



Joint Legislative Transportation Oversight Committee

January 6, 2016

*Maintenance Operations Performance
Analysis Report (MOPAR)*

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Legislative Requirements (NCGS 136-44.3)

The Department shall establish performance standards for the maintenance and operation of the State highway system. In each even-numbered year, the Department of Transportation shall survey the condition of the State highway system and shall prepare a report on the findings of the survey. The report shall provide both quantitative and qualitative descriptions of the condition of the system and shall provide estimates of the following:

- (1) **The annual cost to meet and sustain the established performance standards for the State highway system**, delineated by costs to the primary and secondary system, to include the following categories of work: (i) contract resurfacing, (ii) pavement preservation, (iii) routine highway maintenance, (iv) disasters and emergencies, (v) structurally sound bridge maintenance, and (vi) structurally unsound bridge rehabilitation, repair or replacement.
- (2) **Projected system condition and the corresponding optimal funding requirements for a seven-year plan to sustain established performance standards.** The report shall also identify target levels of service for each maintenance activity and assess historical program performance across divisions, including project delivery rates, staffing, and direct and indirect costs. The Department shall clearly denote prioritized maintenance needs and recommend resource allocations and distribution methods to achieve each target.
- (3) **Any significant variations in system conditions among highway divisions.** The report shall include an examination of how well the highway divisions streamline project delivery, maximize efficiency and prioritize spending based on needs, as well as recommendations on ways to improve these processes. The report shall analyze the cost of delivering maintenance activities by division and make recommendations on how to reduce these costs regionally and state-wide.
- (4) **An assessment of the level of congestion throughout the primary highway system based on traffic data**, and a ranking of the most congested areas based on travel time reliability and the average number of congested hours, together with the Department's recommendations for congestion reduction and mobility improvement.
- (5) **An analysis of existing highway division staffing levels** and recommendations to ensure staffing levels are distributed appropriately based on need.
- (6) **A cross-divisional comparison summary document**, not to exceed one page in length, which includes the divisional performance data described in subdivision (2) of this section as well as the most deficient roads and bridges in each division.

The report on the condition of the State highway system and maintenance funding needs shall be presented to the Joint Legislative Transportation Oversight Committee by December 31 of each even-numbered year, and copies shall be made available to any member of the General Assembly upon request.

Background

DOH is committed to building on the legislative shift in direction

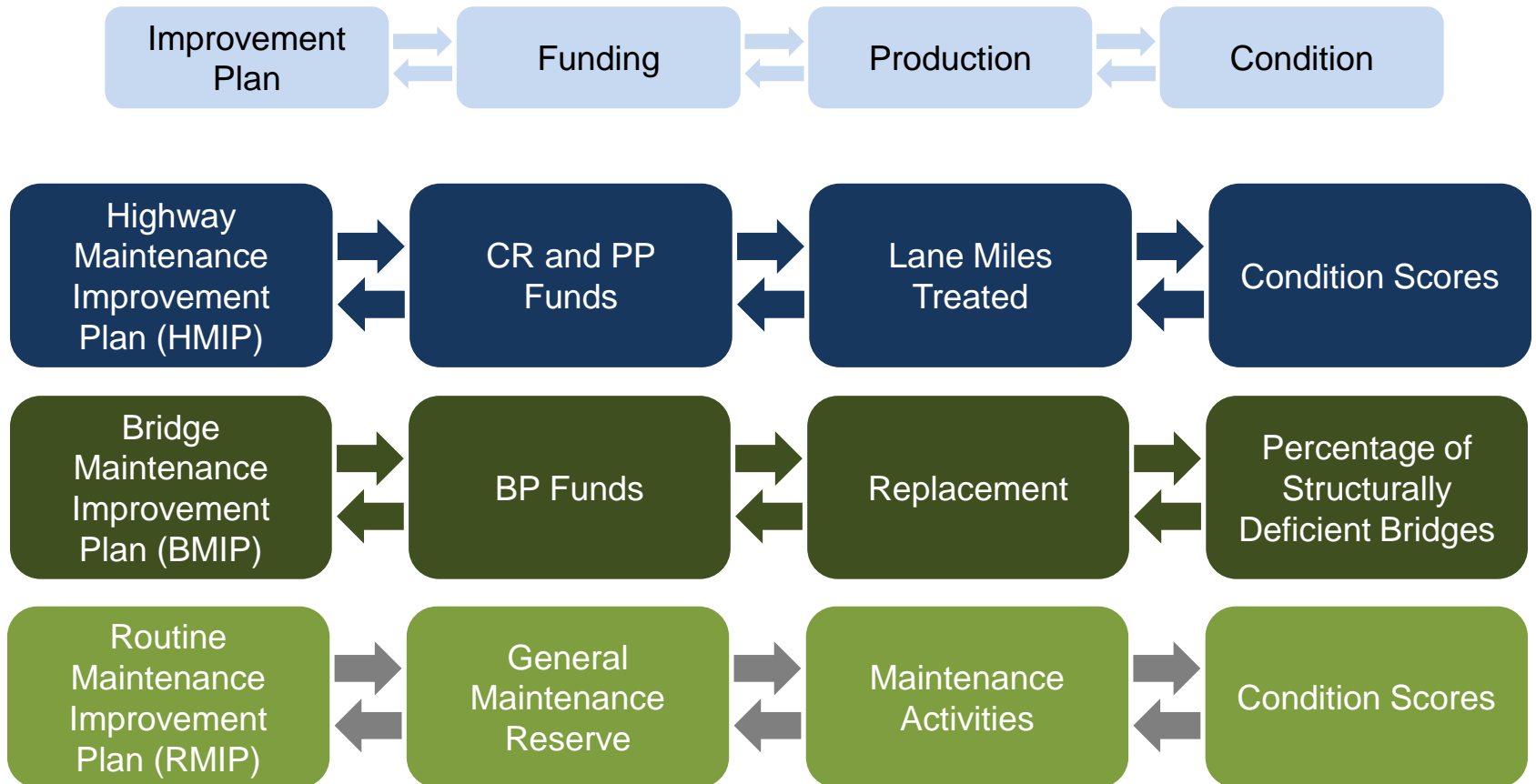
- Legislative requirements in 2014 initiated a change from condition management to condition and performance management
 - HMIP: pavement preservation and contract resurfacing program management
- The 2016 MOPAR expands on the legislative strategic shift in direction
- Asset management vision:

The Division of Highways will restore its legacy as the “Good Roads State” by providing customers with a safe, reliable, and high quality travel experience.

Highway Asset Type	Approximate Quantity	Estimated Asset Value
Bridges (number)	13,500	\$60 billion
Pavement (lane miles)	163,000	\$62 billion
Other Roadway Assets (centerline miles)	80,000	\$446 billion
Large Pipes and Culverts (each)	27,000	\$7 billion
Total	-	\$575 billion

Background

DOH Transition to Maintenance Planning



Asset Condition, Production, Trends

Pavement Program – Primary and Secondary

Observations and Findings	Influencing Factors	Recommendation/ NCDOT Action
Primary system condition has shown improvement	Consistent long term contract resurfacing funds	Expand focus to include lower volume primary roads
Secondary system condition has been declining and is starting to stabilize	Inadequate pavement preservation funds for several years	Expand pavement preservation focus to include lower volume secondary roads
Pavement treatment cycle times are longer than best practices	Large System, dynamic growth in traffic, material cost	Use resources strategically to increase Condition Scores

Asset Condition, Production, Trends

Bridge Program – Structurally Deficient Bridges

Observations and Findings	Influencing Factors	Recommendation/ NCDOT Action
The percent of structurally deficient bridges has decreased steadily since 2013	Bridge Program objectives (reducing SD bridges) and funding are aligned	Expand focus to primary system
Deterioration of high value bridges could prevent from achieving 2030 targets	There are 185 high value bridges each with an estimated replacement cost between \$20 and \$300 million	Extend service life of high value bridges and prevent the need for replacement

Asset Condition, Production, Trends

Routine Maintenance Program

Observations and Findings	Influencing Factors	Recommendation/ NCDOT Action
RMIP enables the department to better focus resources where they are needed	<ul style="list-style-type: none">▪ Emphasis on planned maintenance▪ Divisions being held accountable to production	Extend life of the system and improve safety.
RMIP is built on condition assessments, inventory and activity cycle approach	<ul style="list-style-type: none">▪ Limited inventory	Refining plans, condition assessments and targets to more precisely determine needs.

