MDOT
Michigan Department of Transportation

Fleet Performance Metrics

2011 Northeast/Midwest Regions Joint Equipment Management Meeting

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Performance Metrics

- Fleet Management System – Past and Present
- Why measure performance
- What makes a good metric
- Types of measurements
- Lessons Learned
- National initiatives
- Key Messages
- Questions/Discussion

Fleet Management Systems– Past and Present

- 1994: former fleet management system – not fully functional/not statewide emphasis
- 2002/2003: re-energized initiative and evaluated initiatives
- 2004: "no go" decision of further implementation or additional dollars into existing fleet management system
- 2005: approved business requirements session through IT process
- 2006: Business Requirements Session (important to keep current/continuous evaluation)
- 2007: New fleet management system approved – Enterprise Approach (important to keep continuous evaluation)
- 2008: Pilot and phased-in region implementation
- Oct 2009: Statewide Implementation of new system
- Significant support

"Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it."

H. James Harrington
(Former Chairman and President of the International Academy for Quality and of the American Society of Quality Control.)

Why Measure Performance

- An opportunity to better manage and operate your fleet
- Creates benchmarks to track performance
- Brings focus to improvement efforts
- Part of strategic approach to fleet management
- Enables one to know where they are in relation to where they want to be
- Accountability/transparency
- An opportunity to tell your story

What Makes a Good Metric?

- Fits organizational need/alignment with strategic plan
- Specific in nature with a clear definition
- Identify measurement need/result
  - Leading indicator
  - Lagging indicator
- Customer Input

