

Survey on RAP Use

The seal of the North Carolina Department of Transportation is a circular emblem. It features a blue outline with the text "STATE OF NORTH CAROLINA" at the top and "DEPARTMENT OF TRANSPORTATION" at the bottom. Inside the circle, there is a map of North Carolina in blue, flanked by two stars. A large, stylized red and white graphic, resembling a ribbon or a road, curves across the map.

**HMA Recycling ETG Meeting
Charleston, South Carolina
July 10, 2007**

Survey Results

➤ **38 Responses (Including Ontario)**

➤ **Missing States**

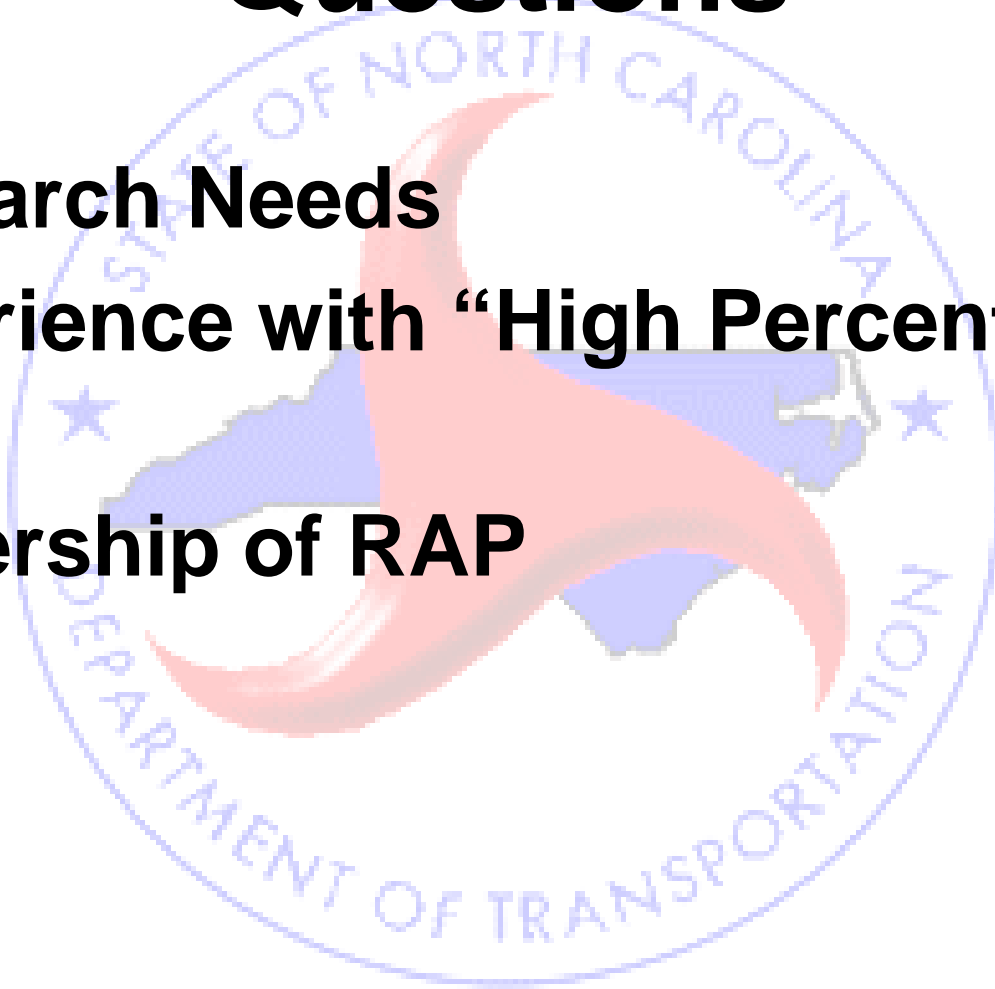
- Delaware
- Hawaii
- Indiana
- Louisiana
- Massachusetts
- Mississippi
- Montana
- New Mexico
- North Dakota
- South Dakota
- Utah
- Vermont
- Wisconsin

