

# 2008 Transportation Engineering & Safety Conference

Session 5B: Transition from ITS Regionalization to Integration

## The Importance of ITS Performance Measures

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# OK, so I've got a question...

## ...why are we doing all this ITS work?

### ● **Examples of Typical Transportation Agency Goals**

- Provide for Safe Travel - Limit Accidents, Incidents and Deaths
- Provide Efficient, Timely and Reliable Travel
- Keep Travelers Informed – Both Static and Dynamic Information – Pre-Trip and En-Route
- Provide for a Comfortable and Pleasant Travel Experience

### ● **How to Achieve these Goals**

- Add capacity, manage travel demand, and implement a comprehensive “operations” program
- Operations: Traffic and Incident Management, Traveler Information, Work Zone Mgmt, Roadside Assist Programs, etc.
- Key Operations Tool → Intelligent Transportation Systems (ITS)
- Therefore: ITS solutions are key to achieving our goals

→ We all need to stay focused on the goals when working on ITS projects.



OK, I understand the goals and the reason for ITS...  
...but what's all this performance measure stuff?

## “You Can't Manage What You Don't Measure”

- **We can not expect to meet our goals and successfully manage (operate) the transportation network if we are not measuring performance.**
- **Well-designed performance measures help us to **determine if our actions are helping us meet our goals** and to:**
  - Set policy
  - Allocate resources
  - Choose between options
  - Report on results
  - Reveal problems and areas for improvement

Allright, that makes sense...  
but we're already measuring performance, right?

## ITS Information that is Commonly Tracked

- Miles of Roadways with ITS Coverage
  - Numbers / Types / Locations of ITS Field Devices
  - Number of Freeway Service Patrol Assists
  - 511 Phone Call and Web "Hit" Statistics
  - Number of DMS and HAR Messages Posted
  - Hours per Day TMC is Open
  - TMC Staffing Levels
- This information mostly measures activity and output, not performance.
- Very valuable information, but need to do more to measure performance in terms of meeting our goals.



# Measuring Performance:

## Is all that activity really doing us any good?

### Some Commonly Used Performance Measures

- **Incident Detection Time**
  - Typically TMC-detected incident = 0.
  - Measures level of inter-agency coordination for other agency-detected incidents.
- **Incident Response**
  - FSP dispatch period – time from detection to dispatch
  - FSP arrival period – time from dispatch to arrival on scene
- **Incident Clearance Time**
  - Time from FSP arrival on scene to departure of last assistance vehicle
- **Travel Times, Travel Time Indices and Delay**
- **Travel Time Variability**
- **Toll Plaza Delay**
- **Accident and Fatality Rates (primary and secondary accidents)**

# Measuring Performance:

Is all that activity really doing us any good?

## Some Commonly Used Performance Measures

- **Provision of Traveler Information**
  - ITS Field Device Coverage, Availability and Information Quality
  - Phone and Web (511) Coverage, Availability and Info Quality
- **User Satisfaction (Surveys)**
  - Traveler Information Quality and Relevance (DMS, HAR, 511)
  - Device Type Preference and Usage (DMS –vs- HAR)
  - Overall Satisfaction with Range of Services (FSP, EZ-Pass, etc).
- **ITS System Performance**
  - Availability (up-time) of ITS Field Devices and Systems
  - Accuracy of data and properly calibrated devices and systems
  - Mean Time Between Failures (MTBF) and Mean Time to Repair
- **Benefit/Cost Ratios**



# OK, now we're *measuring* performance... ...but what can we do to *improve* performance?

- Simply measuring performance does not necessarily lead to improvements in performance
- Need to keep track of a lot of data to be able to continuously improve
- Incident Detection Time
  - Location of incident (for device location and FSP “staging” areas)
  - Method of incident detection (decisions on ITS device types, coordination)
- Incident Response Time
  - Location of incident (to better locate FSP “staging” areas)
- Cause of Incidents
- FSP Activities and Resources Used/Needed at the Scene
  - For improvements in incident clearance time
- Incident Severity Categories
  - To help ensure that an apparent “success” in reducing overall incidents is not masking an increase in “severe” incidents

# Performance Measures (soon to be) in Action

## Northeastern Mexico Toll Road Concession

- ~ 350 miles of existing and proposed toll roads to be concessioned
- 30-year concession with private entity designing, building, operating and maintaining the toll roads and comprehensive ITS system
- Detailed set of “Operations Performance Measures” to be included in the bid documents and the 30-year concession contract.
  - Comprehensive Operations/ITS Program to meet the goals - ITS field devices, FSP vehicles, 24/7 TMC, and TMC “master software”
  - Mostly automated processes for ongoing data collection and reporting (for continuous SCT monitoring via web application)
- Field inspections and system testing every 3 months
- “Continuous Improvement Plan” submitted to SCT every 6 months
- Mandatory “New Technologies Fund” – negotiate what to spend on
- Failure to meet performance goals results in fines



# DISCUSSION AND QUESTIONS

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