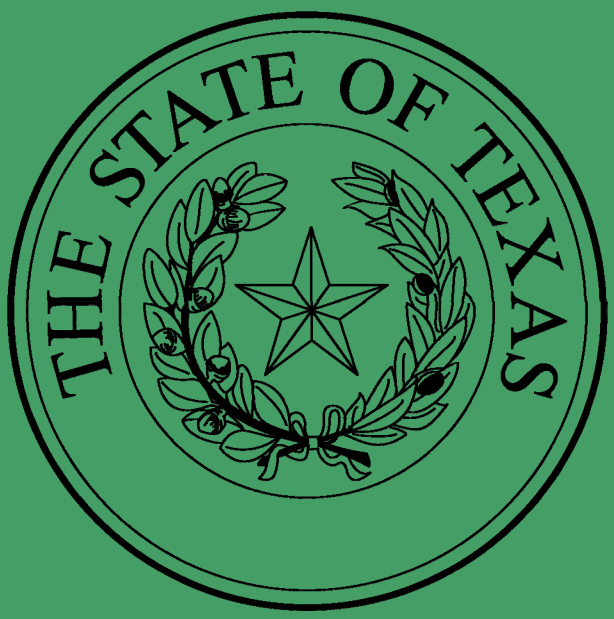

Kountze Independent School District

FACILITIES MANAGEMENT REVIEW

Conducted by SCRS, Inc. and Facility Engineering Associates, Inc. for the Legislative Budget Board

March 2009

LEGISLATIVE BUDGET BOARD

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March 19,2009

Ms. Diane Daniels
Superintendent
Kountze Independent School District

Dear Ms. Daniels:

The attached report reviews the management and performance of the Kountze Independent School District's (KISD) facilities operations.

The report's recommendations will help KISD improve its overall performance as it provides services to students, staff, and community members.

The Legislative Budget Board engaged SCRS, Inc. and Facility Engineering Associates, Inc. to conduct and produce this review, with LBB staff working in a contract oversight role.

The report is available on the LBB website at http://www.lbb.state.tx.us.

Respectfully submitted,

John O'Brien
Director
Legislative Budget Board

cc: Mr. Dean Haynes
Mr. Chuck Turner
Ms. Donna Moody
Mr. Jack Darden
Mr. Steve Martinka
Mr. David Overstreet
Mr. Cody Williford

KOUNTZE INDEPENDENT SCHOOL DISTRICT FACILITIES MANAGEMENT

Texas school districts are challenged with providing instructional services in the most cost-effective and productive manner possible. Effective and efficient programs and a well-designed instructional program determine how well a district meets its goal of educating children. In support of this goal, the facilities organization is tasked with developing effective facilities programs to provide safe, productive, and clean environments where students can learn.

Kountze Independent School District (KISD) is located at the junction of Farm Roads 418 and 1293, State Highway 326, and U.S. Highway 69/287, twenty-seven miles northwest of Beaumont in central Hardin County. Past student enrollment growth has been negligible and in recent years has even been slightly declining. Despite the current and forecasted growth there are significant opportunities for improvement in operations and maintenance as the school district renovates and rebuilds.

The facilities organization is responsible for maintaining facilities covering over 336,000 square feet as shown in **Exhibit 1**.

The facilities organization is led by a Maintenance Supervisor who directly supervises 5.5 full-time equivalents (FTEs) in maintenance and grounds, and 13 custodial workers. The current division of labor is as shown in **Exhibit 2**.

Based on interviews with school principals and staff, there is a high degree of pride in the school facilities, respect for the facilities department, and overall satisfaction in facilities response. The review team also recognized the positive strategic relationship between administration and the facilities organization.

KISD has had to overcome a lot of turmoil through the experience of Hurricane Rita and its lasting aftermath. Hurricane Rita not only affected the school district's ability to run its operations, it has had longer lasting effects on the labor market and available resources. Despite Hurricane Rita, KISD passed its bond issue, which reflects the community's commitment to supporting the school district. Limited and stressed resources make careful maintenance, operations planning, and execution necessary to be wise stewards of the resources available.

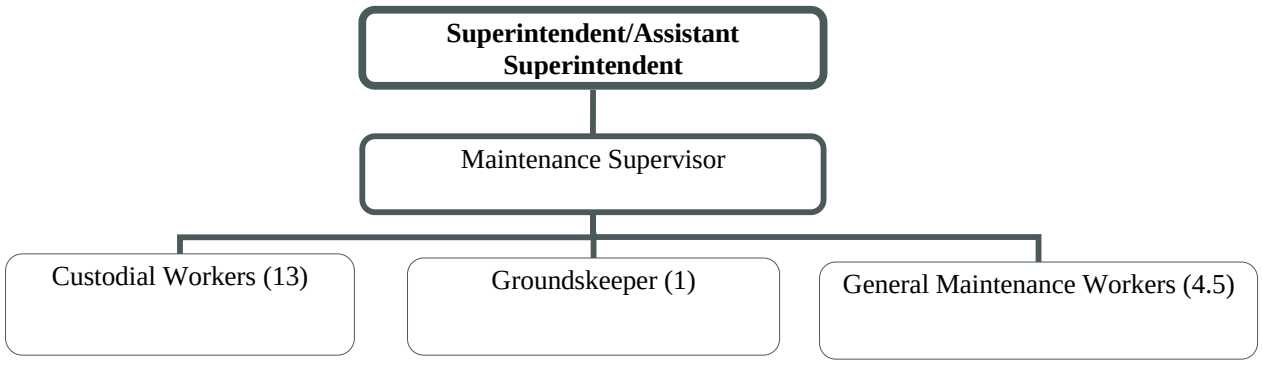
The following sections provide a summary of the findings and recommendations regarding facilities management opportunities for KISD. The information is based on field

EXHIBIT 1
KOUNTZE ISD FACILITIES INVENTORY
JULY 2008

BUILDING	YEAR BUILT	RENOVATION DATE	SQUARE FEET
High School Main Buillding	1978		73,616
High School Vocational Building	1978		13,501
High School Penland Building	2001		10,200
Middle School Lower Hall	1953	1996	20,111
Middle School Upper Hall	1935	1996	19,337
Middle Sshool Gym	1953	1996/2001	15,021
Middle School Cafeteria	1996		7,794
Middle School Field House	1980	1980	4,160
Central Administration	1963	1998	2,480
Elementary School Wing A	1960		5,940
Elementary School Wing B	1960		7,170
Elementary School Wing C	1985		12,045
Elementary School Wing D	1987		15,300
Elementary School Cafeteria	1960	1995	7,346
Elementary School Office	1988	1995	725
Elementary School Gym	1995		10,287
Maintenance	1975		5,151
Transportation	1996		7,625
Warehouse	1950	1995	3,724
Intermediate School	2008		44,124
Multi-Purpose	2008		51,170
			336,827

SOURCE: Kountze ISD, Assistant Superintendent.

EXHIBIT 2
KOUNTZE ISD MAINTENANCE ORGANIZATION CHART
JULY 2008



SOURCE: Kountze ISD, Maintenance Supervisor, 2008.

visits, interviews, document review, and observations completed at KISD in the summer of 2008.

ACCOMPLISHMENT

- KISD implemented online submittal and approval of work requests process.

FINDINGS

- Finding #1 – Lack of funding has stressed facilities resources. Facilities staffing levels have not kept pace with the growth and increased space requirements to be maintained.
- Finding #2 – Funding, not ability or will, has affected maintenance practices and building maintenance levels.
- Finding #3 – Although the current work order process utilizes available technology, there is no use of facility management information technology. This makes it difficult to track performance and obtain good data to make decisions.
- Finding #4 – The Maintenance Supervisor provided a listing of large maintainable assets and a description of preventive maintenance being performed; however, no formalized preventive maintenance program is in place to provide the long-term care necessary to extend the useful life.
- Finding #5 – While there are many good facilities initiatives and effective processes, they are informal and lack documentation.
- Finding #6 – KISD uses service contracts for pest control, fire & life safety inspections and other specialty items; however, no written annual contracts are in place.
- Finding #7 – While there have been some efforts to initiate a master plan, no formal master plan exists.
- Finding #8 – There is no current process of assessing facility condition, identifying deferred maintenance backlogs, or for evaluating capital needs of the existing facilities.
- Finding #9 – There was no internal training program or tracking mechanism for external training completed.
- Finding #10 – Energy conservation is a priority and a number of upgrades and related policies have been established; however, execution of the policies has opportunities for improvement.

RECOMMENDATIONS

- **Recommendation 1: Increase maintenance staffing levels** to be in alignment with industry benchmarks and provide adequate resources to properly maintain the inventory of facilities.
- **Recommendation 2: Implement facility management information technology initially in the form of an automated work order management system** (computerized maintenance management system – CMMS). This will support the improvement of management and execution of the facility operations.

- **Recommendation 3: Implement a comprehensive maintenance program.**
- **Recommendation 4: Formalize and document facilities planning and maintenance policies and procedures.** This should include but not necessarily be limited to formalizing processes for the following:
  - master planning;
  - school design and facility performance guidelines;
  - value engineering and post-occupancy reviews;
  - maintainability reviews during design phases;
  - school commissioning;
  - facilities documentation exchange and control;
  - facilities management information standards;
  - facilities performance measurement (key performance indicators);
  - capital needs assessment; and
  - contract oversight and control.
- **Recommendation 5: Initiate a periodic facility condition assessment (FCA) process** to prepare annual asset management plans and forecast future facility capital needs.
- **Recommendation 6: Initiate a comprehensive training program** by developing individual training and professional development plans to minimize possible on-the-job-accidents, staff inefficiencies, repeat work, and ensure that maintenance personnel are knowledgeable in current Operations and Maintenance (O&M) procedures and techniques.
- **Recommendation 7: Develop tighter controls to monitor implementation of energy conservation measures.**

DETAILED ACCOMPLISHMENT

AUTOMATED SUBMITTAL OF WORK REQUESTS

KISD implemented online submittal and approval of work requests process.

KISD's maintenance department implemented a process for the online submittal of work requests using the district's e-mail client as the medium. The process represents a good example of the proper use of available resources to improve district communication. Teachers and administrators have access to a maintenance request form. A request submitted by a teacher is sent via e-mail, with the maintenance request form attached, to their supervising administrator for approval before the request is submitted to be completed. Approval is accomplished through the forwarding of the e-mail to the Maintenance Supervisor. The Maintenance Supervisor tracks requests by campus through the use of a folder structure within the e-mail client. The work orders are printed and distributed manually. Services for emergency/high priority items are still received and dispatched via telephone.

DETAILED FINDINGS

MAINTENANCE AND GROUNDS STAFFING

Finding #1 – Lack of funding has stressed facilities resources. Facilities staffing levels have not kept pace with the growth and increased space requirements to be maintained.

Finding #2 – Funding, not ability or will, has affected maintenance practices and building maintenance levels.

Recommendation 1: Increase maintenance staffing levels to be in alignment with industry benchmarks and provide adequate resources to properly maintain the inventory of facilities.

KISD's staffing levels do not meet benchmark industry standards.

MAINTENANCE

The district maintains 336,827 square feet of facilities with 4.5 full-time equivalent (FTE) maintenance positions. The district's ratio of maintenance staff per square foot is 1:74,850; while the standards published in the *American School and University M&O Cost Study* (AS&U, 2008) is 1:107,439. Therefore, staffing guidelines would suggest that the district is overstaffed according to industry averages. The district did not provide the review team with any written or verbal staffing guidelines for which maintenance and grounds staffing decisions were made.

Published staffing guidelines are a good starting point for determining the appropriate number of FTEs; however, they do not take into account the desired level of service. The Association of Higher Education Facilities Officers (APPA) has published Service Level Guides that provide a benchmark for service and performance (APPA, 2002). This standard is used extensively in the public sector as a guide for comparing facility condition with the level of effort needed to maintain a desired level of service, as shown in **Exhibit 3**. A modified approach to this measure is often more useful because it allows customers to determine the desired service level for a given facility and then match their expenditures and level of effort to the desired outcome. This approach recognizes that

not all facilities need to be maintained to the highest level. It allows the maintenance leadership to evaluate its portfolio and assign variable service levels as customer needs, capital funds availability, and operating budgets dictate.

