

Appendix H

**Noise and Vibration Modeling Files for
the Etiwanda Commerce Center Project**

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- H-1 Construction Noise Modeling
- H-2 Traffic Noise Modeling
- H-3 Stationary Noise Modeling
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- H-6 Noise Measurement Data
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Etiwanda Commerce Center Project Construction Noise Modeling Summary

Phase	Leq at 50 feet	Lmax at 50 feet
Demolition	84.9	91.3
Grading	86.3	90.6
Building Construction	84.5	90.8
Nighttime Construction	85.9	90.2
Paving	81.0	88.0
Architectural Coating	79.0	83.0
Max	86.3	Grading

Etiwanda Commerce Center Project - Demolition (Leq)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	28	90.0	Mounted Impact Hammer (hoe ram)	90	0.2
Industrial/Commercial Threshold	9	100.0	Tractor	84	0.4
SR 1 - Industrial	450	65.8	Vacuum Street Sweeper	80	0.1
SR 2 - Industrial	1218	57.2			
SR 3 - Industrial	1204	57.3			
SR 4 - Residential	2,780	50.0			
SR 5 - Residential	3,097	49.1			
SR 6 - Industrial	631	62.9			
SR 7 - Industrial	422	66.4			
SR 8 - Residential	2,809	49.9			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Mounted Impact Hammer (hoe ram)	83.0
Tractor	80.0
Vacuum Street Sweeper	70.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

84.9

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Grading (Leq)

ASCENT

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (Leq dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	33	90.0	Vacuum Street Sweeper	80	0.1
Industrial/Commercial Threshold	10	100.0	Scraper	85	0.4
SR 1 - Industrial	450	67.2	Dozer	85	0.4
SR 2 - Industrial	1218	58.6	Grader	85	0.4
SR 3 - Industrial	1204	58.7	Front End Loader	80	0.4
SR 4 - Residential	2,780	51.4			
SR 5 - Residential	3,097	50.5			
SR 6 - Industrial	631	64.3			
SR 7 - Industrial	422	67.8			
SR 8 - Residential	2,809	51.3			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Vacuum Street Sweeper	70.0
Scraper	81.0
Dozer	81.0
Grader	81.0
Front End Loader	76.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

86.3

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006, Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Building Construction (Leq)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (Leq dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	84	80.0	Vacuum Street Sweeper	80	0.1
Industrial/Commercial Threshold	8	100.0	Excavator	85	0.4
SR 1 - Industrial	450	65.4	Crane	85	0.16
SR 2 - Industrial	1218	56.8	Man Lift	85	0.2
SR 3 - Industrial	1204	56.9	Concrete Pump Truck	82	0.2
SR 4 - Residential	2,780	49.6			
SR 5 - Residential	3,097	48.7			
SR 6 - Industrial	631	62.5			
SR 7 - Industrial	422	66.0			
SR 8 - Residential	2,809	49.5			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Vacuum Street Sweeper	70.0
Excavator	81.0
Crane	77.0
Man Lift	78.0
Concrete Pump Truck	75.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

84.5

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Paving(Leq)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Nighttime Residential Threshold	18	90.0	Roller	85	0.2
Nighttime Industrial/Commercial Threshold	100	100.0	Roller	85	0.2
SR 1 - Industrial	450	61.9			
SR 2 - Industrial	1218	53.3			
SR 3 - Industrial	1204	53.4			
SR 4 - Residential	2,780	46.1			
SR 5 - Residential	3,097	45.2			
SR 6 - Industrial	631	59.0			
SR 7 - Industrial	422	62.5			
SR 8 - Residential	2,809	46.0			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Roller	78.0
Roller	78.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

81.0

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006, Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Nighttime Construction (Leq)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (Leq dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Nighttime Residential Threshold	552	65.0	Concrete Mixer Truck	85	0.4
Nighttime Industrial/Commercial Threshold	310	70.0	Concrete Mixer Truck	85	0.4
SR 1 - Industrial	450	66.8	Concrete Pump Truck	82	0.2
SR 2 - Industrial	1218	58.1	Tractor	84	0.4
SR 3 - Industrial	1204	58.2			
SR 4 - Residential	2,780	51.0			
SR 5 - Residential	3,097	50.0			
SR 6 - Industrial	631	63.8			
SR 7 - Industrial	422	67.3			
SR 8 - Residential	2,809	50.9			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Concrete Mixer Truck	81.0
Concrete Mixer Truck	81.0
Concrete Pump Truck	75.0
Tractor	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

85.9

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Architectural Coating (Leq)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (Leq dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Nighttime Residential Threshold	14	90.0	Compressor (air)	80	0.4
Nighttime Industrial/Commercial Threshold	100	100.0	Compressor (air)	80	0.4
SR 1 - Industrial	450	59.9			
SR 2 - Industrial	1218	51.3			
SR 3 - Industrial	1204	51.4			
SR 4 - Residential	2,780	44.1			
SR 5 - Residential	3,097	43.2			
SR 6 - Industrial	631	57.0			
SR 7 - Industrial	422	60.5			
SR 8 - Residential	2,809	44.0			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Compressor (air)	76.0
Compressor (air)	76.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

79.0

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006, Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project Temporary Increase in Noise Calculations: Daytime Activities

	Noise Level		Activity	Combined (Existing	Change	Threshold
	dBA Leq	FT	Noise at SR	+ Project)		
Reference Noise Level (Arrow Route) ¹	72.2	60				
Calculated noise level	73.0	50				
SR 1*	58.1		67.2	67.7	9.6	10
SR 2	60.8	825	58.6	62.9	2.0	10
SR 3	72.9	51	58.7	73.1	0.2	5
SR 4	75.5	28	51.4	75.5	0.0	5
SR 5	69.0	125	50.5	69.1	0.1	5
SR 6*	58.1		64.3	65.2	7.1	10
SR 7*	58.1		67.8	68.2	10.1	10
SR 8	52.4	5675	51.3	54.9	2.5	10

Sources

Attenuation Formula (line source)

$$Lp(R2) = Lp(R1) - 10 \cdot \log(R2/R1)$$

			8
Lp(R1)	=	reference noise level at known distance	5
Lp(R2)	=	noise level at second location	soft
R1	=	reference level distance	6.5
R2	=	distance to second location	

0.6339286

1. 12-hour daytime Leq measurement conducted 60 feet from the centerline of Arrow Route

* noise level from short-term noise monitoring (ST17) applied (i.e., 58.1 dBA Leq)

Etiwanda Commerce Center Project: Temporary Increase in Noise Calculations: Nighttime Activities

	Noise Level		Activity Noise at SR	Combined (Existing + Project)	Change	Threshold	Exceeds Threshold?
	dBA Leq	FT					
Reference Noise Level (Arrow Route) ¹	67.2	60					
	68.0	50					
SR 1	51.2	2387	66.8	66.9	15.7	10	Yes
SR 2	55.8	825	58.1	60.1	4.3	10	No
SR 3	67.9	51	58.2	68.3	0.4	5	No
SR 4	70.5	28	51.0	70.6	0.0	5	No
SR 5	64.0	125	50.0	64.2	0.2	10	No
SR 6	52.1	1939	63.8	64.1	12.0	10	Yes
SR 7	51.3	2320	67.3	67.4	16.1	10	Yes
SR 8	47.4	5675	50.9	52.5	5.1	10	No

Sources

[Attenuation Formula \(line source\)](#)

$$L_p(R2) = L_p(R1) - 10 \cdot \log(R2/R1)$$

Lp(R1) = reference noise level at known distance

Lp(R2) = noise level at second location

R1 = reference level distance

R2 = distance to second location

1. LT2 24-hr measurement (4/25/2024-4/26/2024) used to calculate nighttime (8pm-6am) 10-hr Leq. See Calculation Sheet: 10-Hour Leq Calculator

Etiwanda Commerce Center Project - Demolitino (LMAX)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)	Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	58	90.0	Mounted Impact Hammer (hoe ram)	90	1
Industrial/Commercial Threshold	100	100.0	Tractor	84	1
SR 1 - Industrial	450	72.2	Vacuum Street Sweeper	80	1
SR 2 - Industrial	1218	63.6			
SR 3 - Industrial	1204	63.7			
SR 4 - Residential	2,780	56.4			
SR 5 - Residential	3,097	55.5			
SR 6 - Industrial	631	69.3			
SR 7 - Industrial	422	72.8			
SR 8 - Residential	2,809	56.3			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L_{eq} dBA at 50 feet ³
Mounted Impact Hammer (hoe ram)	90.0
Tractor	84.0
Vacuum Street Sweeper	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

91.3

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Grading (LMAX)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	54	90.0	Vacuum Street Sweeper	80	1
Industrial/Commercial Threshold	100	100.0	Scraper	85	1
SR 1 - Industrial	450	71.5	Dozer	85	1
SR 2 - Industrial	1218	62.9	Grader	85	1
SR 3 - Industrial	1204	63.0	Front End Loader	80	1
SR 4 - Residential	2,780	55.7			
SR 5 - Residential	3,097	54.8			
SR 6 - Industrial	631	68.6			
SR 7 - Industrial	422	72.1			
SR 8 - Residential	2,809	55.6			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Vacuum Street Sweeper	80.0
Scraper	85.0
Dozer	85.0
Grader	85.0
Front End Loader	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

90.6

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006, Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project- Building Construction (LMAX)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	55	90.0	Vacuum Street Sweeper	80	1
Industrial/Commercial Threshold	100	100.0	Excavator	85	1
SR 1 - Industrial	450	71.7	Crane	85	1
SR 2 - Industrial	1218	63.1	Man Lift	85	1
SR 3 - Industrial	1204	63.2	Concrete Pump Truck	82	1
SR 4 - Residential	2,780	55.9			
SR 5 - Residential	3,097	55.0			
SR 6 - Industrial	631	68.8			
SR 7 - Industrial	422	72.3			
SR 8 - Residential	2,809	55.8			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Vacuum Street Sweeper	80.0
Excavator	85.0
Crane	85.0
Man Lift	85.0
Concrete Pump Truck	82.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

90.8

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Nighttime Construction (LMAX)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	51	90.0	Concrete Mixer Truck	85	1
Industrial/Commercial Threshold	100	100.0	Concrete Mixer Truck	85	1
SR 1 - Industrial	450	71.1	Concrete Pump Truck	82	1
SR 2 - Industrial	1218	62.4	Tractor	84	1
SR 3 - Industrial	1204	62.5			
SR 4 - Residential	2,780	55.3			
SR 5 - Residential	3,097	54.3			
SR 6 - Industrial	631	68.2			
SR 7 - Industrial	422	71.7			
SR 8 - Residential	2,809	55.2			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Concrete Mixer Truck	85.0
Concrete Mixer Truck	85.0
Concrete Pump Truck	82.0
Tractor	84.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

90.2

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006, Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Paving (LMAX)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	40	90.0	Roller	85	1
Industrial/Commercial Threshold	100	100.0	Roller	85	1
SR 1 - Industrial	450	68.9			
SR 2 - Industrial	1218	60.3			
SR 3 - Industrial	1204	60.4			
SR 4 - Residential	2,780	53.1			
SR 5 - Residential	3,097	52.2			
SR 6 - Industrial	631	66.0			
SR 7 - Industrial	422	69.5			
SR 8 - Residential	2,809	53.0			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Roller	85.0
Roller	85.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

88.0

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Etiwanda Commerce Center Project - Arch. Coating (LMAX)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
Residential Threshold	22	90.0	Compressor (air)	80	1
Industrial/Commercial Threshold	100	100.0	Compressor (air)	80	1
SR 1 - Industrial	450	63.9			
SR 2 - Industrial	1218	55.3			
SR 3 - Industrial	1204	55.4			
SR 4 - Residential	2,780	48.1			
SR 5 - Residential	3,097	47.2			
SR 6 - Industrial	631	61.0			
SR 7 - Industrial	422	64.5			
SR 8 - Residential	2,809	48.0			

