



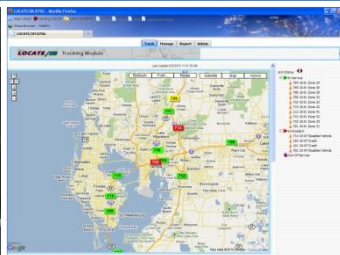
Gannett Fleming

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Review of National & Global Operations Performance Management Programs

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Western States Regional Operations Peer Exchange
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Introduction

- Overview of Operations Performance Management Programs
- Draws on information and experience from:
 - Direct, project-level experience throughout the USA and in England, Australia, New Zealand, Mexico, Colombia and Qatar
 - Literature review of best practices and lessons learned from both the private and public sectors
 - Interviews with 20 DOTs and MPOs in the USA in mid-2014
- Thank you for the opportunity to share my experiences and learn from all of you!



Selected Recommendations and Best Practices for Performance Management Programs

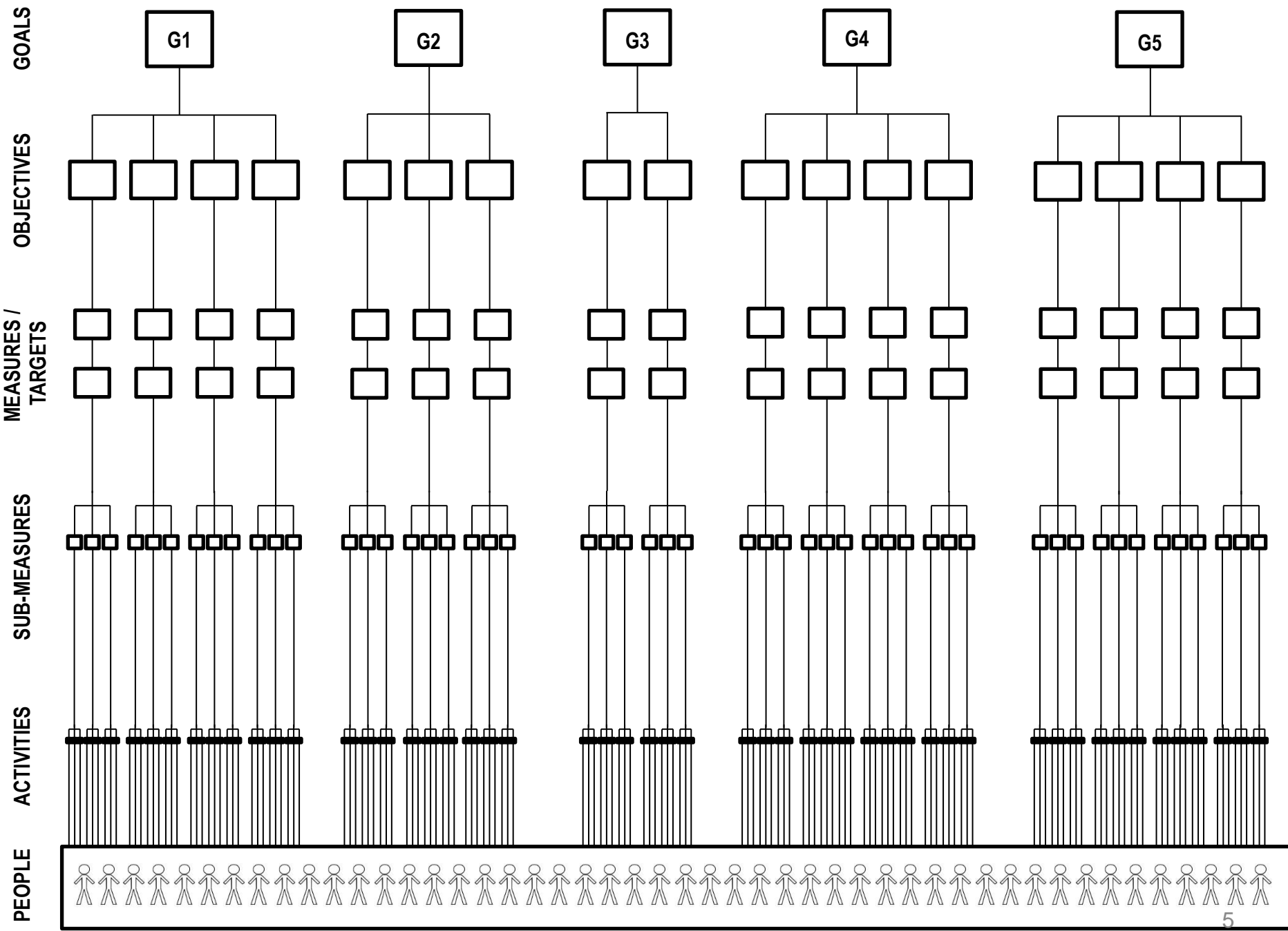


Start at the Top: Goals

Common Transportation Agency Goals

