



MAP-21 Panel Discussion

for:

**Rocky Mountain West Pavement Preservation
Partnership (RMWPPP)**

October 9, 2013

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IRI

- Do we collect it? – Yes
- Do we use it as a trigger? – Rarely
- Do we spec it on paving? - Frequently
- Is it an ODOT performance measure? – No, waiting for rulemaking
- If HPMS data is used, we can meet the data need
- Support IRI for:
 - Interstates
 - High speed rural routes
- Do not support for:
 - Urban facilities
 - Low speed routes
 - Off system routes not already collected



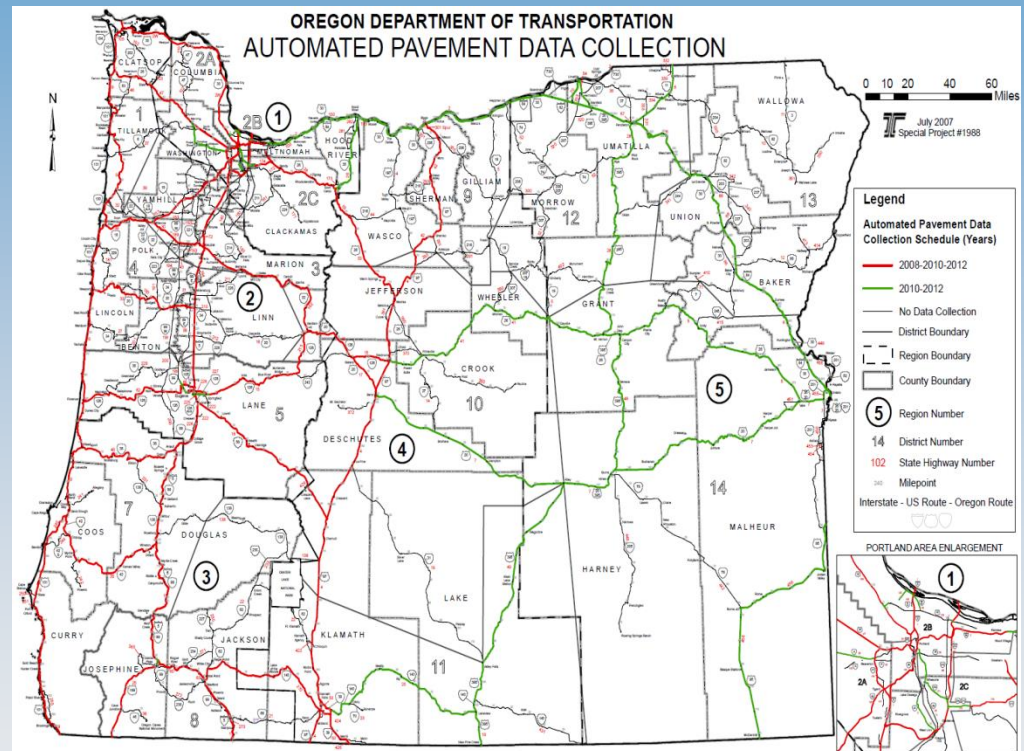
Pavement Condition Measure

Windshield survey

- Started in 1976
- (1=Very Good, 5= Very Poor)
- Use for:
 - Low Volume highways
 - Non-Interstates as QA backup

Distress survey

- Started in 1993
- (0=Failed, 100=Perfect)
- Use for:
 - Interstate
 - NHS highways
 - High Volume Non-NHS



- Structural distress (cracking, patching & rutting) have the biggest impact



Overall Condition Index

- 0 to 100 scale
 - Lower of Cracking or Rutting
 - Each 0.1 mile, whichever is lower sets overall condition



