Sealcoating, Inc.
Innovative Pavement Preservation Solutions

Road Foreman Meeting
West Windsor, Vermont
March 24, 2015

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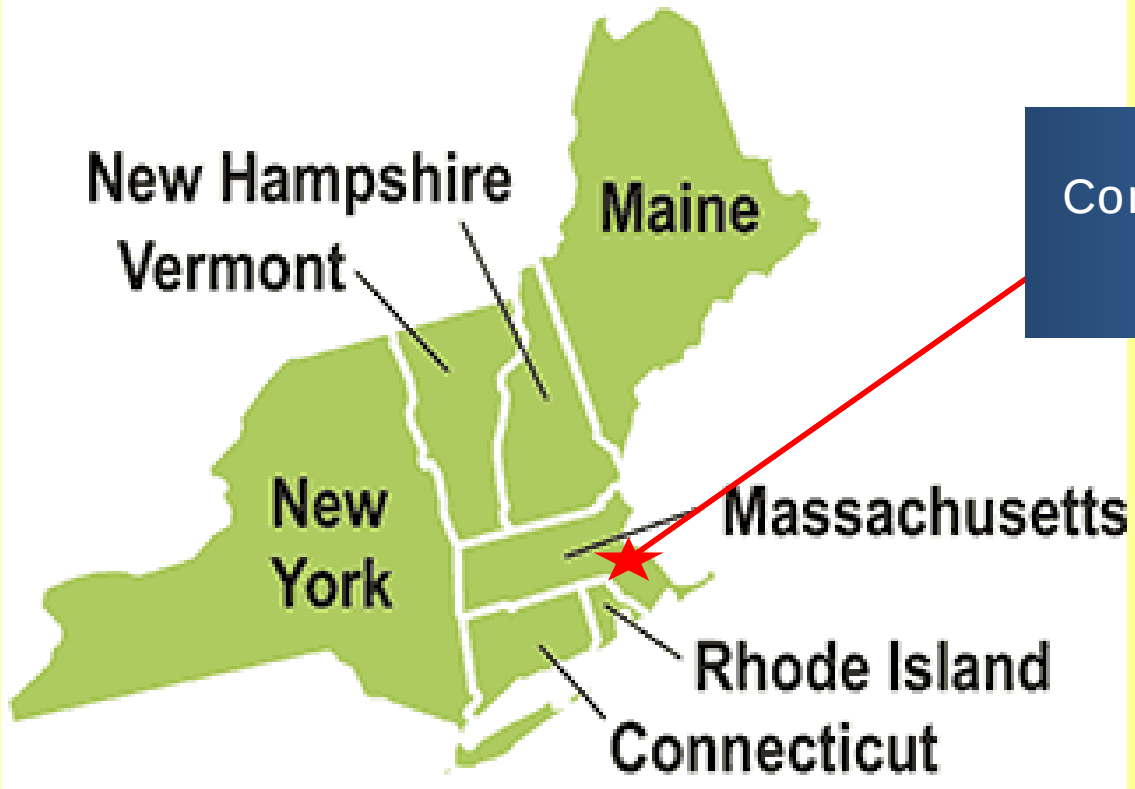
Hometown: Chester, VT

Pavement Preservation

Your Key to Pavement Management Success

Sealcoating, Inc.
Innovative Pavement Preservation Solutions

Since 1957



Corporate Headquarters
Braintree, MA

Bridge Preservation

Pavement Preservation

Pavement Preservation

pre·serve (pri-zērv’) verb

1. to keep in good condition
2. to keep safe from harm
3. to prevent decay
4. maintain

