

**Refresh Elements of Data Collected in 2002 System Preservation Needs Assessment
Task Order PS-4310-1268-01-5-3**

**TECHNICAL MEMORANDUM 3
NORMALIZED DATA**

**FINAL
October 25, 2007**

Table of Contents

1.0 INTRODUCTION..... 1

2.0 NORMALIZED DATA 2

 2.1 NORMALIZED ACTUAL AVERAGE PCI 2

 2.2 NORMALIZED UNMET COSTS 5

 2.3 NORMALIZED ARTERIAL ANNUAL 3R COSTS TO MAINTAIN THRESHOLD 9

3.0 CONCLUSION 14

Appendix – Updated Correlation Tool

PRELIMINARY DRAFT

1.0 INTRODUCTION

This Technical Memorandum #3 (TM #3) is the third in a series of Technical Memorandums prepared by the PB Consultant Team (PB) for the Los Angeles County Metropolitan Transportation Authority (Metro) to assess Los Angeles County's system preservation needs in 2007. This Memorandum summarizes all work completed at the end of Task 7, Normalize Data. Task 7 is the last analysis task prior to Task 8, which is to produce the final report. A list of all tasks in this project can be found in the Project Management Plan.

Task 7 calls for the calculation of the following items for arterial streets only:

1. The normalized pavement condition index (CPCI) threshold.
2. The normalized actual average pavement condition index (PCI).
3. The normalized unmet costs of reconstruction, rehabilitation, and resurfacing (3R) backlog at selected CPCI thresholds.
4. The normalized annual costs to maintain conditions at selected CPCI thresholds.
5. The normalized average unit cost of 3R work.

The first four items in the list above can be determined using the available data. The first item was calculated in the preceding task and presented in Technical Memorandum #2. The second item is calculated in this Memorandum. The third and fourth items were calculated using an updated version of the Correlation Tool, which was originally developed as part of the 2004 Countywide Pavement Condition Index Study. The fifth item could not be calculated due to a low number of reasonable responses to this portion of the survey.

The following sections describe the methods and results from calculating items 1, 2, 3, and 4 above.

2.0 NORMALIZED DATA

2.1 Normalized Actual Average PCI

The method used to normalize actual average PCI's is very similar to the method used to normalize PCI thresholds. The actual average PCI's were normalized using the same correlation curves that were used to normalize the PCI thresholds. There were 60 jurisdictions with correlatable responses that were normalized. No surrogate values were developed for jurisdictions that did not respond or that had non-correlatable systems. Among the correlatable responses, the most frequently occurring normalized actual PCI was 70 and the normalized county actual average PCI was 69. Responses from jurisdictions with no correlatable systems were not used in calculating the normalized county average.

Table 1 presents the provided actual average PCI's, the normalized actual average PCI, the normalized county actual average PCI's, and the most frequently occurring normalized actual average PCI.

Table 1 Normalized Actual Average PCI			
Jurisdiction	Pavement Management System	Provided Actual Average PCI¹	Normalized Actual Average PCI²
Agoura Hills	Micro PAVER	60	60
Alhambra	Micro PAVER	45	45
Arcadia	Micro PAVER	70	70
Artesia	Micro PAVER	70	70
Avalon	No PMS System	NS	
Azusa	In House	NS	
Baldwin Park	LACDPW	70	NC
Bell	Nichols Consulting Engineers	90	90
Bell Garden	Micro PAVER	75	75
Bellflower	Micro PAVER	69	69
Beverly Hills	Hansen's PMS	6.5	NC
Bradbury	No PMS System	NS	
Burbank	Micro PAVER	68	68
Calabasas	Micro PAVER	69	69
Carson	Micro PAVER	67	67
Cerritos	Infrastructure Management Services	80	71
Claremont	In House	60	NC
Commerce	In House	80	NC

¹ "NS" indicates that the Provided Actual Average PCI was not stated in the 2007 PCI survey.

² "NC" indicates that the jurisdiction's Provided Actual Average PCI is not correlatable.

