

How to Avoid the Pitfalls of Implementing a Computerized Maintenance Management System (CMMS)

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Introduction

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Agenda

- CMMS – definition and advantages
- Key success factors
- Sample reports
- Case study

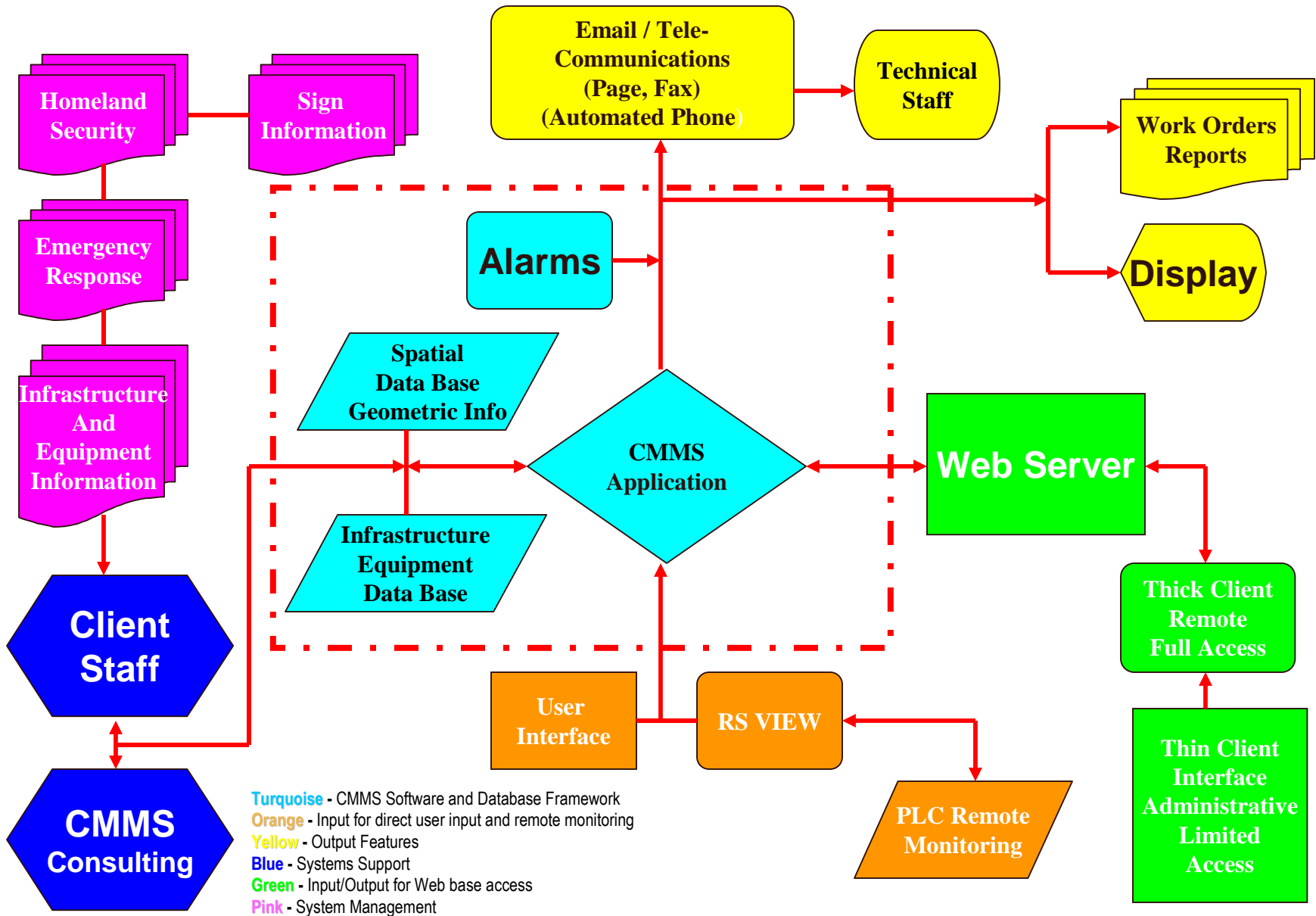
CMMS is a software solution that helps you collect, analyze and manage information