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Compressor (air)	80.0
Compressor (air)	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

83.0

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS s	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Ja	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer	20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzl	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Tugboat	40	87	74	4	81.0	77.0	100	68.0	64.0
Vacuum Excavator (Vac-tri	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Workboat	40	72	74	4	66.0	62.0	100	68.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:

FHWA Roadway Construction Noise Model, January 2006. Table 9.1

U.S. Department of Transportation

CA/T Construction Spec. 721.560

Traffic Noise Spreadsheet Calculator

ASCENT

Project: Etiwanda Commerce Center

Segment Description and Location				Existing Conditions	Existing + Project Conditions	Δ Existing – Existing + Project	Cumulative Conditions	Cumulative +Project Conditions	Δ Cumulative – Cumulative + Project
Number	Name	From	To	Existing Conditions	Existing + Project Conditions	Δ Existing – Existing + Project	Cumulative Conditions	Cumulative +Project Conditions	Δ Cumulative – Cumulative + Project
Summary of Net Changes									
1	Eiwanda Avenue	North of Foothill Blvd		65.8	65.9	0.0	67.5	67.6	0.0
2	Foothill Boulevard	Rochester Avenue	I-15 SB Ramps	73.7	73.7	0.0	74.9	74.9	0.0
3	Foothill Boulevard	I-15 NB Ramps	Etiwanda Avenue	72.9	73.1	0.1	75.1	75.2	0.1
4	Foothill Boulevard	East of Etiwanda Avenue		72.3	72.3	0.0	73.9	73.9	0.0
5	Milliken Avenue	North of Arrow Route		70.9	70.9	0.0	71.6	71.6	0.0
6	Rochester Avenue	North of Arrow Route		67.6	67.6	0.0	69.3	69.3	0.0
7	Etiwanda Avenue	Foothill Boulevard	Arrow Route	68.5	68.8	0.2	71.2	71.3	0.1
8	Arrow Route	West of Milliken Avenue		67.0	67.1	0.1	68.8	68.9	0.0
9	Arrow Route	Milliken Avenue	Rochester Avenue	70.1	70.1	0.1	72.4	72.4	0.0
10	Arrow Route	Rochester Avenue	Etiwanda Avenue	70.0	70.1	0.0	72.1	72.0	0.0
11	Arrow Route	East of Etiwanda Avenue		68.2	68.2	0.1	70.2	70.2	0.0
12	Milliken Avenue	Arrow Route	6th Street	71.5	71.5	0.0	72.5	72.5	0.0
13	Etiwanda Avenue	Arrow Route	6th Street	72.9	73.1	0.2	75.3	75.4	0.1
14	Whittram Avenue	East of Etiwanda Avenue		65.5	65.5	0.0	66.3	66.3	0.0
15	6th Street	West of Milliken Avenue		68.2	68.2	0.0	70.0	70.1	0.0
16	6th Street	Milliken Avenue	Etiwanda Avenue	65.4	65.6	0.2	67.0	67.2	0.2
17	Milliken Avenue	6th Street	4th Street	71.4	71.4	0.0	73.3	73.3	0.0
18	Etiwanda Avenue	6th Street	E. 4th Street	73.9	74.0	0.1	75.8	75.9	0.1
19	4th Street	West of Milliken Avenue		70.3	70.4	0.1	71.6	71.7	0.0
20	4th Street	Milliken Avenue	I-15 SB Ramps	72.3	72.4	0.1	72.9	73.0	0.1
21	4th Street	I-15 NB Ramps	Etiwanda Avenue	71.6	71.7	0.1	73.8	73.8	0.1
22	E. 4th Street	East of Etiwanda Avenue		70.5	70.6	0.0	72.4	72.4	0.0
23	Milliken Avenue	South of 4th Street		72.1	72.1	0.0	74.1	74.1	0.0
24	Etiwanda Avenue	E. 4th Street	I-10 WB Ramps	73.3	73.4	0.1	75.5	75.5	0.0
25	Etiwanda Avenue	South of I-10 EB Ramps		74.1	74.1	0.0	76.7	76.7	0.0

*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: Etiwanda Commerce Center

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

Project: Etiwanda Commerce Center				Input										Output					
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: ADT Traffic K-Factor:				Distance to Directional Centerline, (feet) ₄										CNEL, Distance to Contour, (feet) ₃					
Number	Name	From	To	ADT	Speed (mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	CNEL, (dBA) _{5,6,7}	75 dBA	70 dBA	65 dBA	60 dBA	
Existing Conditions																			
1	Eiwanda Avenue	North of Foothill Blvd		12,590	45	85	115	95.8%	2.2%	2.0%	86.7%	8.5%	4.8%	65.8	12	38	120	379	
2	Foothill Boulevard	Rochester Avenue	I-15 SB Ramps	46,040	50	82	118	97.1%	2.0%	0.9%	80.0%	9.2%	10.8%	73.7	72	229	724	2288	
3	Foothill Boulevard	I-15 NB Ramps	Etiwanda Avenue	28,690	50	82	118	94.8%	2.6%	2.6%	76.2%	9.1%	14.7%	72.9	61	194	613	1937	
4	Foothill Boulevard	East of Etiwanda Avenue		21,540	55	88	112	95.6%	3.0%	1.3%	76.1%	10.2%	13.7%	72.3	54	169	536	1694	
5	Milliken Avenue	North of Arrow Route		28,140	50	65	125	97.0%	1.7%	1.3%	88.4%	6.4%	5.3%	70.9	35	110	348	1102	
6	Rochester Avenue	North of Arrow Route		21,170	45	80	120	97.4%	1.5%	1.1%	89.9%	5.1%	5.0%	67.6	18	56	177	558	
7	Etiwanda Avenue	Foothill Boulevard	Arrow Route	13,500	45	85	115	92.7%	2.4%	4.8%	80.3%	8.3%	11.4%	68.5	22	70	222	701	
8	Arrow Route	West of Milliken Avenue		22,020	40	88	112	95.7%	2.0%	2.4%	88.3%	6.0%	5.7%	67.0	16	50	158	501	
9	Arrow Route	Milliken Avenue	Rochester Avenue	22,520	50	94	106	95.2%	2.2%	2.7%	87.0%	6.7%	6.3%	70.1	32	101	320	1011	
10	Arrow Route	Rochester Avenue	Etiwanda Avenue	21,550	50	94	106	94.0%	2.6%	3.5%	88.1%	6.1%	5.7%	70.0	32	100	316	1000	
11	Arrow Route	East of Etiwanda Avenue		15,990	50	88	112	95.5%	2.3%	2.2%	89.2%	5.4%	5.4%	68.2	21	66	207	655	
12	Milliken Avenue	Arrow Route	6th Street	32,370	50	73	127	96.5%	1.9%	1.6%	86.9%	7.0%	6.2%	71.5	43	137	432	1367	
13	Etiwanda Avenue	Arrow Route	6th Street	14,390	55	80	120	84.3%	3.1%	12.6%	80.5%	8.2%	11.3%	72.9	61	192	607	1918	
14	Whittram Avenue	East of Etiwanda Avenue		6,680	40	97	109	82.6%	4.3%	13.0%	87.5%	4.2%	8.2%	65.5	11	36	114	361	
15	6th Street	West of Milliken Avenue		19,220	45	88	112	94.8%	2.8%	2.4%	86.9%	6.6%	6.5%	68.2	21	65	206	650	
16	6th Street	Milliken Avenue	Etiwanda Avenue	7,680	45	88	112	93.4%	3.0%	3.6%	82.2%	8.0%	9.8%	65.4	11	34	109	344	
17	Milliken Avenue	6th Street	4th Street	29,450	50	73	127	95.6%	2.0%	2.3%	87.7%	6.0%	6.3%	71.4	42	132	417	1319	
18	Etiwanda Avenue	6th Street	E. 4th Street	15,880	55	80	120	80.9%	3.4%	15.7%	80.4%	8.1%	11.5%	73.9	76	241	761	2405	
19	4th Street	West of Milliken Avenue		26,240	50	88	112	97.0%	1.8%	1.3%	86.6%	6.6%	6.9%	70.3	34	107	340	1074	
20	4th Street	Milliken Avenue	I-15 SB Ramps	29,870	50	64	134	95.6%	1.9%	2.5%	83.6%	8.1%	8.4%	72.3	50	158	499	1579	
21	4th Street	I-15 NB Ramps	Etiwanda Avenue	15,070	55	64	134	88.8%	3.5%	7.7%	87.3%	5.8%	6.9%	71.6	42	134	425	1343	
22	E. 4th Street	East of Etiwanda Avenue		10,530	55	75	125	84.5%	3.6%	11.9%	86.8%	6.7%	6.5%	70.5	34	109	345	1091	
23	Milliken Avenue	South of 4th Street		32,530	50	60	140	95.4%	2.0%	2.6%	89.4%	5.0%	5.5%	72.1	47	148	468	1479	
24	Etiwanda Avenue	E. 4th Street	I-10 WB Ramps	20,050	50	80	120	83.5%	3.4%	13.1%	82.1%	7.0%	10.9%	73.3	66	210	663	2097	
25	Etiwanda Avenue	South of I-10 EB Ramps		25,480	50	75	125	83.6%	3.3%	13.1%	84.5%	6.2%	9.3%	74.1	79	249	788	2492	

*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: Etiwanda Commerce Center

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

Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: ADT Traffic K-Factor:				Input										Output				
				Distance to Directional			Traffic Distribution Characteristics							CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃			
				Speed	Centerline, (feet) ₄										70 dBA	65 dBA	60 dBA	55 dBA
Number	Name	From	To	ADT	(mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night					
Existing + Project Conditions																		
1	Eiwanda Avenue	North of Foothill Blvd		12,640	45	85	115	95.7%	2.2%	2.0%	86.8%	8.4%	4.8%	65.9	38	121	382	1207
2	Foothill Boulevard	Rochester Avenue	I-15 SB Ramps	46,180	50	82	118	97.0%	2.0%	0.9%	80.0%	9.2%	10.8%	73.7	230	728	2302	7279
3	Foothill Boulevard	I-15 NB Ramps	Etiwanda Avenue	29,190	50	82	118	94.5%	2.7%	2.8%	76.6%	8.9%	14.5%	73.1	199	629	1988	6286
4	Foothill Boulevard	East of Etiwanda Avenue		21,600	55	88	112	95.6%	3.0%	1.4%	76.2%	10.2%	13.6%	72.3	170	538	1701	5380
5	Milliken Avenue	North of Arrow Route		28,140	50	65	125	97.0%	1.7%	1.3%	88.4%	6.4%	5.3%	70.9	110	348	1102	3485
6	Rochester Avenue	North of Arrow Route		21,200	45	80	120	97.4%	1.5%	1.1%	89.9%	5.1%	5.0%	67.6	56	177	560	1771
7	Etiwanda Avenue	Foothill Boulevard	Arrow Route	14,100	45	85	115	92.2%	2.5%	5.3%	81.1%	7.9%	11.0%	68.8	74	235	742	2347
8	Arrow Route	West of Milliken Avenue		22,190	40	88	112	95.6%	2.0%	2.5%	88.4%	5.9%	5.7%	67.1	51	161	509	1611
9	Arrow Route	Milliken Avenue	Rochester Avenue	22,670	50	94	106	95.1%	2.2%	2.8%	87.1%	6.7%	6.2%	70.1	102	323	1022	3233
10	Arrow Route	Rochester Avenue	Etiwanda Avenue	21,700	50	94	106	93.9%	2.6%	3.6%	88.2%	6.1%	5.7%	70.1	101	320	1011	3197
11	Arrow Route	East of Etiwanda Avenue		16,100	50	88	112	95.4%	2.3%	2.3%	89.2%	5.4%	5.4%	68.2	66	210	663	2098
12	Milliken Avenue	Arrow Route	6th Street	32,390	50	73	127	96.5%	1.9%	1.6%	86.9%	7.0%	6.2%	71.5	137	433	1369	4328
13	Etiwanda Avenue	Arrow Route	6th Street	15,480	55	80	120	84.0%	3.1%	13.0%	81.8%	7.7%	10.5%	73.1	201	636	2011	6359
14	Whittram Avenue	East of Etiwanda Avenue		6,770	40	97	109	82.6%	4.3%	13.1%	87.7%	4.2%	8.1%	65.5	36	115	364	1153
15	6th Street	West of Milliken Avenue		19,330	45	88	112	94.7%	2.8%	2.5%	87.0%	6.5%	6.5%	68.2	66	208	657	2079
16	6th Street	Milliken Avenue	Etiwanda Avenue	7,930	45	88	112	92.9%	3.0%	4.1%	82.8%	7.7%	9.5%	65.6	36	114	361	1140
17	Milliken Avenue	6th Street	4th Street	29,560	50	73	127	95.6%	2.0%	2.4%	87.8%	6.0%	6.3%	71.4	133	420	1328	4200
18	Etiwanda Avenue	6th Street	E. 4th Street	16,940	55	80	120	80.8%	3.4%	15.8%	81.6%	7.6%	10.7%	74.0	249	786	2485	7859
19	4th Street	West of Milliken Avenue		26,410	50	88	112	96.8%	1.8%	1.4%	86.6%	6.5%	6.8%	70.4	109	344	1088	3440
20	4th Street	Milliken Avenue	I-15 SB Ramps	30,110	50	64	134	95.5%	1.9%	2.6%	83.7%	8.0%	8.3%	72.4	160	506	1601	5063
21	4th Street	I-15 NB Ramps	Etiwanda Avenue	15,420	55	64	134	88.6%	3.5%	7.9%	87.6%	5.7%	6.7%	71.7	138	435	1376	4350
22	E. 4th Street	East of Etiwanda Avenue		10,650	55	75	125	84.5%	3.6%	11.9%	86.9%	6.7%	6.4%	70.6	110	348	1101	3481
23	Milliken Avenue	South of 4th Street		32,710	50	60	140	95.3%	2.0%	2.7%	89.5%	5.0%	5.5%	72.1	149	472	1494	4723
24	Etiwanda Avenue	E. 4th Street	I-10 WB Ramps	20,650	50	80	120	83.4%	3.4%	13.2%	82.7%	6.8%	10.6%	73.4	214	676	2137	6759
25	Etiwanda Avenue	South of I-10 EB Ramps		25,610	50	75	125	83.5%	3.3%	13.1%	84.6%	6.1%	9.3%	74.1	250	791	2501	7907

