Final Report

January 2013

California Statewide Local Streets and Roads Needs Assessment

CSAC LEAGUE OF CALIFORNIA CITIES RTPA RCTF

California Statewide Local Streets and Roads Needs Assessment

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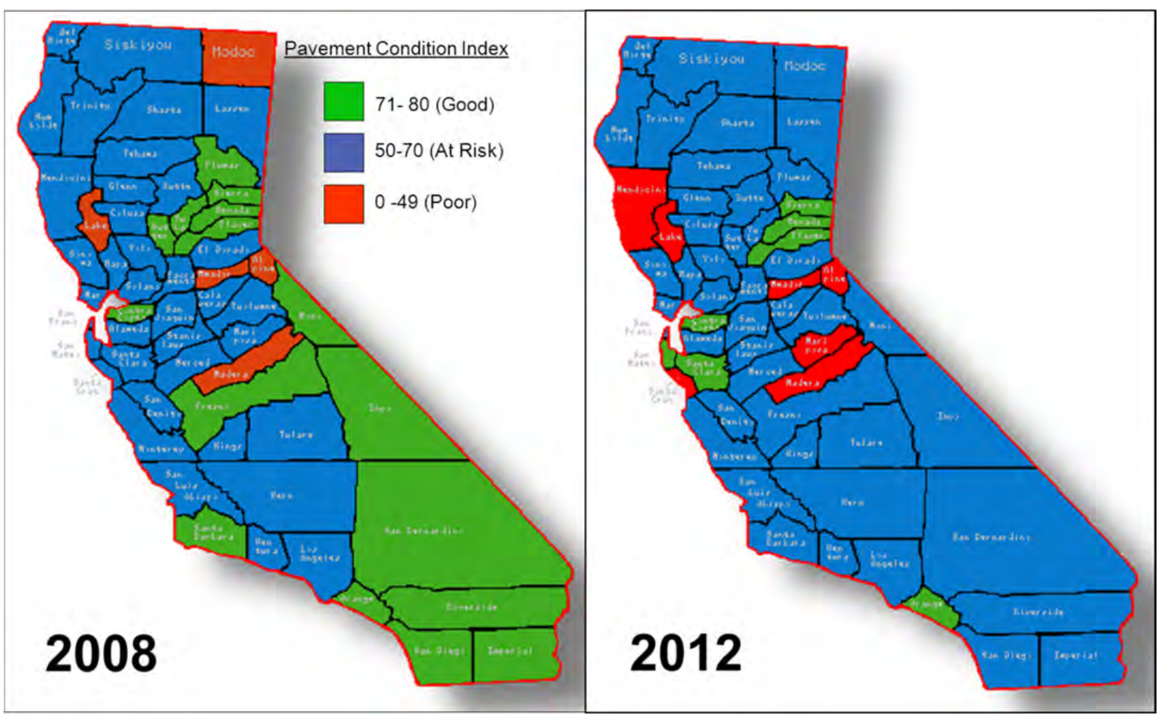
Abstract

California's local streets and roads system is in crisis, driving state and local governments to a decision point: either pay now to update communities' deteriorating thoroughfares, or pay much more later to replace them.

Due to an aging infrastructure, rising construction costs and budget constraints, the state's local road network is falling into disrepair at an alarming rate. With heavier vehicles, increasing traffic and the need to accommodate alternative modes of transportation—including buses, bicyclists, pedestrians, the disabled and school children—the demands on California's streets and roads are growing. At the same time, a growing percentage of streets and roads are in poor condition and in need of repair.

Cities and counties own and maintain 81 percent of California's roads, and these byways are the underpinning of California's statewide transportation network. From the moment we open our front door in the morning to drive to work, bike to school, walk to the bus station, or buy groceries, we are dependent upon our local streets and roads. Emergency responders and law enforcement rely on the network to save lives and keep us safe. It's hard to think of a single aspect of daily life that doesn't involve a local road.

The results of the *2012 California Statewide Local Streets and Roads Needs Assessment* show that there has been a steady downward trend in the pavement condition since 2008. The majority of California's counties now have an average pavement condition rating that is considered "at risk" (see maps below). Projections indicate that In 10 years, 25 percent of California's streets and roads will be in the "failed" category.



The state system encompasses bridges and safety and traffic components such as traffic signals, traffic signs, storm drains, sidewalks, and curbs and gutters. Public safety concerns intensify the urgency for state and local decision makers to come up with answers – and funding - for maintenance and repair.

This report shows that there is a funding shortfall of more than $82 billion over the next 10 years to bring the system up-to-date. The current funding level for the local system is $2.5 billion a year. Just maintaining the status quo for pavements will require an investment of an additional $1.9 billion a year. But that still doesn't resolve the issue that as California grows, its road system is aging and deteriorating rapidly.

Lack of any investment will undoubtedly result in higher costs to all users of the state's transportation system. Cars, bikes, school buses, and utility and emergency vehicles will find it more and more challenging to arrive at their destinations safely and reliably. If bridges fail or are closed for safety reasons, communities will be affected by long detours and delays. Water quality standards will be compromised. The ability to meet clean air standards becomes more difficult as expensive rehabilitation and reconstruction treatments are required.

The 2012 Assessment focuses on the transportation needs, but solutions must come from state and local governments, the Legislature, and the people of California. There's no question that new sources of revenue must be found. The cost to make our local streets and roads safe and reliable should be shared by everyone who uses and benefits from them, whether from the north or south, urban, suburban, or rural areas. Given that new technologies (e.g. hybrids and electric vehicles) continue to improve the efficiency of many types of transportation methods, transportation users must be open to new alternative funding mechanisms.

The bottom line is, Californians will have to work together to secure sustainable revenues to prevent our local streets and roads system from collapse.

The conclusions from this study are inescapable. Given existing funding levels available to cities and counties for maintaining their local systems, the condition of California's local streets and roads will continue to decline in the next 10 years. Unless this crisis is addressed, costs to maintain the local system will only continue to grow, while the safety, quality and reliability of California's local transportation network deteriorates.

We cannot afford to delay action. By investing in the state's local street and road system now, we can avert disaster and strengthen California's transportation future.

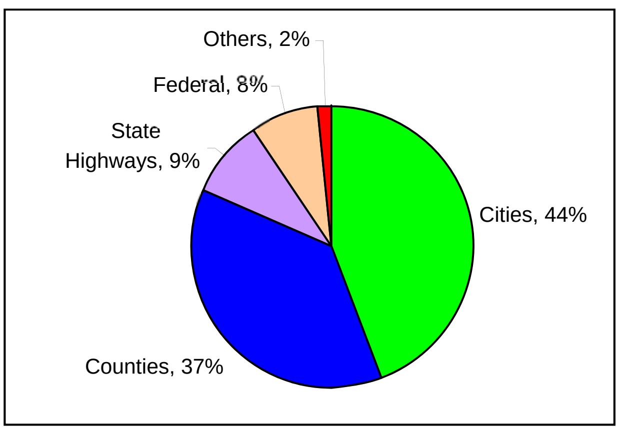
Executive Summary

California's local street and road system continues to be in crisis.

Every trip begins on a city street or county road. Whether traveling by bicycle, bus, rail, truck or family automobile, Californians need a reliable and well-maintained local street and road system. However, these are challenging times on many levels. Funding is at risk, and there is a significant focus on climate change and building sustainable communities, and the need for multi-modal opportunities on the local system has never been more essential. Every component of California's transportation system is critical to provide a seamless, interconnected system that supports the traveling public and economic vitality throughout the state. Sustainable communities cannot function without a well-maintained local street and road system.

The first comprehensive statewide study of California's local street and road system in 2008 provided critical analysis and information on the local transportation network's condition and funding needs. This 2012 needs assessment provides another look at this vital component of the state's transportation system and finds further deterioration and a growing funding shortfall.

As before, the objectives were to report the condition of the local system and provide the overall funding picture for California's local street and road transportation network. We needed answers to some important questions. What are the current pavement conditions of local streets and roads? What will it cost to repair all streets and roads? What are the needs for the essential components to a functioning system? How much is the funding shortfall? What are the solutions?



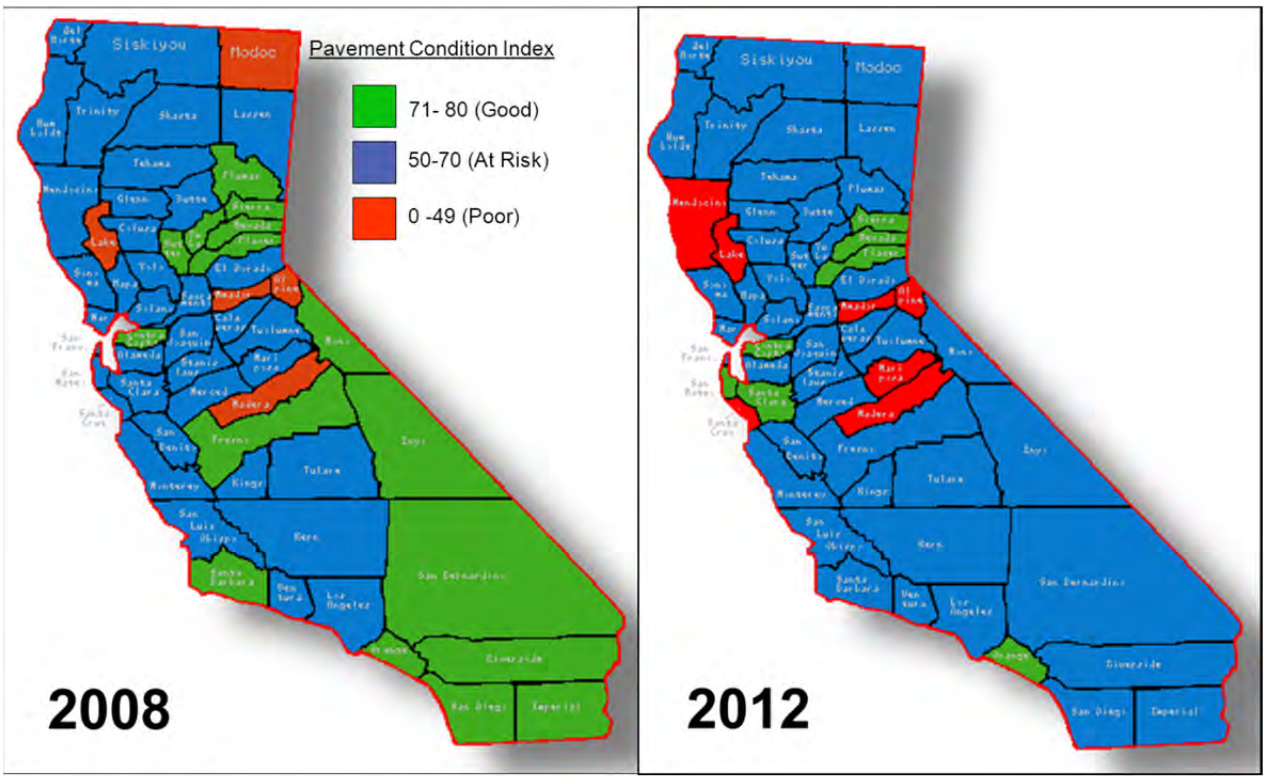
As owners of 81 percent of the state's roads, cities and counties found that the 2008 study was of critical importance for several reasons. While federal and state governments' regularly assess their system needs, no such data existed for the local component of the state's transportation network. Historically, statewide transportation funding investment decisions have been made without recognition of the particular requirements of the local system, and without local pavement condition data. Thus, this biennial assessment provides a critical piece in providing policy makers with a more complete picture of our transportation system funding needs.

The goal is to use the findings of this report to continue to educate policymakers at all levels of government about the infrastructure investments needed to provide California with a seamless, multi-modal transportation system. The findings of this study provide a credible and defensible analysis to support a dedicated, stable funding source for maintaining the local system at an optimum level. It also provides the rationale for the most effective and efficient investment of public funds, potentially saving taxpayers from paying significantly more to fix local streets and roads into the future.

This update surveyed all of California's 58 counties and 482 cities in 2012. The information collected captured data from more than 98 percent of the state's local streets and roads! This level of participation exemplifies the interest at the local level to provide comprehensive and defensible data in hopes of tackling this growing problem.

Pavements

The results show that California's local streets and roads are moving ever closer to the edge of a cliff. On a scale of zero (failed) to 100 (excellent), the statewide average pavement condition index (PCI) has deteriorated from 68 in 2008 to 66 ("at risk" category) in 2012. If current funding remains the same, the statewide condition is projected to deteriorate to a PCI of 53 by 2022. Even more critical, the unfunded backlog will increase from $40.4 billion to $66 billion. The maps illustrate the pavement deterioration that has resulted in each county since 2008.



To spend the taxpayer's money cost-effectively, it makes more sense to preserve and maintain our roads in good condition than to let them deteriorate, since deteriorated roads are more expensive to repair in the future. Consistent with that approach, the costs developed in this study are based on achieving a roadway pavement condition of what the industry calls Best Management Practices (BMPs). This condition represents improving the pavement condition to a level where roads need preventative maintenance treatments (i.e., slurry seals, chip seals, thin overlays). These treatments have the least impact on the public's mobility and commerce, and are more environmentally friendly than the next level of construction that would be required (i.e., rehabilitation and reconstruction).

The importance of this approach is significant. As roadway pavement conditions deteriorate, the cost to repair them increases exponentially. For example, it costs twelve times less to maintain a BMP pavement compared to a pavement that is at the end of its service life. Even a modest resurfacing is four times more expensive than maintenance of a pavement in the BMP condition. At a time when counties and cities are on fixed budgets, employing maintenance practices consistent with BMP results in treating four to twelve times more road area. By bringing the roads to BMP conditions, cities and counties will be able to maintain streets and roads at the most cost-effective level. It is a goal that is not only optimal, but also necessary.

Multiple funding scenarios were investigated to determine the impacts different funding levels would have on the condition of the roads. Five different scenarios were analyzed to determine the level of improvements achieved in ten years. The funding scenarios were as follows:

1. Existing funding levels of $1.33 billion/year – this is the current funding level available to cities and counties.
2. Additional $1 billion/year – this assumes an additional $1 billion is available through a yet to be determined revenue source.
3. Funding to maintain existing conditions ($3.23 billion/year) – this is the funding level required to maintain the pavement conditions at its current PCI of 66.
4. Efficiency measures to add $882 million/year – this assumes that new technologies to repair pavements may be implemented and which is estimated to save $882 million/year.
5. Funding required to achieve best management practices ($7.23 billion/year) – the optimal scenario is to bring all pavements into a state of good repair so that best management practices can prevail. After this, it will only require $2.4 billion a year to maintain the pavements at that level.

Three key performance measures were used to evaluate the impacts of each scenario and the results are summarized in the table below:

1. Pavement condition index
2. Percent of pavements in both good and failed condition
3. Cost savings achieved by not deferring repairs to a later date

Scenarios	Annual Budget ($B)	PCI in 2022	Condition Category	% Pavements in Failed Condition	% Pavements in Good Condition	Cost Savings* ($B)
1. Existing Funding	$1.33	53	At Risk	25%	46%	-
2A. No bond	$2.33	60	At Risk	23%	68%	$26
2B. Bond	$4.23/$1.33	63	At Risk	21%	71%	$34
3. Maintain PCI = 66	$3.23	66	At Risk	20%	78%	$44
4. Efficiency Savings	$4.11	71	Good	16%	83%	$59
5. Best Mgmt. Practices	$7.23	84	Excellent	0%	100%	$108

* Cost savings are compared to Scenario 1.

Essential Components

The transportation network also includes essential safety and traffic components such as curb ramps, sidewalks, storm drains, streetlights and signals. These components require $30.5 billion over the next 10 years, and an estimated shortfall of $21.8 billion.

Bridges

Local bridges are also an integral part of the local streets and roads infrastructure. There are 11,863 local bridges, and approximately $4.3 billion is needed to replace or rehabilitate them. There is an estimated shortfall of $1.3 billion.

Total Funding Shortfall

The table below shows the total funding shortfall of $82.2 billion over the next 10 years. For comparison, the 2008 and 2010 results are also included.

Summary of 10 Year Needs and Shortfall for 2008 through 2012($Billion)

Transportation Asset	Needs ($B)		2012		
	2008	2010	Needs	Funding	Shortfall
Pavement	$67.6	$70.5	$72.4	$13.3	$(59.1)
Essential Components	$32.1	$29.0	$30.5	$8.7	$(21.8)
Bridges	N/A	$3.3	$4.3	$3.0	$(1.3)
Totals	$99.7	$102.8	$107.2	$25.1	$(82.2)

What are the Solutions?

To bring the state's local street and road system to a best management practice level where the taxpayer's money can be spent cost effectively; we will need approximately $59.1 billion of additional funding for pavements alone and a total of $82.2 billion for a functioning transportation system over the next 10 years. The sooner this is accomplished, the less funding will be required in the future (only $2.4 billion/year will be needed to maintain the pavements after that).

If cities and counties do not get additional funding, the results will be disastrous for local streets and roads, and ultimately the entire transportation network, as all modes are interrelated. The fact that more than twice the current funding level is needed just to maintain the current conditions is alarming.

To bring the local system back into a cost-effective condition, thereby preserving the public's $189 billion pavement investment and stopping further costly deterioration, $8.2 billion annually in new funds are needed to stop the further decline and deterioration of the local street and road system. This is equivalent to a 56-cent per gallon gas tax increase.

The conclusions from this study are inescapable. Given existing funding levels available to cities and counties for maintaining the local system, California's local streets and roads will continue to deteriorate rapidly within the next 10 years. Unless this condition is addressed, costs to maintain the local system will only continue to grow, while the quality of California's local transportation network deteriorates.

It is imperative that cities and counties receive a stable and dedicated revenue stream for cost effective maintenance of the local system to avoid this crisis.

1. Introduction

California's 58 counties and 482 cities[1] own and maintain over 143,000 centerline-miles of local streets and roads[2]. This is an impressive 81 percent of the state's total publicly maintained centerline miles (see Figure 1.1 below). Conservatively, this network is valued at over $189 billion.

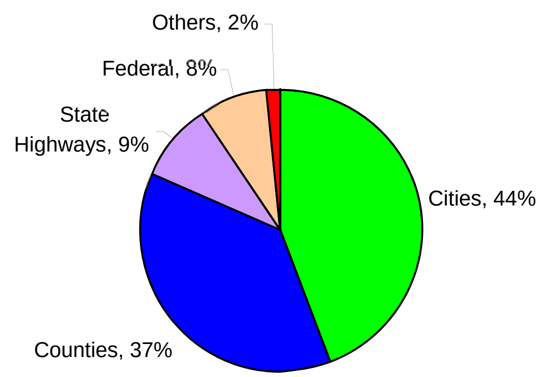


Figure 0.1 Breakdown of Maintained Road Centerline Miles by Agency[2]

Because lane-miles are more commonly used in pavement management analyses (the costs derived are based on areas, and lane-miles are a more accurate depiction of pavement areas), Table 1.1 shows the breakdown of lane-miles for local streets and roads by functional classification, as well as for unpaved roads. Major streets or roads are those that are classified as arterials or collectors, and local streets or roads are those that are classified as residentials and alleys. Unpaved roads are defined as those that have either dirt or gravel surfaces.

In addition, streets and roads are separated into urban and rural classifications. The distinction between urban and rural roads is defined by the U.S. Census Bureau: rural areas have population centers less than 5,000, or are areas with a population density below 1,000 persons per square mile. Urban areas have population centers with more than 5,000 people. However, an urbanized or rural area may or may not contain an incorporated city and the urban boundary does not necessarily follow city corporation lines. Ultimately, however, the decision to determine the miles in either category was left to the individual city or county.

[1] Four new Cities, Wildomar, Menifee, Eastvale and Jurupa Valley were incorporated after the original 2008 study. The first two were included in the 2010 updates, and all were included in the 2012 assessment. Note too that San Francisco is traditionally counted as both a city and a county, but for purposes of analysis, their data have been included as a city only.

[2] *2011 California Public Road Data – Statistical Information Derived from the Highway Performance Monitoring System*, State of California Department of Transportation, Division of Transportation System Information, October 2012. The total miles come from a combination of this reference and survey results.

Table 0.1 Breakdowns of Functional Classification & Unpaved Roads[2]

Lane-miles by Functional Class						
	Urban		Rural		Unpaved	Total
	Major	Local	Major	Local		
Cities	75,419	100,830	1,645	2,239	1,003	181,135
Counties	20,597	29,166	26,412	38,771	16,626	131,572
Totals	96,017	129,996	28,056	41,010	17,629	312,708
Note: San Francisco is included as a city only.						

From Table 1.1, it can be seen almost 77 percent of the total paved lane miles are in urban areas, with the remaining 23 percent in rural areas. It should also come as no surprise that more than 94 percent of rural roads belong to the counties. Conversely, 78 percent of urban roads belong to the cities. Finally, unpaved roads comprise approximately 5.6 percent of the total network, and over 94 percent of this belongs to the counties.

1.1 Study Objectives

In 2008, a study was conducted to assess the statewide needs for the local streets and roads network and the final report released in October 2009[3]. The intent of the 2008 study was to determine the funding required to maintain the local streets and roads system for the next 10 years, so that the information could be reported to the State Legislature and the California Transportation Commission (CTC), as well as other stakeholders.

The specific objectives of the 2008 study were summarized as a series of questions:

- What are the conditions of local streets and roads?
- What will it cost to bring them up to an acceptable condition?
- How much will it cost to maintain them in an acceptable condition for the next 10 years?
- Similarly, what are the needs for other essential components, such as safety, traffic and regulatory items?
- Is there a funding shortfall? If so, how much is it?
- What are the impacts of different funding scenarios?

[3] *California Statewide Local Streets & Roads Needs Assessment*, by Nichols Consulting Engineers, Chtd., October 2009.

In 2010, an update was performed and the objectives were essentially the same, with the addition of the last bullet to address different funding allocations. This was a result of the difficulties that the state faced with the state budget, where a potential deficit of more than $25 billion was projected for FY 2010-11.

This report is the culmination of the 2012 update, and in addition to addressing the same objectives above, also includes a discussion on funding scenarios for approximately 12,000 local bridges.

Finally, since the development of the pavement methodology to answer these questions was well documented in the 2008 study (in Appendix B), they have not been included in this 2012 update. Copies of both the 2008 and 2010 reports are available on www.SaveCaliforniaStreets.org.

1.2 Study Assumptions

As before, there were some important assumptions that were made during the analyses of the data received from cities and counties. Most are consistent with those used in the Caltrans 2011 State Highway Operation and Protection Program (SHOPP)[4]. The assumptions include (see Table 1.2):

- The analysis period used in this study is 10 years, which is consistent with the SHOPP.
- All numbers reported in this study are in constant 2012 dollars – this is consistent with the SHOPP.
- The pavement condition goal was to reach a condition where best management practices (BMP) can occur. This translates to a PCI in the low 80s (on a scale of 0 to 100, where zero is failed and 100 is excellent). Caltrans SHOPP defines performance goals quite differently, i.e., the goal is to reduce the percentage of distressed highways from 28 percent to 10 percent. This is further discussed in Section 4.6.
- It is assumed that no new streets or roads are added within the analysis period. In addition, capital improvement or expansion projects are not included, e.g. realignments, widening, grade separations etc. This is consistent with the SHOPP.
- The inclusion of safety, traffic and regulatory components of the roadway system such as sidewalks, ADA ramps, storm drains, etc. is consistent with the SHOPP. Bicycle and pedestrian facilities are also included.
- A detailed bridge needs assessment was included in this study, including the needs and the results of various funding scenarios.

1.3 Study Sponsors

This study was sponsored by the cities and counties of California and managed by the Metropolitan Transportation Commission (MTC). The Oversight Committee is composed of representatives from the following:

- League of California Cities (League)
- California State Association of Counties (CSAC)
- County Engineers Association of California (CEAC)
- California Regional Transportation Planning Agencies (RTPA)

[4] *Ten Year State Highway Operation & Protection Plan (FY 2012/13 to 2021/22)*, Caltrans, January 2011.

- California Rural Counties Task Force (RCTF)
- Metropolitan Transportation Commission (MTC)
- County of Los Angeles, Department of Public Works

Table 0.2 Summary of Assumptions Used in 2012 Study and SHOPP

Assumptions	2010 Study Update	Caltrans SHOPP
Analysis Period	10 years	10 years
Cost Basis	2012 dollars	2011 dollars
Goals	Best management practices (PCI = low 80's)	% of distressed pavements < 10%
Total Scenarios Evaluated	5	1
Capital Improvement Projects	No	Only related to operational improvement
Essential Components	Yes	Yes
Bridges	Yes	Yes

2. Pavement Needs Assessment

In this chapter, the methodology and assumptions used for the pavement needs assessment are discussed, and the results of our analyses presented. The data collection efforts are described in more detail in Appendix A.

2.1 Methodology and Assumptions

Since not all 540 cities and counties responded to the survey, a methodology had to be developed to estimate the pavement needs of the missing agencies. The following paragraphs describe in detail the methodology that was used in the study (note that this is consistent with the 2008 and 2010 studies).

