

Orangeline Development Authority
Orangeline High Speed Maglev
Milestone 10 - Financial Plan Supplement

Financial Model 2h (2007-2062)

June 7, 2007

Project Summary

2007 dollars

Project Cash Surplus	\$23,312,080,297
Operating Reserves	\$2,000,132,327
Station-area Improvements and Feeder Services	\$21,116,691,148
Investor Interest Earnings	\$23,359,337,310
User Cost Savings (Compared to Owning/Driving a Car)	\$3,113,357,602
User Travel Delay Savings (Compared to Driving a Car)	\$36,301,274,973
Total Project Benefits	\$98,369,317,795
Project Cost (including vehicle replacement in year 25)	\$22,693,799,040
Benefit/Cost Ratio (Without Value of Emission Savings)	4.3
Emission Savings	\$6,025,162,484
Benefit/Cost Ratio (with Emission Benefits)	4.6
Reduction in Gasoline Consumption (gallons)	2,549,314,071
Annual Reduction in NOx and CO ₂ Emissions (tons in 2027)	744,985

Project Description

Orangeline High Speed Maglev from Palmdale in northern Los Angeles County to Irvine in southern Orange County

	Length (miles)	Cost	Schedule
Preconstruction Phase	108	\$199,586,640	2007 - 2009
Construction Phase			
a	20	\$4,326,300,000	2010 - 2012
b	35	\$6,729,800,000	2012 - 2015
c	53	\$7,973,851,600	2014 - 2017
	Average Speed (mph)	Peak Period Service Frequency (minutes)	Off-Peak Period Service Frequency (minutes)
Operation Phase	90	5	10

The project is fully described in Project Milestone Reports and summarized in Milestone 10 - Financial Plan, which are available for viewing and downloading at www.orangeline.calmaglev.org

Prepared by:

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Year	Debt		Revenue							Construction, Operating & Reserve Expenses					Interest			Operating Debt / Surplus		Debt
	Beginning debt balance	Daily Passenger 3.00% 1.10%	Annual Passenger Tips	Average Fare Received 1.70%	Annual Passenger Fare Revenues	Annual Freight Concessions Revenues	Annual Other Revenues	Total Annual Revenues	Annual Construction Expenses (debt)	System O&M Annual escalation 3%	Station-area Improvements & Feeder Services Operating Expense 30%	Reserves Operating Expense 3%	Annual Operating Expenses Sum	Interest	Interest Expense	Earnings	Revenue minus Expenses (debt)	Revenue minus Expenses (surplus)	Ending Debt/Expense Balance	
2007	\$0			\$18.00					\$51,915,600				\$0	10.0%	\$0		-\$51,915,600	\$0	\$51,915,600	
2008	\$51,915,600			\$18.54					\$77,238,676				\$0	10.0%	\$5,191,560		-\$52,450,436	\$0	\$134,348,036	
2009	\$134,348,036			\$19.10					\$77,108,164				\$0	10.0%	\$5,134,804		-\$22,642,788	\$0	\$22,642,788	
2010	\$224,888,804			\$19.67					\$1,050,547,738				\$0	8.0%	\$17,891,104		-\$1,068,538,842	\$0	\$1,293,427,648	
2011	\$1,293,427,648			\$20.28					\$1,023,096,255				\$0	8.0%	\$103,474,212		-\$1,726,570,467	\$0	\$3,019,988,112	
2012	\$3,019,988,112			\$20.87					\$2,229,052,190	\$75,158,959		\$75,158,959	\$0	8.0%	\$241,599,849		-\$2,545,810,998	\$0	\$5,565,809,110	
2013	\$5,565,809,110	91,569	27,928,605	\$21.22	\$592,891,699	\$53,342,250	\$99,925,981	\$745,959,981	\$3,443,985,634	\$77,413,727	\$0	\$20,056,385	\$97,470,112	8.0%	\$445,264,729	\$0	-\$3,240,660,575	\$0	\$8,806,469,695	
2014	\$8,806,469,695	109,883	33,514,326	\$21.58	\$723,320,913	\$65,098,882	\$123,180,719	\$1,019,600,514	\$4,729,002,937	\$79,736,139	\$0	\$24,955,931	\$104,692,070	8.0%	\$704,571,575	\$0	-\$4,627,212,068	\$0	\$13,433,681,753	
2015	\$13,433,681,753	131,860	40,212,191	\$21.95	\$892,740,842	\$78,146,076	\$181,401,625	\$1,401,691,525	\$22,862,614	\$4,871,491,025	\$0	\$26,644,794	\$252,497,408	8.0%	\$1,074,694,540	\$0	-\$5,084,670,563	\$0	\$18,518,352,315	
2016	\$18,518,352,315	158,232	48,200,629	\$22.32	\$1,077,296,924	\$86,956,723	\$197,100,699	\$1,361,354,346	\$3,763,226,917	\$22,628,192	\$0	\$33,861,785	\$266,489,977	8.0%	\$1,481,468,185	\$0	-\$4,149,830,633	\$0	\$22,668,192,948	
2017	\$22,668,192,948	189,878	57,912,755	\$22.70	\$1,314,733,166	\$118,235,985	\$217,631,322	\$1,663,593,703	\$1,871,901,322	\$470,501,093	\$0	\$506,293,871	\$0	8.0%	\$1,813,454,636	\$0	-\$2,326,056,127	\$0	\$24,994,239,075	
2018	\$24,994,239,075	195,574	69,850,138	\$23.09	\$1,377,196,138	\$123,347,652	\$241,767,920	\$1,744,311,711	\$1,648,616,128	\$0	\$0	\$37,800,868	\$222,424,993	6.5%	\$1,624,755,540	\$0	-\$402,265,027	\$0	\$25,386,507,897	
2019	\$25,386,507,897	201,441	81,439,642	\$23.48	\$1,442,626,727	\$130,838,405	\$297,713,089	\$1,830,176,201	\$1,801,176,201	\$469,154,610	\$0	\$39,000,648	\$439,065,258	6.5%	\$1,660,903,013	\$0	-\$359,812,050	\$0	\$25,703,119,847	
2020	\$25,703,119,847	207,485	93,282,831	\$23.88	\$1,511,165,923	\$138,004,933	\$272,402,420	\$1,919,573,276	\$1,514,129,248	\$0	\$0	\$42,163,321	\$556,292,569	6.5%	\$1,674,290,797	\$0	-\$1,071,010,090	\$0	\$26,069,300,037	
2021	\$26,069,300,037	213,709	105,181,316	\$24.29	\$1,582,961,416	\$146,466,527	\$287,868,965	\$2,013,296,308	\$1,311,648,378	\$0	\$0	\$44,512,313	\$574,065,439	6.5%	\$1,694,506,462	\$0	-\$225,274,983	\$0	\$26,324,605,200	
2022	\$26,324,605,200	220,121	121,139,755	\$24.70	\$1,658,187,912	\$149,235,112	\$334,146,355	\$2,111,648,378	\$545,439,719	\$0	\$0	\$46,983,290	\$692,423,009	6.5%	\$1,711,099,326	\$0	-\$149,872,956	\$0	\$26,516,672,676	
2023	\$26,516,672,676	226,724	140,150,858	\$25.12	\$1,736,847,470	\$156,325,272	\$371,268,669	\$2,214,541,412	\$611,802,911	\$0	\$0	\$49,582,155	\$811,385,006	5.5%	\$1,458,411,789	\$0	\$144,744,557	\$0	\$14,744,557	
2024	\$26,744,557	233,526	161,225,384	\$25.55	\$1,819,469,844	\$163,752,296	\$339,270,278	\$2,322,492,409	\$578,696,998	\$72,320,853	\$0	\$52,315,062	\$703,292,913	5.5%	\$1,450,450,838	\$0	\$168,748,857	\$0	\$26,203,064,762	
2025	\$26,982,850,650	240,532	182,362,145	\$25.98	\$1,905,912,857	\$171,532,157	\$358,185,649	\$2,435,630,663	\$598,018,788	\$102,976,762	\$0	\$55,188,419	\$754,181,889	5.5%	\$1,441,169,662	\$0	\$240,273,112	\$0	\$25,962,850,650	
2026	\$27,190,219,915	247,748	203,563,010	\$26.42	\$1,998,462,776	\$179,691,650	\$375,940,122	\$2,554,890,226	\$613,897,209	\$136,239,941	\$0	\$58,208,880	\$808,346,211	5.5%	\$1,427,954,311	\$0	\$378,893,196	\$0	\$25,644,912,633	
2027	\$27,400,392,453	255,180	225,829,930	\$26.87	\$2,091,314,723	\$188,219,325	\$398,894,639	\$2,678,427,887	\$652,314,126	\$172,277,991	\$0	\$61,383,407	\$865,975,523	5.5%	\$1,410,470,185	\$0	\$401,991,979	\$0	\$25,242,930,475	