Needs, Recommended Funding and Priorities

Major Programs, Recommended Funding, Proposed Allocation

Major Programs (\$ millions)	FY17 State Appropriation	FY18 & FY19 Additional Funds	FY18 & FY19 Total Funds	Allocated to Statewide Programs	Allocated to Divisions
Contract Resurfacing	\$498	\$25	\$523	\$3	\$520
Pavement Preservation	\$85	\$35	\$120	\$0	\$120
Bridge Program	\$242	\$8	\$250	\$0	\$250
GMR	\$468	\$266	\$734	\$131	\$603
Total	\$1,293	\$334	\$1,627	\$134	\$1,493

Needs, Recommended Funding and Priorities

General Maintenance Reserve

Needs are itemized but it is important to maintain flexibility in use of GMR funds

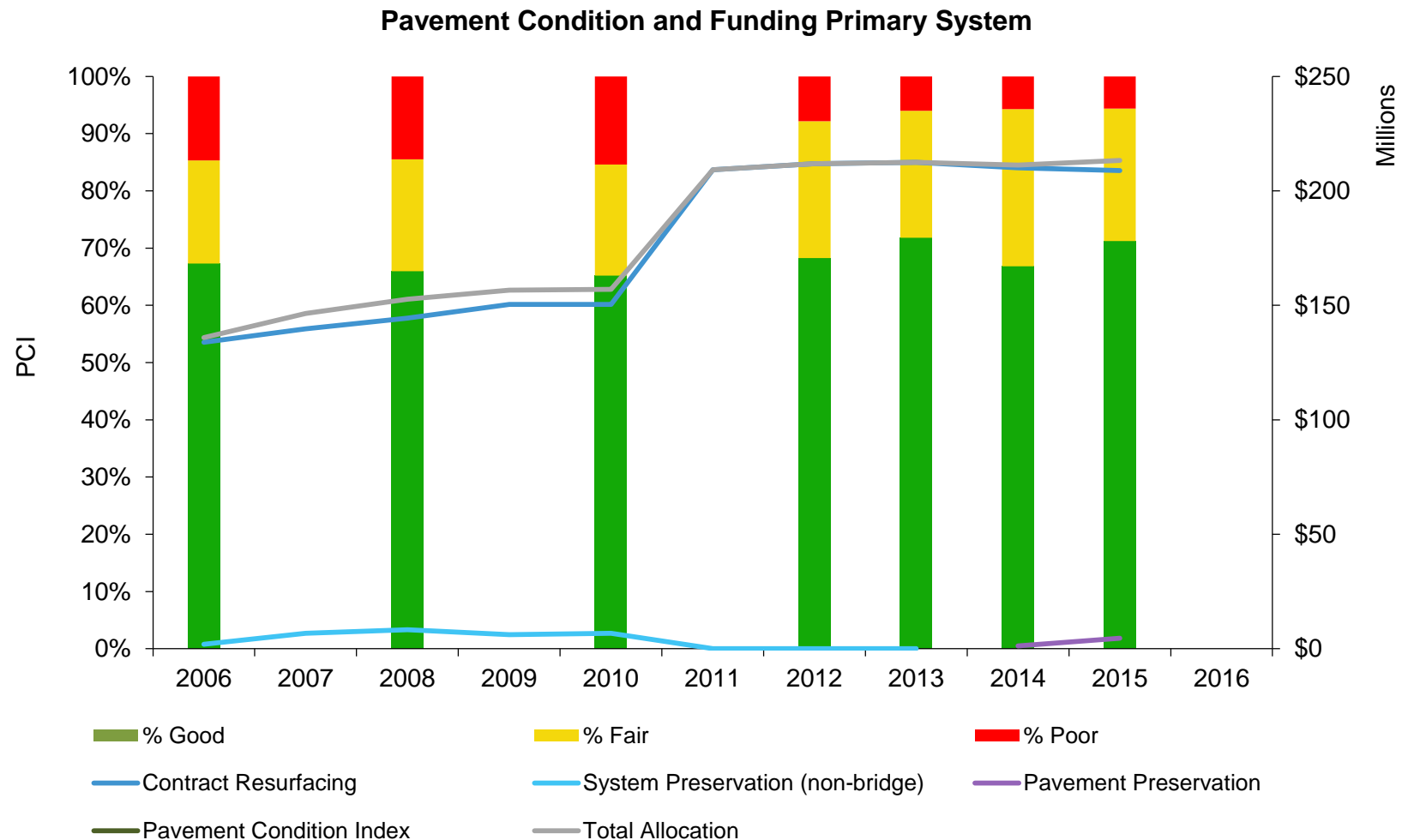
General Maintenance Reserve	Funding Need (\$ million)	Recommended Funding (\$ million)	Percent of Funding Need
Highway Maintenance	\$685	\$483	71%
Routine Bridge Maintenance	\$143	\$90	63%
Statewide Programs	\$131	\$131	100%
High Value Bridge Preservation	\$30	\$30	100%
Total	\$989	\$734	74%

Questions?