- Store maintenance information
- Monitor inventory
- Analyze costs
- Review historical information
- Generate unique work orders
- Generate performance reports

A CMMS program can encompass many environments

- **Thin Client** is a web based interface designed for user friendly navigation and limited access. The limited access allows for input from users outside CMMS operations.
- **Thick Client** is a sequel server or client based interface which allows full access control of all of the functionality of the CMMS application. The access control can be customized for each specific user.
- **Spatial Database** is a data management application used for geometric information and records. The size of record information for maps and drawings requires specialized database tools to efficiently manipulate this type of data.

CMMS flow chart



A well-implemented CMMS will optimize staffing and uptime

Staffing

- Well-trained staff via formalized procedures
- Intelligent manpower allocation
- Communication of understaffing
- Staffing based on PM philosophy

Uptime

- Proactive intervention via problem area reporting
- Predictive maintenance (remote monitoring)
- Continuous improvement through benchmarking

CMMS is a valuable tool to enhance toll-financed transportation services

IBTTA VISION

- Safer, faster, more convenient mobility through toll financing.

MISSION

- To provides a forum for sharing knowledge and ideas to promote and enhance toll-financed transportation services.

What are potential pitfalls?

- IT oversees implementation, not maintenance managers or engineers
- Poor pre-implementation manual structure
 - Inaccurate/insufficient data
- Lack of upper management support
- Inability of your team to take a different approach to maintenance management?

8 keys to a seamless implementation



1. Identify your objectives
2. Invest time upfront
3. Establish maintenance standards & levels of service (Standards Manual)
4. Know your strengths and weaknesses
5. Recognize a turn-key solution
6. Execute a well thought-out PM and inspection plan
7. Generate reports management understands
8. Implement a work control center

**“The process drives the software,
the software does not drive the process.”**

Identify your objectives: Start with the end in mind



- Provide and maintain a safe and efficient transportation system
- Maximize resources, minimize cost
- Overcome the challenges of a linear asset
- Minimize liability
- Address political issues, GASB 34 CMOM
- Maintain a state of good repair
- Optimize aesthetics
- Maintain adequate staffing
- Ensure uptime/reliability
- Integrate with existing systems

Invest time upfront to establish achievable goals



- Establish Maintenance Master Equipment List (MMEL)
- Execute preventive maintenance plan
- Track manpower usage
- Manage inventory and controls
- Define your reporting requirements
 - Daily Reporting – What should I focus on today?
 - Monthly Reporting – How are you doing?
 - Annual Reporting – Did your organization achieve its goals?
- Identify the users who will access the system
- Budget future activities

Establish maintenance standards and levels of service



- Work order type classifications
- Equipment numbering
- Preventive maintenance procedures and frequencies
 - Equipment
 - Infrastructure
- Monthly benchmarks
- Service levels

Know your strengths and weaknesses



- Capabilities of your IT group
- Is your team ready to take a different approach to maintenance management?
- Ability to add manpower and/or change the configuration of your maintenance staff
- Computer savvy-ness of your team
- Ability of management to connect operation dollars to capital dollars

Recognize a turn-key solution reduces implementation time



- MMEL
- Preventive maintenance procedures & schedule
- Work control center organization
- Cost centers
- Employee information
- Inventory
- GIS Database
- Experience

Execute a well thought-out PM and inspection plan



- PM should be treated as a religion, you must believe in it
- Set a goal for man-hours devoted to PM
 - 20% is normal, Transportation is 5% to 30% or higher
- Allow for flexibility in responding to staffing changes
 - Prioritize equipment
 - Disable/enable preventive maintenance procedures
 - Identify critical and non critical assets

