Leveraging Federal Grants at the Regional Level

Athena Hutchins, P.E.
Niagara International Transportation Technology Coalition
June 2023
NITTEC Coalition

• Established in 1995 with a Federal Mobility Grant
• Multi-Agency Transportation Operations Coalition
   5 Policy Members, 9 General Members, 28 Affiliate Members
    ✓ Transportation Agencies
    ✓ Public Safety and Border Enforcement
    ✓ Emergency Services and Recovery
• Only Bi-national Coalition of its kind in U.S. / Canada
NITTEC Mission

To improve mobility, reliability and safety on the regional bi-national multimodal transportation network through information sharing and coordinated management of operations.
Regional Operation Functions

- Multi-agency Collaboration
- Traveler Information
- Border Traffic Management
- Emergency Management
- Incident Management
- Construction Coordination
- Traffic and Congestion Management
- Weather System Monitoring
- Special Event Planning and Management
- Transportation System Monitoring
- Performance Measures Reporting
Performance Measures

- Mobility
  - Travel Time Statistics by Corridor
  - Border Crossing Delay
- Incident Activity
- Traffic Operation Center Activity
- Website Statistics
- MYNITTEC Statistics
- Systems Reliability - ITS Elements
### Grants

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Strategic Highway Research Program Strategic Plan Update</td>
<td>$175,000</td>
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<tr>
<td></td>
<td>Regional Traffic Signals Strategic Plan</td>
<td></td>
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<tr>
<td>2014</td>
<td>Integrated Corridor Management Project – NYSERDA</td>
<td>$299,955</td>
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<tr>
<td>2015</td>
<td>Integrated Corridor Management Project – FHWA</td>
<td>$200,000</td>
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<tr>
<td>2016</td>
<td>Technology &amp; Innovative Deployment Implementation Assistance - Border Wait Technology</td>
<td>$100,000</td>
</tr>
<tr>
<td>2016</td>
<td>Advanced Transportation Congestion Management Technology Deployment (ATCMTD) Initiative</td>
<td>$7,813,256</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>$8,588,211</strong></td>
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</tbody>
</table>
Grant Administration

Administrative Host of NITTEC & GBNRTC
Manages Grant Applications, Agreements, & Awards
SHRP2

• Timeline
  • 2013 – State DOTs and larger MPOs will be identified and committed to applying the SHRP2 Organizing for Reliability Tools
  • 2014 – selected State DOTs and large MPOs will have their action plans developed
  • 2015 – a framework will be established that will lead to nationwide adoption
  • 2016 – selected State DOTs and Large MPOs will have completed their two year implementation of their action plans
Integrated Corridor Management (ICM) Project Overview

- ICM Objective: Optimize traffic operations by identifying effective traffic management strategies and incorporating new technologies
- Approach: Create a sophisticated regional model to test strategies under different conditions to determine best solutions
- **Green**: Microscopic Model (very detailed)
- **Grey**: Mesoscopic (less detailed)
The Issue

- Corridor operates in a very constrained geography
- Implications of border on corridor traffic
- Weather and traffic management
- Multijurisdictional configuration of facilities and management interface
- Multimodal aspects of travel in the corridor
- Corridor as designated emergency evacuation route
- Continued economic and population growth
- Rapidly emerging technologies
Scenarios Tested in Model

- **Typical Weekday AM/PM Peak Periods**
- **Crash Conditions**
  - Northbound
  - Southbound
- **Special Event / Game in PM peak**
- **Holiday Demand in PM peak**
- **Snow Event in AM peak**
What ICM Strategies were evaluated?

ICM strategies were evaluated for five different base conditions including weekday AM and PM peak commute periods, incident, holiday, snow and game day traffic conditions. Two packages of ICM strategies were evaluated that included Package A without arterial signal coordination and Package B with signal coordination.

ICM Strategies

- Dynamic Traveler Information
- Variable Speed Limits and Queue Warning
- Dynamic Lane Controls
- Freeway Incident Detection & Patrols
- Variable Toll Pricing
- Parking ITS
- Ramp Metering
- Arterial Signal Coordination
- Road Weather Information Systems and Plow Management System

What are the costs of ICM?

