



# Assessing Cost Effectiveness

Preservation

Treatment	Unit Cost	Life Extension	\$/LM/Yr
Crack Seal	\$3K/LM	2 years	\$1,500
Chip Seal	\$25K/LM	5 years	\$5,000
1" Pave	\$70K/LM	9 years	\$8,000
2"-3" Pave	\$170K/LM	14 years	\$12,000
Multi-lift Pave	\$270K/LM	17 years	\$16,000
PCC Reconstruct	\$2,000K/LM	40 years	\$50,000



# Here's the Scenario...

## What do I do?





# A Generic LCCA Example

## Scenario 1 – Traditional Approach

Yr	Age	Treatment	Cost/LM	EUAC
0	8	Do Nothing	\$0	\$ 0
6	14	Patch	\$5,000	\$ 200
10	18	Multi-lift	\$270,000	\$9,220
24	14	Patch	\$5,000	\$ 100
28	18	Multi-lift	\$270,000	\$4,550
40	12	Salvage	\$80,000	- \$ 840
			Total	\$13,230

## Scenario 2 – Preservation

Yr	Age	Treatment	Cost/LM	EUAC
0	8	Chip Seal	\$25,000	\$1,260
10	18	Single Lift	\$170,000	\$5,800
18	8	Chip Seal	\$25,000	\$ 620
28	18	Single Lift	\$170,000	\$2,860
40	12	Salvage	\$25,000	- \$ 260
			Total	\$10,200

(22% savings)

Assumptions:

- 40 year analysis
- 4% discount rate

# Funding



**LEGEND**

STATE HIGHWAY  
100  
STATE HIGHWAY  
NUMBER

COUNTY BOUNDARY

CRATER LAKE  
NATIONAL PARK

**ROUTE SHIELDS**

INTERSTATE

U.S.

OREGON

System	Lane Miles	Pavement Programs (2015-2018 avg. \$/yr)	Equiv. Funding (\$/LM/yr)	Planned work (LM/yr)	Equiv. Cycle
<b>Interstate</b>	<b>3,130</b>	<b>STIP (Federal)- \$47M/yr</b> <ul style="list-style-type: none"> <li>• 50% single lift paving or diamond grinding (1R)</li> <li>• 25% structural paving (3R)</li> <li>• 25% reconstruct</li> </ul> <b>MIM (State) - \$3M/yr</b> <ul style="list-style-type: none"> <li>• single lane inlays</li> <li>• intermittent patching</li> <li>• PCC patching</li> </ul>	<b>\$16,000</b>	<b>Paving - 215</b>	<b>15 yrs</b>
<b>Non Interstate High Volume*</b>	<b>7,510</b>	<b>STIP (Federal) - \$54M/yr</b> <ul style="list-style-type: none"> <li>• \$29M single lift paving (1R)</li> <li>• \$20M structural paving (3R)</li> <li>• \$5M chip seals</li> </ul>	<b>\$7,200</b>	<b>Paving - 220</b> <b>Chip Seals - 170</b>	<b>34 yrs</b> <b>8 yrs</b>
<b>Non Interstate Low Volume*</b>	<b>7,530</b>	<b>LVR (State) - \$13M/yr</b> <ul style="list-style-type: none"> <li>• \$8M chip seals</li> <li>• \$3M thin paving</li> <li>• \$2M patching</li> </ul>	<b>\$1,700</b>	<b>Paving - 25</b> <b>Chip Seals - 450</b>	<b>300 yrs</b> <b>10 yrs</b>
<b>Total</b>	<b>18,170</b>	<b>\$117 million/yr</b>	<b>\$6,500</b>	<b>Paving - 460</b>	<b>40 yrs</b>

\* Low Volume defined as non-interstate routes with ADT<=5,000 and 20-year ESAL's <= 3 million



# “Good Practices”

- Pavement Management
  - Dedicated, Predictable funding
  - Don’t wait too long to apply preservation
- Design
  - 2<sup>nd</sup> Opinion
  - Check structural health
  - Evaluate alternatives
- Materials
  - Chip Seal Research - application rates
  - Annual chip seal workshops
  - Thin 1” paving and microsurfacing
  - Keep focus on HMAC durability