BUILDING OPERATING MANAGEMENT'S
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Facility Management Reporting in Facilities: The Value of Metrics & KPIs

Laurie Gilmer, PE, CFM, SFP, LEED AP, CxA
Facility Engineering Associates

Meet Our Presenter:

Laurie Gilmer, PE, CFM, LEEDAP, CxA
Vice President
Facility Engineering Associates

- Lead FEA's Facility Services division
- SME for IFMA's Measurement, Monitoring & Reporting task group
- IFMA Instructor and serves as Chair of IFMA's Scheme Committee for the SFP credential
- Co-authored the second manual in the sustainability "How-to Guide" series, EPA's ENERGY STAR Portfolio Manager

Learning Objectives

- Understand the role of organizational drivers in choosing KPIs
- Choose the right metrics and KPIs
- Identify the elements of a good facility management report - who are your stakeholders and what do they need to hear?
- Demonstrate alignment with organizational mission

Agenda

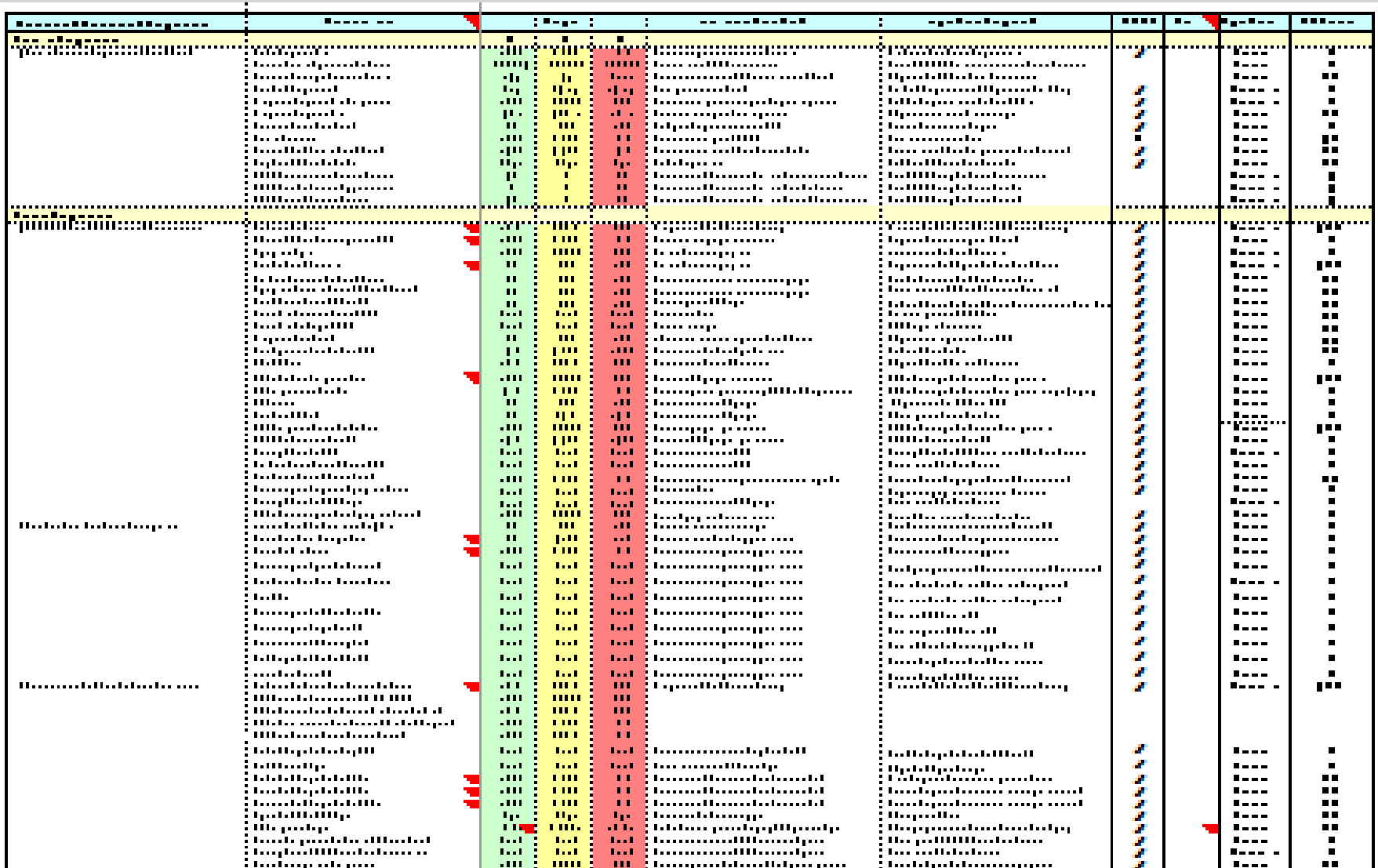
- The Building Blocks of a Strategic Approach
- Facility Operations Overview
- Telling the Story

Starting with the end in mind…

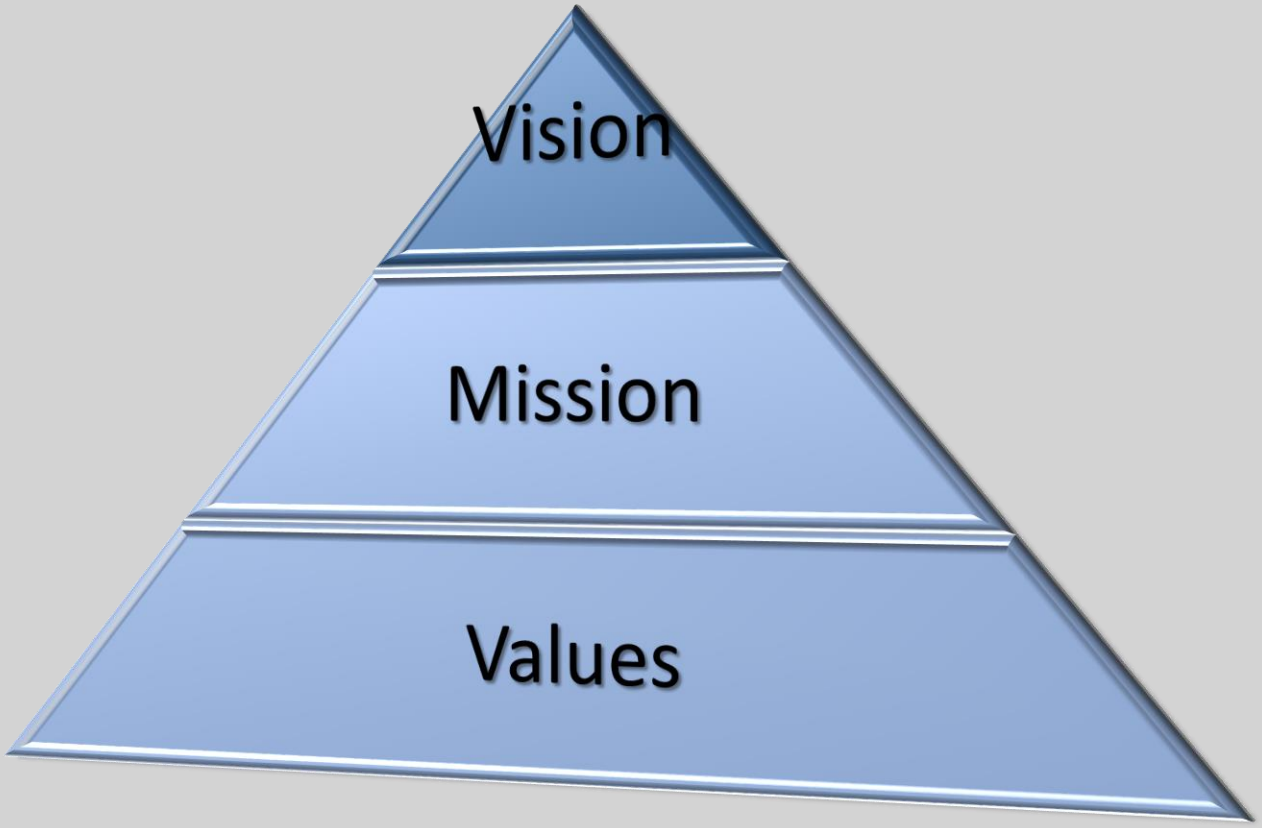
KPIs

doesn't mean skipping to the end.

"We want to use industry standard KPIs."



What is Important to Your Organization?



What is Important to Your Organization?

What is Important to Your Organization?

