

**LIFE CYCLE COSTS FOR LIME  
IN HOT MIX ASPHALT**

**VOLUME II – APPENDICES**

**by**

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## **FOREWARD**

This is Volume II of a three-volume report. The contents of each volume of the report are described as follows:

- Volume I – Final Report describes the study, summarizes the findings, and provides conclusions and recommendations.
- Volume II – Appendices contains all of the supporting data for the study.
- Volume III – LCCA Software User’s Guide is a user’s guide for the Windows-based software program developed specifically for this study.

The final report (Volume I) and appendices (Volume II) will be of interest to State highway agency personnel and hot-mix asphalt paving contractors responsible for conducting and/or reviewing pavement design life cycle cost analyses. The software user’s guide (Volume III) will be of interest to those practitioners that have obtained and desire to use the LCCA software.

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## **ABSTRACT**

Life cycle cost analysis (LCCA) is recognized by public agencies as an effective tool to assist in the selection of highway construction, maintenance, and rehabilitation treatments. Accordingly, the Federal Highway Administration (FHWA) has developed an LCCA methodology that will likely become the standard in the industry. The methodology can be used to evaluate the life cycle costs (LCC) of paving materials with additives/modifiers, such as hydrated lime.

This report uses information from past highway projects to:

- identify the benefits and costs of adding lime;
- compile past performance data into an LCCA model; and
- compare the LCCs for asphalts with and without lime.

Estimated lives used in the LCCA model are based on interviews and on engineering judgment. Practitioners can use project-specific data with the LCCA software to generate project-specific estimates of life cycle costs.

This report presents the LCCA results for interstate and state highway projects. The findings show that lime is the most cost effective design for all of the applications studied. Life cycle cost savings from lime are, on average, \$2 to \$3 per square yard; or, \$13,000 to \$21,000/lane mile (13% to 15% of project life cycle costs). These results are based on the widely accepted use of lime as an additive that reduces stripping.

## ACKNOWLEDGMENTS

The authors are grateful for the assistance of the following agencies and contractors that provided the information to perform life cycle cost comparisons:

- | <u>Agencies</u>              | <u>Contractors</u>          |
|------------------------------|-----------------------------|
| • Arizona                    | • APAC                      |
| • California                 | • FNF Construction          |
| • Colorado                   | • Granite Construction      |
| • FHWA (WFLHD <sup>1</sup> ) | • Kiewit Pacific            |
| • Georgia                    | • Lafarge                   |
| • Mississippi                | • C.W. Matthews Contracting |
| • Oregon                     | • Morse Brothers            |
| • Nevada                     | • Staker Construction       |
| • South Carolina             | • Dean Word Company         |
| • Texas                      | • Young Contractors         |
| • Utah                       |                             |

The information provided and used in the analyses was verified by those surveyed.

## DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy presented herein. The contents do not necessarily reflect the official views of the agencies and contractors that provided information in support of the study. Users of the LCCA model need to apply their judgment when using the results of this report or the software described in Volume III.

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<sup>1</sup> Western Federal Lands Highway Division of the Federal Highway Administration

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# LCCA Analysis of HMA Paving Alternates Survey Form

## PREFACE

The following questions are being used to develop life cycle costs for comparing lime-treated HMA with conventional HMA applications. The questions will be sent about 1-2 weeks in advance of a visit (or telephone call) from one of the team members. Our team will complete the interview form.

If you have questions, please contact the following individual:

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1. When did your agency begin using lime in HMA applications? Year \_\_\_\_\_

2. How is lime added to the HMA?

- In the drum mixer
- Dry lime added to dry aggregate
- Dry lime added to wet aggregate
- Lime slurry added to aggregate

If lime is added to aggregates, is the aggregate-lime mix marinated before use?

Yes  No

If so, is it required or optional? \_\_\_\_\_

3. What is the current estimated usage of lime in the HMA in the following applications?

Type	Typical % of Lime in the Mix	Tons of Lime Used Statewide	% of Use in all HMA
Gap-Graded HMA			
Open-Graded HMA			
Dense-Graded HMA			

4. What are the reasons for using lime? (Estimate level of importance.)

Reason for Using Lime	Level of Importance (1 = very important, 2 = moderately important, 3 = less important)
Resist stripping	
Improve aging resistance/slow oxidation	
Filler to stiffen the binder/reduce rutting	
Improve fracture toughness at low temperatures/reduce cracking	
Alter plastic properties of clay fines	

5. Please provide typical cost information (Average, 10 and 90 percentile) for the following.

	HMA Conventional	HMA With Liquid Anti-Strip	HMA Lime-Treated
Asphalt Binder (\$/ton)			
HMA (\$/ton)			
Open-Graded			
Gap-Graded			
Dense-Graded			
Routine Maintenance* (\$/yd <sup>2</sup> /yr)			
Preventive Maintenance** (\$/yd <sup>2</sup> /yr)			

\*Crack seals, patching (surface and trenches)

\*\*Fog seals, sand (scrub) seals, slurries, microsurfacing



6. What is the life expectancy (in years) for each of the applications noted in Question #3 above? Please provide the following for each:
- Average life expectancy
  - Lower range (1 in 10 projects fails to achieve this life)
  - Upper range (1 in 10 will exceed this life)

Type of Road	Range of ESALs	HMA Lime-Treated	HMA Not Lime-Treated
Interstate (High Volume)			
State and US Highways (Medium Volume)			
Local Roads (Low Volume)			

7. Please identify the maintenance and rehabilitation (M&R) strategies (e.g. chip seals, overlays) for the following types of pavements.

Existing Pavement Type	Highway Type	M&R Strategies Used		Typical Pavement Age When Required (yrs)	
		Maint.	Rehab.	Maint.	Rehab.
Conventional HMA	Interstate				
	State & US Highways				
	Local Roads				
Modified HMA With Liquid Anti-Strip Additives	Interstate				
	State & US Highways				
	Local Roads				
HMA with Lime Treatment	Interstate				
	State & US Highways				
	Local Roads				

8. For both conventional and lime-treated HMA, please provide estimates for the following information.

		HMA Conventional	HMA with Lime	HMA with Liquid Antistrip
Interstate (Multilane)	Length of Project (lane-miles)			
	Total Lane Closure Time* (hrs/day)			
	Typical Lane Rental Fees (\$/hr)			
State & US Highways (2 lane)	Length of Project (miles)			
	Total Lane Closure Time* (hrs/day)			
	Typical Lane Rental Fees (\$/hr)			
Local Roads (2 lane)	Length of Project (miles)			
	Total Lane Closure Time* (hrs/day)			
	Typical Lane Rental Fees (\$/hr)			

\*Paving only

Person Interviewed:

Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

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**APPENDIX B**  
**Results from Survey**

Table B.1. Year Agency Began Using Lime in HMA

Agency	Year Use Began
Arizona	1982 <sup>1</sup>
California	1990
Colorado	1990
FHWA (WDFD)	1983
Georgia	1981
Mississippi	1991
Nevada	1987
Oregon	1984
South Carolina	1983
Texas	1983
Utah	1989

<sup>1</sup>Either lime or cement is permitted

Table B.2. Method of Adding Lime to HMA

Agency	(1) In Drum	(2) Dry Lime to Dry Aggregate	(3) Dry Lime to Wet Aggregate	(4) Lime Slurry to Aggregate	(5) Is Aggregate-Lime Mix Marinated?
Arizona			√ <sup>1</sup>		No
California				√	Required
Colorado			√	√	Optional
FHWA (WDFD)			√		No
Georgia	√	√ <sup>2</sup>			No
Mississippi			√		No
Nevada			√		Required
Oregon			√ <sup>1</sup>		Optional
South Carolina			√ <sup>1</sup>		No
Texas	√		√ <sup>1</sup>	√	No
Utah				√ <sup>1</sup>	Optional

<sup>1</sup>Lime-wet aggregate mixed in pug mill

<sup>2</sup>Lime added this way for both batch and drum plants



Table B.3. Estimated Usage of Lime in HMA

Agency	Typical % of Lime	Tons of Lime Used Statewide	% of Use in All HMA
a) Dense-Graded Mixes			
Arizona <sup>1</sup>	1.0	N/A	100
California	0.8-1.2	N/A	30
Colorado	1.0	20,000	95
FHWA (WDFD)	1.0	N/A	50
Georgia	1.0	82,000	85
Mississippi	1.0	39,250	100
Nevada	1.5	N/A	100
Oregon	1.0	7,300	50
South Carolina	1.0	39,000	75
Texas	1.0	N/A	40-50
Utah	1.0	N/A	100
b) Open-Graded Mixes			
Arizona	1.0	N/A	100
California	0.7-1.0	N/A	5
Colorado	Not used	—	—
FHWA (WDFD)	1.0	N/A	100
Georgia	1.0	700	100
Mississippi	N/A	N/A	N/A
Nevada	1.5	N/A	100
Oregon	0.7	2,000	70
South Carolina	1.0	570	100
Texas	1.0	N/A	100
Utah	1.0	N/A	100
c) Gap-Graded (e.g., SMA)			
Arizona	1.0	N/A	100
California	0.8-1.2	N/A	10
Colorado	Not used	—	—
FHWA (WDFD)	N/A	N/A	N/A
Georgia	1.0	1300	100
Mississippi	N/A	N/A	N/A
Nevada	N/A	N/A	N/A
Oregon	< 1.0	—	50
South Carolina	1.0	2,370	100
Texas	1.0	N/A	80-100
Utah	Not used	—	—

<sup>1</sup>Lime or cement is allowed

Table B.4. Reasons for Using Lime

Agency	Resist Stripping	Improve Aging Resistance	Stiffen Binder	Improve Fracture Toughness	Alter Properties of Fines
Arizona	1	3	2	3	2
California	1	2	3	3	3
Colorado	1	3	3	3	1 (when appropriate)
FHWA	1	2	3	2	3
Georgia	1	3	3	3	3
Mississippi	1	1	2	—	3
Nevada	1	3	3	2	1
Oregon	1	2	3	3	3
South Carolina	1	2	2	2	2
Texas	1	3	2	3	2
Utah	1	2	2	2	2

Level of importance:

- 1 = very important
- 2 = moderately important
- 3 = less important

Table B.5. Typical Cost Information

Agency	Mix Type	Conventional	With Liquid Anti-Strip	With Lime Treatment
a) HMA (\$/ton)				
Arizona	Gap	41	N/A	42
	Open	45	N/A	46
	Dense	30	N/A	31
California	Gap	—	—	—
	Open	—	—	—
	Dense	50	—	55
Colorado	Gap	N/A	—	N/A
	Open	N/A	—	N/A
	Dense	30	30.50	31
FHWA	Gap	—	—	—
	Open	21.50	N/A	23
	Dense	24.50	N/A	26
Georgia	Gap	54	—	55
	Open	53	—	54
	Dense	35	—	36
Mississippi	Gap	—	—	—
	Open	—	—	—
	Dense	38	N/A	39.25
Nevada	Gap	—	—	—
	Open	42	—	46
	Dense	32	—	36
Oregon	Gap	—	—	—
	Open	19.50	20.00	21.00
	Dense	20.00	20.50	21.50
South Carolina	Gap	—	N/A	35
	Open	—	N/A	35
	Dense	35	N/A	29.50
Texas	Gap	40	40.50	41
	Open	50	50.50	51
	Dense	30	30.50	31
Utah	Gap	—	—	—
	Open	40	—	42
	Dense	30	—	32

$\$/\text{yd}^2 \cong 0.0487 \times \$/\text{ton (open)}$   
 $\cong 0.0525 \times \$/\text{ton (gap)}$   
 $\cong 0.0562 \times \$/\text{ton (dense)}$

Table. B.5. Typical Cost Information (continued)

	Type of Treatment	Cost/yd <sup>2</sup>		
		10%	Average	90%
b) Routine Maintenance (\$/yd <sup>2</sup> )				
Arizona	Fog Seal	0.20	0.30	0.40
	Crack Seal	0.30	0.50	0.70
California – Dist 2	Crack Seal	0.20	0.30	0.40
	PM Chip Seal	1.00	1.50	2.00
Colorado	Crack Seal	0.30	0.50	0.70
FHWA	Fog Seal	0.20	0.30	0.40
	Crack Seal	0.30	0.50	0.70
Georgia	Crack Seal	0.30	0.50	0.70
Mississippi	Chip Seal	0.80	0.90	1.00
Nevada	Fog Seal	0.30	0.40	0.50
Oregon	Fog Seal	0.35	0.40	0.45
	Crack Seal	0.30	0.50	0.70
South Carolina	Crack Seal			
Texas	Crack Seal	0.20	0.30	0.40
Utah	Crack Seal	0.30	0.50	0.70
c) Preventive Maintenance (\$/yd <sup>2</sup> )				
Arizona	Fog Seal	0.30	0.35	0.40
	Chip Seal	0.80	1.00	1.25
California	Crack Seal	0.20	0.30	0.40
	PM Ship Seal	1.00	1.50	2.00
Colorado	N/A	—	—	—
FHWA	Chip Seal	0.80	0.90	1.00
Georgia	Chip or Slurry Seal	0.80	1.00	1.25
Mississippi	Chip Seal	0.80	0.90	1.00
Nevada	Chip Seal	0.80	1.00	1.25
Oregon	Chip Seal	0.80	1.00	1.25
South Carolina	Chip or Slurry Seal	1.00		
Texas	Chip Seal	0.80	1.00	1.25
	AR Chip Seal	1.75	2.00	2.25
	Microsurfacing	1.00	1.20	1.40
Utah	Chip Seal	0.80	1.00	1.25
	1 inch OGFC	1.60	1.80	2.00

Table B.6. Life Expectancy of HMA Applications

Agency	Lime Treated			Non-Lime Treated		
	10%	Average	90%	10%	Average	90%
a) Interstate						
Arizona	13	15	17	10	12	14
California	8	10	12	6	8	10
Colorado	8	10	12	6	8	10
Georgia	7	10	15		N/A	
Mississippi	7	10	15		N/A	
Nevada*	7	8	9	3	4	7
Oregon	10	15	20	8	12	15
South Carolina	10	12	15		N/A	
Texas	8	12	15	7	10	12
Utah	15	20	25	7	10	15
b) State and U.S. Highways						
Arizona	18	20	22	15	17	20
California	8	10	12	6	8	10
Colorado*	8	10	12		8	
FHWA	15	20	25		N/A	
Georgia	8	10	14		N/A	
Mississippi	12	15	17		N/A	
Nevada	10	12	14	6	8	10
Oregon	15	17	20	8	12	15
South Carolina	8	10	12		N/A	
Texas	10	12	15	8	10	12
Utah	15	20	25	7	10	15
c) Low Volume Roads						
Arizona	20	25	30	15	20	25
California		N/A			N/A	
Colorado*	10	12	15	8	10	12
FHWA	15	20	25		N/A	
Georgia	8	10	15	8	10	15
Mississippi	12	15	17		N/A	
Nevada	18	20	22	12	15	18
Oregon	15	20	25	7	10	15
South Carolina	10	15	20		N/A	
Texas	8	12	15	7	10	15
Utah	7	10	15	3	5	7

\*Pavement preservation

N/A = not applicable

Table B.7. Typical Maintenance and Rehabilitation Strategies Used – Lime Treated

Agency	Maintenance	Rehabilitation
a) Interstate		
Arizona	Fog seals every 5 years	4 inch mill & fill plus 1 inch OGFC overlay every 15 years
California	Crack seal plus chip or slurry seal at 5-7 years	3 inch overlay over digouts every 10-15 years
Colorado	Crack seal at 5-7 years	2 inch mill & fill plus 2 inch overlay at 10-12 years
FHWA	N/A	N/A
Georgia	Crack seal at 7 years	2 inch mill & fill plus 1.5 inch overlay at 10 years
Mississippi	N/A	1.5 inch overlay every 10 years
Nevada	Fog seal as needed	2 inch overlay every 8 years
Oregon	Fog seal as needed	2 inch mill & fill plus 2 inch overlay at 15 years
South Carolina	N/A	2-4 inch mill & fill plus 2 inch overlay at 12 years
Texas	Crack seal prior to overlay	1.5-2.5 inch overlay every 10-15 years
Utah	1 inch OGFC every 5-7 years	2-3 inch mill & fill plus 2 inch overlay every 20 years
b) State Highways		
Arizona	Fog seal/chip seal every 5 years	2 inch overlay every 20 years
California	Crack seal plus chip or slurry seal at 5-7 years	3 inch overlay over digouts every 10-15 years
Colorado	Crack seal at 5-7 years	2 inch overlay every 10-12 years
FHWA	Chip seal every 5-7 years	2 inch overlay every 10-15 years
Georgia	Crack seal at 8 years	1.5 inch overlay at 10 years
Mississippi	Chip seal as needed	1.5 inch overlay at 15 years
Nevada	Fog seal as needed	2 inch overlay every 12 years
Oregon	Chip seal every 8 years	2 inch mill & fill plus 2 inch overlay at 15-20 years
South Carolina	N/A	2 inch mill & fill plus 2 inch overlay at 10 years
Texas	Chip seal or microsurface every 5-7 years	1.5-2.5 inch overlay every 10-15 years
Utah	Chip seal or OGFC every 5-7 years	2 inch mill & fill plus 1.5 inch overlay every 20 years
c) Local Roads		
Arizona	Fog seal/chip seal every 5 years	Chip seal to 2 inch overlay in 25 years
California	N/A	2 inch overlay over digouts every 10-15 years
Colorado	Crack seal at 5-7 years	2 inch overlay at 12-15 years
FHWA	Chip seal every 5-7 years	2 inch overlay at 10-15 years
Georgia	Crack seal at 7 years	1-1.5 inch overlay at 10 years
Mississippi	Chip seal as needed	1.5 inch overlay at 15 years
Nevada	Fog or chip seal as needed	2 inch overlay every 20 years
Oregon	Chip seal at 8 years	2 inch overlay at 20 years
South Carolina	N/A	Chip seal and/or 2 inch HMA overlay at 15 years
Texas	Chip seal every 5-7 years	1.5-2.5 inch overlay every 10-15 years
Utah	Chip seal or microsurfing every 5-7 years	2 inch mill & fill plus 1.5 inch overlay every 20 years

N/A = not applicable

Table B.8. Typical Maintenance and Rehabilitation Strategies Used – Non-Lime Treated

Agency	Maintenance	Rehabilitation
a) Interstate		
Arizona	Fog seal every 5 years	4 inch mill & fill plus 1 inch overlay every 10-12 years
California	Crack seal plus chip or slurry seal at 5-7 years	3 inch overlay over digouts every 8-12 years
Colorado	Crack seal at 3-5 years	2 inch mill & fill plus 2 inch overlay at 8 years
FHWA	N/A	N/A
Georgia	N/A	N/A
Mississippi	N/A	N/A
Nevada	N/A	N/A
Oregon	Fog seal as needed	Mill & fill plus 2 inch overlay at 12 years
South Carolina	N/A	N/A
Texas	Crack seal prior to overlay	1.5-2.5 inch overlay every 10-15 years
Utah	N/A	N/A
b) State Highways		
Arizona	Fog/chip seal every 5 years	Overlay every 17-20 years
California	Crack seal plus chip or slurry seal	3 inch overlay over digouts every 8-12 years
Colorado	Crack seal at 3-5 years	2 inch overlay at 8-10 years
FHWA	N/A	N/A
Georgia	N/A	N/A
Mississippi	N/A	N/A
Nevada	N/A	N/A
Oregon	Chip seal every 5-7 years	Mill & fills plus 2 inch overlay at 15 years
South Carolina	N/A	N/A
Texas	Chip seal or microsurfacing every 5-7 years	1.5-2.5 inch overlay every 10-15 years
Utah	N/A	N/A
c) Local Roads		
Arizona	Fog/chip seal every 5 years	Chip seal/overlay in 20-22 years
California	N/A	2 inch overlay over digouts every 8-12 years
Colorado	Crack seal at 3-5 years	2 inch overlay at 10-12 years
FHWA	N/A	N/A
Georgia	Crack seal at 7 years	1.5 inch overlay in 10 years
Mississippi	N/A	N/A
Nevada	N/A	N/A
Oregon	Chip seal at 7 years	1.5 inch overlay at 15 years
South Carolina	N/A	N/A
Texas	Chip seal every 5-7 years	1.5-2.5 inch overlay every 10-15 years
Utah	N/A	N/A

N/A = not applicable

Table B.9. Other Project Information

Agency	Interstate	State Highway	Local Roads
a) Typical Project Length (miles)			
Arizona	10	10	10
California	10	5-20	—
Colorado	3-5	< 10	3-5
FHWA	N/A	10	5
Georgia	2-10	2-10	0.2-20
Mississippi	3	1	—
Nevada	7-15	Up to 30	Up to 30
Oregon	10	10	4
South Carolina	7-10	5-7	—
Texas	5-10	5-10	Up to 30
Utah	10	5	5
b) Lane Closure Time (hrs/day)			
Arizona	10	10	10
California	8-10	8-10	—
Colorado	7-10	8-10	8-10
FHWA	N/A	12	12
Georgia	9	9	N/A
Mississippi	24	8-10	—
Nevada	N/A	8-10	8-10
Oregon	8-10	8-10	8-10
South Carolina	8-10 (night time only)	8-10	8-10
Texas	8-10	8-10	8-10
Utah	2 lanes open in day/1 at night	8-10	8-10
c) Lane Rental Fees (\$/lane-mile-day)			
Arizona	Not used	Not used	Not used
California	Not used	Not used	Not used
Colorado	Not used	Not used	Not used
FHWA	Not used	Not used	Not used
Georgia	Not used	Not used	Not used
Mississippi	Not used	Not used	Not used
Nevada	Not used	Not used	Not used
Oregon	Not used	Not used	Not used
South Carolina	Not used	Not used	Not used
Texas	Not used	Not used	Not used
Utah	Not used	Not used	Not used

N/A = not applicable



**APPENDIX C**  
**Scenarios Evaluated**

**a) Interstates**

Agency: ADOT

Scenario: Lime-Treated

Traffic Level: Interstate – Rehab

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 1 inch OG Overlay	15	13	17	7.32	7.10	7.54
1							
2							
3							
4							
5	Fog Seal	5	3	7	0.30	0.20	0.40
6							
7							
8							
9							
10	Fog Seal	5	3	7	0.30	0.20	0.40
11							
12							
13							
14							
15	2 inch Mill & Fill + 1 inch OG Overlay	15	13	17	7.32	7.10	7.54
16							
17							
18							
19							
20	Fog Seal	5	3	7	0.30	0.20	0.40
21							
22							
23							
24							
25	Fog Seal	5	3	7	0.30	0.20	0.40
26							
27							
28							
29							
30	2 inch Mill and Fill + 1 inch OG Overlay	15	13	17	7.32	7.10	7.54
31							
32							
33							
34							
35	Fog Seal	5	3	7	0.30	0.20	0.40
36							
37							
38							
39							
40	Fog Seal	5	3	7	0.30	0.20	0.40

Agency: ADOT  
 Traffic Level: Interstate – Rehab

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill and Fill + 1 inch OG Overlay	13	10	15	7.16	6.94	7.37
1							
2							
3							
4							
5	Fog Seal	5	3	7	0.30	0.20	0.40
6							
7							
8							
9							
10	Fog Seal	5	3	7	0.30	0.20	0.40
11							
12							
13	2 inch Mill and Fill + 1 inch OG Overlay	13	10	15	7.16	6.94	7.37
14							
15							
16							
17							
18	Fog Seal	5	3	7	0.30	0.20	0.40
19							
20							
21							
22							
23	Fog Seal	5	3	7	0.30	0.20	0.40
24							
25							
26	2 inch Mill and Fill + 1 inch OG Overlay	13	10	15	7.16	6.94	7.37
27							
28							
29							
30							
31	Fog Seal	5	3	7	0.30	0.20	0.40
32							
33							
34							
35							
36	Fog Seal	5	3	7	0.30	0.20	0.40
37							
38							
39	2 inch Mill and Fill + 1 inch OG Overlay	13	10	15	7.16	6.94	7.37
40							

Agency: Caltrans  
 Traffic Level: Interstate – Rehab

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	3 inch Overlay	10	8	12	9.27	8.99	9.55
1							
2							
3							
4							
5	Crack Seal + Chip Seal	5	3	7	1.80	1.20	2.40
6							
7							
8							
9							
10	3 inch Overlay	10	8	12	9.27	8.99	9.55
11							
12							
13							
14							
15	Crack seal + Chip Seal	5	3	7	1.80	1.20	2.40
16							
17							
18							
19							
20	3 inch overlay	10	8	12	9.27	8.99	9.55
21							
22							
23							
24							
25	Crack seal + Chip Seal	5	3	7	1.80	1.20	2.40
26							
27							
28							
29							
30	3 inch overlay	10	8	12	9.27	8.99	9.55
31							
32							
33							
34							
35	Crack seal + Chip seal	5	3	7	1.80	1.20	2.40
36							
37							
38							
39							
40	3 inch overlay	10	8	12	9.27	8.99	9.55

