Appendix J

Performance of Initial Set of Alternatives

Metro

Performance of Initial Set of Alternatives

Primary Element of Need	Objective Statement	Evaluation Criterion	Performance Measure	No Build	TSM/TDM	BRT-1	BRT-6	BRT-6A	LRT-4A	LRT-4B	LRT-4D	LRT-6	Freeway-2	Freeway-5	Freeway-6	Freeway-7	Highway/ Arterial Improvements-2	Highway/ Arterial Improvements-6
1) Regional Transportation System (regional travel speeds low; regional travel delays high; regional travel times are unpredictable)	1) Minimize travel time	Trip travel time	Point-to-point travel times for a set of 9 trip pairs - regional (e.g., Long Beach to Stevenson Ranch) and study area (e.g., Union Station to La Cañada Flintridge). Peak period travel times are calculated for highway (SOV, HOV-2, HOV-3+) and transit. Two measures are reported - normalized travel time for highway (line 1) and transit modes (line 2).	0	11	14	7	7	13	15	13	14	92	63	88	100	8	11
				0	41	100	52	52	93	90	95	66	35	37	10	39	2	41
		Total travel time	Reduction in vehicle hours (1000s) of travel for all automobile/truck trips in the region. Reported as the change in travel time (from no-build) for the total of AM/PM, then compared to no-build.	0	89	96	101	101	102	101	100	97	11	7	10	14	9	9
		Travel time reliability	Percent of travel on facilities in study area with dedicated or managed operations, weighted by volume/use, for person-hours of daily travel.	8.6%	8.6%	8.6%	8.6%	8.6%	8.6%	8.6%	8.6%	8.6%	8.6%	8.7%	9 9%	8.8%	8.6%	8.6%
	2) Improve connectivity and mobility	Access to regional freeway and transit system	Number of new interchanges connecting to existing highway facilities + new transit transfer points. Transit transfer points are between an exclusive new/existing transit facility.	0	0	1	1	2	3	3	3	2	5	6	14	7	8	9
		Employment, health care, education accessibility	Assessment of the number of jobs reachable within 25.3 minutes in peak periods, for a set of 12 origins. Percentage of "lost" accessible jobs (due to 2035 congestion) gained back.	0.00%	3.38%	2.97%	3.38%	3.38%	5 20%	4.29%	4.00%	3.67%	98.43%	91.38%	184.04%	122.02%	44.74%	58.56%
		North-south throughput	Total boardings on transit routes crossing an east/west screenline from US 101 to I-605. The screenline is approximately in the middle of South Pasadena.	624,946	648,051	649,428	654,475	654,475	655,759	655,233	655,553	656,319	624,180	625,582	624,032	627,027	624,828	624,035
		Volume served	Daily volume (1000s) on arterials (non-freeways) crossing the east-west Screenline	941	949	941	940	940	940	940	940	940	893	843	880	861	963	954
			Daily volume (1000s) on freeways crossing the east-west screenline	985	984	985	985	985	985	985	985	985	1,097	1,133	1,106	1,129	966	981
2) Freeway system in study area (over-capacity north/south travel demand affects mobility; high delays and unpredictable travel times on study are freeways; freeway system users take longer trips; high accident rates on freeways due to congestion)	3) Reduce congestion on freeway system	Level of congestion on study area freeways	Total directional miles of roadway facilities at LOS F1, F2, and F3 in the study area.	100.0	95.7	100.1	99.4	99.4	99.6	99.6	99 2	99.9	82.5	80.5	72.1	79.2	88.2	93.1
			Total directional miles of roadway facilities at LOS E or F0 in the study area.	420.2	418.4	420.7	419.6	419.6	420.3	421.0	421.4	420.6	406.2	407.2	397.7	414.2	410.9	411.1
			Total daily auto and truck VMT (in 1000s) on congested freeways (V/C > 1.0) in the study area	1550.5	1497.8	1533.3	1546.2	1546.2	1528.4	1545.9	1544.5	1546.6	1219.3	1400.6	1255.7	1292.4	1397.9	1472.1
3) Local Street system (affected by excess freeway traffic; operates at low speeds; out-of-place freeway trips cause high levels of congestion)	4) Reduce congestion on local street system	Local arterials traffic operations	Percentage of intersections in the study area with congested approaches, with PM peak volume/capacity (v/c) ratio > 1.0.	28.0%	28.5%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	28.0%	25.1%	23.2%	19.3%	21.7%	27.9%	23.2%
			Average v/c ratio on north-south arterials at screenlines within the study area, using the maximum of the AM and PM peak hours.	0.77	0.78	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.73	0.72	0.71	0.72	0.76	0.78
			Arterial vehicle-miles traveled (VMT) in the study area - daily for all vehicle trips, in 1000s.	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.5	6.4	6.5	7.1	6.9
			Percentage of PM peak period trips on arterials that have an O-D outside of study area.	24.9%	25.2%	25.2%	25.3%	25.2%	25.2%	25.3%	25.3%	25.3%	17.1%	13.7%	15.5%	9.7%	24.7%	24.7%
			Total north/south travel served (daily person trips on arterials, in millions) crossing an east-west screenline through South Pasadena from US 101 to I-605.	1.27	1.29	1.27	1.27	1.27	1.27	1.27	1.27	1 27	1.19	1.14	1.12	1.15	1.31	1.30
4) Transit system in study area (operational deficiencies of the highway system affects transit; low travel speeds for buses and increased delay for peak hour trips; north/south transit network is constrained by slow speeds on the arterial network)	5) Increase transit ridership	New transit ridership	Increase in transit ridership (new daily riders).	0	16329	18690	19058	19058	20136	19806	19804	19762	0	0	0	0	0	0
		Transit accessibility	Percentage of study area population/employment within 1/4 mile of transit stop with high frequency service.	29.3%	35 3%	34.7%	35.6%	35.6%	35.7%	35.7%	35.7%	35.7%	29.3%	29.3%	29.3%	29.3%	29.3%	29.3%
		Transit use	Transit percentage of total trips (mode split).	3.73%	3.89%	3.90%	3.91%	3.91%	3 92%	3.93%	3.92%	3.92%	3.74%	3.75%	3.74%	3.75%	3.73%	3.75%

