Partnering with Elected Officials on Our Infrastructure

Chris Evers
Pavement Technology, Inc.

Our Nation's most valuable asset

"It was not our wealth that made our highways possible; rather it was our highways that made our wealth possible"

Thomas MacDonald, former U.S. Commissioner of Public Roads

Here we go

1. THE ISSUE
2. GLOBAL PERSPECTIVE
3. POLITICS
4. THE SOLUTION

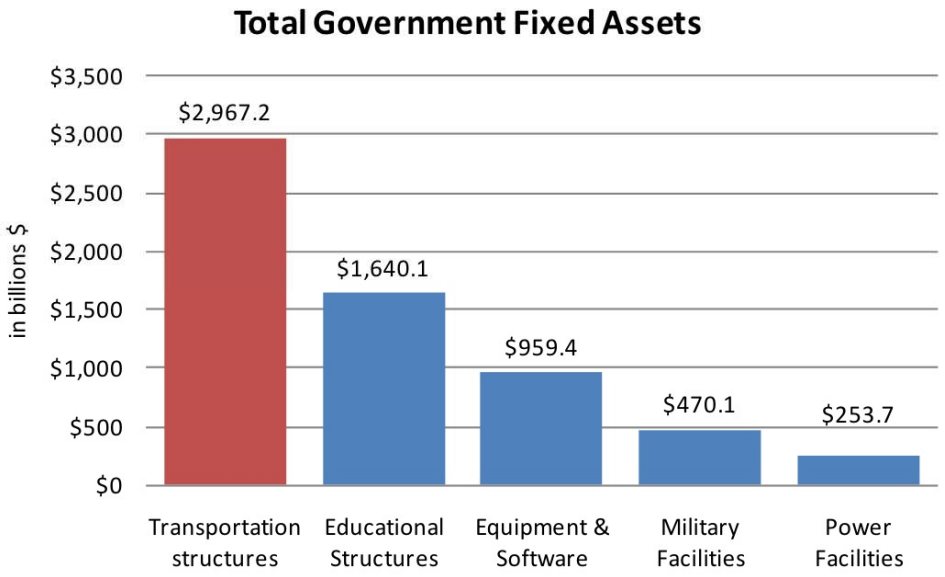
The Issue

- The Great Recession has left us standing at the infrastructure precipice with nothing more than a paper napkin for a parachute and some dental floss for rope
- But we don't have to use either, we can choose not to take the plunge
- The stakeholders include all of us – Taxpayers, Elected Officials and Public Works Officials
- The longer we wait the deeper the hole and the less attractive the fall, reminders such as bridge collapses could become more frequent
- What's happening? Funding is going down, people are driving less while driving more efficient cars, prices are going up, pavement conditions are worsening and most folks are oblivious to the scope of the problem

Our Infrastructure

One of America's Most Valuable Capital Assets[4]

In 2008, the nation's transportation infrastructure was worth $2.97 trillion, or 32 percent of the value of all fixed assets in the United States. Approximately 92 percent of the nation's transportation infrastructure is owned by federal, state and local governments. The remainder is privately owned.

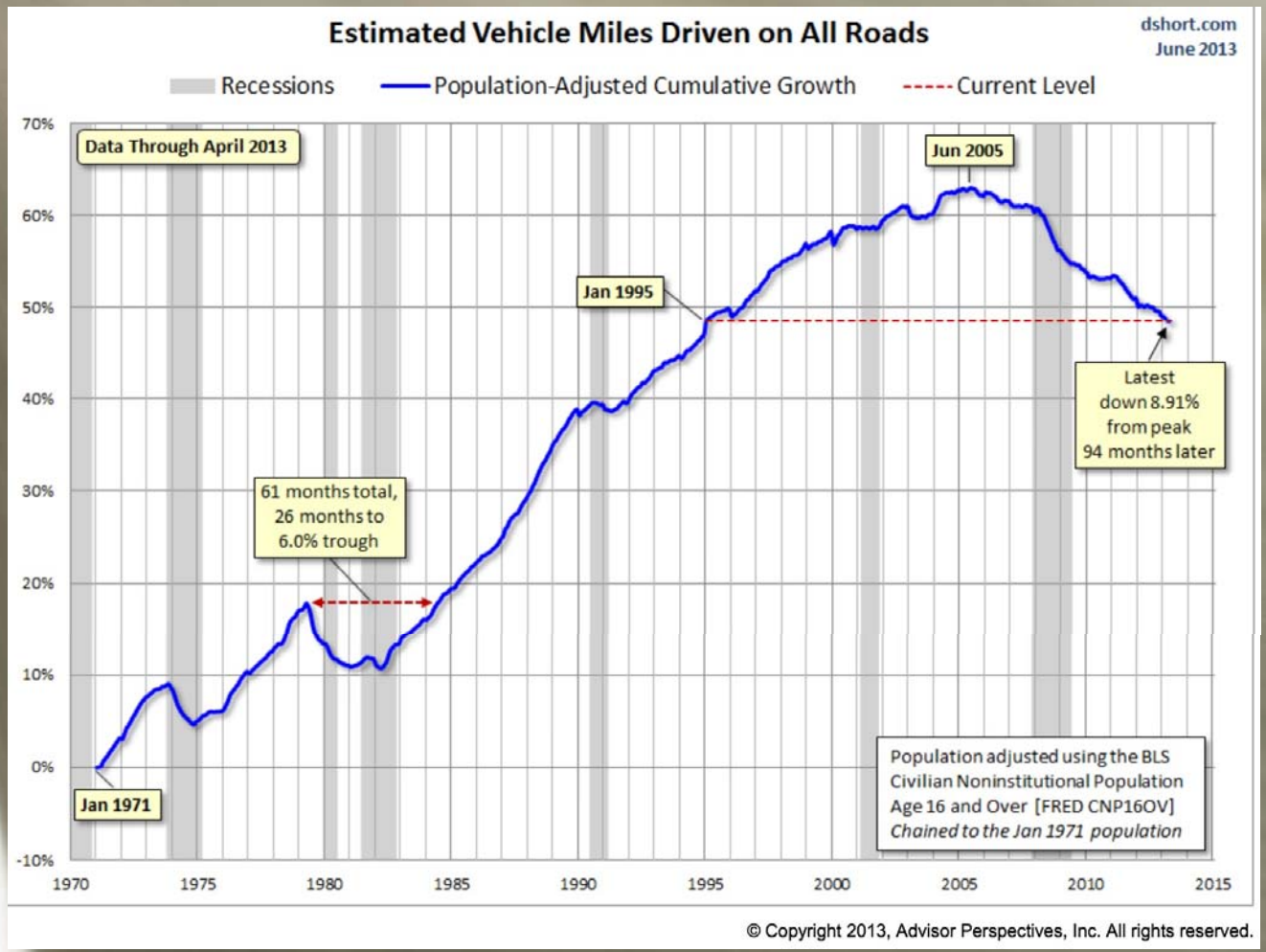


2013 Infrastructure Needs

2013 REPORT CARD FOR AMERICA'S INFRASTRUCTURE ASCE

INFRASTRUCTURE SYSTEMS	TOTAL NEEDS	ESTIMATED FUNDING	FUNDING GAP
SURFACE TRANSPORTATION[1]	$1,723	$877	$846
WATER/WASTEWATER INFRASTRUCTURE[1]	$126	$42	$84
ELECTRICITY[1]	$736	$629	$107
AIRPORTS[1,2]	$134	$95	$39
INLAND WATERWAYS & MARINE PORTS[1]	$30	$14	$16
DAMS[3]	$21	$6	$15
HAZARDOUS & SOLID WASTE[4]	$56	$10	$46
LEVEES[5]	$80	$8	$72
PUBLIC PARKS & RECREATION[6]	$238	$134	$104
RAIL[7]	$100	$89	$11
SCHOOLS[8]	$391	$120	$271
TOTALS	$3,635	$2,024	$1,611
YEARLY INVESTMENT NEEDED	$454	$253	$201

The Dip, driving habits changed forever?



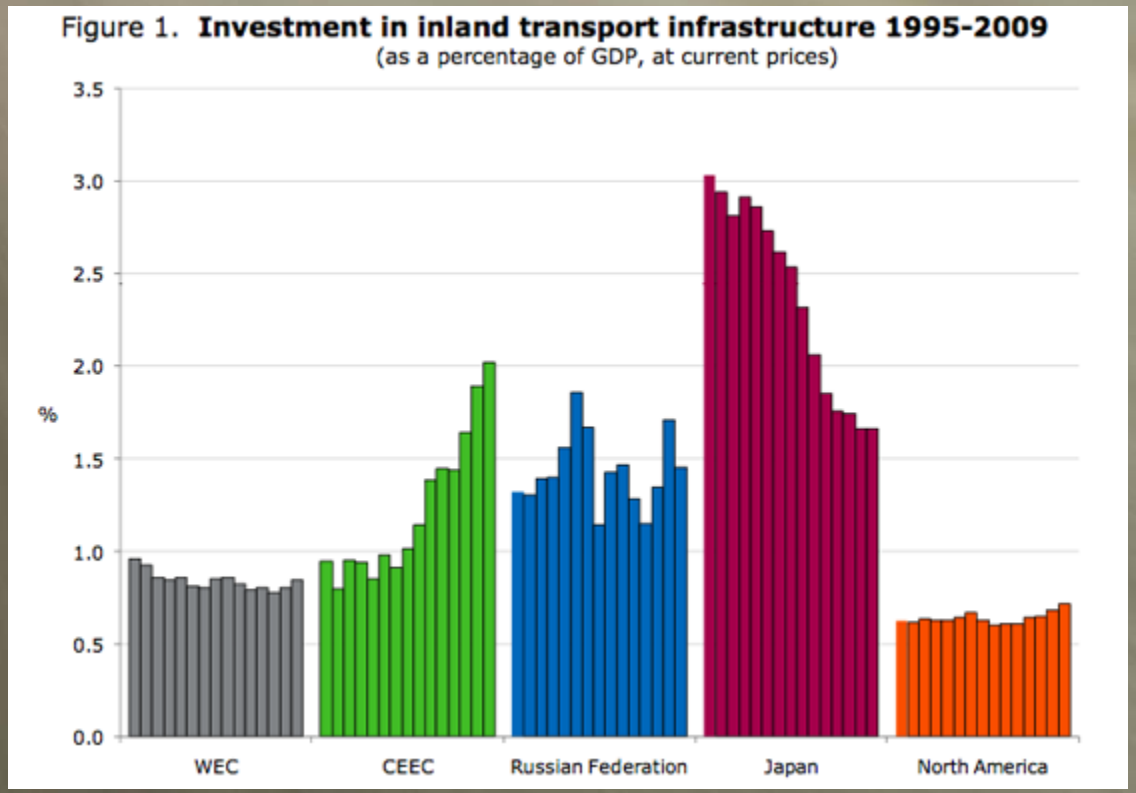
Global Perspective

- India is implementing the next phase of their 5 year $1T infrastructure Plan, much of it utilizing Public/Private Partnerships (PPP)
- Japan's $215B stimulus plan is heavily laden with infrastructure spending
- Australia has identified $200B worth of infrastructure that can be privatized
- UK has developed a top down National Infrastructure Plan and expects to spend $44B/yr