The review team found that maintenance at KISD is currently being performed at a Level 3, Managed Care—as bolded in **Exhibit 3.** KISD does not maintain comprehensive work records to verify all information; therefore, the exhibit is

EXHIBIT 3
KOUNTZE ISD MAINTENANCE CURRENT LEVEL OF SERVICE
JULY 2008

LEVEL	1	2	3	4	5
DESCRIPTION	SHOWPIECE FACILITY	COMPREHENSIVE STEWARDSHIP	MANAGED CARE	REACTIVE MANAGEMENT	CRISIS RESPONSE
Customer Service & Response Time	Able to respond to virtually any type of service, immediate response.	**Response to most service needs, including non-maintenance activities, is typically in a week or less.**	Services available only by reducing maintenance, with response times of one month or less.	Services available only by reducing maintenance, with response times of one year or less.	Services not available unless directed from top administration.
Customer Satisfaction	Proud of facilities, have a high level of trust for the facilities organization.	**Satisfied with facilities related services, usually complimentary of facilities staff.**	Accustomed to basic level of facilities care. Generally able to perform mission duties. Lack of pride in physical environment.	Generally critical of cost, responsiveness, and quality of facilities services.	Consistent customer ridicule, mistrust of facilities services.
Preventive Maintenance	All recommend preventive maintenance (PM) is scheduled and performed on time.	A well-developed PM program. Occasional emergencies.	Reactive maintenance predominates due to systems failing to perform.	**Limited PM program.**	No PM performed.
Maintenance Mix	All recommend preventive maintenance (PM) is scheduled and performed on time. Emergencies (e.g. storms or power outages) are very infrequent and are handled efficiently.	A well-developed PM program: most required PM is done at a frequency slightly less than per defined schedule. Occasional emergencies caused by pump failures, cooling system failures, etc.	Reactive maintenance predominates due to systems failing to perform, especially during harsh seasonal peaks. The high number of emergencies causes reports to upper administration.	**Worn-out systems require staff to be scheduled to react to systems that are performing poorly or not at all. PM work possible consists of simple tasks and is done inconsistently.**	No PM performed due to more pressing problems. Reactive maintenance is a necessity due to worn-out systems. Good emergency response because of skills gained in reacting to frequent system failures.
Aesthetics, Interior	Like-new finishes.	Clean/crisp finishes.	**Average finishes.**	Dingy finishes.	Neglected finishes.
Aesthetics, Exterior	Windows, doors, trim, exterior walls are like new.	Watertight, good appearance of exterior cleaners.	**Minor leaks and blemishes, average exterior appearance.**	Somewhat drafty and leaky, rough-looking exterior, extra painting necessary.	Inoperable windows, leaky windows, unpainted, cracked panes, significant air & water penetration, poor appearance overall.
Aesthetics, Lighting	Bright and clean, attractive lighting.	Bright and clean, attractive lighting.	**Small percentage of lights out, generally well lit and clean.**	Numerous lights out, some missing diffusers, secondary areas dark.	Dark, lots of shadows, bulbs and diffusers missing, cave-like, damaged, hardware missing.

EXHIBIT 3 (CONTINUED)
KOUNTZE ISD MAINTENANCE CURRENT LEVEL OF SERVICE
JULY 2008

LEVEL	1	2	3	4	5
DESCRIPTION	SHOWPIECE FACILITY	COMPREHENSIVE STEWARDSHIP	MANAGED CARE	REACTIVE MANAGEMENT	CRISIS RESPONSE
Service Efficiency	Maintenance activities appear highly organized and focused. Service and maintenance calls are responded to immediately.	Maintenance activities appear organized with direction. Service and maintenance calls are responded to in a timely manner.	**Maintenance activities appear to be somewhat organized, but remain people-dependant. Service and maintenance calls are variable and sporadic, w/out apparent cause.**	Maintenance activities appear somewhat chaotic and are people-dependant. Service and maintenance call are typically not responded to in a timely manner.	Maintenance activities appear chaotic and without direction. Equipment & building components are routinely broken and inoperable. Service calls are never responded to in a timely manner.
Building Systems' Reliability	Breakdown maintenance is rare and limited to vandalism and abuse repairs.	**Breakdown maintenance is limited to system components short of mean time between failures (MTBF).**	Building and systems components periodically or often fail.	Many systems are unreliable. Constant need for repair. Backlog of repair exceeds resources.	Many systems are non-functional. Repair instituted only for life safety issues.

SOURCE: Maintenance Staffing Guidelines for Educational Facilities, The Association of Higher Education Facilities Officers, 2002.

based on information gathered through observations and interviews.

Upon a general walk-through of the facilities, one will find a comfortable yet variable climate and atmosphere; however, it was made clear through interviews with the Maintenance Supervisor that the preventive maintenance program is limited. Because of the age of the high school and elementary school, finishes and equipment are like new. Capital equipment does not display visual signs of deterioration. Therefore, most capital expenditures over the next five years are related to life-cycle renewal. A significant capital improvement project is being undertaken to upgrade the infrastructure and finishes at the middle school.

The optimal level of service for a curriculum-based facility should be a Level 2 – *Comprehensive Stewardship (***Exhibit 3***)*. Maintaining current staffing levels will only yield between a Level 3 and Level 4 in the future. Because of the age of the facilities the maintenance organization has been able to provide a higher level of service with fewer staff. As the facilities continue to age, this same level of service will be unachievable without the appropriate increase in staff.

Based on published staffing standards and the APPA Level of Service model and in the opinion of the review team, KISD's current level of service with 4.5 FTEs is around a Level 3 – Managed Care as outlined in **Exhibit 4**.

Exhibit 5 would indicate that KISD is overstaffed by 1.5 FTEs. However, it should be noted that the level of service methodology only accounts for FTEs dedicated to maintenance activities. Maintenance staffing at KISD routinely perform a wide range of duties. Depending on the time of year, maintenance staff may spend significant time performing functions and offering services that have little or nothing to do with maintenance and operations. They may find themselves performing special functions (such as set-ups and tear-downs for events) or in minor construction activities.

EXHIBIT 4
KOUNTZE ISD CURRENT LEVEL OF SERVICE AND MATCHING STAFFING CRITERIA
JULY 2008

LEVEL	1	2	3	4	5
SQUARE FEET	SHOWPIECE FACILITY	COMPREHENSIVE STEWARDSHIP	MANAGED CARE	REACTIVE MANAGEMENT	CRISIS RESPONSE
336,827	4.18 FTEs	3.14 FTEs	2.26 FTEs	1.63 FTEs	1.09 FTEs

NOTE: FTEs = Full-time Equivalents.
SOURCE: Kountze ISD, School Review Surveys, July 2008.

EXHIBIT 5
KOUNTZE ISD ACTUAL VS. RECOMMENDED STAFFING PER DESIRED LEVEL OF SERVICE
JULY 2008

SQUARE FEET	CURRENT STAFF	CURRENT LEVEL OF SERVICE	STAFF FOR CURRENT LEVEL OF SERVICE	DESIRED LEVEL OF SERVICE	RECOMMENDED STAFFING	DIFFERENCE ACTUAL VS. RECOMMENDED
336,827	4.5 FTEs	Level 3	2.26 FTEs	Level 2	3 FTEs	(1.5) FTEs

NOTE: FTEs = Full-time Equivalents.
SOURCE: Kountze ISD, School Review Surveys, July 2008.

The result is that important maintenance requirements may go ignored.

As stewards of facilities with limited resources, districts should make expectations align with financial resources. This may mean sacrificing one ideal for another and prioritizing standards. Frequently, school districts spend a great deal of attention to the physical appearance of public spaces, while indicating less concern about system reliability or preventive maintenance. Priorities established at one school district may not match the desires of stakeholders at another. The guidelines outlined above should be used as guidelines to help the district's stakeholders make sound decisions regarding the appropriate staffing and level of service. Level of service may vary from facility to facility according to the associated mission of each facility. The district does not maintain significant documentation needed to make the appropriate staff determination. Based on the review team's assessment, staffing levels appear to be appropriate for the level of effort required.

On the other hand, if the district were to downsize the maintenance employees from 4.5 to 3 FTE's, using the average salary of a General Maintenance Worker in a district with an enrollment of 1,000–1,599 from "Salaries and Benefits in Texas Public Schools, Auxiliary Report 2006–07, there would be an annual cost savings of $43,318 ($11.57 x 20.0% Benefits x 8 Hours/Day x 260 Days/Year x 1.5 FTEs).

GROUNDS

The district maintains approximately 85 acres of land and has one dedicated grounds maintenance worker. Current responsibilities include general lawn maintenance (i.e. mowing, weed whacking, general policing). The Maintenance Supervisor indicated that this is the position with the highest turnover due to KISD being unable to keep pace with local competition in providing competitive wages. **Exhibit 6** outlines the optimal level of service for grounds maintenance.

Based on published staffing standards and the APPA Level of Service model, KISD's current level of service at 1 FTE should be a Level 5 – Crisis Response as outlined in **Exhibit 7**. The review team estimates actual level of service to be between Level 3 – Managed Care and Level 4 – Reactive Management. The review team attributes the difference to a lack of variance and sophistication in landscapes, therefore requiring less FTEs per acre to maintain a higher level of service than benchmarks may identify.

Exhibit 8 outlines the actual verses recommended staffing to maintain the grounds at KISD. In order to achieve a level of service appropriate for an educational environment, staffing should be increased. Taking into account seasonal load shifts during growing seasons, numbers dictated by the level of service model should be shifted to normalize the situation. During peak growing season, KISD may need to dedicate 3.5 FTEs to grounds. However, during non-growing seasons, grounds FTEs could be reduced. In order to accomplish this disparity, it is recommended that part-time summer help be hired. Local students are often a good resource for part-time summer help.

If KISD decides to increase staffing to recommended levels, the fiscal impact would be an annual cost of $59,717 ($9.57 X 20.0% Benefits X 8 Hours/Day X 260 Days/Year X 2.5 FTEs) based on KISD's mid-point pay for Pay Grade 2 – groundskeeper.

If KISD adds 2.5 groundskeepers and eliminates 1.5 general maintenance workers, the total impact would be a cost of $16,399 per year ($59,717–$43,318).

FACILITY MANAGEMENT INFORMATION TECHNOLOGY

Finding #3 – Although the current work order process utilizes available technology, there is no use of facility management information technology. This makes it difficult to track performance and obtain good data to make decisions.

Recommendation 2: Implement facility management information technology initially in the form of an automated work order management system (computerized maintenance management system—CMMS). This will support the improvement of effectiveness and efficiency of the management and execution of the facility operations.