Be the best widget producer in our industry

Provide quality goods at a good price to our customers

Preserve the nation's treasures

Extend and preserve life

Provide full clientele to our clientele

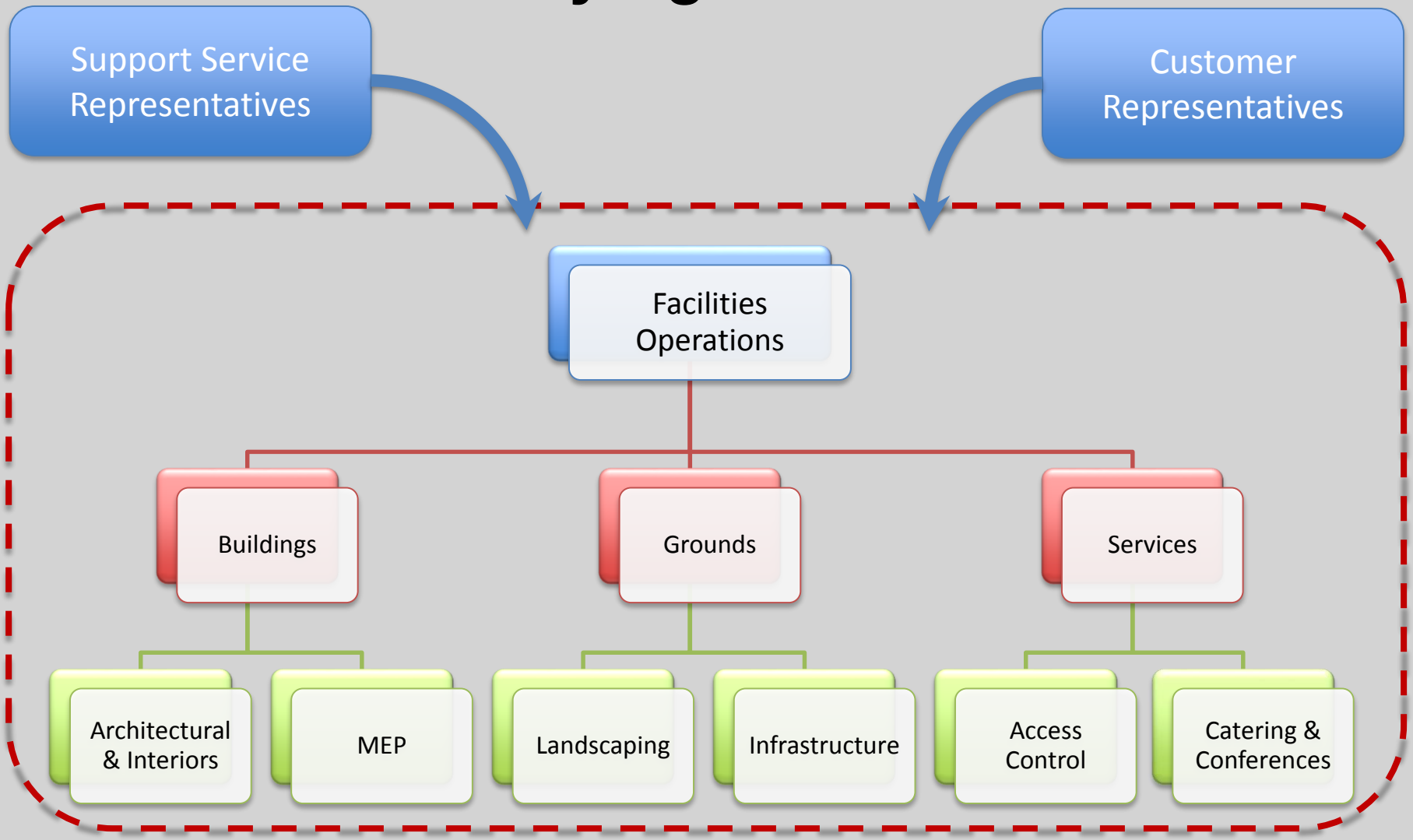
Provide world class guest service

Be a world class educational institution

Maximize profit to our investors

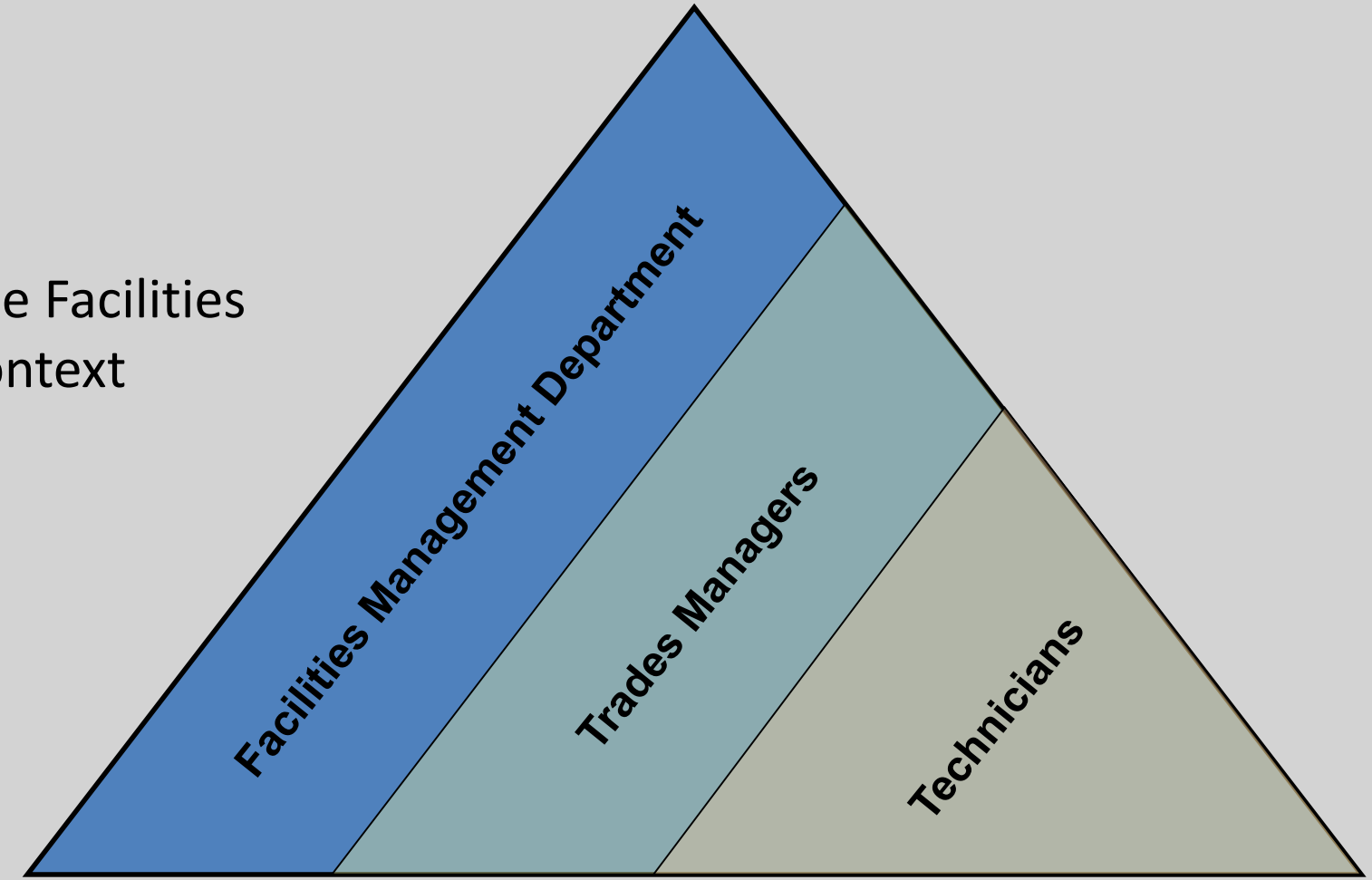
What does this mean for facilities?

Identifying Your Team



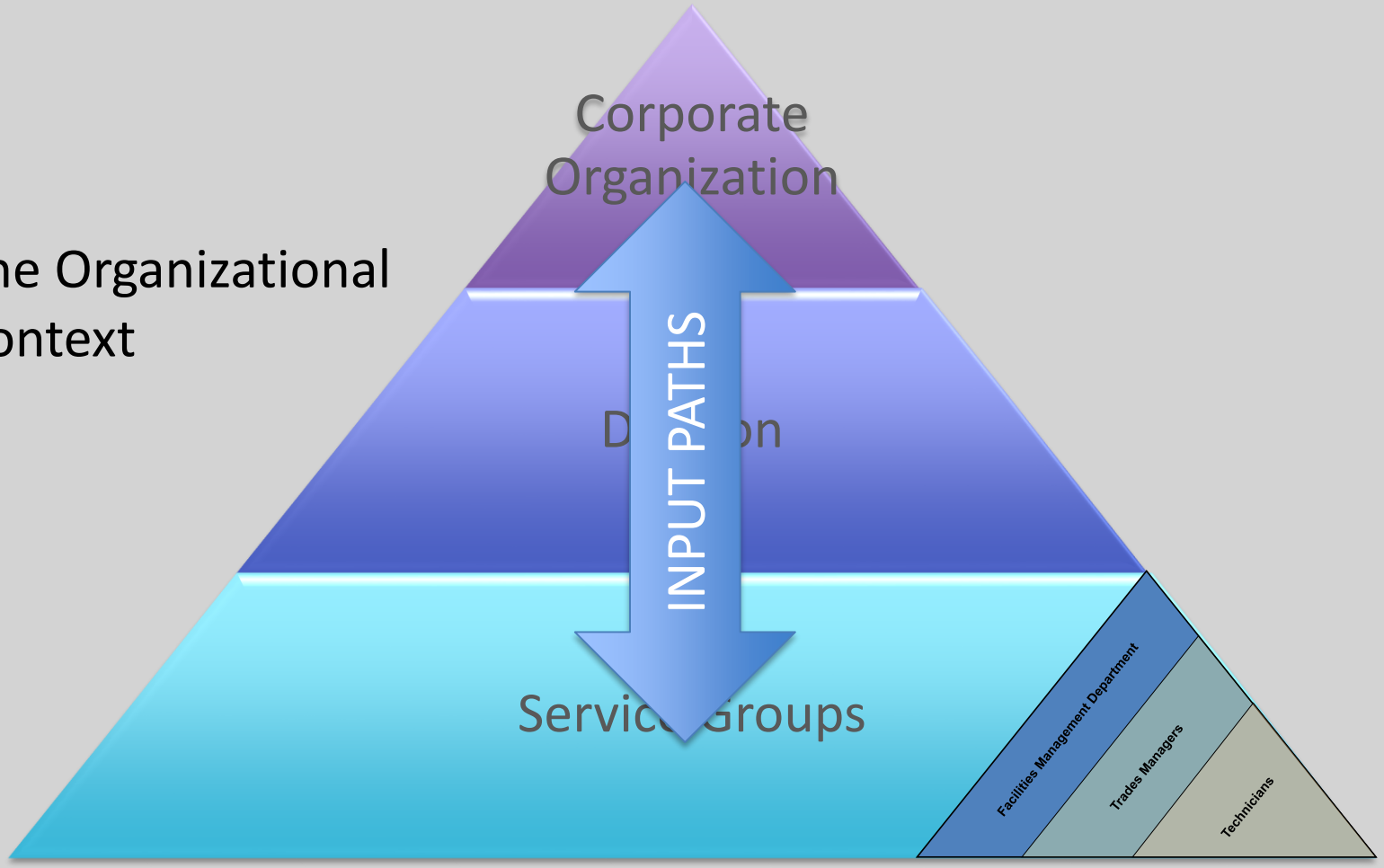
Another Way to Look at the Team…

The Facilities Context



Another Way to Look at the Team…

The Organizational Context

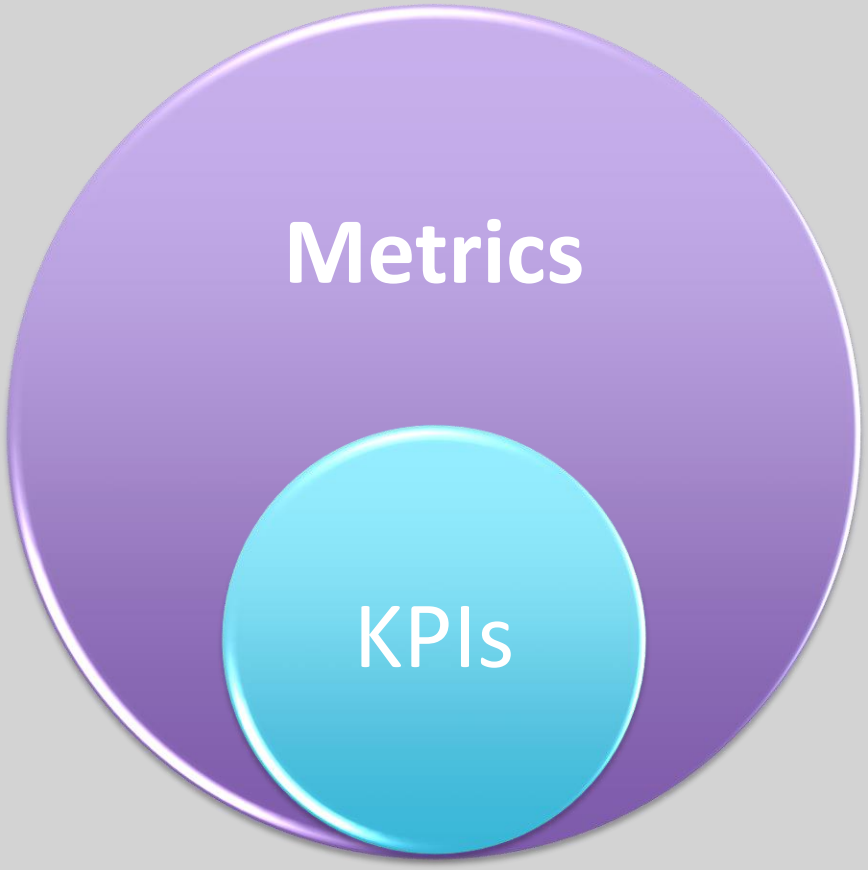


Defining Outcomes

Desired Outcome	How Will You Know?
Have great customer service	• Timeliness of response • Reliability of services • Work quality • Positive interactions
Manage finances well	• Improve capital budgeting process for long term needs • Cost effectiveness of work performed • Cost of facilities
Reduce down-time	• Manage scheduled down-time for lowest impact • Improve critical system reliability • Perform the right about of maintenance at the right time

