A Methodology for Estimating Costs of Bicyclist and Pedestrian Improvements in the SCAG Region

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Why Estimate The Costs to Build Bicycle and Pedestrian Improvements?

- Regional Transportation Plan is an opportunity to improve public health
- The cost to build walkable and bikeable communities in the SCAG region is not known
- Estimated cost for bike/ped infrastructure can inform discussion about investments in active transportation

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Three Sections in the Methodology

1) Bicycle infrastructure costs

2) Pedestrian infrastructure costs

3) Bicycle and pedestrian infrastructure costs in Transit Oriented Districts (TODs)

Bicyclist Costs, Component 1: Infrastructure Costs from Bike Master Plans

City	Plan Year	Total Costs Included	Cost per Year	Cost per Year in 2011 Dollars	2010 US Census Population	2010 Census Land Area (mi^2)	Annual Cost per Capita	Population Density
West Hollywood	2003	$128,690	$42,897	$52,977	34,399	1.89	$1.54	18200.5
Santa Monica	2011	$6,158,000	$1,231,600	$1,231,600	89,736	8.41	$13.72	10670.2
San Fernando	2007	$177,700	$35,540	$38,241	23,645	2.37	$1.62	9976.8
Long Beach	2001	$2,737,050	$547,410	$718,749	462,257	50.29	$1.55	9191.8
Temple City	2011	$6,406,750	$1,281,350	$1,281,350	35,558	4.01	$36.04	8867.3
LA City	2010	$39,680,000	$7,936,000	$8,078,848	3,792,621	468.67	$2.13	8092.3
Culver City	2010	$1,005,240	$201,048	$204,667	38,883	5.11	$5.26	7609.2
South Pasadena	2011	$323,600	$64,720	$64,720	25,619	3.41	$2.53	7512.9
Pasadena	2011	$470,092	$94,018	$94,018	137,122	22.97	$0.69	5969.6
Burbank	2009	$16,822,000	$3,364,400	$3,485,518	103,340	17.34	$33.73	5959.6
Whittier	2008	$6,676,500	$1,335,300	$1,382,036	85,331	14.65	$16.20	5824.6
Santa Clarita	2008	$7,271,596	$1,454,319	$1,505,220	176,320	52.72	$8.54	3344.5
Claremont	2007	$6,103,559	$1,220,712	$1,313,486	34,926	13.35	$37.61	2616.2
San Dimas	2011	$3,215,625	$643,125	$643,125	33,371	15.04	$19.27	2218.8
Calabasas	2008	$2,556,000	$852,000	$881,820	23,058	12.90	$38.24	1787.4
Lancaster	2008	$9,910,000	$1,982,000	$2,051,370	156,633	94.28	$13.10	1661.4
Total for all 16 cities		$109,642,402	$22,286,439	$23,027,746	5,252,819	787.41	**$4.38**	6671.0
Only Low cost cities		$43,517,132	$8,720,585	$9,047,554	4,475,663	549.60	**$2.02**	8143.5
Only Medium cost cities		$34,236,961	$6,847,392	$7,018,018	580,274	190.21	**$12.09**	3050.7
Only High cost cities		$31,888,309	$6,718,462	$6,962,174	196,882	47.60	**$35.36**	4136.2

Note: Low cost cities have per capita costs of <$5, medium cost cities of $5-$20, and high cost cities of >$20.

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1. The table includes bicycle master plans that were approved by cities in Los Angeles County between October 2001 and October 2011.
2. Costs in this table do not include bikeway maintenance or planning.
3. If a plan divided projects into priorities or tiers, only the highest priority projects were counted in plan costs. Unless otherwise specified, the timeframe for building priority projects (or for building all projects in a plan with no priorities identified) was assumed to be a five year period.
4. If a plan included projects that were designed to enhance a light rail or train station, the costs of these projects was not included, since costs for transit oriented districts are estimated elsewhere. Burbank had TOD costs deducted.
5. Calabasas is a 3 year plan (2009-2011).
6. LA City 5 year costs (overall plan costs) were calculated by dividing the entire number of bikeway miles to be built during the 35 year plan by 7 to get miles built in a five year period. The low and high estimates of costs per mile were applied to the five year miles to get a range. The low and high ends of the range were then averaged; that is the number reported in the table above.
7. West Hollywood only includes "short term" projects, which were designated for completion during a 3 year period.
8. Cost per Year in 2011 dollars converts the costs of plans developed between 2001 and 2010 into 2011 dollars.