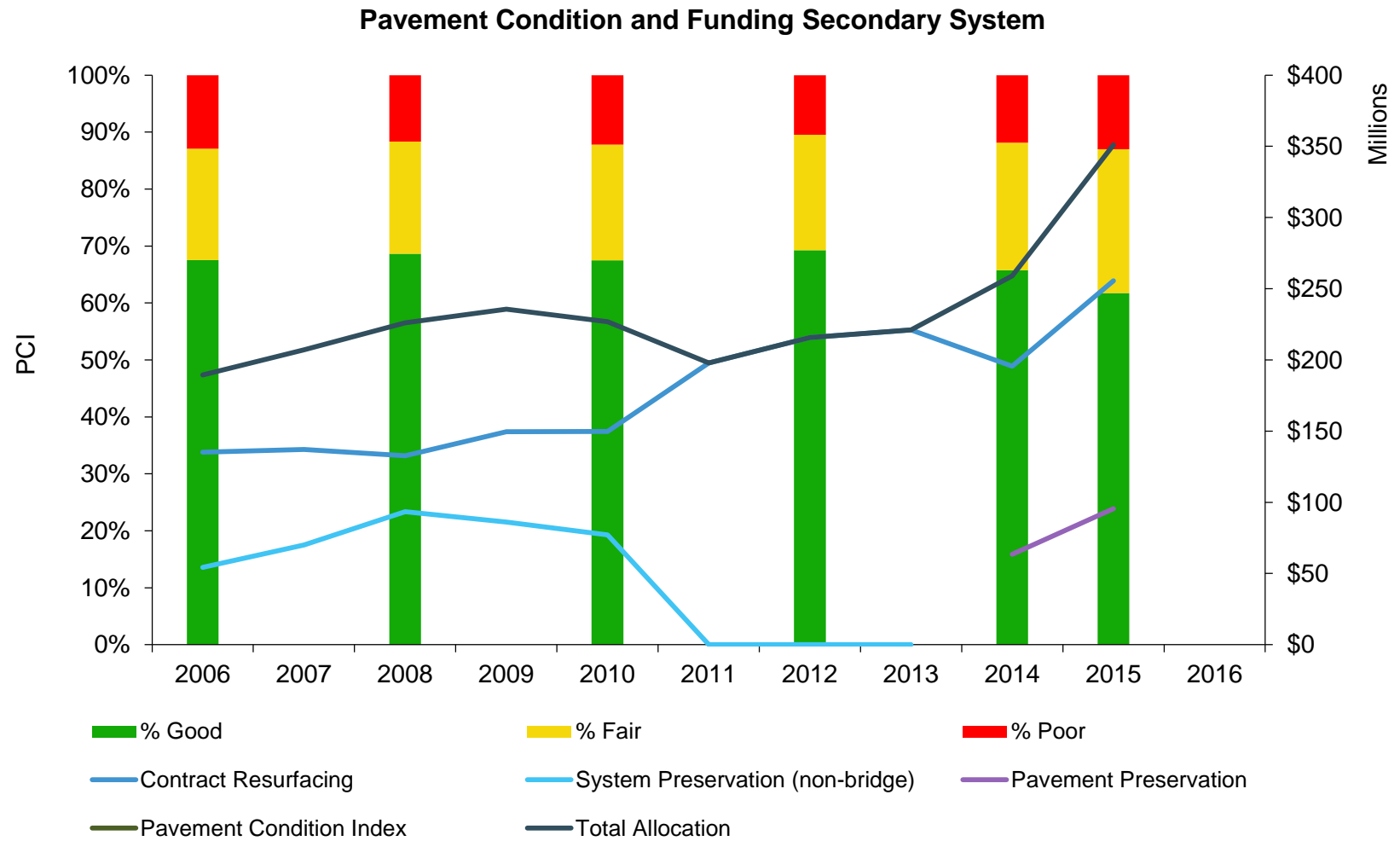
Appendix

Primary System Pavements



Asset Condition, Production, Trends

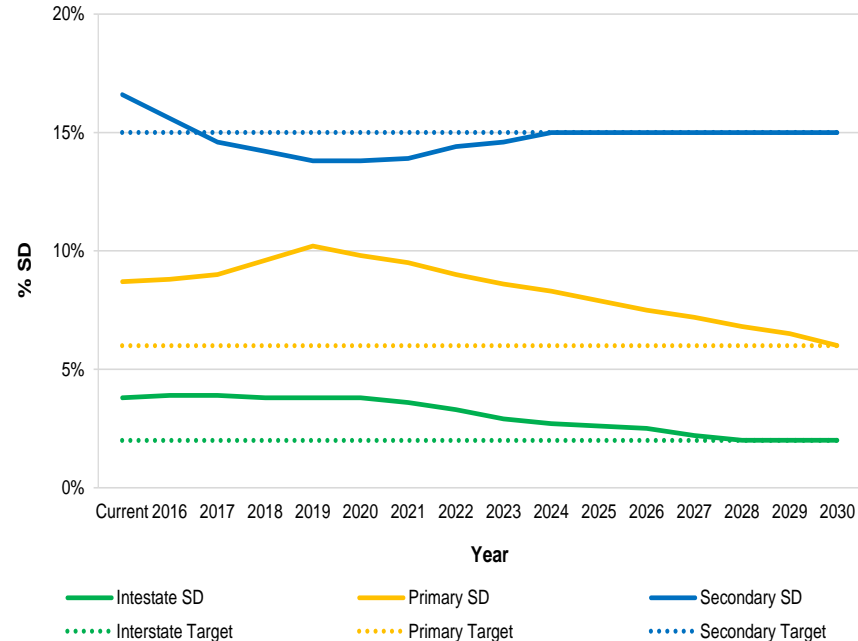
Secondary System Pavements



Bridge Program (Structurally Deficient)

System	2030 %SD Target	2013	Current (2016)
Interstate	2%	6%	4%
Primary	6%	11%	9%
Secondary	15%	24%	17%
Statewide (weighted average)	10%	19%	13%

Bridge Program 15-Year Projection with SD Targets



Highway Maintenance

- **Planned routine maintenance activities** – These activities are planned based on condition and LOS targets. Examples include shoulders and ditch maintenance, crossline pipe replacements, pavement striping, bridge joint repairs, mowing, and painting steel girders, among others.
- **Reactionary routine maintenance activities** – These are activities that cannot be planned and typically require an immediate response. Examples of these activities include pothole repair, removal of hazards, guardrail repair, among others.

Preliminary Cycle Time of Select Activities	Activity Cycle Time
Replacing Drainage Pipe $\leq 48''$	50 years
Replacing Drainage Pipe $> 48''$	50 years
Ditch Maintenance	8 years
Shoulder Maintenance	8 years
Installing Pavement Markings (Paint)	4 years
Installing Long Life Pavement Markings (Thermo, Poly)	10 years
Replacing Ground Mounted Signs	10 years
Mowing – Interstate	2.5 months
Mowing – Primary	2.5 months
Mowing – Secondary	2.5 months

Highway Maintenance