Facility management information technology at KISD is currently limited to an e-mail trail of work requests. The

EXHIBIT 6
KOUNTZE ISD GROUNDS CURRENT LEVEL OF SERVICE
JULY 2008

LEVEL	1	2	3	4	5
DESCRIPTION	SHOWPIECE FACILITY	COMPREHENSIVE STEWARDSHIP	MANAGED CARE	REACTIVE MANAGEMENT	CRISIS RESPONSE
Turf Care	Grass height maintained. Mowed at least once every five days and as often as once every three days.	**Grass cut once every five days.**	**Grass cut once every ten working days.**	Low-frequency mowing scheduled based on species.	Low-frequency mowing scheduled based on species.
Fertilizer	Adequate fertilization applied to plant species according to their optimum requirements.	Adequate fertilizer level to ensure that all plant materials are healthy and growing vigorously.	Applied only when turf vigor seems to be low.	**Not fertilized**	Not fertilized
Irrigation	Sprinkler irrigated - electric automatic commonly used. Frequency of use follows rainfall, temperature, season length, and demands of plant material.	Sprinkler irrigated - electric automatic commonly used. Frequency of use follows rainfall, temperature, season length, and demands of plant material.	**Dependent on climate.**	No irrigation.	No irrigation.
Litter Control	Minimum of once per day, seven days per week.	Minimum of once per day, five days per week.	**Minimum service of two to three times per week.**	Once per week or less.	On demand or complaint basis.
Pruning	Frequency dictated primarily by species and variety of trees and shrubs.	Usually done at least once per season unless species planted dictate more frequent attention.	When required for health or reasonable appearance.	**No regular trimming.**	No pruning unless safety is involved.
Disease and Insect Control	Controlling objective is to avoid public awareness of any problems.	Usually done when disease or insects are inflicting noticeable damage, are reducing vigor or plant material, or could be considered a bother to the public.	**Done only to address epidemics or serious complaints.**	None except where the problem is epidemic and the epidemic condition threatens resources or the public.	No control except in epidemic or safety situations.
Snow Removal	Snow removal starts the same day that accumulations of .5 inch are present.	Snow removed by noon the day following snowfall.	Done based on local law requirements but generally accomplished by the day following snowfall.	**Done based on local law requirements but generally accomplished by the day following snowfall.**	Done based on local law requirements but generally accomplished by the day following snowfall.

EXHIBIT 6 (CONTINUED)
KOUNTZE ISD GROUNDS CURRENT LEVEL OF SERVICE
JULY 2008

LEVEL	1	2	3	4	5
DESCRIPTION	SHOWPIECE FACILITY	COMPREHENSIVE STEWARDSHIP	MANAGED CARE	REACTIVE MANAGEMENT	CRISIS RESPONSE
Surfaces	Sweeping, cleaning, and washing of surfaces should be done so that at no time does an accumulation of sand, dirt, or leaves distract from the looks or safety of the area.	Should be cleaned, repaired, repainted, or replaced when their appearances have noticeably deteriorated.	Cleaned on complaint basis. Repaired or replaced as budget allows.	**Replaced or repaired when safety is a concern and when budget is available.**	Serviced only when safety is a consideration.
Repairs	Repairs to all elements of the design should be done immediately.	Should be done whenever safety, function, or appearance is in question.	Should be done whenever safety or function is in question.	**Should be done whenever safety or function is in question.**	Should be done whenever safety or function is in question.
Inspections	A staff member should conduct inspection daily.	A staff member should conduct inspection daily.	Inspections are conducted once per week.	**Inspections are conducted once per month.**	Inspections are conducted once per month.
Floral Plantings	Maximum care, including watering, fertilizing, disease control, disbudding, and weeding, is necessary. Weeding is done a minimum once per week.	Care cycle is usually at least once per week, but watering may be more frequent. Bed essentially kept weed free.	**Only perennials or flowering trees or shrubs.**	None.	None.

SOURCE: Maintenance Staffing Guidelines Grounds Management, The Association of Higher Education Facilities Officers, 2002.

EXHIBIT 7
KOUNTZE ISD'S GROUNDS CURRENT LEVEL OF SERVICE AND MATCHING STAFFING CRITERIA
JULY 2008

LEVEL	1	2	3	4	5
MOWABLE ACREAGE	SHOWPIECE FACILITY	COMPREHENSIVE STEWARDSHIP	MANAGED CARE	REACTIVE MANAGEMENT	CRISIS RESPONSE
85	4.84 FTEs	3.63 FTEs	2.62 FTEs	1.89 FTEs	1.26 FTEs

NOTE: FTEs = Full-time Equivalents.
SOURCE: Kountze ISD, School Review Surveys, May 2008.

EXHIBIT 8
KOUNTZE ISD'S GROUNDS ACTUAL VS. RECOMMENDED STAFFING PER DESIRED LEVEL OF SERVICE
JULY 2008

MOWABLE ACREAGE	CURRENT STAFF	CURRENT LEVEL OF SERVICE	STAFF FOR CURRENT LEVEL OF SERVICE	DESIRED LEVEL OF SERVICE	RECOMMENDED STAFFING	DIFFERENCE ACTUAL VS. RECOMMENDED
85	1 FTE	Level 3/4	2.62/1.89 FTEs	Level 2	3.5 FTEs	2.5 FTEs

NOTE: FTEs = Full-time Equivalents.
SOURCE: Kountze ISD, School Review Surveys, July 2008.

work requests are categorized by campus and kept for an unspecified duration after being printed. Craftspersons are dispatched by the maintenance director via cell phone in an emergency. There is no feedback mechanism available to the Maintenance Supervisor after work has been completed, therefore impeding his ability to track performance and make informed decisions.

Computerized Maintenance Management Systems (CMMS) is a type of facility management information technology whose purpose is to automate and manage work requests as efficient as possible and provide the basic information districts need to make informed and timely decisions. The benefits of automation include:

- better management data;
- increased efficiency;
- better tracking of assets/equipment;
- organizes facilities management data & information;
- expedited decision making;
- improved maintenance quality/labor tracking;
- improved communication;
- reduced operating costs; and
- enhanced use of facility space.

Many CMMS software packages offer components that are not needed for accomplishing the primary mission of implementation. In fact they often complicate the systems' configuration and interface rendering it laborious to use and maintain. The *Planning Guide for Maintaining School Facilities* published in 2003 by the U.S. Department of Education offers helpful guidelines for evaluating the ever growing number of CMMS software packages on the market.

Recommendations include the following:

1. *The CMMS should be network- or Web-based, be compatible with standard operating systems, have add-on modules, and be able to track assets and key systems. Source codes must be accessible so that authorized district staff are able to customize the system to fit their needs as necessary. In terms of utility, a good CMMS program will:*
    - *acknowledge the receipt of a work order;*
    - *allow the Maintenance Department to establish work priorities;*
    - *allow the requesting party to track work order progress through completion;*
    - *allow the requesting party to provide feedback on the quality and timeliness of work;*
    - *allow preventive maintenance work orders to be included; and*
    - *allow labor and parts costs to be captured on a per-building basis (or, even better, on a per task basis).*
2. *At a minimum, work order systems should account for:*
    - *the date the request was received;*
    - *the date the request was approved;*
    - *a job tracking number;*
    - *job status (received, assigned, ongoing, or completed);*
    - *job priority (emergency, routine, or preventive);*
    - *job location (where, specifically, is the work to be performed);*
    - *entry user (the person requesting the work);*
    - *supervisor and craftsperson assigned to the job;*
    - *supply and labor costs for the job; and*
    - *job completion date/time.*

Implementation of an automated work order system requires careful forethought and development of data standards to ensure long-term usability of the system. Many CMMS systems fail because the data is not standardized and maintainable. Proper implementation and the use of data standards will lead to valuable and effective information and work management systems. Because there are currently no CMMS systems in use at KISD, there is an opportunity to do it right the first time.

Any automated system should be implemented as a tool to support business processes. Thus, it is imperative to document work processes prior to implementing technology. Then a specific set of data standards should be established to provide the framework for data management. Most often, Construction Specifications Institute (CSI) Uniformat or Omniclass standards are used for creating building information models. These standards provide guidance on defining naming conventions and parameters, such as buildings, building systems, equipment, components, work processes, and attributes. Use and enforcement of these standards increase the quality of the data, optimize the system performance, and enable better reporting.

Developing a strategic technology plan will provide the long-term focus needed to successfully select and implement a system and ensure that it supports facility business processes.

The most successful CMMS implementations are those where the facility manager had a sound strategic technology plan, automated broadly, emphasized training, did not try to over-populate the system, had good internal electronic communication in place, had a dedicated automation manager, had buy-in from top to bottom of the organization, understood all costs, and maintained good administrative procedures.

The critical success factors in creating a strategic technology plan include the answers to the following questions.

- Who needs to participate on the planning team?
- Who needs to commit to the objectives of the plan?
- What are the roles of vendors and consultants in preparing a plan?
- What are the predictable do's and don'ts?
- What should be included in the plan?
- Have we set up implementation expectations in the strategic plan?

In order to start, the district should assemble a formal Technology Advisory Team (TAT). The team should consist of an integrated team of facility representatives from the district. Each individual on the team has an opportunity to provide input regarding his/her specific area of expertise or requirements of the selected system. The team is responsible for overseeing implementation and optimization, data integrity and application stewardship, adjudicating resource allocation, evaluating and recommending future needs and requirements. The team is also responsible for maintaining the data and data standards. The team must "own" the technology vision and also be the vehicle for maintaining momentum.

The district should consider a team consisting of a:

- Maintenance Supervisor;
- Information Technology (IT) manager(s);
- Chief Financial Officer; and
- customer representative.

The following are issues that the TAT will need to grapple with:

- Who are the customers?
- Who needs to commit to the objectives of the plan?
- What are the roles of staff, vendors and/or consultants in preparing a plan?
- Have we set up the right expectations in the strategic plan?
- How do we make our IT work for us?
- How do we gain commitment?
- Is our FM department IT savvy?
- What are the true costs?
- Who owns the database?
- Who is responsible for standards?

The team that does the planning should also lead the implementation and on-going management of the technology initiative. Typically, the team that selects the strategic goals will be a little smaller than the one that follows through with the implementation. However, in the case of small to medium districts, like KISD, the team may not change size.

While it is not essential for every interested stakeholder to participate on the planning team, it is essential for all of them to commit to the goals. They will only do so if they know their interests have been taken into account in the decision-making process.

Once established, the team must take a look at what the strategic objectives of the organization are and then mirror them with the technology they are trying to implement. A close evaluation of the existing service level should be made to benchmark the current status of the organization. Next, the district needs to determine its preferred service level (see previous discussions on this topic). Finally, the team must link the organization's technology goals to help achieve the desired service level.

Typical FM technology projects incur problems, such as too much reliance on vendor claims or a sense of urgency that shortcuts methodical implementation. The following lists common steps to take and to avoid so that the district will get the desired benefits from FM technology while maintaining cost control:

- go through the discipline of identifying detailed functionality from FM technology that would benefit both maintenance's clients and staff;
- emphasize training;
- understand all costs;
- ask simple questions about how things are done;
- test applications yourself; don't just watch demonstrations;
- try prototypes and get feedback from users;

- start by fixing small problems to win support;
- structure big project so there are payoffs along the way;
- select your best employees for implementation;
- settle for 80% solutions; and
- agree on realistic goals.

Do not:

- overpopulate the database;
- try to use a large project to cover costs;
- set vague objectives such as "improve productivity";
- structure the implementation to avoid conflict;
- select a technical implementation leader unskilled in negotiation;
- assume that interviewing users reveals exactly what they need; or
- emphasize incremental improvement if what is needed is fundamental change.

If the district considers CMMS systems, good general procurement practices should ensure acquisition of the appropriate system. However, the following recommendations are offered:

- Obtain a short list of two or three vendors.
- Visit at least two reference sites.
- Use a predetermined scorecard for evaluation.
- Weight evaluation criteria.
- Have vendors demo at your facility.
- Provide incentives for value engineering.

There are many types of CMMS packages available on the market today, including some that are freeware.

COMPREHENSIVE MAINTENANCE PROGRAM

Finding #4 – The Maintenance Supervisor provided a listing of large maintainable assets and a description of preventive maintenance being performed; however, no formalized preventive maintenance program is in place to provide the long-term care necessary to extend the useful life.

Recommendation 3: Implement a comprehensive maintenance program.

KISD's maintenance program is insufficient to provide the long-term stewardship needed to preserve the district's facilities. KISD's maintenance program consists mainly of breakdown maintenance, corrective actions, responding to demand work requests, periodic facility inspections, and filter replacements. The Maintenance Supervisor indicated that coils were being cleaned on a cyclical basis; however, no documentation was observed to support or contradict this statement.

There was little evidence of preventive maintenance (PM) being performed on any equipment beyond that described above, with very little historical documentation of the work performed. KISD did provide a filter schedule and equipment list for the new multi-purpose building and middle school. Additionally, they were in possession of building floor plans with equipment tags called out in general locations. KISD has yet to realize the impact of not performing the appropriate maintenance because of the relatively new age of several of their facilities; however, continuing to neglect investing in a formalized maintenance program will result in inordinate expenditures and a shortened useful life of building systems and schools.

