

Project ID*	Project Name	County	Project Type	Project Capital Costs (in millions of 2013 dollars)	Total Annualized 2035 Benefits (in millions of 2013 dollars)	Total Annualized 2035 Costs (in millions of 2013 dollars)	Plan Bay Area B/C Ratio	B/C Ratio (Nov. 2011 Draft)
ADDITIONAL PROJECTS NOT PREVIOUSLY ASSESSED								
580_BUS	I-580 Express Bus (Dublin to Livermore)	Alameda	Transit Efficiency	150	32	16	2	n/a
240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-County	Transit Efficiency	0	108	65	2	n/a
LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Alameda	Transit Expansion	555	37	29	1	n/a
UPDATED PROJECT COSTS BASED ON NEW INFORMATION FROM SPONSORS								
240119	VTA El Camino BRT	Santa Clara	Transit Efficiency	239	28	12	2	1
230164	Geary Boulevard BRT	San Francisco	Transit Efficiency	172	15	9	2	1
UPDATED PROJECT COSTS AND INCLUDED BENEFITS FROM HIGH-SPEED RAIL								
230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	San Francisco/ 3434	Transit Expansion	2,348	108	31	4	0.8
CORRECTED ANNUALIZATION FOR PROJECT BENEFITS								
240582	Truck & Motorcycle Retirement [BAAQMD program]	Regional	Climate	29	55	6	9	0.0
240577	Heavy-Duty Truck Replacement [BAAQMD program]	Regional	Climate	211	42	44	1	0.0
240589	EV Solar Installation [BAAQMD program]	Regional	Climate	25	1	2	0.8	0.0

Projects with slight adjustments to monetized benefits and/or costs since November that did **not** result in changes to the B/C ratio are omitted from the list above.

B/C RATIO - COLOR KEY	
High B/C (B/C ratio greater than 10)	
Medium-High B/C (B/C ratio between 5 and 9)	
Medium-Low B/C (B/C ratio between 1 and 4)	
Low B/C (B/C ratio less than 1)	

* = projects with updates to B/C ratio since November draft release marked in blue

Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	TRAVEL TIME BENEFITS					TOTAL	TRAVEL COST BENEFITS			AIR POLLUTANT BENEFITS		COLLISIONS & ACTIVE TRANSPORT BENEFITS			
										Auto/Truck [in millions of hours]	Auto/Truck (Non-Recurr. Delay) [in millions of hours]	Transit In-Vehicle [in millions of hours]	Transit Out-of-Vehicle [in millions of hours]	Walk/Bike [in millions of hours]		VMT [in millions]	Vehicles Owned	PM2.5 [in tons]	CO2 [in thousands of metric tons]	Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Individuals	
1	22780	AC Transit Grand-MacArthur BRT	ALA/3434	Transit Efficiency	\$ 36.0	\$ -	\$ 31.5	\$ 1.8	18	(1.4)	(0.1)	0.1	(0.1)	0.0	(1.5)	(6)	(53)	(0.9)	(8)	(0.1)	(4)	(7)	98	
2	22062	Irvington BART Station	ALA	Transit Efficiency	\$ 123.0	\$ -	\$ 18.7	\$ 1.5	12	(0.6)	(0.1)	0.2	(0.1)	(0.0)	(0.6)	(6)	(357)	(0.5)	(4)	(0.1)	(4)	(6)	763	
3	94506	Fremont/Union City East-West Connector	ALA	Arterial Expansion	\$ 190.0	\$ 0.5	\$ 65.5	\$ 10.0	7	(3.7)	(0.2)	0.0	0.0	0.0	(3.9)	2	164	(1.6)	(20)	(0.1)	(10)	3	(449)	
4	98207T	Alameda-Oakland BRT + Transit Access Improvements	ALA	Transit Efficiency	\$ 15.8	\$ 1.3	\$ 13.6	\$ 2.1	6	(0.1)	0.0	(0.0)	(0.3)	0.0	(0.4)	(1)	12	0.0	0	(0.0)	(1)	(1)	(200)	
5	22455	AC Transit East Bay BRT	ALA/3434	Transit Efficiency	\$ 211.0	\$ 1.0	\$ 62.0	\$ 11.6	5	(0.8)	(0.0)	(1.2)	(0.9)	(0.1)	(3.0)	6	187	(0.3)	(4)	0.0	3	8	(100)	
6	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	ALA	Highway Expansion	\$ 380.5	\$ 1.7	\$ 87.1	\$ 20.7	4	(5.0)	(0.6)	(0.1)	0.1	(0.0)	(5.6)	16	446	(1.4)	(19)	(0.0)	(2)	23	(624)	
7	580_BUS	I-580 Express Bus (Dublin to Livermore)	ALA	Transit Efficiency	\$ 150.0	\$ 8.1	\$ 31.8	\$ 16.4	2	(1.2)	(0.1)	0.5	(0.2)	(0.0)	(1.0)	(17)	(156)	(0.8)	(6)	(0.2)	(12)	(18)	329	
8	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	ALA	Transit Expansion	\$ 555.3	\$ 10.1	\$ 36.7	\$ 28.6	1	(1.6)	(0.2)	1.3	(0.4)	(0.1)	(1.0)	(19)	(482)	(1.4)	(12)	(0.2)	(12)	(20)	486	
9	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	ALA	Transit Expansion	\$ 1,134.5	\$ 14.6	\$ 49.6	\$ 52.4	1	(2.2)	(0.3)	1.8	(0.5)	(0.1)	(1.3)	(26)	(651)	(1.9)	(16)	(0.2)	(16)	(27)	657	
10	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	ALA	Transit Expansion	\$ 4,177.0	\$ 14.2	\$ 56.7	\$ 153.4	0.4	(2.2)	(0.3)	1.4	(0.5)	(0.1)	(1.7)	(26)	(651)	(1.9)	(16)	(0.2)	(16)	(27)	657	
11	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	ALA/3434	Transit Efficiency	\$ 180.0	\$ -	\$ (0.1)	\$ 2.3	0.0	(0.1)	0.1	0.0	0.0	(0.0)	0.0	(1)	(8)	0.0	0	(0.0)	(1)	(1)	29	
12	22400	SR-239 Expressway Construction (Brentwood to Tracy)	CC	Highway Expansion	\$ 372.7	\$ 1.9	\$ 143.8	\$ 20.6	7	(8.5)	(0.2)	0.0	0.0	(0.0)	(8.6)	18	363	(2.7)	(38)	(0.4)	(32)	28	(553)	
13	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	CC	Highway Expansion	\$ 396.3	\$ 1.4	\$ 65.4	\$ 21.2	3	(2.8)	(0.5)	(0.4)	(0.3)	0.0	(4.0)	6	2,774	0.2	6	(0.1)	(6)	19	(244)	
14	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	CC	Highway Expansion	\$ 149.9	\$ 1.1	\$ 15.5	\$ 8.6	2	(0.6)	(0.0)	0.0	(0.0)	(0.0)	(0.6)	(5)	(32)	0.2	8	(0.5)	(38)	(5)	(16)	
15	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	CC	Transit Efficiency	\$ 59.7	\$ 6.4	\$ 12.2	\$ 10.7	1	(0.5)	0.0	0.2	(0.1)	(0.0)	(0.4)	(4)	(181)	(0.4)	(3)	(0.0)	(3)	(4)	333	
16	230252	Marin Countywide Bus Service Frequency Improvements	MRN	Transit Efficiency	\$ -	\$ 12.3	\$ 8.9	\$ 12.3	0.7	(0.3)	(0.0)	0.5	(0.1)	(0.1)	0.0	(8)	(475)	(0.4)	(3)	(0.1)	(6)	(8)	1,439	
17	240182	BART Metro Program (including Bay Fair Connection and Civic Center Turnback)	Multi-Cty.	Transit Efficiency	\$ 650.0	\$ (18.5)	\$ 161.3	\$ (10.4)	>60	(3.0)	(0.2)	0.9	(2.6)	(0.1)	(5.0)	(31)	(1,373)	(1.9)	(17)	(0.3)	(21)	(32)	2,735	
18	240523, 240060	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)	Multi-Cty.	Road Efficiency	\$ 330.7	\$ 2.8	\$ 122.7	\$ 19.3	6	(5.0)	(1.2)	(0.4)	(0.0)	0.1	(6.5)	(29)	(451)	(0.8)	(1)	(0.2)	(14)	(5)	(281)	
19	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-Cty.	Express Lanes Network	\$ 2,364.0	\$ -	\$ 601.6	\$ 118.2	5	(15.7)	(24.3)	(2.7)	(0.6)	(0.3)	(43.5)	235	5,456	9.8	39	1.3	78	298	(5,050)	
20	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-Cty.	Transit Efficiency	\$ 847.7	\$ 5.6	\$ 152.5	\$ 33.9	5	(3.3)	(0.3)	1.0	(1.5)	(0.0)	(4.1)	(69)	(2,438)	(3.0)	(23)	(0.6)	(42)	(70)	5,760	
21	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-Cty.	Transit Efficiency	\$ 215.7	\$ 3.7	\$ 36.1	\$ 14.5	2	(1.5)	(0.0)	(0.1)	(0.1)	(0.0)	(1.7)	(6)	(174)	(1.0)	(9)	(0.1)	(7)	(5)	(105)	
22	00BART	BART Service Frequency Improvements	Multi-Cty.	Transit Efficiency	\$ 1,274.7	\$ 13.1	\$ 126.0	\$ 55.6	2	(3.2)	(0.4)	1.2	(1.5)	(0.0)	(3.8)	(42)	(1,390)	(2.6)	(23)	(0.4)	(28)	(43)	2,753	
23	230604	Bay Bridge Contraflow Lane	Multi-Cty.	Road Efficiency	\$ 610.5	\$ -	\$ 66.8	\$ 30.5	2	(2.7)	0.1	(2.6)	0.3	0.1	(4.9)	(7)	317	(1.2)	(11)	0.4	32	4	(2,591)	
24	240018	Dumbarton Corridor Express Bus	Multi-Cty.	Transit Efficiency	\$ 101.0	\$ 4.5	\$ 22.6	\$ 11.7	2	(0.5)	(0.1)	0.4	(0.4)	(0.0)	(0.6)	(6)	(200)	(0.4)	(4)	(0.1)	(4)	(6)	552	
25	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-Cty./3434	Transit Expansion	\$ 320.2	\$ 15.7	\$ 41.3	\$ 22.1	2	(2.8)	(0.3)	0.7	0.6	0.0	(1.8)	(27)	(790)	(1.9)	(16)	(0.3)	(18)	(28)	1,714	
26	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-Cty.	Transit Efficiency	\$ -	\$ 64.9	\$ 108.5	\$ 64.9	2	(1.8)	(0.2)	1.8	(2.4)	(0.2)	(2.6)	(29)	(1,847)	(1.4)	(11)	(0.3)	(20)	(28)	(4,761)	
27	230055	Golden Gate Ferry Service Frequency Improvements	Multi-Cty.	Transit Efficiency	\$ 34.4	\$ 3.3	\$ 5.8	\$ 4.4	1	(0.4)	(0.0)	0.5	0.0	(0.0)	0.0	(4)	(286)	(0.4)	(3)	(0.1)	(4)	(4)	661	
28	240521, 240134, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-Cty.	Transit Efficiency	\$ 5,598.7	\$ 33.7	\$ 272.0	\$ 220.3	1	(5.6)	(0.5)	2.3	(2.8)	(0.1)	(6.9)	(124)	(4,553)	(5.7)	(44)	(1.1)	(75)	(126)	10,025	
29	00ACT1	AC Transit Frequent Transit Network	Multi-Cty.	Transit Efficiency	\$ 654.3	\$ 463.6	\$ 605.7	\$ 510.3	1	(12.7)	(1.3)	13.0	(11.6)	(0.6)	(13.2)	(173)	(9,548)	(8.7)	(72)	(1.7)	(118)	(171)	9,442	

