



MAP-21 Performance Measures

ACPA perspective

NCC , Asheville, NC, September 24th, 2013

Leif Wathne

American Concrete Pavement Association

Talking Points

- What Congress wants...
- Industry efforts
- What is a good measure?
 - What about IRI?
 - What about RSL?
- Closing thoughts

What Congress Wants – MAP-21

Sec 1203, §150 DECLARATION OF POLICY.—

... provide a means to the most efficient investment of Federal transportation funds ..., and improving project decision making through performance based planning and programming.

(c) Establishment of Performance Measures

- (3) (A) (ii) ...establish measures for States to use to assess*
- (I) the condition of pavements on the interstate system*
 - (II) the condition of pavements on the NHS*

FHWA Efforts

MAP-21 Putting Performance into Action

Transportation Performance Management Process



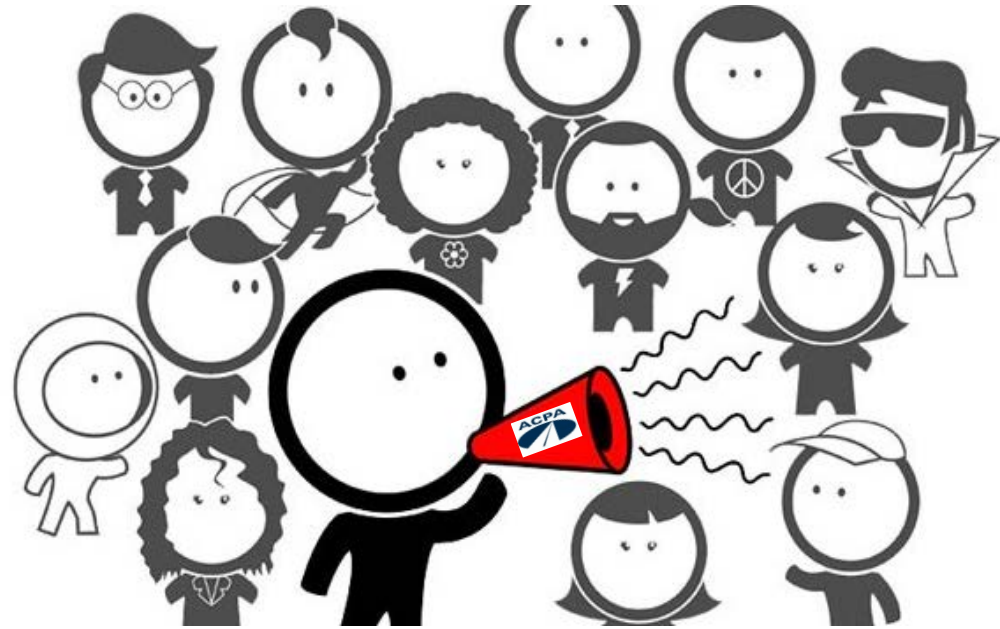
Moving Ahead for Progress in the 21st Century Act (MAP-21) creates a performance-based and multimodal program to strengthen the U.S. transportation system. By focusing on national goals, increasing accountability, and improving transparency, these changes will improve decision-making through better informed planning and programming.

The U.S. Department of Transportation (USDOT) is implementing the new MAP-21 performance requirements through nine rulemakings released in several phases.

- *Pavement Performance Measure Rule • Propose and define pavement condition measures, along with minimum condition standards, target establishment, progress assessment and reporting requirements.*

Concrete Pavement Industry Efforts

- Engage with FHWA
ETG formation?
 - Policy Office
 - Infrastructure
 - AASHTO JTCoP
- Dialogue with Congress
 - EPW and T&I staff briefing
 - Intent of pavement performance measure provision



Concrete Pavement Industry Efforts

- Established ACPA Performance Measure Task Force
 - Review ongoing efforts
 - Evaluate options
 - Make recommendations – ONGOING...
- Input to the USDOT Draft Strategic Plan
 - Perspective on performance measure



MAP21 Pavement Performance Measure

WHAT IS A GOOD MEASURE?

AASHTO's Recommendations

- AASHTO SCOPM Task Force on Performance Measures
 - Interstate rating of **good, fair** and **poor** based on **IRI**
 - NHS rating of **good, fair** and **poor** based on **IRI**
 - Pavement Structural Health Index based on rutting, faulting and cracking (over next several years)

IRI as a Performance Measure – Why?

- Ready for implementation
 - Applicable for both asphalt and concrete
 - Already being collected
 - Can be collected with single piece of equipment
- ...but, IRI does not account for the “structural” condition of the pavement, so a Structural Health Index must be developed.



