

# **SCHOOLS/LOCAL GOVERNMENT ENERGY MANAGEMENT PROGRAM**

For

**PANTHER CREEK  
CONSOLIDATED INDEPENDENT SCHOOL DISTRICT  
Valera, Texas**

*An Energy Efficient Partnership Service*  
of  
**COMPTROLLER of the STATE of TEXAS  
STATE ENERGY CONSERVATION OFFICE  
111 E. 17th Street  
Austin, Texas 78774**

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**April 14, 2009**

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## 1.0 EXECUTIVE SUMMARY:

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



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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 *Dwin Nanny*, Superintendent for Panther Creek C.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 **Panther Creek CISD**, (hereafter known as PCCISD) 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 PCCISD staff, 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 \$26,370 may be saved annually if all recommended projects are implemented. The estimated installed cost of these projects should total approximately **\$379,600**, yielding an average simple payback of **14-1/2** years.

**SUMMARY TABLE:**

<b><i>SUMMARY:</i></b>	<b><i>IMPLEMENTATION COST</i></b>	<b><i>ESTIMATED SAVINGS</i></b>	<b><i>SIMPLE PAYBACK</i></b>
<i>HVAC Renovation</i>	<i>\$354,200</i>	<i>\$ 22,137</i>	<i>16 Years</i>
<i>Lighting</i>	<i>\$ 25,400</i>	<i>\$ 4,233</i>	<i>6 Years</i>
<b><i>TOTAL PROJECTS</i></b>	<b><i>\$ 379,600</i></b>	<b><i>\$ 26,370</i></b>	<b><i>14-1/2 Years</i></b>

(See Section 6.0 for a detailed description of each recommended project.)

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 **PCCISD**. 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.

SECO assisted Panther Creek CISD by providing an Energy Partnership Survey in 1997. At the time, Panther Creek's energy use per square foot was below the regional average, but the cost per square foot was above the regional average. Recommendations included a lighting renovation from T12 to T8 fluorescent lamps and electronic ballasts, the replacement of electrical equipment with propane fired equipment and the installation of an energy management control system.

## 3.0 CAMPUS DESCRIPTIONS:

**Panther Creek CISD** consists of one K-12 campus located in Valera, Texas, a small community located 60 miles northeast of San Angelo, Texas. The facility was constructed in 1987 and serves 150 students. The building is a brick clad structure with both low-sloping metal and flat gravel built-up roofs.

### *HVAC*

The campus is served by a combination of packaged heat pump rooftop units (HPRTUs) and split systems (HPSSs). Most of the HVAC equipment was installed when the building was constructed in 1987. HPRTUs and HPSSs have a normal life expectancy of 15-20 years and these units are therefore nearing the end of their useful life.

*There are 38 units totaling 161 tons of cooling capacity that should be replaced soon. As per the rate schedule analysis in Section 5.0, we recommend the district reconsider their consideration of propane heat when these units are replaced.*

Units are currently controlled with conventional thermostats locked behind a thermostat cover. We recommend that the district include new programmable thermostats with the retrofit of the HVAC units.

The district should plan to replace the electrical service disconnects at the time they renovate the HVAC units. Some were found to be damaged (see picture to the right) and could present a danger to maintenance personnel in their current condition.



### *Lighting*

The district has begun to renovate the existing T12 linear fluorescent fixtures to T8 lamps with electronic ballasts. The staff estimates that they have completed approximately 50% of the linear fluorescent fixtures in the facility. The corridors originally utilized 4-lamps per fixture but the district has already de-lamped to just 2-lamps per fixture. *We recommend that the district complete the planned renovation.* The new lamps and ballasts will produce about 20% more light output while consuming approximately 20% less energy. The retrofit will also help PCCISD comply with the lighting renovation directives of House Bill HB3693 passed in June 2007.

### *Water Heating*

Most of the water heaters have been replaced between 2004 and 2006. During their replacement, the insulation on the hot water lines was cut back in order to re-pipe the hot water outlet piping. This insulation was not replaced after the piping was installed and *we recommend the district should replace this insulation as soon as possible.* Most of the energy lost in a hot water system occurs through the hot water piping, not the tank itself which is normally extremely well insulated. The water heaters are electric units, however, and *we recommend that the district install timers on these units to turn the units off over weekends during the school year and throughout the summer vacation.*

There were seven (7) vending machines discovered during the survey that did not have any occupancy sensor control installed with them. The new vending machine controllers turn off the unit lighting and cycle the unit compressor to keep beverages at a satisfactorily cool temperature, but not allow them to run all of the time. *We recommend that the district install these vending controllers on these vending machines to reduce energy consumption of the units.*

## 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:

$$\text{ELECTRICITY Usage} \\ [\text{Total KWH /yr}] \times [3413 \text{ BTUs/KWH}] = \text{_____ BTUs / yr}$$

$$\text{NATURAL GAS Usage} \\ [\text{Total MCF/yr}] \times [1,030,000 \text{ BTUs/MCF}] = \text{_____ BTUs / yr}$$

After adding the BTU consumption of each fuel, the total BTU's are then divided by the building area.

$$\text{EUI} = [\text{Electricity BTU's} + \text{Gas BTU's}] \text{ divided by } [\text{Total square feet}]$$

### 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:

$$\text{ECI} = [\text{Electricity Cost} + \text{Gas Cost}] \text{ divided by } [\text{Total square feet}]$$

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 :**

**PANTHER CREEK CCISD**

<u>CAMPUS</u>	<u>ENERGY UTILIZATION INDEX (EUI)</u> <u>(Btu/sf-year)</u>	<u>ENERGY COST INDEX (ECI)</u> <u>(\$/sf-year)</u>
<b>2008 K-12 Campus</b>	<b>27,552</b>	<b>\$1.00</b>
Region 16 2006 Average K-12:	46,712	\$1.03

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

Panther Creek facilities are all-electric facilities. There is no natural gas available and the district has chosen to not utilize propane.

