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Texas Comptroller of Public Accounts

Facility Preliminary Energy Assessments and Recommendations

Prepared by:

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Cedar Hill Independent School District

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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 May 2011, **SECO** received a request for technical assistance from Regi Brackin, Director of Maintenance and Operations for **Cedar Hill 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 **Cedar Hill ISD,** (hereafter known as CHISD) 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 *Mr. Brackin, Director of Maintenance*, 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 **$93,620** may be saved annually if all recommended projects are implemented. The estimated installed cost of these projects should total approximately **$1,038,750**, yielding an average simple payback of **11** years.

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

SUMMARY:	IMPLEMENTATION COST	ESTIMATED SAVINGS	SIMPLE PAYBACK
HVAC ECRM #1	$958,550	$79,879	12 Years
Lighting ECRM #1	$48,378	$9,676	5 Years
Lighting ECRM #2	$15,120	$1,890	6 Years
Controls ECRM #1	$14,400	$1,800	8 Years
Controls ECRM #2	$180	$125	1-1/2 Years
Envelope ECRM #1	$2000	$250	8 Years
TOTAL PROJECTS	**$ 1,038,750**	**$93,620**	**11 Years**

**Note: Controls ECRM #2 is the estimate to replace one vending machine sensor. The total must be extrapolated to meet the needs of the district.*

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 CHISD. 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.

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2.0 ENERGY ASSESSMENT PROCEDURE:

Involvement in this on-site analysis program was initiated through completion of a Preliminary Energy Assessment Service Agreement. This PEASA serves as the agreement to form a "partnership" between the client and the State Energy Conservation Office (SECO) for the purposes of energy costs and consumption reduction within owned and operated facilities. After receipt of the PEASA, an initial visit was conducted by the professional engineering firm contracted by SECO to provide service within that area of the state to review the program elements that SECO provides to school districts and determine which elements could best benefit the district. A summary of the *Partner's* most recent twelve months of utility bills was provided to the engineer for the preliminary assessment of the Energy Performance Indicators. After reviewing the utility bill data analysis and consultation with SECO to determine the program elements to be provided to CHISD, 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 CHISD 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
Plummer ES	48,975	9%	$1.38	8%
Cedar Hill HS	46,844	4%	$1.29	1%
Permenter MS	39,592	-12%	$1.16	-9%
Average Value:	45,137		$1.28	

Cedar Hill ISD purchases electricity from Direct Energy. The transmission and distribution utility is Oncor Energy. The energy history spreadsheets are shown on the next few pages.

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

Oncor is in the process of changing their Secondary Service Greater than 10kW rate schedule as of July 1, 2011. There is a significant change in the way demand is charged in the new rate. A copy of the new interim rate schedule is included in Appendix I

*It was noted during the utility analysis that the meter at Cedar Hill HS with ESI number 10443720007039980 is possible not currently associated with operational square footage within the district. There was no history of consumption for the twelve month period analyzed for this report. *We recommend the district consider closing this meter to avoid paying customer charges for a meter incurring no consumption.*

OWNER: Cedar Hill ISD **BUILDING:** Plummer ES

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	$
JANUARY	2011	46,975		182	1,848	6,183	157	1,014
FEBRUARY	2011	49,187		182	1,871	6,413	380	2,246
MARCH	2011	36,459		219	1,869	5,280	89	560
APRIL	2011	46,757		255	1,867	6,181	41	280
MAY	2011	49,522		283	1,881	6,438	19	145
JUNE	2011	63,139		266	1,969	7,835	10	86
JULY	2010	40,119		175	1,810	5,481	2	32
AUGUST	2010	49,673		308	2,132	6,716	0	17
SEPTEMBER	2010	79,456		327	2,179	9,493	4	47
OCTOBER	2010	52,493		289	1,929	6,738	8	76
NOVEMBER	2010	46,262		220	1,912	6,182	16	140
DECEMBER	2010	42,708		201	1,880	5,845	193	1,444
TOTAL		**602,750**	**0**	**2,907**	**23,147**	**$78,785**	**919**	**$6,087**

Annual Total Energy Cost = $84,872 Per Year

Total KWH x 0.003413 = 2,057.19 x 106
Total MCF x 1.03 = 946.57 x 106
Total Other x ____ x 106
Total Site BTU's/yr 3,003.76 x 106

Floor area: 61,332 s.f.

