

In-Place Recycling Activities in Vermont

Northeast & Mid-Atlantic In-Place Recycling Conference

August 24 – 26

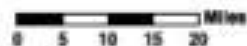
Harrisburg, Pennsylvania

Michael J. Fowler, PE

Pavement Management Engineer



PAVEMENT MANAGEMENT



VTrans Demographics

- Approximately 3800 centerline (two-lane) miles.
- Approximately 4500 FTE's (1,200 VTrans)
- FY 2010 ~ 110 construction projects let
- ~ 220 million dollars
- FY 10 \$30 M for full-depth reclamation
- FY 10 \$57 M for minor pavement preservation
- FY 10 \$11 M for preventive surface treatments

Past Recycling Projects

(Note: Does not include RAP in HMA)

- 2005 (\$3 M)
 - 5 miles unstabilized FDR
- 2006 (\$11 M)
 - 17 miles unstabilized FDR
 - 5 miles plant produced (on-project) Cold Mix Base
- 2007 (\$12 M)
 - 18 miles unstabilized FDR
 - 2 miles of Portland Cement Stabilized FDR
- 2008 (\$14 M)
 - 20 miles unstabilized FDR
 - 7 miles plant produced (on-project) Cold Mix Base

Recent Recycling Projects

(Note: Does not include RAP in HMA)

- 2009 (\$14 M)
 - 18 miles of Portland Cement Stabilized FDR
 - 18 miles plant produced (on-project) Cold Mix Base
- 2010 (\$29 M)
 - 3 miles unstabilized FDR
 - 42 miles of Portland Cement Stabilized FDR
 - 6 miles plant produced (on-project) Cold Mix Base
 - 12 miles Hot In-Place (HIR)

Planned Recycling Projects

(Note: Does not include RAP in HMA)

- 2011 (\$20 M)
 - 22 miles FDR
 - ?? miles of Portland Cement Stabilized FDR
 - ?? miles plant produced (on-project) Cold Mix Base
 - Pending candidates for HIR and CIR

Why In-Place Recycling

- ***INCREASE COMPETITION***
 - Distress Dependent Treatments
 - Remoteness of projects
 - Aggregate supply
 - Long hauls for hot mix
 - The need to do more with less \$\$\$\$
- Environmental Considerations

Utilizing More In-Place Recycling

- INSTITUTIONAL/CULTURAL RESISTANCE
 - Paradigm shift
 - Previous experiences
 - Education or lack of experience processes
- Lack of robust Standard Specifications