*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: Etiwanda Commerce Center																		
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: ADT Traffic K-Factor:				Input										Output				
				Distance to Directional Centerline, (feet) ₄				Traffic Distribution Characteristics						CNEL, Distance to Contour, (feet) ₃				
				ADT	Speed (mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	(dBA) _{5,6,7}	70 dBA	65 dBA	60 dBA	55 dBA
Segment Description and Location																		
Number	Name	From	To															
Cumulative Conditions																		
1	Eiwanda Avenue	North of Foothill Blvd		19,290	45	85	115	95.7%	2.2%	2.1%	87.0%	9.0%	4.0%	67.5	56	177	561	1773
2	Foothill Boulevard	Rochester Avenue	I-15 SB Ramps	56,370	50	82	118	97.0%	2.0%	1.0%	78.3%	9.1%	12.6%	74.9	303	957	3025	9566
3	Foothill Boulevard	I-15 NB Ramps	Etiwanda Avenue	45,500	50	82	118	94.6%	2.7%	2.8%	76.0%	8.3%	15.7%	75.1	321	1014	3205	10135
4	Foothill Boulevard	East of Etiwanda Avenue		27,800	55	88	112	95.6%	3.0%	1.4%	73.5%	10.2%	16.4%	73.9	241	763	2413	7630
5	Milliken Avenue	North of Arrow Route		33,740	50	65	125	96.9%	1.7%	1.3%	88.4%	6.9%	4.8%	71.6	130	411	1301	4113
6	Rochester Avenue	North of Arrow Route		30,200	45	80	120	97.2%	1.5%	1.3%	88.9%	5.8%	5.4%	69.3	84	266	840	2658
7	Etiwanda Avenue	Foothill Boulevard	Arrow Route	22,580	45	85	115	92.3%	2.5%	5.2%	78.7%	8.0%	13.3%	71.2	130	411	1299	4109
8	Arrow Route	West of Milliken Avenue		30,210	40	88	112	95.5%	2.0%	2.5%	85.8%	7.2%	7.1%	68.8	76	241	761	2407
9	Arrow Route	Milliken Avenue	Rochester Avenue	32,300	50	94	106	94.8%	2.2%	3.0%	81.9%	9.5%	9.0%	72.4	175	555	1754	5545
10	Arrow Route	Rochester Avenue	Etiwanda Avenue	30,650	50	94	106	93.4%	2.6%	4.0%	86.4%	6.9%	7.2%	72.1	161	510	1613	5101
11	Arrow Route	East of Etiwanda Avenue		24,140	50	88	112	95.2%	2.3%	2.5%	88.6%	5.7%	5.8%	70.2	104	328	1038	3284
12	Milliken Avenue	Arrow Route	6th Street	36,960	50	73	127	96.3%	2.0%	1.7%	84.5%	8.4%	7.2%	72.5	170	537	1699	5373
13	Etiwanda Avenue	Arrow Route	6th Street	22,120	55	80	120	84.1%	3.1%	12.9%	77.7%	8.3%	13.8%	75.3	329	1040	3289	10400
14	Whittram Avenue	East of Etiwanda Avenue		6,880	40	97	109	82.6%	4.3%	13.1%	83.3%	5.6%	11.2%	66.3	43	138	435	1375
15	6th Street	West of Milliken Avenue		27,910	45	88	112	94.7%	2.8%	2.5%	85.5%	7.3%	7.3%	70.0	100	316	1000	3163
16	6th Street	Milliken Avenue	Etiwanda Avenue	10,930	45	88	112	93.2%	3.0%	3.8%	82.6%	7.1%	10.0%	67.0	49	156	495	1564
17	Milliken Avenue	6th Street	4th Street	43,220	50	73	127	95.5%	2.0%	2.5%	85.8%	7.2%	7.0%	73.3	206	651	2058	6508
18	Etiwanda Avenue	6th Street	E. 4th Street	22,330	55	80	120	80.8%	3.4%	15.8%	78.4%	7.9%	13.8%	75.8	371	1172	3706	11721
19	4th Street	West of Milliken Avenue		36,310	50	88	112	96.8%	1.8%	1.3%	87.5%	6.4%	6.1%	71.6	144	455	1439	4550
20	4th Street	Milliken Avenue	I-15 SB Ramps	33,900	50	64	134	95.6%	1.9%	2.5%	83.3%	8.2%	8.4%	72.9	180	571	1805	5707
21	4th Street	I-15 NB Ramps	Etiwanda Avenue	25,990	55	64	134	88.8%	3.5%	7.7%	88.9%	4.9%	6.1%	73.8	220	695	2196	6945
22	E. 4th Street	East of Etiwanda Avenue		16,150	55	75	125	84.4%	3.6%	12.0%	87.5%	6.2%	6.5%	72.4	168	530	1676	5300
23	Milliken Avenue	South of 4th Street		52,090	50	60	140	95.4%	2.0%	2.6%	89.3%	5.4%	5.3%	74.1	236	746	2360	7462
24	Etiwanda Avenue	E. 4th Street	I-10 WB Ramps	32,020	50	80	120	83.4%	3.4%	13.2%	82.0%	6.4%	11.6%	75.5	345	1092	3452	10917
25	Etiwanda Avenue	South of I-10 EB Ramps		44,420	50	75	125	83.5%	3.3%	13.1%	83.7%	6.2%	10.1%	76.7	451	1425	4508	14254

*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: Etiwanda Commerce Center				Input										Output				
Noise Level Descriptor: CNEL Site Conditions: Hard Traffic Input: ADT Traffic K-Factor:																		
Segment Description and Location				ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
Number	Name	From	To			Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	70 dBA	65 dBA	60 dBA	55 dBA
Cumulative +Project Conditions																		
1	Eiwanda Avenue	North of Foothill Blvd		19,340	45	85	115	95.7%	2.3%	2.1%	87.0%	9.0%	4.0%	67.6	56	178	563	1781
2	Foothill Boulevard	Rochester Avenue	I-15 SB Ramps	56,510	50	82	118	97.0%	2.0%	1.0%	78.4%	9.1%	12.5%	74.9	304	960	3036	9601
3	Foothill Boulevard	I-15 NB Ramps	Etiwanda Avenue	46,000	50	82	118	94.4%	2.7%	2.9%	76.3%	8.2%	15.5%	75.2	326	1030	3256	10296
4	Foothill Boulevard	East of Etiwanda Avenue		27,860	55	88	112	95.5%	3.0%	1.4%	73.5%	10.2%	16.3%	73.9	242	765	2419	7651
5	Milliken Avenue	North of Arrow Route		33,740	50	65	125	96.9%	1.7%	1.3%	88.4%	6.8%	4.7%	71.6	130	411	1299	4107
6	Rochester Avenue	North of Arrow Route		30,230	45	80	120	97.1%	1.5%	1.3%	88.9%	5.7%	5.3%	69.3	84	265	838	2651
7	Etiwanda Avenue	Foothill Boulevard	Arrow Route	23,180	45	85	115	91.9%	2.5%	5.5%	79.3%	7.8%	13.0%	71.3	134	424	1340	4238
8	Arrow Route	West of Milliken Avenue		30,380	40	88	112	95.4%	2.0%	2.6%	85.9%	7.1%	7.0%	68.9	77	243	769	2431
9	Arrow Route	Milliken Avenue	Rochester Avenue	32,450	50	94	106	94.7%	2.2%	3.1%	82.0%	9.3%	8.8%	72.4	175	553	1749	5530
10	Arrow Route	Rochester Avenue	Etiwanda Avenue	30,800	50	94	106	93.3%	2.6%	4.1%	86.4%	6.7%	6.9%	72.0	160	506	1599	5056
11	Arrow Route	East of Etiwanda Avenue		24,250	50	88	112	95.1%	2.3%	2.5%	88.7%	5.6%	5.8%	70.2	104	329	1042	3295
12	Milliken Avenue	Arrow Route	6th Street	36,980	50	73	127	96.3%	2.0%	1.7%	84.5%	8.3%	7.2%	72.5	169	535	1693	5354
13	Etiwanda Avenue	Arrow Route	6th Street	23,210	55	80	120	83.8%	3.1%	13.1%	78.8%	8.0%	13.3%	75.4	340	1074	3395	10737
14	Whittram Avenue	East of Etiwanda Avenue		6,970	40	97	109	82.5%	4.3%	13.2%	83.5%	5.5%	11.0%	66.3	44	138	436	1379
15	6th Street	West of Milliken Avenue		28,020	45	88	112	94.6%	2.8%	2.6%	85.5%	7.2%	7.2%	70.1	101	318	1006	3181
16	6th Street	Milliken Avenue	Etiwanda Avenue	11,180	45	88	112	92.9%	3.0%	4.1%	83.0%	7.0%	9.9%	67.2	52	163	515	1630
17	Milliken Avenue	6th Street	4th Street	43,330	50	73	127	95.5%	2.1%	2.5%	85.9%	7.2%	7.0%	73.3	206	652	2063	6525
18	Etiwanda Avenue	6th Street	E. 4th Street	23,390	55	80	120	80.8%	3.4%	15.8%	79.4%	7.6%	13.1%	75.9	378	1195	3779	11949
19	4th Street	West of Milliken Avenue		36,480	50	88	112	96.8%	1.8%	1.4%	87.5%	6.4%	6.1%	71.7	145	459	1452	4592
20	4th Street	Milliken Avenue	I-15 SB Ramps	34,140	50	64	134	95.5%	1.9%	2.7%	83.4%	8.1%	8.4%	73.0	183	579	1831	5790
21	4th Street	I-15 NB Ramps	Etiwanda Avenue	26,340	55	64	134	88.6%	3.5%	7.9%	89.1%	4.9%	6.0%	73.8	224	708	2239	7080
22	E. 4th Street	East of Etiwanda Avenue		16,270	55	75	125	84.3%	3.6%	12.1%	87.6%	6.1%	6.3%	72.4	167	529	1673	5291
23	Milliken Avenue	South of 4th Street		52,270	50	60	140	95.3%	2.0%	2.7%	89.3%	5.4%	5.3%	74.1	237	751	2375	7510
24	Etiwanda Avenue	E. 4th Street	I-10 WB Ramps	32,620	50	80	120	83.3%	3.4%	13.3%	82.3%	6.3%	11.4%	75.5	349	1102	3486	11022
25	Etiwanda Avenue	South of I-10 EB Ramps		44,550	50	75	125	83.5%	3.3%	13.1%	83.8%	6.2%	10.1%	76.7	451	1427	4513	14270

*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.

