

Appendix G

Noise Modeling Data and Output

Traffic Noise Spreadsheet Calculator

Project: RPU Traffic Noise Model
February 23, 2012

Segment Description and Location		Existing	Alternative 1	Δ Alt 1	Alternative 2	Δ Alt 2	Alternative 3	Δ Alt 3
Number	Name	Conditions						
Summary of Net Changes								
1	US 50 mp 70.62	64.2	64.4	0.2	64.5	0.3	64.4	0.2
2	US 50 mp 71.48	64.2	64.5	0.2	64.6	0.3	64.4	0.2
3	US 50 mp 75.45	66.2	66.4	0.2	66.4	0.2	66.4	0.2
4	US 50 mp 76.41	66.0	66.1	0.1	66.1	0.1	66.2	0.2
5	US 50 mp 77.33	65.7	65.9	0.2	65.9	0.1	65.9	0.2
6	US 50 mp 80.14	65.2	65.5	0.2	65.3	0.1	65.4	0.2
7	US 50 ATR 0521109	65.4	65.7	0.3	65.6	0.2	65.6	0.2
8	US 50 sta 0041	64.5	65.0	0.4	64.8	0.3	64.9	0.3
9	US 50 MP 65.62 Echo Lake Road	61.7	62.0	0.3	61.9	0.2	62.0	0.3
10	US 50 ATR 252125	66.3	66.6	0.3	66.7	0.4	66.3	0.0
11	SR 28 sta 0035	61.9	63.0	1.1	63.2	1.3	62.9	1.0
12	SR 28 ATR 3122409	62.7	62.9	0.3	62.7	0.0	62.9	0.2
13	SR 28 mp 11.00	62.7	62.8	0.0	62.8	0.0	62.8	0.0
14	SR 28 mp 9.34	64.0	64.2	0.2	64.1	0.1	64.2	0.2
15	SR 28 mp 1.85	64.7	65.1	0.4	64.8	0.2	65.1	0.4
16	SR 89 mp 19.54	59.6	59.6	0.0	60.6	1.0	60.4	0.8
17	SR 89 mp 11.69	58.0	59.0	1.0	58.9	0.9	58.9	0.9
18	SR 89 mp 8.67	63.7	63.9	0.2	64.0	0.3	64.0	0.3
19	SR 89 MP 0.00 Alpine-El Dorado	64.0	64.0	0.0	64.5	0.5	64.4	0.4
20	SR 89 MP 13.72 Squaw Valley Rd	65.3	65.9	0.5	65.6	0.3	65.8	0.4
21	SR 207 ATR 0531509- sta 0024	63.1	63.2	0.1	63.1	0.0	63.1	0.0
22	SR 431 sta 770	61.8	62.0	0.3	61.9	0.1	62.0	0.2
23	SR 267 MP 6.23 Martis Peak Rd	66.2	66.5	0.4	66.3	0.1	66.5	0.4
24	SR 267 mp 9.28	61.7	61.9	0.3	61.9	0.2	62.0	0.3

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator



Project: RPU Traffic Noise Model

Noise Level Descriptor: CNEL
 Site Conditions: Soft
 Traffic Input: ADT
 Traffic K-Factor:

Segment Description and Location		Input									Output					
		ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
Number	Name			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA
Existing Conditions																
1	US 50 mp 70.62	17000	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.2	41	88	190	410
2	US 50 mp 71.48	17200	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.2	41	89	192	413
3	US 50 mp 75.45	39500	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.2	56	120	259	559
4	US 50 mp 76.41	37500	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.0	54	116	250	539
5	US 50 mp 77.33	38000	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.7	52	112	240	518
6	US 50 mp 80.14	34000	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.2	48	104	223	481
7	US 50 ATR 0521109	33300	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.4	50	107	231	497
8	US 50 sta 0041	27000	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	64.5	43	93	201	432
9	US 50 MP 65.62 Echo Lake Road	15100	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	61.7	28	60	130	280
10	US 50 ATR 252125	14900	50	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	66.3	57	122	262	566
11	SR 28 sta 0035	7200	45	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	61.9	29	62	134	288
12	SR 28 ATR 3122409	17000	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.7	32	70	150	324
13	SR 28 mp 11.00	17300	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.7	33	71	152	328
14	SR 28 mp 9.34	23200	35	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.0	40	86	185	399
15	SR 28 mp 1.85	13700	45	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.7	44	95	205	442
16	SR 89 mp 19.54	6000	40	100	100	95.9%	3.3%	0.8%	76.5%	11.8%	11.8%	59.6	20	43	94	202
17	SR 89 mp 11.69	6400	35	100	100	97.9%	1.0%	1.1%	76.5%	11.8%	11.8%	58.0	16	34	74	159
18	SR 89 mp 8.67	26000	35	100	100	98.4%	1.2%	0.4%	76.5%	11.8%	11.8%	63.7	38	82	176	380
19	SR 89 MP 0.00 Alpine-El Dorado	3400	55	100	100	84.8%	1.8%	13.3%	76.5%	11.8%	11.8%	64.0	40	86	185	400
20	SR 89 MP 13.72 Squaw Valley Rd	13600	45	100	100	92.6%	5.2%	2.2%	76.5%	11.8%	11.8%	65.3	49	105	227	490
21	SR 207 ATR 0531509- sta 0024	14000	35	100	100	89.4%	8.7%	1.9%	76.5%	11.8%	11.8%	63.1	35	75	161	347
22	SR 431 sta 770	6700	45	100	100	96.2%	1.7%	2.1%	76.5%	11.8%	11.8%	61.8	28	61	132	284
23	SR 267 MP 6.23 Martis Peak Rd	10600	55	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	66.2	55	119	257	554
24	SR 267 mp 9.28	13300	35	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	61.7	28	60	129	278

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator



Project: RPU Traffic Noise Model

Noise Level Descriptor: CNEL
Site Conditions: Soft
Traffic Input: ADT
Traffic K-Factor:

Segment Description and Location		Input									Output					
Number	Name	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
				Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA
Alternative 1																
1	US 50 mp 70.62	17,900	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.4	42	91	197	425
2	US 50 mp 71.48	18,100	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.5	43	92	199	428
3	US 50 mp 75.45	40,900	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.4	57	123	265	572
4	US 50 mp 76.41	38,600	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.1	55	118	255	550
5	US 50 mp 77.33	39,600	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.9	53	115	247	532
6	US 50 mp 80.14	36,000	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.5	50	108	232	500
7	US 50 ATR 0521109	35,600	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.7	52	112	241	519
8	US 50 sta 0041	29,900	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.0	46	100	215	462
9	US 50 MP 65.62 Echo Lake Road	16,100	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	62.0	29	63	136	292
10	US 50 ATR 252125	16,100	50	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	66.6	60	128	276	595
11	SR 28 sta 0035	9,200	45	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	63.0	34	73	158	339
12	SR 28 ATR 3122409	18,100	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.9	34	73	157	338
13	SR 28 mp 11.00	17,400	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.8	33	71	153	329
14	SR 28 mp 9.34	24,100	35	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.2	41	88	190	409
15	SR 28 mp 1.85	14,900	45	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	65.1	47	101	217	468
16	SR 89 mp 19.54	6,000	40	100	100	95.9%	3.3%	0.8%	76.5%	11.8%	11.8%	59.6	20	43	94	202
17	SR 89 mp 11.69	8,000	35	100	100	97.9%	1.0%	1.1%	76.5%	11.8%	11.8%	59.0	18	40	86	184
18	SR 89 mp 8.67	27,500	35	100	100	98.4%	1.2%	0.4%	76.5%	11.8%	11.8%	63.9	39	85	183	395
19	SR 89 MP 0.00 Alpine-El Dorado	3,400	55	100	100	84.8%	1.8%	13.3%	76.5%	11.8%	11.8%	64.0	40	86	185	400
20	SR 89 MP 13.72 Squaw Valley Rd	15,300	45	100	100	92.6%	5.2%	2.2%	76.5%	11.8%	11.8%	65.9	53	114	246	530
21	SR 207 ATR 0531509- sta 0024	14,400	35	100	100	89.4%	8.7%	1.9%	76.5%	11.8%	11.8%	63.2	35	76	164	354
22	SR 431 sta 770	7,100	45	100	100	96.2%	1.7%	2.1%	76.5%	11.8%	11.8%	62.0	29	64	137	295
23	SR 267 MP 6.23 Martis Peak Rd	11,500	55	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	66.5	59	126	272	585
24	SR 267 mp 9.28	14,200	35	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	61.9	29	63	135	290