Execute a well thought-out PM and inspection plan (Cont)



- Use the CMMS to enforce warranties
- Maximize manpower utilization by evaluating area, system, tasks vs. equipment preventive maintenance efforts
- Understand the limitations and consequences of rescheduling preventive maintenance

Generate reports management understands



- Align your CMMS implementation to support the mission of your organization (and IBTTA?)
- Define reports that support the mission
- Set up the database to generate the required reports
- Understand and work within the design of the software
- Ensure management understands numbering systems

“Management should be able to read reports in 5 minutes or less and determine if clearly defined objectives are being met”

Implement a work control center

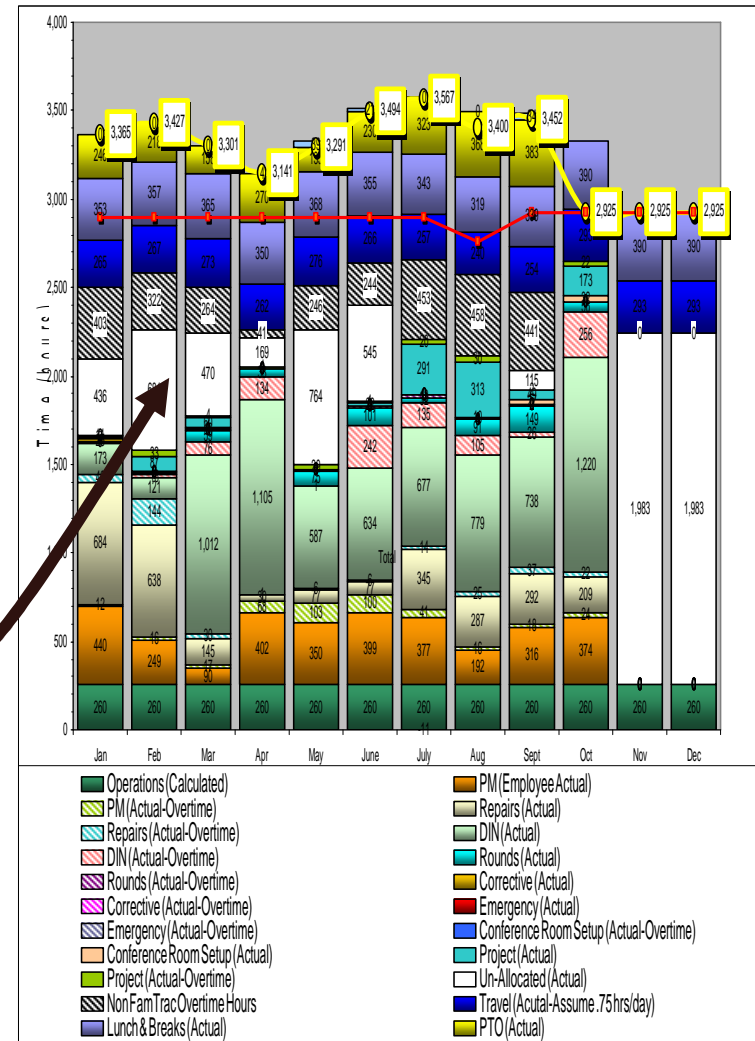


- Provides one phone number for all work requests
- Ensures all calls are logged
 - Helps management schedule work
 - Eliminates deal making in the field
 - Expedites emergency calls - WO sent directly to appropriate individuals via established procedures
- Provides user with work order number at start of request “allow future tracking via web or WCC”
- Ensure PM and inspection efforts are not interrupted