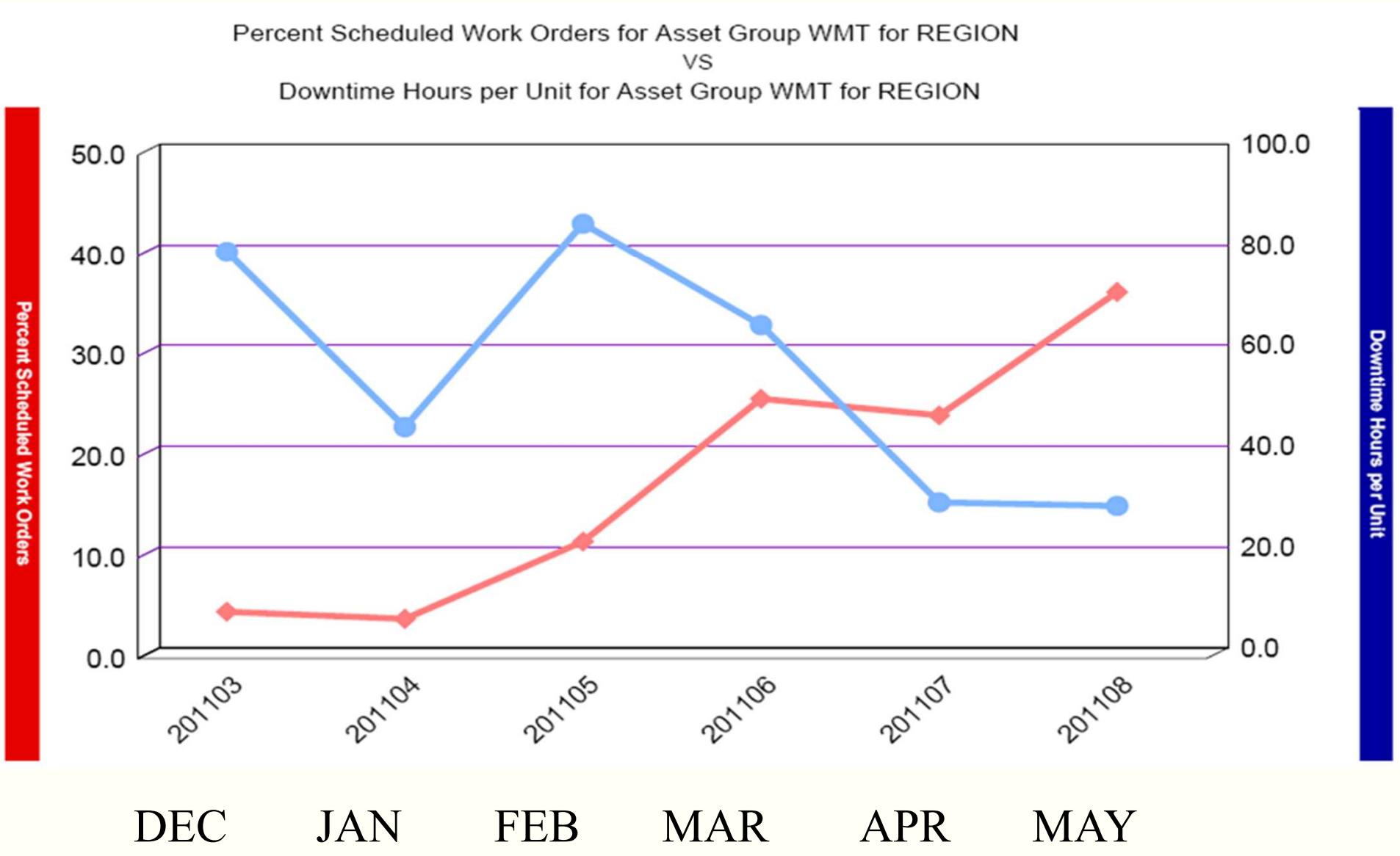
Types of Measurements

- Transaction reporting
- Ad-hoc capabilities
- Replacement modeling
- Trend analysis
- Dashboards
- Key performance/result indicators

Trend Analysis

- Ratios of key maintenance data
- Measure maintenance factors over a set time frame
- Graphs with ability to drill down to detail

Trend Analysis



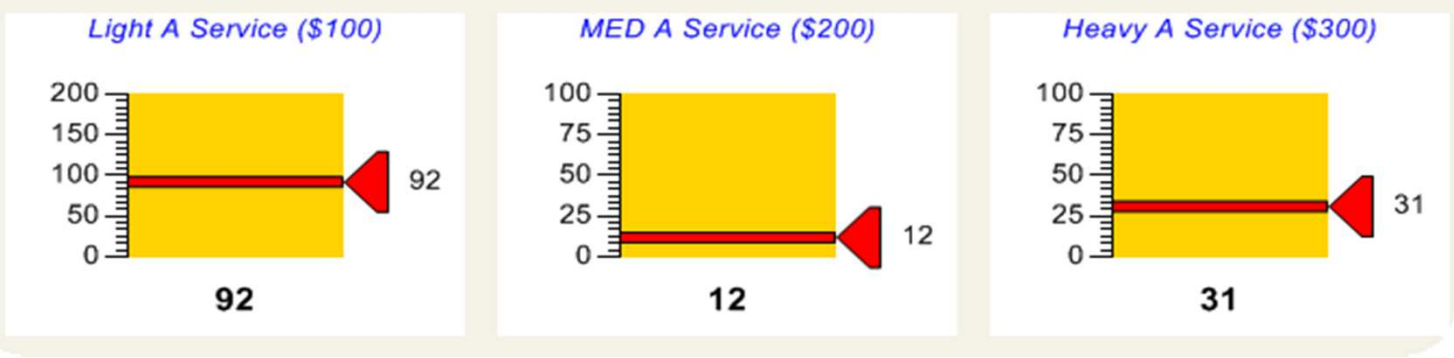
Dashboards

- Near real time data
- Allows for management by exception
- Can act when "pre-defined trigger" occurs
- Do not replace the need for reports, but can reduce reports

Dashboards

PM COSTS	Light A Service ($100)	92
	MED A Service ($200)	12
	Heavy A Service ($300)	31

Name: PM COSTS



WO_NO	SERVICE_PERFORMED	WO_USER_CREATE	OPEN_DT	UNIT_NO
19656	38-PRM-PMA	DAVISJOH	03/25/2011	034402
19661	38-PRM-PMA	DAVISJOH	03/17/2011	034406
20756	38-PRM-PMA	TANISR	04/27/2011	034597

