PERFORMANCE-BASED PLANNING 2.0
RAISING THE BAR WITH SHRP-2
WEST VIRGINIA MPO CONFERENCE

SALEEM A. SALAMEH KY-OH-WVA (KYOVA) INTERSTATE PLANNING COMMISSION
ALLISON FLUITT KIMLEY-HORN AND ASSOCIATES
AGENDA

• Introduction
• Prioritization Process Review
• SHRP-2 Overview
• KYOVA Performance Measurement Tools
• Action Plan
• Closing Thoughts
• Acknowledgements
• Questions?
INTRODUCTION

Who is the KYOVA Interstate Planning Commission?
HUNTINGTON, WV-KY-OH URBANIZED AREA TRANSPORTATION MANAGEMENT AREA

- TMA designation in July 18, 2012
- TMA Population – 202,637 (urbanized)
- MSA Population ~ 365,000 (also includes 1 other county in WV)
- KYOVA Planning Boundary grew
- Now includes Boyd and Greenup counties in Kentucky and Putnam County in West Virginia
  - RIC, the MPO in Charleston is taking the lead in planning responsibilities for Putnam County
TMA REQUIREMENTS – WHAT’S BEEN DONE

- Congestion Management Process
  - Completed January 2013
- Integrated MTP
  - In progress
  - Expectations: strong emphasis on Freight Planning
  - Expected by Spring 2017
- Integrated TIP
  - Completed April 2015
- 5310/5307/5339/5340 Designated Recipient
- Integrated Travel Demand Model
- Certification Review – April 19-20, 2016
<table>
<thead>
<tr>
<th>Goal Area</th>
<th>National Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Reduce fatalities &amp; serious injuries on all public roads</td>
</tr>
<tr>
<td>Infrastructure condition</td>
<td>Maintain a state of good repair</td>
</tr>
<tr>
<td>Congestion reduction</td>
<td>Significantly reduce congestion on the NHS</td>
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<tr>
<td>System reliability</td>
<td>Improve the efficiency of the surface system</td>
</tr>
<tr>
<td>Freight movement &amp; economic vitality</td>
<td>Improve the national freight network, access of rural communities to markets, &amp; economic development</td>
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<tr>
<td>Environmental sustainability</td>
<td>Enhance system performance while protecting and enhancing the environment</td>
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<tr>
<td>Reduced project delivery delays</td>
<td>Accelerate project completion by eliminating delays in the project delivery process</td>
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PERFORMANCE MANAGEMENT WITH SHRP-2
WHAT IS SHRP-2?
(SECOND STRATEGIC HIGHWAY RESEARCH PROGRAM)

- Products developed from objective, credible research.
- Solutions that respond to transportation community challenges – safety, aging infrastructure, and congestion.
- Tested products, refined in the field.
- Focus on Safety, Renewal, Reliability, and Capacity

SHRP2 Solutions offer new technologies and processes to enhance the efficiency of transportation agencies.
### PERFORMANCE MEASUREMENT FRAMEWORK

**Topics and Factors Considered in the Framework:**

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Environment</th>
<th>Economic</th>
<th>Community</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>Ecosystems, Habitat, and Biodiversity</td>
<td>Economic Impact</td>
<td>Land Use</td>
<td>Cost</td>
</tr>
<tr>
<td>Reliability</td>
<td>Water Quality</td>
<td>Economic Development</td>
<td>Archeological and Cultural Resources</td>
<td>Cost-Effectiveness</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Wetlands</td>
<td></td>
<td>Social</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>Air Quality</td>
<td>Environmental Justice</td>
<td>Environmental Justice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Climate Change</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Environmental Health</td>
<td></td>
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</tbody>
</table>
**Actions Addressed at Each Stage:**

<table>
<thead>
<tr>
<th>Long-Range Planning</th>
<th>Programming</th>
<th>Corridor Planning</th>
<th>Environmental Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set goals and objectives.</td>
<td>Select projects for design.</td>
<td>Develop project concepts.</td>
<td>Develop, refine, and evaluate alternatives.</td>
</tr>
<tr>
<td>Understand high priority concerns.</td>
<td></td>
<td>Set corridor-specific objectives.</td>
<td>Identify localized impacts.</td>
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<tr>
<td>Assess system-level impacts.</td>
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PERFORMANCE MEASURES WORKSHOP

- FHWA-facilitated two day workshop
- Federal, state, regional, and local participants
- Understand the history and intent of SHRP-2.
- Understand and be able to practically apply the elements of *Performance Measures for Highway Capacity Decision-Making*.
- Participate in break-out group brainstorming to generate ideas on future “action steps.”
- Collectively decide upon the framework and components of an Action Plan.
- Collectively decide upon “next steps” for developing and implementing the Action Plan.
REGIONAL CHALLENGES

