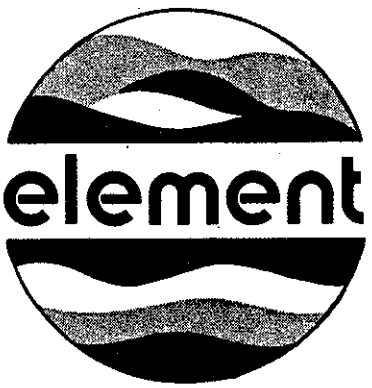
noise element



NOISE ELEMENT

INTRODUCTION:

Sound is anything that is or may be heard. Noise, in turn, is unwanted sound that is disruptive to an individual's environment. Transportation and other activities, typically, produce noise as an undesirable by-product. Until recently, most communities accepted noise as a price for progress.

PURPOSE:

Recognizing the adverse impact of noise on our environment, the State of California now requires a Noise Element in each community's General Plan. Section 65302(g) of the California Government Code contains the State's requirements.

In supplement to the California Government Code requirement, the Council on Intergovernmental Relations prepared a set of guidelines for preparation of the Noise Element. Montebello's Noise Element is prepared in conformance with these guidelines.

DEFINITIONS AND TECHNICAL BACKGROUND:

Preparation of the Noise Element in compliance with state guidelines necessitates certain technical background studies. These studies form a foundation for goals, objectives, policies and implementation of the Noise Element. Technical background studies for Montebello's Noise Element were prepared by J. J. Van Houten and Associates, Acoustical Consultants.

The following portion of this Noise Element summarizes major points contained in Technical Background Study for the Noise Element of the City of Montebello and other relevant sources. For additional details, see the Technical Background Study or the other sources referenced at the conclusion of this element.

1. Ambient and Non-Ambient Noise: The typical community noise environment consists of a background noise level. This background, or ambient noise level is, typically, transportation oriented. Since the background level is lower at night, louder-than-ambient noise sources are more pronounced in their adverse effect on an individual's environment.

Adopted MCC May 27, 1975

2. Sound/Noise Measurement: Sound/noise is measured in decibels (dB), or tenths of a "bel" (named after Alexander Graham Bell). Zero on a decibel scale represents the lowest sound detectable by the human ear. As perceived by human hearing, a 10 dB increase represents a doubling of apparent loudness of sound. For example, a heavy truck at 90 dB seems twice as loud as an alarm clock at 80 dB, and four times as loud as freeway traffic at 70 dB. Figure 1 illustrates decibel relationships.

   A Constant Noise Equivalency Level (CNEL) measurement system is employed in Montebello's Technical Background Study and this element. CNEL is a standard acoustical scale utilizing a weighted average to sensitize late evening and morning noise readings.

3. Sources of Noise: Transportation facilities are primary sources of noise. These facilities include highways and freeways, railroads, mass transit and aircraft. The United States Department of Transportation projects that transportation facilities will have increasingly greater impact on our society. Non-transportation noise sources include stationary facilities (e.g., industrial plants, air conditioners and compressors), recreation activities, construction activity, and the omnipresent barking dog. Because of the magnitude of the transportation noise problem, this is the focus of this element.

   The Technical Background study and this element include a CNEL "contour" map of noise levels in Montebello. These "contour" lines connect points of equal noise level, producing a pattern of noise impacts. This pattern provides a quantitative projection of existing and proposed transportation elements. Each contour line represents a five decibel increment. The map illustrates projected contours in 1984. As explained in the background study, the differences between present and 1984 patterns are minimal.

   Examination of the CNEL contour map, Figure 2, indicates that highway, freeway and railroads are Montebello's most significant noise sources. As explained in the Technical Background Study, the procedure used to derive these contours relies on research studies by the National Highway Research Board, United States Department of Housing and Urban Development (HUD), United States Department of Transportation (DOT), and United States Environmental Protection Agency (EPA). Although

