



# Audible Noise Calculator

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# Audible Noise Calculator

- **Sections/Electric/Audible Noise Calculator...**
- Audible Noise typically occurs during foul/wet weather (rain/fog)
- Water on conductors produce large number of corona discharges which generates noise.
- Two types of noise: Broadband (high frequency) noise and hum (pure tone frequency twice the power frequency).
  - PLS-CADD only calculates the broadband noise
- **L5 Noise Level**
  - Noise Level exceeded for 5% of time during Heavy Rain
- **L50 Noise Level**
  - Noise Level exceeded for 50% of time during measurable natural rain ("wet conductor")



# Audible Noise Calculator Setup

- **Configure calculation settings just like 3D EMF**
- **Two calculation methods available:**
  - EPRI
  - BPA
- **Rain Rate Adjustments**
  - Adjusts for regional rain rate
  - EPRI calculation only, not necessary for BPA
- **Calculation Line options:**
  - Mid-span
  - Low point for all wires
  - Max noise along center line
  - At each structure
- **Noise Limits**
  - L5 and L50 in dBA will show NG when exceeded
- **Reports/Output**
  - Summary of max audible noise
  - Detailed table and graph of each calculation line
  - Markers shown in Plan/Profile/3D views

**Audible Noise Configuration**

All wires to be evaluated, including conductor and ground, must have a circuit label and phase label assigned and have a ground TIN beneath them to determine height above ground. Select both structures for each span to process.

Cable temperature and position is based on the currently displayed weather cases.  
Note that the wind direction of 'Both' is not supported by this command, and will be evaluated as wind from left.

Select structures to determine which spans are evaluated.

Substation  
Tap  
1  
2  
3  
4  
Dist  
Dist  
5  
6  
7  
8  
9  
10

Calculation Settings

Meter height (m) 1.00  
Max wire distance (m) 150  
Max segment size (m) 3.0  
Cross section width (m) 27.1  
Point interval (m) 1  
Overvoltage percent 0

Calculation Method

EPRI  
 BPA

Regional Rain Rate

L5 (mm/hr) 6.50  
L50 (mm/hr) 0.75

Noise Limits

L5 (dBA) 55.00 L50 (dBA) 45.00

Calculations Performed At

Mid-span (half the distance to the next structure)  
 Low point for all wires  
 Max noise along center line  
 At each structure

Select All Select None

Structures: Substation - 10

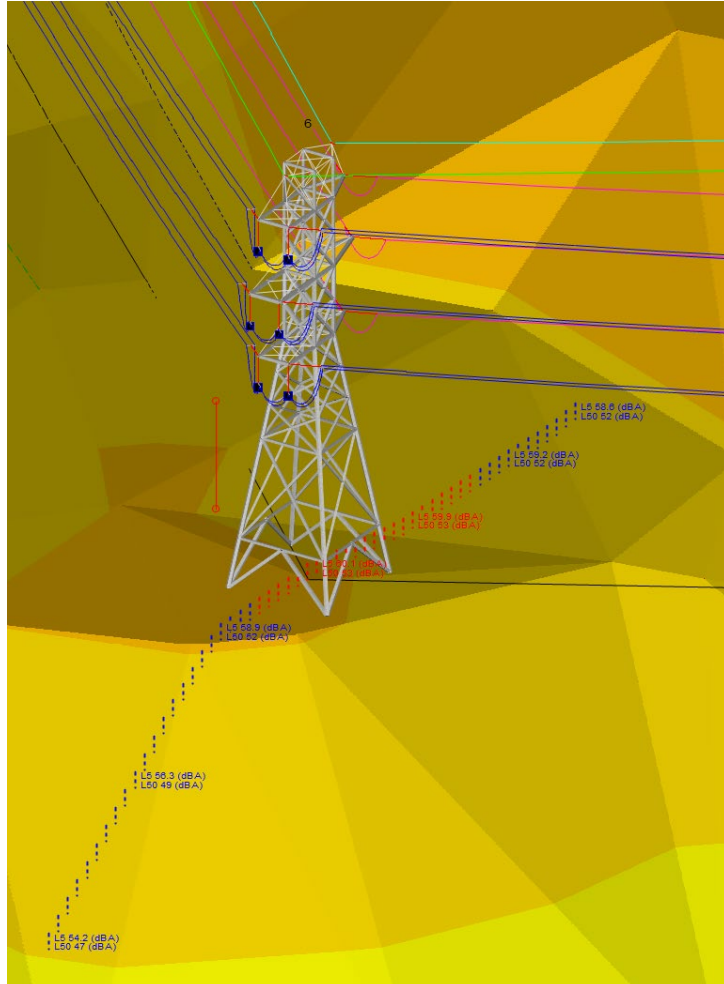
Audible Noise Options

Draw markers Line interval (m) 1.00 Label interval (m) 10.00 Color [Blue]