2.1.1 Filling In the Gaps

Inventory Data

Briefly, this process was to determine the total miles (both centerline and lane-miles) and pavement areas, as this is crucial in estimating the pavement needs for an agency. Missing inventory data were populated based on the following rules:

- If no updated inventory data were provided, then the 2010 or 2008 survey data were used.
- If the inventory data provided was incomplete, Table 2.1 was used to populate the missing information. The average number of lanes and average lane width are summarized from agencies who submitted complete inventory data in the 2012 survey.

Table 2.1 Assumptions Used to Populate Missing Inventory Data

Functional Class	Average Number of Lanes	Average Lane Width (ft.)
Urban Major Roads	2.8	15.5
Urban Residential/Local Roads	2.1	15.5
Rural Major Roads	2	13.2
Rural Residential/Local Roads	2	11.7
Unpaved Roads	1.8	11.4

Pavement Condition Data

To assist those agencies who had no pavement condition data, the online survey provided a table with the average pavement condition index (PCI) collected in the 2010 study. They were then encouraged to look at the data from neighboring cities or counties to make their best estimate of the pavement condition in their agency.

The 2010 and 2012 surveys also asked for condition data for different functional classifications, and additional rules were developed to populate the missing data:

- If the PCI is provided for one but not the other functional classes, the same PCI was used for all functional classes.
- If no pavement condition data were provided in 2010 and 2012:
  - San Francisco Bay area agencies – data from the Metropolitan Transportation Commission (MTC) were used.
  - For all other agencies, their 2008 PCI was used, but we assumed a drop of 2 points. This drop is based on the PCI trend of the agencies that provided data in all three 2008, 2010 and 2012 surveys.

2.1.2 Pavement Needs Assessment Goal

The same needs assessment goal from the 2008 and 2010 studies were used in the 2012 update. To reiterate, the goal is for pavements to reach a condition where best management practices (BMP) can occur, so that only the most cost-effective pavement preservation treatments are needed. Other benefits such as a reduced impact to the public in terms of delays and environment (dust, noise, energy usage) would also be realized.

In short, the BMP goal is to reach a PCI in the low 80s and the elimination of the unfunded backlog. The deferred maintenance or "unfunded backlog" is defined as work that is needed, but is not funded. To perform these analyses, MTC's StreetSaver® pavement management system program was used. This program was selected because the analytical modules were able to perform the required analyses, and the default pavement performance curves were based on data from California cities and counties. This is described in detail in Appendix B of the 2008 report, which may be downloaded at www.SaveCaliforniaStreets.org.

Our goal is to bring streets and roads to a condition where best management practices (BMP) can occur.

2.1.3 Maintenance and Rehabilitation Treatment Types and Costs

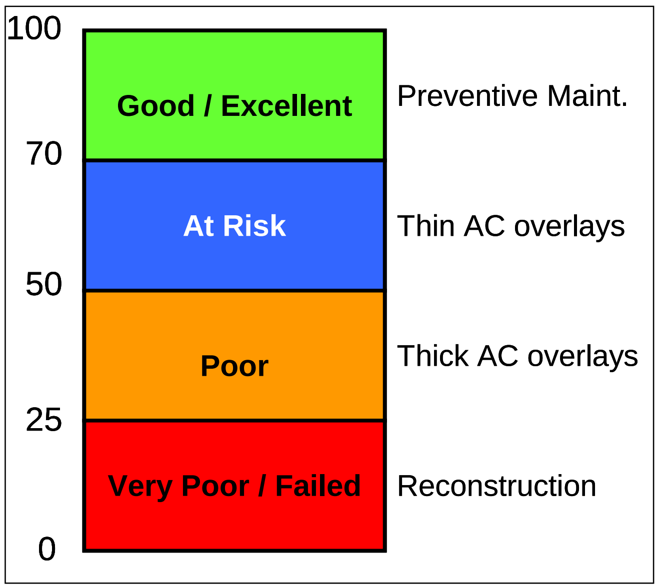
Assigning the appropriate maintenance and rehabilitation (M&R) treatment is a critical component of the needs assessment. It is important to know both the ***type*** of treatment, as well as ***when*** to apply it. This is typically described as a decision tree.

Figure 2.1 summarizes the types of treatments assigned in this study. Briefly, good to excellent pavements (PCI >70) are best suited for pavement preservation techniques, (e.g., preventive maintenance treatments such as chip seals or slurry seals). These are usually applied at intervals of five to seven years depending on the traffic volumes.

As pavements deteriorate, treatments that address structural adequacy are required. Between a PCI of 25 to 69, asphalt concrete (AC) overlays are usually applied at varying thicknesses. This may be accompanied by milling or recycling techniques.

Finally, when the pavement has failed (PCI<25), reconstruction is typically required. Note that if a pavement section has a PCI between 90 and 100, no treatment is applied. The descriptions used for each category are typical of most agencies, although there are many variations on this theme. For example, it is not unusual for local streets to have slightly lower thresholds indicating that they are held to lower condition standards. The PCI thresholds shown in Figure 2.1 are generally accepted industry standards.

Figure 2.1 PCI Thresholds & Treatments Assigned



Unit cost data from 211 agencies were summarized and averaged for the analysis (see Table 2.2). The range in costs for each treatment is for the different functional classes of pavements, i.e., major roads have a higher cost than local roads.

Table 2.2 Unit Costs Used for Different Treatments & Road Classifications

Classification	Unit Costs ($/square yard)			
	Preventive Maintenance	Thin AC Overlay	Thick AC Overlay	Reconstruction
Major Roads	$4.85	$18.82	$29.73	$68.48
Local Roads	$4.61	$18.04	$28.44	$60.31

It should be noted that the costs for preventive maintenance treatments (e.g., seals) increased significantly from 2008. This is attributed to the higher demand for seals in the past four years. There could be two reasons for this:

- The economic climate has forced many agencies to use less expensive treatments such as seals, when compared to overlays or reconstruction; and/or
- More agencies understand the advantages and cost-effectiveness of seals, and therefore their use is more widespread.

Interestingly, the cost for overlays and reconstruction actually declined in 2010 by approximately 5 percent for overlays, and as much as 30 percent for reconstruction. However, costs in 2012 showed small increases. Figures 2.2 and 2.3 illustrate the trends in the unit costs since 2008 for preventive maintenance and thin overlays, respectively.

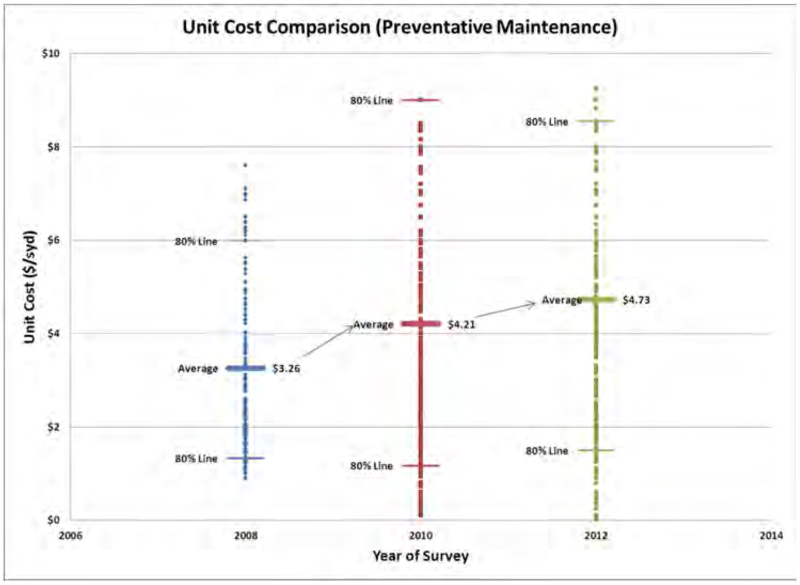


Figure 2.2 Unit Price Trends for Preventive Maintenance Treatments

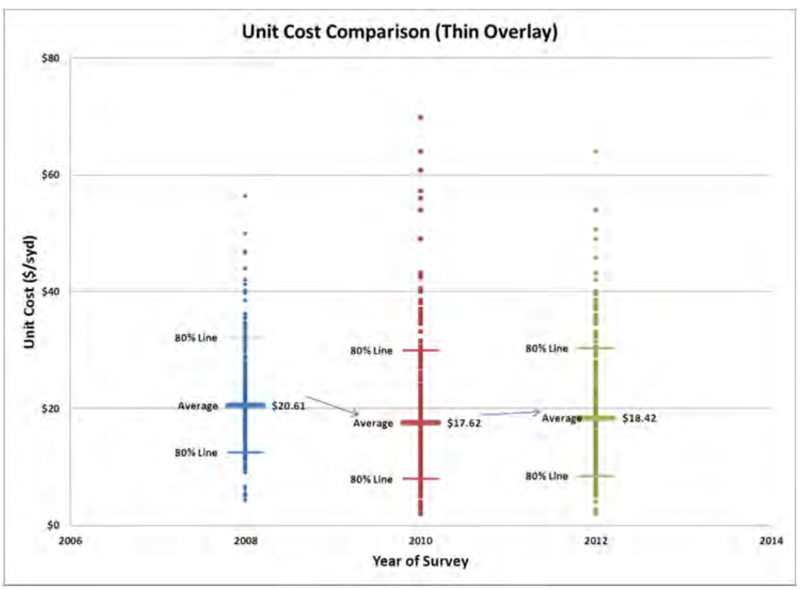


Figure 2.3 Unit Price Trends for Thin Overlays

These trends are reflected in the Asphalt Price Index[5] tracked by Caltrans (see Figure 2.4), which shows more than a 10-fold increase from 2000 to 2008, but then a drop of almost 50 percent in 2009 followed by increases in 2011 and 2012.

5 http://www.dot.ca.gov/hq/esc/oe/asphalt_index/astable.html

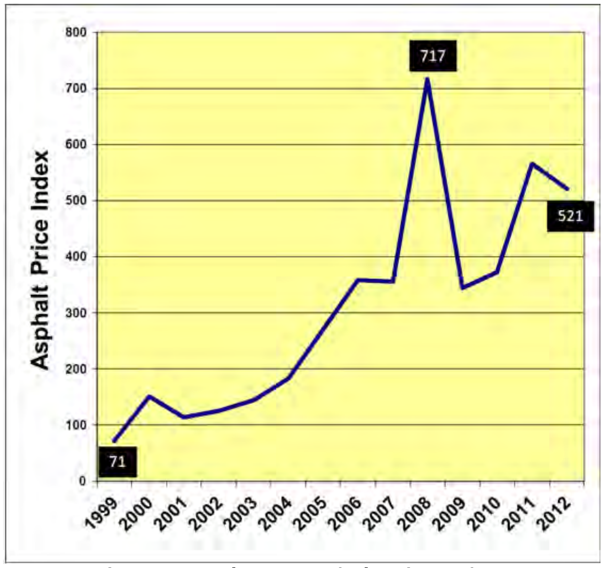


Figure 2.4 Caltrans Asphalt Price Index5

However, there is no expectation that the cost of road construction during the worst recession since the Great Depression will stay at this level for the next 10 years. Rather, most agencies have the opinion that this is a temporary situation. Given the volatility of crude petroleum prices in recent years, *it was decided that the 2008 unit costs for overlays and reconstruction would be used in this analysis.*

Finally, it should be noted that only asphalt concrete roads were considered in this analysis. The percentage of Portland cement concrete pavements was so small (less than 0.5 percent of the total network), that it was deemed not significant for this report.

2.1.4 Escalation Factors

As with the 2008 and 2010 studies, no escalation factors were used in this analysis. All numbers are in constant 2012 dollars, and this is consistent with the SHOPP as well as many Regional Transportation Plans (RTPs).

2.2 Average Network Condition

The average pavement condition index for streets and roads statewide dropped from 68 to 66. This rating is considered to be in the “at risk” category.

Based on the results of the surveys, the current (as of May 2012) pavement condition statewide is 66, a drop of approximately 2 points from 2008, when it was estimated to be 68. The average for Cities is 68 and that for Counties is 62. Table 2.3 includes the current pavement condition index (PCI) for each county (includes cities within the County). Again, this is based on a scale of 0 (failed) to 100 (excellent). This is weighted by the pavement area, i.e., longer roads have more weight than short roads when calculating the average PCI.

Table 2.3 Summary of PCI Data by County (including Cities) for 2008-2012

County (Cities Included)	Center Line Miles	Lane Miles	Area (sq. yd.)	Average Weighted PCI* 2008	2010	2012
Alameda County	3,534	7,982	81,700,384	66	67	68
Alpine County	135	270	2,029,409	40	45	45
Amador County	476	955	6,428,601	31	34	33
Butte County	1,782	3,643	32,578,860	70	67	65
Calaveras County	718	1,344	9,054,592	55	53	51
Colusa County	987	1,524	12,503,304	61	60	60
Contra Costa County	3,346	7,060	63,674,361	72	70	71
Del Norte County	334	675	5,545,540	70	68	64
El Dorado County	1,253	2,508	21,671,673	62	58	63
Fresno County	5,973	12,702	106,961,163	74	70	69
Glenn County	950	1,899	14,089,812	68	68	68
Humboldt County	1,476	2,931	24,138,809	61	56	64
Imperial County	3,000	6,087	45,427,410	74	72	57
Inyo County	1,134	1,652	13,789,051	75	57	60
Kern County	5,026	11,648	103,132,477	66	63	64
Kings County	1,328	2,796	20,026,009	63	62	62
Lake County	753	1,497	10,199,540	33	31	40
Lassen County	429	875	6,406,058	55	69	66
Los Angeles County	21,375	49,879	458,903,871	68	67	66
Madera County	1,822	3,680	23,490,290	48	48	47
Marin County	1,021	2,059	18,077,971	61	61	61
Mariposa County	1,122	561	3,949,440	53	44	44
Mendocino County	1,125	2,255	16,097,768	51	49	37
Merced County	2,330	4,954	37,182,870	57	58	58
Modoc County	1,512	3,034	18,066,419	42	40	56
Mono County	727	1,453	10,071,369	71	68	66
Monterey County	1,779	3,726	33,593,823	63	45	50
Napa County	716	1,489	12,453,529	53	60	59
Nevada County	798	1,617	10,438,504	72	71	72
Orange County	6,501	17,012	146,008,901	78	76	77
Placer County	1,983	4,192	34,161,920	79	77	71
Plumas County	704	1,409	11,409,902	71	66	66

County (Cities Included)	Center Line Miles	Lane Miles	Area (sq. yd.)	Average Weighted PCI* 2008	2010	2012
Riverside County	7,113	15,888	143,854,509	71	72	70
Sacramento County	5,042	11,264	95,668,492	68	66	64
San Benito County	411	833	5,547,794	68	66	66
San Bernardino County	8,823	20,554	171,322,286	72	70	70
San Diego County	8,134	20,258	179,755,199	74	69	67
San Francisco County	940	2,134	21,123,238	62	63	65
San Joaquin County	3,371	7,114	61,240,026	70	70	67
San Luis Obispo Co.	1,967	4,070	32,279,689	64	64	63
San Mateo County	1,872	3,912	33,486,613	69	70	71
Santa Barbara County	1,569	3,294	29,610,551	72	70	67
Santa Clara County	4,162	9,381	90,432,429	70	69	73
Santa Cruz County	856	1,752	13,764,053	52	48	48
Shasta County	1,687	3,479	26,243,076	64	67	57
Sierra County	499	1,001	8,010,229	73	71	71
Siskiyou County	1,495	3,005	20,340,302	57	57	57
Solano County	1,715	3,623	29,162,226	66	66	67
Sonoma County	2,373	4,960	39,517,285	53	50	50
Stanislaus County	2,718	5,899	47,866,381	60	51	52
Sutter County	1,029	2,106	15,865,482	73	56	56
Tehama County	1,197	2,401	15,834,143	69	65	65
Trinity County	916	1,608	12,529,435	52	50	50
Tulare County	3,957	8,181	60,632,842	66	68	68
Tuolumne County	533	1,229	16,984,138	62	62	62
Ventura County	2,440	5,353	47,701,134	64	66	69
Yolo County	1,400	2,538	21,752,974	69	67	63
Yuba County	724	1,504	12,862,583	74	56	56
TOTALS	143,092	312,708	2,666,650,735	68	66	66

* PCI is weighted by area.

From this table, we can see that the statewide ***weighted average*** PCI for all local streets and roads is 66. The PCI ranges from a high of 77 in Orange County to a low of 33 in Amador County. Again, it should be emphasized that the PCI reported above is only the ***weighted average*** for each county and ***includes*** the cities within the county. This means that Amador County may well have pavement sections that have a PCI of 100, although the average is 33.

The average PCI trend since 2008 tends to be downward, although some counties do show small improvements. This could be attributed to the better data collection (the quality of the pavement data collected in 2012 is significantly better than in 2008), better use of pavement preservation treatments, or the availability of additional funds such as local sales taxes or bonds.

In addition, Table 2.4 indicates that major streets or roads are in better condition than local roads. In fact, rural local roads have a significantly lower PCI of 56 than urban locals (PCI = 66).

Table 2.4 Average 2012 PCI by Type of Road

Type	Average 2012 PCI	
	Major	Local
Urban Streets	69	66
Rural Roads	66	56

As was discussed in the 2010 study, an average pavement condition of 66 is not especially good news. While it seems just a couple of points shy of the "good/excellent" category, it has significant implications for the future. Figure 2.5 illustrates the rapid pavement deterioration at this point in the pavement life cycle; if repairs are delayed by just a few years, the costs of the proper treatment may increase significantly, as much as ten times. The financial advantages of maintaining pavements in good condition are many, including saving the taxpayers' dollars with less disruption to the traveling public, as well as environmental benefits.

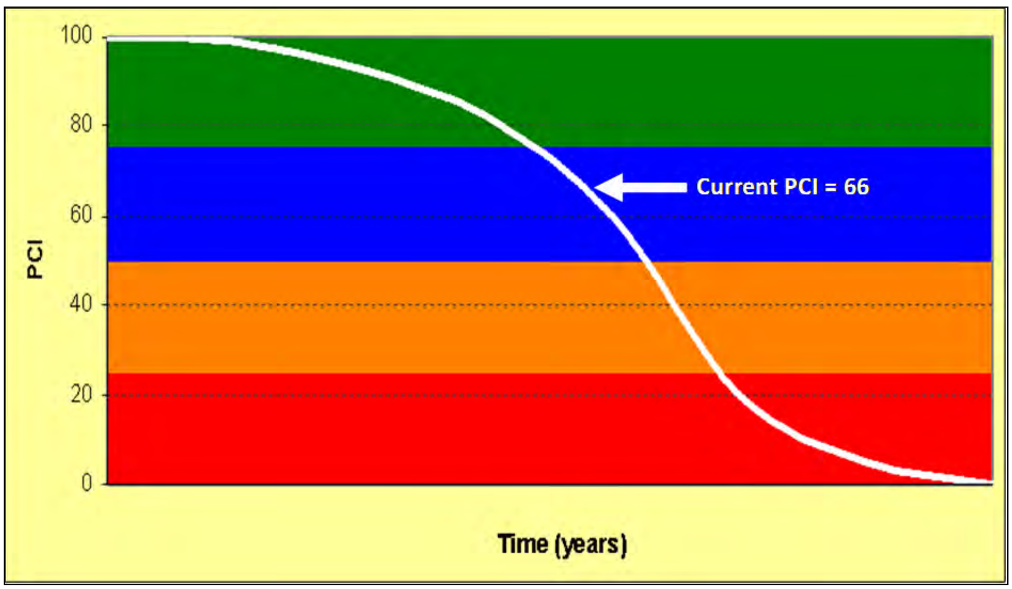


Figure 2.5 Generalized Pavement Life Cycle Curve

The factors that cause this rapid deterioration in pavement condition include:

- More traffic and heavier vehicles
- More transit and more frequent bus trips, including heavier buses
- Heavier and more garbage collection trucks (recycling and green waste trucks are new weekly additions to the traditional single garbage truck)
- More street sweeping for National Pollutant Discharge Elimination System (NPDES) requirements
- More freight and delivery trucks when the economy is thriving

Therefore, a PCI of 66 should be viewed with caution – it indicates that our local streets and roads are, as it were, poised on the edge of a cliff. Figure 2.6 is an example of a local street with an average condition of 66.

Figure 2.6 Example of Local Street with PCI = 66

Figure 2.7 shows the distribution of pavement conditions by county for both 2008 and 2012. As can be seen, a majority of the counties in the state have pavement conditions that are either "At Risk" (blue) or in "Poor" (red) condition. There has been an increase in the "blue" and "red" counties from 2008. Of the 58 counties, 49 are either "At Risk" or in "Poor" condition.

Only 56% of California's local streets and roads are in good condition.

Finally, despite their color, none of the "green" counties have a PCI greater than 77; in fact, the majority are in the low 70's, indicating that they will turn "blue" in a few year unless there are significant improvements in funding.

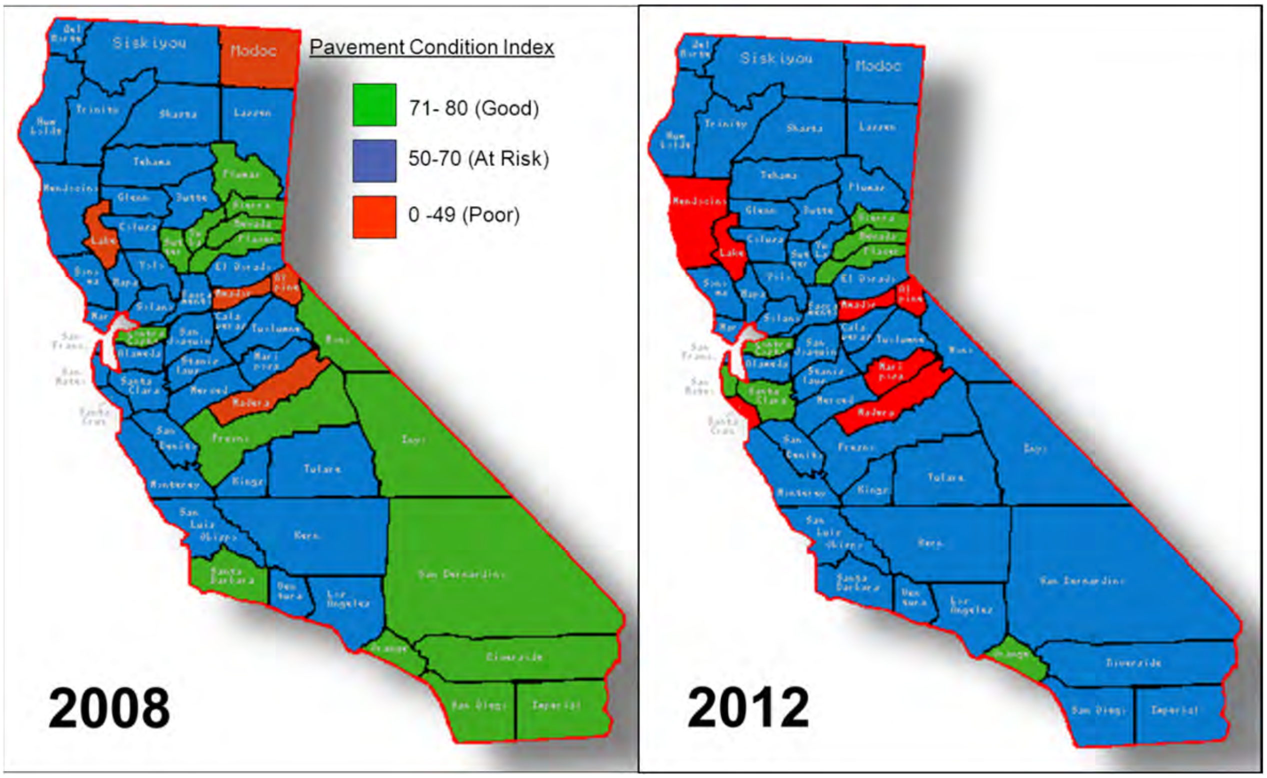


Figure 2.7 Average PCI by County for 2008 and 2012

2.3 Sustainable Pavement Practices

A new section on sustainable pavement practices was added to the survey in 2012. Cities and counties were asked what for information on any sustainable pavement practices they employed and the estimated cost savings, if any. The types of sustainable practices that were mentioned included:

- Reclaimed asphalt pavement (RAP)
- Cold-in-place recycling (CIR)
- Full depth reclamation (FDR)
- Pavement preservation strategies
- Warm mix asphalt
- Porous/pervious pavements
- Rubberized asphalt concrete (RAC)

Some sustainable pavement strategies may have cost savings up to 36%.

The responses were very encouraging; over 300 agencies responded with some information on the types of sustainable practices. Table 2.5 summarizes these responses; CIR, FDR and pavement preservation stratgies were reported to have the highest cost savings when compared with conventional treatments, in the order of 35 percent, 30 percent and 36 percent, respectively. Other sustainable treatments incurred additional costs, particularly rubberized AC (18 percent). The responses for warm mix asphalt and porous/pervious pavements were insufficient to draw any conlusions.