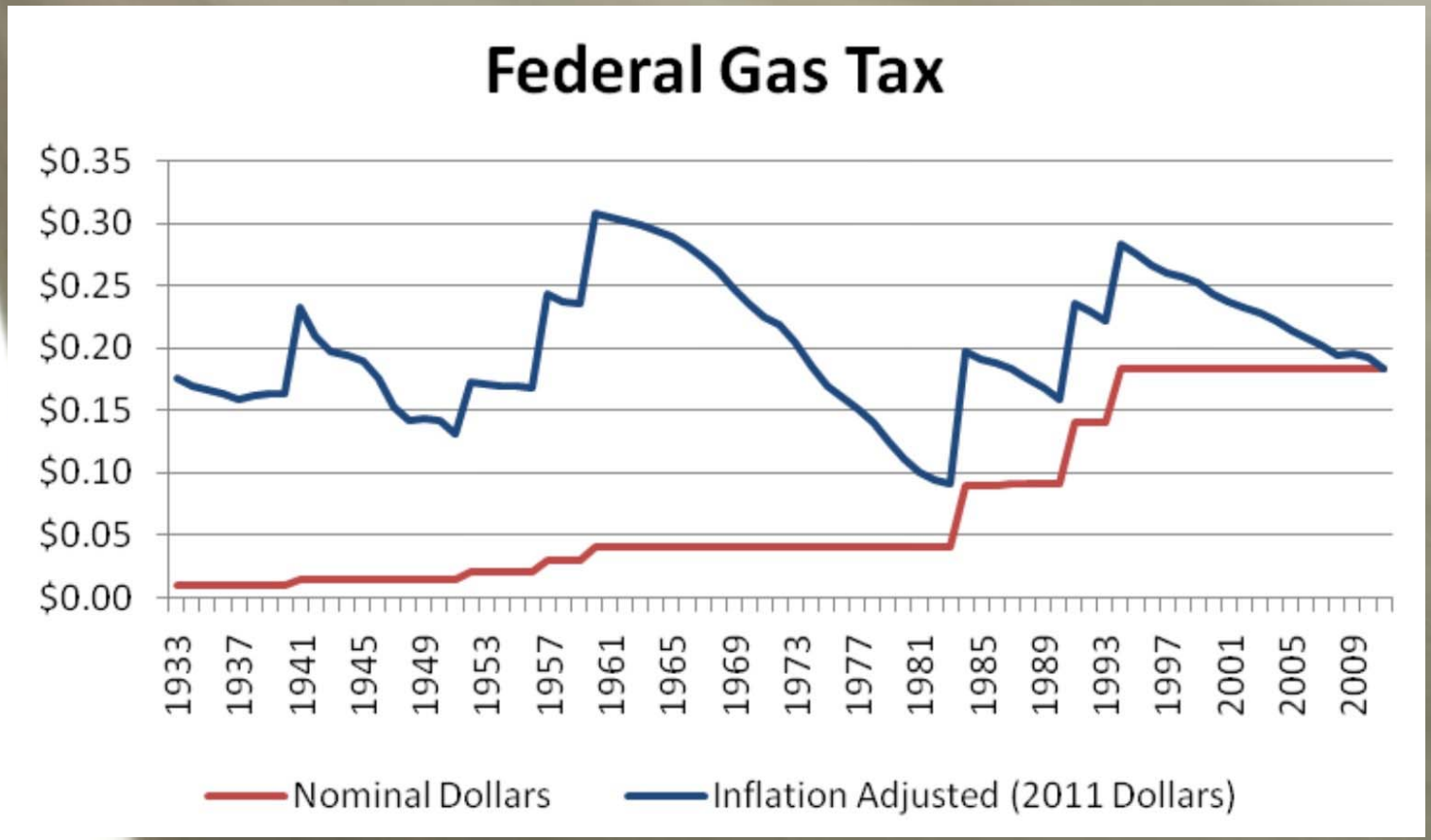
Global Perspective

- China announced $157B in infrastructure spending last fall
- Canada completes it's Build Canada Plan a $32.5B infrastructure effort this year
- Mexico also ramped up their investment with a $230B national program in 2007
- Brazil is investing billions in time for the 2016 Olympics
- Columbia looks to spend $100B over the next 10 years