Agency: Caltrans  
 Traffic Level: Interstate -- Rehab

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	3 inch Overlay + digouts	8	6	10	8.43	8.18	8.68
1							
2							
3							
4	Crack seal + Chip seal	4	3	5	1.80	1.20	2.40
5							
6							
7							
8	3 inch Overlay + digouts	8	6	10	8.43	8.18	8.68
9							
10							
11							
12	Crack seal + Chip seal	4	3	5	1.80	1.20	2.40
13							
14							
15							
16	3 inch Overlay + digouts	8	6	10	8.43	8.18	8.68
17							
18							
19							
20	Crack seal + Chip seal	4	3	5	1.80	1.20	2.40
21							
22							
23							
24	3 inch Overlay + digouts	8	6	10	8.43	8.18	8.68
25							
26							
27							
28	Crack seal + Chip seal	4	3	5	1.80	1.20	2.40
29							
30							
31							
32	3 inch Overlay + digouts	8	6	10	8.43	8.18	8.68
33							
34							
35							
36	Crack seal + Chip seal	4	3	5	1.80	1.20	2.40
37							
38							
39							
40	3 inch Overlay + digouts	8	6	10	8.43	8.18	8.68

Agency: Colorado  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	10	8	12	8.57	8.31	8.83
1							
2							
3							
4							
5	Crack Seal	5	3	7	0.50	0.30	0.70
6							
7							
8							
9							
10	2 inch Mill & Fill + 2 inch Overlay	10	8	12	8.57	8.31	8.83
11							
12							
13							
14							
15	Crack Seal	5	3	7	0.50	0.30	0.70
16							
17							
18							
19							
20	2 inch Mill & Fill + 2 inch Overlay	10	8	12	8.57	8.31	8.83
21							
22							
23							
24							
25	Crack Seal	5	3	7	0.50	0.30	0.70
26							
27							
28							
29							
30	2 inch Mill & Fill + 2 inch Overlay	10	8	12	8.57	8.31	8.83
31							
32							
33							
34							
35	Crack Seal	5	3	7	0.50	0.30	0.70
36							
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	10	8	12	8.57	8.31	8.83

Agency: Colorado  
 Traffic Level: Interstate

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	8	6	10	8.34	8.09	8.59
1							
2							
3							
4	Crack Seal	4	2	6	0.50	0.30	0.70
5							
6							
7							
8	2 inch Mill & Fill + 2 inch Overlay	8	6	10	8.34	8.09	8.59
9							
10							
11							
12	Crack Seal	4	2	6	0.50	0.30	0.70
13							
14							
15							
16	2 inch Mill & Fill + 2 inch Overlay	8	6	10	8.34	8.09	8.59
17							
18							
19							
20	Crack Seal	4	2	6	0.50	0.30	0.70
21							
22							
23							
24	2 inch Mill & Fill + 2 inch Overlay	8	6	10	8.34	8.09	8.59
25							
26							
27							
28	Crack Seal	4	2	6	0.50	0.30	0.70
29							
30							
31							
32	2 inch Mill & Fill + 2 inch Overlay	8	6	10	8.34	8.09	8.59
33							
34							
35							
36	Crack Seal	4	2	6	0.50	0.30	0.70
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	8	6	10	8.34	8.09	8.59



Agency: Georgia  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	8.68	8.42	8.94
1							
2							
3							
4							
5							
6							
7	Crack Seal	3	1	5	0.50	0.30	0.70
8							
9							
10	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	8.68	8.42	8.94
11							
12							
13							
14							
15							
16							
17	Crack Seal	3	1	5	0.50	0.30	0.70
18							
19							
20	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	8.68	8.42	8.94
21							
22							
23							
24							
25							
26							
27	Crack Seal	3	1	5	0.50	0.30	0.70
28							
29							
30	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	8.68	8.42	8.94
31							
32							
33							
34							
35							
36							
37	Crack Seal	3	1	5	0.50	0.30	0.70
38							
39							
40	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	8.68	8.42	8.94

Agency: Georgia  
 Traffic Level: Interstate

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 1.5 inch Overlay	8	5	12	8.48	8.22	8.73
1							
2							
3							
4							
5	Crack seal	3	1	5	0.50	0.30	0.70
6							
7							
8	2 inch Mill & Fill + 1.5 inch Overlay	8	5	12	8.48	8.22	8.73
9							
10							
11							
12							
13	Crack seal	3	1	5	0.50	0.30	0.70
14							
15							
16	2 inch Mill & Fill + 1.5 inch Overlay	8	5	12	8.48	8.22	8.73
17							
18							
19							
20							
21	Crack seal	3	1	5	0.50	0.30	0.70
22							
23							
24	2 inch Mill & Fill + 1.5 inch Overlay	8	5	12	8.48	8.22	8.73
25							
26							
27							
28							
29	Crack seal	3	1	5	0.50	0.30	0.70
30							
31							
32	2 inch Mill & Fill + 1.5 inch Overlay	8	5	12	8.48	8.22	8.73
33							
34							
35							
36							
37	Crack seal	3	1	5	0.50	0.30	0.70
38							
39							
40	2 inch Mill & Fill + 1.5 inch Overlay	8	5	12	8.48	8.22	8.73

Agency: Mississippi  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	1.5 inch Overlay	10	7	15	3.31	3.21	3.41
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	1.5 inch Overlay	10	7	15	3.31	3.21	3.41
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	1.5 inch Overlay	10	7	15	3.31	3.21	3.41
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	1.5 inch Overlay	10	7	15	3.31	3.21	3.41
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	1.5 inch Overlay	10	7	15	3.31	3.21	3.41

Agency: Mississippi  
 Traffic Level: Interstate

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	1.5 inch Overlay	8	5	12	3.20	3.10	3.30
1							
2							
3							
4							
5							
6							
7							
8	1.5 inch Overlay	8	5	12	3.20	3.10	3.30
9							
10							
11							
12							
13							
14							
15							
16	1.5 inch Overlay	8	5	12	3.20	3.10	3.30
17							
18							
19							
20							
21							
22							
23							
24	1.5 inch Overlay	8	5	12	3.20	3.10	3.30
25							
26							
27							
28							
29							
30							
31							
32	1.5 inch Overlay	8	5	12	3.20	3.10	3.30
33							
34							
35							
36							
37							
38							
39							
40	1.5 inch Overlay	8	5	12	3.20	3.10	3.30

Agency: Nevada  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	8	7	9	4.05	3.93	4.17
1							
2							
3							
4							
5							
6							
7							
8	2 inch Overlay	8	7	9	4.05	3.93	4.17
9							
10							
11							
12							
13							
14							
15							
16	2 inch Overlay	8	7	9	4.05	3.93	4.17
17							
18							
19							
20							
21							
22							
23							
24	2 inch Overlay	8	7	9	4.05	3.93	4.17
25							
26							
27							
28							
29							
30							
31							
32	2 inch Overlay	8	7	9	4.05	3.93	4.17
33							
34							
35							
36							
37							
38							
39							
40	2 inch Overlay	8	7	9	4.05	3.93	4.17

Agency: Nevada  
 Traffic Level: Interstate

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
1							
2							
3							
4	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
5							
6							
7							
8	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
9							
10							
11							
12	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
13							
14							
15							
16	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
17							
18							
19							
20	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
21							
22							
23							
24	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
25							
26							
27							
28	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
29							
30							
31							
32	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
33							
34							
35							
36	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71
37							
38							
39							
40	2 inch Overlay + digouts	4	3	7	3.60	3.49	3.71

Agency: Oregon  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	15	10	20	6.43	6.24	6.62
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Fog Seal	5	3	7	0.40	0.35	0.45
11							
12							
13							
14							
15	2 inch Mill & Fill + 2 inch Overlay	15	10	20	6.43	6.24	6.62
16							
17							
18							
19							
20							
21							
22							
23							
24							
25	Fog Seal	5	3	7	0.40	0.35	0.45
26							
27							
28							
29							
30	2 inch Mill & Fill + 2 inch Overlay	15	10	20	6.43	6.24	6.62
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	Fog Seal	5	3	7	0.40	0.35	0.45

Agency: Oregon  
 Traffic Level: Interstate

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
1							
2							
3							
4							
5							
6							
7	Fog seal	5	3	7	0.40	0.35	0.45
8							
9							
10							
11							
12	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
13							
14							
15							
16							
17							
18							
19	Fog seal	5	3	7	0.40	0.35	0.45
20							
21							
22							
23							
24	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
25							
26							
27							
28							
29							
30							
31	Fog seal	5	3	7	0.40	0.35	0.45
32							
33							
34							
35							
36	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
37							
38							
39							
40							



Agency: South Carolina  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	12	10	15	9.69	9.40	9.98
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12	2 inch Mill & Fill + 2 inch Overlay	12	10	15	9.69	9.40	9.98
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24	2 inch Mill & Fill + 2 inch Overlay	12	10	15	9.69	9.40	9.98
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36	2 inch Mill & Fill + 2 inch Overlay	12	10	15	9.69	9.40	9.98
37							
38							
39							
40							

Agency: South Carolina  
 Traffic Level: Interstate

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.47	9.18	9.75
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.47	9.18	9.75
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.47	9.18	9.75
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.47	9.18	9.75
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.47	9.18	9.75

Agency: Texas DOT  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	12	8	15	3.48	3.38	3.58
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Crack Seal	2	1	3	0.30	0.20	0.40
11							
12	2 inch Overlay	12	8	15	3.48	3.38	3.58
13							
14							
15							
16							
17							
18							
19							
20							
21							
22	Crack Seal	2	1	3	0.30	0.20	0.40
23							
24	2 inch Overlay	12	8	15	3.48	3.38	3.58
25							
26							
27							
28							
29							
30							
31							
32							
33							
34	Crack Seal	2	1	3	0.30	0.20	0.40
35							
36	2 inch Overlay	12	8	15	3.48	3.38	3.58
37							
38							
39							
40							

Agency: Texas DOT  
 Traffic Level: Interstate

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	10	7	12	3.37	3.27	3.47
1							
2							
3							
4							
5							
6							
7							
8	Crack Seal	2	1	3	0.30	0.20	0.40
9							
10	2 inch Overlay	10	7	12	3.37	3.27	3.47
11							
12							
13							
14							
15							
16							
17							
18	Crack Seal	2	1	3	0.30	0.20	0.40
19							
20	2 inch Overlay	10	7	12	3.37	3.27	3.47
21							
22							
23							
24							
25							
26							
27							
28	Crack Seal	2	1	3	0.30	0.20	0.40
29							
30	2 inch Overlay	10	7	12	3.37	3.27	3.47
31							
32							
33							
34							
35							
36							
37							
38	Crack Seal	2	1	3	0.30	0.20	0.40
39							
40	2 inch Overlay	10	7	12	3.37	3.27	3.47

Agency: Utah  
 Traffic Level: Interstate

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	20	15	25	8.79	8.53	9.05
1							
2							
3							
4							
5	1 inch OGFC	5	3	7	2.04	1.98	2.10
6							
7							
8							
9							
10	1 inch OGFC	5	3	7	2.04	1.98	2.10
11							
12							
13							
14							
15	1 inch OGFC	5	3	7	2.04	1.98	2.10
16							
17							
18							
19							
20	2 inch Mill & Fill + 2 inch Overlay	20	15	25	8.79	8.53	9.05
21							
22							
23							
24							
25	1 inch OGFC	5	3	7	2.04	1.98	2.10
26							
27							
28							
29							
30	1 inch OGFC	5	3	7	2.04	1.98	2.10
31							
32							
33							
34							
35	1 inch OGFC	5	3	7	2.04	1.98	2.10
36							
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	20	15	25	8.79	8.53	9.05

Agency: Utah  
 Traffic Level: Interstate

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	10	7	15	8.34	8.09	8.59
1							
2							
3							
4							
5	1 inch OGFC	5	3	7	1.95	1.89	2.01
6							
7							
8							
9							
10	2 inch Mill & Fill + 2 inch Overlay	10	7	15	8.34	8.09	8.59
11							
12							
13							
14							
15	1 inch OGFC	5	3	7	1.95	1.89	2.01
16							
17							
18							
19							
20	2 inch Mill & Fill + 2 inch Overlay	10	7	15	8.34	8.09	8.59
21							
22							
23							
24							
25	1 inch OGFC	5	3	7	1.95	1.89	2.01
26							
27							
28							
29							
30	2 inch Mill & Fill + 2 inch Overlay	10	7	15	8.34	8.09	8.59
31							
32							
33							
34							
35	1 inch OGFC	5	3	7	1.95	1.89	2.01
36							
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	10	7	15	8.34	8.09	8.59

**b) State and Local Highways**

Agency: ADOT

Scenario: Lime-Treated

Traffic Level: State Highway

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	20	18	22	3.48	3.38	3.58
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Chip Seal	10	7	12	1.00	0.80	1.25
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	2 inch Overlay	20	18	22	3.48	3.38	3.58
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	Chip Seal	10	7	12	1.00	0.80	1.25
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	2 inch Overlay	20	18	22	3.48	3.38	3.58



Agency: ADOT  
 Traffic Level: State Highway

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	17	15	20	3.37	3.27	3.47
1							
2							
3							
4							
5							
6							
7	Chip Seal	7	5	9	1.00	0.80	1.25
8							
9							
10							
11							
12							
13							
14	Chip Seal	7	5	9	1.00	0.80	1.25
15							
16							
17	2 inch Overlay	17	15	20	3.37	3.27	3.47
18							
19							
20							
21							
22							
23							
24	Chip Seal	7	5	9	1.00	0.80	1.25
25							
26							
27							
28							
29							
30							
31	Chip Seal	7	5	9	1.00	0.80	1.25
32							
33							
34	2 inch Overlay	17	15	20	3.37	3.27	3.47
35							
36							
37							
38							
39							
40							

Agency: Caltrans  
 Traffic Level: State Highway

Scenario: Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	3 inch Overlay	10	8	12	9.27	8.99	9.55
1							
2							
3							
4							
5	Chip Seal	5	3	7	1.50	1.00	2.00
6							
7							
8							
9							
10	Crack seal + 3 inch Overlay	10	8	12	9.57	9.19	9.95
11							
12							
13							
14							
15	Chip Seal	5	3	7	1.50	1.00	2.00
16							
17							
18							
19							
20	Crack seal + 3 inch Overlay	10	8	12	9.57	9.19	9.95
21							
22							
23							
24							
25	Chip Seal	5	3	7	1.50	1.00	2.00
26							
27							
28							
29							
30	Crack seal + 3 inch Overlay	10	8	12	9.57	9.19	9.95
31							
32							
33							
34							
35	Chip Seal	5	3	7	1.50	1.00	2.00
36							
37							
38							
39							
40	Crack seal + 3 inch Overlay	10	8	12	9.57	9.19	9.95

Agency: Caltrans  
 Traffic Level: State Highway

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	3 inch Overlay	8	6	10	8.43	8.18	8.68
1							
2							
3							
4	Chip Seal	4	2	6	1.50	1.00	2.00
5							
6							
7							
8	Crack Seal + 3 inch Overlay	8	6	10	8.73	8.38	9.08
9							
10							
11							
12	Chip Seal	4	2	6	1.50	1.00	2.00
13							
14							
15							
16	Crack Seal + 3 inch Overlay	8	6	10	8.73	8.38	9.08
17							
18							
19							
20	Chip Seal	4	2	6	1.50	1.00	2.00
21							
22							
23							
24	Crack Seal + 3 inch Overlay	8	6	10	8.73	8.38	9.08
25							
26							
27							
28	Chip Seal	4	2	6	1.50	1.00	2.00
29							
30							
31							
32	Crack Seal + 3 inch Overlay	8	6	10	8.73	8.38	9.08
33							
34							
35							
36	Chip Seal	4	2	6	1.50	1.00	2.00
37							
38							
39							
40	Crack Seal + 3 inch Overlay	8	6	10	8.73	8.38	9.08

Agency: Colorado  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	10	8	12	3.48	3.38	3.58
1							
2							
3							
4							
5							
6							
7	Crack Seal	3	2	5	0.50	0.30	0.70
8							
9							
10	2 inch Overlay	10	8	12	3.48	3.38	3.58
11							
12							
13							
14							
15							
16							
17	Crack Seal	3	2	5	0.50	0.30	0.70
18							
19							
20	2 inch Overlay	10	8	12	3.48	3.38	3.58
21							
22							
23							
24							
25							
26							
27	Crack Seal	3	2	5	0.50	0.30	0.70
28							
29							
30	2 inch Overlay	10	8	12	3.48	3.38	3.58
31							
32							
33							
34							
35							
36							
37	Crack Seal	3	2	5	0.50	0.30	0.70
38							
39							
40	2 inch Overlay	10	8	12	3.48	3.38	3.58

Agency: Colorado  
 Traffic Level: State Highway

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	8	6	10	3.37	3.27	3.47
1							
2							
3							
4							
5	Crack Seal	3	1	5	0.50	0.30	0.70
6							
7							
8	2 inch Overlay	8	6	10	3.37	3.27	3.47
9							
10							
11							
12							
13	Crack Seal	3	1	5	0.50	0.30	0.70
14							
15							
16	2 inch Overlay	8	6	10	3.37	3.27	3.47
17							
18							
19							
20							
21	Crack Seal	3	1	5	0.50	0.30	0.70
22							
23							
24	2 inch Overlay	8	6	10	3.37	3.27	3.47
25							
26							
27							
28							
29	Crack Seal	3	1	5	0.50	0.30	0.70
30							
31							
32	2 inch Overlay	8	6	10	3.37	3.27	3.47
33							
34							
35							
36							
37	Crack Seal	3	1	5	0.50	0.30	0.70
38							
39							
40	2 inch Overlay	8	6	10	3.37	3.27	3.47

Agency: FHWA  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	12	10	15	2.92	2.83	3.01
1							
2							
3							
4							
5							
6	Chip Seal	6	5	7	0.90	0.80	1.00
7							
8							
9							
10							
11							
12	2 inch Overlay	12	10	15	2.92	2.83	3.01
13							
14							
15							
16							
17							
18	Chip Seal	6	5	7	0.90	0.80	1.00
19							
20							
21							
22							
23							
24	2 inch Overlay	12	10	15	2.92	2.83	3.01
25							
26							
27							
28							
29							
30	Chip Seal	6	5	7	0.90	0.80	1.00
31							
32							
33							
34							
35							
36	2 inch Overlay	12	10	15	2.92	2.83	3.01
37							
38							
39							
40							

Agency: FHWA  
 Traffic Level: State Highway

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch overlay	10	8	12	2.75	2.67	2.83
1							
2							
3							
4							
5	Chip Seal	5	3	7	0.90	0.80	1.00
6							
7							
8							
9							
10	2 inch overlay	10	8	12	2.75	2.67	2.83
11							
12							
13							
14							
15	Chip Seal	5	3	7	0.90	0.80	1.00
16							
17							
18							
19							
20	2 inch overlay	10	8	12	2.75	2.67	2.83
21							
22							
23							
24							
25	Chip Seal	5	3	7	0.90	0.80	1.00
26							
27							
28							
29							
30	2 inch overlay	10	8	12	2.75	2.67	2.83
31							
32							
33							
34							
35	Chip Seal	5	3	7	0.90	0.80	1.00
36							
37							
38							
39							
40	2 inch overlay	10	8	12	2.75	2.67	2.83

Agency: Georgia  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	1.5 inch Overlay	10	8	14	3.03	2.94	3.12
1							
2							
3							
4							
5							
6							
7							
8	Crack Seal	2	1	3	0.50	0.30	0.70
9							
10	1.5 inch Overlay	10	8	14	3.03	2.94	3.12
11							
12							
13							
14							
15							
16							
17							
18	Crack Seal	2	1	3	0.50	0.30	0.70
19							
20	1.5 inch Overlay	10	8	14	3.03	2.94	3.12
21							
22							
23							
24							
25							
26							
27							
28	Crack Seal	2	1	3	0.50	0.30	0.70
29							
30	1.5 inch Overlay	10	8	14	3.03	2.94	3.12
31							
32							
33							
34							
35							
36							
37							
38	Crack Seal	2	1	3	0.50	0.30	0.70
39							
40	1.5 inch Overlay	10	8	14	3.03	2.94	3.12



Agency: Georgia  
 Traffic Level: State Highway

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	1.5 inch Overlay	8	6	10	2.95	2.86	3.04
1							
2							
3							
4							
5							
6	Crack Seal	2	1	3	0.50	0.30	0.70
7							
8	1.5 inch Overlay	8	6	10	2.95	2.86	3.04
9							
10							
11							
12							
13							
14	Crack Seal	2	1	3	0.50	0.30	0.70
15							
16	1.5 inch Overlay	8	6	10	2.95	2.86	3.04
17							
18							
19							
20							
21							
22	Crack Seal	2	1	3	0.50	0.30	0.70
23							
24	1.5 inch Overlay	8	6	10	2.95	2.86	3.04
25							
26							
27							
28							
29							
30	Crack Seal	2	1	3	0.50	0.30	0.70
31							
32	1.5 inch Overlay	8	6	10	2.95	2.86	3.04
33							
34							
35							
36							
37							
38	Crack Seal	2	1	3	0.50	0.30	0.70
39							
40	1.5 inch Overlay	8	6	10	2.95	2.86	3.04

Agency: Mississippi  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	1.5 inch Overlay	15	12	17	3.31	3.21	3.41
1							
2							
3							
4							
5							
6							
7							
8	Chip Seal	8	6	10	0.90	0.80	1.00
9							
10							
11							
12							
13							
14							
15	1.5 inch Overlay	15	12	17	3.31	3.21	3.41
16							
17							
18							
19							
20							
21							
22							
23	Chip Seal	8	6	10	0.90	0.80	1.00
24							
25							
26							
27							
28							
29							
30	1.5 inch Overlay	15	12	17	3.31	3.21	3.41
31							
32							
33							
34							
35							
36							
37							
38	Chip Seal	8	6	10	0.90	0.80	1.00
39							
40							

Agency: Mississippi  
 Traffic Level: State Highway

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	1.5 inch Overlay	13	10	16	3.20	3.10	3.30
1							
2							
3							
4							
5							
6							
7	Chip Seal	7	5	9	0.90	0.80	1.00
8							
9							
10							
11							
12							
13	1.5 inch Overlay	13	10	16	3.20	3.10	3.30
14							
15							
16							
17							
18							
19							
20	Chip Seal	7	5	9	0.90	0.80	1.00
21							
22							
23							
24							
25							
26	1.5 inch Overlay	13	10	16	3.20	3.10	3.30
27							
28							
29							
30							
31							
32							
33	Chip Seal	7	5	9	0.90	0.80	1.00
34							
35							
36							
37							
38							
39	1.5 inch Overlay	13	10	16	3.20	3.10	3.30
40							

Agency: Nevada  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	12	10	14	4.05	3.93	4.17
1							
2							
3							
4	Fog Seal	4	3	5	0.40	0.30	0.50
5							
6							
7							
8	Fog Seal	4	3	5	0.40	0.30	0.50
9							
10							
11							
12	2 inch Overlay	12	10	14	4.05	3.93	4.17
13							
14							
15							
16	Fog Seal	4	3	5	0.40	0.30	0.50
17							
18							
19							
20	Fog Seal	4	3	5	0.40	0.30	0.50
21							
22							
23							
24	2 inch Overlay	12	10	14	4.05	3.93	4.17
25							
26							
27							
28	Fog Seal	4	3	5	0.40	0.30	0.50
29							
30							
31							
32	Fog Seal	4	3	5	0.40	0.30	0.50
33							
34							
35							
36	2 inch Overlay	12	10	14	4.05	3.93	4.17
37							
38							
39							
40	Fog Seal	4	3	5	0.40	0.30	0.50

Agency: Nevada  
 Traffic Level: State Highway

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	8	6	10	3.60	3.49	3.71
1							
2							
3							
4	Fog Seal	4	3	5	0.40	0.30	0.50
5							
6							
7							
8	2 inch Overlay	8	6	10	3.60	3.49	3.71
9							
10							
11							
12	Fog Seal	4	3	5	0.40	0.30	0.50
13							
14							
15							
16	2 inch Overlay	8	6	10	3.60	3.49	3.71
17							
18							
19							
20	Fog Seal	4	3	5	0.40	0.30	0.50
21							
22							
23							
24	2 inch Overlay	8	6	10	3.60	3.49	3.71
25							
26							
27							
28	Fog Seal	4	3	5	0.40	0.30	0.50
29							
30							
31							
32	2 inch Overlay	8	6	10	3.60	3.49	3.71
33							
34							
35							
36	Fog Seal	4	3	5	0.40	0.30	0.50
37							
38							
39							
40	2 inch Overlay	8	6	10	3.60	3.49	3.71

Agency: Oregon  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	17	15	20	6.43	6.24	6.62
1							
2							
3							
4							
5							
6							
7							
8							
9	Chip Seal	9	6	11	1.00	0.80	1.25
10							
11							
12							
13							
14							
15							
16							
17	2 inch Mill & Fill + 2 inch Overlay	17	15	20	6.43	6.24	6.62
18							
19							
20							
21							
22							
23							
24							
25							
26	Chip Seal	9	6	11	1.00	0.80	1.25
27							
28							
29							
30							
31							
32							
33							
34	2 inch Mill & Fill + 2 inch Overlay	17	15	20	6.43	6.24	6.62
35							
36							
37							
38							
39							
40							