Dashboard Detail

IN-HOUSE_LABOR_COST	IN-HOUSE_PART_COST	OUTSOURCED_COST	TOTAL_JOB_COST
$92.30	$31.29	$.00	$123.59
$92.30	$18.85	$.00	$111.15
$92.30	$18.85	$.00	$111.15
$92.30	$17.93	$.00	$110.23
$90.22	$16.90	$.00	$107.12
$.00	$.00	$100.98	$100.98

Key Performance/Result Indicators

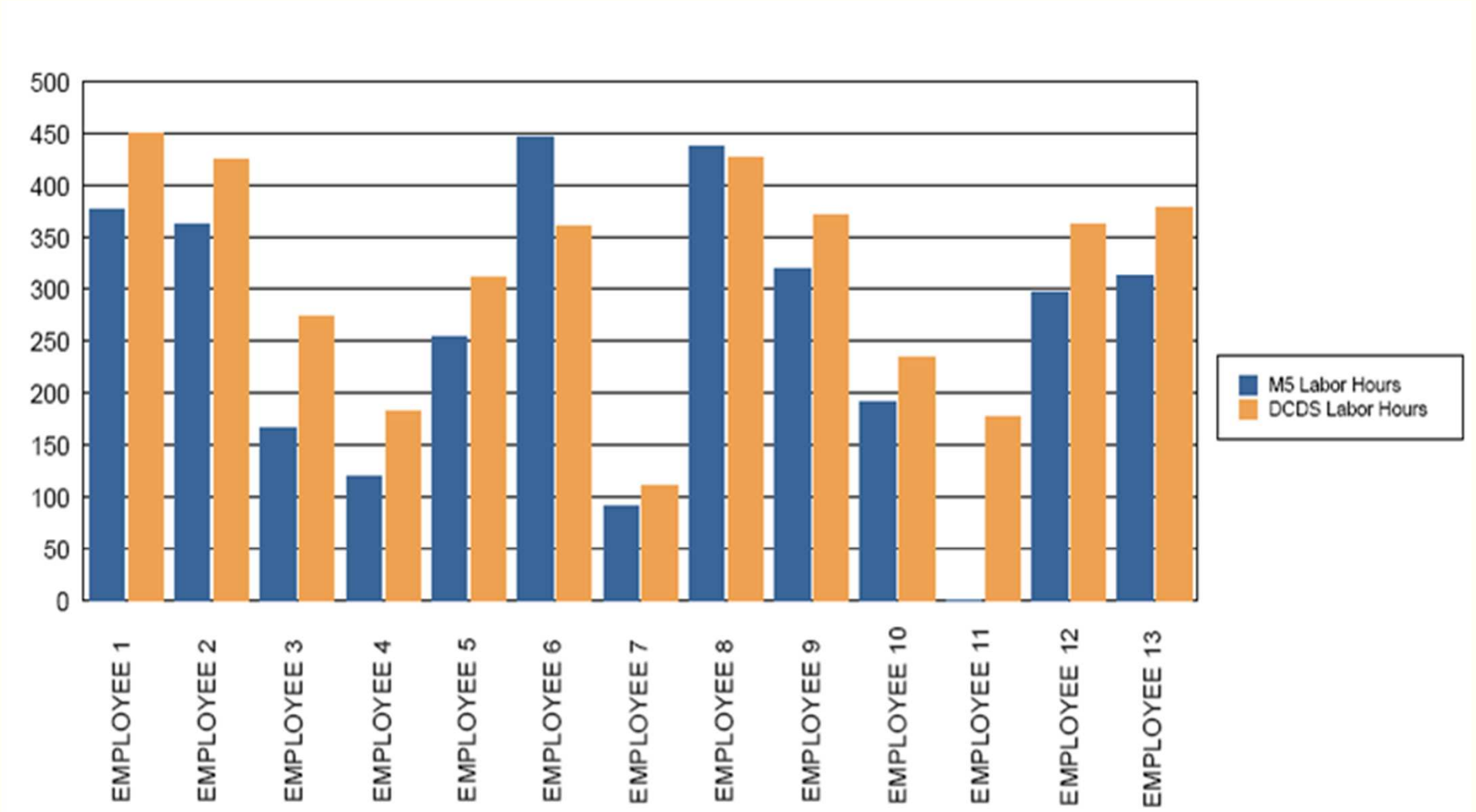
- M5 work order hours vs. DCDS labor hours
- Preventive maintenance (PM) compliance
- Work orders open greater than 60 days
- Fleet downtime/availability
- Fuel usage/rejected fuel meters
- Scheduled vs. non-scheduled repairs
- Come back rate/repeat repairs
- Garage turnaround time
- Outsourcing rate/costs

