

**APPENDIX D**  
**Noise and Vibration Calculations**

Existing

Federal Transit Administration  
 Noise Impact Assessment Spreadsheet  
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<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 1</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>2</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24
<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35

	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	570
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
<b>Daytime hrs</b>	<b>Signal Duration/hr (seconds)</b>	400
<b>Nighttime hrs</b>	<b>Signal Duration/hr (seconds)</b>	120
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	720
	<b>Number of Intervening Rows of Buildings</b>	
<b>Adjustments</b>	<b>Noise Barrier?</b>	No


## Noise Impact Criteria (FTA Manual, Fig 3-1)

### Project Results Summary

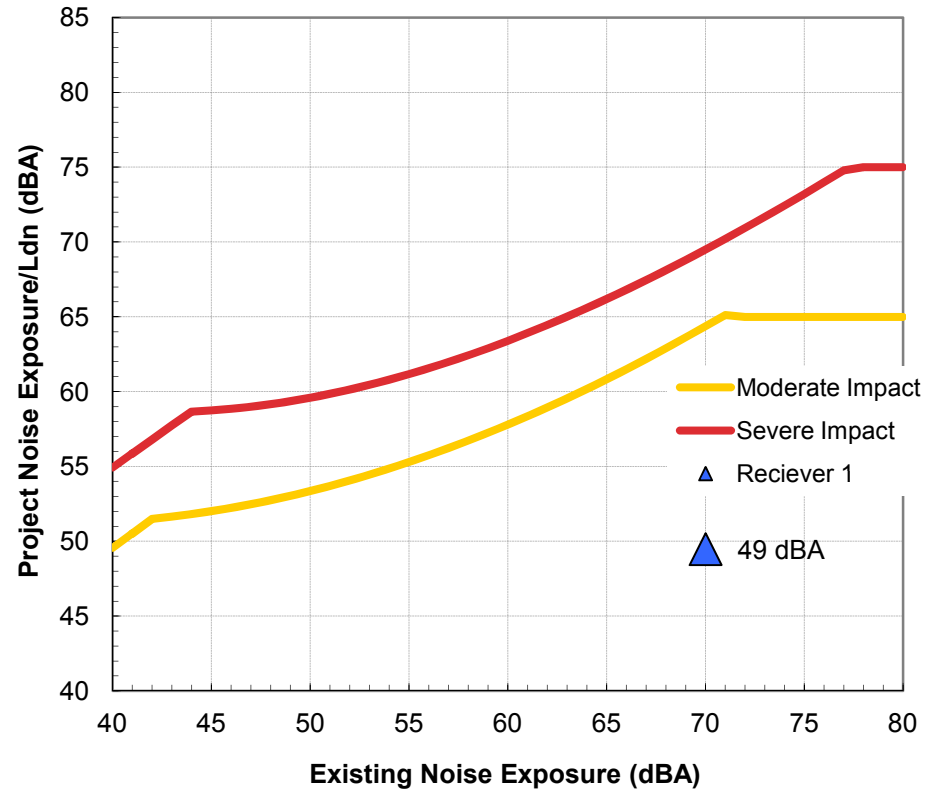
Existing Ldn:	70 dBA
Total Project Ldn:	49 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

### Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	--
Dist to Sev. Impact Contour (Sources 1+2):	--

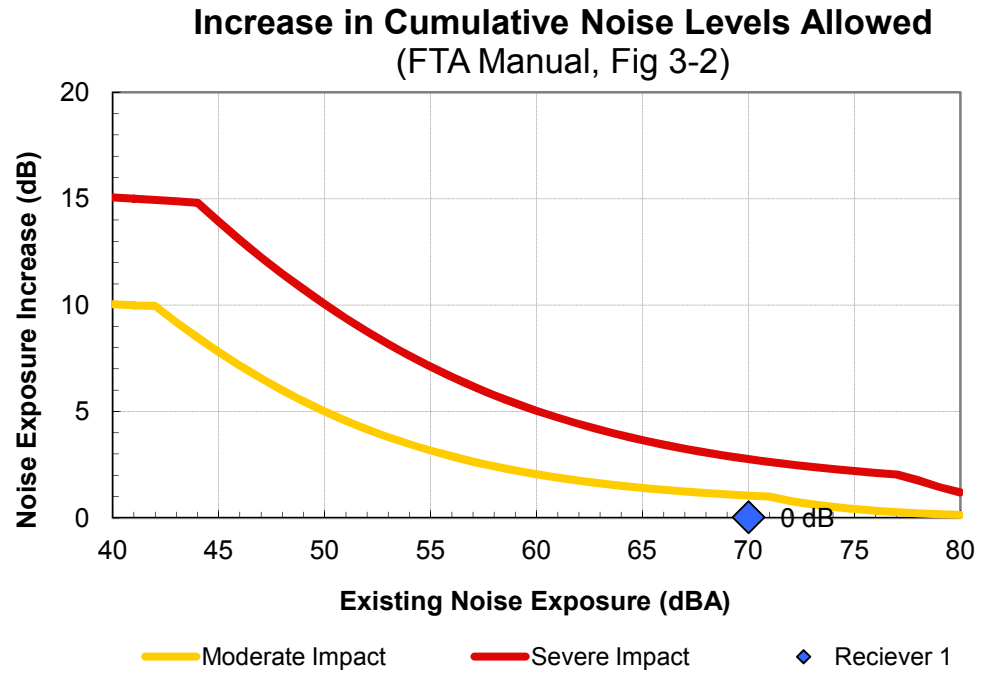
### Source 1 Results

Leq(day):	47.3 dBA
Leq(night):	41.3 dBA
Ldn:	49.2 dBA



**Source 2 Results**

**Leq(day): 34.9 dBA**  
**Leq(night): 29.7 dBA**  
**Ldn: 37.3 dBA**  
**Incremental Ldn (Src 1-2): 49.5 dBA**



**Project:** Airport Metro Connector  
**Receiver:** Receiver 1

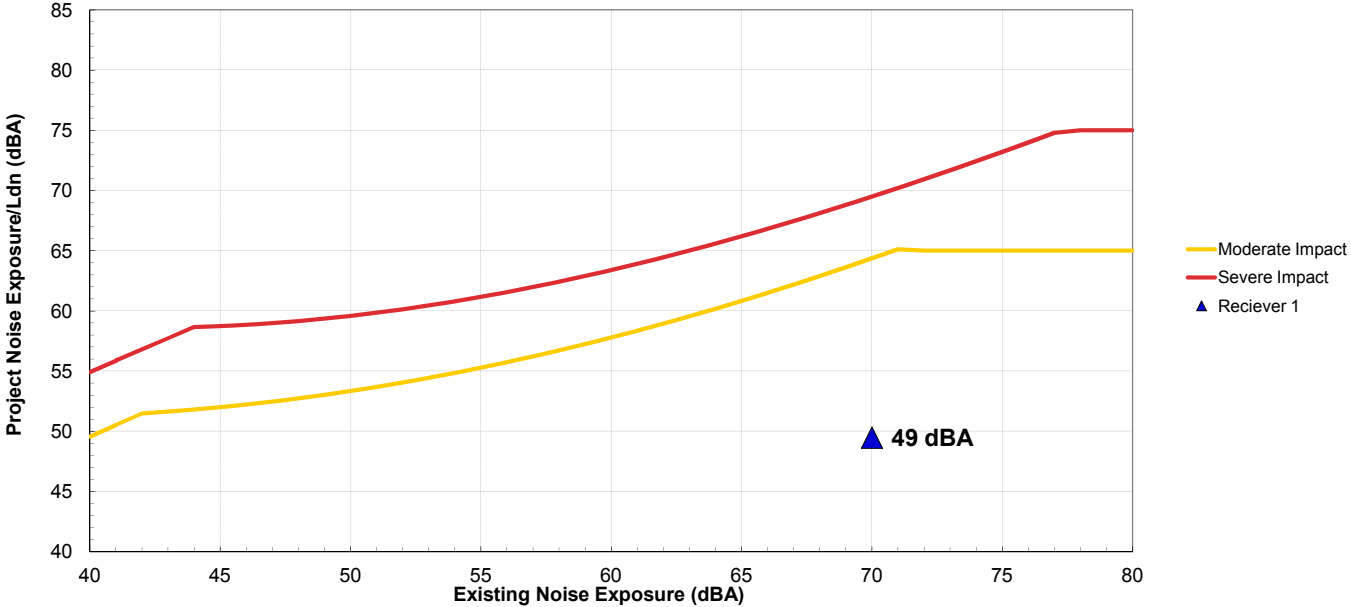
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	570 ft	49.2 dBA	70 dBA
2 Crossing Signals	720 ft	37.3 dBA	70 dBA
3 --	87 ft		70 dBA
4 --	70 ft		70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>49 dBA</b>	<b>70 dBA</b>

**Noise Criteria**

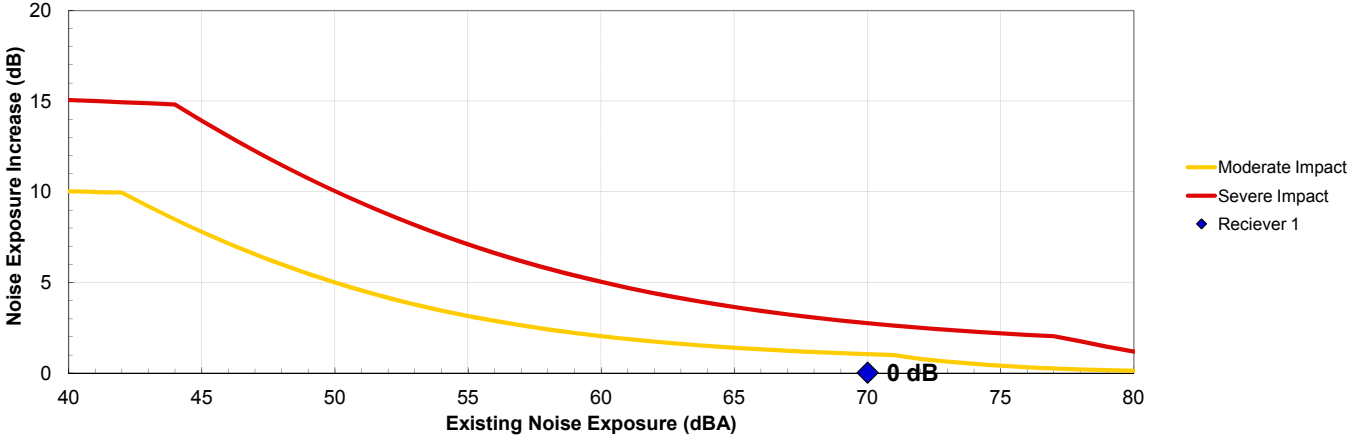
<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>



**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



<b>Warning Signal Duration</b>	
Daytime	
Bell Duration (sec)	20
Trains/hr	20
Total Bell Time (sec)	400
Nighttime	
Bell Duration (sec)	20
Trains/hr	6
Total Bell Time (sec)	120

source: Crenshaw Final EIR/EIS Appendix H Technical Analyses Part 1, Warning Signal Noise

d1	64
d2	110
	87

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<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 2</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>2</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24
<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35

	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	440
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
<b>Daytime hrs</b>	<b>Signal Duration/hr (seconds)</b>	400
<b>Nighttime hrs</b>	<b>Signal Duration/hr (seconds)</b>	120
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	918
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No


### Noise Impact Criteria (FTA Manual, Fig 3-1)

#### Project Results Summary

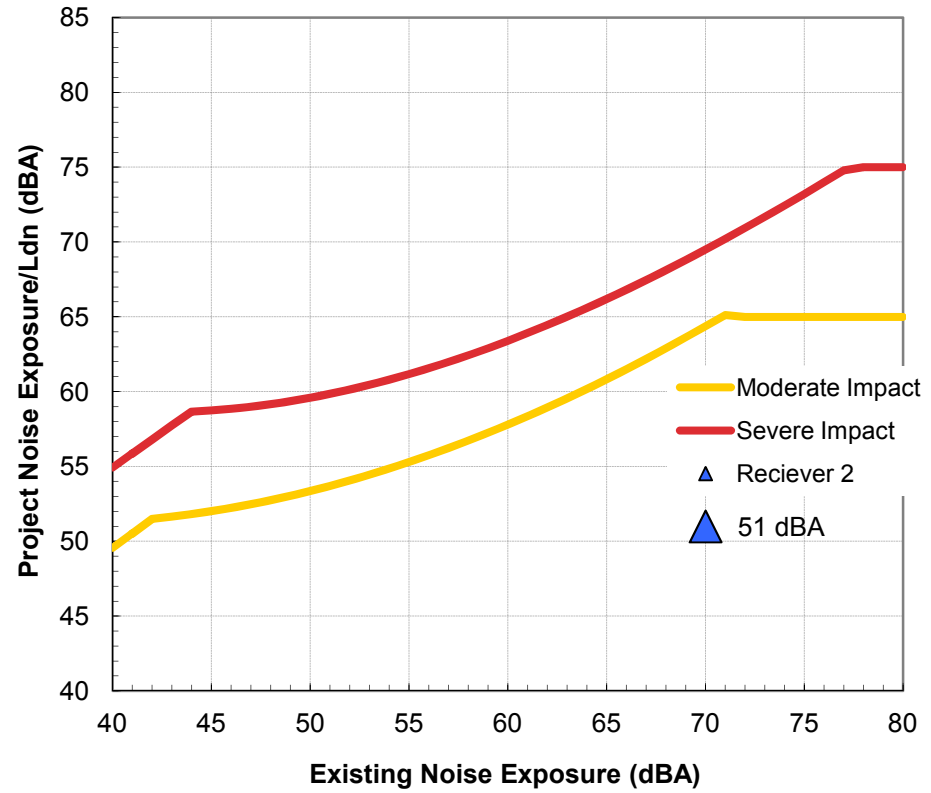
Existing Ldn:	70 dBA
Total Project Ldn:	51 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

#### Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	--
Dist to Sev. Impact Contour (Sources 1+2):	--

#### Source 1 Results

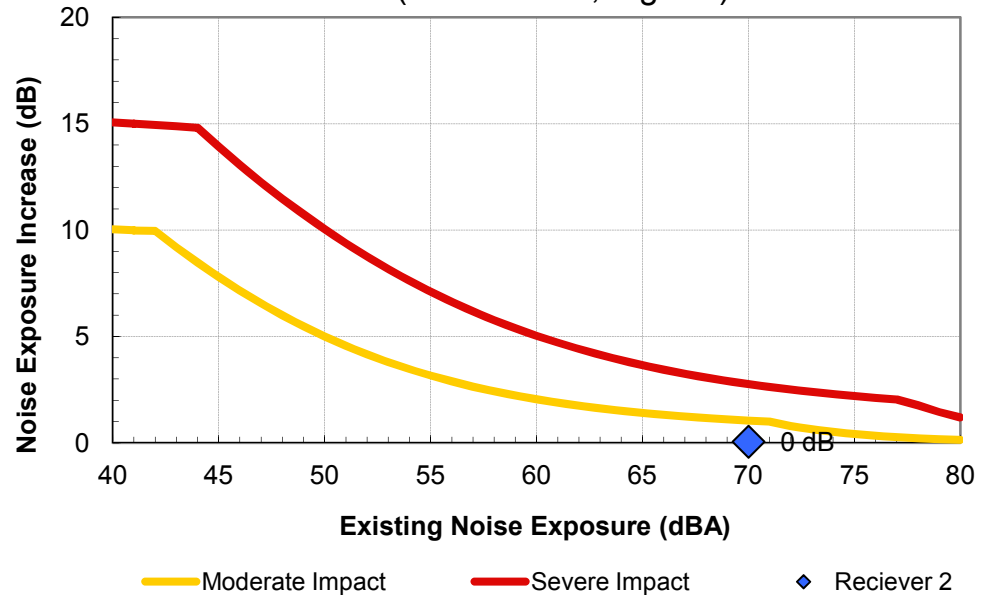
Leq(day):	49.0 dBA
Leq(night):	42.9 dBA
Ldn:	50.9 dBA



**Source 2 Results**

**Leq(day): 32.3 dBA**  
**Leq(night): 27.0 dBA**  
**Ldn: 34.7 dBA**  
**Incremental Ldn (Src 1-2): 51.0 dBA**

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Project:** Airport Metro Connector  
**Receiver:** Receiver 2

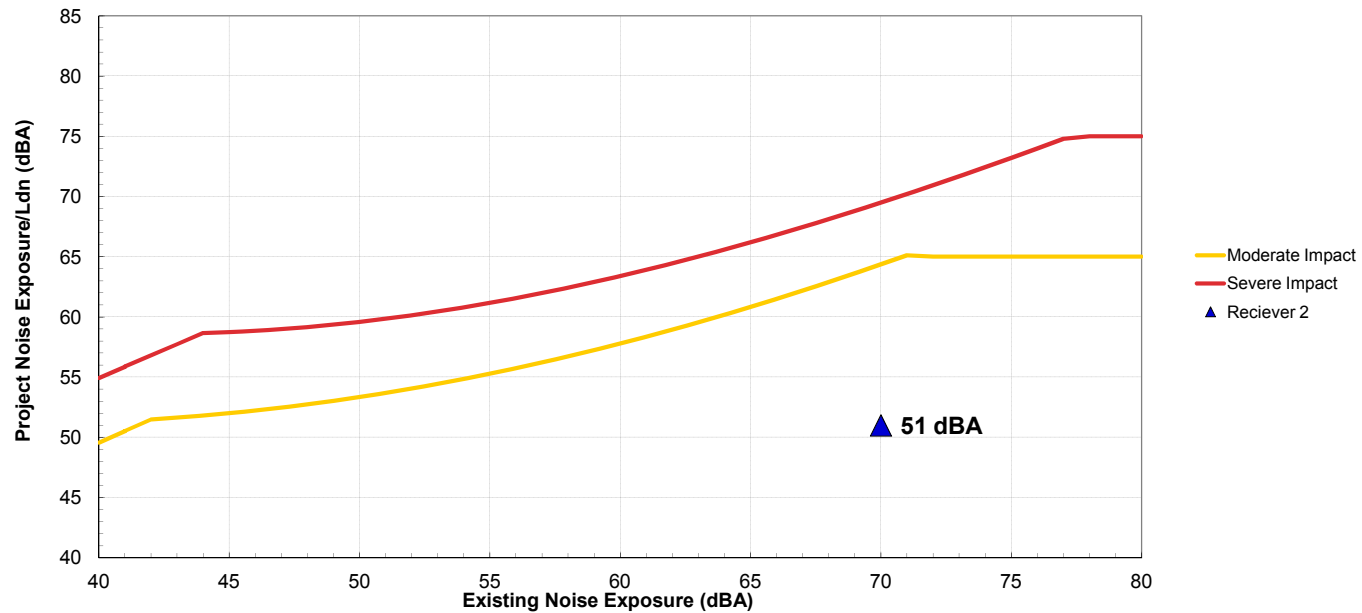
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	440 ft	50.9 dBA	70 dBA
2 Crossing Signals	918 ft	34.7 dBA	70 dBA
3 --	724 ft		70 dBA
4 --	70 ft		70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>51 dBA</b>	<b>70 dBA</b>