Manpower tracking helps optimize labor utilization

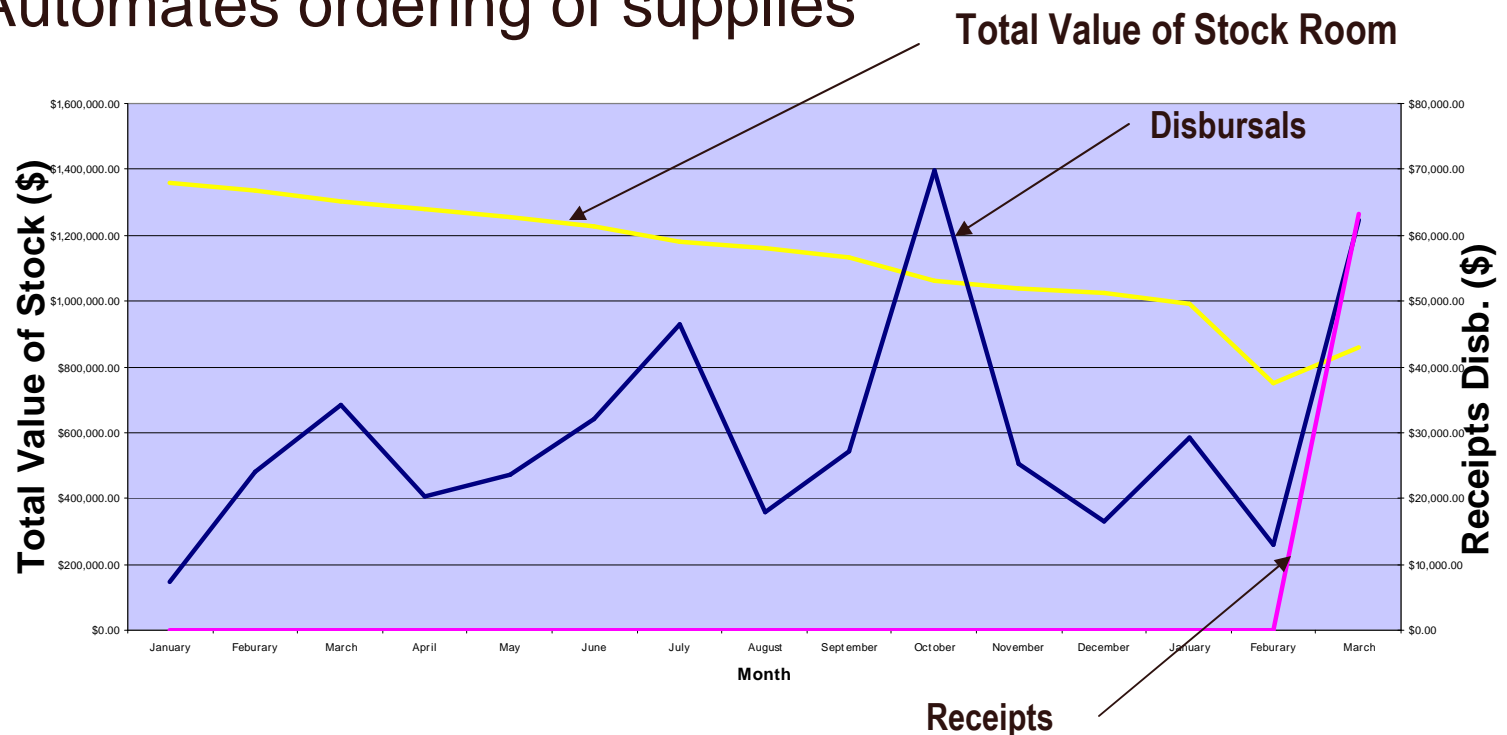
- Data is queried from CMMS
- Shows how manpower is used and labor is allocated
- Tracks overtime and backlog
- Provides exception reporting