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator



Project: RPU Traffic Noise Model

Noise Level Descriptor: CNEL
 Site Conditions: Soft
 Traffic Input: ADT
 Traffic K-Factor:

Segment Description and Location		Input										Output				
Number	Name	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
				Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA
Alternative 2																
1	US 50 mp 70.62	18400	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.5	43	93	201	432
2	US 50 mp 71.48	18500	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.6	43	94	201	434
3	US 50 mp 75.45	40900	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.4	57	123	265	572
4	US 50 mp 76.41	38800	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.1	55	119	256	552
5	US 50 mp 77.33	39300	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.9	53	114	246	530
6	US 50 mp 80.14	34600	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.3	49	105	226	487
7	US 50 ATR 0521109	34600	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.6	51	110	237	510
8	US 50 sta 0041	28900	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	64.8	45	97	210	452
9	US 50 MP 65.62 Echo Lake Road	15800	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	61.9	29	62	134	289
10	US 50 ATR 252125	16500	50	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	66.7	61	130	281	605
11	SR 28 sta 0035	9700	45	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	63.2	35	76	163	352
12	SR 28 ATR 3122409	17100	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.7	33	70	151	325
13	SR 28 mp 11.00	17400	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.8	33	71	153	329
14	SR 28 mp 9.34	23700	35	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.1	40	87	188	404
15	SR 28 mp 1.85	14200	45	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.8	45	98	210	453
16	SR 89 mp 19.54	7600	40	100	100	95.9%	3.3%	0.8%	76.5%	11.8%	11.8%	60.6	24	51	110	236
17	SR 89 mp 11.69	7900	35	100	100	97.9%	1.0%	1.1%	76.5%	11.8%	11.8%	58.9	18	39	85	183
18	SR 89 mp 8.67	27900	35	100	100	98.4%	1.2%	0.4%	76.5%	11.8%	11.8%	64.0	40	86	185	398
19	SR 89 MP 0.00 Alpine-El Dorado	3800	55	100	100	84.8%	1.8%	13.3%	76.5%	11.8%	11.8%	64.5	43	93	200	430
20	SR 89 MP 13.72 Squaw Valley Rd	14500	45	100	100	92.6%	5.2%	2.2%	76.5%	11.8%	11.8%	65.6	51	110	237	511
21	SR 207 ATR 0531509- sta 0024	14100	35	100	100	89.4%	8.7%	1.9%	76.5%	11.8%	11.8%	63.1	35	75	162	349
22	SR 431 sta 770	6800	45	100	100	96.2%	1.7%	2.1%	76.5%	11.8%	11.8%	61.9	29	62	133	286
23	SR 267 MP 6.23 Martis Peak Rd	10900	55	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	66.3	56	122	262	565
24	SR 267 mp 9.28	14000	35	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	61.9	29	62	133	288

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator



Project: RPU Traffic Noise Model

Noise Level Descriptor: CNEL
 Site Conditions: Soft
 Traffic Input: ADT
 Traffic K-Factor:

Segment Description and Location		Input										Output				
		ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
Number	Name			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA
Alternative 3																
1	US 50 mp 70.62	17800	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.4	42	91	196	423
2	US 50 mp 71.48	18000	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.4	43	92	198	426
3	US 50 mp 75.45	41600	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.4	58	125	268	578
4	US 50 mp 76.41	39700	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.2	56	121	260	560
5	US 50 mp 77.33	40100	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.9	54	116	249	537
6	US 50 mp 80.14	35300	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.4	49	106	229	493
7	US 50 ATR 0521109	34500	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.6	51	110	236	509
8	US 50 sta 0041	29100	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	64.9	45	98	211	454
9	US 50 MP 65.62 Echo Lake Road	16000	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	62.0	29	63	135	291
10	US 50 ATR 252125	15000	50	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	66.3	57	122	264	568
11	SR 28 sta 0035	9000	45	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.9	33	72	155	335
12	SR 28 ATR 3122409	17900	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.9	34	72	156	336
13	SR 28 mp 11.00	17400	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.8	33	71	153	329
14	SR 28 mp 9.34	24300	35	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.2	41	89	191	411
15	SR 28 mp 1.85	15000	45	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	65.1	47	101	218	470
16	SR 89 mp 19.54	7200	40	100	100	95.9%	3.3%	0.8%	76.5%	11.8%	11.8%	60.4	23	49	106	228
17	SR 89 mp 11.69	7800	35	100	100	97.9%	1.0%	1.1%	76.5%	11.8%	11.8%	58.9	18	39	84	181
18	SR 89 mp 8.67	27900	35	100	100	98.4%	1.2%	0.4%	76.5%	11.8%	11.8%	64.0	40	86	185	398
19	SR 89 MP 0.00 Alpine-El Dorado	3700	55	100	100	84.8%	1.8%	13.3%	76.5%	11.8%	11.8%	64.4	42	91	196	423
20	SR 89 MP 13.72 Squaw Valley Rd	15000	45	100	100	92.6%	5.2%	2.2%	76.5%	11.8%	11.8%	65.8	52	113	243	523
21	SR 207 ATR 0531509- sta 0024	14100	35	100	100	89.4%	8.7%	1.9%	76.5%	11.8%	11.8%	63.1	35	75	162	349
22	SR 431 sta 770	7000	45	100	100	96.2%	1.7%	2.1%	76.5%	11.8%	11.8%	62.0	29	63	136	292
23	SR 267 MP 6.23 Martis Peak Rd	11600	55	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	66.5	59	127	273	589
24	SR 267 mp 9.28	14300	35	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	62.0	29	63	135	292

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator



Project: RPU Traffic Noise Model

Noise Level Descriptor: CNEL
 Site Conditions: Soft
 Traffic Input: ADT
 Traffic K-Factor:

Segment Description and Location		Input									Output					
Number	Name	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
				Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA
Alternative 4																
1	US 50 mp 70.62	19200	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.7	44	96	207	445
2	US 50 mp 71.48	19400	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.8	45	97	208	448
3	US 50 mp 75.45	42100	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.5	58	126	270	583
4	US 50 mp 76.41	40700	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.3	57	123	264	570
5	US 50 mp 77.33	41200	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	66.1	55	118	254	547
6	US 50 mp 80.14	36300	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.5	50	108	233	502
7	US 50 ATR 0521109	36400	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.8	53	114	245	527
8	US 50 sta 0041	30800	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	65.1	47	102	219	472
9	US 50 MP 65.62 Echo Lake Road	16700	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	62.1	30	64	139	299
10	US 50 ATR 252125	17300	50	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	66.9	62	135	290	625
11	SR 28 sta 0035	10800	45	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	63.7	38	81	175	378
12	SR 28 ATR 3122409	18500	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	63.0	34	74	159	343
13	SR 28 mp 11.00	17500	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.8	33	71	153	331
14	SR 28 mp 9.34	25800	35	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.5	43	92	199	428
15	SR 28 mp 1.85	15900	45	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	65.3	49	105	227	489
16	SR 89 mp 19.54	7900	40	100	100	95.9%	3.3%	0.8%	76.5%	11.8%	11.8%	60.8	24	52	112	242
17	SR 89 mp 11.69	8300	35	100	100	97.9%	1.0%	1.1%	76.5%	11.8%	11.8%	59.1	19	41	88	189
18	SR 89 mp 8.67	28200	35	100	100	98.4%	1.2%	0.4%	76.5%	11.8%	11.8%	64.1	40	86	186	401
19	SR 89 MP 0.00 Alpine-El Dorado	4000	55	100	100	84.8%	1.8%	13.3%	76.5%	11.8%	11.8%	64.7	45	96	207	445
20	SR 89 MP 13.72 Squaw Valley Rd	15900	45	100	100	92.6%	5.2%	2.2%	76.5%	11.8%	11.8%	66.0	54	117	252	543
21	SR 207 ATR 0531509- sta 0024	14600	35	100	100	89.4%	8.7%	1.9%	76.5%	11.8%	11.8%	63.3	36	77	166	357
22	SR 431 sta 770	7500	45	100	100	96.2%	1.7%	2.1%	76.5%	11.8%	11.8%	62.3	31	66	142	306
23	SR 267 MP 6.23 Martis Peak Rd	12000	55	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	66.7	60	130	280	602
24	SR 267 mp 9.28	14800	35	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	62.1	30	64	139	298

