Susan Combs
Texas Comptroller of Public Accounts

Facility Preliminary Energy Assessments and Recommendations

Prepared by:

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Amarillo Independent School District

April 22, 2011

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SECO State Energy Conservation Office

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1.0 EXECUTIVE SUMMARY:

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

State Energy Conservation Office

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

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

Following the utility analysis and a preliminary consultation with *Shawna Ham*, 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 7.0 of this report.

We estimate that as much as **$29,449** may be saved annually if all recommended projects are implemented. The estimated installed cost of these projects should total approximately **$301,511**, yielding an average simple payback of **10-1/4**years.

Table 1: Summary of Recommended Energy Cost Reduction Measures (ECRMs)

SUMMARY:	IMPLEMENTATION COST	ESTIMATED SAVINGS	SIMPLE PAYBACK
HVAC ECRM #1	$ 266,500	$ 24,250	11 Years
LIGHTING ECRM #1	$ 31,150	$ 4,153	7-1/2 Years
LIGHTING ECRM #2	$ 540	$ 375	1-1/2 Years
LIGHTING ECRM #3	$ 125	$ 25	5 Years
ENVELOPE ECRM #1 (per CR)	$ 3,000	$ 300	10 Years
Water ECRM-1	$ 196	$ 346	7 Months
TOTAL PROJECTS	**$ 301,511**	**$ 29,449**	**10-1/4 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 Internal Rate of Return (IRR), for this retrofit program has been calculated and shown in Section 8.0 of this report.

Our final "summary" comment is that **SECO** views the completion and presentation of this report as a beginning, rather than an end, of our relationship with AISD. 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
A Terracon Company

2.0 ENERGY ASSESSMENT PROCEDURE:

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

1. Designing and monitoring customized procedures to control the run times of energy consuming systems.
2. Analyze systems for code and standard compliance in areas such as cooling system refrigerants used, outside air quantity, and lighting illumination levels.
3. Develop an accurate definition of system and equipment replacement projects along with installation cost estimates, estimated energy and cost savings and analyses for each recommended project.
4. Develop a prioritized schedule for replacement projects.
5. Developing and drafting an overall Energy Management Policy.
6. Assist in the development of guidelines for efficiency levels of future equipment purchases.

3.0 ENERGY PERFORMANCE INDICATORS:

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

1. Energy Utilization Index

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

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 BTUs are then divided

by the building area.

EUI = [Electricity BTUs + Gas BTUs] 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 AISD ENERGY PERFORMANCE INDICATORS:

CAMPUS	ENERGY UTILIZATION INDEX (EUI) BTUs/sf-year	COMPARISON TO DISTRICT AVERAGE	ENERGY COST INDEX (ECI) $/sf-year	COMPARISON TO DISTRICT AVERAGE
Caprock HS	64,925	18%	$0.73	11%
Humphrey's Highland ES	51,948	-6%	$0.64	-3%
Lawndale ES	41,416	-25%	$0.54	-18%
North Heights Alternative	61,688	12%	$0.73	11%
Average Value:	54,994		$0.66	

Amarillo ISD purchases electricity for all schools from Xcel Energy. The area of the State surrounding Amarillo has not been deregulated for the purchase of electricity at the current time.

The rate schedule analysis for the district is shown in Section 4.0.

Copies of the rate schedules are included in Appendix I.

OWNER:	Amarillo ISD			BUILDING:	Caprock High School		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	COSTS
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	$
JULY	2009	134,902		529	0	$9,148	41	263
AUGUST	2009	165,251		953	0	$11,668	60	325
SEPTEMBER	2009	227,859		1,085	0	$15,438	126	533
OCTOBER	2009	192,420		923	0	$14,113	641	2,621
NOVEMBER	2009	179,678		736	0	$11,721	1,255	7,363
DECEMBER	2009	188,550		550	0	$10,620	2,922	17,612
JANUARY	2010	170,056		521	0	$9,799	2,899	20,923
FEBRUARY	2010	183,653		540	0	$10,378	2,942	20,446
MARCH	2010	162,084		542	0	$9,658	921	12,299
APRIL	2010	166,892		598	0	$10,463	352	2,227
MAY	2010	162,673		715	0	$11,051	253	1,640
JUNE	2010	154,410		812	0	$12,453	72	515
TOTAL		**2,088,428**	**0**	**8,504**	**0**	**$136,510**	**12,484**	**$86,767**