Pavement Performance Measure



ODOT Performance Dashboard

Print

- Safety
- Mobility/Economy
- Preservation**
- Sustainability
- Stewardship



Better →

PRESERVATION

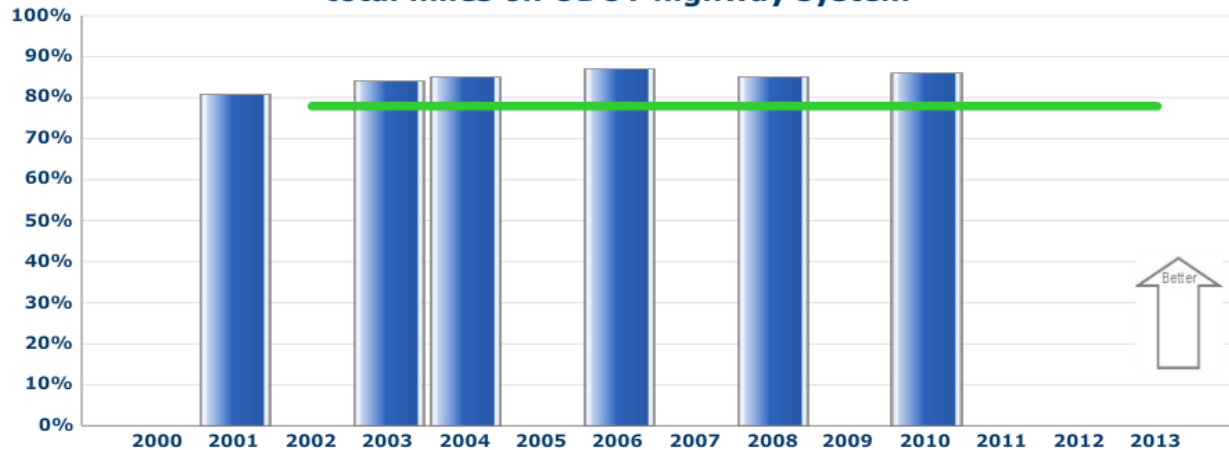
Pavement Condition

Bridge Condition

Preserving and maintaining transportation infrastructure.

Pavement Condition

Percent of pavement miles rated "fair" or better out of total miles on ODOT highway system



Year	00	01	02	03	04	05	06	07	08	09	10	11	12	13
Actual (Bar)		81%		84%	85%		87%		85%		86%			
Target (Line)	-	-	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%

How is ODOT doing?

Progress?

Yes



The last few years pavement condition has exceeded the target. However, reduced funding and increased pavement wear will cause pavement conditions to drop below target in a few years. ODOT's pavement programs resurface less than one-half the need and higher cost projects can't be completed with available funds. To offset declining conditions, the Department is constructing thin preventive maintenance treatments and has implemented a "1R" paving program to optimize investment in pavement surfacing.

For more info:

[Measure Details](#)

[One Page Overview](#)



Tiered Approach

- 78% Overall Target equals:
 - Interstate – 90%
 - Primary State Routes – 85%
 - Regional Routes – 80%
 - Low Volume Secondary – 70%



Pavement Programs

Facility	Lane Miles	Pavement Programs (2015-2018 avg. \$/yr)	Equiv. Annual Funding per Lane Mile (\$/LM/yr)	Expectations (LM/yr)	Approx. Resurface Cycle
Interstate	3,130	STIP - \$47M/yr <ul style="list-style-type: none"> • 40-70% single lift paving (1R) • 30-60% structural paving (3R) MIM - \$3M/yr <ul style="list-style-type: none"> • single lane inlays • intermittent patching • fog seals 	\$16,000	Paving - 215 LM/yr	15 yrs
Non Interstate High Volume*	7,510	STIP (Federal) - \$54M/yr <ul style="list-style-type: none"> • \$29M single lift paving (1R) • \$20M structural paving (3R) • \$5M chip seals 	\$7,200	Paving - 220 LM/yr Chip Seals - 170 LM/yr	34 yrs 8 yrs
Non Interstate Low Volume*	7,530	LVR (State) - \$13M/yr <ul style="list-style-type: none"> • \$8M chip seals • \$3M thin paving • \$2M patching 	\$1,700	Paving - 25 LM/yr Chip Seals - 450 LM/yr	300 yrs 10 yrs
Total	18,170	\$117 million/yr	\$6,500	Paving – 460 LM/yr	40 yrs

* Low Volume defined as non-interstate routes with ADT<=5,000 and 20-year ESAL's <= 3 million