Table 1 Normalized Actual Average PCI			
Jurisdiction	Pavement Management System	Provided Actual Average PCI¹	Normalized Actual Average PCI²
Compton	Micro PAVER	65	65
Covina	CHEC Infra Manager	63	63
Cudahy	Willdan PMS (0-100 scale)	90	NC
Culver City	CHEC Infra Manager	77	77
Diamond Bar	Micro PAVER	84	84
Downey	Infrastructure Management Services	86	80
Duarte	CarteGraph Pavementview Plus	70	70
El Monte	Pavement Condition Inventory	NS	
El Segundo	Micro PAVER	56	56
Gardena	MTC StreetSaver	82	82
Glendale	Micro PAVER	79	79
Glendora	No PMS System	NS	
Hawaiian Gardens	Micro PAVER	47	47
Hawthorne	In House (based on Micro PAVER)	70	70
Hermosa Beach	Micro PAVER	60	60
Hidden Hills	No PMS System	NS	
Huntington Park	CarteGraph Pavementview Plus	52	52
Industry	No PMS System	NS	
Inglewood	Berryman & Henigar	66	75
Irwindale	LACDPW	60	NC
La Canada-Flintridge	Stantec MPMA	7.1	71
La Habra Heights	No PMS System	NS	
La Mirada	LACDPW	3	NC
La Puente	Micro PAVER	67	67
La Verne	CarteGraph Pavementview Plus	75	75
Lakewood	In House	NS	
Lancaster	In House	3.3	NC
Lawndale	Micro PAVER	52	52
Lomita	CarteGraph Pavementview Plus	88	88
Long Beach	Micro PAVER	79	79
Los Angeles City	Micro PAVER	77	77
Los Angeles County Unincorporated	Stantec MPMA	6.5	65
Lynwood	In House	NS	
Malibu	MTC StreetSaver	63	63
Manhattan Beach	Stantec MPMA	7	70
Maywood	Micro PAVER	69	69
Monrovia	Pavement Condition Inventory	78	NC
Montebello	Micro PAVER	51	51

Table 1 Normalized Actual Average PCI			
Jurisdiction	Pavement Management System	Provided Actual Average PCI¹	Normalized Actual Average PCI²
Monterey Park	Berryman & Henigar	30	39
Norwalk	Micro PAVER	61	61
Palmdale	Micro PAVER	65	65
Palos Verdes Estates	Micro PAVER	NS	
Paramount	Micro PAVER	69	69
Pasadena	Modified Micro PAVER 1-70	47	NC
Pico Rivera	Harris & Associates	45	NC
Pomona	CHEC Infra Manager	79	79
Rancho Palos Verdes	Micro PAVER	72	72
Redondo Beach	Stantec MPMA	7.4	74
Rolling Hills Estates	Willdan PMS (0-0.15 scale)	0.045	NC
Rosemead	Micro PAVER	75	75
San Dimas	MTC StreetSaver	70	70
San Fernando	In House	40	NC
San Gabriel	MTC StreetSaver	48	48
San Marino	MTC StreetSaver	85	85
Santa Clarita	MTC StreetSaver	71	71
Santa Fe Springs	Micro PAVER	60	60
Santa Monica	Micro PAVER	83	83
Sierra Madre	Micro PAVER	81	81
Signal Hill	Stantec MPMA	7.6	76
South El Monte	No PMS System	NS	NC
South Gate	Micro PAVER	67	67
South Pasadena	In House	60	NC
Temple City	MTC StreetSaver	99	99
Torrance	MTC StreetSaver	68	68
Vernon	MTC StreetSaver	75	75
Walnut	LACDPW	2.25	NC
West Covina	MTC StreetSaver	65	65
West Hollywood	MTC StreetSaver	85	85
Westlake Village	No PMS System	NS	
Whittier	Charles Abbot Assoc	70	45
Average of Normalized Actual Average PCI's			69
Most Frequent Normalized Actual Average PCI			70

2.2 Normalized Unmet Costs

A jurisdiction's unmet cost is a portion of a jurisdiction's 3R backlog that is calculated by taking the difference between the jurisdiction's backlog costs and its available funding in fiscal year (FY) 2007. Since not all jurisdictions provided backlog and funding responses, the determination of a normalized county unmet cost required two steps. The first step was to develop a complete unmet cost data set for all 88 jurisdictions by calculating extrapolated unmet costs for jurisdictions with missing responses.