Citation # Citations

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|----|--|--|
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Etiwanda Commerce Center (Site 2)

Segment		Project (Site 2)												
		ADT	Fleet Mix (%)			Fleet Mix			Time-of-day Mix (%)			Time-of-day Mix		
			Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+-Axel)	Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+-Axel)	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nightttime (10PM-7AM)
1	Etiwanda Ave north of Foothill Blvd	50	79.5%	3.5%	17.0%	40	2	8	100.0%	0.0%	0.0%	50	-	-
2	Foothill Blvd between Rochester Ave & I-15 SB Ramps	140	79.5%	3.5%	17.0%	111	5	24	100.0%	0.0%	0.0%	140	-	-
3	Foothill Blvd between I-15 NB Ramps & Etiwanda Ave	500	79.5%	3.5%	17.0%	398	18	84	100.0%	0.0%	0.0%	500	-	-
4	Foothill Blvd east of Etiwanda Ave	60	79.5%	3.5%	17.0%	48	2	10	100.0%	0.0%	0.0%	60	-	-
5	Milliken Ave north of Arrow Route	-	79.5%	3.5%	17.0%	-	-	-	100.0%	0.0%	0.0%	-	-	-
6	Rochester Ave north of Arrow Route	30	79.5%	3.5%	17.0%	24	1	5	100.0%	0.0%	0.0%	30	-	-
7	Etiwanda Ave between Foothill Blvd & Arrow Route	600	79.5%	3.5%	17.0%	477	21	102	100.0%	0.0%	0.0%	600	-	-
8	Arrow Route west of Milliken Ave	170	79.5%	3.5%	17.0%	135	6	29	100.0%	0.0%	0.0%	170	-	-
9	Arrow Route between Milliken Ave & Rochester Ave	150	79.5%	3.5%	17.0%	119	5	26	100.0%	0.0%	0.0%	150	-	-
10	Arrow Route between Rochester Ave & Etiwanda Ave	150	79.5%	3.5%	17.0%	119	5	26	100.0%	0.0%	0.0%	150	-	-
11	Arrow Route east of Etiwanda Ave	110	79.5%	3.5%	17.0%	87	4	19	100.0%	0.0%	0.0%	110	-	-
12	Milliken Ave between Arrow Route & 6th St	20	79.5%	3.5%	17.0%	16	1	3	100.0%	0.0%	0.0%	20	-	-
13	Etiwanda Ave between Arrow Route & 6th St	1,090	79.5%	3.5%	17.0%	867	38	185	100.0%	0.0%	0.0%	1,090	-	-
14	Whittram Ave east of Etiwanda Ave	90	79.5%	3.5%	17.0%	72	3	15	100.0%	0.0%	0.0%	90	-	-
15	6th St west of Milliken Ave	110	79.5%	3.5%	17.0%	87	4	19	100.0%	0.0%	0.0%	110	-	-
16	6th St between Milliken Ave & Etiwanda Ave	250	79.5%	3.5%	17.0%	199	9	42	100.0%	0.0%	0.0%	250	-	-
17	Milliken Ave between 6th St & 4th St	110	79.5%	3.5%	17.0%	87	4	19	100.0%	0.0%	0.0%	110	-	-
18	Etiwanda Ave between 6th St & E 4th St	1,060	79.5%	3.5%	17.0%	843	37	180	100.0%	0.0%	0.0%	1,060	-	-
19	4th St west of Milliken Ave	170	79.5%	3.5%	17.0%	135	6	29	100.0%	0.0%	0.0%	170	-	-
20	4th St between Milliken Ave & I-15 SB Ramps	240	79.5%	3.5%	17.0%	191	8	41	100.0%	0.0%	0.0%	240	-	-
21	4th St between I-15 NB Ramps & Etiwanda Ave	350	79.5%	3.5%	17.0%	278	12	60	100.0%	0.0%	0.0%	350	-	-
22	E 4th St east of Etiwanda Ave	120	79.5%	3.5%	17.0%	95	4	21	100.0%	0.0%	0.0%	120	-	-
23	Milliken Ave south of 4th St	180	79.5%	3.5%	17.0%	143	6	31	100.0%	0.0%	0.0%	180	-	-
24	Etiwanda Ave between E 4th St & I-10 WB Ramps	600	79.5%	3.5%	17.0%	477	21	102	100.0%	0.0%	0.0%	600	-	-
25	Etiwanda Ave south of I-10 EB Ramps	130	79.5%	3.5%	17.0%	103	5	22	100.0%	0.0%	0.0%	130	-	-

Source: Fehr & Peers 2024

Etiwanda Commerce Center (Site 2)

Segment		Existing Year (2023) Conditions												
		ADT	Fleet Mix (%)			Fleet Mix			Time-of-day Mix (%)			Time-of-day Mix		
			Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+ -Axel)	Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+ -Axel)	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)
1	Etiwanda Ave north of Foothill Blvd	12,590	95.8%	2.2%	2.0%	12,058	282	250	86.7%	8.5%	4.8%	10,918	1,066	606
2	Foothill Blvd between Rochester Ave & I-15 SB Ramps	46,040	97.1%	2.0%	0.9%	44,700	930	410	80.0%	9.2%	10.8%	36,826	4,227	4,987
3	Foothill Blvd between I-15 NB Ramps & Etiwanda Ave	28,690	94.8%	2.6%	2.6%	27,190	760	740	76.2%	9.1%	14.7%	21,859	2,607	4,224
4	Foothill Blvd east of Etiwanda Ave	21,540	95.6%	3.0%	1.3%	20,600	650	290	76.1%	10.2%	13.7%	16,393	2,199	2,948
5	Milliken Ave north of Arrow Route	28,140	97.0%	1.7%	1.3%	27,300	480	360	88.4%	6.4%	5.3%	24,873	1,788	1,479
6	Rochester Ave north of Arrow Route	21,170	97.4%	1.5%	1.1%	20,620	320	230	89.9%	5.1%	5.0%	19,028	1,085	1,057
7	Etiwanda Ave between Foothill Blvd & Arrow Route	13,500	92.7%	2.4%	4.8%	12,520	330	650	80.3%	8.3%	11.4%	10,836	1,120	1,544
8	Arrow Route west of Milliken Ave	22,020	95.7%	2.0%	2.4%	21,070	430	520	88.3%	6.0%	5.7%	19,444	1,320	1,256
9	Arrow Route between Milliken Ave & Rochester Ave	22,520	95.2%	2.2%	2.7%	21,430	490	600	87.0%	6.7%	6.3%	19,592	1,512	1,416
10	Arrow Route between Rochester Ave & Etiwanda Ave	21,550	94.0%	2.6%	3.5%	20,250	550	750	88.1%	6.1%	5.7%	18,995	1,318	1,237
11	Arrow Route east of Etiwanda Ave	15,990	95.5%	2.3%	2.2%	15,270	370	350	89.2%	5.4%	5.4%	14,259	863	868
12	Milliken Ave between Arrow Route & 6th St	32,370	96.5%	1.9%	1.6%	31,230	630	510	86.9%	7.0%	6.2%	28,116	2,254	2,000
13	Etiwanda Ave between Arrow Route & 6th St	14,390	84.3%	3.1%	12.6%	12,130	440	1,820	80.5%	8.2%	11.3%	11,578	1,185	1,627
14	Whittram Ave east of Etiwanda Ave	6,680	82.6%	4.3%	13.0%	5,520	290	870	87.5%	4.2%	8.2%	5,848	283	549
15	6th St west of Milliken Ave	19,220	94.8%	2.8%	2.4%	18,220	540	460	86.9%	6.6%	6.5%	16,705	1,262	1,253
16	6th St between Milliken Ave & Etiwanda Ave	7,680	93.4%	3.0%	3.6%	7,170	230	280	82.2%	8.0%	9.8%	6,314	611	755
17	Milliken Ave between 6th St & 4th St	29,450	95.6%	2.0%	2.3%	28,160	600	690	87.7%	6.0%	6.3%	25,840	1,760	1,850
18	Etiwanda Ave between 6th St & E 4th St	15,880	80.9%	3.4%	15.7%	12,850	540	2,490	80.4%	8.1%	11.5%	12,766	1,293	1,821
19	4th St west of Milliken Ave	26,240	97.0%	1.8%	1.3%	25,440	470	330	86.6%	6.6%	6.9%	22,712	1,729	1,799
20	4th St between Milliken Ave & I-15 SB Ramps	29,870	95.6%	1.9%	2.5%	28,560	560	750	83.6%	8.1%	8.4%	24,958	2,412	2,500
21	4th St between I-15 NB Ramps & Etiwanda Ave	15,070	88.8%	3.5%	7.7%	13,380	530	1,160	87.3%	5.8%	6.9%	13,157	879	1,034
22	E 4th St east of Etiwanda Ave	10,530	84.5%	3.6%	11.9%	8,900	380	1,250	86.8%	6.7%	6.5%	9,138	711	681
23	Milliken Ave south of 4th St	32,530	95.4%	2.0%	2.6%	31,040	650	840	89.4%	5.0%	5.5%	29,092	1,637	1,801
24	Etiwanda Ave between E 4th St & I-10 WB Ramps	20,050	83.5%	3.4%	13.1%	16,740	680	2,630	82.1%	7.0%	10.9%	16,468	1,397	2,185
25	Etiwanda Ave south of I-10 EB Ramps	25,480	83.6%	3.3%	13.1%	21,290	850	3,340	84.5%	6.2%	9.3%	21,539	1,569	2,372

Source: Fehr & Peers 2024

Etiwanda Commerce Center (Site 2)