PERFORMANCE MEASURES FOR MAP-21

Utah Department of Transportation

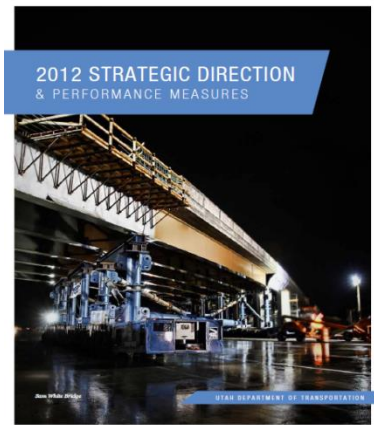
RMWPPP Meeting, Anchorage AK

October 8-9, 2013

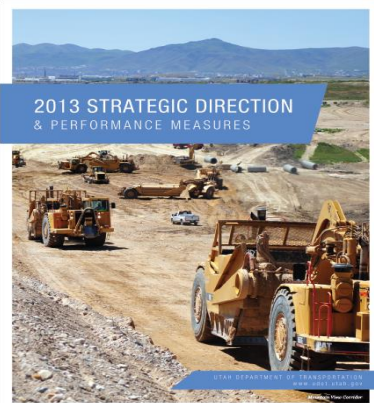




2011 STRATEGIC DIRECTION
& PERFORMANCE MEASURES



2012 STRATEGIC DIRECTION
& PERFORMANCE MEASURES



2013 STRATEGIC DIRECTION
& PERFORMANCE MEASURES

Annual Strategic Direction and Performance Measures

Guiding Principles - Strategic Goals

1. Preserve the Infrastructure
2. Increase Mobility
3. Zero Fatalities
4. Strengthen the Economy

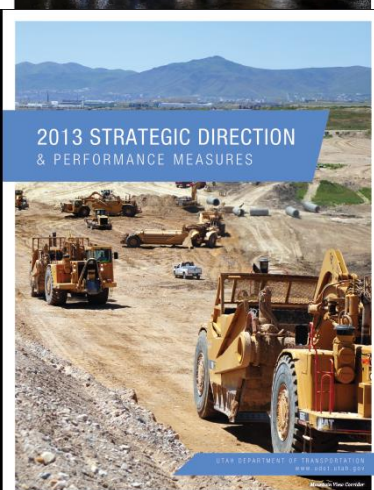
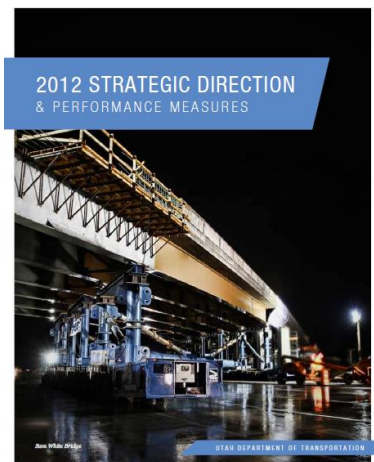
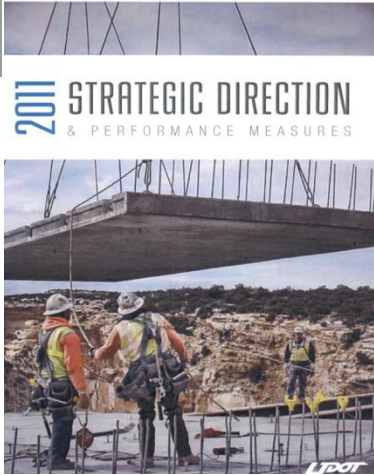


[UDOT Projects](#)



[Dashboard](#)

[Strategic Direction](#)

