FHWA PM Rule Target Setting Process

MPO/RPA Quarterly Meeting

March 21, 2018

# Transportation Asset Management

Managing Iowa's Highway Infrastructure

# TAM Defined

Transportation asset management [TAM] is a strategic approach to managing transportation infrastructure. It embodies a philosophy that is comprehensive, proactive, and long term. The overall goals of asset management are to minimize long-term costs, extend the life of the transportation system, and improve the transportation system's performance.

- Iowa DOT Transportation Asset Management Plan, Nov 2016

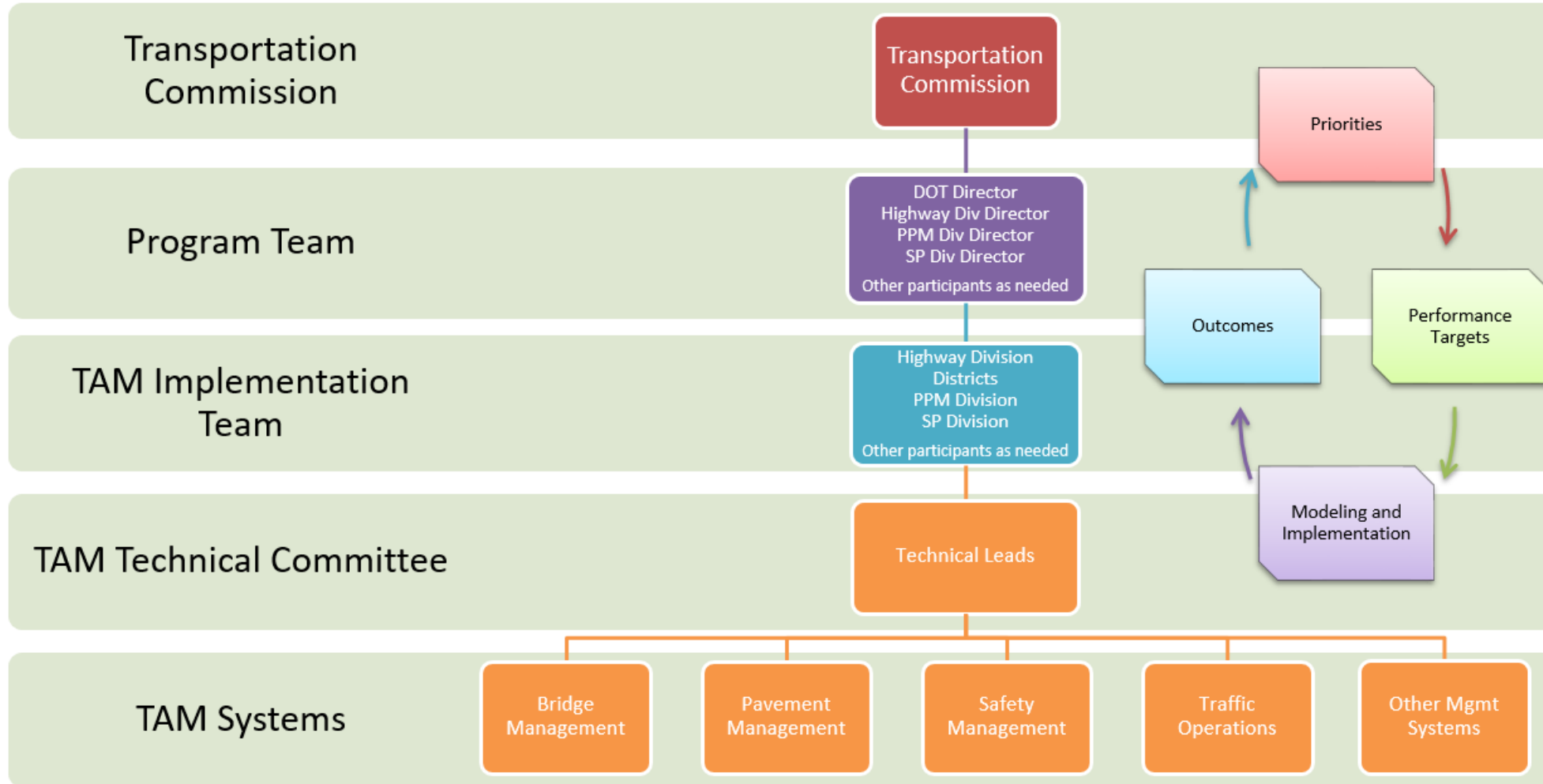# Where do TAM governance structures and processes fit in the big picture?
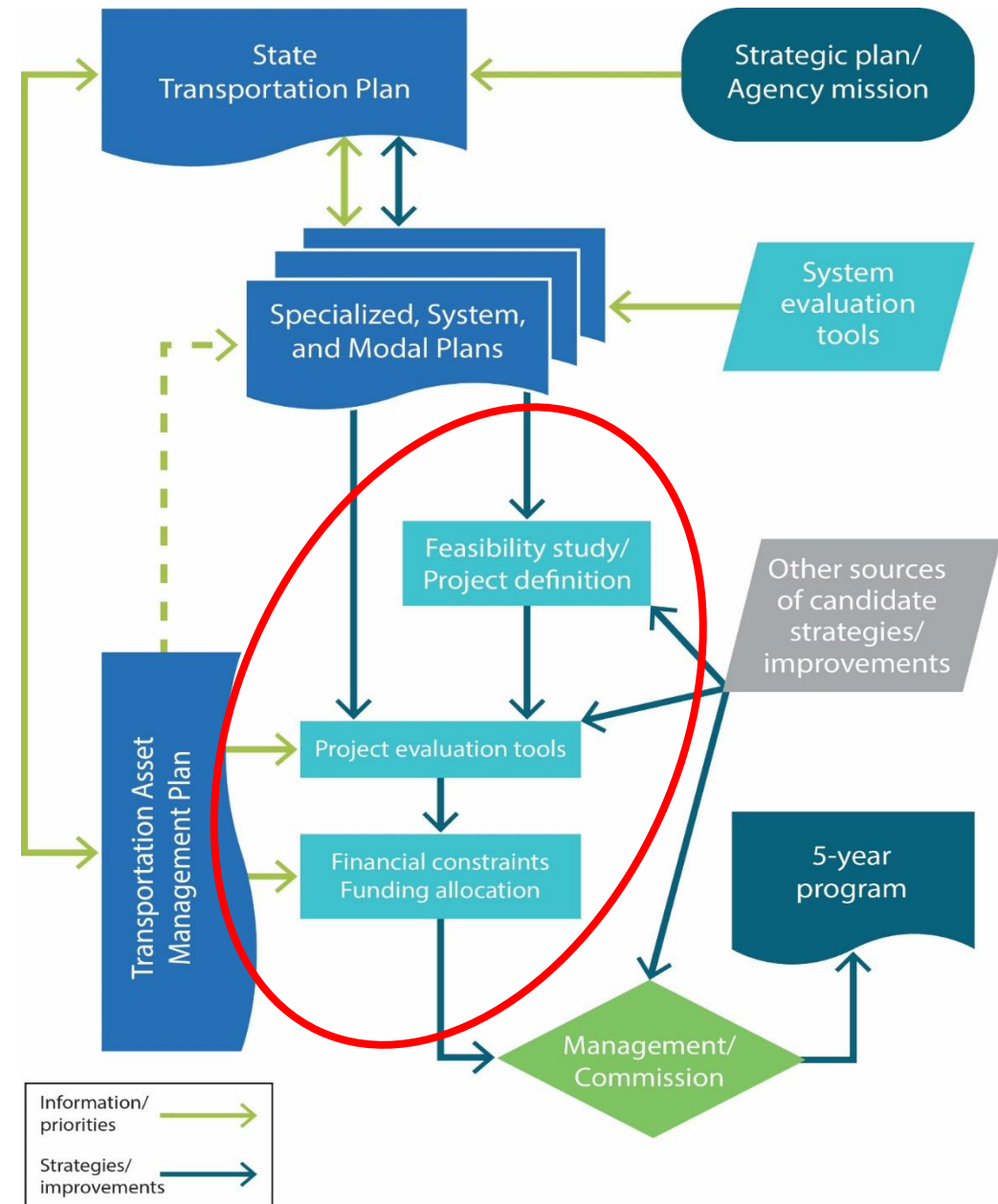
# TAM Principles

➢ **Asset management is policy driven.** Funding decisions reflect Iowa DOT's vision for how the transportation system should look in the future.

