

2022 ILLINOIS BITUMINOUS CONFERENCE



PRESERVING OUR NATION'S TRANSPORTATION INFRASTRUCTURE - *UPDATES & TRENDS*

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NATIONAL CENTER FOR PAVEMENT PRESERVATION (NCPP) at MSU

QUICK FACTS ON NCPP

- Established in 2003 through collaborative efforts of MSU, FHWA, and FP2 Inc.
- Mission is to provide outreach, education, & research needed to advance state of preservation practice and knowledge.
 - ✓ Initially dealt with pavement preservation
 - ✓ Today, portfolio includes:
 - Pavement and bridge*
 - Equipment*
 - Pavement Preservation Certification Program.*



QUICK FACTS ON NCPP (con't)



Currently also administering pavement and bridge preservation technical services programs (TSP-2) and the equipment management technical services program (EMTSP) for AASHTO.

AASHTO
TSP.2
QUICK FACTS



Principal Mission: *Serve as clearinghouse for information on preservation measures that enhance transportation infrastructure performance and extend their service life.*

Endgame: *Advance the state of the practice and knowledge for preserving our nation's transportation infrastructure.*

TSP2 Regional Preservation Partnerships

Bridge:



Pavement:



TSP2 Task Forces / Working Groups

From time to time, Task Forces or Working Groups may be formed to perform other actions which promote the objectives of the Partnership.

- Emulsion Task Force (ETF)
- Concrete Task Force (CTF)

The Task Forces, their activities, and deliverables, are listed on the TSP•2 website.

TSP2 Regional Preservation Partnerships (Con't)

□ **NCPP Overarching Objective:**

- Ensure mission of TSP•2 program effectively and efficiently achieved.
 - ✓ Provides technical, logistics, & administrative support.
 - ✓ Facilitates regional partnership activities,
 - ✓ Provide effective interactive websites,
 - ✓ Offers other assistance as needed or requested.



TSP2 Regional Preservation Partnerships (Con't)

□ Outreach: Facilitate Exchange of Preservation Information

4 Regional Partnerships

- ❖ Monthly Teleconference Meetings
 - Business
 - Technical Presentations/Discussion
 - Innovative Products/Practices
 - Preservation Challenges
 - Best Practices
- ❖ Annual Regional Meetings
- ❖ National Preservation Conference
 - Every 4 years (or so . . .)

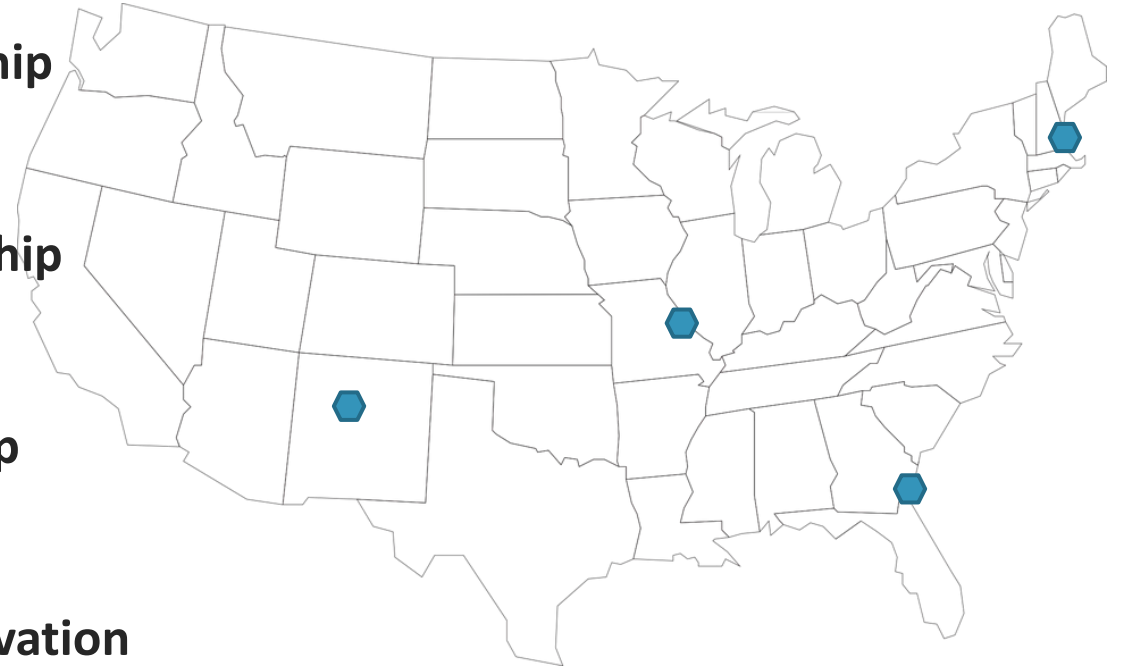
2022 Annual Regional Pavement Partnership Meetings