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Primary Element of Need	Objective Statement	Evaluation Criterion	Performance Measure	No Build	TSM/TDM	BRT-1	BRT-6	BRT-6A	LRT-4A	LRT-4B	LRT-4D	LRT-6	Freeway-2	Freeway-5	Freeway-6	Freeway-7	Highway/ Arterial Improvements-2	Highway/ Arterial Improvements-6
Other issues - Environmental & Communities - improve environmental conditions related to transportation sources within local communities within the study area	6) Minimize environ-mental and community impacts related to transportation	Displace-ments of people and businesses	Estimated number of residences and businesses with full acquisitions	0	53	19	0	0	50	55	103	214	313	255	476	5	632	184
		Potential for effects to recreational resources	Number of recreational/community facilities potentially affected	0	12	3	5	5	4	6	9	10	3	10	9	6	18	9
		Potential for effects to known cultural/ historic resources	Number of known archeological sites potentially affected	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Number of historic period (45 years or older) resources potentially affected.	0	115	9	15	12	56	66	78	270	295	335	530	72	1055	308
			Number of Previously Identified Significant Resources (designated historic districts/buildings)	0	4	0	2	1	0	0	2	5	0	20	54	8	23	47
		Paleon-tological resources impacts	Acres of High Paleontological Sensitivity	0	111.0	16.2	15.0	15.5	79.0	150.6	89.4	172.2	340.3	380.0	403.8	397.1	263.9	180.5
		Subsurface soil and bedrock conditions	Potential to encounter adverse geotechnical conditions: potential liquefaction, subsurface soil/ bedrock variability, active fault crossing, potential for natural gas	6.0	7.0	5.0	6.0	6.0	4.0	4.0	4.0	6.0	4 0	4.0	5.0	4.0	5.0	6.0
		Potential to affect biological resources/ waters	Sensitive habitats potentially affected by type (acres)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2 2	6.3	1.0	0.0	0.5	0.0
			Drainages directly affected (linear feet)	0	0	247	0	0	2050	2034	1938	0	1411	1744	1411	1500	200	0
		Potential for noise/ vibration effects	Percentage change in estimated acres of sensitive receptors along freeway corridors exceeding noise threshold	0.00	0.00	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30	5.70	0.70	5.40	0.90	0.40	0.70
		Potential for air quality effects	Change in regional mobile source air toxins (MSAT) emissions based on regional vehicle hours traveled (VHT)/VMT (% change from no build)	0.00	-0.03	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0 04	0.38	0.31	0.28	0.35	0.05	0.04
			Change in regional criteria pollutants based on regional VHT/VMT (% change from no build)	0.00	-1.17	-1.27	-1.33	-1.33	-1.35	-1.34	-1.33	-1 29	0.04	-0.22	0.00	0.01	-0.06	-0.06
			Change in regional greenhouse gas (GHG) emissions based on regional VHT/VMT (% change from no build)	0.00	-1.26	-1.37	-1.43	-1.43	-1.46	-1.44	-1.44	-1.39	0.08	-0.14	0.02	0.04	-0.05	-0.05
		Potential to affect known hazardous waste sites	Relative number and type of hazardous waste sites affected (1 to 7 scale: 7 is the least affected)	7	7	3	6	6	3	6	3	6	7	7	7	5	3	5
		Visual effects	Visual intrusion into communities (Low=1, Medium=2, High=3)	1	1	1	1	1	3	3	3	3	2	3	3	3	3	2
			Linear feet of alternative through designated scenic corridors and/or vistas	0	0	0	0	0	0	0	0	0	750	300	0	0	250	0
Other issues - Consistency with Plans (Implement the goals and objectives of the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Long Range Transportation Plan (LRTP) relating to this study area)	7) Assure consistency with regional plans and strategies	Consistency with draft SCAG RTP/SCS regarding corridor	Number of RTP/SCS goals/objectives alignment is consistent with	0	3	4	4	4	4	4	4	4	4	4	4	4	1	1
		Consistency with Measure R intent for corridor	Number of Measure R goals/objectives the alignment is consistent with	0	2	4	4	4	3	3	3	3	4	4	4	4	2	2
		Metro LRTP intent for corridor	Number of Metro LRTP goals/objectives the alignment is consistent with	0	3	1	1	1	1	1	1	1	1	1	1	1	1	1
Other issues - Provide Financially Feasible Transportation Solutions	8) Maximize cost-efficiency of public investments	Cost-effective-ness	Estimated construction and ROW costs, normalized to a 1 to 7 scale (7 is best)	7	6	6	6	6	3	3	3	4	1	1	4	2	4	5
		Financial feasibility	Available funding plus potential for generated revenue, relative to total costs	5	5	5	5	5	2	2	2	3	4	4	4	4	5	5
		Technical feasibility	Demonstrated to be technically feasible	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5