For jurisdictions that provided backlog and funding responses, the unmet cost was calculated by taking the difference between the jurisdiction's current backlog costs and available funding. For jurisdictions with missing backlog and funding responses, an extrapolated unmet cost was calculated by multiplying the jurisdiction's total arterial lane miles by the County unmet unit cost per arterial lane mile. For this study, the County unmet unit cost was found to be \$26,225 per arterial lane mile. It was calculated by taking the total unmet cost from jurisdictions that provided 3R backlog cost and funding responses divided by the total lane miles for responding jurisdictions.

Table 2 presents the unmet cost data for each jurisdiction, including responses from the survey, extrapolated values, and the estimated County unmet unit cost per arterial lane mile. The top portion of the table shows the data from responding jurisdictions. The lower section contains the cities for which there were no responses and the data was extrapolated. This same table can be found in the Correlation Tool in a spreadsheet tab labeled "Data – Unmet Costs". The data in this table is used in the Normalized Unmet Costs Tab to calculate normalized unmet costs. Refer to the Appendix to see the updated Correlation Tool.

Table 2 Unmet Cost Data				
Jurisdiction	Total Lane Miles	Backlog Response	Funding Response	Unmet Cost Data
Responding Jurisdictions				
Agoura Hills	134	\$9,000,000	\$1,059,470	\$7,940,530
Alhambra	330	\$7,000,000	\$1,000,000	\$6,000,000
Arcadia	500	\$6,318,288	\$600,000	\$5,718,288
Artesia	62	\$3,500,000	\$200,000	\$3,300,000
Azusa	192	\$8,000,000	\$0	\$8,000,000
Baldwin Park	229	\$7,100,000	\$300,000	\$6,800,000
Bell	86	\$300,000	\$0	\$300,000
Bell Garden	101	\$2,500,000	\$1,500,000	\$1,000,000
Bellflower	246	\$24,000,000	\$270,000	\$23,730,000
Beverly Hills	214	\$10,000,000	\$500,000	\$9,500,000
Burbank	546	\$38,011,900	\$1,200,000	\$36,811,900
Carson	420	\$1,800,000	\$300,000	\$1,500,000
Cerritos	364	\$4,000,000	\$1,200,000	\$2,800,000
Claremont	231	\$2,000,000	\$945,988	\$1,054,012
Commerce	153	\$2,000,000	\$400,000	\$1,600,000
Compton	415	\$3,200,000*	\$3,200,000	\$0
Covina	274	\$8,700,000	\$1,100,000	\$7,600,000
Cudahy	62	\$1,300,000	\$550,000	\$750,000
Culver City	216	\$17,945,034	\$1,800,000	\$16,145,034
Diamond Bar	293	\$1,894,000	\$1,650,000	\$244,000
Downey	503	\$4,886,800	\$2,010,000	\$2,876,800
Duarte	110	\$1,500,000	\$0	\$1,500,000
El Monte	363	\$1,500,000	\$175,000	\$1,325,000
El Segundo	130	\$17,500,000	\$250,000	\$17,250,000
Gardena	220	\$4,000,000	\$2,685,000	\$1,315,000
Glendale	790	\$5,900,000*	\$5,900,000	\$0
Hawaiian Gardens	38	\$250,000	\$0	\$250,000
Hawthorne	390	\$4,000,000	\$700,000	\$3,300,000
Hermosa Beach	88	\$637,760	\$0	\$637,760
Huntington Park	171	\$1,600,000	\$405,000	\$1,195,000
Industry	175	\$10,730,000	\$1,199,100	\$9,530,900
Inglewood	444	\$25,000,000	\$5,000,000	\$20,000,000
Irwindale	58	\$6,000,000	\$1,000,000	\$5,000,000
La Canada-Flintridge	180	\$400,000	\$400,000	\$0
La Mirada	260	\$14,334,894	\$8,065,000	\$6,269,894
La Puente	145	\$8,500,000	\$800,000	\$7,700,000
La Verne	235	\$8,300,000	\$1,500,000	\$6,800,000