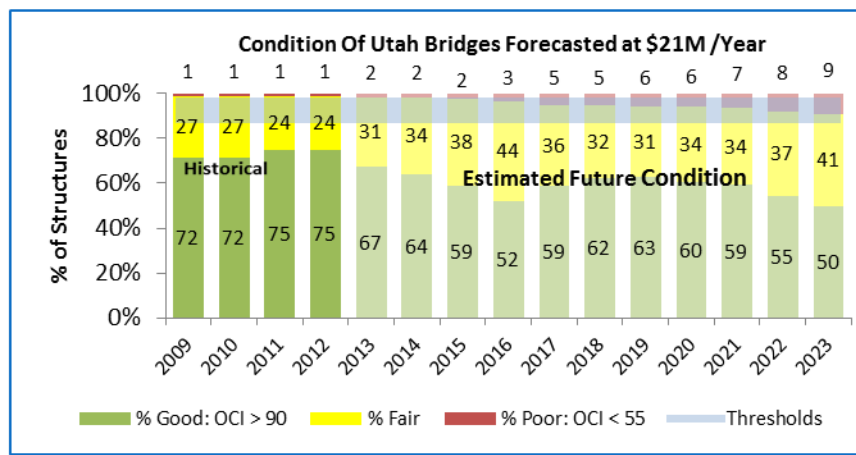
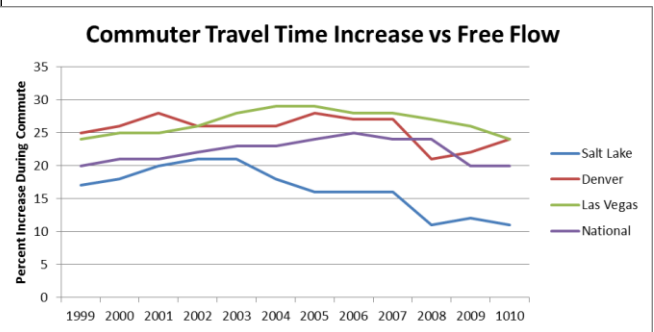
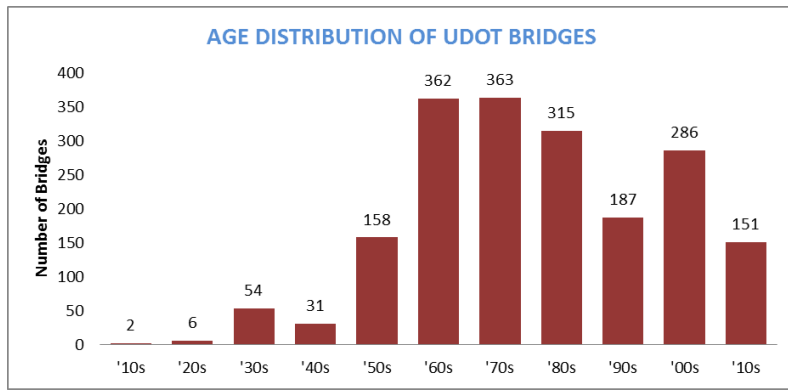
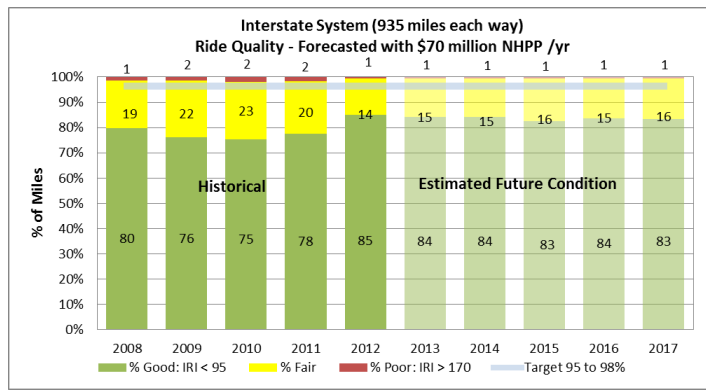


