# Nixon-Smiley Consolidated Independent School District

# FACILITIES MANAGEMENT REVIEW

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

**January 2009**

# LEGISLATIVE BUDGET BOARD

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January 30,2009

Dr. Cathy L. Booth
Superintendent
Nixon-Smiley Consolidated Independent School District

Dear Dr. Booth:

The attached report reviews the management and performance of the Nixon-Smiley Consolidated Independent School District's (NSCISD) facilities operations.

The report's recommendations will help NSCISD 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. Richard Lott
Ms. Norma Riojas
Ms. Diana P. Moreno
Mr. Ronald W. Mangum, DVM
Mr. Phillip Morris
Mr. David Elder
Mr. Bruce Patterson

# NIXON-SMILEY CONSOLIDATED 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 operations and maintenance programs to provide safe, productive, and clean environments where students can learn.

Nixon-Smiley Consolidated Independent School District (NSCISD) serves two distinct communities, located approximately 50 miles east of San Antonio, Texas. Nixon is perched at the nexus of State Highways 80 and 87 in Gonzales County. It has a population estimated in 2008 to be less than 2,200 individuals, approximately 1,500 of whom are over the age of 18. The primary commerce of the area is agriculture, with a focus on chicken processing. In recent years, this particular industry has downsized, which is reflected in the number of residents in the community. Many of Nixon's residents provide service and support to the community, while others commute to Seguin (40 miles north) or other surrounding communities for employment opportunities. In 2000, the median income for a Nixon household was $22,100, while the per capita income was reported at $10,135.

Smiley is approximately eight miles to the east of Nixon, along Highway 87. Its primary commerce is also concentrated on the processing of chickens. Its population has dwindled from an estimated peak of 600 individuals in the 1920s to 453 in 2000. Approximately thirty percent of this population was under the age of 18. In 2000, the median income for a Smiley household was $21,591, and the per capita income was $11,823. According to NSCISD administrators, the population of Smiley is currently slightly better off than is the population of Nixon, in terms of average income and property values. At the same time, the per capita income for all of Texas was recorded at $28,313 (Source: U.S. Bureau of Economic Analysis and Bureau of the Census).

Neither community has a large property tax base, limiting budget growth opportunities for the district. Fortunately, according to district leaders, they have enjoyed a continuously positive history in their relationships with the local residents, who have supported the district's needs.

The district operates three schools: Nixon-Smiley High School (Grades 9-12), Nixon-Smiley Middle School (Grades 5-8), and Nixon-Smiley Elementary School (Grades Pre-Kindergarten-4). Currently, the Middle School is located in Smiley, at the former Smiley High School. The other two schools are in Nixon, adjacent to each other and the district's administrative facilities. District administrators are evaluating options that could move the elementary school functions to Smiley, while locating the Middle School and the High School in closer proximity to each other—thereby potentially providing some economic advantages in the utilization of the faculty's time as well as of the district's facilities.

For many years, from the early years of each community, Nixon and Smiley operated their own independent school districts. In the early 1980s, the labor market began to deteriorate as much of the chicken processing industry moved away from this area. As a result, community leaders from the two cities determined that both would be better off if the two districts combined resources and became one. This idea became a reality in 1983.

The district functions by using a relatively large number of structures in its inventory. Information provided by district officials indicate that there are currently 29 building assets, representing a total assessed value of $14.7 million (**Exhibit 1**).

**EXHIBIT 1**
**NSCISD FACILITIES INVENTORY**
**JUNE 2008**

| CAMPUS | YEAR BUILT | SQUARE FEET |
|---|---|---|
| High School | 1957 | 81,920 |
| Middle School | 1940 | 53,630 |
| Elementary School | 1988 | 38,400 |
| Other | 1945 | 26,502 |
| **TOTAL** | | **200,452** |

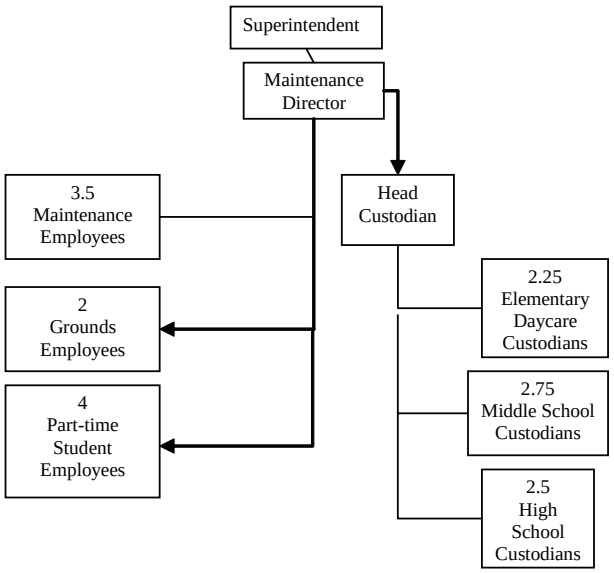
SOURCE: Director of Business and Operations, NSCISD.

The NSCISD Maintenance Organization is shown in **Exhibit 2**.

A staff of 5.5 full-time equivalents (FTEs) plus part-time student help provide support for the buildings and grounds functions assigned to the maintenance organization (excluding custodial services).

The following sections provide a summary of findings and recommendations regarding facilities management issues for

**EXHIBIT 2**
**NSCISD MAINTENANCE ORGANIZATION CHART**
**MAY 2008**




SOURCE: Director of Business and Operations, NSCISD.

NSCISD. The information is based on field visits, interviews, document review, and observations completed in June 2008.

## ACCOMPLISHMENTS

The current superintendent, who has occupied that role for three years, is "thinking outside of the box" when conducting work with district personnel and the Board of Trustees to resolve pressing issues, including space utilization and energy management.

## FINDINGS

- Finding #1 – Maintenance and repair work is often processed and scheduled in a reactive mode. With the exception of filter replacements, there is no effort at performing any preventive maintenance.
- Finding #2 – Depending on the time of year, maintenance staff may spend anywhere between 25 percent and 75 percent of their time performing functions and offering services that have little to do with maintenance and operations. This effect impacts the facilities maintenance budget.
- Finding #3 – There is no code compliance oversight reviewing the work performed by maintenance personnel, including "projects."
- Finding #4 – There is a limited use of facility management information technology and an absence of computer-assisted maintenance applications. This makes it difficult to track performance and obtain good data to make decisions based on factual and retrievable data.
- Finding #5 – The appearance of the buildings and surrounding landscaping was average. A number of structural issues are evident at several of the buildings. Maintenance work is performed either by in-house staff or by outside contractors. The results of either group's efforts are not subject to close quality control. In part, this is the result of a lack of standards or defined expectations.
- Finding #6 – Energy conservation is a priority with the current superintendent, who has established a number of related policies. Additional opportunities remain that can bring significant cost avoidances to the district.
- Finding #7 – There is an absence of design guidelines or standards pertaining to new construction, remodeling, and maintenance efforts.
- Finding #8 – The district has in its possession a comprehensive facilities needs assessment, yet sees little opportunity for finding a way to fund the correction of those needs. Currently, there are no plans in place for keeping those assessments current, even as some needs are addressed while new ones are identified.
- Finding #9 – The district has in its possession a "catastrophe management" plan. This plan lacks a champion for its implementation.

## RECOMMENDATIONS

- **Recommendation #1: Establish a preventive maintenance system, as well as a priority based work order system.** Currently, the maintenance staff is consistently in a response mode of "putting out fires."
- **Recommendation #2: Improve staff utilization.** Maintenance staff performs a number of duties that are not related to "facilities operations and maintenance." This is an expensive and inefficient use of their talents and time, and distorts the cost of doing business.
- **Recommendation #3: Ensure that all work performed on facilities is code compliant.** The host cities associated with the district do not have the capacity or the interest to perform code-compliance inspections on work done by the district's personnel. It may thus be necessary for the district to obtain the services of a

certified inspector to review work done by the district's own personnel or its contractors.