With few exceptions, PM has been considered the most effective way of maintaining building systems and extending the service life of equipment. Most PM programs are based on the assumption that there is a cause and effect relationship between scheduled maintenance and system reliability. The primary assumption is that mechanical parts wear out, thus the reliability of the equipment must be in direct proportion to its operating age.

Reliability Centered Maintenance (RCM) was developed to include the optimal mix of reactive time- or interval-based, and condition-based maintenance. RCM is a preventive maintenance process that identifies actions that will reduce the probability of unanticipated equipment failure that are the most cost effective. The principle is that the most critical facilities assets receive maintenance first, based on their criticality to the mission of the facility or organization dependent on that asset. Maintainable facilities assets that are not critical to the mission are placed in a deferred or "run to failure" maintenance category, and repaired or replaced only when time permits or after problems are discovered or actual failure occurs.

A streamlined RCM process allows organizations to use their scarce personnel and funding resources to support the most critical assets that have the highest probability of failure to the organization's mission.

Streamlined RCM programs have several clear benefits:

- Managers, not equipment, plan shop technicians' activities and time.
- Planning of work allows labor, parts, materials and tools to be available when needed.

- Equipment part replacements are minimized. The probability that bearings need only lubrication and not replacement is maximized. PM also minimizes the potential need to not only replace bearings, but the shaft, rotating parts, bearing housings, casings, and possibly motors.
- Managers/schedulers have time to evaluate what other work could be done at the same time and location as the planned PM, optimizing shop productivity.
- Engineers can study equipment maintenance histories to implement changes that could improve equipment performance or energy efficiency.

The following sections further define the various aspects of a streamlined RCM program.

Passive Monitoring: Passive monitoring (e.g., corrective, reactive, or breakdown maintenance), does have a place in facility operations, but should be limited to equipment that has been evaluated to have no risk of business interruptions or consequences of direct or indirect damage to facilities. "Run-to-failure" plans can be cost effective where the cost of PM over the life cycle of the equipment is greater than the loaded cost of equipment replacement.

Preventive Maintenance: Preventive Maintenance is interval-based work that is planned and scheduled to allow maximum efficiency, minimize excessive labor and parts replacement and prolong the useful service life of equipment. A comprehensive PM program allows the building systems to operate at full efficiency for their useful life and can prevent expensive repairs due to equipment failure. PM programs are also required to preserve most equipment warranties. PM is deemed appropriate for equipment where abrasive, erosive, or corrosive wear takes place, or material properties change due to fatigue.

Preventive Maintenance should be scheduled to be performed at specific frequencies and completed at times in the aging process of the equipment where it can be restored with minimal investment. This proactive approach through such tasks as filter replacements, belt tightening/changes, cleaning, etc., ensures that the equipment ages as slowly as possible.

Predictive Maintenance (also referred to as condition-based maintenance or predictive testing and inspection – PT&I): Predictive testing and inspection (PT&I) should be implemented as a part of the overall RCM program. Equipment operating conditions should be monitored during the PT&I inspections and trends developed to help determine the need for additional PM and the optimum time for equipment overhaul or replacement.

The best use of PT&I is to implement simple visual/audible and non-destructive procedures (e.g., temperature and pressure readings) to record conditions at a specific time (snap shot) when the equipment is inspected at the time of PM. When a series of condition records (snap shots) are compiled, a trend analysis can be developed. This trend analysis is the basis of PT&I and can provide factual data to support capital expenditure decisions regarding building systems.

Specific PT&I methods that have proven to be effective are listed herein:

- *Airborne Ultrasonic Testing* – Most rotating equipment and many fluid system conditions will emit sound patterns in the ultrasonic frequency spectrum. Changes in these ultrasonic wave emissions are reflective of equipment condition. Ultrasonic detectors can be used to identify problems related to component wear as well as fluid leaks, vacuum leaks, and steam trap failures
- *Infrared Thermography* – Infrared (IR) thermography can be defined as the process of generating visual images that represent variations in IR radiance of surfaces of objects. IR tries to detect the presence of conditions or stressors that act to decrease a component's useful or design life. Many of these conditions result in changes to a component's temperature that can be detected with IR.
- *Motor Circuit Evaluator (MCE) Testing* – MCE is used during acceptance to evaluate the condition of motor power circuits. Any impedance imbalances in a motor will result in a voltage imbalance. Voltage imbalances in turn will result in higher operating current and temperatures, which will weaken the insulation and shorten the motor's life.
- *Vibration Analyses (Rotating Equipment)* – Equipment which contains moving parts vibrates at a variety of frequencies. These frequencies are governed by the nature of the vibration sources, and can vary across a wide range or spectrum. If any of these components start to fail, its vibration characteristics change, and vibration analysis detects and analyzes these changes.
- *Lubrication Oil Analyses* – Oil analysis (OA) is the sampling and laboratory analysis of a lubricant's properties, suspended contaminants, and anti-wear additives. OA is performed during routine preventive maintenance to provide meaningful and accurate information on lubricant and machine condition. By monitoring oil analysis sample results over the life of a particular machine, trends can be established which can help eliminate costly repairs.

- *Water Chemistry Analysis* – The use of chemistry to determine the chemical make-up of water used in hydraulic systems to help identify existing or future problems. This analysis should include pH, conductivity, Phenolphthalein and Methyl Purple alkalinity, hardness, Iron (and any metals specific to the system), Sulfate, Nitrate, and Ammonia.

Determination of the right type of maintenance for various equipment types can be determined by following a logic-tree decision-making process as shown in **Exhibit 9**.

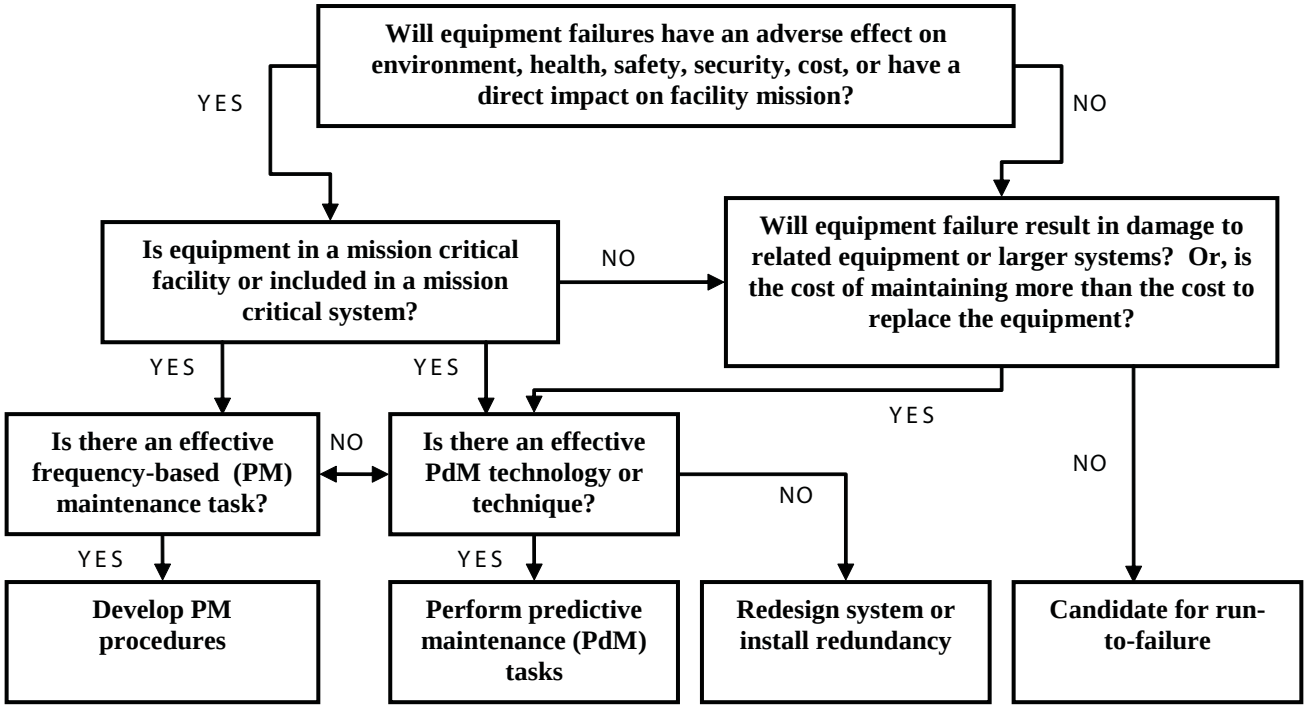
The district should implement a comprehensive maintenance program to improve the stewardship of their facilities and decrease the total cost of ownership of their assets. A comprehensive maintenance program includes the right mix of preventive maintenance (PM), predictive maintenance (PdM), and reactive maintenance (i.e., passive monitoring) components.

To develop a comprehensive maintenance program, KISD should begin by identifying systems and components, prioritizing maintenance activities, developing job plans, and estimating job plan completion times. Each activity is further defined below:

Step 1: Identification of Systems and Components – Comprehensive maintenance programs begin with a facilities assessment to identify the various assets' systems and maintainable components. All pertinent information should be collected (e.g., manufacturer, serial #, model #, capacity, size, etc.), and a determination of the present condition made, to establish a baseline from which to work. Knowing the age and condition of equipment is a prerequisite for maintaining it properly. For more about facilities asset identification and assessments.

Step 2: Prioritizing Maintenance Activities – Once the facilities data has been compiled, the logic tree described in **Exhibit 9** can be applied to help determine at what level each piece of equipment should be maintained. Equipment to be included in the maintenance program should be selected based on the cost of performing advanced maintenance weighed against the cost impact of deferring the maintenance.

EXHIBIT 9
RELIABILITY CENTRAL MAINTENANCE LOGIC TREE
JULY 2008



NOTE: Preventive Maintenance (PM); Predictive Maintenance (PdM)
SOURCE: Adapted from National Aeronautics and Space Administration, Reliability Centered Maintenance Guide for Facilities and Collateral Equipment, February 2000.

Information should be obtained during the data collection process to associate a priority with each system and asset in each district facility. Criticality of each asset should be determined through a review of the system's function, area served, and importance of reliability. The criticality assessment provides the means for quantifying how important the function of a system and its components are relative to the identified mission. A numerical ranking of one through ten can be adopted and applied in accordance with **Exhibit 10**. The equipment can then be prioritized based on its criticality of maintaining functionality of the facilities or other predetermined district mission needs. Prioritization becomes increasingly important as available resources become more scarce.

The criticality factors for each piece of equipment in conjunction with the logic tree **(Exhibit 9)** can then be used to determine and adjust the level of service attributed to each piece of equipment based upon available resources.

Step 3: Developing Job Plan & Estimating Completion Times- Once the criticality analysis is complete and the appropriate maintenance methods established for each type of equipment and by location, maintenance tasks for all equipment types should be compiled.

Maintenance tasks should be based on manufacturer's recommendations and/or job plans developed by industry standard publications such as R.S. Means, General Services Administration (GSA), and Whitestone and adapted based on experience. Detailed tasks, performance times, and frequencies by equipment type should be developed. Care should be taken to format the tasks in a mean and method for future uploading into a CMMS.

In addition to specific tasks, standard performance times and frequencies, the job plans should also describe a process for resolving maintenance problems and the specific tools and materials needed. Some problems will be simple and the appropriate corrective action can be included among the other information in the task list. Other problems may not have an obvious solution, and in these cases the responsibility and process for addressing the problems should be clear.

Once a comprehensive list of maintenance tasks is developed, it may be necessary to again look at the prioritization of items or adjust the frequency of tasks to fit staff availability. Because resources are finite the maintenance supervisor will need to use some judgment about which tasks are most important. When setting these priorities it is important to keep in mind the criticality rankings previously determined, so as to not overlook and reduce maintenance on mission critical systems.