			Energy Use Index:		
Annual Total Energy Cost =	$223,277	Per Year	Total Site BTU's/yr	64,925	BTU/s.f.yr
			Total Area (sq.ft.)		
Total KWH x 0.003413 =	7,127.80	x 106			
Total MCF x 1.03 =	12,858.52	x 106	**Energy Cost Index:**		
Total Other x ____		x 106	Total Energy Cost/yr	$0.73	$/s.f. yr
Total Site BTU's/yr	19,986.32	x 106	Total Area (sq.ft.)		
Floor area:	307,839	s.f.			
Electric Utility	**ESI ID#**	**Meter#**	**Gas Utility**	**Meter #**	
Xcel Energy		Multiple	Atmos	Multiple	

OWNER:	Amarillo ISD			BUILDING:	Humphrey's Highland		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	COSTS
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	$
JULY	2009	19,136		115		$1,740	6	98
AUGUST	2009	29,851		200		$2,288	8	318
SEPTEMBER	2009	44,513		190		$3,169	16	141
OCTOBER	2009	34,551		158		$2,562	83	570
NOVEMBER	2009	32,971		112		$2,094	152	1,082
DECEMBER	2009	28,710		133		$1,835	403	2,618
JANUARY	2010	29,519		93		$1,824	419	3,214
FEBRUARY	2010	33,719		96		$1,997	504	3,695
MARCH	2010	33,893		108		$2,061	501	4,203
APRIL	2010	53,417		153		$3,143	122	950
MAY	2010	52,949		189		$3,436	39	444
JUNE	2010	41,473		204		$3,216	2	212
TOTAL		**434,702**	**0**	**1,751**	**0**	**$29,365**	**2,255**	**$17,545**

			Energy Use Index:		
Annual Total Energy Cost =	$46,910	Per Year	Total Site BTU's/yr	51,948	BTU/s.f.yr
			Total Area (sq.ft.)		
Total KWH x 0.003413 =	1,483.64	x 106			
Total MCF x 1.03 =	2,322.65	x 106	**Energy Cost Index:**		
Total Other x ____		x 106	Total Energy Cost/yr	$0.64	$/s.f. yr
Total Site BTU's/yr	3,806.29	x 106	Total Area (sq.ft.)		
Floor area:	73,271	s.f.			
Electric Utility	**ESI ID#**	**Meter#**	**Gas Utility**	**Meter #**	
Xcel Energy		Multiple	Atmos	Multiple	

OWNER:	Amarillo ISD			BUILDING:	Lawndale Elementary		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	COSTS
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	$
JULY	2009	13,800		44	0	$872	0	36
AUGUST	2009	21,400		166	0	$1,946	3	46
SEPTEMBER	2009	37,600		190	0	$2,636	8	64
OCTOBER	2009	28,600		156	0	$2,269	48	226
NOVEMBER	2009	25,200		120	0	$1,780	91	564
DECEMBER	2009	26,200		94	0	$1,616	286	1,750
JANUARY	2010	25,000		96	0	$1,591	277	2,028
FEBRUARY	2010	26,200		90	0	$1,586	296	2,083
MARCH	2010	25,000		88	0	$1,531	153	1,253
APRIL	2010	26,000		90	0	$1,615	43	300
MAY	2010	26,600		110	0	$1,766	13	116
JUNE	2010	21,200		142	0	$1,992	1	38
TOTAL		**302,800**	**0**	**1,386**	**0**	**$21,200**	**1,219**	**$8,504**

				Energy Use Index:			
Annual Total Energy Cost =		$29,704	Per Year	Total Site BTU's/yr		41,416	BTU/s.f.yr
				Total Area (sq.ft.)			
Total KWH x 0.003413 =		1,033.46	x 106				
Total MCF x 1.03 =		1,255.57	x 106	**Energy Cost Index:**			
Total Other x ____			x 106	Total Energy Cost/yr		$0.54	$/s.f. yr
Total Site BTU's/yr		2,289.03	x 106	Total Area (sq.ft.)			
Floor area:		55,269	s.f.				
Electric Utility		**ESI ID#**	**Meter#**	**Gas Utility**	**Meter #**		
Xcel Energy			0WA01763834	Atmos	5446858		