- **Recommendation #4: Implement a computerized maintenance management system – CMMS.**
- **Recommendation #5: Identify and implement sets of standards guiding the management of physical assets.** District leadership has an opportunity to establish guidelines, goals and objectives for building condition and appearance, with input from a wide variety of stakeholders including building occupants as well as non-instructional staff. The district needs to move from under the prevailing "duct tape" and "bailing wire" attitude. This set of standards can then be monitored and measured across all facilities in the district.

  The standards should identify formalized processes for the following:
  - master planning;
  - school design and performance guidelines;
  - value engineering and post-occupancy reviews;
  - maintainability reviews during design phases;
  - commissioning;
  - facilities documentation exchange and control;
  - facilities management information standards;
  - capital needs assessment;
  - preventive maintenance programs; and
  - facilities performance measurement (key performance indicators).
- **Recommendation #6: Identify and implement opportunities for additional energy conservation; provide methodologies for measurement and verification.** The district has made a significant start into energy conservation, supported by a directive from the superintendent. There is currently no process in place able to demonstrate the successes as a result of these intentions. Significant opportunities remain for additional progress.
- **Recommendation #7: Establish design guidelines and standards that will provide guidance to future facilities activities.** These guidelines should focus on systems and products, to help assure consistency in the installation and replacement, as well as maintenance and replacement requirements of building systems and components.
- **Recommendation #8: Establish a formal process and schedule to perform facilities needs assessments.** The NSCISD has in its possession a facility assessment that is current and comprehensive. The relative age of most of the district's assets suggests that such a list of needs should enable the district to develop strategic plans for its facilities. There are at least two challenges facing the district as it attempts to "manage" this list: identifying an ongoing funding strategy supporting the resolution of items on that list; and implementing a process that will keep such a list current, as projects are completed and other needs become apparent.
- **Recommendation #9: Assign the ownership of the "catastrophe management" plan, as well as other safety issues, to a single individual with the skills and opportunity to lead the district to an incident resistant environment.** Code compliance, safe work habits, and safe environments are interrelated. In a district the size of NSCISD, these priorities can be managed by a single individual with the time, skill and authority to do so.

## DETAILED FINDINGS

### *PREVENTIVE MAINTENANCE SYSTEM*

Finding #1 – Maintenance and repair work is often processed and scheduled in a reactive mode. With the exception of filter replacements, there is no effort at performing any preventive maintenance.

**Recommendation 1: Establish a preventive maintenance system, as well as a priority based work order system.** Currently, the maintenance staff is consistently in a response mode of "putting out fires."

A primary objective for NSCISD should be the development of an effective planned maintenance program including implementation of preventive maintenance. NSCISD's maintenance program is insufficient to provide the long-term stewardship needed to preserve the district's assets. NSCISD's maintenance program consists of as-needed corrective actions, occasional facility inspections and filter replacements. There is no evidence of preventive maintenance being performed on any equipment beyond that described above. There is no historical documentation of the work performed or problems resolved. The prolonged lack of access to a formalized maintenance program will result in inordinate expenditures and a truncated useful life of building systems and schools.

With few exceptions, preventive maintenance (PM) has been considered the most effective way to maintain 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.

Research has indicated that operating age in some cases may have little or no effect on failure rates. There are many different equipment failure modes, only a small number of which are actually age or use related. Reliability Centered Maintenance (RCM) was developed to include the optimal mix of reactive-, time- or interval-based, and condition-based maintenance.

RCM is a process that identifies the most cost effective maintenance actions. 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.

The streamlined RCM process allows organizations to use their scarce personnel and funding resources to support the assets that are the most mission-critical to the successful achievement of 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 also 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 (PM):* PM 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.

PM 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, and cleaning 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) is 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 Thermography (IR) can be defined as the process of generating visual images that represent variations in infrared 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 is all about detecting and analyzing 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.

To develop a comprehensive maintenance program, the district 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* – Any comprehensive maintenance program begins with a facilities assessment that inventories the district's assets, systems and components. All pertinent information should be collected (e.g., manufacturer, serial #, model #, capacity, size, etc.), and the assets' present condition needs to be assessed to establish a baseline from which to evaluate future activities. Recording the age and condition of equipment is a prerequisite for maintaining it properly.

*Step 2: Prioritizing Maintenance Activities* – Once the facilities data has been compiled, the logic tree , seen in **Exhibit 3,** can be applied to help determine the level to which 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 weighted against the cost impact of deferring the maintenance.

Information should be obtained during the data collection process to associate a priority with each system and asset in each of the district facilities. 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 the importance of a system and its components relative to the identified mission. A numerical ranking of one through ten can be adopted and applied. 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 and more scarce **(Exhibit 4)**.

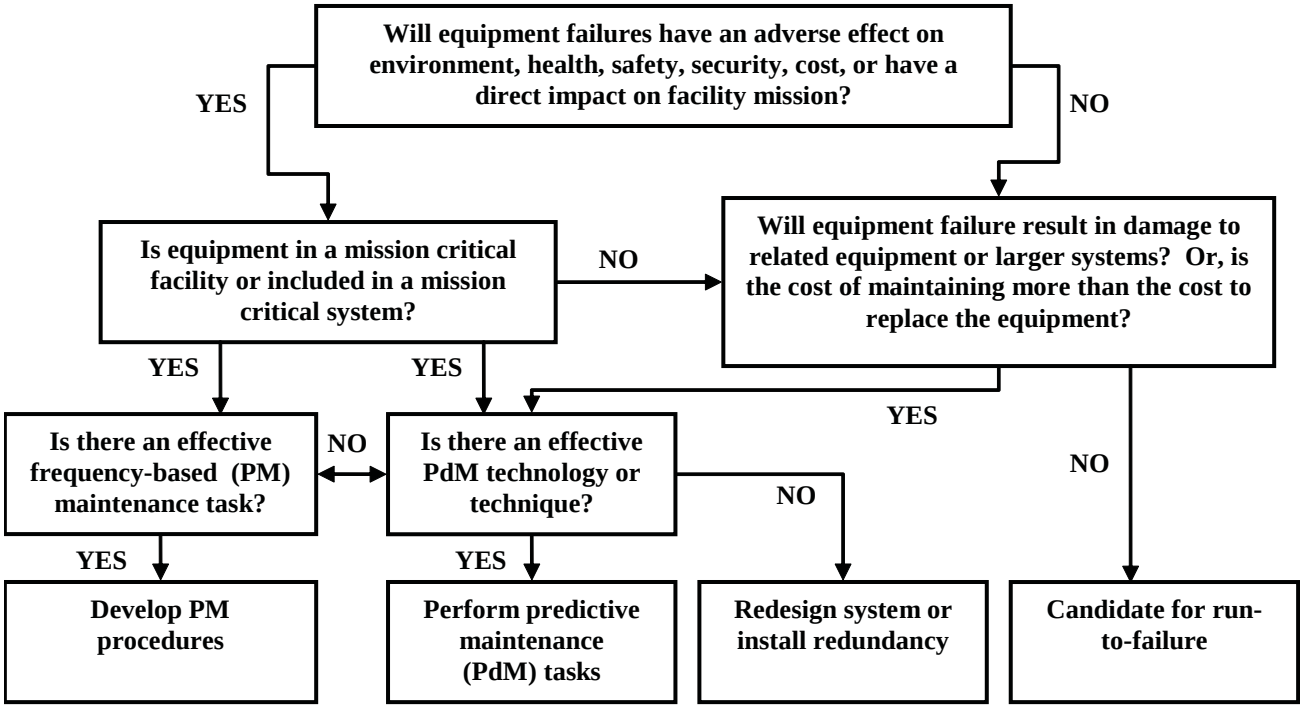
The criticality factors for each piece of equipment in conjunction with the logic tree previously outlined can then be used to determine and adjust the level of service attributed to each piece of equipment based upon available resources.