Energy Use Index:
Total Site BTU's/yr / Total Area (sq.ft.) 48,975 BTU/s.f.yr

Energy Cost Index:
Total Energy Cost/yr / Total Area (sq.ft.) $1.38 $/s.f. yr

Electric Utility	**Account #**	**Meter#**	**Gas Utility**	**Meter #**
Energy CAP	0	0	Atmos Gas	0

OWNER: Cedar Hill ISD **BUILDING:** Cedar Hill HS

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	$
JANUARY	2011	346,558		1,069	8,469	40,767	1,816	5,312
FEBRUARY	2011	343,407		1,140	8,598	40,667	488	10,624
MARCH	2011	368,455		1,286	9,071	43,096	457	3,018
APRIL	2011	405,880		1,432	9,543	47,183	127	2,954
MAY	2011	443,983		1,521	9,938	51,181	88	883
JUNE	2011	536,886		1,486	10,034	60,496	62	640
JULY	2010	382,178		1,341	9,508	45,014	120	496
AUGUST	2010	506,034		1,547	10,375	57,420	70	973
SEPTEMBER	2010	553,661		1,664	11,056	62,477	111	572
OCTOBER	2010	431,423		1,584	10,615	50,664	332	869
NOVEMBER	2010	400,503		1,529	10,334	47,725	609	2,560
DECEMBER	2010	380,913		1,299	9,402	45,574	823	4,539
TOTAL		**5,099,881**	**16,898**	**16,898**	**116,943**	**$592,264**	**5,103**	**$33,440**

Annual Total Energy Cost = $625,704 Per Year

Total KWH x 0.003413 = 17,405.89 x 106
Total MCF x 1.03 = 5,256.09 x 106
Total Other x ____ x 106
Total Site BTU's/yr 22,661.98 x 106

Floor area: 483,779 s.f.

Energy Use Index:
Total Site BTU's/yr / Total Area (sq.ft.) 46,844 BTU/s.f.yr

Energy Cost Index:
Total Energy Cost/yr / Total Area (sq.ft.) $1.29 $/s.f. yr

Electric Utility	**Account #**	**Meter#**	**Gas Utility**	**Meter #**
Direct Energy/Oncor	0	0	Atmos Gas	0

OWNER: **Cedar Hill ISD** **BUILDING:** **Permenter MS**

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	$
JANUARY	2011	87,255		262	3,061	11,105	178	1,160
FEBRUARY	2011	83,025		274	3,090	10,754	639	3,750
MARCH	2011	84,375		357	3,247	10,915	92	581
APRIL	2011	102,195		439	3,403	12,820	60	402
MAY	2011	113,445		477	3,564	13,014	47	334
JUNE	2011	142,335		527	3,721	16,911	34	252
JULY	2010	135,810		467	3,667	16,095	27	222
AUGUST	2010	144,855		533	3,856	17,187	19	166
SEPTEMBER	2010	160,830		640	4,472	19,284	33	276
OCTOBER	2010	122,445		536	3,781	15,004	46	365
NOVEMBER	2010	101,115		437	3,425	12,745	45	359
DECEMBER	2010	93,195		350	3,243	11,729	98	740
TOTAL		**1,370,880**	**0**	**5,299**	**42,530**	**$167,563**	**1,318**	**$8,607**

Annual Total Energy Cost = $176,170 Per Year

Total KWH x 0.003413 = 4,678.81 x 106
Total MCF x 1.03 = 1,357.54 x 106
Total Other x ____ x 106
Total Site BTU's/yr 6,036.35 x 106

Floor area: 152,465 s.f.