Source: Merriam Webster

Surprising Poll Results

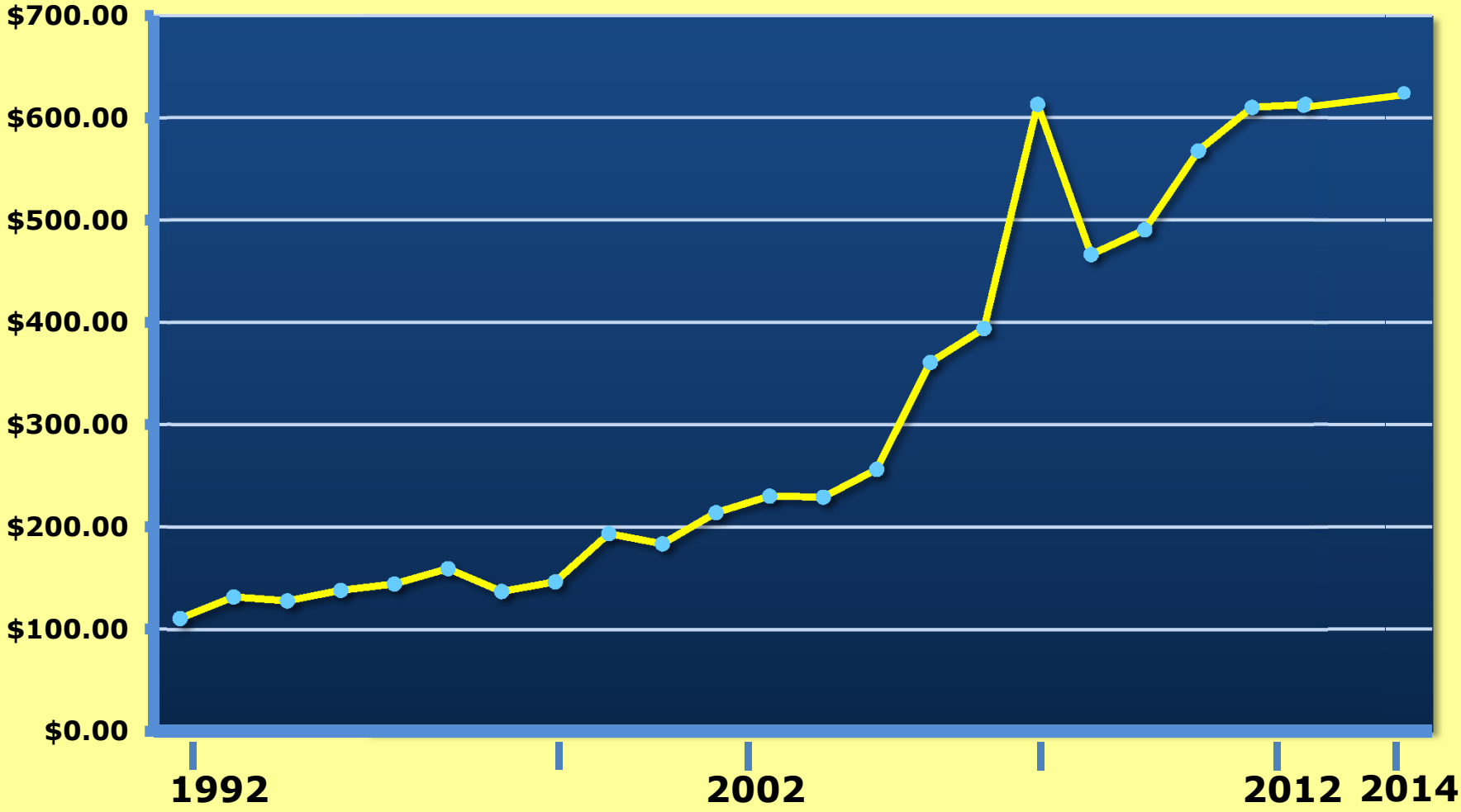
80% want better roads

80% want lower taxes

2 Major Problems

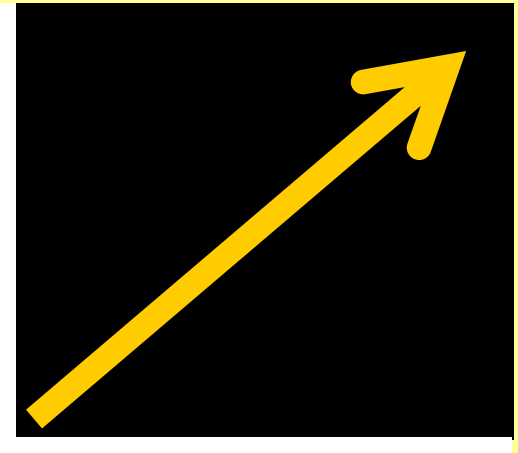
1. Not enough $

Asphalt Cement Price History--1992 to Present (Annual Average $ Per U.S. Liquid Ton)