Unallocated Man-hours



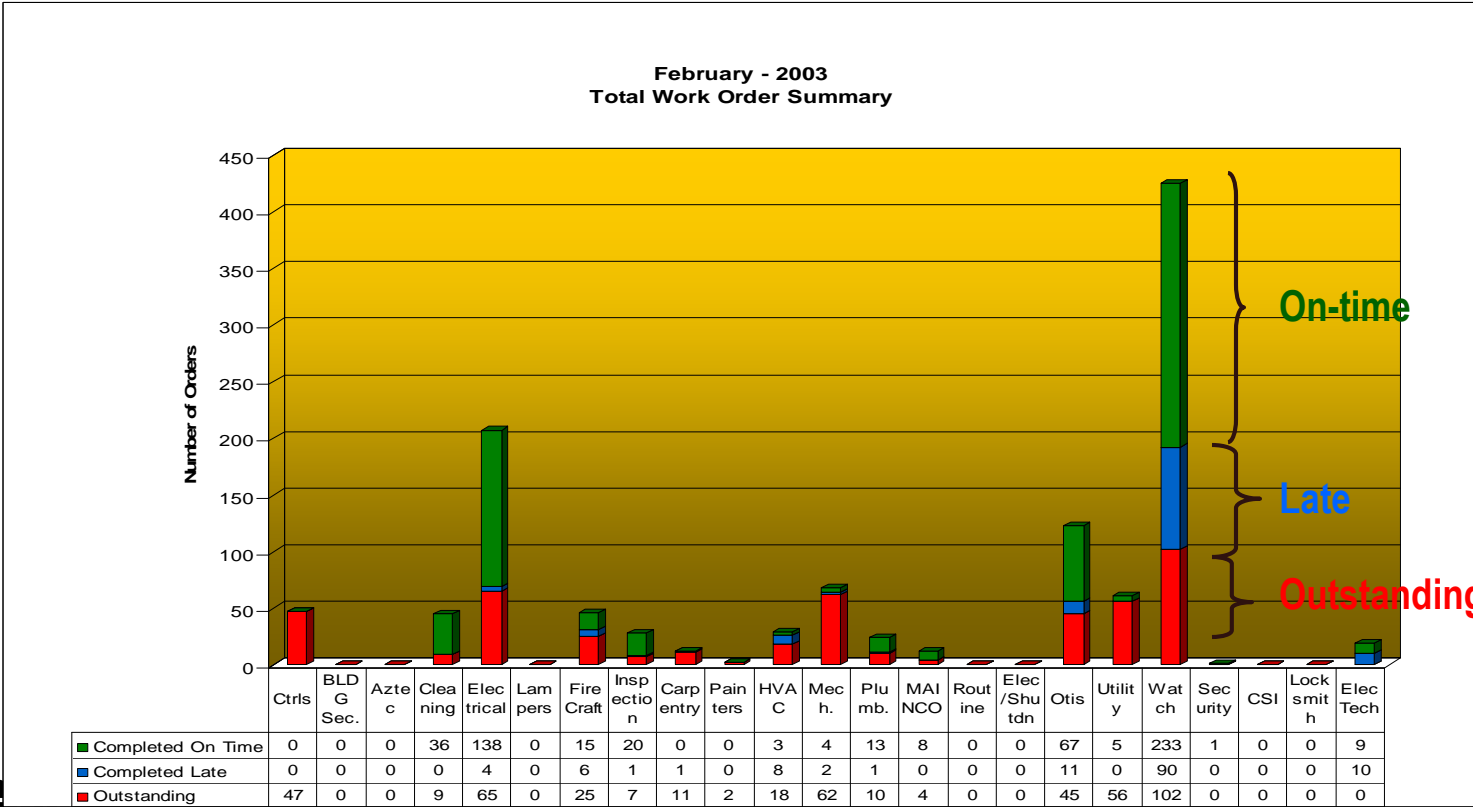
Inventory charting promotes optimal inventory levels

- Allows for reserving inventory
- Reduces the number of unallocated disbursements
- Minimizes inventory stock levels
- Automates ordering of supplies