Energy Use Index:
Total Site BTU's/yr / Total Area (sq.ft.) = 39,592 BTU/s.f.yr

Energy Cost Index:
Total Energy Cost/yr / Total Area (sq.ft.) = $1.16 $/s.f. yr

Electric Utility	**Account #**	**Meter#**
Direct Energy/Oncor	0	0

Gas Utility	**Meter #**
Atmos Gas	0

4.0 RATE SCHEDULE ANALYSIS:

ELECTRICITY PROVIDER:

RETAIL ELECTRIC PROVIDER: TXU Energy Contract price: $0.08807 per kWh

TRANSMISSION AND DISTRIBUTION UTILITY: Oncor

Electric Rate: Secondary Service > 10 kW

I. TRANSMISSION AND DISTRIBUTION CHARGES:

Customer Charge	=	$6.78 per meter
Metering Charge	=	$22.18 per IDR meter
Transmission System Charge	=	$0 per 4CP kW
Distribution System Charge	=	Varies per NCP kW by LF

NCP kW	Annual Load Factor	per Distribution Billing kW
≤ 20 kW	ALL	$4.24
> 20 kW	0-10%	$4.24
	11-15%	$5.30
	16-20%	$5.00
	21-25%	$4.85
	> 26%	$4.24

II.	SYSTEM BENEFIT FUND	=	$0.000654 per kWh
III.	TRANSITION CHARGES		
	Transition Charge 1	=	$0.188 per NCP kW
	Transition Charge 2	=	$0.265 per NCP kW
IV.	NUCLEAR DECOMMISSIONING CHARGE	=	$0.044 per Billing kW
V.	TRANSMISSION COST RECOVERY FACTOR	=	$2.059691/4CP kW
VI.	ENERGY EFFICIENCY COST RECOVERY FACTOR	=	$8.14 per month
VII.	COMPETITIVE METERING CREDIT	=	- $1.82 per month
VIII.	ADVANCED METERING COST RECOVERY FACTOR	=	$ 3.98 per month
IX.	RATE CASE EXPENSE SURCHARGE	=	$0.007944 per kWh

Average Savings for consumption = $0.08807/kWh + $0.000654/kWh + $0.007944/kWh = $0.096668/kWh

Average Minimum Savings for demand, $4.24 + $.188 + $0.265 +$0.044 + $2.059691 = $ 6.80/kVA**

Average Maximum Savings for demand, $5.30 + $.188 + $0.265 +$0.044 + $2.059691 = $ 7.86/kVA**

** This number is a generalization of average cost per kW because the rate schedule from Oncor utilizes three (3) different types of demand for the calculation of the utility bill and a calculation of the previous calendar year's Load Factor as calculated below:

1. NCP kVA: Peak demand during 15 minute interval of current billing cycle
2. 4CP kVA: Average demands of June, July, August and September of previous calendar year; usually only applied to IDR metered accounts
3. Billing kVA: Ratchet demand representing higher of two calculations: 80% of peak demand in last 11 months or current NCP kVA
4. Load Factor: kWh used previous calendar year / (Maximum NCP kW * Days in Billing Period * 24)

NATURAL GAS PROVIDER:

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 facilities in the analyzed billing cycle: $48,134

Total quantity purchased during the analyzed billing cycle: 7,340 MCF

Average cost per MCF = Cost of natural gas / quantity purchased = $48,134 / 7,340 MCF

Average cost per MCF = $6.56

5.0 CAMPUS DESCRIPTIONS:

Cedar Hill ISD consists of 12 educational campuses (2 High Schools, 2 Middle Schools and 8 Elementary Schools) which are located in Dallas County; and serves parts of the cities of Grand Prairie, Ovilla, Duncanville, Dallas and Cedar Hill. Cedar Hill ISD has been involved in SECO's Energy Partnership Program for many years with the assistance of Estes McClure Associates. Many of the recommendations generated by those surveys have been incorporated into the schools as the district has expanded and grown.