1. Mobility & Fast, Efficient, and Reliable Transportation
2. Safety
3. Economic Prosperity, Competitiveness, Movement of Goods
4. Environmental Stewardship, Sustainability, Air Quality
5. Quality of Life, Convenience, Comfort, Affordable, Informed & Satisfied Customers





GOAL
OBJECTIVES
TARGET MEASURE
SUB-MEASURES
PEOPLE ACTIVITIES

Note: Hypothetical Situation

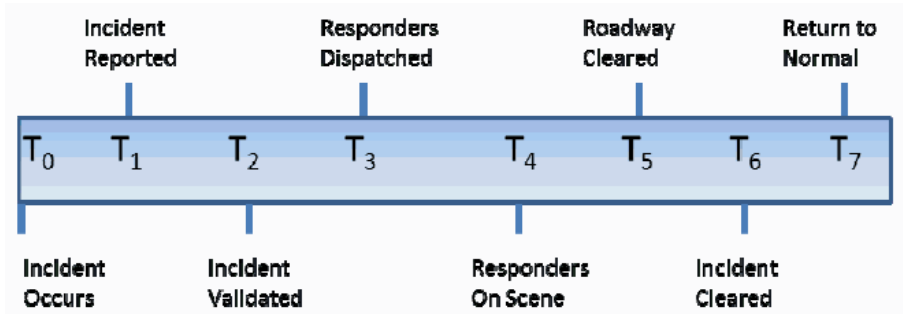
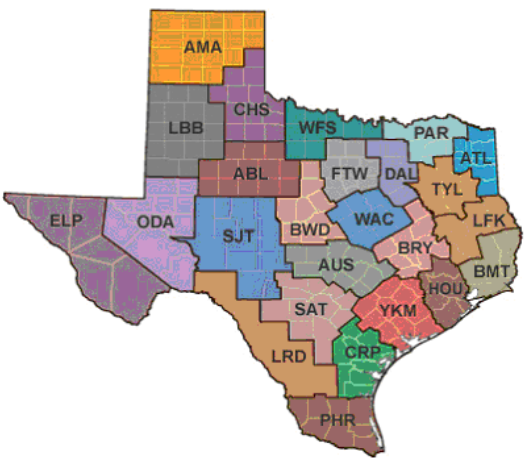
Reduce Congestion

Note: Hypothetical Situation

Reduce Incident Duration

Overall Incident Duration

Reduce 5% each year



- 25 TxDOT Districts x 6 stages of the incident timeline = 150 activities to measure & manage
- Performance goals for hundreds of TxDOT employees directly linked to these sub-measures
- This only covers the highway network. Arterials is another set of activities.

Sampling of Operations-oriented Performance Measurement and Management Programs at DOTs and MPOs



SANDAG – Annual “State of the Commute”



HOW is the SYSTEM WORKING?