Metrics vs. KPIs

A KPI is a core metric that defines top level success



Choosing Metrics

Be the best widget producer in our industry

Desired Outcome	How Will You Know?
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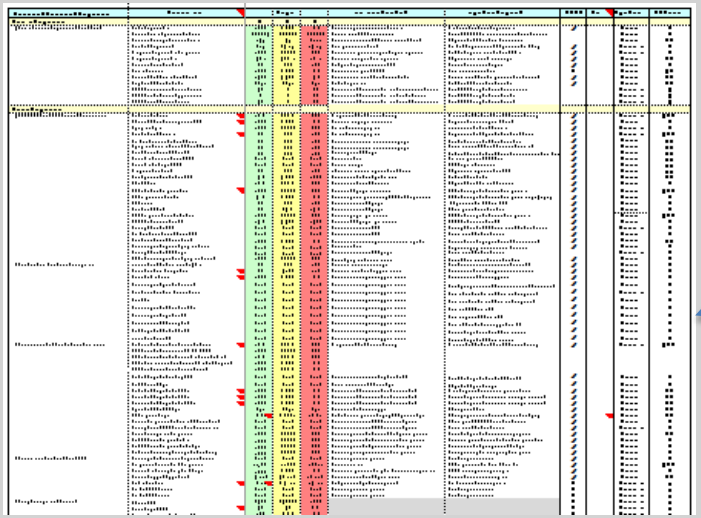

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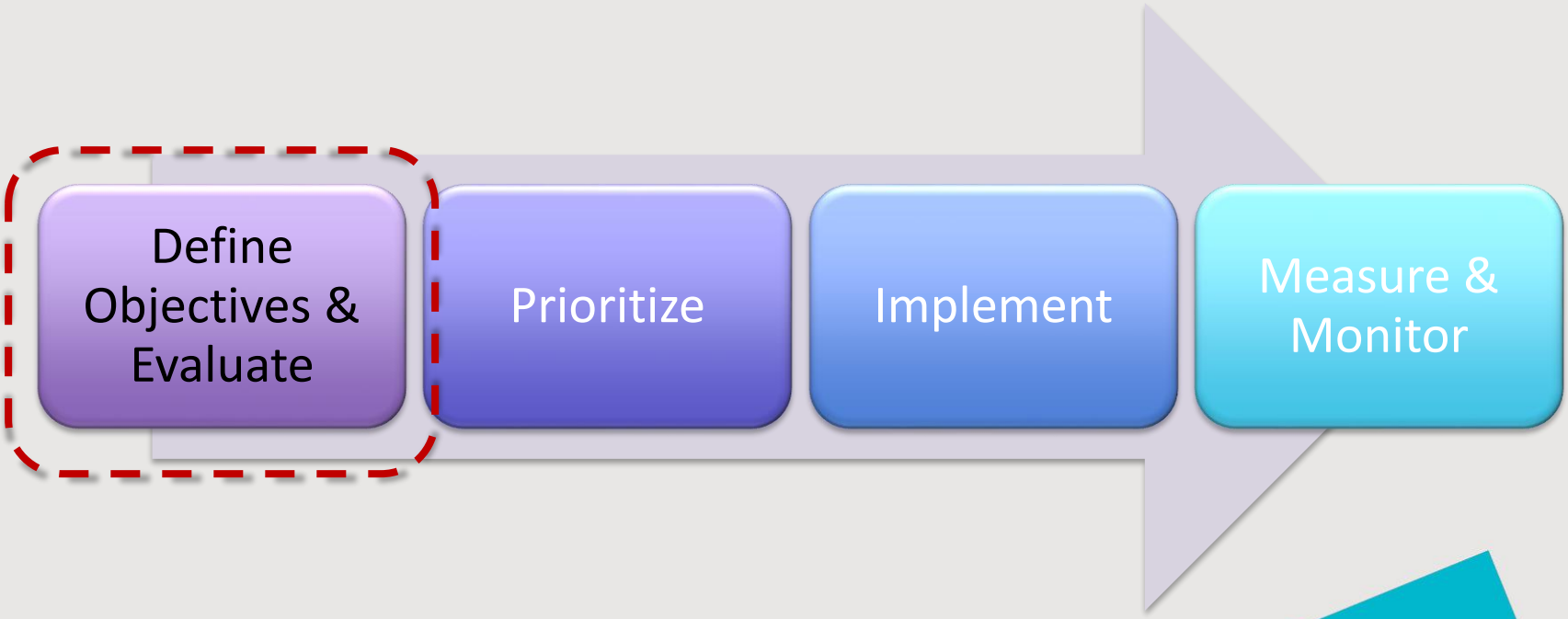
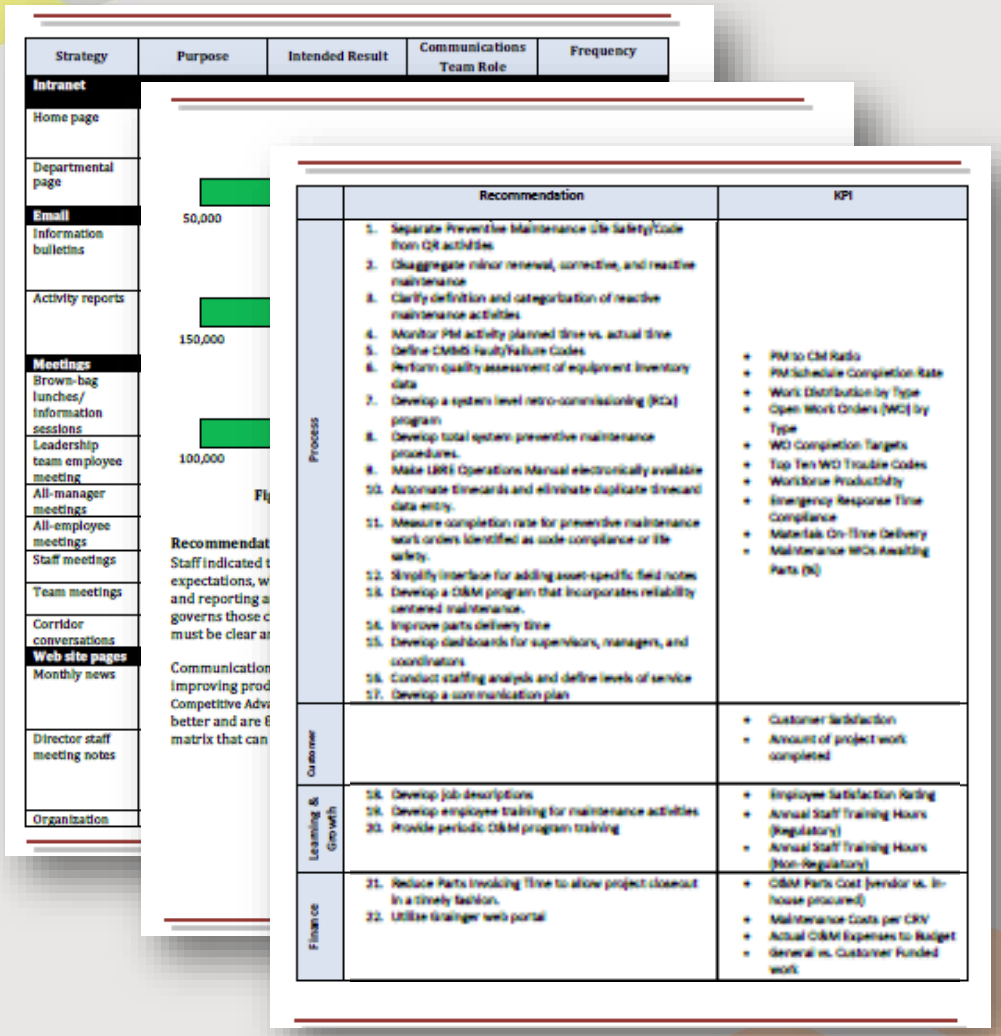
- Facility Operations Overview
- Telling the Story

Where to Start



Evaluate



Strategy	Purpose	Intended Result	Communications Team Role	Frequency
Intranet				
Home page				
Departmental page				
Email				
Information bulletins				
Activity reports				
Meetings				
Brown-bag lunches/ information sessions				
Leadership team employee meeting				
All-manager meetings				
All-employee meetings				
Staff meetings				
Team meetings				
Corridor conversations				
Web site pages				
Monthly news				
Director staff meeting notes				
Organization				

50,000

150,000

100,000

Fig

Recommendat
Staff indicated t
expectations, w
and reporting a
governs those c
must be clear a

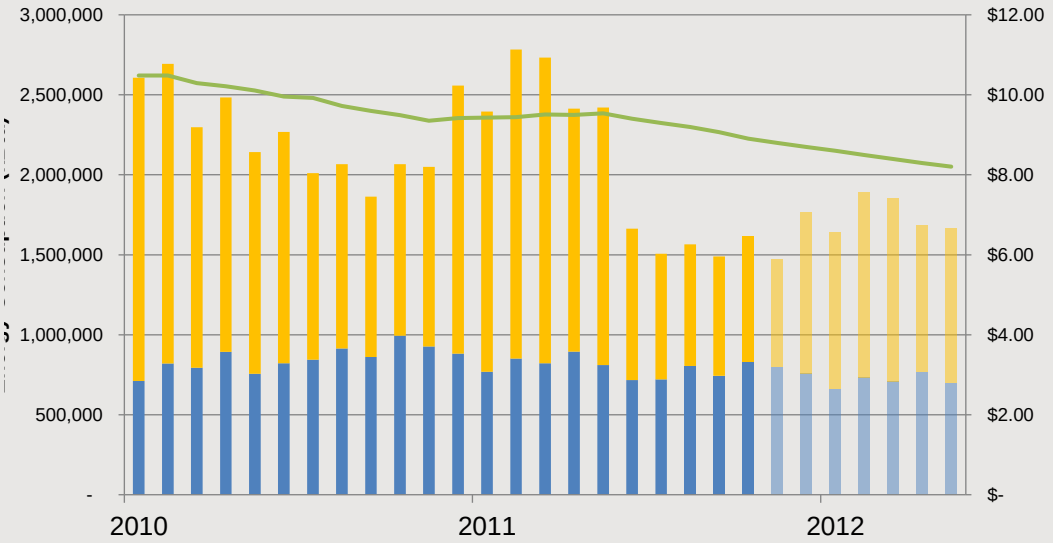
Communication
Improving prod
Competitive Adv
better and are
matrix that can