M5 Work Order Hours vs. Payroll Labor Hours

Compares labor hours charged to the Fleet Management System versus hours charged to the payroll system

(i.e. Mechanic payroll compensation compared to direct hours billed for work on vehicles/equipment --excludes holiday, vacation, and sick hours).

M5 Work Order Hours vs. Payroll Labor Hours



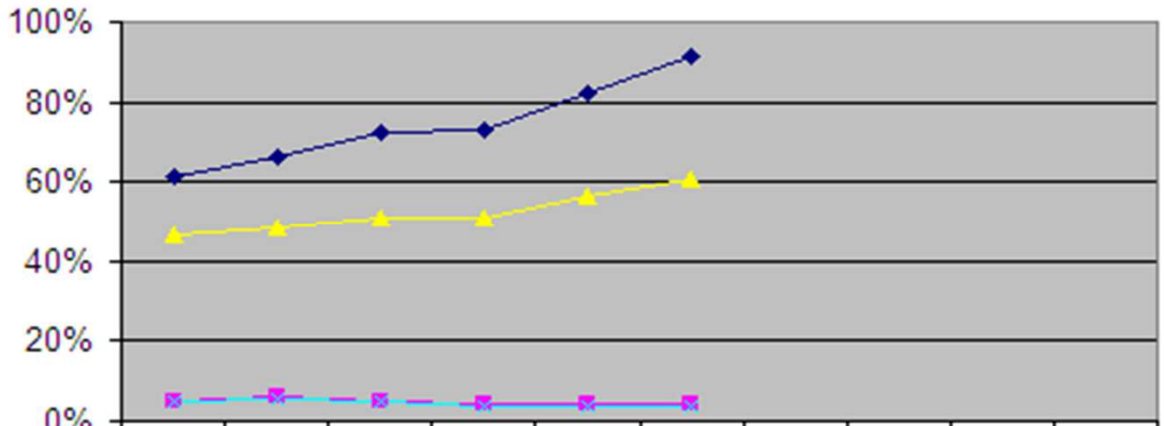
M5 Work Order Hours vs. Payroll Labor Hours Detail

M5 Labor Hours **Payroll Labor Hours**	1,048.00 1,049.50
M5 Labor Hours **Payroll Labor Hours**	1,238.50 1,199.50
M5 Labor Hours **Payroll Labor Hours**	524.50 678.00
M5 Labor Hours **Payroll Labor Hours**	548.00 603.00
M5 Labor Hours **Payroll Labor Hours**	254.50 310.50
M5 Labor Hours **Payroll Labor Hours**	1,190.00 1,084.50

Preventive Maintenance (PM) Compliance

- Indicates PM compliance for vehicles and equipment by job
  - Due between 90 and 109 percent
  - Overdue past 110 percent (Exception a mandated inspection by law such as a commercial motor vehicle inspection, which are due at 100 percent)

Preventive Maintenance (PM) Compliance



	1	2	3	4	5	6	7	8	9	10
% Reg Compliant	61%	66%	73%	73%	82%	92%				
% Reg Due	5%	6%	5%	4%	4%	4%				
% State Compliant	47%	48%	51%	51%	56%	61%				
% State Due	5%	6%	5%	4%	4%	4%				

