

Boling ISD Energy Master Plan

February 27th, 2012

Boling ISD: Efficiency Opportunity

20% Energy Reduction for
Facilities Benchmarked
through the SCORESM
Program=

- ✓ \$54,400 in annual energy cost savings
- ✓ Utility-paid cash incentives for implementing energy efficiency projects
- ✓ Improved usability / comfort in our offices, classrooms, and other district buildings
- ✓ Environmental benefits equivalent to taking 58 passenger vehicles off the road each year
- ✓ Positive public relations in the community, including press releases and incentive check presentations for any projects completed in the SCORE Program

Our Mission

Energy costs are an enormous expense for our nation's schools; energy is the second largest operating expense for Boling ISD. In order to significantly reduce these costs and improve energy efficiency, Boling ISD is participating in the CenterPoint SCORE Program. The no-cost program will assist in identifying energy efficiency opportunities in our school buildings, and help us to:

- ✓ *Improve Learning Environments*
- ✓ *Reduce Energy Expenditures*
- ✓ *Boost the Local Economy (through upgrade projects)*
- ✓ *Enhance Community Relations*

The program provides technical and financial assistance for efficiency upgrades. Whether we retrofit an existing building or incorporate energy-efficiency technologies into new construction, we will identify and implement cost-effective projects that will allow us to use energy more efficiently. In addition, the SCORE Program will help us form a long-term strategy to address rising energy costs. As part of our participation and with assistance from the program, we have prepared this Energy Master Plan to outline where we are today and what steps we will undertake to improve the efficiency of our buildings in 2012 and beyond.

Strategies for Improvement

- ✓ By adopting certain energy management best practices, we can mobilize and coordinate our efforts toward reducing energy costs
- ✓ By adhering to the listed efficiency strategies, we can minimize the life-cycle cost associated with our energy-consuming equipment

Commitment

The Energy Master Plan is an adaptable, evolving document. It is a starting point for consensus and uniform action, which will ensure that all appropriate departments and parties are informed of and involved in our plans. Because it will adapt to changing needs and new information, it will never be "final" or concrete; however, approval of this plan will allow us to plan effectively and efficiently in terms of funding, personnel availability, and other restraints.

Project Implementation

- ✓ We are participating in a performance contract to reduce our energy usage and cost.
- ✓ CenterPoint will pay us cash incentives for incorporating energy efficiency into equipment replacement/installation (e.g., lighting, HVAC) at our facilities by November 30, 2012 (date all projects must also be post inspected by).
- ✓ Outlined below is a list of measures and incentive levels that are supported by the SCORE Program.

MEASURE TYPE	\$/kW	\$/kWh
Lighting – Fluorescent – HID	\$125	\$0.03
Lighting – LED	\$125	\$0.06
Cooling – DX Units	\$175	\$0.04
Cooling – Chillers	\$175	\$0.06
Motor	\$175	\$0.06
Variable Frequency Drives	\$150	\$0.04
Window Film	\$125	\$0.04
Window Replacements	\$125	\$0.04
Roofing	\$150	\$0.06
All Other Measures	\$150	\$0.04

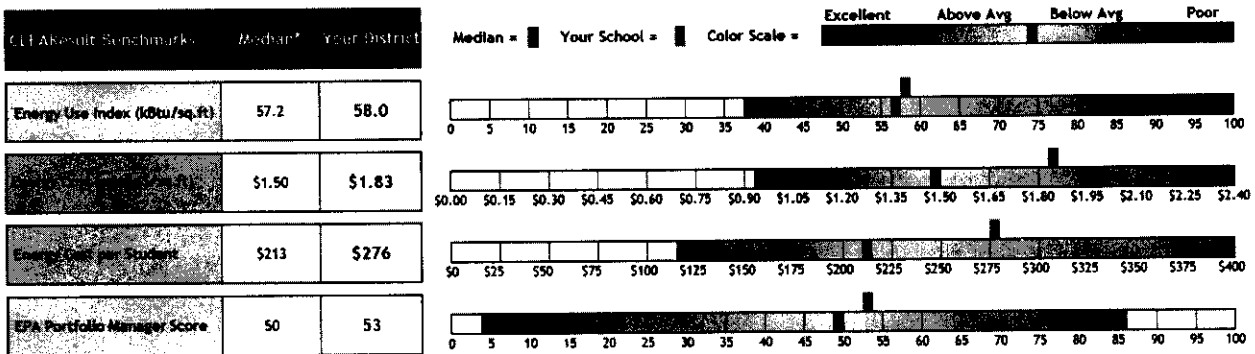
Current Building Benchmark Assessment

Based on the utility bills and building information we provided, the SCORE Program compared our energy use to other school facilities in Texas and the U.S. The benchmarking process revealed that our school district building is performing right at the average, overall. More detailed assessments of each individual building can be found in the Benchmarking Report Appendix.