The EUI for the district is 41% below regional average for energy consumption and 3% below regional average for energy cost per square foot.

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

## 5.0 RATE SCHEDULE ANALYSIS:

**ELECTRIC UTILITY:** Coleman County Electric Cooperative

**ELECTRIC RATE:** Large Power Load (Primary Service)

CUSTOMER CHARGE = \$40.00 per meter

**DEMAND CHARGE:**

Base Demand Charge (October through May) = \$9.50 per kW

On-Peak Rider Charge (June through September) = \$2.75 per kW

ENERGY CHARGE: = \$0.03165 per kWh

**Average Savings for consumption:** = **\$0.03165/kWh**

**Average Savings for demand:** = **\$12.25 in summer; \$9.50 in winter**

**Note:**

The district has been hesitant in the past to begin heating with propane, but this rate schedule is heavily weighted in demand charges and therefore electric heat in the winter months is considerably more expensive than propane heat. As per the following calculation, electric heating under this rate schedule costs 106% more per usable BTU of heat than propane!

One (1) kWh = 3,413 BTUs of energy

One gallon of propane = 95,476 BTUs of energy

**ELECTRICITY:**

One kWh equals 1 kW of power over one hour

Cost = cost of one kWh + cost of 1 kW of demand = \$0.03165/kWh + \$9.50/kW = \$9.53165

Cost / # of BTUs = Cost / BTU = \$9.53165 / 3,413 BTUs = \$0.0027927483 / BTU

Note: Electric heat is 100% efficient in its conversion to usable energy.

**PROPANE:**

One gallon of propane delivered to the facility in 2009 averages \$1.50 to \$2.00 per gallon

Conservative Cost = cost of one gallon = \$2.00/gallon

Cost / # of BTUs = Cost / BTU = \$2.00 / 95,476 BTUs = \$0.0000209477 / BTU

However, as propane is burned to create heat, it is approximately 80% efficient as some of the heat is lost to the atmosphere through exhaust venting, therefore:

\$0.0000209477 / 80% efficiency = propane heat costs \$0.0000261846 per usable BTU

**COMPARISON: Electric heat is 106% more expensive per usable BTU than is propane!**

## 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. Comb condensing unit fins to restore operating efficiency.  
*Crushing just 10% of the fins can result in efficiency losses of 30%.*
3. Install vending machine controllers to limit operation of lights and compressors.  
*Eliminate operation of lights and limit operation of compressor when building or area is unoccupied.*
4. 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.*
5. Install timclocks on electric water heaters to eliminate operation during vacations and weekends.

### B. CAPITAL EXPENSE PROJECTS

#### I. Replace old heat pump split systems

*Heat/Cool Units:* There are thirty-eight (38) each 1987 HVAC systems totaling 161 tons of cooling capacity that need to be replaced soon at the campus. We recommend utilizing propane fired heating in the renovation. These costs include the new rooftop propane piping required to operate the new system.

Estimated Installed Cost	=	\$354,200
Estimated Energy Cost Savings	=	\$ 22,137
Simple Payback Period	=	16 Years

#### II. Lighting Renovation

Complete the T12 fluorescent renovation to T8 lamps and electronic ballasts. Renovate or replace the incandescent exit fixtures to LED or LEC exit fixtures.

Estimated Installed Cost	=	\$ 25,400
Estimated Energy Cost Savings	=	\$ 4,233
Simple Payback Period	=	6 Years

<b>SUMMARY:</b>	<b>IMPLEMENTATION COST</b>	<b>ESTIMATED SAVINGS</b>	<b>SIMPLE PAYBACK</b>
<i>HVAC Renovation</i>	\$354,200	\$ 22,137	16 Years
<i>Lighting</i>	\$ 25,400	\$ 4,233	6 Years
<b>TOTAL PROJECTS</b>	\$ 379,400	\$ 26,370	14-1/2 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	=	\$ 379,400	
10 year commercial loan principal	=	\$ 379,400	
10 year commercial loan interest (5%) paid	=	\$ 103,495	
10 year commercial loan TOTAL	=	\$ 482,895	
Commercial Loan Annual Payment	=	\$ 4,024/month	= \$ 48,288/yr
Total Annual Payment Minus Annual Energy Cost Savings = \$48,288 – 26,370	=	\$ 21,918	
<b>Annual Cost to CISD (without considering Maintenance Cost Reduction)</b>	=	<b>\$ 21,918</b>	

More information regarding financial programs available to PCCISD 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

continued

## 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.

## How to Finance Your Energy Program *continued*

### Financing Mechanisms

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

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

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

### Internal Funds

The most direct way for the owner of a building or facility to pay for energy-efficiency improvements is to allocate funds from the internal capital or operating budget. Financing internally has two clear advantages over the other options discussed below – it retains internally all savings from increased energy-efficiency, and it is usually the simplest option administratively. The resulting savings may be used to decrease overall operating

expenses in future years or retained within a revolving fund used to support additional efficiency investments. Many public and private organizations regularly finance some or all of their energy-efficiency improvements from internal funds.