OWNER:	Amarillo ISD			BUILDING:	North Heights Alternative		
MONTH / YEAR		ELECTRIC				NAT'L GAS / FUEL	
			DEMAND				
		CONSUMPTION	METERED	CHARGED	COST OF	TOTAL ALL ELECTRICAL	CONSUMPTION	COSTS
MONTH	YEAR	KWH	KW/KVA	KW/KVA	DEMAND	COSTS $	MCF	$
JULY	2009	79,687		88		$1,322	0	70
AUGUST	2009	32,633		183		$1,927	0	70
SEPTEMBER	2009	30,422		176		$2,619	6	93
OCTOBER	2009	25,200		157		$2,028	48	257
NOVEMBER	2009	26,848		99		$1,675	123	783
DECEMBER	2009	30,926		101		$1,852	247	1,552
JANUARY	2010	28,681		100		$1,770	490	3,592
FEBRUARY	2010	29,970		108		$1,878	209	1,516
MARCH	2010	23,078		101		$1,594	141	1,190
APRIL	2010	23,284		95		$1,585	40	310
MAY	2010	26,228		135		$1,920	14	155
JUNE	2010	17,386		92		$1,468	0	67
TOTAL		**374,343**	**0**	**1,435**	**0**	**$21,638**	**1,318**	**$9,655**

				Energy Use Index:			
Annual Total Energy Cost =		$31,293	Per Year	Total Site BTU's/yr		61,688	BTU/s.f.yr
				Total Area (sq.ft.)			
Total KWH x 0.003413 =		1,277.63	x 106				
Total MCF x 1.03 =		1,357.54	x 106	**Energy Cost Index:**			
Total Other x ____			x 106	Total Energy Cost/yr		$0.73	$/s.f. yr
Total Site BTU's/yr		2,635.17	x 106	Total Area (sq.ft.)			
Floor area:		42,718	s.f.				
Electric Utility		**ESI ID#**	**Meter#**	**Gas Utility**	**Meter #**		
Xcel Energy			Multiple	Atmos	Multiple		

4.0 RATE SCHEDULE ANALYSIS:

ELECTRICITY PROVIDER:

ENERGY PROVIDER: Xcel Energy Contract price: $0.004305 per kWh

Electric Rate: Secondary Service > 10 kVA

I.	SERVICE AVAILABILITY CHARGE:	=	$21.60 per Month
II.	DEMAND CHARGE		
	Summer Demand Charge	=	$12.53 per kW
	Winter Demand Charge	=	$10.16 per kW
III.	SECONDARY DISTRIBUTION FUEL COST RECOVERY FACTOR		
	Summer Factor	=	$0.030785 per kWh
	Winter Factor	=	$0.029849 per kWh
IV.	SUB-TRANSMISSION FUEL COST RECOVERY FACTOR		
	Summer Factor	=	$0.028481 per kWh
	Winter Factor	=	$0.027616 per kWh
V.	BACKBONE-TRANSMISSION FUEL COST RECOVERY FACTOR		
	Summer Factor	=	$0.028278 per kWh
	Winter Factor	=	$0.027418 per kWh
VI.	PURCHASED POWER COST RECOVERY FACTOR	=	$0.052557 per kW
VII.	FRANCHISE FEE	=	2% of Bill Subtotal
VIII.	TAXES		
	General Local Taxes		

Summer Average Savings for consumption = $0.030785/kWh + $0.028481/kWh + $0.028278/kWh = $0.087544/kWh
Summer Average Savings for demand = $12.53/kW + $0.052557 = $ 12.582557/kW**

Winter Average Savings for consumption = $0.029849/kWh + $0.027616/kWh + $0.027418 = $0.08488/kWh
Winter Average Savings for demand = $10.16/kW + $0.052557 = $ 10.212557/kW**

NATURAL GAS PROVIDER:

NATURAL GAS PROVIDER: Atmos Energy Corporation

The rate schedule for Natural gas is unavailable, but we have calculated the average cost per MCF of purchased natural gas in the district by analyzing the utility histories for the schools surveyed in this report.