*Step 3: Developing Job Plan & Estimating Completion Times* – Once the 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 for the district's unique situation, 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 method for future uploading into a CMMS system (See Recommendation #4).

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

**EXHIBIT 3**
**RELIABILITY CENTERED MAINTENANCE (RCM)**
**LOGIC TREE**
**MAY 2008**




NOTES: Preventive maintenance (PM); predictive maintenance (PdM).
SOURCE: Adapted from National Aeuronautics and Space Administration, Reliability Centered Maintenance Guide for Facilities and Collateral Equipment, February 2000.

**EXHIBIT 4**
**NSCISD CRITICALITY ASSESSMENT RANKING TOOL**

**JUNE 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.

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 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, maintenance planners will need to use some judgment to identify the tasks that are most important, to get "the biggest bang for the buck." 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. If internal resources are not able to accomplish this task, additional resources (i.e. consultants) could be hired to aid 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. An amount of $.05/square foot times the district's total square footage (200,000 square feet) equates to approximately $10,000.

Computerized Maintenance Management Systems (CMMS) are available that focus on such maintenance programs for school districts of all sizes. These systems will 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.

### *IMPROVE STAFF UTILIZATION*

Finding #2 – Depending on the time of year, maintenance staff may spend anywhere between 25 percent and 75 percent of their time performing functions and offering services that have little to do with maintenance and operations. This effect impacts the facilities maintenance budget.

**Recommendation #2: Improve staff utilization.** Maintenance staff performs a number of duties that are not related to "facilities operations and maintenance." This is an expensive and inefficient use of their talents and time, and distorts the cost of doing business.

The district currently rosters 3.5 positions as "maintenance employees" and two positions for grounds-related activities. According to a survey of school districts completed by American School and University (AS&U) in 2008, the median number of square feet per maintenance employee is approximately 107,000 square feet. Based on that information, NSCISD's maintenance staffing level for 200,000 square feet actually appears to be high, and suggests they could eliminate 2 maintenance positions.

The same study reviews the "average" number of acres maintained by grounds workers. It suggests one grounds worker per 45 acres, while NSCISD reports that its two groundskeepers are responsible for approximately 42 acres, indicating that NSCISD is overstaffed by one groundskeeper.

According to details released in the AS&U article, the average cost per square foot for total Operations and Maintenance (O&M), including the cost of utilities, was $4.56 per square foot. This represents a reported 7.8 percent of the districts' total budget. In the case of NSCISD, the average cost per square foot for a similar period was reported at $5.23 per square foot, representing 13 percent of the district's total operating budget (based on a total district budget of $8.23 million, as reported on the district's website). Showing a similar disparity, AS&U reports an average expenditure per student of $876, whereas the apparent O&M cost at NSCISD appears to be closer to $1,100. This district is adequately if not generously funded.

Note should be made, however, that efficiencies for small and geographically dispersed school districts are different than those in the larger districts located in an urban, metropolitan area. It is thus not always reasonable to consider such published data as a good source for a "benchmark." As reported in other sections of this document, NSCISD does not yet track cost data in such a way as to identify specific areas of effort that may or may not be managed effectively and efficiently.

As previously indicated, support staff routinely performs a wide range of duties. Depending on the time of year, maintenance staff may spend anywhere between 25 percent and 75 percent of their 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. The result is that important maintenance requirements may go ignored. It also means that individuals with unique maintenance skills may be under-utilized.

The maintenance department needs to be led by a person with hands-on tactical skills who is also energetic about strategy and progression. This person must have the potential to grow into these attributes while taking advantage of future training opportunities to help them progress. Finding an

individual with these skills is essential to the district's progression. The finite budgets with which the district works may dictate the process and opportunity to be used to hire a qualified person. The designation assigned to this individual could be classified as a "director of facilities management," although another title consistent with the district's Human Resource policies or guidelines could certainly be appropriate.

The district has limited opportunities available to it to fund an additional position for this purpose. A recommended approach involves a slight restructuring of the existing organization, including the re-assignment of certain maintenance responsibilities to remaining staff. The district maintenance budgets suggest that funding levels are adequate for the existing workload, although not necessarily applied in the most effective manner. Through careful restructuring, one or two of the existing "hands-on" positions can be redefined to provide the budget for this new position. The expectation is that the increased efficiency and effectiveness of the remaining staff will more than offset the staff reduction at the front line. Achieving this target through attrition would be preferable over the alternative of eliminating specific positions.

Using the average salary of a maintenance employee in a district with a student enrollment of 1,000 – 1,599 from *Salaries and Benefits in Texas Public Schools, Auxiliary Report 2006–07*, if the district were to downsize maintenance employees from 3.5 to 2 FTE's, there would be an annual cost savings of $43,318 ($11.57 x 1.2 (20.0% Benefits) x 8 Hours/Day x 260 Days/Year x 1.5 FTE).

Using the average salary of a Groundskeeper in a district with an enrollment of 1,000 – 1,599 from *Salaries and Benefits in Texas Public Schools, Auxiliary Report 2006-07*, if the district were to downsize Groundskeepers from 2 to 1 FTE's, there would be an annual cost savings of $25,135 ($10.07 x 1.2 (20.0% Benefits) x 8 Hours/Day x 260 Days/Year x 1 FTE).

Using the average salary of a Maintenance Director in a district with an enrollment of 1,000 – 1,599 from *Salaries and Benefits in Texas Public Schools, Professional Report 2003–04*, if the district were to hire an additional position at the Maintenance Director level, there would be an annual cost of $47,698 ($39,748 x 20.0% Benefits).

If NSCISD were to do all three, it would be an annual cost savings of $20,755 (($43,318 + $25,135) -$47,698).

### *CODE COMPLIANCE*

Finding #3 – There is no code compliance oversight reviewing the work performed by maintenance personnel, including "projects."

**Recommendation 3: Ensure that all work performed on facilities is code compliant.** The host cities associated with the district do not have the capacity or the interest to perform code-compliance inspections on work done by the district's personnel. It may thus be necessary for the district to obtain the services of a certified inspector to review work done by the district's own personnel or its contractors.

The district uses state licensed contractors on repairs/renovations other than typical maintenance items. When NSCISD contracts with a professional architect or engineer to design a project, whether new or remodeling, that individual has the professional obligation to adhere to the building codes currently required by the jurisdiction, and/or the state. That person's license is at risk if this requirement goes unheeded. Presumably, adherence to pertinent codes is also guaranteed when the services of a licensed electrical or plumbing contractor is required. However, district personnel at NSCISD indicate that there is no attempt to assure code compliance in any work performed by its own personnel. The cities in which the facilities are located do not provide this service, nor do they allegedly require it. As a result, maintenance personnel (none of who are currently licensed or journeymen in the relevant trades) are left at their own discretion when they do "projects," as they perform maintenance functions, or as they replace building equipment.

This is a situation that puts the district and its population at risk. For instance, if a domestic water connection is not protected by appropriate backflow preventors, contamination of drinking water can occur. Similar weaknesses potentially exist with electrical connections, at the risk of fire. Inappropriate work on ventilation systems serving classrooms and workspaces could place individuals in a "sick building" situation.

The district should consider establishing a relationship with a professional inspector, perhaps someone who is licensed in the four major areas covered under the International Building Code. This individual's expertise should then be utilized as in-house staff is making preparations to perform remodeling work. The district might evaluate the need to involve this person also when a contractor is retained to perform remodeling activities without the benefit of input from a professional architect or engineer.

The per-hour cost for such a service can be substantial. When this cost is placed on a balance scale against the risks associated with not being code compliant in all work being formed, the cost will appear much more reasonable. Depending on location, the rate for such an inspector can approach $100/billable hour, including expenses. The assumed workload for this individual should not exceed 100 hours per year

(including travel time). The district should thus consider identifying a line item budget of $10,000 for this purpose. Funding for inspection activities associated with separately funded construction or renewal projects should be included in associated capital budgets.