The fiscal impact of creating a comprehensive maintenance program is limited to the internal allocation of resources to inventory and set up the job plans, and the purchase of industry standard job plans if the district does not already have access to these resources. Because of the relative newness of the district's facilities, pertinent equipment information

EXHIBIT 10
CRITICALITY/SEVERITY ASSESSMENT CATEGORIES
JULY 2008

RANKING	EFFECT	COMMENT
1	None	No reason to expect failure to have any effect on safety, health, environment, or mission.
2	Very Low	Minor disruption to facility function. Repair to failure can be accomplished during trouble call.
3	Low	Minor disruption to facility function. Repair to failure may be longer than trouble call but does not delay mission.
4	Low to Moderate	Moderate disruption to facility function. Some portion of the mission may need to be reworked or process delayed.
5	Moderate	Moderate disruption to facility function. 100% of the mission may need to be reworked or process delayed.
6	Moderate to High	Moderate disruption to facility function. Some portion of the mission is lost. Moderate delay in restoring function.
7	High	High disruption to facility function. Some portion of the mission is lost. Significant delay in restoring function.
8	Very High	High disruption to facility function. All of mission is lost. Significant delay in restoring function.
9	Hazard	Potential safety, health, or environmental issue. Failure may occur with warning.
10	Hazard	Potential safety, health, or environmental issue. Failure will occur without warning.

SOURCE: National Aeronautics and Space Administration, Reliability Centered Maintenance Guide for Facilities and Collateral Equipment, February 2000.

can be abstracted from construction documents with relative ease since the associated maintenance tasks and times are provided by industry standard publications.

If internal resources are not capable or able to accomplish this task, additional resources (i.e. consultants) could be hired to aide in the data collection and program set up. Outside consultants could typically be procured for $.05/ square foot to aide in the data collection and program setup. Multiplying $.05/square foot by the district's total square footage (336,827 square feet) equates to approximately $16,841.

Computerized Maintenance Management Systems (CMMS) focus on such preventive maintenance programs for school districts of all sizes. These systems can not only help schedule services on equipment, they can also track costs and activities associated with each asset entered into the system. The right system will help management identify the particular skills they need at various times of the year, allowing them to manage and balance workloads.

POLICIES AND PROCEDURES

Finding #5 – While there are many good facilities initiatives and effective processes, they are informal and lack documentation.

Finding #6 – KISD uses service contracts for pest control, fire & life safety inspections and other specialty items; however, no written annual contracts are in place.

Finding #7 – While there have been some efforts to initiate a master plan, no formal master plan exists.

Recommendation 4: Formalize and document facilities planning and maintenance policies and procedures. This should include but not necessarily be limited to formalizing processes for the following:

- master planning;
- school design and facility performance guidelines;
- value engineering and post-occupancy reviews;
- maintainability reviews during design phases;
- school commissioning;
- facilities documentation exchange and control;
- facilities management information standards;
- facilities performance measurement (key performance indicators);
- capital needs assessment; and
- contract oversight and control.

KISD lacks formal and documented processes for many of their facilities planning, maintenance, and management efforts. The implementation of formal and documented processes for facilities management could result in significant cost avoidance and increased staff efficiencies. While there is effort required to document the processes, it is generally small in comparison to the potential cost savings. Examples of potential cost avoidance and savings are presented in each of the following subsections.

MASTER PLANNING

Currently, short- and long-term planning is conducted primarily by the school superintendent and school board. KISD monitors attendance and if a growth pattern is detected, then options are discussed. Other factors should be considered including: facility condition, life cycle analyses, long-term capital needs requirements, budgets, timelines, and impact of maintenance programs.

A school facility master plan is the "blueprint" for decision-making throughout the school district. It is a formal way of communicating the district's needs, priorities, and intentions to all stakeholders. The master plan also establishes the necessary documentation for stakeholders, funding authorities, and the community to approve funding. As such, the process of master planning establishes a forum through which interested members of the community can voice their opinions to school administrators. This collaborative planning process helps the community feel that their views are valued.

Good master plans include short- and long-term objectives linked to the mission and vision of the school district. A more detailed master plan would include the following:

- introduction;
- master plan definitions;
- district strategic objectives (mission, vision, values, initiatives);
- annual expenditures summary;
- historical school development and renewal;
- historical enrollment;
- enrollment projections;
- projected enrollment vs. permanent capacity;
- enrollment configurations:
    - current district grade configuration;
    - anticipated grade configuration changes; and
    - anticipated effects on facility needs;

- anticipated school boundary changes or consolidation of schools within the district;
- economic environment of the district;
- other community factors that will affect school facility needs;
- campus areas;
- general facility data;
- campus educational adequacy summaries;
- portable buildings used for academic purposes;
- review of maintenance practices and impact;
- facility condition assessment data;
- 10-to 20-year modernization/replacement program;
- prioritization of capital projects (new schools and renovations);
- cost assumptions;
- development options/alternatives;
- recommendations; and
- project specific timelines.

Carefully developed and comprehensive master plans provide information to the community and stakeholders that aids in the approval of bonds and funds sufficient to adequately maintain school facilities. Comprehensive master plans also provide adequate documentation to allow decision-makers to objectively and equitably prioritize needs and make better facility decisions.

DESIGN GUIDELINES

The completion of the new middle school and multi-purpose facility has been carried out without the aid of documented detailed school district education specifications or design guidelines. As the school district grows and key staff changes over time, the collection of intellectual knowledge in the schools will be critical. Failure to formally document improvements may lead to repeating mistakes of the past.

The best way to capture valuable intellectual knowledge regarding best practices in school design and use is to develop design guidelines or district education specifications for school design. The practice of developing the guidelines can and should incorporate the architect, facilities staff, superintendent, CFO, and teachers. The design guidelines should include: space and layout standards, materials, furnishings, mechanical systems, building automation systems, and other specialty construction.

MAINTAINABILITY REVIEWS

Many of the schools, both new and old, have maintenance issues that may have been resolved by minor changes incorporated through a review of the designs by personnel familiar with the maintenance of the schools. Facility maintenance and performance reviews by the facilities director and energy manager should be incorporated and documented. These reviews generally lead to reduced maintenance costs and often lower capital renewal costs over time.

It is generally accepted that the operations and maintenance costs of schools is in the range of two to four times the cost of construction over the life of a facility. Yet, most of the focus continues to be on design and construction. Even value engineering (an organized effort directed at analyzing designed building features, systems, equipment, and material selections for the purpose of achieving essential functions at the lowest life cycle cost consistent with required performance, quality, reliability, and safety) tends to primarily consider the reduction of first-time costs over the long-term maintainability of building systems. The potential to significantly impact the long-term operating costs should be enough to include the Maintenance Supervisor in the review of systems and materials to be used in new schools.

COMMISSIONING

KISD does perform some aspects of a formal commissioning process. KISD indicated that systems were being tested, adjusted, and balanced report by the contractor for the new facilities. However, there is a lack of formal processes when the construction manager turns over a new facility to KISD for use and occupancy.

Commissioning, in its most basic form, is the process of ensuring that building systems are operating in accordance with the design intent and the owner's requirements. More specifically, commissioning:

- defines the building systems performance criteria;
- provides a validated baseline for building performance; and
- provides a means of tracking and evaluating building performance over time.

New buildings and systems often do not operate as intended. When these systems do not operate correctly, they create problems for building occupants and for those managing the facility. Commissioning these systems ensures the building is performing as initially specified.

Commissioning is typically performed in new and existing buildings for a few key reasons:

- to verify that new or existing building systems are operating as designed;
- to identify unexplained rises in energy use;
- to identify an unexplained increased number of thermal comfort complaints; and/or
- to achieve Leadership Energy and Environmental Design (LEED) certification for buildings.

Commissioning can uncover many building system errors that may not otherwise be found, such as:

- ductwork disconnected from diffusers sending conditioned air to the above-ceiling space instead of the space to be conditioned;
- Variable Air Volume (VAV) box re-heat valves stuck open, causing over-heating of zones;
- un-insulated conditioned air ductwork located in unconditioned spaces;
- fans rotating backwards;
- lighting controls programmed incorrectly causing lights to stay on longer than necessary;
- cross-connected Heating, Ventilating, and Air Conditioning (HVAC) sensors, causing systems to over-heat and over-cool;
- clogged filters;
- improperly installed condensate drainage systems resulting in pooling water on the roof and creating the potential for roof damage;
- non-working duct smoke detectors; and
- non-working emergency and exit lights.

Because these problems were discovered and corrected as part of the commissioning process, the building owners gained systems that performed as designed and were safer. They also increased energy efficiency, thermal comfort, cost less to operate, improved the overall safety, and had fewer tenant complaints.

DOCUMENT MANAGEMENT

Currently, the Construction Manager provides some electronic and some hard copies of school design drawings, specifications, and Operations and Maintenance (O&M) manuals. Inconsistencies in submittal formats make it difficult to track the valuable information gathered after a project. Proper formatting, organization, referencing and use of the data will not only help maintenance staff improve processes and efficiency, but aid architects and planners in minimizing future renovation costs, and possibly improve the functionality and safety of the schools.

Experience has shown that institutional organizations and government agencies across the U.S. spend billions of dollars unnecessarily to re-collect or regenerate facilities data and information that has already been created in the past. This is information needed to properly operate, maintain, and improve facilities over their life cycle. Today, this information is also used by first responders in cases of emergency and decision makers to make better decisions about facilities. Easy access to the data is essential.

There are several key issues to making this information most useful. The data needs to be complete, comprehensive (right level of detail), standardized, well organized, and readily accessible. Best practices include providing specifications for designers and contractors to follow to generate and format the data. At a minimum, the facilities data compiled for every new school facility should include:

- project specifications;
- design drawings;
- design factors/ assumptions;
- shop drawings;
- as-built drawings;
- submittals;
- warranties;
- construction photographs;
- commissioning reports;
- general system/ equipment descriptions;
- general operating instructions;
- equipment inventories;
- equipment attributes;
- installation instructions;
- set-up/calibration instructions;
- equipment O&M manuals;
- start-up/shut down procedures;
- spare parts data;
- wiring diagrams;
- material safety data sheets (MSDS);
- preventive maintenance procedures; and
- facility plan with Emergency Shut-Off locations.

Organization and formatting of the data in electronic form should make it easy to find the information listed. Placing documents in directories labeled as 'Specifications', 'Drawings', and 'PM Procedures' is best. Drawings should also be labeled and stored as complete sets by architectural system. O&M Manuals should be filed in accordance with CSI Masterformat or Omniclass guidelines. The equipment inventories and preventive maintenance procedures should

be in a flat file format or database that can be easily migrated into a computerized maintenance management system (CMMS). The current format is not conducive to easy data migration.

PERFORMANCE MEASUREMENT

The development of sound data information standards and automating processes enhances facilities performance measurement and the accuracy of key performance indicators (KPIs). The objectives of automating work processes are to increase performance, measure facilities performance, and provide better information to make the best decisions regarding facilities.

The current performance measurement at KISD is limited in scope and requires time-consuming manual data generation via spreadsheets. No performance measurement data was provided to the review team. No benchmark information exists regarding operational costs and capital expenditures per square foot. There are great opportunities to improve facilities performance through the development of more specific KPIs aligned with the mission and vision of KISD.

Measuring facilities operations performance in today's environment is the route to credibility. The focus must be on prevention, not cure, and there must be recognizable aims and achievable prioritized objectives. Metrics provide essential links between strategy, execution, and ultimate value creation.

There are many ways of identifying and developing metrics and KPIs for use in school facilities management performance measurement. It is also easy to find samples of hundreds of potential facility maintenance metrics. However, it is not easy to identify and implement the right metrics to link facility operations and maintenance to strategy. The right KPIs should focus on those services that have the most prominent place in KISD's strategic plans. The right mix of KPIs should consider all three aspects of facilities performance:

- inputs: indicators that measure the financial, staffing, portfolio condition, and operating impacts from limited budgets/resources, churn and construction, and renovation activities;
- process: indicators that measure how efficiently the department is performing its key process and tasks; and
- outcomes: indicators that provide a measure of how successfully the facilities function is performing at the enterprise level.