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator



Project: RPU Traffic Noise Model

Noise Level Descriptor: CNEL
 Site Conditions: Soft
 Traffic Input: ADT
 Traffic K-Factor:

Segment Description and Location		Input										Output				
Number	Name	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
				Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	70 dBA	65 dBA	60 dBA	55 dBA
Alternative 5																
1	US 50 mp 70.62	20000	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.9	46	98	212	457
2	US 50 mp 71.48	20200	40	100	100	96.8%	1.6%	1.6%	76.5%	11.8%	11.8%	64.9	46	99	214	460
3	US 50 mp 75.45	42600	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.5	59	127	273	587
4	US 50 mp 76.41	41100	35	100	100	96.0%	3.1%	0.9%	76.5%	11.8%	11.8%	66.4	57	124	266	573
5	US 50 mp 77.33	41700	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	66.1	55	119	256	551
6	US 50 mp 80.14	38300	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	65.7	52	112	242	521
7	US 50 ATR 0521109	37800	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	66.0	54	116	251	541
8	US 50 sta 0041	27000	35	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	64.5	43	93	201	432
9	US 50 MP 65.62 Echo Lake Road	17000	35	100	100	96.9%	2.6%	0.5%	76.5%	11.8%	11.8%	62.2	30	65	141	303
10	US 50 ATR 252125	18000	50	100	100	96.9%	1.9%	1.3%	76.5%	11.8%	11.8%	67.1	64	138	298	641
11	SR 28 sta 0035	11700	45	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	64.0	40	86	185	398
12	SR 28 ATR 3122409	20000	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	63.4	36	78	168	361
13	SR 28 mp 11.00	18000	35	100	100	96.4%	2.3%	1.4%	76.5%	11.8%	11.8%	62.9	34	73	156	337
14	SR 28 mp 9.34	26300	35	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	64.6	43	93	201	433
15	SR 28 mp 1.85	16400	45	100	100	96.4%	2.2%	1.4%	76.5%	11.8%	11.8%	65.5	50	107	232	499
16	SR 89 mp 19.54	8100	40	100	100	95.9%	3.3%	0.8%	76.5%	11.8%	11.8%	60.9	25	53	114	246
17	SR 89 mp 11.69	8500	35	100	100	97.9%	1.0%	1.1%	76.5%	11.8%	11.8%	59.2	19	41	89	192
18	SR 89 mp 8.67	28600	35	100	100	98.4%	1.2%	0.4%	76.5%	11.8%	11.8%	64.1	41	87	188	405
19	SR 89 MP 0.00 Alpine-El Dorado	4100	55	100	100	84.8%	1.8%	13.3%	76.5%	11.8%	11.8%	64.8	45	98	210	453
20	SR 89 MP 13.72 Squaw Valley Rd	16300	45	100	100	92.6%	5.2%	2.2%	76.5%	11.8%	11.8%	66.1	55	119	256	552
21	SR 207 ATR 0531509- sta 0024	15400	35	100	100	89.4%	8.7%	1.9%	76.5%	11.8%	11.8%	63.5	37	80	172	370
22	SR 431 sta 770	7900	45	100	100	96.2%	1.7%	2.1%	76.5%	11.8%	11.8%	62.5	32	68	147	317
23	SR 267 MP 6.23 Martis Peak Rd	12200	55	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	66.8	61	131	283	609
24	SR 267 mp 9.28	15300	35	100	100	96.8%	1.4%	1.8%	76.5%	11.8%	11.8%	62.3	31	66	142	305