Questions

- **% RAP Allowed & Used**
 - Mix Type
 - Plant Type
- **Special Requirements**
- **Major Obstacles**
 - Specifications
 - Industry Use

Questions

- **Research Needs**
- **Experience with “High Percentage” Use**
- **Ownership of RAP**



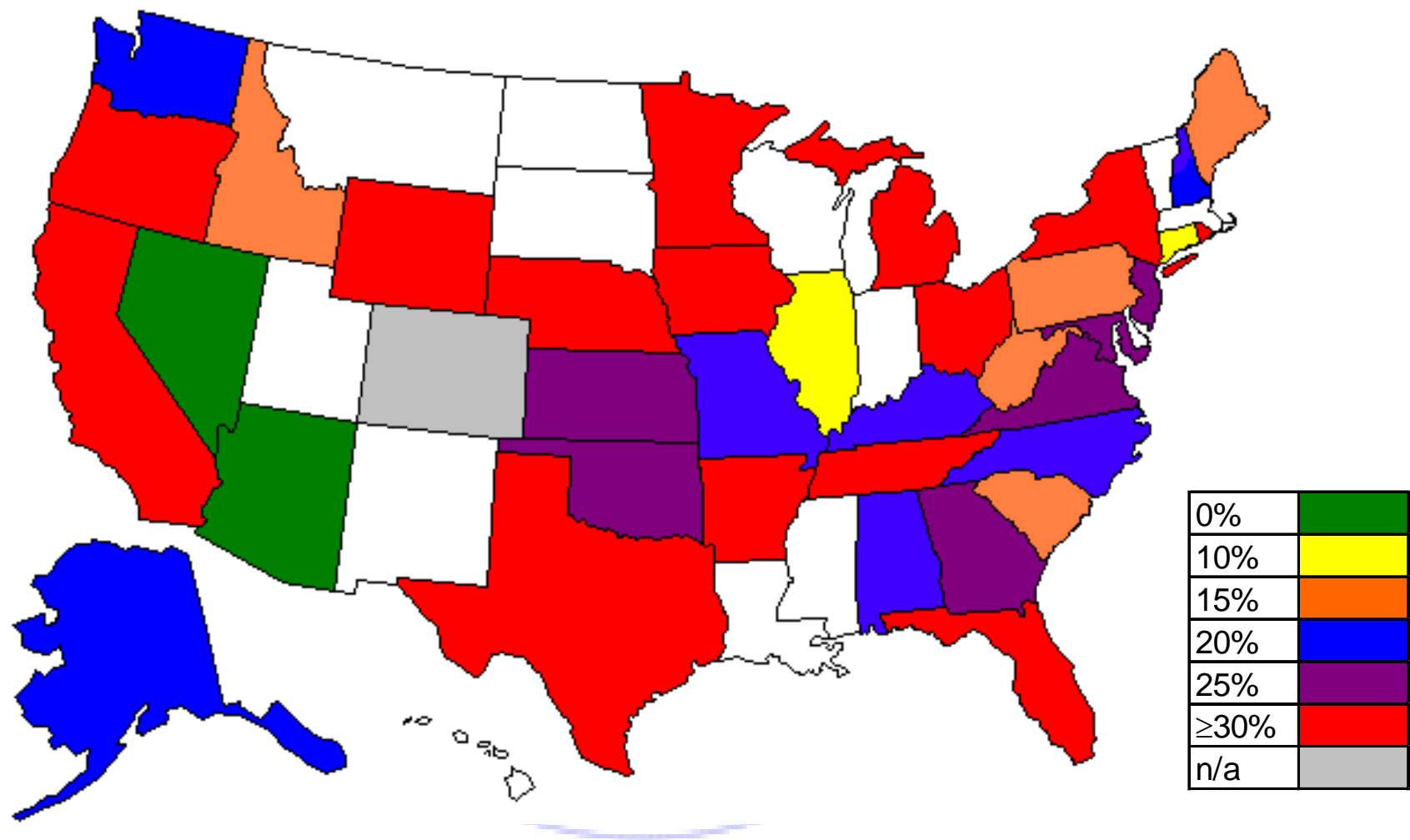
Findings

- **Tried to Understand Specifications**
- **Interpreted Responses**
- **Follow up for Remaining States**
- **Follow up for Clarification**