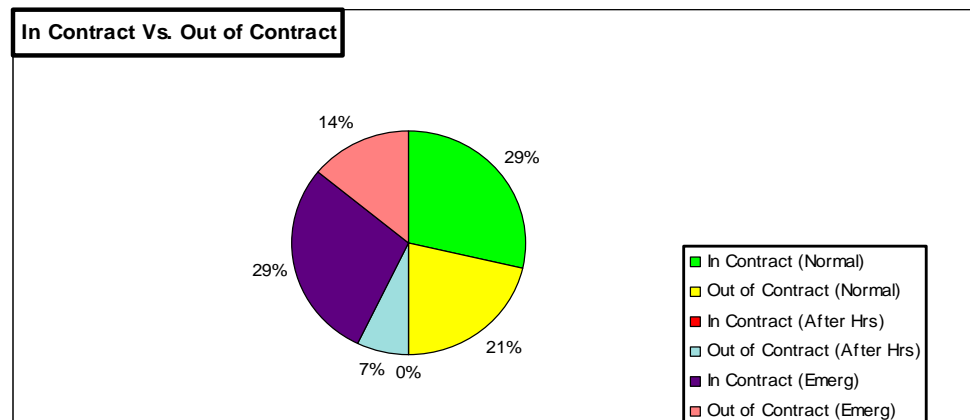
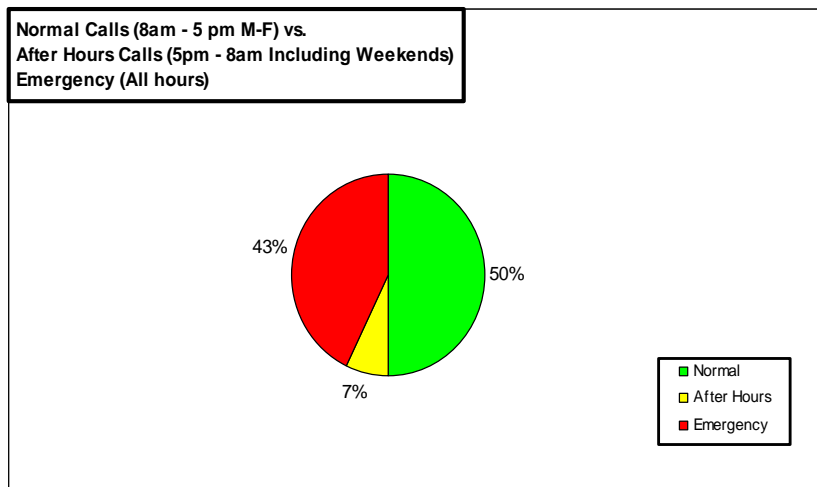
Monthly performance reports can measure customer satisfaction

- Measures number of work orders completed
- Reflects timeliness whether completion was on-time or late
- Benchmarks performance over time



Monitor outsource vendors performance

- Analyzes in-house vs. contract
- Maintenance contracts have line items for performance
- Desire to monitor adherence to contract
- Measure calls to determine if they are in-contract or out-of-contract
- CMMS can be used to develop detailed outsource contracts



Case Study: Electrical shop understaffed

- Developed MMEL of Electrical Equipment
- Developed PM plan for MMEL
- Reviewed maintenance requirements
- Reviewed time estimates
- Justified hiring additional electricians
- Implemented TQM

Electrical PM hours are calculated based on the MMEL

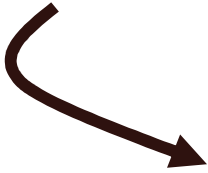
Zone	Total Annual Electrical PM Hours	Total Electrical FTE Required for PM <i>ONLY*</i>
Zone 1	2,027	1.83
Zone 2	2,758	2.49
Zone 3	1,477	1.33
Zone 4	2,098	1.89
Total Hours	8,360	7.54

- By determining and presenting this information, the data required to move to a proactive maintenance plan is presented
- Staffing levels to perform the PM can be determined from availability calculations

