

PAPA Regional Technical Meetings

Warm Mix Asphalt (WMA) Implementation

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Warm Mix Asphalt (WMA)

- What is WMA?





HOT MIX

VS

WARM MIX

Warm Mix Asphalt (WMA)

**Job-Mix Formula
Composition Tolerance Requirements of the Completed Mix
Temperature of Mixture (F)**

	HMA		WMA	
Class of Material	Minimum	Maximum	Minimum	Maximum
PG 58-28	260	310	215	310
PG 64-22	265	320	229	320
PG 76-22	285	330	240	330

From Pub. 408, Section 409 (HMA) and 411 (WMA)

Warm Mix Asphalt (WMA)



Hot Mix Asphalt at 320°F



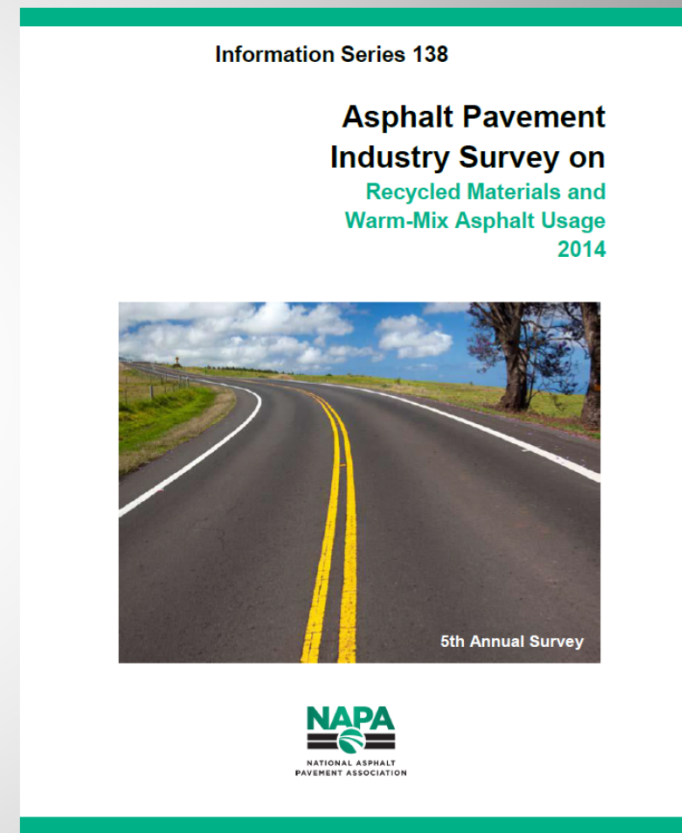
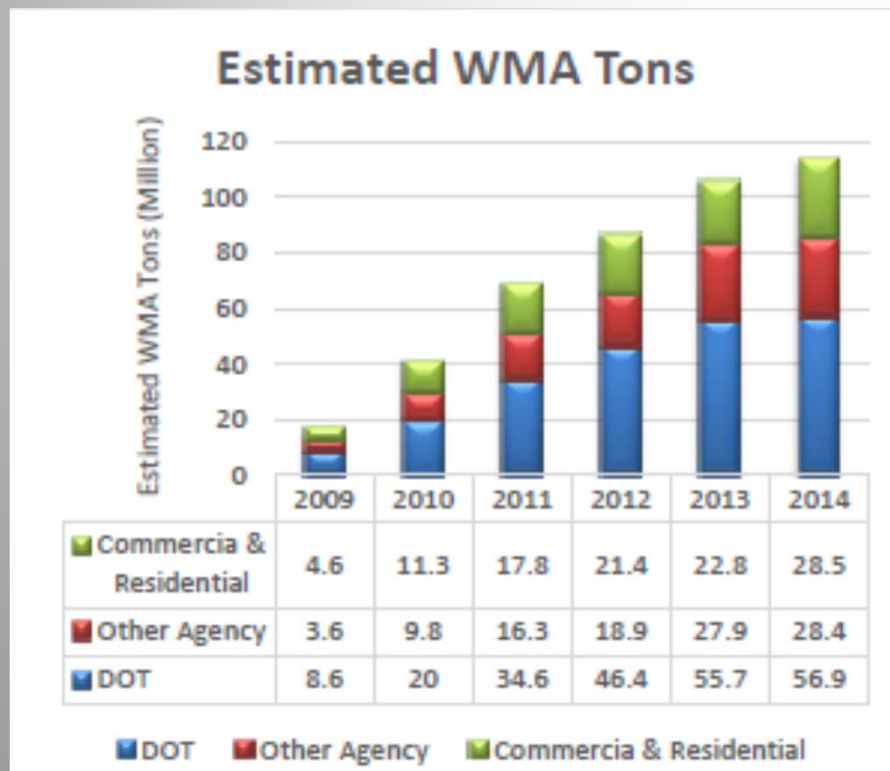
Warm Mix Asphalt at 270°F