➢ **Asset management is performance based.** Iowa DOT understands the condition of its assets, defines performance targets, and makes decisions that support these targets.

➢ **Asset management involves making trade-offs.** Iowa DOT has options for how to allocate transportation funding. It evaluates these options and makes informed decisions regarding the best path forward.

➢ **Asset management relies on quality information.** Iowa DOT uses data and analytical tools to support its decisions.

➢ **Asset management requires transparency and accountability.** Iowa DOT documents how funding decisions are made. It monitors performance, tracks progress towards performance targets, and reports on results.

# Iowa DOT TAM Governance Structure



**Transportation Commission**
- Transportation Commission

**Program Team**
- DOT Director
- Highway Div Director
- PPM Div Director
- SP Div Director
- Other participants as needed

**TAM Implementation Team**
- Highway Division Districts
- PPM Division
- SP Division
- Other participants as needed

**TAM Technical Committee**
- Technical Leads

**TAM Systems**
- Bridge Management
- Pavement Management
- Safety Management
- Traffic Operations
- Other Mgmt Systems

Priorities → Performance Targets → Modeling and Implementation → Outcomes → Priorities

# TAM Plan Requirements

- Among other requirements, FHWA requires that the TAM Plan (TAMP) be integrated into transportation planning processes that leads to the 5-year program (and STIP)

- Must integrate performance targets set under 23 CFR 490, which includes a process for MPO coordination

- Penalties
  - Maximum Federal participation for NHPP drops to 65%
  - FHWA will not approve any further NHPP projects

# ITAM Group

- Forum for Cities, Counties, and DOT to discuss and coordinate asset management efforts

- Quarterly meetings

- Developing website with asset information

  - Inventory
  - Revenue & Investment
  - Condition

# Performance Targets

Update on Iowa DOT Target Setting Process for FHWA's PM Regulations

# Performance Measures

Three Performance Measure Rules (23 CFR 490)

1. PM1 - Safety

2. PM2 - NHS Pavement and Bridge Condition

3. PM3 - Performance of the NHS, Freight, and CMAQ* Measures

DOT required to establish targets for PM2 and PM3 by May 20th, 2018

MPOs then have 180 days to decide whether to support our targets or set their own

Time horizon: 1yr, 2yr and 4yr targets

* Since we don't have any non-attainment areas, the CMAQ measures don't apply to Iowa

# What is the NHS?

NHS = National Highway System

- MAP-21 redefined it to be based on Federal Functional Class

- Class "Other Principal Arterial" or greater is NHS

- Also includes "NHS Connectors" to significant freight/trip generators

- Total of 5,717 CL miles in Iowa (including Interstates), of which 96 miles are owned by LPAs

- Map: http://iowadot.maps.arcgis.com/apps/webappviewer/index.html?id=b0053294f195433da4411a4d83f3a4a6

# Risk-Based Target Setting Approach for 2018

## Develop prediction intervals, focus on probability of achieving targets

| Method A: Develop trend model based on available history | | Method B: Use available data to learn as much as we can about variability | |
|---|---|---|---|
| PM1 (Safety) | PM2 (Bridge) | PM2 (Pavement) | PM3 (System Performance & Freight) |
| Data from 1987 - 2017 / Selected 75% confidence | Data from 2004 – 2016 / Confidence level TBD | Data from 2014 – 2017 / Confidence level TBD | Data from 2017 / Confidence Level TBD |

