Mn/DOT Highway Systems Operations Plan Update

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Why A Highway Systems Operations Plan?

- Responsible for the maintenance and operations on over 30,000 lane miles of highways
- Includes entire roadway infrastructure
- Maintenance activities influenced by numerous factors
  - Cost of raw materials
  - Traffic levels
  - Weather
  - Regulatory requirements
  - Customer expectations
The cost to maintain our transportation system is a reflection of several fundamental elements:

- Size of the system (and it’s growing)
- Number of services provided
- Level of service provided (performance measures)
- Services mandated or legally required
- Inflation
- Efficiencies achieved through technology or improved methods and/or materials
- Level of capital investment toward rehabilitation and/or replacements
• Risk Tolerance review not done on original HSOP

• Received increased funding in:
  – Pavement patching
  – Bridge preventative maintenance
  – Signal re-timing
  – FIRST coverage
  – Guardrail and cable median barrier repair
• Prioritized Maintenance and Operations
  – Legally Mandated Services
  – Snow and Ice Removal
  – Infrastructure Life-Cycle Optimization
  – Safety
  – Mobility
Highway Systems Operations Plan

- Snapshot of current performance and future performance based on funding limitations
- Framework for managing key maintenance and operations activities
- Major trends and key factors
- Identifies significant challenges and funding gaps
- Analyzes level of service changes and/or priorities based on different funding levels
Project Management Structure

• **Steering Team**
  – Overall direction on Plan policies
  – Final review

• **Project Management Team**
  – Provide consistency across maintenance areas
  – Monitor progress
  – Make recommendations to Steering Team

• **Work Teams**
  – Develop individual materials
Work Teams

• Clear Roads
• Safety and Guidance
• Roadsides
• Smooth Roads
• Structures
• Fleet and Facility Management
• Arterial and Facility Management
• Administration
• Supporting Infrastructure
Work Team Summaries

- Summaries of crucial tasks/activities performed
- Vision for future
- Coordination with State Plan and policies
- Analyze costs
  - Materials
  - Labor
  - Other obligations/mandates
- Develop budget and fiscal scenarios
Summary Format

• Introduction and Background
• Factors Affecting Capabilities
• Performance Measures
• Strategy Development/Policy Direction/Risk
• Financial Scenario Analysis
• Implementation Strategies
• Introduction and Background
  – Snow and ice control – most recognizable services
  – Highest priority maintenance service (customer surveys)
  – Variable costs/services based on weather events (year to year and region to region)
  – Average spending - $63M per year
Factors Affecting Capability

- Increasing costs (salt, plow trucks, labor)
- Staffing – flexible/temporary staff
- More miles/more complexity to the system
- ADA compliance
- Environmental sensitivity
• Performance measure – time to regain bare lane following the end of a storm
## Target Clearance Times for Snow and Ice Removal

<table>
<thead>
<tr>
<th>Road Classification</th>
<th>Target Clearance Time (Hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Commuter (SC)</td>
<td>0 to 3</td>
</tr>
<tr>
<td>Urban Commuter (UC)</td>
<td>2 to 5</td>
</tr>
<tr>
<td>Rural Commuter (RC)</td>
<td>4 to 9</td>
</tr>
<tr>
<td>Primary Collector (PR)</td>
<td>6 to 12</td>
</tr>
<tr>
<td>Secondary Collector (SE)</td>
<td>9 to 36</td>
</tr>
</tbody>
</table>
Work Team Example - Clear Roads

• Strategy Development/Policy Direction/ Risk
  – Maintenance Decision Support System (MDSS) and Automated Vehicle Location (AVL) – Provide real time data
  – Anti-Icing – reduce chemical use
  – Pre-wetting – Salt/Sand treated with salt brine
  – Underbody plows – Additional lane coverage
  – Snow plow staffing – Priority staffing
  – Snow and Ice Performance Measures – Higher demands, higher costs
Prioritizing our Investments (FY2012-FY2015)

• Each work team developed unconstrained needs (GAPS) using formalized procedures ("one pagers")
  – Previous years expenditures used to obtain % of future flat budget to assign to each work team
  – Performance measures and engineering determination used to determine needs
• Summarized needs and found they were overwhelming
• Needed to make trade-offs and prioritize
Risk Assessment

• Creation of vision
• Developed risk statements from previous budget and one pagers
• Forecasted probability of risk statement occurring over the next 4 years
• Evaluated each risk statement’s impact on the operations vision based on a guidance scale
  – Public perception, quality of life, system performance
Risk Assessment

- Prioritization - Score developed by likelihood of occurrence and impact
- Added budget or need (gap) requests to each risk statement
- Team felt comfortable accepting a level “1” risk for each statement – Little noticeable impact on the system
- The group challenged each risk statement gap one by one (touch exercise)
- If budgets over-managed risk (one well below level “1”) then an acceptable budget or need was developed to accept more risk (opposite was also true)
Next Steps

- Finalize Work Team Summaries
- Complete financial scenarios
- Assemble/aggregate overall budget and funding gap
- Summarize all performance measures and policy directions
- Present findings and recommendations to Project Management Team
Questions?