Warm Mix Asphalt (WMA)

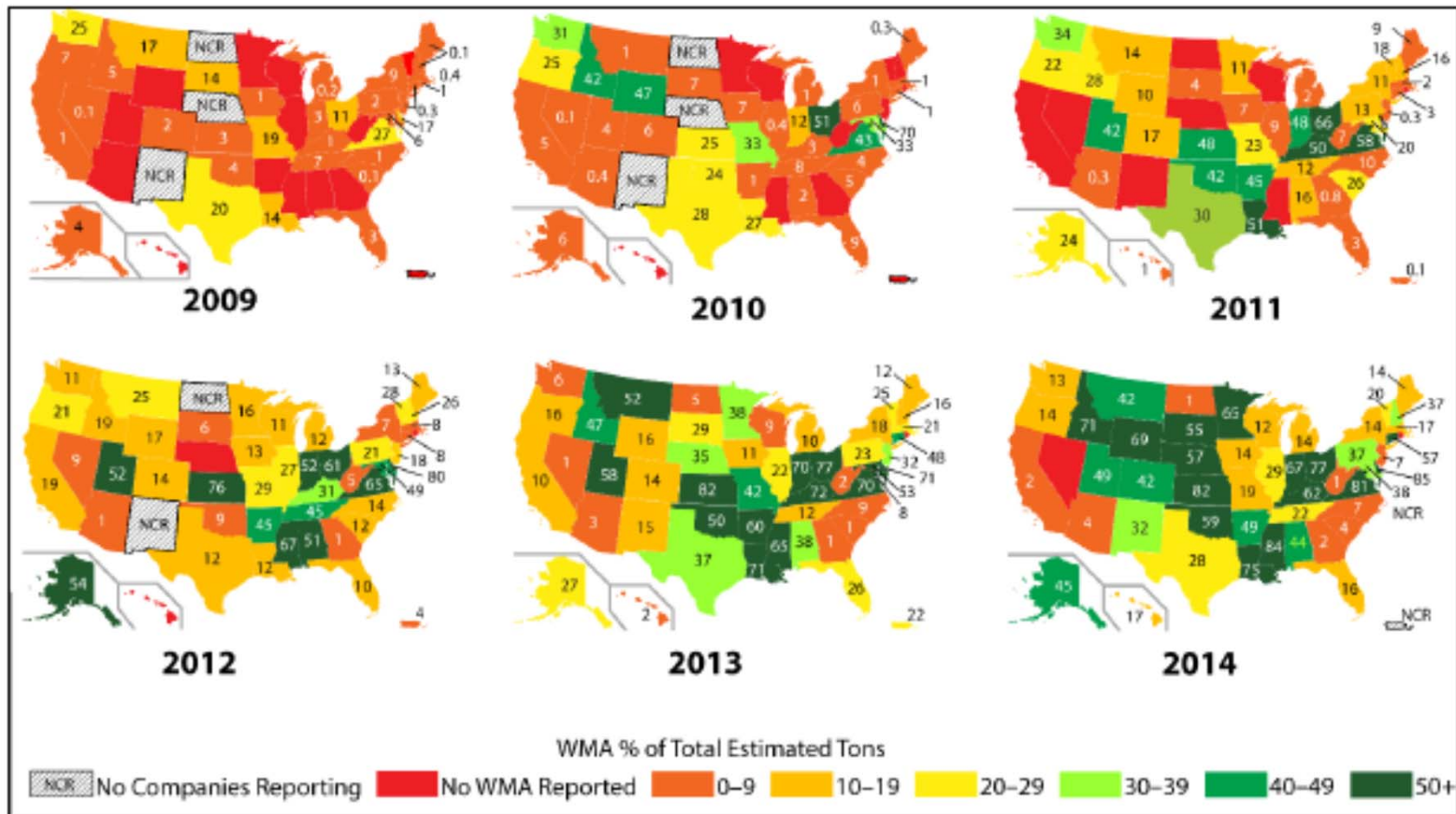
- How do we get to 100% WMA?
- District Plans
- Potential Issues