Manpower availability is calculated

Description	Hours per Year
Total Hours	2080
Training Time	40
Sick Time	96
Vacation Time	120
Holidays	64
Lunch (.5 hours/day)	130
Breaks (.5 hours/day)	130
Travel Time (1.5 hours/day)	390
Total Available	1,110

Travel time tied to square miles



actual # of hours available



Goal: Increase PM and decrease all other work types

Description	Hours per Year
Preventative Maintenance	8,362
Repair	800
Do-It-Now	5,593
Project	2,302
Corrective	63
Shut Down	256
Total Yearly Workload	17,376

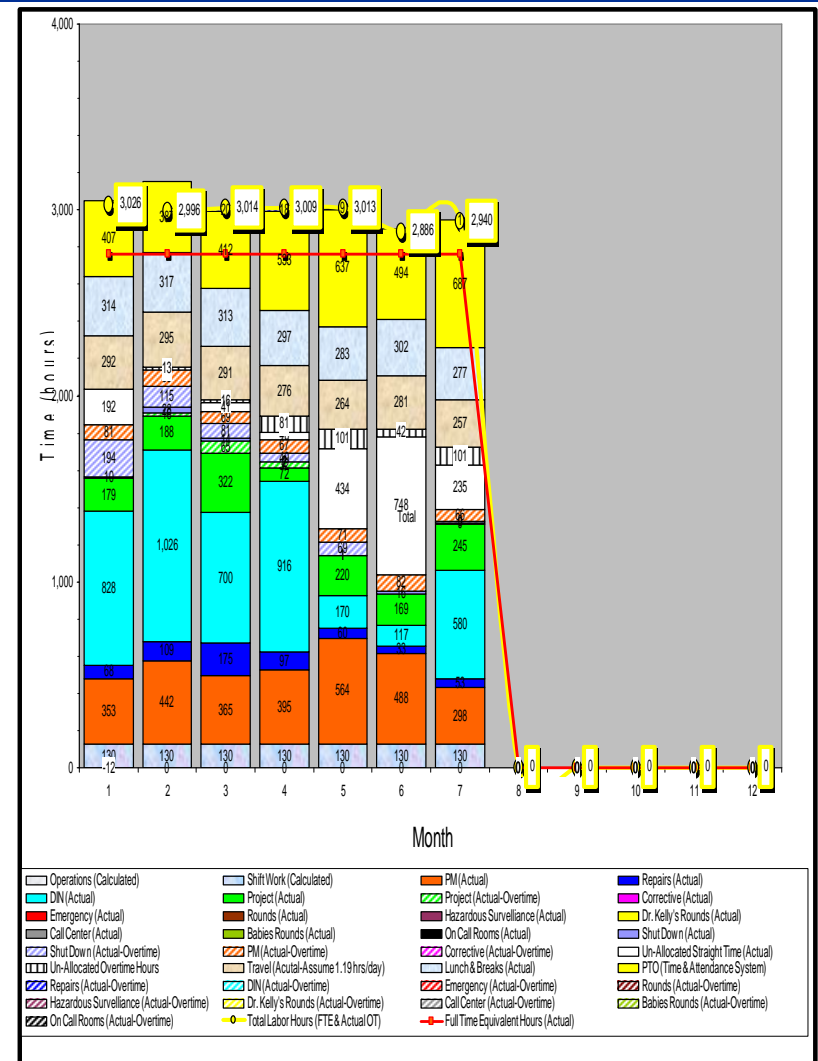
PM effort is
Calculated

Based on
Historical
data

- Historical data can be used to present actual work performed.
- Very valuable during periods of cutbacks
- The goal is to increase PM & decrease all other work types.