Agency: Oregon  
 Traffic Level: State Highway

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
1							
2							
3							
4							
5							
6	Chip Seal	6	4	8	1.00	0.80	1.25
7							
8							
9							
10							
11							
12	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
13							
14							
15							
16							
17							
18	Chip Seal	6	4	8	1.00	0.80	1.25
19							
20							
21							
22							
23							
24	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
25							
26							
27							
28							
29							
30	Chip Seal	6	4	8	1.00	0.80	1.25
31							
32							
33							
34							
35							
36	2 inch Mill & Fill + 2 inch Overlay	12	8	15	6.10	5.92	6.28
37							
38							
39							
40							

Agency: South Carolina  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.69	9.40	9.98
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.69	9.40	9.98
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.69	9.40	9.98
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.69	9.40	9.98
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	10	8	12	9.69	9.40	9.98



Agency: South Carolina  
 Traffic Level: State Highway

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 2 inch Overlay	8	6	10	9.47	9.18	9.75
1							
2							
3							
4							
5							
6							
7							
8	2 inch Mill & Fill + 2 inch Overlay	8	6	10	9.47	9.18	9.75
9							
10							
11							
12							
13							
14							
15							
16	2 inch Mill & Fill + 2 inch Overlay	8	6	10	9.47	9.18	9.75
17							
18							
19							
20							
21							
22							
23							
24	2 inch Mill & Fill + 2 inch Overlay	8	6	10	9.47	9.18	9.75
25							
26							
27							
28							
29							
30							
31							
32	2 inch Mill & Fill + 2 inch Overlay	8	6	10	9.47	9.18	9.75
33							
34							
35							
36							
37							
38							
39							
40	2 inch Mill & Fill + 2 inch Overlay	8	6	10	9.47	9.18	9.75

Agency: Texas DOT  
 Traffic Level: State Highway

Scenario: Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	12	10	15	3.48	3.38	3.58
1							
2							
3							
4							
5							
6	Chip Seal	6	5	7	1.00	0.80	1.25
7							
8							
9							
10							
11							
12	2 inch Overlay	12	10	15	3.48	3.38	3.58
13							
14							
15							
16							
17							
18	Chip Seal	6	5	7	1.00	0.80	1.25
19							
20							
21							
22							
23							
24	2 inch Overlay	12	10	15	3.48	3.38	3.58
25							
26							
27							
28							
29							
30	Chip Seal	6	5	7	1.00	0.80	1.25
31							
32							
33							
34							
35							
36	2 inch Overlay	12	10	15	3.48	3.38	3.58
37							
38							
39							
40							

Agency: Texas DOT  
 Traffic Level: State Highway

Scenario: Non-Lime Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Overlay	10	8	12	3.37	3.27	3.47
1							
2							
3							
4							
5	Chip Seal	5	3	7	1.00	0.80	1.25
6							
7							
8							
9							
10	2 inch Overlay	10	8	12	3.37	3.27	3.47
11							
12							
13							
14							
15	Chip Seal	5	3	7	1.00	0.80	1.25
16							
17							
18							
19							
20	2 inch Overlay	10	8	12	3.37	3.27	3.47
21							
22							
23							
24							
25	Chip Seal	5	3	7	1.00	0.80	1.25
26							
27							
28							
29							
30	2 inch Overlay	10	8	12	3.37	3.27	3.47
31							
32							
33							
34							
35	Chip Seal	5	3	7	1.00	0.80	1.25
36							
37							
38							
39							
40	2 inch Overlay	10	8	12	3.37	3.27	3.47

Agency: Utah  
 Traffic Level: State Highway

Scenario: Lime-Treated

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 1.5 inch Overlay	20	15	25	7.89	7.65	8.13
1							
2							
3							
4							
5	1 inch OGFC	5	3	7	2.04	1.98	2.10
6							
7							
8							
9							
10	1 inch OGFC	5	3	7	2.04	1.98	2.10
11							
12							
13							
14							
15	Chip Seal	5	3	7	1.00	0.80	1.25
16							
17							
18							
19							
20	2 inch Mill & Fill + 1.5 inch Overlay	20	15	25	7.89	7.65	8.13
21							
22							
23							
24							
25	1 inch OGFC	5	3	7	2.04	1.98	2.10
26							
27							
28							
29							
30	1 inch OGFC	5	3	7	2.04	1.98	2.10
31							
32							
33							
34							
35	1 inch OGFC	5	3	7	2.04	1.98	2.10
36							
37							
38							
39							
40	2 inch Mill & Fill + 1.5 inch Overlay	20	15	25	7.89	7.65	8.13

Agency: Utah  
 Traffic Level: State Highway

Scenario: Non-Lime Treated (Not Used)

Year	Maintenance and Rehabilitation Strategy	Expected Life, Years			Estimated Cost, \$/yd <sup>2</sup>		
		$\bar{X}$	L	H	$\bar{X}$	L	H
0	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	7.50	7.28	7.72
1							
2							
3							
4							
5	Chip Seal	5	3	7	1.00	0.80	1.25
6							
7							
8							
9							
10	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	7.50	7.28	7.72
11							
12							
13							
14							
15	Chip Seal	5	3	7	1.00	0.80	1.25
16							
17							
18							
19							
20	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	7.50	7.28	7.72
21							
22							
23							
24							
25	Chip Seal	5	3	7	1.00	0.80	1.25
26							
27							
28							
29							
30	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	7.50	7.28	7.72
31							
32							
33							
34							
35	Chip Seal	5	3	7	1.00	0.80	1.25
36							
37							
38							
39							
40	2 inch Mill & Fill + 1.5 inch Overlay	10	7	15	7.50	7.28	7.72

**APPENDIX D**  
**Results of LCCA**

**a) Deterministic**

ALTERNATIVE 1: ARIZONA INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 1 in. OG Overlay; Lime-Treated	\$0.00	\$15,873.02	\$0.00	\$1,046,529.02	\$1,046,529.02	\$7.43
1							
2							
3							
4							
5	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$34,718.20	\$1,081,247.22	\$7.68
6							
7							
8							
9							
10	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$28,535.83	\$1,109,783.05	\$7.88
11							
12							
13							
14							
15	Rehabilitation; 2 in. M/F + 1 in. OG Overlay; Lime-Treated	\$1,030,656.02	\$15,873.02	\$1,046,529.04	\$581,100.43	\$1,690,883.47	\$12.01
16							
17							
18							
19							
20	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$19,277.78	\$1,710,161.26	\$12.15
21							
22							
23							
24							
25	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$15,844.93	\$1,726,006.19	\$12.26
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 1 in. OG Overlay; Lime-Treated	\$1,030,656.02	\$15,873.02	\$1,046,529.04	\$322,664.44	\$2,048,670.63	\$14.55
31							
32							
33							
34							
35	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$10,704.27	\$2,059,374.90	\$14.63
36							
37							
38							
39							
40	Salvage*; Fog Seal	\$42,240.00	\$0.00	(\$301,312.01)	(\$62,759.99)	\$1,996,614.91	\$14.18

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.



ALTERNATIVE 2: ARIZONA INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 1 in. OG Overlay; Unmodified	\$0.00	\$15,873.02	\$0.00	\$1,024,001.02	\$1,024,001.02	\$7.27
1							
2							
3							
4							
5	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$34,718.20	\$1,058,719.22	\$7.52
6							
7							
8							
9							
10	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$28,535.83	\$1,087,255.05	\$7.72
11							
12							
13	Rehabilitation; 2 in. M/F + 1 in. OG Overlay; Unmodified	\$1,008,127.98	\$15,873.02	\$1,024,000.99	\$614,988.46	\$1,702,243.51	\$12.09
14							
15							
16							
17							
18	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$20,850.85	\$1,723,094.36	\$12.24
19							
20							
21							
22							
23	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$17,137.88	\$1,740,232.24	\$12.36
24							
25	Rehabilitation; 2 in. M/F + 1 in. OG Overlay; Unmodified	\$1,008,127.98	\$15,873.02	\$1,024,000.99	\$384,119.98	\$2,124,352.22	\$15.09
26							
27							
28							
29							
30	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$13,023.38	\$2,137,375.60	\$15.18
31							
32							
33							
34							
35	Maintenance; Fog Seal	\$42,240.00	\$0.00	\$42,240.00	\$10,704.27	\$2,148,079.87	\$15.26
36							
37	Rehabilitation; 2 in. M/F + 1 in. OG Overlay; Unmodified	\$1,008,127.98	\$15,873.02	\$1,024,000.99	\$239,920.21	\$2,388,000.07	\$16.96
38							
39							
40	Salvage	\$0.00	\$0.00	(\$756,095.98)	(\$157,486.51)	\$2,230,513.56	\$15.84

ALTERNATIVE 1: ARIZONA STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$4,000.00	\$0.00	\$493,984.00	\$493,984.00	\$3.51
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$95,119.43	\$589,103.43	\$4.18
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$4,000.00	\$493,984.00	\$225,447.85	\$814,551.29	\$5.79
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$43,411.27	\$857,962.55	\$6.09
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 2 in. Overlay; Lime-Treated	\$489,984.00	\$4,000.00	(\$489,984.00)	(\$102,058.30)	\$755,904.25	\$5.37

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: ARIZONA STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Unmodified	\$0.00	\$4,000.00	\$0.00	\$478,496.00	\$478,496.00	\$3.40
1							
2							
3							
4							
5							
6							
7	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$106,996.43	\$585,492.43	\$4.16
8							
9							
10							
11							
12							
13							
14	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$81,308.49	\$666,800.92	\$4.74
15							
16							
17	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$245,647.04	\$912,447.96	\$6.48
18							
19							
20							
21							
22							
23							
24	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$54,929.10	\$967,377.06	\$6.87
25							
26	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$172,588.35	\$1,139,965.41	\$8.10
27							
28							
29							
30							
31							
32							
33	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$38,592.46	\$1,178,557.87	\$8.37
34							
35	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$121,258.28	\$1,299,816.15	\$9.23
36							
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$210,887.10)	(\$43,925.47)	\$1,255,890.68	\$8.92

ALTERNATIVE 1: CALIFORNIA INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 3 in. Overlay; Lime-Treated	\$0.00	\$30,303.03	\$0.00	\$1,335,519.03	\$1,335,519.03	\$9.49
1							
2							
3							
4							
5	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$208,309.21	\$1,543,828.24	\$10.96
6							
7							
8							
9							
10	Rehabilitation; 3 in. Overlay; Lime-Treated	\$1,305,216.06	\$30,303.03	\$1,335,519.10	\$902,228.85	\$2,446,057.08	\$17.37
11							
12							
13							
14							
15	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$140,726.24	\$2,586,783.32	\$18.37
16							
17							
18							
19							
20	Rehabilitation; 3 in. Overlay; Lime-Treated	\$1,305,216.06	\$30,303.03	\$1,335,519.10	\$609,513.48	\$3,196,296.80	\$22.70
21							
22							
23							
24							
25	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$95,069.60	\$3,291,366.40	\$23.38
26							
27							
28							
29							
30	Rehabilitation; 3 in. Overlay; Lime-Treated	\$1,305,216.06	\$30,303.03	\$1,335,519.10	\$411,765.47	\$3,703,131.87	\$26.30
31							
32							
33							
34							
35	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$64,225.62	\$3,767,357.49	\$26.76
36							
37							
38							
39							
40	Salvage*; 3 in. Overlay; Lime-Treated	\$1,305,216.06	\$30,303.03	(\$1,305,216.06)	(\$271,862.21)	\$3,495,495.28	\$24.83

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: CALIFORNIA INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 3 in. Overlay + Digouts; Unmodified	\$0.00	\$33,333.33	\$0.00	\$1,220,277.33	\$1,220,277.33	\$8.67
1							
2							
3							
4	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$216,641.57	\$1,436,918.91	\$10.21
5							
6							
7							
8	Rehabilitation; 3 in. Overlay + Digouts; Unmodified	\$1,186,944.04	\$33,333.33	\$1,220,277.38	\$891,644.73	\$2,328,563.63	\$16.54
9							
10							
11							
12	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$158,297.88	\$2,486,861.51	\$17.66
13							
14							
15							
16	Rehabilitation; 3 in. Overlay + Digouts; Unmodified	\$1,186,944.04	\$33,333.33	\$1,220,277.38	\$651,516.07	\$3,138,377.58	\$22.29
17							
18							
19							
20	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$115,666.71	\$3,254,044.29	\$23.11
21							
22							
23							
24	Rehabilitation; 3 in. Overlay + Digouts; Unmodified	\$1,186,944.04	\$33,333.33	\$1,220,277.38	\$476,056.41	\$3,730,100.69	\$26.49
25							
26							
27							
28	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$84,516.53	\$3,814,617.22	\$27.09
29							
30							
31							
32	Rehabilitation; 3 in. Overlay + Digouts; Unmodified	\$1,186,944.04	\$33,333.33	\$1,220,277.38	\$347,849.76	\$4,162,466.98	\$29.56
33							
34							
35							
36	Maintenance; Crack Seal + Chip Seal	\$253,440.00	\$0.00	\$253,440.00	\$61,755.40	\$4,224,222.38	\$30.00
37							
38							
39							
40	Salvage*; 3 in. Overlay + Digouts; Unmodified	\$1,186,944.04	\$33,333.33	(\$1,186,944.04)	(\$247,227.44)	\$3,976,994.94	\$28.25

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: CALIFORNIA STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 3 in. Overlay; Lime-Treated	\$0.00	\$6,060.61	\$0.00	\$1,311,276.61	\$1,311,276.61	\$9.31
1							
2							
3							
4							
5	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$173,591.00	\$1,484,867.61	\$10.55
6							
7							
8							
9							
10	Rehabilitation; Crack Seal + 3 in. Overlay; Lime-Treated	\$1,347,455.96	\$6,451.61	\$1,353,907.57	\$914,651.44	\$2,399,519.05	\$17.04
11							
12							
13							
14							
15	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$117,271.86	\$2,516,790.92	\$17.87
16							
17							
18							
19							
20	Rehabilitation; Crack Seal + 3 in. Overlay; Lime-Treated	\$1,347,455.96	\$6,451.61	\$1,353,907.57	\$617,905.74	\$3,134,696.66	\$22.26
21							
22							
23							
24							
25	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$79,224.67	\$3,213,921.33	\$22.83
26							
27							
28							
29							
30	Rehabilitation; Crack Seal + 3 in. Overlay; Lime-Treated	\$1,347,455.96	\$6,451.61	\$1,353,907.57	\$417,434.98	\$3,631,356.30	\$25.79
31							
32							
33							
34							
35	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$53,521.35	\$3,684,877.65	\$26.17
36							
37							
38							
39							
40	Salvage*; Crack Seal + 3 in. Overlay; Lime-Treated	\$1,347,455.96	\$6,451.61	(\$1,347,455.96)	(\$280,660.31)	\$3,404,217.34	\$24.18

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: CALIFORNIA STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	
0	Initial Construction; 3 in. Overlay; Unmodified	\$0.00	\$6,060.61	\$0.00	\$1,193,004.61	\$1,193,004.61	\$8.47
1							
2							
3							
4	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$180,534.65	\$1,373,539.25	\$9.76
5							
6							
7							
8	Rehabilitation; Crack Seal + 3 in. Overlay; Unmodified	\$1,229,183.94	\$6,451.61	\$1,235,635.55	\$902,866.79	\$2,276,406.04	\$16.17
9							
10							
11							
12	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$131,914.90	\$2,408,320.94	\$17.10
13							
14							
15							
16	Rehabilitation; Crack Seal + 3 in. Overlay; Unmodified	\$1,229,183.94	\$6,451.61	\$1,235,635.55	\$659,715.92	\$3,068,036.86	\$21.79
17							
18							
19							
20	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$96,388.92	\$3,164,425.79	\$22.47
21							
22							
23							
24	Rehabilitation; Crack Seal + 3 in. Overlay; Unmodified	\$1,229,183.94	\$6,451.61	\$1,235,635.55	\$482,047.96	\$3,646,473.75	\$25.90
25							
26							
27							
28	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$70,430.44	\$3,716,904.19	\$26.40
29							
30							
31							
32	Rehabilitation; Crack Seal + 3 in. Overlay; Unmodified	\$1,229,183.94	\$6,451.61	\$1,235,635.55	\$352,227.72	\$4,069,131.91	\$28.90
33							
34							
35							
36	Maintenance; Chip Seal	\$211,200.00	\$0.00	\$211,200.00	\$51,462.83	\$4,120,594.75	\$29.27
37							
38							
39							
40	Salvage*; Crack Seal + 3 in. Overlay; Unmodified	\$1,229,183.94	\$6,451.61	(\$1,229,183.94)	(\$256,025.55)	\$3,864,569.20	\$27.45

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: COLORADO INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$0.00	\$22,727.27	\$0.00	\$1,229,383.27	\$1,229,383.27	\$8.73
1							
2							
3							
4							
5	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$57,863.67	\$1,287,246.94	\$9.14
6							
7							
8							
9							
10	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,206,655.96	\$22,727.27	\$1,229,383.23	\$830,527.26	\$2,117,774.20	\$15.04
11							
12							
13							
14							
15	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$39,090.62	\$2,156,864.82	\$15.32
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,206,655.96	\$22,727.27	\$1,229,383.23	\$561,074.46	\$2,717,939.28	\$19.30
21							
22							
23							
24							
25	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$26,408.22	\$2,744,347.50	\$19.49
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,206,655.96	\$22,727.27	\$1,229,383.23	\$379,041.80	\$3,123,389.30	\$22.18
31							
32							
33							
34							
35	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$17,840.45	\$3,141,229.75	\$22.31
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,206,655.96	\$22,727.27	(\$1,206,655.96)	(\$251,333.22)	\$2,889,896.53	\$20.52

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.



ALTERNATIVE 2: COLORADO INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Unmodified	\$0.00	\$22,727.27	\$0.00	\$1,196,999.27	\$1,196,999.27	\$8.50
1							
2							
3							
4	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$60,178.22	\$1,257,177.49	\$8.93
5							
6							
7							
8	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$874,635.66	\$2,131,813.15	\$15.14
9							
10							
11							
12	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$43,971.63	\$2,175,784.78	\$15.45
13							
14							
15							
16	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$639,087.71	\$2,814,872.49	\$19.99
17							
18							
19							
20	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$32,129.64	\$2,847,002.13	\$20.22
21							
22							
23							
24	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$466,975.13	\$3,313,977.26	\$23.54
25							
26							
27							
28	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$23,476.81	\$3,337,454.07	\$23.70
29							
30							
31							
32	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$341,214.15	\$3,678,668.23	\$26.13
33							
34							
35							
36	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$17,154.28	\$3,695,822.50	\$26.25
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	(\$1,174,272.02)	(\$244,588.00)	\$3,451,234.51	\$24.51

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: COLORADO STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$4,000.00	\$0.00	\$493,984.00	\$493,984.00	\$3.51
1							
2							
3							
4							
5							
6							
7	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$53,498.21	\$547,482.21	\$3.89
8							
9							
10	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	\$574,240.03	\$387,935.99	\$935,418.20	\$6.64
11							
12							
13							
14							
15							
16							
17	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$36,141.48	\$971,559.68	\$6.90
18							
19							
20	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	\$574,240.03	\$262,075.65	\$1,233,635.33	\$8.76
21							
22							
23							
24							
25							
26							
27	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$24,415.89	\$1,258,051.22	\$8.94
28							
29							
30	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	\$574,240.03	\$177,048.92	\$1,435,100.14	\$10.19
31							
32							
33							
34							
35							
36							
37	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$16,494.50	\$1,451,594.63	\$10.31
38							
39							
40	Salvage*; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	(\$570,240.03)	(\$118,774.75)	\$1,332,819.88	\$9.47

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: COLORADO STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Unmodified	\$0.00	\$4,000.00	\$0.00	\$478,496.00	\$478,496.00	\$3.40
1							
2							
3							
4							
5	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$57,863.67	\$536,359.67	\$3.81
6							
7							
8	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$349,632.33	\$885,992.00	\$6.29
9							
10							
11							
12							
13	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$42,280.42	\$928,272.41	\$6.59
14							
15							
16	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$255,472.92	\$1,183,745.33	\$8.41
17							
18							
19							
20							
21	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$30,893.89	\$1,214,639.22	\$8.63
22							
23							
24	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$186,671.56	\$1,401,310.77	\$9.95
25							
26							
27							
28							
29	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$22,573.86	\$1,423,884.63	\$10.11
30							
31							
32	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$136,399.08	\$1,560,283.71	\$11.08
33							
34							
35							
36							
37	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$16,494.50	\$1,576,778.21	\$11.20
38							
39							
40	Salvage*; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	(\$474,495.98)	(\$98,832.32)	\$1,477,945.90	\$10.50

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: FHWA FEDERAL LANDS HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$4,000.00	\$0.00	\$415,136.00	\$415,136.00	\$2.95
1							
2							
3							
4							
5							
6	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$100,148.66	\$515,284.66	\$3.66
7							
8							
9							
10							
11							
12	Rehabilitation; 2 in. Overlay; Lime-Treated	\$411,136.01	\$4,000.00	\$415,136.01	\$259,292.73	\$774,577.38	\$5.50
13							
14							
15							
16							
17							
18	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$62,552.56	\$837,129.94	\$5.95
19							
20							
21							
22							
23							
24	Rehabilitation; 2 in. Overlay; Lime-Treated	\$411,136.01	\$4,000.00	\$415,136.01	\$161,953.47	\$999,083.41	\$7.10
25							
26							
27							
28							
29							
30	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$39,070.14	\$1,038,153.55	\$7.37
31							
32							
33							
34							
35							
36	Rehabilitation; 2 in. Overlay; Lime-Treated	\$411,136.01	\$4,000.00	\$415,136.01	\$101,155.66	\$1,139,309.21	\$8.09
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$274,090.67)	(\$57,090.08)	\$1,082,219.13	\$7.69

ALTERNATIVE 2: FHWA FEDERAL LANDS HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Unmodified	\$0.00	\$4,000.00	\$0.00	\$391,200.00	\$391,200.00	\$2.78
1							
2							
3							
4							
5	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$104,154.60	\$495,354.60	\$3.52
6							
7							
8							
9							
10	Rehabilitation; 2 in. Overlay; Unmodified	\$387,200.00	\$4,000.00	\$391,200.00	\$264,280.70	\$759,635.31	\$5.40
11							
12							
13							
14							
15	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$70,363.12	\$829,998.42	\$5.89
16							
17							
18							
19							
20	Rehabilitation; 2 in. Overlay; Unmodified	\$387,200.00	\$4,000.00	\$391,200.00	\$178,538.57	\$1,008,537.00	\$7.16
21							
22							
23							
24							
25	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$47,534.80	\$1,056,071.80	\$7.50
26							
27							
28							
29							
30	Rehabilitation; 2 in. Overlay; Unmodified	\$387,200.00	\$4,000.00	\$391,200.00	\$120,614.26	\$1,176,686.06	\$8.36
31							
32							
33							
34							
35	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$32,112.81	\$1,208,798.87	\$8.59
36							
37							
38							
39							
40	Salvage*; 2 in. Overlay; Unmodified	\$387,200.00	\$4,000.00	(\$387,200.00)	(\$80,649.52)	\$1,128,149.35	\$8.01

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: GEORGIA INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$0.00	\$20,000.00	\$0.00	\$1,242,144.00	\$1,242,144.00	\$8.82
1							
2							
3							
4							
5							
6							
7	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$53,498.21	\$1,295,642.21	\$9.20
8							
9							
10	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$1,222,144.04	\$20,000.00	\$1,242,144.04	\$839,148.01	\$2,134,790.22	\$15.16
11							
12							
13							
14							
15							
16							
17	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$36,141.48	\$2,170,931.70	\$15.42
18							
19							
20	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$1,222,144.04	\$20,000.00	\$1,242,144.04	\$566,898.33	\$2,737,830.03	\$19.44
21							
22							
23							
24							
25							
26							
27	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$24,415.89	\$2,762,245.91	\$19.62
28							
29							
30	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$1,222,144.04	\$20,000.00	\$1,242,144.04	\$382,976.20	\$3,145,222.11	\$22.34
31							
32							
33							
34							
35							
36							
37	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$16,494.50	\$3,161,716.61	\$22.46
38							
39							
40	Salvage*; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$1,222,144.04	\$20,000.00	(\$1,222,144.04)	(\$254,559.22)	\$2,907,157.39	\$20.65

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: GEORGIA INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$0.00	\$20,000.00	\$0.00	\$1,213,984.00	\$1,213,984.00	\$8.62
1							
2							
3							
4							
5	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$57,863.67	\$1,271,847.67	\$9.03
6							
7							
8	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,193,983.94	\$20,000.00	\$1,213,983.94	\$887,046.17	\$2,158,893.84	\$15.33
9							
10							
11							
12							
13	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$42,280.42	\$2,201,174.26	\$15.63
14							
15							
16	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,193,983.94	\$20,000.00	\$1,213,983.94	\$648,155.95	\$2,849,330.20	\$20.24
17							
18							
19							
20							
21	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$30,893.89	\$2,880,224.09	\$20.46
22							
23							
24	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,193,983.94	\$20,000.00	\$1,213,983.94	\$473,601.20	\$3,353,825.29	\$23.82
25							
26							
27							
28							
29	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$22,573.86	\$3,376,399.15	\$23.98
30							
31							
32	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,193,983.94	\$20,000.00	\$1,213,983.94	\$346,055.76	\$3,722,454.91	\$26.44
33							
34							
35							
36							
37	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$16,494.50	\$3,738,949.41	\$26.56
38							
39							
40	Salvage*; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,193,983.94	\$20,000.00	(\$1,193,983.94)	(\$248,693.77)	\$3,490,255.64	\$24.79

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: GEORGIA STATE HIGHWAY DETERMINISTIC

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 1.5 in. Overlay; Lime-Treated	\$0.00	\$2,985.07	\$0.00	\$429,609.07	\$429,609.07	\$3.05
1							
2							
3							
4							
5							
6							
7							
8	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$51,440.59	\$481,049.67	\$3.42
9							
10	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$426,624.00	\$2,985.07	\$429,609.07	\$290,228.49	\$771,278.16	\$5.48
11							
12							
13							
14							
15							
16							
17							
18	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$34,751.42	\$806,029.58	\$5.72
19							
20	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$426,624.00	\$2,985.07	\$429,609.07	\$196,067.97	\$1,002,097.55	\$7.12
21							
22							
23							
24							
25							
26							
27							
28	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$23,476.81	\$1,025,574.37	\$7.28
29							
30	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$426,624.00	\$2,985.07	\$429,609.07	\$132,456.50	\$1,158,030.86	\$8.22
31							
32							
33							
34							
35							
36							
37							
38	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$15,860.09	\$1,173,890.96	\$8.34
39							
40	Salvage*; 1.5 in. Overlay; Lime-Treated	\$426,624.00	\$2,985.07	(\$426,624.00)	(\$88,861.10)	\$1,085,029.85	\$7.71

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.