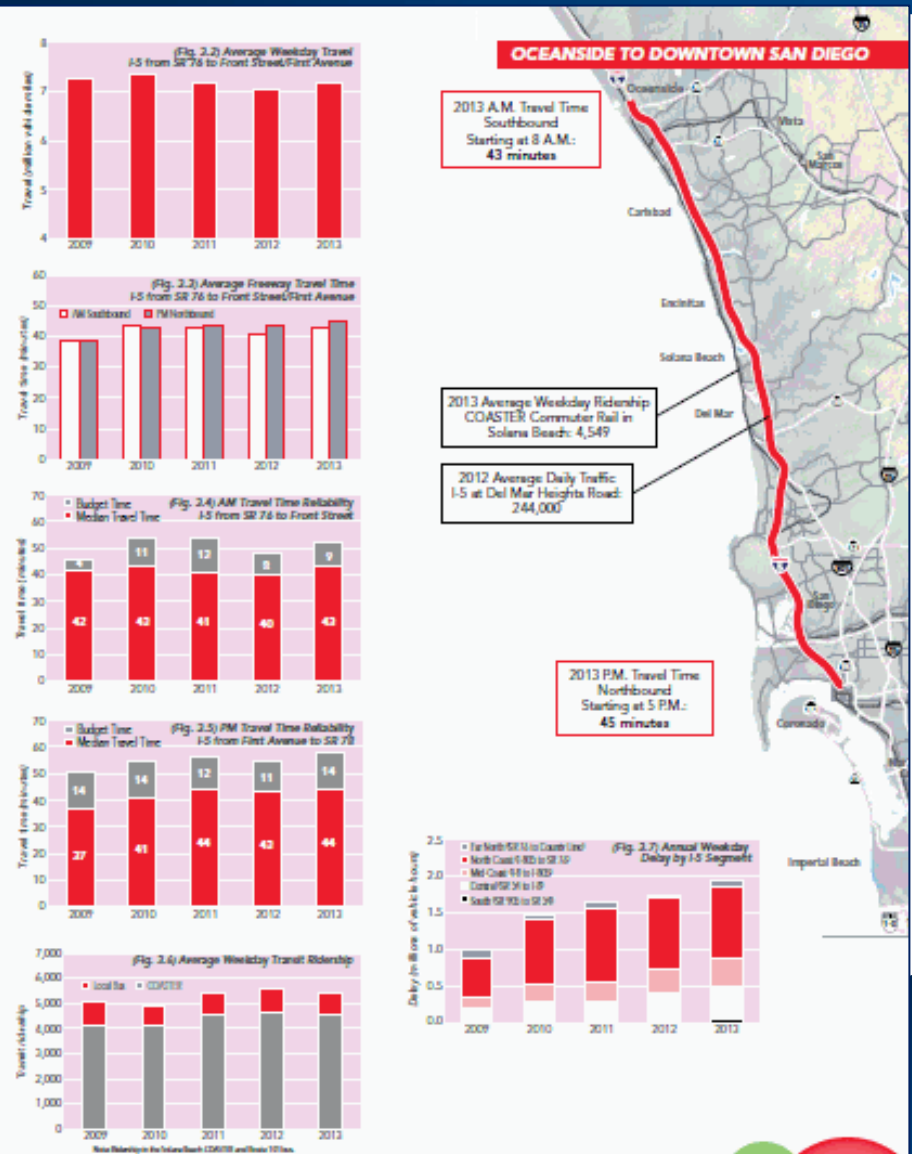
The performance of the surface transportation system is best evaluated by measures such as roadway delay, travel time, and travel time reliability. Transit performance is currently evaluated through measures such as ridership levels and on-time performance. These indicators can be used to assess improvements, identify bottlenecks, and develop strategies and investment plans.