	Recommendation	KPI
Process	1. Separate Preventive Maintenance Life Safety/Code from CM activities 2. Disaggregate minor renewal, corrective, and reactive maintenance 3. Clarify definition and categorization of reactive maintenance activities 4. Monitor PM activity planned time vs. actual time 5. Define CMMS Faulty/Failure Codes 6. Perform quality assessment of equipment inventory data 7. Develop a system level retro-commissioning (RCx) program 8. Develop total system preventive maintenance procedures. 9. Make LRRI Operations Manual electronically available 10. Automate timecards and eliminate duplicate timecard data entry. 11. Measure completion rate for preventive maintenance work orders identified as code compliance or life safety. 12. Simplify interface for adding asset-specific field notes 13. Develop a O&M program that incorporates reliability centered maintenance. 14. Improve parts delivery time 15. Develop dashboards for supervisors, managers, and coordinators 16. Conduct staffing analysis and define levels of service 17. Develop a communication plan	• PM to CM Ratio • PM Schedule Completion Rate • Work Distribution by Type • Open Work Orders (WO) by Type • WO Completion Targets • Top Ten WO Trouble Codes • Workforce Productivity • Emergency Response Time Compliance • Materials On-Time Delivery • Maintenance WOs Awaiting Parts (%)
Customer		• Customer Satisfaction • Amount of project work completed
Learning & Growth	18. Develop job descriptions 19. Develop employee training for maintenance activities 20. Provide periodic O&M program training	• Employee Satisfaction Rating • Annual Staff Training Hours (Regulatory) • Annual Staff Training Hours (Non-Regulatory)
Finance	21. Reduce Parts Invoicing Time to allow project closeout in a timely fashion. 22. Utilize Grainger web portal	• O&M Parts Cost (vendor vs. in-house procured) • Maintenance Costs per CRV • Actual O&M Expenses to Budget • General vs. Customer Funded work

- ✓ Goals
- ✓ Organizational structure
- ✓ Communication protocols
- ✓ Workflow processes
- ✓ Current metrics
- ✓ Staffing & resources
- ✓ Technology
- ✓ Customer satisfaction
- ✓ Employee satisfaction

Defining the Future

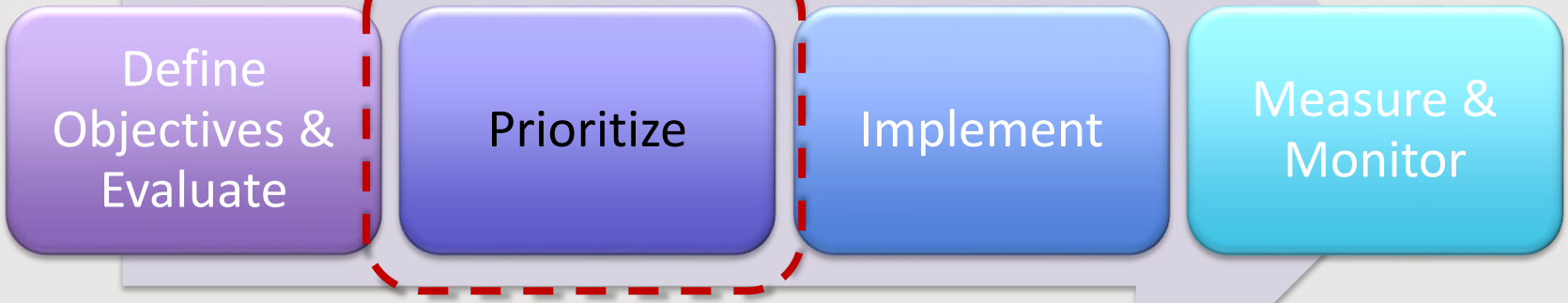
Success Looks Like…
We have great customer service
We manage our finances well
We have very limited down-time

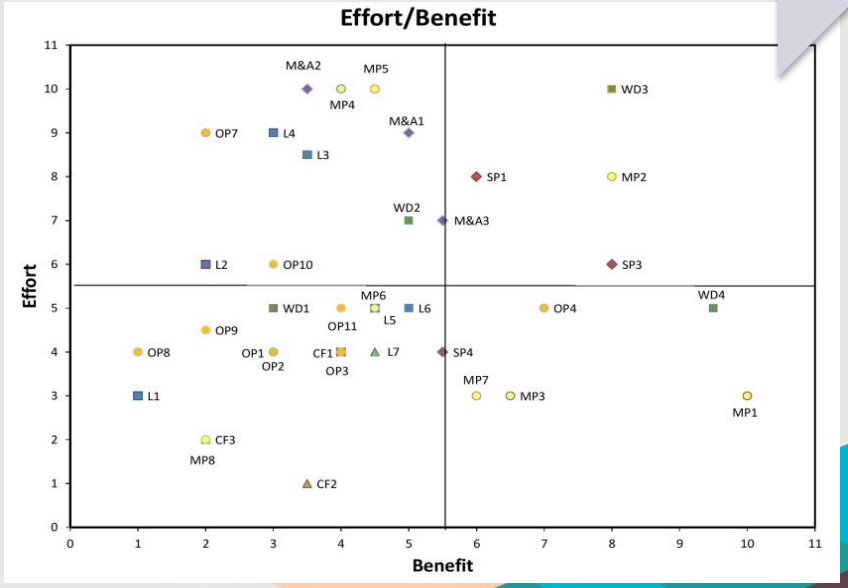


Defining Outcomes

Success Looks Like…	How Will We Know?
We have great customer service	• Timeliness of response • Reliability of services • Work quality • Positive interactions
We manage our finances well	• Improve capital budgeting process for long term needs • Cost effectiveness of work performed • Cost of facilities
We have very limited down-time	• Manage scheduled down-time for lowest impact • Improve critical system reliability • Perform the right about of maintenance at the right time

Prioritize

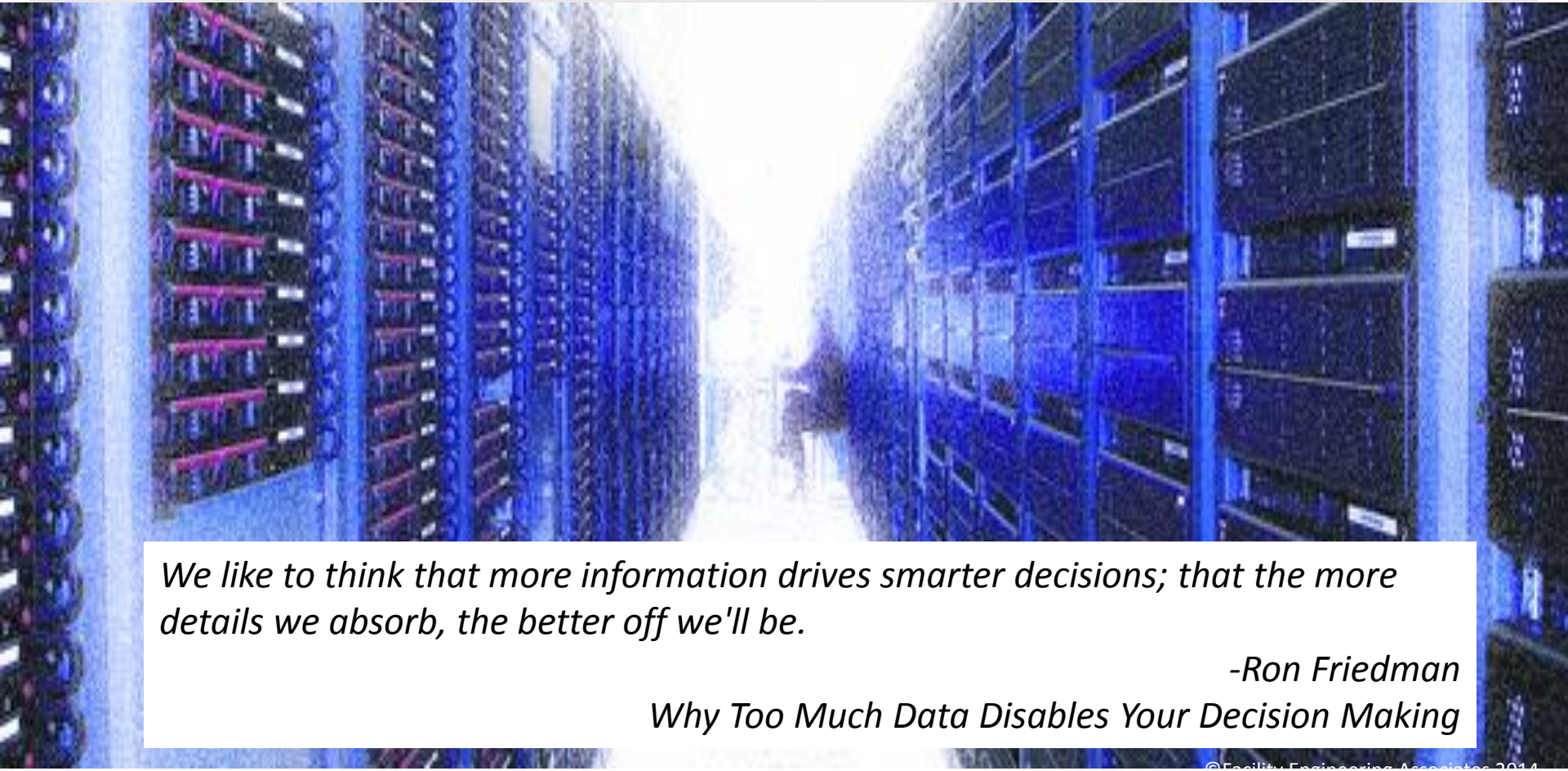

Define Objectives & Evaluate
Prioritize
Implement
Measure & Monitor


Effort/Benefit
Effort
Benefit
M&A2
MP5
MP4
M&A1
OP7
L4
L3
WD3
SP1
MP2
WD2
M&A3
L2
OP10
SP3
MP6
L5
L6
WD1
OP11
OP4
WD4
OP9
OP8
OP1
OP2
CF1
OP3
L7
SP4
MP7
L1
MP3
MP1
CF3
MP8
CF2

Creating the Program

Organization → BSC → Management Plan → Metrics

Selecting the Right Metrics



We like to think that more information drives smarter decisions; that the more details we absorb, the better off we'll be.

-Ron Friedman

Why Too Much Data Disables Your Decision Making

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How Many Things Can You Measure?