SEPPP - Southeast Pavement Preservation Partnership
Jekyll Island, GA - March 28-30

NEPPP - Northeast Pavement Preservation Partnership
Portsmouth, NH - May 3-5

MPPP - Midwest Pavement Preservation Partnership
St. Louis, MO - September 12-14

RMWPPP- Rocky Mountains West Pavement Preservation Partnership, Albuquerque, NM - September 27-29,



2023 National Pavement Preservation Conference

National Pavement Preservation Conference



PAVEMENT PRESERVATION: MAKING THE RIGHT CHOICES
September 18-21 • J.W. Marriott Hotel • Indianapolis, Indiana

Featuring:

- Live Treatment Demonstrations, Equipment Parade, and Pre-staged Treatment Displays
- Four Concurrent Technical Tracks Covering a Variety of Preservation Topics
 - Networking Opportunities with Fellow Practitioners and Exhibitors

PRESERVING OUR NATION'S TRANSPORTATION INFRASTRUCTURE

CONTEXT & QUICK FACTS

- Transportation Infrastructure is essential to:
 - ✓ Commute to work,
 - ✓ Obtain/deliver goods and services,
 - ✓ Visit with family and friends,
 - ✓ Travel both for leisure and work, etc.

QUICK FACTS

- Some statistics, from the *2020 USDOT Transportation Statistics Annual Report* ⁽¹⁾:
 - ✓ Connects 7.9M businesses with customers, suppliers, and workers.
 - ✓ Served 327M residents and 80M visitors.
 - ✓ Transportation assets valued at about \$8.3 trillion
 - Public highways & streets accounted for ~ 45% or \$3.7 trillion*
 - Other publicly owned transportation, such as airports, seaports, and transit structures, accounted for \$861 billion.*

QUICK FACTS (con't)

- The National Highway System consists of about 4.2 million center-line or 8.8 million lane-miles and more than 617K bridges.
- Close to 70% of the roadways are Local roads.
- About 1% of total system-miles are highways handling more than ¼ of total traffic volumes.
- 273.6 million motor vehicles drove a total of more than 3.2 trillion miles
- ✓ Commercial vehicles (trucks & buses) use accounted for about 10% of VMT

Pavement Preservation

Programs and Activities using a network level, long-term strategy that includes integrated, cost-effective set of practices that extend pavement life, improve safety, and meet road user expectations.



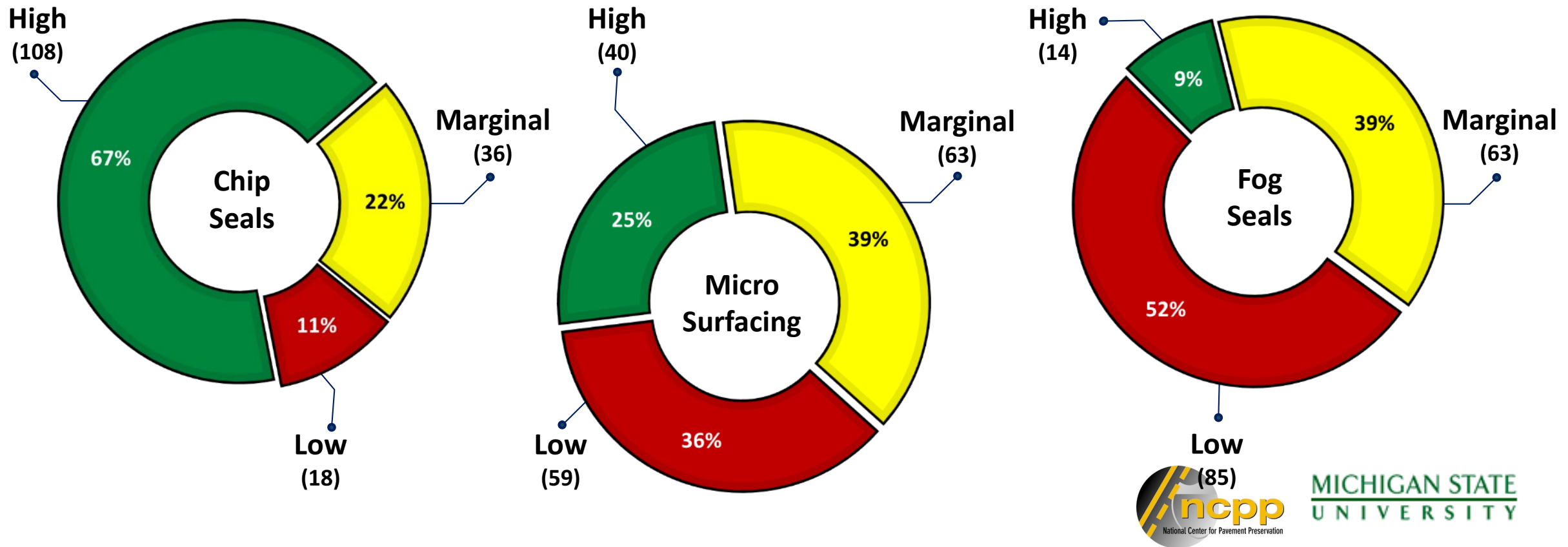
WHY PRESERVATION?