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

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

### Debt Financing

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

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

## How to Finance Your Energy Program *continued*

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

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

### Lease and Lease-Purchase Agreements

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

### Energy Performance Contracts

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

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

### Types of Leasing Agreements

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

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

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

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

## How to Finance Your Energy Program *continued*

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](http://www.rebuild.gov)*



**APPENDIX II**  
**ELECTRIC UTILITY RATE SCHEDULE**

<b>COLEMAN COUNTY ELECTRIC COOPERATIVE, INC.</b> Tariff For Electric Service		Section II	Sheet No. 11
<b>SECTION TITLE:</b> RATE SCHEDULES  APPLICABLE TO ALL AREAS		Coleman County Electric Cooperative, Inc. Coleman, Texas Board Approved 4-22-03  EFFECTIVE DATE: 5-1-03	

- (2) Demand Charge \$9.50 per kW of Billing Demand  
 plus  
On-Peak Rider \$2.75 per On-Peak Measured kW

The Demand Charge shall apply to the maximum kilowatt demand for any period of 15 consecutive minutes during the billing period as adjusted for power factor or the contract billing demand, whichever is greater.

The On-Peak Rider shall apply to the maximum kW demand during the months of June through September.

This charge for the rate at which energy used is applied to the maximum kilowatt demand for any period of fifteen (15) consecutive billing period as adjusted for power factor, but in no event is billing demand less than 35 kw,

and

- (3) Energy Charge \$0.03165 per kWh  
 This charge for the delivery of energy shall be applied to all kWh usage during a billing period.

D. Monthly Minimum Charge.

Each billing period the Customer shall be obligated to pay the highest of the following, whether or not any energy is actually used:

- (1) The Customer Charge plus Demand Charges, or
- (2) The monthly minimum charge specified in the contract for electric service, or
- (3) \$1.00 per kVA of installed transformer capacity.

E. Primary Service Discount.

If service is provided at primary distribution voltage, the monthly rate shall be reduced as follows:

JUL-09-2009 11:13 FROM:COLEMAN CNTY ELEC CO 3256254600

TO:15123883312

P.2/3

<b>COLEMAN COUNTY ELECTRIC COOPERATIVE, INC.</b> Tariff For Electric Service		Section II	Sheet No. 10
<b>SECTION TITLE:</b> RATE SCHEDULES APPLICABLE TO ALL AREAS		Coleman County Electric Cooperative, Inc. Coleman, Texas Board Approved 4-22-03 EFFECTIVE DATE: 5-1-03	

202.5 Large Power.

A. Application.

Applicable to all Customers, except Large Power Special and Large Power Special-Municipal Pipeline Water Pumping, taking the type of service described in this rate schedule for all service supplied at one point of delivery and taken through a single meter, and with 50 kVA or more of transformer capacity, for all commercial and industrial uses and for commercial agricultural water pumping.

B. Type of Service.

Three-phase service at available primary or secondary distribution voltages. Where service of the type desired by Customer is not already available at the point of delivery, additional charges under the Cooperative's line extension policy and special contract arrangements may be required prior to service being furnished.

C. Monthly Rate.

Each billing period the Customer shall be obligated to pay the following charges:

- (1) Customer Charge \$40.00 per meter

This charge is for the availability of electricity service;

And

## **APPENDIX III**

### **UTILITIES CONSUMPTION HISTORY**

District: **Panther Creek CISD**  
 Building/Campus: **K-12**

# Occupants: 150

-----ELECTRIC DATA-----							I---NAT'L GAS / OTHER FUEL---I		
MONTH	YEAR	Consumption kWh	Demand kW/kVA	Demand Cost \$	REP Cost \$	T&D Charge Cost \$	TOTAL ALL ELECTRICAL Cost \$	Consumption MCF/	NG or Other Cost \$
January	2009	29,358					\$4,298		
February	2009	31,672					\$5,199		
March	2009	42,774					\$7,263		
April	2008	40,753					\$6,520		
May	2008	37,230					\$5,198		
June	2008	49,738					\$5,957		
July	2008	49,935					\$5,019		
August	2008	43,754					\$4,332		
September	2008	36,841					\$3,954		
October	2008	60,223					\$6,251		
November	2008	58,984					\$6,326		
December	2008	44,074					\$4,701		
<b>TOTAL</b>		<b>525,336</b>	<b>0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$65,018</b>	<b>0</b>	<b>\$0</b>

Annual Total Energy Cost = \$65,018 Per Year

Total KWH x 0.003413 = 1,792.97 mmbTU  
 Total MCF x 1.03 = 0.00 mmbTU  
 Total Other x \_\_\_\_\_ mmbTU  
 Total Site BTU's/yr 1,792.97 mmbTU

Floor area: 65,075 s.f.