ALTERNATIVE 2: GEORGIA STATE HIGHWAY DETERMINISTIC

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 1.5 in. Overlay; Unmodified	\$0.00	\$2,985.07	\$0.00	\$418,345.07	\$418,345.07	\$2.97
1							
2							
3							
4							
5							
6	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$55,638.14	\$473,983.22	\$3.37
7							
8	Rehabilitation; 1.5 in. Overlay; Unmodified	\$415,360.01	\$2,985.07	\$418,345.08	\$305,680.65	\$779,663.87	\$5.54
9							
10							
11							
12							
13							
14	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$40,654.25	\$820,318.12	\$5.83
15							
16	Rehabilitation; 1.5 in. Overlay; Unmodified	\$415,360.01	\$2,985.07	\$418,345.08	\$223,357.86	\$1,043,675.98	\$7.41
17							
18							
19							
20							
21							
22	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$29,705.66	\$1,073,381.63	\$7.62
23							
24	Rehabilitation; 1.5 in. Overlay; Unmodified	\$415,360.01	\$2,985.07	\$418,345.08	\$163,205.40	\$1,236,587.03	\$8.78
25							
26							
27							
28							
29							
30	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$21,705.63	\$1,258,292.67	\$8.94
31							
32	Rehabilitation; 1.5 in. Overlay; Unmodified	\$415,360.01	\$2,985.07	\$418,345.08	\$119,252.59	\$1,377,545.26	\$9.78
33							
34							
35							
36							
37							
38	Maintenance; Crack Sealing	\$70,400.00	\$0.00	\$70,400.00	\$15,860.09	\$1,393,405.35	\$9.90
39							
40	Salvage*; 1.5 in. Overlay; Unmodified	\$415,360.01	\$2,985.07	(\$415,360.01)	(\$86,514.94)	\$1,306,890.41	\$9.28

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: MISSISSIPPI INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 1.5 in. Overlay; Lime-Treated	\$0.00	\$14,925.37	\$0.00	\$480,973.37	\$480,973.37	\$3.42
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$466,047.99	\$14,925.37	\$480,973.37	\$324,928.37	\$805,901.75	\$5.72
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$466,047.99	\$14,925.37	\$480,973.37	\$219,509.97	\$1,025,411.71	\$7.28
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$466,047.99	\$14,925.37	\$480,973.37	\$148,293.07	\$1,173,704.78	\$8.34
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 1.5 in. Overlay; Lime-Treated	\$466,047.99	\$14,925.37	(\$466,047.99)	(\$97,072.69)	\$1,076,632.09	\$7.65

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: MISSISSIPPI INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 1.5 in. Overlay; Unmodified	\$0.00	\$14,925.37	\$0.00	\$465,485.37	\$465,485.37	\$3.31
1							
2							
3							
4							
5							
6							
7							
8	Rehabilitation; 1.5 in. Overlay; Unmodified	\$450,560.01	\$14,925.37	\$465,485.38	\$340,125.61	\$805,610.98	\$5.72
9							
10							
11							
12							
13							
14							
15							
16	Rehabilitation; 1.5 in. Overlay; Unmodified	\$450,560.01	\$14,925.37	\$465,485.38	\$248,526.45	\$1,054,137.43	\$7.49
17							
18							
19							
20							
21							
22							
23							
24	Rehabilitation; 1.5 in. Overlay; Unmodified	\$450,560.01	\$14,925.37	\$465,485.38	\$181,595.84	\$1,235,733.27	\$8.78
25							
26							
27							
28							
29							
30							
31							
32	Rehabilitation; 1.5 in. Overlay; Unmodified	\$450,560.01	\$14,925.37	\$465,485.38	\$132,690.30	\$1,368,423.58	\$9.72
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 1.5 in. Overlay; Unmodified	\$450,560.01	\$14,925.37	(\$450,560.01)	(\$93,846.71)	\$1,274,576.86	\$9.05

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: MISSISSIPPI STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 1.5 in. Overlay; Lime-Treated	\$0.00	\$2,985.07	\$0.00	\$469,033.07	\$469,033.07	\$3.33
1							
2							
3							
4							
5							
6							
7							
8	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$92,593.06	\$561,626.14	\$3.99
9							
10							
11							
12							
13							
14							
15	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$466,047.99	\$2,985.07	\$469,033.07	\$260,437.41	\$822,063.55	\$5.84
16							
17							
18							
19							
20							
21							
22							
23	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$51,413.64	\$873,477.19	\$6.20
24							
25							
26							
27							
28							
29							
30	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$466,047.99	\$2,985.07	\$469,033.07	\$144,611.65	\$1,018,088.84	\$7.23
31							
32							
33							
34							
35							
36							
37							
38	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$28,548.17	\$1,046,637.01	\$7.43
39							
40	Salvage	\$0.00	\$0.00	(\$155,349.33)	(\$32,357.56)	\$1,014,279.45	\$7.20

ALTERNATIVE 2: MISSISSIPPI STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 1.5 in. Overlay; Unmodified	\$0.00	\$2,985.07	\$0.00	\$453,545.07	\$453,545.07	\$3.22
1							
2							
3							
4							
5							
6							
7	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$96,296.79	\$549,841.86	\$3.91
8							
9							
10							
11							
12							
13	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$450,560.01	\$2,985.07	\$453,545.08	\$272,387.42	\$822,229.28	\$5.84
14							
15							
16							
17							
18							
19							
20	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$57,833.35	\$880,062.64	\$6.25
21							
22							
23							
24							
25							
26	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$450,560.01	\$2,985.07	\$453,545.08	\$163,588.83	\$1,043,651.46	\$7.41
27							
28							
29							
30							
31							
32							
33	Maintenance; Chip Seal	\$126,720.00	\$0.00	\$126,720.00	\$34,733.21	\$1,078,384.68	\$7.66
34							
35							
36							
37							
38							
39	Rehabilitation; 1.5 in. Overlay; Lime-Treated	\$450,560.01	\$2,985.07	\$453,545.08	\$98,247.21	\$1,176,631.89	\$8.36
40	Salvage	\$0.00	\$0.00	(\$415,901.54)	(\$86,627.74)	\$1,090,004.15	\$7.74

ALTERNATIVE 1: NEVADA INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$20,000.00	\$0.00	\$590,240.00	\$590,240.00	\$4.19
1							
2							
3							
4							
5							
6							
7							
8	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$20,000.00	\$590,240.03	\$431,282.61	\$1,021,522.61	\$7.26
9							
10							
11							
12							
13							
14							
15							
16	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$20,000.00	\$590,240.03	\$315,133.98	\$1,336,656.58	\$9.49
17							
18							
19							
20							
21							
22							
23							
24	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$20,000.00	\$590,240.03	\$230,265.31	\$1,566,921.89	\$11.13
25							
26							
27							
28							
29							
30							
31							
32	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$20,000.00	\$590,240.03	\$168,252.61	\$1,735,174.50	\$12.32
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 2 in. Overlay; Lime-Treated	\$570,240.03	\$20,000.00	(\$570,240.03)	(\$118,774.75)	\$1,616,399.75	\$11.48

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: NEVADA INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay + Digouts; Unmodified	\$0.00	\$20,833.33	\$0.00	\$527,713.33	\$527,713.33	\$3.75
1							
2							
3							
4	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$451,091.56	\$978,804.89	\$6.95
5							
6							
7							
8	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$385,594.95	\$1,364,399.84	\$9.69
9							
10							
11							
12	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$329,608.18	\$1,694,008.03	\$12.03
13							
14							
15							
16	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$281,750.46	\$1,975,758.48	\$14.03
17							
18							
19							
20	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$240,841.47	\$2,216,599.95	\$15.74
21							
22							
23							
24	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$205,872.30	\$2,422,472.25	\$17.21
25							
26							
27							
28	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$175,980.50	\$2,598,452.75	\$18.45
29							
30							
31							
32	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$150,428.87	\$2,748,881.62	\$19.52
33							
34							
35							
36	Rehabilitation; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	\$527,713.32	\$128,587.23	\$2,877,468.85	\$20.44
37							
38							
39							
40	Salvage*; 2 in. Overlay + Digouts; Unmodified	\$506,879.99	\$20,833.33	(\$506,879.99)	(\$105,577.55)	\$2,771,891.31	\$19.69

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: NEVADA STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$4,000.00	\$0.00	\$574,240.00	\$574,240.00	\$4.08
1							
2							
3							
4	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$48,142.57	\$622,382.57	\$4.42
5							
6							
7							
8	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$41,152.47	\$663,535.04	\$4.71
9							
10							
11							
12	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	\$574,240.03	\$358,668.63	\$1,022,203.67	\$7.26
13							
14							
15							
16	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$30,069.71	\$1,052,273.38	\$7.47
17							
18							
19							
20	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$25,703.71	\$1,077,977.09	\$7.66
21							
22							
23							
24	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	\$574,240.03	\$224,023.37	\$1,302,000.46	\$9.25
25							
26							
27							
28	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$18,781.45	\$1,320,781.91	\$9.38
29							
30							
31							
32	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$16,054.46	\$1,336,836.37	\$9.49
33							
34							
35							
36	Rehabilitation; 2 in. Overlay; Lime-Treated	\$570,240.03	\$4,000.00	\$574,240.03	\$139,924.33	\$1,476,760.71	\$10.49
37							
38							
39							
40	Salvage*; Fog Seal	\$56,320.00	\$0.00	(\$323,840.02)	(\$67,452.33)	\$1,409,308.38	\$10.01

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.



ALTERNATIVE 2: NEVADA STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Unmodified	\$0.00	\$4,000.00	\$0.00	\$510,880.00	\$510,880.00	\$3.63
1							
2							
3							
4	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$48,142.57	\$559,022.57	\$3.97
5							
6							
7							
8	Rehabilitation; 2 in. Overlay; Unmodified	\$506,879.99	\$4,000.00	\$510,879.99	\$373,295.00	\$932,317.57	\$6.62
9							
10							
11							
12	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$35,177.31	\$967,494.88	\$6.87
13							
14							
15							
16	Rehabilitation; 2 in. Overlay; Unmodified	\$506,879.99	\$4,000.00	\$510,879.99	\$272,763.00	\$1,240,257.88	\$8.81
17							
18							
19							
20	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$25,703.71	\$1,265,961.59	\$8.99
21							
22							
23							
24	Rehabilitation; 2 in. Overlay; Unmodified	\$506,879.99	\$4,000.00	\$510,879.99	\$199,305.25	\$1,465,266.85	\$10.41
25							
26							
27							
28	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$18,781.45	\$1,484,048.30	\$10.54
29							
30							
31							
32	Rehabilitation; 2 in. Overlay; Unmodified	\$506,879.99	\$4,000.00	\$510,879.99	\$145,630.40	\$1,629,678.70	\$11.57
33							
34							
35							
36	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$13,723.42	\$1,643,402.12	\$11.67
37							
38							
39							
40	Salvage*; 2 in. Overlay; Unmodified	\$506,879.99	\$4,000.00	(\$506,879.99)	(\$105,577.55)	\$1,537,824.57	\$10.92

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: OREGON INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$0.00	\$22,727.27	\$0.00	\$928,071.27	\$928,071.27	\$6.59
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$38,047.77	\$966,119.05	\$6.86
11							
12							
13							
14							
15	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$905,343.98	\$22,727.27	\$928,071.25	\$515,325.02	\$1,481,444.07	\$10.52
16							
17							
18							
19							
20							
21							
22							
23							
24							
25	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$21,126.58	\$1,502,570.65	\$10.67
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$905,343.98	\$22,727.27	\$928,071.25	\$286,141.69	\$1,788,712.34	\$12.70
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; Fog Seal	\$56,320.00	\$0.00	(\$245,461.33)	(\$51,126.90)	\$1,737,585.43	\$12.34

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: OREGON INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Unmodified	\$0.00	\$22,727.27	\$0.00	\$881,607.27	\$881,607.27	\$6.26
1							
2							
3							
4							
5							
6							
7	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$42,798.57	\$924,405.84	\$6.57
8							
9							
10							
11							
12	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$858,879.99	\$22,727.27	\$881,607.26	\$550,649.29	\$1,475,055.14	\$10.48
13							
14							
15							
16							
17							
18							
19	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$26,731.86	\$1,501,787.00	\$10.67
20							
21							
22							
23							
24	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$858,879.99	\$22,727.27	\$881,607.26	\$343,933.92	\$1,845,720.92	\$13.11
25							
26							
27							
28							
29							
30							
31	Maintenance; Fog Seal	\$56,320.00	\$0.00	\$56,320.00	\$16,696.64	\$1,862,417.56	\$13.23
32							
33							
34							
35							
36	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$858,879.99	\$22,727.27	\$881,607.26	\$214,820.11	\$2,077,237.68	\$14.75
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$572,586.66)	(\$119,263.53)	\$1,957,974.15	\$13.91

ALTERNATIVE 1: OREGON STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$0.00	\$4,545.45	\$0.00	\$909,889.45	\$909,889.45	\$6.46
1							
2							
3							
4							
5							
6							
7							
8							
9	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$98,924.21	\$1,008,813.67	\$7.16
10							
11							
12							
13							
14							
15							
16							
17	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$905,343.98	\$4,545.45	\$909,889.43	\$467,112.89	\$1,475,926.56	\$10.48
18							
19							
20							
21							
22							
23							
24							
25							
26	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$50,785.04	\$1,526,711.60	\$10.84
27							
28							
29							
30							
31							
32							
33							
34	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$905,343.98	\$4,545.45	\$909,889.43	\$239,803.26	\$1,766,514.86	\$12.55
35							\$0.00
36							
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$585,810.81)	(\$122,017.97)	\$1,644,496.89	\$11.68

ALTERNATIVE 2: OREGON STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Unmodified	\$0.00	\$4,545.45	\$0.00	\$863,425.45	\$863,425.45	\$6.13
1							
2							
3							
4							
5							
6	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$111,276.29	\$974,701.74	\$6.92
7							
8							
9							
10							
11							
12	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$858,879.99	\$4,545.45	\$863,425.44	\$539,292.98	\$1,513,994.72	\$10.75
13							
14							
15							
16							
17							
18	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$69,502.84	\$1,583,497.56	\$11.25
19							
20							
21							
22							
23							
24	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$858,879.99	\$4,545.45	\$863,425.44	\$336,840.81	\$1,920,338.37	\$13.64
25							
26							
27							
28							
29							
30	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$43,411.27	\$1,963,749.64	\$13.95
31							
32							
33							
34							
35							
36	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$858,879.99	\$4,545.45	\$863,425.44	\$210,389.77	\$2,174,139.41	\$15.44
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$572,586.66)	(\$119,263.53)	\$2,054,875.88	\$14.59

ALTERNATIVE 1: SOUTH CAROLINA INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$0.00	\$22,727.27	\$0.00	\$1,387,079.27	\$1,387,079.27	\$9.85
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$22,727.27	\$1,387,079.21	\$866,365.58	\$2,253,444.86	\$16.00
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$22,727.27	\$1,387,079.21	\$541,129.39	\$2,794,574.24	\$19.85
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$22,727.27	\$1,387,079.21	\$337,987.82	\$3,132,562.06	\$22.25
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$909,567.96)	(\$189,453.04)	\$2,943,109.02	\$20.90

ALTERNATIVE 2: SOUTH CAROLINA INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Unmodified	\$0.00	\$22,727.27	\$0.00	\$1,356,103.27	\$1,356,103.27	\$9.63
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$22,727.27	\$1,356,103.31	\$916,134.81	\$2,272,238.08	\$16.14
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$22,727.27	\$1,356,103.31	\$618,907.85	\$2,891,145.93	\$20.53
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$22,727.27	\$1,356,103.31	\$418,111.97	\$3,309,257.89	\$23.50
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$22,727.27	(\$1,333,376.04)	(\$277,727.62)	\$3,031,530.27	\$21.53

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: SOUTH CAROLINA STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$0.00	\$4,545.45	\$0.00	\$1,368,897.45	\$1,368,897.45	\$9.72
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$4,545.45	\$1,368,897.40	\$924,778.03	\$2,293,675.49	\$16.29
11							
12							
13							
14							
15							
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$4,545.45	\$1,368,897.40	\$624,746.90	\$2,918,422.39	\$20.73
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$4,545.45	\$1,368,897.40	\$422,056.62	\$3,340,479.01	\$23.72
31							
32							
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,364,351.94	\$4,545.45	(\$1,364,351.94)	(\$284,179.56)	\$3,056,299.45	\$21.71

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.



ALTERNATIVE 2: SOUTH CAROLINA STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Unmodified	\$0.00	\$4,545.45	\$0.00	\$1,337,921.45	\$1,337,921.45	\$9.50
1							
2							
3							
4							
5							
6							
7							
8	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$4,545.45	\$1,337,921.49	\$977,606.13	\$2,315,527.58	\$16.45
9							
10							
11							
12							
13							
14							
15							
16	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$4,545.45	\$1,337,921.49	\$714,327.22	\$3,029,854.81	\$21.52
17							
18							
19							
20							
21							
22							
23							
24	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$4,545.45	\$1,337,921.49	\$521,951.91	\$3,551,806.71	\$25.23
25							
26							
27							
28							
29							
30							
31							
32	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$4,545.45	\$1,337,921.49	\$381,385.14	\$3,933,191.86	\$27.93
33							
34							
35							
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,333,376.04	\$4,545.45	(\$1,333,376.04)	(\$277,727.62)	\$3,655,464.24	\$25.96

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: TEXAS INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$20,000.00	\$0.00	\$509,984.00	\$509,984.00	\$3.62
1							
2							
3							
4							
5							
6							
7							
8							
9							
10	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$28,535.83	\$538,519.83	\$3.82
11							
12	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$20,000.00	\$509,984.00	\$318,534.50	\$857,054.33	\$6.09
13							
14							
15							
16							
17							
18							
19							
20							
21							
22	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$17,823.40	\$874,877.73	\$6.21
23							
24	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$20,000.00	\$509,984.00	\$198,955.71	\$1,073,833.44	\$7.63
25							
26							
27							
28							
29							
30							
31							
32							
33							
34	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$11,132.44	\$1,084,965.88	\$7.71
35							
36	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$20,000.00	\$509,984.00	\$124,267.15	\$1,209,233.03	\$8.59
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$326,656.00)	(\$68,038.87)	\$1,141,194.16	\$8.11

ALTERNATIVE 2: TEXAS INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. Overlay; Unmodified	\$0.00	\$20,000.00	\$0.00	\$494,496.00	\$494,496.00	\$3.51
1							
2							
3							
4							
5							
6							
7							
8	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$30,864.35	\$525,360.35	\$3.73
9							
10	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$20,000.00	\$494,495.98	\$334,063.77	\$859,424.12	\$6.10
11							
12							
13							
14							
15							
16							
17							
18	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$20,850.85	\$880,274.97	\$6.25
19							
20	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$20,000.00	\$494,495.98	\$225,681.51	\$1,105,956.49	\$7.85
21							
22							
23							
24							
25							
26							
27							
28	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$14,086.09	\$1,120,042.57	\$7.95
29							
30	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$20,000.00	\$494,495.98	\$152,462.34	\$1,272,504.92	\$9.04
31							
32							
33							
34							
35							
36							
37							
38	Maintenance; Crack Sealing	\$42,240.00	\$0.00	\$42,240.00	\$9,516.06	\$1,282,020.97	\$9.11
39							
40	Salvage*; 2 in. Overlay; Unmodified	\$474,495.98	\$20,000.00	(\$474,495.98)	(\$98,832.32)	\$1,183,188.66	\$8.40

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: TEXAS STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; Initial Construction; 2 in. Overlay; Lime-Treated	\$0.00	\$4,000.00	\$0.00	\$493,984.00	\$493,984.00	\$3.51
1							
2							
3							
4							
5							
6	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$111,276.29	\$605,260.29	\$4.30
7							
8							
9							
10							
11							
12	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$4,000.00	\$493,984.00	\$308,540.95	\$913,801.24	\$6.49
13							
14							
15							
16							
17							
18	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$69,502.84	\$983,304.08	\$6.98
19							
20							
21							
22							
23							
24	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$4,000.00	\$493,984.00	\$192,713.77	\$1,176,017.84	\$8.35
25							
26							
27							
28							
29							
30	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$43,411.27	\$1,219,429.11	\$8.66
31							
32							
33							
34							
35							
36	Rehabilitation; 2 in. Overlay; Lime-Treated	\$489,984.00	\$4,000.00	\$493,984.00	\$120,368.45	\$1,339,797.56	\$9.52
37							
38							
39							
40	Salvage	\$0.00	\$0.00	(\$326,656.00)	(\$68,038.87)	\$1,271,758.70	\$9.03

ALTERNATIVE 2: TEXAS STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; Initial Construction; 2 in. Overlay; Unmodified	\$0.00	\$4,000.00	\$0.00	\$478,496.00	\$478,496.00	\$3.40
1							
2							
3							
4							
5	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$115,727.34	\$594,223.34	\$4.22
6							
7							
8							
9							
10	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$323,254.74	\$917,478.08	\$6.52
11							
12							
13							
14							
15	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$78,181.24	\$995,659.32	\$7.07
16							
17							
18							
19							
20	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$218,379.32	\$1,214,038.64	\$8.62
21							
22							
23							
24							
25	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$52,816.45	\$1,266,855.09	\$9.00
26							
27							
28							
29							
30	Rehabilitation; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	\$478,495.98	\$147,529.24	\$1,414,384.33	\$10.05
31							
32							
33							
34							
35	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$35,680.90	\$1,450,065.23	\$10.30
36							
37							
38							
39							
40	Salvage*; 2 in. Overlay; Unmodified	\$474,495.98	\$4,000.00	(\$474,495.98)	(\$98,832.32)	\$1,351,232.91	\$9.60

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: UTAH INTERSTATE DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$0.00	\$22,727.27	\$0.00	\$1,260,359.27	\$1,260,359.27	\$8.95
1							
2							
3							
4							
5	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$236,083.77	\$1,496,443.04	\$10.63
6							
7							
8							
9							
10	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$194,043.65	\$1,690,486.69	\$12.01
11							
12							
13							
14							
15	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$159,489.73	\$1,849,976.42	\$13.14
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,237,631.99	\$22,727.27	\$1,260,359.27	\$575,211.52	\$2,425,187.94	\$17.22
21							
22							
23							
24							
25	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$107,745.55	\$2,532,933.49	\$17.99
26							
27							
28							
29							
30	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$88,558.99	\$2,621,492.47	\$18.62
31							
32							
33							
34							
35	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$72,789.03	\$2,694,281.51	\$19.14
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Lime-Treated	\$1,237,631.99	\$22,727.27	(\$1,237,631.99)	(\$257,785.19)	\$2,436,496.32	\$17.30

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 2: UTAH INTERSTATE DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 2 in. Overlay; Unmodified	\$0.00	\$22,727.27	\$0.00	\$1,196,999.27	\$1,196,999.27	\$8.50
1							
2							
3							
4							
5	Maintenance; 1 in. OGFC; Unmodified	\$274,560.00	\$0.00	\$274,560.00	\$225,668.31	\$1,422,667.58	\$10.10
6							
7							
8							
9							
10	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$808,649.83	\$2,231,317.41	\$15.85
11							
12							
13							
14							
15	Maintenance; 1 in. OGFC; Unmodified	\$274,560.00	\$0.00	\$274,560.00	\$152,453.42	\$2,383,770.83	\$16.93
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$546,294.85	\$2,930,065.69	\$20.81
21							
22							
23							
24							
25	Maintenance; 1 in. OGFC; Unmodified	\$274,560.00	\$0.00	\$274,560.00	\$102,992.07	\$3,033,057.76	\$21.54
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	\$1,196,999.29	\$369,057.23	\$3,402,114.98	\$24.16
31							
32							
33							
34							
35	Maintenance; 1 in. OGFC; Unmodified	\$274,560.00	\$0.00	\$274,560.00	\$69,577.75	\$3,471,692.73	\$24.66
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 2 in. Overlay; Unmodified	\$1,174,272.02	\$22,727.27	(\$1,174,272.02)	(\$244,588.00)	\$3,227,104.74	\$22.92

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

ALTERNATIVE 1: UTAH STATE HIGHWAY DETERMINISTIC (LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$0.00	\$4,000.00	\$0.00	\$1,114,912.00	\$1,114,912.00	\$7.92
1							
2							
3							
4							
5	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$236,083.77	\$1,350,995.77	\$9.60
6							
7							
8							
9							
10	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$194,043.65	\$1,545,039.41	\$10.97
11							
12							
13							
14							
15	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$159,489.73	\$1,704,529.15	\$12.11
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$1,110,911.98	\$4,000.00	\$1,114,911.98	\$508,831.27	\$2,213,360.42	\$15.72
21							
22							
23							
24							
25	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$107,745.55	\$2,321,105.97	\$16.49
26							
27							
28							
29							
30	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$88,558.99	\$2,409,664.96	\$17.11
31							
32							
33							
34							
35	Maintenance; 1 in. OGFC; Lime-Treated	\$287,232.00	\$0.00	\$287,232.00	\$72,789.03	\$2,482,453.99	\$17.63
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 1.5 in. Overlay; Lime-Treated	\$1,110,911.98	\$4,000.00	(\$1,110,911.98)	(\$231,390.80)	\$2,251,063.20	\$15.99

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.



