

## Maintenance & Operations Workshop October 2, 2017



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## Who are we?

- Director of Buildings and Grounds
- Director of Operations
- Director of Maintenance
- Supervisor of Maintenance
- Facilities Director
- Facilities Manager
- Director of Physical Plant – Plant services
- Technology
- Food Service
- Transportation

## Leaders for change

- New programs and procedures
- Does district staff know who you are
- Does your BOE know who you are and what you want for the district

## What will you deal with?

- OSHA
- MIOSHA
- AHERA
- IPM
- IAQ
  - Mold
- ADA
- Confined Space

## More

- Right to Know
- Lockout/Tag out
- PPE
- Safe Drinking Water
- UST (underground storage tanks)
- Ergonomics
- Playground Safety
- Facility Closing

## More?

- Building Maintenance
  - Preventive Maintenance
  - Routine Maintenance
- Custodial
  - Processes
  - Chemicals
  - Equipment
- Grounds
  - General Turf Management
  - Athletic Field Management
- Security
- Construction

## And still more

- DEQ water shed regulations
- Asbestos and Lead regulations
- Human Resources
- Food Service
- Transportation

## Your Turn

- What do you want to take from here today?

## Facility Management

A profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology.

International Facility Management Assoc.  
(IFMA)

## As School Business Officials....

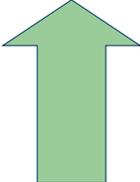
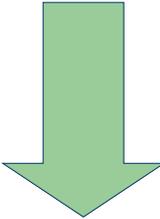
**We strive daily to operate well-maintained schools that are conducive to learning. A quality maintenance program supports these endeavors by keeping schools in good repair in a cost-effective manner. A quality maintenance program will help schools avoid costs, protect assets, and increase productivity of students, teachers, and staff.**

**Todd Bell & Don Hebel**

## Research Shows... .

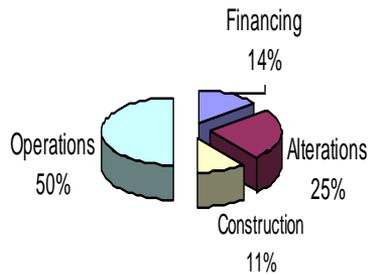
- “A positive relationship exists between school conditions and both student achievement and behavior.”
- “Students who attend schools in poor condition score 11% below students who attend schools in excellent condition.”
- “Physical conditions has a direct effect on teacher morale, sense of personal safety, and feelings of effectiveness in the classroom.”

## Widening Gap of Resources & Needs

- 
- Increasing responsibility of custodians and grounds workers.
  - Decreasing % of budgets allocated to preserve and run facilities (7.7%).
  - Urban districts 3.5% of budget for facilities, of this, 85% emergency repairs.
- 

-American School and University

## Lifecycle Cost of School



-American School and University

**A well designed and constructed school can save energy usage, maintenance, and operations allowing districts to recoup added initial costs over a 40 year lifecycle.**

## Capital expenditure plan for district needs.

Boilers, pumps, VFD controls  
Lighting  
Emergency Battery backup systems  
Carpet  
Trucks, plows  
Grounds equipment, mowers  
Custodial equipment  
Tables and chairs

**Districts should complete a complete facility and infrastructure audit to plan for future needs.**

## School Facility Construction

- Bond Issue
  - Major construction, renovations and/or additions
  - ADA, fire code compliances
  - “Curb” appeal

## Building and Site Sinking Funds

- Ease on general fund
- Energy upgrades DDC controls
- Cosmetic (carpet, paint, roofs, LED lighting)
- Building security (door access controls, Camera systems)
- Boiler systems (energy efficient)

## Construction planning with board and architects

- Have a list of non negotiable
- Key's and locks
- Door types
- Pumps, HVAC systems
- Control systems, DDC, camera's, door access
- Paint colors and floor finishes
- Get board and superintendent support

## Proactive Training Programs

- Financial and functional effects.
- Productivity, quality, and retention.
- Technical skills through computer-based programs.
- Professional development courses.
- 3rd party, partners, colleges.

## Updated maintenance strategies must:

Identify district goals and understand facility's impact on them.

Analyze and prioritize facility and system areas that serve goals.

Match each system and component with most appropriate service approach.



## Four approaches to effective O&M

- Run-to-Fail
- Task-Based Maintenance
- Predictive Maintenance
- Preventive Maintenance

Most school districts use some combination of these four approaches.