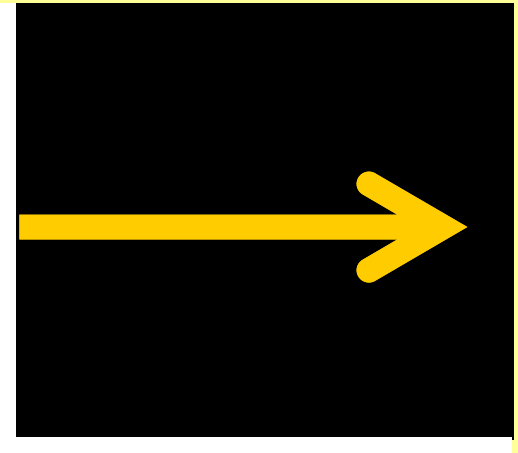


Source: MassDOT

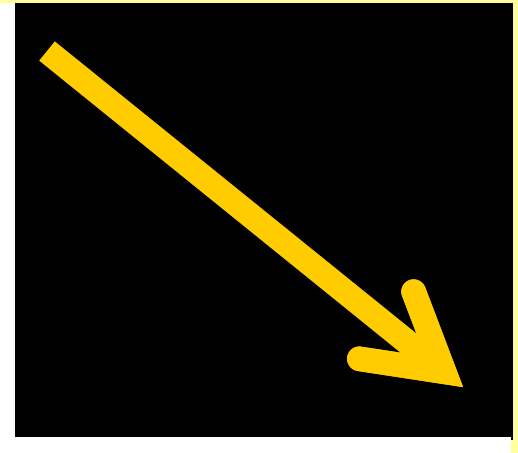
Why Do We Need Pavement Preservation?



Asphalt Cost



Highway Budgets



HMA Life Expectancy

2 Major Problems

1. **Not enough $**
2. **Not optimizing $**

Political Trap

“Worst-First”

Pavement Management approach

Reconstruction Candidate

Lake St
Preservation Candidate

When are you going to fix my road!?

Dirty Little Secret

Engineer

Consulting Fees

Reconstruction Projects

Maintenance Projects

2 Major Problems

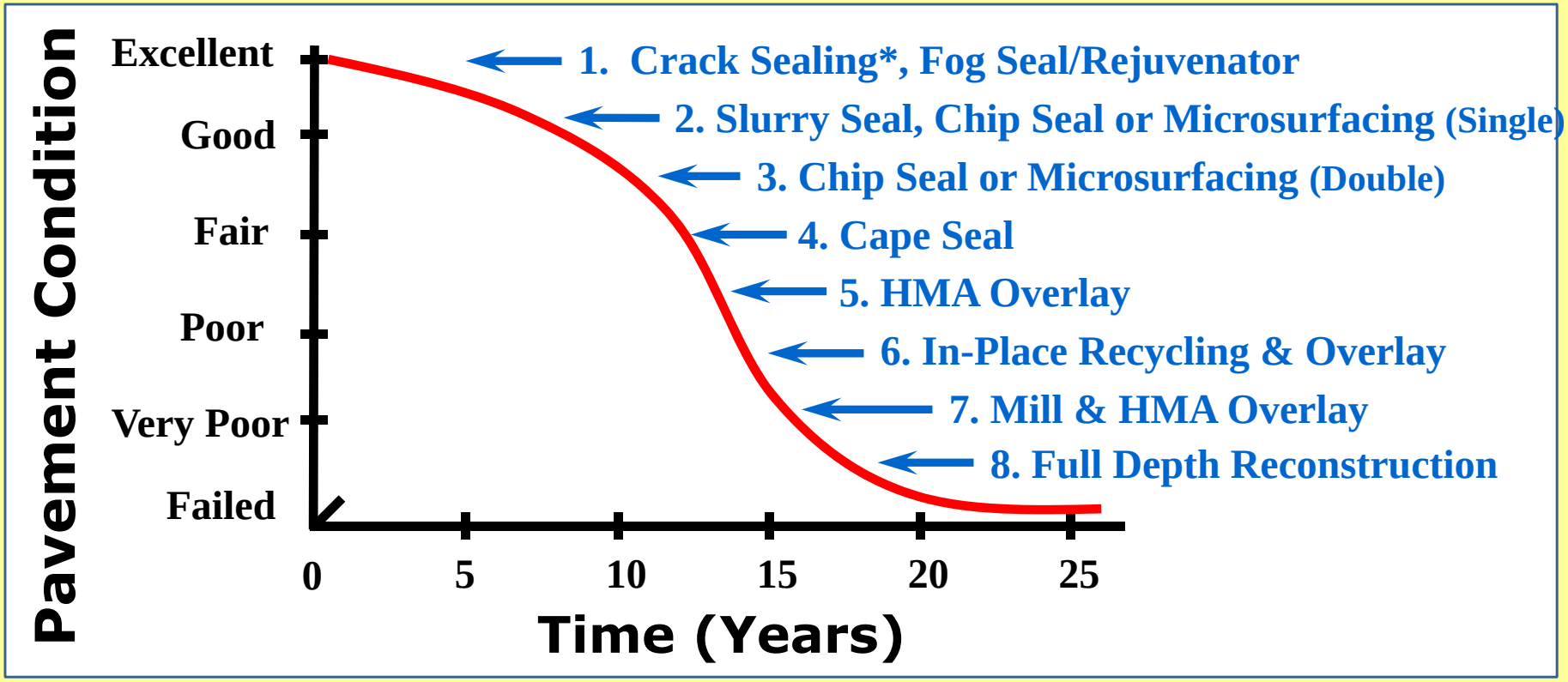
1. **Not enough $**
2. **Not optimizing $**