# Example method A, trend model and prediction interval:
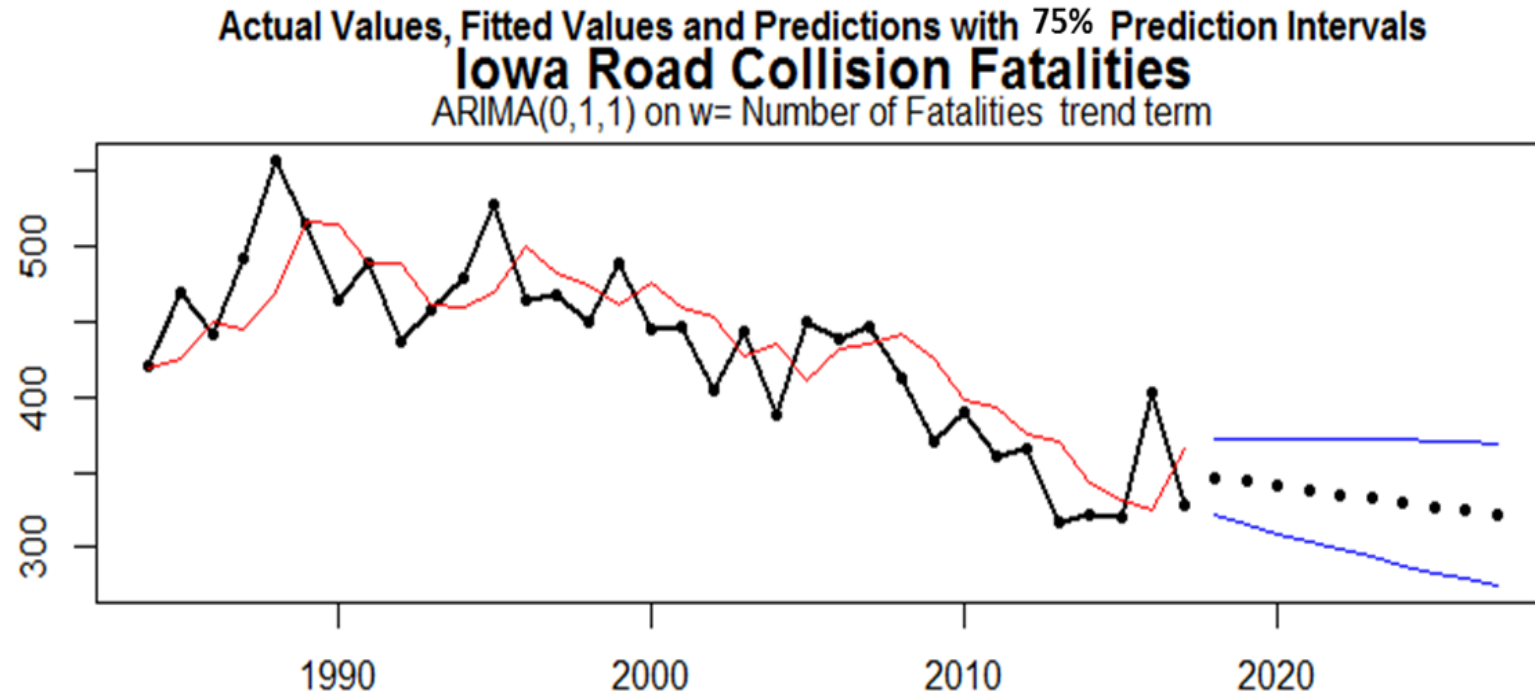


Actual Values, Fitted Values and Predictions with 75% Prediction Intervals
**Iowa Road Collision Fatalities**
ARIMA(0,1,1) on w= Number of Fatalities trend term