## Run-to-Fail

This approach allows the equipment or part to run until it breaks down or wears out beyond repair.

Small, inexpensive, longwearing items are good candidates for this application but it is not appropriate for all equipment.

## Task-Based Maintenance

- This work-order based approach addresses lists of broken items or equipment/parts nearing the end of their life cycle.
- This approach is reactive and focuses on short-term plans.
- Managers are unable to schedule emergency based repairs.
- Emergency based repairs require more resources and labor.
- It leaves the organization with the probability of system failure that could cause school closures.

## Predictive Maintenance

Changing the task-based maintenance approach and focusing on predictive maintenance improves the outcome.

Predictive maintenance is the process for monitoring selected performance data for equipment, against a baseline reference to identify and predict impending failures for just-in-time maintenance attention.

## Preventive Maintenance

Preventive maintenance is the process of performing *scheduled* equipment inspection, testing and repair services. Activities are performed on a scheduled basis annually, or more frequently, that identifies additional maintenance and/or systems testing that is code required.

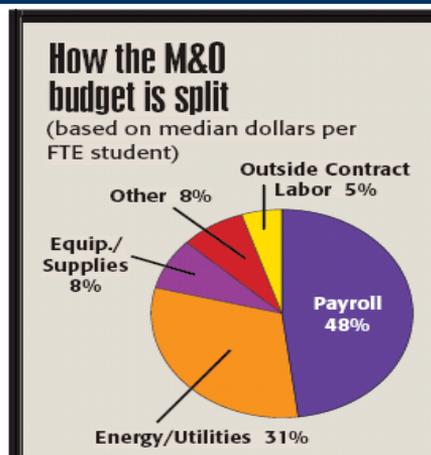
Examples include replacement of filters and belts, lubrication, vibration analysis, tightening of fasteners and connections, infrared analysis of equipment, debris removal, tube inspection, fire alarm, and emergency generator testing.

## Financial Benefits of Preventive Maintenance



- Reducing breakdowns and unexpected failures.
- Initiating energy-saving solutions that reduce utility bills.
- Having an outsourced staff that implements the latest in technology and efficient strategies.
- Utilizing Computerized Maintenance Management Systems and Building Automation Systems to optimize efficiencies.

## M&O Budget



## Key management tools for O&M

- **Audits**
- **Benchmarking**
- **Commissioning**
- **Recommissioning**
- **Retro-commissioning**

## Audits

Energy or facility audits are a comprehensive review of the total energy using systems, policies and procedures of new or existing facilities, by commissioning, benchmarking and assessing each area and piece of equipment, making appropriate changes to enhance or upgrade each to increase efficiency, reduce waste and save money.

The objective of an energy audit is to minimize energy costs by reducing losses and creating an energy efficient environment.

Energy or facility audits are proven methods for gaining accurate baseline information.

## Benchmarking

Benchmarking is comparing and charting activities, standards, levels of performance and other factors against:

- The facility's past history
- Similar school districts
- Published building usage data

### **Common elements of benchmarking:**

- continuous improvement
- measuring and analyzing
- comparing of performance levels
- attaining accurate baseline information
- adoption of superior practices

## The importance of benchmarking

- Long-term planning initiatives and improved policy and financial decisions can only be attained through accurate baseline information on the condition of the facilities for both *physical conditions* and *functional ability* to meet program requirements and projections, based upon proven models and established benchmarks.

## Benchmarking as a resource

Benchmarking is a process to keep a check and balance of the number of staff required to carry out the O&M management plan schedule.

- (Custodial surveys: MSBO-27,933 per sq. ft. and AS&U-25,173 per sq. ft. median levels)
- (Maintenance surveys: MSBO-159,402 per sq. ft. and AS&U- 100,700 per sq. ft. median levels)
- (Grounds Surveys: MSBO-84 acres and AS&U-40 acres at median levels)

## Commissioning

Commissioning is making sure the building meets all of the demands and design criteria that it was intended to meet and to run the building through its paces BEFORE the building is occupied.

When commissioning identify the:

- Systems being controlled
- Logic behind those controls
- Systems usage over a period of time

## The difference between commissioning and maintenance.

### Commissioning:

- A problem *finding* activity
- Focuses mainly on the systems *performance*

### Maintenance:

- A problem *solving* endeavor
- Tends to concentrate mainly on components.

## Recommissioning

Recommissioning applies to buildings that have previously been commissioned.