As is the case with professional consultants in general, these professionals are reluctant to share hourly rates for services rendered. Even the International Code Council (http://www.iccsafe.org) resists offering such a standard. Informal conversations with individuals (architects, engineers, and inspectors themselves) familiar with these types of services suggest that the billing rate for such services can range from $45/hr. to $100/hr., and may vary from one location to another, and will also vary as local building activities compete for their services.

### *COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM*

Finding #4 – There is a limited use of facility management information technology and an absence of computer-assisted maintenance applications. This makes it difficult to track performance and obtain good data to make decisions based on factual and retrievable data.

**Recommendation 4: Implement a computerized maintenance management system – CMMS.**

NSCISD is not in possession of any facility management information technology, such as an automated work order system. This limits the ability to track asset and resource performance and to make informed decisions based on credible data.

Facility management information technology at NSCISD is currently limited to an informal and inconsistent trail of work requests. Maintenance personnel are dispatched by the maintenance supervisor either by handing off a note, or by contacting them using cell phones or two way radios. There is no feedback mechanism available to the supervisor after work has been completed, thereby thwarting the opportunity to track performance and make informed decisions.

There are two general categories of facility management information technology: Computerized Maintenance Management Systems (CMMS) and Computer-Aided Facility Management (CAFM) systems. Basically, both CMMS and CAFM systems handle work management processes, with CAFM systems having space management capabilities. CMMS are much more efficient at channeling requests through their life-cycle when compared to paper-based tracking tools. CMMS systems have become increasingly affordable and easy to use. Their purpose is to automate and manage work requests as efficiently as possible while providing the basic information needed to make informed and timely decisions. The benefits of automation continue to increase and include:

- better management solutions;
- increased efficiency;
- ability to track asset/equipment histories;
- organized facilities management data and information;
- expedited decision making;
- improved maintenance quality/labor tracking;
- improved communication;
- reduced operating costs; and
- better use of facility space.

Many CMMS software packages offer bells and whistles that are not needed for accomplishing the primary purpose for 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:

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 computerized maintenance management systems (CMMS) and computer-aided facility management (CAFM) 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. Any automated system is only a tool to support business processes. It is therefore necessary for the district to be able to document its work processes prior to implementing technology. Subsequently, staff needs to identify and establish a specific set of data standards. This will become 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 increases the quality of the data, optimizes the system performance, and enables 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 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 data, had good internal electronic communication in place, had a dedicated automation manager, had buy-in from top to bottom, 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 this type of project off on the right foot, the district needs to 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 TAT will be responsible for designating an interested, motivated and talented champion to lead them. To be successful, the TAT must be empowered, authoritative, consistent, diversely representative, interested, and knowledgeable. The TAT is responsible for overseeing implementation and optimization, data integrity and application stewardship, adjudicating resource allocation, and evaluating and recommending future needs and requirements. The TAT is also responsible for maintaining the data and data standards. All members of the TAT must "own" the technology vision. This group is the vehicle responsible for maintaining momentum.

The TAT should include the following:

- A Maintenance Director;
- Information Technology (IT) Managers;
- Maintenance Supervisors;
- Training Program Managers;
- Finance Managers; and
- School Administrators.

The following are some of the issues the TAT will need to consider:

- 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 Facility Management (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. If the team is too big, it becomes unwieldy when trying to decide on goals.

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 and desired outcomes. 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 identify the strategic objectives of the organization and then mirror them with the technology they are trying to implement. A close evaluation of the existing service level should be made to establish a baseline and benchmark the current status of the organization. Next, the district needs to determine its preferred service level (see discussions on this topic under Recommendation #5). 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 list identifies certain steps to help achieve the desired benefits, while maintaining cost control:

- Go through the discipline of identifying detailed functionality from facilities management technology that will benefit both maintenance customers and staff, while avoiding unnecessary "bells and whistles;"
- Emphasize training;
- Understand all costs;
- Ask basic questions about how things are done;
- Test applications; don't just watch demos;
- Try prototypes and get feedback from users;
- Start by fixing small problems to win support;
- Structure the big project so there are payoffs along the way;
- Select best employees for implementation;
- Settle for 80% solutions; and
- Agree on realistic goals.

Additionally, avoid

- over-populating the database;
- setting vague objectives such as "improve productivity;"
- structuring the implementation so as to avoid conflict;
- selecting a technical implementation leader unskilled in negotiation;
- assuming that interviewing users reveals exactly what they need; and
- emphasizing incremental improvement if fundamental change is what is truly required.

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, preferably not only at the vendors' offices;
- Use a predetermined scorecard for evaluation;
- Establish weight evaluation criteria;
- Have vendors demo at the district office, where a variety of individuals can be present; and
- Provide incentives for value engineering, knowing that "one size does not fit all."

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

### *STANDARDS*

Finding #5 – The appearance of the buildings and surrounding landscaping was average. A number of structural issues are evident at several of the buildings. Maintenance work is performed either by in-house staff or by outside contractors. The results of either group's efforts are not subject to close quality control. In part, this is the result of a lack of standards or defined expectations.

**Recommendation 5: Identify and implement sets of standards guiding the management of physical assets.** District leadership has an opportunity to establish guidelines, goals and objectives for building condition and appearance, with input from a wide variety of stakeholders including building occupants as well as non-instructional staff. The district needs to move from under the prevailing "duct tape"

and "bailing wire" attitude. This set of standards can then be monitored and measured across all facilities in the district.

NSCISD has stewardship over a sizeable portfolio of facility assets. According to the records of the county assessor, the total value is approximately $15 million—certainly an investment that warrants appropriate attention.

NSCISD should consider identifying the levels of service appropriate for the district's facilities and assets. The Association of Higher Education Facilities Officers (APPA) has published Service Level Guides that provide a benchmark standard 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 by **Exhibit 5**. 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.

NSCISD currently provides a level of service that, per **Exhibit 5**, falls somewhere between a Level 3 and Level 4.

**EXHIBIT 5**
**NSCISD MAINTENANCE CURRENT LEVEL OF SERVICE**
**JUNE 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, none provided except emergencies |
| 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 recommended 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 recommended 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. |

**EXHIBIT 5 (CONTINUED)**
**NSCISD MAINTENANCE CURRENT LEVEL OF SERVICE**
**JUNE 2008**

| LEVEL | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| DESCRIPTION | SHOWPIECE FACILITY | COMPREHENSIVE STEWARDSHIP | MANAGED CARE | REACTIVE MANAGEMENT | CRISIS RESPONSE |
| 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, missing hardware. |
| 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, without 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 & Maintenance 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.

As stewards of facilities, districts should make expectations align with financial resources. This may also mean that districts do not have to identify a single level of service for all of the criteria. 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.

Once the target level has been identified and accepted by a majority of the constituents, the district can move toward establishing staffing levels and skills to achieve that desired level of service.

Currently, the district is not in possession of any documented facility and maintenance performance standards that can be shared with support staff, teachers, or administrators. Decisions regarding frequency of service, response times, and staffing levels are thus routinely based on perceptions and perspectives. No information is available to determine the cost of most maintenance functions, either at the system or component level or for an entire building. The district aggregates actual costs for all buildings into single expense category line items inclusive of all buildings, whereas annual budgets are prepared and submitted for individual buildings.

District administrators, with tools provided by a CMMS and with input from various stakeholder groups, can identify maintenance performance standards for most functions in

the facilities support area. They are then able to share those standards with building occupants. They will have means to identify key performance indicators (KPIs) that measure staff's effectiveness in satisfying those standards. Having this level of knowledge will help identify organizational or operational adjustments that will improve performance and clarify expectations.

Key performance indicators will also allow the district to establish benchmarks. Such indicators, if correctly established, will enable the district to compare its performance against itself, as well as against those of other comparable districts.