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										Auto/Truck [in millions of hours]	Auto/Truck (Non-Recurr. Delay) [in millions of hours]	Transit In-Vehicle [in millions of hours]	Transit Out-of-Vehicle [in millions of hours]	Walk/Bike [in millions of hours]		VMT [in millions]	Vehicles Owned	PM2.5 [in tons]	CO2 [in thousands of metric tons]	Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Individuals
30	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Multi-Cty.	Road Efficiency	\$ 300.0	\$ 2.7	\$ 20.0	\$ 17.7	1	(0.5)	(0.4)	(0.4)	(0.1)	0.0	(1.4)	14	235	0.5	9	0.1	8	17	(601)
31	240216	Dumbarton Rail	Multi-Cty./ 3434	Transit Expansion	\$ 755.0	\$ 11.1	\$ 30.7	\$ 36.3	0.8	(1.1)	(0.2)	0.4	(0.1)	(0.0)	(1.0)	(16)	(502)	(0.9)	(8)	(0.2)	(11)	(16)	942
32	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-Cty./ 3434	Transit Expansion	\$ 282.9	\$ 3.8	\$ 9.7	\$ 13.2	0.7	(0.3)	(0.1)	0.1	(0.1)	(0.0)	(0.3)	(5)	(161)	(0.2)	(1)	(0.0)	(3)	(5)	252
33	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-Cty.	Transit Efficiency	\$ 143.2	\$ 18.9	\$ 15.7	\$ 29.1	0.5	(0.3)	(0.0)	0.3	(0.3)	(0.0)	(0.4)	(5)	(144)	(0.3)	(2)	(0.0)	(4)	(5)	248
34	98139	ACE Service Expansion	Multi-Cty./ 3434	Transit Efficiency	\$ 600.0	\$ 46.5	\$ 19.1	\$ 66.5	0.3	(0.8)	(0.2)	(0.2)	0.3	(0.0)	(0.9)	(17)	(267)	(1.0)	(8)	(0.2)	(11)	(19)	537
35	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-Cty./ 3434	Transit Efficiency	\$ 508.5	\$ 1.2	\$ 1.0	\$ 18.2	0.1	(0.1)	(0.0)	0.0	0.0	(0.0)	(0.1)	1	(12)	(0.0)	(0)	0.0	0	1	29
36	240617	SR-29 HOV Lanes and BRT (Napa Junction to Vallejo)	NAP	Road Efficiency	\$ 60.0	\$ 1.2	\$ 10.9	\$ 4.2	3	(0.4)	(0.2)	(0.0)	0.0	0.0	(0.5)	(1)	(45)	0.0	3	(0.1)	(11)	(0)	976
37	230419	Freeway Performance Initiative	Reg.	FPI	\$ 2,991.0	\$ 54.2	\$ 3,174.9	\$ 202.5	16	(155.9)	(9.8)	(2.9)	(0.9)	(0.5)	(170.0)	(65)	(5,163)	(100.1)	(2,100)	(29.0)	201	4	(3,021)
38	240582	Truck & Motorcycle Retirement [BAAQMD program]	Reg.	Climate	\$ 5.7	\$ 0.3	\$ 54.5	\$ 6.0	9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	(63.0)	0	n/a	n/a	n/a	n/a
39	n/a	Local Streets and Roads Capital Maintenance Needs	Reg.	Maintenance	\$ -	\$ 280.0	\$ 1,369.3	\$ 280.0	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
40	240410	Transportation for Livable Communities	Reg.	TLC	\$ 7,131.3	\$ 0.0	\$ 874.8	\$ 254.7	3	(15.3)	(0.6)	(1.5)	(1.7)	2.6	(16.5)	(392)	(27,961)	(7.7)	(174)	(4.2)	(298)	(461)	167,639
41	22247	Regional Bikeway Network	Reg.	Bike/Ped	\$ 1,464.0	\$ -	\$ 124.5	\$ 73.2	2	(1.2)	(0.1)	(0.1)	(0.1)	0.2	(1.4)	(34)	(2,417)	(0.7)	(15)	(0.4)	(26)	(40)	54,406
42	n/a	New Freedom Program	Reg.	Lifeline/New Freedom	\$ -	\$ 2.0	\$ 3.3	\$ 2.0	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
43	230550	Climate Initiatives (5-year program)	Reg.	Climate	\$ 560.0	\$ -	\$ 158.0	\$ 112.0	1	(0.8)	(0.0)	(0.1)	(0.1)	0.1	(0.9)	(21)	(1,497)	(0.4)	(2,216)	(0.2)	(16)	(25)	n/a
44	n/a	Transit Capital Maintenance Needs	Reg.	Maintenance	\$ -	\$ 1,285.7	\$ 1,787.1	\$ 1,285.7	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
45	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Reg.	Climate	\$ 42.2	\$ 1.8	\$ 41.8	\$ 44.0	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	(48.0)	0	n/a	n/a	n/a	n/a
46	240589	EV Solar Installation [BAAQMD program]	Reg.	Climate	\$ 1.3	\$ 0.3	\$ 1.1	\$ 1.5	0.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0	(13)	n/a	n/a	n/a	n/a
47	240690	Lifeline Transportation Program	Reg.	Lifeline/New Freedom	\$ -	\$ 119.0	\$ 10.0	\$ 119.0	0.1	(0.2)	(0.0)	(0.0)	(0.0)	0.0	(0.2)	(6)	418	(0.1)	(3)	(0.1)	(4)	(7)	n/a
48	240694	Treasure Island Congestion Pricing	SF	Pricing	\$ 58.9	\$ -	\$ 69.1	\$ 1.2	59	(2.3)	(0.1)	1.3	(0.5)	0.0	(1.7)	(25)	(1,540)	(1.4)	(11)	(0.2)	(18)	(25)	2,483
49	240522	Congestion Pricing Pilot	SF	Pricing	\$ 101.8	\$ -	\$ 227.4	\$ 5.1	45	(6.3)	(0.2)	4.3	(1.5)	1.2	(2.4)	(85)	(9,583)	(4.6)	(40)	(1.0)	(75)	(91)	11,899
50	240171	SFMTA Transit Effectiveness Project	SF	Transit Efficiency	\$ 156.9	\$ -	\$ 89.5	\$ 7.8	11	(2.1)	(0.2)	1.0	(1.7)	(0.1)	(3.1)	(11)	(311)	(1.5)	(14)	(0.1)	(8)	(10)	(3,811)
51	230161	Van Ness Avenue BRT	SF/3434	Transit Efficiency	\$ 139.5	\$ -	\$ 44.1	\$ 7.0	6	(1.2)	(0.1)	(0.4)	(0.1)	(0.1)	(2.0)	(11)	(340)	(0.9)	(8)	(0.1)	(9)	(12)	895
52	240155	Better Market Street	SF	Transit Efficiency	\$ 200.0	\$ -	\$ 56.5	\$ 10.0	6	(2.0)	(0.4)	(0.9)	(0.2)	0.3	(3.1)	(12)	436	(0.4)	(1)	(0.2)	(14)	(2)	(423)
53	240557	Oakdale Caltrain Station	SF	Transit Efficiency	\$ 51.2	\$ -	\$ 2.8	\$ 0.6	4	(0.1)	0.0	0.1	(0.0)	(0.0)	(0.0)	(1)	(68)	(0.1)	(1)	(0.0)	(1)	(2)	76
54	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	SF/3434	Transit Expansion	\$ 2,348.0	\$ 1.4	\$ 107.9	\$ 30.8	4	(5.4)	(0.2)	1.8	(0.9)	(0.0)	(4.7)	(22)	(545)	(1.0)	(8)	(0.2)	(14)	(22)	942
55	240147	Southeast Waterfront Transportation Improvements	SF	Transit Efficiency	\$ 397.0	\$ 16.1	\$ 88.1	\$ 36.0	2	(1.7)	(0.1)	0.2	(1.4)	(0.1)	(3.0)	(12)	(558)	(1.0)	(9)	(0.2)	(13)	(11)	(756)
56	00MUNI	Muni Service Frequency Improvements	SF	Transit Efficiency	\$ -	\$ 14.0	\$ 24.7	\$ 14.0	2	(0.2)	0.0	0.2	(0.7)	0.0	(0.7)	(1)	(58)	(0.0)	(0)	(0.0)	(2)	(1)	(1,058)
57	230164	Geary Boulevard BRT	SF	Transit Efficiency	\$ 172.3	\$ -	\$ 15.1	\$ 8.6	2	(0.1)	0.0	0.1	(0.3)	(0.0)	(0.3)	(2)	(191)	(0.1)	(2)	(0.0)	(1)	(2)	463
58	240526	SFCTA Transit Performance Initiative	SF	Transit Efficiency	\$ 489.8	\$ -	\$ 28.4	\$ 16.3	2	(0.4)	(0.1)	(0.6)	(0.1)	(0.1)	(1.2)	(5)	(404)	(0.4)	(3)	(0.1)	(4)	(5)	338
59	240545	Parkmerced Light Rail Corridor	SF	Transit Efficiency	\$ 76.0	\$ 2.0	\$ 6.3	\$ 4.5	1	(0.2)	0.1	0.4	(0.2)	(0.1)	(0.0)	(0)	(168)	(0.1)	(1)	(0.0)	(1)	(0)	(135)
60	22415	Historic Streetcar Expansion Program	SF	Transit Efficiency	\$ 66.4	\$ 7.2	\$ 8.6	\$ 9.4	0.9	(0.3)	0.0	0.1	0.0	(0.2)	(0.3)	(1)	(306)	(0.2)	(1)	(0.0)	(1)	(0)	76
61	22274	ITS Improvements in San Mateo County	SM	Road Efficiency	\$ 65.7	\$ 0.3	\$ 56.0	\$ 3.6	16	(2.7)	(0.2)	(0.1)	(0.0)	(0.0)	(3.0)	(1)	(82)	(1.8)	(37)	(0.5)	4	0	(48)

All benefits and costs are shown in 2013 dollars. For all benefit types except active transportation, a negative value shown above reflects a benefit.

Row #	Project ID	Project Name	County	Project Type	Project Capital Costs [in millions]	Net Annual O&M Costs [in millions]	Total Annualized 2035 Benefits [in millions]	Total Annualized 2035 Costs [in millions]	B/C Ratio	TRAVEL TIME BENEFITS					TOTAL	TRAVEL COST BENEFITS		AIR POLLUTANT BENEFITS		COLLISIONS & ACTIVE TRANSPORT BENEFITS			
										Auto/Truck [in millions of hours]	Auto/Truck (Non-Recurr. Delay) [in millions of hours]	Transit In-Vehicle [in millions of hours]	Transit Out-of-Vehicle [in millions of hours]	Walk/Bike [in millions of hours]		VTM [in millions]	Vehicles Owned	PM2.5 [in tons]	CO2 [in thousands of metric tons]	Fatalities due to Collisions	Injuries due to Collisions	Property Damage Only (PDO) Collisions	Active Individuals
62	240026	SamTrans El Camino BRT	SM	Transit Efficiency	\$ 120.0	\$ 19.0	\$ 59.1	\$ 25.0	2	(2.9)	(0.2)	0.8	(0.2)	(0.0)	(2.4)	(14)	(593)	(1.7)	(17)	(0.1)	(10)	(13)	3,253
63	22268	San Mateo Countywide Shuttle Service Frequency Improvements	SM	Transit Efficiency	\$ -	\$ 6.3	\$ 10.3	\$ 6.3	2	(0.5)	0.0	0.4	(0.0)	(0.0)	(0.1)	(7)	(404)	(0.4)	(3)	(0.1)	(5)	(6)	1,321
64	240494	ITS Improvements in Santa Clara County	SCL	Road Efficiency	\$ 319.5	\$ 32.0	\$ 752.2	\$ 48.0	16	(36.9)	(2.3)	(0.7)	(0.2)	(0.1)	(40.3)	(15)	(1,230)	(23.7)	(498)	(6.9)	48	1	(715)
65	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	SCL	Road Efficiency	\$ 197.8	\$ 1.7	\$ 81.0	\$ 11.6	7	(3.7)	(1.1)	(0.1)	0.0	0.0	(4.9)	0	(179)	(0.3)	2	(0.1)	(9)	16	(125)
66	HOTd	Silicon Valley Express Lanes Network	SCL	Express Lanes Network	\$ 1,398.0	\$ -	\$ 407.8	\$ 69.9	6	(13.4)	(23.8)	(2.6)	(0.5)	(0.3)	(40.6)	471	13,292	17.6	78	3.2	208	544	(5,430)
67	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	SCL/3434	Transit Expansion	\$ 4,094.3	\$ 18.7	\$ 323.5	\$ 69.9	5	(8.5)	(1.0)	3.4	(2.9)	(0.1)	(9.1)	(161)	(6,667)	(7.7)	(63)	(1.5)	(106)	(164)	12,117
68	230294	New SR-152 Alignment	SCL	Highway Expansion	\$ 775.8	\$ 1.9	\$ 147.8	\$ 40.7	4	(8.0)	(0.1)	(0.1)	0.0	(0.0)	(8.1)	21	257	(1.3)	(6)	(1.9)	(152)	20	(194)
69	240119	VTA El Camino BRT	SCL	Transit Efficiency	\$ 239.0	\$ -	\$ 28.1	\$ 12.0	2	(0.9)	(0.1)	(0.0)	(0.0)	(0.1)	(1.0)	(12)	(638)	(0.8)	(6)	(0.1)	(8)	(12)	1,501
70	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	SCL	Transit Expansion	\$ 276.0	\$ 0.9	\$ 3.8	\$ 8.3	0.5	(0.3)	0.0	0.2	0.1	(0.0)	(0.0)	(5)	(297)	(0.2)	(1)	(0.1)	(4)	(5)	1,012
71	230547	Monterey Highway BRT	SCL	Transit Efficiency	\$ 140.0	\$ 29.6	\$ 15.0	\$ 36.6	0.4	(0.2)	0.0	0.3	(0.4)	0.0	(0.3)	(3)	(203)	(0.2)	(2)	(0.0)	(2)	(3)	297
72	22019	Downtown East Valley (Phase 2: LRT)	SCL/3434	Transit Expansion	\$ 307.2	\$ 5.4	\$ 4.8	\$ 15.6	0.3	(0.2)	0.0	0.3	(0.0)	(0.1)	0.0	(3)	(331)	(0.2)	(1)	(0.0)	(4)	(3)	755
73	230554	Sunnyvale-Cupertino BRT	SCL	Transit Efficiency	\$ 100.0	\$ 21.1	\$ 4.8	\$ 26.1	0.2	(0.1)	0.0	0.1	(0.1)	0.0	(0.0)	(0)	(147)	(0.1)	(1)	(0.0)	(0)	0	959
74	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	SCL	Transit Expansion	\$ 434.8	\$ 4.2	\$ 2.8	\$ 18.7	0.2	(0.3)	(0.0)	0.3	0.1	(0.0)	0.1	(6)	(414)	(0.3)	(2)	(0.1)	(4)	(6)	1,407
75	98119	Vasona Light Rail Extension (Phase 2)	SCL	Transit Expansion	\$ 176.0	\$ 0.6	\$ 0.1	\$ 6.5	0.0	(0.2)	0.1	0.2	0.0	(0.0)	0.1	(3)	(211)	(0.1)	(2)	(0.0)	(2)	(3)	622
76	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	SOL	Road Efficiency	\$ 50.0	\$ 1.0	\$ 18.0	\$ 3.5	5	(1.1)	(0.1)	0.1	0.0	0.0	(1.1)	3	(13)	0.1	2	(0.1)	(9)	4	(399)
77	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	SOL	Transit Efficiency	\$ 54.0	\$ -	\$ 2.0	\$ 0.7	3	(0.2)	0.0	0.0	(0.0)	(0.0)	(0.1)	1	(26)	(0.1)	(1)	0.0	0	1	26
78	240650	Sonoma Countywide Bus Service Frequency Improvements	SON	Transit Efficiency	\$ 427.8	\$ 10.4	\$ 32.0	\$ 41.0	0.8	(0.6)	(0.0)	0.6	(0.5)	(0.1)	(0.6)	(9)	(914)	(0.5)	(3)	(0.1)	(6)	(8)	2,594

Memorandum

TO: Dave Vautin, MTC

FROM: Krista Jeannotte and Doug Sallman

DATE: January 23, 2012

RE: Plan Bay Area Project Assessment: Benefit-Cost Analysis Sensitivity Testing

The following memorandum summarizes the sensitivity testing results for the Plan Bay Area Project Performance Assessment benefit-cost (B/C) analysis. The following sensitivity assessments were performed in order to measure how the analysis results could be affected by changes in methodological and technical assumptions:

1. Valuing nonrecurring delay at three (3) times the travel time value;
2. Adjusting transit operations and maintenance (O&M) costs to reflect potential cost savings;
3. Valuing CO₂ at a substantially higher value of \$178.33 per ton;
4. Slightly adjusting collision valuations to match USDOT standards for the value of life;
5. Increasing the noise valuation;
6. Decreasing travel time valuations substantially.