2028	\$27,612,692,383	263,997	250,088,029	\$27.32	\$2,183,245,990	\$196,492,139	\$413,115,277	\$2,792,851,408	\$801,285,549	\$206,887,893	\$0	\$64,247,088	\$944,247,088	5.5%	\$1,388,361,176	\$0	\$449,237,751	\$0	\$24,760,689,723	
2029	\$27,827,061,432	273,025	276,855,575	\$27.80	\$2,279,218,427	\$205,625,663	\$427,970,778	\$2,912,055,663	\$924,648,169	\$243,648,169	\$0	\$67,237,014	\$981,707,239	5.5%	\$1,361,836,230	\$0	\$568,512,462	\$0	\$24,192,162,269	
2030	\$28,043,196,329	283,694	300,426,643	\$28.29	\$2,379,409,679	\$214,146,671	\$447,873,895	\$3,036,230,445	\$990,946,717	\$283,307,150	\$0	\$70,359,512	\$1,044,612,380	5.5%	\$1,330,568,048	\$0	\$691,050,017	\$0	\$23,511,098,311	
2031	\$28,269,809,311	294,595	326,912,338	\$28.81	\$2,484,005,197	\$223,590,468	\$469,005,361	\$3,165,517,125	\$1,071,676,119	\$325,620,620	\$0	\$73,816,877	\$1,111,112,616	5.5%	\$1,294,210,297	\$0	\$780,282,192	\$0	\$22,730,848,199	
2032	\$28,500,277,899	306,527	354,205,760	\$29.35	\$2,593,198,588	\$233,027,673	\$492,681,625	\$3,300,290,066	\$1,141,395,140	\$371,671,641	\$0	\$77,617,641	\$1,181,395,140	5.5%	\$1,252,396,651	\$0	\$868,488,295	\$0	\$21,864,359,904	
2033	\$28,736,359,804	319,502	383,110,024	\$29.93	\$2,707,191,967	\$243,647,277	\$520,727,578	\$3,440,968,823	\$1,214,641,134	\$420,073,312	\$0	\$80,586,521	\$1,255,655,968	5.5%	\$1,204,739,795	\$0	\$980,171,661	\$0	\$20,884,188,843	
2034	\$28,974,944,804	333,489	412,023,234	\$30.54	\$2,826,196,336	\$254,567,070	\$550,893,238	\$3,590,861,242	\$1,294,676,618	\$472,164,246	\$0	\$84,269,419	\$1,330,825,387	5.5%	\$1,150,830,396	\$0	\$1,101,716,654	\$0	\$19,622,472,299	
2035	\$29,218,742,269	348,551	448,948,501	\$31.20	\$2,950,631,970	\$265,585,877	\$582,773,385	\$3,748,644,243	\$1,380,956,616	\$527,613,767	\$0	\$88,132,429	\$1,416,942,812	5.5%	\$1,090,235,975	\$0	\$1,231,545,468	\$0	\$18,390,906,813	
2036	\$29,469,908,813	364,883	488,832,934	\$31.95	\$3,080,128,629	\$277,211,595	\$613,747,255	\$3,907,697,679	\$1,476,626,515	\$587,219,836	\$0	\$92,161,835	\$1,504,408,186	5.5%	\$1,022,499,875	\$0	\$1,370,176,818	\$0	\$17,200,727,195	
2037	\$29,724,727,195	382,491	532,627,646	\$32.73	\$3,215,526,990	\$289,397,428	\$650,997,428	\$4,081,914,408	\$1,574,731,010	\$650,589,896	\$0	\$96,384,113	\$1,596,731,010	5.5%	\$947,139,696	\$0	\$1,471,139,696	\$0	\$16,034,592,602	
2038	\$30,000,347,844	399,812	584,782,750	\$33.62	\$3,356,877,045	\$302,116,934	\$694,472,328	\$4,233,466,507	\$1,673,730,540	\$730,677,930	\$0	\$100,745,969	\$1,697,016,560	5.5%	\$873,124,488	\$0	\$1,567,124,488	\$0	\$15,167,459,115	
2039	\$30,291,027,078	418,279	644,341,319	\$34.59	\$3,504,440,660	\$315,399,659	\$740,159,669	\$4,412,200,245	\$1,778,576,771	\$801,528,748	\$0	\$105,144,662	\$1,802,411,666	5.5%	\$796,101,489	\$0	\$1,664,232,188	\$0	\$14,113,227,116	
2040	\$30,592,347,844	443,179	709,224,993	\$35.65	\$3,664,990,965	\$329,264,187	\$801,013,093	\$4,597,768,245	\$1,892,841,611	\$869,574,611	\$0	\$110,079,809	\$1,919,695,026	5.5%	\$715,769,137	\$0	\$1,765,344,062	\$0	\$13,152,483,062	
2041	\$30,900,307,862	468,516	784,166,563	\$36.81	\$3,838,131,196	\$343,738,190	\$867,985,725	\$4,791,027,010	\$2,010,151,098	\$939,431,949	\$0	\$115,038,155	\$1,874,599,042	5.5%	\$630,597,758	\$0	\$1,864,937,758	\$0	\$12,290,545,304	
2042	\$31,211,000,106	494,687	870,909,368	\$38.08	\$4,020,764,763	\$358,848,429	\$936,024,048	\$4,992,078,280	\$2,134,601,428	\$885,124,805	\$0	\$120,208,603	\$1,989,530,262	5.5%	\$553,001,986	\$0	\$1,969,530,262	\$0	\$11,331,000,106	
2043	\$31,523,000,106	521,504	967,118,194	\$39.46	\$4,216,476,702	\$374,622,903	\$994,070,673	\$5,201,170,279	\$2,259,676,549	\$970,490,308	\$0	\$125,994,732	\$2,110,763,608	5.5%	\$470,295,286	\$0	\$2,068,295,286	\$0	\$10,371,000,106	
2044	\$31,837,418,729	549,338	107,790,094	\$40.95	\$4,424,453,351	\$391,090,802	\$1,060,053,816	\$5,418,897,868	\$1,045,118,985	\$1,092,267,408	\$0	\$131,204,972	\$2,238,590,775	5.5%	\$390,303,000	\$0	\$2,167,893,775	\$0	\$9,314,418,729	
2045	\$32,153,784,566	577,819	119,769,213	\$42.54	\$4,638,473,396	\$408,282,406	\$1,138,090,400	\$5,644,626,802	\$1,076,472,472	\$1,159,822,749	\$0	\$136,931,542	\$2,373,619,541	5.5%	\$308,253,001	\$0	\$2,267,072,541	\$0	\$8,257,513,784	
2046	\$32,481,541,485	612,137	131,811,674	\$44.25	\$4,853,890,416	\$426,230,137	\$1,217,510,072	\$5,879,630,625	\$1,108,766,647	\$1,263,456,883	\$0	\$143,252,919	\$2,515,549,549	5.5%	\$214,162,742	\$0	\$2,364,066,294	\$0	\$7,101,541,485	
2047	\$32,814,675,191	646,922	145,865,603	\$46.09	\$5,079,403,528	\$444,966,618	\$1,303,925,118	\$6,113,635,264	\$1,142,029,646	\$1,373,484,094	\$0	\$149,454,169	\$2,664,967,909	5.5%	\$124,071,135	\$0	\$2,458,039,044	\$0	\$6,044,675,191	
2048	\$33,153,478,971	683,516	161,468,079	\$48.05	\$5,304,266,727	\$464,526,727	\$1,400,261,261	\$6,369,738,067	\$1,176,250,535	\$1,493,770,447</										