Table 2 Unmet Cost Data				
Jurisdiction	Total Lane Miles	Backlog Response	Funding Response	Unmet Cost Data
Responding Jurisdictions				
Lakewood	425	\$6,600,000	\$1,000,000	\$5,600,000
Lancaster	1,137	\$20,085,000	\$4,320,000	\$15,765,000
Lawndale	85	\$2,000,000	\$1,200,000	\$800,000
Lomita	21	\$526,000	\$0	\$526,000
Long Beach	1,900	\$72,000,000	\$5,400,000	\$66,600,000
Los Angeles City	23,014	\$310,500,000	\$15,000,000	\$295,500,000
Los Angeles County Unincorporated	3,131	\$275,000,000	\$54,000,000	\$221,000,000
Lynwood	215	\$8,000,000	\$3,400,000	\$4,600,000
Malibu	94	\$930,000	\$120,000	\$810,000
Manhattan Beach	264	\$2,000,000	\$700,000	\$1,300,000
Maywood	160	\$3,200,000	\$0	\$3,200,000
Monrovia	189	\$4,300,000	\$0	\$4,300,000
Montebello	300	\$17,364,162	\$708,750	\$16,655,412
Monterey Park	275	\$20,000,000	\$1,370,000	\$18,630,000
Norwalk	580	\$9,800,000	\$1,800,000	\$8,000,000
Palmdale	803	\$8,000,000	\$2,200,000	\$5,800,000
Palos Verdes Estates	150	\$631,367*	\$631,367	\$0
Paramount	167	\$4,400,000	\$2,621,000	\$1,779,000
Pasadena	775	\$8,400,000	\$700,000	\$7,700,000
Pico Rivera	320	\$1,800,000	\$1,000,000	\$800,000
Pomona	725	\$45,000,000	\$3,564,000	\$41,436,000
Rancho Palos Verdes	607	\$5,100,000	\$1,600,000	\$3,500,000
Redondo Beach	291	\$6,765,000	\$665,000	\$6,100,000
Rolling Hills Estates	95	\$1,400,000	\$0	\$1,400,000
Rosemead	212	\$4,100,000	\$0	\$4,100,000
San Dimas	250	\$33,000,000	\$65,000	\$32,935,000
San Fernando	106	\$2,700,000	\$576,995	\$2,123,005
San Gabriel	183	\$5,100,000	\$500,000	\$4,600,000
San Marino	132	\$2,100,000	\$800,000	\$1,300,000
Santa Clarita	760	\$24,344,637	\$1,000,000	\$23,344,637
Santa Monica	360	\$4,940,000	\$4,940,000	\$0
Sierra Madre	78	\$497,251	\$497,251	\$0
Signal Hill	120	\$2,217,600*	\$2,217,600	\$0
South El Monte	304	\$2,360,000*	\$2,360,000	\$0
South Gate	267	\$54,000,000	\$1,500,000	\$52,500,000
South Pasadena	130	\$1,000,000	\$50,000	\$950,000
Temple City	147	\$900,000	\$0	\$900,000

Table 2 Unmet Cost Data				
Jurisdiction	Total Lane Miles	Backlog Response	Funding Response	Unmet Cost Data
Responding Jurisdictions				
Torrance	726	\$50,000,000	\$11,000,000	\$39,000,000
Vernon	146	\$11,600,000	\$1,940,000	\$9,660,000
Walnut	245	\$2,057,000	\$0	\$2,057,000
West Covina	566	\$5,185,000	\$800,000	\$5,105,000
West Hollywood	97	\$6,460,000	\$350,000	\$6,110,000
Westlake Village	73	\$559,000	\$254,000	\$305,000
Whittier	600	\$6,300,000	\$1,500,000	\$4,800,000
Subtotal	50,594	\$1,326,830,693	\$180,215,521	\$1,146,615,172
Unit Cost / Lane Mile		\$26,225	\$3,562	\$22,663
Extrapolated Jurisdictions				
Avalon	12	\$314,699	\$42,744	\$271,955
Bradbury	6	\$167,839	\$22,797	\$145,043
Calabasas	164	\$4,300,887	\$584,164	\$3,716,723
Glendora	350	\$9,168,232	\$1,245,266	\$7,922,966
Hidden Hills	2	\$52,450	\$7,124	\$45,326
La Habra Heights	82	\$2,150,443	\$292,082	\$1,858,362
Santa Fe Springs	286	\$7,500,327	\$1,018,725	\$6,481,602
Subtotal	902	\$23,654,878	\$3,212,901	\$20,441,977
County Total	51,497	\$1,350,485,571	\$183,428,422	\$1,167,057,149
* Symbol means backlog was changed to match funding				