Adopted MCC May 27, 1975

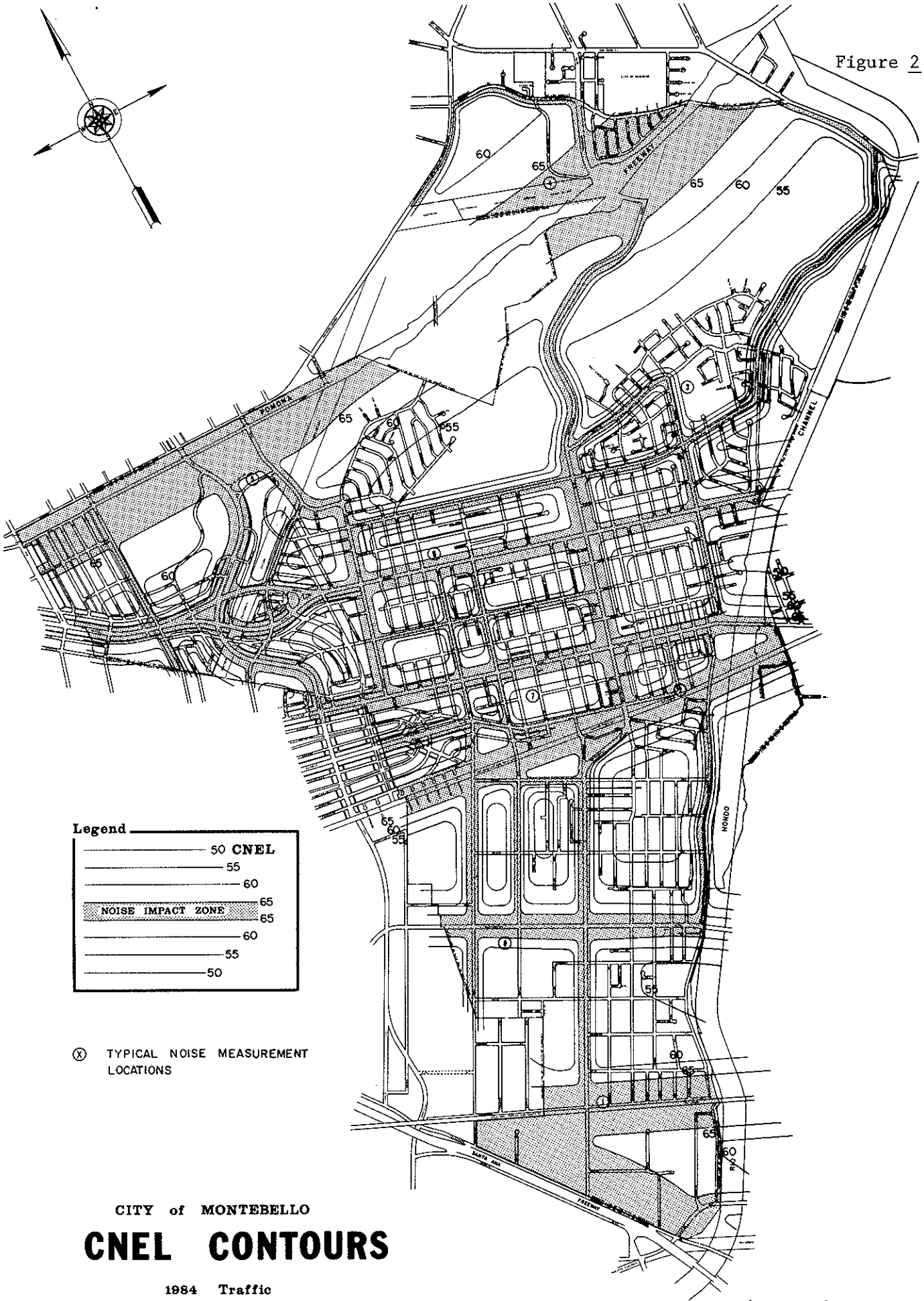
Figure 1

Comparison of Various Noise Sources, Noise Levels and Loudness

Decibel Ratings dB(A)	Over-All	Outdoor Noise Sources	Loudness
130		Jet aircraft take-off with after-burner	
120	Uncomfortable		32 times as loud
		Turbo-prop aircraft at take-off	
			16 times as loud
		Jet fly-over @ 1000 ft.	
100	Very loud		8 times as loud
		Power mower Diesel truck at 40 MPH @ 25 ft. Motorcycle @ 25 ft.	
90			4 times as loud
		Gasoline powered truck @ 25 ft. Car wash @ 20 ft. Propeller plane fly-over @ 1000 ft.	
80			2 times as loud
	Moderately loud	Automobile at 65 MPH @ 25 ft. High urban ambient sound.	REFERENCE NOISE
		Air conditioning unit @ 100 ft.	
60			1/2 as loud
		Large transformers @ 100 ft.	
	Quiet		1/4 as loud
50			
		Bird calls, lower limit	
40			1/8 as loud
	Just audible		
10			
	Threshold of hearing		
0			

Adopted MCC May 27, 1975

Figure 2



CITY of MONTEBELLO

CNEL CONTOURS

1984 Traffic

0 800 1600 2400 3200 4000
SCALE FEET

SOURCE: J. J. Van Houten & Associates 1974

Adopted MCC May 27, 1975

aircraft approaching Los Angeles International Airport do pass over Montebello, and helicopters occasionally land in the city, noise from these aircraft is not considered significant and is not reflected on the CNEL contour map.