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Vehicle Type Distribution Calculations

State	Segment	AADT ¹	MT ²	HT ³	MT%	HT%	Autos%
CA	US 50 mp 70.62	13100	216	206	0.016	0.016	0.968
CA	US 50 mp 71.48	NA	NA	NA	0.016	0.016	0.968
CA	US 50 mp 75.45	33000	1032	288	0.031	0.009	0.960
CA	US 50 mp 76.41	-	-	-	0.031	0.009	0.960
CA	US 50 mp 77.33	-	-	-	0.026	0.005	0.969
CA	US 50 mp 80.14	27500	711	142	0.026	0.005	0.969
NV	US 50 ATR 0521109	22000	415	275	0.019	0.013	0.969
NV	US 50 sta 0041	22000	-	-	0.019	0.013	0.969
CA	US 50 MP 65.62 Echo Lake Road	-	-	-	0.026	0.005	0.969
NV	US 50 ATR 252125	12000	-	-	0.019	0.013	0.969
NV	SR 28 sta 0035	5600	-	-	0.023	0.014	0.964
NV	SR 28 ATR 3122409	12000	-	-	0.023	0.014	0.964
CA	SR 28 mp 11.00	13200	297	181	0.023	0.014	0.964
CA	SR 28 mp 9.34	16100	361	220	0.022	0.014	0.964
CA	SR 28 mp 1.85	12800	287	175	0.022	0.014	0.964
CA	SR 89 mp 19.54	3500	115	28	0.033	0.008	0.959
CA	SR 89 mp 11.69	4150	41	46	0.010	0.011	0.979
CA	SR 89 mp 8.67	16900	203	70	0.012	0.004	0.984
CA	SR 89 MP 0.00 Alpine-El Dorado	2600	48	347	0.018	0.133	0.848
CA	SR 89 MP 13.72 Squaw Valley Rd	10100	528	219	0.052	0.022	0.926
NV	SR 207 ATR 0531509- sta 0024	12000	1045	225	0.087	0.019	0.894
NV	SR 431 sta 770	5300	90	110	0.017	0.021	0.962
CA	SR 267 MP 6.23 Martis Peak Rd	-	-	-	0.014	0.018	0.968
CA	SR 267 mp 9.28	10100	146	177	0.014	0.018	0.968

Notes:

1. AADT=Annual Average Daily Traffic derived from Caltrans 2009 Annual Average Daily Truck Data and NDOT 2009 Annual Traffic Report and NDOT 2010 Vehicle Classification Distribution Report.
2. MT=Medium Trucks include Buses and all 2 axle trucks (FHWA 2011).
3. HT=Heavy Trucks includes all trucks with 3 or more axles.
4. Vehicle type were based on AADT from Caltrans and NDOT. Where Truck Data or AADT was not available, truck percentages were used from a nearby segment of the same road with similar AADT counts.

Source:

1. California Department of Transportation.2010. Annual Average Daily Truck Traffic on the California State Highway System. Available: <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm>
2. Nevada Department of Transportation.2011 (April). 2010 Vehicle Classification Distribution Report. Carson City, Nevada. Available: http://www.nevadadot.com/Documents/Reports_and_Publications.aspx
3. Federal Highway Administration (FHWA). 2011. Highway Traffic Noise. *Measurement of Highway-Related Noise*. U.S. Department of Transportation. Washington, DC. Last updated July 6, 2011. Available:<http://www.fhwa.dot.gov/environment/noise/measurement/mhrn05.cfm>

Temporal Distribution of Traffic Volume Data

	Tahoe Region Vehicle			
	TRPA Time Periods		Trips	
	from	to	#	%
Morning	7:00 AM	10:00 AM	94,039	37.5%
Mid-day	10:00 AM	4:00 PM	52,366	20.9%
Afternoon	4:00 PM	7:00 PM	45,408	18.1%
Eve&Night	7:00 PM	7:00 AM	58,954	23.5%
Total			250,767	100.0%

Source: Data provided by Keith Norberg of TRPA in an e-mail to Austin Kerr of Ascent Environmental on 2/23/2012.