For each sensitivity test, detailed tables (included in Appendix A) present the total annualized benefits, total annualized costs, B/C ratio, and ranking from highest B/C to lowest, for both the original B/C assessment and then adjusted to reflect the impact of the particular sensitivity test. The B/C ratios are color coded according to high, medium-high, medium-low, and low ratings as shown in the table to the right. In addition, summary tables are provided for each sensitivity test, highlighting projects with significant changes to their B/C ratios, B/C ranking, and/or B/C rating.

B/C RATIO - COLOR KEY	
High B/C (B/C ratio greater than 10)	
Medium-High B/C (B/C ratio between 5 and 9)	
Medium-Low B/C (B/C ratio between 1 and 4)	
Low B/C (B/C ratio less than 1)	

(1) Valuing Nonrecurring Delay at Three Times the Value of Travel Time

Test Rationale

The previous RTP analysis (2007) used a value equal to three times the recurring in-vehicle travel time. More recent research under the Strategic Highway Research Program (SHRP) suggests a lower valuation – in the range of 0.9 to 1.2 times the value of recurring in-vehicle travel time – is more appropriate for application to non-recurring travel time. Therefore, the benefit valuation for non-recurring travel time delay for the Plan Bay Area performance assessment was set to a value equal to the value used for recurring travel time to reflect this new research. For this sensitivity test, nonrecurring delay was valued at three times the travel time value, consistent with the 2007 RTP performance assessment.

Key Impacts for Specific Projects

As visible in the Appendix Table A-1, this sensitivity test resulted in some shifting of projects within the B/C ratings and rankings:

- Three projects, SR-85 Auxiliary Lanes, Silicon Valley Express Lanes Network, and CTC Application + Alameda County Authorized Lanes Express Lanes Network, shifted from medium-high B/C rating to high with B/C ratios more than doubling the original B/C value for two of the cases. Two of these projects also realized the greatest movement in the rankings with the Silicon Valley Express Lanes project moving from a rank of 17 to 5 and CTC Application + Alameda County Authorized Lanes Express Lanes Network moving from 20 to 11.
- BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara) and SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680) also moved up in their tiering from medium-low to medium-high.
- Two of the project B/C ratings shifted downward, from medium-low to low, Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3) and Parkmerced Light Rail Corridor. The Fairfield/Vacaville station project decreased in rankings from 31 to 63. This degradation in project performance is due to both projects having substantial disbenefits from non-recurring delay.
- Dumbarton Transit Corridor (Phase 2: Commuter Rail) shifted from low to medium-low rating.

The key changes in B/C results are shown in Table 1.

Table 1. Key B/C Changes for Sensitivity Test – Three Times Non-Recurring Delay Value

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Network	Multi-County	\$408	\$1,216	\$70	\$70	6	17	198%	17	5
Alt49	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Express Lanes Network	Multi-County	\$602	\$1,426	\$118	\$118	5	12	137%	20	11
Alt61	22009	Capitol Corridor Service	Transit Efficiency	Multi-	\$1	\$2	\$18	\$18	0.1	0.1	84%	75	75
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$32	\$18	\$18	1	2	60%	58	43
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$120	\$12	\$12	7	10	48%	12	12
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$109	\$21	\$21	4	5	25%	26	22
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$36	\$36	\$36	0.8	1	17%	62	58
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$357	\$70	\$70	5	5	10%	23	23
Alt91	98207T	Access Improvements	Transit Efficiency	Alameda	\$14	\$13	\$2	\$2	6	6	-5%	14	20
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$4	\$5	\$5	1	0.9	-37%	52	62
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San	\$3	\$2	\$1	\$1	4	3	-42%	25	34
Alt51	21341	Fairfield/Vacaville Capitol	Transit Efficiency	Solano	\$2	\$1	\$1	\$1	3	0.8	-72%	31	63

Key Impacts by Project Type

Highway Expansion – B/C ratios increased nominally for all of the highway expansion projects. There were no significant changes in rankings, except for SR-239 Expressway Construction (Brentwood to Tracy) which decreased from a ranking of 11 to 15, mostly as a result of other projects improving.

Road Efficiency – B/C ratios increased moderately for road efficiency projects. The most significant improvement in ranking was for Marin-Sonoma Narrows (Phase 2: HOV Lanes) which increased in B/C from 1 to 2 and a ranking of 58 to 43.

Transit Efficiency – B/C ratio changes were mixed for transit efficiency as a result of this sensitivity test. Two projects ratings decreased from medium-low to low (Fairfield/Vacaville Capitol Corridor Station and Parkmerced Light Rail Corridor).

Transit Expansion – Impacts of the sensitivity text on transit expansion was nominal.

(2) Adjusted Transit O&M Costs

Test Rationale

For this test, O&M costs were adjusted to reflect a ten percent reduction in projects' gross O&M costs (due to potential cost savings from MTC's Transit Sustainability Project). Net O&M costs for these projects were then recalculated using the same farebox recovery ratios.

Key Impacts for Specific Projects

Appendix Table A-2 presents the results of this adjusted transit O&M cost sensitivity test. Few projects were impacted by this test but two projects did shift in rating, BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara) and Historic Streetcar Expansion Program, improved from the medium-high to high and low to medium-low rating, respectively. The Alameda-Oakland BRT + Transit Access Improvements project improved in ranking from 14 to 11. The key changes in B/C are shown in Table 2.

Table 2. Key B/C Changes for Sensitivity Test - Adjusted Transit O&M Costs

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt13	240375	BART to San Jose/Santa Clara	Transit Expansion	Santa Clara	\$324	\$324	\$70	\$64	5	5	-8%	23	22
Alt62	22415	Historic Streetcar Expansion	Transit Efficiency	San	\$9	\$9	\$9	\$9	0.9	1	-11%	61	59
Alt91	98207T	Alameda-Oakland BRT + Transit	Transit Efficiency	Alameda	\$14	\$14	\$2	\$2	6	7	-11%	14	11
Alt63	230055	Golden Gate Ferry Service	Transit Efficiency	Multi-	\$6	\$6	\$4	\$4	1	2	-16%	53	50
Alt86	00MUNI	Muni Service Frequency	Transit Efficiency	San	\$25	\$25	\$14	\$12	2	2	-17%	43	40
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$41	\$22	\$19	2	2	-18%	41	38
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$272	\$220	\$183	1	1	-21%	55	51

Key Impacts by Project Type

Highway Expansion - No impact.

Road Efficiency - No impact.

Transit Efficiency - The B/C ratios remained the same or had minor improvements for several of the transit efficiency projects. There were no significant changes in rankings with the most significant improvement coming from the Alameda-Oakland BRT + Transit Access Improvements project which increased from a ranking of 14 to 11.

Transit Expansion - This sensitivity test resulted in nominal improvements to transit expansion projects.

(3) Value CO₂ at \$178.33

Test Rationale

The value of carbon dioxide emissions in the Transportation 2035 project assessment, conducted in 2008, was based on guidance issued in December 2007 by the United Kingdom Department for Environment, Food and Rural Affairs. For consistency with other regional plans, the current RTP performance assessment CO₂ valuation was obtained from the Bay Area Air Quality Management District (BAAQMD), and updated for future years to reflect the additional damage caused by incremental accumulation of CO₂ over time. This sensitivity test reflects the substantially greater valuation of CO₂ developed in the United Kingdom (\$178.33/metric ton), indicating how relying on a higher value of CO₂ emissions might affect B/C ratios.

Key Impacts for Specific Projects

B/C ratios and ranking changes were minimal as a result of this test, as seen in Appendix Table A-3. Climate Initiatives (5-year program) resulted in a significant change with a B/C increase from 1 to 4 and a ranking increase from 50 to 27. The EV Solar Installation [BAAQMD program] also realized an improvement in rating from low to medium-low, a B/C increase from 0.8 to 2, and an increase in ranking from 64 to 43. The key changes in B/C are shown in Table 3.

Table 3. Key B/C Changes for Sensitivity Test – Value CO₂ at \$178.33

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$431	\$112	\$112	1	4	172%	50	27
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.4	\$6	\$6	0.0	0.1	163%	76	76
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$3	\$2	\$2	0.8	2	143%	64	43
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$10	\$4	\$4	3	2	-4%	32	34

Key Impacts by Project Type

Highway Expansion – The B/C impacts on the highway expansion projects were mixed with some projects slightly increasing and others decreasing. The most significant change is to the ranking of the SR-4 Bypass Completion project which decreased from 42 to 50.

Road Efficiency – Impacts were also mixed for road efficiency projects with almost no significant impact on the B/C ratios or rankings.

Transit Efficiency – All of the transit efficiency projects either remained the same or slightly improved the B/C ratio as a result of this sensitivity test.

Transit Expansion – This sensitivity test resulted in either no or nominal improvements to transit expansion projects.

(4) Collisions at U.S. DOT Value of Life Economic Values

Test Rationale

This sensitivity test involved adjusting the values of collisions to reflect those used for the U.S. DOT. Per the U.S. DOT's *Treatment of the Economic Value of a Statistical Life in Departmental Analysis- 2011 Interim Adjustment* memorandum dated July 2011, fatalities are valued at \$6.2 million in 2011 dollars with a 1.6 percent annual growth rate. Injury and property damage only (PDO) rates are not directly provided, so the percentages of injury and PDO to fatal accidents from the Caltrans Life-Cycle Benefit-Cost Analysis - Economic Parameters 2010 were used to compute the values for injury and PDOs.

Key Impacts for Specific Projects

As shown in Appendix Table A-4, this sensitivity test had virtually no impact on the B/C ratios and rankings. SR-4 Bypass Completion (SR-160 to Walnut Avenue) resulted in the most substantial change, an improvement in rankings from 42 to 39. The key changes in B/C are shown in Table 4.

Table 4. Key B/C Changes for Sensitivity Test - Collisions

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.3	\$6	\$6	0.0	0.0	101%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$0.03	\$2	\$2	(0.0)	(0.0)	67%	77	77
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$17	\$9	\$9	2	2	12%	42	39
Alt49	HOTe	Express Lanes Network E	Express Lanes Network	Multi-County	\$602	\$594	\$118	\$118	5	5	-1%	20	21
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Network	Multi-County	\$408	\$391	\$70	\$70	6	6	-4%	17	18

Key Impacts by Project Type

Highway Expansion - The collision valuation sensitivity test resulted in no or very little reductions in B/C ratios for highway expansion projects.

Road Efficiency - Impacts were mixed for road efficiency projects with almost no impact on the B/C ratios or rankings.

Transit Efficiency - The transit efficiency projects either remained the same or slightly decreased the B/C ratio as a result of this sensitivity test.

Transit Expansion - This sensitivity test resulted in either no or nominal disbenefits to the B/C of the transit expansion projects.

(5) Increased Noise Valuation

Noise benefits were valued at a level five times greater to reflect more of the health impacts associated with the projects. As there was no available literature indicating a specific higher value to use, we assumed a very significant increase noise benefit valuation to determine the maximum impact such a revision could cause. As shown in Appendix Table A-5, this test resulted in almost no impacts to the B/C ratios and rankings. The key changes in B/C are shown in Table 5.

Table 5. Key B/C Changes for Sensitivity Test – Increased Noise Valuation

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.2	\$6	\$6	0.0	0.0	19%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$0.1	\$2	\$2	(0.0)	(0.0)	10%	77	77

(6) Decreased Travel Time Valuations by 30% and 50%

Test Rationale

The value of time used in the project performance assessment is equal to one half the median wage rate of Bay Area residents. The value of travel time was reduced first by 30 percent and then by 50 percent for this sensitivity test. The 30 percent reduction is approximately equivalent to half the median post-tax wage rate of Bay Area residents. The 50 percent test reduction attempted to see how a very significant reduction in travel time benefit valuations might affect benefit-cost ratios and project rankings.