Use monthly reporting to improve labor efficiency

- White space is unallocated manpower.
- Trending of facility work types can be measured.
- Use to keep the manpower you have or to provide justification for additional manpower
- Hold maintenance managers accountable for their staff
- Use as part of your TQM process



Keys to avoid the pitfalls of a CMMS implementation

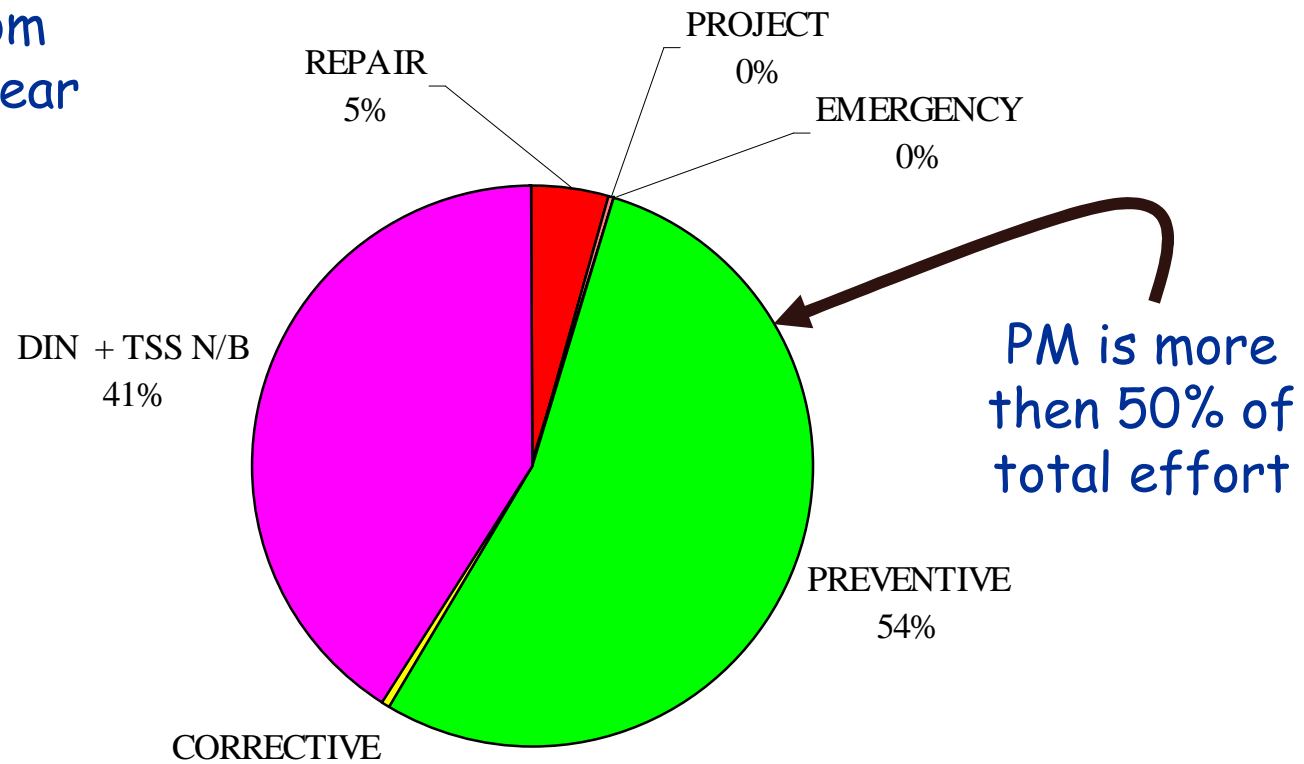


1. Start with the end in mind “Define Your Objective”
2. Invest time upfront
3. Establish maintenance standards and levels of service
4. Know your strengths and weaknesses
5. Recognize a turn-key solution
6. Implement and execute a well thought out preventive maintenance plan
7. Generate reports that management understands
8. Set up a work control center

The end justifies the means

**Labor Utilization Chart
by Work Type**

Data polled from
established 18 year
CMMS client



Questions??

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