Select Routine Maintenance Activities	Annual Need (\$M)	Accomplishment (\$M)	Accomplishment (%)	Needs vs. Accomplishment (\$M)
Long Line Pavement markings (Long Life)	\$20	\$2	12%	\$17
Pipe > 48"	\$80	\$10	12%	\$70
Ditch Maintenance	\$13	\$3	20%	\$10
Shoulder Maintenance	\$29	\$10	35%	\$19
Pipes <= 48"	\$41	\$21	52%	\$20
Ground Mounted Signs	\$14	\$8	53%	\$7
Long Line Pavement markings (paint)	\$17	\$11	61%	\$7
Signals	\$21	\$20	98%	\$1
Mowing	\$39	\$47	120%	-
Total	\$274	\$132	N/A	\$151

Recommended Funding:

- Planned routine maintenance activities: \$274 million
- Reactionary routine maintenance activities: \$210 million

NCDOT Actions

Summary of NCDOT Actions	Plan/ Schedule
Refine and simplify indirect cost accounting methods.	May 1, 2017
Convene a work group with Division staff to reach a consensus on the methodology and tools to support the RMIP, this includes developing an asset inventory and asset cycle time policies. In addition, reevaluate the Maintenance Condition Assessment Program (MCAP) to align with objectives of the RMIP, and inventory and asset cycle time approach.	Ongoing through June 1, 2017
Conduct follow up regional meetings with Division and County offices to refine implementation of the RMIP and tailor individual plans to division and regional priorities and needs.	Ongoing through June 1, 2017
Division Engineers will be asked to review staffing needs in conjunction with the submission of the RMIP (June 1, 2017) to ensure the plans drive division staffing levels.	August 1, 2017