The energy survey focused on eight of the educational campuses:

Table 2: School Facilities Analyzed For This Report

Facility	Year originally Constructed	Approximate Square Footage	Basic HVAC Cool/Heat	Basic HVAC Air Distribution	Basic Lighting System Description	Basic Control System Description
Plummer ES	1973	61,332	Heat Pump Split Systems	AHUs	T8	Programmable Thermostat
Permenter MS	1989	152,465	RTUs	RTUs	T8	Programmable Thermostats
Cedar Hill HS	1957	483,779	Water-cooled chillers	MZAHU VAV / RTUs	20% T12/ 80% T8/ MH in Gym	Alerton DDC/Pneumatic Controls

6.0 ENERGY RECOMMENDATIONS:

HVAC ECRM 1: RENOVATION OF AGED HVAC EQUIPMENT

It was noted during the survey that the Cedar Hill High School has HVAC equipment nearing the end of its useful anticipated lifecycle. The minimum life expectancy of HVAC equipment is 15-20 years for split systems, 20 years for rooftop units and 25 years for water-cooled chillers. Below is an inventory of the HVAC equipment *we recommend the district consider replacing within the next five years. The most cost effective way to perform this retrofit is called planned obsolescence, a method of replacing a few of the oldest and most maintenance intensive units each year as opposed to waiting until all units fail and requiring the district to incur large emergency replacement costs.*

Size (Tons)	Location	Type	Quantity	Age
360	Main Building	Chiller	3	15
20	Training Room	DX Split	1	20
20	Gym	DX Split	2	11
15	Gym, Weight Room, Equipment Room	RTU	6	14
10	Dressing Room	RTU	2	14
5	Offices	RTU	1	14
6	Field House	RTU	1	14
2.5	Field House	RTU	4	14

Chiller Replacement
Estimated Cost: $567,000 Estimated Savings: $47,250 Estimated Payback: 12 Years
RTU and DX Split Replacement
Estimated Cost: $391,550 Estimated Savings: $32,629 Estimated Payback: 12 Years
Total Estimated HVAC Replacement
Estimated Cost: $958,550 Estimated Savings: $79,879 Estimated Payback: 12 Years

Lighting ECRM 1: RETROFIT T12 FLUORESCENT LIGHTING WITH T8

It was reported during the survey that twenty percent of Cedar Hill High School is still operating with T12 lighting fixture components. T12 components produce approximately 18% less light and consume about 20% more energy than the T8 lamps and electronic ballasts that may be retrofit into the existing linear fluorescent fixtures. Senate Bill 300 requires Texas school districts to install the most efficient lamps and ballasts possible in their existing fixtures. *Therefore we recommend the district complete the retrofit of the fixtures at this facility with T8 lamps and electronic ballasts.*

Estimated Cost: $48,378 Estimated Savings: $9,676 Estimated Payback: 5 Years

Lighting ECRM 2: METAL HALIDE FIXTURE RETROFIT TO T5

The Cedar Hill High School gymnasium "C" contains (42) – 400 watt metal halide fixtures. One characteristic of metal halide fixtures is their inherently long re-strike. This means that if the fixtures are ever turned off, it can take up to 15 minutes for them to come back on. This long re-strike encourages staff to leave the lights on throughout the day, even if the space is not occupied. *We recommend replacing the 400 watt metal halides with 6-lamp T5 high-bay fixtures to improve overall light levels in the space and to allow the fixtures to be turned off during unoccupied periods of the day.*

Estimated Cost: $15,120 Estimated Savings: $1,890 Estimated Payback: 6 Years

Controls ECRM 1: REPLACE PROGRAMMABLE THERMOSTATS WITH DDC EMS

There are six 10-ton Carrier units in the competition gymnasium at Cedar Hill High School that do not have automatic on/off controls. The units are currently operating with conventional thermostats, which impose the responsibility of shutting the units off at night on the cleaning staff. Often times this is forgotten and the units remain operating during times without occupancy. *We recommend the district install DDC controls on these units and program them to operate during the regular operating schedule of the campus.*

Estimated Cost: $14,400 Estimated Savings: $1,800 Estimated Payback: 8 Years

Controls ECRM 2: INSTALL VENDING MACHINE CONTROLS

There were several vending machines noted around the district to not have controls. The controls receive input from an occupancy sensor mounted on top of the unit that will control advertising lighting and cycle the compressor. The maximum temperature to which the vending product is allowed to elevate is programmable based on the district's desires. The cost data below is indicated for one machine only and can be extrapolated to other machines across the district.

