



APWA

Fall Conference

ASSET MANAGEMENT

11/19/15 2:45 PM Concurrent Session

Dave Solsrud – Minnesota Dept. Transportation
Asset Management Project Manager



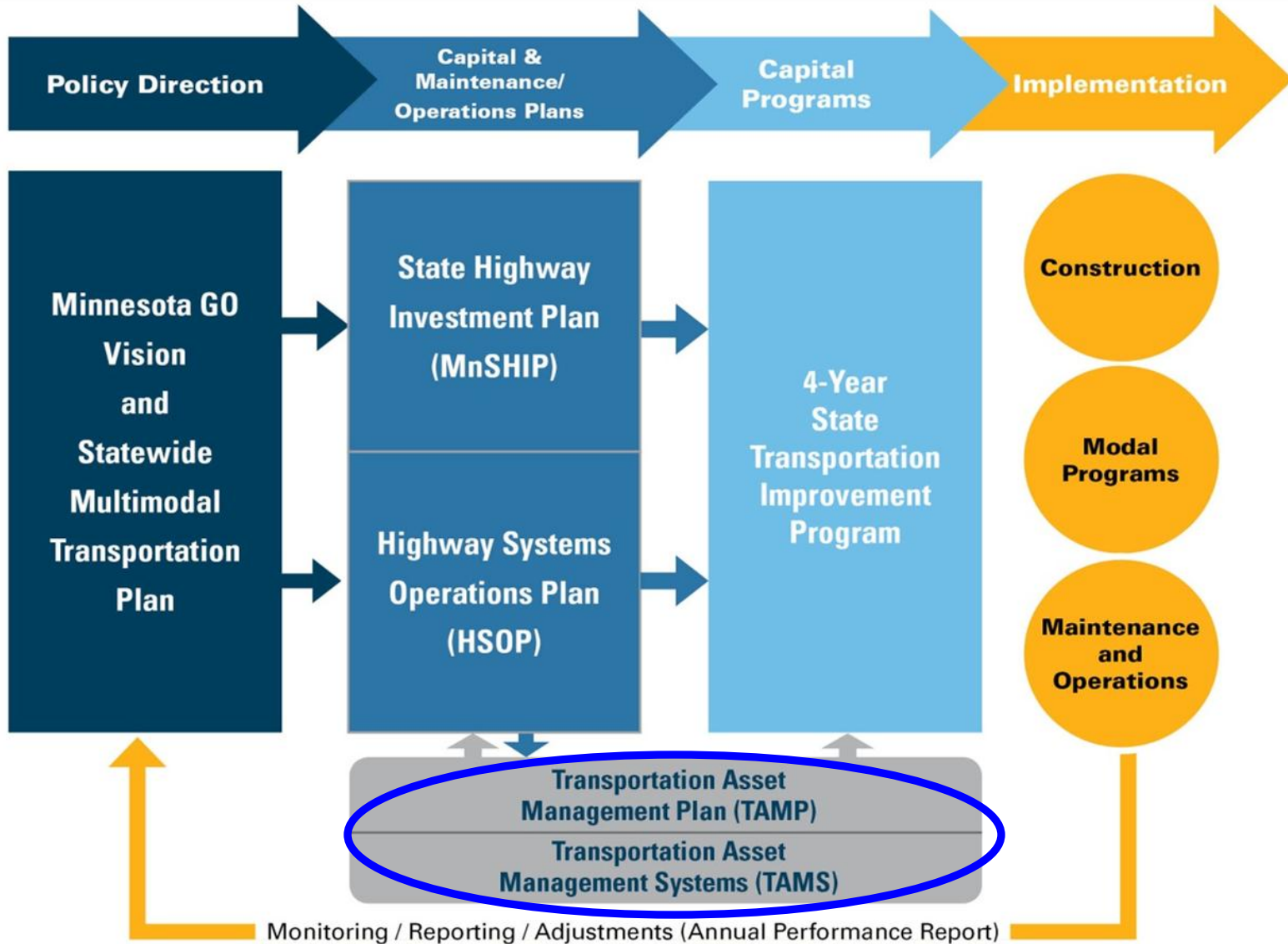
Asset Management – MnDOT

Topics for Today

- 1.Planning – TAMP, other plans
- 2.“Enhancing Financial Effectiveness”
- 3.Asset Management Technologies
- 4.Asset Management Leadership