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# Example of method B, simulation model approach:
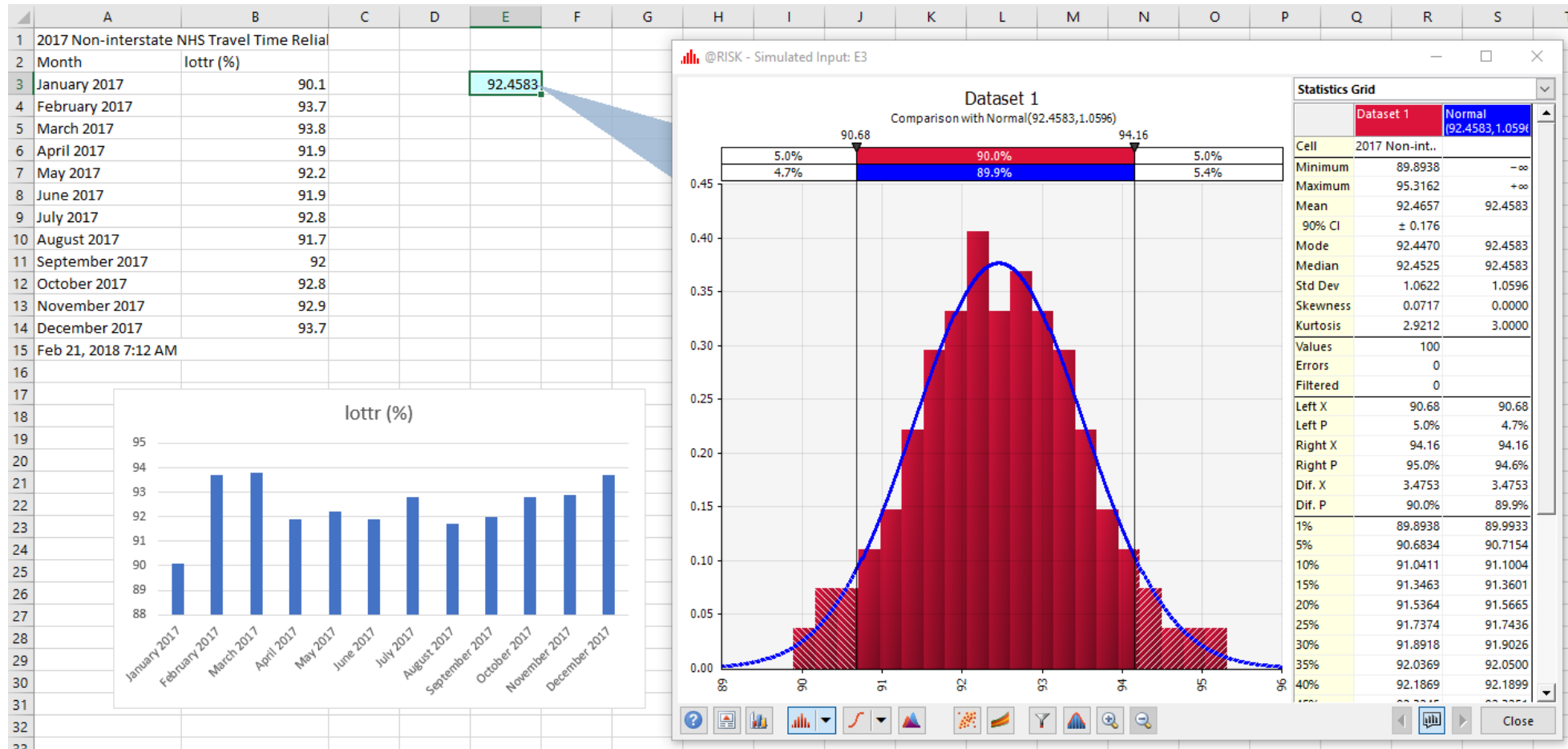
# Access to Data

Iowa DOT will provide access to data at the MPO-level to create your own trends and forecasts, or however MPOs choose to establish targets.

# NHS Routes for PM2 & PM3

The green lines represent routes owned by Iowa DOT, the red lines are NHS routes owned by LPAs, including NHS connectors.

Pavement condition data is being collected for all paved roads in Iowa and is available to LPAs and planning agencies through the Iowa Pavement Management Program (IPMP) at ISU's Institute for Transportation (InTrans). http://www.ctre.iastate.edu/ipmp/