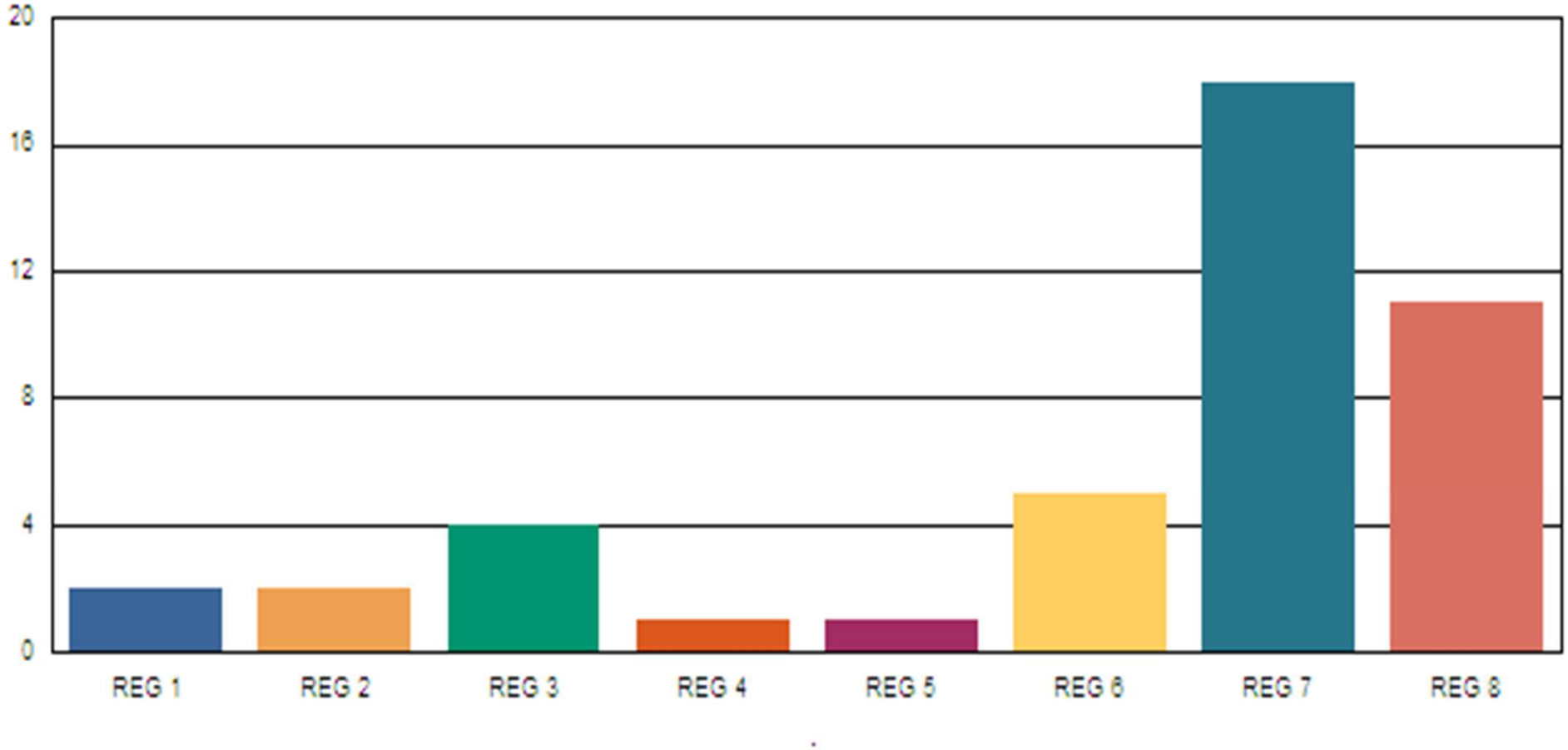
PM Compliance Detail

Job	Last Completed Job			Time Interval			Usage Interval		
	Date	Meter 1	Meter 2	Sched	Next Date	Pct Due	Sched	Next Meter	Pct Due
Parking Loc: 10520 - LAN-TRANS PLN-AMD DATA ELEC SR									
Unit No: 030072 - 2004 GMC C4C042			LTD Usage: 2,690.00					LTD Usage2: 78,861.00	
38-PRM-PMA	03/04/2011	2672	70,883.00				200	2872	9%
38-PRM-PMB	03/02/2009	1906	39,614.00				1000	2906	78%
38-PRM-PMI	03/04/2011	2672	70,883.00	365	3/4/2012	24%	-	-	-

