Thursday, June 13, 2013

10:45  Panel 1: “MAP-21 Performance Measures and Operations Planning”
Panel Moderator: Jeffrey Randall, Jacobs, ITS-NY Vice President
“Implementing a Performance-Based Federal-Aid Program – MAP-21 and Beyond,” Jeffrey Paniati, USDOT/FHWA
“Next Generation Collaborative Transportation Solutions,” Hal Morse, Greater Buffalo-Niagara Reg. Transportation Council and Athena Hutchins, Niagara International Transportation Technology Coalition
Implementing a Performance-Based Federal-Aid Program – MAP-21 and Beyond

2013 ITS-NY TWENTIETH ANNUAL MEETING
“The Past, Present, and Future of ITS”

Jeff Paniati, Executive Director
Federal Highway Administration
June 13, 2013
Presentation Outline

- MAP-21 Performance Requirements
- USDOT Implementation Approach
- Performance Management Initiatives
- Resources
MAP-21 Performance Requirements
Performance Elements

- National Goals
- Measures
- Targets
- Plans
- Reports
- Accountability
Measure Areas

- Federal-aid Highway Program (FHWA)
  - HSIP
    - Fatalities and Serious Injuries (number and rate)
  - NHPP
    - Interstate and NHS pavement condition
    - NHS bridge condition
    - Interstate and NHS performance
  - Congestion Mitigation and Air Quality (CMAQ) Program
    - Traffic Congestion
    - On-road Mobile Source Emissions
  - Freight Movement on the Interstate

- Public Transportation (FTA)
  - State of Good Repair
  - Safety Criteria
USDOT Implementation Approach
Consideration of Challenges
**Stakeholder Outreach**

- **Methods of Outreach**
  - Webinars
  - National Online Dialogues
  - Virtual Town Hall Meetings
  - Subject Matter Meetings
  - Direct Contact to FHWA: PerformanceMeasuresRulemaking@dot.gov

- **Focused Areas for Outreach**
  - Performance Measures
  - Target Setting Listening Session
  - Reporting and Assessment
# Measure Groupings

<table>
<thead>
<tr>
<th>PROGRAM</th>
<th>MEASURE CATEGORY</th>
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<tr>
<td><strong>STATUS I</strong></td>
<td>• Serious Injuries per VMT</td>
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<tr>
<td>9/30/2013</td>
<td>• Fatalities per VMT</td>
</tr>
<tr>
<td></td>
<td>• Number of Serious Injuries</td>
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<tr>
<td></td>
<td>• Number of Fatalities</td>
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<tr>
<td><strong>STATUS II</strong></td>
<td>• Pavement Condition on the Interstates</td>
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<tr>
<td>11/30/2013</td>
<td>• Pavement Condition on the Non-Interstate NHS</td>
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<td></td>
<td>• Bridge Condition on NHS</td>
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<tr>
<td><strong>STATUS III</strong></td>
<td>• Traffic Congestion</td>
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<tr>
<td>1/31/2014</td>
<td>• On-road mobile source emissions</td>
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<tr>
<td></td>
<td>• Freight Movement</td>
</tr>
<tr>
<td></td>
<td>• Performance of Interstate System</td>
</tr>
<tr>
<td></td>
<td>• Performance of Non-Interstate NHS</td>
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Coordinating Implementation

Measure Rules
- Define Measure
  - Data Elements
  - Data Source
- Interstate Pavement Condition
- Target Setting Requirements
- Define Significant Progress
- State Performance Reporting
- Establish Timing

Planning Rules
- Performance-based Planning Process
- Target Setting Coordination
- MPO Performance Reporting
- STIP/TIP Discussion
- Transition Period

Program Rules
- Plan Requirements
- Special Rules
- Integrating Performance
- Transition Period
Performance Management Initiatives
Transportation Performance Management

Travel Time Data Contract

- Data – Actual travel times, date, direction, location
- Travel Measured - freight and passenger traffic
- Coverage – Full National Highway System
- Granularity – TMC segments in 5 minute bins
- Frequency – Monthly updates
- Timing – A few days following the month
- Availability – State DOTs and MPOs
- Support – Initial training followed with support
Asset Management Plan Pilots