Table 2.5 Summary of Responses on Sustainable Pavement Strategies

Sustainable Pavement Strategies	No. of Agencies			Average % Savings	Average % Additional costs
	No. of Responses	Savings	Add'l Costs		
Recycled AC Pavement	66	28	5	-7%	-
Cold in place recycling	40	18	3	-35%	-
Full depth reclamation	61	16	5	-30%	-
Pavement preservation	145	33	18	-36%	-
Warm mix AC*	31	4	4	-	-
Rubberized AC	133	12	46	-	18%
Porous/pervious pavements*	14		5	-	-

* Insufficient data

The most common reasons cited for using sustainable practices were:

- Cost savings or cost effective
- Environmental benefits e.g. greenhouse gas reduction, reduces energy consumption, uses less natural resources, reduces landfills, reuses existing pavement materials, recycles tires etc. (Note that every lane-mile that is recycled in-place is equivalent to removing approximately 11 cars off the road.)
- Extends pavement life
- Positive community benefits e.g., quieter pavements

Every lane-mile that is recycled in-place is the equivalent of removing 11 cars off the road.

The most common reasons cited for not using sustainable practices were:

- Additional costs (mostly related to rubberized AC) or higher up-front costs
- More inspections required from agency staff
- Uncertainty over pavement performance
- Lack of experienced contractors to bid on projects
- Not all streets are good candidates for these treatments e.g. limited right of way

The fact that 60 percent of the cities and counties in California reported using some form of sustainable pavement practices was very encouraging, particularly when one considers the potential cost savings involved. This is clearly evidence of local agencies using newer technologies to "stretch the dollar".

2.4 Complete Streets

Similarly, a new section on"Complete Streets" was included in the survey. A complete streets policy ensures that transportation planners and engineers consistently design and operate the entire roadway with all users in mind - including bicyclists, public transportation vehicles and riders, and pedestrians of all ages and abilities. For purposes of this study, the focus is on bicycle and pedestrian facilities. Figure 2.8 is an example of a street that considers alternative modes of transportation i.e. pedestrians, bicyclists, buses and drivers, as well as curb ramps that are in compliance with the American Disabilities Act (ADA).

Figure 2.8 Example of Complete Streets Element

There were 267 responses to this section; 52 indicated that they had a complete streets policy, 152 indicated they had none, and 63 indicated they did not know. A few indicated that although they did not have a policy in place, there were plans to implement one in the near future, or that elements of a complete streets approach were considered in design regardless of any policy direction. Of the respondents who did have a policy in place, they indicated that the following elements were included:

- Bicycle facilities
- Pedestrian facilities
- Traffic signs
- Curb ramps
- Landscaping
- Medians
- Street lighting

On average, the respondents also indicated that 35 percent of their street and road network were eligible for including some of the above elements, and that the median additional costs were $50 per square yard. However, there was a large range in the cost data provided ($2/sy to $726/sy), so caution is required before using any of these costs.

Complete streets may have very different applications in a rural road vs. an urban street. Many rural roads are long, in remote areas and may have as little as 50 vehicles a day, with no pedestrians or bicyclists. Obviously, these will not be candidates for a complete street approach. The typical examples tend to be focused on urban roads, where the population density can support multiple modes of transportation.

2.5 Unfunded Mandates

A new section on "Unfunded Mandates" was also included in the survey. There were three primary unfunded mandates that cities and counties have to comply with:

1. American Disabilities Act of 1990 (ADA)
2. National Pollutant Discharge Elimination System (NPDES)
3. Traffic sign retroreflectivity

There were 135 responses on ADA, 127 on NPDES and 117 on traffic sign retroreflectivity. Of the respondents, they identified $1.45 billion in needs and only $782 million in funding, or approximately 54 percent (see Table 2.6). However, since many of the agencies did not track these costs separately, the data provided were identified as "guesses" or "informed estimates".

Table 2.6 Unfunded Mandates (Needs and Funding)

Unfunded Mandates	Needs ($M)	Funding ($M)	Shortfall ($M)
ADA	$529	$179	$(350)
NPDES	$816	$546	$(270)
Traffic Signs	$103	$58	$(45)
Totals	$1,447	$782	$(665)

2.6 Unpaved Roads

The needs assessment for unpaved roads is much simpler – 98 agencies reported data for a total unpaved road network of 9,841 centerline miles. The average cost of maintenance is $9,800 per centerline mile per year. Since pavement management software like StreetSaver® only analyzes paved roads, the average cost for unpaved roads from the survey was used for those agencies that did not report any funding needs.

This results in a total 10-year need of $964.4 million for the next 10 years.

2.7 Pavement Needs

The determination of pavement needs and unfunded backlog were described in detail in the 2008 report (see Appendix B[3] of 2008 report) and is therefore not duplicated here, but to briefly summarize, it requires four main elements for the analysis:

- Existing condition, i.e., PCI
- Appropriate treatment(s) to be applied from decision tree and unit costs
- Performance models
- Funding available during analysis period

The calculation of the pavement needs is conceptually quite simple. Once the PCI of a pavement section is known, a treatment and unit cost can be applied. This is performed for all sections within the 10-year analysis period. A section may receive multiple treatments within this time period, e.g., Walnut Avenue may be overlaid in Year 1, and then slurried in Year 5 and again in Year 10.

As before, the deferred maintenance or "unfunded backlog" is defined as work that is needed, but is not funded. It is possible to fully fund ***all*** the needs in the first year, thereby reducing the backlog to zero. However, the funding constraint for the scenario is to achieve our BMP goal within 10 years. Assuming a constant annual funding level for each scenario, the backlog will gradually decrease to zero by the end of year 10.

The results are summarized in Table 2.7 and indicate that $72.4 billion is required to achieve the BMP goals in 10 years. Again, this is in constant 2012 dollars. Detailed results by county are included in Appendix B.

Table 2.7 Cumulative Pavement Needs

Cumulative Needs (2012 dollars)		
Year No.	Year	Reach BMP Goal in 10 Years ($ Billion)
1	2013	$7.2
2	2014	$14.5
3	2015	$21.7
4	2016	$29.0
5	2017	$36.2
6	2018	$43.5
7	2019	$50.7
8	2020	$58.0
9	2021	$65.2
10	2022	$72.4

Pavement needs have increased to $72.4 billion.

In 2010, the total 10-year need was $70.5 billion, so this is an increase of $1.9 billion or approximately 2.7 percent.

3. Essential Components' Needs Assessment

The analyses for the essential components (i.e., safety, traffic and regulatory elements) are quite different from those for the pavements. In 2008, a regression equation was developed to determine first the replacement costs, and from that, the ten year needs were calculated. For 2012, the regression equation was re-evaluated and a minor adjustments made, which are discussed in more detail below.

3.1 Data Collection

A total of 341 survey responses were received compared to 188 in 2008 and 296 in 2010. This was a significant improvement. To recap, agencies were asked to provide specific information on the inventory and replacement costs for the following twelve asset categories:

Asset Category	Essential Components
1	Storm Drains
2	Curb and gutter
3	Sidewalk (public)
4	Curb ramps
5	Traffic signals
6	Street Lights
7	Sounds Walls/Retaining walls
8	Traffic signs
9	Other elements e.g. manholes, inlets, culverts, pump stations etc.
10	NPDES (addressed through the case studies)
11	Other ADA compliance needs
12	Other physical assets or expenditures

In the 2008 analysis, only the first eight categories were included because we had little or no data on the last four categories. In the 2010 update, significantly more data on the last four categories were received, so our approach was modified to address them. Essentially, we used the model from 2008 to determine the needs of the first eight categories, and then added the needs of the remaining four categories as a percentage.

3.2 Model Verification

The regression model developed in 2008 for the replacement cost of the **first eight categories** was:

$$\ln Cost = 17.9 + 0.00189\ Total\ Miles - 2.09\ Type\_Rural + 0.682\ Climate\_Central$$

where:

Cost = total replacement cost, dollars

Total miles = total centerline miles of roads or streets
Type_Rural = indicator variable and is equal to 1 if agency is rural, 0 otherwise
Climate_Central = indicator variable and is equal to 1 if agency is along the central coast, south coast or inland valley

As part of the calculations, we first wanted to verify that the model was still valid. The first step was to compare the "actual" replacement costs reported by the survey responses to that "predicted" by the model. The results are shown below in Figure 3.1, where the cumulative replacement cost is plotted against the centerline miles for each agency. The blue portion indicates the actual replacement costs reported from the survey, and the tan line is the predicted costs. As can be seen, the "predicted" costs begin to deviate significantly from the "actual" costs when the size of an agency approaches 1900 centerline miles. In other words, the model provides a reasonable prediction as long as the agency has less than 1900 miles.

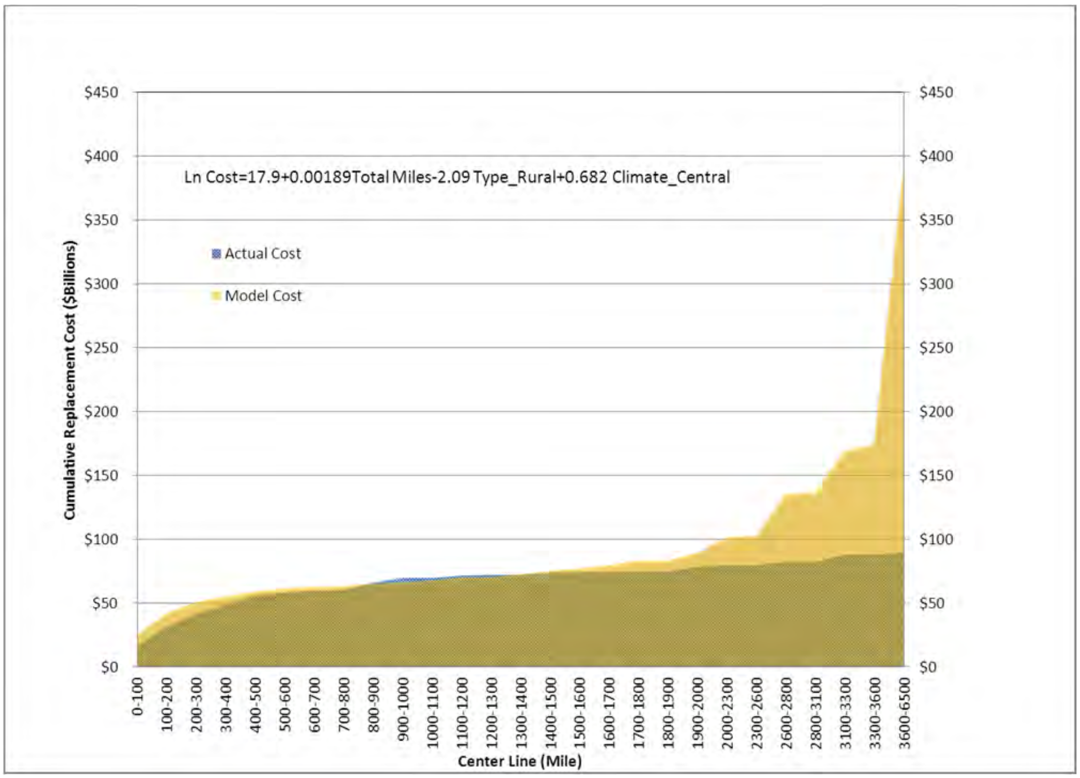


Figure 3.1 Comparisons of Actual and Predicted Replacement Costs (2008 Model)

When we consider that the original data set used to develop the model was limited (less than 60 agencies), this was not surprising. Therefore, the 2012 data was used to derive an improved model. The new regression equation is:

$$\text{Ln Cost}=15.0+0.726 \text{ Total Miles}^{1/3} - 0.00268 \text{ Total Miles} -2.13 \text{ Type\_Rural} + 0.329 \text{ Climate\_Central} + 3.5 \text{ Large}$$

Note that a new variable is added, for large agencies with network greater than 1900 miles. Using this model, Figure 3.2 shows the comparisons between "actual" and "predicted" replacement costs. As can be seen, the predicted costs for the large agencies now closely match the actual costs. The R^2 was 0.51, which is an improvement over the 2008 model.

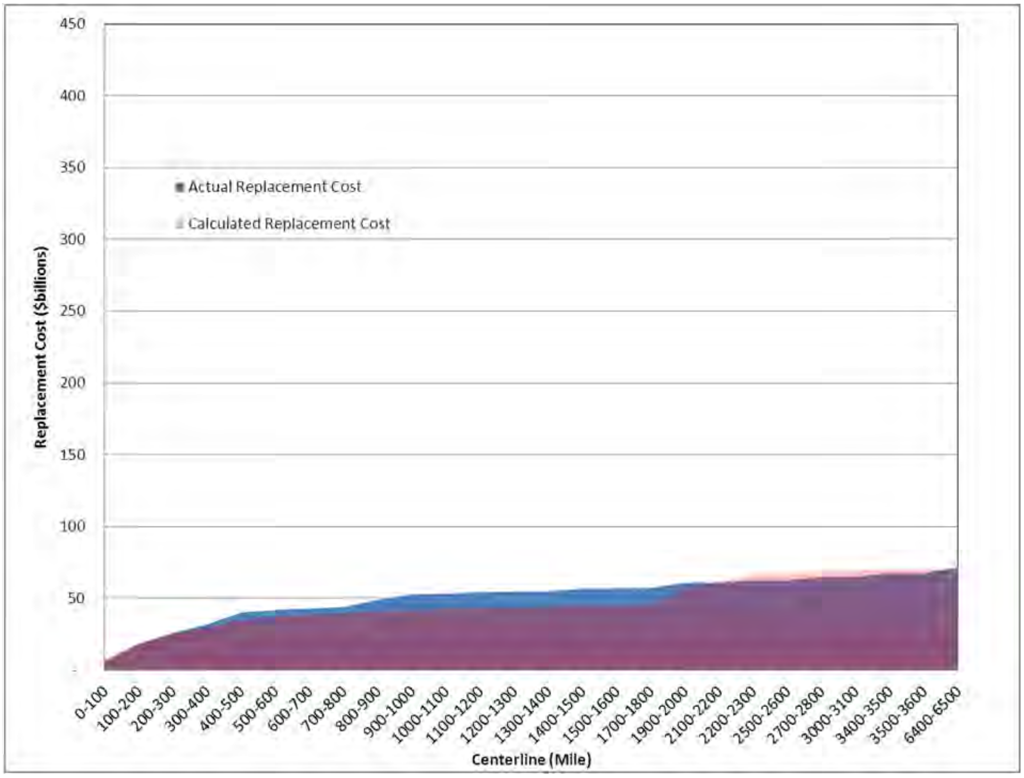


Figure 3.2 Comparisons of Actual and Predicted Replacement Costs (2012 Model)

3.3 Determination of Essential Components' Needs

The revised or new regression model estimates the total replacement cost for only the first eight categories. To estimate the needs, this cost needs to be converted to an annual amount based on the estimated service life of the different non-pavement assets. This procedure was described in detail in Appendix D of the 2008 report and has not been duplicated here.

The 10-year needs figure was estimated to be $30.5 billion, which is an increase from the $29.1 billion reported in 2010.

The funding needs for essential components is $30.5 billion.

4. Funding Analyses

4.1 Pavement Revenue Sources

The online survey also asked agencies to provide both their revenue sources and pavement expenditures for FY 2011-12, FY 2012-13, as well as estimating an annual average for future years. Only 238 agencies responded with financial data this year, compared to 300 in 2010, and only 137 in 2008. Although it was a disappointment to see this decrease in responses, nonetheless, valuable data were gathered.

As before, cities and counties identified a myriad of sources of funds for their pavement expenditures, broadly categorized into federal, state, or local. For local funds alone, more than a hundred different sources were identified. They included the following examples (this is by no means an exhaustive list):

Federal Funding Sources

- American Recovery and Reinvestment Act (ARRA)Stimulus Funds
- Community Development Block Grants (CDBG)
- Congestion Mitigation & Air Quality Improvement (CMAQ)
- Forest Reserve
- Hazard Elimination Safety (HES)
- High Risk Rural Roads (HR3)
- Highway Safety Improvement Program (HSIP)
- Regional Surface Transportation Program (RSTP)
- Safe Routes to School (SRTS)
- Transportation Enhancement Activities (TEA)
- Others such as emergency relief

State Funding Sources

- Bicycle Transportation Account (BTA)
- Gas taxes (Highway User Tax Account or HUTA)
- Proposition 1B
- Proposition 42/AB 2928
- State Transportation Improvement Program (STIP)
- AB 2766 (vehicle surcharge)
- Safe Routes to School (SR2S)
- AB 1546 Vehicle License Fees (VLF)
- CalRecycle grants
- State Local Partnership Program (SLPP)
- State Water Resource Control Board
- Traffic Congestion Relief (TCRP)
- Transportation Development Act (TDA)

- Traffic Safety Fund
- Transportation Uniform Mitigation Fee (TUMF)

Local Funding Sources

- Development Impact Fees
- General funds
- Local sales taxes
- Various assessment districts – lighting
- Redevelopment
- Traffic impact fees
- Traffic safety/circulation fees
- Utilities
- Transportation mitigation fees
- Parking and various permit fees
- Flood Control Districts
- Enterprise Funds (solid waste and water)
- Investment earnings
- Parcel taxes

Table 4.1 summarizes the total pavement funding available as well as by the percentage of funding sources from the different categories for FY 2008-09 to FY 2011-12 and the estimated funds available for future years. The breakdown is similar to the results from the 2010 study.

Table 4.1 Funding Sources for Pavements

	2008/09	2009/10	2010/11	2011/12	Future
Pavement Funding ($M)	$1,453	$1,571	$1,557	$1,530	$1,331
Federal	10%	23%	18%	16%	10%
State	62%	49%	53%	53%	59%
Local	28%	27%	29%	30%	31%

Cities and counties receive almost 60% of their funding from the State.

As before, the important item to note is that cities and counties do not rely heavily on federal funds, with the exception of ARRA in FY 2009/10 and 2010/11. Rather, state and local funds typically make up almost 90 percent of pavement funding, with state funds as the predominant source at 59 percent.

The Highway User Tax Account (HUTA), more commonly known as the gas tax, is by far the single largest funding source for cities and counties. Table 4.2 shows an increasing dependence on a declining revenue source. Part of this is due to declining gas consumption because of more gas-efficient and electric vehicles, and partly this is also due to the additional responsibilities for most cities and counties e.g. compliance with the American Disabilities Act (ADA) in the form or curb ramps and sidewalk, which reduces the amount of funding available for pavements.

Table 4.2 Gas Tax Trends for Pavements

	2008/09	2009/10	2010/11	2011/12	Future
Total Gas Tax ($M)	$1,115	$911	$861	$907	$1,071
% of State funding	66%	69%	75%	78%	91%
% of total funding	41%	34%	40%	41%	53%

Traditionally, cities and some counties have been able to rely on the General Fund for pavement funding. However, as Table 4.3 illustrates, the number of agencies who receive General Funds is markedly declining. Given the economic climate, it is expected that this trend will continue in the near future.

Table 4.3 General Fund for Pavement Funding

	2008/09	2009/10	2010/11	2011/12	Future
Total General Fund ($M)	$201	$120	$175	$168	$109
# of agencies	132	62	77	72	40
% of local funding	27%	16%	28%	25%	17%
% of total funding	7%	4%	8%	8%	5%

Of final interest is the trend in local sales tax measures that have passed. Table 4.4 shows an increasing reliance on the revenues from this source. Although it was only 10 percent of total pavement revenues in the previous two years, that is expected to jump to 16 percent beginning in FY 2012-13.

Table 4.4 Local Sales Tax Trends

	2008/09	2009/10	2010/11	2011/12	Future
Total Sales Tax ($M)	$285	$258	$256	$279	$316
% of local funding	38%	35%	41%	42%	51%
% of total funding	10%	10%	12%	13%	16%

4.2 Pavement Expenditures

The survey also asked for a breakdown of pavement expenditures in four categories:

- Preventive maintenance, such as slurry seals
- Rehabilitation and reconstruction, such as overlays
- Other pavement related activities such as curbs and gutters
- Operations and maintenance

Table 4.5 shows the breakdown in extrapolated pavement expenditures for cities, counties and cities/counties combined. These were consistent for all the years reported. Encouragingly, approximately 17 percent of future pavement expenditures are for preventive maintenance, which indicates that many agencies are cognizant of the need to preserve pavements. One category, “Operations and maintenance” are expenditures that are related to the pavements, such as filling potholes, sealing cracks, street sweeping etc. This category is expected to grow in the future due to new regulatory requirements such as street sweeping to comply with NPDES requirements, tree trimming, complying with new traffic sign retroreflectivity standards, upgrading curb ramps in compliance with the American Disabilities Act (ADA) etc.

Table 4.5 Breakdown of Pavement Expenditures ($M)

Repair Type	2008/09	2009/10	2010/11	2011/12	Future
Preventive maintenance	$394	$375	$273	$273	$234
Rehabilitation & reconstruction	$1,224	$1,400	$817	$794	$542
Other	$200	$172	$84	$82	$78
Operations & maintenance	$573	$543	$383	$381	$477
Totals	$2,391	$2,489	$1,557	$1,530	$1,331

Cities and counties are estimated to spend $1.33 billion annually on pavements. This is only 0.7% of the total invested in the pavement network.

On average, anticipated pavement expenditures for the next ten years are expected to be **$5,711/lane-mile for counties** and **$7,400/lane-mile for cities.** The resulting total pavement expenditures for all 540 cities and counties were therefore estimated to be $1.331 billion annually. To put this funding level in perspective, $1.33 billion/year is only 0.7 percent of the total investment in the pavement network, which is estimated to be $189 billion.

4.3 Essential Components' Revenue Sources

Similarly to the analysis in Section 4.1, the revenue sources for the essential components is shown in Table 4.6 below. Again, federal funds have a small contribution to the cities and counties, in the order of 16 percent. However, unlike pavements, local sources now account for almost 50 percent of total funding, with state sources only accounting for 37 percent.

Table 4.6 Funding Sources for Essential Components ($M)

Funding type	2010/11	2011/12	Future
Funding Available ($M)	$885	$903	$873
Federal	16%	16%	16%
State	31%	31%	37%
Local	53%	53%	47%

Since local revenues form the majority of the funding, Table 4.7 explores the four main funding sources: general funds, development fund, local sales taxes and other. In the last category are mostly stormwater, sanitary, NPDES related sources. Again, the overall trend shows significantly declining revenues.

Table 4.7 Local Revenue Sources for Essential Components ($M)

Funding type	2010/11	2011/12	Future
Sales Tax	$53	$54	$38
General Fund	$49	$58	$13
Development Impact Fees	$16	$18	$3
Other	$117	$120	$77
Totals	$235	$250	$132

4.4 Essential Components' Expenditures

Table 4.8 details the expenditures by category. Storm drains and traffic signals are the largest components. As was noted in previous tables, expenditures are projected to decline in future years.

Table 4.8 Breakdown of Expenditures for Essential Components

Essential Components	Annual Expenditures ($M)			% of total
	2010/11	2011/12	Future	
Storm Drains	$224	$243	$202	23%
Curb and Gutter	$44	$47	$54	6%
Sidewalk (public)	$118	$117	$65	7%
Other Pedestrian Facilities	$12	$13	$13	2%
Class 1 Bicycle Path	$14	$25	$16	2%
Other Bicycle Facilities	$16	$13	$12	1%
Curb Ramps	$51	$51	$33	4%
Traffic Signals	$232	$240	$180	21%
Street Lights	$104	$108	$131	15%
Sound/Retaining Walls	$9	$8	$9	1%
Traffic Signs	$54	$54	$71	8%
Other	$62	$82	$87	10%
Totals	$940	$1,001	$874	100%

Cities and counties are estimated to spend almost $874 million annually on essential components.

On average, anticipated expenditures for essential components over the next ten years are expected to be $1,682/lane-mile for counties and $3,418/lane-mile for cities. The resulting total expenditures for all 540 cities and counties were therefore estimated to be $874 million annually.

4.5 Funding Shortfalls

One of the primary objectives of this study was to determine if a funding shortfall existed for the next ten years, and if so, what that shortfall was. Chapters 2 and 3 described the analysis to determine the funding needs for both the pavement and essential components, respectively. The preceding sections of this chapter analyzed the revenues and expenditures as well.

Table 4.9 summarizes the results of all the preceding analyses and determines the funding shortfall to be $80.9 billion. This does not include any NPDES costs, since it was not possible to determine what these statewide impacts were.

Table 4.9 Summary of 10 Year Needs & Shortfall (2012 $ Billion)

Transportation Asset	Needs ($B)			Funding ($B)	2012 Shortfall
	2008	2010	2012		
Pavement	$67.6	$70.5	$72.4	$13.3	$(59.1)
Essential Components	$32.1	$29.0	$30.5	$8.7	$(21.8)
Totals	$99.7	$99.5	$102.9	$22.1	$(80.9)

In the 2010 study, the funding shortfall identified was $78.6 billion, so this is an increase of $2.3 billion, or approximately 3 percent.