2011 STRATEGIC DIRECTION & PERFORMANCE MEASURES

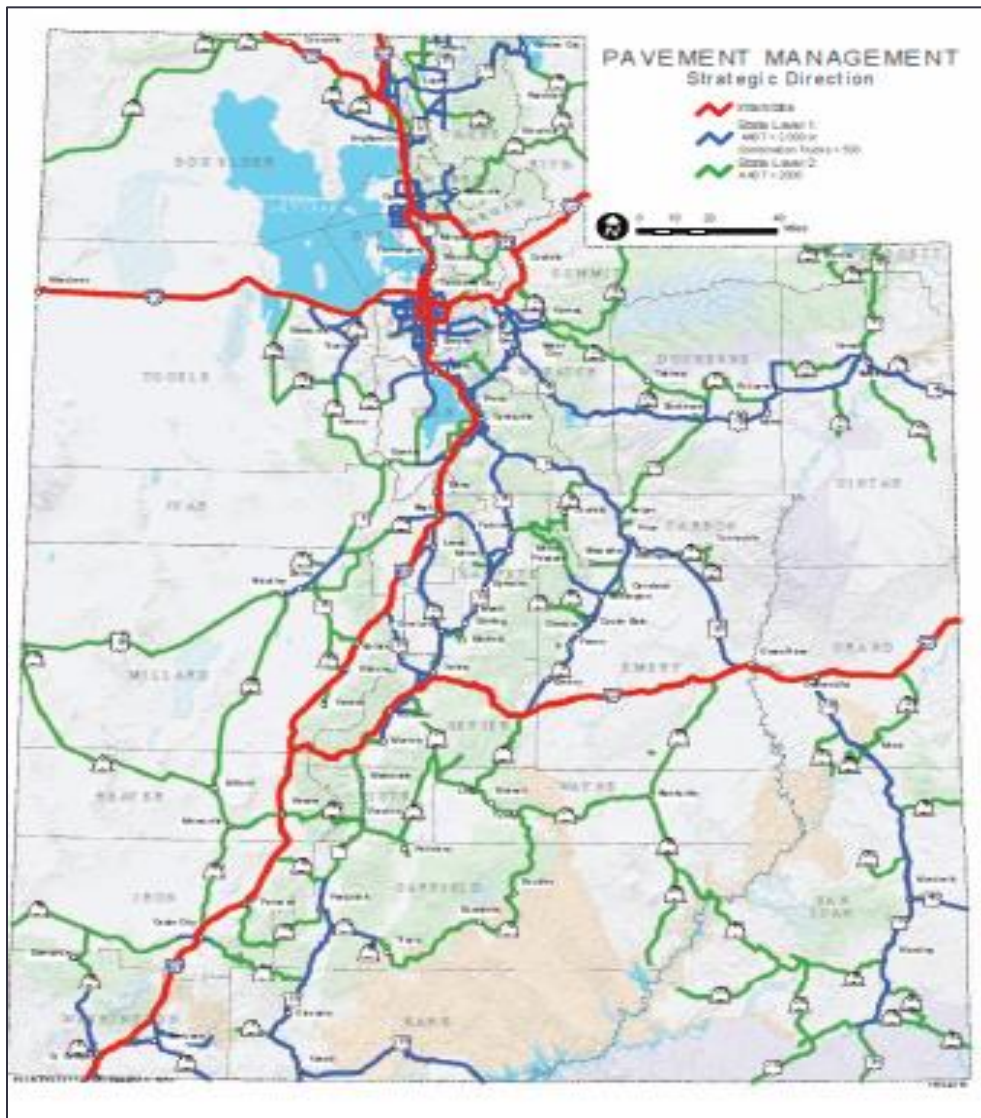
2012 STRATEGIC DIRECTION & PERFORMANCE MEASURES