Work Order Open Greater Than 60 Days

Used to determine if work orders are closed/ completed in a timely manner

Work Order Open Greater Than 60 Days



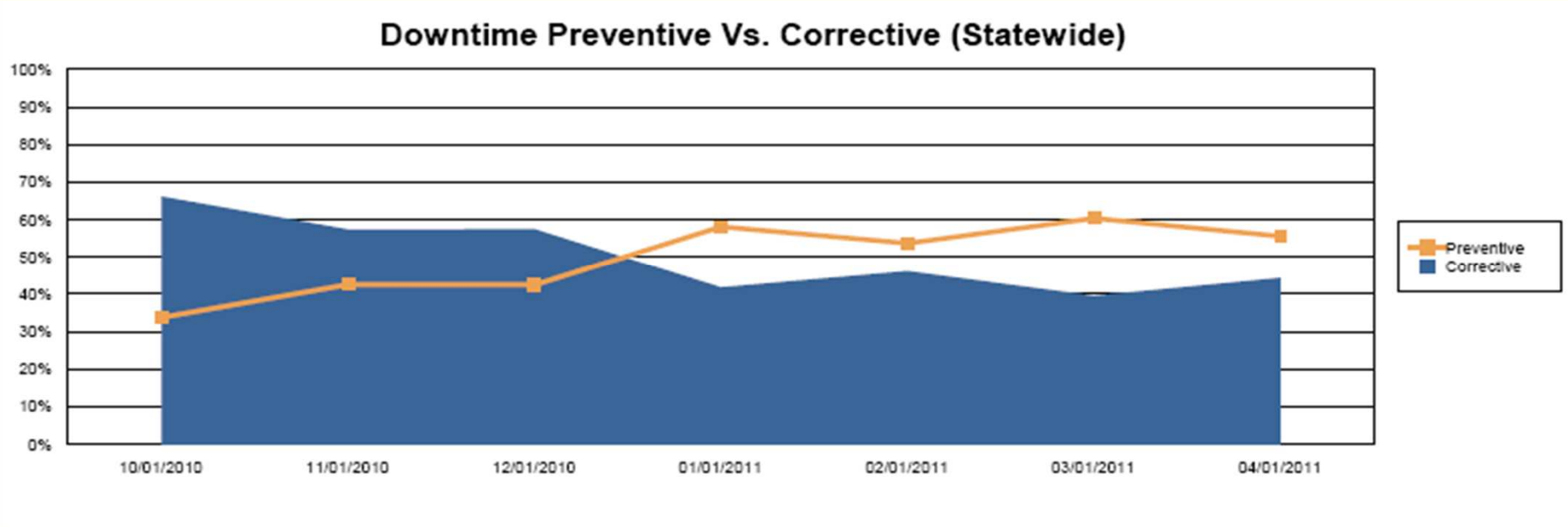
Work Order Open Greater Than 60 Days Detail

Region	WO Location	WO #	WO Reason	Open Date	Unit #
Region A	60550	17040	CORRECTIVE MAINT	1/7/2011	601269
		17545	PREVENTIVE MAINT	2/7/2011	100291
	70550	14299	CORRECTIVE MAINT	8/3/2010	670316

Fleet Downtime

Periods of time when a unit is unavailable and unable to perform its primary function. Measured by the difference between a work order open and close date.