Bridge condition data is available from Iowa DOT's Open Data Portal. http://public-iowadot.opendata.arcgis.com/
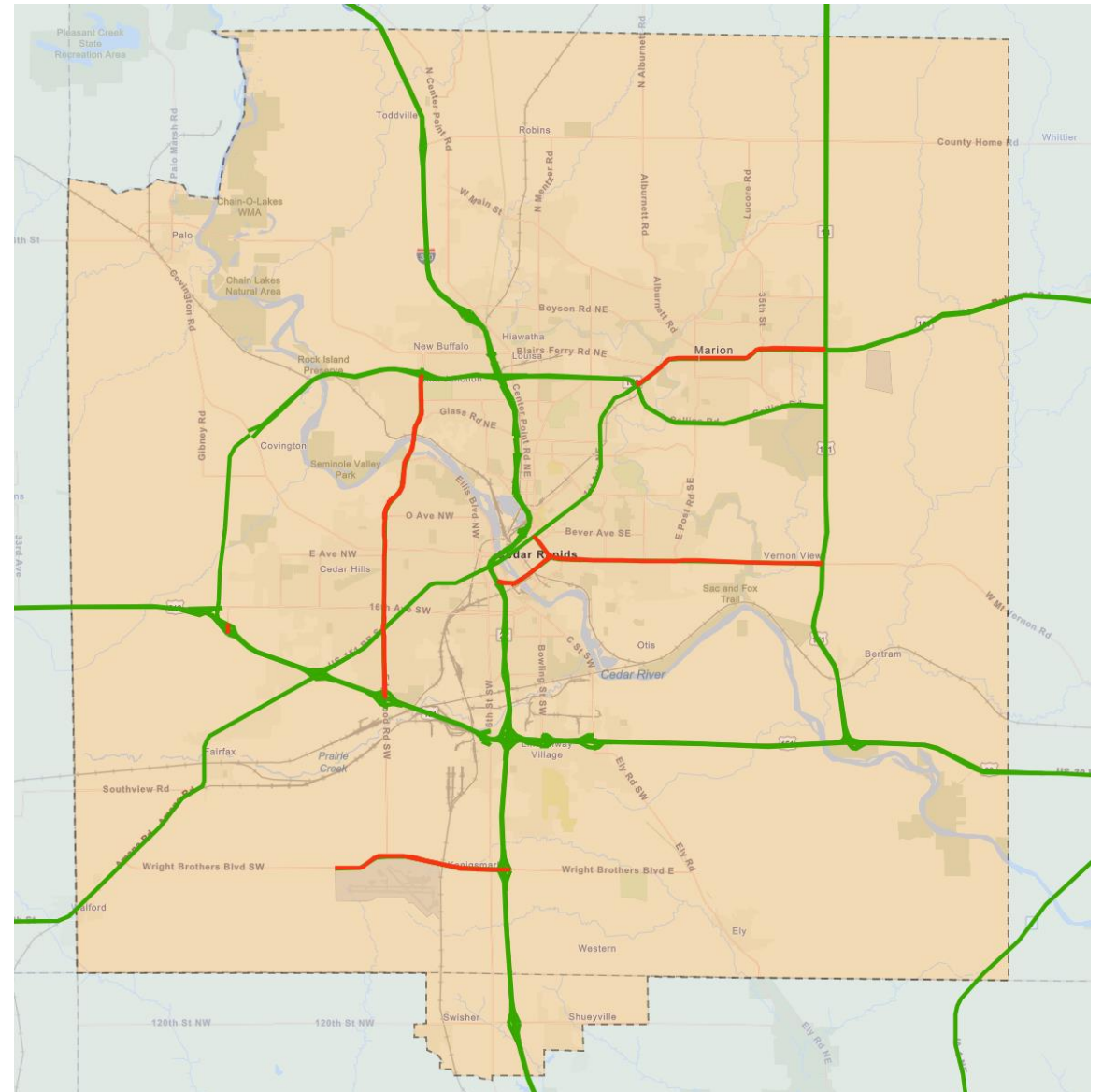
# System Performance and Freight

Use the RITIS NPMRDS website to access performance data for each MPO or statewide: https://npmrds.ritis.org/analytics

Can select target values and see performance over time or on a map

# Next Steps

- Complete development of models
- Prepare data for each MPO and, for pavement and bridge, LPA owner
- Use list of NHS owners to involve those LPAs
  - Solicit feedback/comment
- Review specific risk-based target recommendations with leadership, finalize targets
- Notify MPOs of our PM2 and PM3 targets on May 20th, 2018
- Report targets to FHWA on October 1st, 2018