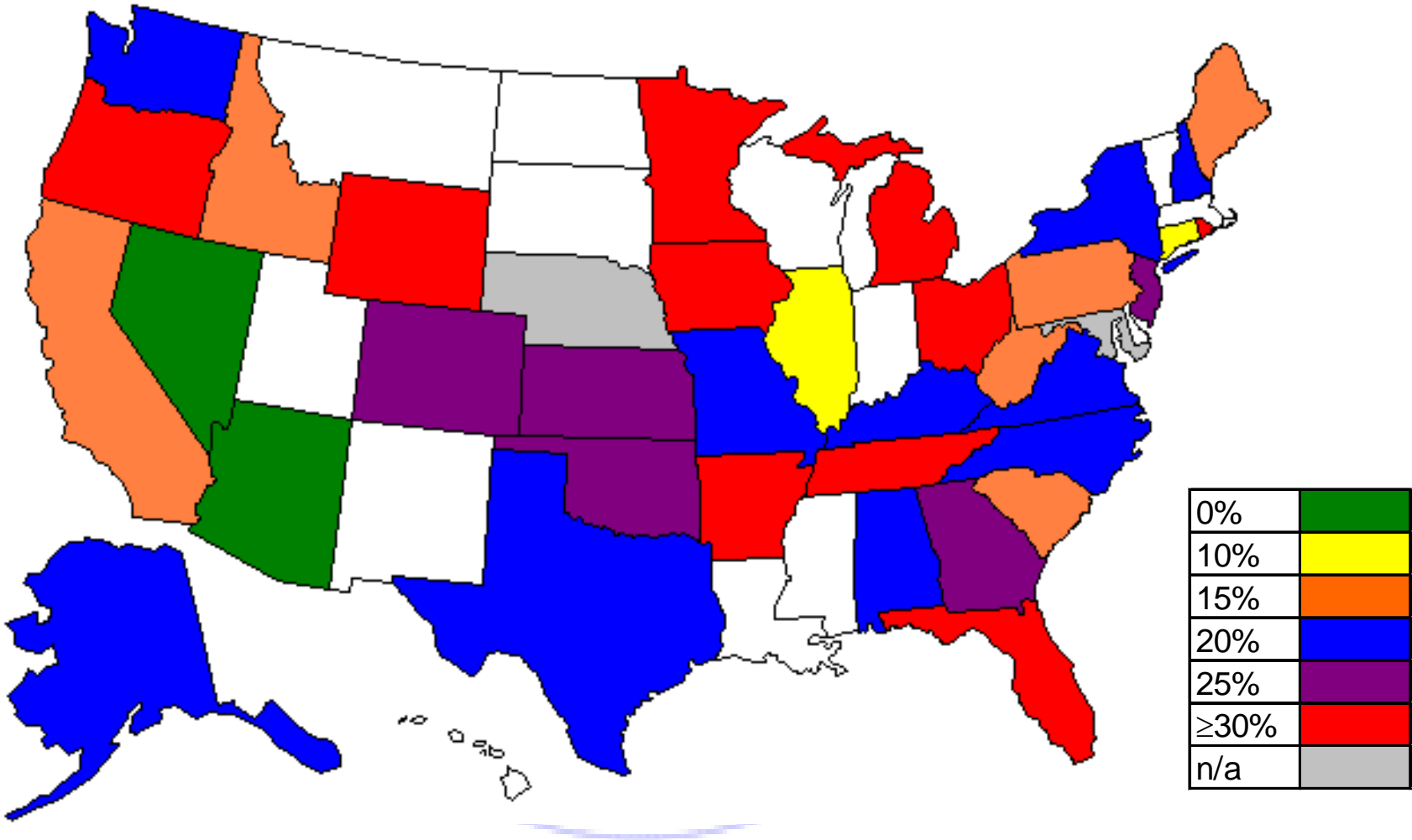
Findings

- **Most States Allowed RAP use**
- **Most Specifications Limited Practical Use of Higher Percentages**
- **Some Differences on Mix Type**
- **Few Limits Based on Plant Type**
 - **Georgia**
 - **New Hampshire**
 - **South Carolina**