ALTERNATIVE 2: UTAH STATE HIGHWAY DETERMINISTIC (NOT LIME-TREATED)

Year	Cost Type	Future Cost	Associated User Cost	Total Future Cost	Present Worth Cost	Cumulative Present Worth Cost	Cumulative Present Worth Cost (\$/sq. yd.)
0	Initial Construction; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$0.00	\$4,000.00	\$0.00	\$1,060,000.00	\$1,060,000.00	\$7.53
1							
2							
3							
4							
5	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$115,727.34	\$1,175,727.34	\$8.35
6							
7							
8							
9							
10	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,056,000.00	\$4,000.00	\$1,060,000.00	\$716,098.02	\$1,891,825.36	\$13.44
11							
12							
13							
14							
15	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$78,181.24	\$1,970,006.60	\$13.99
16							
17							
18							
19							
20	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,056,000.00	\$4,000.00	\$1,060,000.00	\$483,770.16	\$2,453,776.76	\$17.43
21							
22							
23							
24							
25	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$52,816.45	\$2,506,593.21	\$17.80
26							
27							
28							
29							
30	Rehabilitation; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,056,000.00	\$4,000.00	\$1,060,000.00	\$326,817.79	\$2,833,410.99	\$20.12
31							
32							
33							
34							
35	Maintenance; Chip Seal	\$140,800.00	\$0.00	\$140,800.00	\$35,680.90	\$2,869,091.89	\$20.38
36							
37							
38							
39							
40	Salvage*; 2 in. M/F + 1.5 in. Overlay; Unmodified	\$1,056,000.00	\$4,000.00	(\$1,056,000.00)	(\$219,953.23)	\$2,649,138.66	\$18.81

\* If a treatment was triggered in the final year of the analysis period, users costs were not accounted for in the salvage value.

## **b) Probabilistic\***

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\* The graphs in this section are plots of the cumulative distribution of the life cycle cost (LCC) of Alternative 1 minus the LCC of Alternative 2. Probability across the all iterations in the Monte Carlo simulation process is on the y-axis. The difference in LCCs is on the x-axis. Thus, x-axis values less than zero indicate savings (i.e., the cost of Alternative 1 is less than the cost of Alternative 2), whereas values greater than zero indicate that the cost of Alternative 1 is greater then the cost of Alternative 2. See Volume III for additional discussion.

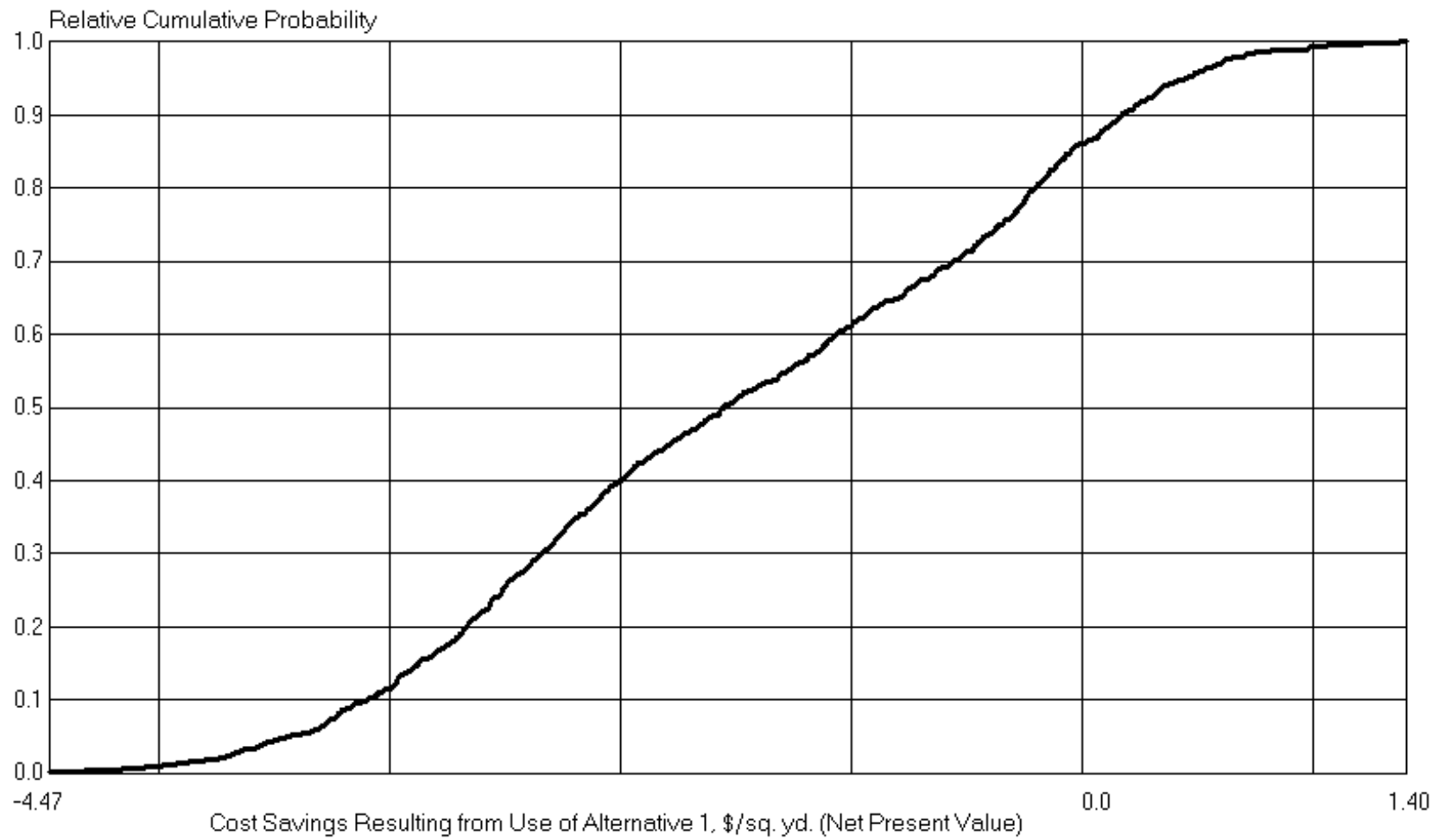
ALTERNATIVE 1: ARIZONA INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,035,359.86	\$1,716,703.92	\$2,448,736.25	\$157,189.62
Life-Cycle Cost (\$/sq. yd.)	\$14.46	\$12.19	\$17.39	\$1.12
Discount Rate (%)	4.06	2.51	5.49	0.77
Life of Initial Construction Alternative (years)	14.99	13.02	16.97	1.04
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$7.33	\$7.10	\$7.54	\$0.12
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.06	3.00	7.00	1.03
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.30	\$0.20	\$0.40	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.94	3.00	7.00	1.02
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.30	\$0.20	\$0.40	\$0.05
Life of 1st Rehabilitation Alternative (years)	15.02	13.01	16.99	1.04
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$7.32	\$7.10	\$7.54	\$0.12

ALTERNATIVE 2: ARIZONA INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,243,504.87	\$1,715,323.48	\$2,950,967.05	\$235,945.10
Life-Cycle Cost (\$/sq. yd.)	\$15.93	\$12.18	\$20.96	\$1.68
Discount Rate (%)	4.06	2.51	5.49	0.77
Life of Initial Construction Alternative (years)	12.65	10.01	14.99	1.31
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$7.16	\$6.94	\$7.37	\$0.11
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.11	3.01	7.00	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative(\$/sq. yd.)	\$0.30	\$0.20	\$0.40	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.98	3.02	6.98	0.99
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.30	\$0.20	\$0.40	\$0.05
Life of 1st Rehabilitation Alternative (years)	12.57	10.00	14.99	1.34
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$7.15	\$6.94	\$7.37	\$0.11

# Arizona Interstate



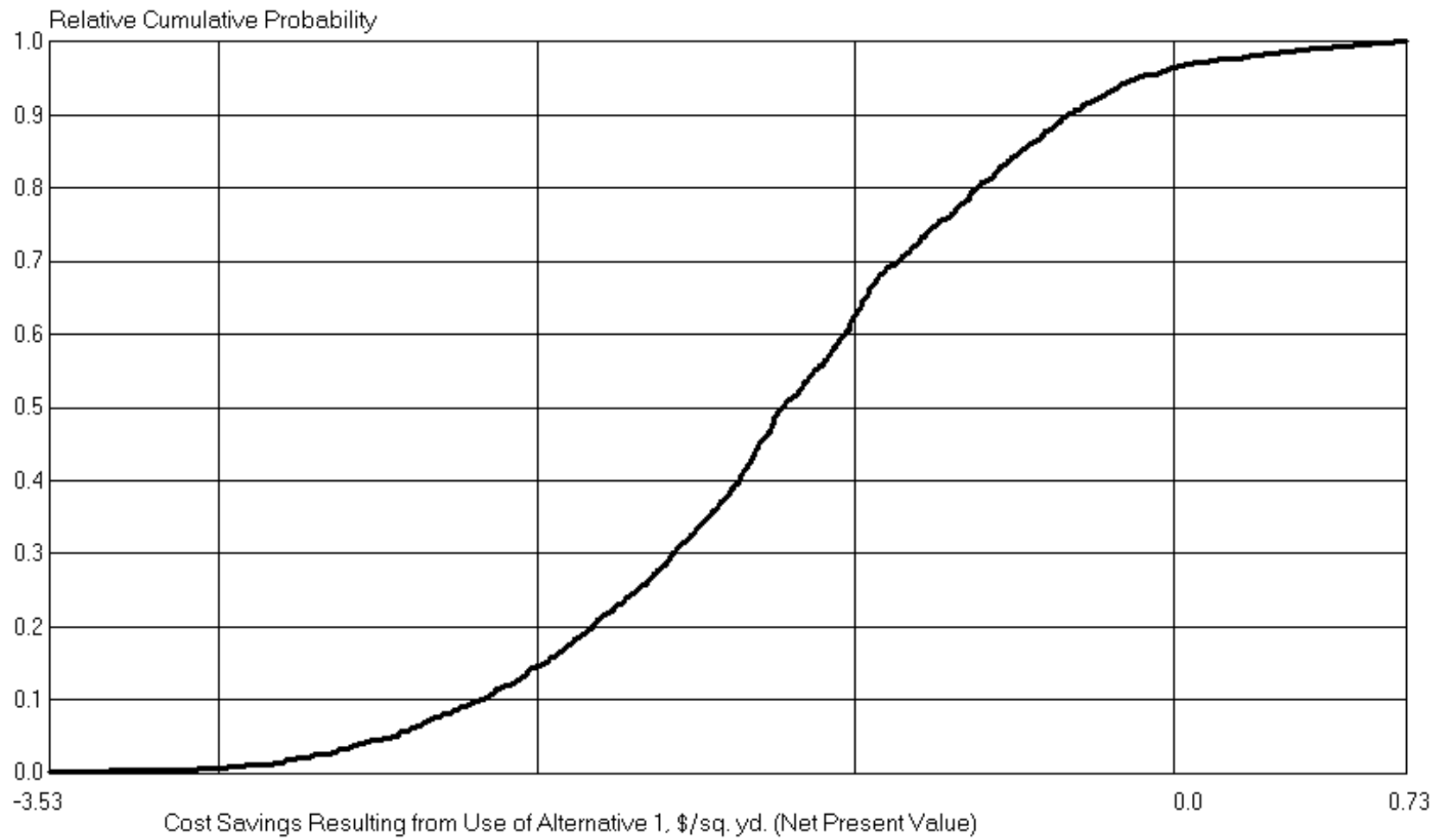
ALTERNATIVE 1: ARIZONA STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$588,623.29	\$457,642.25	\$822,678.57	\$67,523.34
Life-Cycle Cost (\$/sq. yd.)	\$4.18	\$3.25	\$5.84	\$0.48
Discount Rate (%)	3.94	2.50	5.49	0.79
Life of Initial Construction Alternative (years)	19.96	18.00	22.00	1.02
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.48	\$3.38	\$3.58	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	9.61	7.00	11.98	1.33
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$1.01	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	9.75	7.00	12.00	1.32
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$1.01	\$0.80	\$1.25	\$0.12
Life of 1st Rehabilitation Alternative (years)	20.04	18.00	21.98	1.00
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.48	\$3.38	\$3.58	\$0.05

ALTERNATIVE 2: ARIZONA STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$695,985.86	\$547,483.33	\$905,949.74	\$69,721.19
Life-Cycle Cost (\$/sq. yd.)	\$4.94	\$3.89	\$6.43	\$0.50
Discount Rate (%)	3.94	2.50	5.49	0.79
Life of Initial Construction Alternative (years)	17.35	15.00	19.98	1.34
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.37	\$3.27	\$3.47	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	7.00	5.01	9.00	1.01
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$1.01	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	6.98	5.00	9.00	1.02
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$1.02	\$0.80	\$1.25	\$0.12
Life of 1st Rehabilitation Alternative (years)	17.22	15.00	20.00	1.31
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.37	\$3.27	\$3.47	\$0.05

# Arizona State Highway



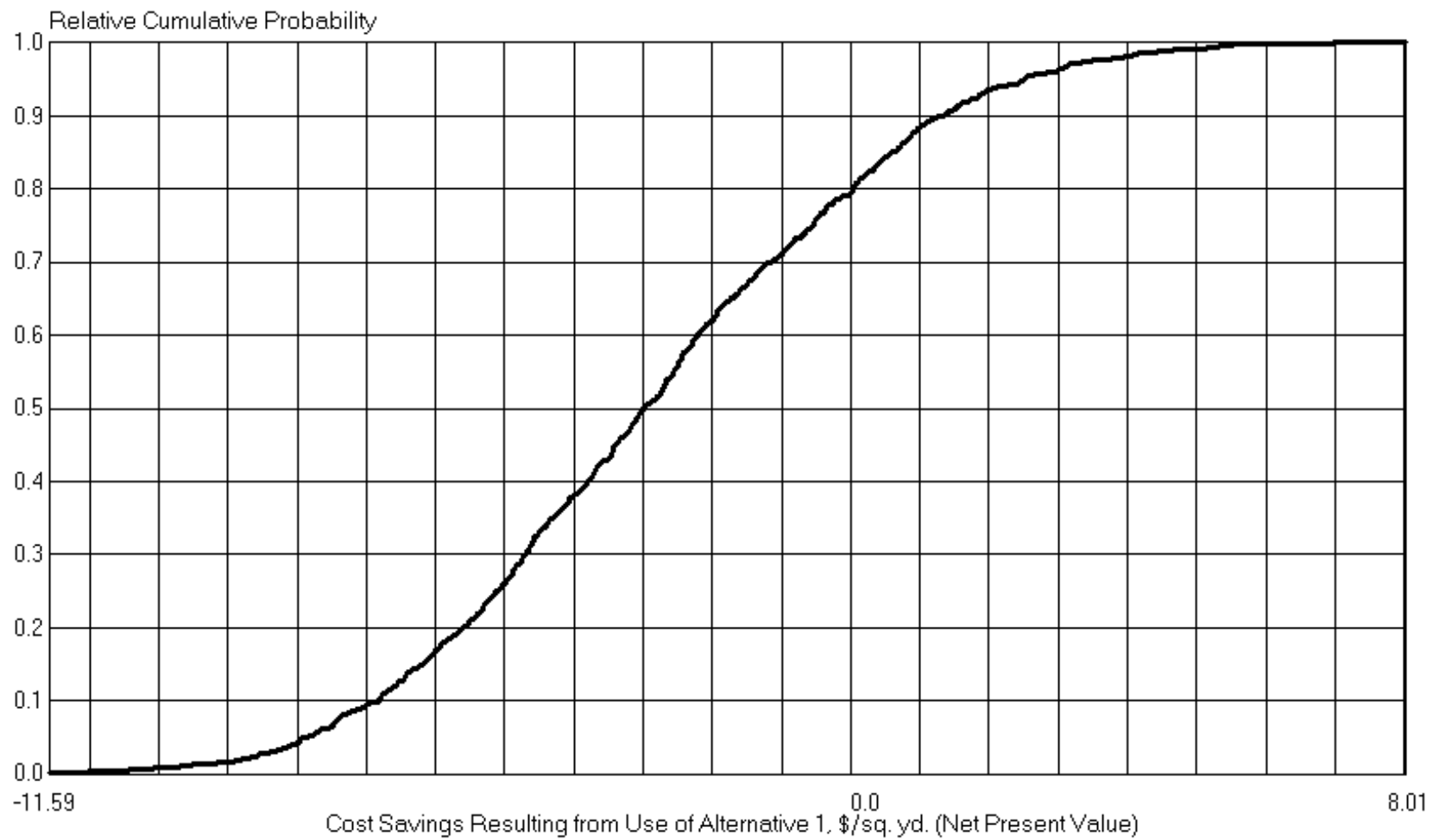
ALTERNATIVE 1: CALIFORNIA INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,936,949.63	\$2,948,877.61	\$5,728,791.27	\$498,627.48
Life-Cycle Cost (\$/sq. yd.)	\$27.96	\$20.94	\$40.69	\$3.54
Discount Rate (%)	3.96	2.50	5.50	0.80
Life of Initial Construction Alternative (years)	10.03	8.00	12.00	1.01
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$9.26	\$8.99	\$9.55	\$0.14
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.00	3.00	7.00	1.05
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$1.80	\$1.21	\$2.40	\$0.31
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.02	3.02	6.99	1.02
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$1.80	\$1.20	\$2.40	\$0.31
Life of 1st Rehabilitation Alternative (years)	9.99	8.03	11.99	1.02
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$9.27	\$8.99	\$9.55	\$0.15

ALTERNATIVE 2: CALIFORNIA INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$4,337,748.73	\$3,224,792.46	\$5,959,761.78	\$492,883.83
Life-Cycle Cost (\$/sq. yd.)	\$30.81	\$22.90	\$42.33	\$3.50
Discount Rate (%)	3.96	2.50	5.50	0.80
Life of Initial Construction Alternative (years)	7.97	6.01	9.99	1.03
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.44	\$8.18	\$8.68	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	3.99	3.00	5.00	0.51
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$1.80	\$1.20	\$2.40	\$0.31
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.01	3.00	5.00	0.53
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$1.81	\$1.20	\$2.40	\$0.30
Life of 1st Rehabilitation Alternative (years)	8.04	6.02	9.98	1.03
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.43	\$8.18	\$8.68	\$0.13

# California Interstate





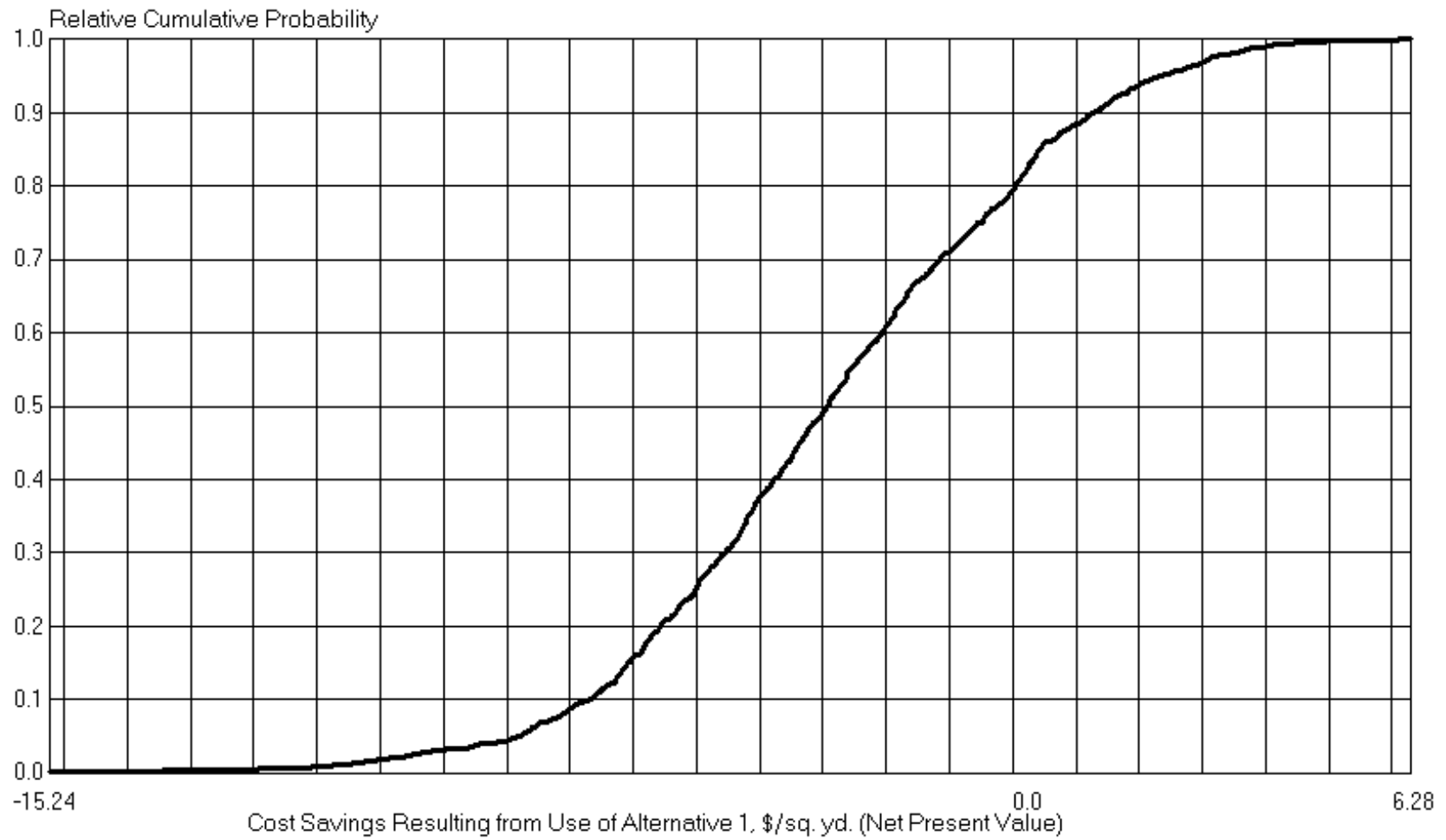
ALTERNATIVE 1: CALIFORNIA STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,851,061.32	\$2,918,345.08	\$5,523,724.03	\$463,891.06
Life-Cycle Cost (\$/sq. yd.)	\$27.35	\$20.73	\$39.23	\$3.29
Discount Rate (%)	4.02	2.50	5.49	0.78
Life of Initial Construction Alternative (years)	9.99	8.00	12.00	1.05
Unit Cost of Initial Construction Alternative	\$9.28	\$8.99	\$9.55	\$0.14
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.98	3.01	6.97	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative	\$1.51	\$1.01	\$2.00	\$0.26
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.95	3.02	6.99	1.05
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s)	\$1.51	\$1.00	\$1.99	\$0.26
Life of 1st Rehabilitation Alternative (years)	10.03	8.01	11.99	1.05
Unit Cost of 1st Rehabilitation Alternative	\$9.58	\$9.19	\$9.95	\$0.19