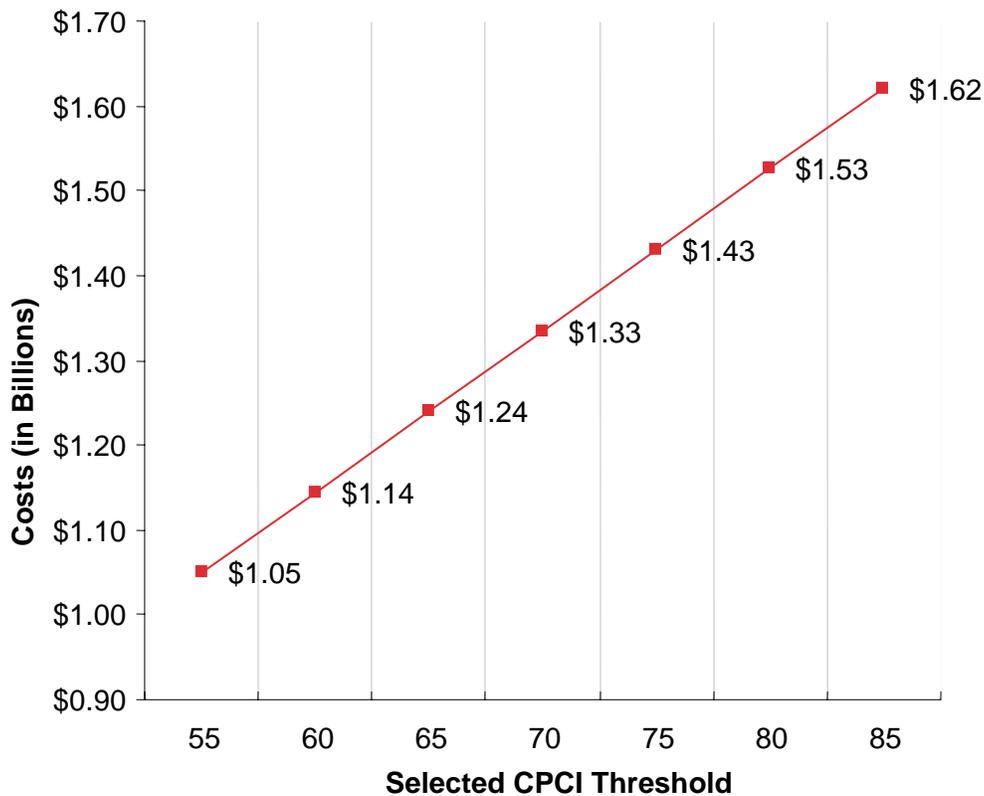
The second step was to normalize each jurisdiction's unmet cost data to a selected CPCI threshold. Normalized County unmet costs of arterial 3R backlog at selected CPCI thresholds were calculated using the Normalized Unmet Costs Tab in the Correlation Tool. The Normalized Unmet Costs Tab was originally named as the Cost Estimate Tab in the 2004 Correlation Tool. The tab has been updated to use the latest unmet cost data as described in the section above and renamed the Normalized Unmet Costs Tab to distinguish it from the new Normalized Annual Costs Tab.