2013 STRATEGIC DIRECTION & PERFORMANCE MEASURES

Annual Strategic Direction and Performance Measures



2014 Maintenance Management Levels



Interstate

Regardless of AADT

Miles ~ 935, 16%

Lane Miles ~ 27%

VMT ~ 53%

Combo Truck VMT ~ 63%

Level 1

AADT > 1,000 and/or Truck

Volumes > 200

Miles ~ 2,960, 51%

Lane Miles ~ 51%

VMT ~ 45%

Combo Truck VMT ~ 35%

Level 2

AADT < 1,000

Miles ~ 1,960, 33%

Lane Miles ~ 22%

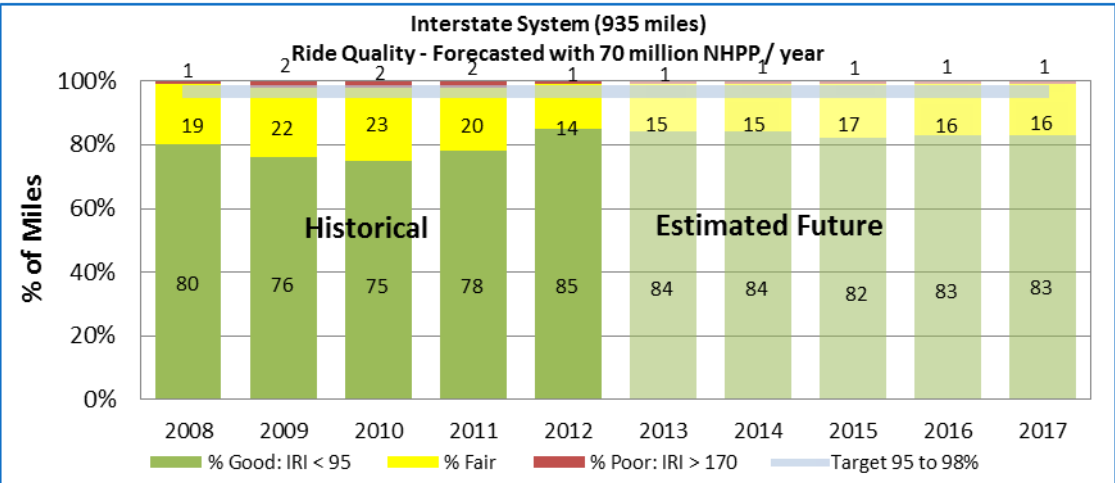
VMT ~ 2%

Combo Truck VMT ~ 2%

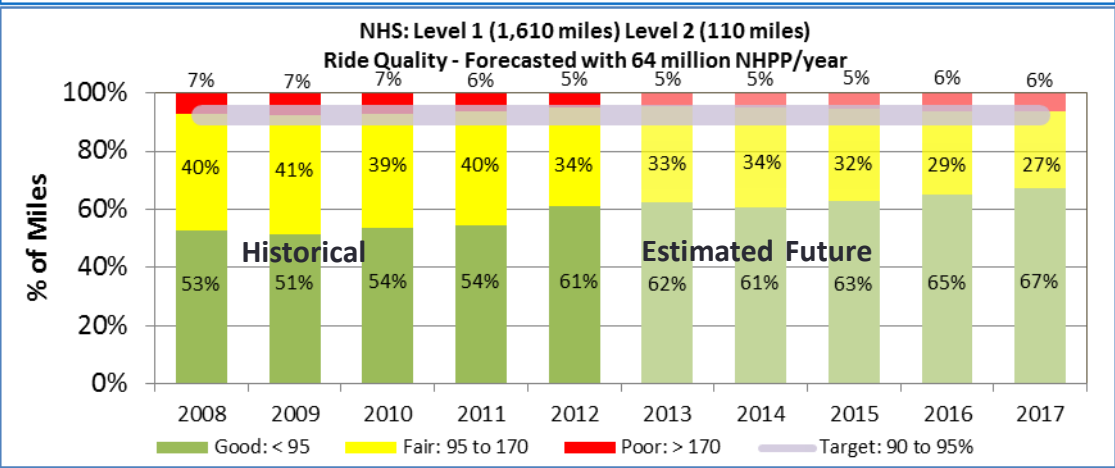


Pavements

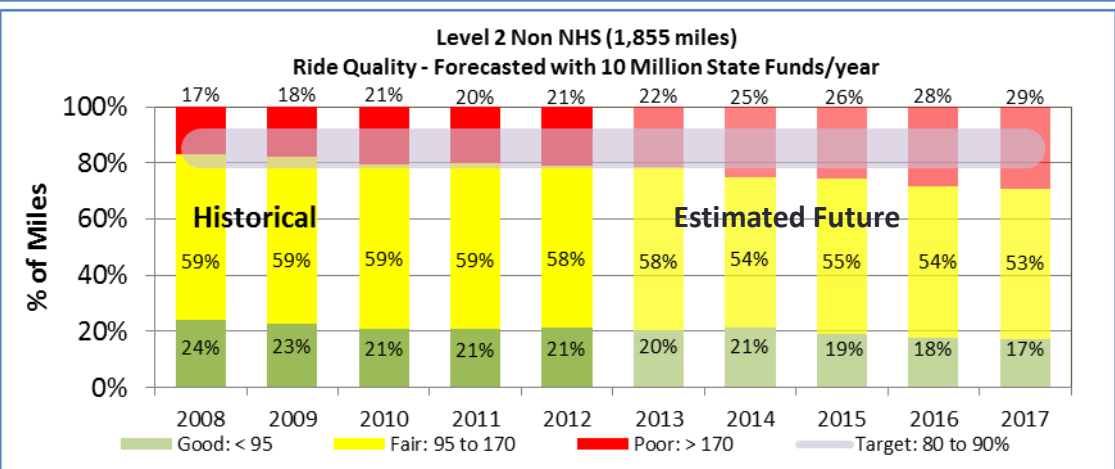
Interstate



Level 1 National Highway System & Non NHS



Level 2 Roads



⑩ MAP-21

⑩ Performance Measures

⑩ Washington State DOT
Perspective

⑩ David Luhr

⑩ Pavement Management Engineer



Initial Implementation of MAP-21 Performance Measures

(Expected)

- Each State will have an approved Asset Management System, and use various pavement performance measures to make decisions.
- A uniform system to measure pavement performance outcomes will be used to report to Congress on the condition of the NHS.

Initial Implementation of MAP-21 Performance Measures

(Anticipated)

Roughness (IRI)

- Minimum requirement for Interstate Highways
- Targets set by States and Local Agencies for rest of NHS

Initial Implementation of MAP-21 Performance Measures

(Anticipated - later)

Structural Health Index ?