Segment		Existing Year (2023) Plus Project Conditions												
		ADT	Fleet Mix (%)			Fleet Mix			Time-of-day Mix (%)			Time-of-day Mix		
			Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+ -Axel)	Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+ -Axel)	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)
1	Etiwanda Ave north of Foothill Blvd	12,640	95.7%	2.2%	2.0%	12,098	284	258	86.8%	8.4%	4.8%	10,968	1,066	606
2	Foothill Blvd between Rochester Ave & I-15 SB Ramps	46,180	97.0%	2.0%	0.9%	44,811	935	434	80.0%	9.2%	10.8%	36,966	4,227	4,987
3	Foothill Blvd between I-15 NB Ramps & Etiwanda Ave	29,190	94.5%	2.7%	2.8%	27,588	778	824	76.6%	8.9%	14.5%	22,359	2,607	4,224
4	Foothill Blvd east of Etiwanda Ave	21,600	95.6%	3.0%	1.4%	20,648	652	300	76.2%	10.2%	13.6%	16,453	2,199	2,948
5	Milliken Ave north of Arrow Route	28,140	97.0%	1.7%	1.3%	27,300	480	360	88.4%	6.4%	5.3%	24,873	1,788	1,479
6	Rochester Ave north of Arrow Route	21,200	97.4%	1.5%	1.1%	20,644	321	235	89.9%	5.1%	5.0%	19,058	1,085	1,057
7	Etiwanda Ave between Foothill Blvd & Arrow Route	14,100	92.2%	2.5%	5.3%	12,997	351	752	81.1%	7.9%	11.0%	11,436	1,120	1,544
8	Arrow Route west of Milliken Ave	22,190	95.6%	2.0%	2.5%	21,205	436	549	88.4%	5.9%	5.7%	19,614	1,320	1,256
9	Arrow Route between Milliken Ave & Rochester Ave	22,670	95.1%	2.2%	2.8%	21,549	495	626	87.1%	6.7%	6.2%	19,742	1,512	1,416
10	Arrow Route between Rochester Ave & Etiwanda Ave	21,700	93.9%	2.6%	3.6%	20,369	555	776	88.2%	6.1%	5.7%	19,145	1,318	1,237
11	Arrow Route east of Etiwanda Ave	16,100	95.4%	2.3%	2.3%	15,357	374	369	89.2%	5.4%	5.4%	14,369	863	868
12	Milliken Ave between Arrow Route & 6th St	32,390	96.5%	1.9%	1.6%	31,246	631	513	86.9%	7.0%	6.2%	28,136	2,254	2,000
13	Etiwanda Ave between Arrow Route & 6th St	15,480	84.0%	3.1%	13.0%	12,997	478	2,005	81.8%	7.7%	10.5%	12,668	1,185	1,627
14	Whittram Ave east of Etiwanda Ave	6,770	82.6%	4.3%	13.1%	5,592	293	885	87.7%	4.2%	8.1%	5,938	283	549
15	6th St west of Milliken Ave	19,330	94.7%	2.8%	2.5%	18,307	544	479	87.0%	6.5%	6.5%	16,815	1,262	1,253
16	6th St between Milliken Ave & Etiwanda Ave	7,930	92.9%	3.0%	4.1%	7,369	239	322	82.8%	7.7%	9.5%	6,564	611	755
17	Milliken Ave between 6th St & 4th St	29,560	95.6%	2.0%	2.4%	28,247	604	709	87.8%	6.0%	6.3%	25,950	1,760	1,850
18	Etiwanda Ave between 6th St & E 4th St	16,940	80.8%	3.4%	15.8%	13,693	577	2,670	81.6%	7.6%	10.7%	13,826	1,293	1,821
19	4th St west of Milliken Ave	26,410	96.8%	1.8%	1.4%	25,575	476	359	86.6%	6.5%	6.8%	22,882	1,729	1,799
20	4th St between Milliken Ave & I-15 SB Ramps	30,110	95.5%	1.9%	2.6%	28,751	568	791	83.7%	8.0%	8.3%	25,198	2,412	2,500
21	4th St between I-15 NB Ramps & Etiwanda Ave	15,420	88.6%	3.5%	7.9%	13,658	542	1,220	87.6%	5.7%	6.7%	13,507	879	1,034
22	E 4th St east of Etiwanda Ave	10,650	84.5%	3.6%	11.9%	8,995	384	1,271	86.9%	6.7%	6.4%	9,258	711	681
23	Milliken Ave south of 4th St	32,710	95.3%	2.0%	2.7%	31,183	656	871	89.5%	5.0%	5.5%	29,272	1,637	1,801
24	Etiwanda Ave between E 4th St & I-10 WB Ramps	20,650	83.4%	3.4%	13.2%	17,217	701	2,732	82.7%	6.8%	10.6%	17,068	1,397	2,185
25	Etiwanda Ave south of I-10 EB Ramps	25,610	83.5%	3.3%	13.1%	21,393	855	3,362	84.6%	6.1%	9.3%	21,669	1,569	2,372

Source: Fehr & Peers 2024

Etiwanda Commerce Center (Site 2)

Segment		Cumulative Year (2050) Without Project Conditions												
		ADT	Fleet Mix (%)			Fleet Mix			Time-of-day Mix (%)			Time-of-day Mix		
			Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+-Axel)	Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+-Axel)	Daytime	Evening	Night	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)
1	Etiwanda Ave north of Foothill Blvd	19,290	95.7%	2.2%	2.1%	18,460	434	396	87.0%	9.0%	4.0%	16,783	1,739	768
2	Foothill Blvd between Rochester Ave & I-15 SB Ramps	56,370	97.0%	2.0%	1.0%	54,682	1,142	546	78.3%	9.1%	12.5%	44,156	5,140	7,074
3	Foothill Blvd between I-15 NB Ramps & Etiwanda Ave	45,500	94.6%	2.7%	2.8%	43,029	1,210	1,261	76.0%	8.3%	15.7%	34,590	3,782	7,128
4	Foothill Blvd east of Etiwanda Ave	27,800	95.6%	3.0%	1.4%	26,571	840	389	73.5%	10.2%	16.4%	20,423	2,828	4,549
5	Milliken Ave north of Arrow Route	33,740	96.9%	1.7%	1.3%	32,708	578	454	88.4%	6.8%	4.7%	29,834	2,307	1,599
6	Rochester Ave north of Arrow Route	30,200	97.2%	1.5%	1.3%	29,344	464	392	88.9%	5.7%	5.3%	26,853	1,735	1,612
7	Etiwanda Ave between Foothill Blvd & Arrow Route	22,580	92.3%	2.5%	5.2%	20,837	560	1,183	78.7%	8.0%	13.3%	17,774	1,804	3,002
8	Arrow Route west of Milliken Ave	30,210	95.5%	2.0%	2.5%	28,857	595	758	85.8%	7.2%	7.1%	25,916	2,162	2,132
9	Arrow Route between Milliken Ave & Rochester Ave	32,300	94.8%	2.2%	3.0%	30,612	714	974	81.9%	9.3%	8.8%	26,444	3,003	2,853
10	Arrow Route between Rochester Ave & Etiwanda Ave	30,650	93.4%	2.6%	4.0%	28,620	794	1,236	86.4%	6.7%	6.9%	26,470	2,054	2,126
11	Arrow Route east of Etiwanda Ave	24,140	95.2%	2.3%	2.5%	22,983	564	593	88.6%	5.6%	5.8%	21,389	1,356	1,395
12	Milliken Ave between Arrow Route & 6th St	36,960	96.3%	2.0%	1.7%	35,597	724	639	84.5%	8.3%	7.2%	31,229	3,075	2,656
13	Etiwanda Ave between Arrow Route & 6th St	22,120	84.1%	3.1%	12.9%	18,592	681	2,847	77.7%	8.4%	13.9%	17,193	1,849	3,078
14	Whittram Ave east of Etiwanda Ave	6,880	82.6%	4.3%	13.1%	5,680	297	903	83.3%	5.5%	11.1%	5,733	381	766
15	6th St west of Milliken Ave	27,910	94.7%	2.8%	2.5%	26,426	785	699	85.5%	7.3%	7.3%	23,853	2,027	2,030
16	6th St between Milliken Ave & Etiwanda Ave	10,930	93.2%	3.0%	3.8%	10,187	328	415	82.6%	7.2%	10.2%	9,032	787	1,111
17	Milliken Ave between 6th St & 4th St	43,220	95.5%	2.0%	2.5%	41,276	885	1,059	85.8%	7.2%	7.0%	37,089	3,117	3,014
18	Etiwanda Ave between 6th St & E 4th St	22,330	80.8%	3.4%	15.8%	18,050	761	3,519	78.4%	7.9%	13.7%	17,500	1,766	3,064
19	4th St west of Milliken Ave	36,310	96.8%	1.8%	1.3%	35,166	654	490	87.5%	6.4%	6.1%	31,757	2,333	2,220
20	4th St between Milliken Ave & I-15 SB Ramps	33,900	95.6%	1.9%	2.5%	32,398	638	864	83.3%	8.2%	8.5%	28,246	2,781	2,873
21	4th St between I-15 NB Ramps & Etiwanda Ave	25,990	88.8%	3.5%	7.7%	23,067	914	2,009	88.9%	4.9%	6.1%	23,115	1,284	1,591
22	E 4th St east of Etiwanda Ave	16,150	84.4%	3.6%	12.0%	13,628	582	1,940	87.5%	6.1%	6.4%	14,128	991	1,031
23	Milliken Ave south of 4th St	52,090	95.4%	2.0%	2.6%	49,674	1,044	1,372	89.3%	5.4%	5.3%	46,514	2,802	2,774
24	Etiwanda Ave between E 4th St & I-10 WB Ramps	32,020	83.4%	3.4%	13.2%	26,701	1,087	4,232	82.0%	6.4%	11.6%	26,256	2,051	3,713
25	Etiwanda Ave south of I-10 EB Ramps	44,420	83.5%	3.3%	13.1%	37,107	1,482	5,831	83.7%	6.2%	10.1%	37,198	2,740	4,482

Source: Fehr & Peers 2024

Etiwanda Commerce Center (Site 2)

Segment		Cumulative Year (2050) With Project Conditions												
		ADT	Fleet Mix (%)			Fleet Mix			Time-of-day Mix (%)			Time-of-day Mix		
			Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+-Axel)	Autos	Medium Duty Trucks (2-Axel)	Heavy Duty Trucks (3+-Axel)	Daytime	Evening	Night	Daytime (7AM-7PM)	Evening (7PM-10PM)	Nighttime (10PM-7AM)
1	Etiwanda Ave north of Foothill Blvd	19,340	95.7%	2.3%	2.1%	18,500	436	404	87.0%	9.0%	4.0%	16,833	1,739	768
2	Foothill Blvd between Rochester Ave & I-15 SB Ramps	56,510	97.0%	2.0%	1.0%	54,793	1,147	570	78.4%	9.1%	12.5%	44,296	5,140	7,074
3	Foothill Blvd between I-15 NB Ramps & Etiwanda Ave	46,000	94.4%	2.7%	2.9%	43,427	1,228	1,345	76.3%	8.2%	15.5%	35,090	3,782	7,128
4	Foothill Blvd east of Etiwanda Ave	27,860	95.5%	3.0%	1.4%	26,619	842	399	73.5%	10.2%	16.3%	20,483	2,828	4,549
5	Milliken Ave north of Arrow Route	33,740	96.9%	1.7%	1.3%	32,708	578	454	88.4%	6.8%	4.7%	29,834	2,307	1,599
6	Rochester Ave north of Arrow Route	30,230	97.1%	1.5%	1.3%	29,368	465	397	88.9%	5.7%	5.3%	26,883	1,735	1,612
7	Etiwanda Ave between Foothill Blvd & Arrow Route	23,180	91.9%	2.5%	5.5%	21,314	581	1,285	79.3%	7.8%	13.0%	18,374	1,804	3,002
8	Arrow Route west of Milliken Ave	30,380	95.4%	2.0%	2.6%	28,992	601	787	85.9%	7.1%	7.0%	26,086	2,162	2,132
9	Arrow Route between Milliken Ave & Rochester Ave	32,450	94.7%	2.2%	3.1%	30,731	719	1,000	82.0%	9.3%	8.8%	26,594	3,003	2,853
10	Arrow Route between Rochester Ave & Etiwanda Ave	30,800	93.3%	2.6%	4.1%	28,739	799	1,262	86.4%	6.7%	6.9%	26,620	2,054	2,126
11	Arrow Route east of Etiwanda Ave	24,250	95.1%	2.3%	2.5%	23,070	568	612	88.7%	5.6%	5.8%	21,499	1,356	1,395
12	Milliken Ave between Arrow Route & 6th St	36,980	96.3%	2.0%	1.7%	35,613	725	642	84.5%	8.3%	7.2%	31,249	3,075	2,656
13	Etiwanda Ave between Arrow Route & 6th St	23,210	83.8%	3.1%	13.1%	19,459	719	3,032	78.8%	8.0%	13.3%	18,283	1,849	3,078
14	Whittram Ave east of Etiwanda Ave	6,970	82.5%	4.3%	13.2%	5,752	300	918	83.5%	5.5%	11.0%	5,823	381	766
15	6th St west of Milliken Ave	28,020	94.6%	2.8%	2.6%	26,513	789	718	85.5%	7.2%	7.2%	23,963	2,027	2,030
16	6th St between Milliken Ave & Etiwanda Ave	11,180	92.9%	3.0%	4.1%	10,386	337	457	83.0%	7.0%	9.9%	9,282	787	1,111
17	Milliken Ave between 6th St & 4th St	43,330	95.5%	2.1%	2.5%	41,363	889	1,078	85.9%	7.2%	7.0%	37,199	3,117	3,014
18	Etiwanda Ave between 6th St & E 4th St	23,390	80.8%	3.4%	15.8%	18,893	798	3,699	79.4%	7.6%	13.1%	18,560	1,766	3,064
19	4th St west of Milliken Ave	36,480	96.8%	1.8%	1.4%	35,301	660	519	87.5%	6.4%	6.1%	31,927	2,333	2,220
20	4th St between Milliken Ave & I-15 SB Ramps	34,140	95.5%	1.9%	2.7%	32,589	646	905	83.4%	8.1%	8.4%	28,486	2,781	2,873
21	4th St between I-15 NB Ramps & Etiwanda Ave	26,340	88.6%	3.5%	7.9%	23,345	926	2,069	89.1%	4.9%	6.0%	23,465	1,284	1,591
22	E 4th St east of Etiwanda Ave	16,270	84.3%	3.6%	12.1%	13,723	586	1,961	87.6%	6.1%	6.3%	14,248	991	1,031
23	Milliken Ave south of 4th St	52,270	95.3%	2.0%	2.7%	49,817	1,050	1,403	89.3%	5.4%	5.3%	46,694	2,802	2,774
24	Etiwanda Ave between E 4th St & I-10 WB Ramps	32,620	83.3%	3.4%	13.3%	27,178	1,108	4,334	82.3%	6.3%	11.4%	26,856	2,051	3,713
25	Etiwanda Ave south of I-10 EB Ramps	44,550	83.5%	3.3%	13.1%	37,210	1,487	5,853	83.8%	6.2%	10.1%	37,328	2,740	4,482