Other types of standards deserve consideration by NSCISD leadership. The district has a need to establish guidelines, goals and objectives for building condition and appearance. Such development has to involve input from building occupants as well as non-instructional staff. The district needs to move from under historic operating philosophies built around an attitude of "duct tape" and "bailing wire." This set of standards can then be monitored and measured across all facilities in the district.

A comprehensive set of standards should identify formalized processes for the following:

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

In order to achieve the above recommendations, the district will want to take small steps, but with a firm goal in mind. To assist in that journey, the district may also want to consider a slight change in staffing philosophy. The district currently does not have the benefit of employing an individual who has a background or training in strategic leadership of a facilities management organization. The staff directly responsible for NSCISD facilities are all dedicated individuals whose orientation is exclusively "hands-on." Their district level supervisor, also dedicated, comes from a strong academic background. Therefore, strategic planning from a facilities perspective is not happening to the extent it should be, in today's environment. It may thus be appropriate for the district to consider redefining a position that becomes vacant at some point in the future such that it can recruit an individual who is or can become well-versed and experienced in strategic facilities management.

To keep up with today's facilities demands, the role of Maintenance Director has to progress from the role of "halls, walls, mops, and cops manager" to that of developing, directing, organizing and administering the planning of the facility functions while effectively managing personnel.

The Maintenance Director will need to have the right balance of strategic and tactical skills to accomplish the various facility functions needed in a progressive facilities organization. Strategic activities identify the "what" and "why" of the organization and include:

- strategic facilities planning;
- capital project development;
- organizational development;
- policy and standards development; and
- marketing the department and its services.

Tactical activities address the "how;" they are the specific tasks needed to implement a strategy. Tactical activities include:

- construction;
- renovation;
- space planning;
- workplace planning, allocation, and management;
- operations, maintenance and repair;
- telecommunications; and
- general administrative services.

Because so much of the work in facilities is tactical in nature it is often difficult to set aside time for strategic planning. The Maintenance Director needs to be both a visionary and a "doer" so that the maintenance department not only "does the right things" but "does the right things right, the first time." The Facilities Planning Committee, recently assembled and comprised of a diverse group of stakeholders, can provide meaningful guidance and support to the long-term planning process.

If the district is inclined and has the opportunity to include a Facilities Director on its management team, one of that person's first challenges should be to develop a strategic facilities plan. A well-developed plan helps to establish clear

parameters for action and ensures that activities are consistent with the district direction. It should include the following components as identified by David G. Cotts in his book *The Facility Management Handbook, Second Edition (1997)*:

- Mission statement: The facilities mission statement should be derived from the district mission statement, goals, and objectives.
- Goals and objectives: Goals are quantitative statements and objectives are measurable tasks.
- Trend analysis: The facilities plan should also describe those external factors that are likely to affect facilities. External events may include environmental regulations, rising furniture costs, utility deregulation; they also include changes in the district that are likely to affect facilities.
- Key variables: These are factors that will affect the success of the different facilities function initiatives. Key variables may include monetary resources or additional staff.
- Strategic alternatives: This section of the plan can also be called "scenario planning" as it involves developing scenarios of probable events. The scenarios should represent the worst case, best case, and most probable case.
- Final strategy: Based on the strategic alternatives generated and an analysis of industry data, a final strategy should be recommended. In terms of criteria for selecting one of several alternatives, the district should consider available resources, degree of risk, timeline, and practicality.

### *ENERGY CONSERVATION*

Finding #6 – Energy conservation is a priority with the current superintendent, who has established a number of related policies. Additional opportunities remain that can bring significant cost avoidances to the district.

**Recommendation 6: Identify and implement opportunities for additional energy conservation; provide methodologies for measurement and verification.** The district has made a significant start into energy conservation, supported by a directive from the superintendent. There is currently no process in place able to demonstrate the successes as a result of these intentions. Significant opportunities remain for additional progress.

A recently passed Texas House Bill will require electric consumption reductions and monitoring of such conservation measures. Texas H.B. No. 3693, Sec. 44.902, passed on May 23, 2007 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.*

Recognizing this enactment is an opportunity, NSCISD Superintendent generated the policy as shown in **Exhibit 6**.

The superintendent clearly displays a genuine concern about the consumption and the cost of energy in the district. Since her first few days on the job, she has been emphasizing the

**EXHIBIT 6**
**NSCISD ENERGY CONSUMPTION REDUCTION PLAN 2007-08**
**JUNE 2008**

*The district shall consider the following areas of potential conservation by implementing the activities listed:*

*Efficient Lighting Systems*
*Replace incandescent bulbs with fluorescent bulbs on an as needed, ongoing basis.*

*Solar Electric Generation Panels*
*In conjunction with new or renovation facility projects the district will explore the energy conservation and potential cost savings of using solar electric generation panels.*

*Efficient Appliance Purchases*
*In conjunction with appliance purchases the district will select the appliance that is the best value in balancing energy conservation and cost.*

*Vending Machine Operations*
*Require that each vending machine owner annually validate the presence and operability of energy conservation controls on each vending machine located on district property.*

*General Maintenance and Operations*
*Train maintenance and custodial personnel to seek ways to conserve energy in the process of completing their assigned job tasks.*

*Record and Report Energy Consumption*
*Quarterly utility consumption and cost data shall be posted on a publicly accessible Internet website.*

SOURCE: Director of Business and Operations, NSCISD.

need, in fact the expectation, for all district personnel to "turn off the lights" and "turn down the thermostats." Tours of the facilities conducted during late June, 2008, indicated that this was happening, as a general rule. The Director of Business and Operations helps enforce this administrative rule. The district also participated in the Texas State Energy Conservation Office Audit, the result of which was a list of suggestions that, upon successful implementation, could result in reductions. One result is that the district now specifies air conditioning units with the highest possible Seasonal Energy Efficiency Ratio (SEER) rating.

In 2005, the average utility cost per square foot in public education was approximately $1.15/square foot. Based on square footage as shown in **Exhibit 1**, and on budget information provided by the district pertaining to 2008, the district's electrical costs were approximately $.83/square foot, representing a reduction of 29 percent. The rates stayed relatively flat during that period. On the face of available data, this appears to be commendable. Time will tell if that situation was the result of intentional efforts and if the effects are lasting. Better data tracking will help analyze trends by building, as the following discussion demonstrates.

### *ENERGY MANAGEMENT SOFTWARE*

The district should consider the implementation of a process that will encourage accurate tracking of energy consumption, by meter and site. Some CMMS applications offer features that facilitate this activity, although this feature is frequently an "add-on" module. Separate energy management software is also available.

It is important for administrators to know which buildings are the least efficient, and the performance of each building at different periods of times of the year. Ideally, metering could be installed that could track such data on a more frequent basis. In the absence of such technology, an individual could be given the responsibility for the manual recording of such data on a pre-determined schedule. That data could then be populated into a simple energy management software application for analysis.

The person in charge of energy conservation programs will then be able to share results with school principals and other key individuals, much like a report card. Principals indicate this is not currently a common practice. The district could choose to involve their students, since school age youth are increasingly interested in energy conservation. Their energies can provide lively and enthusiastic support to any initiative intent on reducing carbon footprints and protecting the environment.

The district should consider establishing a partnership with a respected and certified energy services company (ESCO). A carefully defined relationship can result in the implementation of energy conservation measures (ECMs) financed by energy cost avoidance. Any cost reduction in energy costs frees up financial resources that can cover any associated debt. Some institutions have actually been able to fund the remediation of other deferred maintenance needs in this manner. Most of the respected and reputable ESCOs provide a monitoring and verification service that will validate the district's claims of being in an energy conserving mode. (See www.naesco.org for additional background information on accredited providers.) It is not unusual for building owners to reduce their energy consumption by at least 20 percent, upon the proper selection of ECMs to be implemented.