SANDAG – My Corridor Commute



- 5 year comparison
- Vehicle miles traveled
- Avg Travel times (AM/PM)
- Travel time reliability (AM/PM)
- Annual delay
- ADT



Success Story – Arizona DPS

- New policy implemented in 2011
 - Move vehicles off roadway for all incidents, where safe and feasible
 - Daily roll-call reminders for all officers
 - Reminded officers that incident clearance times would be tracked as part of effort to reduce incident duration
- Reduced non-injury incident duration by 51%
 - From 84 minutes to 40 minutes
- Reduced non-fatal injury incident duration by 37%
 - From 94 minutes to 58 minutes
- “You’re not doing more work, just doing your work differently” – Captain Jeff King (Retired), AzDPS



Highway Concessions in Mexico

- Performance-based Operations & ITS Requirements
 - Very few specific requirements for number, type or location of ITS devices or SSPs
 - Incident detection, response and clearance times
 - Maximum toll plaza delay
- CQI reviews and recommendations every 6 months
- Mutual agreement on operations enhancements to improve performance, using dedicated funds
- Financial penalties for not achieving performance goals



Private Sector / Business Example



- 1996 study in the UK
 - Central hub with 28 regional depots around the country
 - Package collection & delivery done from regional depots, through the hub for inter-regional shipments
 - Primary objective: packages delivered to the right place at the right time.
 - Multiple performance metrics used at hub and 28 depots
- **One key to success:** Weekly performance reports on all 28 depots, published at each depot, to encourage competition.

Transport for London

- Multi-modal transportation agency
 - City streets, traffic signals, subway, buses, taxis, light rail, congestion charging program.
- Limited access highways managed by the UK Highways Agency
- A wide range of operations performance measures are used
- The primary performance measure is travel time reliability during the AM peak period
- Multi-modal corridor managers for all major corridors
- Daily performance reviews at 11am after AM peak period
- Goal to improve travel time reliability by 3% per year



- HOV to HOT lane conversion
- 7 miles, 2 lanes each direction
- \$7 initial max toll, raised to \$10.50
- Goals:
 - Improve Express Bus travel times
 - Improve other vehicle travel times (both HOT and free lanes)
 - Achieve 45mph (HOT), 90% time
- Closely managed, several measures
 - Average speeds (HOT & free lanes)
 - Reliability (HOT lanes)
 - HOT lane availability (open/closed)
 - Throughput (HOT & free lanes)
 - Express Bus ridership





I-95 Express Lanes - Miami



PERFORMANCE

	<u>BEFORE</u>	<u>AFTER</u>
• HOV/HOT lane peak period speeds	20 mph	60 mph
• General purpose lane peak period speeds	18 mph	46 mph
• Reliability (speeds > 45 mph) (HOT)	N/A	AM: 99.7% PM: 91.2%
• Availability	N/A	94.5%*
		*(2.1% Incidents and 3.3% C&M)
• Person throughput (multimodal)	Increase of 7,100 pers/day	
• Express Bus Ridership (avg daily riders)	1,746	4,718

Qatar













**Lessons Learned and
Opportunities for Improvement
as Operations Performance Management
Programs Continue to Evolve**



Lessons Learned, Gaps & Opportunities for Improvement

1. Significantly more output/activity measurement than true outcome/performance measurement
2. Roadway focus is on limited access highways; arterials still get little attention
 - TMC coverage/focus
 - ITS instrumentation
 - Traffic Incident Management teams/focus
 - Performance measures
3. Many agencies utilize no performance measures, particularly cities
4. Agencies with performance measures have very few, and they are often not balanced, or aligned with stated mission/goals
5. Many agencies have poor vertical integration from goals down to specific activities and people



Lessons Learned, Gaps & Opportunities for Improvement

6. Modally-focused agencies = lack of multimodal measurement and management
7. Need to move from culture of compliance to culture of performance and innovation
8. Benchmarking performance against peer-level agencies/districts/regions can foster collaboration, sharing and improvements
9. Environmental goals are extremely common, but environmental performance measures are rare