Total cost for natural gas at the five facilities in the analyzed billing cycle: $122,471

Total quantity purchased during the analyzed billing cycle: 17,276 MCF

Average cost per MCF = Cost of natural gas / quantity purchased = $122,471 / 17,276 MCF

Average cost per MCF = $7.09

5.0 CAMPUS DESCRIPTIONS:

Amarillo ISD consists of 5 educational campuses which are all located in Potter County; in and throughout the city of Amarillo. The energy survey focused on four of the educational campuses:

Table 2: School Facilities Analyzed For This Report

Facility	Year originally Constructed	Approximate Square Footage	Basic HVAC Cool/Heat	Basic Lighting System Description	Basic Control System Description
Caprock HS	1962 with Gymnasium Addition in 1987	307,839	RTU-DX Cooled/ Natural Gas Heat	T8/Metal Halides	Invensys
Humphrey's Highland ES	1928 with Additions in 1948, 2010	73,271	RTU-DX Cooled/ Natural Gas Heat	T8	Invensys
Lawndale ES	1956	55,269	RTU-DX Cooled/ Natural Gas Heat	T8	Invensys
North Heights Alternative	1948	42,718	RTU-DX Cooled/ Natural Gas Heat	T8/Metal Halides	Invensys

Note: The selection of campuses to be surveyed in the report represented a mix of older and newer campuses which allows for comparison of energy strategies between older and newer designs as well as the ability to extrapolate recommendations for these facilities to other facilities in the district.

6.0 ENERGY RECOMMENDATIONS:

HVAC ECRM 1: RENOVATION OF AGED HVAC EQUIPMENT

It was noted during the survey that several pieces of equipment have reached the end of their useful life expectancy. *We recommend this equipment be included in subsequent maintenance budgets to be replaced as planned equipment upgrades in order to avoid the higher cost of emergency replacement when they inevitably fail.*

At Caprock High School, it was noted there were several portable buildings that utilize window units. Window units on average have lower efficiency ratings than the alternative split system units. *If these buildings are owned by the district and they are categorized more as permanent buildings rather than portable, then we recommend replacing the window units with single zone mini split systems.*

Humphrey's Highland Elementary School

This 1928 building has had two additions since original construction, one in 1948 and another in 2010. The facility is conditioned with approximately thirty packaged DX rooftop units. These rooftop units are a combination of 1997 and 2009 equipment installations. Since its original construction, most of the original units have been replaced by the district through a system commonly referred to as "planned obsolescence." In this process, a few of the oldest or most maintenance intensive units are replaced each year so that the district can plan for the equipment replacement and not have to schedule a massive HVAC project that would occur when all of the units began to fail at the same time. The useful life expectancy of rooftop units and split systems is 15-20 years. The 1997 equipment, at 14 years old, is nearing the end of its 15-20 year life expectancy. *We recommend the district begin to budget for this equipment replacement within the next 5 years to avoid emergency replacement costs that would be incurred if the units are allowed to fail on their own.*

Estimated Cost: $266,500 Estimated Savings: $24,250 Estimated Payback: 11 Years

Lighting ECRM 1: METAL HALIDE FIXTURE RETROFIT TO T5

It was noted during the survey that the gymnasium at the Caprock High School and the cafetorium at North Heights Alternative School utilized 400 watt metal halide fixtures. Metal halide fixtures have an inherently long re-strike time, which means there is a 5-10 minute delay after the lights are turned on for the lamps to warm up to their full operating light output level. This often promotes district personnel to leave gym lights operating throughout the day in order to avoid the long re-strike when the fixtures are turned back on. *We recommend replacing each metal halide fixtures with new 54-watt six-lamp T5 high-output fluorescent fixtures.* The facilities at AISD utilize the following quantities of metal halide fixtures in each of their gymnasiums:

Facility	# Existing 400w Metal Halides	# of new T5 HO fixtures	Estimated Installed Cost	Estimated Annual Savings	Simple Payback (Years)
Caprock High School	74	74	$ 25,900	$ 3,453	7-1/2
North Heights Alt.	15	15	$ 5,250	$ 700	7-1/2
TOTAL			$ 31,150	$ 4,153	7-1/2

Estimated Cost: $31,150 *Estimated Savings: $4,153* *Estimated Payback: 7-1/2*

Lighting ECRM 2: INSTALL OCCUPANCY SENSORS ON VENDING MACHINES

At Caprock High School it was noted that there are three vending machines that are operating all day. *We recommend the district install vending machine controls. These controls have an occupancy sensor that operates the advertising lighting and compressor while the space is occupied, but turns the lighting off and cycles the compressor when the space is unoccupied.* The compressor will operate and maintain a programmed maximum temperature for the vending product during the unoccupied periods in order to keep the product from getting too hot.

Estimated Cost: $540 *Estimated Savings: $375* *Estimated Payback: 2 Years*

Lighting ECRM 3: RENOVATE EXIT FIXTURES

It was noted at North Heights Alternative School that incandescent exit fixtures were being utilized. These fixtures typically utilize two 15-watt incandescent lamps and consume 263 kWh per year. LED exit fixtures utilize Light Emitting Diode (LED) lamps and consume just 18 kWh per year. *We recommend replacing all incandescent exits fixtures in the district with more efficient LED fixtures.*

Estimated Cost: $125/fixture *Estimated Savings: $25/fixture* *Est. Payback: 5 Years*

Envelope ECRM 1: INSTALL TINT TO SINGLE PANE WINDOWS

During the survey, it was noted that many of the older single pane windows at North Heights Alternative School and Lawndale Elementary School were in poor condition. Each typical classroom at North Heights Alternative currently has seven windows. *We recommend the district replace four of the seven windows with new double pane tinted windows and enclose the remaining three windows in order to reduce the amount of solar radiation allowed to enter the room.*

Est. Cost: $3,000 per classroom *Estimated Savings: $300* *Estimated Payback: 10 Years*

Water ECRM 1: RETROFIT SINK FAUCETS

It was noted during the survey that Caprock High School is utilizing high-flow faucets in the restrooms that do not have an automatic shut off. Current plumbing code requires faucets to be limited to two and a half gallons per minute flow rate. Without the proper restrictor on a faucet it is possible to have a flow rate of four gallons per minute. *We recommend installing faucet restrictors to meet the current code specification.* This will ensure a decrease in water consumption at this campus. Another possibility is to install automated shutoff valves, which will prevent any faucets from being left on by the users.

<u>Low Flow Aerators</u>
Estimated Cost: $196 *Estimated Savings: $346* *Estimated Payback: 2/3 Year*
Savings estimate is based on research of replacing 40 sink restrictors with low flow 1 gpm restrictors.

7.0 MAINTENANCE AND OPERATION RECOMMENDATIONS

HVAC	• Inspect and repair refrigerant piping insulation at Caprock High School and North Heights Alternative School • Implement a schedule for electric water heater at Humphrey's Highland Elementary School
Lighting	• Turn off all light fixtures not required during daytime • Supplement the current exterior light timers with photocell sensors • Reprogram interior and exterior lighting controls schedule. • Open blinds at Caprock HS Gym.
Envelope	• Replace damaged weatherstripping
Indoor Air Quality	• Relocate library laminator machine

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

HVAC M&O

It was noted during the survey that the hot water piping at Caprock High School and North Heights Alternative School was not insulated. The majority of the energy losses in a hot water system occur in the hot water piping. At North Heights we noted 30’ of 1” pipe, 25’ of 2” pipe, and 30’ of ¾” pipe that was all uninsulated. Insulating this specific selection of hot water piping can save the district 2,154 kWh and $183 annually, which grants a payback time less than a year. *We recommend the district insulate the hot water piping to minimize energy losses in the hot water system.*