**Noise Criteria**

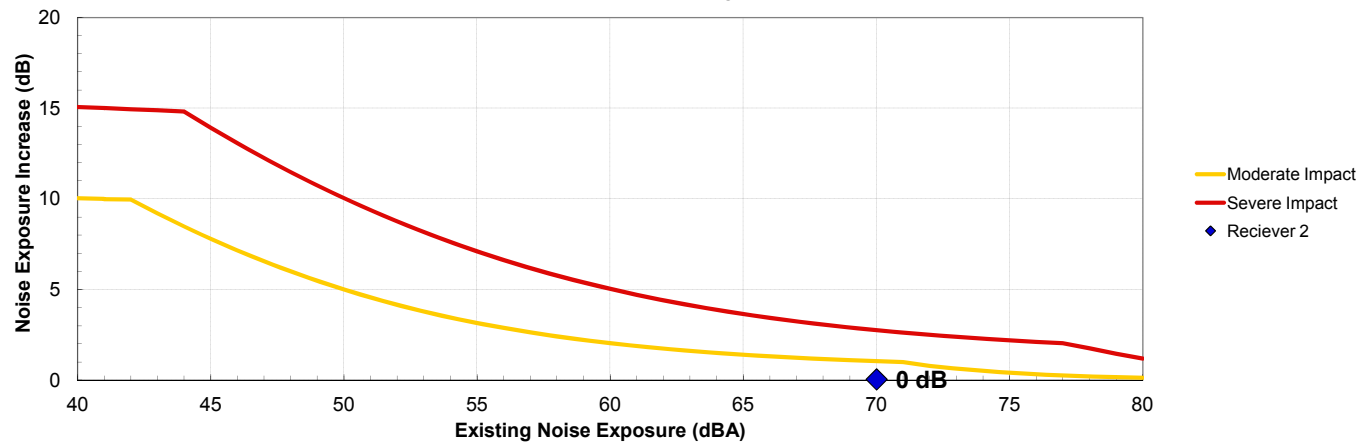
<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>



**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



<b>Warning Signal Duration</b>	
Daytime	
Bell Duration (sec)	20
Trains/hr	20
Total Bell Time (sec)	400
Nighttime	
Bell Duration (sec)	20
Trains/hr	6
Total Bell Time (sec)	120

Time (Min)  
Train Headway 5

source: Crenshaw Final EIR/EIS Appendix H Technical Analyses Part 1, Warning Signal Noise

Mobile Source Average Distance	
D1	60
D2	107
Average	83.5

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<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 3</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>2</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24
<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35

	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	240
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
<b>Daytime hrs</b>	<b>Signal Duration/hr (seconds)</b>	400
<b>Nighttime hrs</b>	<b>Signal Duration/hr (seconds)</b>	120
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	1350
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No


## Noise Impact Criteria (FTA Manual, Fig 3-1)

### Project Results Summary

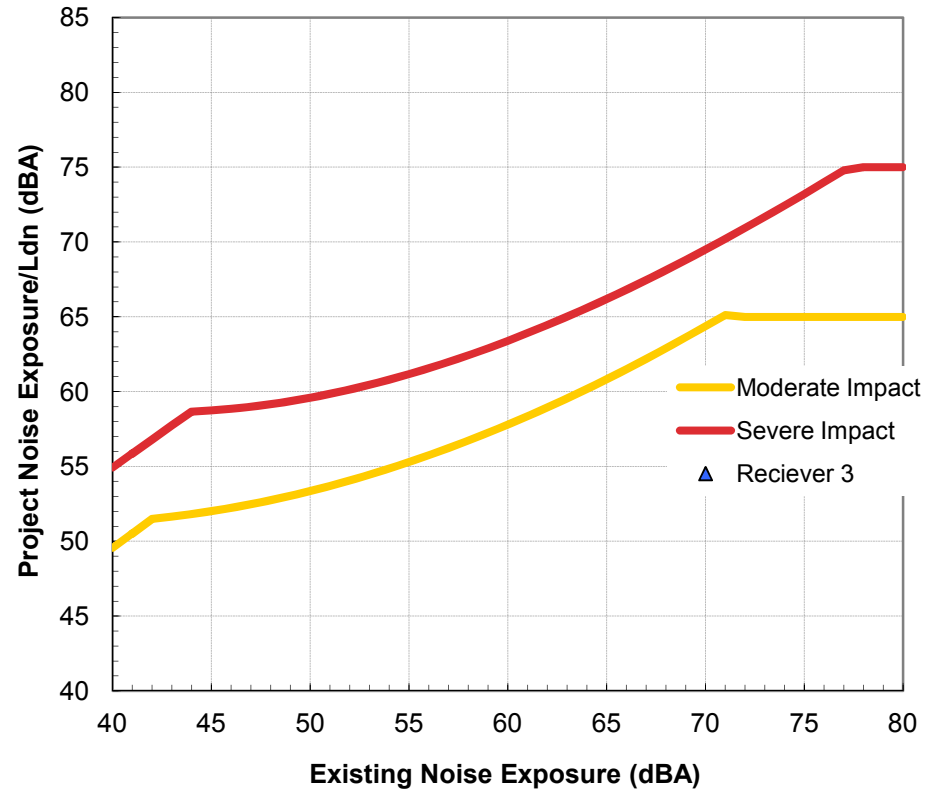
Existing Ldn:	70 dBA
Total Project Ldn:	55 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

### Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	--
Dist to Sev. Impact Contour (Sources 1+2):	--

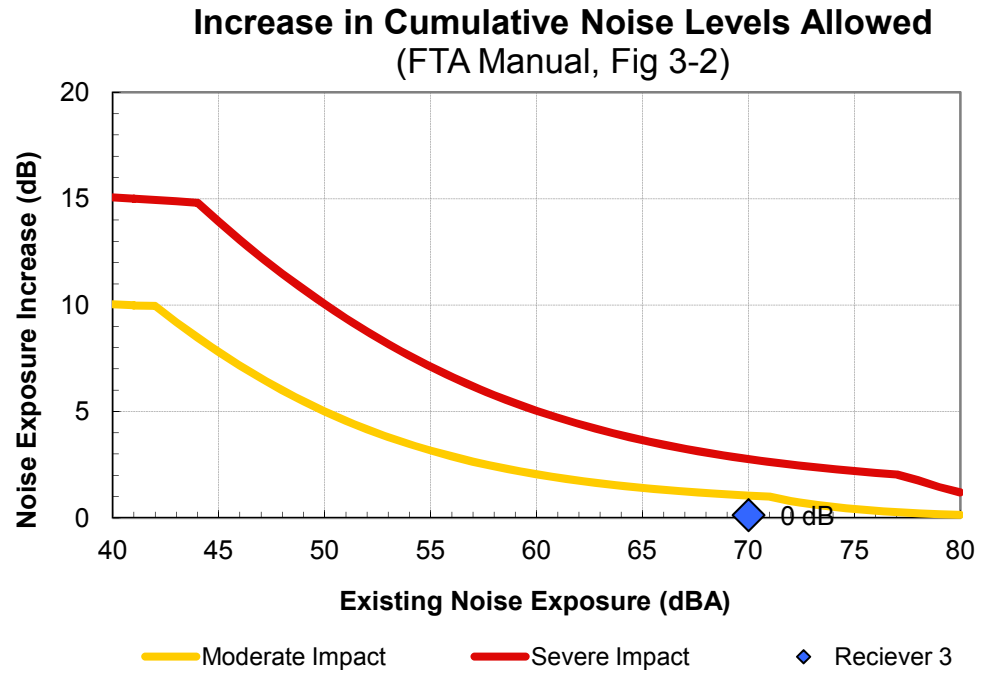
### Source 1 Results

Leq(day):	52.9 dBA
Leq(night):	46.9 dBA
Ldn:	54.8 dBA



**Source 2 Results**

**Leq(day): 28.1 dBA**  
**Leq(night): 22.8 dBA**  
**Ldn: 30.5 dBA**  
**Incremental Ldn (Src 1-2): 54.9 dBA**



**Project:** Airport Metro Connector  
**Receiver:** Receiver 3

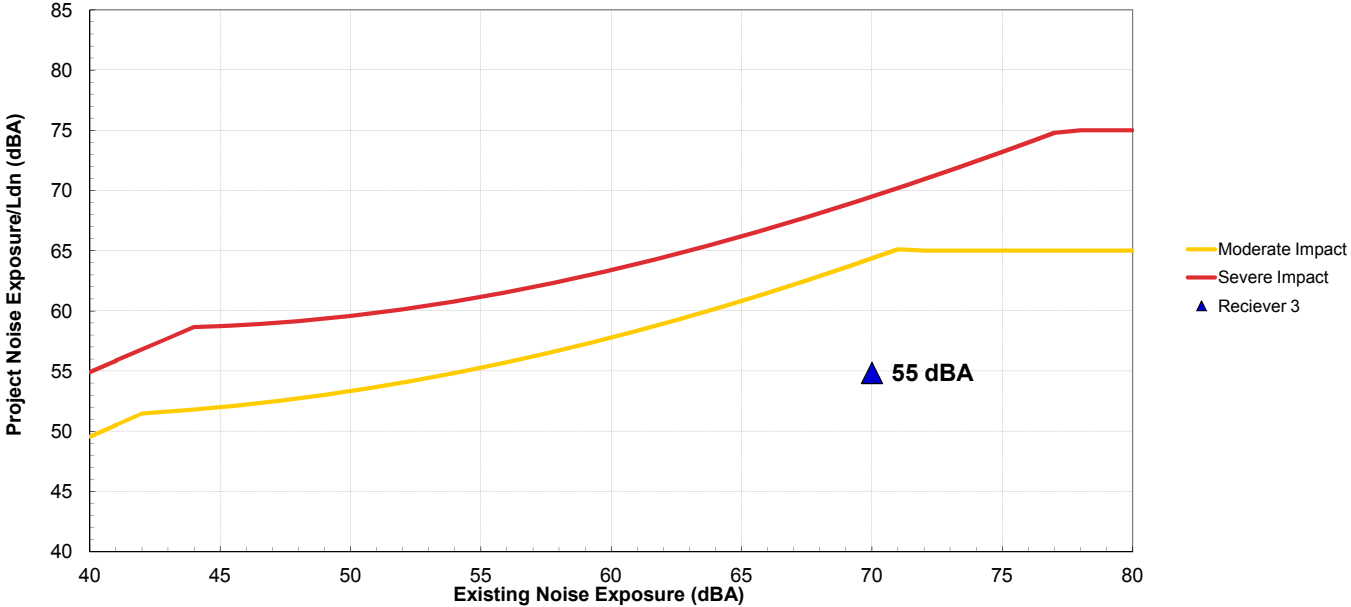
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	240 ft	54.8 dBA	70 dBA
2 Crossing Signals	1350 ft	30.5 dBA	70 dBA
3 --	724 ft		70 dBA
4 --	70 ft		70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>55 dBA</b>	<b>70 dBA</b>

**Noise Criteria**

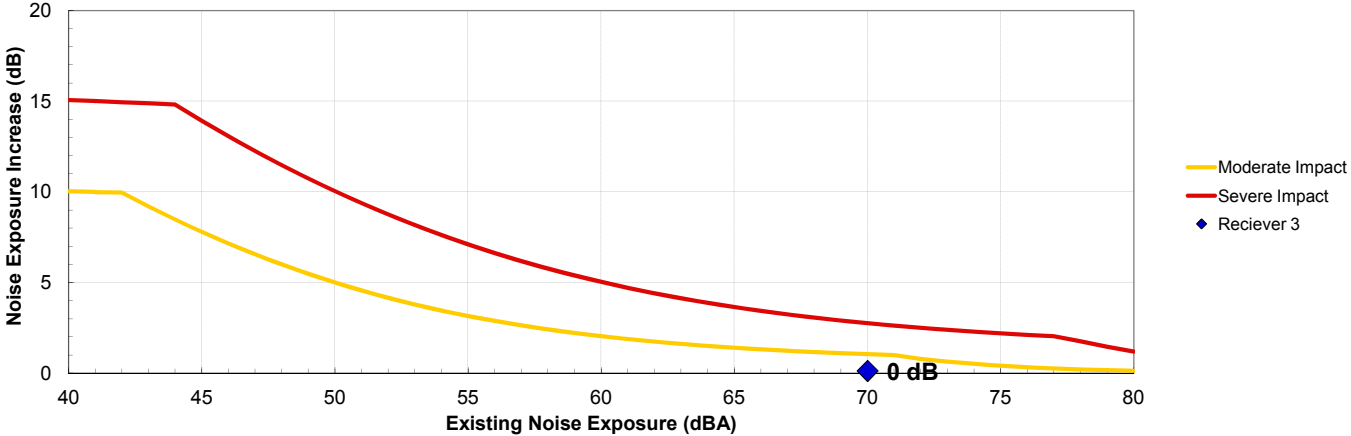
<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>



**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



<b>Warning Signal Duration</b>	
Daytime	
Bell Duration (sec)	20
Trains/hr	20
Total Bell Time (sec)	400
Nighttime	
Bell Duration (sec)	20
Trains/hr	6
Total Bell Time (sec)	120

Time (Min)  
Train Headway            5

source: Crenshaw Final EIR/EIS Appendix H Technical Analyses Part 1, Warning Signal Noise

Mobile Source Average Distance	
D1	60
D2	107
Average	83.5

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<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Reciever 4 (Travelodge Hotel)</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>2</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24
<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35

	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	123
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	Yes

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
<b>Daytime hrs</b>	<b>Signal Duration/hr (seconds)</b>	400
<b>Nighttime hrs</b>	<b>Signal Duration/hr (seconds)</b>	120
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	1900
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No


## Noise Impact Criteria (FTA Manual, Fig 3-1)

### Project Results Summary

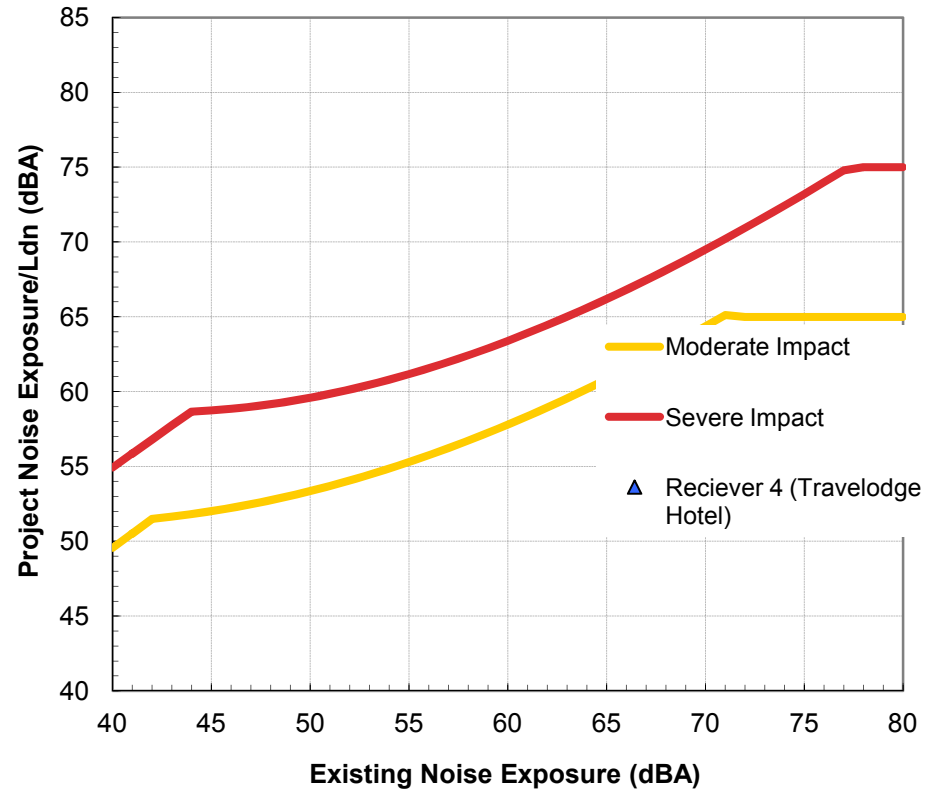
Existing Ldn:	70 dBA
Total Project Ldn:	63 dBA
Total Noise Exposure:	71 dBA
Increase:	1 dB
Impact?:	None

### Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	--
Dist to Sev. Impact Contour (Sources 1+2):	--

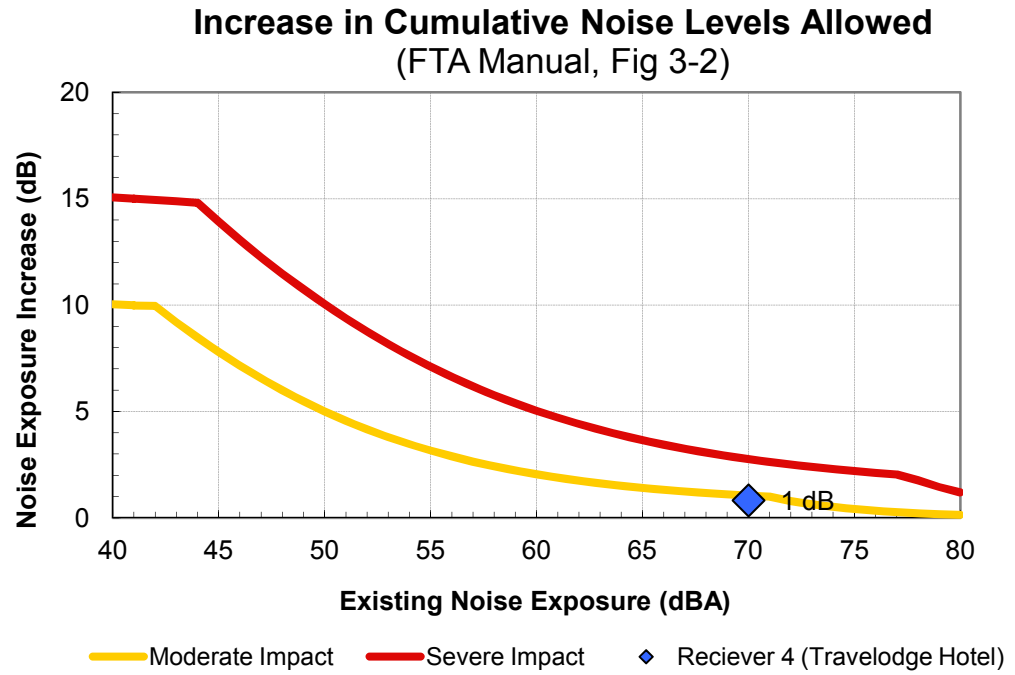
### Source 1 Results

Leq(day):	61.3 dBA
Leq(night):	55.2 dBA
Ldn:	63.2 dBA



**Source 2 Results**

**Leq(day): 24.4 dBA**  
**Leq(night): 19.1 dBA**  
**Ldn: 26.8 dBA**  
**Incremental Ldn (Src 1-2): 63.2 dBA**



**Project:** Airport Metro Connector  
**Receiver:** Receiver 4 (Travelodge Hotel)

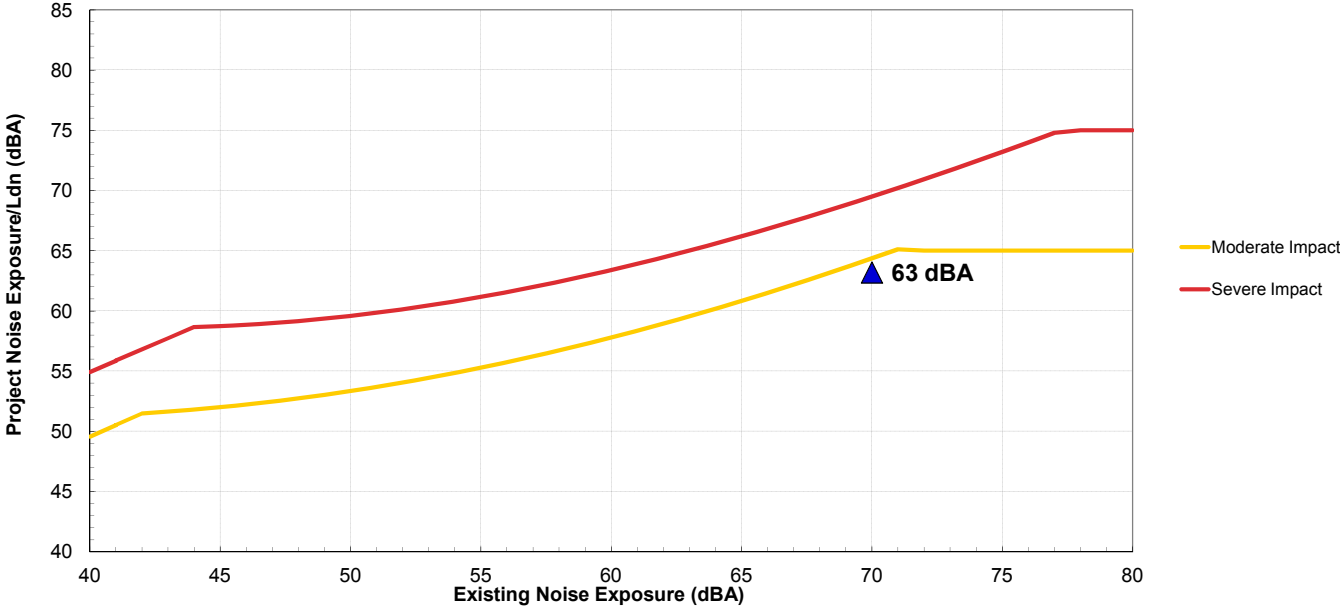
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	123 ft	63.2 dBA	70 dBA
2 Crossing Signals	1900 ft	26.8 dBA	70 dBA
3 --	724 ft		70 dBA
4 --	70 ft		70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>63 dBA</b>	<b>70 dBA</b>