- Fundamental need to preserve transportation assets.
- Public agencies mission to provide a safe, efficient, resilient, and durable infrastructure.
- Ultimately, it is about economics:
 - ✓ *Significant reduction in construction and management costs.*
 - ✓ *Fewer traffic delays and negative impact on traveling public.*
 - ✓ *Time-efficiency and cost-effectiveness to optimizing service.*
- It is better for the Environment as well:
 - ✓ *It typically uses up to 80% less of natural non-renewable resources.*
 - ✓ *Extending pavement life through preventative strategies can reduce greenhouse gasses by up to 2% *.*

WHY PRESERVATION? (con't)

- In addition, with the implementation of performance measures through *MAP-21* and the *Fast Act*, states are required to develop a risk-based asset management plan to improve or preserve the condition and the performance of their transportation assets.
 - ✓ Held accountable for the condition of their transportation infrastructure.
 - ✓ Preservation is the most cost-effective approach to improve and maintain the state of good network condition.
- In light of the Bipartisan Infrastructure Law (BIL), the need to preserve our investment and ensure a resilient transportation infrastructure has never been greater.

State of Knowledge of Emulsion-based Treatments (Based on 162 Responses)



Pavement Preservation – Trends & Updates

- For several years, the TSP2 Regional Pavement Preservation Partnerships have been working with their member states to increase awareness, adoption, and use of Pavement Preservation programs.
- 4 major focus areas:
 - ✓ *Certification and Lab Accreditation*
 - ✓ *Updated Specifications*
 - ✓ *Focused Training and Education*
 - ✓ *Research and Testing of Materials and Processes*