Hide TINs Calculate Cancel

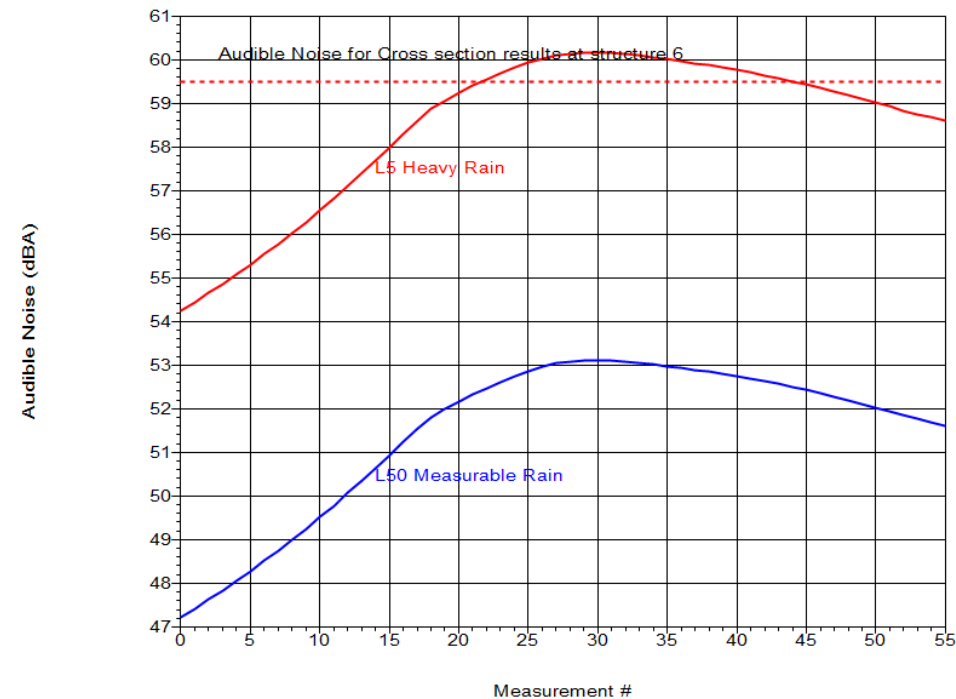
# Audible Noise Calculator Results

Markers visually show the calculation line with values at specified intervals. Red NG for values that exceed specified Noise Limits. Markers are drawn from the Ground TIN to the specified Meter Height.



Report includes graphs at each span/structure

Cross section results at structure 6



Dotted red line indicates L5 noise limit setting.  
Dotted blue line indicates L50 noise limit setting.  
No dotted line indicates no noise limit set.

# Audible Noise Calculator Reports

Summary table of all calculated spans/structures with the Max L5 noise level and associated L50 noise level

Audible Noise Measurement Summary:

Span#	Back Structure	Ahead Structure	Measurement					-Audible Noise-		L5 (dBA)	L50 (dBA)	
			X (m)	Y (m)	Z (m)	Station (m)	Offset (m)	Max L5 (dBA)	L50 (dBA)			
1	Substation		23.4	-0.9	457.8	23.4	0.9	52.5	45.2			
1		1	244.4	-6.9	458.1	244.4	6.9	56.4	49.4			
2		2	511.3	-5.9	449.7	511.3	5.9	57.5	50.4			
3		3	738.6	-13.4	437.2	765.3	13.4	58.6	51.5			
4		4	748.1	-266.0	430.3	1018.0	3.9	58.2	51.2			
5		5	758.1	-494.3	430.8	1246.2	-6.1	58.5	51.5			
6		6	754.0	-725.8	434.6	1481.9	-2.1	60.2	53.1	L5 exceeds limit	NG	
7	Dist		763.6	-342.6	430.1	1094.5	-11.6	57.9	50.9			
7		Dist	739.2	-419.6	427.1	1171.6	12.8	58.5	51.6			
8		7	1038.8	-725.8	413.6	1766.7	-2.1	57.9	50.9			
9		8	1431.4	-733.8	394.7	2159.3	5.9	56.6	49.5			
10		9	1719.0	-732.8	394.6	2446.9	4.9	55.6	48.0			
11		10	2049.1	-731.8	394.2	2777.0	3.9	55.4	49.0			
12	Tap		127.8	-2.9	464.0	127.8	2.9	59.0	51.9			

Measurement table per span/structure

Audible Noise Measurement Results At Structure 6:

Measurement						-Audible Noise-	
X (m)	Y (m)	Z (m)	Station (m)	Offset (m)	L5 (dBA)	L50 (dBA)	
732.8	-747.0	423.1	1479.8	27.1	54.2	47.2	
733.5	-746.3	423.8	1479.8	26.1	54.4	47.4	
734.2	-745.6	424.5	1479.8	25.1	54.6	47.6	
734.9	-744.9	425.3	1479.8	24.1	54.9	47.8	
735.6	-744.2	426.0	1479.8	23.1	55.1	48.1	
736.3	-743.5	426.7	1479.8	22.1	55.3	48.3	
737.0	-742.8	427.4	1479.8	21.1	55.5	48.5	
737.7	-742.1	428.1	1479.8	20.1	55.8	48.8	
738.5	-741.4	428.8	1479.8	19.1	56.0	49.0	
739.2	-740.7	429.5	1479.8	18.1	56.3	49.3	
739.9	-740.0	430.2	1479.8	17.1	56.6	49.5	
740.6	-739.2	430.9	1479.8	16.1	56.8	49.8	
741.3	-738.5	431.6	1479.8	15.1	57.1	50.1	
742.0	-737.8	432.3	1479.8	14.1	57.4	50.4	
742.7	-737.1	432.9	1479.8	13.1	57.7	50.6	
743.4	-736.4	433.5	1479.8	12.1	58.0	50.9	
744.1	-735.7	434.1	1479.8	11.1	58.3	51.2	
744.8	-735.0	434.7	1479.8	10.1	58.6	51.5	
745.5	-734.3	435.0	1479.8	9.1	58.9	51.8	
746.2	-733.6	435.0	1479.8	8.1	59.1	52.0	
746.9	-732.9	435.0	1479.8	7.1	59.2	52.2	
747.6	-732.2	435.0	1479.8	6.1	59.4	52.3	
748.4	-731.5	435.0	1479.8	5.1	59.5	52.5	L5 exceeds limit NG
749.1	-730.8	435.0	1479.8	4.1	59.7	52.6	L5 exceeds limit NG
749.8	-730.1	435.0	1479.8	3.1	59.8	52.7	L5 exceeds limit NG
750.5	-729.3	435.0	1479.8	2.1	59.9	52.9	L5 exceeds limit NG
751.2	-728.6	435.0	1479.8	1.1	60.0	53.0	L5 exceeds limit NG
751.9	-727.9	435.0	1479.8	0.1	60.1	53.0	L5 exceeds limit NG
752.6	-727.2	434.9	1480.5	-0.6	60.1	53.1	L5 exceeds limit NG
753.3	-726.5	434.8	1481.2	-1.3	60.2	53.1	L5 exceeds limit NG
754.0	-725.8	434.6	1481.9	-2.1	60.2	53.1	L5 exceeds limit NG
754.7	-725.1	434.5	1482.6	-2.8	60.1	53.1	L5 exceeds limit NG
755.4	-724.4	434.4	1483.3	-3.5	60.1	53.1	L5 exceeds limit NG
756.1	-723.7	434.2	1475.6	-4.2	60.1	53.1	L5 exceeds limit NG
756.8	-723.0	434.1	1484.7	-4.9	60.1	53.0	L5 exceeds limit NG
757.5	-722.3	433.9	1485.4	-5.6	60.0	53.0	L5 exceeds limit NG
758.3	-721.6	433.8	1486.1	-6.3	60.0	52.9	L5 exceeds limit NG
759.0	-720.9	433.7	1486.8	-7.0	59.9	52.9	L5 exceeds limit NG
759.7	-720.2	433.7	1487.5	-7.7	59.9	52.8	L5 exceeds limit NG
760.4	-719.4	433.7	1488.2	-8.4	59.8	52.8	L5 exceeds limit NG
761.1	-718.7	433.6	1488.9	-9.1	59.8	52.8	L5 exceeds limit NG
761.8	-718.0	433.6	1489.6	-9.8	59.7	52.7	L5 exceeds limit NG
762.5	-717.3	433.6	1490.4	-10.5	59.6	52.6	L5 exceeds limit NG
763.2	-716.6	433.5	1491.1	-11.2	59.6	52.6	L5 exceeds limit NG
763.9	-715.9	433.5	1491.8	-12.0	59.5	52.5	L5 exceeds limit NG
764.6	-715.2	433.5	1492.5	-12.7	59.4	52.4	
765.3	-714.5	433.5	1493.2	-13.4	59.4	52.4	
766.0	-713.8	433.4	1493.9	-14.1	59.3	52.3	
766.7	-713.1	433.4	1494.6	-14.8	59.2	52.2	
767.4	-712.4	433.4	1495.3	-15.5	59.1	52.1	
768.2	-711.7	433.3	1463.6	-16.2	59.0	52.0	
768.9	-711.0	433.3	1496.7	-16.9	58.9	51.9	
769.6	-710.3	433.3	1497.4	-17.6	58.8	51.8	
770.3	-709.5	433.3	1498.1	-18.3	58.8	51.8	
771.0	-708.8	433.4	1498.8	-19.0	58.7	51.7	
771.7	-708.1	433.5	1499.5	-19.7	58.6	51.6	



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