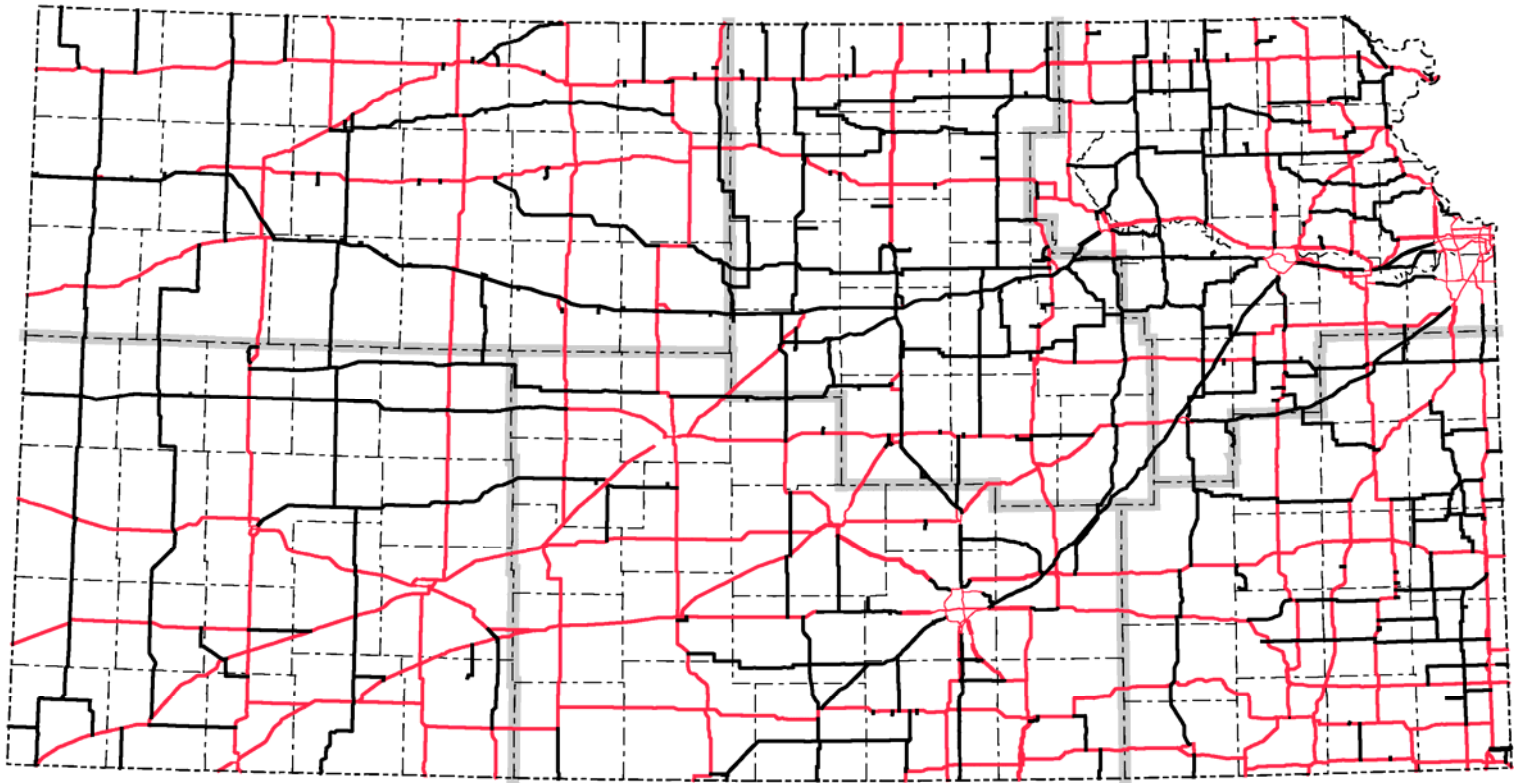


KDOT

Road to Pavement Preservation

2005 Maintenance Conference
Kansas City, Missouri
November 1, 2005



System

- 9,565 Centerline miles
- 25,872 Lane miles
- 4,932 Bridges
- 2,688,418 Population

National Survey

1995 & 2000 by NPHQ

- What Does the Public Really Want?
 1. Smooth Driving Surface
 2. Pavement Free of Obstructions (Such as Potholes, SNICE)
 3. Well Marked (Stripes & Signs)