4. Characteristics of Noise: Noise varies in terms of source, time of day, day of week, and distance to the individual hearing the noise.

   a. Figure 3 illustrates the relative noise emission levels for transportation vehicles, given present technology. The highway generators and rail lines have greatest relevance to Montebello.

   b. Figure 4 depicts typical noise level variation with time of day near an arterial (heavily traveled) street. Examples of such streets in Montebello would be Beverly and Whittier Boulevards.

   c. Figure 5 shows the day-of-week vehicular traffic volume (expressed in ADT: Average Daily Traffic) and accompanying noise level variation.

   d. As indicated in Figures 6 and 7, noise decreases in loudness with increasing distance from the source. Also, the amount of sound reaching the receiver is affected by barriers between the noise source and receiver.

5. Consequences of Noise: Under certain conditions noise may affect the average individual in any of the following ways:

   a. General Hearing Loss or Damage - Highly amplified music, sports, shooting, and other recreational uses may produce sound levels capable of producing hearing loss, especially if exposures are prolonged or recurrent. The greater or longer the exposure, the greater the potential for hearing loss.

   b. Impaired Speech Communication - Noise levels of 60 dB(A) and greater make communication difficult to impossible.

   c. Sleep Interference - Noise levels above 45 dB(A) may be unacceptable, depending upon the individual.