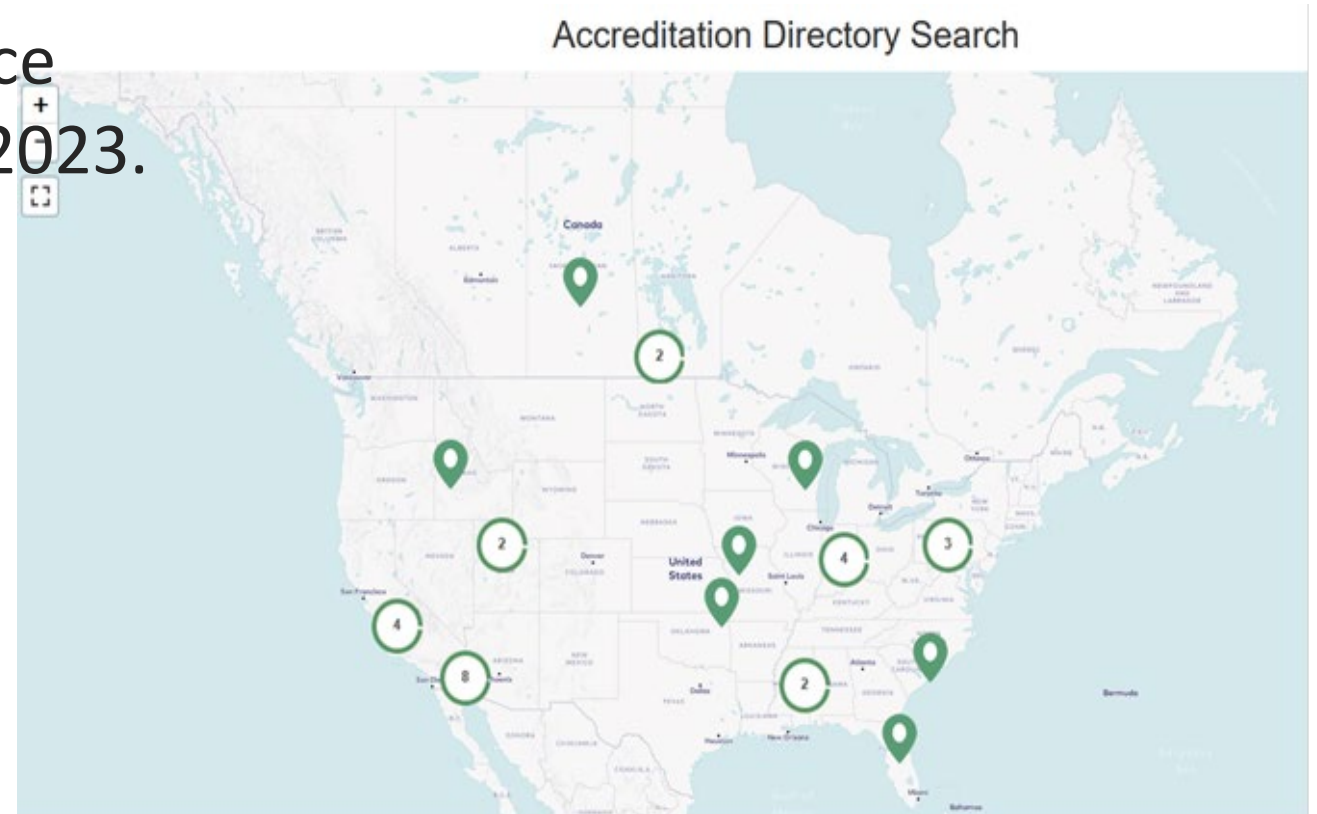
Certification

- NCPP collaborated with its stakeholders to develop a certification program that combines education and testing. It covers:
 - ✓ Individuals - Agency and Contractor
 - ✓ Contractor
 - ✓ Agencies
- Separate certification for contractor and agency personnel.
- Testing can be completed in-person at a proctored site or on-line.
- Spanish-version available.
- First group of individuals was certified in 2016.



AASHTO:resource - Lab Accreditation

- 32 Labs have been accredited since 2016. More are in the queue for 2023.
- Working with AASHTO:resource (formerly AMRL) to develop accreditation standards for slurry surfacing design labs.



New Specifications

- AASHTO Specifications and Construction Guides approved and published in 2022 for:
 - ✓ Micro surfacing, Chip Seals and Fog Seals.
 - ✓ Diamond Grinding.
- Additional Specifications are in development for other treatments.
- Draft QA/QC Guides for Chip Seal and Slurry Systems are at the review stage for publication.
- Polymer Modified Slurry Seals
 - ✓ *Recently approved, this new Specifications and construction guide bridge the gap between standard Slurry Seal and Micro surfacing.*
- On-going efforts to harmonize AASHTO and ASTM standards

Ongoing Research

NCAT/MnROAD - Pavement Preservation Group Study

- To quantify service-life extension and condition-improving benefits of different pavement preservation treatments on low-volume and high-volume roads in both northern and southern climates.
- Test Sections have been placed at various locations in Alabama and Minnesota.
- Most of the preservation treatments are out-performing expectations after 10-years of service.

More information can be found at: [Pavement Preservation \(auburn.edu\)](http://Pavement Preservation (auburn.edu))



Ongoing Research

Micro Surfacing Sampling and AC Content Determination

Objectives

- ✓ Develop a field sampling procedure
- ✓ Test method to determine the asphalt binder content in a slurry surfacing system.

Research is complete and under review. Expect publication in 2023.