- Pavement Preservation covers 1 & 2

Factors in the KDOT Pavement Preservation Program

1. Commitment from Top Management (Selling Top Management)
2. A System to Measure Results/Progress & Setting Goals for the System
3. Keep Pavement Preservation Program Simple (Few Rules)
4. Champions Within the Agency
5. Keep Selection of Actions Open (One Size Does Not Fit All)

Commitment and Factors Concerning Top Management

- Long Term – Through a Number of Administrations
- Willing to Mix Funds – Preventative Maintenance, and Rehabilitation (Reconstruction Considered new Projects)
- Doing Maintenance (Preservation) Rather than New Projects

Commitment and Factors Continued

- Defend working on newer roads rather than deteriorated roads
- Overall Highway Needs are Great
- Results Are Slow in Coming

How KDOT Gained Commitment?

- In 1983 Sold the Concept that Having Good Smooth Surface was Necessary
- Noted the Lack of Any Contract Actions
- Showed the Condition of the System (New Pavement Management System)
- Offered to Give Up 300 Maintenance Positions by Attrition
- Buy Less MRA in District Budget
- Transfer Savings

KDOT Commitment Continued

- Secondary Selling Point was to Get KDOT Maintenance Forces Off the Pavement
- Top Management Agreed but Added Its Requirements
 1. Wanted Something Done to 1000 Miles per Year
 2. Only Enough Money to Average a $\frac{3}{4}$ " Overlay on the Selected Locations
- It was A Start
- Dedicated Dollars

Pavement Measuring System PMS

- KDOT PMS became available in 1983
- Data Collection Done Annually
 - All Approximately 10,000 Center Line miles
 - Done in Spring
- System is Divided into Approximately 11,500 One Mile Segments
- Each Segment is Measured for:
Roughness (IRI), Rutting, Cracking,
Faulting & Joint Distress

PMS & Pavement Preservation

How does PMS work?

- Data Collection
- Data Reporting
- Data Analysis
 - Major Modification Support
 - Substantial Maintenance Support
- Could Spend Session Just on PMS

KDOT Measuring Systems & Goal Setting

- Depending on Surface Type (HMA or PCCP) Only 3 Elements Used to Determine a Composite Number
- Distress Number Represents a Measured Range

KDOT Measuring System & Goal Setting Continued

- When Combined from Individual Elements
 - Create Distress States for Each Section
- Distress States Used to Determine Performance Levels
- Performance Levels Are: PL 1 Good, PL 2 Acceptable, PL 3 Poor

- Roughness or Ride Carries a Greater Weight (System is Ride Driven)

Using Benefit to Assign Performance Level



KDOT Goal Setting

- We Had a Starting Condition
 - 1983 Condition
 - Interstate: 49% in Level 1, and 14% in Level 3
 - Non Interstate: 43% in Level 1, and 19% in Level 3
 - Goal
 - System: 72% in Level 1 and No More than 5% in Level 3
 - Funding Constraints

PMS & Pavement Preservation

- Outputs from PMS
 - Candidate Project Mileage for Each District
 - Candidate Project Locations for Out Years
 - Preliminary Scopes
 - Maps with Distress & Planned Projects Noted

KDOT Pavement Preservation Program (Simple Rules)

- Funding - Substantial Maintenance
- Funds Controlled by Chief Bureau C&M
- Funds Spent on a State Wide Basis
- PMS is Run to Optimize Benefits Received for Dollars Invested on Pavements
- PMS generates candidate list, proposed actions and Allots Miles to Each District

KDOT Pavement Preservation Program (Simple Rules) Continued

- Districts Develop Logical Projects from Selected Sections
- Results Become the Program for Next Year as to Location of Projects
- Action Shown is PMS Pick and is Tentative
- First Cut at Budget

KDOT Pavement Preservation Program (Simple Rules) Continued

- Annual 1-R Tour (March & April)
- 1-R Team
 - District Engineer
 - Chief Materials & Research
 - Chief Construction & Maintenance
- Field Review Every Project Location Selected
- Review History of Project
- Use Engineering Judgment
- Select Individual Project Scopes/Actions

Agency Champion

- Many Champions Within KDOT
- Bureaus
- Districts
- Areas & Sub Areas
- Construction & Maintenance

Selection of Actions

- Willing to Try New Products
- “One Size Does Not Fit All”
- No Set Trigger Value Initiates an Action

Selection of Actions

- List of Action Being Used

Bituminous Seal	1" to 4" Overlay
Rout & Crack Seal	1" to 4" Inlay
Heater Scarification	Cold Milling
Cold Recycle (4")	Nova Chip
Diamond Grind	PCCP Patching
Joint Repair	Dowel-Bar Retrofit
MSS	SAF Interlayer