Management Concepts to Optimize Limited Funding

- EAC – Equivalent Annual Costs
- RSL – Remaining Service Life

Asphalt Deterioration Curve
(An Unfortunate Fact of Life)

Applying the Right Treatment, to the Right Road, at the Right Time…



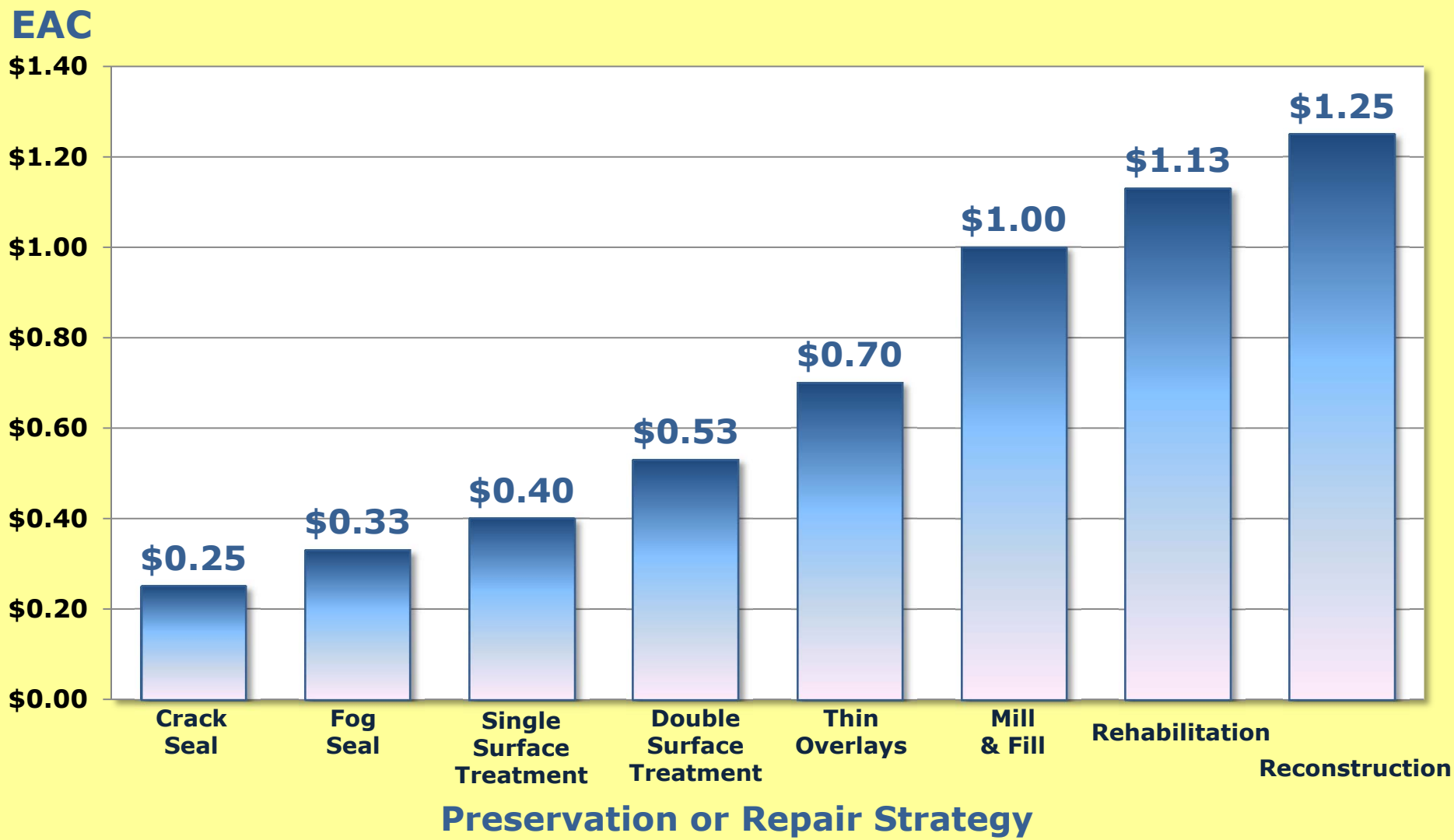
*** Crack Sealing to also be used in conjunction with other applications and as needed**