PRESENT NOISE EMISSION LEVELS FOR TRANSPORTATION VEHICLES

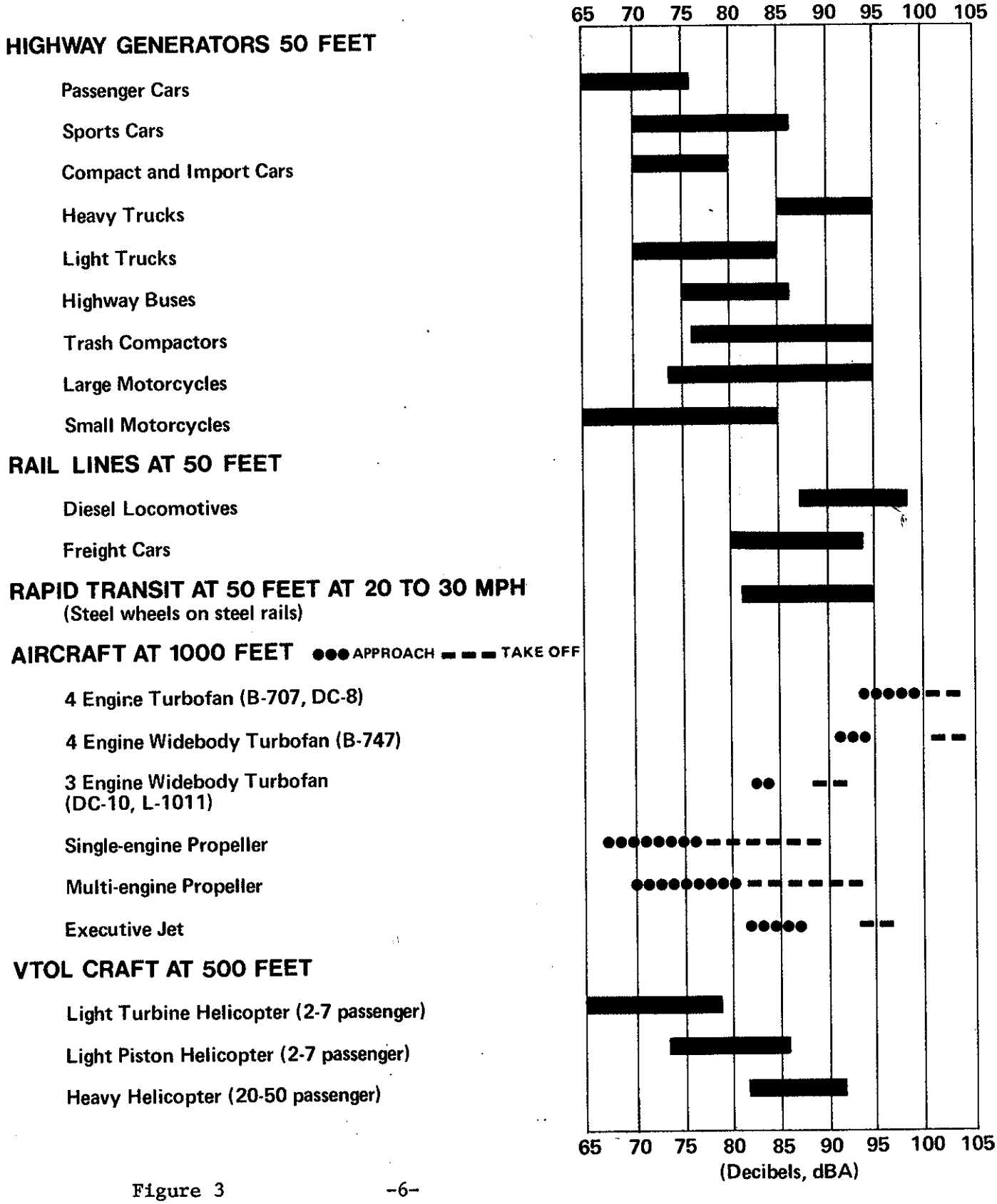


Figure 3

SOURCE: Noise Element, Los Angeles County, 1974