The Normalized Unmet Costs Tab normalizes a jurisdiction's actual or extrapolated unmet cost by adjusting the value with the percent difference between a jurisdiction's normalized PCI threshold and the selected CPCI threshold. The percent difference serves to represent the estimated difference between the jurisdiction's PCI threshold and the selected countywide PCI threshold. For further details on the method used to calculate a jurisdiction's normalized unmet

backlog cost at a selected CPCI threshold, please refer to Technical Memorandum #4 in the 2004 Countywide Pavement Condition Index Study.

Many threshold levels including the county average can be selected as the CPCI Threshold input in calculating the normalized unmet cost. Figure 1 presents normalized county arterial 3R unmet backlog needs at various selected CPCI threshold levels, which is the final result of the two step process. The normalized county unmet backlog cost ranged between \$1.05 billion to \$1.62 billion for a CPCI threshold ranging from 55 to 85 respectively. When the selected CPCI threshold is set to the average normalized PCI threshold (not to be mistaken with the actual average PCI) of 62, the normalized county unmet cost was found to be \$1.18 billion. When the selected CPCI threshold is set to the most frequently occurring correlated PCI threshold of 70, the normalized county unmet cost was found to be \$1.33 billion.

Figure 1 Normalized Unmet Backlog Costs at Selected CPCI Thresholds



2.3 Normalized Arterial Annual 3R Costs to Maintain Threshold

Similar to the situation found when determining normalized county unmet costs, not all jurisdictions provided responses for annual costs to maintain thresholds, so the determination of a normalized county annual cost required two steps. The first step was to calculate extrapolated annual costs for jurisdictions with missing responses using a method that is similar to the one for

calculating extrapolated unmet costs. This method calculates a jurisdiction's annual cost by multiplying the jurisdiction's total arterial lane miles by a County unit annual cost per arterial lane mile. The County unit annual cost was found to be \$4,154 per arterial lane mile. This County unit cost was calculated by taking the total annual cost from jurisdictions that provided responses divided by the total lane miles from responding jurisdictions.

Table 3 presents the annual cost to maintain threshold data including responses from the survey, extrapolated values, and the estimated County unit annual cost per arterial lane mile. The top portion of the table shows the data from responding jurisdictions. The lower section contains the cities for which there were no responses and the data was extrapolated. This same table can be found in the Correlation Tool in a spreadsheet tab labeled "Data – Annual Costs". The data in this table is used in the Normalized Annual Costs Tab to calculate normalized costs. Refer to the Appendix to see the updated Correlation Tool.

Table 3 Annual Cost Data		
Jurisdiction	Total Lane Miles	Annual Cost Data
Responding Jurisdictions		
Alhambra	330	\$1,000,000
Arcadia	500	\$750,000
Artesia	62	\$200,000
Baldwin Park	229	\$690,000
Bell	86	\$76,000
Bell Garden	101	\$2,200,000
Bellflower	246	\$1,500,000
Beverly Hills	214	\$1,000,000
Burbank	546	\$14,545,000
Carson	420	\$2,200,000
Cerritos	364	\$2,000,000
Claremont	231	\$590,816
Commerce	153	\$1,000,000
Compton	415	\$3,000,000
Covina	274	\$2,700,000
Cudahy	62	\$275,000
Culver City	216	\$2,200,000
Diamond Bar	293	\$850,000
Downey	503	\$750,000
Duarte	110	\$300,000
El Segundo	130	\$800,000
Gardena	220	\$1,400,000
Glendale	790	\$8,930,000
Hawaiian Gardens	38	\$90,000
Hawthorne	390	\$1,000,000