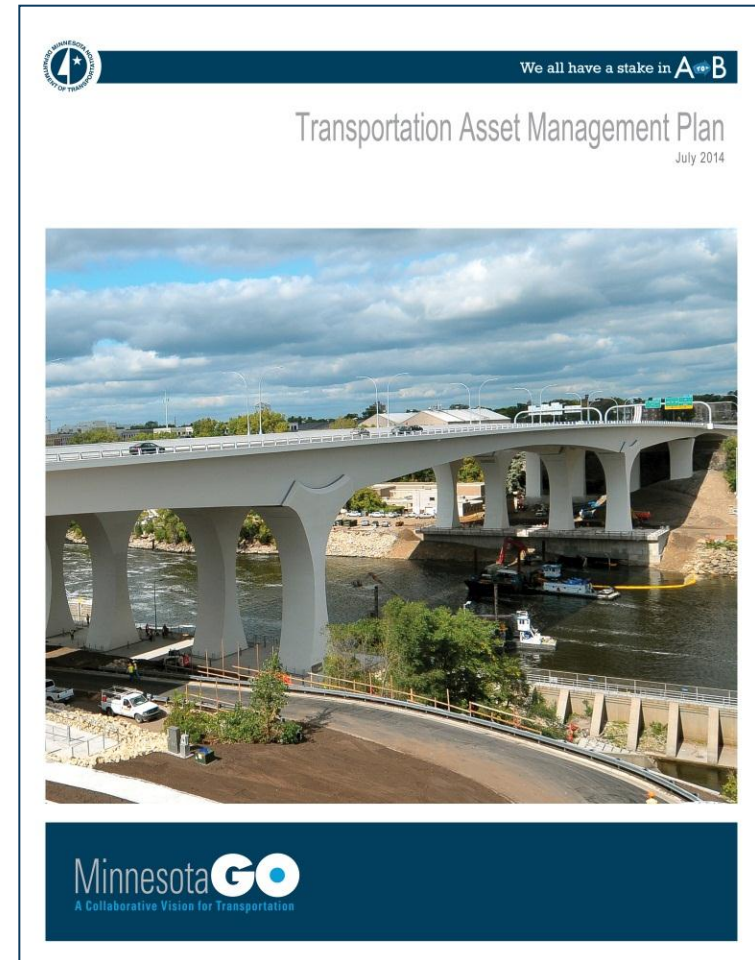


Planning Framework



TAMP Components

- Asset Inventory & Conditions
- Risk Analysis
- Life Cycle Cost Analysis
- Performance Measures & Targets
- Performance Gap Assessment
- Financial Plan & Investment Strategies
- Implementation & Next Steps



Assets Analyzed

TAMP1 (Draft July 2014)

- Pavements
- Bridges
- Highway Culverts
- Overhead Sign Structures/High-Mast Light Tower Structures
- Deep Stormwater Tunnels

TAMP2 (2016)