Electric Utility Acc't #  
 Xcel

Energy Use Index: 27,552 BTU/s.f.-yr  
 Energy Use / Occupant: 12.0 BTU/Occupant

Energy Cost Index: \$1.00 \$/s.f.-yr  
 Energy Cost / Occupant: \$433.45 \$/Occupant

REP % of Total Elec. Cost: 0.00%  
 Ave \$/kWh for REP Portion: \$0.0000  
 T&D % of Total Elec. Cost: 0.00%  
 Ave \$/kWh for T&D Portion: \$0.0000

Gas Utility Acc't #  
 n/a

**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**



### Preliminary Energy Assessment Service Agreement



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 PANTHER CREEK 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: 4-6-09  
 Name (Mr./Ms./Dr.): Dwain Nanny Title: Superintendent  
 Organization: Panther Creek CISD Phone: 325-357-4449  
 Street Address: 129 PR 3421 Fax: 325-357-4470  
 Mailing Address: 129 PR 3421 EMail: dwain.nanny@panthercreektx.net  
Nakota TX 76884 County: Coleman

#### CONTACT INFORMATION:

Name (Mr./Ms./Dr.): SA Title: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_ County: \_\_\_\_\_

Please sign & FAX or mail to Glenda Baldwin at State Energy Conservation Office. FAX: 512-475-2569 Address: LBJ State Office Building, 111 E. 17<sup>th</sup> 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	\$ 379,400.00
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	\$ 4,024.13
Scheduled number of payments	120
Actual number of payments	120
Total early payments	\$ -
Total interest	\$ 103,495.08

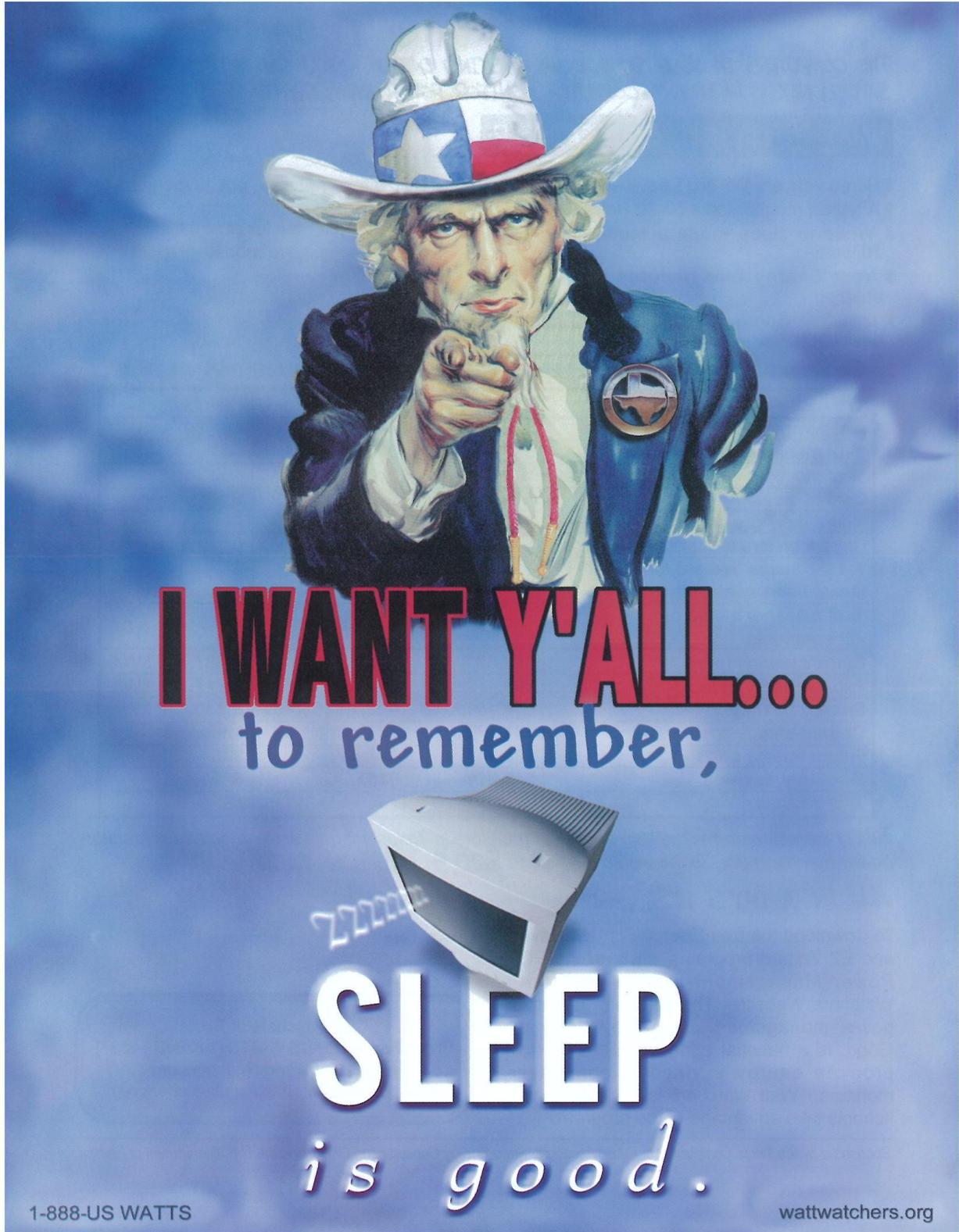
Lender name:

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance	Cumulative Interest
1	8/1/2009	\$ 379,400.00	\$ 4,024.13	\$ -	\$ 4,024.13	\$ 2,443.29	\$ 1,580.83	\$ 376,956.71	\$ 1,580.83
2	9/1/2009	376,956.71	4,024.13	-	4,024.13	2,453.47	1,570.65	374,503.23	3,151.49
3	10/1/2009	374,503.23	4,024.13	-	4,024.13	2,463.70	1,560.43	372,039.54	4,711.92
4	11/1/2009	372,039.54	4,024.13	-	4,024.13	2,473.96	1,550.16	369,565.58	6,262.08
5	12/1/2009	369,565.58	4,024.13	-	4,024.13	2,484.27	1,539.86	367,081.31	7,801.94
6	1/1/2010	367,081.31	4,024.13	-	4,024.13	2,494.62	1,529.51	364,586.69	9,331.44
7	2/1/2010	364,586.69	4,024.13	-	4,024.13	2,505.01	1,519.11	362,081.67	10,850.55
8	3/1/2010	362,081.67	4,024.13	-	4,024.13	2,515.45	1,508.67	359,566.22	12,359.23
9	4/1/2010	359,566.22	4,024.13	-	4,024.13	2,525.93	1,498.19	357,040.29	13,857.42
10	5/1/2010	357,040.29	4,024.13	-	4,024.13	2,536.46	1,487.67	354,503.83	15,345.09
11	6/1/2010	354,503.83	4,024.13	-	4,024.13	2,547.03	1,477.10	351,956.81	16,822.19
12	7/1/2010	351,956.81	4,024.13	-	4,024.13	2,557.64	1,466.49	349,399.17	18,288.67
13	8/1/2010	349,399.17	4,024.13	-	4,024.13	2,568.30	1,455.83	346,830.87	19,744.50
14	9/1/2010	346,830.87	4,024.13	-	4,024.13	2,579.00	1,445.13	344,251.87	21,189.63
15	10/1/2010	344,251.87	4,024.13	-	4,024.13	2,589.74	1,434.38	341,662.13	22,624.02
16	11/1/2010	341,662.13	4,024.13	-	4,024.13	2,600.53	1,423.59	339,061.60	24,047.61
17	12/1/2010	339,061.60	4,024.13	-	4,024.13	2,611.37	1,412.76	336,450.23	25,460.36
18	1/1/2011	336,450.23	4,024.13	-	4,024.13	2,622.25	1,401.88	333,827.98	26,862.24
19	2/1/2011	333,827.98	4,024.13	-	4,024.13	2,633.18	1,390.95	331,194.80	28,253.19
20	3/1/2011	331,194.80	4,024.13	-	4,024.13	2,644.15	1,379.98	328,550.66	29,633.17
21	4/1/2011	328,550.66	4,024.13	-	4,024.13	2,655.16	1,368.96	325,895.49	31,002.13
22	5/1/2011	325,895.49	4,024.13	-	4,024.13	2,666.23	1,357.90	323,229.26	32,360.03
23	6/1/2011	323,229.26	4,024.13	-	4,024.13	2,677.34	1,346.79	320,551.93	33,706.82
24	7/1/2011	320,551.93	4,024.13	-	4,024.13	2,688.49	1,335.63	317,863.43	35,042.45
25	8/1/2011	317,863.43	4,024.13	-	4,024.13	2,699.69	1,324.43	315,163.74	36,366.88
26	9/1/2011	315,163.74	4,024.13	-	4,024.13	2,710.94	1,313.18	312,452.80	37,680.06
27	10/1/2011	312,452.80	4,024.13	-	4,024.13	2,722.24	1,301.89	309,730.56	38,981.95
28	11/1/2011	309,730.56	4,024.13	-	4,024.13	2,733.58	1,290.54	306,996.98	40,272.49
29	12/1/2011	306,996.98	4,024.13	-	4,024.13	2,744.97	1,279.15	304,252.00	41,551.65
30	1/1/2012	304,252.00	4,024.13	-	4,024.13	2,756.41	1,267.72	301,495.59	42,819.36
31	2/1/2012	301,495.59	4,024.13	-	4,024.13	2,767.89	1,256.23	298,727.70	44,075.60
32	3/1/2012	298,727.70	4,024.13	-	4,024.13	2,779.43	1,244.70	295,948.27	45,320.29