Estimated Cost: $180 per unit   Est. Savings: $125 per unit   Est. Payback: 1-1/2 Years

Envelope ECRM 1: INSTALL AIR CURTAIN AT NORTH SIDE EXTERIOR DOORS

At Cedar Hill High School there used to be a vestibule in the back lobby of the office area on the north side of the campus. The district decided to remove the vestibule in order to make more room in the lobby. Since that time the office staff has mentioned that they are uncomfortable, especially when there is a cold front. An air curtain is a powered fan box that blows a “curtain” of air to prevent outside air from entering the building when the exterior door is opened. *We recommend installing an air curtain to maintain the open atmosphere of the lobby, while providing improved comfort for the staff and increasing the overall efficiency of the building.*

Estimated Cost: $2000   Estimated Savings: $250   Estimated Payback: 8 Years

7.0 MAINTENANCE AND OPERATION RECOMMENDATIONS

HVAC

- Comb fins on damaged condensing units
- Install hail guards to protect fins in future
- Turn off HVAC when space unoccupied

Lighting

- Turn off all light fixtures not required during daytime
- Turn off lights in unoccupied spaces
- Retrofit T12 fixtures with T8 lamps and electronic ballasts

Controls

- Implement an aggressive energy management control schedule
- Experiment with higher cooling setpoint temperature

Envelope

- Replace damaged or missing weatherstripping

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 #1 and 2

It was noted during the survey that there was damage to some of the condenser coils, largely because the units do not have coil guards installed. Damage to just 10% of the coil fins can lead to a loss of operational efficiency up to 30%. The district can repair this damage by combing the condenser fins [combs available for less than $10]. The installation of coil guards prevents future fin combing, which is ultimately a combination of deferred labor savings for eliminating the need for maintenance personnel to perform the task and energy savings resulting from the units maintaining optimum operating efficiency. *We recommend installing hail guards on the units to prevent future coil fin damage.*

HVAC M&O #3

The HVAC units at Cedar Hill High School gymnasium were operating when there was nobody present at the school. It is possible the system was dehumidifying the space to protect the integrity of the wood flooring, but the setpoint remained at the normal operating temperature for the six units in the space. *We recommend a higher setback temperature for conditioning cycles required during unoccupied periods and turning the units off at all other unoccupied times.*

Lighting M&O #1 and 2

Some areas of the buildings noted in Section 6.0 of the report had light fixtures that were not required to be operating during the day or were fixtures left operating in unoccupied spaces. The least expensive remedy to these issues is to train staff leave fixtures turned off not needed during daytime hours and to turn off fixtures in unoccupied spaces. Failure of the behavioral modification training will require the district to invest capital into automatic controls for the fixtures. Examples of these fixtures are the sunlit lobby light fixtures at Cedar Hill High School, the lobby at Permenter Elementary School, and both gymnasiums at Cedar Hill High School when nobody was present in the gym. *We recommend light fixtures be turned off when the space is unoccupied or is well lit by natural light through windows.*

The trophy cases at the high school were observed to be on at all times. *We recommend the lights in the cabinet can be turned off during the summer and when there are no occupants present.*

Lighting M&O #3

As mentioned in section 6.0, there is a portion of Cedar Hill High School that was still operating with T12 fluorescent lighting components. It is in the district's best interest to determine where this scenario is true at other campuses. *We recommend the district locate all T12 components and retrofit them with T8 components to obtain higher efficiency at all campuses.*