The shortfall for local streets and roads is estimated at $80.9 billion!

4.6 Pavement Funding Scenarios

Since 2008, California, together with the rest of the nation, has faced severe economic challenges, with reductions in revenues, multi-billion deficits and a high unemployment rate. This has impacted transportation funding accordingly, with reductions in gas taxes, the loss of redevelopment funds and a general decrease in sales taxes as well as contributions from the General Fund. Although Proposition 30 (which recently passed in the November 2012 General Election) is expected to stabilize state funding, the funding outlook for local streets and roads continues to be grim. The preceding sections describe a general declining trend in funding, yet the needs continue to increase.

Over the past four years, the results of the 2008 study have helped educate policy makers and prevented severe cuts to road funding. To further assist policy makers on how potential cuts will affect pavement conditions, this update included the results of five different funding scenarios with variations:

1. Existing funding
2. Passage of a voter's initiative that adds $1 billion annually
    a. No bond
    b. Assumes bond so that funding is available in first five years
3. Funding to maintain current pavement condition at PCI = 66
4. Efficiency Cost Savings
5. Achieve best management practices (BMP) in ten years

Scenario 1: Existing Funding ($1.33 billion/year)

In this scenario, the most cost-effective treatments are funded first, and these are typically preventive maintenance or preservation strategies, such as seals. This approach generally treats a larger percent of pavement network resulting in optimizing the use of limited funds. Therefore, at the existing funding level of $1.33 billion/year, the pavement condition is expected to deteriorate to 53 by 2022, and the unfunded backlog will increase by more than 50 percent to $66 billion. Again, these are in constant 2012 dollars. Figure 4.1 graphically illustrates these two trends.

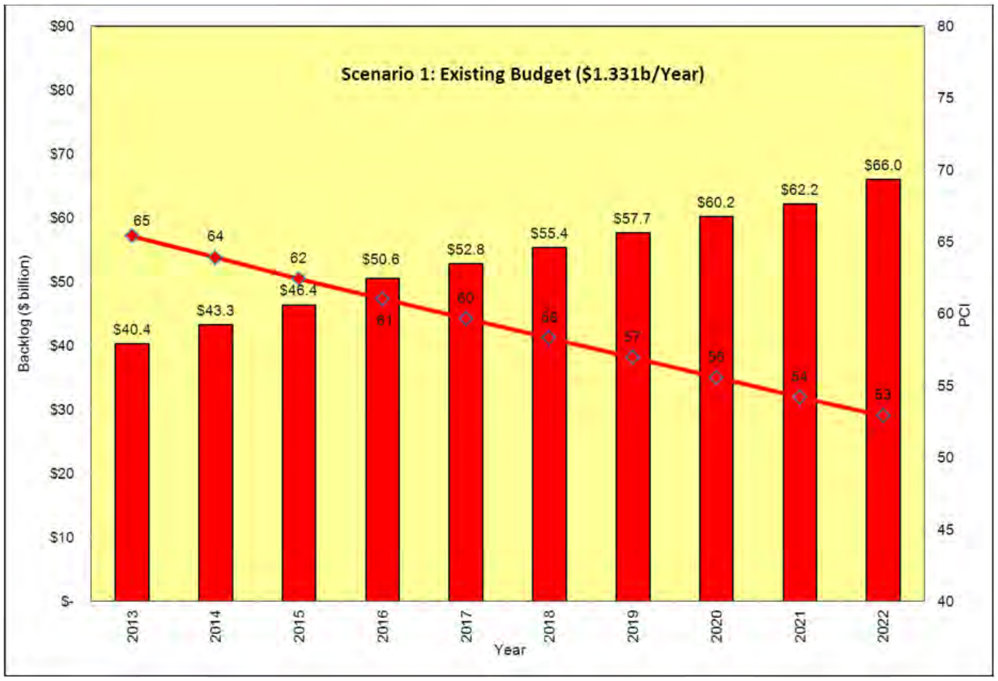


Figure 4.1 Results of Scenario 1: Existing Budget ($1.33 billion/year)

Scenario 2: Passage of Voter's Initiative (Adds $1 billion/year)

There are current discussions among various stakeholders about putting a measure on the ballot in the near future to raise additional transportation revenues. One such group is Transportation California, which is a coalition of various industry and labor groups interested in maintaining and improving the state's transportation infrastructure. Although no specific strategies have been finalized, it was assumed that up to $1 billion/year would be available to local streets and roads for the purposes of this study. Two variations were assumed:

a. The total funding available will be $2.33 billion/year i.e. the existing $1.33 billion/year plus an additional $1 billion/year.
b. The additional $1 billion/year would be used to issue bonds, so that the money could be "front-loaded" into the first five years. After removing the expenses of issuing the bond, it was assumed that an additional $2.9 billion/year would be available in the first five years, and then the funding level reverts to $1.33 billion/year.

In Scenario 2A, the funding level is $2.33 billion/year. The pavement condition is expected to deteriorate to 60 by 2022. The unfunded backlog will increase to $50 billion (see Figure 4.2).

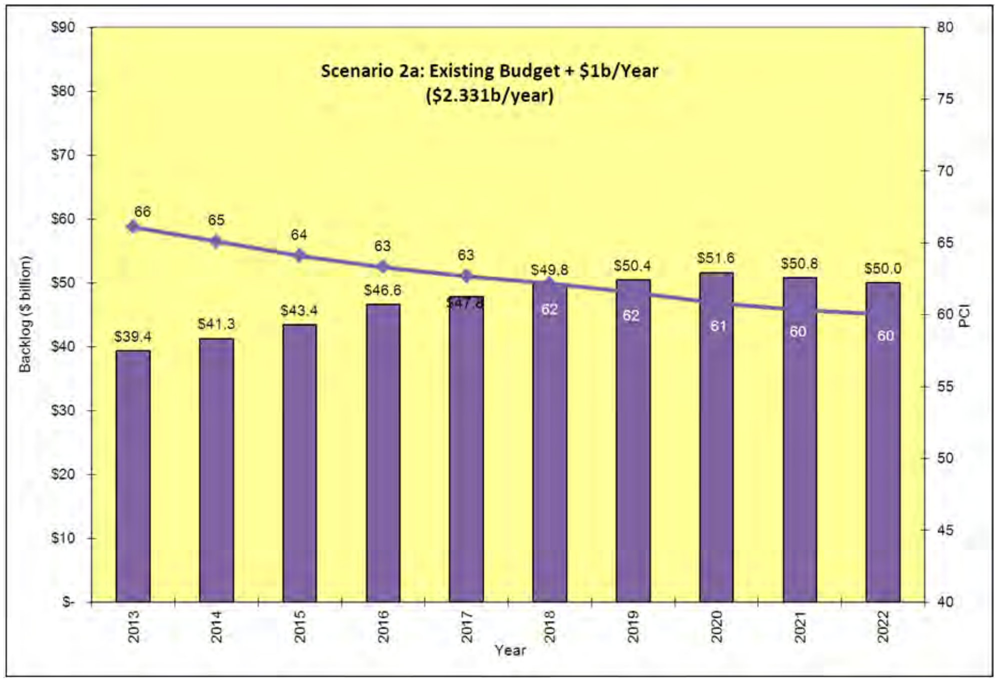


Figure 4.2 Results of Scenario 2A ($2.33 billion/year)

In Scenario 2B, the funding level is $4.23 billion/year for the first five years, and then it reverts to $1.33billion/year for the next five years. This is clearly an improvement over Scenario 2A. The PCI actually increases slightly to 69 in the first five years before dropping to 63 by 2022. In addition, the unfunded backlog is only $45.5 billion by 2022 (see Figure 4.3).

Scenario 3: Maintain PCI at 66 ($3.228 billion/year)

In order to maintain the pavement condition and unfunded backlog at existing conditions (i.e., PCI = 66) an annual funding level of $3.228 billion is required (see Figure 4.4). This funding level is almost 2½ times the current funding level of $1.33 billion/year.

Scenario 4: Efficiency Cost Savings Scenario ($4.11 billion/year)

In this scenario, it was assumed that cost savings could be achieved if cities and counties were to employ recycling techniques as part of their rehabilitation and reconstruction treatments. Examples of such techniques include cold-in-place recycling (CIR), and full-depth reclamation (FDR), where cost savings over conventional techniques range from 25% to 30%. It was assumed that half the streets and roads would be eligible for these cost savings (not all streets are eligible for various reasons such as shallow utilities, geometric factors, inadequate pavement sections etc.). This results in an additional $882 million/year available for use on additional streets and roads.

Scenario 3 was used as the baseline i.e. add $882 million to $3.228 billion, which results in $4.11 billion/year. The results are shown in Figure 4.5 and they are significant; the PCI increases to 71 by 2022, and the unfunded backlog drops to $30.2 billion. This is the first scenario where we can see improvements to the local streets and roads system.

An additional benefit to using CIR or FDR technologies is that it can result in the equivalent of as many as 34,000 cars removed from roads!

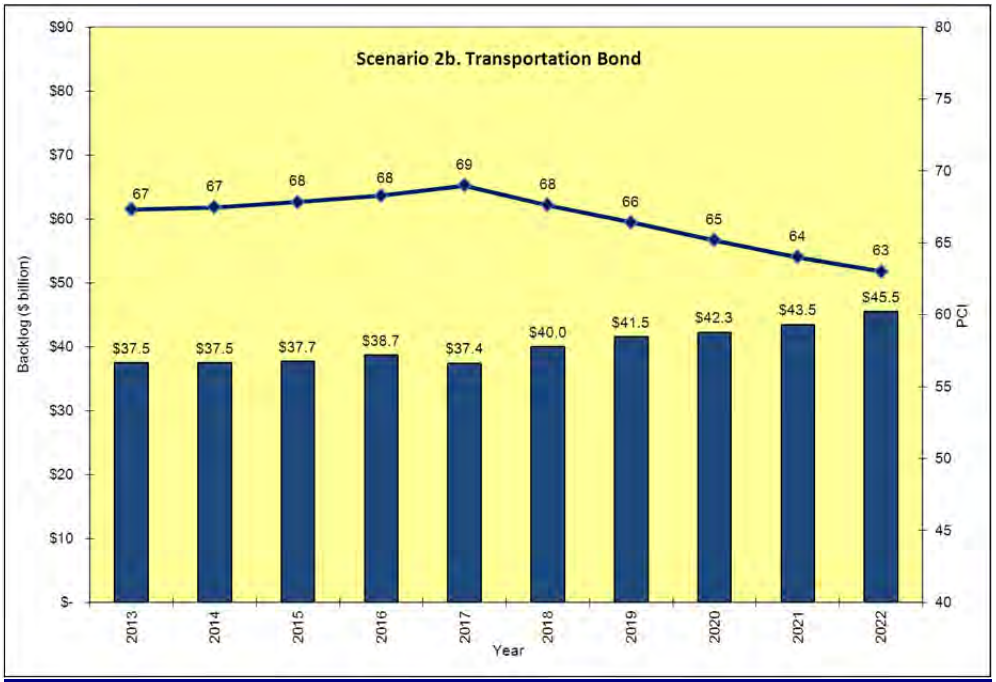


Figure 4.3 Results of Scenario 2B ($4.23billion/year for first five years)

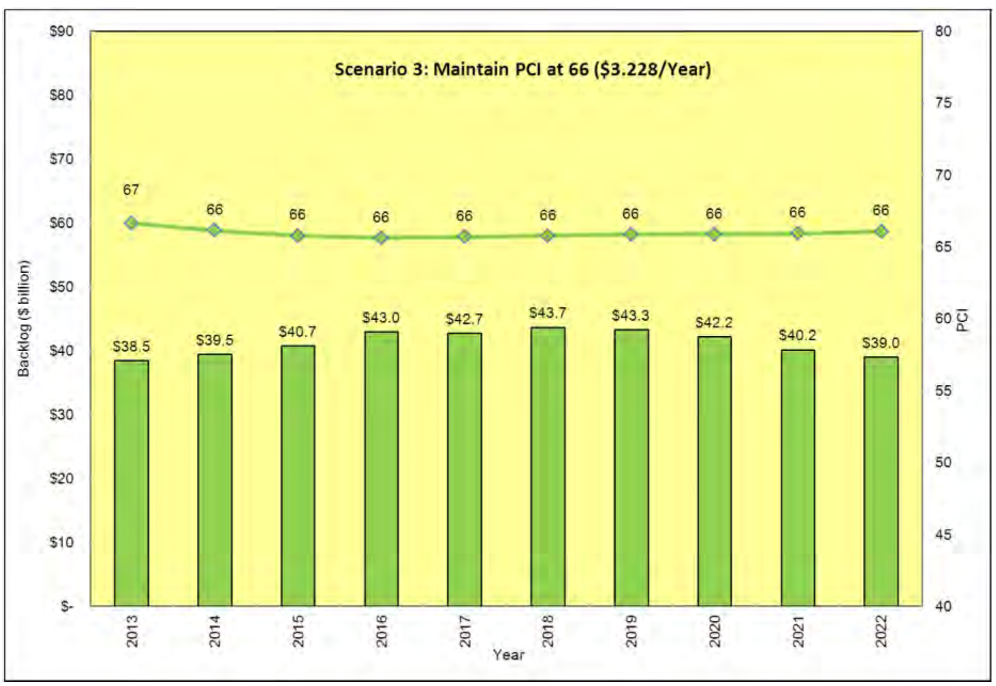


Figure 4.4 Results of Scenario 3 (Maintain PCI = 66; $3.228b billion/year)

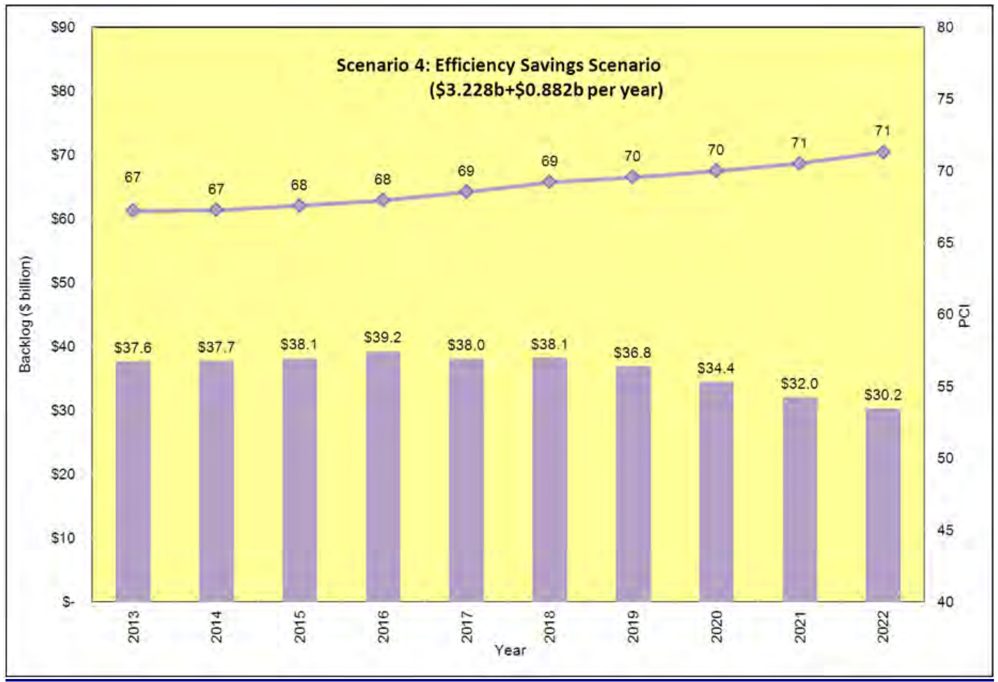


Figure 4.5 Results of Scenario 4 (Efficiency Cost Savings - $4.11 billion/year)

Scenario 5: Reach Best Management Practices ($7.244 billion/year)

One of the objectives of this study was to determine what funding level would be required to reach a pavement condition where best management practices can be applied. This occurs when the PCI reaches an optimal level in the low to mid 80's, and the unfunded backlog has been eliminated.

For this scenario, $7.244 billion/year is required to achieve this level (see Figure 4.6). The PCI will reach 84 by 2022 and the unfunded backlog is eliminated. Once eliminated, the cost of maintenance thereafter is significantly lower, requiring approximately $2.4 billion a year.

Other Perfomance Measures

Although both PCI and the unfunded backlog are common performance measure for cities and counties, there are others that may be used. One such measure is the percentage of pavement area in different condition categories. Table 4.10 illustrates the breakdown in pavement area for each funding scenario.

> A quarter of California's streets will be in failed condition by 2022 under existing funding levels.

The biggest factor that jumps out is that the percentage of pavements in failed condition today is estimated to be approximately 6.6 percent; however, under Scenarios 1 to 3, this will grow to between 20.1 and 25.3 percent by 2022. Or to be blunt, a quarter of local streets and roads will be considered "failed" by 2022 under existing funding levels. The photos are examples of "failed" local streets.

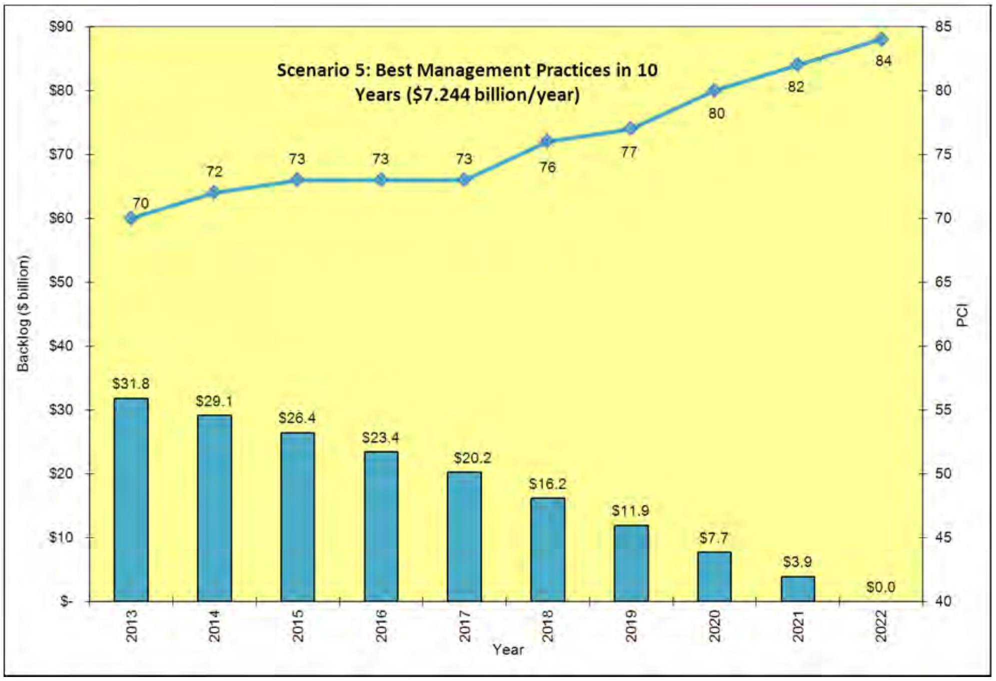


Figure 4.6 Results of Scenario 5 (BMP in 10 years - $7.244 billion/year)

Table 4.10 Percent of Area by Condition Category in 2022 for Each Scenario

Condition Category	Current Breakdown (2012)	Scenario 1: Existing Budget ($1.33b/yr)	Scenario 2A: No Bond ($2.33b/yr)	Scenario 2B: Transportation Bond ($4.23b/yr for 5 yrs then $1.33b/yr for 5 yrs)	Scenario 3: Maintain PCI at 66 ($3.23b/yr)	Scenario 4: Efficiency Cost Savings ($4.11b/yr)	Scenario 5: BMP in 10 Years ($7.24b/yr)
PCI 70-100 (Good to Excellent)	56.0%	45.8%	67.8%	70.7%	78.0%	83.2%	100.0%
PCI 50-69 (At Risk)	21.6%	16.8%	1.4%	3.9%	0.0%	0.0%	0.0%
PCI 25-49 (Poor)	15.8%	12.1%	8.0%	4.3%	1.9%	0.5%	0.0%
PCI 0-24 (Failed)	6.6%	25.3%	22.8%	21.1%	20.1%	16.3%	0.0%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Another trend of note is that while Scenario 3 maintains the existing condition and unfunded backlog, there is still a significant growth in the percentage of pavements that are "failed" (from 6.6 percent to 20.1 percent). The good news is that the preservation strategies will also dramatically improve the percent of pavements in the "good to excellent" category from 56 percent to 78 percent.

Finally, a short note on the definitions of a "distressed highway." As was mentioned in Chapter 1, Caltrans has a goal of reducing the percentage of distressed highways from the current level of 25 percent to 10 percent. Distressed highways in this definition are those highways that require capital preventive maintenance and rehabilitation. When applied to a local street or road, this includes all the streets in the "At Risk" category and below. Applying the Caltrans definition would mean that currently, 44 percent of local streets and roads are "distressed". Clearly, the definitions used by Caltrans are applicable for highways but not for local streets and roads; this is only logical since the types of facilities are so different.

Another performance measure is the cost savings that may be realized from the additional investment in each funding scenario. This is simply the savings achieved by NOT deferring repairs to a later date. An annual escalation of 5% was used, which includes increases in both material, labor and equipment costs. Table 4.11 summarizes different performance measures for each funding scenario.

Table 4.11 Summary of Performance Measures for Each Scenario

Scenarios	Annual Budget ($B)	PCI in 2022	Condition Category	% Pavements in Failed Condition	% Pavements in Good Condition	Cost Savings* ($B)
Current Conditions	N/A	66	At Risk	6.6%	56%	N/A
1. Existing Funding	$1.33	53	At Risk	25%	46%	-
2A. No bond	$2.33	60	At Risk	23%	68%	$26
2B. Bond	$4.23/$1.33	63	At Risk	21%	71%	$34
3. Maintain PCI = 66	$3.23	66	At Risk	20%	78%	$44
4. Efficiency Savings	$4.11	71	Good	16%	83%	$59
5. Best Mgmt. Practices	$7.23	84	Excellent	0%	100%	$108

* Annual escalation of 5% and cost savings are compared to Scenario 1.

4.7 How Did We Get Here?

For those who do not work with tranportation issues every day, it can be difficult to understand how California cities and counties have reached this situation. Yet the factors that have led us here can be quickly summarized as:

- The population of California was approximately 30 million in 1990; it is now approximately 38 million, an increase of almost 27 percent. Attendant with that increase in population are increases in traffic, housing and new roads.
- There are many new regulations which have increased the responsibilities of cities and counties, such as ADA, NPDES and new traffic sign retroreflectivity standards.
- The public demands a higher quality of life e.g. complete streets policies.
- Cities and counties need to consider, build and maintain a transportion system that has multiple transportation modes e.g. bicycles, pedestrians.
- The cost of road repairs and construction has steadily increased, and is significantly more than inflation. In the last 15 years, paving costs have increased more than eight-fold.
- Despite all the additional challenges described above, the gas tax has not increased in over 20 years. This may not be immediately obvious to the driving public, since they only notice higher prices at the pump.

Since the gas tax is the primary funding source for transportation, this has meant that cities and counties are relying on a diminshing revenue source for a transportation system that is aging and deteriorating rapidly, and which continues to shoulder additional demands from the public.

4.8 Summary

From the results of the surveys as well as the funding scenarios, it is apparent that:

- Total funding for pavements is projected to decrease to $1.33 billion annually over the next ten years. Of this, 59 percent will come from state funds (almost all gas tax), 10 percent from federal sources, and the remainder from local sources (mostly sales taxes).
- Total funding for essential components is projected to slightly decrease to $874 million annually. The majority of the funding comes from local sources (47%) with the state contributing approximately 37%.
- Given the existing funding levels, the total funding shortfall for pavements and essential components is a staggering $80.9 billion over the next ten years!
- Under the existing funding for pavements ($1.33 billion/year), it is projected that the statewide PCI will decrease from 66 to 53 and the unfunded backlog will increase to $66 billion. In addition, a quarter of the pavement network will be in "failed' condition by 2022.
- In Scenarios 2A and 2B, we can see the significant impacts from "front-loading" repairs. The effects of bonding against the additional $1 billion revenue stream not only results in a better pavement condition, but also cost savings of $8 billion. Nonetheless, overall, the funding is still inadequate to maintain the existing pavement condition.

- In order to maintain the existing pavement condition (Scenario 3), it will require a funding level of $3.23 billion/year, more than twice the existing level. This would dramatically improve the percentage of pavements in the "good to excellent" category from 56 percent to 78 percent. Unfortunately, the percentage of pavements in the "failed" category also grows from 6.6 percent to 20 percent.
- Scenario 4 projects that an estimated $822 million annually could be achieved through changes in rehabilitation and reconstruction techniques, and if these could be added to Scenario 3, the results are very encouraging. Overall, the PCI will improve to 71, the percentage of failed pavements is 16 percent, and cost savings of $59 billion are achieved.
- Any additional investments in the pavement network will result in substantial cost savings ranging from $26 to $108 billion. On average, this represents cost savings of $2 for every additional $1 invested.