ORANGELINE MAGLEV
INITIAL FINANCING SCENARIO FOR CONSTRUCTION

INPUTS	Irvine-Palmdale	Irvine-Santa Clarita											MS 10	Ridership in 2027	255180		
	\$ 19,229,000,000	\$12,996,703,704	Source:	Milestone 10	\$3,363,360,000 2006S												
Capital Cost (in 2005 \$)	\$ 19,229,000,000		Source:	Milestone 10	\$3,363,360,000 2006S	=	\$339,454,409 2007S										
Vehicle Replacement (in Year 25)	\$ 3,464,260,000																
O&M Cost (in 2013)	\$ 405,858,378																
Capital Cost Escalation Rate	3.0%																
O&M Cost Escalation Rate	3.0%																
Short Term Interest Rate	10.0%																
TIFIA Interest Rate	8.0%																
Tax-exempt/vendor interest rate	9.0%																
Construction Schedule extended from that assumed in Milestone 10																	
(all figures in millions, except for O&M costs)	capital cost value in year	\$19,228,000,000 2007	\$19,804,840,000 2008	\$20,398,985,200 2009	\$21,010,954,756 2010	\$21,641,283,399 2011	\$22,290,521,901 2012	\$22,959,237,558 2013	\$23,648,014,684 2014	\$24,357,455,125 2015	\$25,088,178,779 2016	\$25,840,824,142 2017	\$26,616,048,866 2018	\$27,414,530,332 2019	\$28,239,867,000 2020	\$29,091,122,000 2021	\$29,970,000,000 2022
CAPITAL USES																	
% of capital applied	0.27%	0.39%	0.38%	5.00%	7.50%	10.00%	15.00%	20%	20.00%	15.00%	6.47%	100.01%					
Total capital required	51,915,600	77,238,876	77,108,164	1,050,547,738	1,623,096,255	2,229,052,190	3,443,886,634	4,729,602,937	6,071,491,025	7,463,226,817	8,912,301,322	10,466,164,990	12,134,867,418	13,926,603,821	15,849,555,869	17,911,110,519	20,125,950,453
DEBT																	
Short-term loan proceeds	51,915,600	77,238,876	77,108,164														
Short-term interest	2,595,780	9,313,082	17,961,742														
Total Short-term outstanding debt	54,511,380	141,063,338	236,133,244														
TIFIA Principal					350,182,579	541,032,085	743,017,397	1,147,961,878	1,576,534,312	1,623,830,342	1,254,408,939	557,300,441					
TIFIA Interest					20,304,190	57,577,111	113,545,260	198,268,051	323,109,343	476,872,677	630,260,062	783,149,242					
Total Outstanding TIFIA debt					448,197,850	1,047,807,047	1,904,369,703	3,250,599,632	5,150,243,287	7,251,046,306	9,133,715,307	10,446,164,990					
Tax-exempt/vendor principal					700,365,159	1,082,064,170	1,486,038,793	2,295,923,756	3,153,068,625	3,247,660,683	2,508,817,878	1,114,600,881					
Tax-exempt/vendor interest					40,608,379	115,154,223	227,090,519	396,636,103	646,218,686	953,945,353	1,260,520,124	1,506,298,484					
Total cumu tax-exempt/vendor debt					157,422,163	898,395,700	2,095,614,093	3,808,739,406	6,501,199,264	10,300,486,575	14,502,092,612	18,271,430,613	20,892,329,979				
Total cumulative debt	54,511,380	141,063,338	236,133,244	1,347,593,551	3,143,421,140	5,713,109,109	9,751,798,896	15,450,729,862	21,753,138,917	27,407,145,920	31,338,494,969						
TOTAL OUTSTANDING DEBT TO BE CARRIED OVER TO DEBT SCHEDULE SHEET				\$	31,338,494,969												