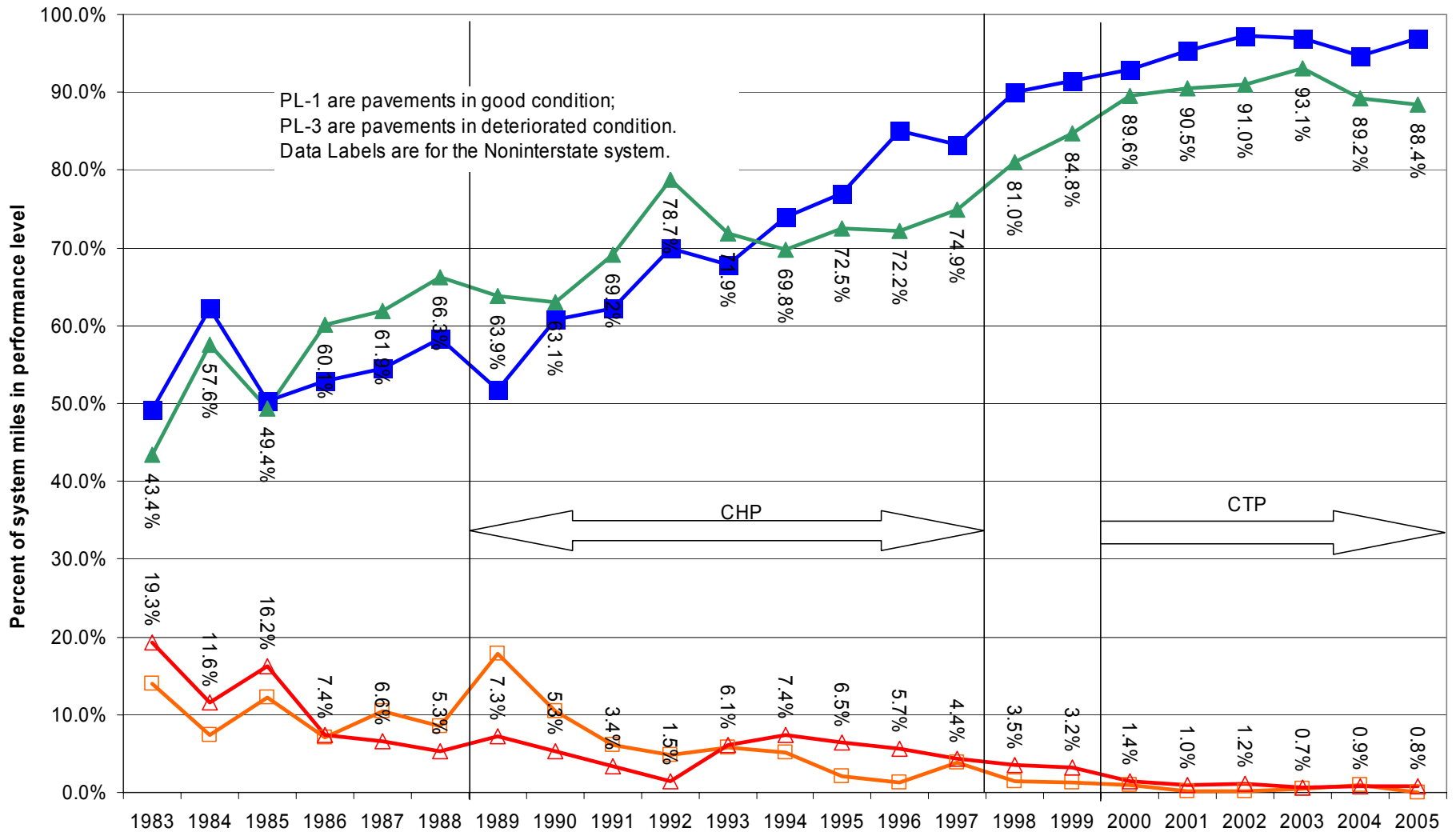
- Often a Combination of the Above

Results

- Non-Interstate System
- Interstate System

Success? Condition Over Time

■ Interstate PL-1
 □ Interstate PL-3
 ▲ Noninterstate PL-1
 ▲ Noninterstate PL-3



KDOT Goal Setting Continued

- The Original Goals Have Been Exceeded
- New Goals Have Been Established

New Goals

- Revised System Goals

Interstate in 1999

85% or More in Level 1

Less than 3% in Level 3

Non-Interstate in 2001