Every additional dollar invested will result in cost savings of almost $2.

5. Bridge Needs and Funding Analysis

Bridges are an integral part of the transportation system, and therefore a study such as this one would be incomplete without a discussion of their needs. The catastrophic nature of a bridge failure is exemplified by the collapse of the I-35W bridge in Minneapolis during rush hour in August 2007. Thirteen people were killed and 145 injured. Failures in local bridges can also have significant consequences. Many rural bridges provide the only access to homes and communities, and if a bridge collapses, access to help is limited or not available. In other cases, detours of more than four hours may be necessary.

For this update, both Quincy Engineering (QE) and Spy Pond Partners (SPP) collaborated to provide the analysis to determine both the ten year bridge needs and funding analysis, respectively. Copies of their reports, with a more detailed discussion of the methodologies used, are available at www.SaveCaliforniaStreets.org.

A total of 11,863 local agency bridges in California were inventoried in the 2012 National Bridge Inventory (NBI) Database. Local agency bridges are defined as bridges that are owned by local agencies such as counties and cities. Other owners such as the State, Bay Area Rapid Transit, private, railroad and federal bridges were not considered as local agency bridges for this study.

Figure 5.1 below represents a breakdown of local bridge count by county. Most counties (including city bridges within the county) have a few hundred bridges, averaging about 200 bridges per county. In general, the larger populated counties have a significantly higher number of bridges than the lower populated counties. Los Angeles County has the most locally owned bridges, with over 1400 bridges.

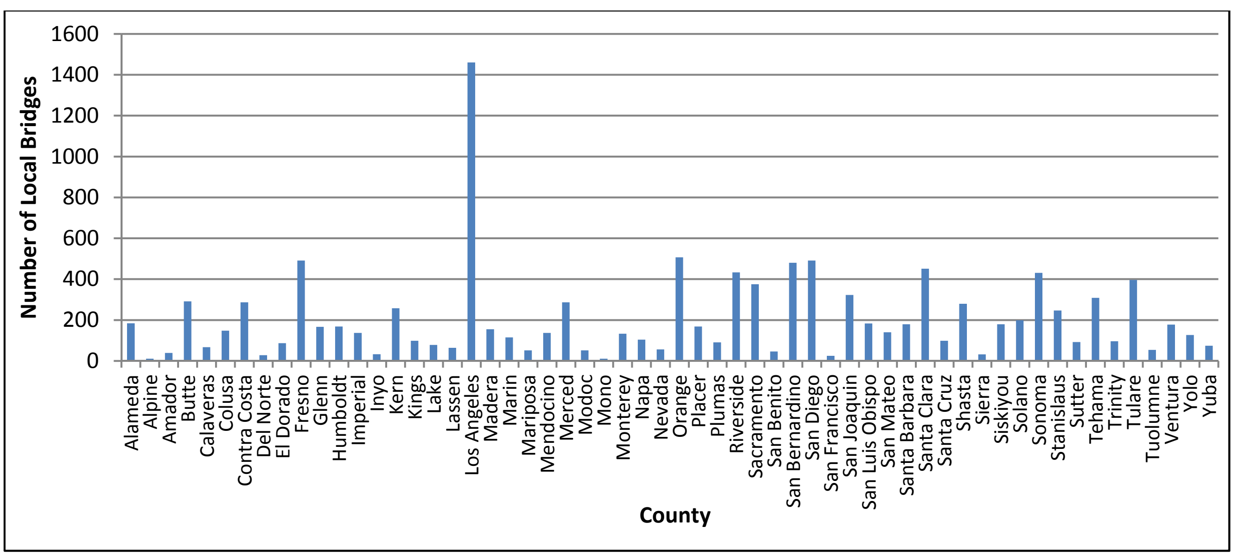


Figure 5.1 Number of Local Bridges by County (includes Cities within County)

Figure 5.2 illustrates the age distribution of all the statewide local bridges. The largest age group are bridges 40 years or older, followed by bridges that are 50 years or older. As bridges age, the need for rehabilitation becomes greater. As with streets and roads, it is more cost effective to maintain bridges in good condition than it is to allow those bridges to deteriorate at a faster rate and require replacement sooner. Figure 5.2 also shows that there are a significant number of bridges that are over 80 years old (most bridges are designed to last 50 years). Most of those bridges are at the end of their life and will require replacement soon.

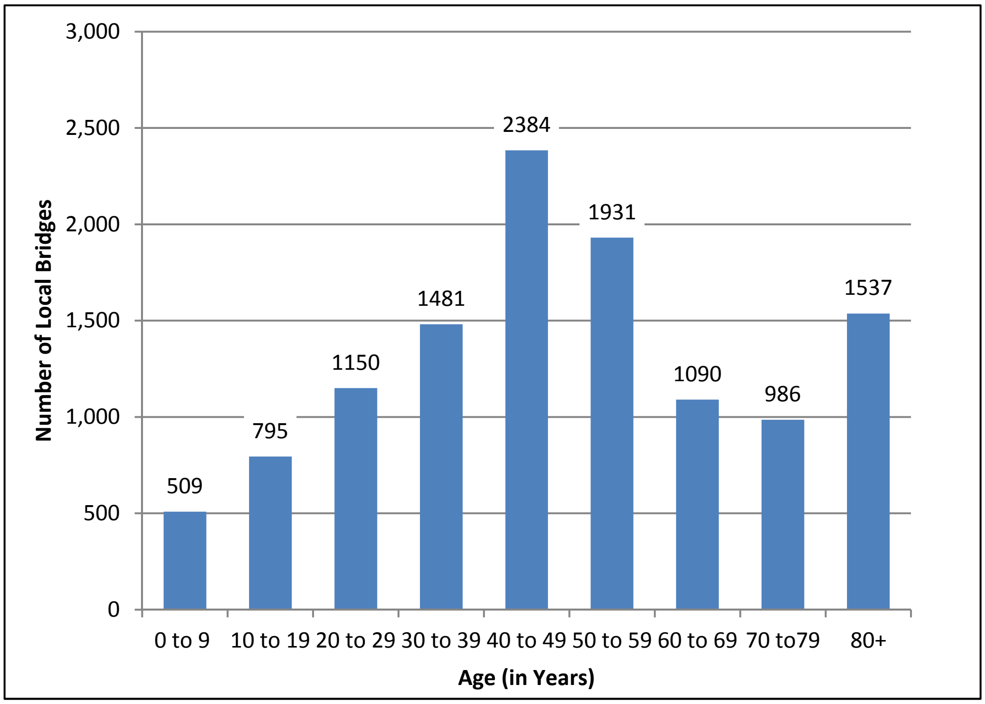


Figure 5.2 Age Distribution of Local Bridges

Of the 11,863 local agency bridges, 6,285 bridges are considered "on-system" and 5,584 are "off-system". "On-system" bridges are listed in the National Highway System or are bridges with the following functional classifications:

- Urban Principal Arterial – Interstate
- Urban Principal Arterial – Other Freeways or Expressways
- Urban Other Principal Arterial
- Urban Minor Arterial
- Urban Collector
- Rural Principal Arterial – Interstate
- Rural Principal Arterial – Other
- Rural Major Arterial
- Rural Major Collector

Off-system bridges are bridges that are not on the National Highway System and have the following functional classifications:

- Urban Local
- Rural Minor Collector
- Rural Local

5.1 Survey Results

The results of the statewide survey showed that 49 of 58 counties (84%) responded to the survey, and 128 of 482 cities (27%) responded to the survey. While the percentage of cities participating was low, it should be noted that many of the smaller cities do not own and maintain their own bridges.

Figure 5.3 below compares some of the data received from the survey with NBI data provided by Caltrans. As can be seen, there are some variations between the bridge counts provided. There could be several explanations for the variations, such as:

- New bridges may have been constructed or old bridges demolished due to old age, and such changes may not have been captured in either of the databases
- Respondent may not have understood the definition of NBI versus non-NBI bridges, and thereby provided inaccurate information.

Although there is some inconsistency, the overall differences are within acceptable limits. However, for the purpose of this study, the analysis was performed using the NBI data provided by Caltrans.

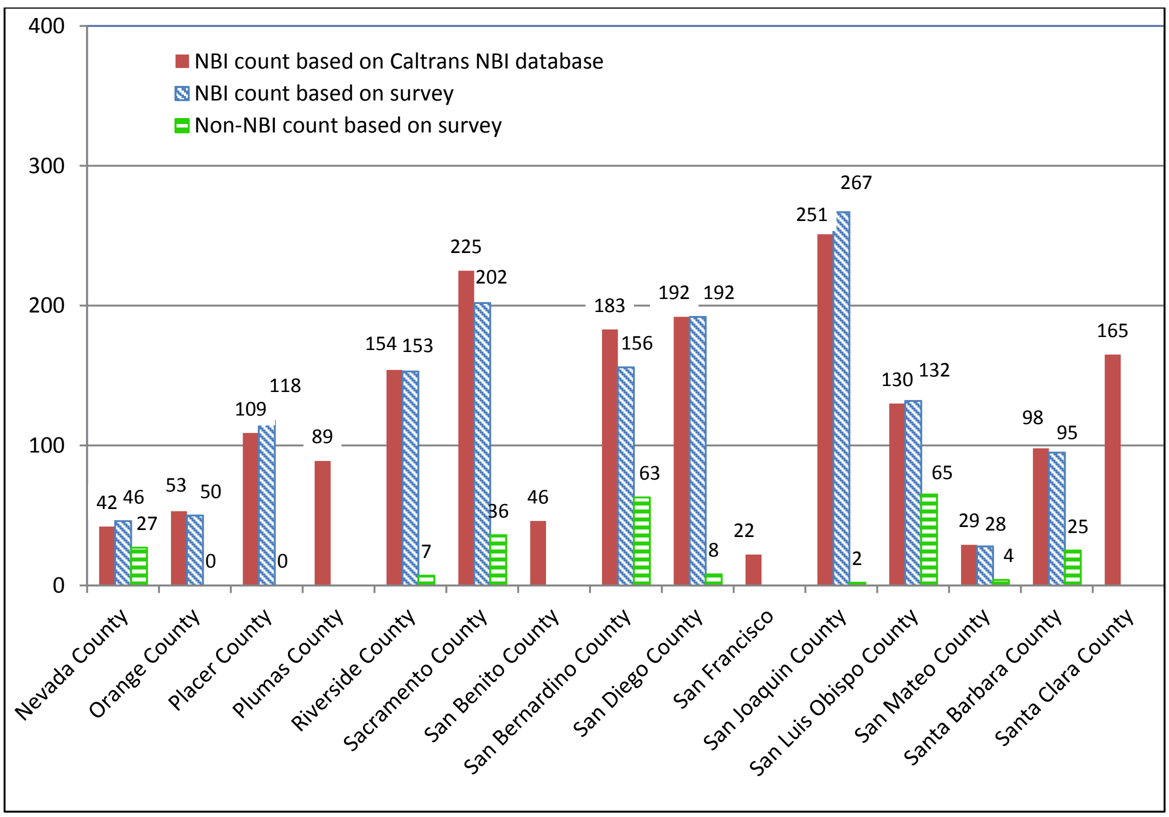


Figure 5.3 Selected Local County Owned Bridge Count (Excluding cities owned bridges)

5.2 Needs Assessment

The needs assessment for bridges has three primary categories: Replacement, Rehabilitation, and Seismic Retrofit to follow the Federal Highway Administration Highway Bridge Replacement and Rehabilitation Program and the Caltrans

Seismic Retrofit funding eligibilities. For the purpose of this study's terminology, rehabilitation is separated into three sub-categories:

- Bridge deck rehabilitation and deck replacement (deck improvement)
- Bridge strengthening
- Bridge widening

The bridge deck is the component that takes the most wear-and-tear from the impact of daily vehicular traffic, and is the most common bridge rehabilitation. Therefore, it contributes to the majority of bridge rehabilitation cost projects in California. Figure 5.4 below shows an example of deck rehabilitation with methacrylate resin treatment.

Figure 5.4 Bridge Deck Rehabilitation With Methacrylate Resin Treatment

The three sub-rehabilitation needs are estimated to capture all preservation needs such as deck joint replacement, bearing pad replacement, painting, etc. Preservation works are typically performed concurrently with a bridge rehabilitation job. For instance, painting is performed at the same time a steel structure is strengthened to minimize impact and save cost. Another example is when a bridge deck is replaced, bridge joints are replaced at the same time. Also, during a bridge widening, concrete barriers are replaced and updated to new standards. In this study, all preservation needs are accounted for in the bridge deck rehabilitation-and-replacement, bridge strengthening, and bridge widening needs category (the three rehabilitation categories).

5.2.1 Replacement and Rehabilitation Eligibility

The Federal Highway Administration Highway Bridge Replacement and Rehabilitation Program funding eligibility requirements (FHWA HBRRP 23 CFR 650.409) was used as the basis to determine which bridges have needs for replacement or rehabilitation.

According to FHWA, the National Bridge Inventory is used for preparing the selection list of bridges both on and off Federal-aid highways. Bridges that are considered structurally deficient or functionally obsolete and with a sufficiency rating of 80 or less is used for the selection list. Those bridges appearing on the list with a sufficiency rating of less than 50 are eligible for replacement while those with a sufficiency rating of 80 or less are eligible for rehabilitation. To be classified as structurally deficient, a bridge must have a length equal to or greater than 20 feet and not been constructed or had major reconstruction within the past 10 years. The definitions are listed below:

- A bridge is defined as eligible for replacement if the Sufficiency Rating is less than 50 *and* the bridge is structurally deficient or functionally obsolete (SR<50 & bridge is SD or FO).
- A bridge is defined as eligible for rehabilitation if the Sufficiency Rating is greater than or equal to 50 but less than or equal to 80 *and* the bridge is structurally deficient or functionally obsolete (50≤SR ≤ 80 & bridge is SD or FO).

In order to be considered for either the Structurally Deficient (SD) or Functionally Obsolete (FO) classification, a bridge must also meet the following guidelines:

1. Structurally Deficient (SD)
    a. Condition rating of 4 or less for deck, superstructures, substructures, culvert and retaining Walls, or
    b. Appraisal rating of 2 or less for structural condition or waterway adequacy.
2. Functionally Obsolete (FO)
    a. An appraisal rating of 3 or less for deck geometry, under-clearances or approach roadway alignment, or
    b. An appraisal rating of 3 for structural condition or waterway adequacy

Figures 5.5 to 5.8 illustrate examples of structurally deficient and functionally obsolete bridges.

Figure 5.5 Structurally Deficient – Low Deck & Superstructure Condition Rating

Figure 5.6 Structurally Deficient – Low Superstructure & Substructures Condition Rating

Figure 5.7 Structurally Deficient – Low Substructures Condition Rating & Low Waterway Adequacy

Figure 5.8 Functionally Obsolete – Low Approach Roadway Alignment Appraisal Rating

Of the 11,863 bridges, 1,887 bridges are Structurally Deficient (16%), and 1,796 bridges are Functionally Obsolete (15%). Of the total, 950 bridges are eligible for replacement (8%), and 1,891 bridges are eligible for rehabilitation (16%).

5.2.2 Bridge Replacement

Of the 950 bridges eligible for replacement, 33 were removed from the needs assessment because they already have secured funding in place or construction was imminent. Two large bridges were also excluded from this study.

1. *Golden Gate-San Francisco Bay Bridge (*Bridge #27 0052), is owned by a local toll authority and is not considered a local bridge.
2. *Los Angeles River Bridge on Sixth Street (*Bridge #53C1880), owned by the City of Los Angeles is already programmed and federally obligated for $229.5 million dollars for construction and $104.6 million dollars for right-of-way. Therefore, this bridge was removed from this assessment.

Figure 5.9 shows the average bridge replacement unit cost (dollars per square foot) of all the bridges that are assessed to require replacement. This cost is based on site characteristics and includes the new bridge and bridge removal costs. It does not include approach roadway and other bridge replacement project costs.

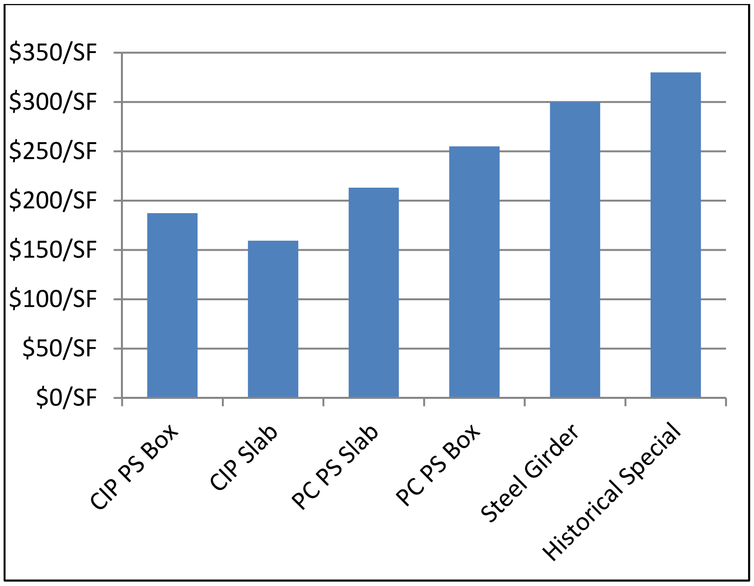


Figure 5.9 Average Bridge Replacement Unit Cost ($/SF)

Figure 5.10 below shows the different components of the bridge replacement associated cost. In addition to the cost of replacing the bridge, the other associated costs include costs for roadway approaches, right-of-way, design engineering and environmental, construction mobilization, construction contingency, and construction management. The cost of the bridge itself is only about 40% of the total bridge replacement project cost.

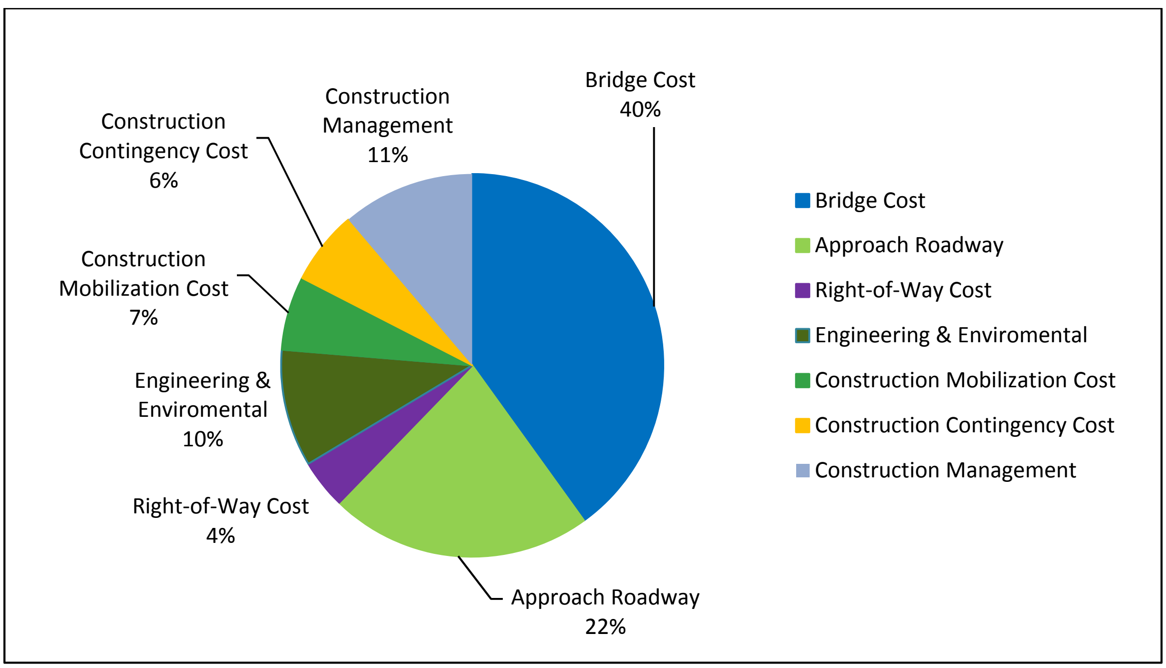


Figure 5.10 Total Bridge Replacement Associated Costs

5.2.3 Bridge Rehabilitation

As mentioned previously, rehabilitation is categorized into the following three categories:

1. Bridge deck rehabilitation and deck replacement (deck improvement)
2. Bridge strengthening, and
3. Bridge widening

Bridge deck rehabilitation is the most common bridge rehabilitation, and contributes to the majority of the bridge rehabilitation costs in California. Because it accounts for the majority of bridge rehabilitation cost, a refined assessment of the unit cost of bridge decks was required. A unit cost of $10/sf for deck rehabilitation and $100/sf for deck replacement was used. The unit prices are based on Caltrans and Quincy Engineering's historical design and construction support data. The unit cost is conservatively estimated to include common preservation needs such as rehabilitation of expansion joints and bridge bearings.

Of the 1,891 bridges eligible for rehabilitation, approximately 548 bridges require deck rehabilitation and 133 bridges require deck replacement.

Figure 5.11 is an example of a bridge deck that requires replacement. Figure 5.12 shows a bridge expansion bearing replacement during deck widening project.

Figure 5.11 Bridge Deck Requiring Replacement

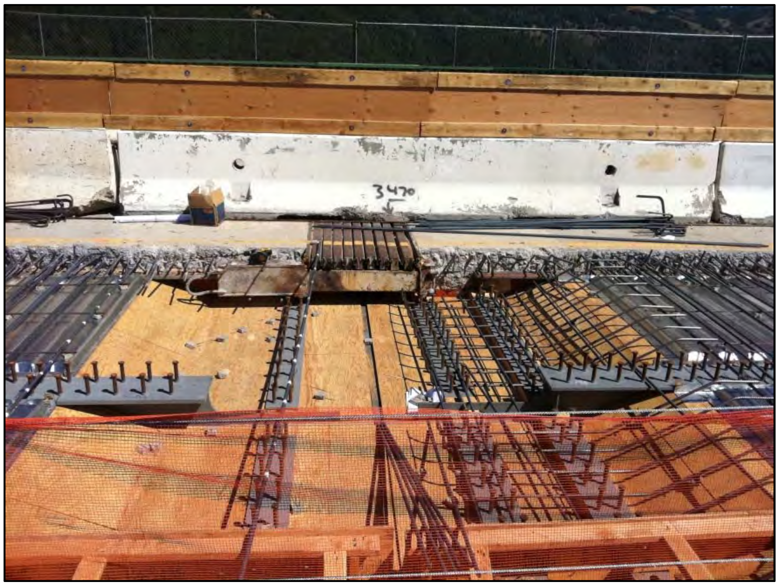


Figure 5.12 Bridge Expansion Bearing Replacement During Deck Widening

5.2.4 Bridge Strengthening

Bridge strengthening project costs vary widely depending on individual projects. For example, to strengthen an older steel bridge built before 1970, lead abatement and environmental mitigation will be required. Depending on the amount of work involved in bridge strengthening, the cost of lead abatement can vary from a local containment to a full bridge containment system which tends to be very costly.

The cost associated with bridge strengthening was obtained from bridge improvement data within the NBI database. To scale the improvement needs to 2012 dollars, a Construction Cost Index was used. This methodology was considered to be more accurate because local bridge inspectors and agencies have more site specific information on a project by project basis.

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Using the rehabilitation criteria (50≤SR ≤ 80 & bridge is SD), it was estimated that approximately 495 bridges required bridge strengthening. The weighted average cost per area is $150/sf.

5.2.5 Bridge Widening

Similarly to bridge strengthening, bridge widening costs are highly dependent on specific project needs. Figure 5.13 illustrates the bridge widening cost distribution over all the local agency bridges. Most bridges that require widening are located in Los Angeles County. This is because the Average Daily Traffic (ADT) count is high in comparison to the traveling capacity of the existing bridge. The LA county bridges also have a higher project cost due to site specific variables such as higher right-of-way acquisition costs and construction limitations due to congested conditions. From the NBI data, there are approximately 154 bridges that require widening.