Key Impacts for Specific Projects

Appendix Tables A-6a and A-6b present the results of this test. This test resulted in the most significant impacts to the B/C ratios and rankings:

- In the case of the 30 percent reduction test, two high rated projects were reduced to medium-high level and ten medium-high level projects decreased to medium-low (all but two of the projects in that B/C tier). Additionally, four projects shifted from medium-low to low.
- For the 50 percent travel time reduction test, six high level projects decreased to medium-high, ten medium-high rated projects decreased to medium-low, and eight medium-low projects shifted down to low.
- The Silicon Valley Express Lanes Network project realized the greatest impact as a result of the travel time adjustments with the B/C ratio in the 50 percent test decreasing from six to one, a reduction in the rankings from 17 to 51.

- The largest improvement in ranking is for the Local Streets and Roads Capital Maintenance Needs program which would increase from 22 to 12.

The key changes in B/C ratios are shown in Table 6; because the 50 percent reduction test impacts a greater number of total projects, this table solely focuses on the impacts of that test.

Key Impacts by Project Type

Highway Expansion - Reducing travel time valuation resulted in significant decreases in B/C for the highway expansion projects, especially under the 50 percent reduction sensitivity test. The SR-239 Expressway Construction (Brentwood to Tracy) project resulted in a reduction in B/C of 7 to 3, as well as a decrease in ranking of 11 to 15.

Road Efficiency - The roadway efficiency projects were significantly negatively impacted as a result of this sensitivity test, except the Bay Bridge Contraflow Lane which remained the same. The ITS Improvements projects in Santa Clara and San Mateo counties realized a shifting from the high rating to medium-high as a result of the 50 percent reduction in travel time valuation test.

Transit Efficiency - The transit efficiency projects were also significantly impacted by the travel time valuation sensitivity test, with benefits often decreasing by half in many of the 50 percent reduction test. The AC Transit Grand-MacArthur BRT, Irvington BART Station, and SFMTA Transit Effectiveness Projects all decreased from the high rating tier to the medium-high as a result of the 50 percent test.

Transit Expansion - This sensitivity test resulted in a mix of impacts to the B/C of the transit expansion projects with those seeing improvements being minor improvements. BART to Livermore (Phase 1) decreased from the medium-low to low rating as a result of the 50 percent test.

Table 6. Key B/C Changes for Sensitivity Test - Decreased Travel Time Valuations by 50%

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$2	\$6	\$6	0.0	0.3	1134%	76	70
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	\$0.2	\$2	\$2	(0.0)	0.1	316%	77	76
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$188	\$220	\$220	1	0.9	-31%	55	56
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$13	\$2	\$2	12	8	-31%	8	9
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$33	\$52	\$52	1	0.6	-33%	60	62
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$25	\$29	\$29	1	0.9	-33%	54	55
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$4	\$5	\$5	1	0.9	-34%	52	53
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$37	\$153	\$153	0.4	0.2	-35%	70	73
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$8	\$11	\$11	1	0.7	-36%	57	59
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$382	\$510	\$510	1	0.7	-37%	56	58
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$27	\$7	\$7	6	4	-39%	16	13
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$18	\$2	\$2	18	10	-44%	4	4
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$68	\$19	\$19	6	4	-45%	15	14
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$31	\$4	\$4	16	9	-45%	5	6
Alt105	240494	ITS Improvements in Santa Clara	Road	Santa Clara	\$752	\$413	\$48	\$48	16	9	-45%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$1,745	\$202	\$202	16	9	-45%	5	6
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$47	\$8	\$8	11	6	-47%	9	11
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$29	\$10	\$10	6	3	-49%	18	22
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$33	\$10	\$10	7	3	-49%	13	18
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$7	\$2	\$2	6	3	-50%	14	19
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$71	\$21	\$21	7	3	-50%	11	15
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$12	\$14	\$14	2	0.9	-50%	43	54
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway)	Road	Solano	\$18	\$9	\$4	\$4	5	3	-51%	21	24
Alt8	22455	AC Transit East Bay BRT	Transit	Alameda	\$62	\$29	\$12	\$12	5	3	-53%	19	23
Alt49	HOTe	Express Lanes Network E	Express Lanes Network	Multi-County	\$602	\$235	\$118	\$118	5	2	-61%	20	27
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$6	\$18	\$18	1	0.3	-70%	58	67
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Network	Multi-County	\$408	\$68	\$70	\$70	6	1	-83%	17	51

APPENDIX A

Table A-1. Benefit-Cost Sensitivity Testing - Non-Recurring Delay at Three Times the Value of Travel Time

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of dollars) of 2013	Adjusted Total Annualized Benefits (in millions of dollars)	Original Total Annualized Costs (in millions of dollars)	Adjusted Total Annualized Costs (in millions of dollars)	Benefit-Cost Ratio		Percent Change B/C	Original Rank	Adjusted Rank
									Original B/C	Adjusted B/C			
AIt90	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$169	-\$4	-\$4	>60	>60	-	1	1
AIt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$74	\$1	\$1	59	62	6%	2	2
AIt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$233	\$5	\$5	45	46	2%	3	3
AIt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$36	\$2	\$2	18	20	14%	4	4
AIt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$3,509	\$202	\$202	16	17	11%	5	8
AIt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$62	\$4	\$4	16	17	11%	5	6
AIt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	\$752	\$831	\$48	\$48	16	17	11%	5	6
AIt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$21	\$2	\$2	12	14	14%	8	9
AIt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$96	\$8	\$8	11	12	7%	9	10
AIt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	13
AIt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$151	\$21	\$21	7	7	5%	11	15
AIt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$120	\$12	\$12	7	10	48%	12	12
AIt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$73	\$10	\$10	7	7	11%	13	16
AIt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$13	\$2	\$2	6	6	-5%	14	20
AIt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$162	\$19	\$19	6	8	32%	15	14
AIt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$49	\$7	\$7	6	7	11%	16	17
AIt36	H0TD	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$1,216	\$70	\$70	6	17	198%	17	5
AIt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$69	\$10	\$10	6	7	23%	18	18
AIt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$63	\$12	\$12	5	5	2%	19	21
AIt49	H0Te	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Express Lanes Netw	Multi-County	\$602	\$1,426	\$118	\$118	5	12	137%	20	11
AIt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$22	\$4	\$4	5	6	23%	21	19
AIt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	24
AIt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$357	\$70	\$70	5	5	10%	23	23
AIt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$153	\$163	\$34	\$34	5	5	7%	24	25
AIt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$2	\$1	\$1	4	3	-42%	25	34
AIt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$109	\$21	\$21	4	5	25%	26	22
AIt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$150	\$41	\$41	4	4	1%	27	28
AIt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown)	Transit Expansion	Multi-County	\$108	\$113	\$31	\$31	4	4	5%	28	29
AIt97	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	30
AIt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello)	Highway Expansion	Contra Costa	\$65	\$81	\$21	\$21	3	4	24%	30	26
AIt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$1	\$1	\$1	3	0.8	-72%	31	63
AIt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$16	\$4	\$4	3	4	47%	32	27
AIt66	240328, 22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$38	\$15	\$15	2	3	4%	33	32
AIt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$91	\$36	\$36	2	3	4%	34	35
AIt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$65	\$25	\$25	2	3	11%	35	31
AIt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$31	\$12	\$12	2	3	10%	36	33
AIt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$138	\$56	\$56	2	2	10%	37	36
AIt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$31	\$31	\$31	2	2	0%	38	38
AIt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$35	\$16	\$16	2	2	10%	39	40
AIt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$25	\$12	\$12	2	2	12%	40	39
AIt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$51	\$22	\$22	2	2	22%	41	37
AIt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$16	\$9	\$9	2	2	2%	42	42
AIt86	00MUUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$24	\$14	\$14	2	2	-3%	43	45
AIt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$14	\$9	\$9	2	2	-9%	44	48
AIt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$30	\$16	\$16	2	2	6%	45	41
AIt98	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	46
AIt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	\$108	\$114	\$65	\$65	2	2	5%	47	44
AIt99	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	47
AIt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$10	\$6	\$6	2	2	-5%	49	50
AIt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$159	\$112	\$112	1	1	1%	50	52
AIt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	53
AIt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$4	\$5	\$5	1	0.9	-37%	52	62
AIt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$7	\$4	\$4	1	2	15%	53	51
AIt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$45	\$29	\$29	1	2	22%	54	49
AIt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$291	\$220	\$220	1	1	7%	55	54
AIt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$649	\$510	\$510	1	1	7%	56	55
AIt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$12	\$11	\$11	1	1	-1%	57	57
AIt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$32	\$18	\$18	1	2	60%	58	43
AIt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$61	\$52	\$52	1	1	22%	60	56
AIt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$42	\$42	\$44	\$44	1	1	0%	59	59
AIt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$8	\$9	\$9	0.9	0.9	-3%	61	61
AIt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$36	\$36	\$36	0.8	1	17%	62	58
AIt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$32	\$41	\$41	0.8	0.8	1%	63	64
AIt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$1	\$2	\$2	0.8	0.8	0%	64	65
AIt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$12	\$13	\$13	0.7	0.9	23%	65	60
AIt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$9	\$12	\$12	0.7	0.7	3%	66	66
AIt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$16	\$29	\$29	0.5	0.6	3%	67	67
AIt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$3	\$8	\$8	0.5	0.4	-11%	68	69
AIt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$14	\$37	\$37	0.4	0.4	-5%	69	71
AIt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$68	\$153	\$153	0.4	0.4	20%	70	68
AIt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	\$5	\$4	\$16	\$16	0.3	0.2	-20%	71	72
AIt79	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$27	\$67	\$67	0.3	0.4	40%	72	70
AIt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$3	\$26	\$26	0.2	0.1	-32%	73	74
AIt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$4	\$19	\$19	0.2	0.2	45%	74	73
AIt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to)	Transit Efficiency	Multi-County	\$1	\$2	\$18	\$18	0.1	0.1	84%	75	75
AIt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	-\$4	\$6	\$6	0.0	(0.5)	-2600%	76	76
AIt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$2	\$2	\$2	(0.0)	(1.1)	-2842%	77	77

APPENDIX A

Table A-2. Benefit-Cost Sensitivity Testing – Adjusted Transit O&M Costs

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of dollars)	Adjusted Total Annualized Benefits (in millions of dollars)	Original Total Annualized Costs (in millions of dollars)	Adjusted Total Annualized Costs (in millions of dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt190	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$161	-\$4	-\$4	>60	>60	-	1	1
Alt193	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$69	\$1	\$1	59	59	0%	2	2
Alt185	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$227	\$5	\$5	45	45	0%	3	3
Alt171	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$32	\$2	\$2	18	18	0%	4	4
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$3,175	\$202	\$202	16	16	0%	5	7
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$56	\$4	\$4	16	16	0%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	\$752	\$752	\$48	\$48	16	16	0%	5	5
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$19	\$2	\$2	12	12	0%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$90	\$8	\$8	11	11	0%	9	9
Alt195	240582	Truck & Motorcycle Retirement [BAAQMD program]	Climate	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$144	\$21	\$21	7	7	0%	11	12
Alt125	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$81	\$12	\$12	7	7	0%	12	13
Alt127	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$65	\$10	\$10	7	7	0%	13	14
Alt191	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$14	\$2	\$2	6	7	-11%	14	11
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$123	\$19	\$19	6	6	0%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$44	\$7	\$7	6	6	0%	16	16
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$408	\$70	\$70	6	6	0%	17	17
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$56	\$10	\$10	6	6	0%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$62	\$12	\$11	5	5	-1%	19	19
Alt49	HOTE	Express Lanes Network E	Express Lanes Netw	Multi-County	\$602	\$602	\$118	\$118	5	5	0%	20	20
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$18	\$4	\$4	5	5	0%	21	21
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	23
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$324	\$70	\$64	5	5	-8%	23	22
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	\$153	\$153	\$34	\$33	5	5	-3%	24	24
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$3	\$1	\$1	4	4	0%	25	25
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$87	\$21	\$21	4	4	0%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$148	\$41	\$41	4	4	0%	27	27
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	Transit Expansion	Multi-County	\$108	\$108	\$31	\$31	4	4	0%	28	28
Alt97	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	29
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	\$65	\$65	\$21	\$21	3	3	0%	30	30
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$2	\$1	\$1	3	3	0%	31	31
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$11	\$4	\$4	3	3	-1%	32	33
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$36	\$15	\$14	2	3	-4%	33	35
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$88	\$36	\$34	2	3	-7%	34	32
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$59	\$25	\$23	2	3	-10%	35	34
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$28	\$12	\$12	2	2	0%	36	37
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$126	\$56	\$52	2	2	-7%	37	36
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$67	\$31	\$31	2	2	0%	38	39
Alt88	580 BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$32	\$16	\$16	2	2	0%	39	42
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$23	\$12	\$11	2	2	-5%	40	41
Alt19	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$41	\$22	\$19	2	2	-18%	41	38
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$15	\$9	\$9	2	2	0%	42	44
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$25	\$14	\$12	2	2	-17%	43	40
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$15	\$9	\$9	2	2	0%	44	46
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$28	\$16	\$16	2	2	0%	45	47
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	48
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of	Transit Efficiency	Alameda	\$108	\$108	\$65	\$58	2	2	-11%	47	43
Alt99	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	49
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$10	\$6	\$6	2	2	-10%	49	45
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$158	\$112	\$112	1	1	0%	50	53
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	54
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$6	\$4	\$4	1	1	-7%	52	52
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$6	\$4	\$4	1	1	-16%	53	50
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus	Transit Expansion	Alameda	\$37	\$37	\$29	\$28	1	2	-3%	54	56
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$272	\$220	\$183	1	1	-21%	55	51
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$606	\$510	\$453	1	1	-13%	56	55
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$12	\$11	\$10	1	1	-8%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$20	\$18	\$18	1	1	0%	58	58
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$50	\$52	\$51	1	1	-3%	60	60
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$42	\$42	\$44	\$44	1	1	0%	59	61
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$9	\$9	\$9	0.9	1	-11%	61	59
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$31	\$36	\$35	0.8	0.9	-4%	62	62
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$32	\$41	\$40	0.8	0.8	-3%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$1	\$2	\$2	0.8	0.8	0%	64	66
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$10	\$13	\$13	0.7	0.8	-4%	65	65
Alt22	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$9	\$12	\$11	0.7	0.8	-14%	66	63
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$16	\$29	\$27	0.5	0.6	-8%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$4	\$8	\$8	0.5	0.5	-1%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$15	\$37	\$33	0.4	0.5	-10%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$57	\$153	\$149	0.4	0.4	-3%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	\$5	\$5	\$16	\$15	0.3	0.3	-5%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$19	\$67	\$60	0.3	0.3	-10%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$5	\$26	\$24	0.2	0.2	-10%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$3	\$19	\$18	0.2	0.2	-2%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to	Transit Efficiency	Multi-County	\$1	\$1	\$18	\$18	0.1	0.1	-1%	75	75
Alt48	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.1	\$6	\$6	0.0	0.0	-2%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$0.1	\$2	\$2	(0.0)	(0.0)	0%	77	77