Balanced Scorecard Perspective	Measurement		Target		Information Provided	Input / Data Required	CMMS	Priority	Type Metric	KPI Level
Customer Perspective		E	S	B						
1. Customer Awareness, Response, and Fulfillment	Work Order Response Time	>90%	80-90%	<80%	Measure of response situation with customers	Total # of work orders for response time	✓		Process	3
	Human Customer Dissatisfaction Calculation	BPPB II	BPPB I2	BPPB I3	Measurement of BPPB use of causes	Refer to BPPB IBB for maintenance and reliable causes			Process	2
	Provides Manager Standards of Customer	>1/yr	1/yr	None	Provides evaluation and PM to customers for feedback	IM reports - Detailed based monitor of standards			Process	2,3
	Contacts OR Inspection Hit	<30 / Insp.	30-50 / Insp.	>50 / Insp.	Contact point of causes, IR trends	Monitor OR inspections and MRs generated from OR insp.	✓		Outcome	2
	Emergency Response Time Compares	>90%	80-90%	<80%	Measure of response compared to emergency	Detailed response for schedule and MR time	✓		Outcome	3
	Emergency Response Time	<10 min.	10-20 min.	>20 min.	Measure of time to respond to emergency	MR generation time and time to site (in repo)	✓		Process	2,3
	Percent of Unmet (in tools)	<3%	3-8%	>8%	Work parts. Report to re-work MR	Tool calls for return and repeat	✓		Process	2
	Customer Satisfaction	>90%	80-90%	<80%	Assess results of completed CM MRs	Customer satisfaction survey tools	✓		Process	1,2
	Percent MR will Customer Fulfilled	>90%	80-90%	<80%	Measure of customer fulfilled on work orders	No. customer fulfilled items generated and released	✓		Process	2,3
	Top Ten MR Trends Calls	Rolling	Rolling	Rolling	Trends of repeaters	No. MRs coded to Tool or Trends calls	✓		Process	2,3
	BPPB Maintenance Use of Assess	1-3	3	4-8	Baseline and Benchmarks Measure of Maintenance Assess	Use BPPB Billing Columns - Maintenance			Outcome	1
	BPPB Controls Use of Appearance	3	3	4-8	Baseline and Benchmarks Measure of Controls Assess	Use BPPB Billing Columns - Controls			Outcome	1
	BPPB Exempts Use of Billables	1-3	3	4-8	Baseline and Benchmarks Measure of Exempts Maintenance	Use BPPB Billing Columns - Exempts			Outcome	1
Process Perspective										
1. PM, PIM/PTM, and RCM (Planned Maintenance)	Maintenance Productivity	>90%	80-90%	<80%	Top signal to PM vs CM (annual items)	Top results of MR data for PM and CM (annual items)	✓		Outcome	1,2,3
	MRs Initiated to Shift or Need of Completion/RCM	>70%	60-70%	<60%	Measure of work, program effectiveness	Report selection of report from PM work	✓		Process	2
	Approval Rates	>90%	80-90%	<80%	Backup audits of rules approval	Success of completed tracking	✓		Outcome	3
	Unscheduled Downtime	<3%	3-8%	>8%	Backup audits of rules approval	Report use of Work Type to facility healthcare	✓		Outcome	1,2,3
	Results of Preventive Healthcare	<3%	3-8%	>8%	Measure effectiveness of maintenance program	Goal to Value standards - Best Cases Names	✓		Process	2,3
	Approval Baseline Count to Healthcare (%)	<3%	3-8%	>8%	Measure effectiveness of maintenance program	Baseline count to healthcare/Risk baseline (%)	✓		Process	2,4
	Healthcare Count to Pass PM	<3%	3-8%	>8%	Measure value of PM Program	No. healthcare that shall have been prevented/Risk Value	✓		Process	2,5
	Mean Time Between Issue (MTBI)	Trend	Trend	Trend	Measure results of values	Baseline vs compared - CM MR data	✓		Process	2,6
	Mean Time To Repair (MTTR)	Trend	Trend	Trend	Measure how to repair	CM MR repair how value to issue	✓		Process	2,7
	Emergency Miss Rates (%)	<3%	3-8%	>8%	Indicator of causal of emergency healthcare	IR signal to emergency checks IR (%)	✓		Process	2,8
	Rates Signal to Unscheduled MRs	<30%	10-20%	>20%	Baseline of activities, IR value rates	Value for CM and values	✓		Process	2,3
	PM to CM Ratio	>80%	60-80%	<60%	Measure of workflows between school	MR logs for PM and Manual/Corrective	✓		Process	2
	PM Workflow Completion Rate	>90%	80-90%	<80%	Measure of PM program effectiveness	PM planning values and completion time	✓		Process	1,2,3
	PM Compares to Value Workers	100%	90-95%	<90%	Measure of goals compares using CMMS to IM Dept source	PM planning values and completion time for goals type	✓		Process	2
	PM Efficiency	<3%	3-8%	>8%	Measure efficiency of PM program	# MR generated from PM/Total # MR (%)	✓		Process	2
	Reduce PM Tasks	<8%	8-10%	>10%	Measure efficiency of PM program	PM completion time vs. to date	✓		Process	2
	PTM Completion Rates to Baseline	>90%	80-90%	<80%	Measure of program optimization	PTM planning values and completion time	✓		Process	1,2,3
	PTM MR vs Planned of Tools PM	>90%	10-10%	>10%	Measure of PTM program optimization	PTM MR vs Planned of Tools PM	✓		Process	2
	Change Historical to PTM	Trend	Trend	Trend	Measure effectiveness of PTM	Change Historical to PTM - Successful Costs Reviews	✓		Outcome	2
	Results of Issues Resolved Due to PTM	Trend	Trend	Trend	Measure effectiveness of PTM	Successful Cost Reviews	✓		Process	2
	Best Cases Reviews (% Issues Resolved)	>90%	80-90%	<80%	Measure effectiveness of operation to resolve values gaps	Best value, backups, values and No. resolved	✓		Process	2,3
	Percentage of Negative Approval Issues	Trend	Trend	Trend	Measure results of values	Negative approval issues/Total number of issues	✓		Process	2
	Change Historical to RCM Program	Trend	Trend	Trend	Measure effectiveness of RCM program	Successful Cost Reviews			Outcome	2
	CMR vs. Percentage of Value Approval (Results)	>90%	80-90%	<80%	Base Approval Alliance measure	Results, Performance Alliance, Work Hub	✓		Process	2
2. Planned Delivery/Customer Response	Service Hour (% Measured in Past 12 mo.)	<3%	3-8%	>8%	Measure of values service ways	Hour measure results - Service Hour/Total Hour (%)	✓		Process	2
	Values/Workforce Time per Task	1-3	3-4-8	8-10-8	Measure of values backup performance	Task times Workforce ways/Total number of	✓		Process	2
	Values On-Time Rates	>90%	80-90%	<80%	Measure of service process performance	Maintenance MR backup gain status	✓		Process	3
	Percentage of Open Work Content	Trend	Trend	Trend	Measure of service process performance	Total # open work hours/Total # of hours	✓		Process	2
	Workforce/Workforce Ratio Use	Trend	Trend	Trend	Measure of service process performance	Total # value hours/Total # of values reported	✓		Outcome	2
	Work Hub	Trend	Trend	Trend	Measure of service process performance	Total # work hours/Total # of values reported	✓		Process	2
	Percentage of Work Practice Values	Trend	Trend	Trend	Measure of service process performance	Total # of work P.M.s / Total # P.M.s	✓		Process	2
	Percentage of Days for PMs	Trend	Trend	Trend	Measure of service process performance	Total # of days on P.M.s / Total # P.M.s	✓		Process	2
	Maintenance MRs Backlog Rate (%)	Trend	Trend	Trend	Measure of service process performance	Total # of MRs in backlog rate / Total # MR	✓		Process	2
	Parts Charged to Customer Provide (%)	Trend	Trend	Trend	Measure of service process performance	Values charged to customer costs / Total values costs	✓		Process	2
	Inbound Costs to Process PMs	Trend	Trend	Trend	Measure of service process performance	Values charged to P.M.s / Total values costs	✓		Process	2
3. Maintenance Meet Use - Productivity - Performance	Maintenance Productivity (Man Hours on Productivity)	>90%	80-90%	<80%	Top signal to PM vs CM (annual items)	Top results of MR data for PM and CM (annual items)	✓		Outcome	1,2,3
	RCM - Human Cost Effectiveness - CM + CP + COM (%)	>90%	80-90%	<80%						
	CM - Cost Effective - Total Productive Time / Hours Time	>90%	80-90%	<80%						
	CP - Cost Performance - Total Planned Time / Act. Hrs.	>90%	80-90%	<80%						
	COM - Cost Hours Work - Planned Hours	>90%	80-90%	<80%						
	Jobs Charged to Backlog MRs (%)	Trend	Trend	Trend	Measure charges of backlog/Total MRs	Total IR charged to Total MR / Total IR	✓		Process	2
	Most Schedules to Days	Trend	Trend	Trend	Base measure of most schedules to days	MR per Most Type (in Category)	✓		Process	2

Metrics Can Be Driven By…

1. Financial performance requirements
2. Mandatory reporting requirements (resource use, pollution)
3. Voluntary reporting requirements (corporate citizenship)

Financial Drivers

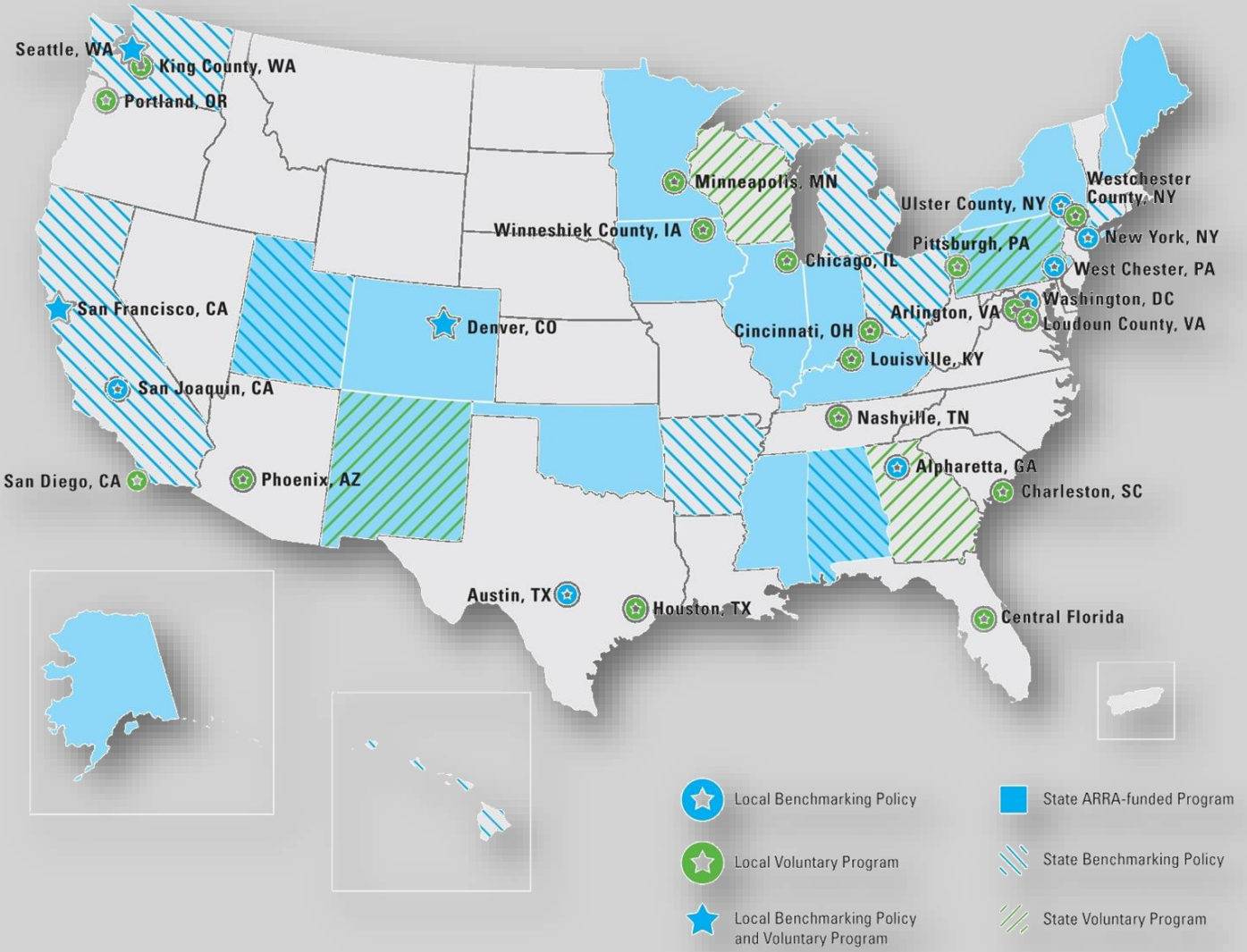
1. How much money do we need?
2. Where should it be directed?
3. How do we know we are using our resources wisely?