Educational organizations at the forefront of their industry have developed best practices by using a balanced scorecard approach to KPIs. The balanced scorecard is an approach that integrates financial and non-financial performance measures to show a clear linkage between the institution's goals and strategies. Most balanced scorecards consider four perspectives: customer perspective, process perspective, learning and growth perspective, and a financial perspective. The framework set by the balanced scorecard approach provides an excellent methodology to measure overall performance as facilities managers.

CAPITAL PLANNING

The topic of facility investments and capital planning for school facilities remains at the forefront of the educational facilities executive's world. School organizations across the U.S. are facing the largest collection of aging buildings ever encountered. Deferred maintenance backlogs continue to grow at unprecedented rates, while the toll it has taken on facilities is reaching critical levels. Current research and data to support the need for better facility capital investments and asset management:

- obtain objective and credible data to make the rational and informed facilities investment decisions through prioritizing needs;
- streamline facilities management processes and reducing the total cost of ownership;
- improve the condition of facilities;
- extend the life of assets through proper maintenance and repair funding and decisions;
- minimize safety and security risks at facilities;
- minimize the disruption to customers (passengers) and tenants caused by facility system failures by maximizing critical system reliability;
- enable optimal use of facilities and infrastructure in support of the agency/organizational mission; and
- improve overall stewardship of facilities and maximizing return-on-investment for stakeholders.

CONTRACT OVERSIGHT AND CONTROL

KISD uses service contracts for pest control, fire & life safety inspections and other specialty items; however, no written annual contracts are in place to define the contractual relationship. Improvements are needed in contract administration with respect to the documentation, organization, policies and procedures, and processes to control oversight of contractor performance. Without contracts in place there is no means for holding contractors liable for the work being performed and the district opens themselves up to certain liabilities. Additionally, the lack of

documented contracts provides no means to measure contractor performance against value added to the district. It is recommended that the district develop a standard contract that can be applied to contracts of various sizes, and that these contracts are executed for all ongoing services.

As new contracts are put in place, KISD should focus on contract oversight by adopting practices similar to those outlined in The Federal Acquisition Regulations, such that a Contracting Officer (CO) and a Contracting Officers Technical Representative (COTR) are established. The CO, responsible for signing a contract on behalf of the organization, and the COTR, responsible for overseeing the work, should not be the same person to avoid a conflict of interest. In a small school district the formalities can be foregone, but the CO typically would be the Superintendent and the COTR would be the Maintenance Supervisor.

KISD needs to focus on the responsibilities of the Maintenance Supervisor in order to improve contract administration within the district. The Maintenance Supervisor is a key player in the contract award and administration process. The Maintenance Supervisor should act on behalf of the Contracting Officer in contractual matters and is responsible for successfully overseeing completion of assigned contract tasks by contractors. The supervisor's role is vital in ensuring successful contract execution and completion. This individual also ensures that contractors fulfill contract terms and conditions, and that taxpayer dollars are prudently spent.

The Maintenance Supervisor should provide oversight and is in the best position to recommend adjustments to the contract that improve services and capture any cost saving opportunities for the district. The Maintenance Supervisor should also conduct inspections, collect customer feedback on services, manage quality assurance inputs and data, and coordinate any activities by others, such projects that will impact contract operations.

The Maintenance Supervisor should monitor contractor performance and make payment approval/disapproval recommendations. The following is a list of general duties and responsibilities:

- provide technical assistance to contract management in coordinating services under the contract;
- coordinate orientation sessions to contractor staff to acclimate and familiarize them to the agency environment;
- conduct orientation briefings;
- monitor work performance under the contract;
- keep the contractor on target;
- coordinate evaluation procedures;
- transition operations from contract to contract;
- administer expenditures for services, materials, and equipment against annual allocations;
- ensure compliance by the contractor;
- develop contingency plans in case of a break in service;
- approve contractor's invoices for payment; and
- provide approval for all expenditures of funds by the contractor.

FACILITIES CONDITION ASSESSMENT PROGRAM

Finding #8 – There is no current process of assessing facility condition, identifying deferred maintenance backlogs, or for evaluating capital needs of the existing facilities.

Recommendation 5: Initiate a periodic facility condition assessment (FCA) process to prepare annual asset management plans and forecast future facility capital needs.

KISD's process of assessing facility condition, identifying deferred maintenance backlogs, or for evaluating capital needs of the existing facilities is insufficient to identify growing deferred maintenance. With the growth of the district and its programs, the district has placed greater emphasis on the design and construction of new schools and facilities, as well as expansion of existing buildings. This focus has resulted in a neglect of practices to identify needs and adequately maintain older buildings. This has not presented major issues to date due to the overall relative young age of the schools. However, as these schools age, capital planning procedures should be implemented to ensure the effective maintenance and repair of the schools. Failure to do so could result in significant unanticipated capital expenditures, increased deferred maintenance backlogs, and deteriorating school conditions.

There is no formal planning process for projecting and funding short- and long-range capital replacement items, such as roofing systems, pavements, mechanical/electrical/plumbing (MEP) and life safety systems in the schools. Currently, the only process reported included the preparation of a single table listing the general condition of building systems for the eight owned and one leased facility. The table identified the years of service and condition of the building system (including structure, foundation, plumbing, electrical, HVAC, floors, network wire, and roof) as poor, fair, good, or excellent.

KISD should initiate a periodic facility condition assessment (FCA) process to prepare annual asset management plans and forecast future facility capital needs. Comprehensive facilities master plans should include the following elements:

- a review of the district construction and improvement plans;
- five- to ten-year projections of enrollment by school, grade, and year;
- an analysis of school capacity over the planning period;
- a public input process to obtain community desires and needs;
- a five- or ten-year capital plan for existing facility maintenance and repair;
- a review of funding strategies; and
- an ongoing review and monitoring process for the plan.

The most important factor to achieve success in assessing the condition of school facilities is to evaluate needs without bias. There are a multitude of reasons to conduct FCAs. Some of the more common outcomes include:

- developing and justifying long-term or short-term capital budgets;
- identifying backlogs of deferred maintenance;
- identifying and prioritizing specific capital project needs;
- independently validating capital improvement project requirements; and
- verifying equitable distribution of capital funds among multiple schools.

The primary challenge that public educational facilities across the country have faced is that they have historically under funded maintenance of capital assets. Compounded by a portfolio of aging schools and infrastructure and the need to constantly modernize building systems and technologies, educational facilities are accumulating backlogs of capital expenditures. Taken together, the accumulated backlog of maintenance and repair is generally referred to as "deferred maintenance."

Concern about the deterioration of educational environments led to a number of collaborative studies by both educational and government associations. The identification and reduction of deferred maintenance has been the primary driving force of asset management programs for educational facilities. The studies also led to the development of the Facility Condition Index (FCI), one of the most recognized metrics for facilities asset management performance measurement.

Most public and private school systems generally use some form of facility condition assessment or life cycle analysis to determine backlogs of maintenance and repair and assess their facility needs. Findings and recommendations of best practices in facilities asset management (and facility condition assessments) have been researched and reported by the National Research Council independent of the specific approach. Key components to an asset management program include:

- standardized documented process that provides accurate, consistent, and repeatable results;
- detailed ongoing evaluation of real property assets that is validated at predetermined intervals;
- standardized cost data based on industry-accepted cost estimating systems (repair/replacement); and
- user-friendly information management system that prioritizes deferred maintenance and capital renewal.

The goal of an asset management program is to conduct facility condition assessments and create a facility investment plan that is:

- rational;
- repeatable;
- recognizable; and
- credible.

Asset management plans should independently validate funding requests and provide consistent and credible information to aid in appropriately allocating funding for major facility maintenance projects. The plans should support funding decisions to ensure equitable distribution of funds among schools and ensure proper stewardship of the facilities.

If internal resources are not capable or able to accomplish this task, additional resources (i.e. consultants) could be hired to aide in the assessment. Outside consultants could typically be procured for $.10 /square foot to aide in the data collection and program setup. Multiplying $.10/ square foot by the district's total square footage (336,827 square feet) equates to approximately $33,683.

COMPREHENSIVE TRAINING AND PROFESSIONAL DEVELOPMENT PROGRAM

Finding #9 – There was no internal training program or tracking mechanism for external training completed.

Recommendation 6: Initiate a comprehensive training program by developing individual training and professional development plans to minimize possible on-the-job-accidents, staff inefficiencies, repeat work, and to ensure that maintenance personnel are knowledgeable in current Operations and Maintenance (O&M) procedures and techniques.

KISD does not currently have a formal training or professional development program. Limited training is offered outside of basic biohazard safety training provided by the nurse and required certification training. KISD's budget did not indicate funds set aside specifically for training.

Not investing in ongoing training can result in increased on-the-job accidents, inefficient staff, and required repeat work. Adequate and continuous training is a key step in the development of individual performers.

Best practices show that 2-5% of a facility department's overall personnel budget should be spent on training and development. Although most organizations do not spend to this level, this best practice indicates the importance of training.

Training is the opportunity to educate the employees in the most effective way to utilize the available resources and to ensure that people understand the environmental rules and regulations regarding facilities and grounds. Information can be shared not only about the facilities and spaces, but also about the larger district environment and the industry in general.

Generally, there are four basic areas of training focus:

- training new employees in the maintenance and use of the facilities and grounds;
- training current employees who have changed task or function;
- training all employees when new statutes need to be enforced; and
- training all employees when new equipment or tools are purchased.

Managers must think creatively about how to provide high-quality training opportunities in the face of time and budget constraints. *The Planning Guide for Maintaining School Facilities* makes the following suggestions:

- sharing training costs with other organizations on a collaborative basis (e.g., training may be sponsored by several neighboring school districts or jointly by the school facilities department and the public works department in the same community);
- hiring expert staff or consultants to provide on-site supervision during which they actively help staff improve their skills while still on-the-job;
- developing training facilities, such as training rooms in which equipment and techniques can be demonstrated and practiced;
- offering tuition reimbursement programs which provide educational opportunities to staff who might not otherwise be motivated to improve their knowledge and skills; and
- building training into contracts so that vendors are obligated to provide training at either an on-site or off-site training center as a condition of the purchase of their products.

Additional suggestions include:

- utilizing current staff to perform training with respect to their expertise; and
- compounding the effects of training by having employees who have attended training report to those who were unable to attend due to resource restrictions.

Training typically refers to learning opportunities specifically designed to help an employee do his or her job better. "Professional Development" has a broader meaning which includes expanding participant's knowledge and awareness to areas outside their specific job duties, yet still related to the overall well-being of the organization. Such topics might include:

- asbestos awareness;
- energy systems;
- building knowledge;
- first aid;
- emergency response;
- biohazard disposal;
- technology use;
- universal precautions;
- right-to-know;
- first responder awareness; and

- first responder operations.

Finally, ongoing evaluation of training efforts, including all aspects of the experience, should be built into the program for educating employees about the facilities and grounds. Good training is timely, informative, effective, and keeps teachers, staff, students, and visitors healthy and safe.

The best training evaluations are the summaries of work orders related to the focus of the training regarding implementation of a Work Order System. Have the number of requests for "the problem area" decreased since training was instituted in regards to that area? Those items in the work plan that can be directly tied to training issues should be set up on a tracking system to monitor on a regular basis.

This monitoring can serve multiple functions; one, to track the effectiveness of the training, two, to be able to lobby for more money to do more training when the results are good, and to help identify areas where further training may be required.

KISD should develop individual staff training plans for each employee. The Maintenance Supervisor should conduct formalized training specific to all job operations and safety related to their staff's functions. Clear documentation of training should be referred to and reviewed periodically to ensure that consistent and updated training is provided and to measure safety improvement practices. It is also recommended that facility management staff document all safety related training conducted and that these documents be stored at a designated document center for easy access and reference for management and employees alike. It is encouraged that any training provided to the organization be videotaped for future reference and training opportunities.