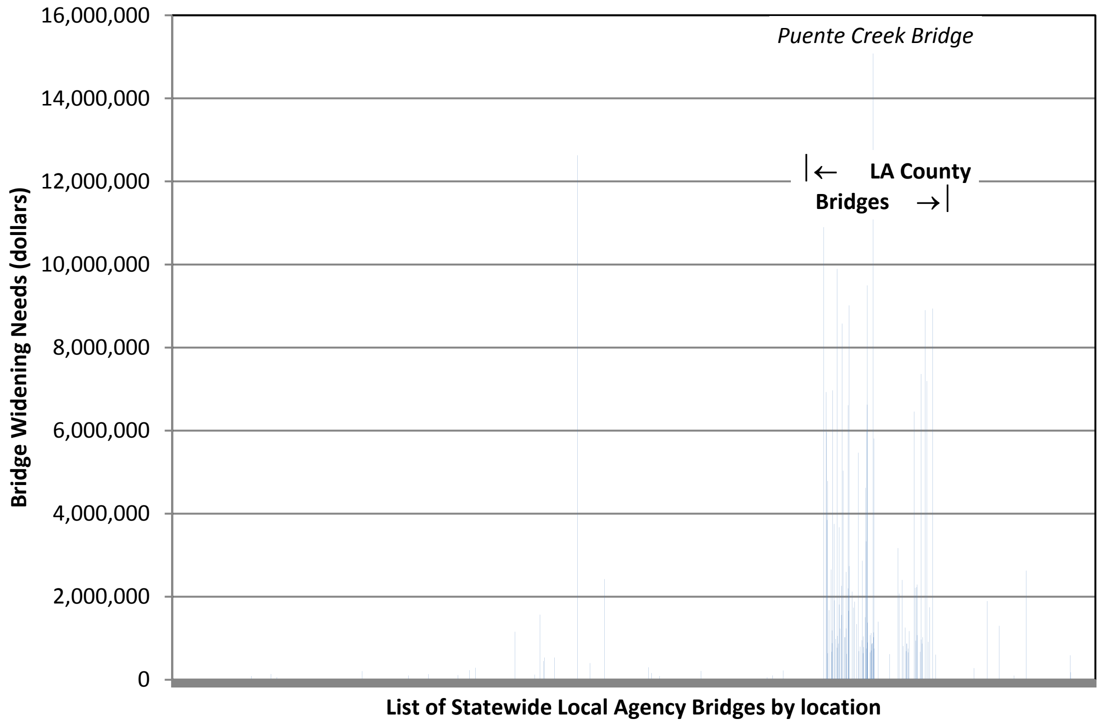


Figure 5.13 Distribution of Bridge Widening Projects

5.2.6 Bridge Seismic Retrofit

Seismic retrofit need is also project specific with costs varying greatly between individual projects. The Caltrans Local Bridge Seismic Retrofit Program (LBSRP) list provides remaining projects that are eligible for LBSRA Funds. The total seismic requested federal Highway Bridge Program (HBP) funds requested was used to determine the total seismic needs.

5.2.7 Non-NBI Bridges

Non-NBI Bridges are non-vehicular bridges or vehicular bridges less than 20 feet long. While a bridge maybe considered non-NBI due to its limited length or because of its pedestrian and/or bicycle designation, these bridges are still of significant importance to our communities. For instance, there are many local short vehicular bridges (less than 20 feet) that provide the only access for fire trucks in case of emergencies. The need for non-NBI bridges should not be neglected.

Unlike NBI bridges, non-NBI bridges do not have a state or national database that documents these bridges. Therefore, the survey information was the only source available. As was noted previously, 49 counties out of 58 counties (84%) responded to the survey, and 128 cities out of 482 cities (27%) responded to the survey. However, only 41 counties and 95 cities responded to questions about the non-NBI bridges.

Therefore, a method of approximation had to be developed to estimate the non-NBI bridge counts. Briefly, the methodology to estimate the missing or unknown county bridge data was to consider geography, adjacent county data, and population. For instance, based on the 2010 United States Census, Sutter County, Yuba County, and Nevada County have similar population size. Based on geography, the three counties have similar rivers characteristics. Since bridge survey data is available for Sutter and Nevada County, Yuba County's missing data can be estimated similar to that of Sutter and Nevada County's.

The method to estimate city non-NBI bridges was based on available data from adjacent cities. However, not all cities within a county are similar; some cities have larger population than smaller cities. This method assumes that cities within a county had a similar bridge to population ratio. Within a given county, the geographical characteristics of its land and rivers are assumed to be similar. Therefore, the number of bridges per population should be similar.

Based on the assumptions above, the total number of non-NBI bridges was estimated to be approximately 3,500. Of these, approximately 30 percent were assumed to be non-vehicular bridges (extrapolated survey data). The percentage of non-NBI bridges assumed to require rehabilitation or replacement were assumed to be similar to those for the NBI bridges. The unit costs for vehicular bridges were also assumed to be the same as for the NBI bridges, while those for non-vehicular bridges were $200/sf for replacement, and $10/sf for rehabilitation. With the assumptions above, the non-NBI bridge needs are estimated to range from $30 to $60 million.

5.2.8 Summary of Local Bridge Needs

The total statewide local agency bridge needs is estimated to be $4.3 billion over the next ten years. The breakdowns are as follows:

- Bridge replacement needs are approximately $2.6 billion.
- Bridge deck rehabilitation and deck replacement costs are approximately $420 million.
- Bridge structural strengthening requires approximately $530 million.
- Bridge widening requires approximately $420 million (widening projects are to bring bridges up to current width standards, and are not for adding capacity i.e. adding lanes)
- Bridge seismic retrofit needs are approximately $320 million.
- Non-NBI bridge needs are estimated at $30 to $60 million.

The total statewide local bridge needs are estimated at $4.3 billion over the next ten years.

Appendix D contains a summary of the bridge needs by County.

5.3 Funding Analysis

The funding analysis considered maintenance, repair, rehabilitation actions required to preserve existing structures. Also, it included needs to perform seismic retrofits, strengthen bridges, raise bridges to increase vertical clearance, and widen bridges (without adding lanes) to address clearance or safety issues. Bridge replacement was considered in the analysis when it was projected to be more cost effective than preservation or functional improvement, or when other actions were deemed to be infeasible. The analysis did not consider costs associated with adding lanes to existing structures to relieve congestion.

To develop the projections, the FHWA's National Bridge Investment Analysis System (NBIAS)[6] was used. FHWA uses NBIAS to develop its biannual Conditions and Performance Report[7]. NBIAS has a modeling approach similar to that of the AASHTO Pontis Bridge Management System (BMS) which is used by Caltrans for managing its bridges. However, NBIAS requires only publically-available NBI data to run, in contrast to Pontis, which requires detailed element data that are not part of the NBI. (Note that the 3500 non-NBI bridges were not therefore included in this analysis. However, their needs are less than 1.5% of the total, so was not considered to be significant.)

Though NBIAS is populated with default costs, deterioration models, and other parameters, it is important to calibrate the system results so that they provide as realistic a projection as possible. The costs in NBIAS were calibrated using data provided by Quincy Engineers. Consequently, the calculation of initial needs corresponds to that developed independently by Quincy Engineers. Further, seismic retrofit needs, which are not modeled by NBIAS, were calculated by Quincy Engineers. The deterioration models used in the system were originally developed by Caltrans, and are included in NBIAS, along with models from other states. A set of calibration runs was performed in NBIAS to confirm the deterioration models, using 2001 data to compare results predicted for 2011 using different deterioration models with actual conditions observed in 2011 based on NBI data.

The results obtained from NBIAS provide a projection of bridge investment needs over time for different budget assumptions. Investment needs are funds that should be invested to minimize bridge costs over time and address economically-justified functional improvements. To the extent that projected funds are insufficient for addressing all needs, the system simulates what investments will occur with an objective of maximizing benefits given an available budget. The system also predicts what new needs may arise considering deterioration and traffic growth, and projects a range of different physical measures of bridge condition.

5.3.1 Projected Statewide Bridge Conditions and Needs

Table 5.1 presents the summary results for the statewide analysis. The table shows results for annual budgets from $0 to $600 million. For each budget level shown the table shows results by year for 10 years for the following measures:

- Needs: investment need as of the beginning of the year, shown in billions of dollars. The projections include costs for replacement, functional improvement, rehabilitation, minor preservation activities, and seismic retrofits.
- Cumulative Work Done: total spending over time, shown in billions of dollars. Typically this measure increases by the budgeted amount each year, but in some cases may increase by less than the budgeted amount if no needs remain to be met, or if during the program simulation the available budget was less than the cost of the next recommended action.
- Average Health Index: average calculated from predicted element conditions, where a value of 75 or less for an individual bridge generally indicates the bridge is in fair or poor condition (in need of rehabilitation) and a value of 90 or greater for an individual bridges indicates the bridge is in good condition.
- Average Sufficiency Rating: average rating calculated based on FHWA definitions. Unlike Health Index Sufficiency Rating includes adjustments for functional characteristics of a bridge.

[6] Cambridge Systematics, Inc. *NBIAS 3.3 Technical Manual.* Technical Report prepared for FHWA. 2007.
[7] FHWA and FTA. *2010 Status of the Nation's Highways, Bridges, and Transit: Conditions & Performance*. Report to the United States Congress. 2012.

- **Percent Structurally Deficient:** percent of bridges classified as Structurally Deficient based on FHWA definitions, weighted by deck area.

Table 5.1 Summary Bridge Funding Analysis (2013 to 2022)

	Value by Year										
Description	**Base**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Annual Budget: $0M											
Needs ($B)		4.4	4.9	5.6	6.1	6.6	7.3	8.0	8.9	10.0	11.2
Cumulative Work Done ($B)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Avg. Health Index	91.44	90.54	89.64	88.73	87.82	86.91	85.99	85.07	84.15	83.22	82.30
Avg. Sufficiency Rating	82.45	81.60	80.60	79.69	78.76	77.91	76.44	74.35	71.81	69.49	67.16
% Structurally Deficient	20.72	25.52	29.32	33.30	37.11	41.75	47.55	53.66	59.57	63.55	67.13
Annual Budget: $100M											
Needs ($B)		4.4	4.8	5.4	5.8	6.2	6.7	7.2	7.9	8.7	9.8
Cumulative Work Done ($B)		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Avg. Health Index	91.44	90.58	89.72	88.88	88.03	87.21	86.38	85.57	84.74	83.97	83.17
Avg. Sufficiency Rating	82.45	81.68	80.76	79.99	79.18	78.47	77.21	75.36	73.07	70.98	68.89
% Structurally Deficient	20.72	25.39	28.98	32.68	36.20	40.38	45.57	51.14	56.58	60.32	63.64
Annual Budget: $200M											
Needs ($B)		4.4	4.7	5.1	5.4	5.7	6.1	6.4	6.7	7.2	7.9
Cumulative Work Done ($B)		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0
Avg. Health Index	91.44	90.63	89.83	89.08	88.36	87.75	87.18	86.64	86.05	85.47	84.94
Avg. Sufficiency Rating	82.45	81.78	80.99	80.32	79.70	79.20	78.21	76.83	74.93	73.15	71.33
% Structurally Deficient	20.72	25.14	28.71	31.81	34.54	37.82	41.49	44.98	48.95	52.20	54.55
Annual Budget: $300M											
Needs ($B)		4.4	4.6	4.8	5.0	5.1	5.4	5.5	5.5	5.6	6.0
Cumulative Work Done ($B)		0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0
Avg. Health Index	91.44	90.70	89.98	89.40	88.88	88.52	88.22	88.17	87.98	88.06	88.23
Avg. Sufficiency Rating	82.45	81.92	81.20	80.73	80.29	79.96	79.40	78.64	77.27	76.32	75.62
% Structurally Deficient	20.72	25.04	28.18	30.34	32.17	33.00	34.46	35.76	37.42	37.30	37.19
Annual Budget: $400M											
Needs ($B)		4.4	4.5	4.6	4.6	4.7	4.5	4.5	4.3	4.1	3.9
Cumulative Work Done ($B)		0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0
Avg. Health Index	91.44	90.74	90.14	89.78	89.59	89.69	90.13	91.00	92.06	93.25	93.94
Avg. Sufficiency Rating	82.45	81.99	81.41	81.14	80.94	81.07	81.00	80.96	80.97	81.32	81.23
% Structurally Deficient	20.72	24.91	27.65	28.04	27.46	26.06	24.80	24.00	22.46	18.75	18.87
Annual Budget: $500M											
Needs ($B)		4.4	4.4	4.4	4.3	4.1	3.9	3.6	3.2	2.9	2.6
Cumulative Work Done ($B)		0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Avg. Health Index	91.44	90.78	90.33	90.27	90.68	91.65	93.21	94.57	94.71	94.77	94.79
Avg. Sufficiency Rating	82.45	82.08	81.64	81.56	81.76	82.28	82.85	83.26	83.15	83.00	82.76
% Structurally Deficient	20.72	24.83	26.76	24.85	22.11	18.60	16.29	13.69	13.85	14.68	15.34
Annual Budget: $600M											
Needs ($B)		4.4	4.3	4.1	3.9	3.5	3.1	2.7	2.2	1.8	1.5
Cumulative Work Done ($B)		0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0
Avg. Health Index	91.44	90.84	90.67	91.04	92.54	84.71	95.08	95.15	95.18	95.19	95.23
Avg. Sufficiency Rating	82.45	82.17	81.93	82.19	82.78	83.63	84.01	84.20	84.15	84.05	83.95
% Structurally Deficient	20.72	24.59	24.63	20.79	15.87	13.23	11.47	11.31	11.79	12.87	13.29

Note that the current level of spending is approximately $300 million/year. Figure 5.14 shows total bridge needs over time and Figures 5.15, 5.16 and 5.17 show the average Health Index, average Sufficiency Rating, and percent Structurally Deficient, respectively. Additional detailed results from NBIAS are included Spypond's report available at www.SaveCaliforniaStreets.org.

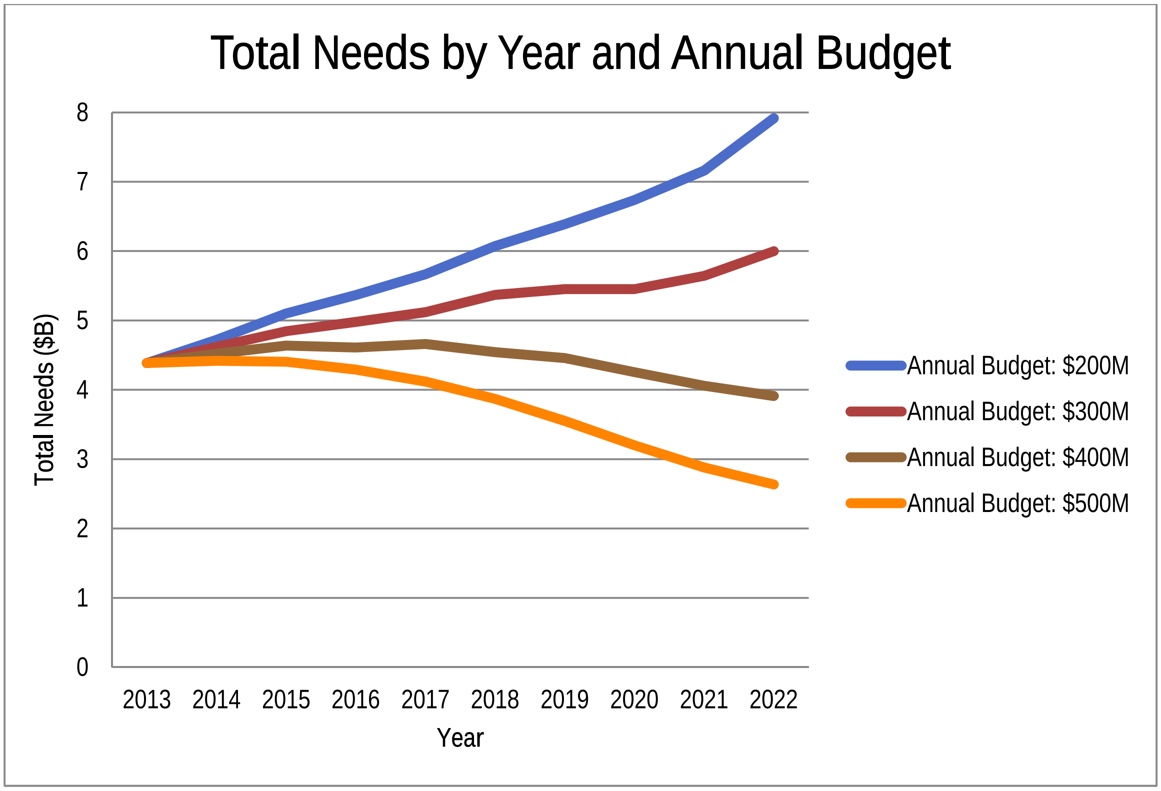


Figure 5.14 Projected Local Bridge Needs (2013-2022)

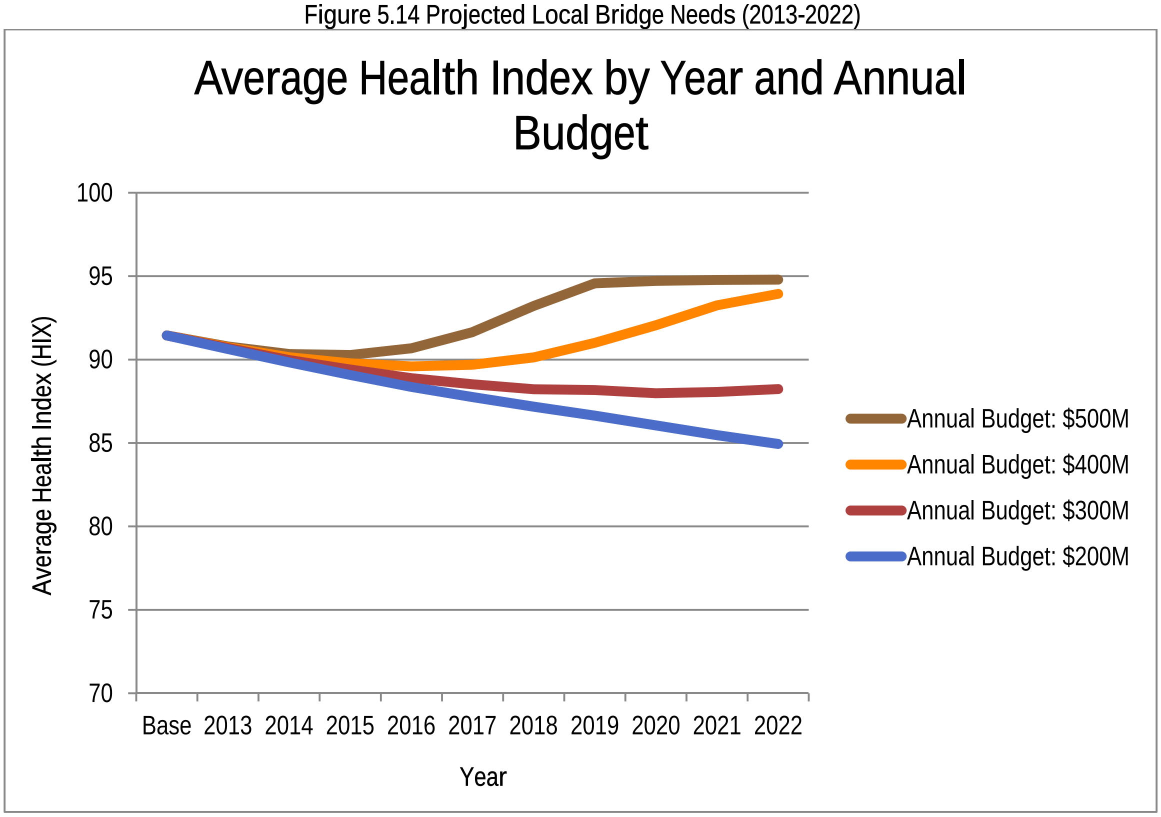


Figure 5.15 Projected Health Index (2013-2022)

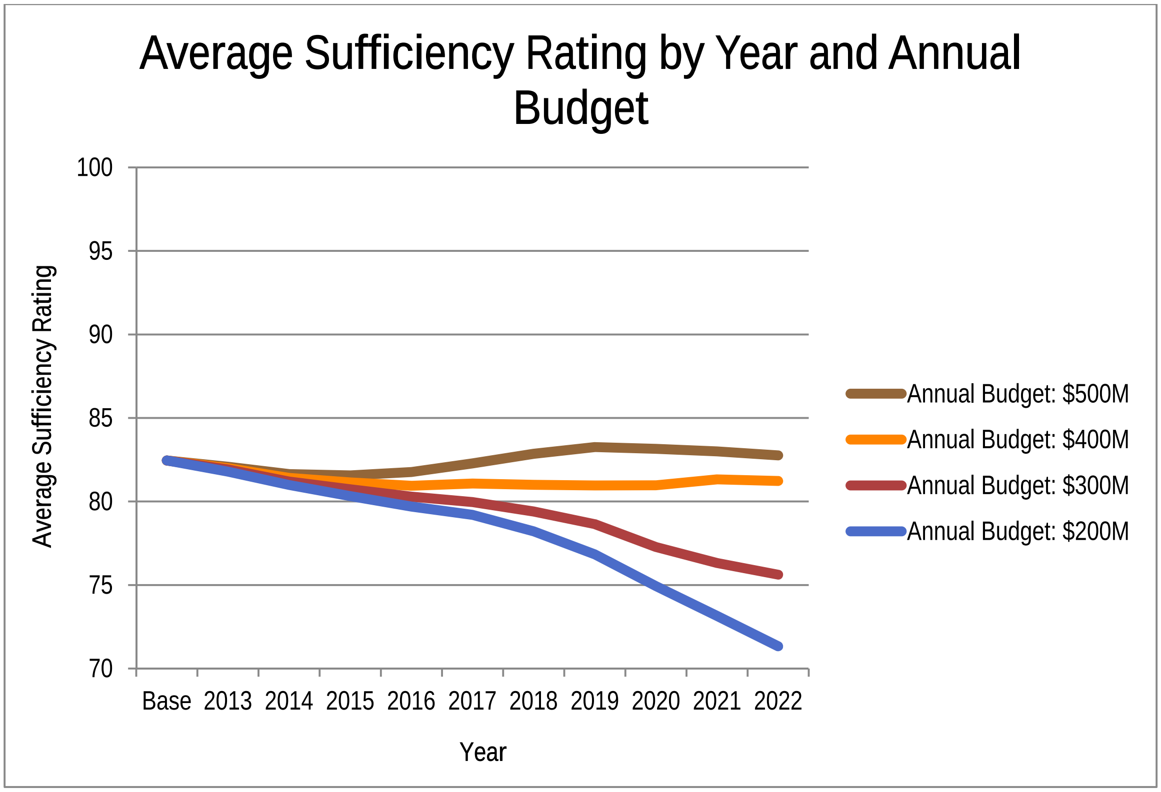


Figure 5.16 Projected Sufficiency Rating (2013-2022)

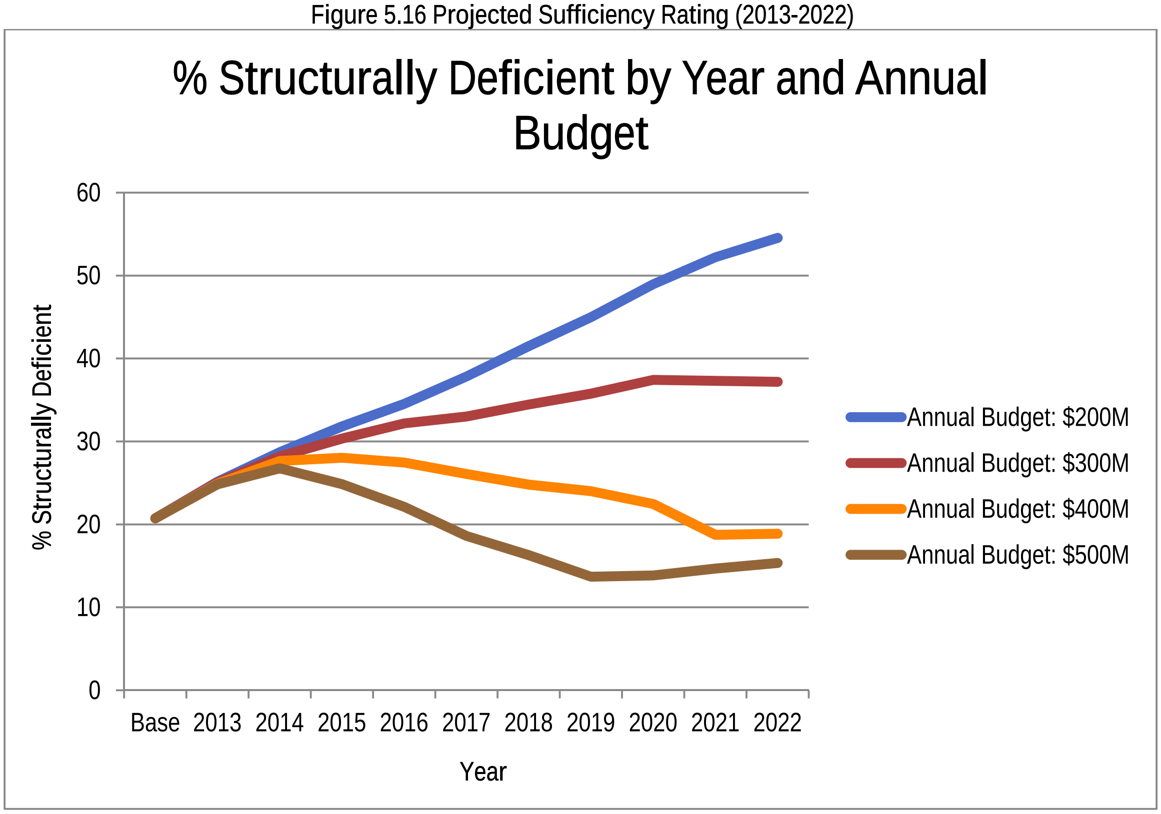


Figure 5.17 Projected Percent Structurally Deficient (2013-2022)

5.4 Summary

The total estimated needs for the local bridges is estimated to be $4.3 billion, which includes rehabilitation, replacement and seismic retrofit costs. Currently, it is estimated that only $300 million a year is available for bridge repairs. However, with the passage of MAP-21 and the elimination of the Highway Bridge Program (HBP), it is still unknown what the future levels of funding will be.