Table 3 Annual Cost Data		
Jurisdiction	Total Lane Miles	Annual Cost Data
Responding Jurisdictions		
Hermosa Beach	88	\$637,760
Huntington Park	171	\$65,000
Industry	175	\$300,000
Inglewood	444	\$1,000,000
Irwindale	58	\$200,000
La Canada-Flintridge	180	\$500,000
La Puente	145	\$2,100,000
La Verne	235	\$1,000,000
Lakewood	425	\$2,800,000
Lancaster	1,137	\$4,000,000
Lawndale	85	\$500,000
Lomita	21	\$100,000
Long Beach	1,900	\$8,000,000
Los Angeles City	23,014	\$37,600,000
Los Angeles County Unincorporated	3,131	\$29,000,000
Lynwood	215	\$500,000
Malibu	94	\$50,000
Maywood	160	\$3,200,000
Monrovia	189	\$750,000
Montebello	300	\$17,364,161
Monterey Park	275	\$3,100,000
Norwalk	580	\$800,000
Palmdale	803	\$2,500,000
Paramount	167	\$385,000
Pasadena	775	\$2,200,000
Pico Rivera	320	\$1,000,000
Pomona	725	\$4,500,000
Rancho Palos Verdes	607	\$500,000
Redondo Beach	291	\$1,400,000
Rolling Hills Estates	95	\$320,000
Rosemead	212	\$490,000
San Dimas	250	\$500,000
San Fernando	106	\$300,000
San Gabriel	183	\$900,000
San Marino	132	\$70,000
Santa Fe Springs	286	\$3,000,000
Santa Monica	360	\$4,900,000
Sierra Madre	78	\$150,000

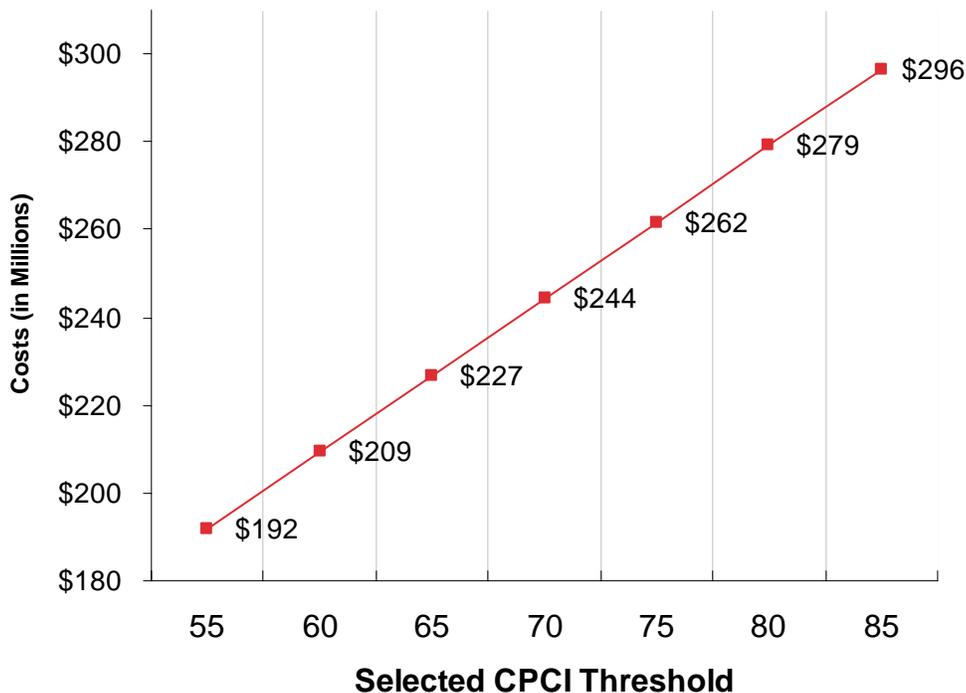
Table 3 Annual Cost Data		
Jurisdiction	Total Lane Miles	Annual Cost Data
Responding Jurisdictions		
Signal Hill	120	\$772,499
South Gate	267	\$450,000
South Pasadena	130	\$200,000
Temple City	147	\$70,000
Torrance	726	\$5,000,000
Vernon	146	\$3,000,000
Walnut	245	\$100,000
West Covina	566	\$100,000
West Hollywood	97	\$1,750,000
Westlake Village	73	\$600,000
Subtotal	47,852	\$198,771,236
Unit Cost / Lane Mile		\$4,154
Extrapolated Jurisdictions		
Agoura Hills	134	\$558,278
Avalon	12	\$49,846
Azusa	192	\$798,703
Bradbury	6	\$26,585
Calabasas	164	\$681,232
El Monte	363	\$1,509,345
Glendora	350	\$1,452,188
Hidden Hills	2	\$8,308
La Habra Heights	82	\$340,616
La Mirada	260	\$1,080,002
Manhattan Beach	264	\$1,096,618
Palos Verdes Estates	150	\$623,078
Santa Clarita	760	\$3,156,930
South El Monte	304	\$1,262,772
Whittier	600	\$2,492,313
Subtotal	3,644	\$15,136,815
County Totals	51,497	\$213,908,051