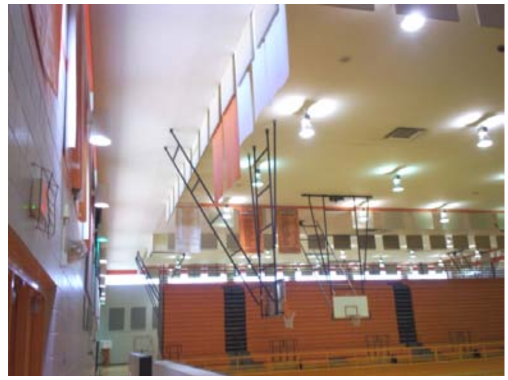
At Humphrey’s Highland Elementary School it was noted that the campus was utilizing an electrical water heater. The cost to heat an equal amount of water with a gas water heater is three times less than the cost to use an electric heater. In order to save cost *we recommend putting a timer on the water heater to manage the amount of time the water heater is operating when it is not needed by implementing a schedule to stop operation of the water heater during holidays and weekends. We recommend the district review the district calendar and create a schedule to stop operation of the water heater at all times the buildings will be unoccupied.*

Lighting M&O

There were areas in Caprock High School where natural daylight was brought into the building with windows or light wells and the light fixtures were still operating during daytime hours. *We recommend turning off light fixtures close to the natural light source when sufficient natural light supplies the recommended light levels for the tasks to be performed in the space.* These levels are designated by the Illumination Engineering Society of North America (IESNA) for each type of space in a school facility. The least expensive means to turn these fixtures off is to train district staff to not turn them on during the daytime hours. If staff training is unsuccessful, then automatic means, for instance photocells and occupancy sensor controls, can be installed to control the light fixtures automatically.

Also during the survey it was observed that there were areas that had too much light. The Caprock High School library, for example, is operating at 80 foot candles when only 50 foot candles are recommended by the IESNA. *We recommend de-lamping one of the three lamps in the 28 fixtures above the seating area.*

At Caprock High School, it was noted that the gymnasium was constructed with transom windows that were designed to provide natural daylight. However, many of the blinds were closed. It is possible that the blinds are closed due to glare from sunlight reflecting off of the court surface. *We recommend that the district leave the blinds open keep the slats in the blinds horizontal in order to minimize any potential for glare issues. Utilizing the natural light through the windows might allow the district to leave the light fixtures off during non-competition activities during the day.*



<u>*Envelope M&O*</u>

During the survey, it was discovered that the weatherstripping was in poor condition at some of the exterior doors. Poor weatherstripping allows conditioned air to escape and non-conditioned air to enter the building uncontrolled. Undesired moisture in the building can lead to mold growth, which decreases indoor air quality. When outside air is getting into the conditioned space it causes the HVAC system to work harder because it is trying to condition based on the outside conditions. *We recommend that the district implement a schedule to inspect and replace all weather-stripping and seals to ensure optimal energy efficiency and conditioning.*

During the survey of Caprock High School it was noted that the exterior door next to classroom 317 (pictured to the right) does not shut completely. This problem allows outside air to enter the building causing the indoor air quality to decrease as well as the HVAC efficiency. *We recommend that the district staff makes ensures that all doors shut completely once they have been opened.*

<u>*Indoor Air Quality M&O*</u>

While in the Library at Caprock High School, it was noted that the lamination machine in use in an adjacent office to the Library was producing a burning plastic smell that was distributed throughout the Library. The odor could present itself as an irritant to some occupants of the Library. *We recommend that the laminator machine be relocated to a room that is conditioned separately from larger and more public spaces so that the smell is not so readily distributed throughout the space. If at all possible, we recommend relocating the equipment to a room that has an existing exhaust fan that would eliminate the smell from adjacent areas entirely.*

__Lighting Controls M&O__

Humphrey's Highland Elementary School has a computerized lighting control system that was installed during the renovation in 2009. The system was programmed with a basic control sequence, but is reported to not have been programmed to maximize energy savings. The district does not feel that the Contractor provided sufficient training with the new system at the time the system was installed.

At the current time, the Hubbell LX lighting control system is programmed with the following sequence of operation:

Area	Function	Programmed Sequence
Exterior Lights	ON	15 minutes before sunset
Exterior Lights	OFF	15 minutes after sunrise
Interior lights	ON	0530 hours Monday through Friday
Interior lights	OFF	2330 hours Monday through Friday

The holiday schedule was empty and no definable summer schedule was discovered, so it is assumed that the Monday to Friday schedule applies throughout the year.