- Facilities
- Intelligent Transportation System Infrastructure



Life-Cycle Costs

Iceberg

Initial Capital Expenditures

Maintenance Costs

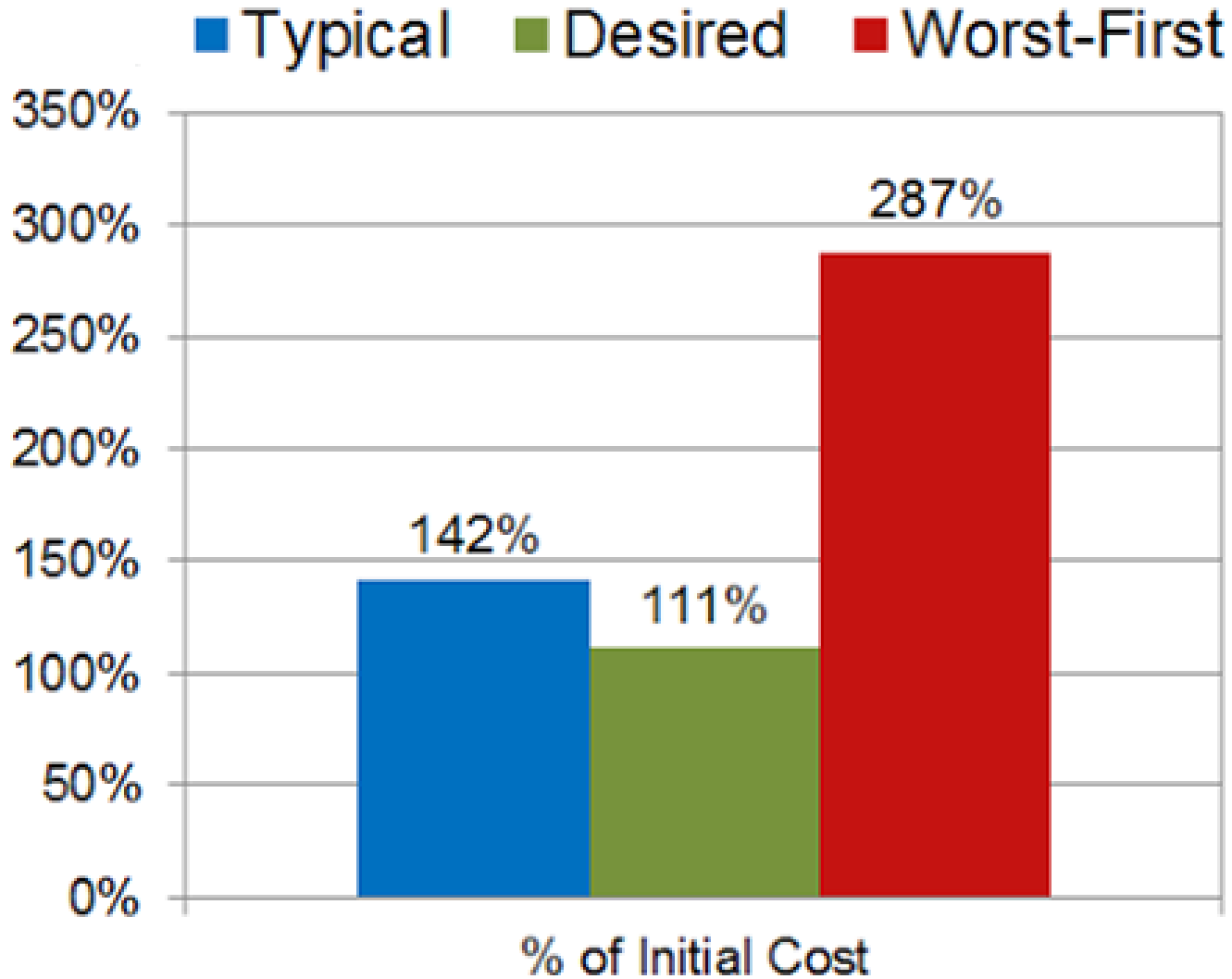
Future Capital Costs

Operational costs are not part of LCC, but are part of overall management \$

Background image: http://www.pvisoftware.com/blog/wp-content/uploads/2013/11/Pegasus_vertex_iceberg.png