- Development of Transportation Asset Management Plans in 3 States
- Provide as examples for all States
- Pilots: LA, MN, NY
- Observer States: AK, NV, OR
- Holding monthly web meetings to discuss progress
- Generic work plan available on website
- Anticipated completion in 5/30/2014
Corridor Performance Management

- Study how multiple agencies have worked together to manage performance of a multi-state corridor
- Focus on MAP-21 goal areas
- Development and testing of Maturity Model
- Test application of model on I-95 and I-15
- Final Report (June, 2013)
  - Maturity model and assessment tool
  - Noteworthy practices
  - Implementation plan recommendations
Resources
FHWA Transportation Performance Management Web Site
www.fhwa.dot.gov/tpm

TPM and MAP-21
- What is TPM?
- National Goals
- MAP-21 Performance Requirements Summary
- Implementation Schedule

Engagement
- Rulemaking Stakeholder Engagement
- Readiness Stakeholder Engagement

Resources
- Tools
- Noteworthy Practices
- Presentations

News and Events
- Performance Measures for Financial Sustainability of Highway Assets
  Webinar
  May 28, 2013, 1:00 PM ET
- Data Palooza Session Recordings (May 9, 2013)
- View all TPM Events
- Subscribe to email updates

PennDOT Evaluating Performance Measures
As PennDOT evolves their approach to transportation performance management, they continue to focus on the right measure. (.pdf, 0.4 mb)
Additional Resources

- Transportation Performance Management training courses

- MAP-21 Web Site
  www.fhwa.dot.gov/map21

- Performance Measure Rulemaking Direct Contact to FHWA
  PerformanceMeasuresRulemaking@dot.gov

- U.S. DOT Transportation Data Palooza Event Recording
  www.fhwa.dot.gov/tpm/events/datapalooza.cfm
Niagara International Transportation Technology Coalition
Buffalo Niagara Regional Transportation Council

Next Generation Collaborative
Transportation Solutions
INTRODUCTION

- NITTEC Overview
- Regional Collaboration
  - Traffic Management
  - ITS
  - Construction Coordination
  - Incident Management
  - Performance Measures
  - Traveler Information
  - Linking Planning and Operations
NITTEC MISSION

To improve mobility, reliability and safety on the regional bi-national multimodal transportation network through information sharing and coordinated management of operations.
NITTEC REGION-SOUTHERN ONTARIO/WESTERN NY

- Strategic BiNational plans in place
- Traffic models integrated
- Cooperative studies
- Regular interface in NITTEC - MPO Operations
NITTEC COALITION

• Established in 1995 with a Federal Mobility Grant
• Multi-Agency Transportation Operations Coalition
  – 14 Member Agencies with 16 Affiliate Members
    ▪ Transportation Agencies
    ▪ Public Safety and Border Enforcement
    ▪ Emergency Services
    ▪ Recovery and Environmental Conservation
  – Only Bi-national Coalition of its kind in U.S. / Canada
NITTEC MEMBERSHIP

Policy Members
- Ontario
- NEW YORK
- NFTA

General Members
- Niagara Falls
- Fort Erie
- Niagara Parks

Affiliate Members
- Greater Buffalo-Niagara Regional Transportation Council
- City of St. Catharines
- Rural/Metro Medical Services
- OPP
- UB
- Rusty's
- John's Towing
- OPP
- GBNTOC
NITTEC LEADERSHIP

- Committee Structure
  - Border Crossing
  - Construction Coordination
  - Strategic Planning
  - Traffic Operations Center
  - Technology and Systems
  - Incident Management
    - Western New York
    - Ontario
  - Regional Traffic Signals Committee (Ad-Hoc)
GREATER BUFFALO NIAGARA REGIONAL TRANSPORTATION COUNCIL

City of Buffalo
City of Niagara Falls
Erie County
Niagara County
New York State DOT
Niagara Frontier Transportation Authority
New York State Thruway Authority
GBNRTC MISSION

• Focus on projects - Staging the right projects at the right time
• Plan for the future - What do we need, how will we get there
• Address region’s issues – examine regional and local challenges and develop solutions
• BiNational planning and economic integration seen as a key issue
METROPOLITAN TRANSPORTATION PROCESS FLOW