Lessons Learned, Gaps & Opportunities for Improvement

10. Many DOTs have strong, autonomous Districts and very little centralized/statewide guidance or direction (there is a disconnect between statewide direction/reporting and District-level awareness and activity)
11. “We are trained professionals. We are doing our best and we know intuitively that we are making a difference”
→ *Imagine if FedEx ran their business that way.*
12. Opportunity to utilize performance measures to demonstrate the significant need for resources at transportation agencies if we want to achieve our goals
13. “You don’t need to do more work; you just need to do your work differently” – Captain Jeff King (retired), AZ DPS



Questions/Collaboration/Follow-up:

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Recommendations and Best Practices for Performance Measures



Characteristics of a Good Performance Measure

1. Align with high level policy and goals
2. Measure both outcomes and outputs, but focus on outcomes (very important distinction)
3. Measurable, with available data and tools
4. Acceptable and meaningful to the stakeholder community
5. Utilize accurate information of known quality & origin
6. Clearly defined owners for collecting the data and calculating the performance measure
7. Clearly defined owners for the performance of the transportation system, not just measuring it

Characteristics of a Good Performance Measure

8. Affordable, based on readily available data that is available at a reasonable cost
9. Appropriate level of detail and level of aggregation
10. Use core/global measures and supporting/sub-measures, with sub-measures rolling up to MPO or statewide level
11. Have a target that is challenging but achievable
(some measures have desired trends, not targets)
12. Understandable to all stakeholders and the public
13. Mechanism to review and update measures to keep them relevant and up-to-date

Sampling of Performance Measures

- Travel time (link or corridor)
 - Incident duration
 - Crashes
 - Secondary Crashes
 - Fatality rate (typically per 100 MVMT)
 - Vehicle throughput
 - Person throughput
 - On-time performance (for public transit)
 - Commercial vehicle weight compliance
- Contact me for the 55 most commonly used measures, broken down by category and goal/objective.