**Noise Criteria**

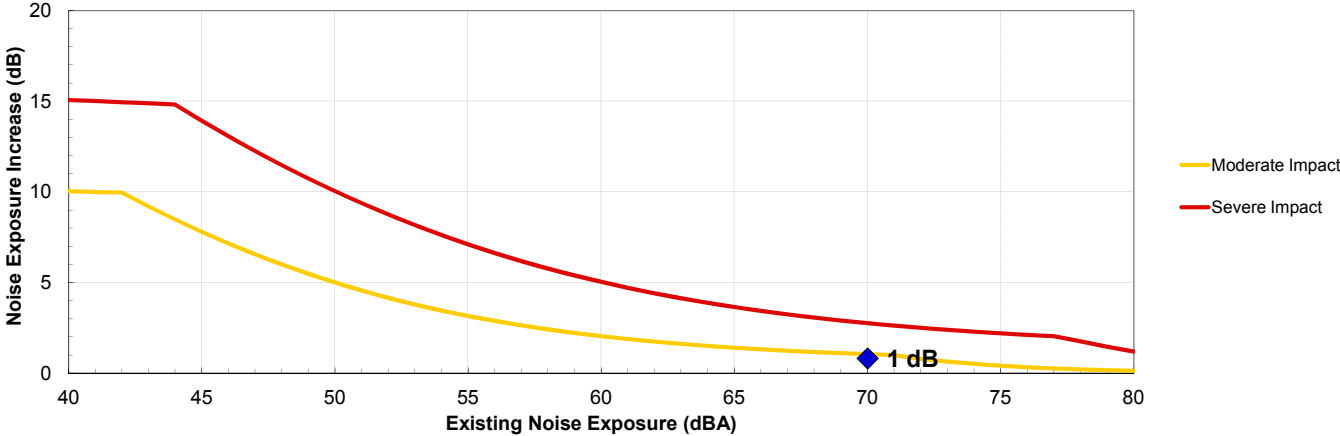
<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>



**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





Project

<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Reciever 1</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>4</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24
<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	6

<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	570
	<b>Number of Intervening Rows of Buildings</b>	1
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
<b>Daytime hrs</b>	<b>Avg. Number of Buses/hr</b>	58
<b>Nighttime hrs</b>	<b>Avg. Number of Buses/hr</b>	24
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	400
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No

<b>Noise Source Parameters</b>		<b>Source 3</b>
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
<b>Daytime hrs</b>	<b>Speed</b>	10
	<b>Avg. Number of Events/hr</b>	9

Nighttime hrs			
		Speed	10
		Avg. Number of Events/hr	4
Distance		Distance from Source to Receiver (ft)	87
		Number of Intervening Rows of Buildings	0
Adjustments		Noise Barrier?	No

Noise Source Parameters		Source 4	
	Source Type:	Stationary Source	
	Specific Source:	Crossing Signals	
Daytime hrs		Signal Duration/hr (seconds)	400
Nighttime hrs		Signal Duration/hr (seconds)	120
Distance		Distance from Source to Receiver (ft)	720
		Number of Intervening Rows of Buildings	1
Adjustments		Noise Barrier?	No


**Project Results Summary**

Existing Ldn:	70 dBA
Total Project Ldn:	52 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

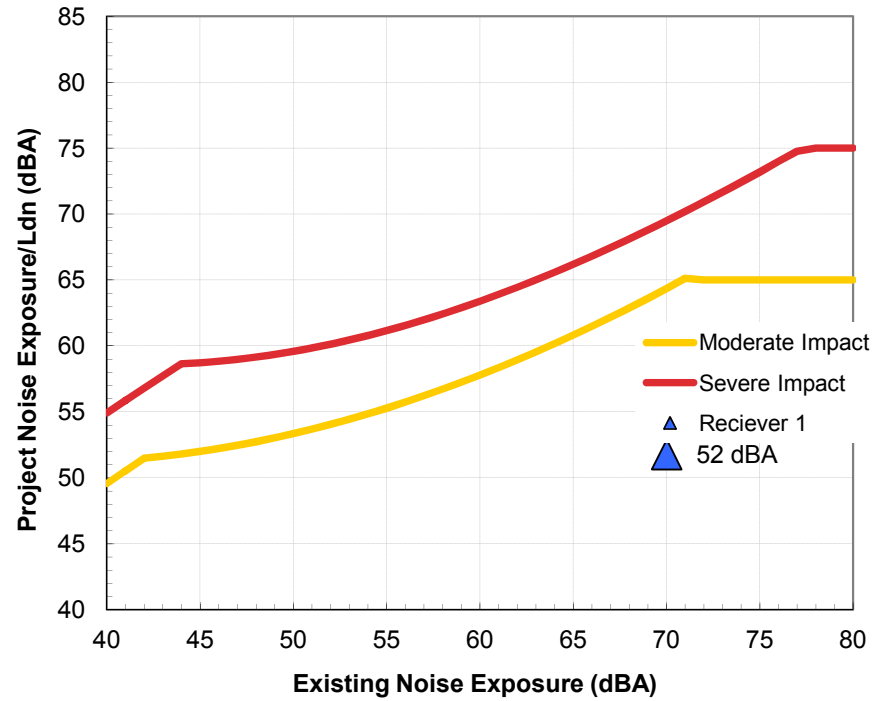
**Distance to Impact Contours**

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

**Source 1 Results**

Leq(day):	37.9 dBA
Leq(night):	31.9 dBA
Ldn:	39.9 dBA

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



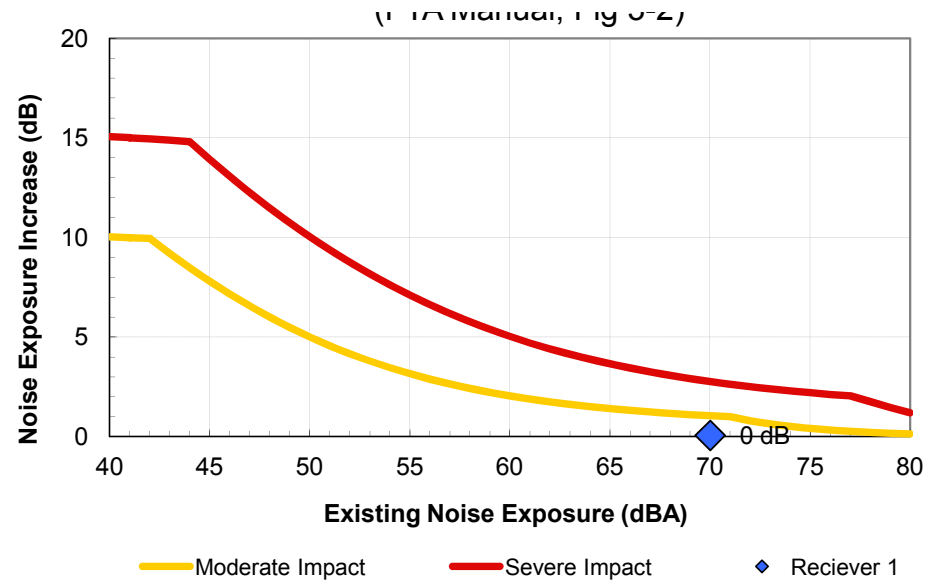
**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)

### Source 2 Results

Leq(day): 47.4 dBA  
Leq(night): 43.6 dBA  
Ldn: 50.8 dBA  
Incremental Ldn (Src 1-2): 51.2 dBA

### Source 3 Results

Leq(day): 38.7 dBA  
Leq(night): 35.1 dBA  
Ldn: 42.3 dBA  
Incremental Ldn (Src 1-3): 51.7 dBA





**Source 4 Results**

**Leq(day): 34.9 dBA**

**Leq(night): 25.2 dBA**

**Ldn: 35.0 dBA**

**Incremental Ldn (Src 1-4): 51.8 dBA**

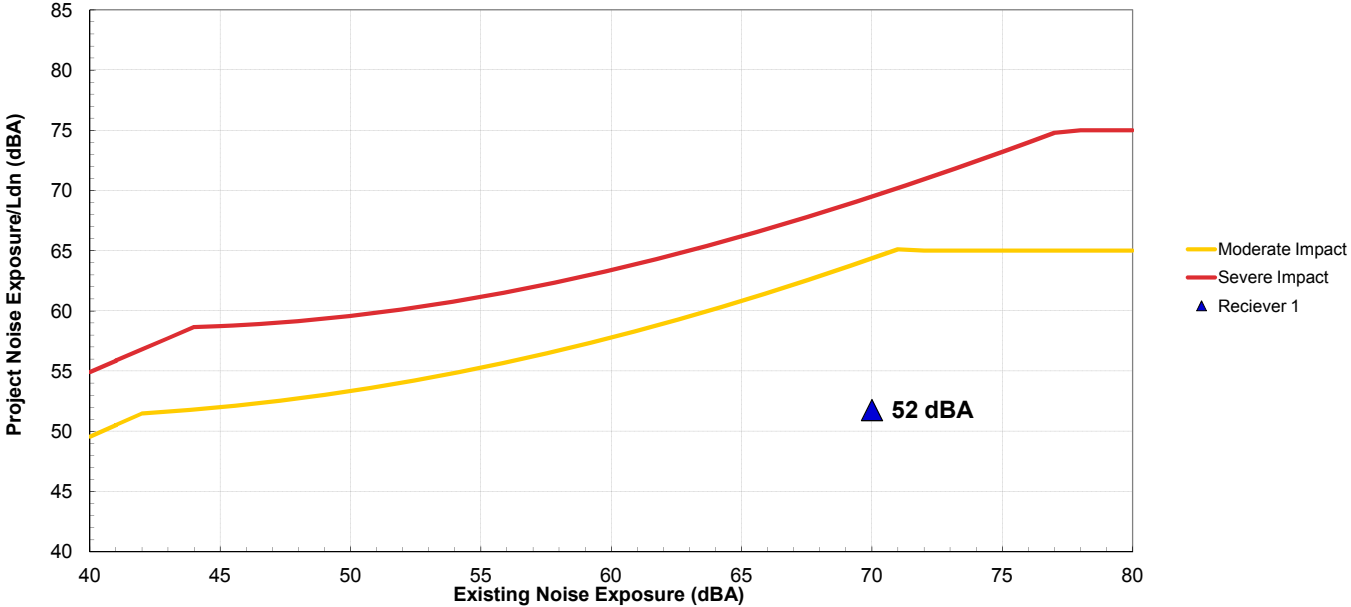
**Project:** Airport Metro Connector  
**Receiver:** Receiver 1

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	570 ft	39.9 dBA	70 dBA
2 Bus Transit Center	400 ft	50.8 dBA	70 dBA
3 Buses (hybrid)	87 ft	42.3 dBA	70 dBA
4 Crossing Signals	720 ft	35.0 dBA	70 dBA
5 --	70 ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>52 dBA</b>	<b>70 dBA</b>

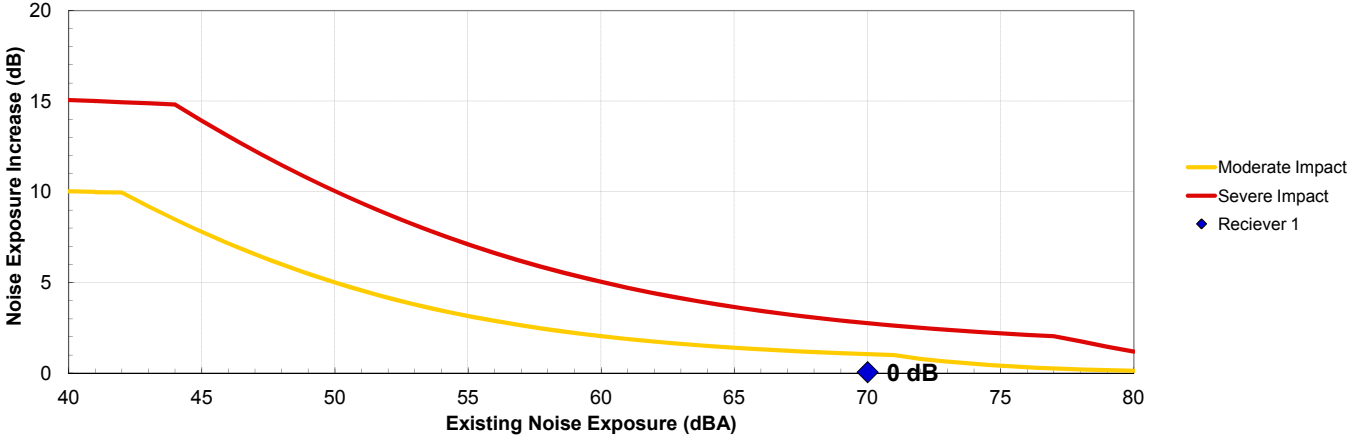
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





<b>Project:</b>	<b>Airport Metro Connector</b>
-----------------	--------------------------------

<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Reciever 2</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>4</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24
<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	6

<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	440
	<b>Number of Intervening Rows of Buildings</b>	1
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
<b>Daytime hrs</b>	<b>Avg. Number of Buses/hr</b>	58
<b>Nighttime hrs</b>	<b>Avg. Number of Buses/hr</b>	24
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	325
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No

<b>Noise Source Parameters</b>		<b>Source 3</b>
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
<b>Daytime hrs</b>	<b>Speed</b>	25
	<b>Avg. Number of Events/hr</b>	49

Nighttime hrs		
	Speed	25
	Avg. Number of Events/hr	20
Distance	Distance from Source to Receiver (ft)	83
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No

Noise Source Parameters		Source 4
	Source Type:	Stationary Source
	Specific Source:	Crossing Signals
Daytime hrs	Signal Duration/hr (seconds)	400
Nighttime hrs	Signal Duration/hr (seconds)	120
Distance	Distance from Source to Receiver (ft)	918
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No




### Project Results Summary

Existing Ldn:	70 dBA
Total Project Ldn:	59 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

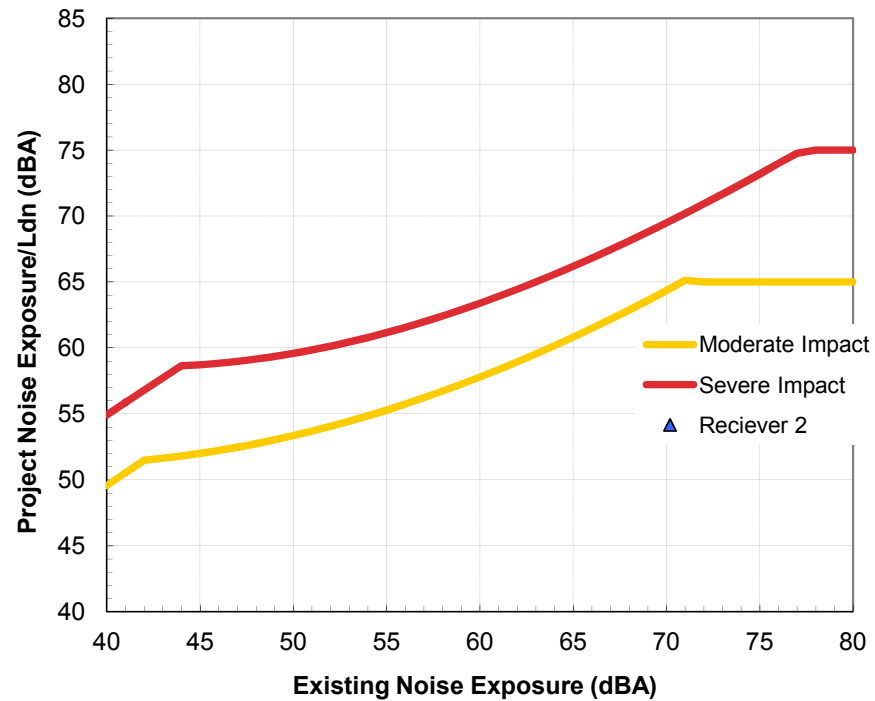
### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

### Source 1 Results

Leq(day):	39.6 dBA
Leq(night):	33.6 dBA
Ldn:	41.5 dBA

### Noise Impact Criteria (FTA Manual, Fig 3-1)



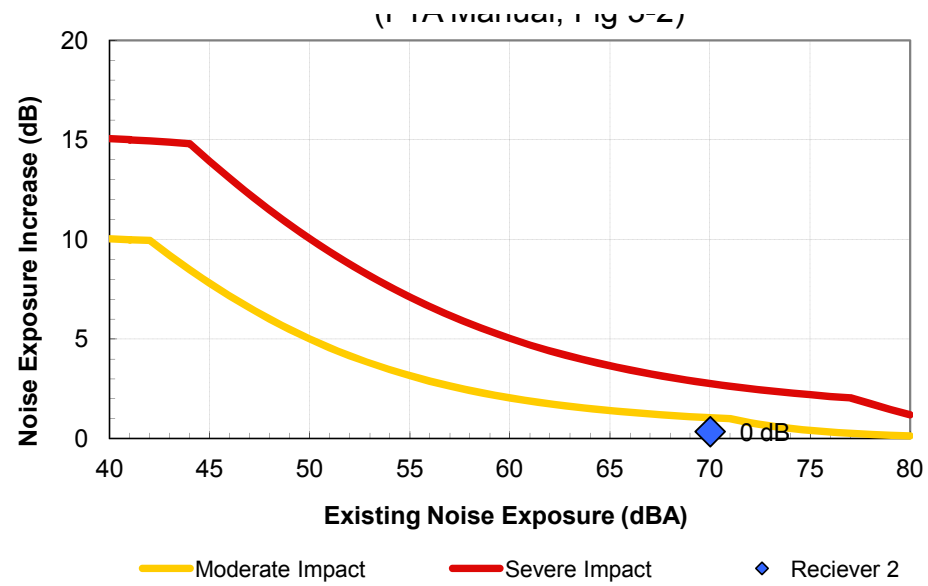
### Increase in Cumulative Noise Levels Allowed (FTA Manual, Fig 3-2)