APPENDIX A

Table A-3. Benefit-Cost Sensitivity Testing - Value CO₂ at \$178.33 per metric ton

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt190	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$163	-\$4	-\$4	>60	>60	-	1	1
Alt193	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$70	\$1	\$1	59	60	2%	2	2
Alt185	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$232	\$5	\$5	45	46	2%	3	3
Alt171	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$33	\$2	\$2	18	18	3%	4	4
Alt104	22274	ITS Improvements In San Mateo County	Road Efficiency	San Mateo	\$56	\$61	\$4	\$4	16	17	8%	5	5
Alt105	240494	ITS Improvements In Santa Clara County	Road Efficiency	Santa Clara	\$752	\$813	\$48	\$48	16	17	8%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$3,433	\$202	\$202	16	17	8%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$19	\$2	\$2	12	12	2%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$91	\$8	\$8	11	12	2%	9	9
Alt195	240582	Truck & Motorcycle Retirement (BAAQMD program)	Transit Efficiency	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	10
Alt144	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$148	\$21	\$21	7	7	3%	11	11
Alt125	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$81	\$12	\$12	7	7	0%	12	12
Alt127	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$68	\$10	\$10	7	7	4%	13	13
Alt191	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$14	\$2	\$2	6	6	0%	14	14
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$123	\$19	\$19	6	6	0%	15	16
Alt121	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$45	\$7	\$7	6	6	2%	16	15
Alt136	HOTD	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$398	\$70	\$70	6	6	-2%	17	17
Alt180	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$57	\$10	\$10	6	6	0%	18	18
Alt18	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$62	\$12	\$12	5	5	1%	19	19
Alt149	HOTe	Express Lanes Network E	Express Lanes Netw	Multi-County	\$602	\$597	\$118	\$118	5	5	-1%	20	20
Alt132	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$18	\$4	\$4	5	5	-1%	21	21
Alt196	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	22
Alt113	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$331	\$70	\$70	5	5	2%	23	23
Alt147	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco To Tamien)	Transit Efficiency	Multi-County	\$153	\$155	\$34	\$34	5	5	2%	24	25
Alt156	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$3	\$1	\$1	4	5	6%	25	24
Alt123	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$89	\$21	\$21	4	4	3%	26	26
Alt138	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$149	\$41	\$41	4	4	1%	27	28
Alt115	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown)	Transit Expansion	Multi-County	\$108	\$109	\$31	\$31	4	4	1%	28	29
Alt197	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	30
Alt16	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	\$65	\$65	\$21	\$21	3	3	-1%	30	31
Alt151	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$2	\$1	\$1	3	3	4%	31	32
Alt158	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$10	\$4	\$4	3	2	-4%	32	34
Alt166	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$37	\$15	\$15	2	3	3%	33	33
Alt187	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$89	\$36	\$36	2	2	1%	34	35
Alt117	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$61	\$25	\$25	2	2	4%	35	36
Alt124	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$29	\$12	\$12	2	2	3%	36	37
Alt177	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$129	\$56	\$56	2	2	2%	37	38
Alt184	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$67	\$31	\$31	2	2	0%	38	39
Alt188	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$33	\$16	\$16	2	2	2%	39	40
Alt133	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$23	\$12	\$12	2	2	2%	40	41
Alt19	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$43	\$22	\$22	2	2	5%	41	42
Alt173	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$14	\$9	\$9	2	2	-6%	42	50
Alt186	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$25	\$14	\$14	2	2	0%	43	45
Alt12	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$15	\$9	\$9	2	2	2%	44	44
Alt175	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$29	\$16	\$16	2	2	1%	45	46
Alt198	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	47
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	\$108	\$110	\$65	\$65	2	2	1%	47	49
Alt199	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	51
Alt143	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$11	\$6	\$6	2	2	3%	49	48
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$431	\$112	\$112	1	4	172%	50	27
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	53
Alt155	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$6	\$5	\$5	1	1	2%	52	52
Alt163	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$6	\$4	\$4	1	1	7%	53	54
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$38	\$29	\$29	1	1	4%	54	55
Alt134	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$278	\$220	\$220	1	1	2%	55	56
Alt183	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$615	\$510	\$510	1	1	1%	56	57
Alt167	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$13	\$11	\$11	1	1	3%	57	58
Alt11	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$19	\$18	\$18	1	1	-5%	58	59
Alt154	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$52	\$52	\$52	1	1	4%	60	60
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$41.80	\$42	\$44	\$44	1	1	0%	59	61
Alt162	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$9	\$9	\$9	0.9	0.9	2%	61	62
Alt174	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$32	\$36	\$36	0.8	0.9	3%	62	63
Alt141	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$32	\$41	\$41	0.8	0.8	1%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$3	\$2	\$2	0.8	2	143%	64	43
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$10	\$13	\$13	0.7	0.7	2%	65	66
Alt122	230252	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$9	\$12	\$12	0.7	0.8	4%	66	65
Alt140	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$16	\$29	\$29	0.5	0.5	2%	67	67
Alt110	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$4	\$8	\$8	0.5	0.5	3%	68	68
Alt150	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$15	\$37	\$37	0.4	0.4	1%	69	69
Alt139	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$59	\$153	\$153	0.4	0.4	3%	70	70
Alt130	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	\$5	\$5	\$16	\$16	0.3	0.3	4%	71	71
Alt179	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$20	\$67	\$67	0.3	0.3	5%	72	72
Alt152	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$5	\$26	\$26	0.2	0.2	3%	73	73
Alt119	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$3	\$19	\$19	0.2	0.2	8%	74	74
Alt161	22009	Capitol Corridor Service Frequency Improvements (Oakland to Vasona)	Transit Efficiency	Multi-County	\$1	\$1	\$18	\$18	0.1	0.1	3%	75	75
Alt148	98119	Vasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.4	\$6	\$6	0.0	0.1	163%	76	76
Alt145	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$0.1	\$2	\$2	(0.0)	(0.0)	-11%	77	77

APPENDIX A

Table A-4. Benefit-Cost Sensitivity Testing - Crashes at U.S. DOT Value of Life Economic Values

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Benefit/Cost		Percent Change B/C	Original Rank	Adjusted Rank
									Original B/C	Adjusted B/C			
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$163	-\$4	-\$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$70	\$1	\$1	59	60	2%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$232	\$5	\$5	45	46	2%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$32	\$2	\$2	18	18	1%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$57	\$4	\$4	16	16	1%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	\$752	\$763	\$48	\$48	16	16	1%	5	5
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$3,222	\$202	\$202	16	16	1%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$19	\$2	\$2	12	12	1%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$90	\$8	\$8	11	11	1%	9	9
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction [Brentwood to Tracy]	Highway Expansion	Santa Clara	\$144	\$145	\$21	\$21	7	7	1%	11	11
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$81	\$12	\$12	7	7	0%	12	12
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$66	\$10	\$10	7	7	1%	13	13
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$14	\$2	\$2	6	7	0%	14	14
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$123	\$19	\$19	6	6	1%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$44	\$7	\$7	6	6	1%	16	16
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$391	\$70	\$70	6	6	-4%	17	18
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$57	\$10	\$10	6	6	1%	18	17
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$62	\$12	\$12	5	5	0%	19	19
Alt49	HOTE	Express Lanes Network E	Express Lanes Netw	Multi-County	\$602	\$594	\$118	\$118	5	5	-1%	20	21
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$18	\$4	\$4	5	5	2%	21	20
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	22
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$331	\$70	\$70	5	5	2%	23	23
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$153	\$155	\$34	\$34	5	5	2%	24	24
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$3	\$1	\$1	4	5	3%	25	25
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$87	\$21	\$21	4	4	0%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$155	\$41	\$41	4	4	5%	27	27
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown)	Transit Expansion	Multi-County	\$108	\$109	\$31	\$31	4	4	1%	28	28
Alt97	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	29
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	\$65	\$65	\$21	\$21	3	3	0%	30	30
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$2	\$1	\$1	3	3	-1%	31	31
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$11	\$4	\$4	3	3	5%	32	32
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$36	\$15	\$15	2	3	1%	33	33
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$89	\$36	\$36	2	2	1%	34	34
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$59	\$25	\$25	2	2	1%	35	36
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$28	\$12	\$12	2	2	1%	36	35
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$128	\$56	\$56	2	2	2%	37	37
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$67	\$31	\$31	2	2	0%	38	38
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$33	\$16	\$16	2	2	3%	39	40
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$23	\$12	\$12	2	2	1%	40	41
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$42	\$22	\$22	2	2	2%	41	42
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$17	\$9	\$9	2	2	12%	42	39
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$25	\$14	\$14	2	2	0%	43	43
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$15	\$9	\$9	2	2	1%	44	44
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$29	\$16	\$16	2	2	1%	45	45
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	46
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	\$108	\$110	\$65	\$65	2	2	1%	47	47
Alt99	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	49
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$11	\$6	\$6	2	2	3%	49	48
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$159	\$112	\$112	1	1	1%	50	50
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	52
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$5	\$5	\$5	1	1	1%	52	51
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$6	\$4	\$4	1	1	4%	53	53
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$38	\$29	\$29	1	1	2%	54	54
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$277	\$220	\$220	1	1	2%	55	55
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$613	\$510	\$510	1	1	1%	56	56
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$12	\$11	\$11	1	1	2%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$19	\$18	\$18	1	1	-3%	58	58
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$51	\$52	\$52	1	1	2%	60	59
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$42	\$42	\$44	\$44	1	1	0%	59	60
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$9	\$9	\$9	0.9	0.9	1%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$31	\$36	\$36	0.8	0.9	2%	62	62
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$32	\$41	\$41	0.8	0.8	1%	63	63
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$1	\$2	\$2	0.8	0.8	0%	64	64
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$10	\$13	\$13	0.7	0.7	2%	65	66
Alt22	230525	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$9	\$12	\$12	0.7	0.7	3%	66	65
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$16	\$29	\$29	0.5	0.5	1%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$4	\$8	\$8	0.5	0.5	4%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$15	\$37	\$37	0.4	0.4	1%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$58	\$153	\$153	0.4	0.4	2%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	\$5	\$5	\$16	\$16	0.3	0.3	3%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$20	\$67	\$67	0.3	0.3	4%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$5	\$26	\$26	0.2	0.2	0%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$3	\$19	\$19	0.2	0.2	6%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to)	Transit Efficiency	Multi-County	\$1	\$1	\$18	\$18	0.1	0.1	-3%	75	75
Alt48	98119	Yasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.3	\$6	\$6	0.0	0.0	101%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$0.03	\$2	\$2	(0.0)	(0.0)	67%	77	77