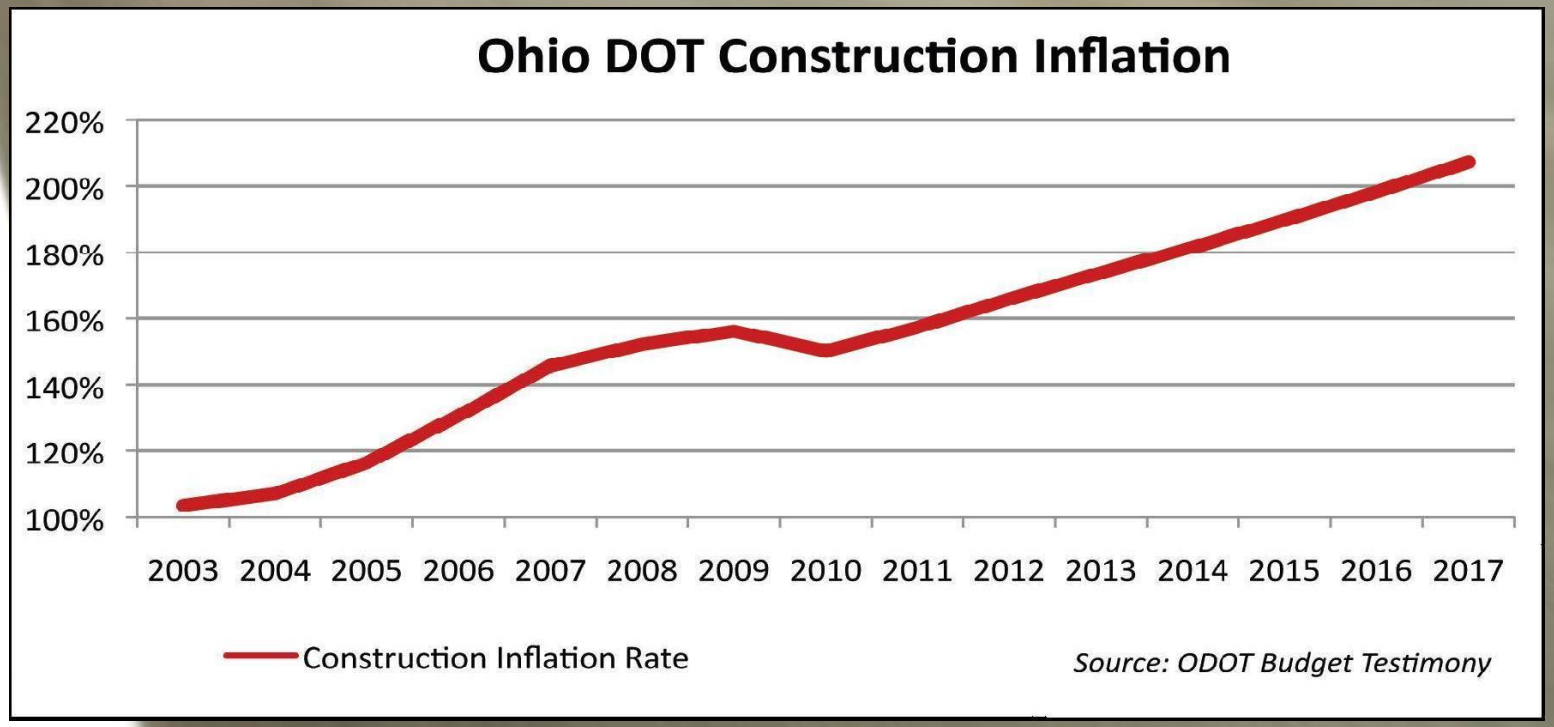
Global Infrastructure Investment



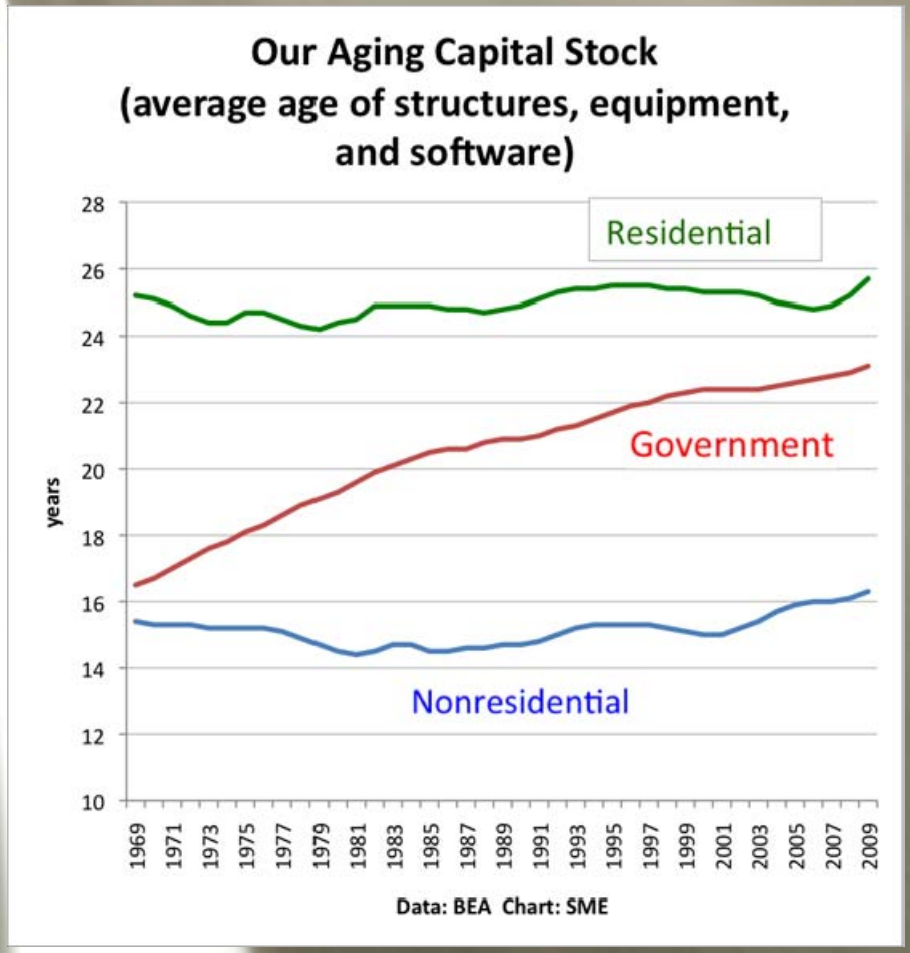
Meanwhile back at the ranch…



Example of projected inflation after slight dip from 2008-2010



Aging, but it won't be graceful



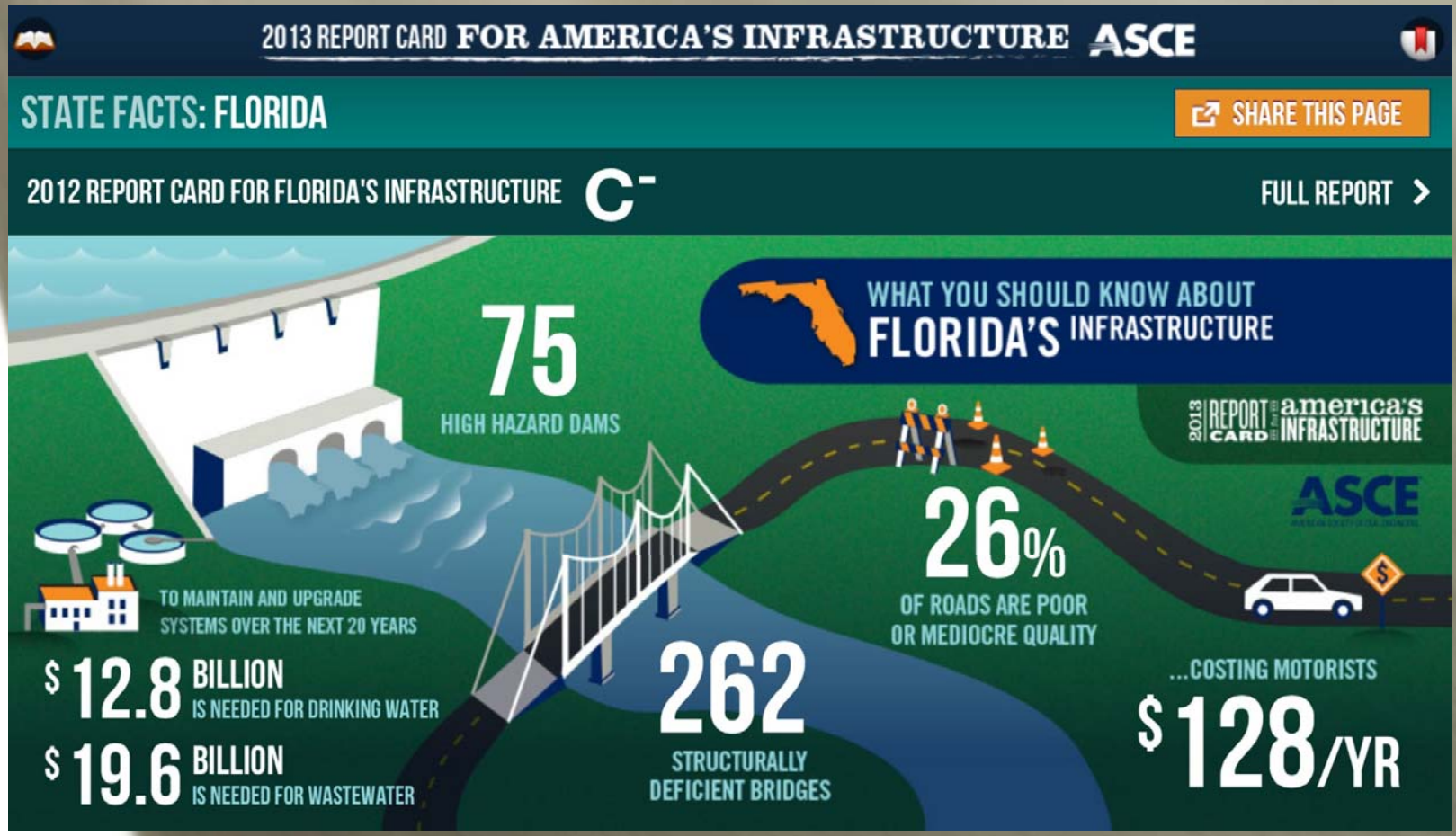
Life Cycles don't match our expectations

Asphalt life cycle = 15 years

Paving cycles routinely exceed 20 year design

One County I recently met with was on a 150 year paving cycle! Some of their roads won't be paved until Star date 2163!

The Florida Report Card



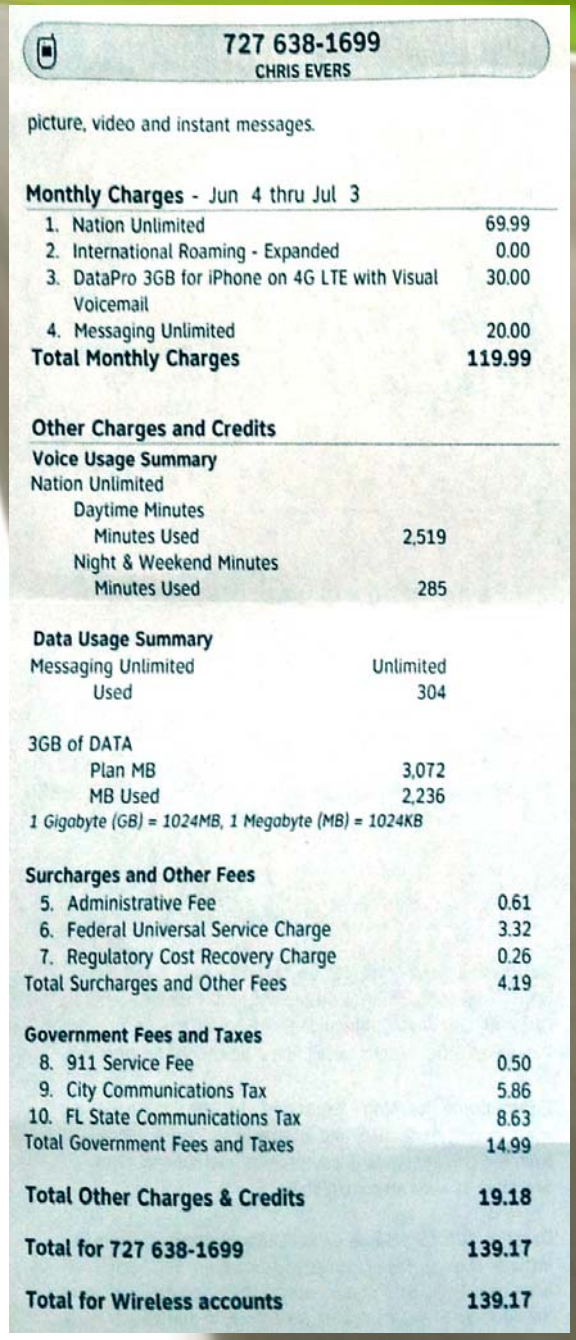
Politics – Funding in Florida

- Out of 67 Counties only 20 have zero unutilized County-Imposed gas tax
- 43 Counties have 5¢ or more in unutilized County-imposed gas tax
- Hillsborough County has 5¢ unutilized yet faces huge shortfalls and unfunded infrastructure needs
- Using Hillsborough as an example with 3,318 centerline miles (7,700 lane miles) of paved road their $3M resurfacing budget puts them on a 148 year paving cycle
- That additional 5¢ would generate nearly $30M per year which would wipe out their funding shortfall

Is this scenario familiar?

Your needs go up but you settle for less $

Roads vs. AT&T



727 638-1699
CHRIS EVERS

picture, video and instant messages.

Monthly Charges - Jun 4 thru Jul 3

1. Nation Unlimited	69.99
2. International Roaming - Expanded	0.00
3. DataPro 3GB for iPhone on 4G LTE with Visual Voicemail	30.00
4. Messaging Unlimited	20.00
Total Monthly Charges	**119.99**

Other Charges and Credits

Voice Usage Summary

Nation Unlimited	
Daytime Minutes	
Minutes Used	2,519
Night & Weekend Minutes	
Minutes Used	285

Data Usage Summary

Messaging Unlimited	Unlimited
Used	304
3GB of DATA	
Plan MB	3,072
MB Used	2,236

1 Gigabyte (GB) = 1024MB, 1 Megabyte (MB) = 1024KB

Surcharges and Other Fees

5. Administrative Fee	0.61
6. Federal Universal Service Charge	3.32
7. Regulatory Cost Recovery Charge	0.26
Total Surcharges and Other Fees	4.19

Government Fees and Taxes

8. 911 Service Fee	0.50
9. City Communications Tax	5.86
10. FL State Communications Tax	8.63
Total Government Fees and Taxes	14.99
Total Other Charges & Credits	**19.18**
Total for 727 638-1699	**139.17**
Total for Wireless accounts	**139.17**

Average driver logs 12,000 miles per year @ 24 mpg

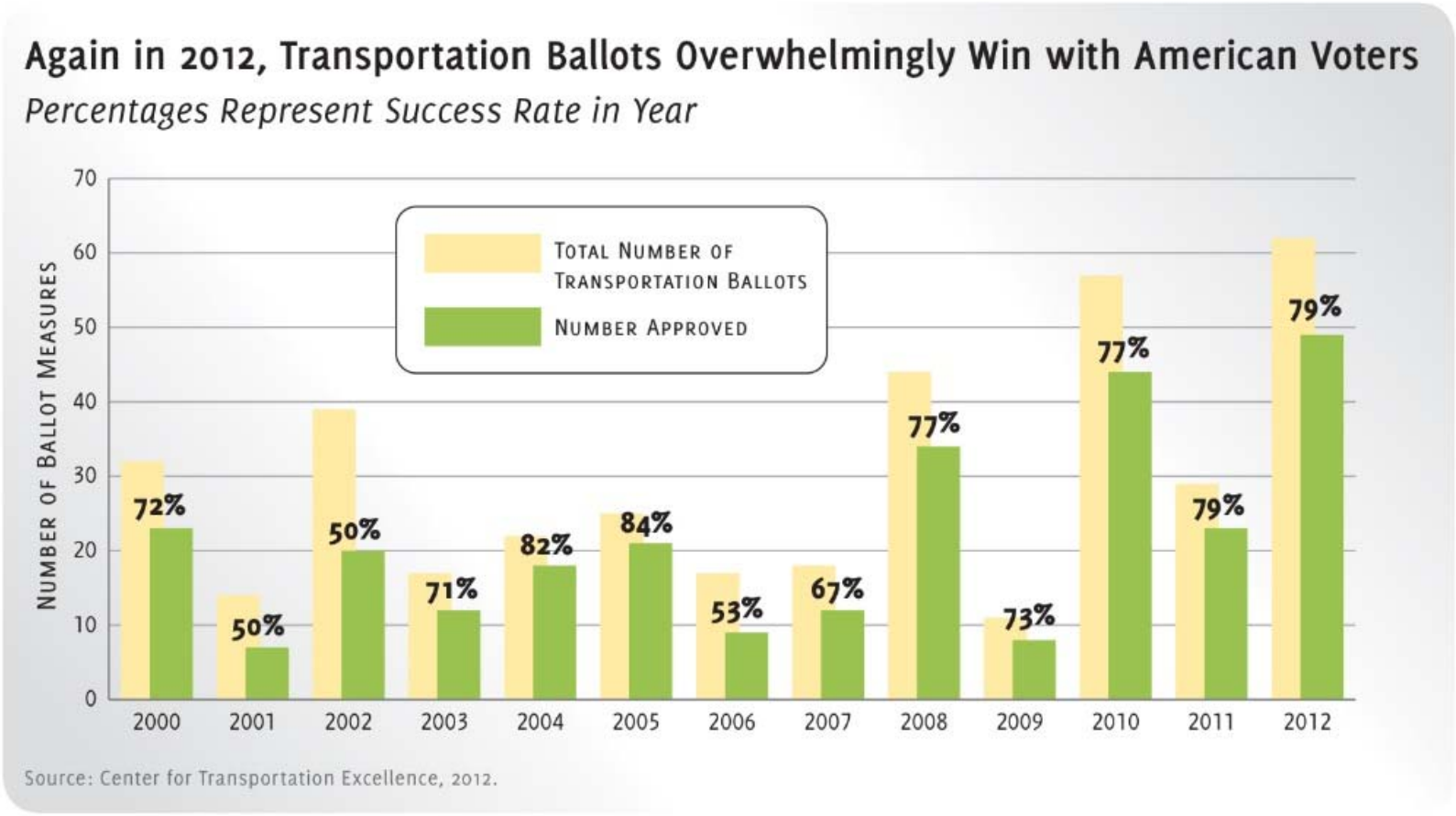
Average driver uses 500 gallons per year

