Benchmarking: It's Much More Than Just a Bunch of Numbers!

Teena Shouse, CFM, IFMA Fellow, VP, Facility Engineering Associates
Vision Statement
The FMCC is the resource and voice for Facility Management Consultants worldwide to leverage our collective expertise to benefit IFMA members, and the Facility Management profession.

Mission Statement
To serve as a global Facility Management consultants' resource and representative for Knowledge Sharing, Networking and Business Opportunities in support of our impact upon the built environment and value to their clients.
Today’s Presentation

Moderator:
Josh Amos, IFMA Components Liaison

Presentation Title:
Benchmarking:
It's Much More Than Just a Bunch of Numbers!

Presenter:
Teena Shouse, CFM, IFMA Fellow,
VP, Facility Engineering Associates
Presentation Logistics

- Polls will be used throughout the webinar
- Q&A at the end of the presentation
- Quick survey at the conclusion of the Webinar
- PowerPoint & Recorded Webinar will be available online via FMCC’s Website (fmcc.ifma.org)
- Your Participation is Greatly Appreciated!
How We Can Help

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Meet Our Presenter:

• Past Chairman of IFMA and Global FM
• Over 27 years of FM experience
• Author, Instructor and Speaker
• Diversified experience
  • Organizational re-design to achieve Operational Excellence
  • Sustainability
  • Outsource contract creation/governance
  • Project Management
The Internet of Things

Connect the World
Review Session Learning Objectives

- Better understand how to use data in decision making
- What questions to ask to choose services/products
- How to better communicate accomplishments and future opportunities using benchmark data
- Select the right KPIs which make sense for your organization
How to tell your story

1. Gather Data
2. Interpret Data
3. Utilize Data
Definitions

• Big Data
  – Extensive amounts of complex data about your organization pulled from many sources

• Key Performance Indicators
  – Critical metrics that can be measured against to determine success of core processes in an organization

• Balanced Score Card
  – Aligns and monitors performance in comparison to core business values

• Benchmarking
  – Comparison of metrics against “targets”
Gathering Data

- Surveys
- Sensors
- Orders
- Alarms
- Databases
- Software
- Customer expectations
Information sources

- FM Information System
- Staff
- Internal Surveys
- Utility Companies
- Service Companies
- Vendors
- Building Automation System
- Energy Management System
- Other Internal Systems
FM Software: An Alphabet Soup

- CMMS: Computerized maintenance management system
- CPS: Capital planning system
- BAS: Building automation system
- BIM: Building information modeling
- GIS: Geographical information system
- ERP: Enterprise resource planning
- IWMS: Integrated work management system
- DMS: Document management system
- CAFM: Computer aided facility management
CMMS Opportunity: COBie

- **COBie**: Construction operations building information exchange
  - Standard method to exchange information between systems to drive down cost

http://thelinkbetween.wordpress.com/2011/02/16/bridge-building/
What is Included in COBie

- Asset data
- Spare part information
- Preventive maintenance procedures
- Closeout submittals, O&M manuals, product data

- Number and names of floors
- Room numbers and names
- Occupancy classification
- Contact information
BIM: An Abundance of Data

Responsibilities of the FM team:

• Define what data you need and why
• Determine process changes to realize benefits of increased data availability

Tip: Integration can be expensive, start by defining processes.

Tip: Answer these questions: 1) What data do you need? 2) Why?
Starting from the Inside Out

1. Why is data needed?
2. How will the data be used?
3. What data is available?
Interpreting Data

• Analytics: Discovering and communicating meaningful data
• Select KPIs
• Follow your Strategic Plan
Summary
Say “yes” to data gathering if it will help...

1. Determine how money/resources are spent (financial)
2. Demonstrate alignment/meeting strategic goals (organizational)
3. Improve the operation of buildings or organization (operational)
BAS: Measurement vs. Metric

**Measurement**: Value read from a sensor or meter

Examples: Watts, CFM, GPM

**Metric**: Unit of measure that can be used to assess performance

Examples: W/SF, kWh/SF
Opportunity: The Value of Data

• Support quick, compelling decisions
• Communicate value to a broad audience
  • Past accomplishments: Organizational impact, such as demonstrating success
  • Future opportunity: Potential opportunity to make an impact

Tip: Nearly any metric can be equated to dollars.... Although soft costs can be hard to quantify

Tip: Collecting the right data can be expensive. To optimize your investment, understand why specific data is being collected. Ask: How will the data be used?
Two Questions:

1. How does your organization make decisions?

2. How do you measure success?
“The problem is that most companies collect and report a vast amount of everything that is easy to measure and as a consequence their managers end up drowning in data while thirsting for insights...In order to identify the right KPIs for any business it is important to be clear about the objectives and strategic directions” (Bernard Marr, The 75 KPIs Every Manager Needs To Know)
Selecting Meaningful KPIs

- Mission
- Vision
- Values
MISSION
“To provide the facilities and operational support required to fulfill the mission, vision and values of M. D. Anderson Cancer Center.”