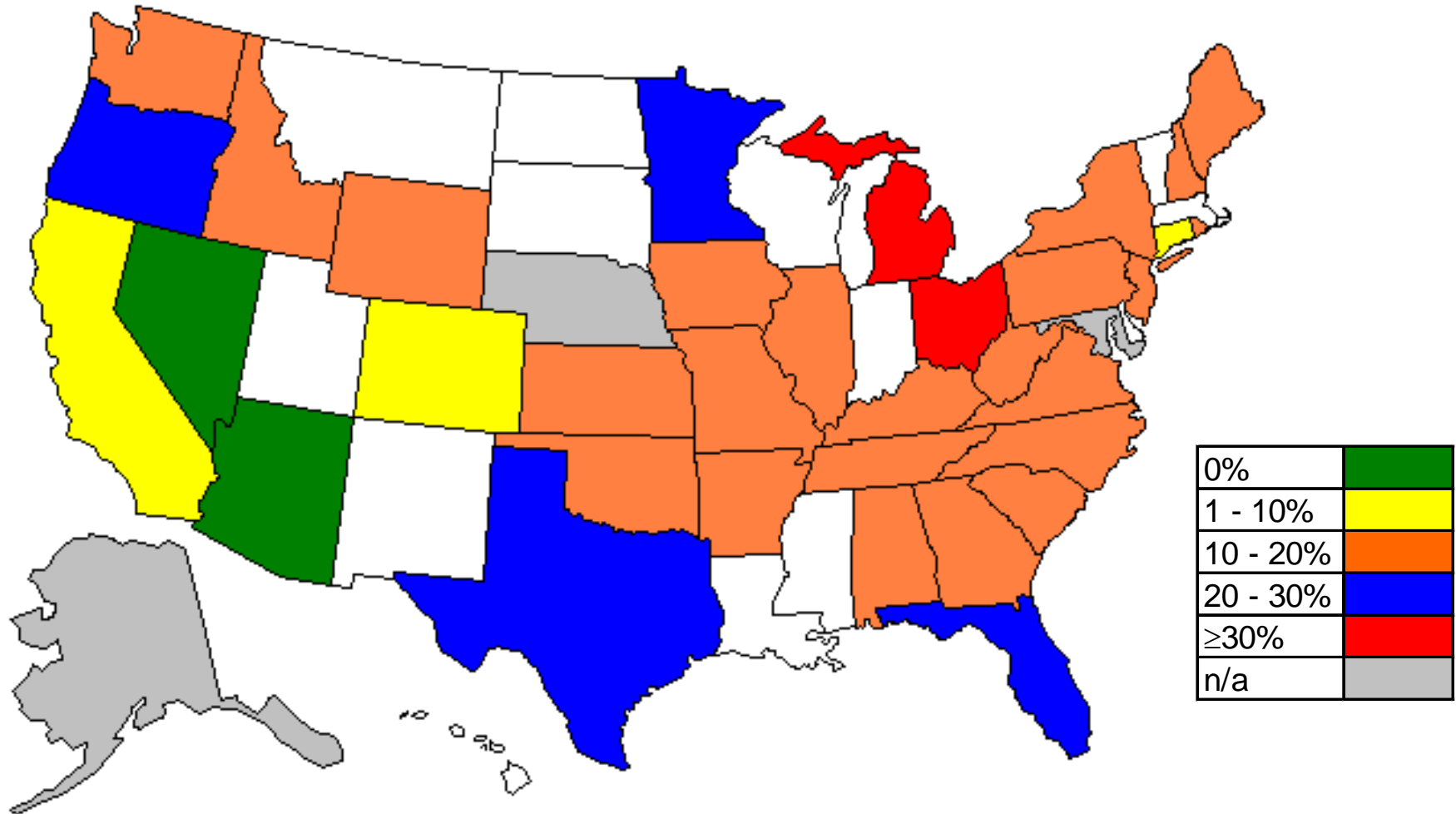
Base Mixes -- Specified



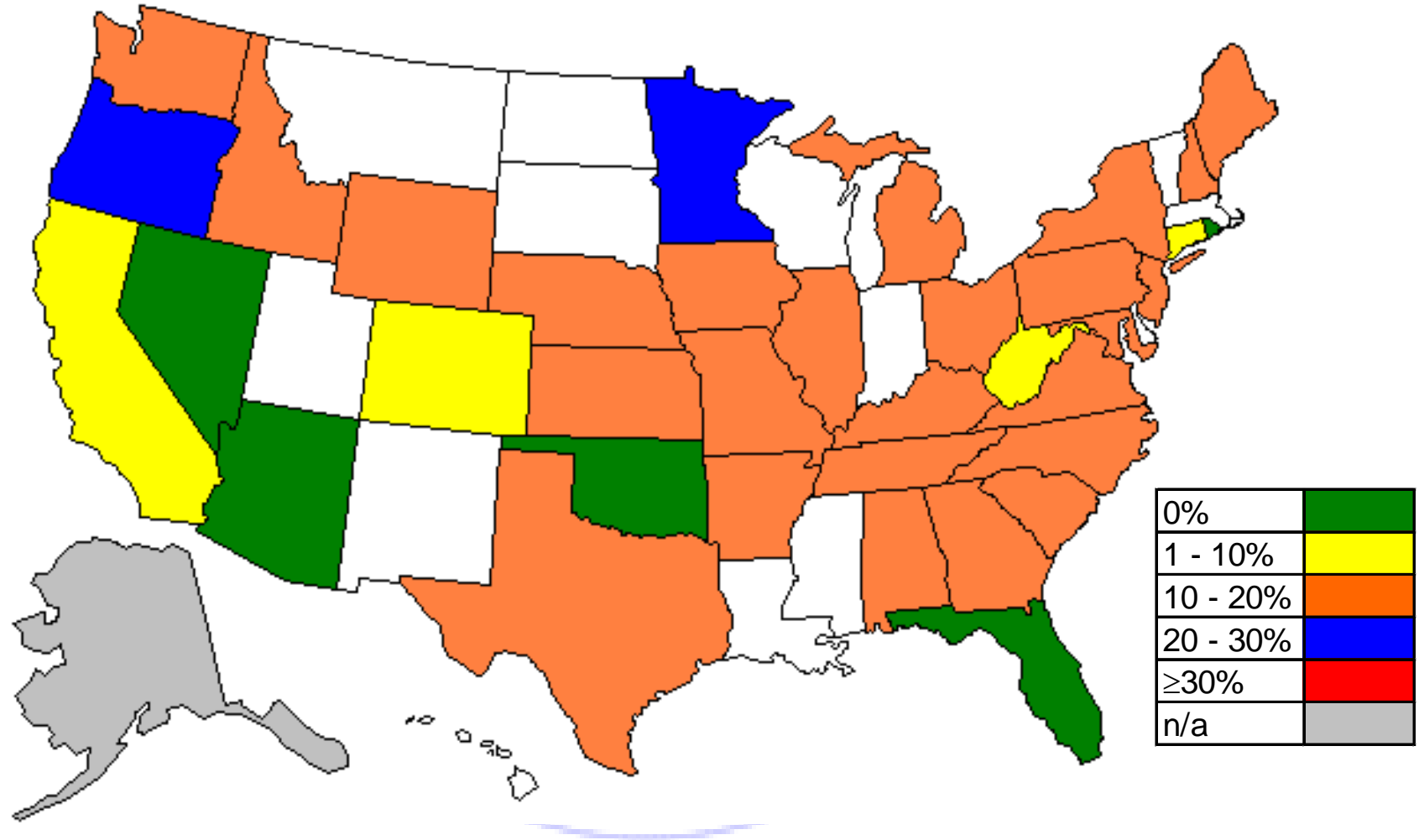
Intermediate Mixes -- Specified