Here in Hillsborough County we pay $0.489 per gallon

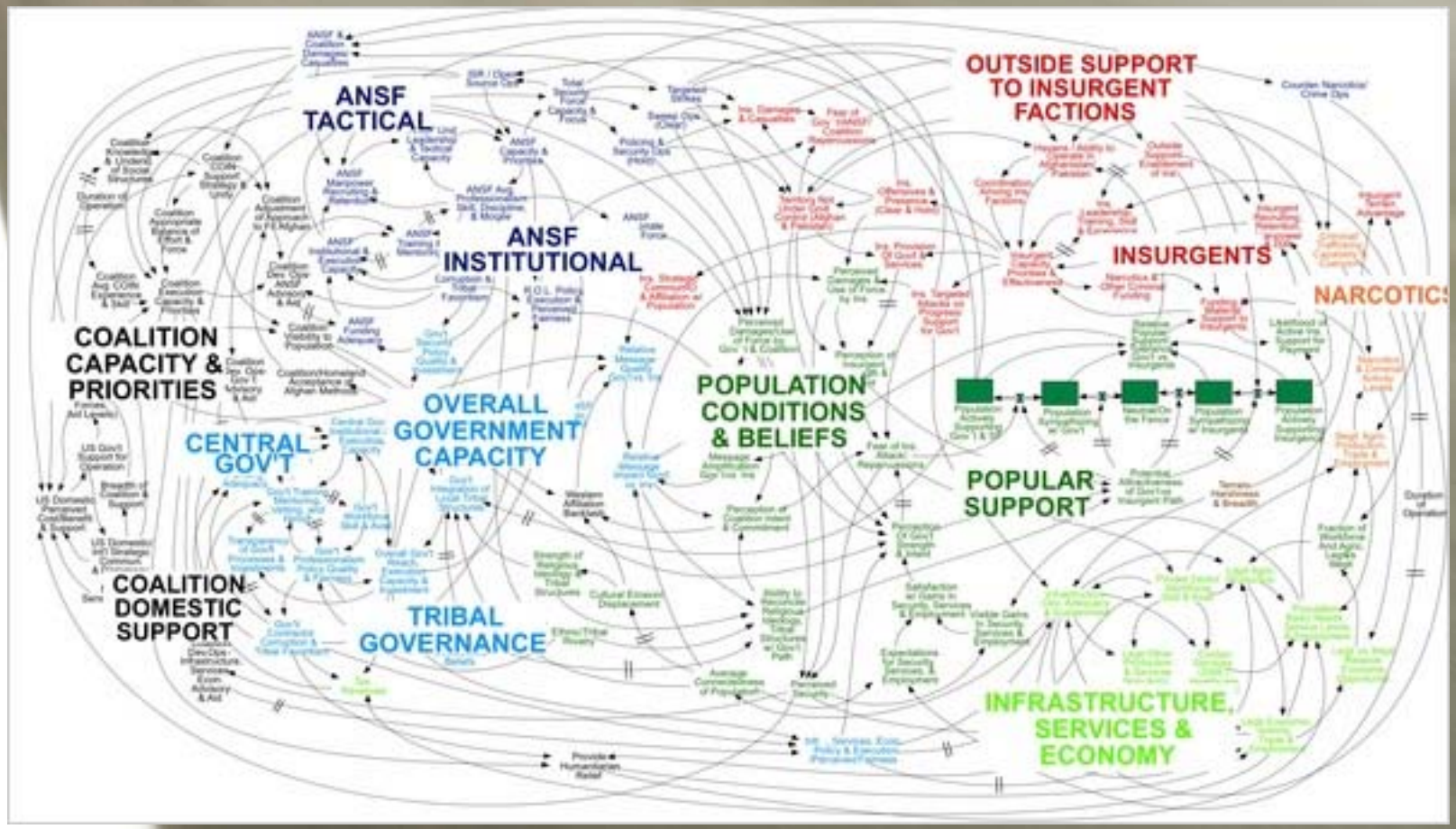
Average Driver pays $244.50 or just over $20 a month

The argument goes that an extra $0.05/gal or $25/year equals revolt

So what harm comes of asking? They might say yes…

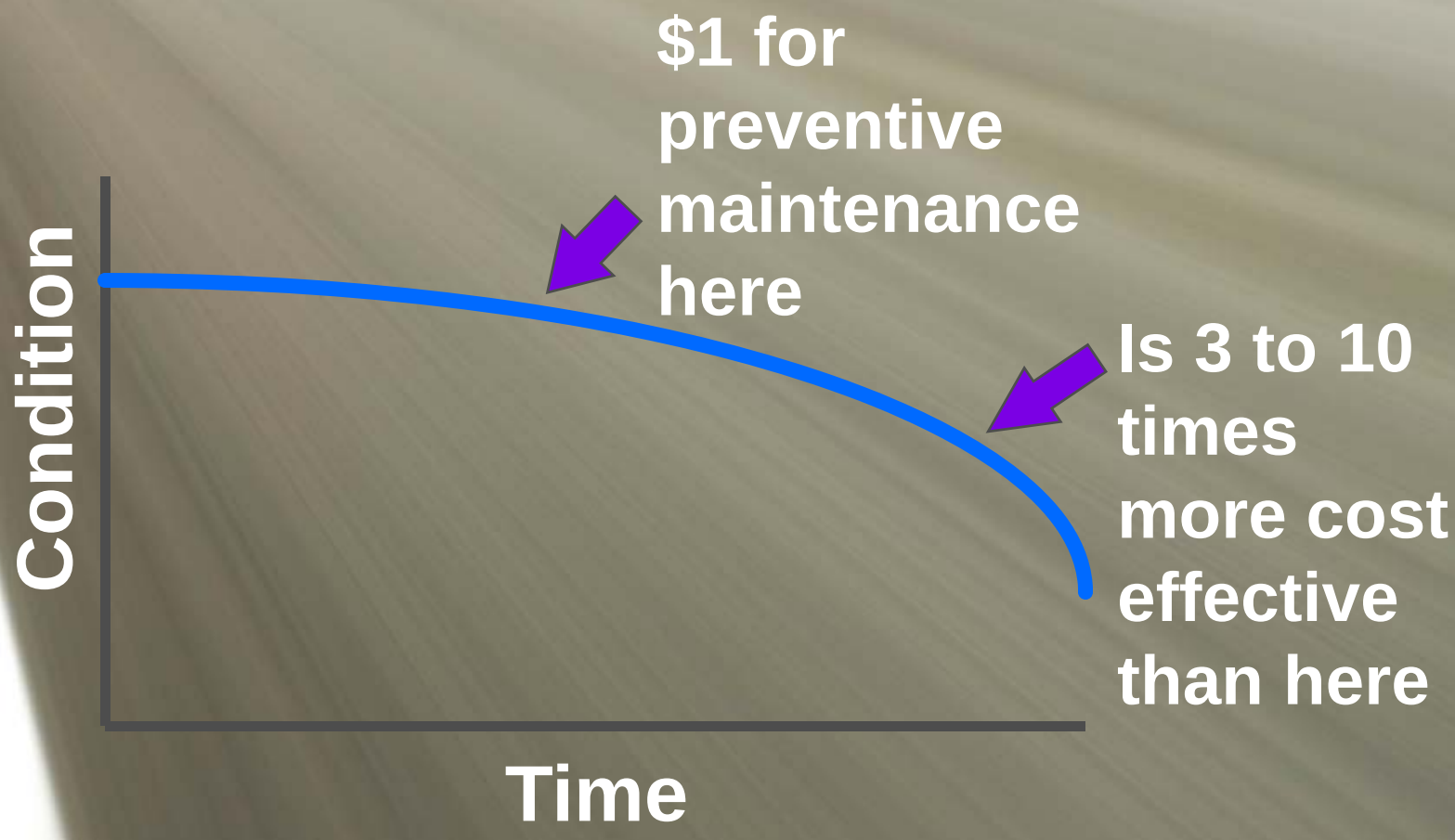


It doesn't have to be complicated, it's not the Afghan war strategy!

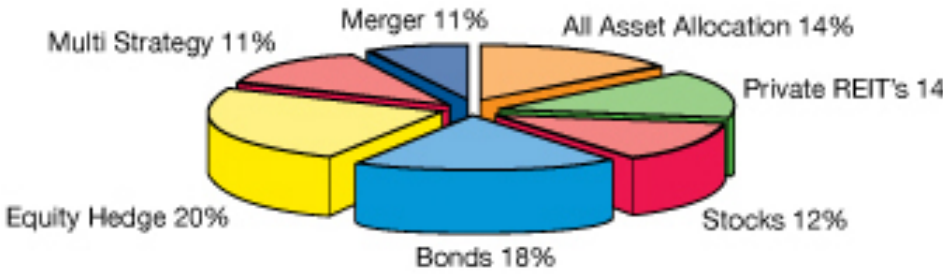


What's the public perception of our roads?

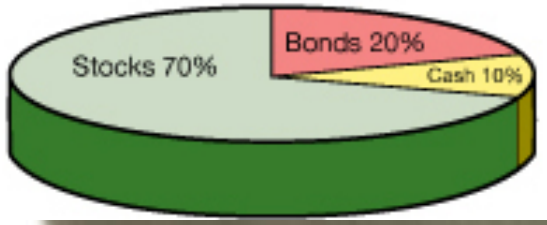
Effective preventative maintenance "Right Road with the Right Treatment at the Right Time"

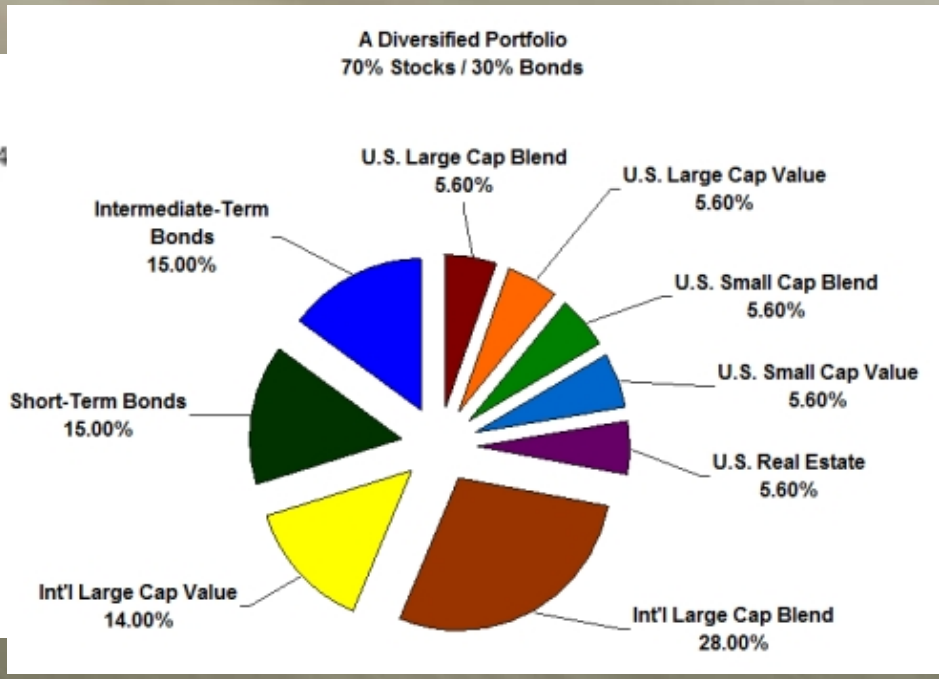


Are you Diversified???