- TMA includes a neighboring MPO with separate planning and modeling tools
- KYOVA combined with a previously separate MPO and integrating planning and modeling practices
- Working with disparate data sources
  - Different levels of detail
  - Different attributes
  - Different state requirements
  - Different update schedules
REGIONAL OPPORTUNITIES

- Consistent approach over the tri-state area
- Opportunity to build synergy between agencies
- Application for new regional data and plans

*Maintainable by KYOVA and within available budget parameters*
PERFORMANCE MEASUREMENT TOOLS

- A Spatial Decision Support System (SDSS)
- A GIS-based system of relational databases, computational tools, and information sources used to
  - Store transportation system attribute and performance data
  - Perform technical analyses that identify/quantify congestion and assess the effectiveness of congestion reduction/mitigation strategies
  - Provide thematic maps and system performance reports for stakeholders and decision makers
WHAT IS A SPATIAL DECISION SUPPORT SYSTEM (SDSS)?

SDSS Characteristics

- Spatial Data Management
- Iterative Problem Solving
- Spatial Modeling
- Report Generation
- Visualization
- Scenario Evaluation
- Semi or ill-structured problem solving
- Easy to use, interactive user interface
FACILITATE CONGESTION MANAGEMENT PROCESS (CMP) REPORT
FIGURE GENERATION
DEVELOP A TOOLBOX TO FACILITATE WORKFLOW
TOOL #1: UPDATE MAP DATA

The "Update Map Data" tool is used to update data stored in the KYOVA SDSS geodatabase. There is an input for each dataset used in the map templates. Each input is optional which means that one dataset, a collection of datasets, or all datasets can be updated during each tool run. There are 23 inputs for this tool 1 of which is required, the rest are optional inputs. If the only required input is selected and the tool is executed, none of the datasets will be updated.
TOOL #2: IMPORT KYOVA MODEL LINKS

The "Import KYOVA Model Links" tool creates a copy of the model links shapefile. A unique identifier field is used to join the output text file from the model to the model links copy. The joined data are imported into the SDSS geodatabase as a single feature class. The text file is imported to the geodatabase as a table. There are seven required inputs to run this tool.
TOOL #3: EXPORT MXD TO JPEG

The "Export MXD To JPEG" tool takes an .mxd or a list of .mxd's and exports a map image as a .jpg. The map .jpg's are saved to a folder specified by the user.
TOOL #4: UPDATE MAP TEMPLATE AND EXPORT

The "Export LOS, VOL, CAP, TTI to JPEG" tool is used to export a specific map as a .jpg. An optional input is for an .mxd to be saved with the specified data. This tool will export a .jpg and a .mxd based on which template is chosen, time of day, and year. Model years include 2010, 2020, 2030, and 2040. Time of day can be chosen as AM, PM or Daily total. The output files will be saved in the folder designated by the user.
# HOW DOES KYOVA USE THE SDSS?

<table>
<thead>
<tr>
<th>MAP FIGURES</th>
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<tbody>
<tr>
<td>KYOVA Transportation Management Area Boundary</td>
<td>Volumes from Traffic Model Assignments</td>
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<td>CMP Network</td>
<td>Capacities from Traffic Model Assignments</td>
</tr>
<tr>
<td>Major River Crossings</td>
<td>V/C Ratios from Traffic Model Assignments</td>
</tr>
<tr>
<td>Fixed Route Transit Coverage</td>
<td>Levels of Service</td>
</tr>
<tr>
<td>Computed Crash Rates Compared to Statewide Average</td>
<td>Travel Time Indices</td>
</tr>
<tr>
<td>Congested Locations from Stakeholder Workshops</td>
<td>Planning Time Indices</td>
</tr>
<tr>
<td>Downtown Railroad Underpass/Viaduct Locations</td>
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PROGRAM-LEVEL GUIDING STATEMENTS

- Safety – Increase safety for all users.
- Infrastructure Condition – Maintain the existing transportation network in a state of good repair.
- Congestion – Manage and reduce roadway congestion where appropriate.
- Goods Movement – Facilitate timely and efficient movement of freight both within and through the region.
- Environmental Impacts – Reduce or mitigate negative environmental impacts.
- Multimodal Accommodations – Promote a multimodal travel environment.
- Economic Vitality and Livability – Influence positive economic impacts through enhancements in livability for residents, employers, and visitors.
ACTION PLAN STEPS

- Consider emerging federal and state performance measurement benchmarks
- Finalize program-level guiding statements
- Establish working groups to help define project-level performance measures
- Create a maintainable data strategy
- Revisit the action plan as milestones are achieved
CONTINUING APPLICATIONS

- Finalizing tri-state travel demand model
- Building on the regional SDSS
- Metropolitan Transportation Plan Update
- Transportation Improvement Program Update
- Monitoring the CMP
- Small area or multimodal studies
QUESTIONS?
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