Bicyclist Costs, Component 2: Infrastructure Costs for Closing Gaps in LA County's Bikeway Network

Total Estimated Costs to Close Gaps in Bike Network, 2010 dollars	$163,793,710
Total Estimated Costs to Close Gaps in Bike Network, 2011 dollars	$166,741,997
Average Cost per Year, Assuming 5 Year Period	$33,348,399
Los Angeles County 2010 Population	9,818,605
Annual Costs per capita	**$3.40**

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1. Close-the-gap projects are taken from LA County Metro's 2006 Bikeway Master Plan
2. Length of close-the-gap projects and type of bikeway needed (class I, class II, class III) were provided by Metro.
3. When a city's bicycle master plan included all or part of a close-the-gap project the length of the city's close-the-gap project was deducted from the length of the close-the-gap project to avoid duplication. The following cities had projects partially or completely deducted: Burbank (one project), Los Angeles(two projects), Long Beach (one project), Whittier (one project).
4. Cost for close-the-gaps projects were calculated by applying per mile cost estimates to the the project length using an average of the high and low estimates found for each bikeway type in the City of LA Bike Master Plan (2010).

Bicyclist Costs, Component 3: Maintenance Costs for LA County Bikeways

	Class I Bikeways	Class II Bikeways	Class III Bikeways	Total
Bikeway Miles in LAC, Existing as of 2008	264	484.6	518.2	1266.8
Bikeway Miles in LAC, Proposed as of 2008	197.8	509.9	318.7	1026.4
SCAG Bikeway Miles in LAC, Proposed as of 2008	3.9	79	127	209.9
Estimated Annual Maintenance Costs per Mile, 2010 dollars	$15,000	$5,000	$5,000	
Annual Maintenance for Existing Bikeways, 2010 dollars	$3,960,000	$2,423,000	$2,591,000	$8,974,000
Annual Maintenance for All Proposed Bikeways, 2010 dollars	$3,025,500	$2,944,500	$2,228,500	$8,198,500
Annual Maintenance Total for Existing & Proposed, 2010 dollars	$6,985,500	$5,367,500	$4,819,500	$17,172,500
Annual Maintenance Total for Existing & Proposed, 2011 dollars	$7,111,239	$5,464,115	$4,906,251	$17,481,605
Average Annual Maintenance, Assuming a 25 Year Time Period				$13,141,647
Los Angeles County 2010 Population				9,818,605
Average Annual per Capita Cost, Assuming 25 Year Period				**$1.34**

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1) Existing and proposed bikeway mileage provided by SCAG using 2008 numbers; this does not include proposed miles from city bike master plans developed after that year.
2) Annual maintenance costs for different classes of bikeways taken from LA City's 2010 Bicycle Plan
3) Close-the-gap projects are not included in these maintenance costs.

Estimated 25 Year Costs for Bicycle Projects & Maintenance in SCAG Region

	Per Capita Cost	Cost for 1 year, 2011 dollars	Cost for 25 years, 2011 dollars	Cost for 25 years, assuming 3.0% inflation
Bike Master Plans, Low Cost Cities	$2.02	$36,705,659	$917,641,472	$1,338,261,319
Bike Master Plans, High Cost Cities	$35.36	$642,093,227	$16,052,330,676	$23,410,246,683
Bike Master Plans, Overall Average	$4.38	$79,600,942	$1,990,023,554	$2,902,191,791
Gap Projects	$3.40	$61,671,486	$1,541,787,156	$2,248,497,018
Maintenance Costs	$1.34	$24,302,963	$607,574,067	$886,068,140
Total Costs, Low Cost Estimate	$6.76	$122,680,108	$3,067,002,695	$4,472,826,478
Total Costs, High Cost Estimate	$40.10	$728,067,676	$18,201,691,899	$26,544,811,842