80% or More in Level 1

Less than 5% in Level 3

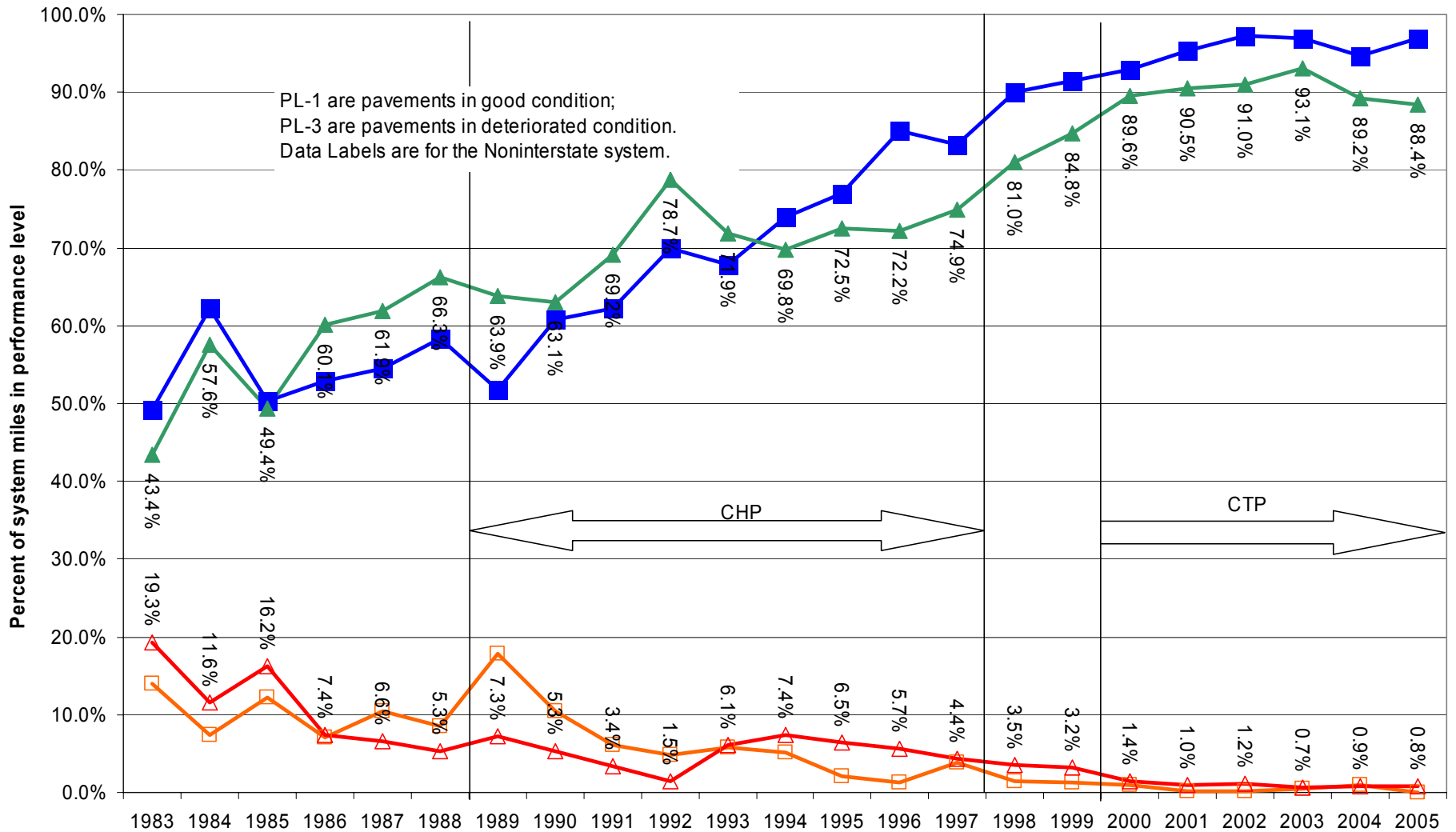
Success

- Possible due to Commitment By:
 - Legislature
 - KDOT Top Management
 - Bureau of Materials & Research
 - Bureau of Construction & Maintenance
 - District Engineers & Staff
 - Area Personnel
 - Sub-area Personnel

QUESTIONS ?

Success? Condition Over Time

■ Interstate PL-1
 □ Interstate PL-3
 ▲ Noninterstate PL-1
 ▲ Noninterstate PL-3



All of Us at KDOT
Believe in Pavement
Preservation