As best practices show that 2 to 5% of a facility department's overall personnel budget should be spent on training and development, based on 5% of their personnel budget ($523,390 for fiscal year 2007–08), KISD should spend approximately $26,170 annually on training for their Maintenance Department.

Exhibit 11 identifies what training is typically included in a comprehensive training program, as well as indications of how such training is generally delivered and who should receive it. This should be used as a guideline to prioritize and select appropriate topics to meet the needs of KISD. Potential future positions have been included to increase relevance over time as dynamics and responsibilities change.

MONITOR IMPLEMENTATION OF ENERGY CONSERVATION MEASURES

Finding #10 – Energy conservation is a priority and a number of upgrades and related policies have been established; however, execution of the policies has opportunities for improvement.

Recommendation 7: Develop tighter controls to monitor implementation of energy conservation measures.

House Bill 3693 enacted by the state of Texas on May 23, 2007, and issued by the Board on February 1, 2008, states the following:

> *GOAL TO REDUCE CONSUMPTION OF ELECTRIC ENERGY. The board of trustees of a school district shall establish a goal to reduce the school district's annual electric consumption by five percent each state fiscal year for six years beginning September 1, 2007.*

The enactment of HB 3693 certainly provides encouragement to school districts to become increasingly aggressive in their energy conservation efforts. KISD has been proactive in trying to achieve this goal through the engagement of an energy management firm to provide a performance based energy savings contract. The contract provides for conservation measures guidance as well as capital replacement measures to obtain savings. KISD has developed a mission statement for energy conservation as follows:

KISD:

- is committed to the conservation of energy and natural resources.
- will operate facilities that provide students and staff members a comfortable, safe, and healthy environment.
- will improve energy efficiency and energy savings through energy-conservation measures and optimal usage of systems.
- will promote the importance of energy conservation.
- buildings will be operated in accordance with the Energy Conservation Guidelines (**Exhibit 12**).

In support of the mission statement, KISD has installed controls to coordinate building usage with HVAC run times. Monitoring controls have been installed in a zonal format, but currently only provide on/off control. Temperatures are controlled locally via thermostats. The new middle school and multi-purpose building were built with full scheduling and remote temperature control capabilities. Additionally, the district has implemented operational controls such as the staggered start-up of major systems to reduce peak demand.

EXHIBIT 11
TRAINING GUIDELINES
AUGUST 2008

	M & O Coordinator	Maintenance Supervisor/Lead	HVAC Mechanic	Electrician	Plumber	Carpenter	Maintenance Generalist	Painter	Ground Crew Leader	Grounds Worker	Clerk		Online	Video	Peer Delivered	Outside Provider
Asbestos Awareness	x	x	x	x	x	x	x	x				Regulatory	x			
Bloodborne Pathogens Safety	x	x	x	x	x	x	x	x	x	x	x		x	x	x	
Combustible & Flammable Liquids	x	x	x	x	x	x	x	x	x	x			x	x		
Confined-Space Entry	x	x	x	x	x		x						x	x		
Hazard Communications	x	x	x	x	x	x	x	x	x	x	x		x		x	
HAZ-MAT Spill Prevention & Control	x	x	x	x	x	x	x	x	x	x			x			
Lock-Out/Tag-Out	x	x	x	x	x		x						x		x	
Materials Handling, Storage, Use & ID	x	x	x	x	x	x	x	x	x	x	x		x			
Alcohol-Free Workplace	x	x	x	x	x	x	x	x	x	x	x	General Training	x			
Back Injury Prevetion	x	x	x	x	x	x	x	x	x	x			x		x	
Building Evacuation & Emergencies	x	x	x	x	x	x	x	x	x	x	x				x	
Emergency Response	x	x	x	x	x	x	x	x	x	x	x				x	
CPR Academic	x	x	x	x	x	x	x	x	x	x			x		x	x
Disaster Preparedness	x	x	x	x	x	x	x	x	x	x	x		x		x	
Electrical Safety	x	x	x	x	x	x	x						x	x	x	
Eye Safety	x	x	x	x	x	x	x	x	x	x			x	x	x	
Fall Protection	x	x	x	x	x	x	x	x					x	x		
Fire Extinguisher Safety	x	x	x	x	x	x	x	x	x	x	x		x	x	x	
Fire Prevention Safety	x	x	x	x	x	x	x	x	x	x	x		x	x		
General Contruction Safety	x	x	x	x	x	x	x	x					x	x		
General First Aid	x	x	x	x	x	x	x	x	x	x	x		x		x	x
Golf Cart	x	x	x	x	x	x	x	x	x	x	x			x	x	
Forklift		x	x	x	x	x	x	x	x	x				x	x	
Bucket Truck		x	x	x	x	x								x	x	
Job Specific Equipment		x	x	x	x	x	x	x	x	x				x	x	
Hand & Power Tool Safety	x	x	x	x	x	x	x	x	x	x			x	x	x	
Hearing Conservation	x	x	x	x	x	x	x	x	x	x			x	x		
Ladder & Scaffolding Safety	x	x	x	x	x	x	x	x	x	x	x		x	x		
Office Safety	x	x	x	x	x	x	x	x	x	x	x		x	x	x	
Cultural Differences	x	x	x	x	x	x	x	x	x	x	x				x	x
Personal Protective Equipment	x	x	x	x	x	x	x	x	x	x			x	x		
Sexual Harassment	x	x	x	x	x	x	x	x	x	x	x					x
Slips, Trips, & Falls Prevention	x	x	x	x	x	x	x	x	x	x	x		x	x		
H.S. Diploma/GED	x	x	x	x	x				x		x	Certification/ Licenses				x
College Degree	x															x
Technical Degree		x	x	x	x											x
Electrical -Master/Journeyman				x												x
Plumbing -Master/Journeyman					x											x
HVAC Certificate			x													x
On-the-Job						x		x		x						x
Department Procedures	x	x	x	x	x	x	x	x	x	x	x	General Personnel Practices			x	
Work Practices - Time Management/Organization	x	x	x	x	x	x	x	x	x	x	x		x			x
Supervision	x	x						x								x
Employee Relations - Counseling, Performance Evaluation	x	x						x								x
Work Order System	x	x	x	x	x	x			x		x		x		x	x

SOURCE: Facility Engineering Associates, Inc., July 2008

EXHIBIT 12
KOUNTZE ISD MISSION STATEMENT FOR ENERGY CONSERVATION
JULY 2008

ROOM TEMPERATURES	HEATING SEASON	COOLING SEASON
Classrooms, Computer Labs, Library, Band, Dance, Choir, Auditorium, Kitchens and Offices	70 Degrees	74 Degrees
Gymnasiums, Field Houses, Locker Rooms, Shops, Cafeterias and Corridors	70 Degrees	76 Degrees
Unoccupied Areas	60-65 Degrees	80-85 Degrees

SOURCE: Kountze ISD, Assistant Superintendent, 2008

The district has done well to implement policies and contracts to assist them in achieving their mission; however, opportunities for improvement abound via greater oversight and control. As the review team toured the district's facilities, the team noticed unoccupied spaces being abundantly cooled (temperature settings in the 60s). The problem is an issue of control wherein when controls are set to "on" the district has no means of deterring students and staff from lowering setpoints at the thermostat. In order to further the mission of KISD and achieve the adopted goals of increasingly saving electricity, KISD must adopt means to further control temperature. Continued education is one means and should always be deployed; however, education may not be sufficient and more drastic measures must be taken in order to accomplish the desired goals. The best long-term solution would include installing additional wiring and controls to monitor and control temperatures. Because of the costs associated with additional wiring and updated controls, projects like this are typically most feasible in conjunction with capital renovation of spaces. Another option would be to install programmable thermostats that provide end users a range of temperatures they can operate within for comfort, but also prevent temperatures from following outside of the parameters set by the district.

The review team suggests an analysis be done as to which option is more financially feasible for the level of control desired, adding additional wiring and controls to the current energy management system or installing programmable thermostats to localize control.

In addition to the analysis, continued education, evaluation, and record keeping should be deployed. Involving the campus community, improving awareness, and tracking performance always have payback over time. At a minimum, KISD needs to meet the recording requirements required by the state.

House Bill 3693 enacted by the state of Texas on May 23, 2007 and issued by the Board on February 1, 2008 states the following:

REQUIRED RECORDING AND REPORTING OF ELECTRICITY, WATER, AND NATURAL GAS CONSUMPTION. (b) Notwithstanding any other law, a governmental entity responsible for payments for electric, water, or natural gas utility services shall record in an electronic repository the governmental entity's metered amount of electricity, water, or natural gas consumed for which it is responsible to pay and the aggregate costs for those utility services. The governmental entity shall report the recorded information on a publicly accessible Internet website with an interface designed for ease of navigation if available, or at another publicly accessible location.

The review team was unable to verify compliance with this requirement via KISD's website. Either it does not exist and there is an opportunity to include it, or it is buried in the links and KISD has an opportunity to bring it more to the forefront in order to better inform the community. This issue requires further investigation by the district.

KISD should treat the current mission statement for energy conservation as a living document. It should be reviewed and updated periodically. Energy-Efficient Education, a 2001 publication distributed by the State Energy Conservation Office (SECO) identifies the following important points in establishing an energy policy:

- acknowledge rising utility costs of the district and the necessity for energy controls;
- set realistic and attainable goals and timelines for accomplishment of these goals;
- apply goals and timelines to the entire district and require commitment from all staff and students;
- designate an energy manager that answers directly to the superintendent and board;
- require the preparation of an energy management plan for board approval that keeps the program visible, relevant, and responsive; and
- allot an energy management budget that is directly linked to expected savings.

KISD should develop and implement a formal energy conservation plan for the district and its campuses, with focus on defining specific goals and objectives that can be measured and monitored periodically to report progress toward upholding the overall mission statement for energy conservation.

FISCAL IMPACT

RECOMMENDATION	2009–10	2010–11	2011–12	2012–13	2013–14	5–YEAR (COSTS) OR SAVINGS	ONE TIME (COSTS) OR SAVINGS
1. Increase maintenance staffing levels.	($16,399)	($16,399)	($16,399)	($16,399)	($16,399)	($81,995)	$0
2. Implement facility management information technology.	$0	$0	$0	$0	$0	$0	$0
3. Implement a comprehensive maintenance program.	$0	$0	$0	$0	$0	$0	($16,841)
4. Formalize and document facilities planning and maintenance policies and procedures.	$0	$0	$0	$0	$0	$0	$0
5. Initiate a periodic facilities condition assessment.	$0	$0	$0	$0	$0	$0	($33,683)
6. Implement a comprehensive training program.	($26,170)	($26,170)	($26,170)	($26,170)	($26,170)	($130,850)	$0
7. Develop tighter controls to monitor implementation of energy conservation measures.	$0	$0	$0	$0	$0	$0	$0
TOTAL	**($42,569)**	**($42,569)**	**($42,569)**	**($42,569)**	**($42,569)**	**($212,845)**	**($50,524)**

KOUNTZE INDEPENDENT SCHOOL DISTRICT INSTRUCTIONAL FACILITIES ALLOTMENT

KISD encompasses an area of approximately 253.56 square miles. The district's enrollment has remained steady over the last 15 years, experiencing slow growth from 1993–94 through 2003–04, and a slow decline from 2003–04 through 2007–08. As shown in **Exhibit 13**, the number of students in 2007–08 is consistent with the average for the previous 15-year period.

From 2003–04 to 2007–08, KISD's taxable property values have grown by $73,901,831 or 42.1 percent. **Exhibit 14** presents the enrollments and taxable values from 2003–04 through 2007–08.

KISD maintained facilities at each of the individual campuses as presented in **Exhibit 15**. Additional classroom space is located in 15 portable classroom buildings throughout the district, with seven at the elementary school, one at the middle school, and seven at the high school.