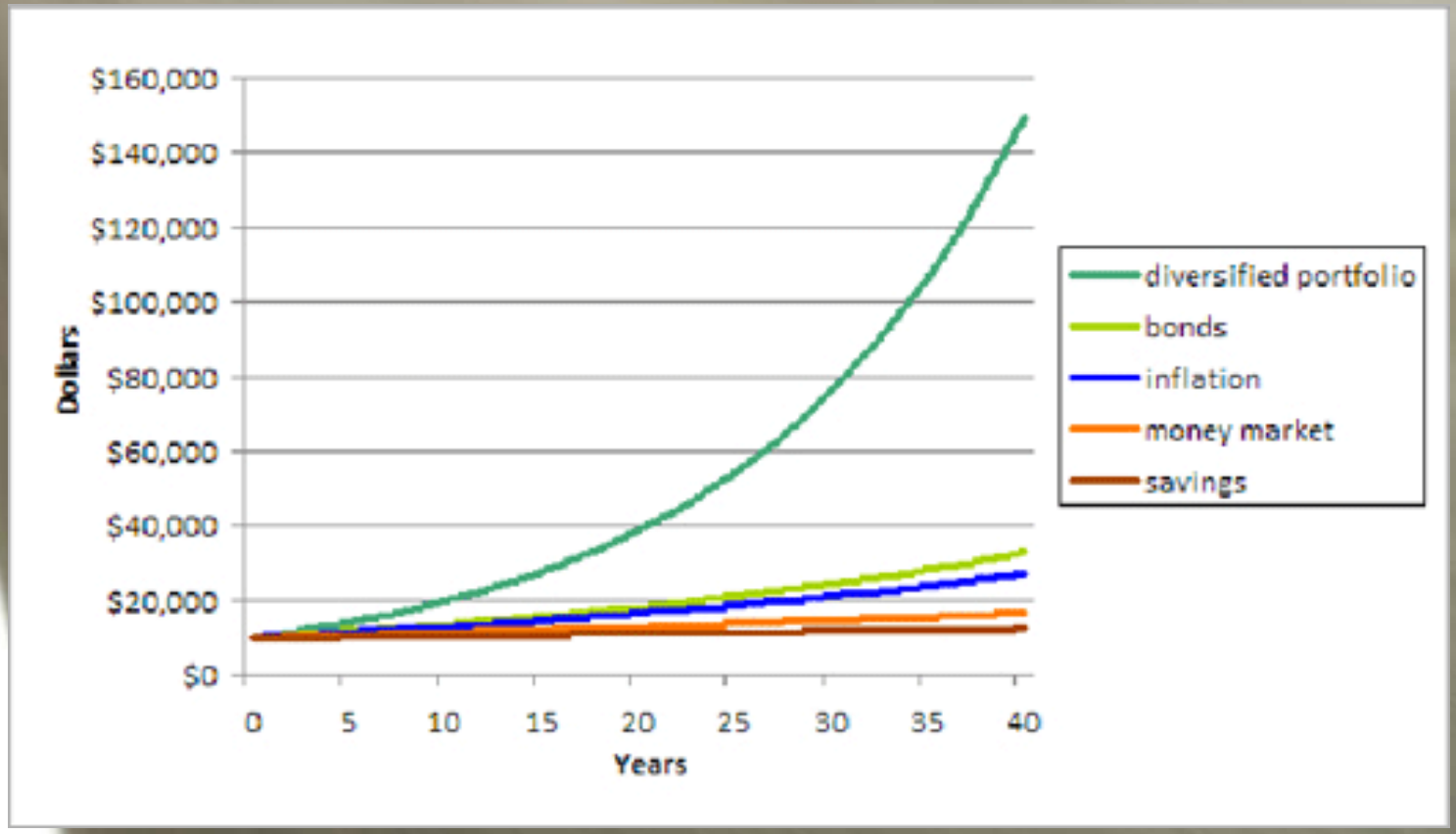


Typical Portfolio:





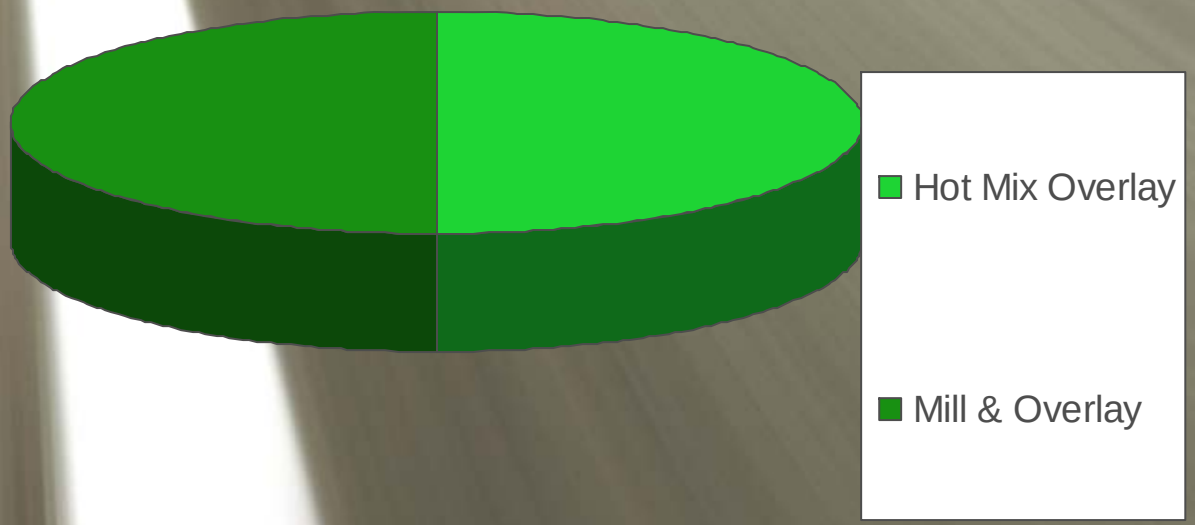
Value of Diversification



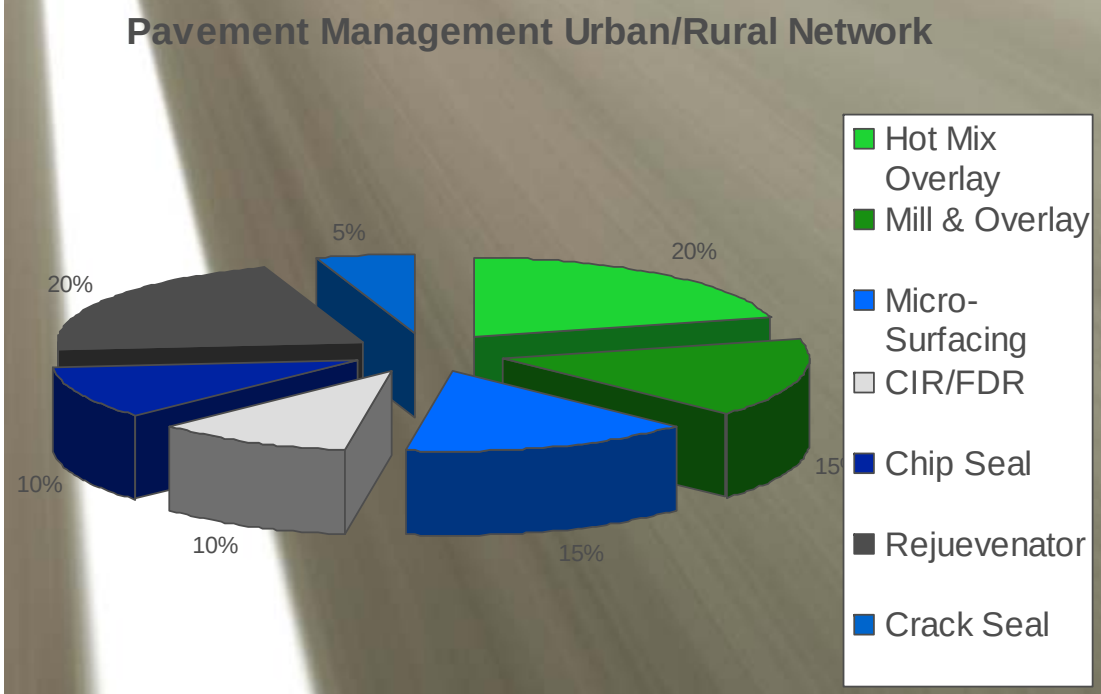
Does this look diversified?