- ✓ Our school district is spending 34 cents per square foot more than schools in our same weather region, which cost us approximately \$50,000 in annual energy costs
- ✓ By reducing our current electricity consumption by 10 percent, we could save another estimated \$26,000 in annual utility bills at the buildings included in the benchmarking analysis.

Energy Performance Benchmarking Analysis

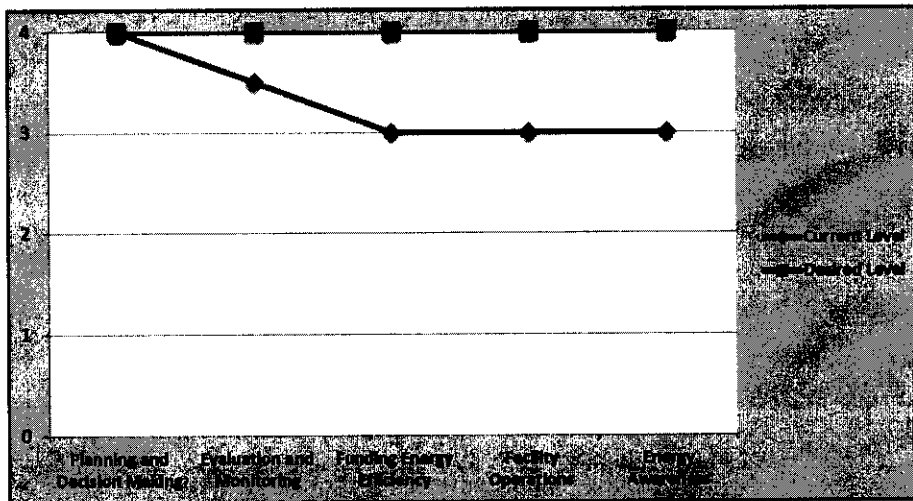
District-Wide Summary / Boling ISD



* Median for a similar profile of K-12 schools in the Houston climate region.

Energy Management Scorecard Assessment

In addition to facility performance benchmarking, our energy management methods were also benchmarked against recognized “best practices” in the following key focus areas: Planning and Decision Making, Evaluation and Monitoring, Funding Energy Efficiency, Facility Operations, and Energy Awareness. The below chart summarizes the outcome of the workshop *Energy Performance Best Practices Scorecards*. The orange line represents our current level of achievement and the blue line represents our desired level. Strengths in each category, along with specific short and long term strategies to help us achieve our desired levels in each category, are identified in the appendix.



Set Goals

The goal of implementing the Energy Master Plan is to avoid spending more money on energy than necessary. We attempted to quantify the “bottom-line effect” of improving the energy performance of our buildings. For the three buildings that we included in the benchmarking analysis, the chart below estimates how much reducing our electricity consumption would save us on electricity utility bills.

Annual Electricity Consumption (kWh)	Percent Reduction	Electricity Saved (kWh)	Our District's Blended Rate	Annual Electricity Bill Savings
1,998,646	10%	199,864	\$0.13 per kWh	\$25,982
	20%	399,729		\$51,964
	30%	599,593		\$77,947

Create Action Plan

In benchmarking our procedures against recognized “best practices,” we confirmed a number of areas in which we want to improve our energy management methods. The appendix provides a complete breakdown of short- and long-term steps toward improving energy management in each focus area. However, the table below identifies the highest priority “next steps” for Boling ISD:

Focus Area	Target Audience	Priority Item
Energy Awareness	Administration Office, Energy Management / Facilities Personnel	Establish an Energy Awareness Program that includes participation from principals, teachers, students and custodial staff. Award performance and create accountability among peers.
Maximize Energy Efficiency	Management, School Board, Energy Management / Facilities Personnel	Explore setting up an internal revolving fund to invest a portion of collected energy savings into additional energy efficiency measures. Consider funding the fund by utilizing the Center Point SCORE Program. Encourage and invest in more energy efficiency projects.
Facility Operations	Energy Management / Facilities Personnel	Enforce written guidelines that outline operating rules (such as building usage, operating hours, personal refrigerators / heaters, and set points).