### Source 2 Results

**Leq(day): 49.7 dBA**  
**Leq(night): 45.9 dBA**  
**Ldn: 53.1 dBA**  
**Incremental Ldn (Src 1-2): 53.4 dBA**

### Source 3 Results

**Leq(day): 54.7 dBA**  
**Leq(night): 50.8 dBA**  
**Ldn: 58.0 dBA**  
**Incremental Ldn (Src 1-3): 59.3 dBA**



**Source 4 Results**

**Leq(day): 32.3 dBA**

**Leq(night): 22.5 dBA**

**Ldn: 32.4 dBA**

**Incremental Ldn (Src 1-4): 59.3 dBA**

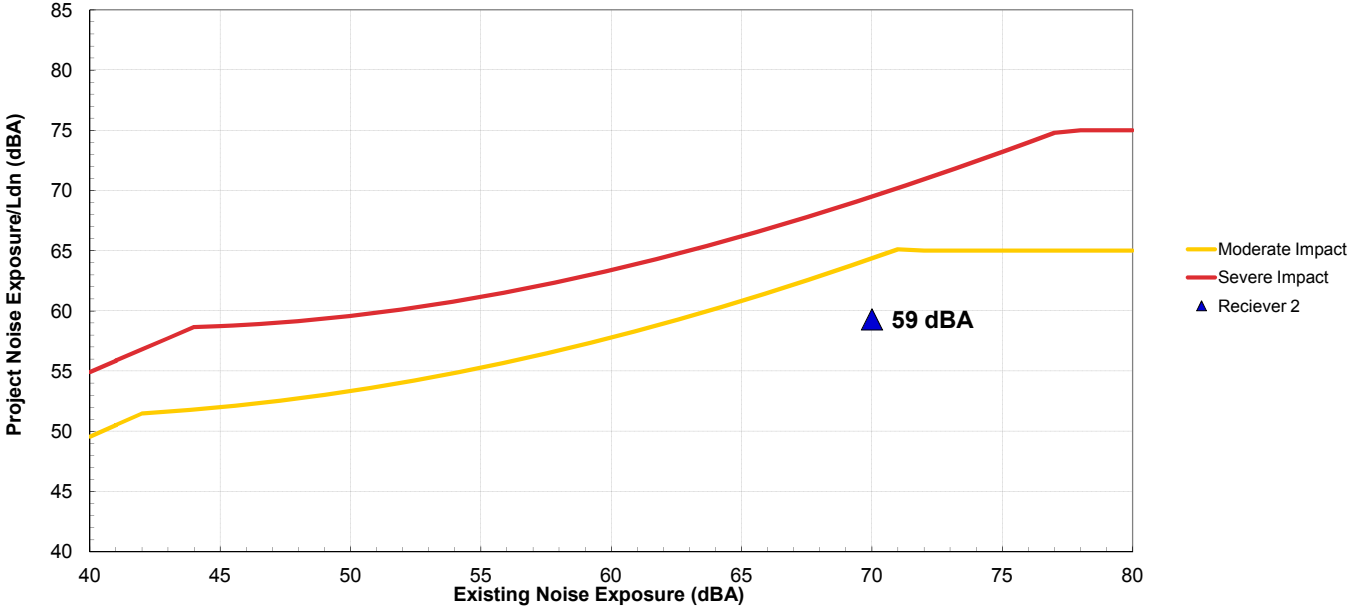
**Project:** Airport Metro Connector  
**Receiver:** Receiver 2

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	440 ft	41.5 dBA	70 dBA
2 Bus Transit Center	325 ft	53.1 dBA	70 dBA
3 Buses (hybrid)	83 ft	58.0 dBA	70 dBA
4 Crossing Signals	918 ft	32.4 dBA	70 dBA
5 --	70 ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>59 dBA</b>	<b>70 dBA</b>

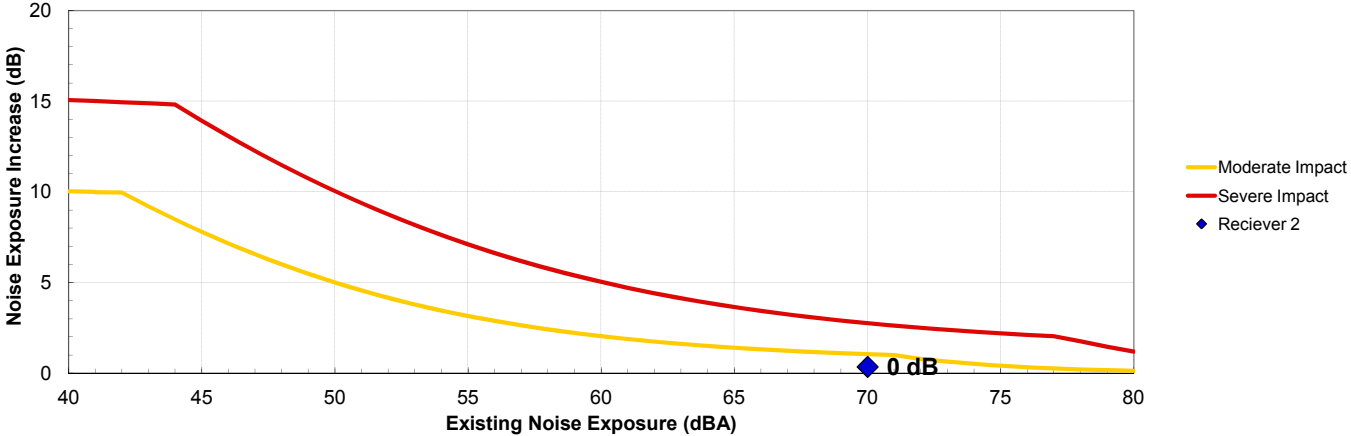
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



<b>Warning Signal Duration</b>	
Daytime	
Bell Duration (sec)	20
Trains/hr	20
Total Bell Time (sec)	400
Nighttime	
Bell Duration (sec)	20
Trains/hr	6
Total Bell Time (sec)	120

Time (Min)  
Train Headway            5

source: Crenshaw Final EIR/EIS Appendix H Technical Analyses Part 1, Warning Signal Noise

Mobile Source Average Distance	
D1	60
D2	107
Average	83.5

Bus Trips From North (15% of total)

Total Trips	From North
58	8.7
24	3.6

Bus Trips From South

Total Trips	From South
58	49
24	20

<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 3</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>4</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24



<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	240
	<b>Number of Intervening Rows of Buildings</b>	1
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
<b>Daytime hrs</b>	<b>Avg. Number of Buses/hr</b>	58
<b>Nighttime hrs</b>	<b>Avg. Number of Buses/hr</b>	24
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	700
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 3
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
Daytime hrs		
	<b>Speed</b>	30
	<b>Avg. Number of Events/hr</b>	49
Nighttime hrs		
	<b>Speed</b>	30
	<b>Avg. Number of Events/hr</b>	20
Distance	<b>Distance from Source to Receiver (ft)</b>	80
	<b>Number of Intervening Rows of Buildings</b>	0
Adjustments	<b>Noise Barrier?</b>	No



**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)

**Project Results Summary**

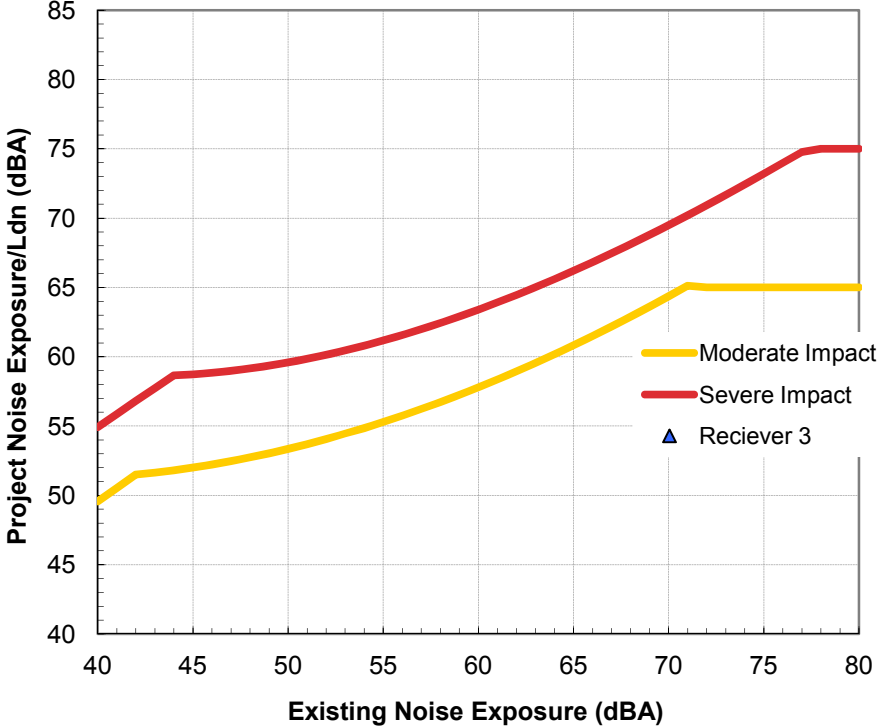
Existing Ldn:	70 dBA
Total Project Ldn:	60 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

**Distance to Impact Contours**

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

**Source 1 Results**

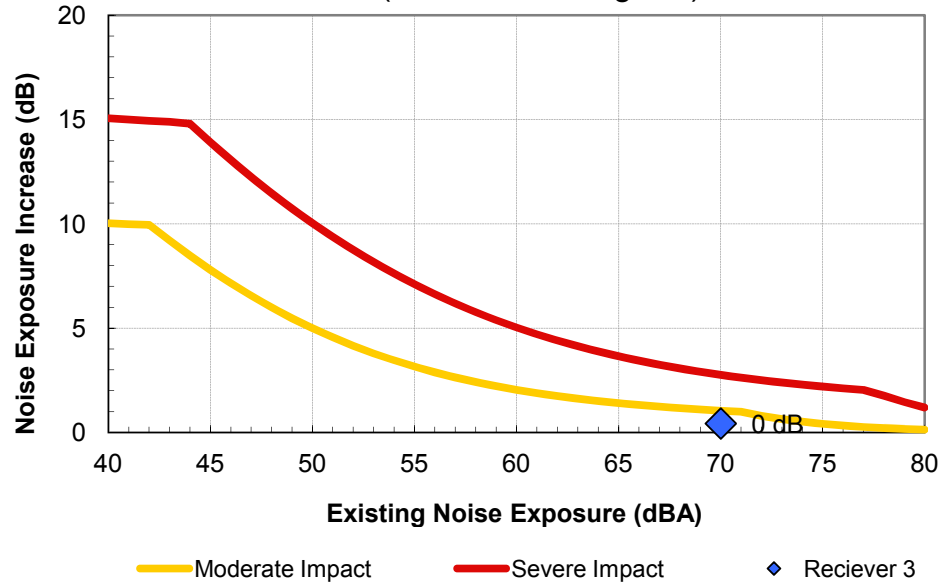
Leq(day):	43.5 dBA
Leq(night):	37.5 dBA
Ldn:	45.5 dBA



**Source 2 Results**

Leq(day): 41.4 dBA  
Leq(night): 37.5 dBA  
Ldn: 44.8 dBA  
Incremental Ldn (Src 1-2): 48.1 dBA

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Source 3 Results**

**Leq(day): 56.6 dBA**

**Leq(night): 52.7 dBA**

**Ldn: 59.9 dBA**

**Incremental Ldn (Src 1-3): 60.2 dBA**

**Source 4 Results**

**Leq(day): 28.1 dBA**

**Leq(night): 18.3 dBA**

**Ldn: 28.2 dBA**

**Incremental Ldn (Src 1-4): 60.2 dBA**

**Project:** Airport Metro Connector  
**Receiver:** Receiver 3

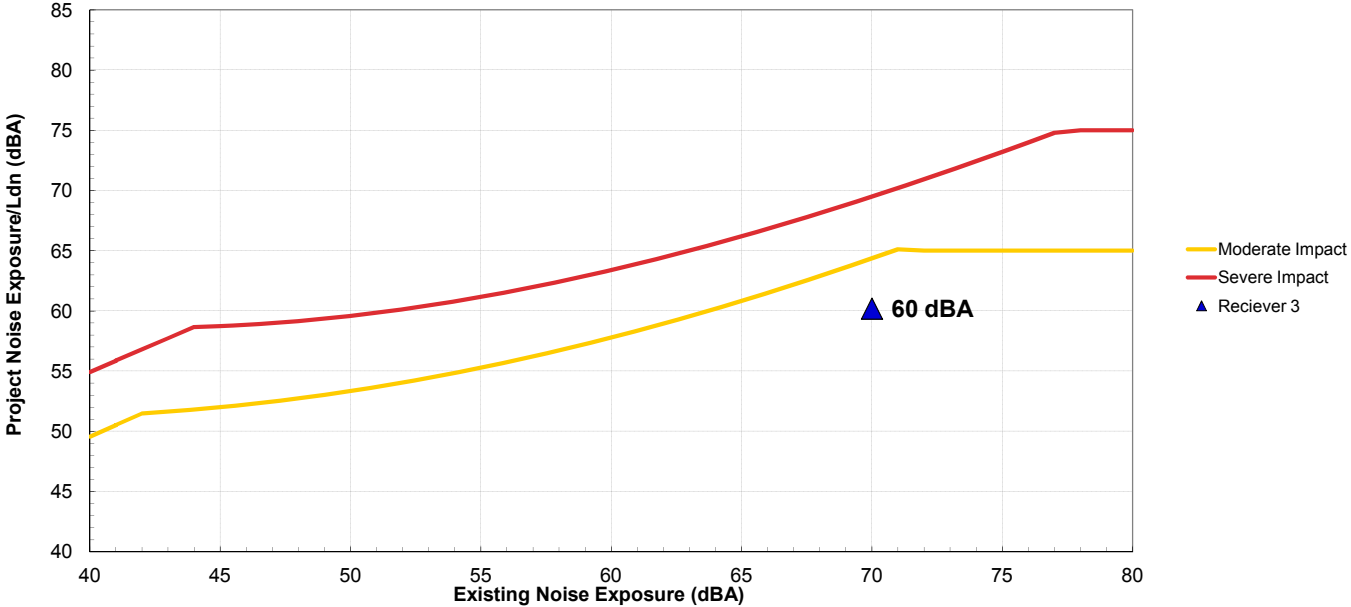
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	240 ft	45.5 dBA	70 dBA
2 Bus Transit Center	700 ft	44.8 dBA	70 dBA
3 Buses (hybrid)	80 ft	59.9 dBA	70 dBA
4 Crossing Signals	1350 ft	28.2 dBA	70 dBA
5 --	70 ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>60 dBA</b>	<b>70 dBA</b>



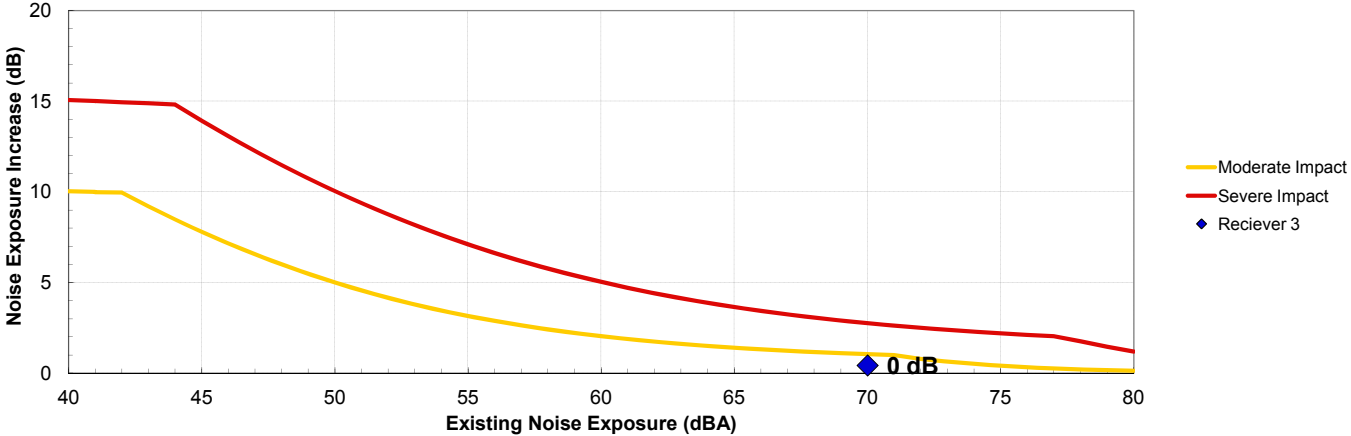
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





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 Noise Impact Assessment Spreadsheet  
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<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 4 (Travelodge Hotel)</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>71 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>4</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24

Nighttime hrs	Avg. Number of Transit Vehicles/train	4
	Speed (mph)	20
	Avg. Number of Events/hr	6
Distance	Distance from Source to Receiver (ft)	123
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Jointed Track?	No
	Embedded Track?	No
	Aerial Structure?	Yes

Noise Source Parameters		Source 2
	Source Type:	Stationary Source
	Specific Source:	Bus Transit Center
Daytime hrs	Avg. Number of Buses/hr	58
Nighttime hrs	Avg. Number of Buses/hr	24
Distance	Distance from Source to Receiver (ft)	1280
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No

Noise Source Parameters		Source 3
	Source Type:	Highway/Transit
	Specific Source:	Buses (hybrid)
Daytime hrs		
	Speed	20
	Avg. Number of Events/hr	49
Nighttime hrs		
	Speed	20
	Avg. Number of Events/hr	20
Distance	Distance from Source to Receiver (ft)	31
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No

Noise Source Parameters		Source 4
	Source Type:	Stationary Source
	Specific Source:	Crossing Signals
Daytime hrs	Signal Duration/hr (seconds)	400
Nighttime hrs	Signal Duration/hr (seconds)	120
Distance	Distance from Source to Receiver (ft)	1900
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No

### Project Results Summary

Existing Ldn:	71 dBA
Total Project Ldn:	64 dBA
Total Noise Exposure:	72 dBA
Increase:	1 dB
Impact?:	None

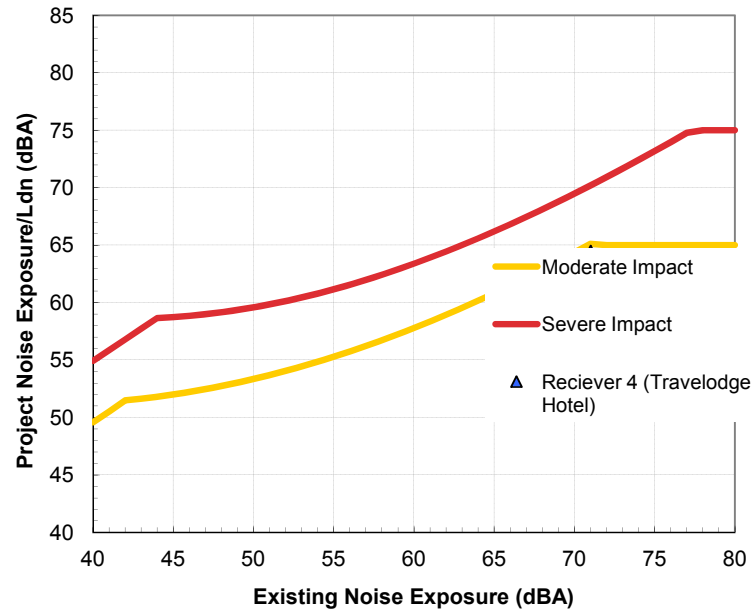
### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