APPENDIX A

Table A-5. Benefit-Cost Sensitivity Testing - Increased Noise Valuation

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$162	-\$4	-\$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$69	\$1	\$1	59	59	0%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$228	\$5	\$5	45	45	0%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$32	\$2	\$2	18	18	0%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$56	\$4	\$4	16	16	0%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	\$752	\$752	\$48	\$48	16	16	0%	5	5
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$3,175	\$202	\$202	16	16	0%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$19	\$2	\$2	12	12	0%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$90	\$8	\$8	11	11	0%	9	9
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	10
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$144	\$21	\$21	7	7	0%	11	11
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$81	\$12	\$12	7	7	0%	12	12
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$65	\$10	\$10	7	7	0%	13	13
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$14	\$2	\$2	6	7	0%	14	14
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$123	\$19	\$19	6	6	0%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$44	\$7	\$7	6	6	0%	16	16
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$403	\$70	\$70	6	6	-1%	17	17
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$57	\$10	\$10	6	6	0%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$62	\$12	\$12	5	5	0%	19	19
Alt49	HOTE	Express Lanes Network E	Express Lanes Netw	Multi-County	\$602	\$599	\$118	\$118	5	5	0%	20	21
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$18	\$4	\$4	5	5	0%	21	20
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	22
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$325	\$70	\$70	5	5	0%	23	23
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$153	\$153	\$94	\$94	5	5	0%	24	24
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$3	\$1	\$1	4	4	1%	25	25
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$87	\$21	\$21	4	4	0%	26	26
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$148	\$41	\$41	4	4	0%	27	27
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown)	Transit Expansion	Multi-County	\$108	\$108	\$31	\$31	4	4	0%	28	28
Alt97	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	29
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	\$65	\$65	\$21	\$21	3	3	0%	30	30
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$2	\$1	\$1	3	3	-1%	31	31
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$11	\$4	\$4	3	3	0%	32	32
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$36	\$15	\$15	2	2	0%	33	33
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$88	\$36	\$36	2	2	0%	34	34
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$59	\$25	\$25	2	2	0%	35	35
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$28	\$12	\$12	2	2	0%	36	36
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$126	\$56	\$56	2	2	0%	37	37
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$67	\$31	\$31	2	2	0%	38	38
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$32	\$16	\$16	2	2	1%	39	39
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$23	\$12	\$12	2	2	0%	40	40
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$42	\$22	\$22	2	2	1%	41	41
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$16	\$9	\$9	2	2	0%	42	42
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$25	\$14	\$14	2	2	0%	43	43
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$15	\$9	\$9	2	2	0%	44	44
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$28	\$16	\$16	2	2	0%	45	45
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	46
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	\$108	\$109	\$65	\$65	2	2	0%	47	47
Alt99	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	48
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$10	\$6	\$6	2	2	1%	49	49
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$158	\$112	\$112	1	1	0%	50	50
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	51
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$5	\$5	\$5	1	1	0%	52	52
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$6	\$4	\$4	1	1	1%	53	53
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$37	\$29	\$29	1	1	1%	54	54
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$273	\$220	\$220	1	1	0%	55	55
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$607	\$510	\$510	1	1	0%	56	56
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$12	\$11	\$11	1	1	0%	57	57
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$20	\$18	\$18	1	1	-1%	58	58
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$50	\$52	\$52	1	1	1%	60	59
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$42	\$42	\$44	\$44	1	1	0%	59	60
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$9	\$9	\$9	0.9	0.9	0%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$31	\$36	\$36	0.8	0.9	1%	62	62
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$32	\$41	\$41	0.8	0.8	0%	63	63
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$1	\$2	\$2	0.8	0.8	0%	64	64
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$10	\$13	\$13	0.7	0.7	1%	65	65
Alt22	230525	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$9	\$12	\$12	0.7	0.7	1%	66	66
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$16	\$29	\$29	0.5	0.5	0%	67	67
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$4	\$8	\$8	0.5	0.5	1%	68	68
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$15	\$37	\$37	0.4	0.4	0%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$57	\$153	\$153	0.4	0.4	0%	70	70
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	\$5	\$5	\$16	\$16	0.3	0.3	1%	71	71
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$19	\$67	\$67	0.3	0.3	1%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$5	\$26	\$26	0.2	0.2	0%	73	73
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$3	\$19	\$19	0.2	0.2	2%	74	74
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to)	Transit Efficiency	Multi-County	\$1	\$1	\$18	\$18	0.1	0.1	-1%	75	75
Alt48	98119	Yasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$0.2	\$6	\$6	0.0	0.0	19%	76	76
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	-\$0.1	\$2	\$2	(0.0)	(0.0)	10%	77	77

APPENDIX A

Table A-6a. Benefit-Cost Sensitivity Testing – Decreased Travel Time Valuation by 30 Percent

Alt	RTPID#	Alternative	Mode	County	Original Total Annualized Benefits (in millions of 2013 dollars)	Adjusted Total Annualized Benefits (in millions of 2013 dollars)	Original Total Annualized Costs (in millions of 2013 dollars)	Adjusted Total Annualized Costs (in millions of 2013 dollars)	Original B/C	Adjusted B/C	Percent Change B/C	Original Rank	Adjusted Rank
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$122	-\$4	-\$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$57	\$1	\$1	59	49	-17%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$206	\$5	\$5	45	40	-10%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$23	\$2	\$2	18	13	-26%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$41	\$4	\$4	16	11	-27%	5	5
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	\$752	\$549	\$48	\$48	16	11	-27%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$2,317	\$202	\$202	16	11	-27%	5	7
Alt53	22062	Irvington BART Station	Transit Efficiency	Alameda	\$19	\$15	\$2	\$2	12	10	-19%	8	8
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$64	\$8	\$8	11	8	-28%	9	10
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	9
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$100	\$21	\$21	7	5	-30%	11	13
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$75	\$12	\$12	7	6	-7%	12	11
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$46	\$10	\$10	7	5	-30%	13	16
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$9	\$2	\$2	6	5	-30%	14	17
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$90	\$19	\$19	6	5	-27%	15	15
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$34	\$7	\$7	6	5	-24%	16	14
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$204	\$70	\$70	6	3	-50%	17	26
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$40	\$10	\$10	6	4	-29%	18	18
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$42	\$12	\$12	5	4	-32%	19	21
Alt49	HOTE	Express Lanes Network E	Express Lanes Netw	Multi-County	\$602	\$382	\$118	\$118	5	3	-37%	20	25
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$13	\$4	\$4	5	4	-30%	21	23
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	12
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$261	\$70	\$70	5	4	-19%	23	20
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$153	\$124	\$34	\$34	5	4	-19%	24	22
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$2	\$1	\$1	4	4	-14%	25	19
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$59	\$21	\$21	4	3	-32%	26	27
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$107	\$41	\$41	4	3	-28%	27	28
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown)	Transit Expansion	Multi-County	\$108	\$80	\$31	\$31	4	3	-26%	28	29
Alt97	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	24
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	\$65	\$44	\$21	\$21	3	2	-33%	30	31
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$1	\$1	\$1	3	2	-30%	31	32
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$9	\$4	\$4	3	2	-22%	32	33
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$27	\$15	\$15	2	2	-26%	33	35
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$65	\$36	\$36	2	2	-26%	34	37
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$46	\$25	\$25	2	2	-23%	35	36
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$23	\$12	\$12	2	2	-19%	36	34
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$98	\$56	\$56	2	2	-22%	37	38
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$67	\$31	\$31	2	2	0%	38	30
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$26	\$16	\$16	2	2	-19%	39	42
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$17	\$12	\$12	2	1	-24%	40	44
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$35	\$22	\$22	2	2	-14%	41	41
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$25	\$13	\$9	\$9	2	1	-19%	42	45
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$17	\$14	\$14	2	1	-30%	43	52
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$12	\$9	\$9	2	1	-23%	44	48
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$22	\$16	\$16	2	1	-22%	45	49
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	39
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	\$108	\$82	\$65	\$65	2	1	-25%	47	51
Alt99	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	40
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$9	\$6	\$6	2	1	-9%	49	43
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$112	\$112	\$112	1	1	-3%	50	47
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	46
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$5	\$5	\$5	1	1	-20%	52	53
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$6	\$4	\$4	1	1	2%	53	50
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$30	\$29	\$29	1	1	-20%	54	54
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$221	\$220	\$220	1	1	-19%	55	55
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$472	\$510	\$510	1	0.9	-22%	56	57
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$10	\$11	\$11	1	0.9	-22%	57	58
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$12	\$18	\$18	1	0.7	-42%	58	64
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$40	\$52	\$52	1	0.8	-20%	60	60
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$42	\$42	\$44	\$44	1	1	0%	59	56
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$7	\$9	\$9	0.9	0.8	-16%	61	59
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$25	\$36	\$36	0.8	0.7	-18%	62	63
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$26	\$41	\$41	0.8	0.6	-18%	63	65
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$1	\$2	\$2	0.8	0.8	0%	64	61
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$8	\$13	\$13	0.7	0.6	-19%	65	66
Alt22	230525	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$9	\$12	\$12	0.7	0.7	-3%	66	62
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$12	\$29	\$29	0.5	0.4	-23%	67	68
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$4	\$8	\$8	0.5	0.5	9%	68	67
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$11	\$37	\$37	0.4	0.3	-24%	69	69
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$45	\$153	\$153	0.4	0.3	-21%	70	71
Alt30	22019	Downtown East Valley (Phase 2: LRT)	Transit Expansion	Santa Clara	\$5	\$5	\$16	\$16	0.3	0.3	-2%	71	70
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$16	\$67	\$67	0.3	0.2	-14%	72	72
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$4	\$26	\$26	0.2	0.2	-15%	73	75
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$4	\$19	\$19	0.2	0.2	41%	74	73
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to)	Transit Efficiency	Multi-County	\$1	\$1	\$18	\$18	0.1	0.0	-36%	75	76
Alt48	98119	Yasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$1	\$6	\$6	0.0	0.2	681%	76	74
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	\$0.1	\$2	\$2	(0.0)	0.0	190%	77	77

APPENDIX A

Table A-6b. Benefit-Cost Sensitivity Testing - Decreased Travel Time Valuation by 50 Percent