Fleet Downtime



Fleet Downtime Detail

From Period **201101** To **201107**

		Total	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Total	Average DT	85	98	94	152	126	73	55	54
	# of WO's	939	85	75	107	136	86	266	184
CORRECTIVE MAINT	Average DT	96	99	94	148	116	67	83	61
	# of WO's	436	45	44	72	74	46	71	84
BREAKDOWN	Average DT	9	0	0	17	0	0	0	0
	# of WO's	2	0	0	1	1	0	0	0
ROAD CALL	Average DT	15	0	0	0	14	0	27	11
	# of WO's	5	0	0	0	2	0	1	2
PREVENTIVE MAINT	Average DT	90	75	99	178	150	69	70	49
	# of WO's	299	28	25	27	42	35	85	57
INSPECTION	Average DT	55	194	72	104	145	191	22	50
	# of WO's	179	8	6	7	14	4	99	41
MODIFY/CONVERT	Average DT	52	45	0	0	88	29	46	0
	# of WO's	18	4	0	0	3	1	10	0

"All successful organizations keep score. Without the ability to do so it is impossible for organizations to prove the value of their services to their customers – the residents of the communities they serve."

American Public Works Association
Handbook, September 2002

Lessons Learned

- FACT: Have to be able to document what you are doing, how you are doing it, and why.
- Don't necessarily need a fleet management system, but need an effective way to gather, collect, and report on the metrics.
- Statewide, coordinated, organized approach important
- Planning and evaluation/re-evaluation cradle to grave
- Be careful what you measure (it will drive behavior!)
- Careful evaluation of metric "suggestions"
- Statewide continual training is imperative
- Performance Metric reporting and incremental progress has resulted in renewed support

NCHRP – Project 20-07/Task 309

- "Challenges and Opportunities: A Strategic Plan for Equipment Management Research" (National Cooperative Highway Research Program Project) - June 2011 - Irvine, California
- Team reviewed and rated (H, M, L) 50 fleet program management functions within 14 categories
- Broke into two teams – the "High" priority ranked functions from five categories were further defined (challenge, description, areas of research, anticipated outcomes/benchmarks, importance/readiness).
- Team Identified and Ranked Top Five Categories:
  - **Performance Metrics**
  - Cost and Financial
  - Utilization Management
  - Replacement Management
  - Disposal/Remarketing

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MAASTO – Performance Measures

- Mid-American Association of State Transportation Officials – July 2011 – Cincinnati, Ohio
- MAASTO – Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin
- Concurrent Sessions where five separate sessions presented on "performance measures"
- "Performance Measures" and "Performance Management" were components of several presentations

Key Messages

- Every state is using performance metrics, but there are considerable differences among the states
- Tie performance metrics to department strategic plan and tie to operations
- Be careful about setting targets/be careful what you measure/tendency is to measure what is easiest
- Don't have to be perfect…incremental progress is ok.
- AASHTO is focused on performance management
  - Created a standing committee on performance management
  - Advocating a state driven approach based on **national** goals
- Yes, national performance metrics mean benchmarking/comparison, but…focus should be on collaboration among the states to improve and share best practices--UNITED WE STAND, DIVIDED WE FALL