Reporting Requirements

"…It is therefore the policy of the United States that **Federal agencies** shall increase energy efficiency; **measure, report, and reduce** their greenhouse gas emissions from direct and indirect activities; **conserve and protect** water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies…"

-Federal Executive Order 13514
October 8, 2009

Energy: Voluntary and Mandatory Disclosure



Global Reporting Framework

Reporting Protocol: GRI

Sustainability Reporting guidelines (G3 Guidelines)

Environmental Performance Indicators (9 Aspects)

- Materials
- Energy
- Water
- Biodiversity
- Emissions, Effluents, Waste
- Products and Services
- Compliance
- Transport
- Overall

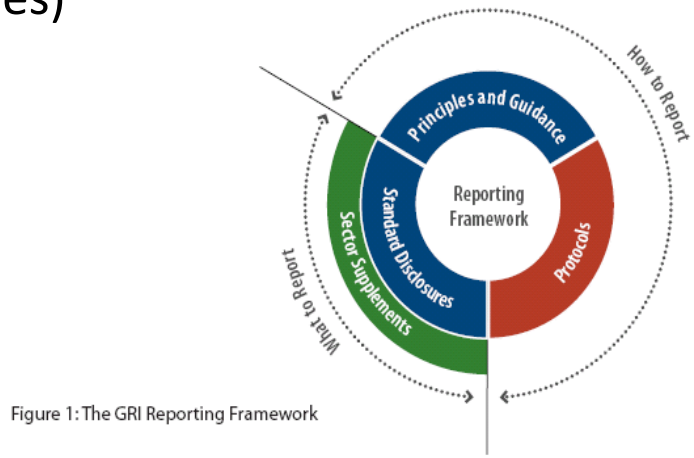


Figure 1: The GRI Reporting Framework

Global Reporting Initiative™

Example Balanced Scorecard

7. Integrate technology to improve services	7a. Develop a strategic technology plan.
	7b. Utilize the Big Foot upgrade process to improve work order management.
	7c. Evaluate current work order codes, priorities, and completion rates.
	7d. Develop an ongoing CMMS training program.

% complete
% complete
% complete
# of CMMS trainings delivered

Mission Statement: Integ ity operations by providing, maintaining an tomer's needs while fulfilling the visions and g

Information Sources

- ✓ FM Information System
- ✓ Staff
- ✓ Internal Surveys
- ✓ Utility Companies
- ✓ Service Companies
- ✓ Vendors
- ✓ Building Automation System
- ✓ Energy Management System
- ✓ Other Internal Systems

Linking Information to the Source

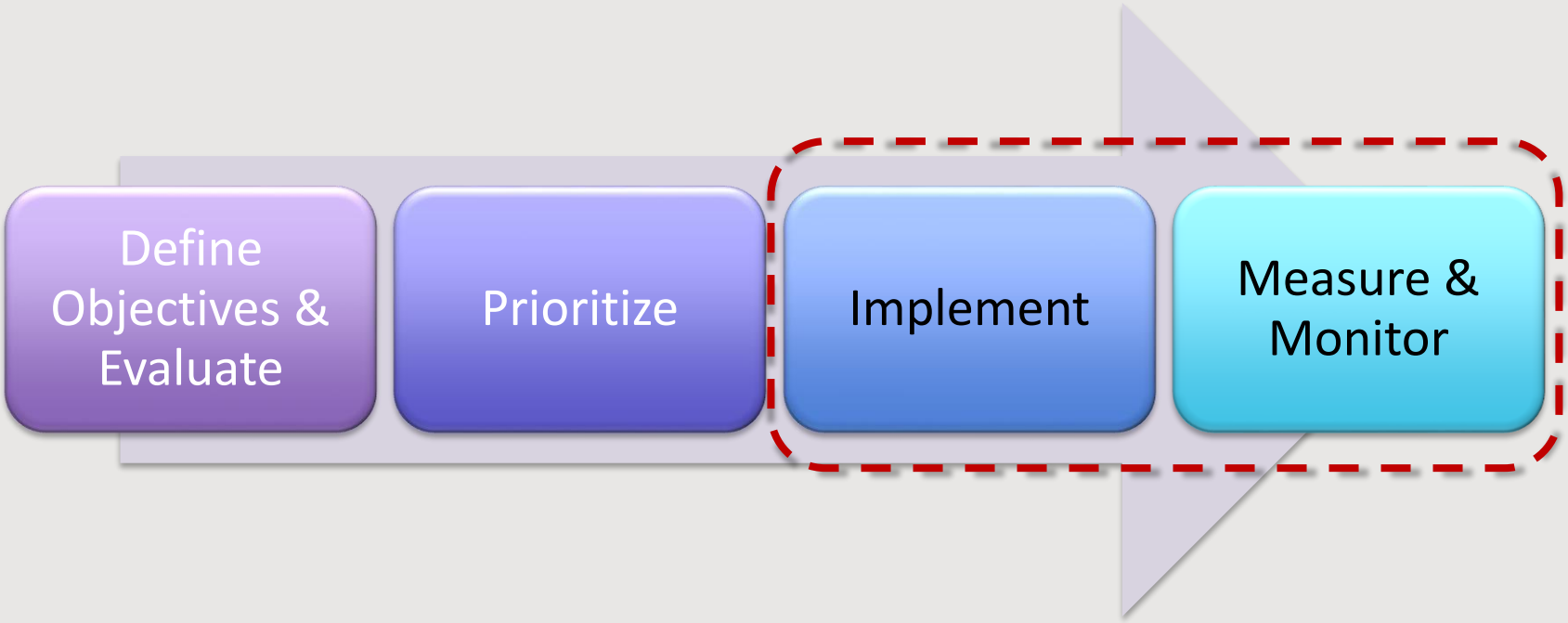
Commonly Measured	BAS	EMS	FM Information Systems	Other Internal Systems	Staff	Internal Surveys	Utility Companies	Service Companies & Vendors
Facility Info								
Occupancy			✓					
Space Use			✓					
Floor area			✓					
Energy Use								
Electricity		✓		✓			✓	
Natural Gas		✓		✓			✓	
Diesel								✓
GHGs		✓					✓	
IEQ								
CO2	✓	✓						
Thermal Comfort	✓	✓	✓			✓		
Purchasing								
Construction				✓				
Consumables				✓				
FF&E				✓				
Water								
Source					✓		✓	
Consumption	✓			✓			✓	
Uses	✓			✓	✓			
Waste Stream								
Waste					✓			✓
Diversion Rate					✓			✓
Recycling					✓			✓
People stuff								
Complaints				✓	✓	✓		
Noise					✓	✓		
Ergonomics					✓	✓		
Sick days				✓				
Productivity?				✓				
OH&S?				✓				
Site								
Waste water					✓			

Messaging and Motivation

Strategy	Purpose	Intended Result	Communications Team Role	Frequency
Intranet				
Home page	Business metrics/ dashboard	To keep employees up-to-date on progress	Undate data that is not automated	Daily
Departmental page	Departmental dashboard, contracts, budgets	To keep employees up-to-date don department progress	None	Daily
Email				
Information bulletins	Inform, engage	Employees understand the purpose, progress and how to connect	Consult, develop, publish	Weekly and as necessary
Activity reports	Inform	Employees understand what the rest of the organization is doing	Collect and publish	Monthly
Meetings				
Brown-bag lunches/ information sessions	Inform, clarify, exchange		Plan, announce	Twice a month
Leadership team employee meeting	Model open organization, inform		Take notes	Varies
All-manager meetings	Inform, clarify		Note taking	Monthly
All-employee meetings	Inform, clarify		Planning, logistics	Twice a year
Staff meetings	Inform, clarify			
Team meetings	Daily work			
Corridor conversations	Various			
Web site pages				
Monthly news	Connect people to colleagues, to organization and to job	Employees connected and informed	Develop, publish	Monthly
Director staff meeting notes	Connect people to organization and document organizational history	Employees connected and informed	Develop, publish	Weekly
Organization				

- ✓ Communication Plan
- ✓ Program Training
- ✓ Report Progress
- ✓ Celebrate Successes

Implementation & Monitoring



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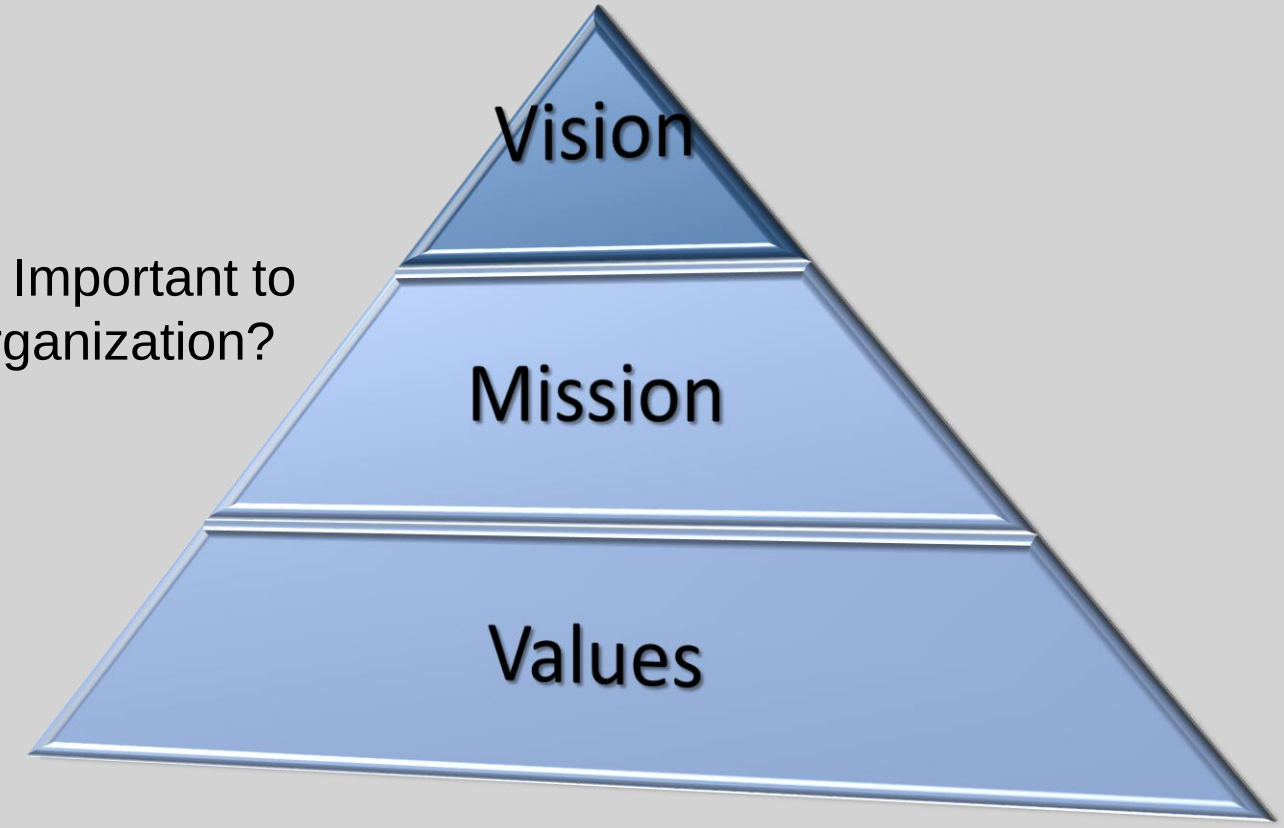
We Started Here…

What is Important to Your Organization?



