BAC Presentation for Placer County

Acoustical Fundamentals & Application

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What is Noise???

- Simply Stated…..Noise is unwanted sound.

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How do you describe noise???

- Loudness?
  - Average?
  - Maximum?
  - Minimum?
- Pitch?
  - High Frequency Screech or Low Frequency Boom?
  - Rap Music or Beethoven Concerto?
- Duration?
  - Continuous or Temporary?
  - Drone or Bang?

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How “noisy” is this?

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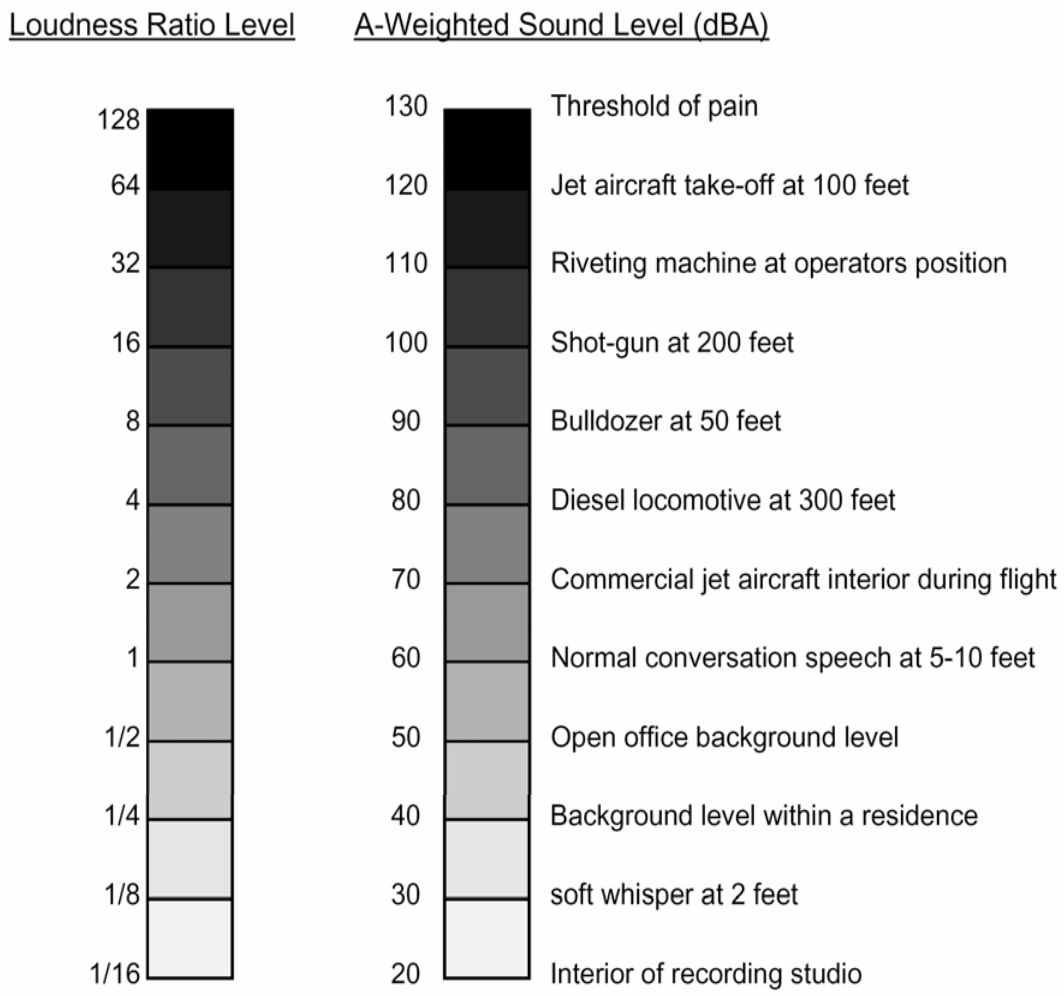
Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
SEL	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.