<u>Controls M&O #1</u>

It was noted that the control system at Permenter Elementary School is set to turn on at 5:45 am and turn off at 4:30 pm. An aggressive energy management schedule can be set by matching operation times to the district calendar. This will allow the system to be operating when it is supposed to and prevent it from operating at times with no occupancy. Another aggressive practice is to schedule the system to turn on 30 minutes before occupants enter the building and to turn off 30 minutes before occupants leave the building. *We recommend the district implement an aggressive energy management schedule throughout the district.*

<u>Controls M&O #2</u>

The current ASHRAE recommendations for cooling temperature setpoint are 68°F for heating and 76-78°F for cooling. It was noted during the survey, that many of the setpoints at campuses are set at 72°F. The district can save up to 3% of their utility bill for every degree that heating/cooling setpoints are lowered or raised, respectively. *We recommend the district experiment with raising the cooling setpoint to find the optimum balance between occupant comfort and utility bill savings.*

<u>Envelope M&O #1</u>

It was noted at Cedar Hill High School that there was damaged or missing weatherstripping (pictured to the right), which allows conditioned air to escape the building and contaminants and moisture to enter the facility. *We recommend all damaged or missing weatherstripping be replaced.*

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. $2,500 maintenance expense next 5 years				
4. $5,000 maintenance expense next 5 years				
5. Savings decreases 3% per year after year 5				
Cash Flow	**Project Cost**	**Project Savings**	**Maintenance Expense**	**Net Cash Flow**
Time 0	($1,038,750)		0	($1,038,750)
Year 1		$ 93,620.00	0	$93,620
Year 2		$ 93,620.00	0	$93,620
Year 3		$ 93,620.00	0	$93,620
Year 4		$ 93,620.00	0	$93,620
Year 5		$ 93,620.00	0	$93,620
Year 6		$ 90,811.40	($2,500)	$88,311
Year 7		$ 88,002.80	($2,500)	$85,503
Year 8		$ 85,194.20	($2,500)	$82,694
Year 9		$ 82,385.60	($2,500)	$79,886
Year 10		$ 79,577.00	($2,500)	$77,077
Year 11		$ 76,768.40	($5,000)	$71,768
Year 12		$ 73,959.80	($5,000)	$68,960
Year 13		$ 71,151.20	($5,000)	$66,151
Year 14		$ 68,342.60	($5,000)	$63,343
Year 15		$ 65,534.00	($5,000)	$60,534
			Internal Rate of Return	**2.17%**

More information regarding financial programs available to CHISD 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

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 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

6

APPENDIX II - ELECTRIC UTILITY RATE SCHEDULE

6.1.1.1.3 Secondary Service Greater Than 10 kW

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

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

MONTHLY RATE

I. Transmission and Distribution Charges:

Customer Charge	$6.78	per Retail Customer
Metering Charge	$22.18	per Retail Customer
Transmission System Charge		
Non-IDR Metered	$0.00	per NCP kW
IDR Metered	$0.00	per 4CP kW
Distribution System Charge	See Table Below	

NCP kW	Annual Load Factor	per Distribution Billing kW
Less than or equal to 20 kW	All	$4.24
Greater than 20 kW	0% - 10%	$5.91
	11% - 15%	$5.30
	16% - 20%	$5.00
	21% - 25%	$4.85
	26% and above	$4.24

II. System Benefit Fund:	$0.000654	per kWh, See Rider SBF
III. Transition Charge:	See Riders TC1 and TC2	per Distribution System billing kW
IV. Nuclear Decommissioning Charge:	$0.044	per Distribution System billing kW, See Rider NDC
V. Transmission Cost Recovery Factor:	See Rider TCRF	
VI. Energy Efficiency Cost Recovery Factor:	See Rider EECRF	
VII. Competitive Meter Credit:	See Rider CMC	

VIII. Advanced Metering Cost Recovery Factor:	See Rider AMCRF	
Other Charges or Credits		
IX. Rate Case Expense Surcharge:	See Rider RCE	per Distribution System billing kW
X. State Colleges and Universities Discount:	See Rider SCUD	