The second step was to normalize each jurisdiction's annual cost data to a selected CPCI threshold. Normalized annual costs at selected CPCI thresholds were calculated using the Normalized Annual Cost Tab in the Correlation Tool. The Normalized Annual Cost Tab was developed based on the Normalized Unmet Costs tab in the Updated Correlation Tool. The tab incorporates updated annual cost data as described in the section above.

The Normalized Annual Costs Tab normalizes a jurisdiction's actual or extrapolated annual cost by adjusting the value with the percent difference between a jurisdiction's normalized PCI threshold and the selected CPCI threshold. The percent difference serves to represent the estimated difference between the jurisdiction's PCI and the selected countywide PCI.

Many threshold levels including the county average can be selected as the CPCI threshold input in calculating the normalized annual cost. Figure 2 presents normalized county annual costs to maintain conditions without backlog at various selected CPCI levels, which are the results of the two step process. The normalized county annual cost to maintain thresholds ranged between \$192 million to \$296 million for a CPCI threshold ranging from 55 to 85 respectively. When the selected CPCI threshold is set to the average PCI threshold of 62, the normalized county annual cost to maintain threshold was found to be \$215 million. When the selected CPCI threshold is set to the most frequently occurring correlated PCI threshold of 70, the normalized county unmet backlog cost was found to be \$244 million.

Figure 2 Arterial Annual 3R Costs to Maintain Threshold



3.0 CONCLUSION

As stated in the 2004 Study, the relationship between the normalized PCI threshold and the normalized county backlog cost as well as the normalized county annual cost to maintain threshold are positively correlated - the higher the standard of pavement condition, the higher the level of 3R funding needed to meet and maintain the standard.

This 2007 study found that when the selected CPCI threshold is set to the average correlated PCI threshold of 62, then the normalized county unmet cost to address the 3R backlog needs for arterials within Los Angeles County is estimated to be \$1.18 billion. This is an increase from the 2004 study results, which found that when using the average correlated PCI threshold of 61 and 2002 cost data developed by Metro the total unmet backlog cost results in \$0.82 billion in FY 2002.

When the selected CPCI threshold is set to the average most frequently occurring correlated PCI threshold standard of 70, then the normalized county unmet cost to address the 3R unmet backlog needs for arterials within Los Angeles County is estimated to be \$1.33 billion. Again, this is an increase from the 2004 study results, which found that when using the most frequently occurring correlated PCI value of 70 and 2002 cost data developed by Metro the total unmet backlog cost is \$0.93 billion in FY 2002.

Table 4 compares the unmet backlog costs in FY 2002 and FY 2007 dollars. The comparison shows that the percent increase between the five years is at least 43% or 8.6% per year when using selected CPCIs of 61 and 70 – not adjusted for cost escalation. When the unmet backlog costs are compared to the 2007 costs using the escalation factor estimated by Bureau of Labor statistics Producer Price Index for Highway/Street construction, there is little change in unmet backlog. This difference is also shown in Table 4

Fiscal Year	Average Correlated PCI (61 in 2002; 62 in 2007)	Most Frequently Occurring Correlated PCI (70 in both)
2002	820	930
2002 escalated	1160	1,310
2007	1180	1,330
Difference	360	410
Percent Increase	43.9	43.0
% Increase/Year	8.8	8.6
Percent Increase 2002 escalated	1.7	1.5

When the selected CPCI threshold is set to the average correlated PCI threshold standard of 62, then the normalized county annual cost to maintain that threshold once the backlog is eliminated is estimated to be \$215 million. When the selected CPCI threshold is set to the most frequently occurring correlated PCI threshold standard of 70, then the normalized county annual cost to maintain that threshold once the backlog is eliminated is estimated to be \$244 million.