In February 2005, KISD approved a facility feasibility committee charged to meet and discuss district facility needs. In May 2005, the committee met and interviewed architectural firms and later met with the selected firm to discuss the district's facility needs. KISD conducted surveys on all campuses regarding facility concerns and bond recommendations. In July 2005, the committee recommended that the Board of Trustees present a $12.5 million bond package proposal to the community and in August 2005 the Board approved an order calling a bond election. Despite the devastating effects of Hurricane Rita in September 2005, the bond election passed in November 2005 and in January 2006, district teachers and administrators met with architects to begin building designs. In March 2006, the Board approved an order to authorize issuance of bonds and the district selected the approved sealed proposals method of construction delivery. However, all bids received in May 2006 were over the KISD construction budget and all bids were rejected. The Board then determined the construction manager at-risk (CMAR) would be a more suitable construction delivery method. Two contractors were subsequently interviewed by the contractor selection committee. The KISD assistant superintendent was authorized by the board to negotiate and execute a contract on behalf of the district with the chosen contractor and site work for the district's new construction began in August 2006.

EXHIBIT 13
KOUNTZE ISD STUDENT ENROLLMENT
1993–94 THROUGH 2007–08

SCHOOL YEAR	ENROLLMENT
1993–94	1,298
1994–95	1,337
1995–96	1,328
1996–97	1,357
1997–98	1,362
1998–99	1,387
1999–2000	1,363
2000–01	1,363
2001–02	1,370
2002–03	1,390
2003–04	1,408
2004–05	1,405
2005–06	1,399
2006–07	1,377
2007–08	1,363
AVERAGE	**1,367**

SOURCE: Kountze ISD and Texas Education Agency, Student Enrollment.

A new campus for 7th and 8th grade students includes a library, cafeteria, kitchen, twelve classrooms, two computer labs, two science labs, an art room, and offices for administrative staff. The new 7th and 8th grade campus is located on the same property as the Kountze High School. A multi-purpose facility was also constructed in between the two campuses and is to be shared by all students in grades 7 through 12.

EXHIBIT 14
KOUNTZE ISD ENROLLMENT AND TAXABLE PROPERTY VALUES
2003–04 THROUGH 2007–08

DESCRIPTION	2003–04	2004–05	2005–06	2006–07	2007–08
Enrollment	1,408	1,405	1,399	1,377	1,363
Taxable Value	$175,678,152	$185,276,095	$193,470,042	$221,517,985	$249,579,983

SOURCE: Texas Education Agency, CPTD Tax Final, Summary of Finance and Student Enrollment, 2003–04 through 2007–08.

EXHIBIT 15
KOUNTZE ISD CAMPUSES AND FACILITIES
JUNE 2008

CAMPUS	FACILITY	YEAR BUILT	SQUARE FEET
Kountze High School	Main Building	1979	73,616
	Vocational	1979	13,501
	Career Tech	2001	10,200
Kountze Middle School		2008	44,124
Kountze High School/Middle School	Lions' Den (Fine Arts/ Athletics)	2008	51,170
Kountze Intermediate	Classrooms/Library	1953	20,111
	Classrooms/Auditorium	1935	19,337
	Gym	1953	15,021
	Central Administration	1963	2,480
	Cafeteria	1996	7,794
	Field House	1980	4,160
Kountze Elementary	Wing A	1960	5,940
	Wing B	1960	7,170
	Wing C	1985	12,045
	Wing D	1987	15,300
	Cafeteria	1960	7,346
	Office	1988	725
	Gym	1995	10,287

SOURCE: Kountze ISD, Building and Contents Schedule, Facilities Information, June 2008.

The new multi-purpose building has facilities for athletics, drama, and music programs that will be for classroom and extracurricular use. It also includes a choir rehearsal room, an ensemble rehearsal room, a percussion rehearsal room, a band rehearsal room, a practice and competition basketball court with stands, a weight room, locker room, and staff offices. Graduation ceremonies were held in the multi-purpose facility in June 2008 and the new campus for 7th/8th grade students will be completed and ready for 2008–09. In addition to these facilities, the 2005 bond program also funded the construction of a new competition track at the high school.

The former middle school was converted for use as an intermediate campus for 4th, 5th and 6th grade students while the elementary campus will serve students in grades Pre-K through 3rd grade.

KISD used the construction manager at risk (CMAR) type of contract for the construction of the new 7th/8th grade building and the new multipurpose building. A CMAR is defined as a sole proprietorship, partnership, corporation, or other legal entity that assumes the risk for construction, rehabilitation, alteration, or repair of a facility at the contracted price as a general contractor and provides consultation to the school district regarding construction during and after the design of a facility. The Guaranteed Maximum Price (GMP) for the construction of the two new facilities was established at $11,292,923. The construction manager's fee was negotiated at 3.65 percent of cost and did not apply to any costs of competitively bid work that was self-performed by the construction company. **Exhibit 16** presents the total construction cost and the related CMAR fee.

Construction costs have increased significantly in recent years due to demand for a variety of products used in the construction of buildings. All Texas school districts have faced the escalation of costs related to construction. KISD administrators indicate the construction market in the gulf area has been heavily affected as a result of Hurricanes Rita and Katrina with laborers opting to work for higher wages in hurricane-affected territories and the demand for products raising the cost of materials. The Guaranteed Maximum Price (GMP) portion of the CMAR contract aids in overcoming cost overruns as it shifts the risk to the construction manager rather than the owner. **Exhibit 17** presents the actual cost for each of the district's new facilities.

EXHIBIT 16
KOUNTZE ISD CONSTRUCTION MANAGER AT-RISK FEES – FINAL BUDGETS
JUNE 2008

DESCRIPTION OF WORK	COMMITTED COST	CONSTRUCTION MANAGER AT-RISK FEE	COMMITTED COST + CONSTRUCTION MANAGER AT-RISK FEE	CONSTRUCTION MANAGER AT-RISK FEE AS A PERCENTAGE OF COSTS
Competitively Bid Work	$7,996,498	$291,872	$8,288,370	3.65%
Self-Performed Work	$3,004,553	$0	$3,004,553	0.00%
TOTALS	**$11,001,051**	**$291,872**	**$11,292,923**	**2.65%**

SOURCE: Kountze ISD, American Institute of Architects Contracts Document B141 Owner-Architect Agreement, May 2005.

EXHIBIT 17
KOUNTZE ISD CONSTRUCTION COSTS
2005 BOND PROJECTS

PROJECT	ACTUAL CONSTRUCTION COST	SQUARE FEET	ACTUAL CONSTRUCTIONCOST PER SQUARE FOOT
7th & 8th Grade Building	$5,228,964	44,124	$118.51
Multi-Purpose Building	$6,063,959	51,170	$118.51
High School Track	$430,866	N/A	N/A
TOTAL	**$11,723,789**	**95,294**	**N/A**

SOURCE: Kountze ISD, American Institute of Architects Contracts, June 2008.

Construction costs for the 7th/8th grade building and the multi-purpose facility were included as one contract.

The district negotiated a fee structure with the architect based on a percentage of the cost of the construction for the design of the two new facilities. The architect provided pre-bond and bond services for a fee equal to 5.50 percent of the total construction cost. The district also negotiated a payment schedule for the architectural services that reflects certain benchmarks in the design and construction process as shown in **Exhibit 18**.

EXHIBIT 18
KOUNTZE ISD ARCHITECTURE FEES PAYMENT SCHEDULE
JULY 2008

PHASE	PERCENTAGE PAYABLE
Schematic Design	15%
Design Development	20%
Construction Document	40%
Bidding or Negotiation	5%
Construction	20%

SOURCE: Kountze ISD, 2005 Architect Contract, July 2008.

The district negotiated a turn key pricing structure with the financial advisor that also includes the fee for bond counsel services. The fee schedule for the issuance of bonds is presented in **Exhibit 19**.

Texas school districts have three major funding sources to repay bond funds used for facilities construction: revenues from local taxes, the existing debt allotment (EDA) and the instructional facilities allotment (IFA). Local interest and sinking (I&S) taxes are levied based on the amount required to fund the district's debt service payments after any funding received from EDA or IFA.

State revenues consist of three tiers. The first two Foundation Program Tiers, I and II, are for operating expenses and go in a district's General Fund. The Tier III allotment, or EDA, was introduced in 1999–2000 and provides financial assistance for certain outstanding debt issued by school districts to produce a guaranteed yield of $35 in revenue per student in average daily attendance (ADA) per penny of tax effort. By providing a guaranteed yield on I&S taxes levied to pay the principal and interest on eligible bonds, the program guarantees a specific amount of state and local funds per student for each cent of tax effort per $100 of assessed valuation. The EDA program operates without applications, has no award cycles and is available only to repay bonded debt.

The state's IFA program became effective in September 1997 and provides assistance to school districts in making debt service payments on eligible bond obligations issued to construct, acquire, renovate, or improve instructional facilities. In order to receive IFA funding, a district must apply to the Texas Education Agency before issuing bonds to be paid with state assistance. The IFA program operates with

EXHIBIT 19
KOUNTZE ISD FEE SCHEDULE FOR FINANCIAL ADVISOR/BOND COUNSEL SERVICES

FEE		INCREMENT		
$11,275		for the first	$1,000,000	of bonds issued
plus	$4 per $1,000	for the next	$4,000,000	of bonds issued
plus	$2 per $1,000	for the next	$5,000,000	of bonds issued
plus	$1 per $1,000	for the next	$40,000,000	of bonds issued
plus	$0.75 per $1,000	thereafter		

SOURCE: Kountze ISD, Financial Advisory Agreement, February 23, 2006.

applications, has award cycles and has selection criteria based primarily on a district's property wealth per student.

KISD levied a $0.1756 tax rate per $100 valuation in 2007–08 to pay the district's debt service payments. In 2007–08, the district received $405,692 in EDA funding to assist in making the district's debt service payments. The district applied for but did not receive funding from Round 8 (June 2006) of $197,253. **Exhibit 20** presents the I&S tax rate, taxable values and a calculated tax levy for KISD from 2003–04 through 2007–08. Furthermore, the KISD debt service fund expenditures and local I&S tax revenue for 2003–04 through 2007–08 is outlined in **Exhibit 21**.

IMPACT

KISD reported that not receiving the IFA had no direct impact on the capital improvement plan, because the district did not anticipate receiving IFA funding in Round 8. Administrators indicated that the district's financial advisor encouraged KISD to apply for IFA funding but not to plan the budget process contingent on the receipt of those funds as the award for IFA funding is very competitive. As such, KISD only considered its local revenues in developing the 2005 bond proposals.

EXHIBIT 20
KOUNTZE ISD INTEREST & SINKING TAX RATE, TAXABLE VALUES, AND INTEREST & SINKING TAX LEVY
2003–04 THROUGH 2007–08

DESCRIPTION	2003–04	2004–05	2005–06	2006–07	2007–08
Tax Rate	$0.0840	$0.0850	$0.0850	$0.3870	$0.1756
Taxable Values	$175,678,152	$185,276,095	$193,470,042	$221,517,985	$249,579,983
Tax Levy	$147,570	$157,485	$164,450	$857,275	$438,262

SOURCE: Texas Education Agency, Academic Excellence Indicator System 2003–04 through 2006–07, Kountze ISD Tax Rate Resolution, CPTD Tax Final and Summary of Finance, Calculation by Consultant, July 2008.

EXHIBIT 21
KOUNTZE ISD DEBT SERVICE FUND
2003–04 THROUGH 2007–08

DESCRIPTION	2003–04	2004–05	2005–06	2006–07	2007–08
Debt Payments	$388,155	$387,370	$387,770	$773,591	$799,000
State Revenue	$241,844	$236,229	$230,496	$0	$405,692
Local Revenue	$141,435	$149,442	$156,822	$776,915	$406,105

SOURCE: Kountze ISD and Texas Education Agency, Annual Audit Reports 2003–04 through 2006–07, Summary of Finance 2007–08, and 2007–08 Budget, June 2008.