### Source 1 Results

Leq(day):	56.4 dBA
Leq(night):	50.4 dBA
Ldn:	58.3 dBA

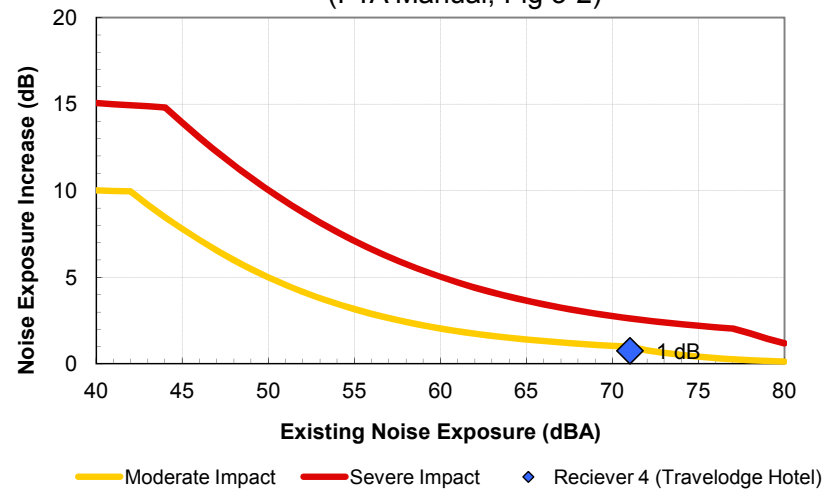
### Noise Impact Criteria (FTA Manual, Fig 3-1)



**Source 2 Results**

Leq(day): 34.8 dBA  
Leq(night): 31.0 dBA  
Ldn: 38.2 dBA  
Incremental Ldn (Src 1-2): 58.4 dBA

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





**Source 3 Results**

**Leq(day): 59.1 dBA**

**Leq(night): 55.2 dBA**

**Ldn: 62.4 dBA**

**Incremental Ldn (Src 1-3): 63.8 dBA**

**Source 4 Results**

**Leq(day): 24.4 dBA**

**Leq(night): 14.6 dBA**

**Ldn: 24.5 dBA**

**Incremental Ldn (Src 1-4): 63.8 dBA**

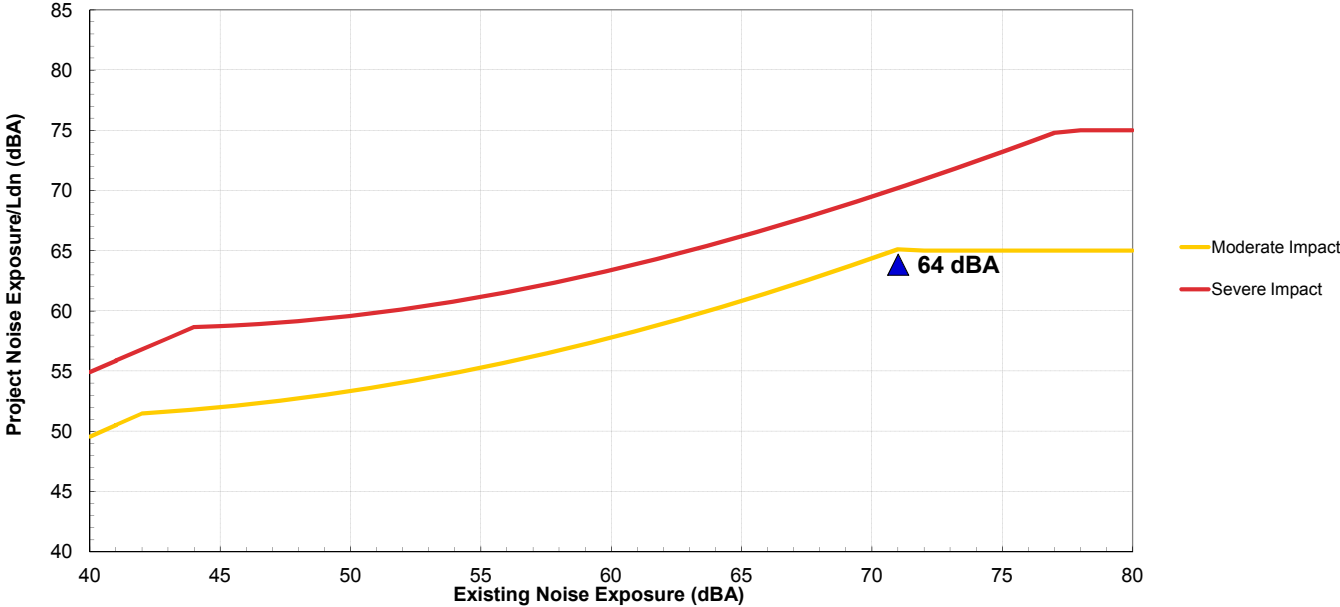
**Project:** Airport Metro Connector  
**Receiver:** Receiver 4 (Travelodge Hotel)

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	123 ft	58.3 dBA	71 dBA
2 Bus Transit Center	1280 ft	38.2 dBA	71 dBA
3 Buses (hybrid)	31 ft	62.4 dBA	71 dBA
4 Crossing Signals	1900 ft	24.5 dBA	71 dBA
5 --	70 ft		71 dBA
6 --	ft		71 dBA
<b>Combined Sources</b>		<b>64 dBA</b>	<b>71 dBA</b>

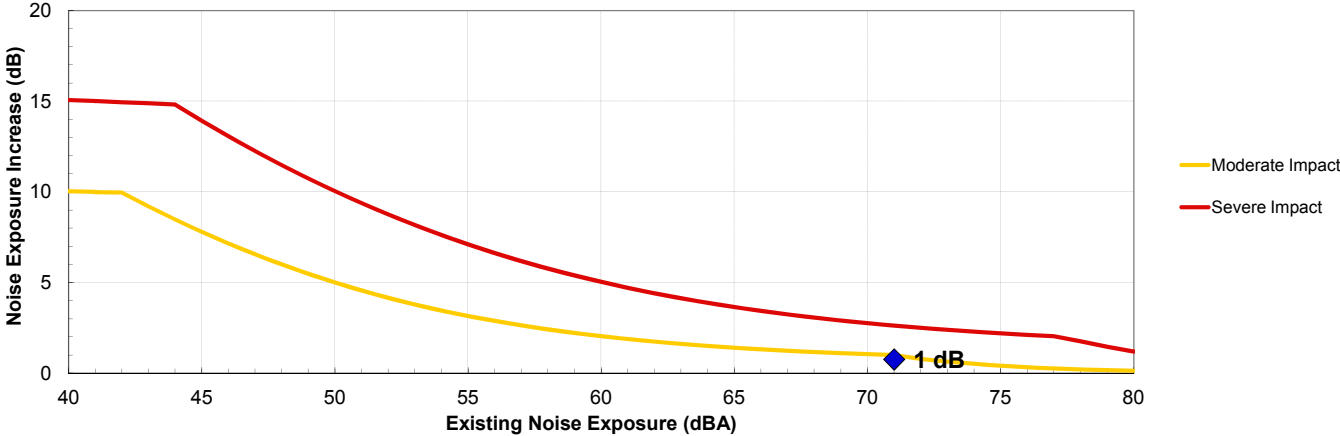
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	
65 dBA	70 dBA	
<b>65 dBA</b>	<b>70 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





**No Build Alternative**

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<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 1</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>70 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>4</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24

Nighttime hrs	Avg. Number of Transit Vehicles/train	4
	Speed (mph)	35
	Avg. Number of Events/hr	6
Distance	Distance from Source to Receiver (ft)	570
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Jointed Track?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 2
	Source Type:	Stationary Source
	Specific Source:	Crossing Signals
Daytime hrs	Signal Duration/hr (seconds)	400
Nighttime hrs	Signal Duration/hr (seconds)	120
Distance	Distance from Source to Receiver (ft)	720
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	No



Noise Source Parameters		Source 3
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
Daytime hrs	<b>Avg. Number of Buses/hr</b>	58
Nighttime hrs	<b>Avg. Number of Buses/hr</b>	24
Distance	<b>Distance from Source to Receiver (ft)</b>	1975
	<b>Number of Intervening Rows of Buildings</b>	1
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 4
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
Daytime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	8
Nighttime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	4
Distance	<b>Distance from Source to Receiver (ft)</b>	87
	<b>Number of Intervening Rows of Buildings</b>	
Adjustments	<b>Noise Barrier?</b>	No

### Project Results Summary

Existing Ldn:	70 dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

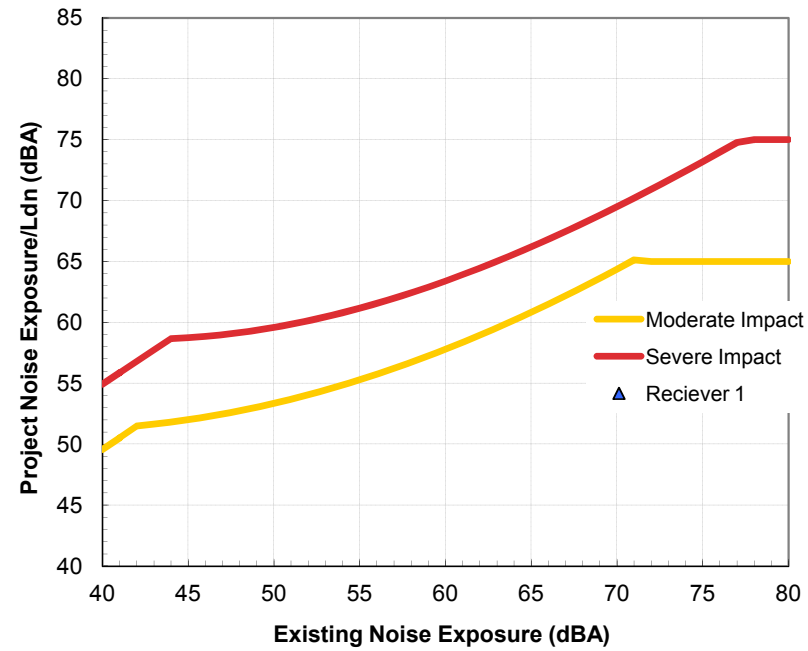
### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

### Source 1 Results

Leq(day):	47.3 dBA
Leq(night):	41.3 dBA
Ldn:	49.2 dBA

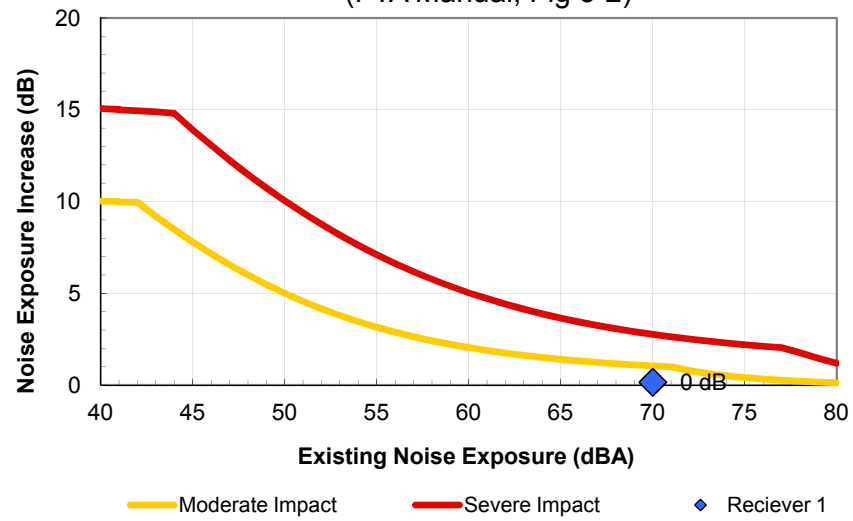
### Noise Impact Criteria (FTA Manual, Fig 3-1)



**Source 2 Results**

**Leq(day): 34.9 dBA**  
**Leq(night): 29.7 dBA**  
**Ldn: 37.3 dBA**  
**Incremental Ldn (Src 1-2): 49.5 dBA**

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Source 3 Results**

**Leq(day):** 30.1 dBA

**Leq(night):** 21.8 dBA

**Ldn:** 30.8 dBA

**Incremental Ldn (Src 1-3):** 49.5 dBA

**Source 4 Results**

**Leq(day):** 50.8 dBA

**Leq(night):** 47.8 dBA

**Ldn:** 54.8 dBA

**Incremental Ldn (Src 1-4):** 55.9 dBA

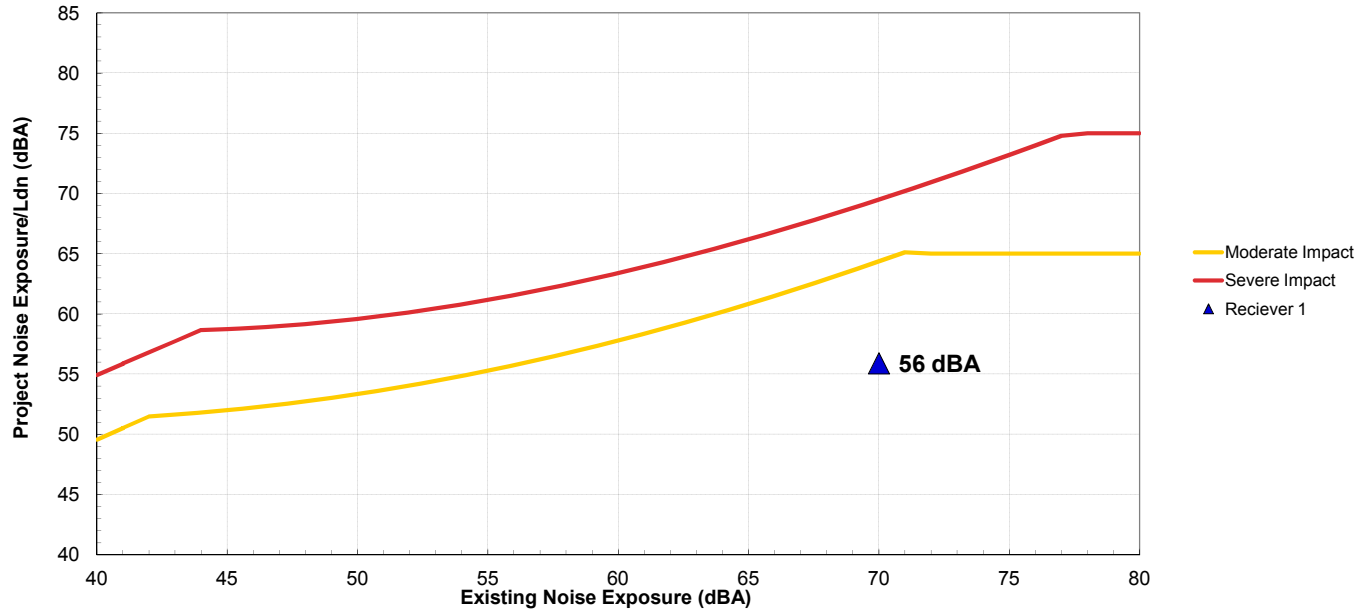
**Project:** Airport Metro Connector  
**Receiver:** Receiver 1

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	570 ft	49.2 dBA	70 dBA
2 Crossing Signals	720 ft	37.3 dBA	70 dBA
3 Bus Transit Center	1975 ft	30.8 dBA	70 dBA
4 Buses (hybrid)	87 ft	54.8 dBA	70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>56 dBA</b>	<b>70 dBA</b>

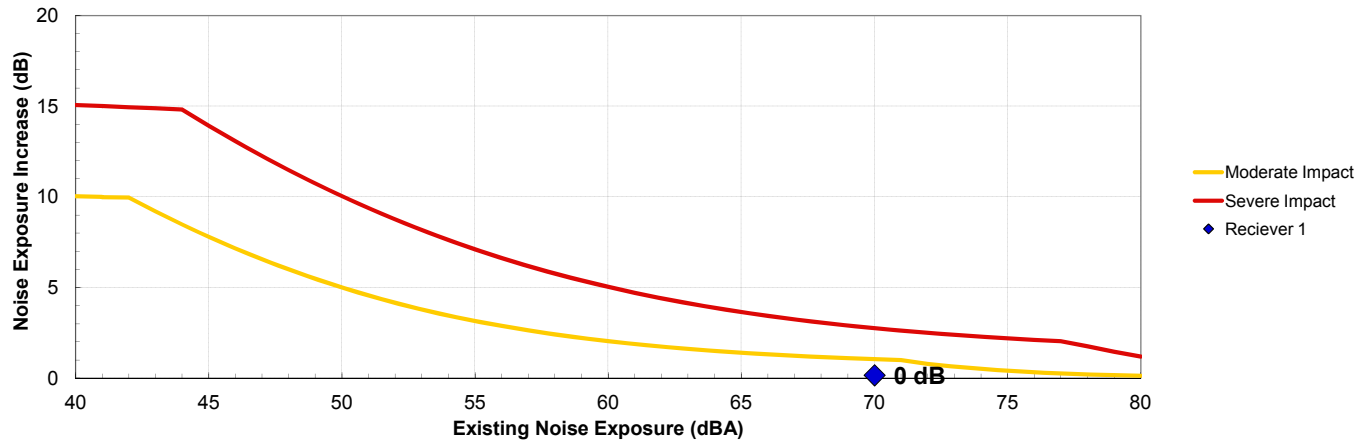
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



<b>Warning Signal Duration</b>	
Daytime	
Bell Duration (sec)	20
Trains/hr	20
Total Bell Time (sec)	400
Nighttime	
Bell Duration (sec)	20
Trains/hr	6
Total Bell Time (sec)	120

source: Crenshaw Final EIR/EIS Appendix H Technical Analyses Part 1, Warning Signal Noise

d1	64
d2	110
	87

<b>Metro Busline 111 Daytime/Nighttime Trips</b>	
<b>Daytime</b>	<b>Trips</b>
One Way Per Hour	4
Two Way Per Hour	8
<b>Nighttime</b>	<b>Trips</b>
One Way Per Hour	2
Two Way Per Hour	4



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	<b>Project:</b> Airport Metro Connector
--	---

<b>Receiver Parameters</b>	
	<b>Receiver:</b> Reciever 2
	<b>Land Use Category:</b> 2. Residential
	<b>Existing Noise (Measured or Generic Value):</b> 70 dBA

<b>Noise Source Parameters</b>	
	<b>Number of Noise Sources:</b> 4

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24

<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	440
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
<b>Daytime hrs</b>	<b>Signal Duration/hr (seconds)</b>	400
<b>Nighttime hrs</b>	<b>Signal Duration/hr (seconds)</b>	120
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	918
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 3
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
Daytime hrs	<b>Avg. Number of Buses/hr</b>	58
Nighttime hrs	<b>Avg. Number of Buses/hr</b>	24
Distance	<b>Distance from Source to Receiver (ft)</b>	1565
	<b>Number of Intervening Rows of Buildings</b>	1
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 4
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
Daytime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	8
Nighttime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	4
Distance	<b>Distance from Source to Receiver (ft)</b>	83
	<b>Number of Intervening Rows of Buildings</b>	
Adjustments	<b>Noise Barrier?</b>	No



### Project Results Summary

Existing Ldn:	70 dBA
Total Project Ldn:	57 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