VERMONT FACTS

- State Mammal



- Morgan Horse





Thank You

NHDOT In-Place Recycling Activities

Northeast & Mid-Atlantic States In-Place Recycling Conference

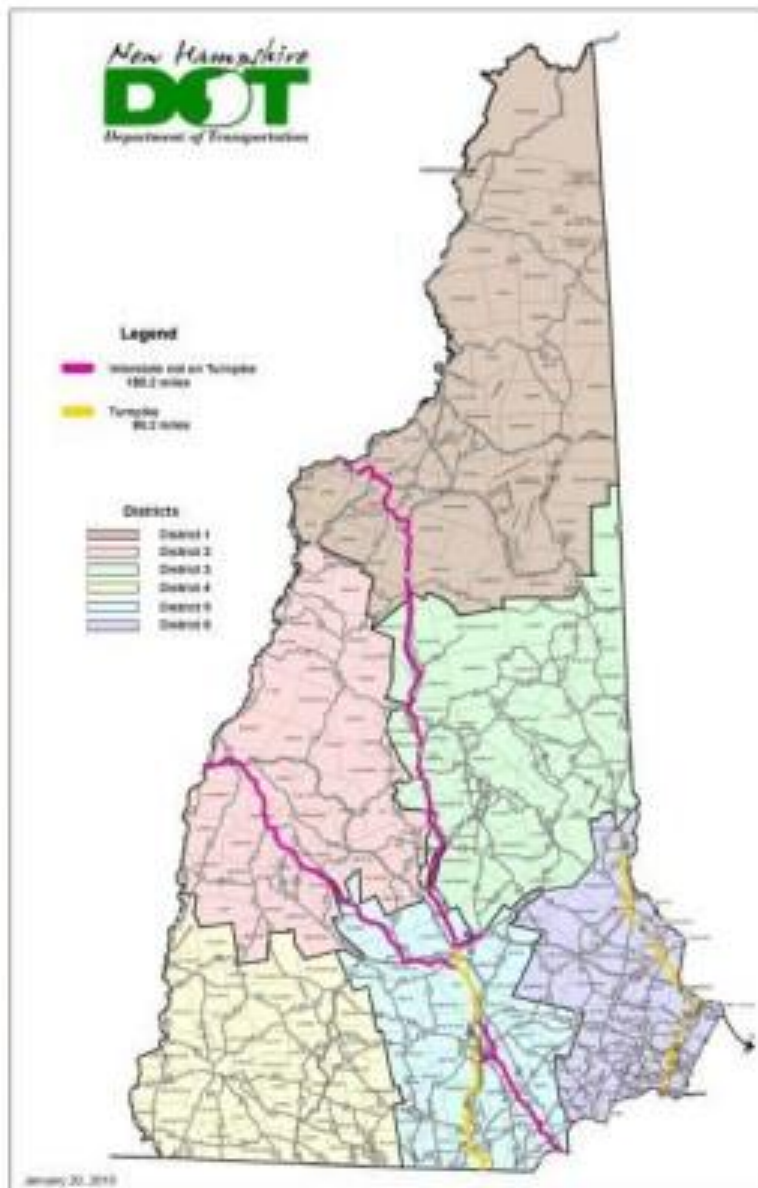
Harrisburg, PA

August 24-26, 2010



Eric Thibodeau, P.E. – Pavement Management Chief

New Hampshire Demographics



- 2,500 Employees
- 4,500 CL Miles
 - 6 Maintenance Districts
 - Turnpikes
- 2009 Summary
 - 74 Projects
 - \$278 Million
- 2010 Summary
 - 101 Projects
 - \$529 Million
 - \$58.2M for Resurfacing/Preservation