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Questions

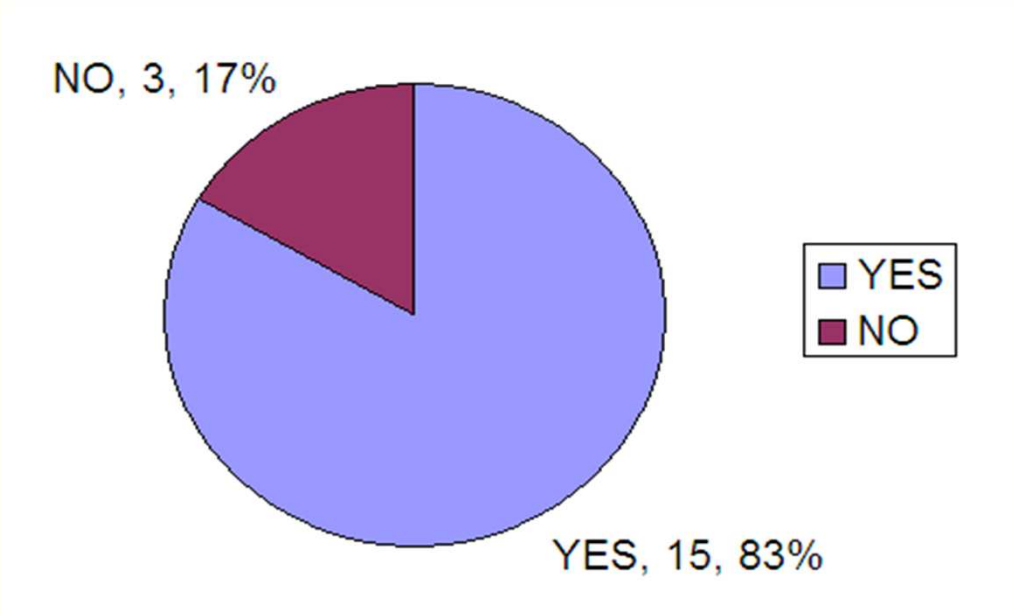
Discussion

Objective

- To establish national standards for fleet management
- To encourage consistent reporting to allow not just benchmarking but sharing and collaborating of best practices with other states

Discussion

Does your State use performance metrics for vehicles and equipment?



Discussion

If yes what would you consider the top three fleet metrics?

- Downtime (8 – 18.6%)
- Utilization (8 – 18.6%)
- Retention (6 – 15%)
- PM Compliance (6 –13.9%)
- Scheduled Vs. Non-Scheduled Repairs (4 – 9.3%)
- Average Repair Costs (1 – 2.3%)
- Cost Of PM Services (1 – 2.3%)
- Fuel Efficiency (1 – 2.3%)
- Labor Hours (1 – 2.3%)
- Maintenance Dollars Per Hour (1 – 2.3%)
- Miles/Hours Driven (1 – 2.3%)
- Overall Condition (1 – 2.3%)
- Repair Cost Vs. Utilization (1 – 2.3%)
- Rework Percentage (1 – 2.3%)
- Warranty Recovery (1 – 2.3%)
- Work Order Turn Around Time (1 – 2.3%)

Discussion

What are the top three fleet metrics recommended for measurement and comparison at the national level?

- Downtime (8 – 19.0%)
- Utilization (7 - 16.6%)
- PM Compliance (7 – 16.6%)
- Retention (6 – 14.2%)
- Technician Productivity (2 – 4.7%)
- Scheduled Vs. Non-Scheduled Repairs (2 – 4.7%)
- Average Repair Costs (2 – 4.7%)
- Maintenance Dollars Per Hour (1 – 2.3%)
- Rework Percentage (1 – 2.3%)
- Fleet Management Method (1 – 2.3%)
- Cost Per Usage (1 – 2.3%)
- Fuel Efficiency (1 – 2.3%)
- Unit Idle Time (1 – 2.3%)
- Equipment Justification (1 – 2.3%)
- Overall Condition (1 – 2.3%)

Discussion

What fleet management system does your State use to capture data to report fleet metrics?

- Fleet Focus – M5 (5 – 33.3%)
- In-House (3 – 20.0%)
- Agile Assets (2 – 13.3%)
- Systems Application and Products (SAP) (2 – 13.3%)
- Chesapeake Computer Group (CCG) Faster (1 – 6.6%)
- Electronic Adjudication Management System (EAMS) (1 – 6.6%)
- Fleet Focus – FA (similar to M4 old Citrix version of M5) (1 – 6.6%)

Facilitated Discussion

- Review/discuss survey—are the top four recommended performance metrics applicable to all states?
  - (downtime, utilization, PM compliance, retention)
- The capability to compare metrics among States
- Necessity to have fleet management system/same fleet management system
- Impact of NCHRP project
- EMTSP as the repository for State metrics
- Other items to consider?

Potential Next Steps

- Recommend/select potential national metrics.
  - Each state recommend up to three sample metrics
  - Each state recommend/define a standard for each metric submitted.
  - Each state provide any limitations in regards to compiling and reporting metrics.
- Through EMTSP, organize a committee(s)/subcommittee(s)
- Define responsibilities and expectations of subcommittee
- Subcommittee to review, assess, and make recommendation for specific performance metrics. Approval via EMTSP.
- Subcommittee will recommend a timeline for metric development. Approval via EMTSP.
- Final metric(s) presented to EMTSP members for review.

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