Adopted MCC May 27, 1975

Adopted MCC May 27, 1975

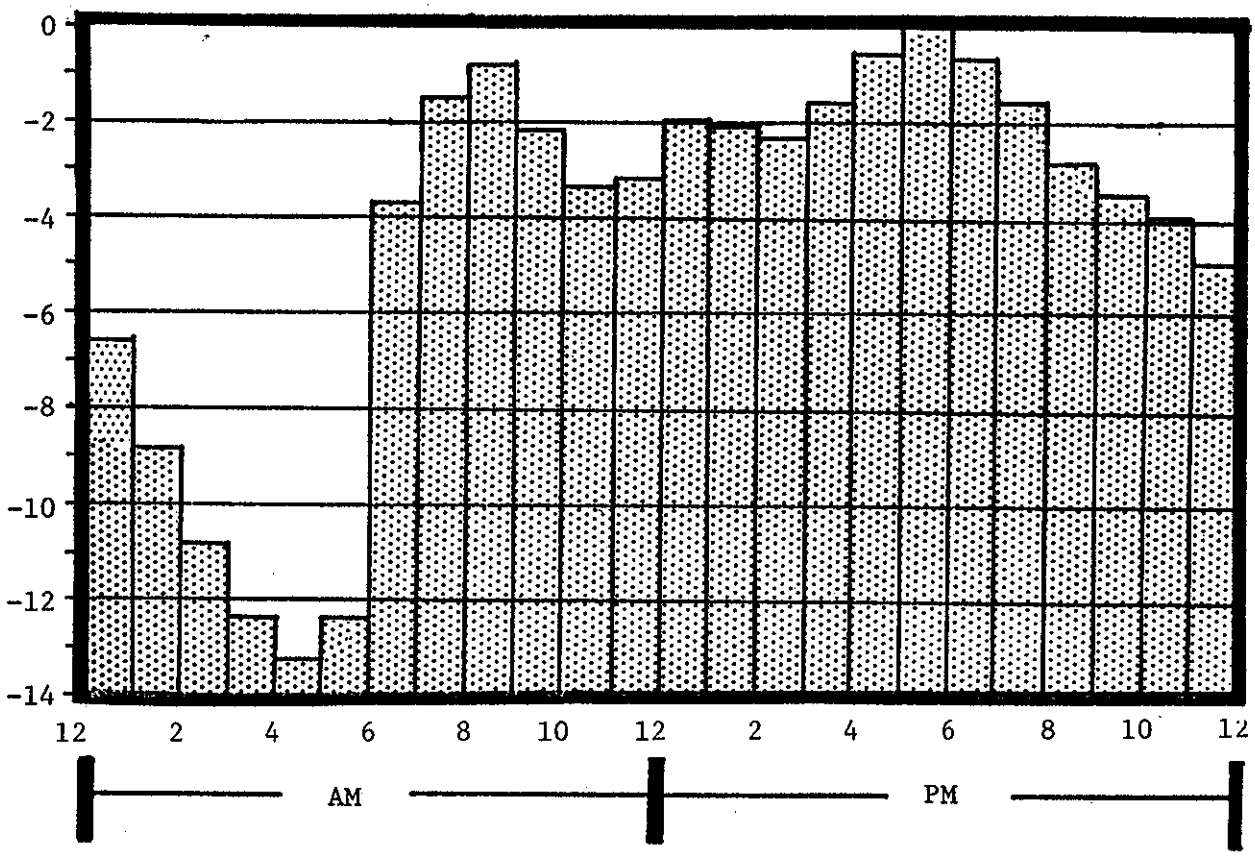


Figure 4 - TYPICAL NOISE LEVEL VARIATION WITH TIME-OF-DAY AT