- To be determined, ongoing research

Remaining Service Life

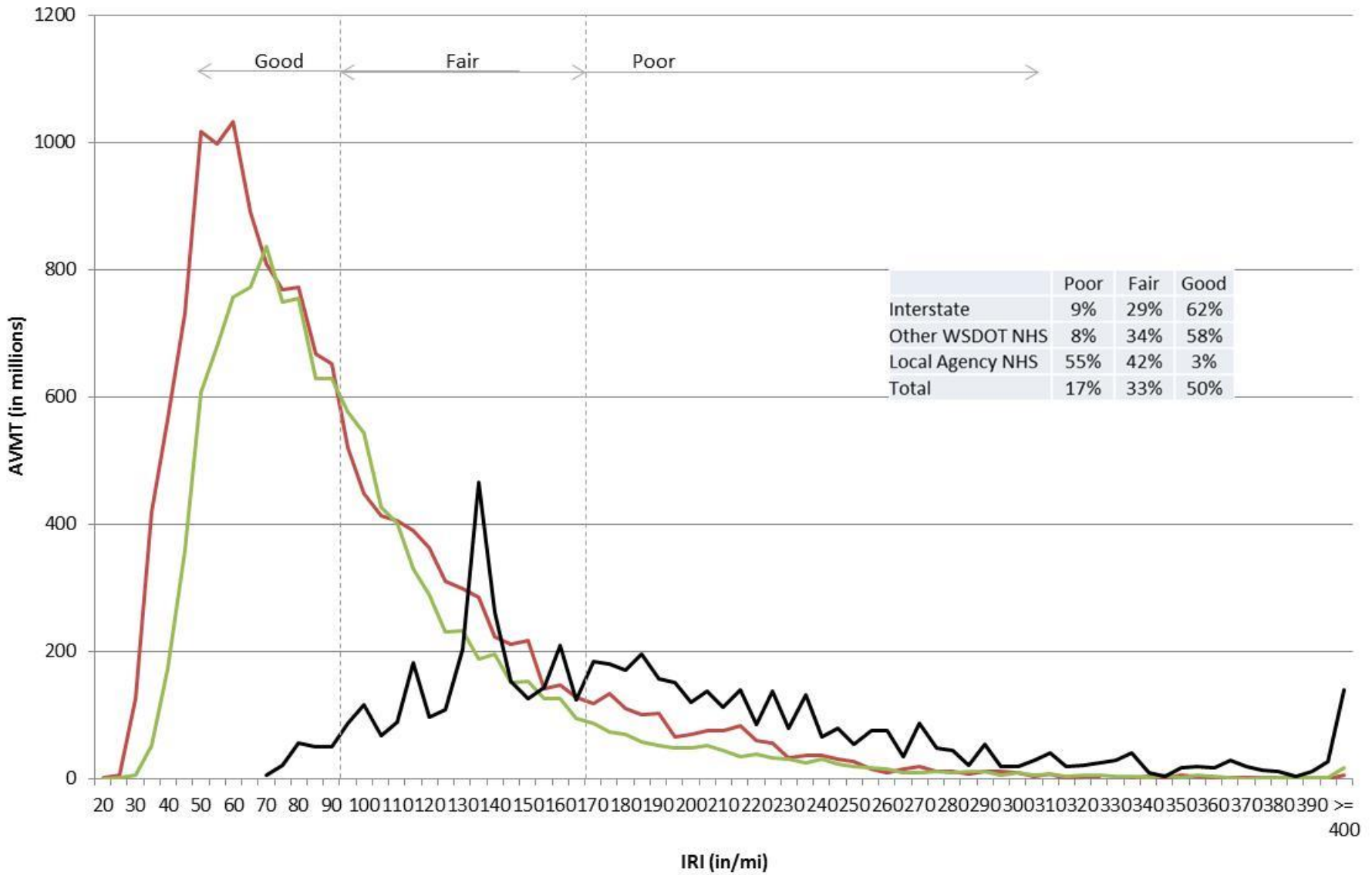
Using life-cycle cost analysis, the lowest cost results in rehab when road is no longer in “fair” condition (score of 45 out of 100)

Decisions for rehab (Due Year) are based on meeting any one of three criteria:

- Pavement Structural Condition (PSC) score of 45
- Pavement Rutting Condition (PRC) score of 45 = 1/2” rut
- Pavement Profile Condition (PPC) score of 45
= 220 in/mi IRI