IRI as a Performance Measure – Challenges

- IRI only gives point-in-time measure
- IRI only addresses the functional component, so is not comprehensive
- IRI is a delayed performance indicator – by the time IRI is unacceptable, rehabilitation should have been performed!

What about Remaining Service Life?

- Remaining Service Life (RSL) defines **how long the public will be able to use the pavement segment.**
- While use of IRI, faulting and cracking can be important to the performance measure process, the use of **RSL** can enhance this pavement condition data by demonstrating the time until rehabilitation is necessary.
Seems like a good candidate...

Remaining Service Life

- Pavement Health Track (PHT) tool (FHWA, 2010)
Remaining Service Life Forecasting Tool
<http://www.fhwa.dot.gov/pavement/healthtrack/>
- KEY: Monitor Condition – Forecast the Future.
- RSL – main performance Indicator

Pavement Health Track (PHT) RSL Forecasting Models

Technical Information

Federal Highway Administration
Office of Asset Management



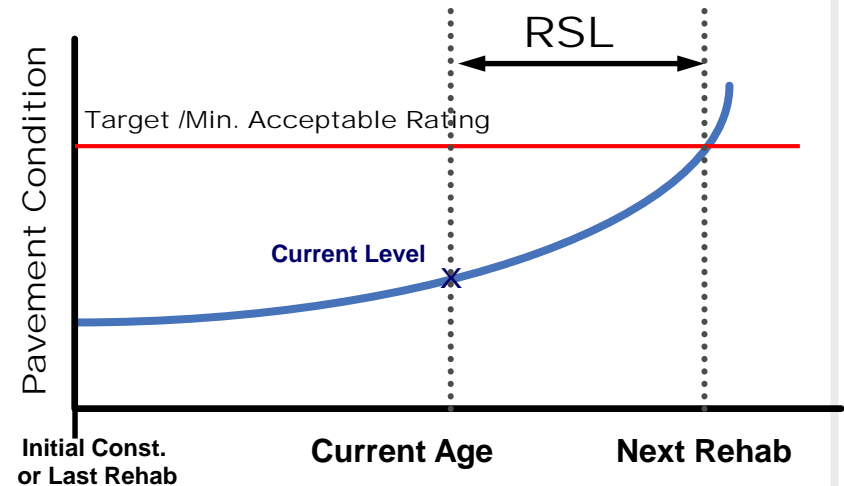
U.S. Department of Transportation – Federal Highway Administration

May 2010

Remaining Service Life?

Remaining Service Life (RSL) is the number of years before rehabilitation is required for any given pavement section.

- A RSL=10 means that it is 10 years to next rehabilitation for that segment
- RSL of a new pavement is equal to the pavement design life
- A pavement with a condition worse than the target has an RSL = 0



- What is the current condition of my pavement network?
- How does the current condition compare to the required level of service/performance?
- Which individual pavement sections are critical to sustained performance?
- What are my best "operations and maintenance" and "capital improvement" investment strategies to ensure sustained performance over the short to medium time horizon?
- What is my best long-term funding strategy to ensure sustained performance?

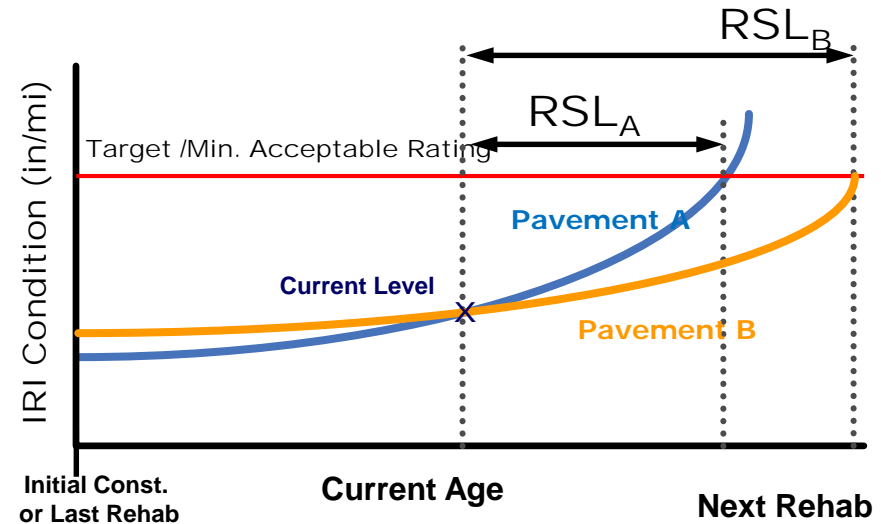
RSL – NOT a substitute for condition measure

Pavement distress data is not universal or standardized

- RSL converts performance measure into an operational measure that tells how well the pavement is serving the public.
- RSL can take into account both Ride (IRI) and Structural Condition
- RSL is “Flexible” and allows State DOT’s to use their current data and lets them set Individual Condition Targets

Accounts for Changing Conditions

- Two pavement sections having the same condition (IRI) are not necessarily equal
 - They will require different management strategies
 - RSL takes into account “rate of deterioration”
- Keeps agencies from doing “band aid approaches” just to improve the condition



How do you determine segment RSL?