It involves *revisiting* the systems regularly and checking/retesting equipment, using the original checklists and test procedures.

## Retro-Commissioning

Retro-commissioning is performed on *existing* buildings that have never been commissioned.

With this approach you can reduce energy consumption, IAQ, and improve temperature control

Retro-commissioning is a must for systems whose design intent has changed or their systems were upgraded since they were originally constructed.

## Maintenance with a HOLISTIC approach

Facility directors should plan and develop current and future facility strategies and best practices that *meet the needs and goals of the school district*.

Administrators need to reflect on how their facilities meet the educational needs of their students, teachers and community as well as how their varied systems work together with each other to increase building operation efficiency.

Directors should continually analyze and prioritize all areas within the facility and the systems that serve those areas, matching each system and component with the most appropriate service approach to impact education.

## Technology

- Virtual High School (Kent ISD)
- I phones – I pads
- Wireless buildings
- Changing traditional classrooms to computer rooms and now back to traditional classrooms.
- Electrical requirements to support

## Maintenance Management Systems

- CMMS - Computerized Maintenance Management System
- IMMS - Internet Maintenance Management System

## What does the Maintenance Management System need to have at a minimum?

- The date the request was approved.
- A job tracking number.
- Job status
- Job priority
- Job location
- Contact person
- The date the request was received.
- Supervisor and craftsman assigned to the job
- Supply and labor cost for the job
- Job completion date and time

## Computerized Maintenance Management System

- Streamline the work order system
- Minimize the number of people involved in work order delivery, approval, and completion

## The Formal Maintenance Management System

- Work order received
- Worker completed
- Current work order backlog
- Use of time, including absenteeism, vacations, training
- Costs for each work order, e.g. labor and material

## What does a better Maintenance Management System offer?

- Acknowledges the receipt of the work order
- Allows the maintenance department to establish work priorities
- Allows the requesting party to verify that the work has been completed
- Allows the requesting party to provide feedback
- Allows for preventative maintenance work orders
- Allows for queries of labor and parts cost

## Schooldude – Online Services

### CommunityDirect

CommunityDirect membership for districts.

### FSDirect

Your online solution for facility and event scheduling. Maximize your after-hours facility usage while managing and recovering costs - all online, all the time.

### InventoryDirect

Your online tool for requesting, ordering, and managing inventory.

## Schooldude – Online Services

### ITDirect

Your powerful, online help desk management tool that streamlines the entire technology workflow process from incident request to completion.

### MaintenanceDirect

Finally! an Internet Maintenance Management System (IMMS) built exclusively for school facility management - even small schools!

### MaintenanceDirect Global

This optional tool can be used with MaintenanceDirect to aggregate two or more educational organizations maintenance information into a state level or organization-wide view for analysis and reporting.

## Schooldude – Online Services

### PlanningDirect

The new online capital planning and budgeting tool from SchoolDude that simplifies strategic planning for your educational institution's future capital needs.

### PlanningDirect Global

This optional tool can be used with PlanningDirect to aggregate individual capital plan information into a state level or organization-wide view for analysis and reporting.

### PMDirect

A powerful, online preventive maintenance tool designed for school facility professionals – and it's fully integrated with MaintenanceDirect!

### UtilityDirect

Your online utility management and reporting tool that audits, tracks and analyzes utility consumption and costs to identify savings opportunities.

## SafeSchools or GCN

### ● Benefits of Online Training

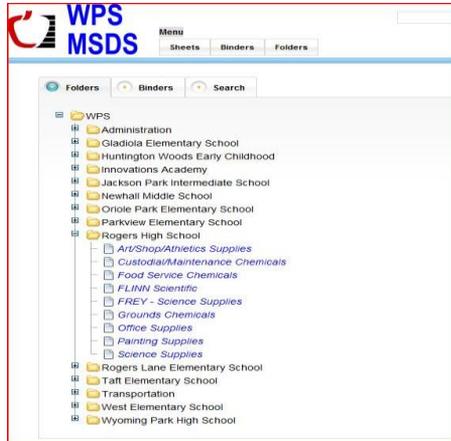
- Less time needed to train
- Increase in retention rates
- Consistency
- Increased employee satisfaction