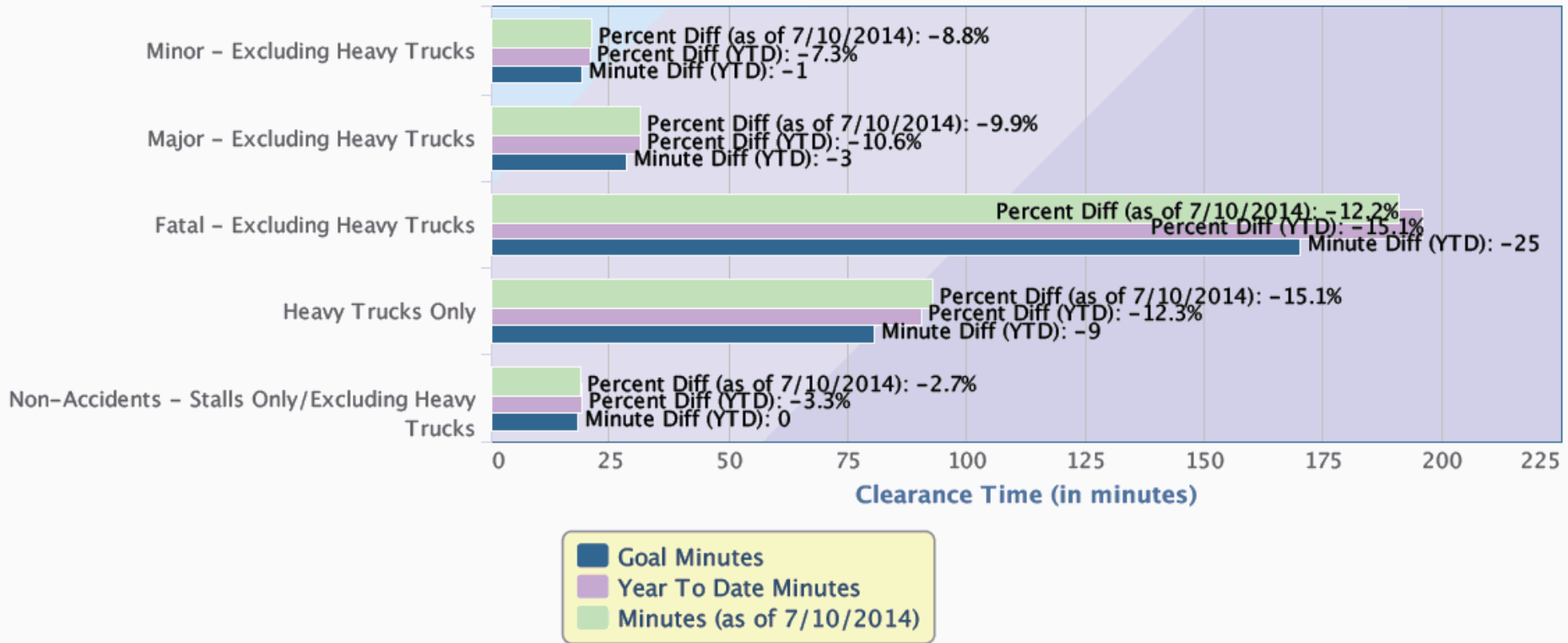
Houston TranStar



- TIM performance measurement & management
- Incidents on the limited-access roadway network in Houston metro
- Timestamps in the incident database for each step of the incident timeline
- Five incident types/categories
- Goal of reducing overall incident duration by 10% from the previous rolling 3-year average
- Tracked monthly against YTD and the goal
- Monthly TIM meetings / AAR sessions with all members

Houston TranStar

Incident Clearance Performance Report Card for 2014 (as of 8/7/2014)



Highcharts.com

The AZTech™ Regional Partnership (Phoenix)

- Good multi-agency, multi-modal effort focused on the entire metro area's transportation systems
 - FHWA
 - Arizona DOT
 - Maricopa County DOT
 - Arizona Department of Public Safety
 - Maricopa Assoc. of Governments (MPO)
 - Valley Metro
 - METRO Light Rail
 - City of Phoenix
 - 10 other cities in Phoenix metro area



AZTech™ Performance Dashboard (2013)








Performance trending in favorable direction.



Trend is holding.





Performance is trending in an unfavorable direction.




Policy Goal/ Performance Measure	Previous Reporting Period	Current Reporting Period	Trend	Description
Freeways				
Percent of Miles Congested (out of total of 240 miles measured)	567 miles	612 miles	+7.9%	 Overall the freeways are experiencing more congestion where average vehicle speeds drop below 50 mph
Percent of Time Congested Per Mile (out of total of 240 miles measured)	1.77 minutes	2.03 minutes	+14.8%	 Overall the freeways are experiencing more congestion where average vehicle speeds drop below 50 mph
Arterials				
Bell Road Westbound PM Peak Travel Time	26:05 min	22:23 min	-14.2%	 Bell Road has seen an overall reduction in travel time
McDowell Road Eastbound AM Peak Travel Time	16:59 min	12:44 min	-25.1%	 McDowell Road has seen an overall reduction in travel time
Hayden Road Northbound PM Peak Travel Time	21:34 min	17:48 min	-17.5%	 Hayden Road has seen an overall reduction in travel time

AZTech™ Performance Dashboard (2013)



Incident Management—Freeways and Arterials

Number of Vehicular Accidents	103,780	103,637	-0.1%		Slight reduction in the number of crashes per year
Percent of Incidents Cleared in 120 Minutes or Less	10.13%	6.77%	-3.36%		Reduction in the percentage of incidents that are cleared in 120 minutes or less

Traveler Information

Highway Conditions Reporting System (HCRS) Entries	44,248	36,098	-23%		Reduction in the number of HCRS entries indicates less road restrictions
Phoenix Fire CAD to RADS	30,393	32,199	+6%		Increase in the number of Phoenix Fire CAD data that are being transferred to RADS and 511
Twitter Followers	40,734	68,037	+40.1%		Increase in Twitter followers of agencies providing information to the public through this social media method