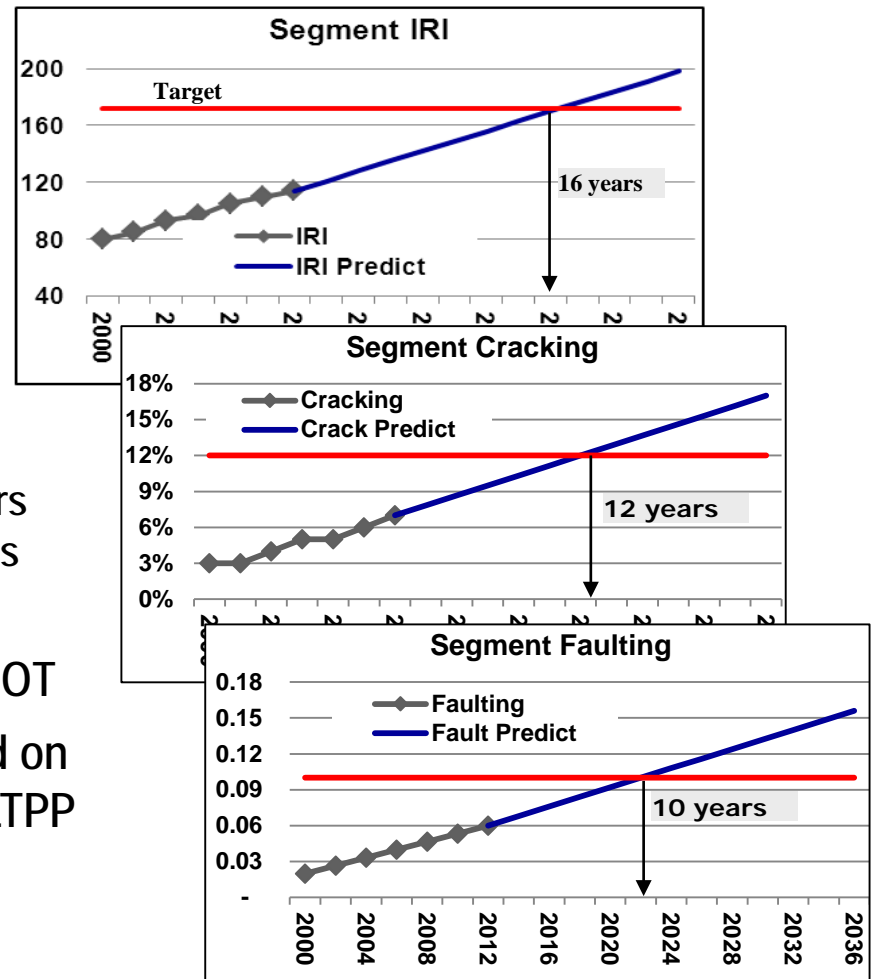
Use Current Conditional & Performance Data

RSL builds on each DOT's "condition" measures already being used

- For each roadway segment, DOT determines "Time to Next Rehabilitation" for each distress
 - Time to next rehab (IRI) = 16 yrs
 - Time to next rehab (cracking) = 12yrs
 - Time to next rehab (faulting) = 10 yrs

Distress targets are set by each state DOT

- Performance predictions are based on modeling (Pavement-ME models, LTPP Models, FHWA PHT, state models, straight line predictions, etc.)