Source: Fehr & Peers 2024

Site 2 - Stationary Noise Modeling Attenuation Calculations

Levels in dBA Leq

Loading Docks	Reference					
	Level	SR 1	SR 4	SR 6	SR 7	SR 8
	<i>Distances</i>	100	220	2600	370	277
Adjacent Commercial Uses	59	52.5	31.0	47.9	50.5	32.8

HVAC Mechanical Equipment	Reference				
	Level	SR 1	SR 4		
	<i>Distances</i>	3	80	2337	
HVAC	75	46	17		
HVAC	78	49.5	20		

Deisel Generator	Reference		
	Level	SR 1	SR 8
	<i>Distances</i>	50	130
Deisel Generator	82	73.7	49

Truck Movements	Reference		
	Level	SR 7	SR 8
	<i>Distances</i>	16	90
Truck Movements	66	50.8	22.9

Reference			
Truck Refrigeration Units	Level	SR 1	SR 4
<i>Distances</i>	50	220	2229
Truck Movements	73	60.1	40.0

Notes:

Parking truck movements reference Lmax level obtained by Ascent Environmental in 2014 during preparation of the Village At Squaw Valley Specific Plan EIR (Placer County 2014)

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Attenuation calculated through Inverse Square Law: $L_p(R2) = L_p(R1) - 20\log(R2/R1)$

Addition of Noise Levels from Multiple Sources at a Discrete Receptor

OBJECTIVE: This work sheet is designed to estimate the combined level of noise exposure at a single discrete receptor from multiple point sources.

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).

Receptor Name: Industrial Receptors (SR 1) and Victoria Woods Apartments (SR 4)

STEP 1: Identify the noise sources and enter the reference noise levels (dBA and distance).

Hour of Day (24-HR time)

STEP 3: Select the distance to the receptor and the reduction provided by any intervening barrier.

Step 1.

Step 2.

Step 3.

Noise Source	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor (SR 1)			
	Noise Level (dBA)	@	Reference Distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	Noise Level (dBA)	@	Distance to Receptor (ft)	Reduction Provided by Barrier, if any (dBA)
HVAC Unit	75.0	@	3	hard	35	5	0.00	46.5	@	80	0
HVAC Unit	75.0	@	3	hard	35	5	0.00	46.5	@	80	0
HVAC Unit	75.0	@	3	hard	35	5	0.00	46.5	@	80	0
HVAC Unit	75.0	@	3	hard	35	5	0.00	46.5	@	80	0

Combined level of noise exposure at receptor from all noise sources (dBA): 52.5

Noise Source	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor (SR4)			
	Noise Level (dBA)	@	Reference Distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	Noise Level (dBA)	@	Distance to Receptor (ft)	Reduction Provided by Barrier, if any (dBA)
HVAC Unit	75.0	@	3	hard	35	5	0.00	17.2	@	2337	0
HVAC Unit	75.0	@	3	hard	35	5	0.00	17.2	@	2337	0
HVAC Unit	75.0	@	3	hard	35	5	0.00	17.2	@	2337	0
HVAC Unit	75.0	@	3	hard	35	5	0.00	17.2	@	2337	0

Combined level of noise exposure at receptor from all noise sources (dBA): 23.2

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presented in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise level can be Summation of noise levels from different stationary noise sources at the same receptor is based on the equation presented on page 2-3 of FTA 2006.

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: March 5, 2020.

Distance Propagation Calculations for Stationary Sources of Ground Vibration

ASCENT

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)
Vibratory Roller - Threshold	94	@	25
Locomotive-Powered Passenger or Freight Vibration Level	85	@	50
Locomotive-Powered Passenger or Freight Vibration Level	85	@	50
Locomotive-Powered Passenger or Freight Vibration Level - Project Site	85	@	50

Attenuated Noise Level at Receptor		
vibration level (VdB)	@	distance (ft)
79.7	@	75
77.1	@	92
77.1	@	92
72.4	@	132

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

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)
Vibratory Roller	0.210	@	25

Attenuated Noise Level at Receptor		
vibration level (PPV)	@	distance (ft)
0.030	@	92

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. 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.

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. Washington, D.C. Accessed: December 20, 2020. Page Available:

https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Etiwanda Commerce Center Cumulative Construction Noise Attenuation

Orange cells are for input.

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: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receptor.

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
SR Closest to all three project sites	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
Daytime Construction	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project Grading Phase - SR 6 (Industrial)	86.3	@	50	hard	8	5	0.00	64.3	@	631
Site 1 Grading Phase at SR 6 (Industrial)	86.3	@	50	hard	8	5	0.00	63.6	@	684
Site 3 Demolition Phase at SR 6 (Industrial)	87.4	@	50	hard	8	5	0.00	63.9	@	752
								Combined Leq @ Receptor		
								68.7		
								80.0		-11
								65.0	@	4
								60.0	@	9

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
SR Closest to Project Site	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
Daytime Construction	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project Grading Phase - SR 1 (Industrial)	86.3	@	50	hard	8	5	0.00	67.2	@	450
Site 1 Grading Phase at SR 1 (Industrial)	86.3	@	50	hard	8	5	0.00	62.7	@	755
Site 3 Demolition Phase at SR 1 (Industrial)	87.4	@	50	hard	8	5	0.00	58.3	@	1429
								Combined Leq @ Receptor		
								68.9		
								80.0		-11
								65.0	@	4
								60.0	@	9

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
<u>SR Closest to two project sites</u>	noise level		distance	Ground Type	Source	Receiver	Ground	noise level		distance
Nighttime Construction	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project SiteConcrete Pour - SR 6 (Industrial)	85.9	@	50	hard	8	5	0.00	63.8	@	631
Site 1 Concrete Pour at SR 6 (Industrial)	85.9	@	50	hard	8	5	0.00	63.2	@	684
								Combined Leq @ Receptor		
								66.5		
								80.0		-13
								65.0	@	2
								60.0	@	7

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
<u>SR Closest to Project Site</u>	noise level		distance	Ground Type	Source	Receiver	Ground	noise level		distance
Nighttime Construction	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project SiteConcrete Pour - SR 1 (Industrial)	85.9	@	50	hard	8	5	0.00	66.8	@	450
Site 1 Concrete Pour at SR 1 (Industrial)	85.9	@	50	hard	8	5	0.00	62.3	@	755
								Combined Leq @ Receptor		
								68.1		
								80.0		-12
								65.0	@	3
								60.0	@	8

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
<u>SR Closest to all three project sites</u>	noise level		distance	Ground Type	Source	Receiver	Ground	noise level		distance
Daytime Construction - Mitigated	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project Grading Phase - SR 6 (Industrial)	86.3	@	50	hard	8	5	0.00	54.3	@	631
Site 1 Grading Phase at SR 6 (Industrial)	86.3	@	50	hard	8	5	0.00	63.6	@	684
Site 3 Demolition Phase at SR 6 (Industrial)	87.4	@	50	hard	8	5	0.00	63.9	@	752
								Combined Leq @ Receptor		
								67.0		
								80.0		-13
								65.0	@	2
								60.0	@	7

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
SR Closest to Project Site	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Daytime Construction - Mitigated										
Proposed Project Grading Phase - SR 1 (Industrial)	86.3	@	50	hard	8	5	0.00	57.2	@	450
Site 1 Grading Phase at SR 1 (Industrial)	86.3	@	50	hard	8	5	0.00	62.7	@	755
Site 3 Demolition Phase at SR 1 (Industrial)	87.4	@	50	hard	8	5	0.00	58.3	@	1429
								Combined Leq @ Receptor		
								64.9		
								80.0		-15
								65.0		0
								60.0	@	5

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
SR Closest to all three project sites	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Nighttime Construction - Mitigated										
Proposed Project SiteConcrete Pour - SR 6 (Industrial)	85.9	@	50	hard	8	5	0.00	53.8	@	631
Site 1 Concrete Pour at SR 6 (Industrial)	85.9	@	50	hard	8	5	0.00	63.2	@	684
								Combined Leq @ Receptor		
								63.7		
								80.0		-16
								65.0		-1
								60.0	@	4

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
SR Closest to Project Site	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Nighttime Construction - Mitigated										
Proposed Project SiteConcrete Pour - SR 1 (Industrial)	85.9	@	50	hard	8	5	0.00	56.8	@	450
Site 1 Concrete Pour at SR 1 (Industrial)	85.9	@	50	hard	8	5	0.00	62.3	@	755
								Combined Leq @ Receptor		
								63.4		
								80.0		-17
								65.0		-2
								60.0	@	3

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.

Computation of the ground factor is based on the equation presented in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available:

<http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf>Accessed: March

Etiwanda Commerce Center Cumulative Construction Noise Attenuation

Orange cells are for input.