The funding analysis shows that an annual budget of $377 million is required to maintain the level of investment needed over a 10-year period for California's local bridges. Somewhat less money would be required to maintain an average Health Index equal to the current value, while somewhat more would be required to maintain conditions measured using Sufficiency Rating. For percent of bridges classified as Structurally Deficient the analysis suggests that $390 million would be required annually to maintain conditions statewide.

An additional $90 million/year is needed to ensure that no more than 20% of the state's bridges are structurally deficient.

While the analysis shows the funds required to achieve a given target condition, it does not recommend a specific level of funding. Given the investment needs in NBIAS are based on consideration of what work is economically justified, ideally a bridge owner would address all needs rather for their bridge inventory, rather than simply maintaining conditions. However, doing this in the short term would require a substantial increase in budget and is not practical in this case. Another approach to setting a target level of investment is to base the investment level on a specific target condition. There are several issues with this approach in the case of California's local bridges. First, it is difficult to summarize conditions using an average Health Index or Sufficiency Rating, as an average may mask the extent of bridges in very poor condition requiring immediate attention. An average is a good measure for illustrating trends, but less useful for characterizing the distribution of conditions.

The percent of bridges classified as Structurally Deficient is a better measure than an average condition index for illustrating bridges in poor condition. However, some caution is needed in interpreting this measure. The calculation of Structurally Deficient classification is based upon the condition ratings defined in NBI. In California, unlike other states, these ratings are not explicitly captured. Instead, they are calculated based on element-level data using an algorithm developed by FHWA. The impact of this approach is that counts of Structurally Deficient bridges for California bridges tend to be high compared to other states, but this is based more upon the inspection approach than actual differences in condition[8].

In the absence of a better alternative, it is recommended that level of investment needed be used as the best measure for use in establishing target investment levels for California's local bridges. Absent budget constraints, an organization seeking to maximize economic efficiency would address all investment needs. Considering budget constraints, a reasonable goal is to at least keep needs from increasing by addressing new investment needs as they arise, if not to lower the backlog of needs over time. Even with the goal of gradually lowering needs, however, one faces a situation in which needed work is being deferred, potentially increasing the work that must be performed on a given bridge.

[8] Spy Pond Partners, LLC and Arora and Associates, Inc. NCHRP 20-24(37)E: *Measuring Performance Among State DOTs, Sharing Best Practices - Comparative Analysis of Bridge Condition.* Technical report prepared for NCHRP Project 20-24-37(E). 2010.

6. Conclusions

The results of this study continue to be sobering. It is clear that California's local streets and roads network are not just at risk; they are on the edge of a cliff with an average PCI of 66. With this pavement condition and the existing funding climate, there is a clear downward trend projected for the next ten years.

By 2022, with the current funding of $1.33 billion/year, the pavement condition index will continue to deteriorate to 53. Even more critically, the backlog will increase from $40.4 billion to $66 billion. This is assuming that construction costs do not outstrip the anticipated revenues. It also does not include any additional costs due to new roads/streets that will be added. Further, it is estimated that a quarter of California's local streets and roads will be in "failed" condition.

Table 6.1 summarizes the results from Chapters 3, 4 and 5. The total funding needs over the next 10 years is $107.2 billion, and the resulting shortfall is $59.1 billion for pavements, $21.8 billion for essential components and $1.3 billion for bridges. The total shortfall is $82.2 billion over the next 10 years.

Table 6.1 Summary of 10-Year Needs and Shortfall Calculations (2012 $ Billion)

Transportation Asset	Needs ($B)		2012		
	2008	2010	Needs	Funding	Shortfall
Pavement	$67.6	$70.5	$72.4	$13.3	$(59.1)
Essential Components	$32.1	$29.0	$30.5	$8.7	$(21.8)
Bridges	-	$3.3	$4.3	$3.0	$(1.3)
Totals	$99.7	$102.8	$107.2	$25.1	$(82.2)

The conclusions that can be drawn from this study are inescapable. Given existing funding levels, California's local streets and roads can be expected to deteriorate rapidly within the next 10 years. In addition, the costs of any deferred maintenance will only continue to grow. The additional funding scenarios analyzed also serve to emphasize this point. The ability to bond against new revenue streams (Scenario 2) will have an immediate and significant impact.

To bring the transportation network to a level where best management practices can occur will require more than four times the existing level of funding. For pavements, that will require an increase of at least $59.1 billion. However, once this has been achieved, it will only require $2.3 billion/year after that to maintain the pavement network.

For essential components, it will require $21.8 billion to address the ten year needs, and for bridges, it will require an additional $1.3 billion for a total of $82.2 billion.

To just maintain the existing pavement condition at 66 will require $3.23 billion/year, more than double the existing funding level of $1.33 billion.

To put the shortfall in perspective, $82.2 billion over 10 years translates to an additional 56 cents per gallon at the pump (based on an estimated 14.7 billion gallons of fuel purchased in California in 2011) [9]. For the average driver (10,000 miles a year driving a 20 mpg vehicle, this translates to an average of 76 cents a day.

[9] http://www.boe.ca.gov/sptaxprog/spftrpts.htm

APPENDIX A

Data Collection

This appendix describes in detail the data collection efforts for this update. The goal was to ensure participation by all 58 Counties and 482 Cities.

A.1 Outreach Efforts

As with the 2008 and 2010 studies, significant efforts were made to reach all 540 agencies in April-May 2012. This included letters sent out by the League and CSAC, followed up by emails and phone calls from Nichols Consulting Engineers, Chtd. (NCE). The contact database had over 2,100 contacts for all the cities and counties. This was compiled from a variety of sources including contacts from the 2008 and 2010 studies, the memberships of both CSAC and the League, the email listserv for the Regional Transportation Agencies (RTPA) and NCE's contacts.

The contacts included Public Works staff (Directors of Public Works, City Engineers or engineers responsible for pavement/asset management), Directors of Finance, City Managers, County Administrative Officers, RTPAs (Regional Transportation Planning Agencies), and MPOs (Metropolitan Planning Agencies).

Over 2,100 contact letters were mailed out in early April 2012 (see Exhibit A-1) with instructions on how to access the online survey and a fact sheet explaining the project. The deadline for responding to the survey was May 15, 2012, but this was later extended to June 2012, as there were numerous requests from agencies for more time to respond.

A.2 Project Website

The website at www.SaveCaliforniaStreets.org (see Figure A.1) was originally designed and developed for the 2008 study. This was subsequently modified to accommodate the 2012 update. The intent of this website was to act as both an information resource on this study and as a repository of related reports that might be of interest to cities and counties. More importantly, it was a portal to the online survey that is described in Section A.3.

The domain name was registered for five years (expiring February 27, 2013) and can be used for future updates after this study is completed. The Metropolitan Transportation Commission (MTC) currently hosts the website.

A.3 Online Survey Questionnaire

A survey questionnaire was prepared and finalized in early April 2012, and a blank example included in Exhibit A-1. Briefly, it included a request for the following information:

1. Contact name and information for both pavements and financial data
2. Streets and pavements data
3. Safety, traffic, and regulatory components data
4. Bridges
5. Unfunded mandates
6. Funding and expenditure data

Figure A.1 Home Page of www.SaveCaliforniaStreets.org Website

Like the 2010 study, no hardcopy surveys were available to the cities and counties, thus requiring all data entry to be made online. The online survey made data aggregation much simpler and faster. A custom database was also designed and developed for this update to overcome the limitations of the previous survey. Also, multiple validation fields were added to prevent some of the data entry errors that were discovered in the 2008 study, thus mitigating the significant effort in follow-up calls as well as extensive validation checks.

A.4 Results of Data Collection

98% of the state's local streets and roads are included in this study.

Figure A.2 Responses to Survey

A total of 361 agencies responded to the survey, which was a decrease from the 399 agencies in 2010. Nonetheless, when these were added to those agencies who responded in 2008 and 2010 (but not 2012), this represented more than 98 percent of the total centerline miles of local streets and roads in the state (see Figure A.2). It also represented 98 percent of the state's population.

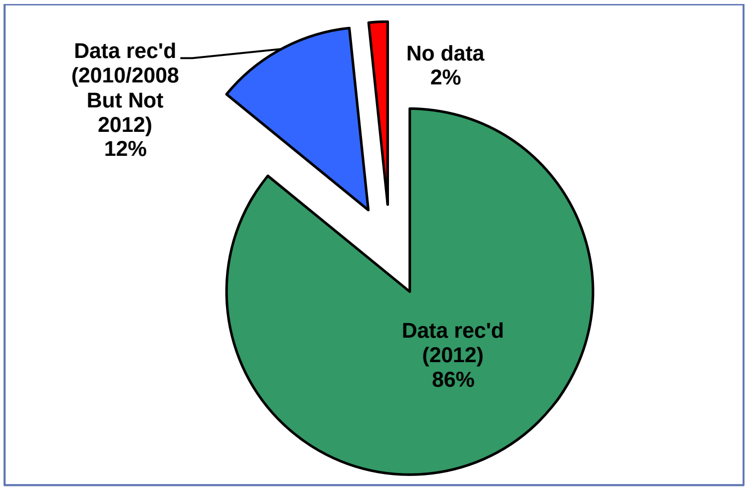


Figure A.2 Responses to Survey (% centerline miles)

In general, fewer agencies responded but with more information in various data categories (see Table A.1). Of particular importance was the number of agencies who responded with data on the safety, traffic and regulatory components. Of the missing 39 agencies, 35 had less than 100 centerline miles, and 34 had populations less than 50,000. Many had limited resources in terms of staff time to respond to the survey.

Table A.1 Number of Agencies Responding by Data Type

Data Type	2008	2010	2012
Pavement data	314	344	273
Unit costs	50*	260	211
Sustainable practices	-	-	280
Complete streets	-	-	269
Safety, Traffic & Regulatory	188	296	341
Bridges	-	-	177
Unfunded Mandates	-	-	220
Financial	137	300	238

* from NCE's database

A.4.1 Are Data Representative?

Throughout the data collection phase, it was important to ensure that the data received were representative in nature. This was critical for the analyses – as with the 2008 and 2010 studies, the criterion used was network size.

The distribution of responses with respect to network size is shown in Figure A.3. Small agencies are those that have less than 100 centerline miles; medium between 101 to 300 miles, and large agencies have more than 300 miles. Figure A.3 shows all the agencies who responded in 2012 (green), those who responded in 2008/2010 but not 2012 (blue) and the ones who have never responded in red. Clearly, the bulk of the agencies who did not respond had less than 100 miles of pavement network (small cities), but we still had 227 responses (87%) in this category, so our confidence in the responses were validated.

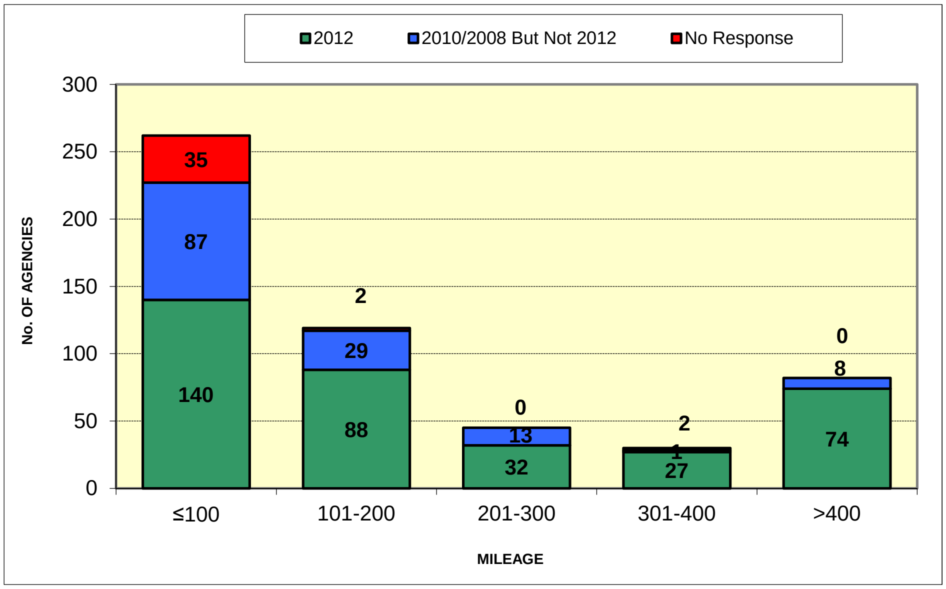


Figure A.3 Distribution of Agency Responses by Network Size (centerline miles)

An important point to note too is that small agencies account for a very small percentage of the state's pavement network. There are 262 cities with less than 100 centerline miles of streets, and 159 cities with less than 50 centerline miles of streets. However, they comprise only 8.2 percent and 2.9 percent of the total miles in the state, respectively. Their impact on the statewide needs is consequently minimal.

A.4.2 PMS Software

Due to the widespread use of a PMS, the quality of the pavement data received contributed immensely to the validity of this study's results.

The survey responses showed that 82 percent of the responding agencies had a pavement management system (PMS) in place (see Figure A.4). The StreetSaver® (39%) and MicroPAVER (24%) software programs are the two main ones in the state, not surprising given their roots in the public domain and reasonable costs. StreetSaver® was developed and supported by the Metropolitan Transportation Commission (MTC) and MicroPAVER supported by the American Public Works Association (APWA).

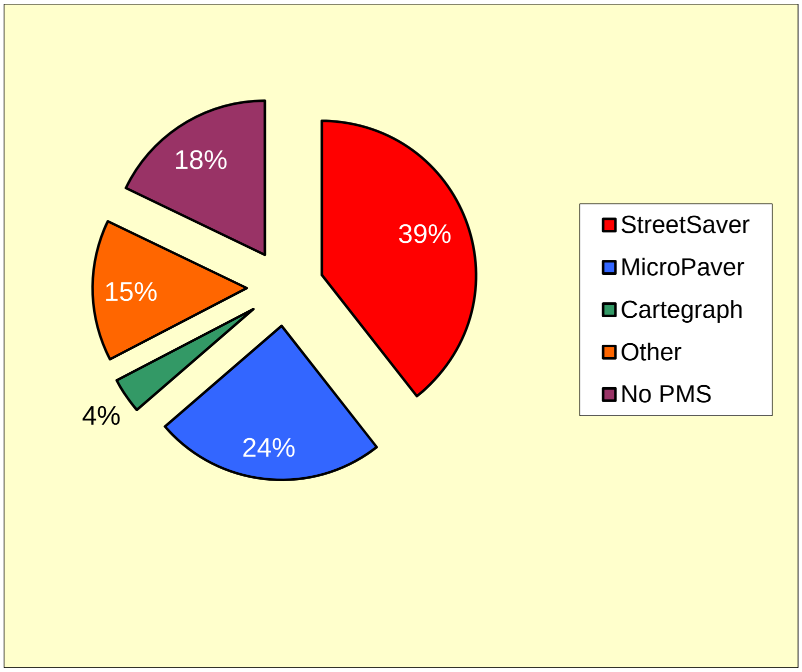


Figure A.4 PMS Software Used from Survey Responses

A.5 Summary

Overall, the number and quality of the survey responses received again exceeded expectations and more than met the needs of this study. To obtain data on more than 98 percent of the state's local streets and roads network was a remarkable achievement. That 82 percent of agencies that responded also had some pavement management system in place removed many obstacles in the technical analyses. In particular, the consistency in the pavement conditions reported contributed enormously to the validity of the study.

EXHIBIT 1

Contact Letter, Fact Sheet & Survey Questionnaire

April 2, 2012

SUBJECT: 2012 CALIFORNIA STATEWIDE LOCAL STREETS AND ROADS NEEDS ASSESSMENT

To Whom It May Concern:

Your help in responding to our survey in 2010 made a difference! We are asking for your help again in updating the information you provided two years ago.

As you may know, the Fiscal Year 2010-11 Statewide Needs Assessment Report identified a funding shortfall of over $79 billion for local streets and roads pavement and non-pavement needs. The report assisted CSAC and League staff to advocate against, and avoid what could have been devastating cuts to local transportation funding, over several state budget cycles (a copy of the final report is available at www.SaveCaliforniaStreets.org).

In addition to deterring negative policies and budget decisions, we will be using the findings of this assessment to emphasize the importance of *increasing* funding for maintenance of our local streets and roads. Towards this goal, this year's needs assessment will include the development of a marketing plan to help us better communicate the findings to legislators and the public.

As in the past, this project is being funded through contributions from stakeholders. Regional Transportation Planning Agencies have been asked to sponsor fifty percent of the cost of the 2012 assessment and the update in 2014, with cities and counties sharing equally in the remaining cost. It is essential that each agency contribute toward this project in order to demonstrate how critical this issue is to sustaining our state's transportation infrastructure.

An ongoing effort is needed to update the local streets and roads needs on a regular, consistent basis, much like the State does in preparing the State Highway Operation and Protection Program (SHOPP). Nichols Consulting Engineers, Chtd. (NCE), will assist us in performing the 2012 update of the Statewide Needs Assessment.

YOU CAN MAKE A DIFFERENCE!

We need your immediate assistance on the following items:

1. To ensure a widespread dissemination of this request, this letter has been sent to the City Manager/County Administrative Officer, Public Works Director, City/County Engineer, and Finance Director. We recognize that the data may come from multiple sources, so we ask your agency to coordinate among yourselves to ensure that the most recent and accurate information is entered. Please provide NCE with your agency's contact information if you

are not the appropriate contact. This person(s) should be able to provide all the information requested in the survey. We need information on two main areas:

a. Technical – pavement and safety, regulatory and traffic needs.

b. Financial – projected funding revenues/expenditures.

2. Fill out the online survey at www.SaveCaliforniaStreets.org. Instructions for filling out the survey are enclosed. Your agency's login and password are:

Login: Password:

It is essential that we have this data no later than May 15, 2012. Should you have any questions, please do not hesitate to contact:

Ms. Margot Yapp, P.E.
Vice President/Project Manager
Nichols Consulting Engineers, Chtd.
501 Canal Blvd, Suite I
Pt. Richmond, CA 94804
(510) 215-3620
myapp@ncenet.com

We appreciate your help in providing this information.

Very truly yours,

Daniel Woldesenbet, President
County Engineers Association of California
Director of Public Works
County of Alameda

Randy Breault, President
Public Works Officers Department
League of California Cities
Director of Public Works/City Engineer
City of Brisbane

Enclosures: Fact Sheet
Instructions for Online Survey

California Statewide Needs Assessment Project

www.SaveCaliforniaStreets.org

FACT SHEET

Why are we updating the 2010 study?

Transportation funding for Cities and Counties are still at risk.

The 2010 statewide needs study identified a funding shortfall of over $70 billion for local streets and roads (the final report is available on the www.SaveCaliforniaStreets.org website). This information was used to help protect gas tax funds in FY 2010/11.

However, the current budget discussions between the Governor and the Legislature make it clear that the prospect of having our already insufficient local road funds reallocated to address the state's budget woes is a very real concern. This update will help us once again with our efforts to protect our transportation funds. An additional goal for this assessment is to promote the augmentation of funding for local street and road maintenance.

Why is this update important?

Performing a needs assessment biennially is important to provide updated information to maintain and obtain transportation funding, similar to what Caltrans does. Hopefully, the information from this study will embed into the decision makers minds the importance of maintaining sufficient transportation funding for local streets and roads. Additionally, we need to make it clear what the detrimental consequences are for deferring or reducing local street and road funds. This study is the only comprehensive and systematic statewide approach to quantify local streets and roads needs.

How can Cities and Counties help?

Your help in 2010 made a difference, and we need your input again!

Please go to www.SaveCaliforniaStreets.org and login to our online survey to provide updates in the following categories:

- Contact Person from your Agency
- Recent Pavement condition data
- Safety, traffic, and regulatory data
- Funding/expenditure projections

There are a few new items that were not included in the 2010 survey (such as complete streets and bridges) that have been added to the survey and need your input. We are anxious to begin the study so please provide us with the contact person who is responsible for both the technical and funding information in your agency. We will be in touch with them soon to obtain this information. The deadline for responding to this survey is May 15th, 2012.

FACT SHEET

Who is sponsoring this project?

Many cities and counties contributed funding to this study. The agencies listed below have accepted the leadership responsibility for completing this study on behalf of the cities and counties in California.

- California State Association of Counties (CSAC)
- League of California Cities (League)
- County Engineers Association of California (CEAC)
- County of Los Angeles
- California Regional Transportation Planning Agencies (RTPA)
- Metropolitan Transportation Commission (MTC)
- California Rural Counties Task Force (RCTF)

The Oversight Committee is composed of representatives from each organization, with the Metropolitan Transportation Commission acting as the Project Manager. Nichols Consulting Engineers, Chtd. (NCE) is the consultant who will be performing the update.

Who should I contact for more information?

Margot Yapp, Vice President
Nichols Consulting Engineers, Chtd.
501 Canal Blvd, Suite I
Pt. Richmond, CA 94804
(510) 215-3620

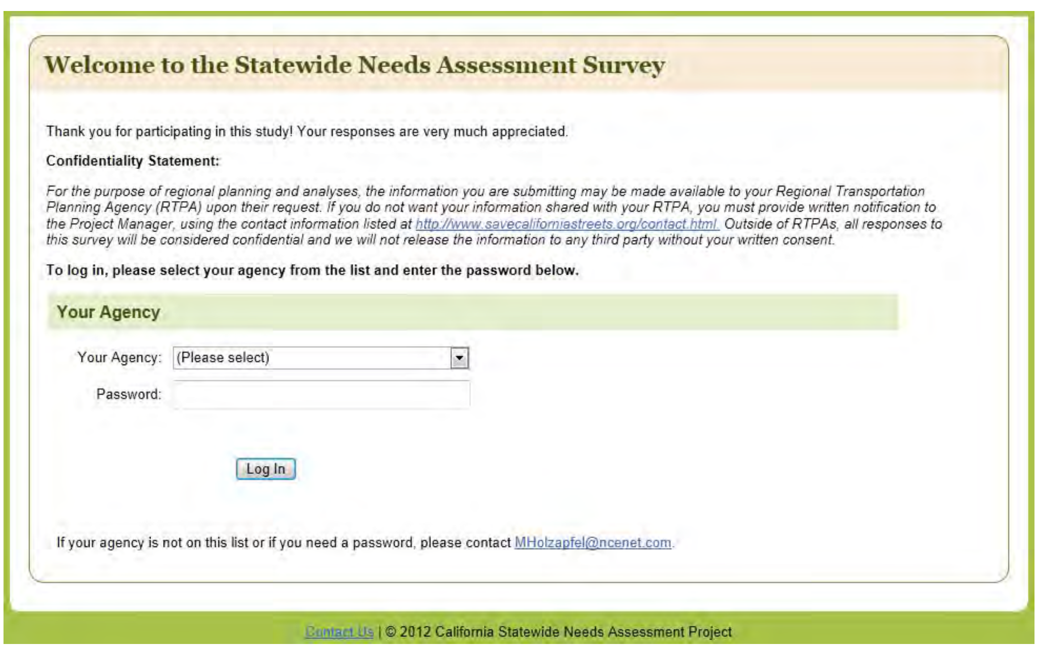
Theresa Romell, Senior Planner
Project Manager
Metropolitan Transportation Commission
(510) 817-5772

Greg Kelley, Assistant Deputy Director
County of Los Angeles
Dept of Public Works
(626) 458-4911

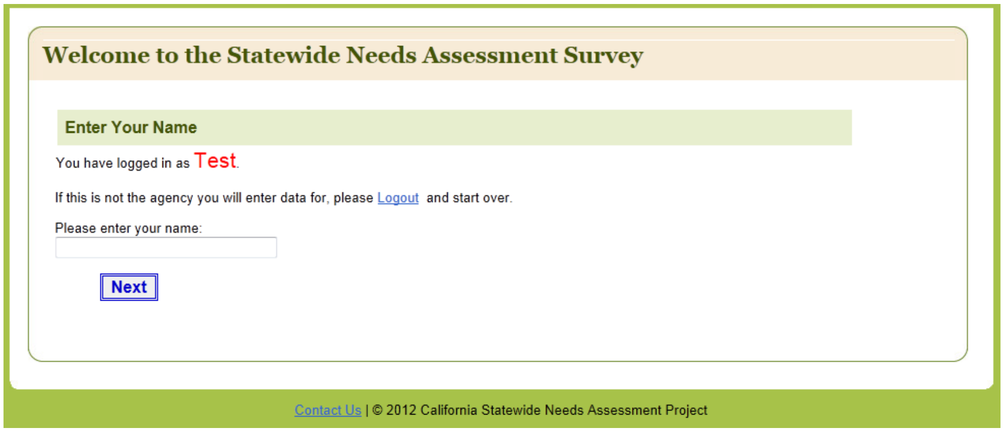
Instructions for Online Survey

Step 1. Go to http://www.savecaliforniastreets.org. Click on the button that says "Click here to participate".