Intermediate Mixes -- Average Use



Surface Mixes -- Average Use

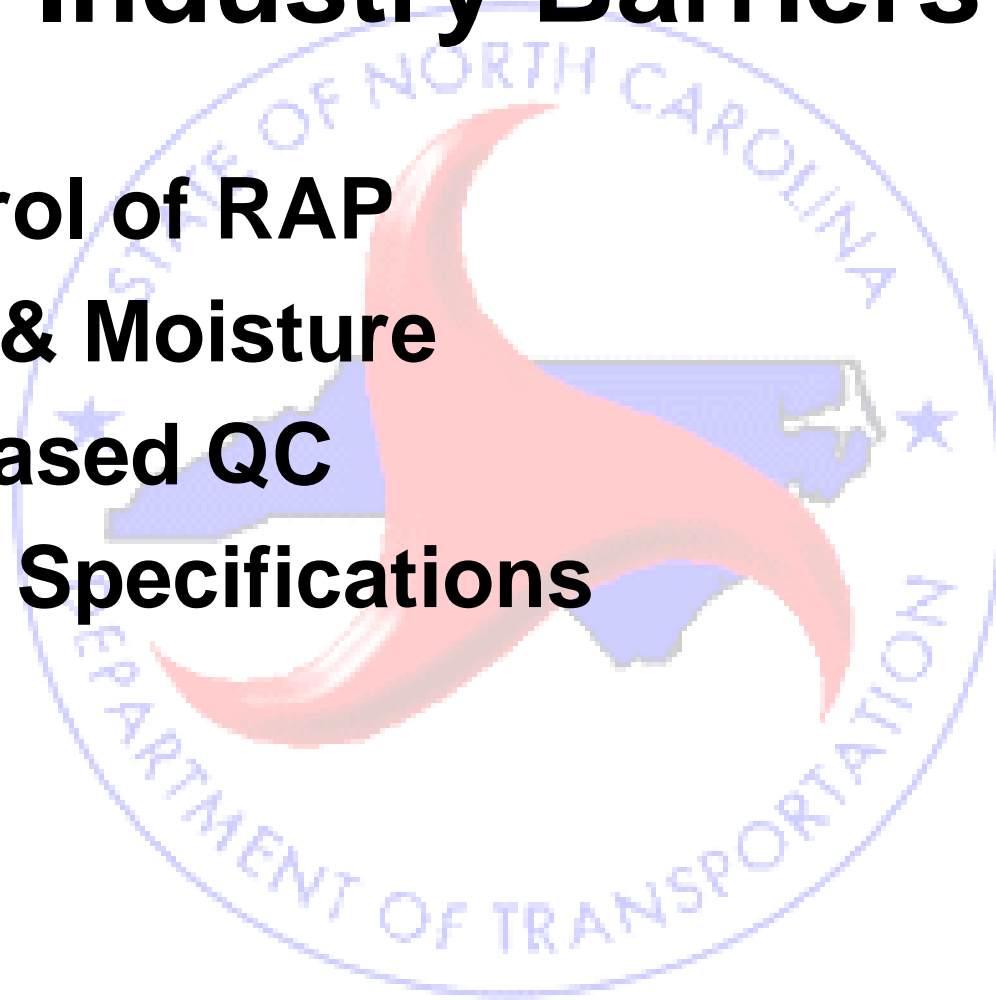


Specification Barriers

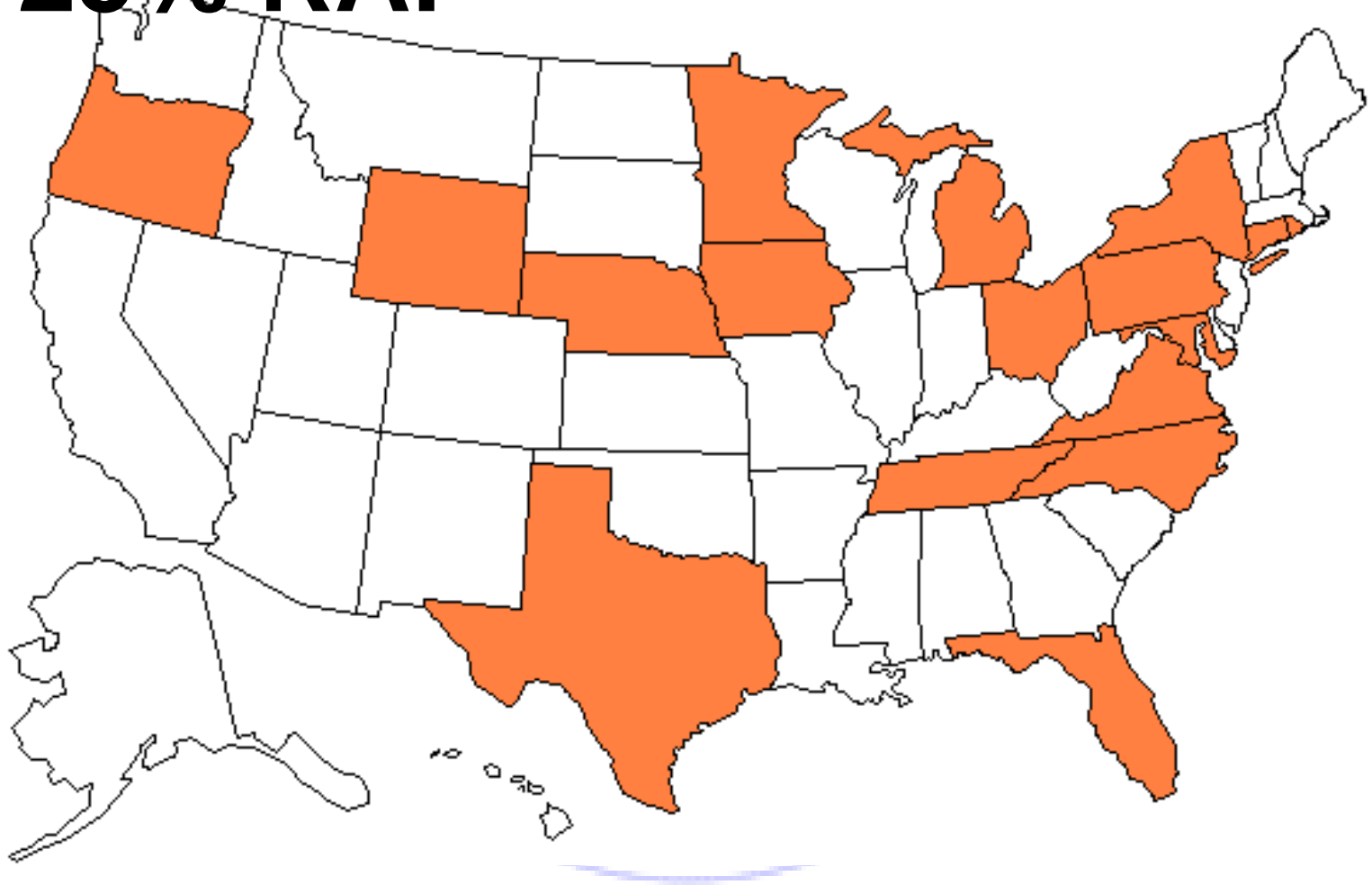
- **Quality Concerns**
- **Consistency of RAP**
- **Durability of Mixes**
- **Ability to Meet Volumetric Requirements**
- **Stiffness of Binder**
- **Use with Polymers**

Industry Barriers

- **Control of RAP**
- **Dust & Moisture**
- **Increased QC**
- **State Specifications**