Note: 2010 SCAG population = 18,157,632

Pedestrian Costs, Component 1: Infrastructure Costs from Pedestrian Master Plans

City	Plan Year	Total Costs Included	Cost per Year	Cost per Year in 2011 Dollars	2010 US Census Population	2010 Census Land Area (mi^2)	Annual Cost per Capita	Population Density
Culver City	2010	$133,050	$26,610	$27,089	38,883	5.11	$0.70	7609.2
Santa Clarita	2008	$1,045,000	$209,000	$216,315	176,320	52.72	$1.23	3344.5
West Hollywood	2003	$189,500	$63,167	$78,011	34,399	1.89	$2.27	18200.5
Total, for 3 cities		**$1,367,550**	**$298,777**	**$321,415**	**249,602**	**59.72**	**$1.29**	**4179.5**

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1. The table includes pedestrian master plans that were approved by cities in Los Angeles County between October 2001 and October 2011, with the exception of Pasadena, which was excluded because of per capita cost estimates which were much greater than those found in other cities.
2. Costs in this table do not include maintenance or planning.
3. If a plan divided projects into priorities or tiers, only the highest priority projects were counted in plan costs. Unless otherwise specified, the timeframe for building priority projects (or for building all projects in a plan with no priorities identified) was assumed to be a five year period.
4. If a plan included projects that were designed to enhance a light rail or train station, the costs of these projects was not included, since costs for transit oriented districts are estimated elsewhere. Santa Clarita & Pasadena had TOD costs deducted.
5. West Hollywood's pedestrian master plan only includes "short term" projects, which were designated for completion during a 3 year period.
6. Cost per year in 2011 dollars converts the costs of earlier plans into 2011 dollars.

Pedestrian Costs, Component 2: Maintenance Costs: Sidewalk Repair

Geography	Los Angeles City
Miles of Sidewalks	10,750
Miles of Sidewalks Needing Repair	4,600
Estimated Cost of Repairs, 2010 Dollars	$1,200,000,000
Cost per year Assuming 10 Year Time Period, 2010 Dollars	$120,000,000
Cost per year, Adjusted to 2011 Dollars	$122,160,000
LA City 2010 Census Population	3,792,621
Annual per Capita Costs	**$32.21**

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1. The costs per capita were calculated based on data about 4,600 miles of sidewalks in the City of LA in need of repair for a total cost of $1.2 billion, as presented in the journal article by Donald Shoup: "Putting Cities Back on Their Feet", Journal of Urban Planning and Development, Sept. 2010, p. 225 (accessed at: http://shoup.bol.ucla.edu/PuttingCitiesBackOnTheirFeet.pdf)
2. A 10-year period for fixing sidewalks was assumed to calculate the annual cost
3. This methodology could lead to: a) an underestimate because it does not include the costs of building new sidewalks - only repair; b) an overestimate because it's based on cost of repair in City of LA and newer cities in the SCAG region may have lower costs for sidewalk repair.

Pedestrian Costs, Component 3: Costs to Build Pedestrian Improvements Around Schools

Number of schools in LA County funded by Caltrans- SRTS in cycle 9, 2010	28
Total Project Costs for LA County SRTS projects	$7,847,300
Average Cost per SRTS school	$280,261
Total Number of public schools in LA County	2230
Total costs for all public schools in LA County, 2010 Dollars	$624,981,393
Average Annual Cost for all schools, Assuming 5 Year Period, 2010 Dollars	$124,996,279
Average Annual cost for all schools, Adjusted to 2011 Dollars	$127,246,212
LA County 2010 Census Population	9,818,605
Annual per capita cost for all schools	**$12.96**