### ● Course List

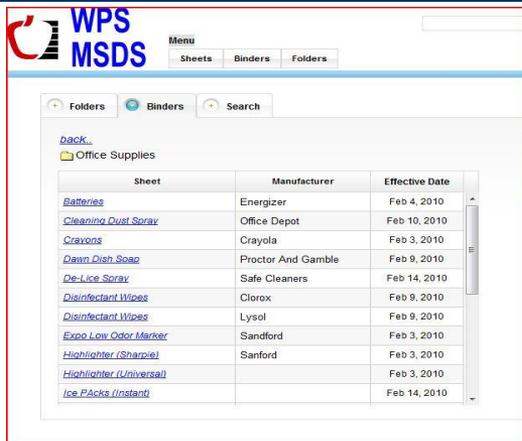
- Human Resources
- Security
- Transportation
- Nutrition Service
- Spanish
- Environmental
- Emergency Operations Management
- Social & Behavioral
- Health

[www.safeschools.com](http://www.safeschools.com)

# MSDS online



# MSDS folders



## Having an emergency plan.

- Be prepared for the next emergency.

Do you have names and numbers of key contacts for emergency events. List of who should be notified (Superintendent, police, fire, utilities)

Water damage, roof or facility damage, trees down, power failure, flat tires on buses, broken windows, mold, asbestos.

## Emergency plan continued

Waiting until the moment it happens can create unnecessary stress and slower response time.

Do you have relationships with vendors, other districts, local city departments that in the event of an emergency you can call for help.

Do you and your key staff know where this information is located?

## **Custodial Operations**

- Team cleaning
- Zone Cleaning
- Specialty cleaning
- Summer Cleaning
- Equipment use (updated equipment)
- Training
- Evaluations

## **Buildings and Grounds**

- Proper Equipment
- Training
- Skilled Trades in house or outsource
- Mowing, plowing and salting in house or outsource
- Evaluations

## Transportation

- Bus purchasing or Leasing plan
- Managing district routes and stops
- Student management (video on bus)
- Driver management
- Hiring and training drivers
- Service and repair schedules and expectations
- Accident investigation
- Evaluations

## Food Service

- Staying current on the latest regulations
- Serve Safe certification for staff
- Allergen notification
- Purchasing
- Menu management, nutritional values
- Portion sizes, food quality
- Hiring staff
- Evaluations

## Scheduling and Staffing

- Build the scheduling and staffing plan
- Be part of the solution
- Benchmarking as a resource
- Creative scheduling
- Daily work schedule requirements
- Mission statement

## Build the scheduling and staffing plan

To begin the process, the facility manager should start by taking the individual and personal needs of the facilities staff and traditional scheduling techniques out of the equation. In other words, start with a clean slate!

Review the educational programs, building needs, budget constraints and community and district culture to build your model.

## Hiring Practices

- Appli Track for educators
- PESG \ Edu Staff
- Word of mouth
- District E-mail
- Newspaper - Online
- Marquee signs
- Replacing open positions with private service through attrition

## Be part of the solution

- **Start or join a building usage team that is made up of key administrators and after-school-hours users from the district.**
- **The facility manager's job is to be a leader on this team and have a reputation as being an open-minded problem solver.**

## Creative Scheduling

Schedules should be created for all situations with the schedules and duties varying from period to period (School vacations, snow days, worker compensation, light-duty, in-service days, reassignments, etc).

Other possibilities to maximize the production of your staff are initiating:

- Tuesday through Saturday working days
- Staggered starting times
- Part-time personnel for special situations
- Out-sourcing, not staffing for the exception
- 44 week employees

## Daily work schedule requirements

Daily work schedules need to be set up by time, work description and duration for each and every assigned area. Part of any good scheduling and job description process is periodic inspection and performance reviews.

Job descriptions and schedules need to be reviewed with the person performing the duties at least yearly and those documents posted in the respective custodial closet/maintenance work area.

## Daily work schedule requirements

Maintenance staff should be assigned by zone and be cross-trained to cover other assignments. All work-orders should be recorded and a record of back-logs and issues tracked.

Maintenance personnel should also keep a daily log to track their individual working hours.

## Increase productivity for O&M

Increase O&M by over 25% by scheduling maintenance and head-custodial time with emphasis on preventive maintenance in the beginning of the summer period.

To develop the summer schedule, establish the last day of work required to complete the job and then work backward to develop the summer schedule start date.

Establish dates within the schedule, indicating the level of completion and schedule intermediate targeted walk-through dates with the employee to review their job performance.

