Performance Management
An Optimized Investment Portfolio
Session Moderator

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Today

- Current State-of-the-Practice
- Rethinking Resource Allocation
- Performance-based Planning & Programming Framework
- Example Demonstration
- Discussion
Current State-of-the-Practice

- Oftentimes, allocations based on:
  - historical precedence or
  - formula-driven based on inventory size and % requests
- Typically for statewide programming:
  - Regions submit rank-ordered project list,
  - Central Office validates and use largely manual-driven processes to finalize project selection based on equity and funding eligibility
- Trends have shown:
  - States moving towards performance-based principles but focus more on reporting than predicting
  - Increased legislative pressure and demands for transparency
Rethinking Resource Allocation

- Links planning to programming
- Recognizes cross-asset impacts
- Flexible to support any criteria
- Accommodates management systems
- Supports target setting
Rethinking Resource Allocation

Identify agency goals and objectives – make it directional, make it specific
Identify agency goals and objectives – make it directional, make it specific

Select performance measures that align to goals and objectives
Rethinking Resource Allocation

1. Identify agency goals and objectives – make it directional, make it specific
2. Select performance measures that align to goals and objectives
3. Predict the performance impacts of proposed projects
Rethinking Resource Allocation

Goals
- Identify agency goals and objectives – make it directional, make it specific

Measures
- Select performance measures that align to goals and objectives

Projects
- Predict the performance impacts of proposed projects

Decision Science

Tradeoffs
- Optimize the project portfolio per agency preferences and constraints
Rethinking Resource Allocation

Goals
- Identify agency goals and objectives – make it directional, make it specific

Measures
- Select performance measures that align to goals and objectives

Projects
- Predict the performance impacts of proposed projects
- Optimize the project portfolio per agency preferences and constraints

Decision Science

Tradeoffs

Conduct scenario analysis to evaluate possible paths forward
Move beyond the siloes…

If there were one more dollar to spend, where should it go?

- Put project value above historic programmatic allocation
- Allow performance to drive project selection
- Select the next best project that optimizes resources while considering project schedules, dependencies, and constraints
- Make your case for increased funding flexibility
Applying the Framework

The agency’s Strategic Plan and/or LRTP can provide goals for project selection.

However, create a specific “decision goal” to ensure the decision problem is consistently understood across all stakeholders, e.g.,:

- Recommend freight projects using criteria collected in state freight plan development
- Develop TAMP using MAP-21 performance criteria to meet federally-mandated targets
- Develop 5- & 10-year capital program priorities using strategic plan goals and objectives
MAP-21 rulemaking identifies NHS measures; additional state and local measures and criteria should be included to round-out a performance-based process.
Applying the Framework

What is a project? And what will it buy us?

Agencies can leverage management systems with supplemental expert judgments to capture the true value of a project.

<table>
<thead>
<tr>
<th>Projects</th>
<th>Cost, $</th>
<th>Time, t (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair/Replacement</td>
<td></td>
<td></td>
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<tr>
<td>Performance Rating</td>
<td></td>
<td></td>
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<tr>
<td>Routine Maintenance Only</td>
<td></td>
<td></td>
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<tr>
<td>Preventive Maintenance Strategy</td>
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<tr>
<td>Repair Strategy</td>
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<tr>
<td>Good</td>
<td>Preservation</td>
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</tr>
<tr>
<td>Fair</td>
<td>Repair/Replacement</td>
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</tr>
<tr>
<td>Poor</td>
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<td></td>
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</tbody>
</table>
Applying the Framework

Decision Science

Multiple levels of decision making:

1) Within an investment area

Where do we start?

- Calculate project impacts across all performance areas
- Assign relative importance of performance metrics
- Compare dissimilar performance metrics on a level-playing field
- Score and prioritize projects
- Optimize project selection and evaluate tradeoffs
Applying the Framework

Multiple levels of decision making:
2) Across investment areas

Where do we start?
- Run management systems to establish performance vs. investment curves
- Use priorities to guide where to fall on each curve
- Optimal project sets depend on approximate budget by silo
Applying the Framework

Weight

- Elicits priorities through structured, repeatable, and collaborative pairwise comparative process
- Quantifies subjective opinions for various groupings of staff and facilitates stakeholder discussions
- Particularly helpful when dealing with multiple performance criteria
Applying the Framework

Scale

- Applies utility / value scaling to project attribute or impact
- Can accommodate data-driven or subjective ratings, as well as monetization on a normative 0 to 1 scale
- Supports varying risk tolerances and outcome preferences
- Highlights marginal rates of return
Applying the Framework

**Score**
Combine weights with project ratings to develop a prioritized list and view impacts of different stakeholder perspectives.
### Applying the Framework

**Optimize**

Maximize Portfolio Score subject to constraints

- Consider resource constraints by time period and category, performance targets, project dependencies, geographic equity, project readiness, and financing strategies

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Value</th>
<th>Funded</th>
<th>Requested</th>
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<tbody>
<tr>
<td>Interstate 80 Corridor Reconstruction</td>
<td>0.642</td>
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<td>Interstate 76 Managed Lanes</td>
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<td>9,000,000.00</td>
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<td>Interstate 70 Pavement Rehabilitation and</td>
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<td>Interstate 70 Safety Enhancements</td>
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</tr>
<tr>
<td>Interstate 80 ITS Deployment at Interchange</td>
<td>0.269</td>
<td>500,000.00</td>
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<td>Interstate 305 Median Barrier Construction</td>
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<td>Interstate 10 Bridge Replacement and Widening</td>
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<td>State Route 35 Roadway Widening and BI</td>
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<td>Construct Two-way Direct Connector between</td>
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<tr>
<td>State Route 50 Deck Replacement and Bridge</td>
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<tr>
<td>Construct Park and Ride Facility along River</td>
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</tbody>
</table>
Applying the Framework

Tradeoffs

- Understand policy implications:
  - **What if** I had to achieve these targets?
  - **What if** I invest more or less in a region?
  - **What if** I shift money from one category to another?
  - **What if** I was not mandated to fund this way?
  - **What if** my priorities change?
Overcoming Challenges

- Start with a program or sub-program. For example, apply the framework to support the STIP, TAMP, SLRTP, Freight Plan, Corridor Study, etc.
- Use the long-range or strategic plan as guiding goals and objectives, and drill down if/when appropriate.
- Incorporate asset management data at the project-level (most agencies have substantial bridge and pavement data).
- Build-in considerations for must-do and political “pet” projects, as well as any sub-area equity concerns.
- Track effectiveness of programs, learn, and improve.
Example Implementation Strategy

Headquarters Dashboard

Statewide performance targets

MPO 1
- unique weights

MPO 2
- unique weights

MPO 3
- unique weights

Standard performance metrics (pavement condition, bridge condition, etc.)
Demonstration
Thank You

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