Life-Cycle Analysis Pavements



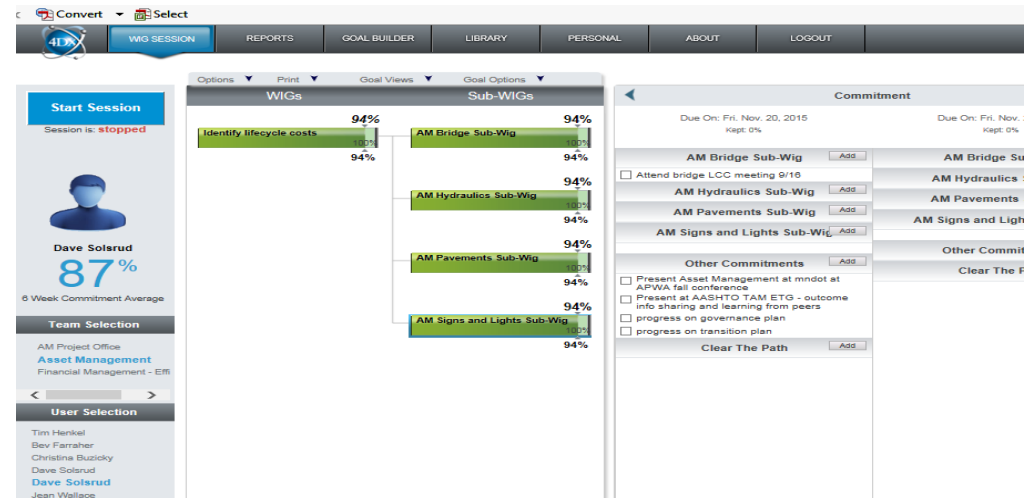
Performance Gap

| ASSET | CURRENT CONDITION | TARGET RECOMMENDATION | INVESTMENT |
|--|----------------------------|------------------------------|---|
| Pavement: Non-NHS | 7.5% Poor | ≤ 10% Poor | \$1.38 billion |
| Hydraulic Infrastructure: Highway Culverts | 10% Poor; 6% Very Poor | ≤ 8% Poor; ≤ 3% Very Poor | \$ 400 million |
| Hydraulic Infrastructure: Deep Stormwater Tunnels | 39% Poor; 14% Very Poor | ≤ 8% Poor; ≤ 3% Very Poor | \$ 35 million (condition) + \$1.6 million (inspection) |
| Other Traffic Structures: Overhead Sign Structures | 6% Poor; 8% Very Poor | ≤ 4% Poor; ≤ 2% Very Poor | \$8 million |
| Other Traffic Structures: High-Mast Light Tower Structures | 6% Poor; 15% Very Poor | TBD | TBD |



“Enhancing Financial Effectiveness”

- 4 Major MnDOT “Battles”
 - Project Management
 - Financial Management
 - Asset Management
 - Information and Outreach
- Covey “4 Disciplines of Execution”
 - Battles,
 - Whirlwind,
 - WIG,
 - Scorecard,
 - Lead/Lag Measures



“Asset Management Battle”

- Asset Management: “Understand Lifecycle Costs”
 - Beyond Capital Investments (Maintenance and Ops)
 - TAMP Used high level maint. cost averages
 - Goal was to determine discrete maintenance expenses directly related to infrastructure condition.
 - Numerous other uses of this type of data
 - TAMP Assets: Pavement, Bridge, Culvert, Overhead Sign Structures & Tower Lighting