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: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
SR Closest to all three project sites	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
Loading Dock Activity	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project Loading Docks at SR 6 (industrial)	59.0	@	100	hard	8	5	0.00	51.4	@	248
Site 1 Loading Docks at SR 6 (industrial)	59.0	@	100	hard	8	5	0.00	51.1	@	248
Site 3 Loading Docks at SR 6 (industrial)	59.0	@	100	hard	8	5	0.00	51.1	@	247
								Combined Leq @ Receptor		
								56.0		
								80.0		-24
								65.0		-9
								60.0		-4

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
SR Closest to Project Site	noise level	distance		Ground Type	Source	Receiver	Ground	noise level	distance	
Loading Dock Activity	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Proposed Project Loading Docks at SR 1 (industrial)	59.0	@	100	hard	8	5	0.00	48.3	@	355
Site 1 Loading Docks at SR 1 (industrial)	59.0	@	100	hard	8	5	0.00	46.3	@	434
Site 3 Loading Docks at SR 1 (industrial)	59.0	@	100	hard	8	5	0.00	35.1	@	1571
								Combined Leq @ Receptor		
								50.5		
								80.0		-29
								65.0		-14
								60.0		-9

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level		distance	Ground Type	Source	Receiver	Ground	noise level		distance
SR Closest to two project sites	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Truck Movements										
Proposed Project at SR 6 (industrial)	66.0	@	16	hard	8	5	0.00	47.8	@	130
Site 1 Truck Movement at SR 6 (industrial)	66.0	@	16	hard	8	5	0.00	75.9	@	5
Site 3 Truck Movement at SR 6 (industrial)	66.0	@	16	hard	8	5	0.00	75.9	@	5
								Combined Leq @ Receptor		
								78.9		
								80.0		-1
								65.0	@	14
								60.0	@	19

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level		distance	Ground Type	Source	Receiver	Ground	noise level		distance
SR Closest to Project Site	(dBA)	@	(ft)	(soft/hard)	Height (ft)	Height (ft)	Factor	(dBA)	@	(ft)
Truck Movements										
Proposed Project at SR 1 (industrial)	66.0	@	16	hard	8	5	0.00	31.1	@	892
Site 1 Truck Movement at SR 1 (industrial)	66.0	@	16	hard	8	5	0.00	53.1	@	71
Site 3 Truck Movement at SR 1 (industrial)	66.0	@	16	hard	8	5	0.00	29.9	@	1018
								Combined Leq @ Receptor		
								53.1		
								80.0		-27
								65.0		-12
								60.0		-7

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.

Computation of the ground factor is based on the equation presented in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available:

<http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf>Accessed: March

Temporary Increase in Cumulative Construction Noise Calculations

	Noise Level		Activity Noise at SR	Combined (Existing + Project)	Change	Exceeds Threshold Threshold?	
	dBA Leq	FT				Threshold	Threshold?
Reference Daytime Noise Level (Arrow Route) ¹	72.2	60					
Reference Nighttime Noise Level (Arrow Route) ¹	67.2	60					
Calculated noise level	73.0	50					
SR 6 Daytime	58.1		68.7	69.1	11.0	10	Yes
SR 6 Nighttime	52.1	1939	66.5	66.7	14.6	10	Yes
SR 1 Daytime	58.1		68.9	69.3	11.2	10	Yes
SR 1 Nighttime	51.2	2387	68.1	68.2	17.0	10	Yes
Mitigated Daytime Construction Noise at SR 1	58.1		64.9	65.7	7.6	10	No
Mitigated Daytime Construction Noise at SR 6	58.1		67.0	67.5	9.4	10	No
Mitigated Nighttime Construction Noise at SR1	51.2	2388	63.4	63.6	12.4	10	Yes
Mitigated Nighttime Construction Noise at SR 6	52.1	1939	63.7	63.9	11.8	10	Yes
Daytime Loading Dock Activity at SR 6	58.1		56.0	60.2	2.1	10	No
Daytime Loading Dock Activity at SR 1	58.1		50.5	58.8	0.7	10	No
Nighttime Loading Dock Activity at SR 6	52.1	1939	56.0	57.5	5.4	10	No
Nighttime Loading Dock Activity at SR 1	51.2	2387	50.5	53.9	2.7	10	No
Daytime Truck Movement at SR 6	58.1	1939	78.9	78.9	20.8	10	Yes
Nighttime Truck Movement at SR 6	52.1	1939	78.9	78.9	26.8	10	Yes
Daytime Truck Movement at SR 1	58.1	2387	53.1	59.3	1.2	10	No
Nighttime Truck Movement at SR 1	51.2	2387	53.1	55.3	4.1	10	No

Sources

Attenuation Formula (line source)

$$Lp(R2)=Lp(R1)-10*\log(R2/R1)$$

			8
Lp(R1)	=	reference noise level at known distance	5
Lp(R2)	=	noise level at second location	soft
R1	=	reference level distance	6.5
R2	=	distance to second location	
			0.6339286

1. 12-hour daytime Leq measurement conducted 60 feet from the centerline of Arrow Route

Number	Start Date	Start Time	End Time	Duration	Meas Mode	Input Rang	Input Type	SPL Time V
85	5/7/2024	1:00:00 PM	2:00:00 PM	1:00:00	Auto	Low	Mic	Slow
86	5/7/2024	2:00:00 PM	3:00:00 PM	1:00:00	Auto	Low	Mic	Slow
87	5/7/2024	3:00:00 PM	4:00:00 PM	1:00:00	Auto	Low	Mic	Slow
88	5/7/2024	4:00:00 PM	5:00:00 PM	1:00:00	Auto	Low	Mic	Slow
89	5/7/2024	5:00:00 PM	6:00:00 PM	1:00:00	Auto	Low	Mic	Slow
90	5/7/2024	6:00:00 PM	7:00:00 PM	1:00:00	Auto	Low	Mic	Slow
91	5/7/2024	7:00:00 PM	8:00:00 PM	1:00:00	Auto	Low	Mic	Slow
92	5/7/2024	8:00:00 PM	9:00:00 PM	1:00:00	Auto	Low	Mic	Slow
93	5/7/2024	9:00:00 PM	10:00:00 PM	1:00:00	Auto	Low	Mic	Slow
94	5/7/2024	10:00:00 PM	11:00:00 PM	1:00:00	Auto	Low	Mic	Slow
95	5/7/2024	11:00:00 PM	12:00:00 AM	1:00:00	Auto	Low	Mic	Slow
96	5/8/2024	12:00:00 AM	1:00:00 AM	1:00:00	Auto	Low	Mic	Slow
97	5/8/2024	1:00:00 AM	2:00:00 AM	1:00:00	Auto	Low	Mic	Slow
98	5/8/2024	2:00:00 AM	3:00:00 AM	1:00:00	Auto	Low	Mic	Slow
99	5/8/2024	3:00:00 AM	4:00:00 AM	1:00:00	Auto	Low	Mic	Slow
100	5/8/2024	4:00:00 AM	5:00:00 AM	1:00:00	Auto	Low	Mic	Slow
101	5/8/2024	5:00:00 AM	6:00:00 AM	1:00:00	Auto	Low	Mic	Slow
102	5/8/2024	6:00:00 AM	7:00:00 AM	1:00:00	Auto	Low	Mic	Slow
103	5/8/2024	7:00:00 AM	8:00:00 AM	1:00:00	Auto	Low	Mic	Slow
104	5/8/2024	8:00:00 AM	9:00:00 AM	1:00:00	Auto	Low	Mic	Slow
105	5/8/2024	9:00:00 AM	10:00:00 AM	1:00:00	Auto	Low	Mic	Slow
106	5/8/2024	10:00:00 AM	11:00:00 AM	1:00:00	Auto	Low	Mic	Slow
107	5/8/2024	11:00:00 AM	12:00:00 PM	1:00:00	Auto	Low	Mic	Slow
108	5/8/2024	12:00:00 PM	1:00:00 PM	1:00:00	Auto	Low	Mic	Slow
109	5/8/2024	1:00:00 PM	1:10:45 PM	0:10:45	Auto	Low	Mic	Slow

LN% Freq \	Overload	UnderRange	Sensitivity	LZeQ	LCeq	LAeq	LZFmax	LCFmax	LAFmax
dBA	Yes	No	17.82mV/F	79.6	78.4	70.9	103.6	103.3	94.1
dBA	No	No	17.82mV/F	78.1	76.3	69.7	97.3	96.9	83.8
dBA	No	No	17.82mV/F	81.2	78.2	70.6	98.3	98.1	89.9
dBA	No	No	17.82mV/F	81.9	77.8	70.4	94.3	94	83.5
dBA	Yes	No	17.82mV/F	81	78.1	69.9	102.3	102	87.1
dBA	No	No	17.82mV/F	81.2	77.3	70.1	94.1	93.7	83.3
dBA	Yes	No	17.82mV/F	78.8	75.9	69.5	97.4	97	91.9
dBA	Yes	No	17.82mV/F	76.6	74.2	69.1	99.8	99.7	94.9
dBA	No	No	17.82mV/F	72.1	71	66.8	90.9	90.8	83.8
dBA	No	No	17.82mV/F	72.4	71.8	66.2	94.3	94	83.1
dBA	No	No	17.82mV/F	70.6	69.7	65.4	90.5	90.4	84.5
dBA	No	No	17.82mV/F	69.9	69.1	64.5	93.5	93.5	88.8
dBA	No	No	17.82mV/F	68	67.2	60.6	95.3	95	81.4
dBA	No	No	17.82mV/F	66.8	65.9	62.2	85.4	84.9	79.7
dBA	Yes	No	17.82mV/F	73.2	72.6	66.4	102.1	101.9	90
dBA	No	No	17.82mV/F	73.5	72.7	69.5	90.8	90.5	84.8
dBA	No	No	17.82mV/F	77.8	77.1	72	99	98.5	86.7
dBA	No	No	17.82mV/F	78.3	77.7	72.9	93.9	93.7	83.7
dBA	Yes	No	17.82mV/F	80.3	79.8	73.3	98.8	98.7	91
dBA	Yes	No	17.82mV/F	80	79.4	72.4	102.9	102.9	97
dBA	No	No	17.82mV/F	78.7	77.9	70.1	100.5	100.1	88
dBA	No	No	17.82mV/F	77.8	76	69	93.2	93	83.5
dBA	No	No	17.82mV/F	79.5	77.1	69.3	96.8	96.7	88.7
dBA	No	No	17.82mV/F	80.3	77.5	69	94.1	94	87.5
dBA	Yes	No	17.82mV/F	81.5	78.5	69	98.6	97.9	86.1

LZFmin	LCFmin	LAFmin	LZE	LCE	LAE	LZpk	LCpk	LApk	LAF1%
63	60.8	48.4	115.2	114	106.5	112.8	115.2	110.6	78.9
64.2	61.4	48.1	113.7	111.9	105.3	109	108.2	99.7	78
65.1	62.9	49.6	116.8	113.8	106.2	109.8	109.4	104.8	79.2
64.6	62.2	51.3	117.5	113.4	106	107.8	105	100.3	78
66.1	63	52.2	116.6	113.7	105.5	112.3	111.1	100.7	77
65.8	62.9	52.6	116.8	112.9	105.7	108.1	106.9	101.2	77.6
62.7	60.5	50.6	114.4	111.5	105.1	112.7	112.7	112.2	76.5
61.9	59.6	50.2	112.2	109.8	104.7	112.5	112.6	108.8	76.1
60.6	58	47.8	107.7	106.6	102.4	104	103.7	97.8	75
58.6	56.3	44.5	108	107.4	101.8	103.7	104	98.5	74.9
58.3	55.3	43.5	106.2	105.3	101	104.6	104.6	98.7	75.3
56.3	53.2	40.5	105.5	104.7	100.1	105.1	104.9	102.3	74.8
56.5	53.6	41.1	103.6	102.8	96.2	106.5	105.7	96	72.8
56.5	53.6	40.7	102.4	101.5	97.8	97.6	97.6	94.6	74.6
57.2	54.6	41.2	108.8	108.2	102	112.3	113.2	105.5	77.4
58.7	55.8	42.7	109.1	108.3	105.1	104.7	105	106.1	79
61.9	59.5	48	113.4	112.7	107.6	108.4	107.9	102.9	80.2
64	61.1	47.2	113.9	113.3	108.5	104.4	104.7	102.5	80.3
65.7	63	51.2	115.9	115.4	108.9	112.2	111.7	105.7	81.6
68.1	66.2	54.6	115.6	115	108	112.7	113.2	111.5	80.3
64.5	61.9	50.1	114.3	113.5	105.7	108.5	108	101.6	79.3
64.8	62	51	113.4	111.6	104.6	106.9	106.3	101.9	78
66.8	64.8	54.4	115.1	112.7	104.9	108.7	108.1	105.6	79.3
65.6	63.4	51.5	115.9	113.1	104.6	105.4	104.4	102.5	78.8
65.5	63.2	50.6	109.6	106.6	97.1	113.2	113.2	114.8	80.5