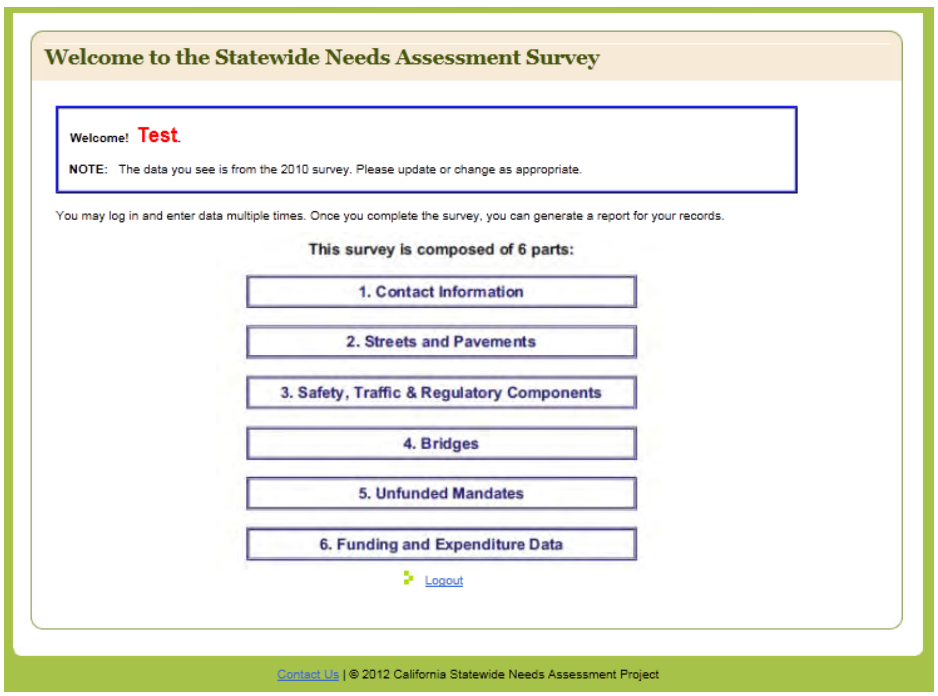
Step 2. On the login page, select the name of your agency from the dropdown list. If you responded to the 2010 survey, the information you entered at that time will be shown so that you can update it. You will need your agency's login and password which was mailed to you. If you do not have this information, please contact Melissa Holzapfel at (510) 215-3620 or at mholzapfel@ncenet.com.



Step 3. Enter your name, then click “Next” to the main survey page.



Step 4. There are six (6) parts in this survey (see image below). Click on each button to enter the relevant information.



Step 5. Once data entry is complete, you can view and print your entry by clicking on the “Print a copy for your records” button. If there are no more changes, select “Yes” on the “Are you ready to submit the survey as final?” question.

Step 6. Click on “Logout” button when done.

THANK YOU FOR YOUR PARTICIPATION!

Statewide Needs Assessment Survey Report

1. CONTACT INFORMATION

Contact Type	Salutation	Name	Title	Department	Address Line 1	Address Line 2	City	Zip Code	Email	Phone
Main Contact Person										
Alternative Contact Person										
Contact Person for Financial Data										
Alternative Contact Person for Financial Data										

2. STREETS AND PAVEMENTS

2.1 Pavement Management System and Pavement Distress Survey Procedures

1. Does your agency use Pavement Management System (PMS) software?
[ ] (Go to Question 1a if "Yes"; Go to Question 1b if "No".)

1a. Select your agency's Pavement Management System (PMS) software:
[ ]

Enter your agency's PMS software name (if "Other" is selected above):
[ ]

1b. Select the reason your agency does not use a PMS:
[ ]

Enter the reason your agency does not use a PMS (if "Other" is selected above):
[ ]

2. What pavement distresses do you collect for AC (Asphalt Concrete)? If you collect distresses that are not listed below, please enter in the "Other AC Distresses" box.

1) Alligator Cracking No
2) Block Cracking No
3) Distortions No
4) Long. & Trans. Cracking No
5) Patch & Util. Cut Patch No
6) Rutting/Depression No
7) Weathering & Raveling No

Other AC distresses your agency collects, if any:

3. Does your agency have PCC (Portland Cement Concrete) pavements?

If yes, what pavement distresses do you collect for PCC? If you collect distresses that are not listed below, please enter in the "Other PCC Distresses" box.

1) Corner Break No
2) Divided Slab No
3) Faulting No
4) Linear Cracking No
5) Patching & Utility Cuts No
6) Scaling/Map Cracking/Crazing No
7) Spalling No

Other PCC distresses your agency collects, if any:

4. What other condition data do you collect?

Deflection N/A
Ride Quality N/A
Friction N/A
Drainage N/A
Structure/Core N/A
Complaints N/A
Pavement Age N/A

Other condition data your agency collects, if any:

5. What is the scale of the pavement condition index/rating used (e.g. 0-100, A-F)?
Lowest possible rating(e.g. 0)

Highest possible rating(e.g. 100)

6. Any notes you would like to add regarding your pavement distress survey procedures (e.g. collected by consultant, in-house, frequency of collection, etc.), or any comments/notes you have regarding any portion of this survey/your data:

2.2 Sustainable Pavement Practices

1. What sustainable pavement practices does your agency utilize?

Sustainable Pavement Practice	Does your agency utilize?	Unit Cost ($/sy)	Additional Costs or Savings	Percentage of Additional Costs or Savings
Reclaimed Asphalt Pavement (RAP)				%
Cold In-place Recycling (CIR) Pavements				%
Warm Mix Asphalt				%
Porous/Pervious Pavements				%
Full Depth Reclamation (FDR)				%
Rubberized Asphalt Concrete (RAC)				%
Pavement Preservation Strategies				%

Other Sustainable Pavement Practices your agency is utilizing (indicate additional costs or savings):

2. What are the estimated total cost savings resulting from sustainable pavement practices, if any? (Enter savings as % of total pavement treatment costs)

%

3. Will you continue applying sustainable pavement practices?

4. What do you like about sustainable pavement practices?

5. What do you dislike about sustainable pavement practices?

6. Other comments regarding sustainable pavement practices:

2.3 Inventory and condition Information

Functional Class/Road Type	Year of Last Inspection	Pavement Condition Rating (Weighted Average)	Center Line Miles	Lane Miles	Area(sq. yd.)	PCC (as % of the area)
Urban Major Roads						
Urban Residential/Local Roads						
Rural Major Roads						
Rural Residential/Local Roads						
Unpaved Roads						0.00

2.4. Pavement treatment unit costs

Urban Major Roads:

Pavement Treatment	PCI Range	Unit Cost ($/sq. yd.)
Do Nothing	90 - 100	$0.00
Preventive Maintenance (e.g. slurry, chip seal, cape seal)	70 - 89	
Thin overlay (e.g. less than or equal to 2 inches)	50 - 69	
Thick overlay (e.g. more than 2 inches)	25 - 49	
Reconstruction (e.g. remove & replace)	0 - 24	

Urban Residential/Local Roads:

Pavement Treatment	PCI Range	Unit Cost ($/sq. yd.)
Do Nothing	90 - 100	$0.00
Preventive Maintenance (e.g. slurry, chip seal, cape seal)	70 - 89	
Thin overlay (e.g. less than or equal to 2 inches)	50 - 69	
Thick overlay (e.g. more than 2 inches)	25 - 49	
Reconstruction (e.g. remove & replace)	0 - 24	

Rural Major Roads:

Pavement Treatment	PCI Range	Unit Cost ($/sq. yd.)
Do Nothing	90 - 100	$0.00
Preventive Maintenance (e.g. slurry, chip seal, cape seal)	70 - 89	
Thin overlay (e.g. less than or equal to 2 inches)	50 - 69	
Thick overlay (e.g. more than 2 inches)	25 - 49	

Reconstruction (e.g. remove & replace)	0 - 24	

Rural Residential/Local Roads:

Pavement Treatment	PCI Range	Unit Cost ($/sq. yd.)
Do Nothing	90 - 100	$0.00
Preventive Maintenance (e.g. slurry, chip seal, cape seal)	70 - 89	
Thin overlay (e.g. less than or equal to 2 inches)	50 - 69	
Thick overlay (e.g. more than 2 inches)	25 - 49	
Reconstruction (e.g. remove & replace)	0 - 24	$23.00

2.5 Complete Streets Policy

1. Has your agency adopted a "Complete Streets Policy"?
   If your answer is "No" or "Don't know", skip this session.

2. What complete streets elements are included or assumed in the policy? Check all that apply.

   - Bicycle facilities ☐
   - Pedestrian facilities ☐
   - Landscaping ☐
   - Medians ☐
   - Lighting ☐
   - Roundabouts ☐
   - Traffic Calming e.g. reducing lane widths ☐
   - Signs ☐
   - Curb Ramps ☐

   Comments/Additional items:
   ____

3. What percentage of roads are candidates to become a Complete Street? (e.g. enter 10 for 10%)
   [   ]%

4. What is the estimated average incremental costs to provide Complete Street enhancements ($/sq. yd)?
   $[   ]/sq. yd

5. Other comments or notes you would like to add regarding Complete Streets:
   ____

3. SAFETY, TRAFFIC AND REGULATORY COMPONENTS

Category	Inventory (Quantity)	Unit	Total Replacement Cost	Accuracy
Storm Drains - pipelines		mile		
Other elements e.g. manholes, inlets, culverts, pump stations etc		ea		
Curb and gutter		ft		
Pedestrian facilities: Sidewalk (public)		sq. ft.		
Other pedestrian facilities, e.g. over-crossings		ea		
* Bicycle facilities: Class I bicycle path		mile		
Other bicycle facilities		ea		
Curb ramps		ea		
Traffic signals		ea		
Street Lights		ea		
Sounds Walls/Retaining walls		sq. ft.		
Traffic signs		ea		
Other physical assets or expenditures that constitute >5% of total non-pavement asset costs e.g. heavy equipment, corporation yards etc. Note: Do NOT include bridges (handled separately)		ea		

4. BRIDGE DATA

4.1 Local Agency Owned/Maintained Bridges (LAB's)

1. Total Number of LAB's within / not within the National Bridge Inventory (NBI):

Number of LAB's within the NBI	Number of LAB's NOT within the NBI

2. Number of LAB's by maintenance expenditures in last two years:

	Maintenance Expenditures per Bridge in Last Two Years		
	None	<$1000/Bridge	>=$1000/Bridge
Number of LAB's			

3. Number of LAB’s posted for live load restriction:

4. Has Agency developed a Scour Mitigation Plan of Action (POA) for LAB’s?

5. If so, number of LAB’s that the Agency has completed Scour Mitigation POA’s over last 5 years:

6. Has Agency submitted Bridge Preventative Maintenance Program (BPMP) Plan to Caltrans for review / approval?

4.2 Short Span Vehicular Bridges (SSB’s)

1. Total Number of SSB’s

4.3. Non-Vehicular Bridges (NVB’s)

1. Total Number of NVB’s

2. Number of NVB’s by Maintenance Expenditures in last two years

	Maintenance Expenditures per Bridge in Last Two Years		
	None	<$1000/Bridge	>=$1000/Bridge
Number of NVB's			

4.4 Low Water Crossings (LWC’s)

Total Number of LWC’s	Number of LWC’s replaced over last 5 years	Total Number of LWC’s that should be replaced with bridges

5. UNFUNDED MANDATES

Does your agency have unfunded mandates such as Americans with Disabilities Act (ADA), NPDES(National Pollutant Discharge Elimination System) requirements or Traffic Sign Retroreflectivity?

If you answer "Yes" above, please fill out the table. Otherwise, skip this section.

Are you willing to be contacted if we have follow-up questions regarding "Unfunded Mandates"?

Additional comments regarding "Unfunded Mandates":

Mandate	Do you track costs separately?	Estimated 10-Year Needs	Estimated 10-Year Needs	Accuracy
ADA				
NPDES				
Traffic Sign Retroreflectivity				

6. FUNDING AND EXPENDITURE DATA

6.1 Actual/Estimated Revenues for Pavement-related Activities

(No data has been entered)

6.2 Actual/Estimated Revenues for Safety, Traffic & Regulatory Components

(No data has been entered)

6.3 Expenditures on Pavements

Name	Amount (FY2010/11)	Amount (FY 2011/12)	Annual Average (FY2012/13 to 2021/22)
Preventive Maintenance e.g. crack seals, slurry seals etc			
Rehabilitation & reconstruction e.g. overlays			
Other (pavement related)			
Other Operations & Maintenance e.g. vegetation, cleaning ditches, sweeping etc			

Of the totals reported above, what percentages are due to "Sustainable Pavement Practices" and "Complete Streets Policy"? Enter in table below.

Name	% of Amount (FY 2010/11) Total	% of Amount (FY 2011/12) Total	% of Annual Average (FY 2012/13 to 2021/22) Total
Sustainable Pavement			

Practices			
Complete Streets Policy			

6.4 Expenditures on Safety, Traffic & Regulatory Components

Name	Amout (FY2010/11)	Amount (FY2011/12)	Annual Average (FY2012/13 to 2021/22)
Storm Drains - pipelines			
Other elements e.g. manholes, inlets, culverts, pump stations etc			
Curb and gutter			
Pedestrian facilities: Sidewalk (public)			
Other pedestrian facilities, e.g. over-crossings			
* Bicycle facilities: Class I bicycle path			
Other bicycle facilities			
Curb ramps			
Traffic signals			
Street Lights			
Sounds Walls/Retaining walls			
Traffic signs			
Other physical assets or expenditures that constitute >5% of total non-pavement asset costs e.g. heavy equipment, corporation yards etc. Note: Do NOT include bridges (handled separately)			

Of the above total expenditures, what percentages are due to a "Complete Streets Policy"?

Name	% of Amount (FY 2010/11) Total	% of Amount (FY 2011/12) Total	% of Annual Average (FY 2012/13 to 2021/22) Total
Complete Streets Policy			

6.5 Bridge Needs, Funding and Expenditures

1. Bridge maintenance expenditures:

Bridge Type	Total maintenance expenditures over last 2 years
Local Agency Owned/Maintained Bridges (LAB's)	

Non-vehicular Bridges (NVB's)	

2. If your agency has developed a Scour Mitigation Plan of Action (POA) for LAB's, provide total project costs of Scour Mitigation POA's over last 5 years:

3. If you agency has submitted Bridge Preventative Maintenance Program (BPMP) Plan to Caltrans, provide cost of developing the BPMP Plan:

4. Please provide your estimated bridge needs and available funding for the next ten (10) years:

Activity	Anticipated funding needs in the next 10 years	Available funding currently identified in the next 10 years
Bridge Maintenance		
Bridge Rehabilitation		
Bridge Replacement		

6.6 Financial Questions

1. What are innovative ways that your agency is doing to "stretch" the dollar?

2. Are there new revenues sources that your agency is considering?

3. Is there a county wide sales tax for transportation?

4. Is there a city wide sales tax for transportation?

5. If there is a city/county wide sales tax for transportation, describe how it is used (e.g. local match for highways, local streets & roads only, transit, etc).

APPENDIX B

Pavement Needs by County

Table B.1 Pavement Needs by County* (2012 $M Dollars)

County (Cities included)	Center Line Miles	Lane Miles	Area (sq. yd.)	2012 PCI	10 Year Needs (2012 $M)
Alameda County	3,534.16	7,981.96	81,700,384	68	$ 2,108
Alpine County	135.00	270.00	2,029,409	45	$ 60
Amador County	475.80	954.95	6,428,601	33	$ 383
Butte County	1,782.10	3,642.99	32,578,860	65	$ 828
Calaveras County	718.28	1,344.19	9,054,592	51	$ 372
Colusa County	986.70	1,523.51	12,503,304	60	$ 333
Contra Costa County	3,346.14	7,059.50	63,674,361	71	$ 1,464
Del Norte County	334.35	674.74	5,545,540	64	$ 135
El Dorado County	1,252.70	2,508.40	21,671,673	63	$ 635
Fresno County	5,972.88	12,702.32	106,961,163	69	$ 2,519
Glenn County	950.10	1,899.40	14,089,812	68	$ 350
Humboldt County	1,476.25	2,931.29	24,138,809	64	$ 687
Imperial County	2,999.96	6,086.66	45,427,410	57	$ 1,236
Inyo County	1,134.20	1,651.50	13,789,051	60	$ 328
Kern County	5,026.42	11,648.11	103,132,477	64	$ 2,927
Kings County	1,328.00	2,795.72	20,026,009	62	$ 600
Lake County	752.75	1,497.37	10,199,540	40	$ 450
Lassen County	429.31	874.60	6,406,058	66	$ 208
Los Angeles County	21,374.97	49,878.61	458,903,871	66	$ 12,531
Madera County	1,822.44	3,680.41	23,490,290	47	$ 1,019
Marin County	1,020.68	2,059.35	18,077,971	61	$ 551
Mariposa County	1,122.00	561.00	3,949,440	44	$ 150
Mendocino County	1,124.71	2,255.29	16,097,768	37	$ 617
Merced County	2,330.00	4,954.00	37,182,870	58	$ 1,224
Modoc County	1,511.58	3,034.24	18,066,419	56	$ 483
Mono County	727.38	1,453.39	10,071,369	66	$ 148
Monterey County	1,779.37	3,725.91	33,593,823	50	$ 1,388
Napa County	716.14	1,489.35	12,453,529	59	$ 410
Nevada County	798.01	1,617.30	10,438,504	72	$ 219
Orange County	6,501.06	17,011.98	146,008,901	77	$ 2,771
Placer County	1,983.49	4,192.32	34,161,920	71	$ 733
Plumas County	703.90	1,408.60	11,409,902	66	$ 214
Riverside County	7,112.65	15,887.53	143,854,509	70	$ 3,419

County (Cities included)	Center Line Miles	Lane Miles	Area (sq. yd.)	2012 PCI	10 Year Needs (2012 $M)
Sacramento County	5,041.96	11,263.99	95,668,492	64	$ 2,728
San Benito County	410.70	832.97	5,547,794	66	$ 160
San Bernardino County	8,822.82	20,553.99	171,322,286	70	$ 4,006
San Diego County	8,134.08	20,258.27	179,755,199	67	$ 5,314
San Francisco County	939.64	2,133.62	21,123,238	65	$ 610
San Joaquin County	3,370.60	7,113.91	61,240,026	67	$ 1,586
San Luis Obispo County	1,967.03	4,070.03	32,279,689	63	$ 944
San Mateo County	1,872.39	3,912.39	33,486,613	71	$ 769
Santa Barbara County	1,568.63	3,293.66	29,610,551	67	$ 814
Santa Clara County	4,161.97	9,380.88	90,432,429	73	$ 1,860
Santa Cruz County	855.67	1,751.53	13,764,053	48	$ 573
Shasta County	1,686.97	3,479.08	26,243,076	57	$ 861
Sierra County	499.23	1,000.91	8,010,229	71	$ 155
Siskiyou County	1,494.88	3,004.80	20,340,302	57	$ 605
Solano County	1,714.96	3,623.43	29,162,226	67	$ 742
Sonoma County	2,372.70	4,959.65	39,517,285	50	$ 1,634
Stanislaus County	2,718.05	5,898.62	47,866,381	52	$ 1,946
Sutter County	1,028.81	2,105.53	15,865,482	56	$ 507
Tehama County	1,197.49	2,400.88	15,834,143	65	$ 402
Trinity County	915.78	1,608.07	12,529,435	50	$ 455
Tulare County	3,956.82	8,180.79	60,632,842	68	$ 1,496
Tuolumne County	532.50	1,228.95	16,984,138	62	$ 508
Ventura County	2,440.39	5,352.55	47,701,134	69	$ 1,190
Yolo County	1,400.29	2,538.48	21,752,974	63	$ 622
Yuba County	724.40	1,504.26	12,862,583	56	$ 454
California	143,092	312,708	2,666,650,735	66	$72,443

* Includes Cities within County

APPENDIX C

Essential Component Needs by County

Table C.1 Summary of Essential Component Needs by County

County	10 year Needs ($M)
Alameda	$ 2,617
Alpine	$ 4
Amador	$ 2
Butte	$ 116
Calaveras	$ 7
Colusa	$ 21
Contra Costa	$ 1,098
Del Norte	$ 36
El Dorado	$ 61
Fresno	$ 242
Glenn	$ 24
Humboldt	$ 174
Imperial	$ 108
Inyo	$ 8
Kern	$ 563
Kings	$ 115
Lake	$ 33
Lassen	$ 15
Los Angeles	$ 6,210
Madera	$ 104
Marin	$ 298
Mariposa	$ 6
Mendocino	$ 109
Merced	$ 136
Modoc	$ 3
Mono	$ 14
Monterey	$ 459
Napa	$ 188
Nevada	$ 22
Orange	$ 1,943
Placer	$ 421
Plumas	$ 31
Riverside	$ 1,456
Sacramento	$ 1,364
San Benito	$ 16
San Bernardino	$ 1,210
San Diego	$ 2,249
San Francisco	$ 1,380
San Joaquin	$ 728
San Luis Obispo	$ 239
San Mateo	$ 827
Santa Barbara	$ 308
Santa Clara	$ 1,536
Santa Cruz	$ 141
Shasta	$ 204
Sierra	$ 12
Siskiyou	$ 16
Solano	$ 544
Sonoma	$ 852
Stanislaus	$ 645
Sutter	$ 260
Tehama	$ 11
Trinity	$ 10
Tulare	$ 309
Tuolumne	$ 59
Ventura	$ 635
Yolo	$ 263
Yuba	$ 25
Totals	**$ 30,485**

* Includes cities within County

APPENDIX D

Bridge Needs By County

Estimated Local Agency Needs Summary					
	Number of Bridges	Average Sufficiency Rating, SR	Structures with SR ≤ 80	Structures with SR ≤ 50	Total Bridge Need
County Name	EA		EA	EA	$ Million
Alameda	183	83	55	9	$120 M
Alpine	11	75	5	1	$1 M
Amador	39	66	19	9	$7 M
Butte	291	74	97	46	$82 M
Calaveras	67	76	27	9	$11 M
Colusa	148	86	27	11	$11 M
Contra Costa	287	83	83	15	$118 M
Del Norte	28	78	11	3	$12 M
El Dorado	87	66	45	17	$39 M
Fresno	491	81	156	34	$72 M
Glenn	167	76	58	22	$56 M
Humboldt	168	71	64	31	$119 M
Imperial	137	77	49	16	$18 M
Inyo	33	78	12	2	$3 M
Kern	258	87	57	4	$19 M
Kings	99	89	22	1	$4 M
Lake	78	73	28	13	$19 M
Lassen	64	78	24	6	$8 M
Los Angeles	1,456	85	451	28	$1,239 M
Madera	155	84	30	16	$38 M
Marin	112	74	44	16	$31 M
Mariposa	52	68	24	11	$16 M
Mendocino	137	74	55	20	$58 M
Merced	287	80	109	19	$27 M
Modoc	50	86	9	2	$1 M
Mono	11	80	3	1	$1 M
Monterey	133	69	52	31	$175 M
Napa	104	72	37	19	$35 M
Nevada	56	72	14	13	$26 M

Estimated Local Agency Needs Summary (continued from previous page)					
	Number of Bridges	Average Sufficiency Rating, SR	Structures with SR ≤ 80	Structures with SR ≤ 50	Total Bridge Need
County Name	EA		EA	EA	$ Million
Orange	507	84	179	13	$71 M
Placer	168	77	51	25	$29 M
Plumas	91	70	41	16	$34 M
Riverside	429	86	119	10	$71 M
Sacramento	375	84	86	21	$168 M
San Benito	46	76	14	7	$7 M
San Bernardino	480	76	109	91	$243 M
San Diego	491	87	106	12	$95 M
San Francisco	23	73	12	3	$23 M
San Joaquin	323	85	78	14	$75 M
San Luis Obispo	183	76	83	17	$37 M
San Mateo	140	78	62	12	$36 M
Santa Barbara	178	80	47	21	$54 M
Santa Clara	447	78	118	64	$204 M
Santa Cruz	99	68	40	23	$57 M
Shasta	280	80	97	22	$66 M
Sierra	32	72	11	7	$13 M
Siskiyou	179	82	31	18	$32 M
Solano	199	87	41	7	$24 M
Sonoma	431	77	154	52	$150 M
Stanislaus	247	78	116	14	$81 M
Sutter	92	81	41	3	$3 M
Tehama	309	74	91	56	$136 M
Trinity	96	77	32	12	$24 M
Tulare	396	83	133	9	$29 M
Tuolumne	54	67	25	11	$10 M
Ventura	178	82	58	10	$81 M
Yolo	127	76	41	20	$27 M
Yuba	74	70	24	17	$30 M