Lane Miles per $1M

- HMA – 10 Miles
- Mill & Overlay – 8 Miles
- **Total = 18.3 Miles**



Process Diversification example Urban/Rural Network



Lane Miles per $1M

HMA – 4 Miles

Mill & Overlay – 2.4 Miles

Micro – 7.1 Miles

CIR/FDR – 1.2 Miles

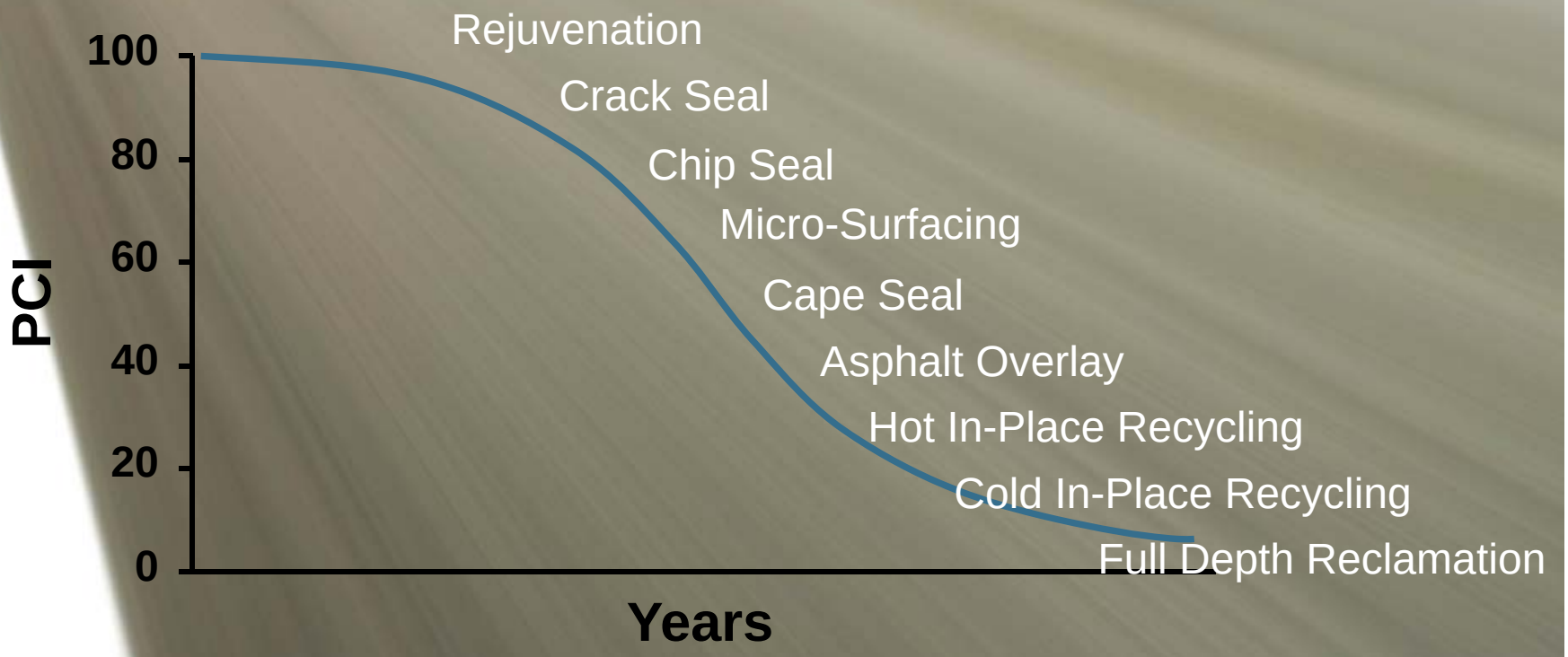
Chip Seal – 9.1 Miles

Rejuvenation – 33 Miles

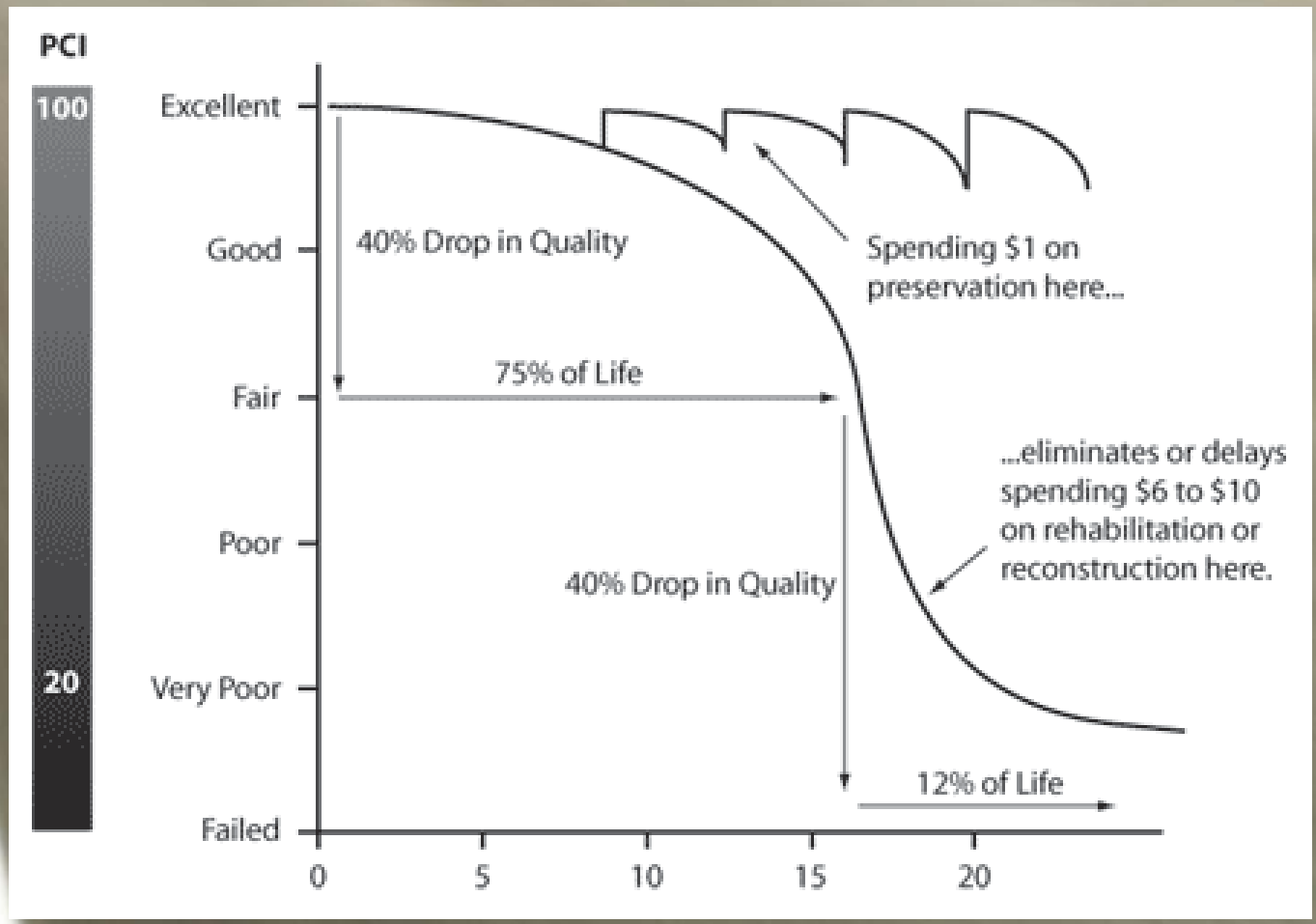
Crack Seal – 16.7 Miles

Total = 73.5 Miles

“The Right Time” Pavement Strategies

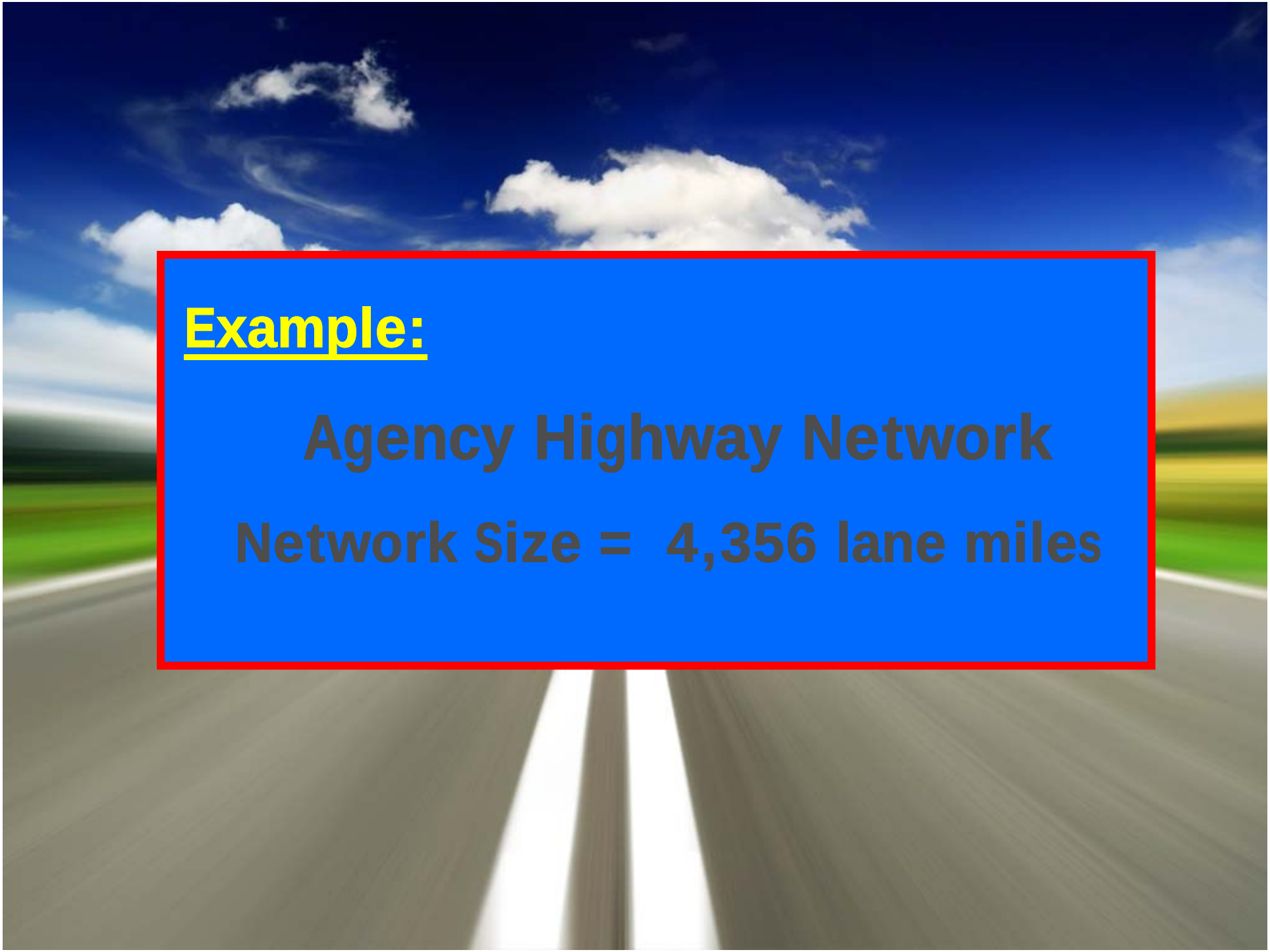


FHWA has been preaching preservation for awhile now

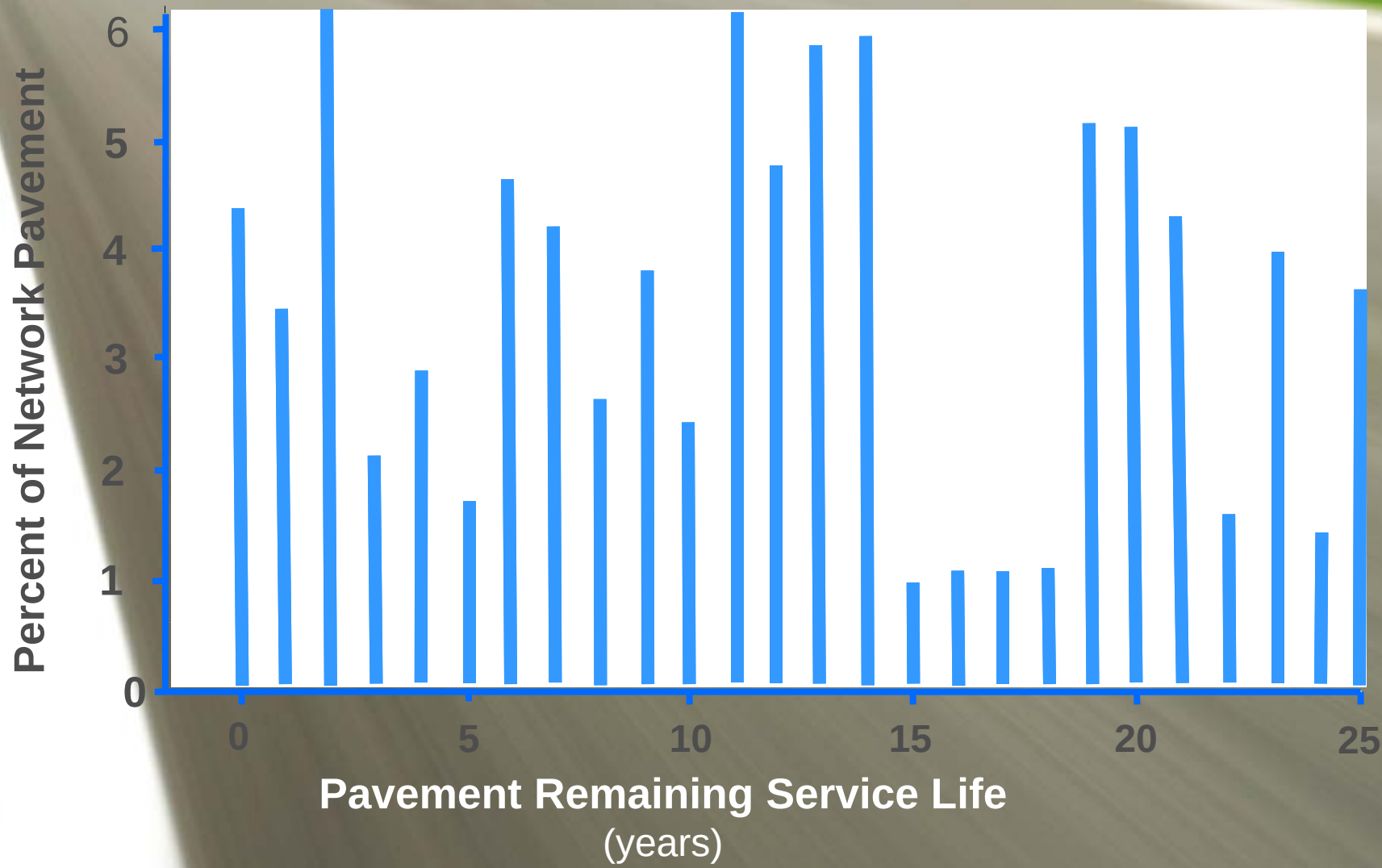


A Quick Check of Your Highway Network Health

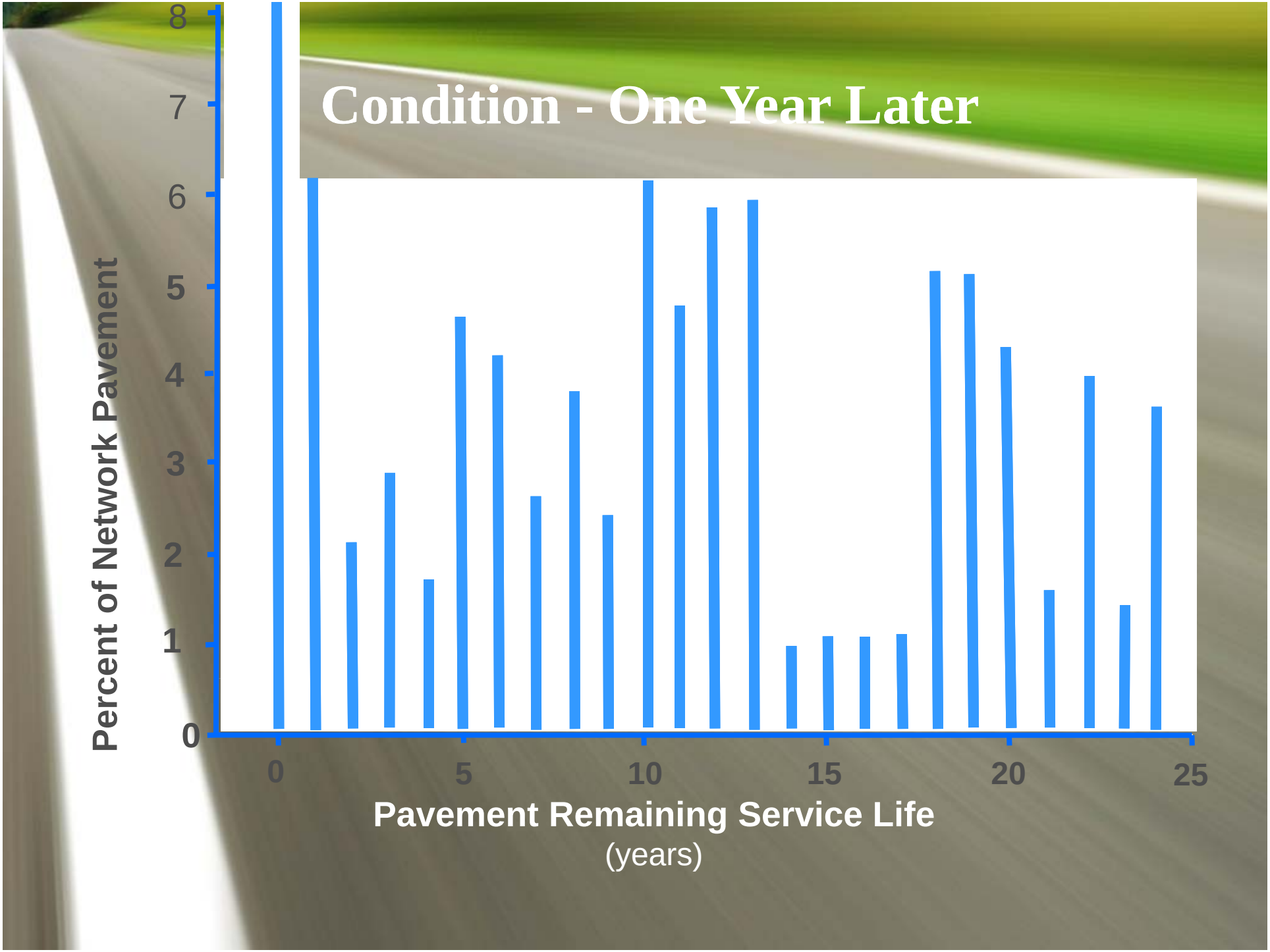
by Larry Galehouse, Director,
National Center for Pavement Preservation
and
Jim Sorenson, Team Leader,
FHWA Office of Asset Management

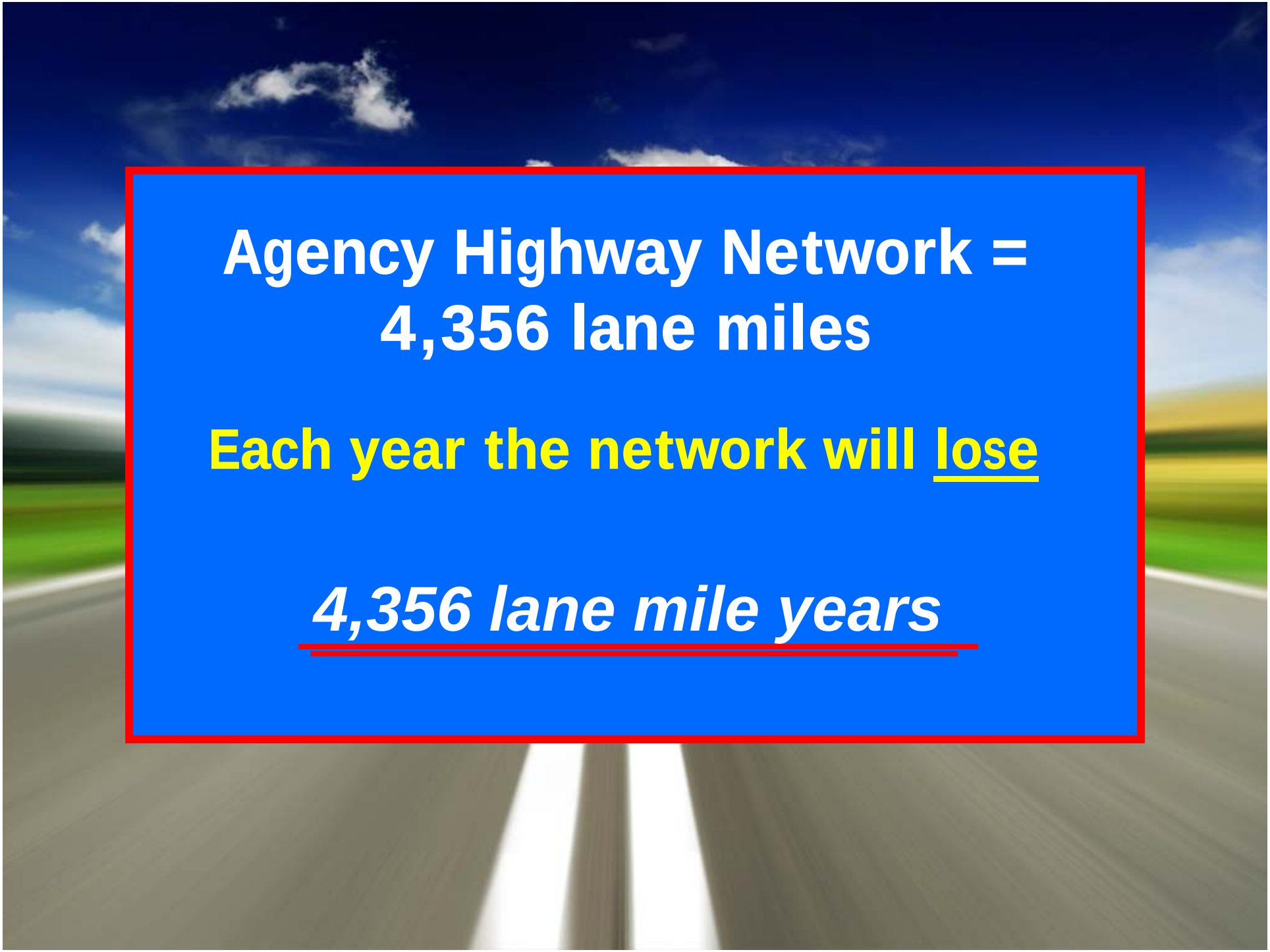

Example:
Agency Highway Network
Network Size = 4,356 lane miles

Current Condition



Condition - One Year Later




Agency Highway Network =
4,356 lane miles
Each year the network will lose
4,356 lane mile years

Reconstruction Evaluation

Project	Lane Miles	Design Life	Lane Mile Years	Lane Mile Costs	Total Cost
#1	22	25 yrs	550	$463,425	$10,195,350
#2	18	30 yrs	540	$556,110	$10,009,980
Total	=		1,090		$20,205,330

Rehabilitation Evaluation

Project	Lane Miles	Design Life	Lane Mile Years	Lane Mile Costs	Total Cost
#3	22	18 yrs	396	$263,268	$5,791,896
#4	28	15 yrs	420	$219,390	$6,142,920
#5	32	12 yrs	384	$115,848	$3,707,136
Total	=		1,200		$15,641,952

Pavement Preservation Evaluation

Project	Lane Miles	Life Ext.	Lane Mile Years	Lane Mile Costs	Total Cost
