Methodology for Data-Driven Asset Management and Program Effectiveness Measurement

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A Data-Driven Investment Stewardship Approach...

✓ **Asset Management Goal:**

*Selecting transportation investments that provide the safest, most efficient, and best conditions that funding can provide.*
State Highway Rehabilitation (SHR)
Data-Driven Investment Stewardship

Meta-Manager Asset Management Tools

Ensure Prudent Use of Funding

- System Needs Analysis
- Program Effectiveness Measurement
- Funding Allocation
- Program Development

Meta-Manager
Meta-Manager
System Needs Analysis

Incorporates:
- 10 Year Analysis Period
- System Needs
- Constrained Budget
- Project Prioritization Theme

Provides:
- Estimates of system condition for a given budget
  - Before
  - 5 years
  - 10 years
Forecast Highway Performance And Needs

Develop A Program Of Projects

Build Those Projects

A Process Overview:

Policies, Goals, Priorities, and Budget Provide Guidance
Type Of Guidance?

- High Level Policies
  - *Conditions Requiring Road And Bridge Improvement*
  - *Improvement Philosophy*

- Long Term Goals
  - *Reduce Pavement, Bridge, Safety And Capacity Deficiencies*

- General Priorities
  - *System Condition And Safety Are Our Top Priorities*
After Guidance, What's Next?

Guidance

- System Inventory
- System Condition
- Traffic Volumes
- Crash Locations...

Forecast Highway Performance And Needs

Requires Data...
After Guidance, What's Next?

Guidance

Forecast
Highway
Performance
And Needs

...And Models...

- Pavement Management System
- Bridge Management System
- Safety Management System
- Congestion Management System
After Guidance, What’s Next?

Guidance

Forecast
Highway
Performance
And Needs

Meta-Manager “Meta” Management System
Meta-Manager Helps Answer Important Questions

✓ What Pavements And Bridges Need Improvement?

✓ When?

✓ How?

✓ Are There Safety Or Capacity Issues To Address?
System Needs Drive Resource Allocation

Biennial Budget

Backbone Rehab

NE Region

SW Region

NC Region

NW Region

SE Region
Select Projects to Fit Within Budget

System Need Exceeds Budget Level

Budget Level

System Needs ($)

Budget $
**Measure Results**

*(Program Effectiveness)*

**Compare Region Program to Model**

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<th>Needy</th>
<th>Not Needy</th>
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**Right Place?**

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<th>Under -</th>
<th>Over +</th>
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**Right Fix?**

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**Right Time?**

- Safety
- Pavement Condition
- Bridge Condition
- Congestion
Measure Results
(Program Effectiveness)

Right Place?

“NEED” LOCATION MEASURE

$278 M Region Program
$229 M Matched Need Location
82% of Program to Matched Need
### Measure Results

*(Program Effectiveness)*

- **Right Fix (Scope)?**

#### SCOPING MEASURE

for Programmed "Let" Projects Meeting Modeled "Need" Warrants

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<th>Miles</th>
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<tr>
<td><strong>Similar Scope</strong></td>
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<td><strong>Over Scoped</strong></td>
<td>$43M</td>
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- **$229 M Lets w/ Matching Need**
- **$151 M Similar Scope**
- **65%**
Measure Results
(Program Effectiveness)

Right Time?

TIMING MEASURE
for Programmed "Lets"

$229 M Programmed Lets
$143 M On Time
62%
Measure Results
(Program Effectiveness)

Right Place?

Right Fix (Scope)?

Right Time?

Lane-Mile Remaining Life Years

Model
Region Program

2351

IMPACT SUMMARY...
QUESTIONS