
#1
WATT WATCHERS
SAVING ENERGY IS...
A Gift to the world
Thanks-Watt Watchers
1-888-US WATTS
wattwatchers.org

ENROLL IN WATT WATCHERS OF TEXAS

Getting a Watt Watchers program started in your school is so simple. All you need to do is order the FREE kit! Your kit comes complete with 4 name badges, 4 lanyards, 4 notebooks, 4 pencils, the forms, and a CD-ROM with a manual to get you started saving energy and money for your school today!

Your students will patrol the halls of the schools to see where energy is being wasted. When they locate a classroom or office that is empty and the lights are on they will leave a reminder ticket …

"OH, NO –YOU FORGOT TO TURN YOUR LIGHTS OUT WHEN YOU LEFT THE ROOM!"

If they notice classrooms that consistently turn the lights out they leave them a thank-you note…

"THIS ROOM IS FIRST RATE –THANKS FOR SAVING ENERGY FOR OUR SCHOOL!"

IT IS THAT SIMPLE.

Your students and your entire school will learn a valuable lesson about energy efficiency and its benefits that will last a lifetime. Your students will change habits and attitudes about our environment while saving money and preventing pollution. You will change the world for the better.

Teachers, just place the Watt Watchers materials in a bin at your front door and assign your students a time to go on patrols throughout the day and the work is done. The program can be adapted to fit your teaching needs and demands. The Watt Watchers program is designed not to interrupt daily school activities. Thousands of programs across Texas are now patrolling quickly and quietly.

JOIN US TODAY!

The Watt Watchers staff is here to support you. We have a quarterly newspaper, lesson plans, energy kits for loan, and several more energy-related programs. To learn more about Watt Watchers or to sign up and receive your free kit, please contact us:

Watt Watchers of Texas
Phone/Fax 1-888-US WATTS (1-888-879-2887)
e-mail info@wattwatchers.org
Visit our website http://wattwatchers.org

Sponsored by the Texas Comptroller of Public Accounts, State Energy Conservation Office, and the U.S. Department of Energy

APPENDIX VIII

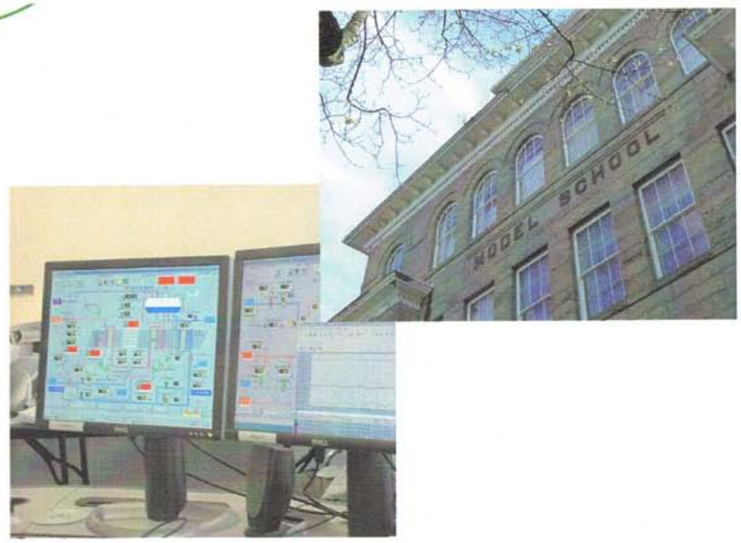
TEXAS ENERGY MANAGERS ASSOCIATION (TEMA)

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.

Texas Energy Managers Association

SECO
State Energy Conservation Office

APPENDIX IX

Energy Performance Indices for MISD Facilities Not Surveyed in this Report

Facility	Grades	EUI	ECI
Bunche	Early Childhood	104,584	$2.26
Greathouse	ES	88,491	$2.24
Washington	ES	71,956	$1.91
West	Early Childhood	66,124	$1.91
South	ES	68,578	$1.82
Pease	ES	59,288	$1.74
Travis	ES	60,167	$1.70
Rusk	ES	63,664	$1.70
Long	ES	63,239	$1.69
Crockett	ES	62,018	$1.67
Fannin	ES	57,342	$1.62
Bonham	ES	61,019	$1.60
Bowie	ES	50,032	$1.60
Jones	ES	53,295	$1.57
Emerson	ES	55,240	$1.57
Lamar	ES	56,989	$1.50
Bush	ES	47,835	$1.47
Burnet	ES	52,659	$1.41
DeZavala	ES	46,535	$1.39
Alamo	MS	52,487	$1.36
San Jacinto	MS	42,916	$1.20
Santa Rita	ES	40,615	$1.16
Lee Freshman	HS	41,965	$1.14
Houston	ES	37,748	$1.03
Henderson	ES	37,501	$0.97
Average		57,692	$1.57

APPENDIX IX

UTILITY CHARTS ON DISKETTE