Fixtures have been assigned to groups, numbered from 1 to 48, that allow different areas of fixtures to be programmed for anticipated occupancy schedules.

Studies have shown that energy savings are produced when the fluorescent fixtures, the type most often found in school classrooms in Texas, are kept off when occupants remain vacant from a space for greater than 23 seconds. Most all of the spaces in this school are unoccupied between 5:30 and 7:00am and between 4:30 and 11:30 pm which are currently programmed as occupied times. This represents a tremendous opportunity for energy savings if the system was re-programmed with a new sequence of operations that more closely matched the actual occupancy hours for the spaces.

In addition to the energy savings available from keeping fixtures off in unoccupied spaces, there are a number of areas in the building which are supplied natural daylight through windows, skylights or lightwells. The light fixtures in these spaces are operating despite the fact that the natural daylight in the space exceeds the illumination levels required in the space. Lighting recommendations are guidelines established by the Illumination Engineering Society of North America (IESNA). One such space, the lobby near the main office (pictured to the right), appears to be programmed as Lighting Group #34 in LX Panel #2. This block of fixtures should be programmed to only operate for night periods when the daylighting is no longer adequate to provide the 15-20 footcandles anticipated to be required in Elementary School corridors. Group 34 is currently programmed to operate following the same schedule as all of the interior light fixtures and the corridor space was measured at over 50 footcandles during the daytime period of the survey.

We recommend the district re-commission the lighting control system to follow a sequence of operations that more closely models the occupancy schedules and daylighting strategies for the building.

8.0 FINANCIAL EVALUATION

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

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

Proposal:	Perform recommended ECRMs			
Assumptions:				
1. Equipment will last at least 15 years prior to next renovation				
2. No maintenance expenses for first five years (warranty period)				
3. $500 maintenance expense next 5 years				
4. $1000 maintenance expense next 5 years				
5. Savings decreases 2% per year after year 5				
Cash Flow	**Project Cost**	**Project Savings**	**Maintenance Expense**	**Net Cash Flow**
Time 0	($301,511)		0	($301,511)
Year 1		$ 29,449.00	0	$29,449
Year 2		$ 29,449.00	0	$29,449
Year 3		$ 29,449.00	0	$29,449
Year 4		$ 29,449.00	0	$29,449
Year 5		$ 29,449.00	0	$29,449
Year 6		$ 28,860.02	($500)	$28,360
Year 7		$ 28,271.04	($500)	$27,771
Year 8		$ 27,682.06	($500)	$27,182
Year 9		$ 27,093.08	($500)	$26,593
Year 10		$ 26,504.10	($500)	$26,004
Year 11		$ 25,915.12	($1,000)	$24,915
Year 12		$ 25,326.14	($1,000)	$24,326
Year 13		$ 24,737.16	($1,000)	$23,737
Year 14		$ 24,148.18	($1,000)	$23,148
Year 15		$ 23,559.20	($1,000)	$22,559
			Internal Rate of Return	**4.04%**

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

APPENDIX I: SUMMARY OF FUNDING AND PROCUREMENT OPTIONS

9.0 GENERAL COMMENTS

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted engineering practices. All estimations provided in this report were based upon information provided to ESA by the District and their respective utility providers. While cost saving estimates have been provided, they are not intended to be considered a guarantee of cost savings. No guarantees or warranties, expressed or implied, are intended or made. Changes in energy usage or utility pricing from those provided will impact the overall calculations of estimated savings and could result in different or longer payback periods.