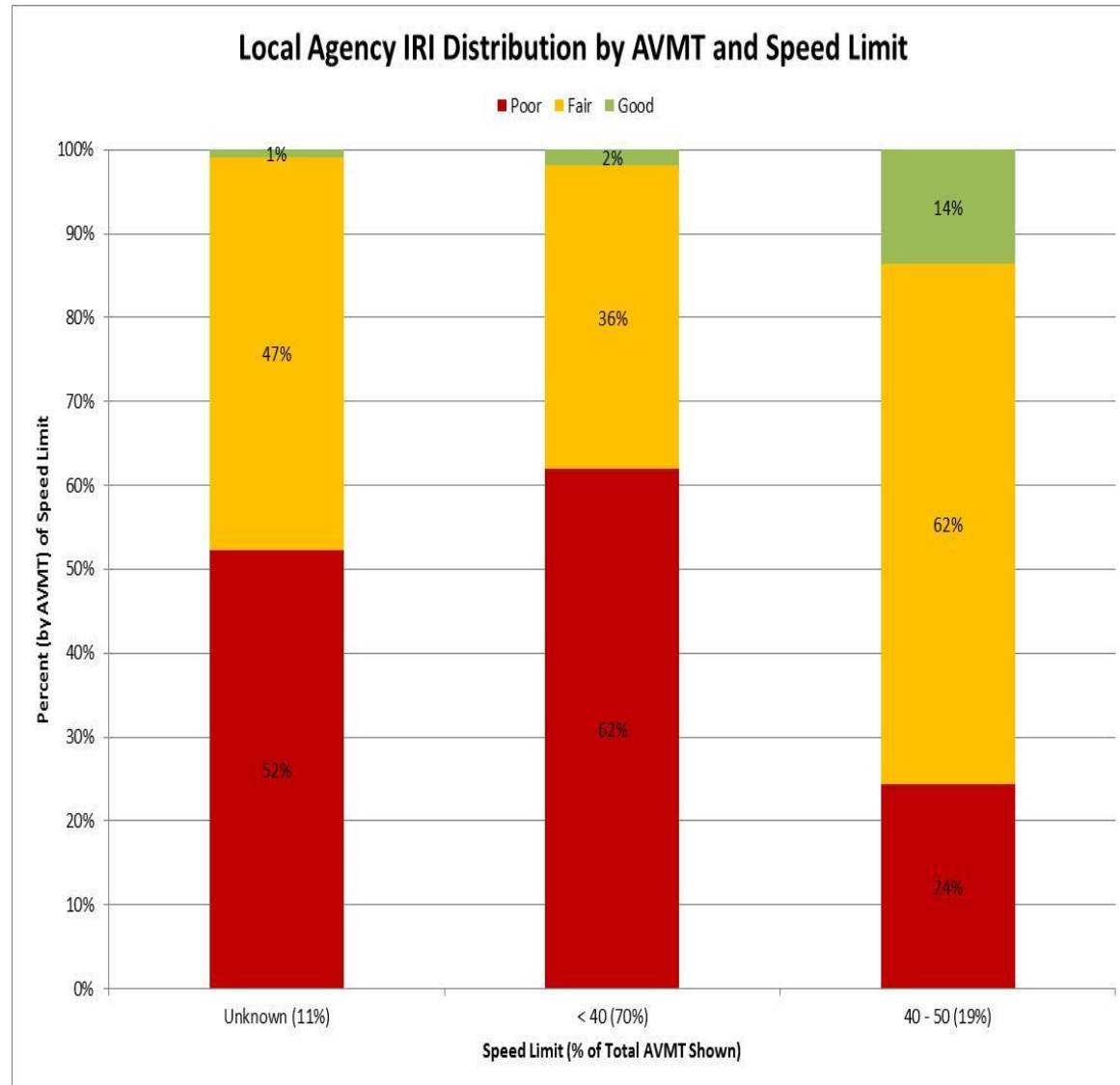
WSDOT and Local Agency NHS IRI Distribution by AVMT

Interstate Other WSDOT NHS Local Agency NHS



⑩ Issues with measuring IRI in urban areas

- Technical issues with measuring IRI at slow speeds (< 16-18 mph)
- Intersections with changes in slope
- Stop and go traffic



Initial Implementation of MAP-21 Performance Measures

Process will need to be developed for States and Local Agencies to agree on NHS performance targets.

In Washington State, it is likely that user cost will be involved in evaluating different levels of pavement performance and setting targets.