The district may also choose to pursue a similar relationship with consulting firms that specialize in behavior modification directed at energy conservation. It is possible, based on experiences at other locations, that the district could save an additional 20 percent on its energy consumption.

Potentially, based on experiences at other institutions and agencies, the district could realize a cost avoidance of up to 40 percent (before debt service obligations) by applying both opportunities. However, for planning purposes, the district may choose to consider a more conservative estimate of approximately 20 percent resulting from the implementation of both programs, starting off fractionally with a gradual growth over a five year period. Based on the district's expenditures in recent years, and on a conservative estimate of 20 percent, the district should be able to achieve an annual cost avoidance of at least $30,000 per year. However, since the successful implementation of a program such as this (especially one that relies on a change in cultural habits) takes time, any cost avoidance enjoyed in the first year of implementation will undoubtedly be a smaller percentage. Additionally, if the district chooses to undertake this effort during the 2009–10 school year, it will only benefit from its effects for a portion of the year, after its implementation. It is thus prudent to assume a potential cost avoidance of $8,000 during this first year, with a consistent but significant increase every year thereafter until the 5th year.

### *ROOFTOP AIR CONDITIONERS*

NSCISD relies almost exclusively on the use of rooftop units or other relative small package units for climate conditioning of its occupied spaces. Using this approach typically results in lower first-cost of a project, when contrasted against the cost of a centralized building system. Maintenance personnel tend to prefer this type of system in that they are less complicated to service than are the centralized systems. Conversely, the costs for operating and maintaining such

units in combination with their shorter life expectancies support the common opinion that such an approach is more costly in the long run.

Interviews with NSCISD staff responsible for these systems suggest that a substantial reason for the allegiance to this design option is related to the minimization of service interruptions to individual areas served. This may be a valid consideration, but should not be considered as a primary driver for this type of investment.

It is common for ISD projects to select the packaged approach even though the architects and engineers know that the central plant option is the best when considering life cycle costs (paying for it long before the building is retired).

Typical benefits of the central plant approach over the packaged unit approach are as follows:

- Central plants are more energy-efficient, thus presenting lower annual operating costs.
- They benefit from lower maintenance costs, since there is less equipment to maintain, plus a central plant is typically located in an easily accessible central location, without consideration of existing weather conditions.
- Central plant equipment has an appreciably longer service life.

There is no general rule guiding decisions on when a central plant should be considered versus packaged equipment. It may vary from location to location and project to project. The square footage of the overall school has an impact on which system should be selected. A school building larger than approximately 87,500 square feet (350 square feet/ton x 250 tons of cooling) should consider a central plant. This is based on the common minimum size of most efficient chillers, which is approximately 250 tons; although smaller chillers are available.

Unfortunately, first cost is too often the driving factor; this in turn drives the selection of packaged units. They do have some benefits, however. For instance, packaged units do not typically require additional training of a typically minimally educated staff, whereas central plant equipment is usually maintained primarily under a contract with a qualified service company.

There are applications where packaged units are more efficient to operate even at schools with central plants. For example, it is often best to install packaged units at office areas and corridors which are to be occupied 12 months, instead of the 9 months the rest of the school is typically used. Central plants commonly serve large air-handling units that require complex ductwork which can present challenges with some school designs.

If packaged units are employed, they should at a minimum include connection to a central energy management control system (preferred) or programmable thermostats. The latter are not as ideal since they are difficult to monitor, they are at many diverse locations, and prevent override.

More and more districts recognize the overall cost and benefit of installing geothermal heat pumps. According to the International Ground Source Heat Pump Association, ground source (geothermal) heat pumps (GSHPs) are electrically powered systems that tap the stored energy of the earth. These systems use the earth's relatively constant temperature as the source/sink to provide heating, cooling, and hot water. Geothermal heat pumps have proven to pay back in a relatively short period (i.e. less than 5 years) compared with other schools that have traditional central plants.

Once aware of its options, the district will be able to guide (from a position of knowledge) decisions and associated design standards applicable to future projects. Any potential cost avoidance or actual savings will only materialize as new structures are erected, or as existing facilities are renovated.

### *DESIGN GUIDELINES*

Finding #7 – There is an absence of design guidelines or standards pertaining to new construction, remodeling, and maintenance efforts.

**Recommendation 7: Establish design guidelines and standards that will provide guidance to future facilities activities.** These guidelines should focus on systems and products, to help assure consistency in the installation and replacement, as well as maintenance and replacement requirements of building systems and components.

The district should identify a set of design guidelines that address the architectural vocabulary of the facilities to be built. As much as possible, the guidelines should also identify detailed specifications for certain products and systems, without violating the intent of procurement regulations. Life-cycle costing or "total cost of ownership" considerations should play an important role as product specifications are identified. The district should solicit input from all stakeholder groups having a long-term interest in the district's facilities, with special attention being paid to design preferences (beyond code requirements) related to the safety and security of staff and students. This set of guidelines should be captured in a format that can be easily updated and shared.

These guidelines should guide both the design and construction of new capital projects or upgrades, as well as decisions made by maintenance personnel as they replace

existing products and systems. The district will have to exercise care to differentiate between "must have" and "would be nice to have."

Producing a document that is readily available and whose contents can receive frequent reviews and updates will help avoid conflict and misunderstanding later. Designers, users, and the people in the facilities organization will all have an understanding of priorities and needs—ahead of time. They may not agree, but will be informed.

### *FACILITIES NEEDS ASSESSMENTS*

Finding #8 – The district has in its possession a comprehensive facilities needs assessment, yet sees little opportunity for finding a way to fund the correction of those needs. Currently, there are no plans in place for keeping those assessments current, even as some needs are addressed while new ones are identified.

**Recommendation 8: Establish a formal process and schedule to perform facilities needs assessments.** The NSCISD has in its possession a facility assessment report that is current and comprehensive. The relative age of most of the district's assets suggests that such a list of needs should enable the district to develop strategic plans for its facilities. There are at least two challenges facing the district as it attempts to "manage" this list: identifying an ongoing funding strategy supporting the resolution of items on that list; and implementing a process that will keep such a list current, as projects are completed and other needs become apparent.

The district reported it has been engaged in formal facilities needs assessment activities with projects identified, prioritized, and awaiting board action in December 2008. Recently, NSCISD chose to obtain the services of consultants in developing a recent inventory of needs for each of the district's facilities. The assessment clearly identified deficiencies in conditions regarding operational needs, code and system deficiencies. The report also provides a budget estimate for each line item, and for each campus. It is a simple matter to further analyze the information based on individual buildings. It may also be useful for the district to be aware of the amount of financial backlog it faces for types of systems, such as roofs; heating, ventilating and air conditioning (HVAC); electrical; and others (see **Exhibit 7**).

Based on this inventory, the individual campuses face significant funding needs to resolve their facilities issues. The consultants identified a recommended priority schedule to resolve those needs. A majority of those needs, according to the consultant's report, should be addressed during the next three years.

**EXHIBIT 7**
**NSCISD FACILITIES NEEDS BACKLOG**
**JUNE 2008**

| | |
|---|---|
| High School | $5,567,000 |
| Middle School | $3,278,000 |
| Elementary School | $3,719,000 |
| **TOTAL** | **$12,564,000** |

SOURCE: Director of Business and Operations, NSCISD.

A facility condition index (FCI) calculation, on its most basic level, would place this needs backlog of $62 per square foot over the current replacement value for the asset inventory. If one were to assume a conservative estimate of $150/square foot for the replacement of these buildings, this would result in a FCI of .41, which is approaching the point (.60) where some experts would suggest replacement of the buildings, in lieu of rejuvenation. In NSCISD's case, this type of analysis should be performed on a building-by-building basis, if not by individual campus. Regardless, it is clear that this is not a need that will go away.