1. Metropolitan Transportation Plan (MTP) - Planning
2. UPWP Corridor/Area Studies - Studies/Analysis
3. Transportation Improvement Program - Implementation
METROPOLITAN TRANSPORTATION PLAN

- Looks 20 plus years into the future to determine transportation needs in the region
- Guides transportation investment in the region to achieve key regional objectives
- Based on projections of growth and travel demand coupled with financial assumptions
- Technology a significant consideration
  - long term relative to travel demand
  - near term focused on more operational focus
CONGESTION MANAGEMENT PROCESS

Regionwide Summation and Trending

Identification/Confirmation of Indicators

Review/Confirm Objectives

Model to Screen System Performance to Indicators

Develop Alternative Strategies

Assess Objectives Satisfaction

Develop and Analyze Location Specific Improvements

Prioritize for Implementation

Implement Improvements

Data Collection

LRP Process

TIP Process
SETTING THE CONGESTION CONTEXT IN BUFFALO-NIAGARA

- Use of national services and data to assess region’s relative congestion issues
- Local initiatives to identify locations and conditions for resolution
- Incorporation in the Planning Process
- Results in plans, operational improvements and capital projects
INRIX NATIONAL TRAFFIC SCORECARD

• Provides a comprehensive glimpse of congestion in the region
  – How bad is it?
  – Where is it worst?
  – How has it changed?

• Relies on a “Travel Time Tax” measurement (“T³”)
NITTEC – GBNRTC AND CONGESTION IDENTIFICATION

- Instrumentation of freeway system permits collection of transponder data
- Analytical procedures provide indication of location and duration of congestion through variety of indices
Mobility

*Travel Time Statistics*

**Travel Time Index:** The Travel Time Index is a measure of average conditions that indicates how much longer, on average, travel times are during congestion compared to during the free-flow travel time at 55 mph.

**Planning Time Index (95th Percentile):** The Planning Time Index represents how much time a traveler should allow to ensure on-time arrival 95% of the time.

**Free Flow Travel Time:** Travel time experienced when traveling at the posted speed limit (55 mph). Free flow travel time is represented by an index value of 1.0 on the following graphs.

**Congested Hours (Daily Avg.):** The average number of hours between 6 am and 10 pm in which instrumented road sections have average speeds less than 45 mph. The daily average is calculated by dividing the hours of congested travel per day by a 14-hour base period.

The following graphs show the travel time for the specified highway section at 10 min intervals for the full 24 hour day for all non-holiday weekdays. The Peak Planning Time represents the amount of time travelers should allow during the peak travel periods for the associated segment to ensure on-time arrival 95% of the time.
Border Crossing Delay

Total Hours of Reported Delay
By Day

Total Hours of Reported Delay
By Month
TRANSPORTATION IMPROVEMENT PROGRAM

- A regionally agreed upon list of priority projects
- Builds out the Metro Transportation Plan
- Includes Congestion Management Process
- Funds NITTEC operations center
- Numerous operational and ITS focused initiatives
REGIONAL COLLABORATION

• Multi-Agency ITS Elements in use at NITTEC
  • NYSDOT Region 5
  • NYSTA Buffalo Division
  • Peace Bridge Authority
  • Niagara Falls Bridge Commission
  • Ministry of Transportation Ontario

• Crossroads System - ATMS
  • Intelligent Freeway Traffic Management System
  • Monitors & Displays Highway Events & Incidents
  • Deploys ITS Elements in Region
REGIONAL COLLABORATION

Traffic Management

- Information Clearinghouse
- Standardized Operations
- Multi-Agency Event Planning and Operations
- Multi-Agency ITS Deployment
- Regional Messaging Standards
TRAFFIC MANAGEMENT PLANS

- Established for all planned events
- In place for incidents, weather events including preplanned and preplaced signage and detour routes
- Multi-Agency Event Planning and Operations
- Includes on-scene resources, collaboration / unified command, ITS use and traveler information
ITS Elements Monitored and Operated by NITTEC

- CCTV
- DMS / PVMS
- HAR
- RWIS / SWIS
- TRANSMIT
- ATC – Congestion Monitoring
  - Loops
  - Radar
  - Acoustic