## Increase Productivity for O&M

Coordination of the educational calendar, non-educational calendar, summer events, construction and repair schedules is vital so that personnel know what is happening in their building as well as in the entire district. Use written up-dates throughout the period to minimize conflicting schedules and events.

Vacation for most personnel should be scheduled in the summer months encouraging time around July 4th, when the school calendar is slow.

No vacations should be allowed during the last two weeks of the summer.

## The facility manager's impact on attitudes.

Administrators should visit every building so staff members know that their needs and issues are heard and that their job is important enough to warrant personal time by the manager.

Ask for their input and suggestions, they will help if they are given the opportunity. This is essential in team building.

Know your personnel e.g. their personalities, their families and their aspirations.

Be a mentor! Encourage learning and professional development so they are ready for advancement when the time presents itself.

If you invest time in your staff, they will in turn, give results that support and increase the educational mission.

Find something your employee is doing **right** and tell them.

## Mission Statement

Have a written mission and a written vision for your department.

Become a cheerleader for your department that shows your staff and the educators that you support the mission of education in your district.

Sell yourself and your department.

## Get involved

Find a group to be part of:  
MSBO, regional facilities group  
neighboring district manager.

It is important that you find someone that you can contact when you have questions.

## Co-Sourcing

**Combines skills of district and service vendor staff.**

**Ranking process helps determine responsibility of each party.**

**Example: building specialist or project manager on site.**

## Outsourcing

- Nearly **1,500 public districts outsource** food service and/or facility management. Non-core activities.
- National School Board Association indicates most districts that outsource **improve efficiency and lower operating costs.**

## Outsourcing

- More Michigan public school districts contracted out in 2015 for at least one of the three main support services – food, custodial or transportation – according to the Mackinac Center for Public Policy’s annual privatization survey. Some 246 of the state’s 551 districts, or 44.6 percent, contract with private companies for one or more of those support services, up from 42.4 percent a year ago. The Mackinac Center has surveyed Michigan school districts since 2001, when 31 percent of districts contracted out for one of the “big three” noninstructional services. The survey found that 173 districts in 2012 and 192 in 2015 contracted food services while custodial had 146 districts in 2012 and 217 in 2015. Transportation went from 53 to 89 districts outsourcing.
- [www.mackinac.org](http://www.mackinac.org)

## Outsourcing

- While 66 districts contracted out services this past year, 11 chose to bring a service back in-house. Only 4 of these decisions resulted from dissatisfaction with the private vendor — the remainder involved districts which had privatized one or two employees who retired this past year.

## Shared services

- The vast majority of districts share at least part of one support service, even if the sharing amounts to just a single employee dividing their time between two districts. 497 districts are now sharing at least some portion of their food, custodial, transportation services, technology or administrative services

## School Facility Closing

- Michigan Schools = Declining Enrollment  
Facility managers expected to make recommendations:
  - Close and moth-ball or sell and/or demolish
- Items to Consider:
  - HVAC, electrical units
  - Insurance
  - Inventory

## Change Recommendations

- Share philosophies with staff so all are working toward the same goal.
- Analyze existing O&M efforts and rank facility/equipment needs.
- Investigate O&M options such as training, co-sourcing, or outsourcing.
- Integrate those options into Bond Issues that best fit needs, capabilities, and goals.
- Continue to assess O&M status/needs and make appropriate changes.
- Be part of an operations group.
- Find a mentor or someone you can ask questions and advice.

## You Can Make a Difference

**We encourage you to realize the positive impact an improved operations and maintenance plan has on the district's ability to provide an exceptional educational environment for students, teachers, and staff.**

End

## References/Resources

- School Specific Information
  - ASBO Publications ([www.asbointl.org](http://www.asbointl.org))
  - APPA Publications ([www.appa.org/k12](http://www.appa.org/k12))
  - American School & University Magazine (<http://www.asumag.com/>)
  - Michigan School Business Officials ([www.msbo.org](http://www.msbo.org))
  - School Planning and Management Magazine (<http://www.peterli.com/spm/>)
  - National Clearinghouse for Educational Facilities ([www.edfacilities.org](http://www.edfacilities.org))
    - Planning Guide for Maintaining School Facilities
- Today's Facility Manager  
(<http://www.facilitycity.com/tfm/>)
- Commissioning and O & M resources  
(<http://www.peci.org/cx/index.html>)
- Facilities Net  
(<http://www.facilitiesnet.com/>)
- FMLink  
(<http://www.fmlink.com>)