By continuing to refine our energy management practices at all organizational levels, we will ensure that we are getting the most out of our existing equipment and facilities. We will also position ourselves to identify, evaluate, and move forward with new energy efficiency investments on shorter timelines.

New construction, renovations, routine change-outs, and outdated and/or failing equipment all present opportunities for increasing energy efficiency in our buildings. Unfortunately, many potential efficiency opportunities are left unrealized or delayed considerably. When less efficient equipment is installed or left in place, we incur higher utility costs over the life of the equipment. By taking the “life-cycle cost” and “cost of delaying efficiency” into consideration during our project evaluations, we will equip ourselves to make sound financial decisions.

Working with the SCORE Program, we have identified the strategies listed below for achieving energy efficiency. We will evaluate the feasibility of each strategy separately, and consider incorporating into written guidelines or minimum specifications for energy-consuming equipment. By having our own target design specifications, we will ensure that energy efficiency is always a consideration in our buildings.

Measure	Energy Efficiency Strategy
Lighting	25% improvement over the lighting power density (LPD) guidelines put forth by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1 2004
	30-40 foot-candles in office settings, per the guidelines of the Illumination Engineering Society of North America (IESNA) Lighting Handbook, 9 th Edition
	High-performance T8 lamps w/ premium efficiency ballasts in hallways, offices
	High-bay fluorescents (T5, T8) in bay areas, multi-purpose rooms, and other applicable areas
	Automatic lighting controls (occupancy sensors, automatic daylight controls, time clock controls) and adjustable lighting level strategies (BI-level switching)
HVAC	System size closely matches the actual building loads, thus increasing operating efficiency, reducing operating costs, and extending equipment service life
	Improvement over minimum equipment efficiencies specified in ASHRAE 90.1 2004
	Usage of demand control ventilation
Roofing	ENERGY STAR®-labeled Cool Roof materials
	Increased insulation and air sealing systems
Window	Thermo pane, low-emissivity glass, thermal break frames

Operation and Maintenance

Attention to operation and maintenance provides the most rapid means of reducing consumption and costs in most buildings. Not only do correct procedures aid in the proper utilization of the facility's equipment (heating, cooling, ventilation, etc.) and the energy involved, but they also help to increase the longevity and maintain the attractiveness of the building itself. We have identified the O&M strategies listed below to help us achieve our energy efficiency goals.

	O&M Opportunities
Off-Hour	<ul style="list-style-type: none"> • First round savings when building is unoccupied • After-hours, Weekends, Holidays
Computers & Office Equipment	<ul style="list-style-type: none"> • Computers • Monitors • Printers • Scanners
Unnecessary Lighting	<ul style="list-style-type: none"> • Offices • Common areas • Display • Exterior • Photocell maintenance
HVAC Systems	<ul style="list-style-type: none"> • Temperature Settings • System Scheduling

O&M Opportunities

	<ul style="list-style-type: none">• Ventilation• Sensor Locations• Obstructions to airflow• System maintenance
Exhaust Fans	<ul style="list-style-type: none">• Meeting Rooms, Bathrooms, Maintenance Closets• Off at night
Door & Window Operation	<ul style="list-style-type: none">• Blinds closed at night• Close doors and windows• Weather stripping
Water Usage	<ul style="list-style-type: none">• Drips and Leaks• Temperatures• Aerators

Endorsement

Although we will seek approval of individual projects and expenditures separately, we request a review and endorsement of this plan. This will ensure that our facilities personnel have a clear understanding of the input, concerns, and support of the Superintendent, School Board, and management.

The following people contributed to this plan:


Wade Stidevent, Superintendent
Bryan Blamar, Assistant Superintendent
Keith Jedlicka, Boling High School Principal
Shane Wagner, Boling Assistant Principal
Brett Pohler, Iago Junior High Principal
Gerald Floyd, Newgulf Elementary School Principal
Randy Ramey, Maintenance Supervisor
Trey Calvery, Way Engineering

Prepared and Submitted by:



Wade Stidevent - Superintendent

Date 2-27-12

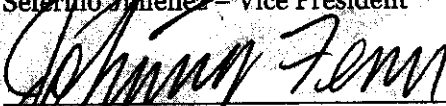
Endorsed by:


Donald Sciba - President


Date 4/10/12


Seferino Jimenez - Vice President

Date 4/11/12


Johnny Fenn - Secretary

Date 4-10-12


Russell Hubenak - Asst Secretary

Date 4-10-12


Shawn Chilek - Board Member

Date 4/10/12


Cheryal Gavranovic - Board Member

Date 4/10/12


Jerry Svatek - Board Member

Date 4/10/12