#101	12	2 yrs	24	$2,562	$30,744
#102	22	3 yrs	66	$7,743	$170,346
#103	26	5 yrs	130	$13,980	$363,480
#104	16	7 yrs	112	$29,750	$476,000
#105	8	10 yrs	80	$54,410	$435,280
Total	=		412		$1,475,850

Network Trend

Required: 4,356 lane mile years

Programmed Activity	Lane Mile Years	Total Cost
Reconstruction *(40 lane miles)* $$$$	1,090	$20,205,330
Rehabilitation *(82 lane miles)* $$$	1,200	$15,641,952
Pavement Preservation *(84 lane miles)* $	412	$1,475,850
Total =	2,702	$37,323,132

Network Needs Summary

Network Size *(needs)*	4,356 *(lane mile years)*
Programmed Activity	2,702 *(lane mile years)*
Deficit =	1,654 *(lane mile years)*

Steps to Address Minimal Needs

Required: 4,356 lane mile years

Programmed Activity	Lane Mile Years
Reconstruction (40 lane miles)	1,820
Rehabilitation (80 lane miles)	1,135
Pavement (412 lane miles)	412
Total =	2,357

Savings = $ 6.1 M

Program Modification

Savings = $ 6,101,940 Needs = 1,999 LMY

Preservation Treatment	*Life Ext*	*Lane Miles*	*Lane Mile Years*	*Total Cost*
Concrete Reseal	**4 yrs**	**31**	**124**	**$979,600**
Thin HMA Overlay	**10 yrs**	**16**	**160**	**$870,560**
Micro-surfacing	**7 yrs**	**44**	**308**	**$1,309,000**
Chip Seal	**5 yrs**	**79**	**395**	**$1,104,420**
Crack Seal	**2 yrs**	**506**	**1,012**	**$1,296,372**
			1,999	**$5,559,952**

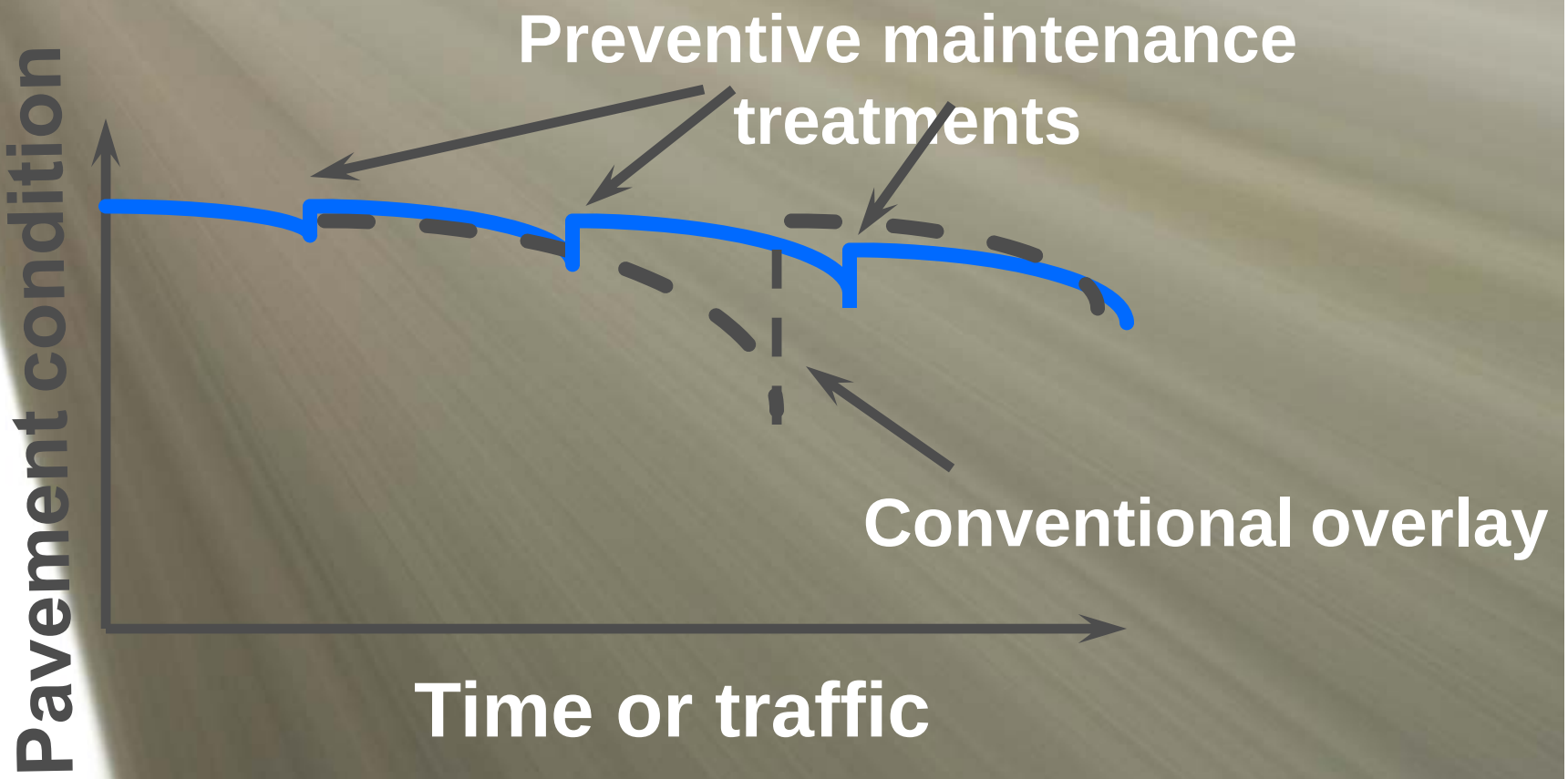
Revised Network Strategy

Required: 4,356 lane mile years

Programmed Activity	Lane Mile Years
Reconstruction *(31 lane miles)*	*820*
Rehabilitation *(77 lane miles)*	*1,125*
Pavement Preservation *(2,083 lane miles)*	*2,411*
Total =	**4,356**