WMA Usage – Nationwide

- Nationwide use of WMA
 - Based on 2014 NAPA Industry Survey



WMA Usage – Nationwide



WMA Usage - PA

Asphalt Producers Sampled in 2015

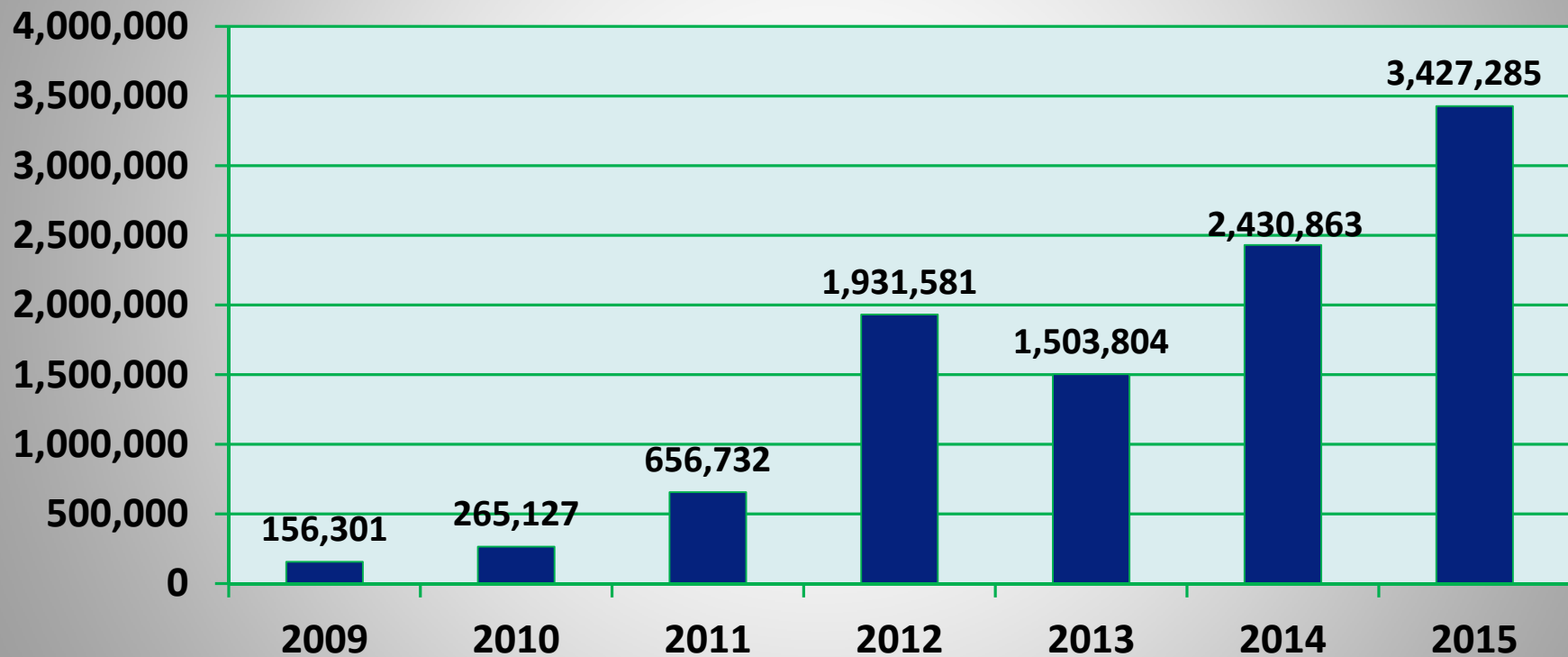
- Asphalt Producers sampled either with HMA or WMA = 123 (125 in 2014)
- Asphalt Producers sampled with WMA = 86 (63 in 2014)
- Percent of Total Asphalt Producers sampled with WMA = $86/123 = 69.9\%$ (50.4% in 2014)