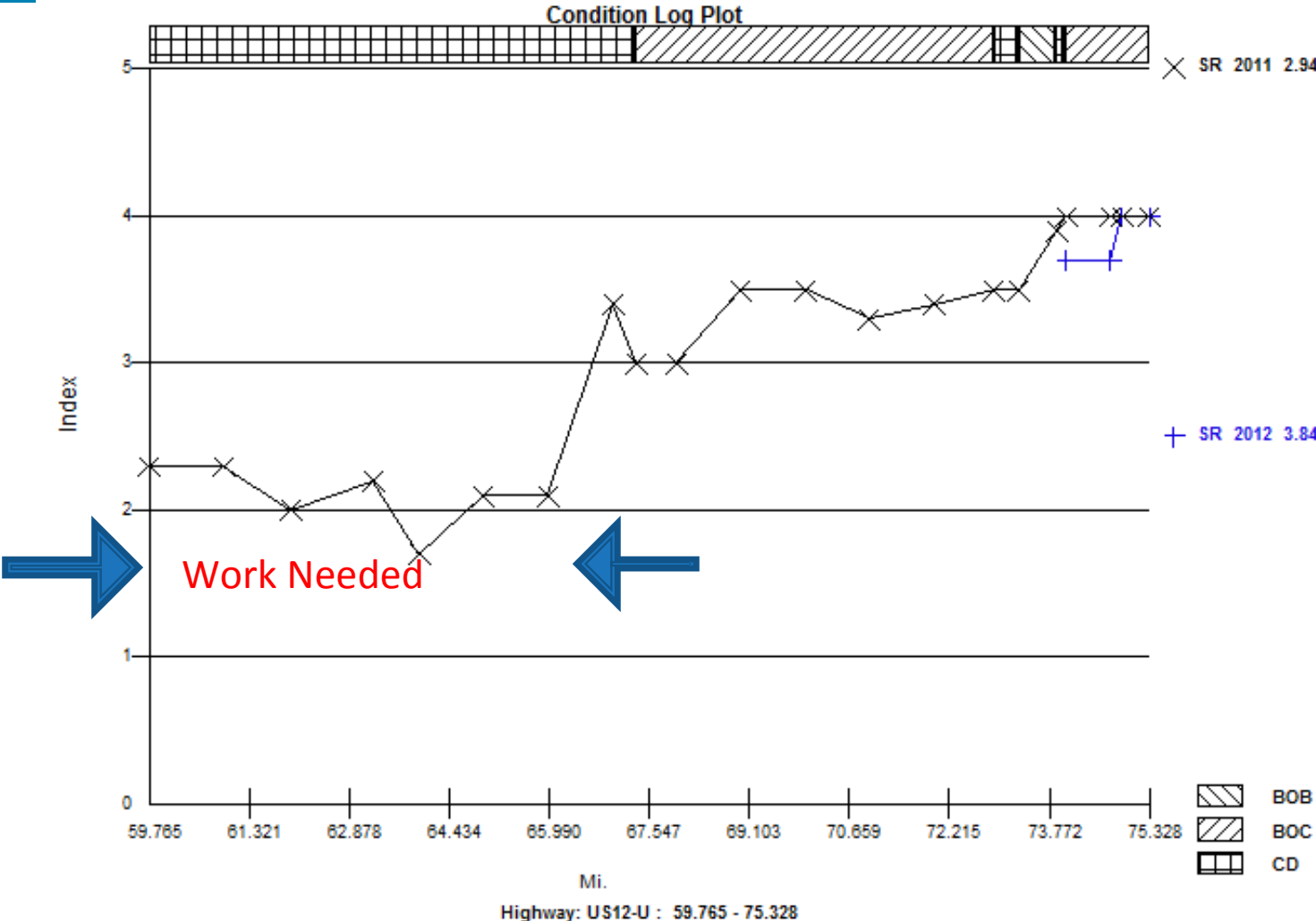


Pavement Example

- MnDOT generally records over 15 measures of pavement condition for each mile of roadway annually. (14,000 “M” records, HPMA system)
- Created business processes and technology to record Maintenance Expenditures (LEM) to the 1/10 mile.
- Used existing timesheet system
- Oracle BI “ETL” and report to attribute resources consumed to specific “M” records
- “Resource Demand Models”
- Can now analyze statistically: cost vs condition (next 2 slides)