33	4/1/2012	295,948.27	4,024.13	-	4,024.13	2,791.01	1,233.12	293,157.27	46,553.41
34	5/1/2012	293,157.27	4,024.13	-	4,024.13	2,802.64	1,221.49	290,354.63	47,774.90
35	6/1/2012	290,354.63	4,024.13	-	4,024.13	2,814.31	1,209.81	287,540.31	48,984.71
36	7/1/2012	287,540.31	4,024.13	-	4,024.13	2,826.04	1,198.08	284,714.27	50,182.80
37	8/1/2012	284,714.27	4,024.13	-	4,024.13	2,837.82	1,186.31	281,876.46	51,369.11
38	9/1/2012	281,876.46	4,024.13	-	4,024.13	2,849.64	1,174.49	279,026.82	52,543.59
39	10/1/2012	279,026.82	4,024.13	-	4,024.13	2,861.51	1,162.61	276,165.30	53,706.20
40	11/1/2012	276,165.30	4,024.13	-	4,024.13	2,873.44	1,150.69	273,291.87	54,856.89
41	12/1/2012	273,291.87	4,024.13	-	4,024.13	2,885.41	1,138.72	270,406.46	55,995.61
42	1/1/2013	270,406.46	4,024.13	-	4,024.13	2,897.43	1,126.69	267,509.02	57,122.30
43	2/1/2013	267,509.02	4,024.13	-	4,024.13	2,909.50	1,114.62	264,599.52	58,236.92
44	3/1/2013	264,599.52	4,024.13	-	4,024.13	2,921.63	1,102.50	261,677.89	59,339.42
45	4/1/2013	261,677.89	4,024.13	-	4,024.13	2,933.80	1,090.32	258,744.09	60,429.74
46	5/1/2013	258,744.09	4,024.13	-	4,024.13	2,946.03	1,078.10	255,798.07	61,507.85
47	6/1/2013	255,798.07	4,024.13	-	4,024.13	2,958.30	1,065.83	252,839.77	62,573.67
48	7/1/2013	252,839.77	4,024.13	-	4,024.13	2,970.63	1,053.50	249,869.14	63,627.17
49	8/1/2013	249,869.14	4,024.13	-	4,024.13	2,983.00	1,041.12	246,886.13	64,668.29
50	9/1/2013	246,886.13	4,024.13	-	4,024.13	2,995.43	1,028.69	243,890.70	65,696.98
51	10/1/2013	243,890.70	4,024.13	-	4,024.13	3,007.91	1,016.21	240,882.79	66,713.19
52	11/1/2013	240,882.79	4,024.13	-	4,024.13	3,020.45	1,003.68	237,862.34	67,716.87
53	12/1/2013	237,862.34	4,024.13	-	4,024.13	3,033.03	991.09	234,829.31	68,707.97
54	1/1/2014	234,829.31	4,024.13	-	4,024.13	3,045.67	978.46	231,783.64	69,686.42
55	2/1/2014	231,783.64	4,024.13	-	4,024.13	3,058.36	965.77	228,725.28	70,652.19
56	3/1/2014	228,725.28	4,024.13	-	4,024.13	3,071.10	953.02	225,654.17	71,605.21
57	4/1/2014	225,654.17	4,024.13	-	4,024.13	3,083.90	940.23	222,570.27	72,545.43
58	5/1/2014	222,570.27	4,024.13	-	4,024.13	3,096.75	927.38	219,473.52	73,472.81
59	6/1/2014	219,473.52	4,024.13	-	4,024.13	3,109.65	914.47	216,363.87	74,387.28
60	7/1/2014	216,363.87	4,024.13	-	4,024.13	3,122.61	901.52	213,241.26	75,288.80
61	8/1/2014	213,241.26	4,024.13	-	4,024.13	3,135.62	888.51	210,105.64	76,177.30
62	9/1/2014	210,105.64	4,024.13	-	4,024.13	3,148.69	875.44	206,956.95	77,052.74
63	10/1/2014	206,956.95	4,024.13	-	4,024.13	3,161.81	862.32	203,795.15	77,915.07
64	11/1/2014	203,795.15	4,024.13	-	4,024.13	3,174.98	849.15	200,620.17	78,764.21
65	12/1/2014	200,620.17	4,024.13	-	4,024.13	3,188.21	835.92	197,431.96	79,600.13