ITS improves transportation safety and mobility and enhances productivity through the use of advanced communications technologies.
REGIONAL COLLABORATION – ITS

• Central Controlled Corridor Signal Systems
  – Niagara Street Corridor Project

• Border Crossing Information System
  – Establish System for Real Time Border Crossing
  – Integrate with Queue End Warning Systems
  – Promote “Single Crossing” Concept for Niagara Region by Posting Travel Times
CONSTRUCTION COORDINATION

• Regional coordination of all contracts
• Include maintenance and utility operations
• Coordination of future programming for regional mobility
• Identification of planned special events and peak volume implications
• Incident Management impacts
INCIDENT MANAGEMENT

• Monthly Meetings & Incident Debriefing
• Response Protocol Agreements
• Standardized Facility Incident Markings
• Education and Training
• Relationships
• Promotion of National Unified Goal for Incident Management
INCIDENT MANAGEMENT - DATA

- Date / Time
- Location
- Severity
- Notifications
- Incident Timeline
  - Detection Time
  - Verification Time
  - Scene Arrival Time
  - Lane Clearance Time
  - Clearance Time
  - Scene Departure Time
  - Return to Normal Condition
PERFORMANCE MEASURES

- Coalition Participation
- Website Statistics
- MYNITTEC Statistics
- Travel Time Statistics by Corridor
- Travel Time Statistics by DMS Routes
- Border Crossing Delay
- Incident Activity
- Traffic Operation Center Activity
- Systems Reliability - ITS Elements
TRAVELER INFORMATION

• Dynamic Message Signs in US and Canada
  – Incident Information
  – Travel Times
• Highway Advisory Radio
• 1-800 Bridge Conditions Phone Service
  – 1-800-715-6722
• 511
• NITTEC Website
• MYNITTEC Subscriber System
New Advanced Technology Tools Available
Simulation Capabilities
IN-HOUSE ANALYTICAL CAPABILITIES

• Macro, meso and microscopic level modeling capabilities powerful and dynamic
• In use for problem identification and scenario testing
• Solutions evolved and incorporated in design or referred to project development
• Intersection level analyses performed to identify spot improvements
Mesoscopic Model Extent
I-290 Demonstration Microsimulation Network Extent
Scajaquada Demonstration Microsimulation Network Extent
Scajaquada Simulation with Roundabouts
SOME CURRENT MPO STUDIES

Significant Operational Components

- Buffalo Corridor Studies
- Buffalo Harbor Bridge
- Truck VMT Charges – Off Peak Discounts
- Interstate Bridge Tolling
- Niagara Street
- Emergency Freeway Closures
Buffalo Corridor Study
Buffalo Harbor Bridge – Main Street Crossing
CBD Animation of Calibrated Network Flows
Some Possible Impacts of Major Peak Period Truck Traffic Reduction - Before
Some Possible Impacts of Major Peak Period Truck Traffic Reduction - After
Off Peak Discounts – No Dramatic Effect
INTERSTATE BRIDGE TOLLING
SCENARIO TEST
TOLL PLAZA ON BRIDGE

- Scenario 1: Current Tolling Configuration
- Scenario 2: No delay at toll plaza
Current Toll Configuration
No Delay at Tolls (All EZ Pass or other electronic tolling)
FLOW AT PLAZA
SPEED AT PLAZA

The graph shows the speed variation at Plaza from 12:00 AM to 12:00 AM. The blue line represents 'No Stop', and the magenta line represents 'Delay'. The speed data is recorded in miles per hour (mph).
Opportunity to leverage and combine several initiatives for major corridor improvement in Buffalo

- NFTA Bus Livability: TSP, Next Bus, Solar Shelters, Transit Center
- City of Buffalo street reconfiguration: Complete Street approach
- NITTEC integrated signal management: 5 timing plans incl Emergency Evacuation
- Buffalo Niagara Riverkeeper waterfront/creek access and bike/pedestrian facilities
- Olmsted parks and parkway improvements
- Substantial support and engagement by community emerging positively
A Complete Niagara Street

Visualizing the concept for a liveable, walkable corridor

Niagara Street in the City of Buffalo is the region’s “front door,” a gateway greeting international visitors who arrive via the Peace Bridge. Bordering the waterfront, Niagara Street is a multi-purpose corridor with a range of uses from residential to industrial. Niagara Street’s intact architectural stock is highly visible from the Peace Bridge, Black Rock Canal and I-190. The area is rich in historical significance including numerous events during the War of 1812 and a significant role in the Underground Railroad. In addition to offering unparalleled views of the Niagara River and Lake Erie, the Niagara Street corridor offers residents and visitors an opportunity to interact with the waterfront through the Riverwalk trail system and Broderick Park.