According to Keith Norberg, these data indicate the number of vehicle trips originating in the Basin and is representative of the volume of vehicles on roadways in the Basin even though some trips will originate from locations outside the Basin. Keith Norberg stated that this temporal distribution would not differ in any substantial way among the 24 road segments being analyzed or among the alternatives and baseline conditions.

Below, TRPA's data is used to estimate the day-evening-night distribution for the traffic noise modeling.

	Traffic Noise Model		Vehicle Trips			
	from	to	#	%		
Day	7:00 AM	7:00 PM	191,813	76.49%		
Evening	7:00 PM	10:00 PM	29,477	11.75%	50.0%	This assumption is deemed reasonable by Keith Norber of TRPA.
Night	10:00 PM	7:00 AM	29,477	11.75%	50.0%	This assumption is deemed reasonable by Keith Norber of TRPA.
Total			250,767	100.0%		

Source: Calculations and assumptions

Citation Reference

- 1 Caltrans Technical Noise Supplement. 2009 (November). Table (5-11), Pg 5-60.
- 2 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-26), Pg 5-60.
- 3 Caltrans Technical Noise Supplement. 2009 (November). Equation (2-16), Pg 2-32.
- 4 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-11), Pg 5-47, 48.
- 5 Caltrans Technical Noise Supplement. 2009 (November). Equation (2-26), Pg 2-55, 56.
- 6 Caltrans Technical Noise Supplement. 2009 (November). Equation (2-27), Pg 2-57.
- 7 Caltrans Technical Noise Supplement. 2009 (November). Pg 2-53.
- 8 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-7), Pg 5-45.
- 9 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-8), Pg 5-45.
- 10 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-9), Pg 5-45.
- 11 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-13), Pg 5-49.
- 12 Caltrans Technical Noise Supplement. 2009 (November). Equation (5-14), Pg 5-49.
- 13 Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (16), Pg 67
- 14 Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (20), Pg 69
- 15 Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (18), Pg 69

Distance Propagation Calculations for Stationary Sources of Ground Vibration



KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

- If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.
- If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level		
	vibration level (VdB)	@	distance (ft)
Impact pile driver	112	@	25
sonic pile driving	105	@	25
Blasting	109.0	@	25

Attenuated Noise Level at Receptor		
vibration level (VdB)	@	distance (ft)
79.6	@	300
79.6	@	175
79.0	@	250

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level		
	vibration level (PPV)	@	distance (ft)
Impact pile driver	1.518	@	25
Sonic pile driving	0.734	@	25
Blasting	1.130	@	25

Attenuated Noise Level at Receptor		
vibration level (PPV)	@	distance (ft)
0.190	@	100
0.197	@	60
0.180	@	85

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 12-11 of FTA 2006. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: September 24, 2010.

Distance Propagation Calculations for Stationary Sources of Ground Vibration



KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

- If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.
- If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level		
	vibration level (VdB)	@	distance (ft)
Impact pile driver	112	@	25
Sonic pile driver	105	@	25
blasting	109	@	25
large bull dozer	87	@	25

STEP 3A: Select the distance to the receiver.

Attenuated Noise Level at Receptor		
vibration level (VdB)	@	distance (ft)
79.6	@	300
79.6	@	175
79.0	@	250
78.0	@	50

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level		
	vibration level (PPV)	@	distance (ft)
Impact pile driver	1.518	@	25
Sonic pile driver	0.734	@	25
blasting	1.130	@	25
large bull dozer	0.089	@	25

STEP 3B: Select the distance to the receiver.

Attenuated Noise Level at Receptor		
vibration level (PPV)	@	distance (ft)
0.190	@	100
0.197	@	60
0.180	@	85
0.191	@	15

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 12-11 of FTA 2006.

Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: September 24, 2010.