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance	Cumulative Interest
66	1/1/2015	197,431.96	4,024.13	-	4,024.13	3,201.49	822.63	194,230.47	80,422.76
67	2/1/2015	194,230.47	4,024.13	-	4,024.13	3,214.83	809.29	191,015.64	81,232.06
68	3/1/2015	191,015.64	4,024.13	-	4,024.13	3,228.23	795.90	187,787.41	82,027.95
69	4/1/2015	187,787.41	4,024.13	-	4,024.13	3,241.68	782.45	184,545.73	82,810.40
70	5/1/2015	184,545.73	4,024.13	-	4,024.13	3,255.19	768.94	181,290.55	83,579.34
71	6/1/2015	181,290.55	4,024.13	-	4,024.13	3,268.75	755.38	178,021.80	84,334.72
72	7/1/2015	178,021.80	4,024.13	-	4,024.13	3,282.37	741.76	174,739.43	85,076.48
73	8/1/2015	174,739.43	4,024.13	-	4,024.13	3,296.04	728.08	171,443.39	85,804.56
74	9/1/2015	171,443.39	4,024.13	-	4,024.13	3,309.78	714.35	168,133.61	86,518.91
75	10/1/2015	168,133.61	4,024.13	-	4,024.13	3,323.57	700.56	164,810.04	87,219.46
76	11/1/2015	164,810.04	4,024.13	-	4,024.13	3,337.42	686.71	161,472.62	87,906.17
77	12/1/2015	161,472.62	4,024.13	-	4,024.13	3,351.32	672.80	158,121.30	88,578.97
78	1/1/2016	158,121.30	4,024.13	-	4,024.13	3,365.29	658.84	154,756.01	89,237.81
79	2/1/2016	154,756.01	4,024.13	-	4,024.13	3,379.31	644.82	151,376.70	89,882.63
80	3/1/2016	151,376.70	4,024.13	-	4,024.13	3,393.39	630.74	147,983.31	90,513.37
81	4/1/2016	147,983.31	4,024.13	-	4,024.13	3,407.53	616.60	144,575.78	91,129.96
82	5/1/2016	144,575.78	4,024.13	-	4,024.13	3,421.73	602.40	141,154.06	91,732.36
83	6/1/2016	141,154.06	4,024.13	-	4,024.13	3,435.98	588.14	137,718.07	92,320.50
84	7/1/2016	137,718.07	4,024.13	-	4,024.13	3,450.30	573.83	134,267.77	92,894.33
85	8/1/2016	134,267.77	4,024.13	-	4,024.13	3,464.68	559.45	130,803.10	93,453.78
86	9/1/2016	130,803.10	4,024.13	-	4,024.13	3,479.11	545.01	127,323.98	93,998.79
87	10/1/2016	127,323.98	4,024.13	-	4,024.13	3,493.61	530.52	123,830.38	94,529.31
88	11/1/2016	123,830.38	4,024.13	-	4,024.13	3,508.17	515.96	120,322.21	95,045.27
89	12/1/2016	120,322.21	4,024.13	-	4,024.13	3,522.78	501.34	116,799.43	95,546.61
90	1/1/2017	116,799.43	4,024.13	-	4,024.13	3,537.46	486.66	113,261.97	96,033.27
91	2/1/2017	113,261.97	4,024.13	-	4,024.13	3,552.20	471.92	109,709.76	96,505.20
92	3/1/2017	109,709.76	4,024.13	-	4,024.13	3,567.00	457.12	106,142.76	96,962.32
93	4/1/2017	106,142.76	4,024.13	-	4,024.13	3,581.86	442.26	102,560.90	97,404.58
94	5/1/2017	102,560.90	4,024.13	-	4,024.13	3,596.79	427.34	98,964.11	97,831.92
95	6/1/2017	98,964.11	4,024.13	-	4,024.13	3,611.78	412.35	95,352.34	98,244.27
96	7/1/2017	95,352.34	4,024.13	-	4,024.13	3,626.82	397.30	91,725.51	98,641.57
97	8/1/2017	91,725.51	4,024.13	-	4,024.13	3,641.94	382.19	88,083.58	99,023.76
98	9/1/2017	88,083.58	4,024.13	-	4,024.13	3,657.11	367.01	84,426.46	99,390.78
99	10/1/2017	84,426.46	4,024.13	-	4,024.13	3,672.35	351.78	80,754.12	99,742.55
100	11/1/2017	80,754.12	4,024.13	-	4,024.13	3,687.65	336.48	77,066.47	100,079.03
101	12/1/2017	77,066.47	4,024.13	-	4,024.13	3,703.02	321.11	73,363.45	100,400.14
102	1/1/2018	73,363.45	4,024.13	-	4,024.13	3,718.44	305.68	69,645.01	100,705.82
103	2/1/2018	69,645.01	4,024.13	-	4,024.13	3,733.94	290.19	65,911.07	100,996.01
104	3/1/2018	65,911.07	4,024.13	-	4,024.13	3,749.50	274.63	62,161.57	101,270.64
105	4/1/2018	62,161.57	4,024.13	-	4,024.13	3,765.12	259.01	58,396.45	101,529.65
106	5/1/2018	58,396.45	4,024.13	-	4,024.13	3,780.81	243.32	54,615.64	101,772.96
107	6/1/2018	54,615.64	4,024.13	-	4,024.13	3,796.56	227.57	50,819.08	102,000.53
108	7/1/2018	50,819.08	4,024.13	-	4,024.13	3,812.38	211.75	47,006.71	102,212.28
109	8/1/2018	47,006.71	4,024.13	-	4,024.13	3,828.26	195.86	43,178.44	102,408.14
110	9/1/2018	43,178.44	4,024.13	-	4,024.13	3,844.22	179.91	39,334.23	102,588.05
111	10/1/2018	39,334.23	4,024.13	-	4,024.13	3,860.23	163.89	35,473.99	102,751.94
112	11/1/2018	35,473.99	4,024.13	-	4,024.13	3,876.32	147.81	31,597.67	102,899.75
113	12/1/2018	31,597.67	4,024.13	-	4,024.13	3,892.47	131.66	27,705.21	103,031.40
114	1/1/2019	27,705.21	4,024.13	-	4,024.13	3,908.69	115.44	23,796.52	103,146.84
115	2/1/2019	23,796.52	4,024.13	-	4,024.13	3,924.97	99.15	19,871.55	103,245.99
116	3/1/2019	19,871.55	4,024.13	-	4,024.13	3,941.33	82.80	15,930.22	103,328.79
117	4/1/2019	15,930.22	4,024.13	-	4,024.13	3,957.75	66.38	11,972.47	103,395.17
118	5/1/2019	11,972.47	4,024.13	-	4,024.13	3,974.24	49.89	7,998.23	103,445.05
119	6/1/2019	7,998.23	4,024.13	-	4,024.13	3,990.80	33.33	4,007.43	103,478.38
120	7/1/2019	4,007.43	4,024.13	-	4,007.43	3,990.73	16.70	0.00	103,495.08