Now, tell the story!

Telling the Story

Tips for Success

1. Know your audience and how people think
2. Sketch it out
3. Use graphics
4. Use trends
5. Include the future as well as the past
6. Keep the focus on the right information

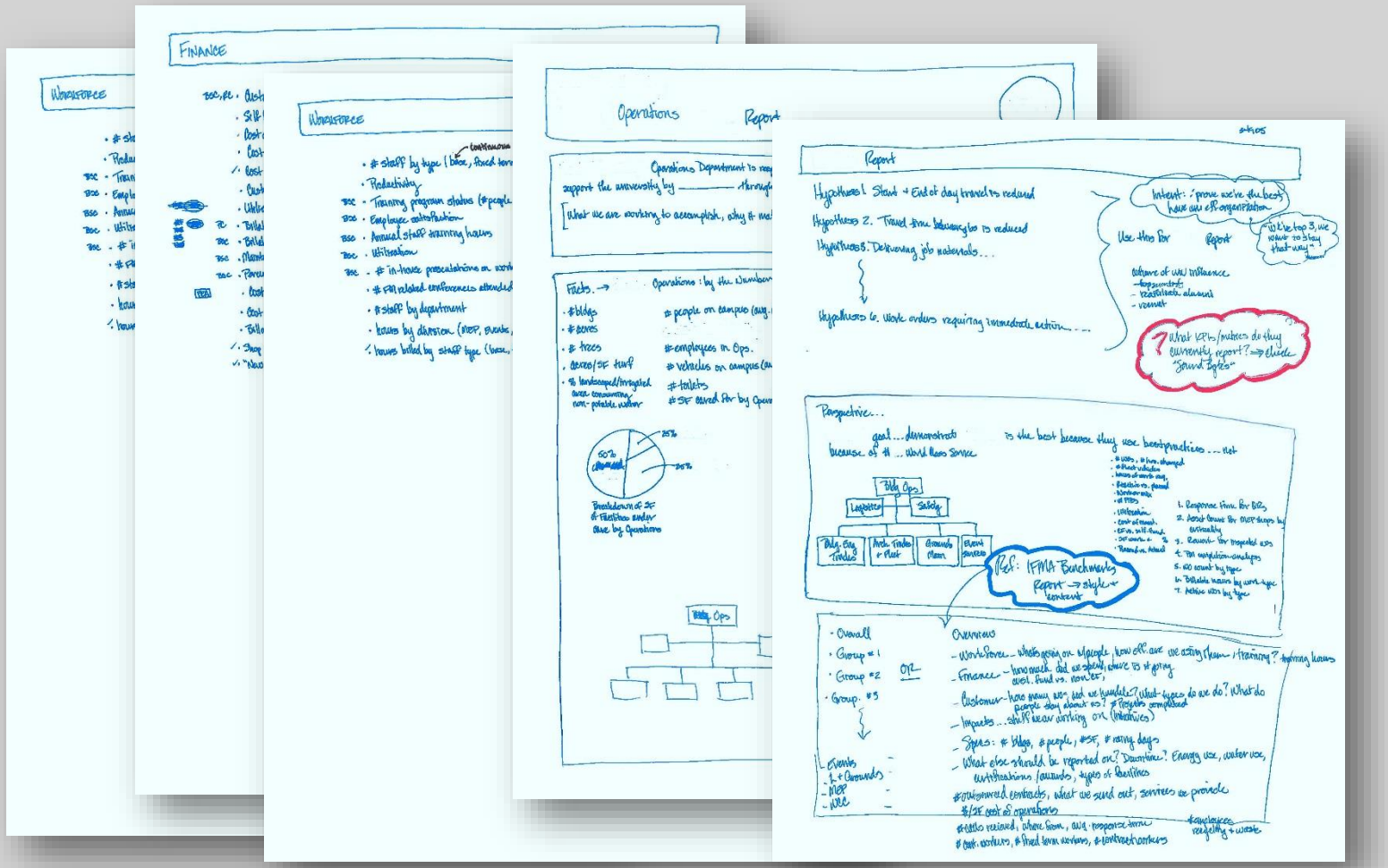
Framing Effects

How different ways of presenting the same information can evoke different emotions, decisions, and outcomes

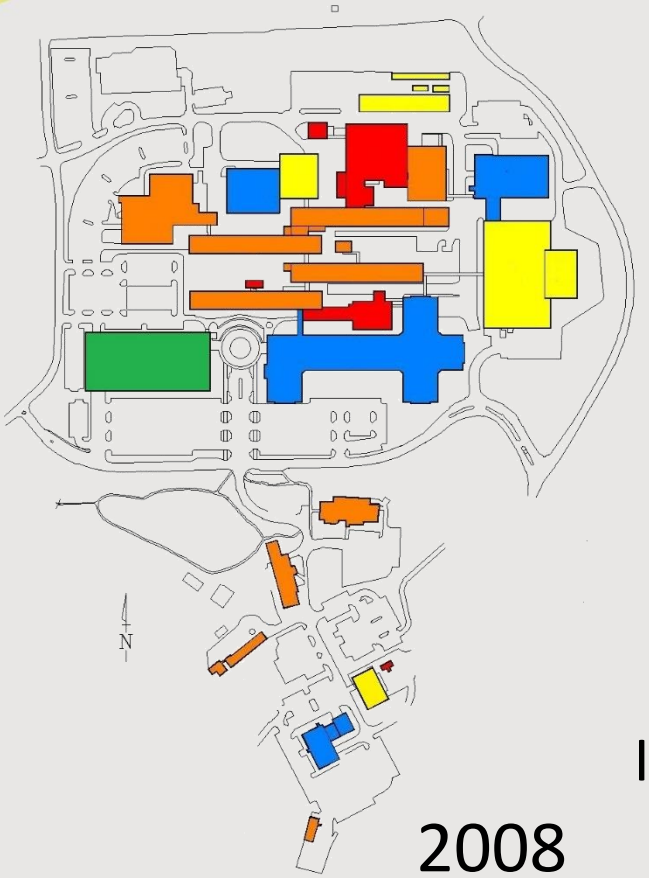
The Perception: Facilities is a Cost Center

Facilities is an Investment in Organizational Success

Sketch it Out



Use Graphics

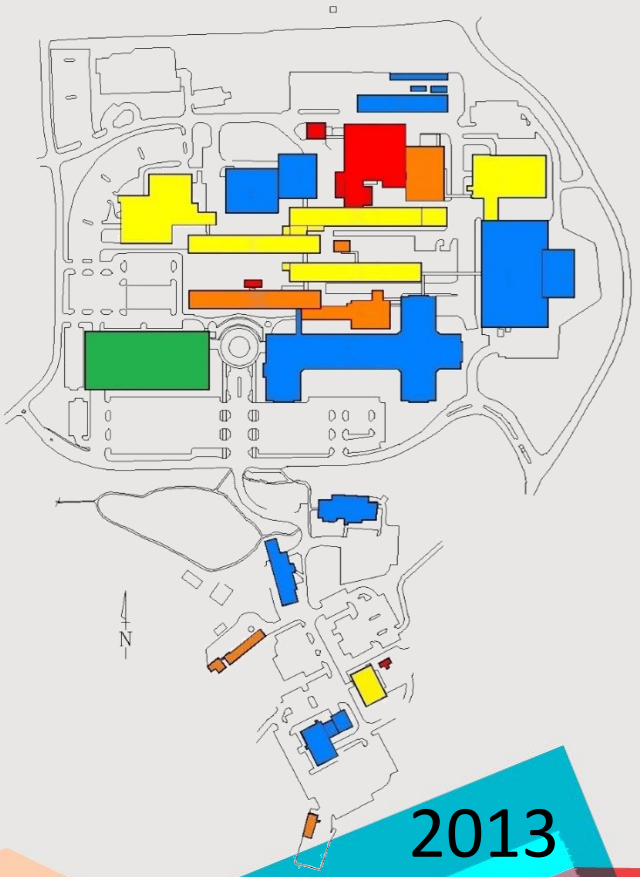


Condition Index

- Excellent
- Good
- Fair
- Below Average
- Poor

Invest $24M

2008



2013

Mission Criticality & Capital Needs

Use Trends

Healthy People Impact Profits

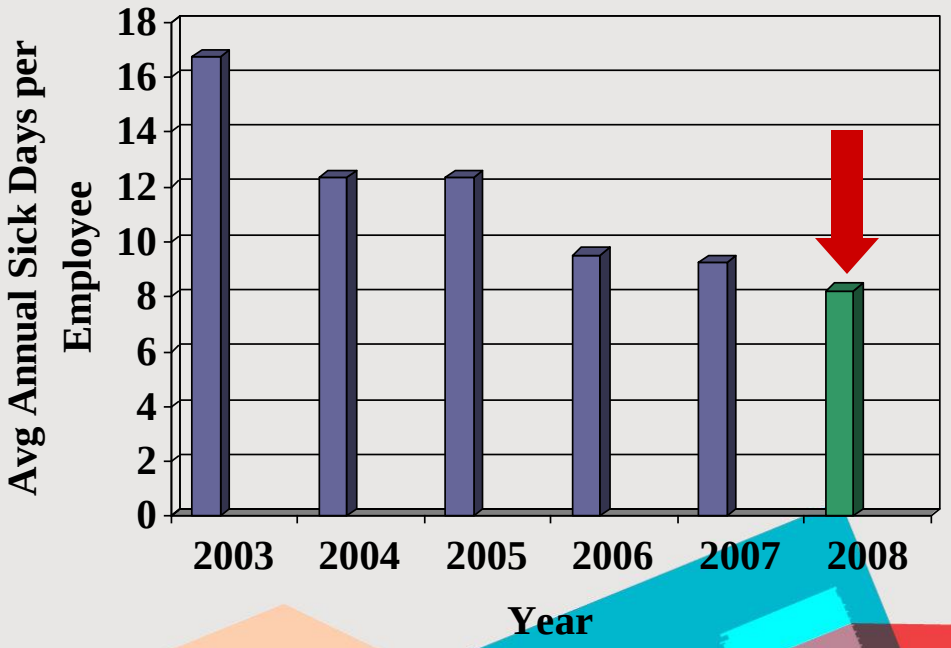
Through these programs, the company reduced employee sick time