Alt	RTPID#	Alternative	Mode	County	Original Total	Adjusted Total	Original Total	Adjusted Total	Original	Adjusted	Percent	Original	Adjusted
					Annualized	Annualized	Annualized	Annualized					
					Benefits (in	Benefits (in	Costs (in	Costs (in			B/C		
					millions of 2013	millions of 2013	millions of 2013	millions of 2013					
					dollars)	dollars)	dollars)	dollars)					
Alt90	240182	BART Metro Program	Transit Efficiency	Multi-County	\$161	\$95	-\$4	-\$4	>60	>60	-	1	1
Alt93	240694	Treasure Island Congestion Pricing	Pricing	Regional	\$69	\$49	\$1	\$1	59	42	-29%	2	2
Alt85	240522	Congestion Pricing Pilot	Pricing	San Francisco	\$227	\$191	\$5	\$5	45	38	-16%	3	3
Alt71	22780	AC Transit Grand-MacArthur BRT	Transit Efficiency	Alameda	\$32	\$18	\$2	\$2	18	10	-44%	4	4
Alt104	22274	ITS Improvements in San Mateo County	Road Efficiency	San Mateo	\$56	\$31	\$4	\$4	16	9	-45%	5	6
Alt105	240494	ITS Improvements in Santa Clara County	Road Efficiency	Santa Clara	\$752	\$413	\$48	\$48	16	9	-45%	5	6
Alt5	230419	Freeway Performance Initiative	FPI	Regional	\$3,175	\$1,745	\$202	\$202	16	9	-45%	5	6
Alt53	22062	Irvinton BART Station	Transit Efficiency	Alameda	\$19	\$13	\$2	\$2	12	8	-31%	8	9
Alt57	240171	SFMTA Transit Effectiveness Project	Transit Efficiency	San Francisco	\$90	\$47	\$8	\$8	11	6	-47%	9	11
Alt95	240582	Truck & Motorcycle Retirement [BAAQMD program]	Transit Efficiency	Regional	\$55	\$55	\$6	\$6	9	9	0%	10	5
Alt44	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Highway Expansion	Santa Clara	\$144	\$71	\$21	\$21	7	3	-50%	11	15
Alt25	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Road Efficiency	Santa Clara	\$81	\$71	\$12	\$12	7	6	-12%	12	10
Alt27	94506	Fremont/Union City East-West Connector	Arterial Expansion	Alameda	\$65	\$33	\$10	\$10	7	3	-49%	13	18
Alt91	98207T	Alameda-Oakland BRT + Transit Access Improvements	Transit Efficiency	Alameda	\$14	\$7	\$2	\$2	6	3	-50%	14	19
Alt14	240060, 240523	US-101 Express Lanes - Whipple to County Line	Road Efficiency	Multi-County	\$123	\$68	\$19	\$19	6	4	-45%	15	14
Alt21	230161	Van Ness Avenue BRT	Transit Efficiency	San Francisco	\$44	\$27	\$7	\$7	6	4	-39%	16	13
Alt36	HOTd	Silicon Valley Express Lanes Network	Express Lanes Netw	Multi-County	\$408	\$68	\$70	\$70	6	1	-43%	17	51
Alt80	240155	Better Market Street	Transit Efficiency	San Francisco	\$56	\$29	\$10	\$10	6	3	-49%	18	22
Alt8	22455	AC Transit East Bay BRT	Transit Efficiency	Alameda	\$62	\$29	\$12	\$12	5	3	-53%	19	23
Alt49	HOTE	Express Lanes Network E	Express Lanes Netw	Multi-County	\$602	\$235	\$118	\$118	5	2	-61%	20	27
Alt32	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Road Efficiency	Solano	\$18	\$9	\$4	\$4	5	3	-51%	21	24
Alt96	n/a	Local Streets and Roads Capital Maintenance Needs	Maintenance	Regional	\$1,369	\$1,369	\$280	\$280	5	5	0%	22	12
Alt13	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Transit Expansion	Santa Clara	\$324	\$220	\$70	\$70	5	3	-32%	23	20
Alt47	240134	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$153	\$105	\$94	\$94	5	3	-31%	24	21
Alt56	240557	Oakdale Caltrain Station	Transit Efficiency	San Francisco	\$3	\$2	\$1	\$1	4	3	-23%	25	17
Alt23	240062	SR-84/I-680 Interchange Improvements + SR-84 Widening (Pigeon Pass to I-680)	Highway Expansion	Alameda	\$87	\$40	\$21	\$21	4	2	-54%	26	29
Alt38	230294	New SR-152 Alignment	Highway Expansion	Santa Clara	\$148	\$80	\$41	\$41	4	2	-46%	27	28
Alt15	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown)	Transit Expansion	Multi-County	\$108	\$61	\$31	\$31	4	2	-43%	28	26
Alt97	240410	Transportation for Livable Communities	TLC	Regional	\$875	\$875	\$255	\$255	3	3	0%	29	16
Alt6	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening	Highway Expansion	Contra Costa	\$65	\$29	\$21	\$21	3	1	-55%	30	40
Alt51	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Transit Efficiency	Solano	\$2	\$1	\$1	\$1	3	1	-51%	31	35
Alt58	240617	SR-29 HOV Lanes & BRT (Napa Junction to Vallejo)	Road Efficiency	Napa	\$11	\$7	\$4	\$4	3	2	-36%	32	32
Alt66	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Transit Efficiency	Multi-County	\$36	\$21	\$15	\$15	2	1	-43%	33	38
Alt87	240147	Southeast Waterfront Transportation Improvements	Transit Efficiency	San Francisco	\$88	\$50	\$36	\$36	2	1	-44%	34	42
Alt17	240026	SamTrans El Camino BRT	Transit Efficiency	San Mateo	\$59	\$37	\$25	\$25	2	1	-38%	35	34
Alt24	240119	VTA El Camino BRT	Transit Efficiency	Santa Clara	\$28	\$19	\$12	\$12	2	2	-31%	36	33
Alt77	00BART	BART Service Frequency Improvements	Transit Efficiency	Multi-County	\$126	\$80	\$56	\$56	2	1	-37%	37	36
Alt84	230604	Bay Bridge Contraflow Lane	Road Efficiency	Multi-County	\$67	\$67	\$31	\$31	2	2	0%	38	25
Alt88	580_BUS	I-580 Express Bus (Dublin to Livermore)	Transit Efficiency	Alameda	\$32	\$22	\$16	\$16	2	1	-31%	39	45
Alt33	240018	Dumbarton Transit Corridor (Phase 1: Express Bus)	Transit Efficiency	Alameda	\$23	\$14	\$12	\$12	2	1	-40%	40	47
Alt9	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Transit Expansion	Multi-County	\$41	\$32	\$22	\$22	2	1	-24%	41	37
Alt73	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Highway Expansion	Contra Costa	\$15	\$11	\$9	\$9	2	1	-31%	42	46
Alt86	00MUNI	Muni Service Frequency Improvements	Transit Efficiency	San Francisco	\$25	\$12	\$14	\$14	2	0.9	-50%	43	54
Alt2	230164	Geary Boulevard BRT	Transit Efficiency	San Francisco	\$15	\$9	\$9	\$9	2	1	-38%	44	49
Alt75	240526	SFCTA Transit Performance Initiative	Transit Efficiency	San Francisco	\$28	\$18	\$16	\$16	2	1	-37%	45	48
Alt98	22247	Regional Bikeway Network	Bike/Ped	Regional	\$124	\$124	\$73	\$73	2	2	0%	46	30
Alt106	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Transit Efficiency	Alameda	\$108	\$64	\$65	\$65	2	1	-41%	47	50
Alt99	n/a	New Freedom Program	Maintenance	Regional	\$3	\$3	\$2	\$2	2	2	0%	48	31
Alt43	22268	San Mateo Countywide Shuttle Service Frequency Improvements	Transit Efficiency	San Mateo	\$10	\$9	\$6	\$6	2	1	-15%	49	39
Alt100	230550	Climate Initiatives (5-year program)	Climate	Regional	\$158	\$150	\$112	\$112	1	1	-5%	50	44
Alt101	n/a	Transit Capital Maintenance Needs	Maintenance	Regional	\$1,787	\$1,787	\$1,286	\$1,286	1	1	0%	51	41
Alt55	240545	Parkmerced Light Rail Corridor	Transit Efficiency	San Francisco	\$6	\$5	\$4	\$4	1	0.9	-34%	52	53
Alt63	230055	Golden Gate Ferry Service Frequency Improvements	Transit Efficiency	Multi-County	\$6	\$6	\$4	\$4	1	1	3%	53	43
Alt107	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Transit Expansion	Alameda	\$37	\$25	\$29	\$29	1	0.9	-33%	54	55
Alt34	240521, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (San Francisco to Tamien)	Transit Efficiency	Multi-County	\$272	\$188	\$220	\$220	1	0.9	-31%	55	56
Alt83	00ACT1	AC Transit Frequent Transit Network	Transit Efficiency	Multi-County	\$606	\$382	\$510	\$510	1	0.7	-37%	56	58
Alt67	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Transit Efficiency	Contra Costa	\$12	\$8	\$11	\$11	1	0.7	-36%	57	59
Alt1	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Road Efficiency	Multi-County	\$20	\$6	\$18	\$18	1	0.3	-70%	58	67
Alt54	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Transit Expansion	Alameda	\$50	\$33	\$52	\$52	1	0.6	-33%	60	62
Alt102	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Climate	Regional	\$42	\$42	\$44	\$44	1	1	0%	59	52
Alt62	22415	Historic Streetcar Expansion Program	Transit Efficiency	San Francisco	\$9	\$6	\$9	\$9	0.9	0.7	-26%	61	61
Alt74	240216	Dumbarton Transit Corridor (Phase 2: Commuter Rail)	Transit Expansion	Alameda	\$31	\$21	\$36	\$36	0.8	0.6	-30%	62	63
Alt41	240650	Sonoma Countywide Bus Service Frequency Improvements	Transit Efficiency	Sonoma	\$32	\$23	\$41	\$41	0.8	0.6	-29%	63	64
Alt103	240589	EV Solar Installation [BAAQMD program]	Climate	Regional	\$1	\$1	\$2	\$2	0.8	0.8	0%	64	57
Alt16	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Transit Expansion	Multi-County	\$10	\$7	\$13	\$13	0.7	0.5	-32%	65	66
Alt22	230525	Marin Countywide Bus Service Frequency Improvements	Transit Efficiency	Marin	\$9	\$8	\$12	\$12	0.7	0.7	-6%	66	60
Alt40	230219, 230314	Golden Gate Bus Service Frequency Improvements	Transit Efficiency	Multi-County	\$16	\$10	\$29	\$29	0.5	0.3	-38%	67	68
Alt10	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Transit Expansion	Santa Clara	\$4	\$4	\$8	\$8	0.5	0.5	15%	68	65
Alt50	230547	Monterey Highway BRT	Transit Efficiency	Santa Clara	\$15	\$9	\$37	\$37	0.4	0.2	-40%	69	72
Alt39	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Transit Expansion	Alameda	\$57	\$37	\$153	\$153	0.4	0.2	-35%	70	73
Alt30	22019	Downtown East Valley (Phase 2: IRT)	Transit Expansion	Santa Clara	\$5	\$5	\$16	\$16	0.3	0.3	-4%	71	69
Alt79	98139	ACE Expansion	Transit Efficiency	Alameda	\$19	\$15	\$67	\$67	0.3	0.2	-24%	72	74
Alt52	230554	Sunnyvale-Cupertino BRT	Transit Efficiency	Santa Clara	\$5	\$4	\$26	\$26	0.2	0.1	-26%	73	75
Alt19	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Transit Expansion	Santa Clara	\$3	\$5	\$19	\$19	0.2	0.3	68%	74	71
Alt61	22009	Capitol Corridor Service Frequency Improvements (Oakland to)	Transit Efficiency	Multi-County	\$1	\$0.4	\$18	\$18	0.1	0.0	-59%	75	77
Alt48	98119	Yasona Light Rail Extension (Phase 2)	Transit Expansion	Santa Clara	\$0.1	\$2	\$6	\$6	0.0	0.3	1134%	76	70
Alt45	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Transit Efficiency	Alameda	-\$0.1	\$0.2	\$2	\$2	(0.0)	0.1	316%	77	76

Considerations Applicable to All Projects

Three issues affect the benefit-cost performance for all projects analyzed.

Land Use Pattern

ABAG's Current Regional Plans land use was selected for the project performance assessment, as the other land use scenarios were not developed until after the analysis began. While some projects may perform better (or worse) given a particular land use pattern, selecting a single land use pattern for analysis creates a level playing field between projects. The Current Regional Plans land use represents a "middle ground" between a highly focused growth scenario and a more dispersed Outer Bay Area growth scenario. The scenario assessment will give a sense of how projects perform under different land use assumptions.

Interaction among Projects

In general, projects were evaluated individually. Projects serving related travel markets could, if evaluated as a package, increase or decrease the benefits of an individual project. For example, expanded local bus service may increase the projected ridership and benefits of metro/commuter rail projects, while expanding a freeway and building a new transit line in the same corridor may cause the improvements' combined benefits to be lower than estimated. The scenario assessment will help us understand the interaction among projects.

"Mode Choice" Modeling Approach

When forecasting project benefits, MTC staff ran the regional travel model's tour mode choice, stop frequency, stop location, trip departure time choice, trip mode choice, and trip assignment components – but not tour generation or tour destination choice. This is an improvement from T-2035 and allowed us to gain a better understanding of the mode changes caused by all projects. This approach has two distinct impacts:

1. The approach does not capture changes in tour destinations (e.g., people may decide to take a new job in a new location when the commute to that new location is improved). An individual project is not likely to generate changes of regional significance in most cases, given the mature state of the region's transportation system. This approach (to exclude changes in tour destinations) is consistent with project level assessments done elsewhere, most notably the FTA New Starts program. To include this step in the project assessment would have tripled analysis time, without necessarily providing meaningful information. The choice of where one works is extremely complex and one that travel models do not understand particularly well. MTC will, however, include this step in the scenario assessment, in which the collective changes in land use and transportation infrastructure are significant enough that the model can provide insight.
2. The approach does not consider the land use impacts of a particular project. For example, an urban transit expansion project might, when combined with supportive land use policies, encourage increased high-density development in the urban core – allowing people to live closer to job centers. Running the full travel model would not have solved this problem, however. This issue can only be dealt with by constructing unique land use scenarios to tie land use to transportation and/or using an integrated land use/travel model – both approaches are best suited for the scenario level of analysis.

Project-Specific Considerations

The attached table illustrates some of the project-specific confidence considerations; key criteria utilized for this assessment are detailed in the box below. Several common themes emerged from this project-specific review:

1. A subset of projects, including bus rapid transit (BRT) systems, transit frequency improvements, and infill stations, can be implemented quickly. Because 2035 was identified as the analysis year (based on the Plan Bay Area planning horizon), the B/C ratio does not fully capture the advantages of attaining for near-term benefits.
2. The travel model is unable to fully capture particular types of travel behavior (which only impacts a small subset of projects). Tourist and recreational trips, as well as trips headed to airports or seaports, may be underrepresented in the travel model.
3. Model forecasts exhibit some level of deviation from historical observed ridership and may lead to under- or over-estimation of existing ridership (and corresponding benefits). For example, forecasts of year 2005 SFMTA ridership are lower than actual 2005 systemwide ridership counts. Note that these deviations are typical of a regional travel model when utilized to examine performance of individual agency or route; furthermore, these deviations are unlikely to affect whether a project falls into the high or low outlier categories.

Key Criteria for Project-Specific Confidence Assessment

- **Travel Model Output**
 - *Does the travel model have limitations in understanding a particular type of travel behavior (e.g. weaving)?*
 - *Does the travel model lack an understanding of specific travel conditions (e.g. ridership or traffic volumes)?*
- **Framework Completeness**
 - *Does the travel model output capture all of the primary benefits of the project?*
 - *Are we capturing all of the real-world limitations of relevant transportation systems (e.g. transit vehicle crowding)?*
- **Timeframe Inclusiveness**
 - *Is the project an "early winner" (i.e. can be implemented quickly and provides key benefits in the short term)?*
 - *Is the project a "late bloomer" (i.e. benefits will not be realized until the final years of the planning horizon)?*

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1	240182	BART Metro Program (including Bay Fair Connection & Civic Center Turnback)	Multi-County	Transit Efficiency	>60	n/a	✓	✓	✓	
2	240694	Treasure Island Congestion Pricing	San Francisco	Pricing	59	n/a	✓	✓	✓	
3	240522	Congestion Pricing Pilot	San Francisco	Pricing	45	n/a	✓	✓	✓	
4	22780	AC Transit Grand-MacArthur BRT	Alameda/3434	Transit Efficiency	18	n/a	✓	✓	*	BRT project can be implemented quickly for near-term benefits.
5	230419	Freeway Performance Initiative	Regional	FPI	16	28	✓	✓	✓	
6	22274	ITS Improvements in San Mateo County	San Mateo	Road Efficiency	16	n/a	n/a	✓	✓	
7	240494	ITS Improvements in Santa Clara County	Santa Clara	Road Efficiency	16	n/a	n/a	✓	✓	
8	22062	Irvington BART Station	Alameda	Transit Efficiency	12	n/a	✓	✓	*	Infill stations can be implemented quickly to achieve benefits in the near-term.
9	240171	SFMTA Transit Effectiveness Project	San Francisco	Transit Efficiency	11	n/a	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions; bus frequency improvements can be implemented quickly for near-term benefits.
10	240582	Truck & Motorcycle Retirement [BAAQMD program]	Regional	Climate	9	n/a	n/a	✓	✓	
11	22400	SR-239 Expressway Construction (Brentwood to Tracy)	Contra Costa	Highway Expansion	7	1	*	✓	✓	Because the land uses outside of the 9-county Bay Area are not explicitly represented, the model does not fully understand the likely impact of projects located near the boundaries of the planning region.
12	240431	SR-85 Auxiliary Lanes (El Camino Real to Winchester Boulevard)	Santa Clara	Road Efficiency	7	n/a	*	✓	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements).
13	94506	Fremont/Union City East-West Connector	Alameda	Arterial Expansion	7	1	*	✓	✓	Due to their relative proximity, the travel model has difficulty assigning travelers who could use either I-680 or I-880 to the correct facility. This route choice decision is important to the performance of the East-West Connector.
14	98207T	Alameda-Oakland BRT + Transit Access Improvements	Alameda	Transit Efficiency	6	n/a	✓	✓	*	BRT project can be implemented quickly to achieve benefits in the near-term.
15	240523, 240060	US-101 HOV Lanes (Whipple Avenue to Cesar Chavez Street)	Multi-County	Road Efficiency	6	n/a	✓	✓	✓	
16	230161	Van Ness Avenue BRT	San Francisco/3434	Transit Efficiency	6	n/a	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. Project can be implemented quickly for near-term benefits.
17	HOTd	Silicon Valley Express Lanes Network	Santa Clara	Express Lanes Network	6	n/a	*	✓	*	The travel model has difficulty representing the benefits of an operational strategy that relies on real-time price changes throughout the morning and evening commute periods. Some portions of the project may be implemented early and accrue benefits over a long period in the Plan, the Network likely will not be complete until near the end of the Plan period.
18	240155	Better Market Street	San Francisco	Transit Efficiency	6	n/a	*	*	✓	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions.
19	22455	AC Transit East Bay BRT	Alameda/3434	Transit Efficiency	5	n/a	✓	✓	*	BRT project can be implemented quickly for near-term benefits.
20	HOTe	CTC Application + Alameda County Authorized Lanes Express Lanes Network	Multi-County	Express Lanes Network	5	n/a	*	✓	*	The travel model has difficulty representing the benefits of an operational strategy that relies on real-time price changes throughout the morning and evening commute periods. Some portions of the project may be implemented early and accrue benefits over a long period in the Plan, the Network likely will not be complete until near the end of the Plan period.