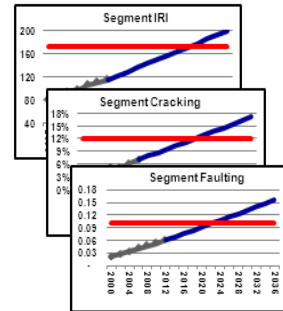
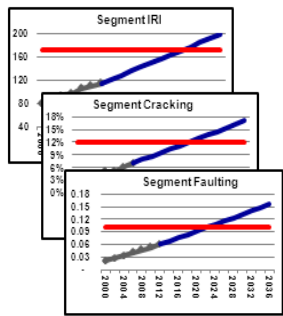


Segment RSL = 10 years

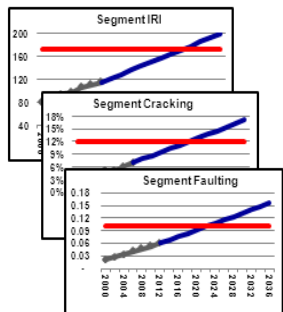
For each Roadway Segment, RSL converts "Performance Data" to "Operational Information"



Combine data into Network RSL

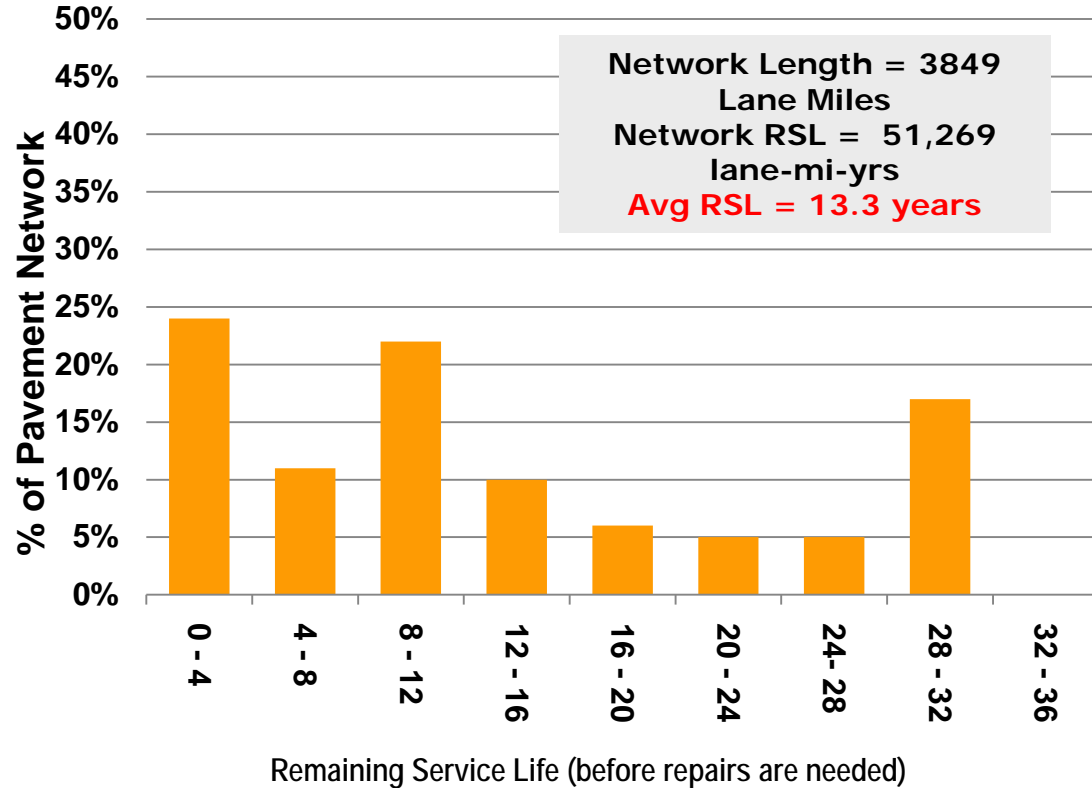


⋮



Represents average time between rehab for any given section

2012 RSL (Lane-mile-years)



Benefits of Increased Network RSL

- Higher RSL networks deliver more value than lower RSL networks...
 - Increasing RSL means average years of service for network is increased
 - This reduces network's annual cost, as there are fewer pavements to rehabilitate each year.
- Objective: *Select activities that increase RSL for the lowest cost (RSL x \$)*

RSL as a Pavement Performance Measure

- RSL adds a time element to the traditional performance measures - can distinguish between pavements of same condition but different worth
- Intuitive measure – (18 is better than 11)
- It is a multi-condition measure – based on existing state data
- No need to develop universal distress data
- Can be used to determine best investment strategies and projections
- Is applicable to other performance provisions in MAP-21 as well...



Thank you!

- Thank you to the ACPA Performance Measure Task Force – especially **Jim Mack**
- ACPA Celebrating 50 years... would love to see you in Puerto Rico!
 - December 4-6, 2013
 - Rio Mar Resort



Comments - Questions?



www.acpa.org

apps.acpa.org | **ACPA Application Library**

local.acpa.org | **ACPA-affiliated Chapter/States**

resources.acpa.org | **Concrete Pavement Resource Center**

wikipave.org | **ACPA's paving wiki**