**APPENDIX VII**

**SECO PROGRAM CONTACTS  
WATT WATCHERS OF TEXAS**



*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
<b>Energy savings</b>	<b>604,141 kWh</b>	<b>4,357,860 kWh</b>	<b>3,340,350 kWh</b>
Current energy costs	\$71,522	\$320,322	\$305,265
Future energy costs	\$26,211	\$67,566	\$104,844
<b>Monetary savings</b>	<b>\$45,311</b>	<b>\$252,756</b>	<b>\$200,421</b>
% 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](mailto: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.*



## -IT'S FREE!-IT'S SIMPLE!-IT WORKS!- START YOUR PROGRAM TODAY!

**W**att 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. 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 — Over 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](mailto: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**

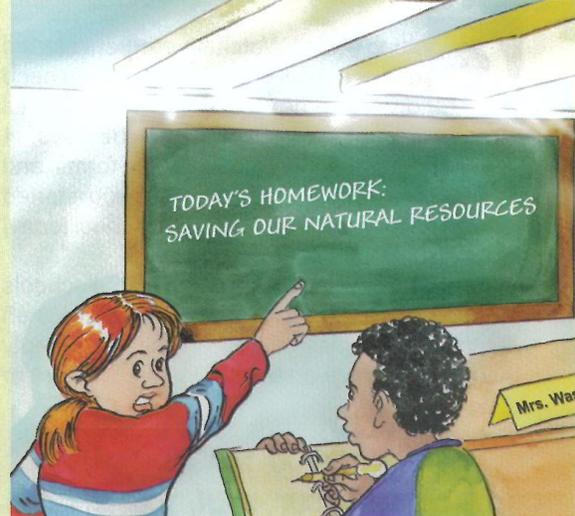
**4-NAME BADGES  
4-NOTEBOOKS  
4-LANYARDS  
4-PENCILS**

**FORMS &  
MANUAL**

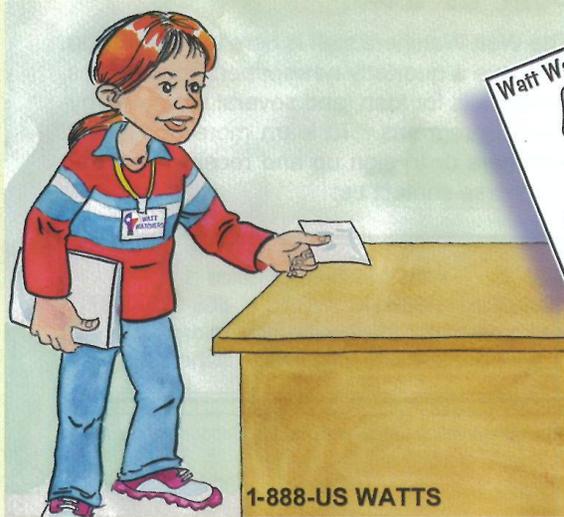
**1 YOUR STUDENTS  
PATROL THE SCHOOL**



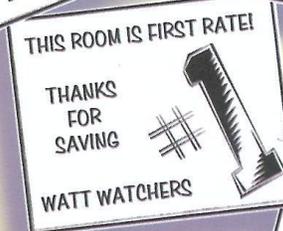
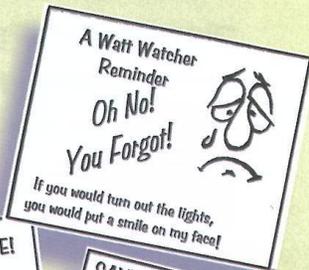
**2 FIND EMPTY CLASSROOMS  
WITH THE LIGHTS ON**



**3 LEAVE TICKETS, SOMETIMES  
THANK YOU NOTES...**



**...REMINDING EVERYONE  
TO SAVE ENERGY AND MONEY**



[wattwatchers.org](http://wattwatchers.org)

# ENROLL IN WATT WATCHERS OF TEXAS



**G**etting 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](mailto: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**

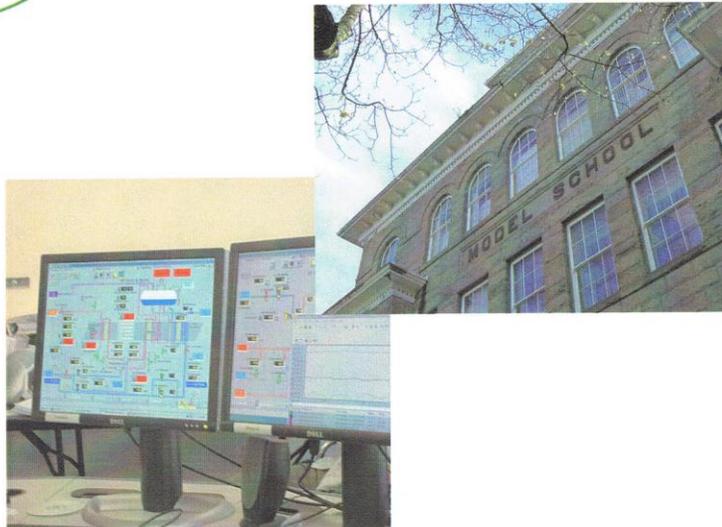
### **TEXAS ENERGY MANAGERS ASSOCIATION (TEMA)**

**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.



**APPENDIX IX**

**UTILITY CHARTS ON DISKETTE**