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21	230468	I-80 Auxiliary Lanes (Airbase Parkway to I-680)	Solano	Road Efficiency	5	2†	*	*	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements). Analysis is performed for a typical weekday, but many of the project's benefits will be accrued on weekends due to recreational traffic.
22	n/a	Local Streets and Roads Capital Maintenance Needs	Regional	Maintenance	5	5	n/a	*	✓	The benefit-cost framework doesn't consider the impacts that state of repair has on air quality, goods movement, transit operations and emergency services. Furthermore, the assessment does not capture travel time savings from avoided delays (e.g. potholes leading to slower vehicle travel speeds).
23	240375	BART to San Jose/Santa Clara (Phase 2: Berryessa to Santa Clara)	Santa Clara/3434	Transit Expansion	5	n/a	*	✓	*	The travel model does not forecast air passenger trips or special events, which are markets served by this project. The project is likely to be complete toward the end of the Plan so much of the benefits would likely be accrued after the Plan period.
24	240134, 21627	Caltrain Service Frequency Improvements (6-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County	Transit Efficiency	5	n/a	✓	✓	✓	
25	240557	Oakdale Caltrain Station	San Francisco	Transit Efficiency	4	n/a	✓	✓	*	Infill stations can be implemented quickly to achieve benefits in the near-term.
26	240062, 22776	SR-84/I-680 Interchange Improvements + SR-84 Widening (Jack London to I-680)	Alameda	Highway Expansion	4	n/a	*	✓	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements), acceleration or deceleration behavior (thus ignoring the benefits of longer ramps), or queue spillback.
27	230294	New SR-152 Alignment	Santa Clara	Highway Expansion	4	n/a	*	*	✓	Because the land uses outside of the 9-county Bay Area are not explicitly represented, the model does not fully understand the likely impact of projects located near the boundaries of the planning region. Analysis also underestimates the freight benefits of this project, both in terms of the number of truck trips and the impacts of steep grades on trucks. Furthermore, the route serves a large number of interregional trips, which are not captured very well in the travel model.
28	230290	Transbay Transit Center - Phase 2B (Caltrain Downtown Extension)	San Francisco/3434	Transit Expansion	4	n/a	✓	✓	*	The project is likely to be complete toward the end of the Plan, so much of the benefits would likely be accrued after the Plan period. (Note: since November draft release, project benefits were revised to reflect associated benefits of high-speed rail.)
29	240410	Transportation for Livable Communities	Regional	TLC	3	2	✓	✓	✓	
30	21205, 22350	I-680/SR-4 Interchange Improvements + SR-4 Widening (Morello Avenue to SR-242)	Contra Costa	Highway Expansion	3	1	*	✓	✓	The model does not explicitly represent weaving (thus ignoring the benefits of longer weaving sections or other improvements), acceleration or deceleration behavior (thus ignoring the benefits of longer ramps), or queue spillback.
31	21341	Fairfield/Vacaville Capitol Corridor Station (Phases 1, 2, and 3)	Solano	Transit Efficiency	3	n/a	*	✓	*	Greater TOD around the station (as included in the Fairfield General Plan but not in the Current Regional Plans land use) could significantly increase ridership and the corresponding B/C ratio. Infill stations can be implemented quickly for near-term benefits
32	240617	SR-29 HOV Lanes and BRT (Napa Junction to Vallejo)	Napa	Road Efficiency	3	n/a	✓	✓	✓	
33	22227, 240328, 240334	Geneva Avenue Corridor Improvements (Roadway Extension, BRT, and Southern Intermodal Terminal)	Multi-County	Transit Efficiency	2	n/a	*	✓	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. BRT project can be implemented quickly to achieve benefits in the near-term.
34	240147	Southeast Waterfront Transportation Improvements	San Francisco	Transit Efficiency	2	n/a	*	✓	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. Project can be implemented quickly for near-term benefits.
35	240026	SamTrans El Camino BRT	San Mateo	Transit Efficiency	2	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
36	240119	VTA El Camino BRT	Santa Clara	Transit Efficiency	2	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
37	00BART	BART Service Frequency Improvements	Multi-County	Transit Efficiency	2	n/a	✓	*	✓	B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions.
38	230604	Bay Bridge Contraflow Lane	Multi-County	Pricing	2	n/a	✓	*	✓	Modeling for this project doesn't fully capture the transit benefits of such a project. Because the project was represented as an HOV lane, rather than a bus-only lane, many of the benefits are accruing due to increased carpooling. A bus-only lane would provide faster speeds for buses and increase transit ridership more substantially.
39	580_BUS	I-580 Express Bus (Dublin to Livermore)	Alameda	Transit Efficiency	2	n/a	✓	✓	*	Express bus service can be implemented quickly for near-term benefits.

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40	240018	Dumbarton Corridor Express Bus	Multi-County	Transit Efficiency	2	n/a	✓	✓	✓	
41	22511, 22512, 22122, 230613, 22120, 230581	WETA Service Expansion (Treasure Island, Berkeley/Albany, Richmond, Hercules, and Redwood City)	Multi-County/3434	Transit Expansion	2	n/a	✓	✓	✓	
42	22605	SR-4 Bypass Completion (SR-160 to Walnut Avenue)	Contra Costa	Highway Expansion	2	1†	✓	✓	✓	
43	00MUNI	Muni Service Frequency Improvements	San Francisco	Transit Efficiency	2	n/a	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions; bus frequency improvements can be implemented quickly for near-term benefits.
44	230164	Geary Boulevard BRT	San Francisco	Transit Efficiency	2	7	*	*	*	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions; BRT improvements can be implemented quickly for near-term benefits.
45	240526	SFCTA Transit Performance Initiative	San Francisco	Transit Efficiency	2	n/a	*	*	✓	Model may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. B/C framework doesn't consider transit crowding, which may result in underestimate of emissions and VMT reductions and overestimate of travel time reductions.
46	22247	Regional Bikeway Network	Regional	Bike/Ped	2	0.5	n/a	✓	✓	
47	240699	AC Transit Service Frequency Improvements (Restoration of 2009 Funding Levels)	Multi-County	Transit Efficiency	2	n/a	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
48	n/a	New Freedom Program	Regional	Lifeline/New Freedom	2	n/a	n/a	✓	✓	
49	22268	San Mateo Countywide Shuttle Service Frequency Improvements	San Mateo	Transit Efficiency	2	n/a	✓	✓	*	Shuttle service can be implemented quickly for near-term benefits.
50	230550	Climate Initiatives (5-year program)	Regional	Climate	1	0	n/a	✓	✓	
51	n/a	Transit Capital Maintenance Needs	Regional	Maintenance	1	1	n/a	*	✓	The benefit-cost framework doesn't consider many impacts state of repair has on maintaining an operable transit system, such as maintaining or increasing transit ridership, reducing congestion and emissions and increasing mobility.
52	240545	Parkmerced Light Rail Corridor	San Francisco	Transit Efficiency	1	n/a	*	✓	✓	
53	230055	Golden Gate Ferry Service Frequency Improvements	Multi-County	Transit Efficiency	1	n/a	✓	✓	*	Ferry frequency improvements can be implemented quickly for near-term benefits.
54	LBART	BART to Livermore (Phase 1: 1-Station DMU Extension with Bus Enhancements)	Alameda	Transit Expansion	1	n/a	n/a	✓	✓	Project's quantitative results reflect a sketch-level planning adjustment to the BART to Livermore (Phase 1) project, reflecting the slower travel speeds of DMU technology. This was due to the model's inability to reflect the unique proposed bus/rail transfer station without auto, ped, or bike access.
55	240521, 240134, 21627	Caltrain Vision (10-Train Service during Peak Hours) + Electrification (SF to Tamien)	Multi-County/3434	Transit Efficiency	1	n/a	✓	✓	✓	
56	00ACT1	AC Transit Frequent Transit Network	Multi-County	Transit Efficiency	1	n/a	*	✓	✓	Project includes a wide range of services; some service improvements may have higher benefit-cost ratios and some may have lower benefit-cost ratios.
57	22343	I-680 Express Bus Service Frequency Improvements (Phase 2)	Contra Costa	Transit Efficiency	1	1	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.

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58	98147, 240691	Marin-Sonoma Narrows (Phase 2: HOV Lanes)	Multi-County	Road Efficiency	1	8†	✓	*	✓	Analysis is performed for a typical weekday, but many of the project's benefits will be accrued on weekends due to recreational traffic.
59	240577	Heavy-Duty Truck Replacement [BAAQMD program]	Regional	Climate	1	n/a	n/a	✓	✓	
60	240196	BART to Livermore (Phase 1: 1-Station Rail Extension with Bus Enhancements)	Alameda	Transit Expansion	1	4†	n/a	✓	✓	Project's quantitative results were based on the full BART to Livermore extension model results. This was due to the model's inability to reflect the unique proposed bus/rail transfer station without auto, ped, or bike access.
61	22415	Historic Streetcar Expansion Program	San Francisco	Transit Efficiency	0.9	2	*	✓	*	Model doesn't capture tourist ridership and may underestimate travel time benefits for existing MTA riders, as the model's year 2005 Muni systemwide estimates are about 20% less than observed ridership levels. Project can be implemented quickly for near-term benefits.
62	240216	Dumbarton Rail	Multi-County/ 3434	Transit Expansion	0.8	n/a	✓	✓	✓	
63	240589	EV Solar Installation [BAAQMD program]	Regional	Climate	0.8	n/a	n/a	*	*	Most project benefits accrue in the near term before widespread electric vehicle adoption.
64	240650	Sonoma Countywide Bus Service Frequency Improvements	Sonoma	Transit Efficiency	0.8	n/a	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
65	240676, 240675, 240677	SMART (Phase 2: Extensions to Cloverdale & Larkspur + IOS Cost Deferrals)	Multi-County/ 3434	Transit Expansion	0.7	n/a	*	✓	✓	The travel model does not forecast tourist trips, which are served by this project.
66	230252	Marin Countywide Bus Service Frequency Improvements	Marin	Transit Efficiency	0.7	1	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
67	230219, 230314	Golden Gate Bus Service Frequency Improvements	Multi-County	Transit Efficiency	0.5	n/a	✓	✓	*	Bus frequency improvements can be implemented quickly for near-term benefits.
68	22956	Capitol Expressway Light Rail Extension (Phase 2: to Eastridge Transit Center)	Santa Clara	Transit Expansion	0.5	n/a	✓	✓	✓	
69	230547	Monterey Highway BRT	Santa Clara	Transit Efficiency	0.4	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
70	22667	BART to Livermore (Phases 1 & 2: Rail Extension)	Alameda	Transit Expansion	0.4	n/a	✓	✓	✓	
71	22019	Downtown East Valley (Phase 2: LRT)	Santa Clara/ 3434	Transit Expansion	0.3	n/a	✓	✓	✓	
72	98139	ACE Service Expansion	Multi-County/ 3434	Transit Efficiency	0.3	n/a	✓	✓	*	The project is likely to be complete toward the end of the Plan so much of the benefits would likely be accrued after the Plan period.
73	230554	Sunnyvale-Cupertino BRT	Santa Clara	Transit Efficiency	0.2	n/a	✓	✓	*	BRT can be implemented quickly for near-term benefits.
74	22978	Capitol Expressway Light Rail Extension (Phases 2 & 3: to Nieman)	Santa Clara	Transit Expansion	0.2	n/a	✓	✓	✓	
75	240690	Lifeline Transportation Program	Regional	Lifeline/New Freedom	0.1	0	n/a	*	✓	The benefit-cost framework doesn't reflect the primary justifications for this program, which revolve around providing basic mobility rather than travel time or emissions reductions.
76	22009	Capitol Corridor Service Frequency Improvements (Oakland to San Jose)	Multi-County/ 3434	Transit Efficiency	0.1	n/a	✓	✓	✓	
77	98119	Vasona Light Rail Extension (Phase 2)	Santa Clara	Transit Expansion	0.0	n/a	*	✓	✓	Model may not fully capture benefits from this relatively short extension.
78	230101	Union City Commuter Rail Station + Dumbarton Rail Segment G Improvements	Alameda/ 3434	Transit Efficiency	0.0	n/a	✓	✓	*	Infill stations can be implemented quickly to achieve benefits in the near-term.