LOCATIONS NEAR THE ARTERIALS

SOURCE: J. J. Van Houten & Associates, 1974

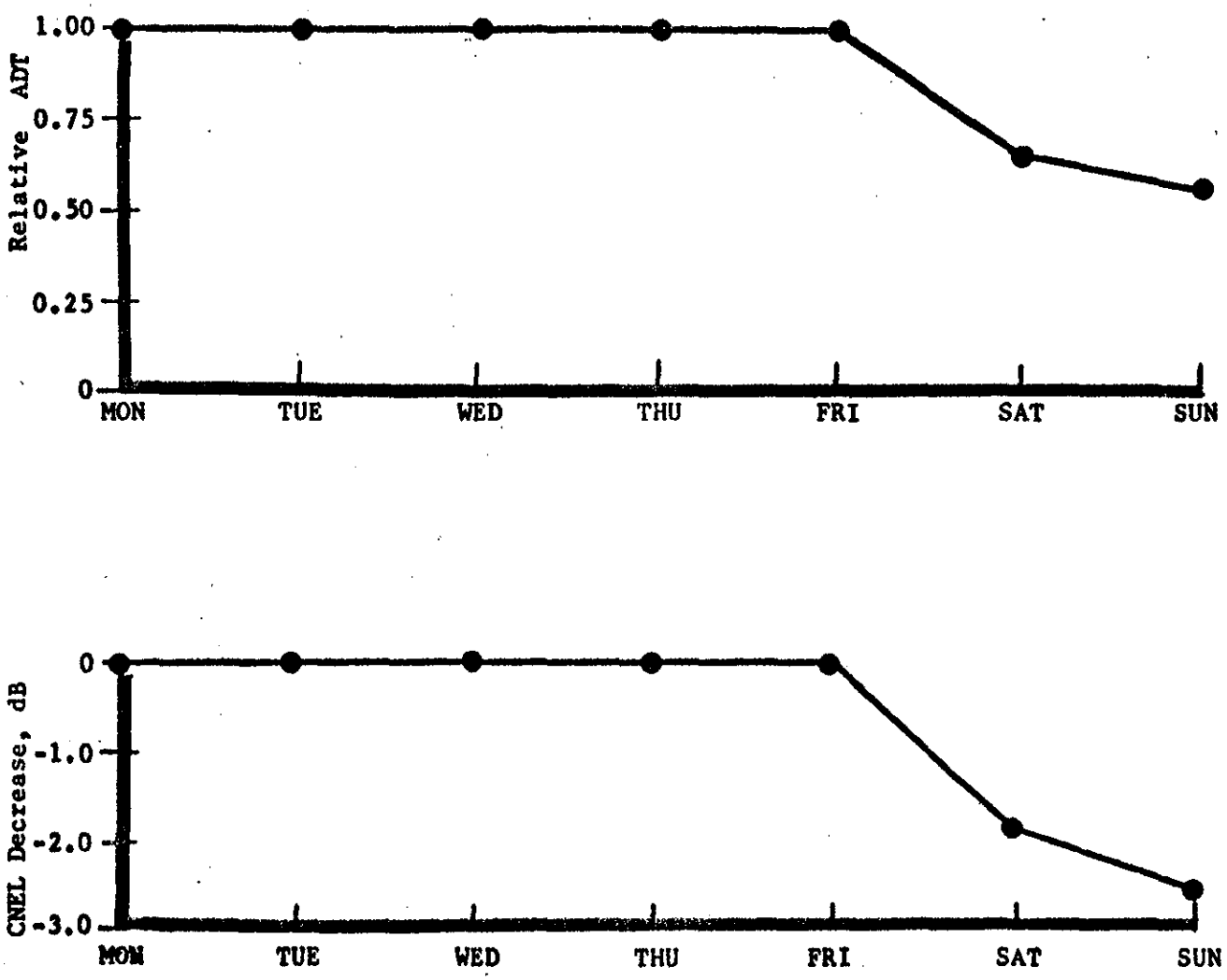
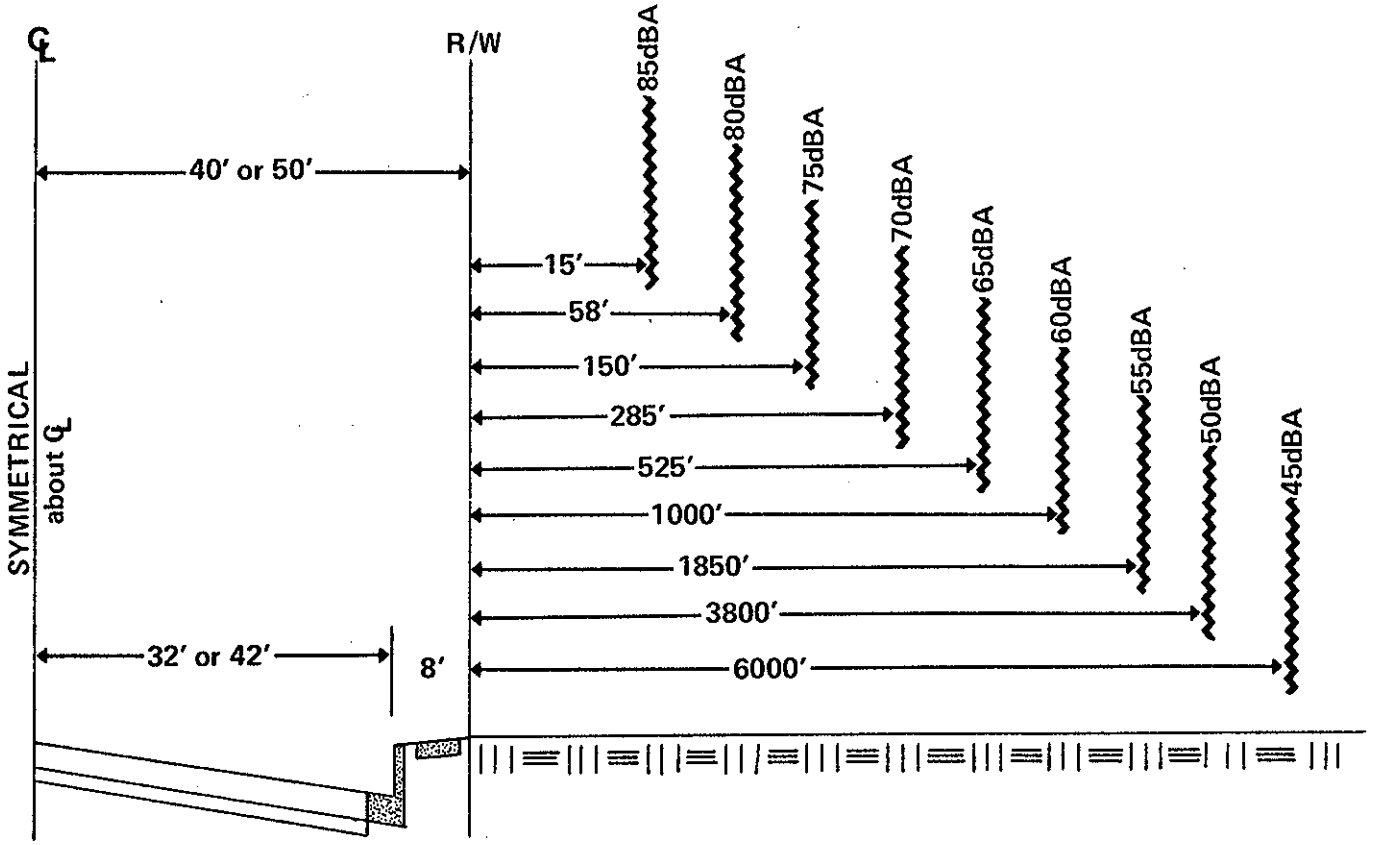