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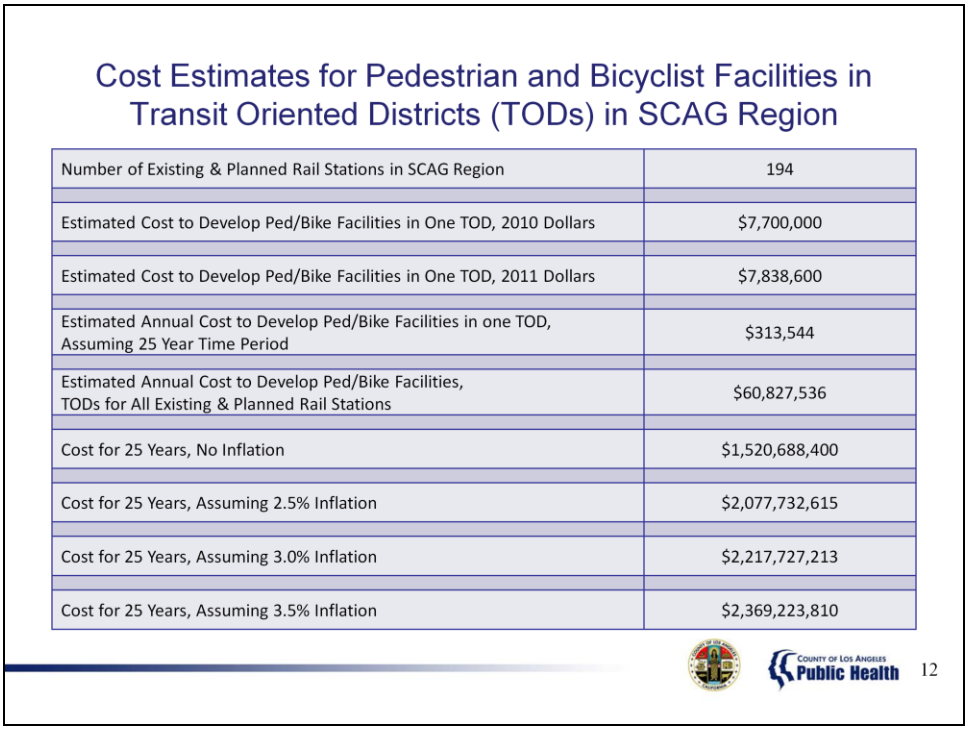
1. Costs were calculated based on the awards made by Caltrans for SRTS projects in cycle 9, announced in 2010.
2. Total number of schools includes all public elementary, middle and high schools, obtained from the LA County Office of Education.
3. Total number of schools does not include private schools
4. A 5-year period for implementing SRTS projects was assumed to calculate the annual cost

Estimated 25 Year Costs for Pedestrian Projects & Maintenance in SCAG Region

	Per Capita Cost	Cost for 1 year, 2011 dollars	Cost for 25 years, 2011 dollars	Cost for 25 years, assuming 3.0% inflation
Pedestrian Master Plans	$1.29	$23,381,751	$584,543,784	$852,481,453
Sidewalk Repair	$32.21	$584,855,783	$14,621,394,579	$21,323,411,588
SRTS	$12.96	$235,317,531	$5,882,938,267	$8,579,504,051
Total	$76.69	$1,392,419,065	$34,810,476,630	$50,766,574,744

Note: 2010 SCAG population = 18,157,632



1. Information on number of existing & planned rail stations provided by SCAG.
2. Cost data was obtained from the report, "The Central Corridor TOD Investment Framework: A Corridor Implementation Strategy," 2010, supported by the Central Corridor Funders Collaborative and led by the Center for Transit-Oriented Development, Bonestroo and Springsted. Accessible at: www.funderscollaborative.org/sites/default/files/pdfs/Central_Corridor_Investment_Framework_report.pdf

Low and High Estimates of Bike and Ped Costs, Adjusted for 3% Inflation, as a Percentage of SCAG's 25 Year Budget

Project Type	Low Estimate for 25 Years		High Estimate for 25 Years	
	Cost	% SCAG Budget	Cost	% SCAG's Budget
Bike Master Plans	$1,338,261,319	0.3%	$23,410,246,683	4.5%
Bike Gap Projects	$2,248,497,018	0.4%	$2,248,497,018	0.4%
Bike Proj Maintenance	$886,068,140	0.2%	$886,068,140	0.2%
Bicycle Costs Total	$4,472,826,478	0.9%	$26,544,811,842	5.1%
Pedestrian Master Plans	$852,481,453	0.2%	$852,481,453	0.2%
Pedestrian – Sidewalks	$21,323,411,588	4.1%	$21,323,411,588	4.1%
Ped - SRTS	$8,579,504,051	1.6%	$8,579,504,051	1.6%
Pedestrian Costs Total	$30,755,397,091	5.9%	$30,755,397,091	5.9%
TOD Costs Total	$2,217,727,213	0.4%	$2,217,727,213	0.4%
Bike/Ped/TOD Combined	**$37,445,950,782**	**7.1%**	**$59,517,936,146**	**11.4%**

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1. Percents calculated using SCAG's $524 billion budget.