Road Treatment Alternatives - Equivalent Annual Costs

Treatment Alternative	Costs		Estimated Service Life (Years)	EAC ($/SY/Year)
	($/Lane-Mile) *	($/SY)		
Crack Seal	$ 3,520	$ .50	2	$0.25
Fog Seal	$ 7,040	$ 1.00	3	$0.33
Single Surface Treatment	$ 14,080	$ 2.00	5	$0.40
Double Surface Treatment	$ 29,920	$ 4.25	8	$0.53
Thin Overlays	$ 49,280	$ 7.00	10	$0.70
Mill-and-Fill	$ 84,480	$12.00	12	$1.00
Rehabilitation	$119,680	$17.00	15	$1.13
Reconstruction	$176,000	$25.00	20	$1.25

* Based on 12' lane widths

EAC by Strategy ($/SY/Year)



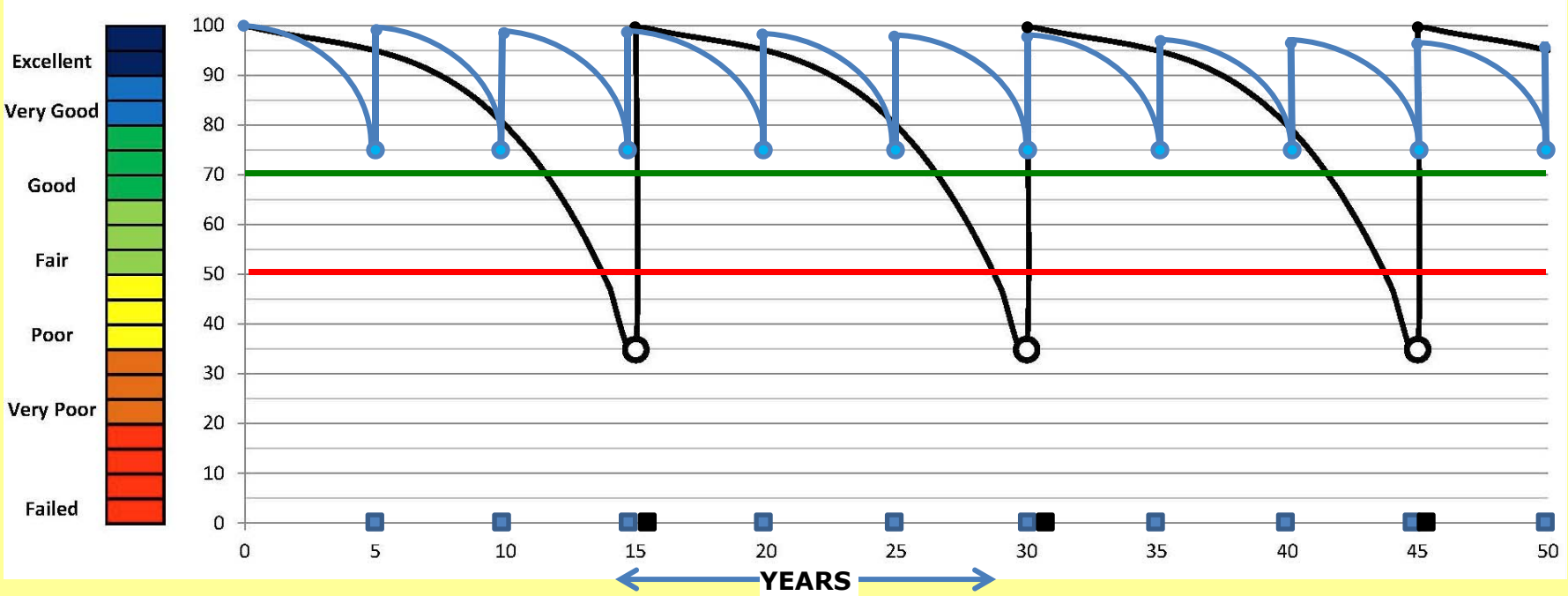
EAC Example

Roadway Network	= 100 centerline miles
Average Paved Width	= 26 feet
Total Paved Area	**= 1,525,000 SY**

	Preservation Approach (Chip Seal)	"Worst First" Approach (Rehab)
Network Area	1,525,000 SY	1,525,000 SY
Avg. EAC	**X** $ 0.40/SY/Year	**X** $ 1.13/SY/Year
Required Annual Budget	**$ 610,000**	**$1,723,250**

Save Money…Keep Good Roads Good!

Progressive Pavement Management
Preservation vs. Rehabilitation



PRESERVATION STRATEGY:

TOTAL COST/SY OVER 50 YEARS = $20.00/SY

REHABILITATION STRATEGY:

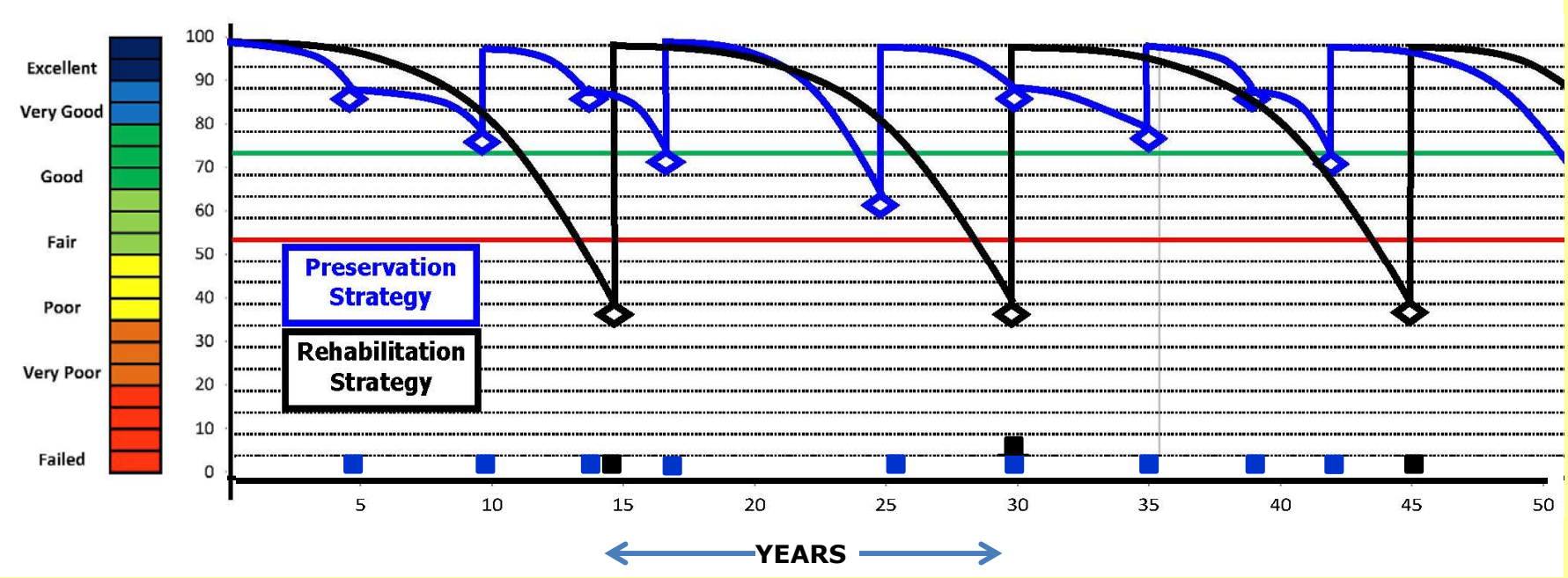
TOTAL COST/SY OVER 50 YEARS = $51.00/SY

Preservation Strategy

Rehabilitation Strategy

***Savings*= $31.00/SY x 1,525,000 SY = $47M!**

Progressive Pavement Management
Preservation vs. Rehabilitation



PRESERVATION STRATEGY:

Years 5, 14, 30 & 39: Crack sealing
Years 10 & 35: Microsurfacing (Double)
Years 17 & 42: Cape Seal
Year 25: Mill & Pave

TOTAL COST/SY OVER 50 YEARS = $29.60

REHABILITATION STRATEGY:

Year 15: FDR plus 4" Hot Mix Overlay
Year 30: FDR plus 4" Hot Mix Overlay
Year 45: FDR plus 4" Hot Mix Overlay