ALTERNATIVE 2: CALIFORNIA STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$4,254,137.44	\$3,076,535.70	\$6,367,176.30	\$487,440.50
Life-Cycle Cost (\$/sq. yd.)	\$30.21	\$21.85	\$45.22	\$3.46
Discount Rate (%)	4.02	2.50	5.49	0.78
Life of Initial Construction Alternative (years)	8.05	6.01	9.99	1.04
Unit Cost of Initial Construction Alternative (years)	\$8.43	\$8.18	\$8.68	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.01	2.01	6.00	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative	\$1.50	\$1.00	\$2.00	\$0.26
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.01	2.00	6.00	1.03
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s)	\$1.50	\$1.00	\$2.00	\$0.25
Life of 1st Rehabilitation Alternative (years)	8.02	6.01	9.99	1.02
Unit Cost of 1st Rehabilitation Alternative	\$8.72	\$8.38	\$9.08	\$0.18

# California State Highway



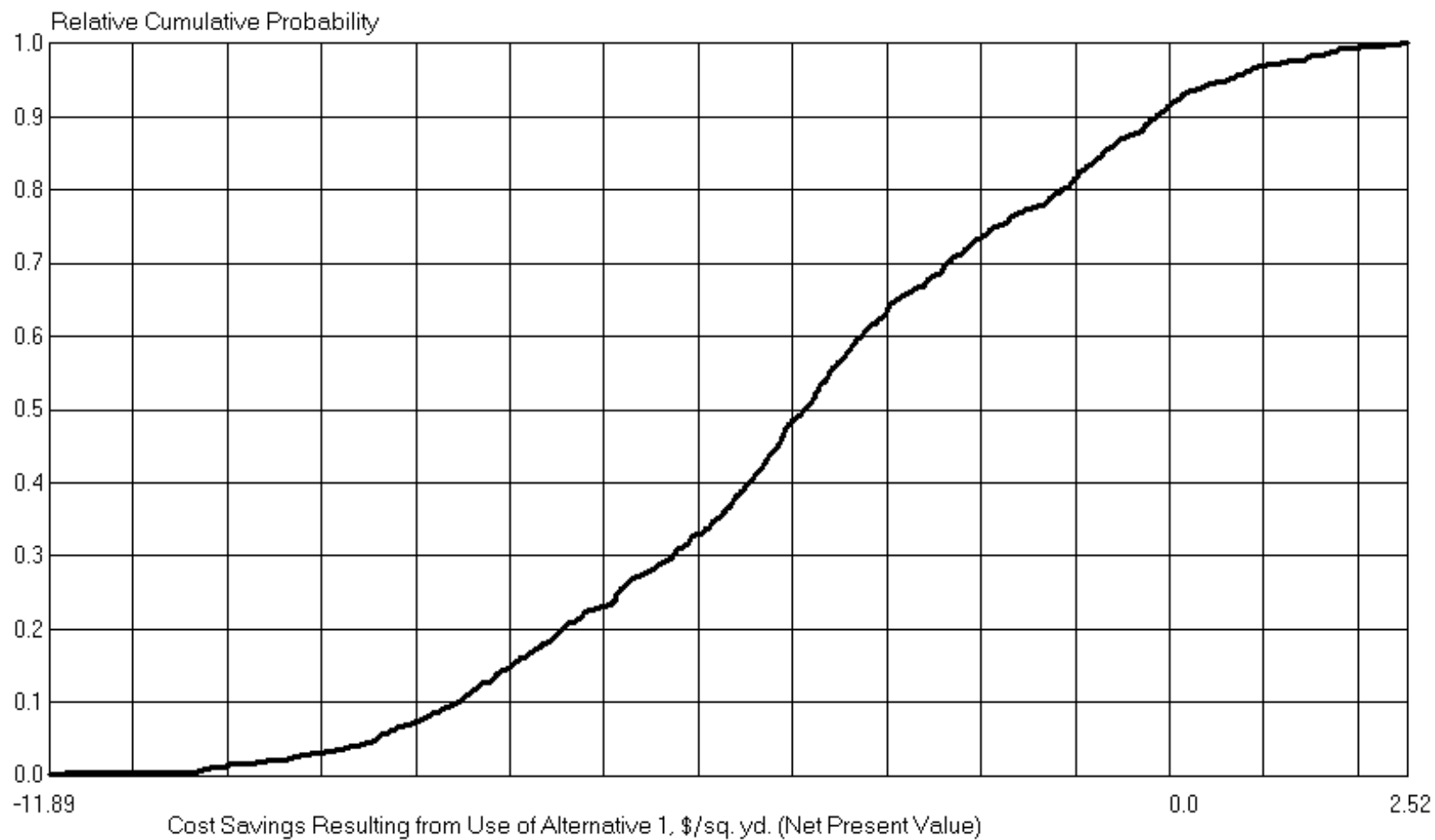
ALTERNATIVE 1: COLORADO INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,229,049.49	\$2,557,900.22	\$4,436,323.50	\$380,216.06
Life-Cycle Cost (\$/sq. yd.)	\$22.93	\$18.17	\$31.51	\$2.70
Discount Rate (%)	3.95	2.51	5.49	0.79
Life of Initial Construction Alternative (years)	10.06	8.02	11.99	1.07
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.57	\$8.31	\$8.83	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.00	3.00	7.00	1.05
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.00	3.03	7.00	1.01
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	9.98	8.00	11.99	1.04
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.56	\$8.31	\$8.83	\$0.13

ALTERNATIVE 2: COLORADO INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,773,395.69	\$2,852,918.37	\$5,214,783.51	\$405,065.82
Life-Cycle Cost (\$/sq. yd.)	\$26.80	\$20.26	\$37.04	\$2.88
Discount Rate (%)	3.95	2.51	5.49	0.79
Life of Initial Construction Alternative (years)	8.02	6.00	10.00	1.03
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.33	\$8.09	\$8.59	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	3.99	2.00	6.00	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	3.97	2.00	6.00	1.01
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	8.02	6.00	10.00	1.06
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.34	\$8.09	\$8.59	\$0.13

# Colorado Interstate



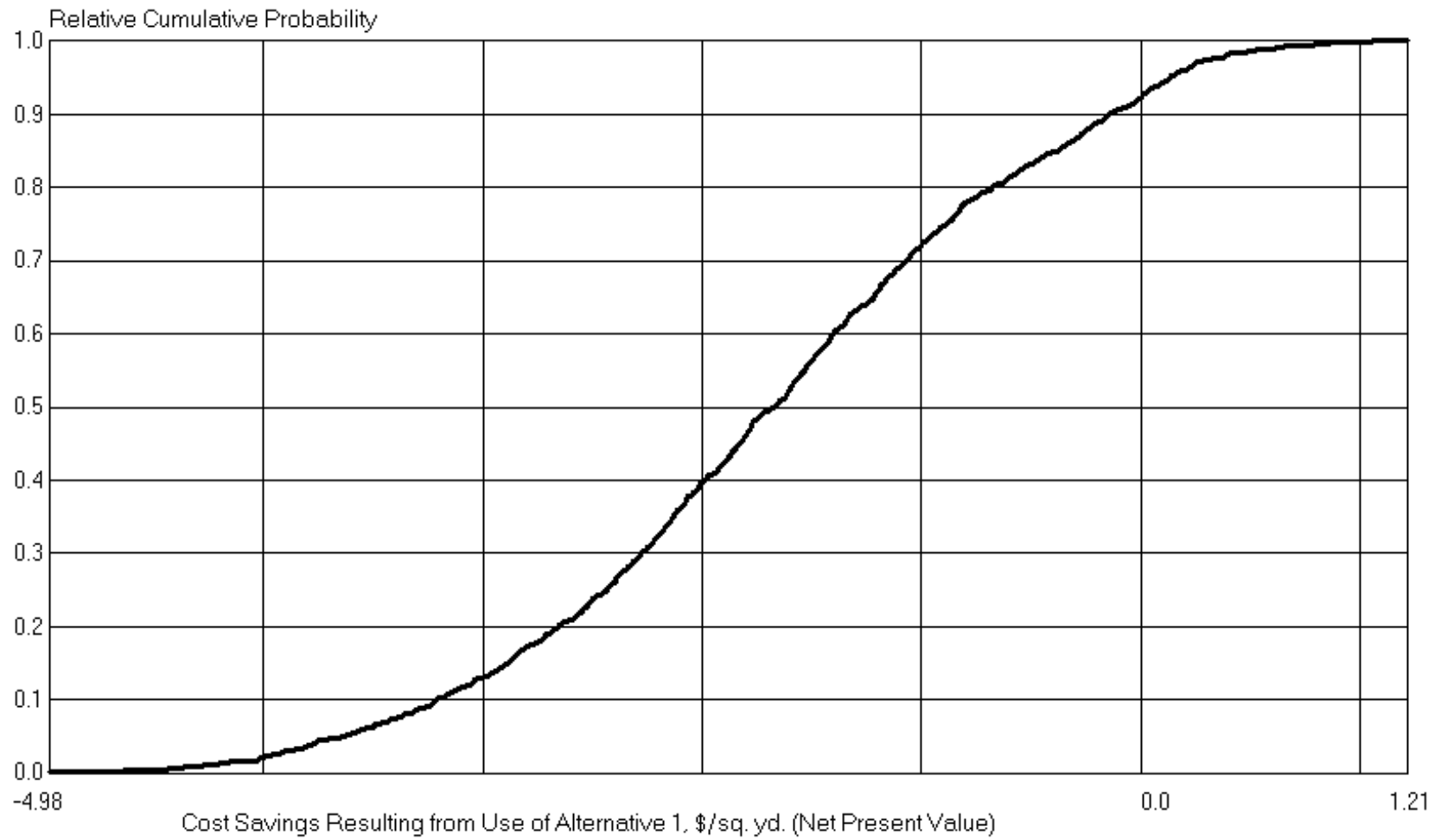
ALTERNATIVE 1: COLORADO STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$671,321.89	\$528,975.92	\$920,950.65	\$78,132.03
Life-Cycle Cost (\$/sq. yd.)	\$4.77	\$3.76	\$6.54	\$0.55
Discount Rate (%)	4.01	2.50	5.49	0.80
Life of Initial Construction Alternative (years)	10.01	8.00	12.00	1.02
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.48	\$3.38	\$3.58	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	7.36	6.00	9.00	0.81
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	7.33	6.01	9.00	0.78
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.51	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	10.00	8.02	12.00	1.02
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.48	\$3.38	\$3.58	\$0.05

ALTERNATIVE 2: COLORADO STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$789,980.42	\$590,866.72	\$1,080,908.57	\$86,194.93
Life-Cycle Cost (\$/sq. yd.)	\$5.61	\$4.20	\$7.68	\$0.61
Discount Rate (%)	4.01	2.50	5.49	0.80
Life of Initial Construction Alternative (years)	7.96	6.01	10.00	1.05
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.37	\$3.27	\$3.47	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.89	3.01	6.99	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.11
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.05	3.00	7.00	1.01
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.51	\$0.30	\$0.70	\$0.11
Life of 1st Rehabilitation Alternative (years)	8.04	6.00	9.99	1.04
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.37	\$3.27	\$3.47	\$0.05

# Colorado State Highway



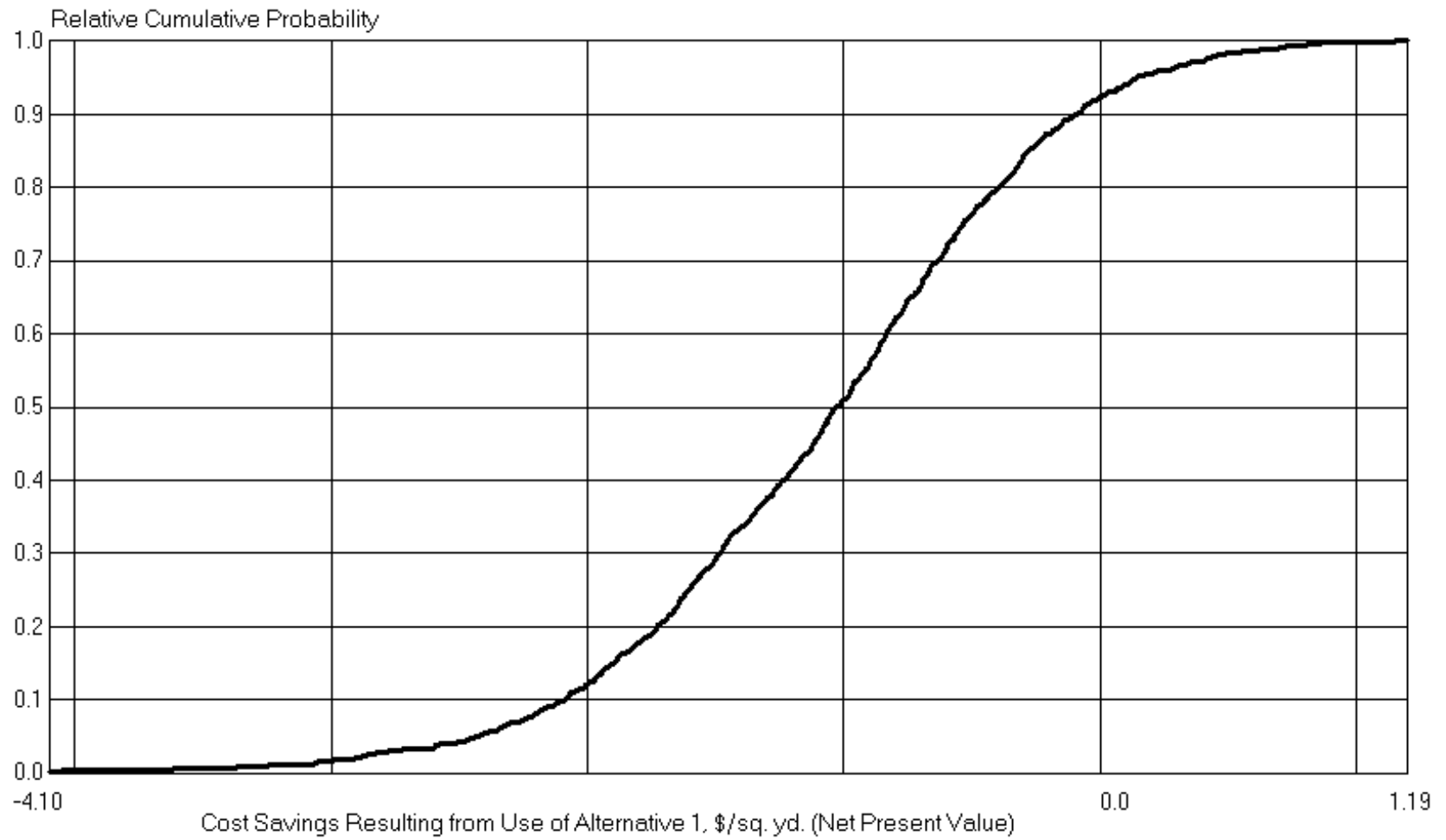
ALTERNATIVE 1: FHWA FEDERAL LANDS HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,133,373.47	\$861,481.57	\$1,466,811.23	\$116,860.86
Life-Cycle Cost (\$/sq. yd)	\$8.05	\$6.12	\$10.42	\$0.83
Discount Rate (%)	4.03	2.50	5.50	0.76
Life of Initial Construction Alternative (years)	12.33	10.01	14.97	1.34
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$2.92	\$2.83	\$3.01	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	6.01	5.00	7.00	0.50
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd)	\$0.90	\$0.80	\$1.00	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	6.00	5.00	7.00	0.51
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd)	\$0.90	\$0.80	\$1.00	\$0.05
Life of 1st Rehabilitation Alternative (years)	12.35	10.00	14.94	1.28
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$2.92	\$2.83	\$3.01	\$0.05

ALTERNATIVE 2: FHWA FEDERAL LANDS HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,284,971.85	\$925,938.06	\$1,846,868.15	\$144,136.40
Life-Cycle Cost (\$/sq. yd)	\$9.13	\$6.58	\$13.12	\$1.02
Discount Rate (%)	4.03	2.50	5.50	0.76
Life of Initial Construction Alternative (years)	9.98	8.01	12.00	1.01
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$2.75	\$2.67	\$2.83	\$0.04
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.00	3.00	6.99	1.00
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd)	\$0.90	\$0.80	\$1.00	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.00	3.01	7.00	1.03
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd)	\$0.90	\$0.80	\$1.00	\$0.05
Life of 1st Rehabilitation Alternative (years)	9.93	8.01	12.00	1.03
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$2.75	\$2.67	\$2.83	\$0.04

# FHWA Federal Lands Highway





ALTERNATIVE 1: GEORGIA INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,087,265.75	\$2,183,501.14	\$4,912,237.12	\$435,893.73
Life-Cycle Cost (\$/sq. yd.)	\$21.93	\$15.51	\$34.89	\$3.10
Discount Rate (%)	4.03	2.51	5.50	0.77
Life of Initial Construction Alternative (years)	10.71	7.00	15.00	2.16
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.68	\$8.42	\$8.94	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	7.01	5.01	9.00	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	6.99	5.01	8.99	1.03
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	10.72	7.00	15.00	2.13
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.69	\$8.42	\$8.94	\$0.13

ALTERNATIVE 2: GEORGIA INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,731,570.43	\$2,530,751.27	\$5,716,951.63	\$544,269.62
Life-Cycle Cost (\$/sq. yd.)	\$26.50	\$17.97	\$40.60	\$3.87
Discount Rate (%)	4.03	2.51	5.50	0.77
Life of Initial Construction Alternative (years)	8.19	5.03	11.97	1.80
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.48	\$8.22	\$8.73	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.00	3.01	6.99	1.05
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.04	3.00	7.00	1.04
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	8.11	5.00	12.00	1.82
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.48	\$8.22	\$8.73	\$0.14

# Georgia Interstate



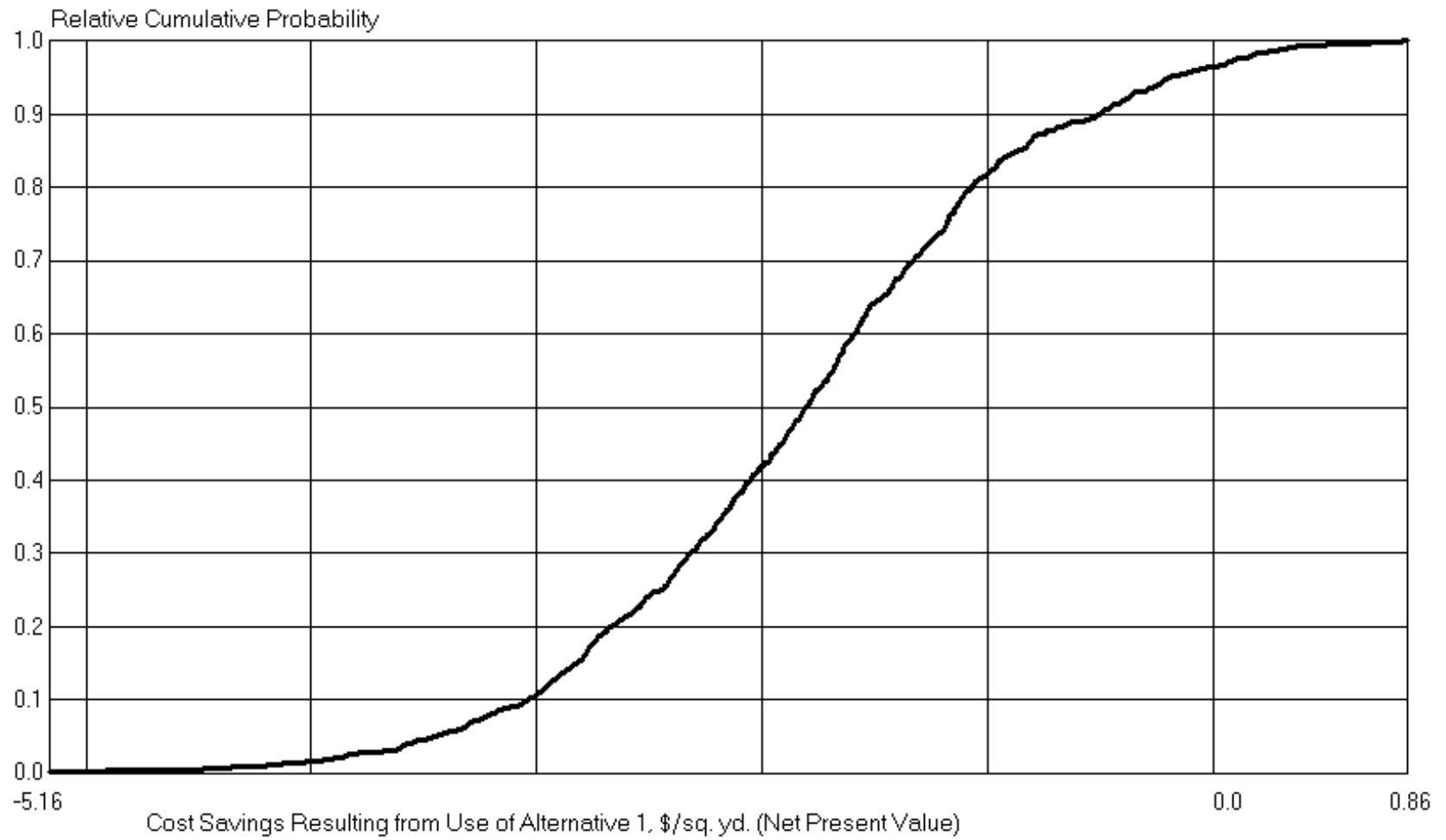
ALTERNATIVE 1: GEORGIA STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,119,945.16	\$799,277.62	\$1,625,623.24	\$138,866.78
Life-Cycle Cost (\$/sq. yd.)	\$7.95	\$5.68	\$11.55	\$0.99
Discount Rate (%)	4.06	2.52	5.49	0.77
Life of Initial Construction Alternative (years)	10.77	8.00	13.98	1.59
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.03	\$2.94	\$3.12	\$0.04
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	8.07	7.01	9.00	0.49
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	7.98	7.00	9.00	0.51
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.51	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	10.81	8.00	13.99	1.63
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.03	\$2.94	\$3.12	\$0.05

ALTERNATIVE 2: GEORGIA STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,376,878.77	\$1,023,431.27	\$1,903,835.41	\$148,439.34
Life-Cycle Cost (\$/sq. yd.)	\$9.78	\$7.27	\$13.52	\$1.05
Discount Rate (%)	4.06	2.52	5.49	0.77
Life of Initial Construction Alternative (years)	7.94	6.01	9.99	1.00
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$2.95	\$2.86	\$3.04	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	6.01	5.01	7.00	0.51
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	6.00	5.00	6.99	0.52
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.50	\$0.30	\$0.70	\$0.10
Life of 1st Rehabilitation Alternative (years)	7.85	6.01	10.00	1.02
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$2.95	\$2.86	\$3.04	\$0.05

# Georgia State Highway



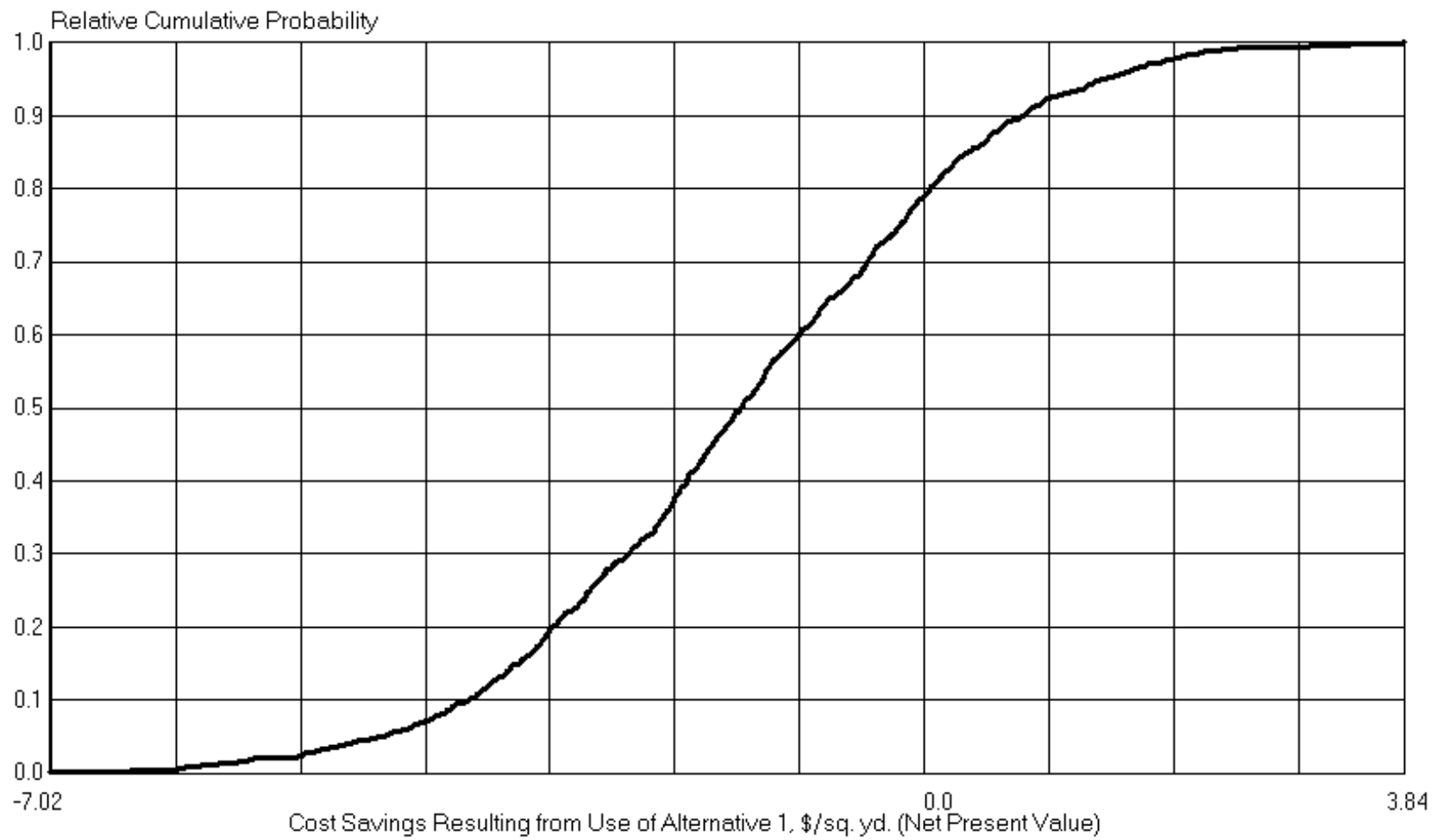
ALTERNATIVE 1: MISSISSIPPI INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,149,248.34	\$773,502.13	\$1,835,236.15	\$174,281.08
Life-Cycle Cost (\$/sq. yd.)	\$8.16	\$5.49	\$13.03	\$1.24
Discount Rate (%)	3.98	2.50	5.49	0.76
Life of Initial Construction Alternative (years)	10.73	7.01	14.99	2.15
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.32	\$3.21	\$3.41	\$0.05
Life of 1st Rehabilitation Alternative (years)	10.69	7.01	14.99	2.10
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.31	\$3.21	\$3.41	\$0.05