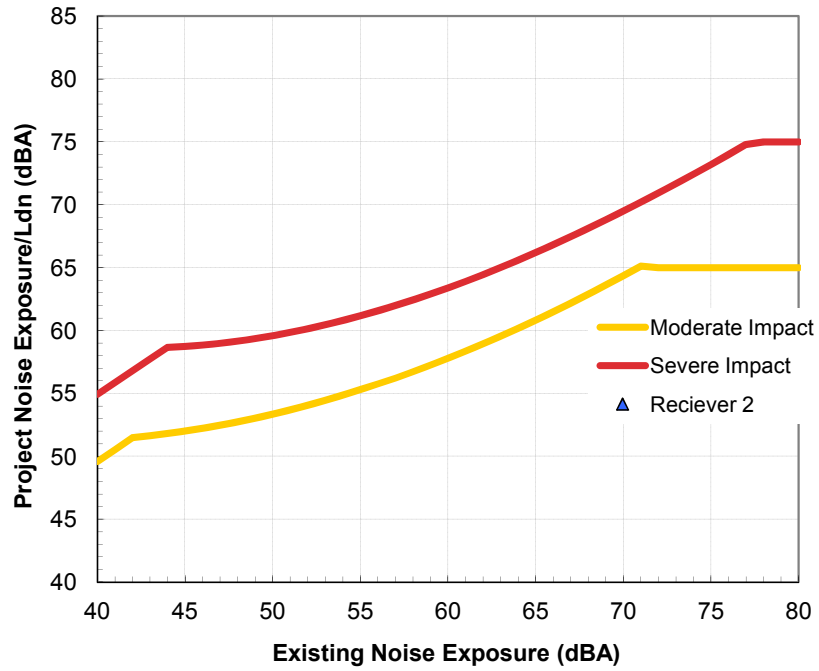
### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

### Source 1 Results

Leq(day):	49.0 dBA
Leq(night):	42.9 dBA
Ldn:	50.9 dBA

### Noise Impact Criteria (FTA Manual, Fig 3-1)



**Source 2 Results**

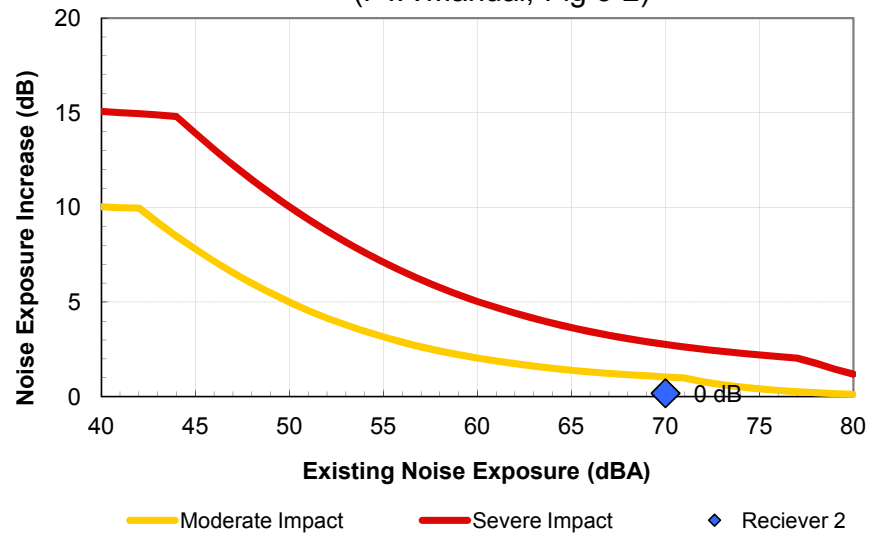
**Leq(day): 32.3 dBA**

**Leq(night): 27.0 dBA**

**Ldn: 34.7 dBA**

**Incremental Ldn (Src 1-2): 51.0 dBA**

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Source 3 Results**

**Leq(day):** 32.6 dBA

**Leq(night):** 24.3 dBA

**Ldn:** 33.3 dBA

**Incremental Ldn (Src 1-3):** 51.1 dBA

**Source 4 Results**

**Leq(day):** 51.1 dBA

**Leq(night):** 48.1 dBA

**Ldn:** 55.1 dBA

**Incremental Ldn (Src 1-4):** 56.5 dBA

**Project:** Airport Metro Connector  
**Receiver:** Receiver 2

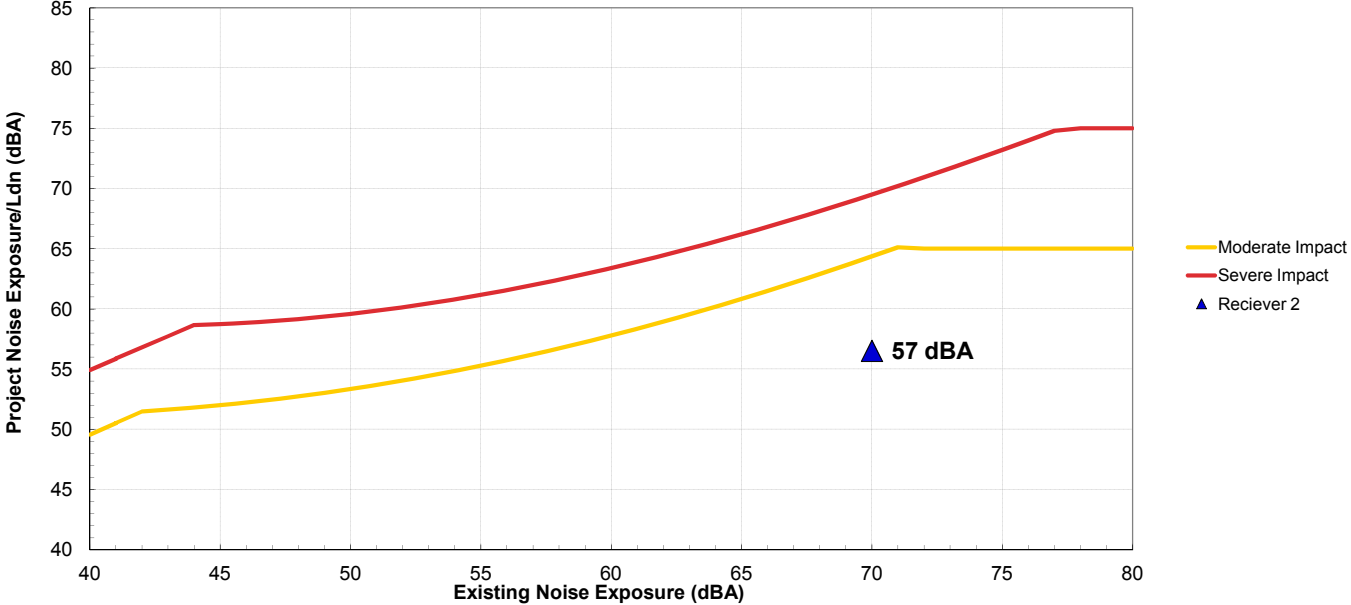
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	440 ft	50.9 dBA	70 dBA
2 Crossing Signals	918 ft	34.7 dBA	70 dBA
3 Bus Transit Center	1565 ft	33.3 dBA	70 dBA
4 Buses (hybrid)	83 ft	55.1 dBA	70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>57 dBA</b>	<b>70 dBA</b>



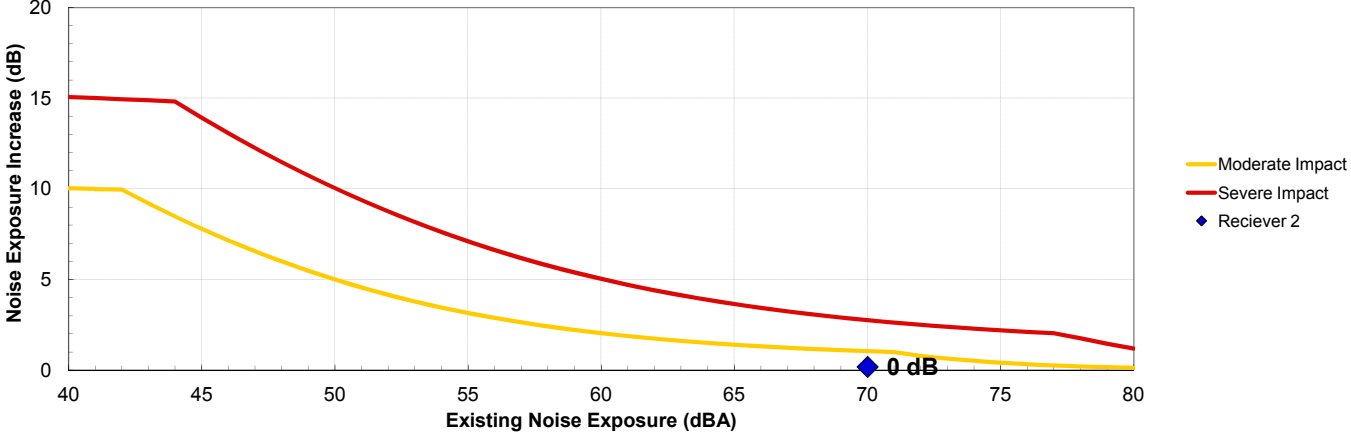
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





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	<b>Project:</b> Airport Metro Connector
--	---

<b>Receiver Parameters</b>	
<b>Receiver:</b>	Reciever 3
<b>Land Use Category:</b>	2. Residential
<b>Existing Noise (Measured or Generic Value):</b>	70 dBA

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	4

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	24

<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	35
	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	240
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	No

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
<b>Daytime hrs</b>	<b>Signal Duration/hr (seconds)</b>	400
<b>Nighttime hrs</b>	<b>Signal Duration/hr (seconds)</b>	120
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	1350
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 3
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
Daytime hrs	<b>Avg. Number of Buses/hr</b>	58
Nighttime hrs	<b>Avg. Number of Buses/hr</b>	24
Distance	<b>Distance from Source to Receiver (ft)</b>	1000
	<b>Number of Intervening Rows of Buildings</b>	1
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 4
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
Daytime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	8
Nighttime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	4
Distance	<b>Distance from Source to Receiver (ft)</b>	80
	<b>Number of Intervening Rows of Buildings</b>	
Adjustments	<b>Noise Barrier?</b>	No

### Project Results Summary

Existing Ldn:	70 dBA
Total Project Ldn:	58 dBA
Total Noise Exposure:	70 dBA
Increase:	0 dB
Impact?:	None

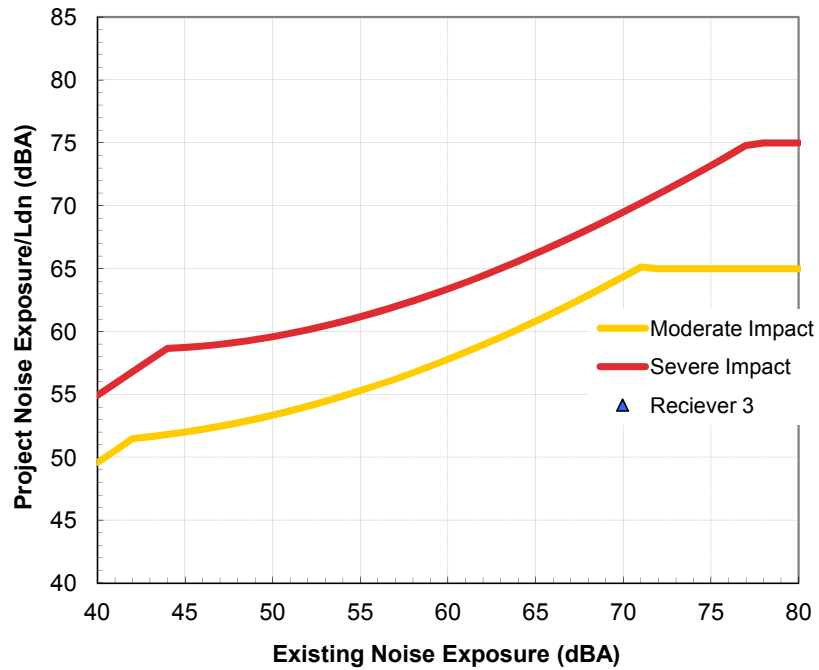
### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

### Source 1 Results

Leq(day):	52.9 dBA
Leq(night):	46.9 dBA
Ldn:	54.8 dBA

### Noise Impact Criteria (FTA Manual, Fig 3-1)



**Source 2 Results**

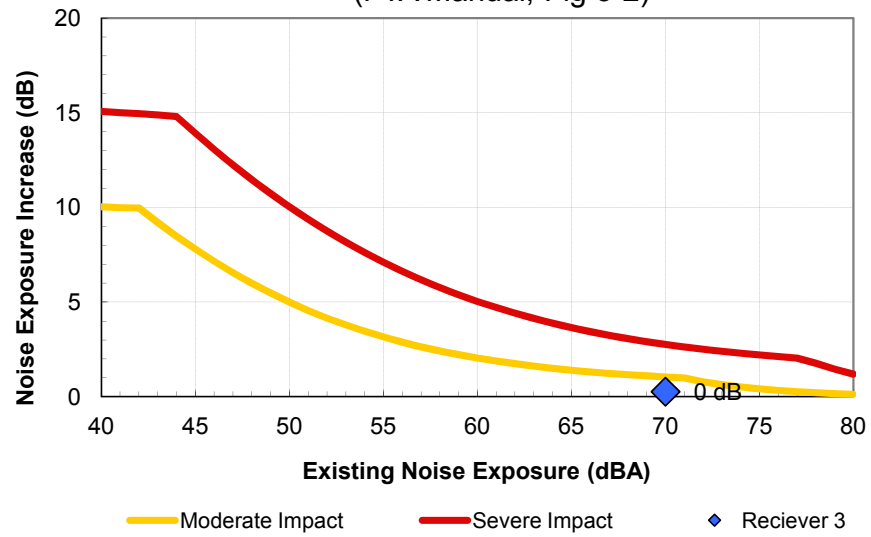
**Leq(day): 28.1 dBA**

**Leq(night): 22.8 dBA**

**Ldn: 30.5 dBA**

**Incremental Ldn (Src 1-2): 54.9 dBA**

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





**Source 3 Results****Leq(day): 37.5 dBA****Leq(night): 29.2 dBA****Ldn: 38.2 dBA****Incremental Ldn (Src 1-3): 55.0 dBA****Source 4 Results****Leq(day): 51.3 dBA****Leq(night): 48.3 dBA****Ldn: 55.3 dBA****Incremental Ldn (Src 1-4): 58.1 dBA**

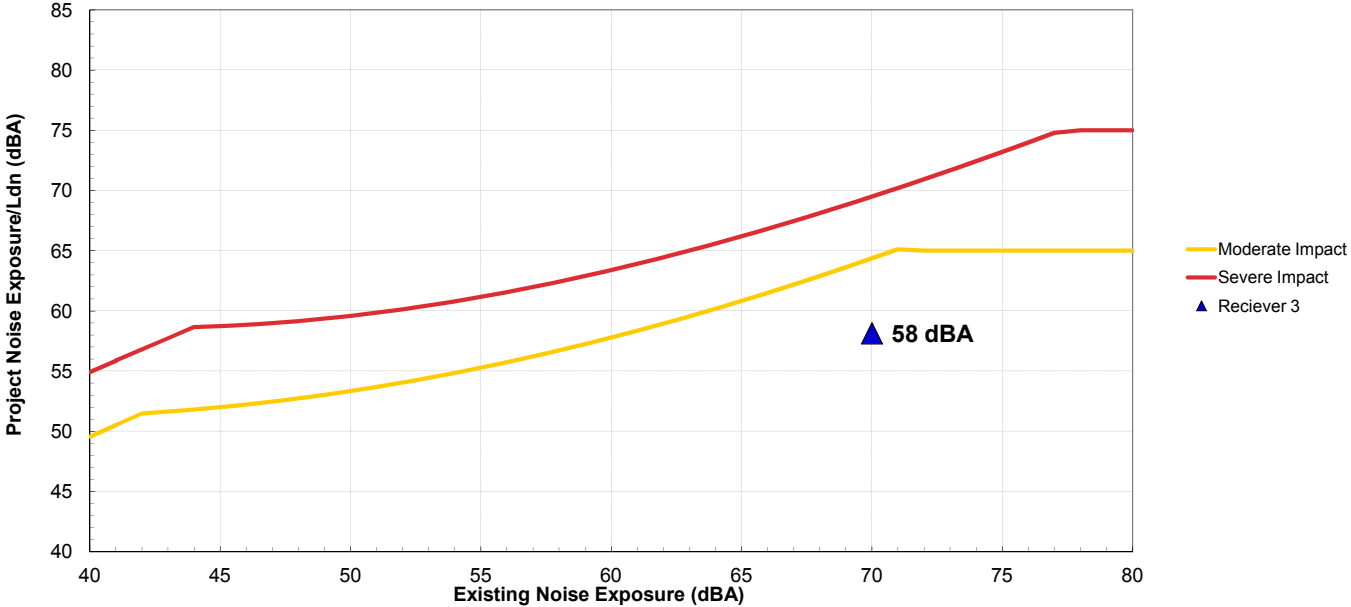
**Project:** Airport Metro Connector  
**Receiver:** Receiver 3

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	240 ft	54.8 dBA	70 dBA
2 Crossing Signals	1350 ft	30.5 dBA	70 dBA
3 Bus Transit Center	1000 ft	38.2 dBA	70 dBA
4 Buses (hybrid)	80 ft	55.3 dBA	70 dBA
5 --	ft		70 dBA
6 --	ft		70 dBA
<b>Combined Sources</b>		<b>58 dBA</b>	<b>70 dBA</b>

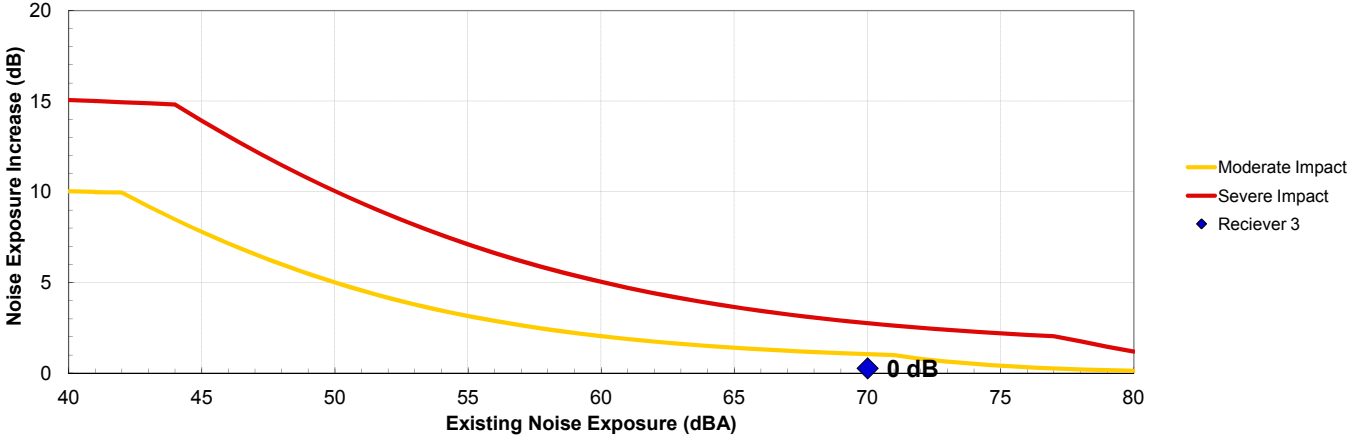
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	None
64 dBA	69 dBA	
64 dBA	69 dBA	
<b>64 dBA</b>	<b>69 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





<b>Project:</b>	<b>Airport Metro Connector</b>
-----------------	--------------------------------

<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 4 (Travelodge Hotel)</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>71 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>4</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24