Illinois DOT – Asphalt Content in Micro surfacing Mixtures

Ongoing NCHRP Projects

- NCHRP 9-62 Rapid Tests and Specifications for Construction of Asphalt-Treated Cold Recycled Pavements.
- NCHRP 14-43 Construction Guide Specifications for Cold Central Plant Recycling and Cold In-Place Recycling
- NCHRP 14-44 Construction Guide Specifications for Slurry Seals, Scrub Seals, and Tack Coats. Andrew Braham
- NCHRP 14-48 Construction Guide Specifications for Pavement Treatments - Sand Seals and Ultra-thin Bonded Surface Treatments.
- NCHRP 10-144 Developing Performance and Safety Specifications for Rejuvenating Seals.
- NCHRP 10-124 Development of Field Test to Determine Actual Percent Embedment of Chip Seal Aggregate.



NCHRP 20-44(26) Implementing Guide Specifications for the Construction of Chip Seals, Micro Surfacing, and Fog Seals

□ **Background**

- ✓ Initial Construction Guide Specifications developed through NCHRP 14-37.
- ✓ These specifications adopted as AASHTO Provisional Standards.

□ **Project Objective**

- ✓ Develop and execute a dissemination and implementation plan to generate awareness of these Construction Guides.



IMPLEMENTATION PLAN

- **Implementation effort consists of 5 tasks:**
 1. Information Dissemination
 2. Outreach
 3. Training
 4. Demonstrations
 5. Final Report

Educational Opportunities

RoadResource.org

All things Pavement Preservation from PPRA (Pavement Preservation and Recycling Alliance).

Website includes:

Detailed Information on 18 Preservations treatments.

Network Optimization Calculators that help prove the benefits of preservation using YOUR data.

Treatment Selection based on:

Distress

Pavement Criteria

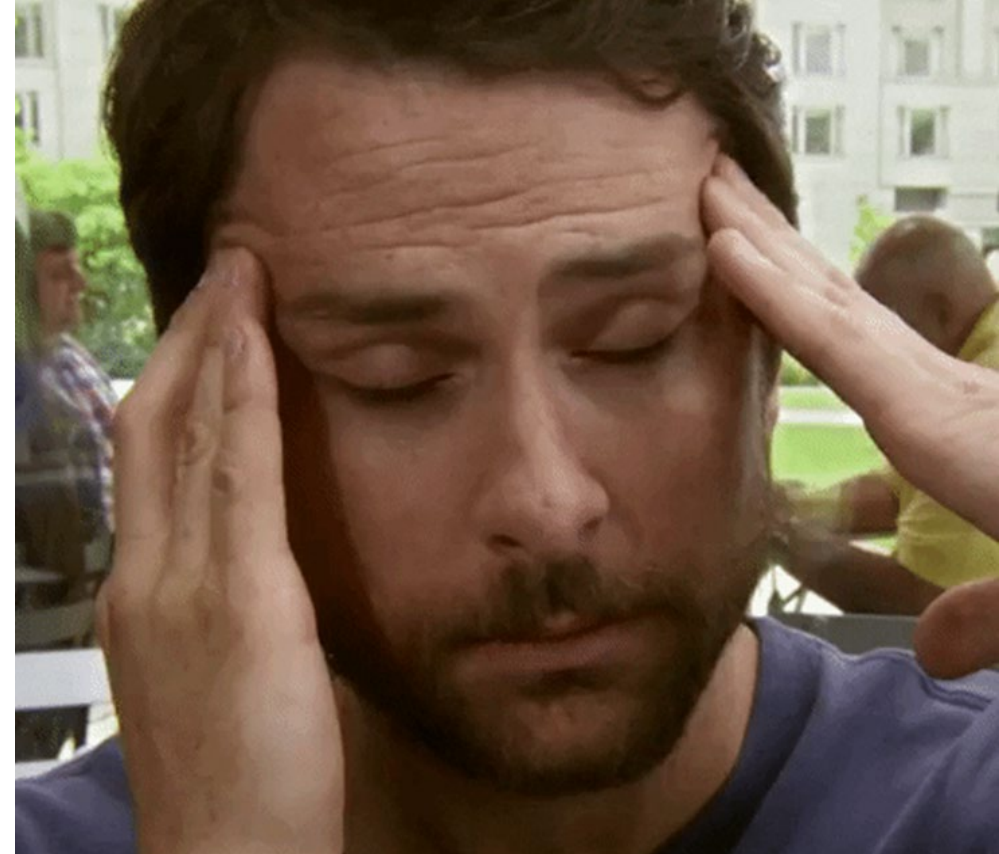


Educational Opportunities

Development of university level class modules on pavement preservation.