Automobile Driving Costs, 2005

CATEGORY		SMALL CAR	MIDSIZE CAR	LARGE CAR	SPORT UTILITY VEHICLE	VAN							
OPERATING COSTS (cents per mile)													
Gasoline & Oil		6.9	8.5	9.3	10.8	8.9	0.09	\$0.16	\$3.50 gallon (Observed)				
Maintenance		4.7	5.8	5.4	5.3	5.7	0.06	\$0.10	21.4 miles per gallon (AAA)				
Tires		0.5	0.7	0.5	0.9	0.6	0.01	\$0.01	25.68 passenger miles per gallon (1.2 pass per vehicle)				
SUBTOTAL		12.1	15	15.2	17	15.2	0.16	\$0.27					
OWNERSHIP COSTS (cost per year, dollars)													
Insurance		1,456	1,195	1,212	1,398	1,130	0.11						
License, registration, taxes		333	390	445	435	389	0.03						
Depreciation (15,000 miles annually)		2,985	4,005	4,647	4,300	3,755	0.33						
Finance charge (10% down; loan @ 6%/5 yrs.)		553	740	925	891	739	0.06						
SUBTOTAL		5,327	6,330	7,229	7,024	6,013	0.50						
DEPRECIATION ADJUSTMENTS (dollars)													
(mileage under 15,000 miles annually)		-550	-925	-1,175	-950	-925		\$0.08					
(mileage over 15,000 miles annually)		650	950	1,175	925	950							
TOTAL ANNUAL COST (dollars)													
10,000 miles per year		5,987	6,905	7,574	7,774	6,608							
15,000 miles per year		7,142	8,580	9,509	9,574	8,293							
20,000 miles per year		8,397	10,280	11,444	11,349	10,003							
TOTAL ANNUAL COST WITH PARKING (\$10 dollars/day)													
10,000 miles per year	\$10.00 per day	9,637	10,555	11,224	11,424	10,258		\$0.24					
15,000 miles per year		10,792	12,230	13,159	13,224	11,943							
20,000 miles per year		12,047	13,930	15,094	14,999	13,653							
TOTAL COST PER MILE (dollars)													
10,000 miles per year	10000	0.60	0.69	0.76	0.78	0.66			2007\$				
15,000 miles per year	15000	0.48	0.57	0.63	0.64	0.55	0.64	0.74	0.81	0.83	0.71	0.75	
20,000 miles per year	20000	0.42	0.51	0.57	0.57	0.50	0.51	0.61	0.68	0.68	0.59	0.61	
							0.45	0.55	0.61	0.61	0.53	0.55	
TOTAL COST PER MILE WITH PARKING (\$10 dollars/day)													
10,000 miles per year	10000	0.96	1.06	1.12	1.14	1.03	1.03	1.13	1.20	1.22	1.10	1.14	
15,000 miles per year	15000	0.72	0.82	0.88	0.88	0.80	0.77	0.87	0.94	0.94	0.85	0.87	
20,000 miles per year	20000	0.60	0.70	0.75	0.75	0.68	0.64	0.74	0.81	0.80	0.73	0.75	
TOTAL EXPRESS LANE COST PER MILE (\$5.00 toll) WITH PARKING (\$10 dollars/day)													
10,000 miles per year	10000						1.53	1.63	1.70	1.72	1.60	1.64	
15,000 miles per year	15000						1.27	1.37	1.44	1.44	1.35	1.37	
20,000 miles per year	20000						1.14	1.24	1.31	1.30	1.23	1.25	

auto access savings

0.09 \$0.16 \$3.50 gallon (Observed)

0.06 \$0.10 21.4 miles per gallon (AAA)

0.01 \$0.01 25.68 passenger miles per gallon (1.2 pass per vehicle)

0.16 \$0.27

0.11

0.03

0.33

0.06

0.50

\$0.08

\$0.59 Marginal Cost Savings from not driving but retaining auto ownership

\$0.24

Source: American Automobile Association and Runzheimer International, Your Driving Costs, 2005 Edition. Data for a popular model of each type listed assuming ownership of more than 5 years or 75,000 miles before replacement

Source: Orange County Register

Source www.vtpi.org/tca/tca0504.pdf (parking costs)

Toll Lane Charges in Orange County

			41.66	305	12,706
			mi per day	days	miles
Toll Road	73	241	91		
Peak Charge	\$4.57	\$5.25	\$9.50		
Length (miles)	16	25	10		
Cost per mile	\$0.29	\$0.21	\$0.95	\$0.48	