Source:



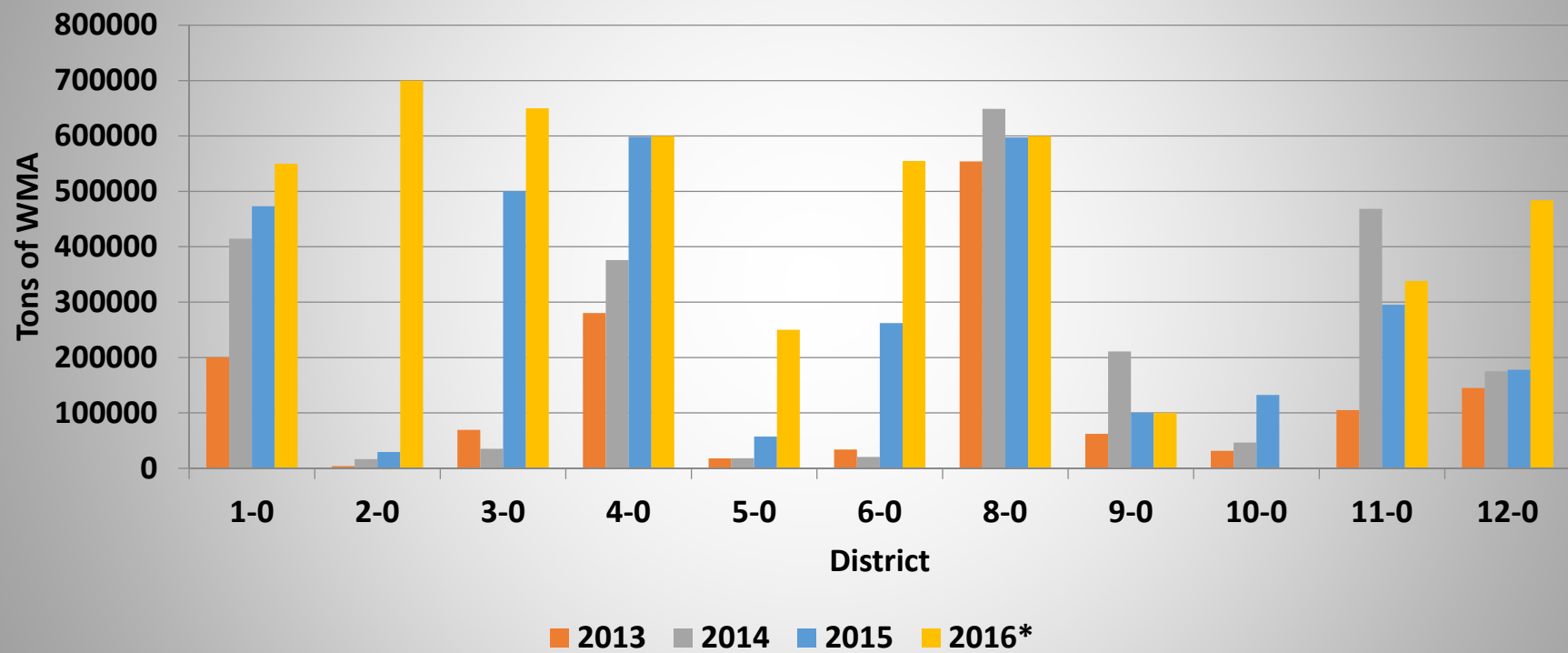
WMA Usage - PA

WMA Usage 2009-2015 (TONS)