Other Governmental Initiatives

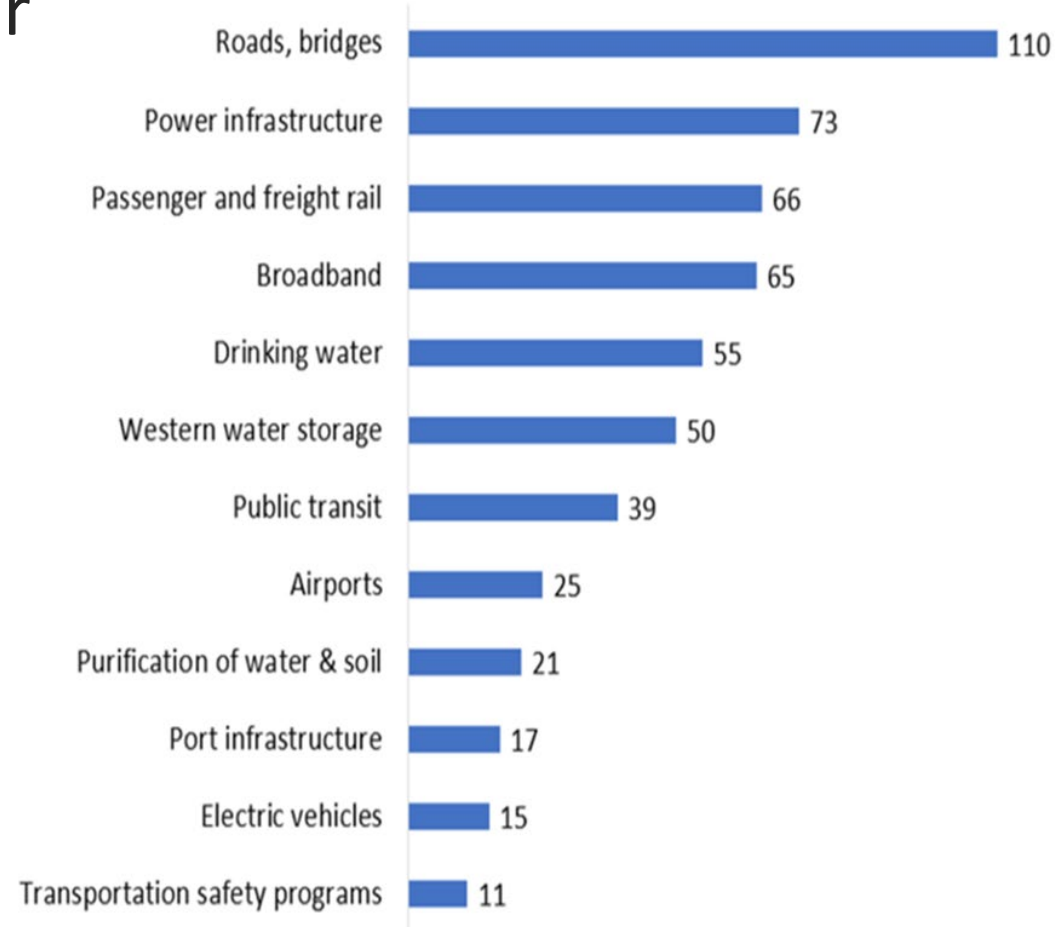


Infrastructure Investment & Jobs Act (IIJA) (aka Bipartisan Infrastructure Law or BIL)

- Signed into law - Nov 15, 2021
- Scheduled to go into effect - May 14, 2022
 - ✓ *6 months waiver issued – New implementation Nov. 10, 2022*
 - ✓ *Numerous requests to delay further*
- IIJA total budget: \$1.2 Trillion total
 - *Original bill - \$547 billion*
 - *Amended bill – 1.2 trillion*
 - *Roads & Bridges~ 10%*

- Roads/Bridges: \$110 Billion over five years
 - ✓ *35% increase over baseline spending for roads*
 - ✓ *39% of that will be distributed through discretionary grants*
 - ✓ *Additional research funding to current research programs*

Infrastructure Investment and Jobs Act (\$ Billion)