APPENDICES

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

SUMMARY OF FUNDING OPTIONS FOR CAPITAL EXPENDITURE PROJECTS

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

LoanSTAR Program:

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

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

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

Loans on Commercial Market:

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

Leasing Corporations:

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

Bond Issue:

The Board 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 Eddy Trevino 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*

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

3

How to Finance Your Energy Program *continued*

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

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

Lease and Lease-Purchase Agreements

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

Energy Performance Contracts

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

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

Types of Leasing Agreements

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

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

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

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

How to Finance Your Energy Program *continued*

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

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

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

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

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

Rebuild America
U.S. Dept. of Energy

APPENDIX II - ELECTRIC UTILITY RATE SCHEDULE

XcelEnergy
SOUTHWESTERN PUBLIC SERVICE

ELECTRIC TARIFF INTERIM

SECONDARY GENERAL SERVICE

APPLICABLE: To all commercial and industrial electric service supplied at secondary voltage level at one point of delivery and measured through one meter, where facilities of adequate capacity and suitable voltage are adjacent to the premises to be served, in excess of 10 kW of demand in any month.

Not applicable to temporary, breakdown, standby, supplementary, resale or shared service, or service to oil and natural gas production customers.

TERRITORY: Texas service territory.

RATE: Service Availability Charge: $21.60 per month I
Energy Charge: $0.004305 per kWh for all kWh used during the month I

Demand Charge:
$12.53 per kW of demand used per month during each summer month I
$10.16 per kW of demand used per month during each winter month I

SUMMER MONTHS: The billing months of June through September.

WINTER MONTHS: The billing months of October through May.

OPTIONAL SERVICE: Customers receiving service under this rate may elect to receive interruptible service under the Interruptible Credit Option.

DEMAND: The Company will furnish, at Company's expense, the necessary metering equipment to measure the customer's kW demand for the 30-minute period of greatest use during the month. In no month, shall the billing demand be greater than the kW value determined by dividing the kWh sales for the billing period by 80 hours.

POWER FACTOR ADJUSTMENT: Company may install power factor metering for customers with demand exceeding 200 kW. Bills will be increased $0.50 for each kvar by which the reactive demand exceeds 0.33 times the measured kW demand, and will be reduced $0.50 for each kvar by which the reactive demand is less than 0.33 times the measured kW demand. T T

FUEL COST RECOVERY AND ADJUSTMENTS: The charge per kilowatt-hour shall be increased by the applicable fuel cost recovery factor per kilowatt-hour as provided in PUCT Sheet IV-69. This rate schedule is subject to other applicable rate adjustments.

DIRECTOR, REGULATORY ADMINISTRATION

XcelEnergy
SOUTHWESTERN PUBLIC SERVICE

ELECTRIC TARIFF INTERIM

SECONDARY GENERAL SERVICE

CHARACTER OF SERVICE: A-C; 60 hertz; single or three phase, at one available standard voltage.

LINE EXTENSIONS: The Company will make line extensions in accordance with its standard line extension policy.

TERMS OF PAYMENT: Net in 16 days after mailing date; 5 percent added to bill after 16 days. If the sixteenth day falls on a holiday or weekend, the due date will be the next work day.

RULES, REGULATIONS AND CONDITIONS OF SERVICE: Service supplied under this schedule is subject to the terms and conditions set forth in the Company's Rules, Regulations and Conditions of Service on file with the Public Utility Commission of Texas.

Effective 2/16/2011

DIRECTOR, REGULATORY ADMINISTRATION

APPENDIX IV - PRELIMINARY ENERGY ASSESSMENT SERVICE AGREEMENT

Public Schools, Colleges and Non-Profit Hospitals

Preliminary Energy Assessment
Service Agreement

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

Description of the Service

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

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

Principles of the Agreement

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

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

Acceptance of Agreement

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

Signature: Shawna Ham
Date: 2/18/11
Name (Mr./Ms./Dr.) Shawna Ham
Title: Supervisor / Energy Manager
Organization: Amarillo ISD
Phone: 806-326-1558
Street Address: 905 East Street
Fax: 806-371-5555
Mailing Address: Amarillo, TX 79107
E-Mail: shawna.ham@amaisd.org
County: Potter

Contact Information:

Name (Mr./Ms./Dr.): Same as above
Title:
Phone:
Fax:
E-Mail:
County:

Please sign and mail or fax to: Stephen Ross, Schools and Education Program Administrator, State Energy Conservation Office, 111 E. 17th Street, Austin, Texas 78774. Phone: 512-463-1770. **Fax 512-475-2569.**

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

APPENDIX V - 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 VI - UTILITY CHARTS ON CD