The district may not be able to resolve many of the issues identified in this report, purely as a result of limitations in funding. Administrators fear that they have reached the limit for drawing additional resources from their local community. The only option they have currently is using the limited funds reserved by the previous superintendent, and using Operations and Maintenance funds from its yearly budget. It is with this perspective in mind that the district may not choose to update its assessment report on a frequent and regular schedule.

However, it is recommended that they find the opportunity and methodology to do so. It is not necessary to hire a consultant every time. In-house staff can be trained to update the inventory in terms of deleting completed items, and to add many of the newly discovered needs. This should occur on a regular basis, and at least annually. The most ideal situation would be if this file were to be made available electronically, such that authorized individuals could add or delete items as they became aware of them. These individuals could also become competent in providing many of the budget estimates, by relying on information that is already present. A professional consultant can then be retained on a three- to five-year cycle to fine tune the information that is present, in close collaboration with administrators and representatives from in-house staff. A qualified facilities professional can help guide this process. Outside consultants could typically be procured for $.10/square foot to aide in the assessment. Multiplying $.10/square foot times the district's total square footage (200,452 square feet) equates to approximately $20,045.

Most public and private school systems use some form of facility needs assessment to determine backlogs of maintenance and repair and assess their facility needs. Findings and recommendations of best practices in facilities asset management (and facility needs assessments) have been researched and reported by the National Research Council independent of the specific approach. Key components to an asset management program include (NRC, 1998):

- 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 (DM) and capital renewal (CR).

The goal of an asset management program is to conduct facility needs 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.

The benefits of preparing facility asset management plans by conducting baseline facility needs assessments include:

- obtaining objective and credible data to make informed facilities investment decisions through prioritizing needs;
- streamlining facilities management processes and reducing the total cost of ownership;
- improving the condition of school facilities;
- extending the life of assets through proper maintenance and repair funding and decisions;
- minimizing safety and security risks at school facilities;
- minimizing the disruption to teachers and students caused by facility system failures;
- enabling optimal use of facilities and infrastructure in support of the educational mission; and
- improving overall stewardship of facilities and maximizing return-on-investment for district stakeholders.

### *CATASTROPHE MANAGEMENT*

Finding #9 – The district has in its possession a "catastrophe management" plan. This plan lacks a champion for its implementation.

**Recommendation 9: Assign the ownership of the "catastrophe management" plan, as well as other safety issues, to a single individual with the skills and opportunity to lead the district to an incident resistant environment.** Code compliance, safe work habits, and safe environments are interrelated. In a district the size of NSCISD, these priorities can be managed by a single individual with the time, skill and authority to do so.

The district obtained the services of a professional consulting firm to help lay out a management plan for catastrophic situations. The document clearly identifies each of the district's facilities, its structural characteristics, presence of hazardous materials, floor plans, utility providers, and district emergency contact information.

As is the case with the facilities condition assessment document, this one provides a snapshot of the conditions that existed at the time the survey was completed. This document will require constant attention, and not be allowed to become unused.

Additionally, the district has the opportunity to identify the structures or assets that are most at risk from the types of catastrophes that are likely to impact them, and to mitigate existing conditions before an event occurs. Thus, if severe winds are a realistic threat, it is appropriate and necessary to identify and mitigate those conditions that are most likely to create casualties or serious loss of assets and/or business opportunity. Actions need to be taken if the risk associated with an existing condition is deemed to be unacceptably high, and its impact is considered to compromise the use of a mission critical facility. The remediation of such a condition may take priority over some of the needs identified under traditional facility condition assessments.

The district should identify an individual who can and will take ownership of this program. Since it is largely a facilities-related endeavor, the person in charge of facilities management may have to own it, along with other safety and code compliance efforts. Clearly, the absence of a required "EXIT" sign (which was a noted condition in several locations) is not

merely a code compliance issue, it is also an emergency management issue.

This individual could become the official liaison to the county's Emergency Operations Center (EOC) service under the City-County Emergency Services, the model under which the district currently operates as a satellite operations center during an emergency. Such a relationship will also facilitate the district's conformity to the operations model suggested under the National Incident Management System (NIMS).

The district does have and adheres to strict pesticide application standards and protocols, as recommended by the Texas School Pesticide Law. The services of a licensed contractor are used for this purpose, with strict requirements of notification to building occupants.

## FISCAL IMPACT

| RECOMMENDATION | | 2009–10 | 2010–11 | 2011–12 | 2012–13 | 2013–14 | 5-YEAR (COSTS) OR SAVINGS | ONE TIME (COSTS) OR SAVINGS |
|---|---|---|---|---|---|---|---|---|
| 1. | Establish a preventive maintenance system, as well as a priority based work order system. | $0 | $0 | $0 | $0 | $0 | $0 | ($10,000) |
| 2. | Improve staff utilization. | $20,755 | $20,755 | $20,755 | $20,755 | $20,755 | $103,775 | $0 |
| 3. | Ensure that all work on facilities is code compliant. | ($10,000) | ($10,000) | ($10,000) | ($10,000) | ($10,000) | ($50,000) | $0 |
| 4. | Implement a Computerized Maintenance Management System. | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| 5. | Identify and implement sets of standards guiding the management of physical assets. | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| 6. | Identify and implement opportunities for additional energy conservation; provide methodologies for measurement and verification. | $8,000 | $12,000 | $16,000 | $22,000 | $30,000 | $88,000 | $0 |
| 7. | Establish design guidelines and standards. | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| 8. | Establish a formal process and schedule to perform facility needs assessments. | $0 | $0 | $0 | $0 | $0 | $0 | ($20,045) |
| 9. | Assign ownership of the catastrophe management plan. | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| **TOTAL** | | **$18,755** | **$22,755** | **$26,755** | **$32,755** | **$40,755** | **$141,775** | **($30,045)** |

# NIXON-SMILEY CONSOLIDATED INDEPENDENT SCHOOL DISTRICT INSTRUCTIONAL FACILITIES ALLOTMENT

Functional and cost effective facilities are essential to providing a school environment that is conducive to student learning. Nixon-Smiley Consolidated Independent School District (NSCISD) has experienced consistent student enrollment over the past five years. NSCISD student enrollment grew by 10 students or 1.0 percent from 2003–04 through 2007–08. During the same period, taxable property values grew by $47,769,426 or 44.0 percent. **Exhibit 8** presents the enrollments and taxable values from 2003–04 through 2007–08.

A recent enrollment forecast indicates NSCISD will experience growth in the coming years. The district anticipates student enrollment for the 2010–11 school year will increase 5.6 percent from 2007–08 to 1,059 students.

The district undertook a capital improvement plan funded by bonded indebtedness to provide adequate educational services for the students and update existing facilities. In 2003, voters passed a $1.5 million bond proposition to fund the following projects:

- New middle school band hall;
- Remodeling of middle school restrooms;
- New high school classrooms;
- New multi-purpose room at the high school;
- Covering for sidewalks;
- Upgrade and add more parking;
- Drainage repair at the elementary school; and
- Demolition and/or relocation of old buildings.

The elementary building was constructed in two phases with phase one opening n 1988 and phase two opening in 1989. The elementary school serves students in grades Pre-Kindergarten through 4. The middle school was originally constructed in 1940 and is located in the community of Smiley, which is 8 miles away. The middle school was formerly used to serve all students of the small community of Smiley but since the consolidation of district in 1983, has been used to serve NSCISD students in grades 5 through 8. A new band hall was added in 2004. The campus was originally constructed in 1957 with an annex added in 1993. **Exhibit 9** summarizes information regarding the size and age of the district's facilities. Student capacity is stated based on permanent facilities and does not include square footage available from the use of portable buildings.

With the struggle of meeting the needs of anticipated student growth, district administrators indicate a need to re-locate campuses and are developing plans to swap the elementary campus with the middle school facilities. The current layout of campuses makes sharing coaching staff, English as a Second Language (ESL) staff, gyms, and athletic programs difficult. Bringing the middle school and high school campuses closer together would help alleviate those issues.