Transit

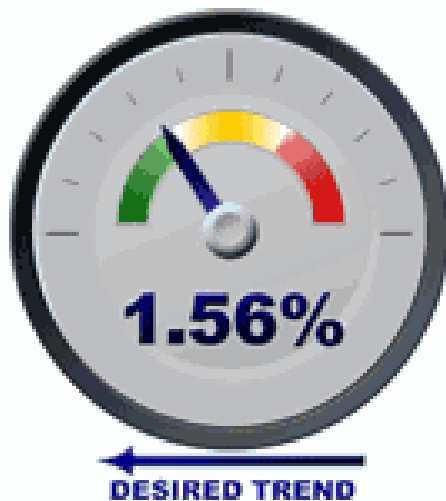
Transit Schedule Adherence	96.70%	94.87%	-2%		Reduction in schedule adherence for transit vehicles
Number of Transit Boardings	135.38 M	146.82 M	+7.8%		Increase in boarding for Valley Metro transit including light rail and bus

Alaska DOT

- **Performance Dashboard**

- Two categories of performance measures: Safety & Infrastructure
- Two measures apply to operations:

Reduce traffic fatalities



Commercial motor vehicle weight compliance



Colorado DOT

- Clear linkage from Vision → Mission → Goals → Objectives → Process/Strategies → Performance Measures
- Operations-related Goals
 - Safety
 - Congestion Reduction
 - System Reliability
 - Freight Movement & Economic Vitality
 - Environmental Stewardship
- Each goal has multiple objectives; each objective has one performance measure (with target)
- 2 types of performance measures (outcome & output)



Caltrans

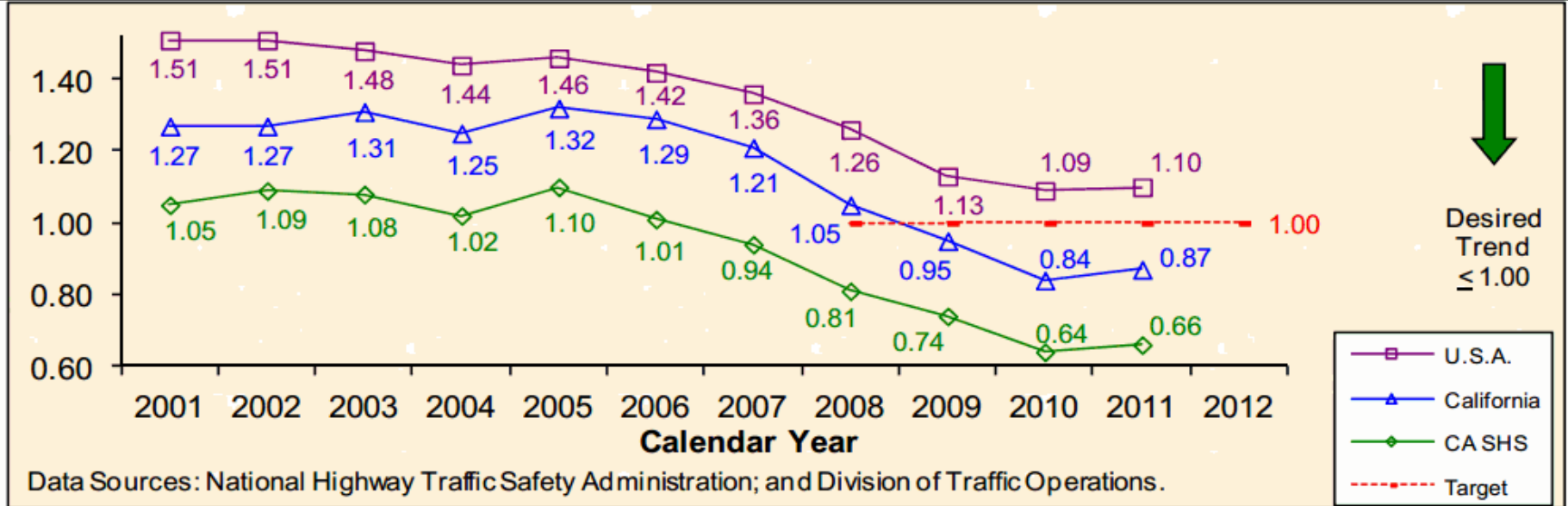
- **Quarterly Performance Reports**
 - 5 Goals (safety, mobility, stewardship, delivery and service)
 - 29 objectives (spread across the 5 goals)
 - Every objective has at least one performance measure
- **Operations-related Objectives**
 1. Fatality rate
 2. Vehicle hours of delay
 3. Transportation system reliability
 4. Intercity rail ridership
 5. Single occupancy vehicle
 6. Satisfaction of external stakeholders