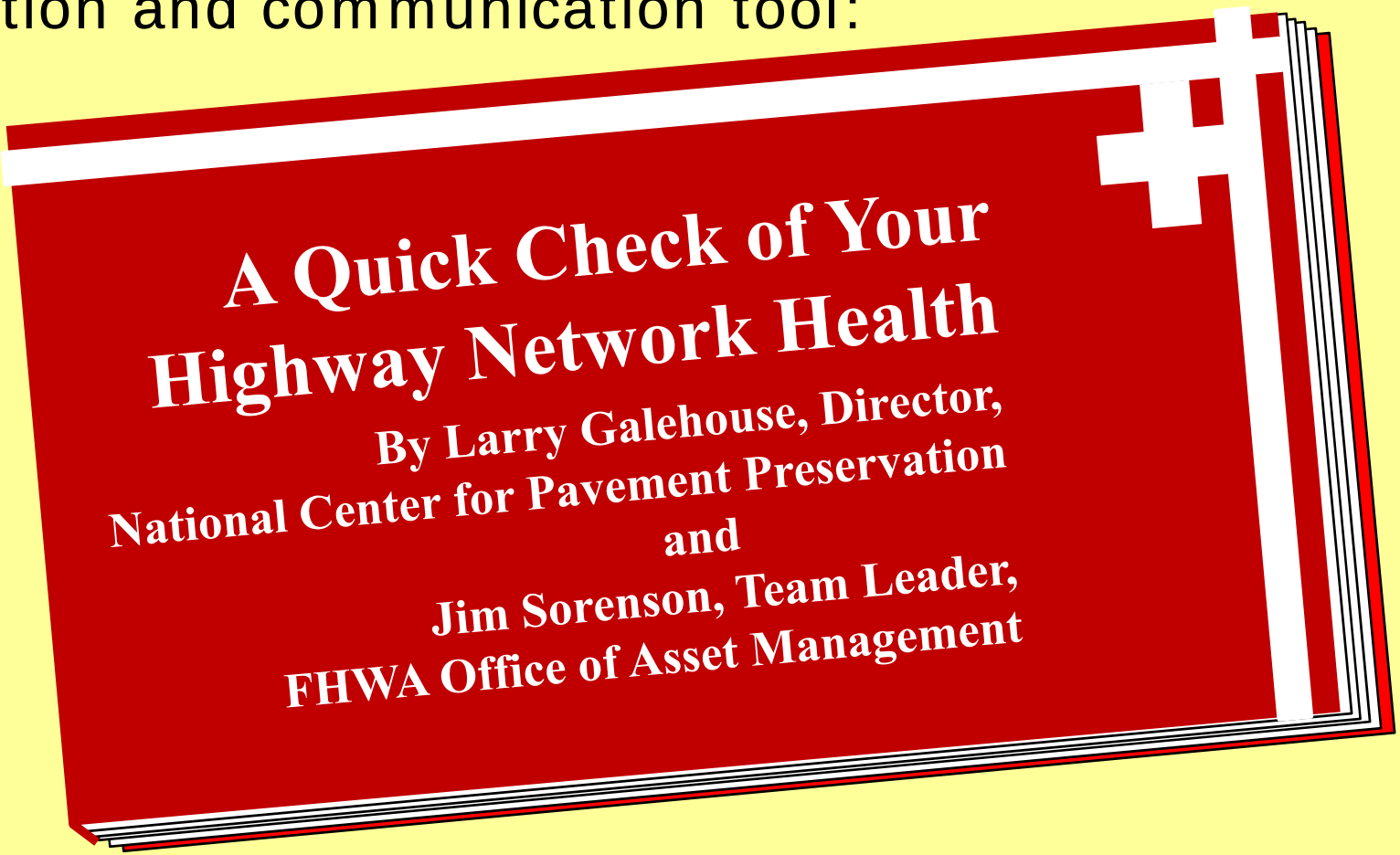
TOTAL COST/SY OVER 50 YEARS = $60.00

Management Concepts to Optimize Limited Funding

- EAC – Equivalent Annual Costs
- RSL – Remaining Service Life

Remaining Service Life

Simple (*but effective*) planning, education and communication tool:



Available at: http://www.fhwa.dot.gov/pavement/pub_details.cfm?id=478

A Quick Check of Your Highway Network Health

<u>Remaining Service Life</u> <u>(RSL)</u> **<u>Concept</u>**

- Every road segment has a **Remaining Service Life**
- 200 lane-miles with NO REPAIRS or MAINTENANCE in a given year, will **lose 200 lane-mile-years of Remaining Service Life**
- Annual work plans should match condition goals ("outcome based budgeting")

For Each Treatment Used:

Added Network Service Life =

Miles of Treatment X **Service Life of Treatment** = **Mile - Years**

Pavement Network Evaluation Worksheet

Total Network Lane Miles = _____

Reconstruction					
Project	Design Life	Lane Miles	Lane Mile Years	Lane Mile Cost	Total Cost
FDR		X	=		
		Total	=	Total	=

Rehabilitation					
Project	Design Life	Lane Miles	Lane Mile Years	Lane Mile Cost	Total Cost
CIPR		X	=		
Mill & Fill		X	=		
		Total	=	Total	=

Pavement Preservation					
Project	Design Life	Lane Miles	Lane Mile Years	Lane Mile Cost	Total Cost
UTBO		X	=		
Microsurfacing		X	=		
Chip Seal		X	=		
Fog Seal		X	=		
Crack Seal		X	=		