Figure 5 - DAY-OF-WEEK TRAFFIC VOLUME AND NOISE EXPOSURE LEVEL VARIATION.

SOURCE: Ibid., Figure 4."

Adopted MCC May 27, 1975

TYPICAL ARTERIAL HIGHWAY NOISE LEVELS (L_{10})



TYPICAL FREEWAY NOISE LEVELS (701A)

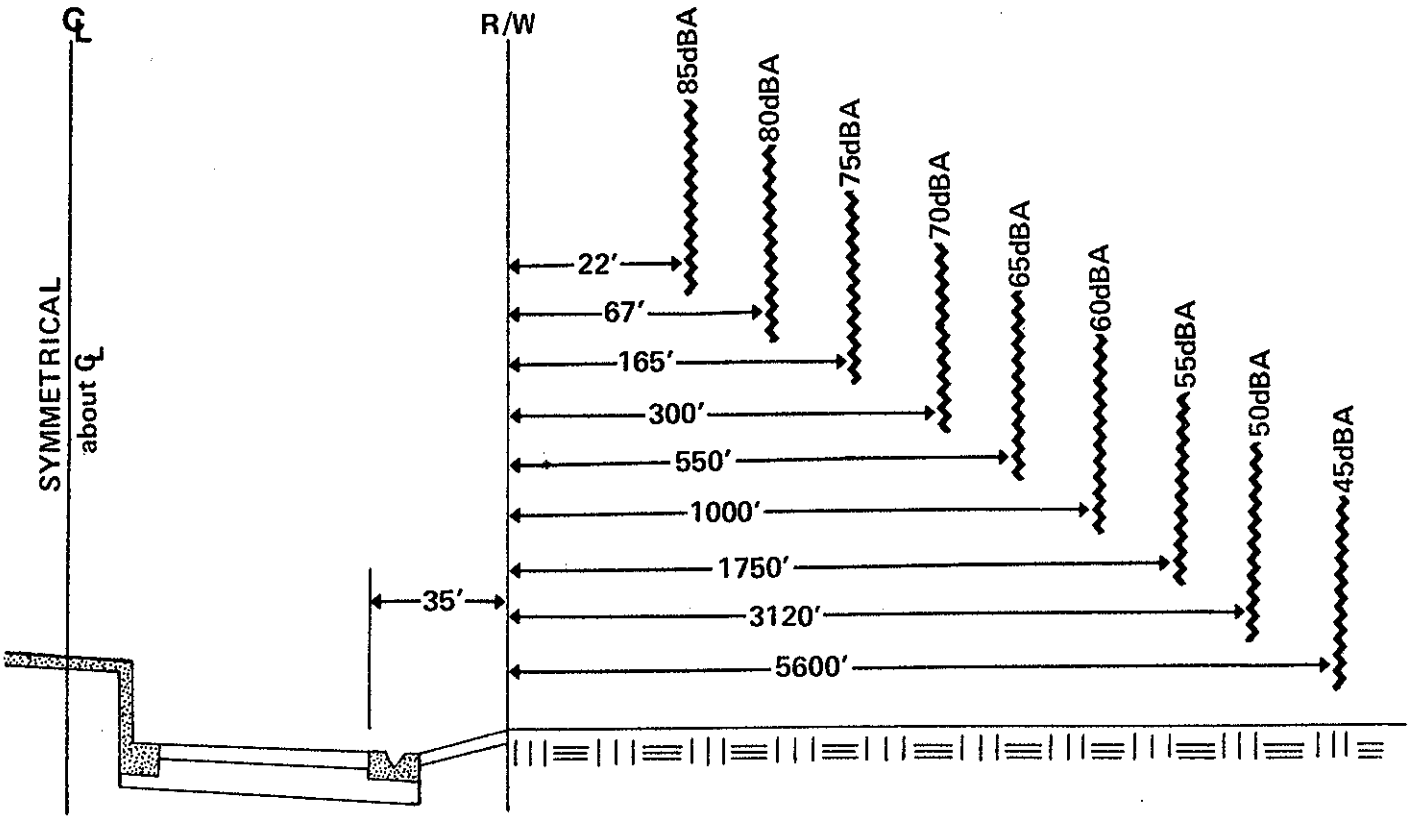


Figure 6 *SOURCE: Noise Element, Los Angeles County, 1974*

Adopted MCC May 27, 1975

TYPICAL RAILROAD NOISE LEVELS
(CNEL,dB)