CORE VALUES

Customer Perspective
Deliver products that our customers need and value. Our customers recognize us as their provider of choice.

Process Perspective
Products that are produced and delivered by continually enhanced processes, efficiently, and seamlessly.

Learning and Growth Perspective
A Facilities Management organization whose people possess the latest skills and knowledge, and are recognized for their contributions to the institution.

Financial Perspective
Optimally used resources that provide the best value when compared to other providers and which are utilized in total alignment with the strategic goals & mission of the institution.

Caring
Integrity
Discovery

Figure 2
MISSION

“To provide the facilities and operational support required to fulfill the mission, vision and values of M. D. Anderson Cancer Center.”

1. Establish a proactive customer service program
2. Develop partnerships with customers for mutual success
3. Implement effective customer service feedback and measurement system

4. Simplify and streamline processes
5. Improve the delivery of service
6. Integrate technology to improve services
7. Adopt best practices to improve services

8. Provide appropriate training for our employees
9. Formalize a program for career development
10. Prepare and encourage employees to implement new techniques

11. Establish a high level of accountability
12. Align department priorities with institutional requirements
13. Benchmark performance
14. Maximize asset utilization
## M. D. Anderson Facilities Division Balanced Scorecard

### Customer Perspective

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Measurements</th>
<th>Targets</th>
</tr>
</thead>
</table>
| Establish a proactive customer service program | a. Custodial QA Inspection Hits  
b. Emergency Response Times  
c. Percent of Rework (call backs) | a. < 5 per Inspection  
b. < 15 min. for Priority 1  
c. < 3 % |
| Develop partnerships with customers for mutual success | a. On-Site Supervisor Time  
b. Annual Customer Expectations  
c. Manager Contacts w/ Customers | a. > 65 %  
b. APPA Level 1 or 2 Scores  
c. > 1 per quarter |
| Implement effective customer service feedback and measurement system | a. Customer Satisfaction  
b. Percent WO w/ Customer Feedback  
c. Top Ten WO Trouble Codes | a. > 95 %  
b. > 15 %  
c. # & type |

Figure 4
**M. D. Anderson Facilities Division Balanced Scorecard**

### Internal Process Perspective

<table>
<thead>
<tr>
<th>Process Perspective</th>
<th>Objectives</th>
<th>Measurements</th>
<th>Targets</th>
</tr>
</thead>
</table>
| **Simplify and streamline processes** | Simplify and streamline processes               | a. Workforce Productivity  
b. WOs Initiated by Staff vs. Customer  
c. Hours Spent on Unscheduled WOs  
d. Materials On-Time Delivery | a. > 60 %  
b. Trend  
c. < 10 %  
d. > 97 % |
| **Improve the delivery of service**  | Improve the delivery of service                 | a. PM Schedule Completion Rate  
b. Unscheduled Downtime  
c. Temperature/Relative Humidity  
d. Elevator Traps per Bldg per Month  
e. WO Completion Targets | a. > 95 %  
b. < 2 %  
c. Time in Specified Range  
d. < 1 per month  
e. Meets standard times by priority |
| **Integrate technology to improve services** | Integrate technology to improve services | a. PT&I Completion Rates to Schedule  
b. Labor Costs Charged to Work Orders  
c. Material Costs Charged to WOs | a. PT&I completion rate > 90%  
b. > 95 %  
c. > 95 % |
| **Adopt best practices to improve services** | Adopt best practices to improve services       | a. PM to CM Ratio  
b. Materials/Stockroom Turns per Year  
c. PM Compliance for Critical Systems | a. 80 % (PM) to 20 % (CM)  
b. 2 to 3 Turns per Year  
c. 100 % |