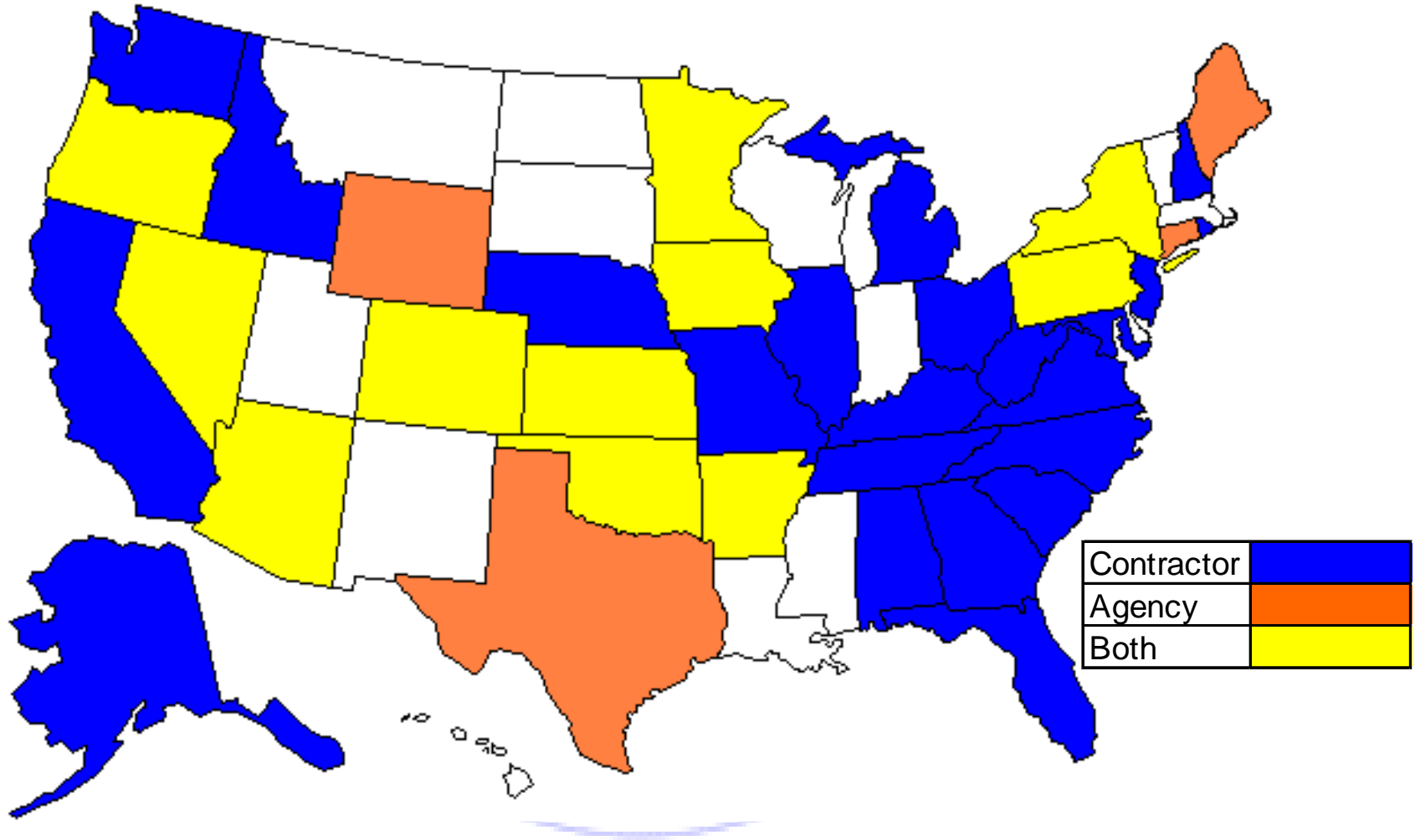
Recent Experience Using >25% RAP



“High RAP” Experience

- **Limited Experience**
- **Some Restrictions on Mix Type**
 - **Base Courses More Common**
- **Responses Indicated Interest to Learn More**

Ownership of RAP



Research Needs

- **Modulus of RAP Mixes**
- **Fatigue Concerns**
- **Final Effective Binder Grade**
- **Performance of High RAP Mixes**
- **Need to Bump Binder Grade**
- **How to Better Control RAP - Fractionating**

Next Steps

- **Contact Remaining States**
- **Clarify Other Responses**
- **Summarize Similarities**
- **Quantify Data**
- **Discuss at Subcommittee on Materials**

ETG Next Steps

- **Additional Information Needed?**
- **Marketing Success Stories**
- **Technology Transfer**
- **Guide Document for Subcommittee on Materials?**

Questions?