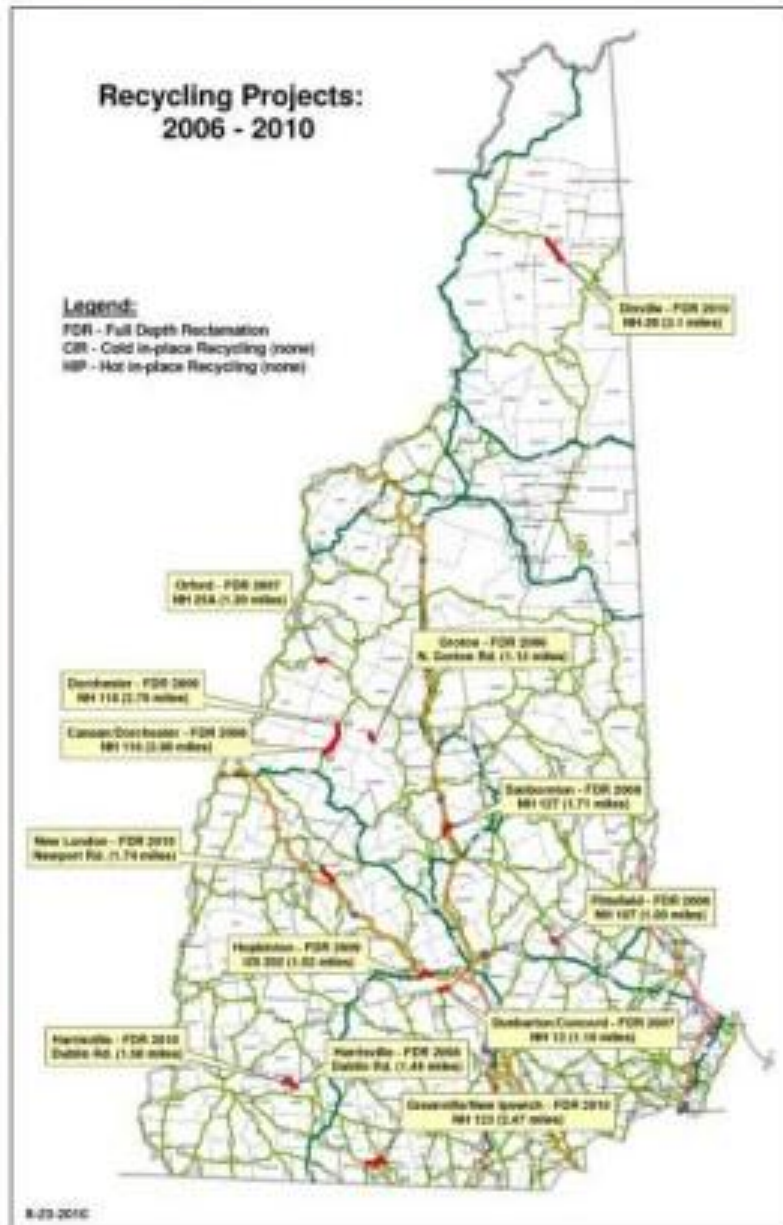
New Hampshire State Animal



White-Tailed Deer

Experience With In-Place Recycling

- Last 5 Years
- 13 Projects
- Full Depth Reclamation Only
- Non-Stabilized
- Sometimes add stone



Experience With In-Place Recycling

- 1992-2002
 - 8 Cold In-Place
 - 1 Hot In-Place



Cold In-place / Hot In-place Recycling Projects: 1992 - 2002

Legend:

CRP - Cold in-place Recycling
HPP - Hot in-place Recycling



Why NH Chose In-Place Recycling

- **Full Depth Reclamation (FDR)**
 - Way to “renew” the road
 - Less costly than full depth recon.
 - Less traffic disruption
- **Hot In-Place (HIP)**
 - Limited experience (1 project in 1992)
 - Correct surface defects prior to overlay?
 - Starting to develop new guidelines now
- **Cold In-Place (CIR)**
 - Less costly than traditional mill and fill
 - Green treatment
 - Correct surface defects (deeper) prior to overlay



Barriers To Using In-Place Recycling

- Lack of experience/training
- Lack of structurally sound “built” roads
- Funding constraints
- Small State
- Past experiences (perceived failures)
- High expectations