District staff report that members of the community do not support an increase in taxes right now as the economy is struggling. However, swapping of campuses will facilitate the need for a new and larger library to be shared by both middle and high school students, 8-10 classrooms and a new cafeteria at the Smiley campus to serve the needs of its elementary students.

Construction costs have increased significantly in recent years due to demand for a variety of products used in the construction of buildings. The cost of steel, copper, concrete and oil-based products has risen significantly. Oil prices have increased the cost of site development work and transportation costs for delivery of products to the construction site. All Texas school districts have faced the escalation of costs related to construction. With bond funding, NSCISD constructed a new band hall at the middle school and a new multi-purpose facility and classrooms at the elementary school. Other smaller projects around the district included drainage improvements at the elementary school, adding parking

**EXHIBIT 8**
**NSCISD ENROLLMENTS AND TAXABLE VALUES**
**2003–04 THROUGH 2007–08**

| DESCRIPTION | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 |
|---|---|---|---|---|---|
| Enrollment | 993 | 996 | 1,032 | 1,043 | 1,003 |
| Taxable Value | $108,518,855 | $117,216,026 | $130,727,122 | $143,269,820 | $156,288,281 |

SOURCE: Texas Education Agency (TEA), Comptroller's Property Tax Division (CPTD) Tax Final, Summary of Finance and Student Enrollment, 2003–04 through 2007–08.

**EXHIBIT 9**
**NSCISD FACILITIES**
**SNAPSHOT FALL 2005**

| FACILITY NAME | YEAR BUILT | YEAR LAST RENOVATED | SQUARE FOOTAGE | STUDENT ENROLLMENT | STUDENT CAPACITY |
|---|---|---|---|---|---|
| Nixon-Smiley Elementary | 1988 | 1989 | 38,400 | 456 | 450 |
| Nixon-Smiley Middle School | 1940 | 1996 | 51,314 | 282 | 350 |
| Nixon-Smiley High School | 1957 | 2004 | 53,714 | 294 | 450 |

NOTE: Does not include square footage of non-permanent faciliities such as portables.
SOURCE: NSCISD, 2006–07 Property Statement of Values, June 2008.

spaces, restrooms at the 6th grade wing, and coverings for sidewalks. **Exhibit 10** compares the estimated cost and actual cost for construction of the new facilities.

The district used the common 'tripartite' contracting format whereby the district had a direct contractual relationship with both the architect and the general contractor. The architect was responsible for completion and quality of all design work and the general contractor was responsible for completion and quality of all construction work, including that performed by subcontractors.

The district negotiated a fee structure with the architect based on a percentage of the cost of the construction of the new multi-purpose/classroom building at the elementary school and the new band hall at the high school. For the architect's services, a lump sum payment of $87,750 was negotiated based on approximately 4.5 percent of the estimated construction cost of $1,124,900 plus fees for bidding and construction administration/management. The design portion of the fee was 65 percent of the total lump sum while bidding and construction management totaled 35 percent of the base fee. NSCISD negotiated a payment schedule for the architectural services to be paid in phases as shown in **Exhibit 11**.

Texas school districts have three major funding sources to repay bond funds used for facilities construction: revenues from local taxes, the state's Existing Debt Allotment (EDA) and the state's 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.

The state's EDA program provides tax rate equalization for local debt service taxes. By providing a guaranteed yield on I&S taxes levied to pay the principal of 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 guaranteed yield for EDA provides $35 per student in average daily attendance (ADA) per penny of tax effort. The EDA program operates without applications, has no award cycles and is available only to repay bonded debt.

The state's IFA program provides assistance to school districts in making debt service payments on qualifying bonds or lease-purchase agreements. Bond or lease-purchase proceeds must be used for the construction or renovation of an instructional facility. The IFA program operates with applications and has award cycles.

Though NSCISD did apply and was eligible for IFA funding in Round 7 (June 2004) of $154,771 and Round 8 (June 2006) of $58,392 it did not receive IFA funding from either round. However, the district did receive EDA funding in 2005–06 through 2007–08 to assist its repayment of bond indebtedness.

NSCISD levied a $0.0326 interest and sinking fund (I&S) tax rate per $100 valuation in 2007–08 to pay the district's debt service payments. In 2007–08, the district also received $60,506 in EDA funding to assist in making the district's debt service payments. **Exhibit 12** presents the I&S tax rate, taxable property values and a calculated tax levy for NSCISD from 2003–04 through 2007–08.

**EXHIBIT 10**
**NSCISD CONSTRUCTION COSTS**
**2003 BOND PROJECTS**

| PROJECT | PROPOSED BOND EXPENDITURE | ACTUAL COST | SQUARE FOOTAGE | ACTUAL COST PER SQUARE FOOT |
|---|---|---|---|---|
| Middle School Band Hall | $215,099 | $180,833 | 2,448 | $73.87 |
| High School Multi-Purpose and Classrooms | $1,354,128 | $1,057,458 | 14,043 | $75.30 |

SOURCE: NSCISD, Property Statement of Values and Construction Spreadsheet, July 2008.

**EXHIBIT 11**
**NSCISD ARCHITECTURE FEES PAYMENT SCHEDULE**
**FEBRUARY 2003**

| PHASE | PERCENTAGE PAYABLE |
|---|---|
| Schematic Design/Design Development | 15% |
| Construction Documents | 50% |
| Bidding | 5% |
| Construction Management | 30% |

SOURCE: NSCISD, February 2003 Architectural/Engineering and Construction Management Fee, June 2008.

NSCISD collected an average of 98 percent of the calculated I&S levy from 2003–04 through 2006–07. In addition, the district received the EDA funding to assist in the payment of its debt service. NSCISD did not levy an I&S tax until 2004–05 and paid all or part of the interest on the 2003 series bonds from the general fund from 2002–03 through 2004–05. The general fund paid interest of $7,458 in 2002–03, $61,320 in 2003–04 and $25,310 in 2004–05. **Exhibit 13** presents the debt service fund expenditures and local I&S tax revenue for 2003–04 through 2007–08. The 2003 bond did not require payment of principal until 2005–06.

## IMPACT

NSCISD reported that not receiving IFA would have had a devastating impact on the district had it not received EDA funding instead. Prior to the bond election, the district indicated to the community the importance of applying for IFA funding to the proposed bond package and that tax rates would be impacted by a 6.8 cent increase if IFA funding was not received.

**EXHIBIT 12**
**NSCISD INTEREST AND SINKING (I&S) TAX RATE, TAXABLE PROPERTY VALUES, AND I&S TAX LEVY**
**2003–04 THROUGH 2007–08**

| DESCRIPTION | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 |
|---|---|---|---|---|---|
| Tax Rate | $0.000 | $0.033 | $0.00 | $0.034 | $0.0326 |
| Taxable Value | $108,518,855 | $117,216,026 | $130,727,122 | $143,269,820 | $156,288,281 |
| Tax Levy | $0 | $38,681 | $0 | $48,712 | $50,950 |

SOURCE: NSCISD Tax Rate Resolution, TEA Academic Excellence Indicator System (AEIS), CPTD Taxable Values, Calculation by Consultant, July 2008.

**EXHIBIT 13**
**NSCISD DEBT SERVICE FUND**
**2003–04 THROUGH 2007–08**

| DESCRIPTION | 2003–04 | 2004–05 | 2005–06 | 2006–07 | 2007–08 |
|---|---|---|---|---|---|
| Debt Payments | $0 | $35,710 | $68,833 | $110,752 | $115,595 |
| IFA | $0 | $0 | $0 | $0 | $0 |
| EDA | $0 | $0 | $69,426 | $65,658 | $60,506 |
| Local Revenue | $0 | $35,340 | $0 | $44,827 | $47,648 |

NOTES: Instructional Facilities Allotment (IFA); Existing Debt Allotment (EDA).
SOURCE: NSCISD and TEA, Annual Audit Reports, 2007–08 Budget and Summary of Finance, July 2008.