Typical A-Weighted Sound Levels of Common Noise Sources



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Types of Noise Studies

- Environmental Impact Report Noise Sections
  - General, Specific, & Community Plans
  - Large Industrial, Commercial, Residential, School Projects
  - Roadway Improvement Projects
- Initial Study / Negative Declaration Noise Sections
- Stand Alone Environmental Noise Analyses
  - Tentative maps
  - Small industry expansion
  - Car Washes / Strip Malls

Types of Noise Sources

- Traffic
- Railroad
- Aircraft
- Industry
- Commercial
- Recreational
- Daycare centers
- Dog Kennels

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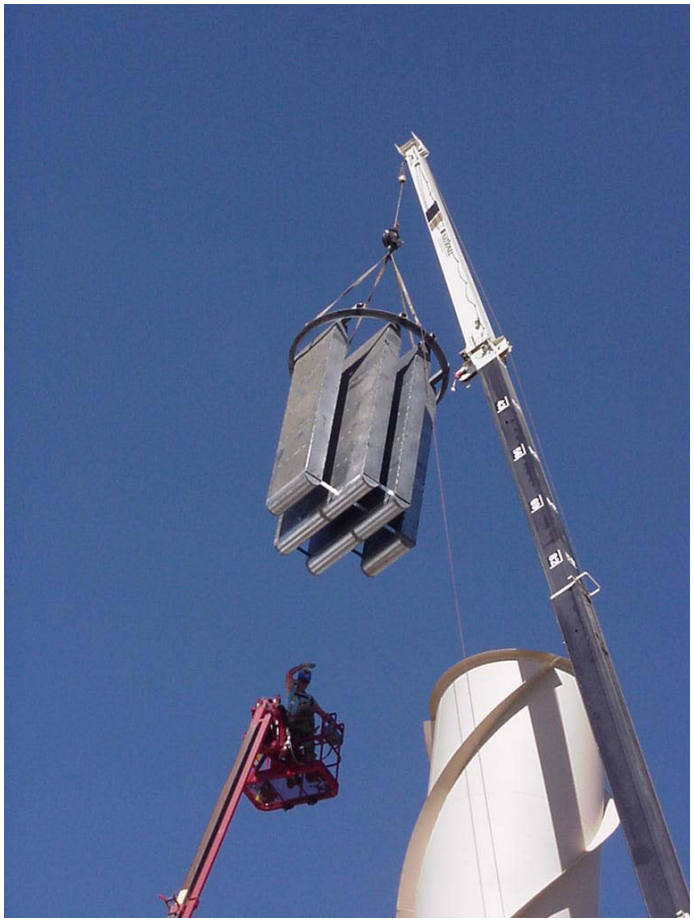

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Noise Study Components

- Introduction
- Environmental Setting / Existing & Future Noise Environments
- Regulatory Setting / Placer County Noise Standards
- Noise Impacts and Mitigation
- Cumulative Conditions

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Introduction

- Site description
- Adjacent land uses
- Significant noise sources

Environmental Setting

- Terminology
- Effects of Noise on People
- Existing & Projected Future Noise Conditions

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Regulatory Setting

- California Environmental Quality Act (CEQA)
- Federal Interagency Committee on Noise (FICON)
- Placer County Noise Element
- Placer County Noise Ordinance

California Environmental Quality Act (CEQA)

CEQA guidelines state that implementation of the project would result in significant noise impacts if the project would result in either of the following:

A. Exposure of persons to or generation of noise levels in excess of regulatory standards.
B. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
C. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
D. A substantial temporary (construction noise) or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
E. Commercial Airports
F. Private Airports

Federal Interagency Committee on Noise (FICON)

Significance of Changes in Cumulative Noise Exposure	
Ambient Noise Level Without Project, Ldn	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
Source: Federal Interagency Committee on Noise (FICON)	

- Based upon recommendations made in August 1992 by FICON
- Provides guidance in the assessment of changes in ambient noise levels
- Although initially developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the Ldn.

Noise Element Standards – Residential Uses

Transportation Noise Source (Traffic, Rail, Aircraft)

- For residential land uses, compatible noise levels are:
  - Exterior: 60 dB L_{dn} (65 dB L_{dn} conditionally acceptable)
  - Interior: 45 dB L_{dn}

Non-transportation Noise Source (Everything Else)

- Residential Next to Industrial - 60 dB Ldn
- Other Residenital - 50 dB Ldn

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Noise Ordinance Standards – Sensitive Receptors

Transportation Noise Source – None, Not Locally Regulated

Non-transportation Noise Source

- Exterior noise level standards:
  - Daytime (7AM to 10 PM)
    - Hourly: 55 L_{eq}
    - Maximum: 70 L_{max}
  - Nighttime (10PM to 7 AM)
    - Hourly: 45 L_{eq}
    - Maximum: 65 L_{max}

Featured Case Studies
Morgan Place & Livingstons Concrete

- Residential & Industrial Projects
- Placer County, California
- Project Specific and EIR Level of Analysis
- Multiple Noise Sources

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Main Issues of Noise Study

- Morgan Place: What are impacts of traffic noise sources on proposed residences in the development

- Livingstons Concrete: What are impacts of increased traffic noise generated by the project on existing residences, as well as impacts of on-site industrial noise sources on nearby neighbors.

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