COMPANY SPECIFIC APPLICATIONS

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

DETERMINATION OF BILLING DEMAND FOR TRANSMISSION SYSTEM CHARGES

DETERMINATION OF NCP kW

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

DETERMINATION OF 4 CP kW

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

DETERMINATION OF BILLING DEMAND FOR DISTRIBUTION SYSTEM CHARGES

DETERMINATION OF ANNUAL LOAD FACTOR

The Annual Load Factor for each premise shall be calculated using the previous year's usage for that premise ending with the December Bill Cycle. The Annual Load Factor shall apply for the following 12 billing months.

The Annual Load Factor calculation is as follows:

$$\frac{\text{kWh Used in 12 Billing Months Ending December}}{\text{Maximum NCP kW for the 12 Billing Months Ending December * Days in Billing Periods * 24}}$$

For premises with less than 12 months usage history, the available billing history shall be used for determining the Annual Load Factor. However, if less than 90 days of billing history is available, the premise shall be assumed to have an Annual Load Factor greater than 25%.

DETERMINATION OF BILLING kW

For loads whose maximum NCP kW established in the 11 months preceding the current billing month is less than or equal to 20 kW, the Billing kW applicable to the Distribution System Charge shall be the NCP kW for the current billing month.

For loads whose maximum NCP kW established in the 11 months preceding the current billing month is greater than 20 kW and their Annual Load Factor is less than or equal to 25%, the Billing kW applicable to the Distribution System Charge shall be the NCP kW for the current billing month. Billing kW applicable to Riders TC, NDC, RCE charges shall be the higher of the NCP kW for the current billing month or 80% of the highest monthly NCP kW established in the 11 months preceding the current billing month (80% ratchet).

For all other loads, the Billing kW applicable to the Distribution System Charge shall be the higher of the NCP kW for the current billing month or 80% of the highest monthly NCP kW established in the 11 months preceding the current billing month (80% ratchet).

The 80% ratchet and the Annual Load Factor Provisions shall not apply to Retail Seasonal Agricultural Customers.

NOTICE

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

APPENDIX IV - PRELIMINARY ENERGY ASSESSMENT SERVICE AGREEMENT

OFFICE OF THE COMPTROLLER TEXAS

SECO State Energy Conservation Office

Local Governments and Municipalities

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 Cedar Hill ISD, hereinafter referred to as Partner, to identify energy cost-savings potential. To achieve this potential, SECO and Partner have agreed to work together to complete an energy assessment of mutually selected facilities.

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

Principles of the Agreement

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

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

Acceptance of Agreement

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

Signature: [signature]
Date: 6-7-2011

Name (Mr./Ms./Dr.) Mr. Michael B McSwain
Title: CFO

Organization: Cedar Hill ISD
Phone: 972-291-1581, x4028

Street Address: 285 Uptown Blvd, Building 200
Fax: 972-293-9638

Mailing Address: Cedar Hill, Tx 75104
E-Mail: mike-mcswain@chisd.net

County: Dallas

Contact Information:

Name (Mr./Ms./Dr.): Regi Brackin
Title: Director of Maintenance

Phone: 972-291-1581 x 4090
Fax: 972-293-9638

E-Mail: ReginaBrackin@chisd.net
County: Dallas

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

Sent 6/16/11 ESA.

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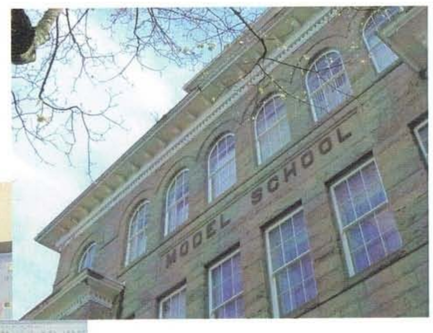
APPENDIX V - TEXAS ENERGY MANAGERS ASSOCIATION (TEMA)

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