<table>
<thead>
<tr>
<th></th>
<th>Without Arterial Management</th>
<th>With Arterial Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Benefit</td>
<td>$4 million</td>
<td>$7 million</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$4.9 million</td>
<td>$5.1 million</td>
</tr>
<tr>
<td>Approximate Cost per Mile</td>
<td>$371,000</td>
<td>$384,000</td>
</tr>
<tr>
<td>Benefit/Cost Ratio</td>
<td>2.8</td>
<td>3.4</td>
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</table>

What are the next steps to deploy ICM Strategies?

1. Seek out funding opportunities such as grants for design and deployment
2. Detailed Design for specific locations and equipment
3. Explore Staged or Phased Deployment since it may be cost prohibitive to implement the whole system at one time
4. Provide a Performance Evaluation Program to evaluate effectiveness and make adjustments based on real-world conditions

Contact

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Lessons Learned

• Typical weekday AM and PM peak period conditions improved or benefited the most of the ICM deployment whereas other conditions had improvement but to a lesser degree
• Traveler information and freeway incident clearance were the two strategies that provided the most improvements in the system related to the ICM strategies deployed
• Emissions positively benefited from deployment of ICM but only by a small amount when monetized
• Arterial signal managed resulted in a large increase in the benefit-cost ratio
Next Steps

- Identify potential funding
- Detailed Design for specific locations and equipment
- Explore staged or phased deployment
- Provide Performance Evaluation Program to evaluate effectiveness
Smart City Challenge

- Source: U.S. Department of Transportation
- Notice of Funding Opportunity - December 2015
- First Round Applications Submitted - February 2016
- Ultimately Awarded to Columbus, OH
- ATCMTD Grant spun off from this
Advanced Transportation And Congestion Management Technologies Deployment Initiative (ATCMTD)
ATCMTD

- Source: U.S. Department of Transportation
- Notice of Funding Opportunity - March 2016
- Applications Submitted - June 2016
- $60 Million in Federal Funding available
- 5-10 awards of up to $12 million
- October 2016 - Notified selected for $7.8 Million
ATCMTD

The goal of the project is to enhance safety and mobility across the Region.

- Improve Border Crossing Performance and Travel Time
- Improve Commercial Vehicle Operations and Safety
- Expand Regional Smart Mobility
- Improve Incident Management
- Provide for Operational Integration with Member Agencies regarding Regional Smart Mobility
- Using Real-time and Forecasted Weather Information for Active Traffic Management Strategies
- Provide Travelers with Enhanced Real-Time Information
- Enhance Data Collection, Fusion, Distribution and Archiving

The goal of the project is to enhance safety and mobility across the Region.

- Balance multimodal demand at international border crossings through active demand management.
- Extend integrated corridor management functionality & advance the regional traffic model.
- Improving commercial vehicle operations through targeted traveler information.
Proposed Solution - AllRoads

• A systems integrator bridging the gap between existing systems
• Data Hub & Data Mart for automated real-time information exchange with external users
• Advanced Road Weather Information
• Powered by Parsons’ iNET product, with custom features for NITTEC’s needs
• Decision Support System build on a robust micro-/mesoscopic model
• Additional auxiliary field deployments to augment data collection and operations
# ATCMTD Project Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>2016</td>
<td>NITTEC Awarded $7.8 million from FHWA</td>
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<tr>
<td>2020</td>
<td>Project Planning Phase (Phase 1)</td>
</tr>
<tr>
<td>2021</td>
<td>RFP for Solution Development (Phase 2)</td>
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<tr>
<td>2022</td>
<td>Phase 2 Kick-Off</td>
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<tr>
<td>2022</td>
<td>Begin System Development</td>
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<tr>
<td>2023</td>
<td>System Testing</td>
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<tr>
<td>2023</td>
<td>Pilot Technology Development</td>
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<tr>
<td>2024</td>
<td>System Deployment</td>
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Challenges & Lessons Learned to Date

- Meeting the 50% Local Match
  - Struggled to find projects which qualified (could not be federally funded projects)
- Multiple years and 2 Request For Proposals (RFP) before consultant was chosen
- Second attempt began with a separate initial RFP for planning phase only
  - Resulted in a more well-defined RFP for the second phase – implementation
- Consultant for planning phase remained on project to assist NITTEC in project management and review of deliverables
  - This assistance has been invaluable given NITTEC’s limited resources
Thank You

Questions

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