Station-area Improvements and Feeder Services by Cities

Potential Allocations to Member Cities (2007 Dollars)		Total Expenses	2017 Expenses	2027 Expenses	2037 Expenses	
Assumed Fare (2007\$) = \$18.00		With Station Area Development - to 2064	With Station Area Development - to 2064	With Station Area Development - to 2064	With Station Area Development - to 2064	
Cities	Population, 2000 (some 2001-2005)	3% Discount	3% Discount	3% Discount	3% Discount	
Member Cities	Artesia	16,380	\$94,942,062	\$0	\$428,863	\$1,205,101
	Bell	36,664	\$212,512,562	\$0	\$959,940	\$2,697,425
	Bellflower	74,900	\$434,136,779	\$0	\$1,961,038	\$5,510,504
	Cerritos	51,488	\$298,435,707	\$0	\$1,348,063	\$3,788,048
	Cudahy	24,200	\$140,268,492	\$0	\$633,606	\$1,780,430
	Downey	110,600	\$641,061,786	\$0	\$2,895,738	\$8,137,005
	Huntington Park	61,348	\$355,586,423	\$0	\$1,606,218	\$4,513,463
	Los Alamitos	11,500	\$66,656,515	\$0	\$301,094	\$846,072
	Maywood	28,083	\$162,775,209	\$0	\$735,271	\$2,066,108
	Palmdale	121,400	\$703,660,947	\$0	\$3,178,505	\$8,931,577
	Paramount	55,266	\$320,333,821	\$0	\$1,446,979	\$4,066,001
	Santa Clarita	155,100	\$898,993,517	\$0	\$4,060,841	\$11,410,936
	South Gate	99,800	\$578,462,624	\$0	\$2,612,972	\$7,342,433
	Vernon	91	\$527,456	\$0	\$2,383	\$6,695
	Total Member Cities	846,820	\$4,908,353,901	\$0	\$22,171,512	\$62,301,797
Average city population	60,487	\$350,596,707	\$0	\$1,583,679	\$4,450,128	
Prospective LA County Cities	Burbank	102,400	\$593,532,793	\$0	\$2,681,045	\$7,533,719
	Glendale	199,000	\$1,153,447,517	\$0	\$5,210,235	\$14,640,724
	San Fernando	23,564	\$136,582,097	\$0	\$616,955	\$1,733,638
	Lancaster	0	\$0	\$0	\$0	\$0
	County Unincorporated (portion)	50,000	\$289,810,934	\$0	\$1,309,104	\$3,678,574
	Total LA County (w/o City of LA)	1,210,284	\$7,015,070,726	\$0	\$31,687,756	\$89,042,380
Average city population	67,238	\$389,726,151	\$0	\$1,760,431	\$4,946,799	
Prospective Orange County Cities	La Palma	15,400	\$89,261,768	\$0	\$403,204	\$1,133,001
	Cypress	46,000	\$266,626,059	\$0	\$1,204,376	\$3,384,288
	Buena Park	80,100	\$464,277,116	\$0	\$2,097,185	\$5,893,075
	Stanton	38,300	\$221,995,175	\$0	\$1,002,774	\$2,817,788
	Anaheim	336,300	\$1,949,268,341	\$0	\$8,805,035	\$24,742,087
	Garden Grove	169,000	\$979,560,957	\$0	\$4,424,772	\$12,433,579
	Santa Ana	348,100	\$2,017,663,722	\$0	\$9,113,983	\$25,610,231
	Orange	128,000	\$741,915,991	\$0	\$3,351,307	\$9,417,149
	Tustin	69,200	\$401,098,333	\$0	\$1,811,800	\$5,091,146
	Irvine	191,000	\$1,107,077,767	\$0	\$5,000,778	\$14,052,152
	Total OC cities	1,432,900	\$8,305,401,743	\$0	\$37,516,307	\$105,420,568
	Average population OC cities	130,264	\$755,036,522	\$0	\$3,410,573	\$9,583,688
Total Cities (not LA)	2,643,184	\$15,320,472,470	\$0	\$69,204,063	\$194,462,947	
Average population all cities (not LA)	91,144	\$528,292,154	\$0	\$2,386,347	\$6,705,619	
City of LA (portion)	1,000,000	\$5,796,218,678	\$0	\$26,182,083	\$73,571,476	
Total Cities	3,643,184	\$21,116,691,148	\$0	\$95,386,147	\$268,034,423	
California	33,871,648					

Savings in Gasoline Consumption

		Power Requirement	Miles Saved	Year	Annual Emission Savings in tons			Energy Savings
					CO	NOX	CO2	Gallons of Gasoline
Average Trip Length (miles)	20.83		581,752,839	2013	13,380	889	266,443	16,836,398
Drivers in 2027	127,590		698,103,406	2014	16,056	1,067	319,731	20,203,678
Average round trip	42		837,724,068	2015	19,268	1,260	383,678	24,244,414
Annual Miles Saved/driver	12,706	312	1,005,266,905	2016	23,121	1,536	460,413	29,083,296
Passenger Miles per Gallon average	25.68	vehicle trips/day	1,206,322,686	2017	27,745	1,843	552,496	34,911,956
Annual Gallons Saved	63,130,717		1,242,512,367	2018	28,578	1,899	569,071	35,959,314
Average Cost per Gallons	\$3.50	12	1,279,787,738	2019	29,435	1,956	586,143	37,038,094
Annual cost saved	\$220,957,510	MWH/vehicle trip	1,318,181,370	2020	30,318	2,014	603,727	38,149,237
			1,357,726,811	2021	31,228	2,075	621,839	39,293,714
Maglev Users		3,744	1,398,458,616	2022	32,165	2,137	640,494	40,472,525
Passenger Miles per gallon	100 from TRI	MWH/day	1,440,412,374	2023	33,129	2,201	659,709	41,686,701
Annual Gallons used	16,211,968		1,483,624,745	2024	34,123	2,267	679,500	42,937,302
Average Cost per Gallons	\$3.50	1,530,547	1,528,133,488	2025	35,147	2,335	699,885	44,225,421
Annual cost	\$56,741,889	MWH/year	1,573,977,492	2026	36,201	2,405	720,882	45,552,183
Net cost savings per year	\$164,215,622		1,621,196,817	2027	37,288	2,477	742,508	46,918,749
Net gallons of gas saved per year	46,918,749		1,639,029,982	2028	37,698	2,504	750,676	47,434,855
			1,657,059,312	2029	38,112	2,532	758,933	47,956,639
			1,675,286,964	2030	38,532	2,560	767,281	48,484,162
			1,693,715,121	2031	38,955	2,588	775,722	49,017,487
			1,712,345,987	2032	39,384	2,616	784,254	49,556,680
			1,731,181,793	2033	39,817	2,645	792,881	50,101,803
			1,750,224,793	2034	40,255	2,674	801,603	50,652,923
			1,769,477,265	2035	40,698	2,704	810,421	51,210,105
			1,788,941,515	2036	41,146	2,734	819,335	51,773,416
			1,808,619,872	2037	41,598	2,764	828,348	52,342,924
			1,828,514,691	2038	42,056	2,794	837,460	52,918,896
			1,848,628,352	2039	42,518	2,825	846,672	53,500,802
			1,868,963,264	2040	42,986	2,856	855,985	54,089,311
			1,889,521,860	2041	43,459	2,887	865,401	54,684,293
			1,910,306,600	2042	43,937	2,919	874,920	55,285,820
			1,931,319,973	2043	44,420	2,951	884,545	55,893,964
			1,952,564,493	2044	44,909	2,984	894,275	56,508,798
			1,974,042,702	2045	45,403	3,016	904,112	57,130,395
			1,995,757,172	2046	45,902	3,050	914,057	57,758,829
			2,017,710,501	2047	46,407	3,083	924,111	58,394,176
			2,039,905,316	2048	46,918	3,117	934,277	59,036,512
			2,062,344,275	2049	47,434	3,151	944,554	59,685,914
			2,085,030,062	2050	47,956	3,186	954,944	60,342,459
			2,107,965,393	2051	48,483	3,221	965,448	61,006,226
			2,131,153,012	2052	49,017	3,256	976,068	61,677,294
			2,154,595,695	2053	49,556	3,292	986,805	62,355,745
			2,178,296,248	2054	50,101	3,328	997,660	63,041,658
			2,202,257,506	2055	50,652	3,365	1,008,634	63,735,116
			2,226,482,339	2056	51,209	3,402	1,019,729	64,436,202
			2,250,973,645	2057	51,772	3,439	1,030,949	65,145,000
			2,275,734,355	2058	52,342	3,477	1,042,286	65,861,595
			2,300,767,433	2059	52,918	3,516	1,053,751	66,586,073
			2,326,075,874	2060	53,500	3,554	1,065,343	67,318,520
			2,351,662,709	2061	54,088	3,593	1,077,062	68,059,024
			2,377,530,999	2062	54,683	3,633	1,088,909	68,807,673