WMA Usage - PA

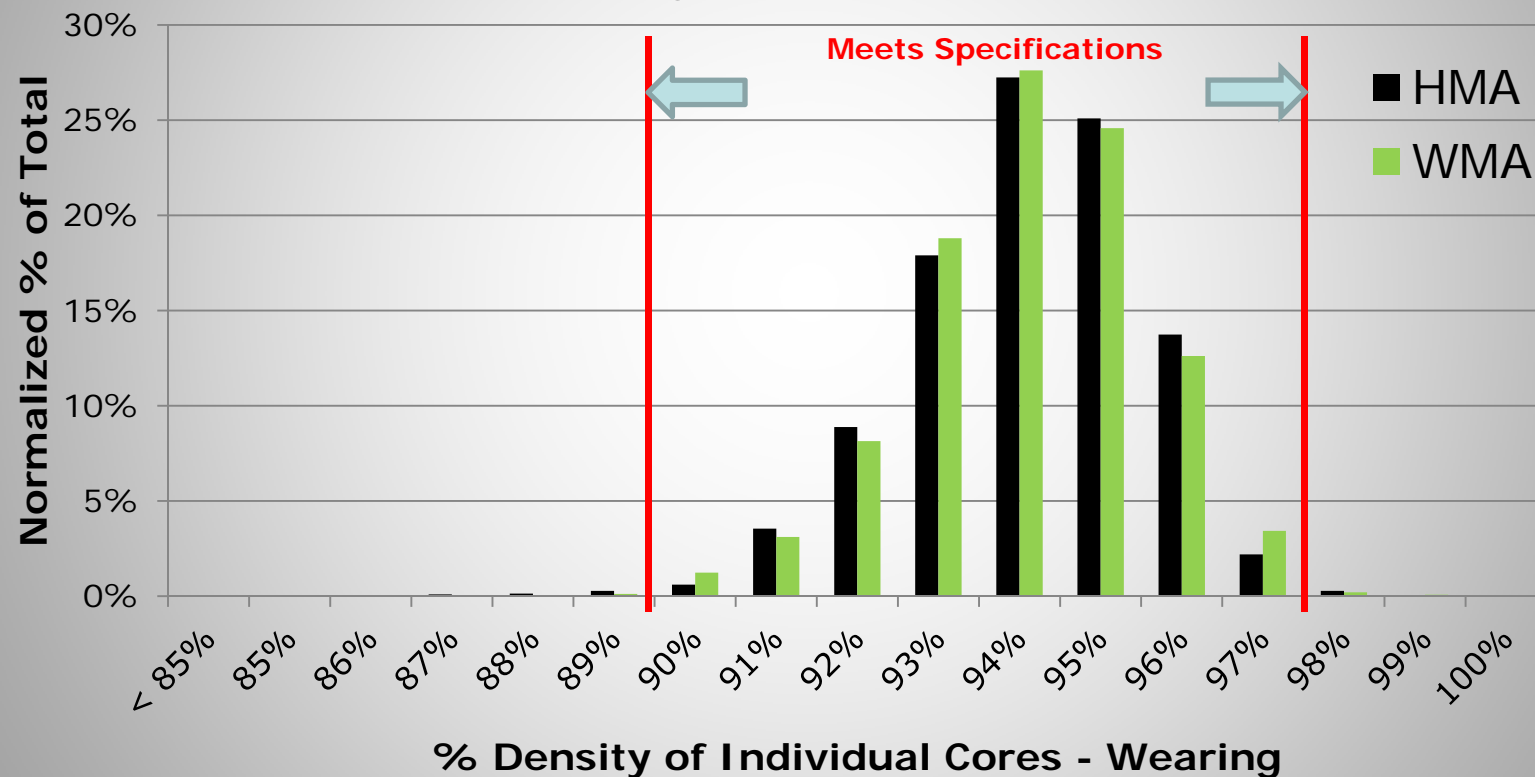
Increase Use of Warm Mix Asphalt



*Projections

Focus Areas: HMA vs. WMA Standard Const. Individual Core Density

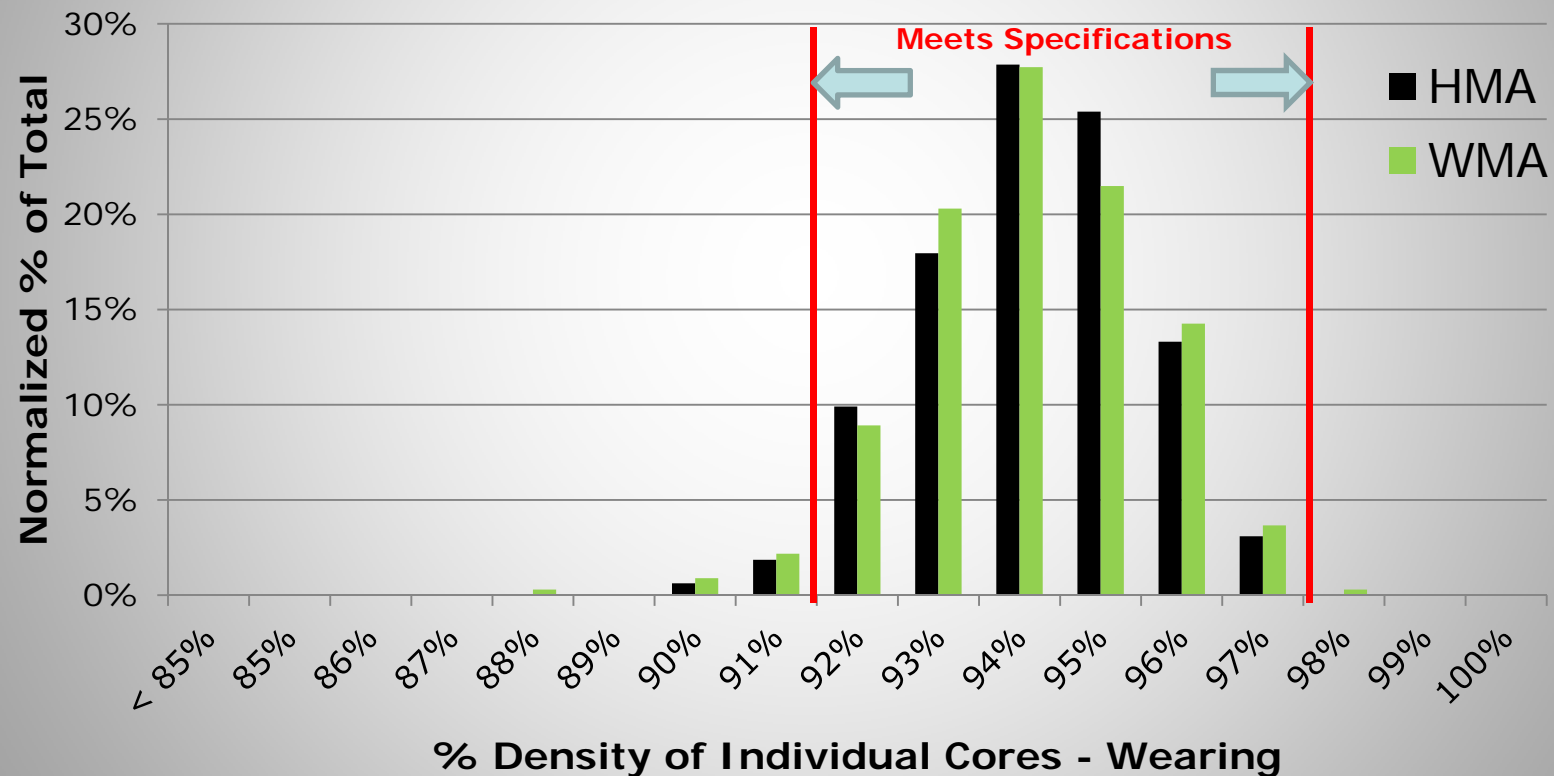
2015 Statewide % of HMA & WMA Cores with
X% Density [Std. Lots (409A)]



Wearing Course Density Data from eCAMMS.

Focus Areas: HMA vs. WMA RPS Const. Individual Core Density

2015 Statewide % of HMA & WMA Cores with
X% Density [RPS Lots (409B)]



Wearing Course Density Data from eCAMMS.

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Questions?