ALTERNATIVE 2: MISSISSIPPI INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,353,583.32	\$910,605.86	\$2,142,922.63	\$204,933.27
Life-Cycle Cost (\$/sq. yd.)	\$9.61	\$6.47	\$15.22	\$1.46
Discount Rate (%)	3.98	2.50	5.49	0.76
Life of Initial Construction Alternative (years)	8.24	5.00	12.00	1.80
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.20	\$3.10	\$3.30	\$0.05
Life of 1st Rehabilitation Alternative (years)	8.27	5.00	11.98	1.79
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.20	\$3.10	\$3.30	\$0.05

# Mississippi Interstate



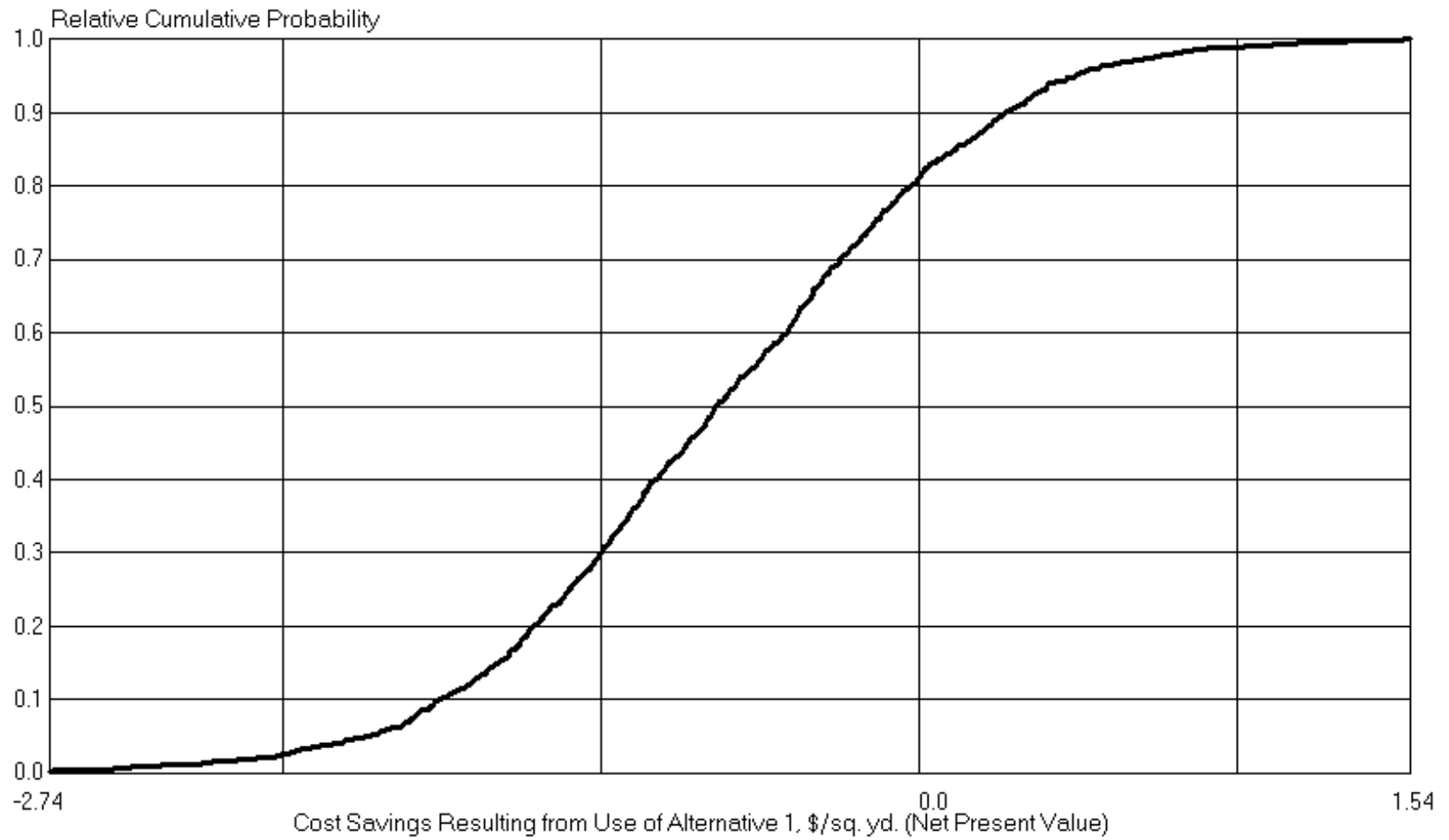
ALTERNATIVE 1: MISSISSIPPI STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,062,107.18	\$831,111.62	\$1,413,418.93	\$101,908.78
Life-Cycle Cost (\$/sq. yd.)	\$7.54	\$5.90	\$10.04	\$0.72
Discount Rate (%)	3.99	2.50	5.50	0.77
Life of Initial Construction Alternative (years)	14.67	12.00	16.99	1.34
Unit Cost of Initial Construction Alternative	\$3.31	\$3.21	\$3.41	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	8.01	6.00	9.99	1.02
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative	\$0.90	\$0.80	\$1.00	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	8.01	6.00	9.99	1.00
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s)	\$0.90	\$0.80	\$1.00	\$0.05
Life of 1st Rehabilitation Alternative (years)	14.77	12.01	16.99	1.34
Unit Cost of 1st Rehabilitation Alternative	\$3.31	\$3.21	\$3.41	\$0.05

ALTERNATIVE 2: MISSISSIPPI STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,149,716.30	\$886,503.32	\$1,585,051.33	\$119,883.88
Life-Cycle Cost (\$/sq. yd.)	\$8.17	\$6.30	\$11.26	\$0.85
Discount Rate (%)	3.99	2.50	5.50	0.77
Life of Initial Construction Alternative (years)	13.01	10.00	16.00	1.54
Unit Cost of Initial Construction Alternative (years)	\$3.20	\$3.10	\$3.30	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	6.97	5.01	8.99	1.03
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative	\$0.90	\$0.80	\$1.00	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	7.03	5.00	9.00	1.03
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s)	\$0.90	\$0.80	\$1.00	\$0.05
Life of 1st Rehabilitation Alternative (years)	13.03	10.01	15.96	1.54
Unit Cost of 1st Rehabilitation Alternative	\$3.20	\$3.10	\$3.30	\$0.05

# Mississippi State Highway





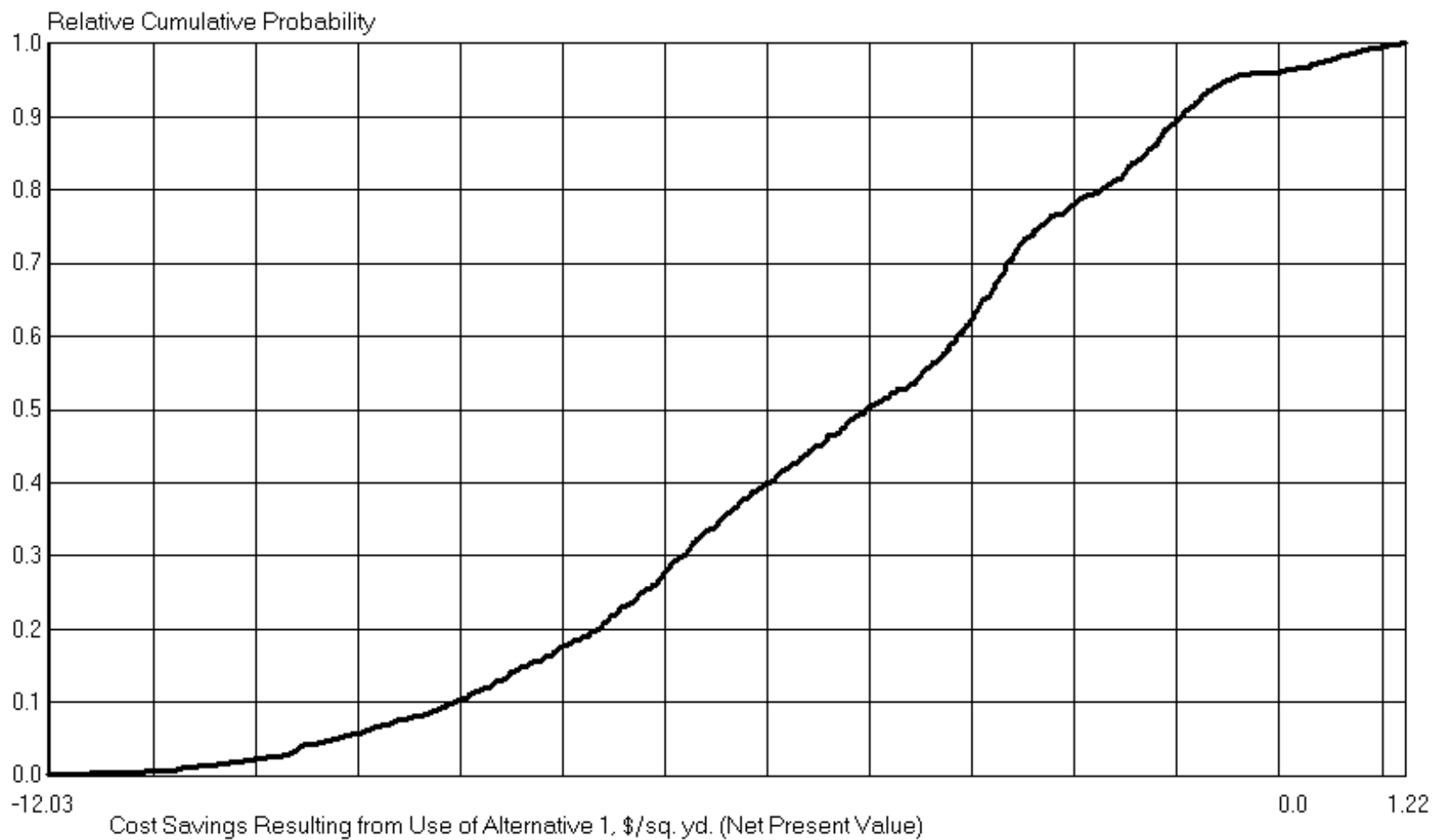
ALTERNATIVE 1: NEVADA INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,768,028.50	\$1,380,099.28	\$2,302,186.97	\$195,133.57
Life-Cycle Cost (\$/sq. yd.)	\$12.56	\$9.80	\$16.35	\$1.39
Discount Rate (%)	3.82	2.51	5.47	0.76
Life of Initial Construction Alternative (years)	7.99	7.00	9.00	0.52
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$4.05	\$3.93	\$4.17	\$0.06
Life of 1st Rehabilitation Alternative (years)	7.92	7.00	9.00	0.50
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$4.05	\$3.93	\$4.17	\$0.06

ALTERNATIVE 2: NEVADA INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,373,296.30	\$1,487,526.48	\$3,680,811.15	\$391,959.32
Life-Cycle Cost (\$/sq. yd.)	\$16.86	\$10.56	\$26.14	\$2.78
Discount Rate (%)	3.82	2.51	5.47	0.76
Life of Initial Construction Alternative (years)	4.88	3.00	7.00	1.05
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.60	\$3.49	\$3.71	\$0.06
Life of 1st Rehabilitation Alternative (years)	4.85	3.00	6.99	1.06
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.60	\$3.49	\$3.71	\$0.06

# Nevada Interstate



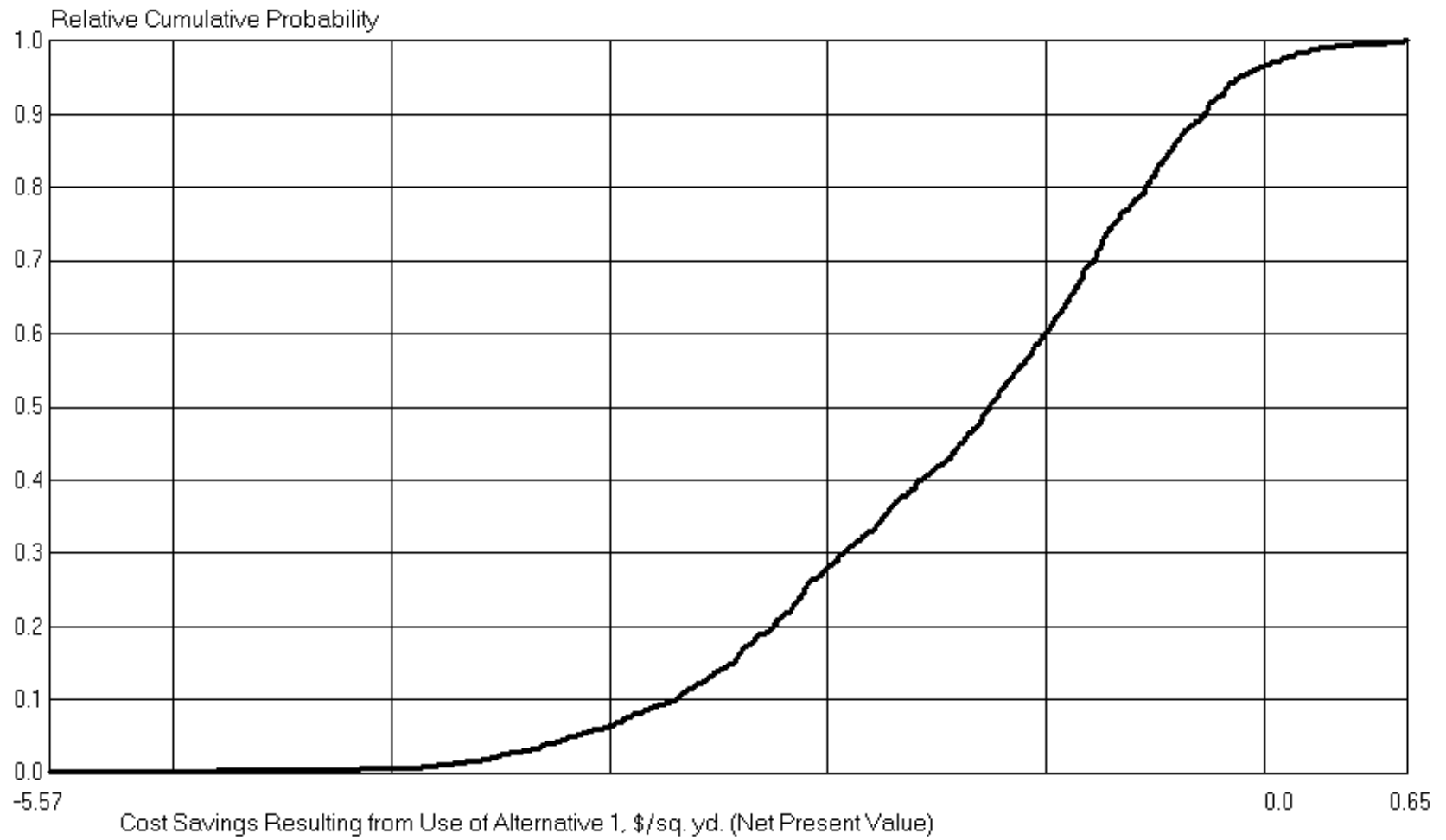
ALTERNATIVE 1: NEVADA STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,471,431.96	\$1,106,519.01	\$1,854,413.00	\$148,512.95
Life-Cycle Cost (\$/sq. yd.)	\$10.45	\$7.86	\$13.17	\$1.05
Discount Rate (%)	\$3.97	\$2.51	\$5.50	\$0.78
Life of Initial Construction Alternative (years)	12.03	10.02	14.00	1.02
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$4.05	\$3.93	\$4.17	\$0.06
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	\$4.00	\$3.01	\$4.99	\$0.50
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.40	\$0.30	\$0.50	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	\$4.00	\$3.01	\$4.99	\$0.52
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.40	\$0.30	\$0.50	\$0.05
Life of 1st Rehabilitation Alternative (years)	\$11.93	\$10.00	\$13.99	\$1.01
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$4.05	\$3.93	\$4.17	\$0.06

ALTERNATIVE 2: NEVADA STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,670,203.22	\$1,267,300.21	\$2,265,888.08	\$178,811.91
Life-Cycle Cost (\$/sq. yd.)	\$11.86	\$9.00	\$16.09	\$1.27
Discount Rate (%)	3.97	2.51	5.50	0.78
Life of Initial Construction Alternative (years)	8.03	6.01	9.99	1.03
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$3.60	\$3.49	\$3.71	\$0.06
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.01	3.00	5.00	0.51
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.40	\$0.30	\$0.50	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.00	3.00	5.00	0.51
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.40	\$0.30	\$0.50	\$0.05
Life of 1st Rehabilitation Alternative (years)	8.05	6.02	9.98	1.00
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$3.60	\$3.49	\$3.71	\$0.06

# Nevada State Highway



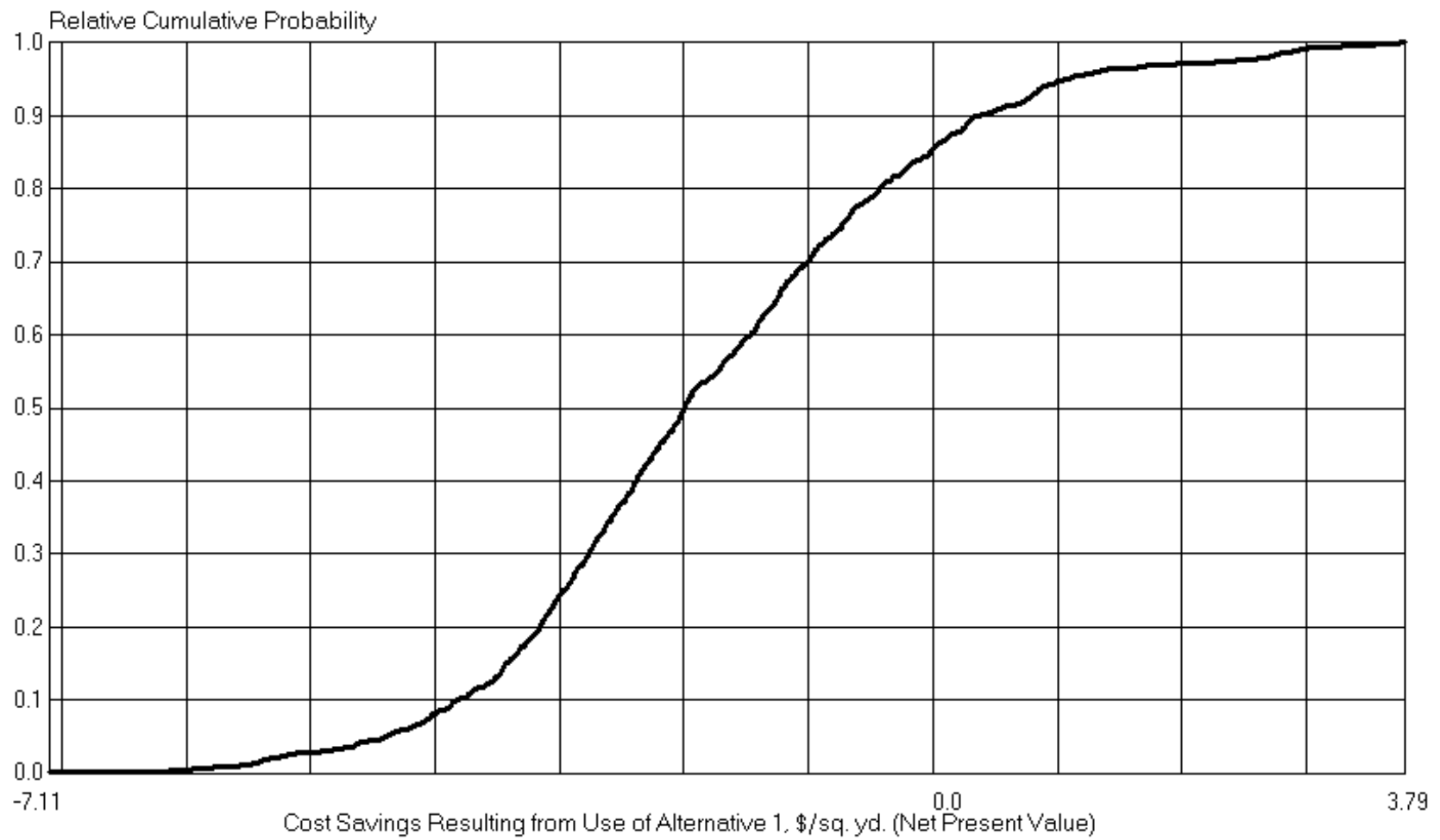
ALTERNATIVE 1: OREGON INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,792,255.31	\$1,384,866.04	\$2,553,593.93	\$202,510.44
Life-Cycle Cost (\$/sq. yd.)	\$12.73	\$9.84	\$18.14	\$1.44
Discount Rate (%)	4.01	2.51	5.50	0.77
Life of Initial Construction Alternative (years)	15.04	10.00	19.94	2.57
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$6.43	\$6.24	\$6.62	\$0.10
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	10.04	8.00	12.00	1.01
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.40	\$0.35	\$0.45	\$0.03
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	9.98	8.00	11.99	1.02
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.40	\$0.35	\$0.45	\$0.03
Life of 1st Rehabilitation Alternative (years)	15.09	10.00	19.99	2.52
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$6.43	\$6.24	\$6.62	\$0.10

ALTERNATIVE 2: OREGON INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,045,814.71	\$1,497,211.73	\$2,973,779.85	\$223,527.00
Life-Cycle Cost (\$/sq. yd.)	\$14.53	\$10.63	\$21.12	\$1.59
Discount Rate (%)	4.01	2.51	5.50	0.77
Life of Initial Construction Alternative (years)	11.73	8.00	14.99	1.84
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$6.10	\$5.92	\$6.28	\$0.09
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	7.03	5.00	8.99	1.03
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$0.40	\$0.35	\$0.45	\$0.03
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	7.00	5.01	9.00	1.01
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$0.40	\$0.35	\$0.45	\$0.02
Life of 1st Rehabilitation Alternative (years)	11.64	8.01	14.99	1.86
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$6.10	\$5.92	\$6.28	\$0.09