Annual Reduction in Air Pollution

Reduction in auto travel (total miles saved in 2027)	1,621,196,817							
AQMD RECLAIM Calculation for NOx only								
Vehicle miles per year**	12500							
Vehicle Emissions per year**	lbs/12500 mi	lbs	tons	Value***				
Hydrocarbons	77.1	9,999,542	5,000	\$19,999,084	1,828,514,691	2038	42,056	837,460
Carbon Monoxide	575	74,575,054	37,288	\$149,150,107	1,848,628,352	2039	42,518	846,672
Nitrogen Oxides***	38.2	4,954,377	2,477	\$9,908,755	1,868,963,264	2040	42,986	855,985
Carbon Dioxide***	11450	1,485,016,284	742,508	\$100,981,107	1,889,521,860	2041	43,459	865,401
Total Emissions		1,574,545,257	787,273	\$110,889,862	1,910,306,600	2042	43,937	874,920
Gasoline (gallons/12500 miles)	487				1,931,319,973	2043	44,420	884,545
					1,952,564,493	2044	44,909	894,275
					1,974,042,702	2045	45,403	904,112
					1,995,757,172	2046	45,902	914,057
CARB Calculation for NOx + HC					2,017,710,501	2047	46,407	924,111
Vehicle emissions - NOx+HC (tons per mile)*	0.0000042857				2,039,905,316	2048	46,918	934,277
Total pollution reduction (tons per year)	6,948				2,062,344,275	2049	47,434	944,554
Value of pollution reduction (per pound on emission credit market)	\$2.00				2,085,030,062	2050	47,956	954,944
Total annual savings	\$13,895.97				2,107,965,393	2051	48,483	965,448
					2,131,153,012	2052	49,017	976,068
					2,154,595,695	2053	49,556	986,805
					2,178,296,248	2054	50,101	997,660
					2,202,257,506	2055	50,652	1,008,634
					2,226,482,339	2056	51,209	1,019,729
					2,250,973,645	2057	51,772	1,030,949
* Source	www.arb.ca.gov/html/brochure/history.htm				2,275,734,355	2058	52,342	1,042,286
	280 billion miles per year travel in California				2,300,767,433	2059	52,918	1,053,751
	1.2 million tons of NOx + Hydrocarbons per year in California				2,326,075,874	2060	53,500	1,065,343
	0.0000042857 tons per mile NOx + Hydrocarbons per year in California				2,351,662,709	2061	54,088	1,077,062
					2,377,530,999	2062	54,683	1,088,909
** Source	www.epa.gov/otaq/consumer/f00013.htm							
	Values for emissions are for one year based upon annual average 12,500 miles driven				88,087,170,815	Total	2,026,005	134,597
						Value		\$538,388,768
***Sources	www.aqmd.gov/reclaim/rtc_main.html							\$5,486,773,696
	\$2 per pound of CO2 emission on the Reclaim Trading Credit Market					Tons per day	111	7
	Values for other pollutants are illustrative only							2,211
	http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/05/84&format=HTML&aged=1&language=EN&quillanguage=en							
	\$0.068 per pound of CO2 emission on the EETNAP (European Emissions Trading and National Allocation Plans) (EU100 per ton)							
****Source	The Orange County Register - May 25, 2007							
	111.5 tons per day of diesel emissions in California			40,697.5 per year				
	5 tons per day of diesel particulate matter							
	34.6 tons per day from heavy duty diesel trucks			12,629 per year				