Total estimated infrastructure bill allocations / State

Alabama – \$7B	Indiana – \$8.8B	Nebraska – \$3B	South Carolina – \$6.1B
Alaska – \$4.9B	Iowa – \$5.1B	Nevada – \$4B	South Dakota – \$2.8B
Arizona – \$7.3B	Kansas – \$3.8B	New Hampshire – \$2B	Tennessee – \$8B
Arkansas – \$5B	Kentucky – \$6.5B	New Jersey – \$13.5B	Texas – \$35.4B
California – \$44.6B	Louisiana – \$7.3B	New Mexico – \$3.7B	Utah – \$4B
Colorado – \$6.2B	Maine – \$2.4B	New York – \$26.9B	Vermont – \$2.2B
Connecticut – \$6B	Maryland – \$7.4B	North Carolina – \$10.4B	Virginia – \$10.1B
Delaware – \$2.4B	Massachusetts – \$9.3B	North Dakota – \$2.6B	Washington – \$8.6B
Florida – \$19.1B	Michigan – \$10.8B	Ohio – \$12.8B	West Virginia – \$4.4B
Georgia – \$12.3B	Minnesota – \$6.8B	Oklahoma – \$5.8B	Wisconsin – \$7.3B
Hawaii – \$2.6B	Mississippi – \$4.5B	Oregon – \$5.4B	Wyoming – \$2.6B
Idaho – \$3B	Missouri – \$9B	Pennsylvania – \$17.8B	
Illinois – \$17.8B	Montana – \$3.9B	Rhode Island – \$2.6B	

Bill allocations for local agencies

Local agencies have the opportunity to access funds through:

- Competitive grants
- Sub-allocations based on the state's population
- Federal formulas

PRESERVATION & RESILIENCY/SUSTAINABILITY

- *Growing emphasis on making infrastructure more sustainable and resilient.*
- Preservation essential to sustainability and resiliency of our transportation infrastructure
- Proper and appropriate timing of preservation treatments key to optimizing sustainability and resiliency benefits
 - ✓ Extending pavement service life
 - ✓ Lessens amount of new construction or reconstruction
 - ✓ Less material mining, acquisition, processing, and hauling
 - ✓ Reduces congestion and impact to traveling public due to construction delays
 - ***Ultimately reducing vehicle greenhouse gas emissions.***
 - ***FHWA issued guidance clarifying that sustainable pavements and construction materials are eligible/preferred for funding as part of its Carbon Reduction program***

Buy Clean Provision

Federal Sustainability Plan and Executive Order 14057 established a Buy Clean Task Force and initiative to promote use of low-carbon, made in America construction materials

The Buy Clean Task Force is charged with developing recommendations on policies and procedures to include:

- ✓ Identifying materials as well as pollutants to prioritize for consideration in Federal procurement and federally-funded projects;
- ✓ Increasing the transparency of embodied emissions through supplier reporting, including incentives and technical assistance to help domestic manufacturers better report and reduce embodied emissions; and,
- ✓ Launching pilot programs to boost federal procurement of clean construction materials.



Buy Clean Provision



- State and local agencies to establish targets on:
 - ✓ Declining carbon dioxide targets and
 - ✓ On-road reductions as part of their performance measures.
- Funding, at some level will be directly tied to environmentally friendly construction processes.
- Inflation Reduction Act passed recently set \$250 million for assistance in developing Environmental Product Declarations (EPDs) for construction materials.

Buy Clean Provision

\$4.5 billion allocated to the General Services Admin,
Department of Transportation, & Environmental Protections
Agency.

- Designate construction materials & products that produce sustainably lower levels of greenhouse gases
- Incentives for low carbon materials
- Prioritize purchase of materials that have lower levels of GHG emissions

Build America-Buy American Act (BABA)