THANK YOU



The Commonwealth of Pennsylvania's Department of Transportation

A brief overview of PennDOT

Charles C. Goodhart
Director, Bureau of Maintenance and Operations

cgoodhart@state.pa.us

(717) 787-6899

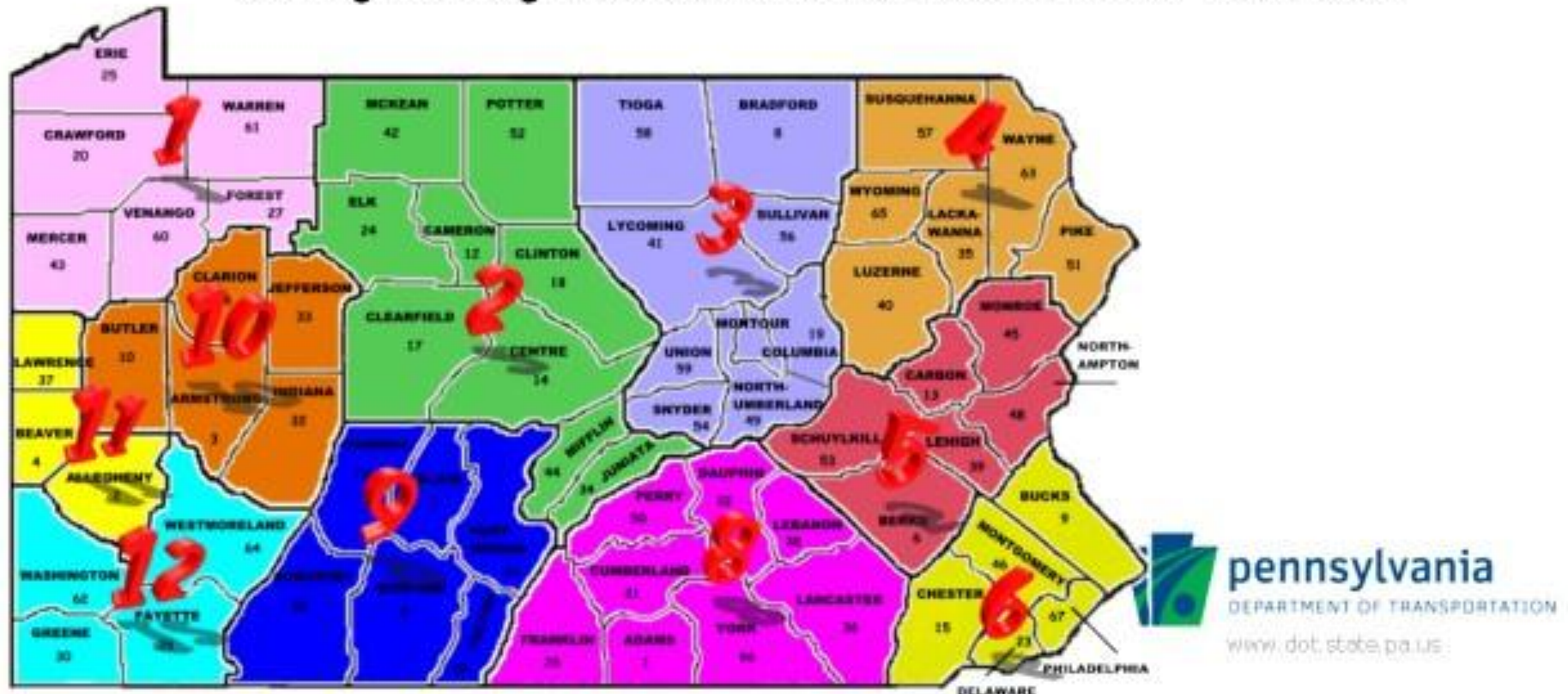


Pennsylvania Roadways

- Total 121,770.5 linear miles of state and local highways.
- Total 55,000 state and local bridges.
- PennDOT directly responsible for
 - 40,000 miles of highways (Ranked 5th).
 - 25,000 bridges over 8-feet long, with more than 15,000 of those being over 20-feet long are state-maintained (Ranked 3rd).
- System first established in 1911.

PennDOT's Employees

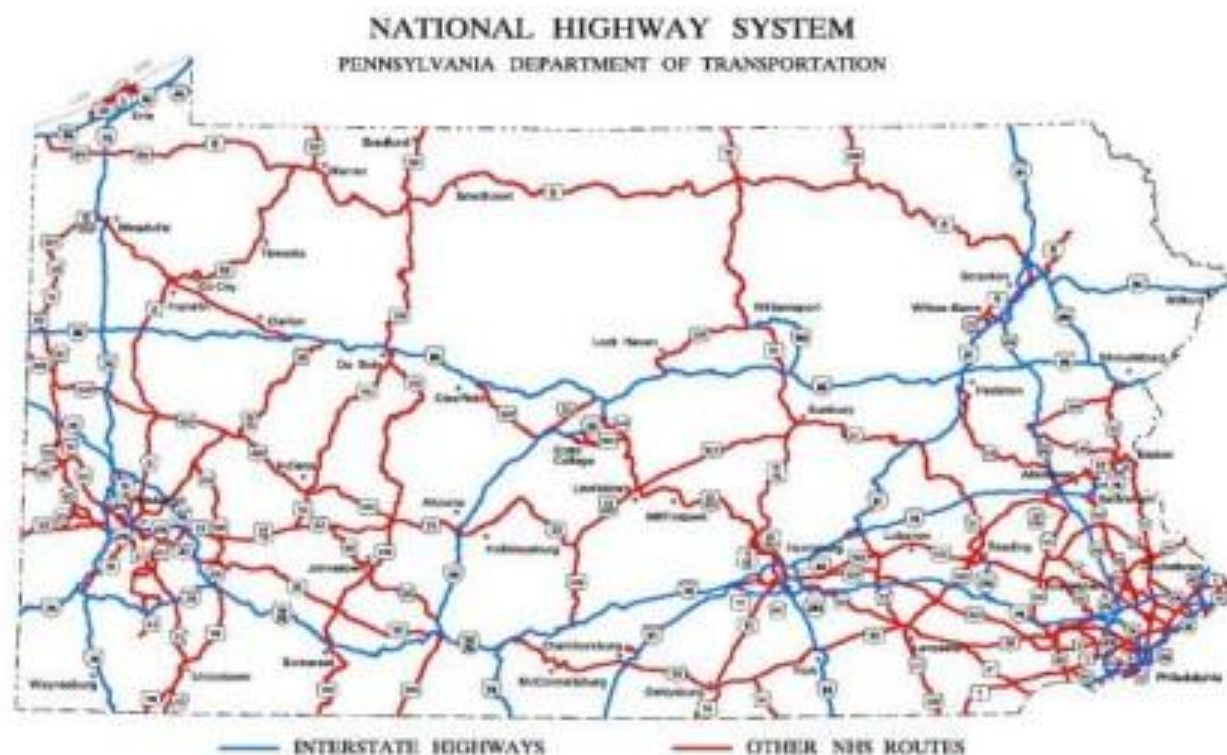
- 12,000 total employees in the Department
 - 10,500 employees dedicated to the maintenance, restoration and expansion of the state highway system.
 - Work in Central Office in Harrisburg and 11 Engineering Districts with facilities in all 67 counties.