Nighttime hrs	Avg. Number of Transit Vehicles/train	4
	Speed (mph)	20
	Avg. Number of Events/hr	6
Distance	Distance from Source to Receiver (ft)	123
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Jointed Track?	No
	Embedded Track?	No
	Aerial Structure?	Yes

Noise Source Parameters		Source 2
	Source Type:	Stationary Source
	Specific Source:	Crossing Signals
Daytime hrs	Signal Duration/hr (seconds)	400
Nighttime hrs	Signal Duration/hr (seconds)	120
Distance	Distance from Source to Receiver (ft)	1900
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No

Noise Source Parameters		Source 3
	Source Type:	Stationary Source
	Specific Source:	Bus Transit Center
Daytime hrs	Avg. Number of Buses/hr	58
Nighttime hrs	Avg. Number of Buses/hr	24
Distance	Distance from Source to Receiver (ft)	500
	Number of Intervening Rows of Buildings	1
Adjustments	Noise Barrier?	No

Noise Source Parameters		Source 4
	Source Type:	Highway/Transit
	Specific Source:	Buses (hybrid)
Daytime hrs	Speed (mph)	20
	Avg. Number of Events/hr	8
Nighttime hrs	Speed (mph)	20
	Avg. Number of Events/hr	4
Distance	Distance from Source to Receiver (ft)	31
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	No

**Project Results Summary**

Existing Ldn:	71 dBA
Total Project Ldn:	60 dBA
Total Noise Exposure:	71 dBA
Increase:	0 dB
Impact?:	None

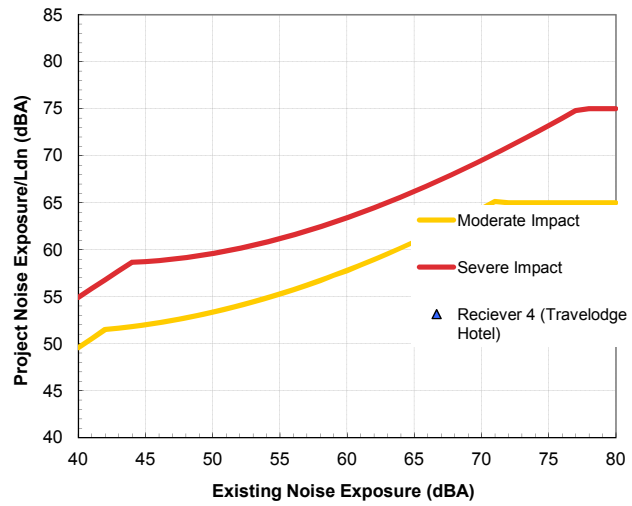
**Distance to Impact Contours**

Dist to Mod. Impact Contour:	----
Dist to Sev. Impact Contour:	----

**Source 1 Results**

Leq(day):	56.4 dBA
Leq(night):	50.4 dBA
Ldn:	58.3 dBA

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)

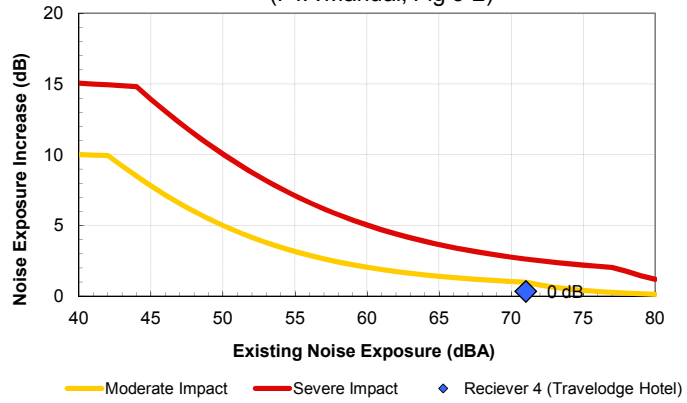




**Source 2 Results**

Leq(day): 24.4 dBA  
Leq(night): 19.1 dBA  
Ldn: 26.8 dBA  
Incremental Ldn (Src 1-2): 58.3 dBA

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Source 3 Results**

Leq(day): 45.0 dBA  
Leq(night): 36.7 dBA  
Ldn: 45.7 dBA  
Incremental Ldn (Src 1-3): 58.6 dBA

**Source 4 Results**

Leq(day): 51.2 dBA  
Leq(night): 48.2 dBA  
Ldn: 55.2 dBA  
Incremental Ldn (Src 1-4): 60.2 dBA

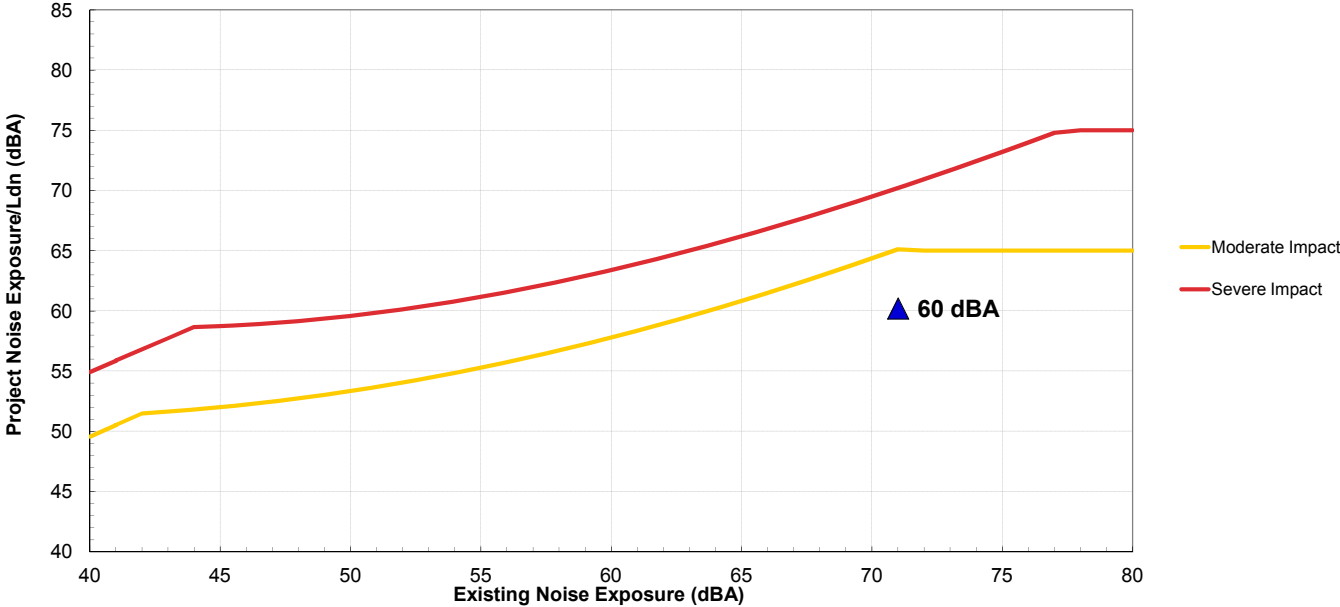
**Project:** Airport Metro Connector  
**Receiver:** Receiver 4 (Travelodge Hotel)

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	123 ft	58.3 dBA	71 dBA
2 Crossing Signals	1900 ft	26.8 dBA	71 dBA
3 Bus Transit Center	500 ft	45.7 dBA	71 dBA
4 Buses (hybrid)	31 ft	55.2 dBA	71 dBA
5 --	ft		71 dBA
6 --	ft		71 dBA
<b>Combined Sources</b>		<b>60 dBA</b>	<b>71 dBA</b>

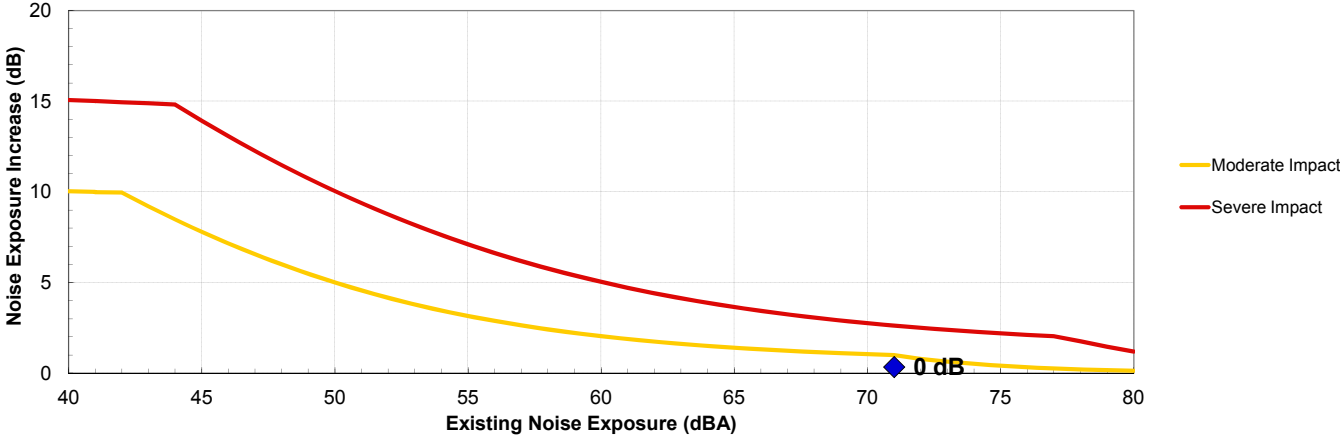
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	
65 dBA	70 dBA	
<b>65 dBA</b>	<b>70 dBA</b>	<b>None</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





# Cumulative Build

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	<b>Project:</b> Airport Metro Connector
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<b>Receiver Parameters</b>	
	<b>Receiver:</b> Reciever 4 (Travelodge Hotel)
	<b>Land Use Category:</b> 2. Residential
	<b>Existing Noise (Measured or Generic Value):</b> 71 dBA

<b>Noise Source Parameters</b>	
	<b>Number of Noise Sources:</b> 6

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24

<b>Nighttime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	6
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	123
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No
	<b>Jointed Track?</b>	No
	<b>Embedded Track?</b>	No
	<b>Aerial Structure?</b>	Yes

<b>Noise Source Parameters</b>		<b>Source 2</b>
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Bus Transit Center
<b>Daytime hrs</b>	<b>Avg. Number of Buses/hr</b>	58
<b>Nighttime hrs</b>	<b>Avg. Number of Buses/hr</b>	24
<b>Distance</b>	<b>Distance from Source to Receiver (ft)</b>	1280
	<b>Number of Intervening Rows of Buildings</b>	0
<b>Adjustments</b>	<b>Noise Barrier?</b>	No



Noise Source Parameters		Source 3
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
Daytime hrs	<b>Speed</b>	20
	<b>Avg. Number of Events/hr</b>	49
Nighttime hrs	<b>Speed</b>	20
	<b>Avg. Number of Events/hr</b>	20
Distance	<b>Distance from Source to Receiver (ft)</b>	31
	<b>Number of Intervening Rows of Buildings</b>	0
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 4
	<b>Source Type:</b>	Stationary Source
	<b>Specific Source:</b>	Crossing Signals
Daytime hrs	<b>Signal Duration/hr (seconds)</b>	400
Nighttime hrs	<b>Signal Duration/hr (seconds)</b>	120
Distance	<b>Distance from Source to Receiver (ft)</b>	1900
	<b>Number of Intervening Rows of Buildings</b>	1
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 5
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Automated Guideway Transit /Steel Wheel
Daytime hrs	<b>Avg. Number of vehicles/train</b>	5
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	30
Nighttime hrs	<b>Avg. Number of vehicles/train</b>	5
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	9
Distance	<b>Distance from Source to Receiver (ft)</b>	820
	<b>Number of Intervening Rows of Buildings</b>	0
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 6
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Automobiles and Vans
Daytime hrs	<b>Speed</b>	40
	<b>Avg. Number of Events/hr</b>	399
Nighttime hrs	<b>Speed</b>	40
	<b>Avg. Number of Events/hr</b>	163
Distance	<b>Distance from Source to Receiver (ft)</b>	31
	<b>Number of Intervening Rows of Buildings</b>	
Adjustments	<b>Noise Barrier?</b>	No

### Project Results Summary

Existing Ldn:	71 dBA
Total Project Ldn:	66 dBA
Total Noise Exposure:	72 dBA
Increase:	1 dB
Impact?:	Moderate

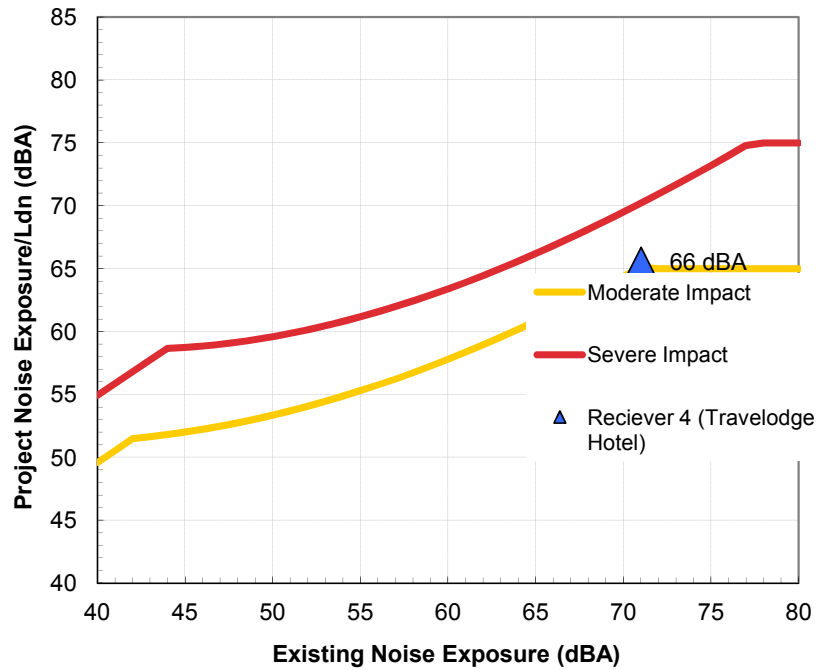
### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

### Source 1 Results

Leq(day):	56.4 dBA
Leq(night):	50.4 dBA
Ldn:	58.3 dBA

### Noise Impact Criteria (FTA Manual, Fig 3-1)



**Source 2 Results**

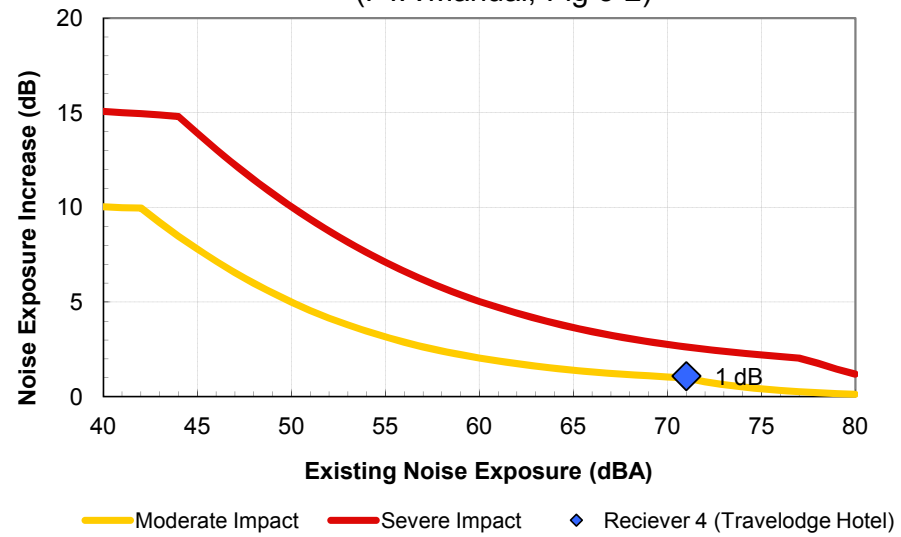
**Leq(day): 34.8 dBA**

**Leq(night): 31.0 dBA**

**Ldn: 38.2 dBA**

**Incremental Ldn (Src 1-2): 58.4 dBA**

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Source 3 Results**

**Leq(day):** 59.1 dBA

**Leq(night):** 55.2 dBA

**Ldn:** 62.4 dBA

**Incremental Ldn (Src 1-3):** 63.8 dBA

**Source 4 Results**

**Leq(day):** 24.4 dBA

**Leq(night):** 14.6 dBA

**Ldn:** 24.5 dBA

**Incremental Ldn (Src 1-4):** 63.8 dBA

**Source 5 Results**

**Leq(day): 38.0 dBA**

**Leq(night): 32.8 dBA**

**Ldn: 40.4 dBA**

**Incremental Ldn (Src 1-5): 63.9 dBA**

**Source 6 Results**

**Leq(day): 64.6 dBA**

**Leq(night): 60.7 dBA**

**Ldn: 68.0 dBA**

**Incremental Ldn (Src 1-6): 69.4 dBA**

**Project:** Airport Metro Connector  
**Receiver:** Receiver 4 (Travelodge Hotel)

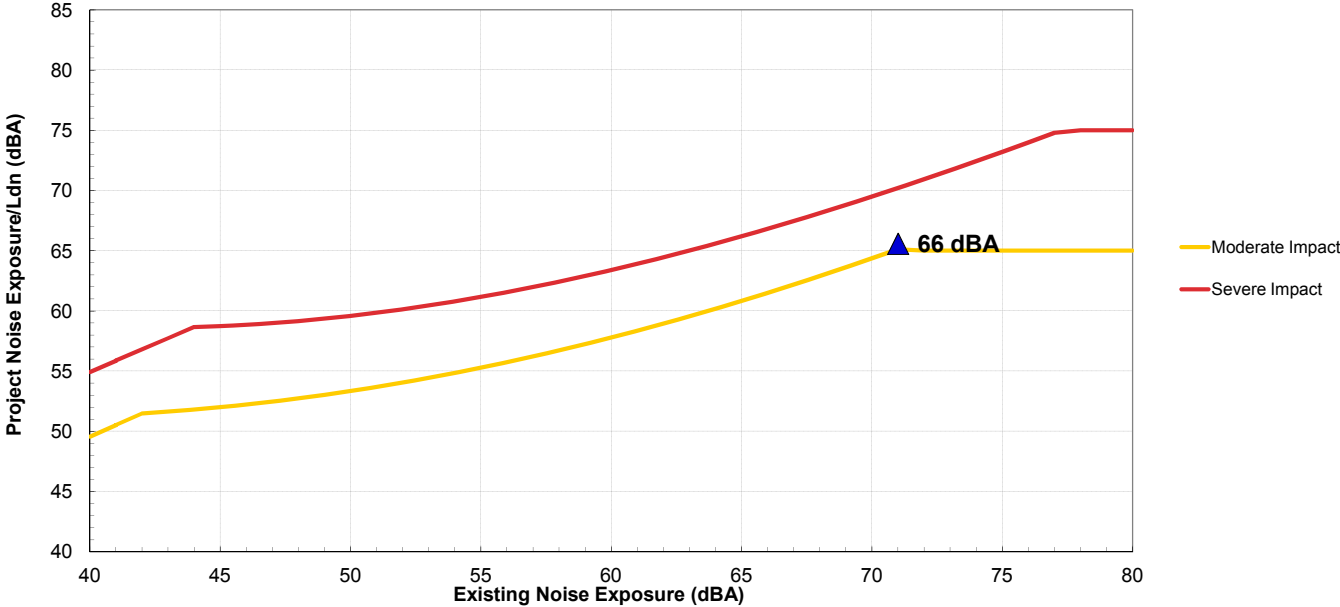
<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	123 ft	58.3 dBA	71 dBA
2 Bus Transit Center	1280 ft	38.2 dBA	71 dBA
3 Buses (hybrid)	31 ft	62.4 dBA	71 dBA
4 Crossing Signals	1900 ft	24.5 dBA	71 dBA
5 Automated Guideway Transi	820 ft	40.4 dBA	71 dBA
6 Automobiles and Vans	31 ft	68.0 dBA	71 dBA
<b>Combined Sources</b>		<b>66 dBA</b>	<b>71 dBA</b>