Reducing sick time by

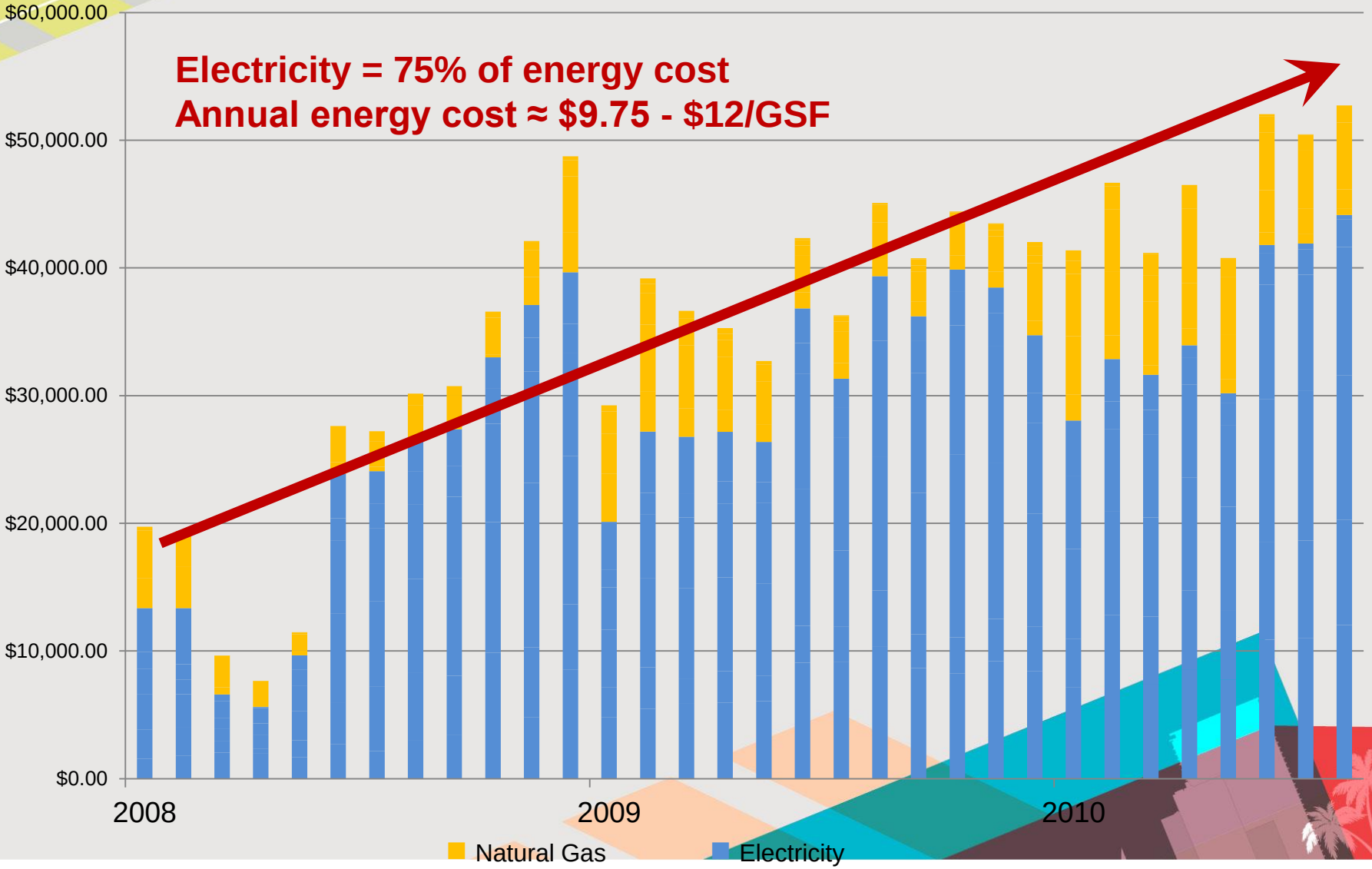
- 1 day
- per employee
- per year…

Estimated savings: $105,000 each year

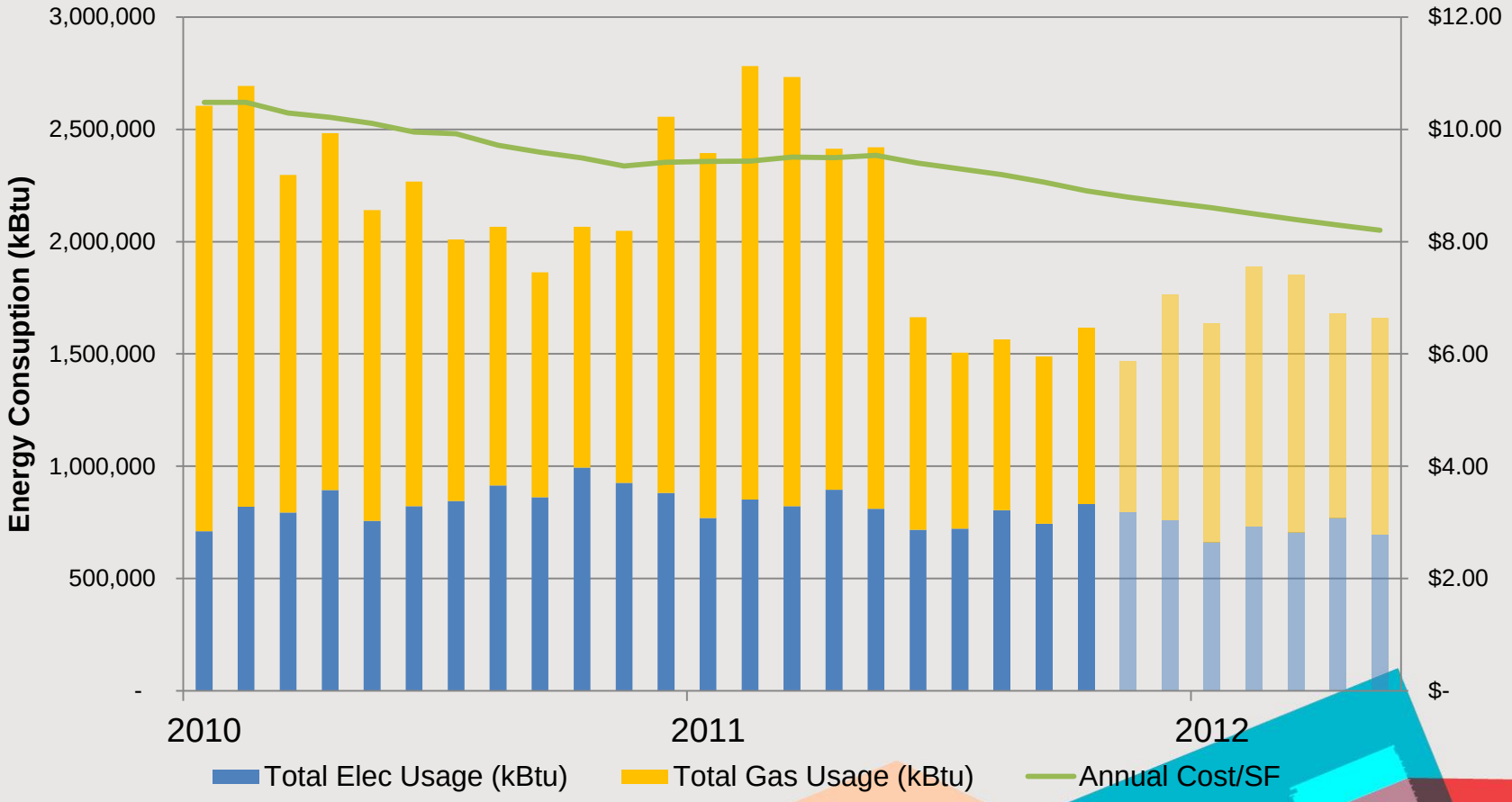
Based on 1,750 employees, average cost $60/employee



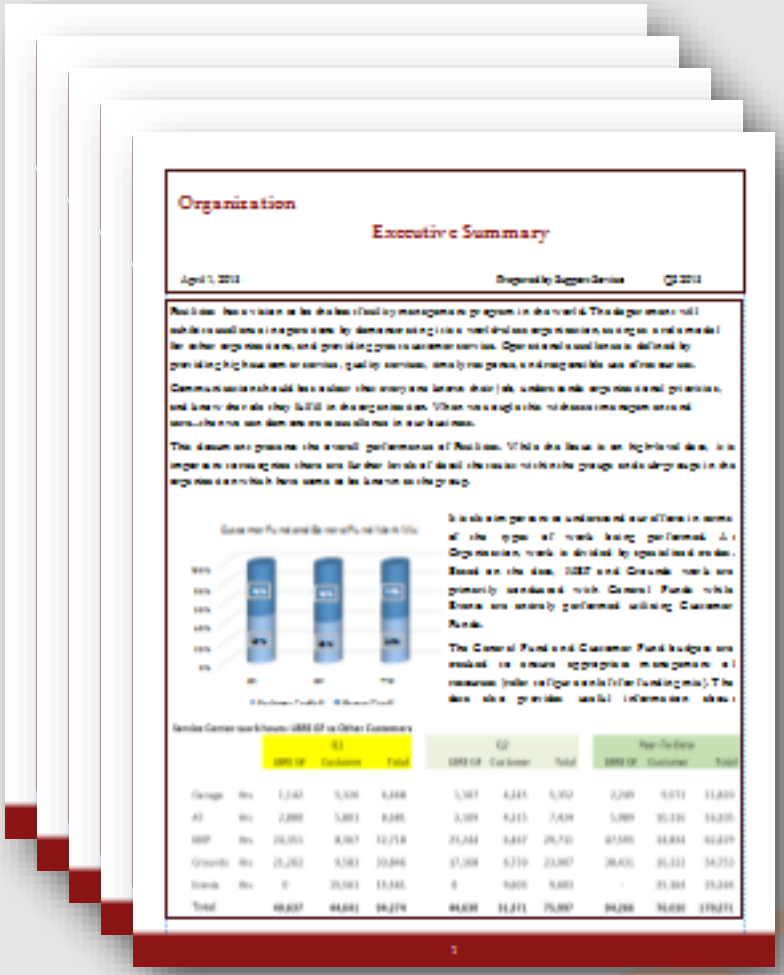
Use Trends


Electricity = 75% of energy cost
Annual energy cost ≈ $9.75 - $12/GSF
$60,000.00
$50,000.00
$40,000.00
$30,000.00
$20,000.00
$10,000.00
$0.00
2008
2009
2010
Natural Gas
Electricity

Include the Future



Reporting



- Targeted to your audience
- Reports progress using selected metrics
- Paints a picture for future success

Summary

- Organizational drivers inform metrics and KPIs
- Choose the right metrics and KPIs
- Demonstrate alignment with organizational mission
- A well crafted report tells your audience what they need to understand past performance and future expectations

Questions?

Laurie Gilmer
Laurie.gilmer@feapc.com

Thank You!

Laurie Gilmer
Laurie.gilmer@feapc.com

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www.feapc.com