# Oregon Interstate



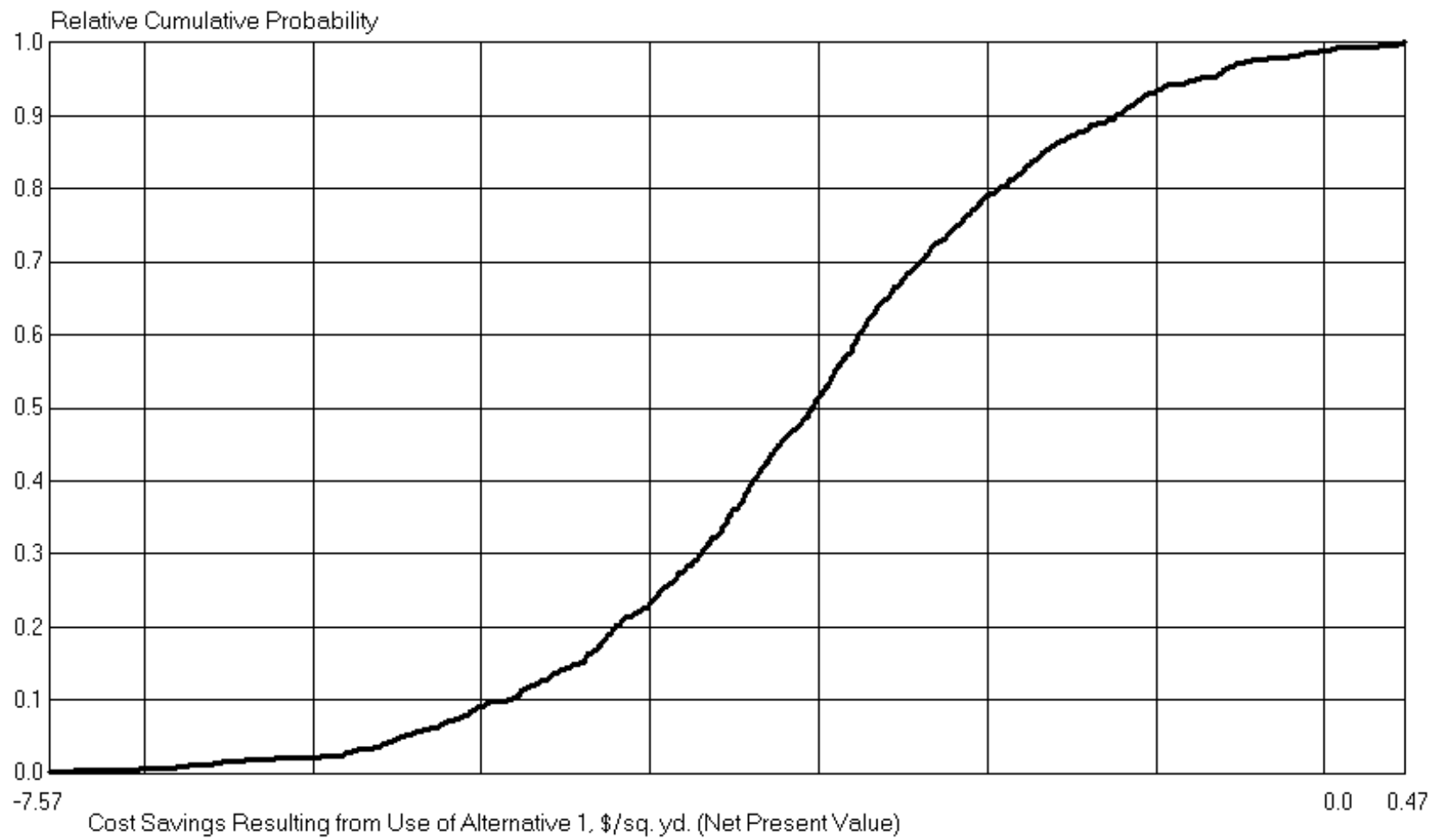
ALTERNATIVE 1: OREGON STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,772,792.20	\$1,460,196.44	\$2,250,368.99	\$152,240.94
Life-Cycle Cost (\$/sd. yd.)	\$12.59	\$10.37	\$15.98	\$1.08
Discount Rate (%)	4.08	2.50	5.49	0.76
Life of Initial Construction Alternative (years)	17.37	15.00	20.00	1.34
Unit Cost of Initial Construction Alternative	\$6.43	\$6.24	\$6.62	\$0.10
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	8.69	6.00	11.00	1.33
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative	\$1.01	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	8.66	6.03	11.00	1.32
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s)	\$1.02	\$0.80	\$1.25	\$0.12
Life of 1st Rehabilitation Alternative (years)	17.34	15.03	19.98	1.35
Unit Cost of 1st Rehabilitation Alternative	\$6.43	\$6.24	\$6.62	\$0.10

ALTERNATIVE 2: OREGON STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,205,442.30	\$1,607,196.50	\$3,086,280.30	\$238,082.75
Life-Cycle Cost (\$/sd. yd.)	\$15.66	\$11.41	\$21.92	\$1.69
Discount Rate (%)	4.08	2.50	5.49	0.76
Life of Initial Construction Alternative (years)	11.69	8.01	15.00	1.86
Unit Cost of Initial Construction Alternative (years)	\$6.10	\$5.92	\$6.28	\$0.09
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	6.06	4.00	7.99	1.01
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative	\$1.02	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.96	4.01	7.99	1.05
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s)	\$1.02	\$0.80	\$1.25	\$0.12
Life of 1st Rehabilitation Alternative (years)	11.61	8.01	14.99	1.87
Unit Cost of 1st Rehabilitation Alternative	\$6.10	\$5.92	\$6.28	\$0.09

# Oregon State Highway





ALTERNATIVE 1: SOUTH CAROLINA INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,974,661.70	\$2,244,099.78	\$3,844,346.38	\$329,801.31
Life-Cycle Cost (\$/sq. yd)	\$21.13	\$15.94	\$27.30	\$2.34
Discount Rate (%)	3.98	2.50	5.50	0.75
Life of Initial Construction Alternative (years)	12.37	10.01	14.99	1.32
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$9.69	\$9.40	\$9.98	\$0.15
Life of 1st Rehabilitation Alternative (years)	12.30	10.01	14.98	1.30
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$9.69	\$9.40	\$9.98	\$0.15

ALTERNATIVE 2: SOUTH CAROLINA INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,360,835.37	\$2,618,711.99	\$4,510,986.06	\$353,798.07
Life-Cycle Cost (\$/sq. yd)	\$23.87	\$18.60	\$32.04	\$2.51
Discount Rate (%)	3.98	2.50	5.50	0.75
Life of Initial Construction Alternative (years)	9.98	8.01	11.99	1.01
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$9.48	\$9.18	\$9.75	\$0.14
Life of 1st Rehabilitation Alternative (years)	10.00	8.00	12.00	1.01
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$9.46	\$9.18	\$9.75	\$0.15

### South Carolina Interstate



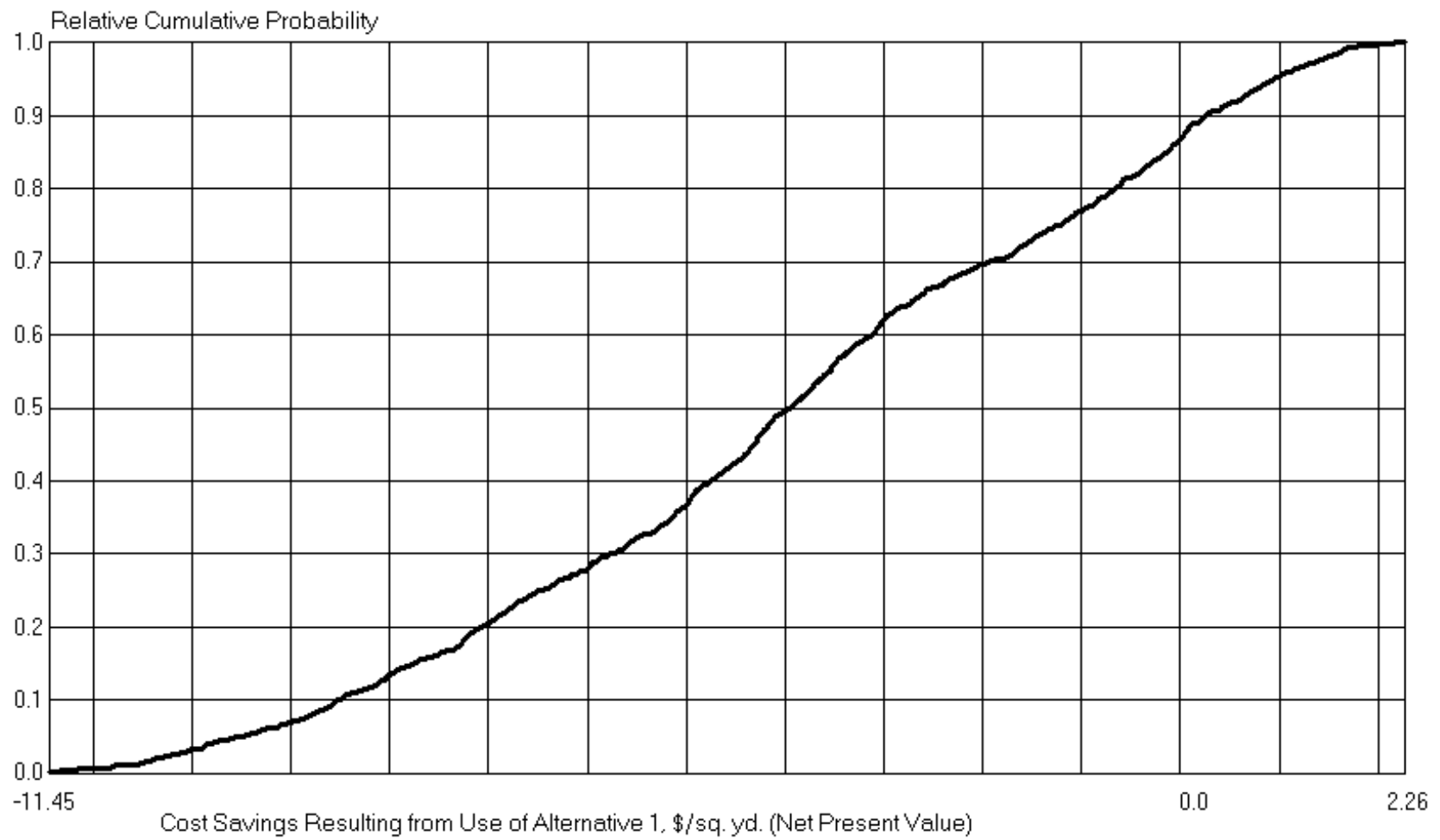
ALTERNATIVE 1: SOUTH CAROLINA STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,404,305.12	\$2,642,493.09	\$4,620,058.01	\$393,039.01
Life-Cycle Cost (\$/sq. yd.)	\$24.18	\$18.77	\$32.81	\$2.79
Discount Rate (%)	4.03	2.50	5.50	0.75
Life of Initial Construction Alternative (years)	10.00	8.01	11.99	1.02
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$9.68	\$9.40	\$9.98	\$0.15
Life of 1st Rehabilitation Alternative (years)	10.00	8.01	12.00	1.01
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$9.69	\$9.40	\$9.98	\$0.15

ALTERNATIVE 2: SOUTH CAROLINA STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,965,555.06	\$2,991,842.99	\$5,449,805.31	\$440,751.62
Life-Cycle Cost (\$/sq. yd.)	\$28.16	\$21.25	\$38.71	\$3.13
Discount Rate (%)	4.03	2.50	5.50	0.75
Life of Initial Construction Alternative (years)	7.99	6.02	10.00	1.05
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$9.47	\$9.18	\$9.75	\$0.15
Life of 1st Rehabilitation Alternative (years)	7.93	6.00	10.00	1.02
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$9.47	\$9.18	\$9.75	\$0.15

# South Carolina State Highway



ALTERNATIVE 1: TEXAS INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,168,813.02	\$881,100.71	\$1,660,215.78	\$140,762.98
Life-Cycle Cost (\$/sq. yd)	\$8.30	\$6.26	\$11.79	\$1.00
Discount Rate (%)	4.01	2.50	5.50	0.77
Life of Initial Construction Alternative (years)	11.63	8.02	14.96	1.84
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$3.48	\$3.38	\$3.58	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	10.02	9.00	11.00	0.52
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd)	\$0.30	\$0.20	\$0.40	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	9.99	9.00	11.00	0.52
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd)	\$0.30	\$0.20	\$0.40	\$0.05
Life of 1st Rehabilitation Alternative (years)	11.69	8.01	14.98	1.89
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$3.48	\$3.38	\$3.58	\$0.05

ALTERNATIVE 2: TEXAS INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,287,512.57	\$1,008,731.40	\$1,846,381.44	\$134,918.62
Life-Cycle Cost (\$/sq. yd)	\$9.14	\$7.16	\$13.11	\$0.96
Discount Rate (%)	4.01	2.50	5.50	0.77
Life of Initial Construction Alternative (years)	9.69	7.01	12.00	1.33
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$3.37	\$3.27	\$3.47	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	8.00	7.01	8.99	0.52
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd)	\$0.30	\$0.20	\$0.40	\$0.05
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	7.98	7.00	9.00	0.51
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd)	\$0.30	\$0.20	\$0.40	\$0.05
Life of 1st Rehabilitation Alternative (years)	9.78	7.01	12.00	1.34
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$3.37	\$3.27	\$3.47	\$0.05

# Texas Interstate



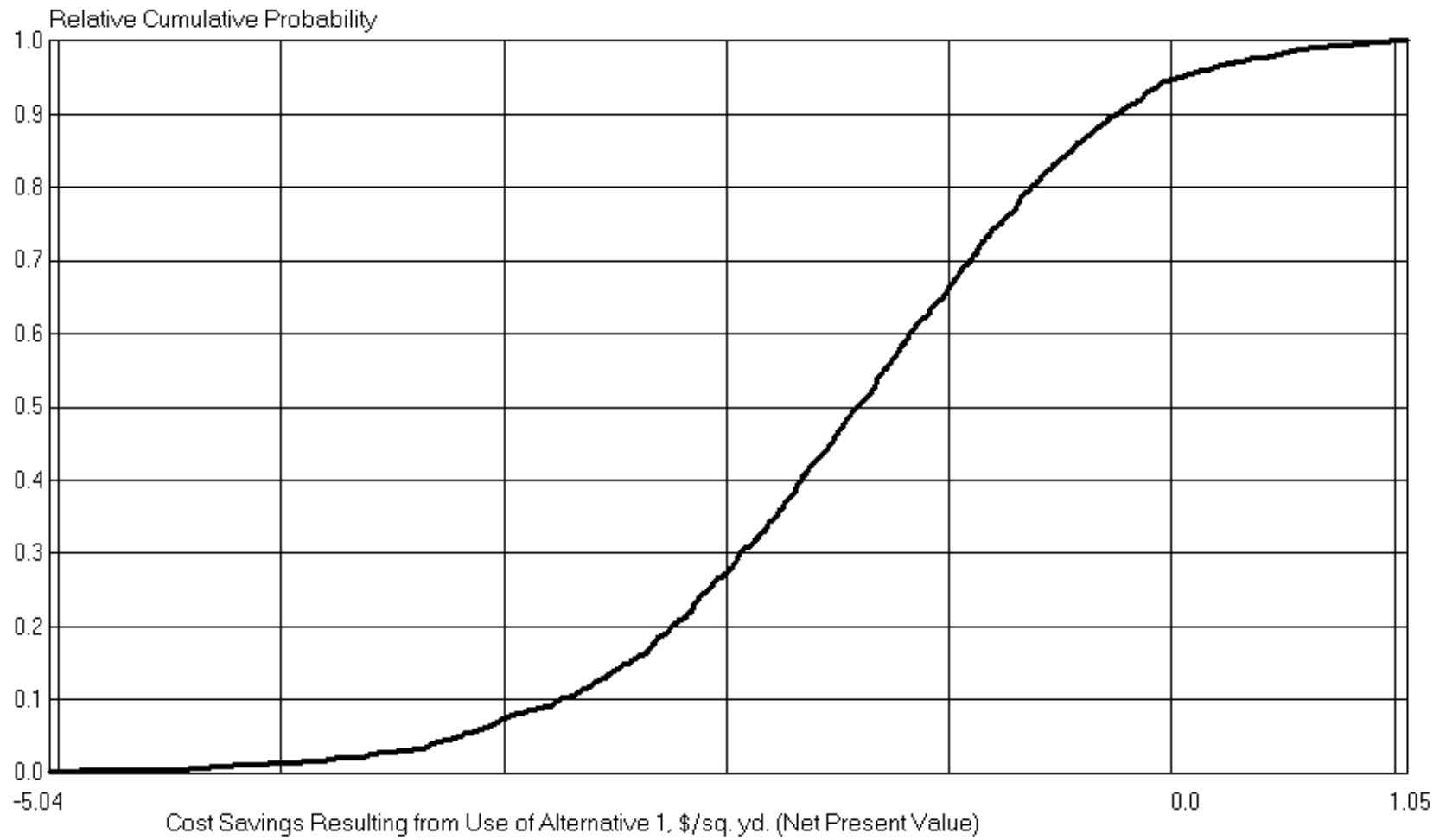
ALTERNATIVE 1: TEXAS STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,329,895.56	\$1,009,939.25	\$1,801,134.62	\$146,545.48
Life-Cycle Cost (\$/sq. yd)	\$9.45	\$7.17	\$12.79	\$1.04
Discount Rate (%)	4.06	2.50	5.49	0.79
Life of Initial Construction Alternative (years)	12.39	10.00	14.99	1.36
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$3.48	\$3.38	\$3.58	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	6.03	5.00	7.00	0.51
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd)	\$1.02	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	6.02	5.00	7.00	0.52
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd)	\$1.01	\$0.80	\$1.25	\$0.12
Life of 1st Rehabilitation Alternative (years)	12.32	10.00	14.99	1.39
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$3.48	\$3.38	\$3.58	\$0.05

ALTERNATIVE 2: TEXAS STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$1,535,510.57	\$1,086,083.35	\$2,094,657.98	\$171,493.85
Life-Cycle Cost (\$/sq. yd)	\$10.91	\$7.71	\$14.88	\$1.22
Discount Rate (%)	4.06	2.50	5.49	0.79
Life of Initial Construction Alternative (years)	9.91	8.00	12.00	1.01
Unit Cost of Initial Construction Alternative (\$/sq. yd)	\$3.37	\$3.27	\$3.47	\$0.05
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	5.07	3.01	6.99	1.06
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd)	\$1.01	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	4.98	3.00	7.00	1.04
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd)	\$1.02	\$0.80	\$1.25	\$0.12
Life of 1st Rehabilitation Alternative (years)	9.97	8.00	11.99	1.06
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd)	\$3.37	\$3.27	\$3.47	\$0.05

# Texas State Highway





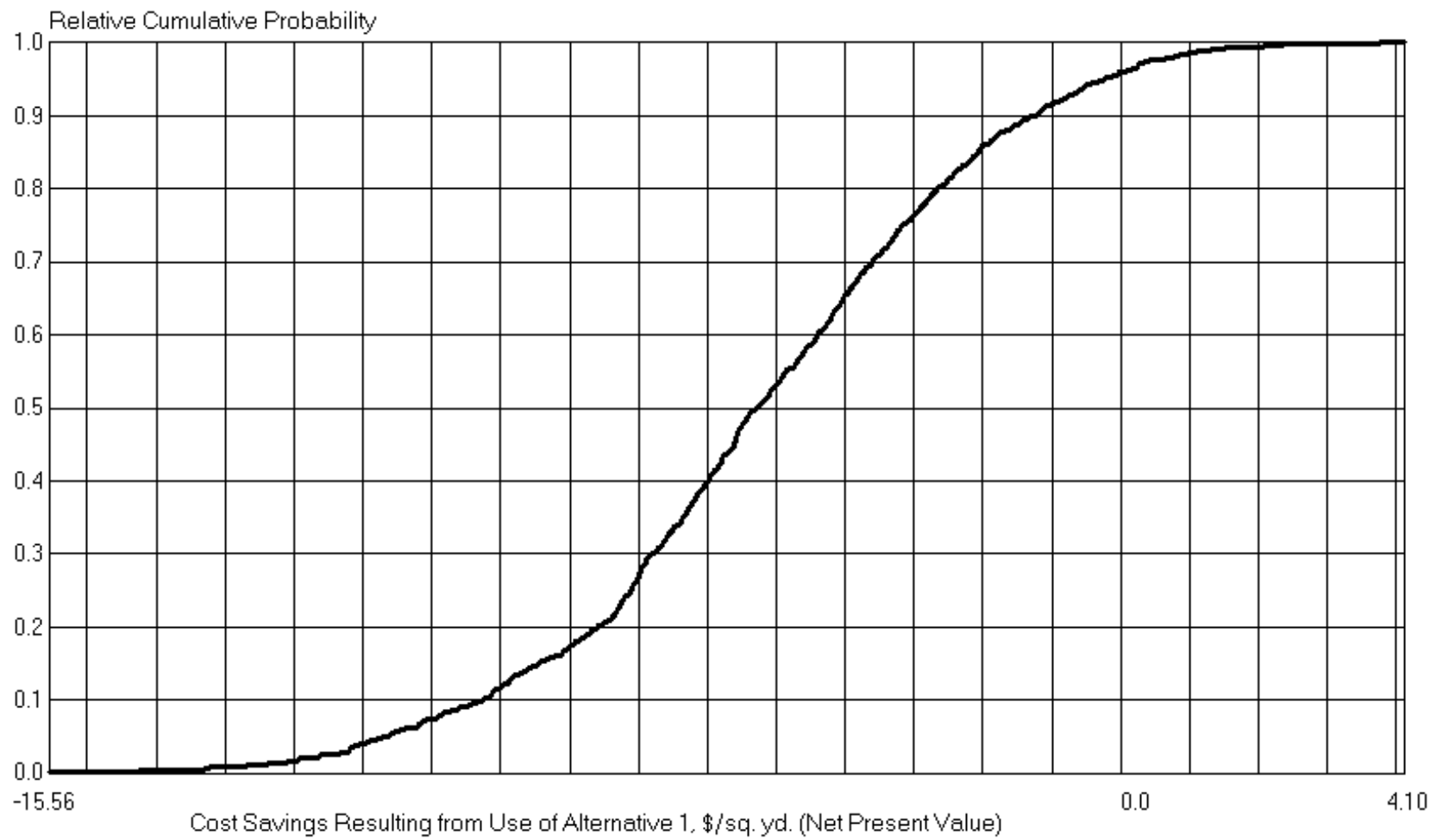
ALTERNATIVE 1: UTAH INTERSTATE PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,831,193.81	\$2,137,233.46	\$3,895,225.34	\$330,969.50
Life-Cycle Cost (\$/sq. yd.)	\$20.11	\$15.18	\$27.66	\$2.35
Discount Rate (%)	3.97	2.50	5.49	0.77
Life of Initial Construction Alternative (years)	20.00	15.02	24.95	2.56
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.79	\$8.53	\$9.05	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.95	3.00	6.99	1.00
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$2.04	\$1.98	\$2.10	\$0.03
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.06	3.00	6.98	1.00
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$2.04	\$1.98	\$2.10	\$0.03
Life of 1st Rehabilitation Alternative (years)	19.97	15.02	24.99	2.56
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.80	\$8.53	\$9.05	\$0.14

ALTERNATIVE 2: UTAH INTERSTATE PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$3,569,713.71	\$2,391,708.84	\$5,069,002.25	\$431,109.46
Life-Cycle Cost (\$/sq. yd.)	\$25.35	\$16.99	\$36.00	\$3.06
Discount Rate (%)	3.97	2.50	5.49	0.77
Life of Initial Construction Alternative (years)	10.72	7.00	14.96	2.12
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$8.35	\$8.09	\$8.59	\$0.13
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.94	3.01	7.00	1.05
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$1.95	\$1.89	\$2.01	\$0.03
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.02	3.01	6.99	1.06
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$1.95	\$1.89	\$2.01	\$0.03
Life of 1st Rehabilitation Alternative (years)	10.82	7.01	14.96	2.17
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$8.34	\$8.09	\$8.59	\$0.13

# Utah Interstate



ALTERNATIVE 1: UTAH STATE HIGHWAY PROBABILISTIC (LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,634,526.67	\$1,973,730.23	\$3,766,431.76	\$312,527.38
Life-Cycle Cost (\$/sq. yd.)	\$18.71	\$14.02	\$26.75	\$2.22
Discount Rate (%)	3.88	2.50	5.50	0.78
Life of Initial Construction Alternative (years)	20.18	15.00	24.98	2.60
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$7.89	\$7.65	\$8.13	\$0.12
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.99	3.01	7.00	1.00
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$2.04	\$1.98	\$2.10	\$0.03
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.04	3.01	6.99	1.03
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$2.04	\$1.98	\$2.10	\$0.03
Life of 1st Rehabilitation Alternative (years)	20.02	15.01	24.89	2.60
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$7.89	\$7.65	\$8.13	\$0.12

ALTERNATIVE 2: UTAH STATE HIGHWAY PROBABILISTIC (NOT LIME-TREATED)

Description	Mean	Minimum	Maximum	Standard Deviation
Life-Cycle Cost (\$)	\$2,958,852.54	\$2,092,641.01	\$4,351,207.22	\$374,615.97
Life-Cycle Cost (\$/sq. yd.)	\$21.01	\$14.86	\$30.90	\$2.66
Discount Rate (%)	3.88	2.50	5.50	0.78
Life of Initial Construction Alternative (years)	10.63	7.00	15.00	2.12
Unit Cost of Initial Construction Alternative (\$/sq. yd.)	\$7.50	\$7.28	\$7.72	\$0.11
Life of Maintenance Treatment Applied to Initial Construction Alternative (years)	4.99	3.01	7.00	1.04
Unit Cost of Maintenance Treatment Applied to Initial Construction Alternative (\$/sq. yd.)	\$1.02	\$0.80	\$1.25	\$0.12
Life of Maintenance Treatment Applied to Rehabilitation Alternative(s) (years)	5.06	3.00	7.00	1.03
Unit Cost of Maintenance Treatment Applied to Rehabilitation Alternative(s) (\$/sq. yd.)	\$1.01	\$0.80	\$1.25	\$0.11
Life of 1st Rehabilitation Alternative (years)	10.77	7.00	14.95	2.23
Unit Cost of 1st Rehabilitation Alternative (\$/sq. yd.)	\$7.51	\$7.28	\$7.72	\$0.11

# Utah State Highway