Net Savings = $ 541,988

Strategy to Minimize Costs will shorten paving cycle



Solutions

- Preservation is used successfully in every aspect of life
  - Cost to own is much lower when we take care of the asset
  - Cost to replace isn't the only cost associated with our infrastructure (user delay, environmental)
  - Can investing at the "top of the curve" really make an impact?
- Consider this example:
  - The average HMA overlay per lane mile costs $75,000
  - In the first 1-3 years scheduling a preservation treatment that costs $6,000 per lane mile will extend the life of the pavement 3-5 years
  - When we annualize the cost to own that lane mile of road it's like getting a 20% discount on the original overlay!

We all know the virtues of preservation, why don't we do it?

That road looks fine why are you doing ANYTHING to that one?

What about my road? It hasn't been done in 30 years?

"We are getting too many complaints on this road, it needs to be scheduled for resurfacing. Bump the preservation till next year."

"Come on now, **Worst First** is how we do it around here!"

The 2012 Corvette Z06 MSRP $75,600

- Cost to change the oil?
- Cost to replace the engine?

Pretty easy choice right?

Imagine not changing the oil in your taxpayer funded $400M piece of equipment, every year!

94% = Sand & Stone **6% = Liquid Asphalt Cement**

Asphalt Pavement Cost:

$56.0 = Sand & Stone **$44.0 = Liquid Asphalt**

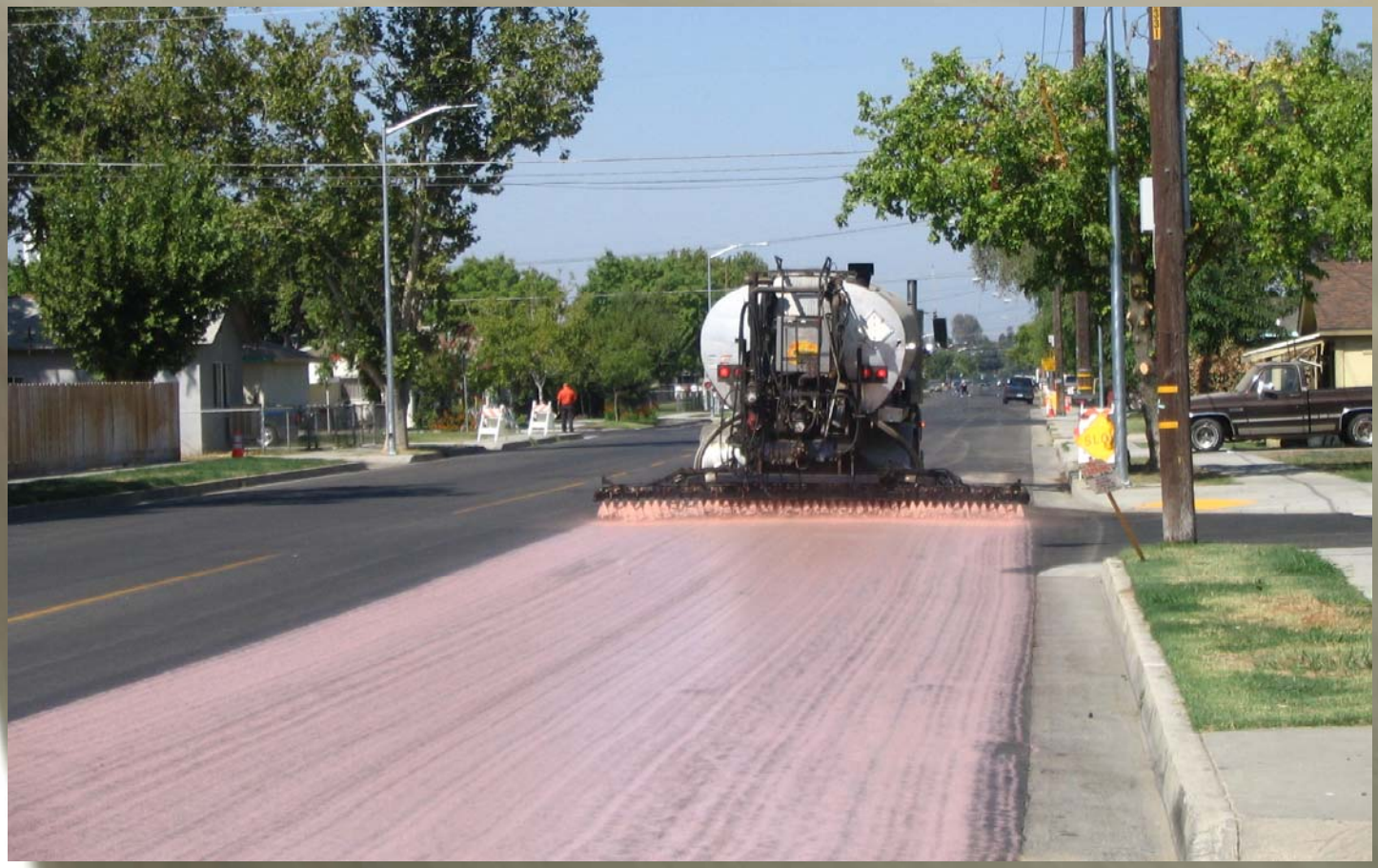

Components of Rejuvenators
Second acidaffins
Saturated hydrocarbons
First acidaffins
The Maltenes
Polar compounds

Why Asphalt Deteriorates

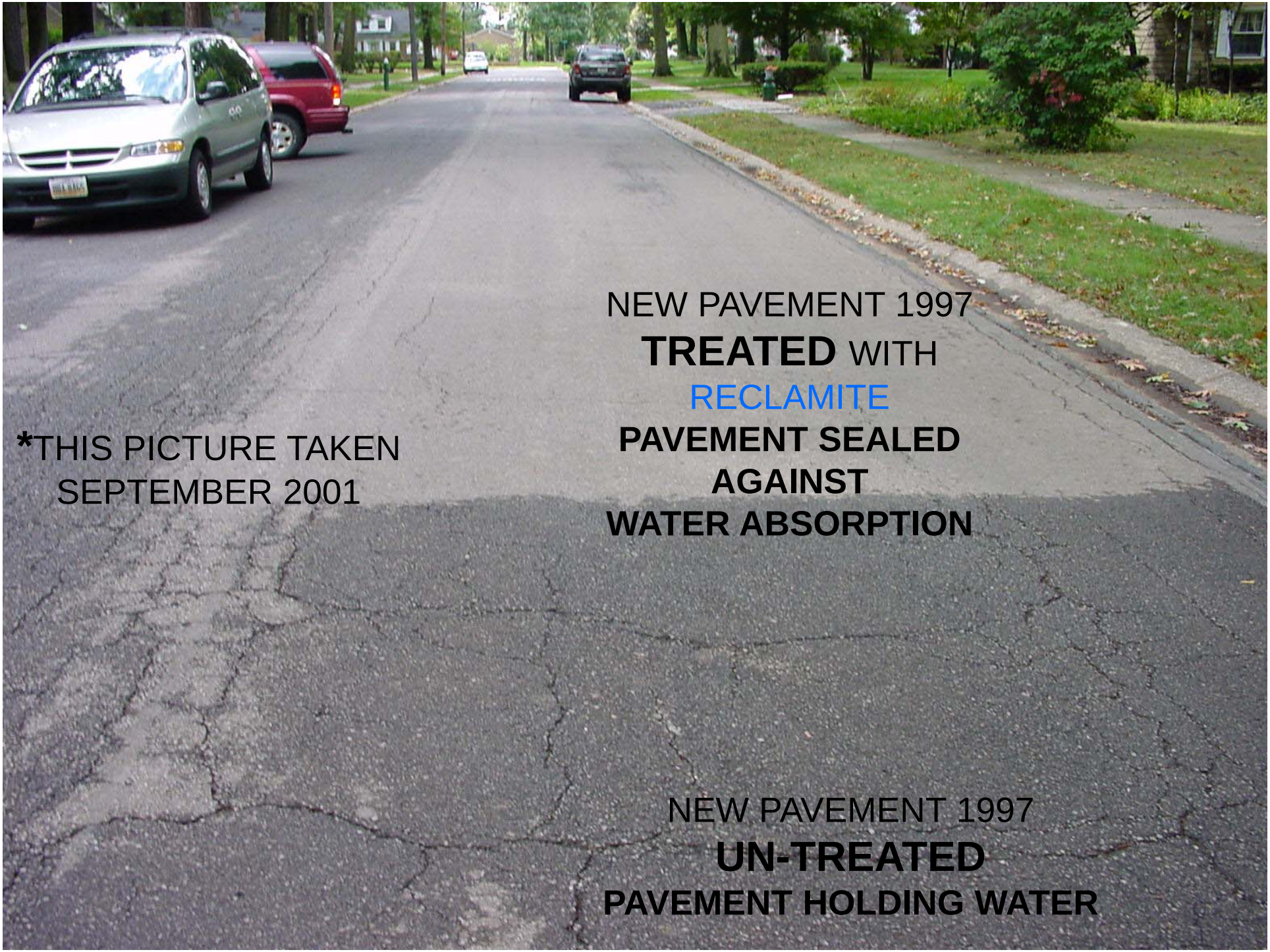
Aging Begins

The first significant hardening of the asphalt cement takes place in the pugmill or drum mixer where heated aggregate is mixed with hot asphalt cement. During this short mixing time, the asphalt cement, which is in very thin films, is exposed to high temperatures ranging from 275 to 350º F.

Example of Preservation



Reclamite® Maltene Based Rejuvenating Emulsion
Applied at .08 gal./sq.yd.


NEW PAVEMENT 1997
TREATED WITH
RECLAMITE
PAVEMENT SEALED AGAINST WATER ABSORPTION
***THIS PICTURE TAKEN SEPTEMBER 2001**
NEW PAVEMENT 1997
UN-TREATED
PAVEMENT HOLDING WATER

Agencies with Alternative Process Contracts

Counties

- Volusia County
- Manatee County
- Nassau County
- St. Johns County
- Orange County
- Marion County
- Pasco County
- Sumter County

Cities

- Tampa
- Orlando
- Lakeland
- Palm Bay
- Vero Beach
- West Palm Beach

Solutions

Engage our elected officials, be an advocate

Start the conversation, rinse and repeat

Guide the discussion, prepare your pitch

Educate the public at every opportunity

Explore every option

Employ available tools

Break the paradigms

Partnering with Elected Officials on Our Infrastructure

Chris Evers
Pavement Technology, Inc.