*Figure 5*
## M. D. Anderson Facilities Division Balanced Scorecard

### Learning & Development Perspective

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Measurements</th>
<th>Targets</th>
</tr>
</thead>
</table>
| Provide appropriate training for our employees | a. Increased employee satisfaction  
  b. Annual staff training hours  
  c. Facility Center training compliance | a. Employee satisfaction > 95%  
  b. > 40 hours annually  
  c. >95% |
| Formalize a program for career development | a. Decreased staff turnover  
  b. Staffing needs and gap analysis  
  c. Number of CFM or EFP certifications  
  d. Number of trades credentialing | a. < 10%  
  b. < 10%  
  c. > 5 per year  
  d. > 10 per year |
| Prepare and encourage employees to implement new techniques | a. Root Cause Analyses  
  b. Number of preventable breakdowns  
  c. Staff innovations | a. > 75%  
  b. < 2%  
  c. TBD |

**Figure 6**
### M. D. Anderson Facilities Division Balanced Scorecard

#### Financial Perspective

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Measurements</th>
<th>Targets</th>
</tr>
</thead>
</table>
| Establish a high level of accountability         | a. Reduced lost time accidents  
                      b. Reduced overtime usage  
                      c. Actual O&M expenses to budget  
                      d. % Planned WOs covered by estimate | a. < 50 per year  
                      b. < 10%  
                      c. + or - 4%  
                      d. > 90% |
| Align department priorities with institutional requirements | a. Priority project completion rate  
                      b. Increased Energy Savings  
                      c. Sustainable FM score | a. TBD  
                      b. TBD  
                      c. Sustainability Radar Chart |
| Benchmark performance                            | a. Facility Condition Index (FCI)  
                      b. Facility Operating Index (FOI)  
                      c. Minimize TCO  
                      d. Capital reserve funding  
                      e. Change in GSF maintained | a. < 0.05  
                      b. < $7.55 per s.f.  
                      c. < $18.50 per sf  
                      d. > 2% of CRV  
                      e. < 2% increase |
| Maximize asset utilization                      | a. Cost of breakdown repairs  
                      b. Mhrs spent on emergency repairs  
                      c. Space Utilization Index (SUI)  
                      d. System lifecycle performance | a. < 2 %  
                      b. < 3 %  
                      c. > 92 %  
                      d. > 10% EUL (design life) |

Figure 7
Selecting Meaningful KPIs

• Focus
• Validity
• Connectivity
• Integration
Selecting Meaningful KPI

<table>
<thead>
<tr>
<th>Balanced Scorecard Perspective</th>
<th>Measurement</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Perspective</td>
<td>Customer Satisfaction</td>
<td>G Y R</td>
</tr>
<tr>
<td>Process Perspective</td>
<td>Workforce Productivity</td>
<td>G Y R</td>
</tr>
<tr>
<td>Maintenance Work Flow</td>
<td>Work Distribution by Type</td>
<td>G Y R</td>
</tr>
<tr>
<td>Financial Perspective</td>
<td>Financial Performance, Benchmarks, and Indeces</td>
<td>G Y R</td>
</tr>
</tbody>
</table>

Information Provided

- Maximum number of complaints
- Customer satisfaction survey data
- No WO's pending by PM or CM

Input / Data Required

- Customer complaints
- WO's initiated by staff
- PM to CM ratio
- Work distribution by type

Process

- Process 1
- Process 2
- Process 3

Type Metric

- Process
- Outcome

KPI Level

- Level 1
- Level 2
- Level 3

Balanced Scorecard Matrix

<table>
<thead>
<tr>
<th>Customer Satisfaction</th>
<th>G Y R</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;95%</td>
<td></td>
</tr>
<tr>
<td>90%-95%</td>
<td></td>
</tr>
<tr>
<td>&lt;90%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Workforce Productivity</th>
<th>G Y R</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;60%</td>
<td></td>
</tr>
<tr>
<td>45%-60%</td>
<td></td>
</tr>
<tr>
<td>&lt;45%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in Facility Condition Index (FCI)</th>
<th>G Y R</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.05</td>
<td></td>
</tr>
<tr>
<td>0.05-0.15</td>
<td></td>
</tr>
<tr>
<td>&gt;0.15</td>
<td></td>
</tr>
</tbody>
</table>
1. PM-PdM/CM ratio
2. PM-PdM compliance
3. PM-PdM effectiveness
4. Uptime, also called reliability
5. Rework
6. Work order type distribution
7. Work order aging
8. Overall equipment efficiency (OEE)
9. Overall craft effectiveness (OCE)
10. Top 10 problem codes

**Tip:** Multiple metrics are important

**Story:** PM compliance is not enough
CAFM: Supporting Metrics

- Total cost of ownership
- Space utilization rate
- Cost per assignable square foot
- Cost per non-assignable square foot
BAS: Supporting Metrics

• Building or campus level
  – Energy: kWh/SF/year
  – Energy: % energy consumption by fuel type
  – Labs: CFM/SF