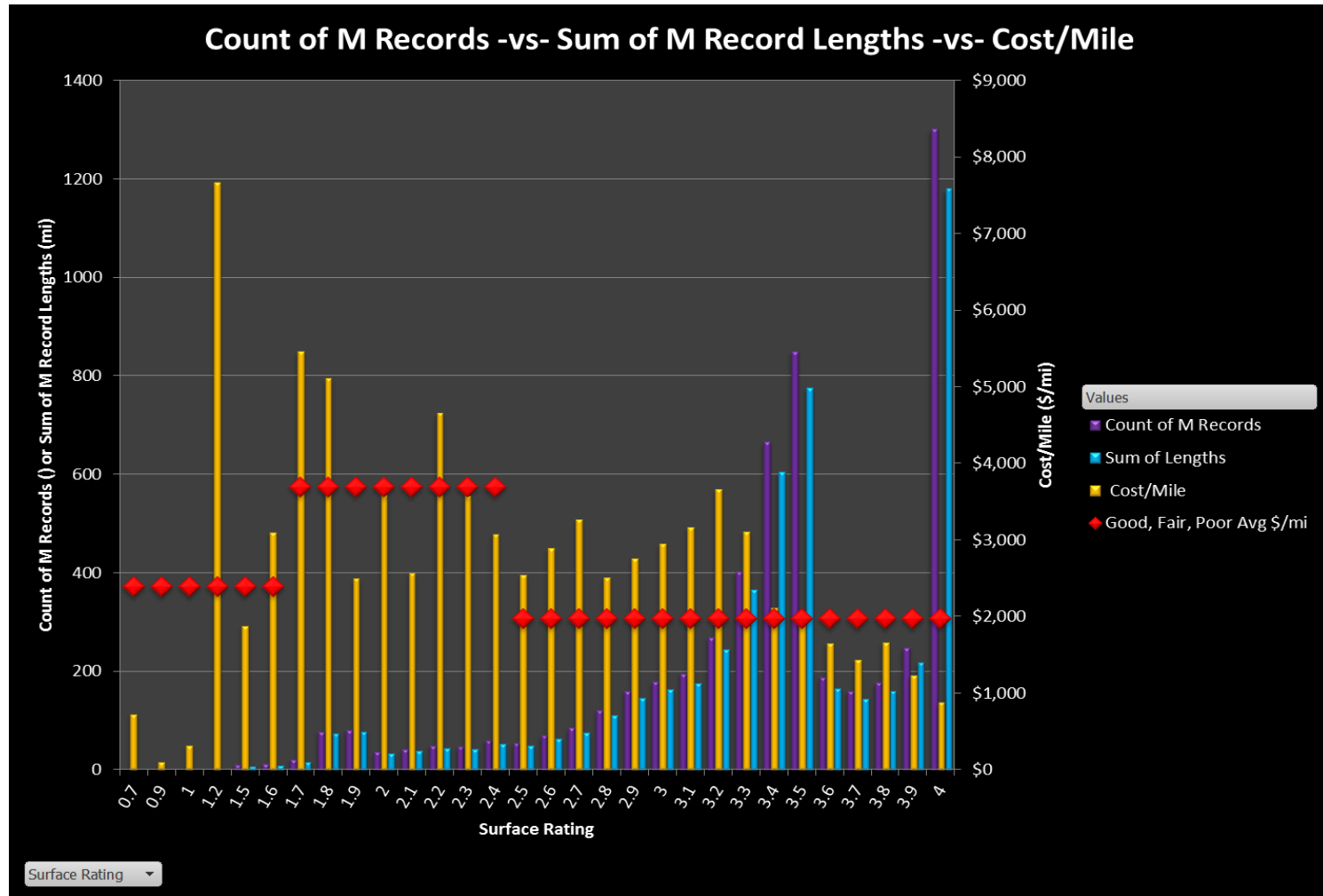


Pavement Condition Info

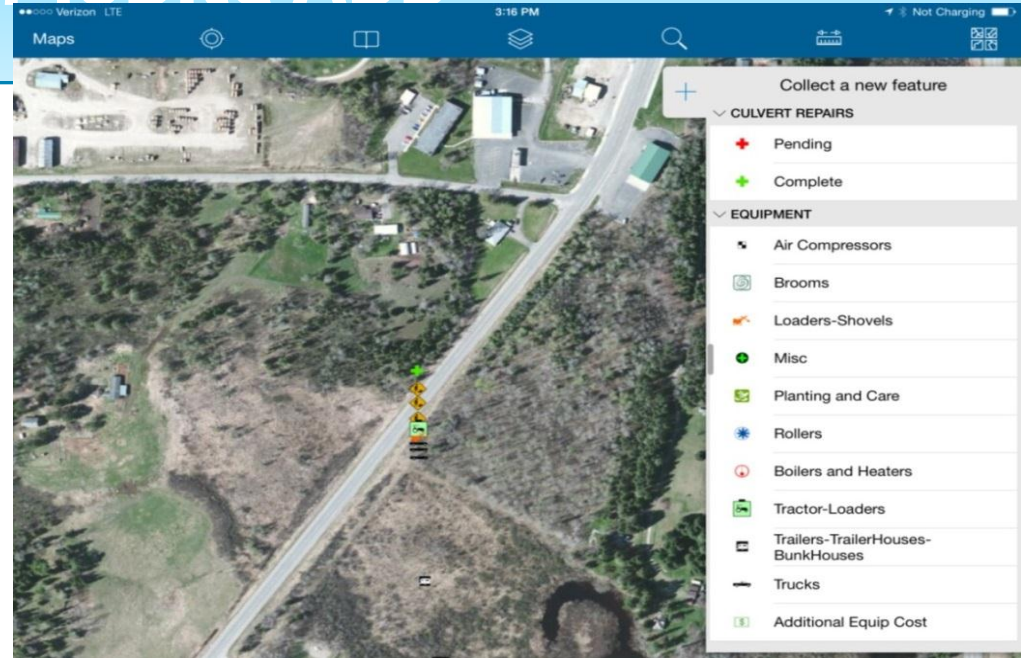


Pavement Data Modeling – Surface Rating

(sample data only)



Culvert Repairs are recorded onsite with Mobile App



Culvert Cost data
entered by Mobile App
is immediately available
in office or in the field



Uses of Data

- Life Cycle Cost Scenarios
 - Capital strategies = predicted cond. = Maint. \$'s
 - Best practices – economically analyzed, deterministic
- Capital Investment Scenarios
 - Predicted system condition, maintenance costs
 - Tradeoff efforts
- Budgeting by Products and Services
 - Needs driven
- Local Work Planning
 - Labor hours by Season/District



2050 Survey Observations

- High number of systems predictable
 - Asset specific functionality
 - Chronological iterations – advancing technology capabilities
 - High costs of technology
 - Justifying ROI to local governments
 - Broad range of assets – unique “set up” issues
 - Jurisdictional partnering?



Asset Management Systems

- MnDOT: AFMS, HPMA, SIMS, Pontis, Hydinfra, Signtrack, PALS, Culvert Cost, BI products, RCA, Access, Xcel, GIS, etc.
- MnDOT direction is **integration**:
 - Infrastructure inventory/Cond (house, push, pull)
 - Human resource (Sema4)
 - Equip, materials (M5, Peoplesoft)
 - Timesheets (RCA)
 - Links to data (plans, agreements, photo's, etc.)
 - Financial/Organizational coding (SWIFT)
 - User requests
 - Work plans