Caltrans

Objective 1.1 – By 2008, reduce the fatality rate on the California state highway system (SHS) to 1.00 per 100 million vehicle miles traveled and continuously reduce annually thereafter toward a goal of the lowest rate in the nation.

PM 1.1 Traveler Safety – Fatalities per 100 MVMT on the California state highway system (SHS).



Houston-Galveston Area Council

- **7 Goals**

- Improve Mobility and Reduce Congestion
- Improve Access to Jobs, Homes and Services
- Preserve the Transportation System
- Support Economic Growth
- Create a Healthier Environment
- Safety – Minimize Crashes and Deaths
- Increase Transit Options

- **17 Core Objectives with Performance Measures**


- 51 total measures reported on HGAC website




Houston-Galveston Area Council

REGIONAL TRANSPORTATION SYSTEM PERFORMANCE MEASURES




1. IMPROVE MOBILITY AND REDUCE CONGESTION

TRAFFIC CONGESTION Cost per Peak Auto Commuter	FREEWAY USAGE Daily Vehicle Miles of Travel (VMT)	TRANSIT USAGE Annual Passenger Miles of Travel (PMT)
<ul style="list-style-type: none"> - \$1,090 in 2011 - \$1,071 in 2010 	<ul style="list-style-type: none"> - Down 1% - 142.6 million daily VMT in 2012 - 143.8 million daily VMT in 2011 	<ul style="list-style-type: none"> - Down 1% - 541.5 million annual PMT in 2012 - 546.2 million annual PMT in 2011 
Source: TTI 2012 - Most Current Data	Source: TxDOT 2012	Source: National Transit Database 2012

2. IMPROVE ACCESS TO JOBS, HOMES AND SERVICES

ROADWAYS Lane Miles Added	TOLL Lane Miles Added	BICYCLE Miles Added
<ul style="list-style-type: none"> - Up .002% - 68,899 lane miles in 2012 - 68,749 lane miles in 2011 <i>Includes state, county and local roads</i> 	<ul style="list-style-type: none"> - Up 4% - 663 lane miles in 2012 - 635 lane miles in 2011 	<ul style="list-style-type: none"> - Up 1% - 1,215 miles in 2013 - 21 miles obligated for funding in 2013 
Source: TxDOT 2012	Source: TxDOT 2012	Source: H-GAC 2013

3. PRESERVE THE TRANSPORTATION SYSTEM

ROADWAY PAVEMENT CONDITIONS Percent of Lane Miles in Good or Better Condition	BRIDGE CONDITIONS Percent of On-system Bridges in Good or Better Condition	MAINTENANCE EXPENDITURES Non-contracted and Contracted Maintenance
<ul style="list-style-type: none"> - Up 3.5% - 85.1% of miles in good or better condition in 2013 - 81.5% of miles in good or better condition in 2012 	<ul style="list-style-type: none"> - No change - 83% of system bridges in good or better condition in 2012 - 82% of system bridges in good or better condition in 2010 	<ul style="list-style-type: none"> - Up 2% - \$281.7 million in expenditures in 2013 - \$275.6 million in expenditures in 2012 
Source: TxDOT 2013	Source: TxDOT 2012 - Most Current Data	Source: TxDOT 2013