• System level
  – Energy: % energy consumption per system type
  – Equipment operation: Hours of operation
  – Air handler energy consumption:
    Air handler power consumption (kW) vs. OAT
KPIs/Benchmarks/Technology
Summary

1. Start w/ the End in Mind

2. Limit Data and Focus Measurements

3. Technology is a Tool
Utilizing Data

BIG DATA
Sort through data

METRICS
Determine critical data

KPIs
Compare data to targets

Define Best Practices and industry standards to fine tune KPI

Balanced Score Card
Align data with strategic plans

Benchmarking
Utilization Tools

• Balanced Score Card
  – Clearly links KPIs to Strategic Plan

• Benchmarking
  – Compares KPIs to standards and other organizations
Measurement – Balanced Scorecard

- **Financial Perspective**
  - How do we look to our financial stakeholders?

- **Customer Perspective**
  - How do our customers see us?

- **Process Perspective**
  - What must we excel at?

- **Employee Perspective**
  - Can our employees continue to improve and create value?
Benchmarking

“It could be seen as a set of numbers, but the real value of benchmarking comes from how this information is used. It has the most impact when it is used to question concerns, or demonstrate the value that good facilities management delivers to the organization” (BIFM, *Benchmarking: Effective performance management for FM*).
Benchmarking

• Internal vs. External
  – Measure against yourself
  – Measure against other organizations

• “Targets”
  – Best Practices
  – Industry Standards
  – Top Organizations
Internal Benchmarking

• First step in benchmarking
• Takes years to get valid results
• Continuous and on-going process
• Most organizations already do this in some way
External Benchmarking

“In many ways, FMs at ground level are using benchmarking without appreciating that it is ‘benchmarking’, because measuring performance, setting targets and standards, and making continuous improvements is already an intrinsic part of their job. What they are not doing, however, is comparing this data with other organizations, and that is the next required level to deliver the best benefit” (BIFM, Benchmarking: Effective performance management for FM).
External Benchmarking

• Look to industry leaders
• Many benchmarking sources are available
• Circle back to selecting KPIs
• Not just about costs
Benchmarking Sources

- APPA
- BEX
- BOMA EER
- Eia
- IFMA
- SMRP
- Portfolio Manager
- fm Diagnostics
- sightlines
- ROPA+
Benefits of Benchmarking

• Reduce costs
• Help earn a “green” designation
  – LEED-EBOM
  – ENERGY STAR
• Identify best practices
• Add values to your facilities
Benefits of Benchmarking

• Support business case for change
• Identify strengths and weaknesses
• Justify costs and practices
• Justify energy efficiency improvements
• Conduct trend analysis
Case Study: Facility Maintenance Program

- Multi-year plan for correction of existing deficiencies
- Identify capital projects and deficiencies
- Prioritize projects
- CMMS upload able data

Bottom line:

How much money is needed to maintain facilities?
Nearly 2,000 lines of data...
Annual Funding Needs | FCI  
--- | ---  
Site 1 | $9.0M | 0.14  
Building Group 1 | $5.4M | 0.14  
Building Group 2 | $3.1M | 0.14  
Site | $0.5M | -  
Site 2 | $2.3M | 0.42  
Site 3 | $0.3M | 0.45  
Site 4 | $0.9M | 0.27  
To understand this:
Expenditures Over 20 Year Study Period

- G30 Site Civil / Mechanical Utilities
- A20 Basement Construction
- G20 Site Improvements
- B10 Superstructure
- A10 Foundations
- E10 Equipment
- D20 Plumbing
- F20 Selective Demolition
- D10 Conveying
- D40 Fire Protection
- C10 Interior Construction
- D50 Electrical
- B20 Exterior Enclosure
- B30 Roofing
- D30 Heating, Ventilation, and Air Conditioning...
- C20 Interior Finishes
Q&A

Teena Shouse, CFM, IFMA Fellow
VP Facility Engineering Associates
Teena.Shouse@feapc.com
IFMA Councils

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- Airport Facilities Council
- Banking Institutions & Credit Unions Council
- City & Country Clubs Council
- Corporate Facilities Council
- Corporate Real Estate Council / W.E.
- Environmental Health & Safety Council
- FM Consultants Council
- Food Service & Restaurant Council
- Information Technology: Council
- Legal Industry Council
- Manufacturing, Industrial & Logistics Council
- Museums/Cultural Institutions Council
- Public Sector Facilities Council
- Religious Facilities Council
- Research & Development Facilities Council
- Utilities Council

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