**Noise Criteria**

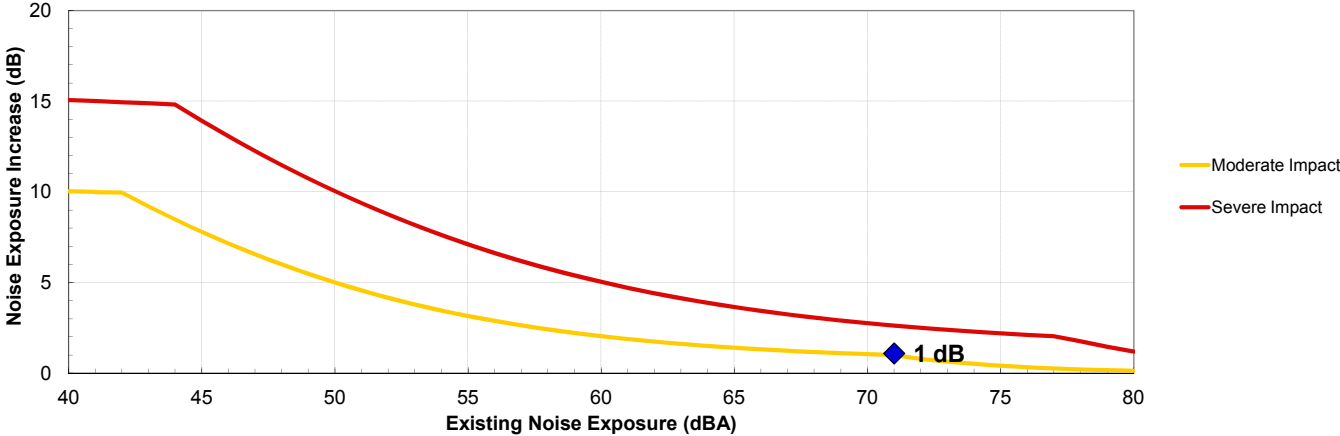
<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	Moderate Impact
<b>65 dBA</b>	<b>70 dBA</b>	<b>Moderate Impact</b>



**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)





### Existing Mobile Trips Calculation

Am North	856
Am South	631
<b>Average Am</b>	<b>743.5</b>
Pm North	732
Pm South	858
<b>Average Pm</b>	<b>795</b>
Average	769
<b>Daytime</b>	<b>546</b>
<b>Nighttime</b>	<b>223</b>

### Cumulative vs Existing Mobile Trips

Daytime (Cumulative - existing)	399
Nighttime (Cumulative - existing)	163

Cumulative No Build

Federal Transit Administration  
 Noise Impact Assessment Spreadsheet  
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 version: 7/3/2007

<b>Project:</b>	<b>Airport Metro Connector</b>
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<b>Receiver Parameters</b>	
<b>Receiver:</b>	<b>Receiver 4 (Travelodge Hotel)</b>
<b>Land Use Category:</b>	<b>2. Residential</b>
<b>Existing Noise (Measured or Generic Value):</b>	<b>71 dBA</b>

<b>Noise Source Parameters</b>	
<b>Number of Noise Sources:</b>	<b>6</b>

<b>Noise Source Parameters</b>		<b>Source 1</b>
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Rail Transit Vehicle
<b>Daytime hrs</b>	<b>Avg. Number of Transit Vehicles/train</b>	4
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	24

Nighttime hrs	Avg. Number of Transit Vehicles/train	4
	Speed (mph)	20
	Avg. Number of Events/hr	6
Distance	Distance from Source to Receiver (ft)	123
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Jointed Track?	No
	Embedded Track?	No
	Aerial Structure?	Yes

Noise Source Parameters		Source 2
	Source Type:	Stationary Source
	Specific Source:	Parking Garage
Daytime hrs	Avg. Number of Autos/hr	270
Nighttime hrs	Avg. Number of Autos/hr	110
Distance	Distance from Source to Receiver (ft)	260
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No

Noise Source Parameters		Source 3
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Buses (hybrid)
Daytime hrs		
	<b>Speed</b>	20
	<b>Avg. Number of Events/hr</b>	8
Nighttime hrs		
	<b>Speed</b>	20
	<b>Avg. Number of Events/hr</b>	4
Distance	<b>Distance from Source to Receiver (ft)</b>	31
	<b>Number of Intervening Rows of Buildings</b>	0
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 4
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Automobiles and Vans
Daytime hrs		
	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	390
Nighttime hrs		
	<b>Speed (mph)</b>	20
	<b>Avg. Number of Events/hr</b>	159
Distance	<b>Distance from Source to Receiver (ft)</b>	31
	<b>Number of Intervening Rows of Buildings</b>	
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 5
	<b>Source Type:</b>	Highway/Transit
	<b>Specific Source:</b>	Automobiles and Vans
Daytime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	270
Nighttime hrs	<b>Speed (mph)</b>	40
	<b>Avg. Number of Events/hr</b>	110
Distance	<b>Distance from Source to Receiver (ft)</b>	170
	<b>Number of Intervening Rows of Buildings</b>	0
Adjustments	<b>Noise Barrier?</b>	No

Noise Source Parameters		Source 6
	<b>Source Type:</b>	Fixed Guideway
	<b>Specific Source:</b>	Automated Guideway Transit /Steel Wheel
Daytime hrs	<b>Avg. Number of vehicles/train</b>	5
	<b>Speed</b>	20
	<b>Avg. Number of Events/hr</b>	30
Nighttime hrs	<b>Avg. Number of vehicles/train</b>	5
	<b>Speed</b>	20
	<b>Avg. Number of Events/hr</b>	9
Distance	<b>Distance from Source to Receiver (ft)</b>	820
	<b>Number of Intervening Rows of Buildings</b>	0
Adjustments	<b>Noise Barrier?</b>	No



### Noise Impact Criteria (FTA Manual, Fig 3-1)

#### Project Results Summary

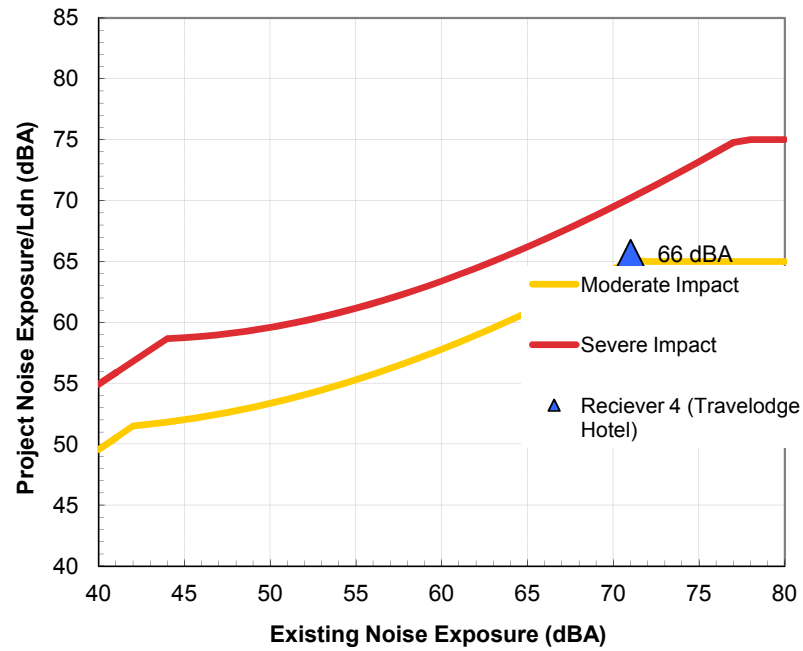
Existing Ldn:	71 dBA
Total Project Ldn:	66 dBA
Total Noise Exposure:	72 dBA
Increase:	1 dB
Impact?:	<b>Moderate</b>

#### Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

#### Source 1 Results

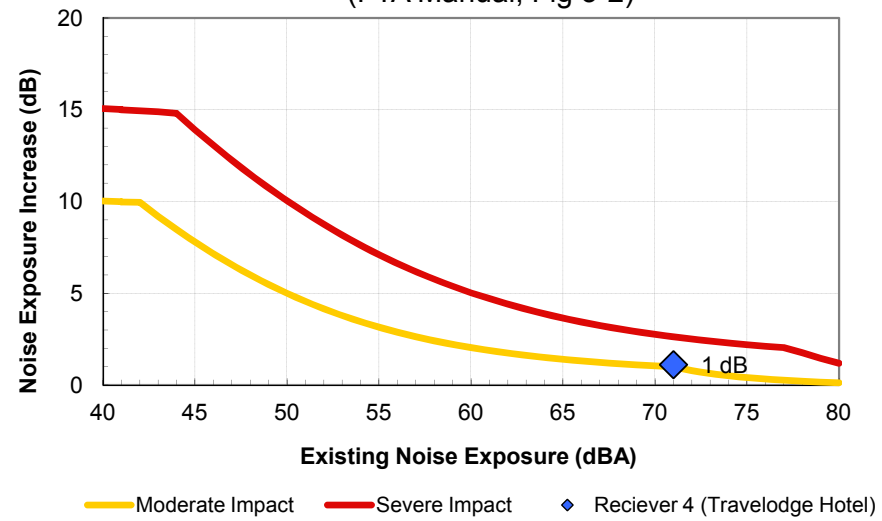
Leq(day):	56.4 dBA
Leq(night):	50.4 dBA
Ldn:	58.3 dBA



**Source 2 Results**

Leq(day): 41.8 dBA  
Leq(night): 37.9 dBA  
Ldn: 45.1 dBA  
Incremental Ldn (Src 1-2): 58.5 dBA

**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



**Source 3 Results**

Leq(day): 51.2 dBA

Leq(night): 48.2 dBA

Ldn: 55.2 dBA

Incremental Ldn (Src 1-3): 60.2 dBA

**Source 4 Results**

Leq(day): 64.5 dBA

Leq(night): 51.6 dBA

Ldn: 63.6 dBA

Incremental Ldn (Src 1-4): 65.3 dBA

**Source 5 Results**

Leq(day): 51.8 dBA

Leq(night): 47.9 dBA

Ldn: 55.2 dBA

Incremental Ldn (Src 1-5): 65.7 dBA

**Source 6 Results**

Leq(day): 38.0 dBA

Leq(night): 32.8 dBA

Ldn: 40.4 dBA

Incremental Ldn (Src 1-6): 65.7 dBA

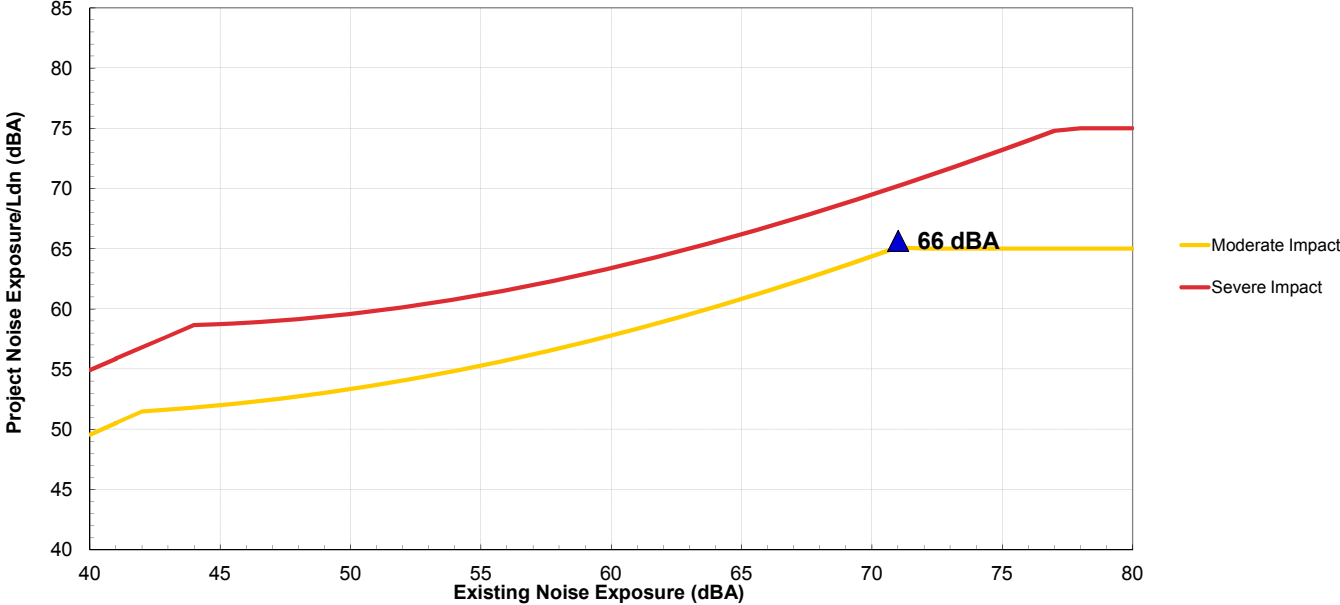
**Project:** Airport Metro Connector  
**Receiver:** Receiver 4 (Travelodge Hotel)

<b>Source</b>	<b>Distance</b>	<b>Project Ldn</b>	<b>Existing Ldn</b>
1 Rail Transit Vehicle	123 ft	58.3 dBA	71 dBA
2 Parking Garage	260 ft	45.1 dBA	71 dBA
3 Buses (hybrid)	31 ft	55.2 dBA	71 dBA
4 Automobiles and Vans	31 ft	63.6 dBA	71 dBA
5 Automobiles and Vans	170 ft	55.2 dBA	71 dBA
6 Automated Guideway Transi	820 ft	40.4 dBA	71 dBA
<b>Combined Sources</b>		<b>66 dBA</b>	<b>71 dBA</b>

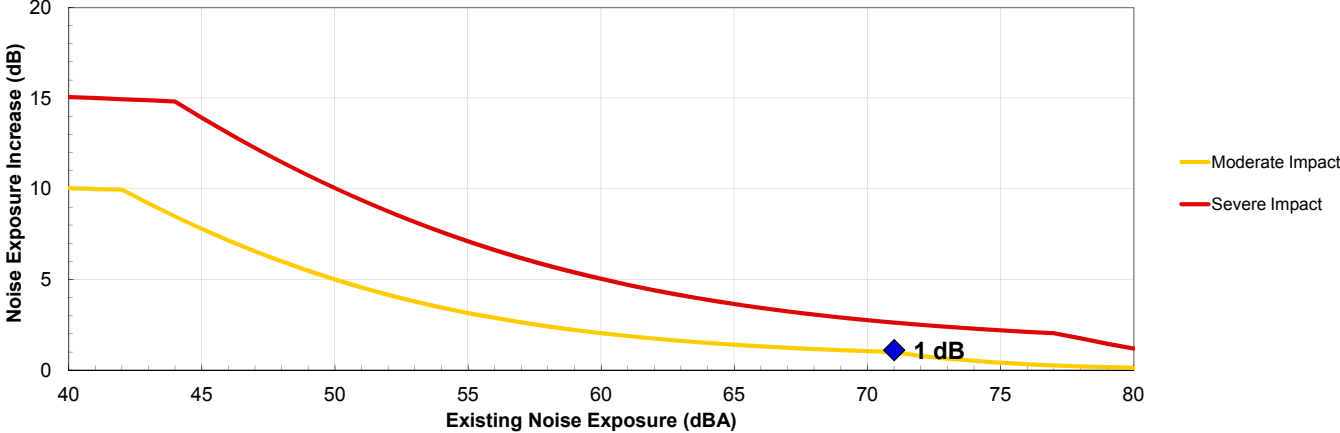
**Noise Criteria**

<b>Mod. Impact</b>	<b>Sev. Impact</b>	<b>Impact?</b>
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
65 dBA	70 dBA	None
<b>65 dBA</b>	<b>70 dBA</b>	<b>Moderate Impact</b>

**Noise Impact Criteria**  
(FTA Manual, Fig 3-1)



**Increase in Cumulative Noise Levels Allowed**  
(FTA Manual, Fig 3-2)



<b>Warning Signal Duration</b>	
Daytime	
Bell Duration (sec)	20
Trains/hr	20
Total Bell Time (sec)	400
Nighttime	
Bell Duration (sec)	20
Trains/hr	6
Total Bell Time (sec)	120

Train Headway

Time (Min)  
5

source: Crenshaw Final EIR/EIS Appendix H Technical Analyses Part 1, Warning Signal Noise

Mobile Source Average Distance	
D1	7
D2	56
Average	31.5

<b>Metro Busline 111 Daytime/Nighttime Trips</b>	
<b>Daytime</b>	<b>Trips</b>
One Way Per Hour	4
Two Way Per Hour	8
<b>Nighttime</b>	<b>Trips</b>
One Way Per Hour	2
Two Way Per Hour	4

**98th St Cumulative Mobile Trips Calculation**

Am West	570
Am East	635
<b>Average AM</b>	<b>602.5</b>
Pm West	637
Pm East	759
<b>Average PM</b>	<b>698</b>
Average	650
<b>Daytime</b>	<b>462</b>
<b>Nighttime</b>	<b>189</b>

**Aviation Blvd Cumulative Mobile Trips Calculation**

Am North	1396
Am South	1096
<b>Average AM</b>	<b>1246</b>
Pm North	1392
Pm South	1391
<b>Average PM</b>	<b>1391.5</b>
Average	1318.75
<b>Daytime</b>	<b>936.3125</b>
<b>Nighttime</b>	<b>382.4375</b>



### Existing Mobile Trips Calculation

Am West	151
Am East	299
<b>Average Am</b>	<b>225</b>
Pm West	308
Pm East	320
<b>Average Pm</b>	<b>314</b>
Average	270
<b>Daytime</b>	<b>191</b>
<b>Nighttime</b>	<b>78</b>

### Cumulative vs Existing Mobile Trips

Daytime (Cumulative - existing)	270
Nighttime (Cumulative - existing)	110

### Existing Mobile Trips Calculation

Am North	856
Am South	631
<b>Average Am</b>	<b>743.5</b>
Pm North	732
Pm South	858
<b>Average Pm</b>	<b>795</b>
Average	769
<b>Daytime</b>	<b>546</b>
<b>Nighttime</b>	<b>223</b>

### Cumulative vs Existing Mobile Trips

Daytime (Cumulative - existing)	390
Nighttime (Cumulative - existing)	159

# LAMP + Cumulative Build Noise

## Adding Noise Sources

### Summation Formula

$$N_s = 10 \times \text{LOG}_{10}((10^{(N_1/10)}) + (10^{(N_2/10)}) + (10^{(N_3/10)}) + (10^{(N_4/10)}))$$

where;

N<sub>s</sub>= summation of noise levels

N<sub>1</sub>= noise level 1= 66 dBA

N<sub>2</sub>= noise level 2= 45.1 dBA

N<sub>3</sub>= noise level 3= 55.2 dBA

N<sub>4</sub>= noise level 4= 0 dBA

N<sub>s</sub>= **66.4 dBA**

Project + APM and Aviation Blvd Increased Mobile Traffic

ETIF Parking Garage

98th Street Mobile Traffic Noise

Source: "*Technical Noise Supplement*". CalTrans, 2009.