Currently, Niagara Street’s wide surface area, multiple travel lanes and lack of landscaping encourages high speed traffic through the corridor making pedestrian and bicycle travel difficult and limiting access to the area’s key destinations. Slowing traffic and improving non-motorized transportation options will significantly improve livability and reinvestment in the Niagara Street corridor by providing more mobility options to residents and visitors and resulting in a more vital, energized urban environment.

These conceptual street designs for Niagara Street incorporate improved transit amenities, roadway restriping, and streetscape and safety enhancements such as pedestrian crosswalks, designated bicycle lanes and landscaping. Aligned with Complete Street principles and reflecting a shared community vision for the corridor, these concepts take Niagara Street from a divisive, outdated four-lane undivided roadway to a “complete street” configured three-lane facility fully in context with the emerging redevelopment of the Niagara Street community.

Benefits of Complete Streets

Complete streets make economic sense.
A balanced transportation system that includes complete streets can bolster economic growth and stability by providing accessible and efficient connections between residences, schools, parks, public transportation, offices, and retail destinations.

Complete streets are good for air quality.
Poor air quality in our urban areas is linked to increases in asthma and other illnesses. If, however, each resident replaced one car trip with a bike ride or walking trip just once a month, it could potentially cut carbon dioxide (CO2) emissions by 3,734 tons per year.

Complete streets improve health.
Public health experts are encouraging active transportation including walking and cycling as a response to the obesity epidemic. Obesity is currently costing New York State $6.1 billion in direct and indirect medical expenses.

Complete streets improve safety.
Studies have shown that investment in pedestrian and bicycle facilities and appropriate traffic calming improve the safety of the transportation system for all users.

Complete streets improve quality of life.
Better conditions for bicycling, walking and transit use have mitigating benefits to the quality of life in cities and towns. The number of people using non-motorized or public transport can be a good indicator of a community’s livability: a factor that has a profound impact on attracting businesses and workers as well as tourists.

Complete streets create social capital.
Complete and connected streets offer alternatives to personal vehicles and increase opportunities for social contact with others. By providing appropriate bicycle, pedestrian, and transit facilities and amenities, communities can improve the social and economic connections between neighbors and other citizens that can strengthen relationships and contribute to a healthy sense of identity and place.

Source: Buffalo Complete Streets and Niagara Complete Streets Corridor
TRAVEL DEMAND MANAGEMENT (TDM)
Focus on Travel Choices and Options

• Statewide stakeholders groups defining path
• Plan underway for state and regional actions
  – regionally includes transit, rideshare, land use, jobs access, alternatives (bike/car share, etc)
  – strengths, especially in Buffalo-Niagara are ongoing efforts and collaboration
  – weaknesses are land use, sprawl, parking, institutional issues
  – recommended actions include increased coordination, incentives, funding innovations
• Locally, continued integration of items like carshare/bikeshare and transit nodes
• Integration and expansion of NY511 underway
FUTURE INITIATIVES

• Forecast future traffic on existing networks
• Test complete range of operational and ITS improvements
• Integrate Demand Management, Transportation Management Districts (TMDs) and NY511
• Formalize Performance Measures and Tracking
LINKING PLANNING & OPERATIONS

• Data Sharing
  – Real-Time Data Archived for Future Use
  – Multi-Jurisdictional Data is Shared

• Congestion Management Process Integration
  – Consider Operational Improvements as Solutions

• Performance Reporting
  – Effectiveness of Operations
  – Communication of Results

• Funding and Resource Sharing
• ITS Regional Architecture
• Integrated Corridor Management
Contact Information

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