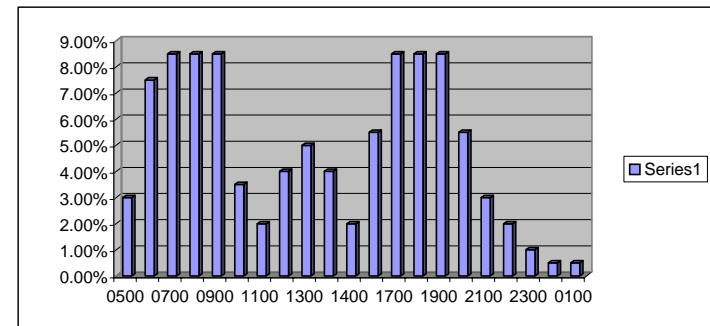
Theoretical Operational Capacity (in year 2062)

seated passengers per vehicle	1,000	1,000
service frequency (minutes)	5.0	2.0
vehicle trips per hour (two directions)	24	60
hours per day	20	20
vehicle trips per day	480	1,200
passenger trips per vehicle trip	1,500	1,500
passenger trips per hour (Capacity)	36,000	90,000
passenger trips per day (Capacity)	720,000	1,800,000
passenger trips per year	219,600,000	549,000,000
average fare per passenger trip	\$18.00	\$18.00
passenger fares per year	\$3,952,800,000	\$9,882,000,000

Projected Operational Demand/Usage (in year 2062)

projected daily riders	374,229	374,229
projected utilization (ridership)	52%	21%
projected fares per year	\$9,426,143,901	\$9,426,143,901
projected fares ratio (demand / capacity)	238%	95%
maximum passengers on-board/capacity	88%	35% (assumes equal distribution)

Time of Day	Percent of Daily Riders	In-vehicle	% Capacity
0500	3.00%	11,227	31%
0600	7.50%	28,067	78%
0700	8.50%	31,809	88%
0800	8.50%	31,809	88%
0900	8.50%	31,809	88%
1000	3.50%	13,098	36%
1100	2.00%	7,485	21%
1200	4.00%	14,969	42%
1300	5.00%	18,711	52%
1400	4.00%	14,969	42%
1400	2.00%	7,485	21%
1600	5.50%	20,583	57%
1700	8.50%	31,809	88%
1800	8.50%	31,809	88%
1900	8.50%	31,809	88%
2000	5.50%	20,583	57%
2100	3.00%	11,227	31%
2200	2.00%	7,485	21%
2300	1.00%	3,742	10%
2400	0.50%	1,871	5%
0100	0.50%	1,871	5%
	100.00%	374,229	



Calculations for FTA Benefits Criteria

Summary Description	
Proposed Project:	Orangeline Corridor Development Project Orangeline High Speed Maglev 108 miles, 18 stations
Total Capital Cost (\$2007):	\$19,228,000,000
Section 5309 Share:	\$0
Annual Operating Cost in 2027 (\$2007):	\$350,097,000
Ridership Forecast (2027):	255,180 daily boardings 255,180 daily new riders
FY 2007 Financial Rating:	High
FY 2007 Project Justification Rating:	High
FY 2007 Overall Project Rating:	Highly Recommended

Mobility Improvements	New Start vs. No-Build	New Start vs. TSM
Annual Travel Time Savings in 2027 (Million Hours)	N/A	36
Total Travel Time Savings Over 50 years (Million Hours)	N/A	1,957

Air Quality Improvements	New Start vs. No-Build	New Start vs. TSM	New Start vs. TSM	New Start vs. TSM
Criteria Pollutant		In 2027	Over 50 Years	Over 50 Years
Carbon Monoxide (CO)	N/A	37,288	2,026,005	N/A
Nitrogen Oxide (NO_x)	N/A	2,477	134,597	\$538,388,788
Volatile Organic Compounds (VOC)	N/A	N/A	N/A	N/A
Particulate Matter (PM₁₀)	N/A	N/A	N/A	N/A
Carbon Dioxide (CO₂)	N/A	742,508	40,343,924	\$5,486,773,696

Values reflect annual tons of emissions reductions and dollar values based upon emission credits trading

Energy Savings	New Start vs. No-Build	New Start vs. TSM
Gallons of Gasoline (million) In 2027	N/A	47
Gallons of Gasoline (million) Over 50 years	N/A	2,549

Operating Efficiencies	No-Build	TSM	New Start
System Capital + Operating Cost per Passenger Mile (2027)	N/A	\$1.14	\$0.61

Values reflect 2027 ridership forecast and 2007 dollars.

Economic Efficiencies	New Start vs. No-Build	New Start vs. TSM
Incremental Cost per Incremental Passenger	N/A	\$0.00

Values reflect 2027 ridership forecast and 2007 dollars. () indicates income.

Economic Benefits	New Start vs. No-Build	New Start vs. TSM
Project Surplus	N/A	\$23,312,080,297
Operating Reserves	N/A	\$2,000,132,327
Station-area Improvements/Feeder Services	N/A	\$21,116,691,148
Investor Earnings	N/A	\$23,359,337,310
User Cost Savings	N/A	\$3,113,357,602
User Delay Savings	N/A	\$29,217,442,288
Total Project Benefits	N/A	\$91,285,485,109
Project Cost	N/A	\$22,693,799,040
Benefit/Cost Ratio	N/A	4.02
Emission Savings	N/A	\$6,025,162,484
Benefit/Cost Ratio	N/A	4.29

Values reflect 50-year ridership cost and revenue projections and 2007 dollars.