AgileAssets Project

- “AFMS” replacement
 - Contract executed June 2015
 - Traffic Signals, Lighting, ITS etc. infrastructure
 - Lays groundwork for future Asset Classes
 - Business processes
 - Integrations
 - Configurations
 - June 2016 go live
- Future Asset Class Implementations
 - Strategic Plan
 - Asset Management Project Team
 - Asset Management Steering Committee



Asset Management Leadership

- “Asset Management Steering Committee”
 - Asst. Commissioners as Champions: Henkel, Barnes, Daubenberger
 - Planning, Operations, FHWA Leaders: Wallace, Jabr, Nelson, Becker, Farragher, Falgren, Riesenber, Solsrud
 - Set AM priorities, direction, decisions, accountability



Asset Management Project Team

- Carry Out AMSC Initiatives:
 - TAMS planning, implementations, management, support
 - Tradeoff processes – MnSHIP
 - Workplanning processes, tools
 - Asset Owner/Specialty Office function
 - Data Quality Assurance
 - Analytical Services
- MAP-21 Federal Workplan, 80% Fed Funding



Asset Management Project Team

- Team:
 - AM Engineer – Trisha Stefanski
 - Business Process, Pavt. Expert – Tom Zimmerman
 - TAMS Application Coordinator – Wade Adams
 - Research Analyst – TBD
 - Construction Liaison/inspectors – TBD
 - IT Specialist embedded – TBD
 - Manager – Dave Solsrud





Thank You!

For further information contact

Dave Solsrud

Dave.solsrud@state.mn.us/ (320) 214-6428

Or visit

<http://www.dot.state.mn.us/assetmanagement>