		Total	=	Total	=

Publication No. FHWA-IF-07-006

RSL Example

Network	=	200 lane-miles
Budget	=	$1,000,000 ($0.71/SY)

"Worst First" or Preservation?

Which program will add more service life?

Network Trend

Strategic Summary

"Worst First"

Programmed Activity	Lane-Miles	Lane-Mile Years	Total Cost
Reconstruction	2	40	$352,000
Rehabilitation	7	90	$661,760
Preservation	0	0	$0
Totals:	**9**	**130**	**$1,013,760**

Programmed Activity (Lane-Mile-Years) =	130
minus - Total Network (Lane-Mile-Years) =	200
Gain (+) / Deficit (-) =	**-70**

Preservation

Programmed Activity	Lane-Miles	Lane-Mile Years	Total Cost
Reconstruction	1	20	$176,000
Rehabilitation	3	39	$288,640
Preservation	41	174	$535,040
Totals:	**45**	**233**	**$999,680**

Programmed Activity (Lane-Mile-Years) =	233
minus - Total Network (Lane-Mile-Years) =	200
Gain (+) / Deficit (-) =	**33**

Good Idea……

Develop annual work plans to **maximize the amount of new service life** getting injected into your network!

Park Avenue – August 1, 2014

Bridgeport, CT

2004: 2” Mill & Fill

Fairfield, CT

2004: 2” Mill & Fill

2010: Crack Seal & Microsurfacing

Optimizing Limited Roadway Funding

- “Worst-First” is unaffordable
- Deferring maintenance does **<u>NOT</u>** save $$$
- A balanced approach is best

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THANK YOU

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