National Highway System Network

Total Interstate
segment miles –
2,701.87

Total NHS non-
Interstate segment
miles – 5,271.76



Pennsylvania State Animal

White-tailed deer



*Note: This is not road kill. That is a whole other maintenance issue.

Construction Projects

- 901 Projects Let (Contract) in FY '09
 - Bridge Replacement
 - Bridge Rehabilitation
 - Resurfacing
 - New Construction
 - Reconstruction, Widening
 - Concrete Pavement Rehabilitation
 - Guiderail Improvement, Signals, Pavement Markings
 - Slide Stabilization
- \$3,035,841,472.54 Total Original Contract Amount



Recycling Tools Employed

- Cold In-Place Recycling
- Mobile Plant-Mix Recycling
- Mixer-Paver Recycling
- Full-Depth Reclamation



Recent Projects

- Cold In-Place Recycling

- FY '09 – 56 miles
 - \$3,400,000
- FY '10 – 66 miles
 - \$3,800,000

(Contract costs)



Recent Projects

- Mobile Plant-Mix Recycling
 - Current FY – Planned 200,000 Tons
 - 130,000 Tons Placed YTD

(Department Force Projects)



Recent Projects

- Mixer-Paver Recycling
 - 20,000 Tons (Department Force Projects)
 - 7 miles



Recent Projects

- Full-Depth Reclamation
 - 100 miles in FY '09
 - \$4,800,751 Total Spent
 - Includes Department Manpower, Materials, Equipment, as well as Rented Equipment/Reclaimers.
- Will increase due to Marcellus Shale Industry.
- Research Project ongoing to develop standards and specifications for FDR.



Why Does PennDOT Use Recycling Tools?

- Reclaimed Asphalt Pavement (RAP) Material Available
- Upgrade/Stabilize Dirt and/or Low Volume Routes
- Promotes "GREEN"
 - Reduces demand for Natural Resources
 - Aggregates
 - Asphalt
 - Fuel



Why Not More?

- Competition with HMA producers for RAP.
- Capacity.
- Currently sorting out RAP Policy.



Suggestions to Industry

- Promote through Municipal Organizations
- Continue research on additive binders
- Market in Northeast United States to Marcellus Shale Industry.



pennsylvania
DEPARTMENT OF TRANSPORTATION
www.dot.state.pa.us

Thank you!

Any Questions?

DISTRICT OF COLUMBIA

DEPARTMENT OF TRANSPORTATION

d.

STATE DEMOGRAPHICS

- NUMBER OF EMPLOYEES: around 1100

Design and Construction Group: around 200

- TOTAL ROADWAY NETWORK: 4,346 lane miles

LOCAL: 2,292 lane miles

FEDERAL: 2,054 lane miles

STATE DEMOGRAPHICS

▪ CONSTRUCTION PROJECTS

- Major Reconstruction: 24
- Federal Aid Citywide Paving
- Local Citywide Paving, sidewalk, curb & gutter, Alleys

▪ ANNUAL \$\$ AMOUNT CONTRACTED

- Federal: \$ 100 million*
- ARRA: \$ 123.5 million
- Local: \$ 13 million

* Excludes mega projects (i.e. 11th Street Bridge, Street Cars)

STATE DEMOGRAPHICS

STATE ANIMAL



Wood Thrush

d. IN-PLACE RECYCLING

- No experience with In-Place Recycling in past 30 years
- Implementation of Pavement Preservation Program
- More information needed on Recycling:
 - Material Properties and Mix Design
 - d. challenges: City Environment, Utilities
 - Contractors / specialties

d.

www.ddot.dc.gov

64 New York Ave, NE, 1st Floor

Washington, DC 20002

(202) 671-2800

d.