Application of Buy America Preference

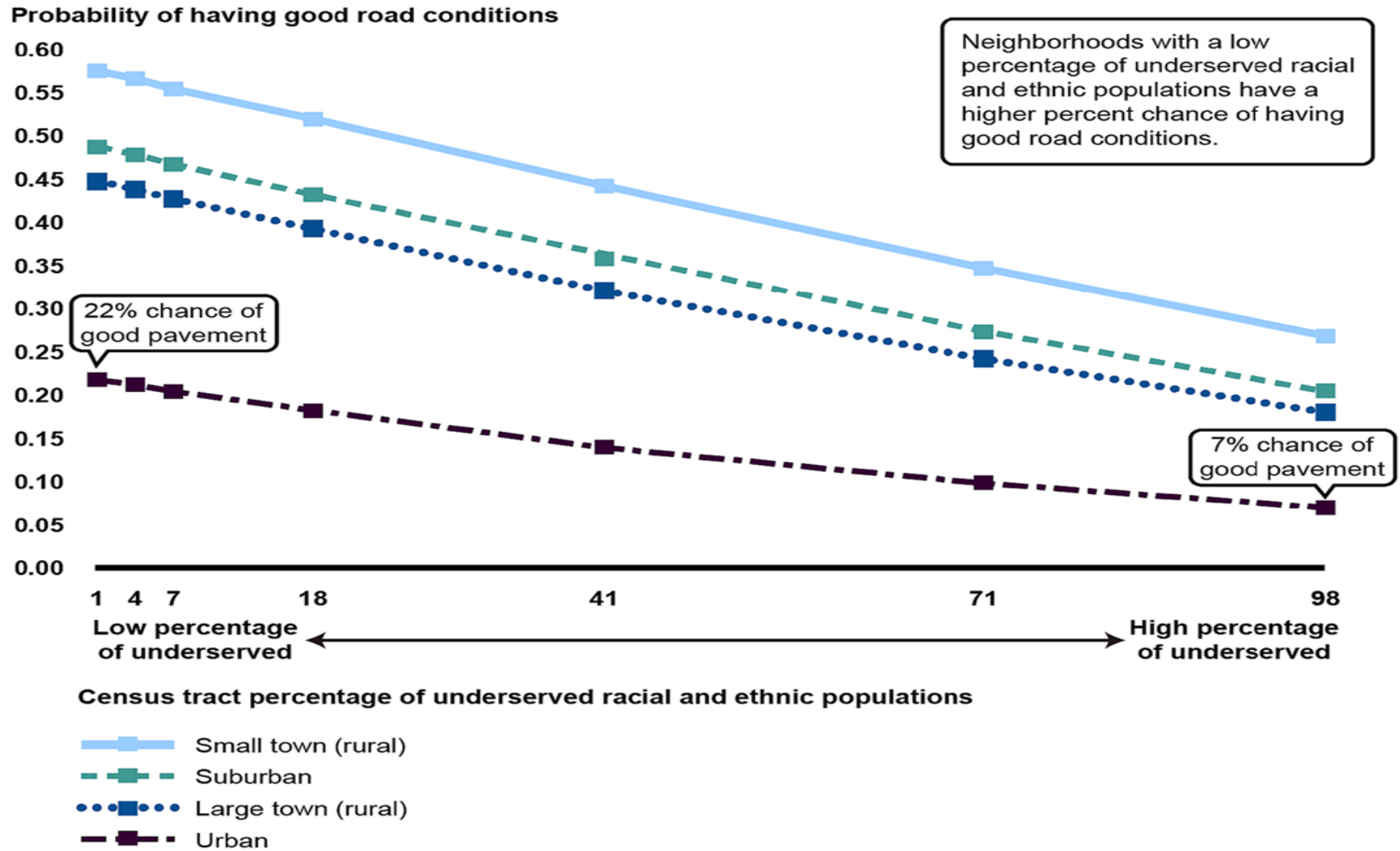
- SEC. 70914 of the Bipartisan Infrastructure Law (BIL)

(a) IN GENERAL. – Not later than 180 days after the date of enactment of this Act, the head of each Federal agency shall ensure that none of the funds made available for a Federal financial assistance program for infrastructure, including each deficient program, may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States. (emphasis added)

Equity & Pavements

- Conditions of pavements tend to be worse in Communities with Higher Percentages of Underserved Racial and Ethnic Populations, Communities with Higher Rates of Family Poverty, and Urban Areas
- FHWA urged to better-examine pavement condition in local, rural & urban areas where improvement is needed.
- US Department of Agriculture department released \$71 million in grants in pursuit of 'equality and justice'

Equity & Pavements



Source: GAO analysis of Federal Highway Administration, U.S. Census Bureau, National Aeronautics and Space Administration, and U.S. Department of Agriculture data. | GAO-22-104578

A crocodile is captured in the middle of a splash on a dark asphalt road. The crocodile's head and front legs are visible above the surface of the water, which is splashing outwards. The background shows a paved road curving to the right, lined with green trees and a blue sky with light clouds.

*Thank You &
Have a great meeting*

"We are what we repeatedly do. Excellence, then, is not an act, but a habit."

Aristotle