LAF2%	LAF5%	LAF8%	LAF10%	LAF25%	LAF50%	LAF90%	LAF95%	LAF99%
77	75.4	74.5	74	71.4	67.6	57	54	50.5
76.8	75	74	73.5	70.8	67	57.8	54.5	50.2
77.2	75.1	74.2	73.8	71.4	67.7	59.8	57.4	53.5
76.7	75.3	74.3	73.8	71.4	68.4	60.8	58.3	54.7
75.9	74.5	73.7	73.3	71.1	67.9	59.7	57.7	54.3
76.4	74.9	74	73.6	71.3	68.1	59.8	57.3	54.4
75.3	73.9	73.2	72.7	70.3	66.9	56.9	54.8	52.7
75	73.3	72.4	71.9	69.4	65.6	55.7	53.5	51.6
74.1	72.6	71.5	71	68.1	63.3	51.2	50.1	49.1
73.6	72	71.1	70.5	67	61.6	49	47.6	46
73.3	70.9	69.9	69.3	65.6	59.3	48.2	47.1	45.7
73.3	70.2	68.7	67.9	62.5	52.2	43.6	42.4	40.9
70.6	67.7	65.5	64.2	54.3	47.8	43	42.4	41.7
73.2	69.6	66.8	65.4	55.6	48.5	44.2	43.7	42.7
76.2	73.6	71.7	70.5	63	52.3	44.1	43	41.9
77.8	76.1	75	74.3	69.8	62.4	47.6	45.8	44
79.1	77.9	77.1	76.5	73.3	67.7	55.2	52.5	48.9
79.5	78.2	77.5	77	74.6	70.3	58.7	55.6	51.9
79.6	77.5	76.6	76.2	74.3	71.6	62.5	59	53.8
78.5	76.5	75.5	75.1	72.9	69.9	61.5	59.2	56.6
77.6	75.2	74	73.5	70.9	66.6	57.5	54.9	52.2
76.6	74.4	73.2	72.6	69.9	65.7	56.9	54.3	51.9
77.1	74.4	73	72.3	69.1	65	58.6	57.4	56.3
76.9	74.5	73.1	72.3	69.3	64.4	57.4	55.6	53.3
77.9	73.9	72.5	71.8	69	63.8	54	53	51.2

Long-Term Noise Measurement Summary

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).

Measurement Site: Arrow Route
Measurement Date: 5/7-5/8/2024
Project Name: Rancho Cucamonga SEIQ

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA /10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	64.5	2,818,383	0	0	1	0	0	2,818,383
1:00	60.6	1,148,154	0	0	1	0	0	1,148,154
2:00	62.2	1,659,587	0	0	1	0	0	1,659,587
3:00	66.4	4,365,158	0	0	1	0	0	4,365,158
4:00	69.5	8,912,509	0	0	1	0	0	8,912,509
5:00	72.0	15,848,932	0	0	1	0	0	15,848,932
6:00	72.9	19,498,446	0	0	1	0	0	19,498,446
7:00	73.3	21,379,621	1	0	0	21,379,621	0	0
8:00	72.4	17,378,008	1	0	0	17,378,008	0	0
9:00	70.1	10,232,930	1	0	0	10,232,930	0	0
10:00	69.0	7,943,282	1	0	0	7,943,282	0	0
11:00	69.3	8,511,380	1	0	0	8,511,380	0	0
12:00	69.0	7,943,282	1	0	0	7,943,282	0	0
13:00	70.9	12,302,688	1	0	0	12,302,688	0	0
14:00	69.7	9,332,543	1	0	0	9,332,543	0	0
15:00	70.6	11,481,536	1	0	0	11,481,536	0	0
16:00	70.4	10,964,782	1	0	0	10,964,782	0	0
17:00	69.9	9,772,372	1	0	0	9,772,372	0	0
18:00	70.1	10,232,930	1	0	0	10,232,930	0	0
19:00	69.5	8,912,509	0	1	0	0	8,912,509	0
20:00	69.1	8,128,305	0	1	0	0	8,128,305	0
21:00	66.8	4,786,301	0	1	0	0	4,786,301	0
22:00	66.2	4,168,694	0	0	1	0	0	4,168,694
23:00	65.4	3,467,369	0	0	1	0	0	3,467,369

Sum of Sound Power during Period wo/penalty	#####	21,827,115	61,887,231
Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10
Sound Power during Period with penalty	#####	65,481,346	618,872,314

Total Daily Sound Power, with penalties	821,829,016
Hours per Day	24
Average Hourly Sound Power, with penalties	34,242,876
CNEL	75.3

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	2,818,383
0	1	0	1,148,154
0	1	0	1,659,587
0	1	0	4,365,158
0	1	0	8,912,509
0	1	0	15,848,932
0	1	0	19,498,446
1	0	21,379,621	0
1	0	17,378,008	0
1	0	10,232,930	0
1	0	7,943,282	0
1	0	8,511,380	0
1	0	7,943,282	0
1	0	12,302,688	0
1	0	9,332,543	0
1	0	11,481,536	0
1	0	10,964,782	0
1	0	9,772,372	0
1	0	10,232,930	0
1	0	8,912,509	0
1	0	8,128,305	0
1	0	4,786,301	0
0	1	0	4,168,694
0	1	0	3,467,369

Sum of Sound Power during Period wo/penalty	#####	61,887,231
Log Factor for Penalty (i.e., $10 \cdot \log(x)$)	1	10
Sound Power during Period with penalty	#####	618,872,314

Total Daily Sound Power, with penalties	778,174,785
Hours per Day	24
Average Hourly Sound Power, with penalties	32,423,949
Ldn	75.1

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

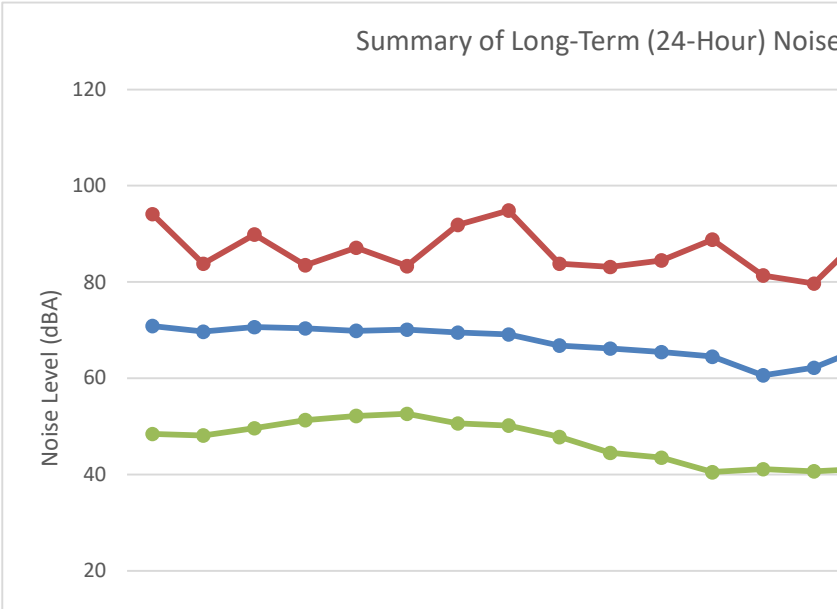
Source:

California Department of Transportation (Caltrans), Division of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement*. Sacramento, CA. Available: <<http://www.dot.ca.gov/hq/env/noise/>>. Accessed September 24, 2010.

Long-Term Measurement Summary

Start Date	Start Time	Duration	LAeq	LAFmax	LAFmin
3/7/2024	1:00 PM	1:00:00	70.9	94.1	48.4
3/7/2024	2:00 PM	1:00:00	69.7	83.8	48.1
3/7/2024	3:00 PM	1:00:00	70.6	89.9	49.6
3/7/2024	4:00 PM	1:00:00	70.4	83.5	51.3
3/7/2024	5:00 PM	1:00:00	69.9	87.1	52.2
3/7/2024	6:00 PM	1:00:00	70.1	83.3	52.6
3/7/2024	7:00 PM	1:00:00	69.5	91.9	50.6
3/7/2024	8:00 PM	1:00:00	69.1	94.9	50.2
3/7/2024	9:00 PM	1:00:00	66.8	83.8	47.8
3/7/2024	10:00 PM	1:00:00	66.2	83.1	44.5
3/7/2024	11:00 PM	1:00:00	65.4	84.5	43.5
3/7/2024	12:00 AM	1:00:00	64.5	88.8	40.5
3/8/2024	1:00 AM	1:00:00	60.6	81.4	41.1
3/8/2024	2:00 AM	1:00:00	62.2	79.7	40.7
3/8/2024	3:00 AM	1:00:00	66.4	90	41.2
3/8/2024	4:00 AM	1:00:00	69.5	84.8	42.7
3/8/2024	5:00 AM	1:00:00	72	86.7	48
3/8/2024	6:00 AM	1:00:00	72.9	83.7	47.2
3/8/2024	7:00 AM	1:00:00	73.3	91	51.2
3/8/2024	8:00 AM	1:00:00	72.4	97	54.6
3/8/2024	9:00 AM	1:00:00	70.1	88	50.1
3/8/2024	10:00 AM	1:00:00	69	83.5	51
3/8/2024	11:00 AM	1:00:00	69.3	88.7	54.4
3/8/2024	12:00 PM	1:00:00	69	87.5	51.5

Overall:	Leq	Ldn	CNEL	Daytime Leq	Nighttime Leq
	69.6	75.1	75.3	72.4	67.2



8-Hour (10 p.m. - 6 a.m.) Nighttime Leq Calculator

Hour	Hourly Leq (dB)	Linear Power (P)
1	66.2	4168693.835
2	65.4	3467368.505
3	64.5	2818382.931
4	60.6	1148153.621
5	62.2	1659586.907
6	66.4	4365158.322
7	69.5	8912509.381
8	72	15848931.92
<i>Sum</i>		42388785.43
<i>Avg. Sound Power</i>		5298598.178
8-hour Leq		67.2

70.1

Note

The sheet converts dBA noise levels to sound power (watts), for each individual hour of the measurement period. Then SP values are summed and averaged, then converted back to dBA to obtain the 8-hour Leq

12-Hour (7 a.m. - 7 p.m.) Leq Calculator

Hour	Hourly Leq (dB)	Linear Power (P)
1	73.3	21379620.9
2	72.4	17378008.29
3	70.1	10232929.92
4	69	7943282.347
5	69.3	8511380.382
6	69	7943282.347
7	70.9	12302687.71
8	69.7	9332543.008
9	70.6	11481536.21
10	70.4	10964781.96
11	69.9	9772372.21
12	70.1	10232929.92
<i>Sum</i>		137475355.2
<i>Avg. Sound Power</i>		17184419.4
12-hour Leq		72.4

Note

The sheet converts dBA noise levels to sound power (watts), for each individual hour of the measurement period. Then SP values are summed and averaged, then converted back to dBA to obtain the 12-hour Leq

11-Hour (8 p.m. - 7 a.m.) Leq Calculator

Hour	Hourly Leq (dB)	Linear Power (P)
8 p.m.	69.1	8128305.162
9 p.m.	66.8	4786300.923
10	66.2	4168693.835
11	65.4	3467368.505
12	64.5	2818382.931
1 a.m.	60.6	1148153.621
2 a.m.	62.2	1659586.907
3 a.m.	66.4	4365158.322
4 a.m.	69.5	8912509.381
5	72	15848931.92
6	72.9	19498446
<i>Sum</i>		74801837.51
<i>Avg. Sound Power</i>		9350229.689
12-hour Leq		69.7

Note

The sheet converts dBA noise levels to sound power (watts), for each individual hour of the measurement period. Then SP values are summed and averaged, then converted back to dBA to obtain the 12-hour Leq