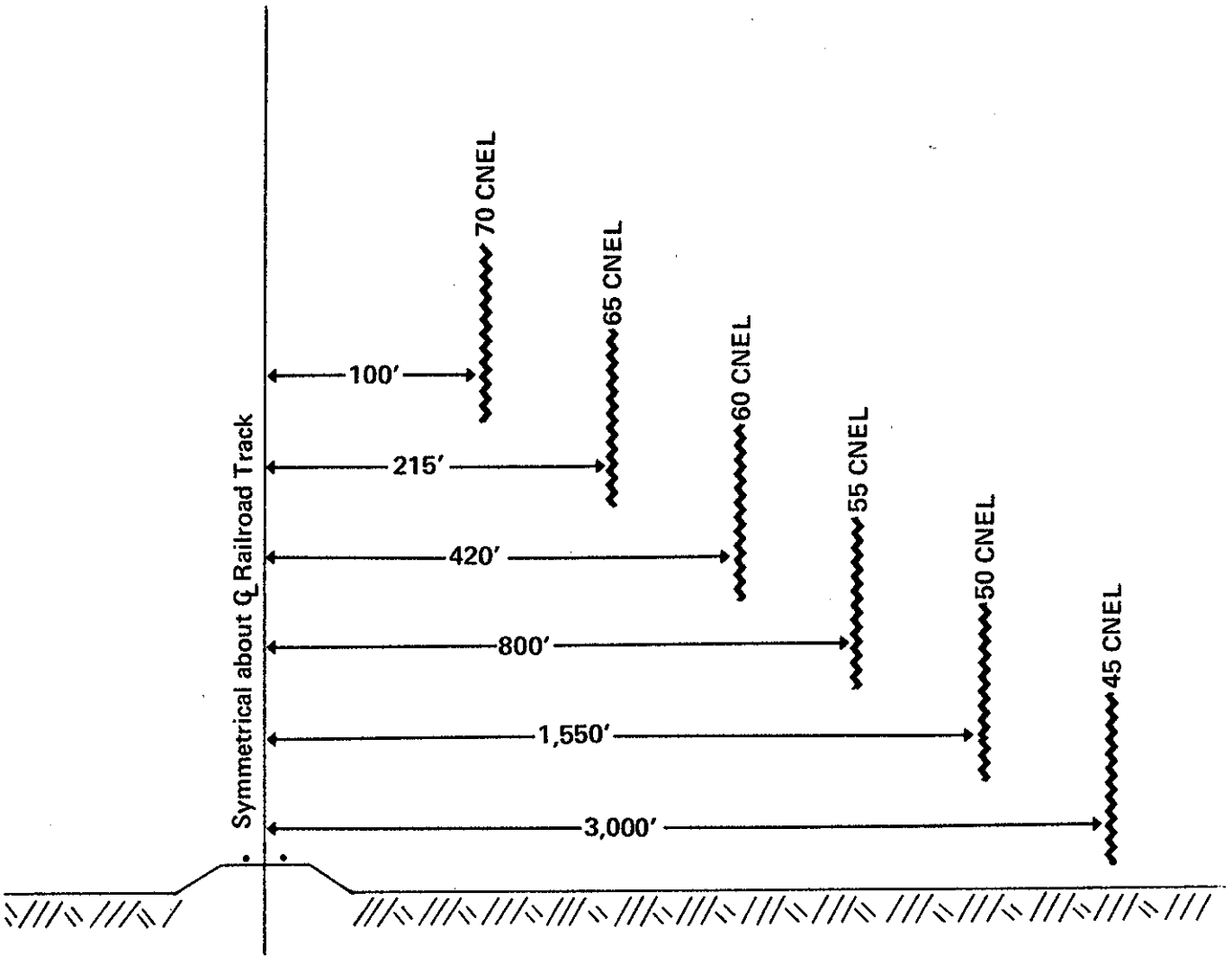


Figure 7

SOURCE: Ibid, Figure 6.

d. Nervousness and Tension - Growing concern has been expressed that exposure to the high noise levels of the city might contribute to nervous disorders and tensions, but findings are still inconclusive.

e. Economic Impacts - Costs of noise can include medical care, loss of efficiency and production, reduction in property value, abatement measures, and administrative time. Figure 8 illustrates the trend of public reaction to peak noise near residences.

6. Mitigation of Noise: Three basic variables are the key to mitigation of the impacts of noise: source, path and receiver. Changes in one or more of these variables will result in mitigation of adverse noise levels.

   a. Reduction of noise at the source is the most direct approach to noise mitigation. This places the economic impact of noise reduction on the noise producer. Transportation noise control is, however, largely outside the purview of local planning bodies. These limitations are explained under the "constraints" portion of this element. An enforceable and enforced noise ordinance can correct sources in areas where local power has not been preempted.

   b. Control of the path of noise transmission can also mitigate noise levels. By increasing the distance between source and receiver, or by placing adequate barriers between source and receiver, the effects on the receiver can be reduced. For example, highway noise can be mitigated by elevating or depressing the roadway, or by installing rigid and massive round barriers. It should be noted, however, that landscaping adjacent to a highway produces little physical reduction in noise levels unless it is very dense and of significant depth. Landscaping's effect, in terms of noise reduction, may, however, be psychologically positive.

   c. Reduction of noise impact on the receiver is the third alternative. Land use control can assure that only relatively insensitive receivers are in noise impact areas, or that the receiver can be "hardened" to

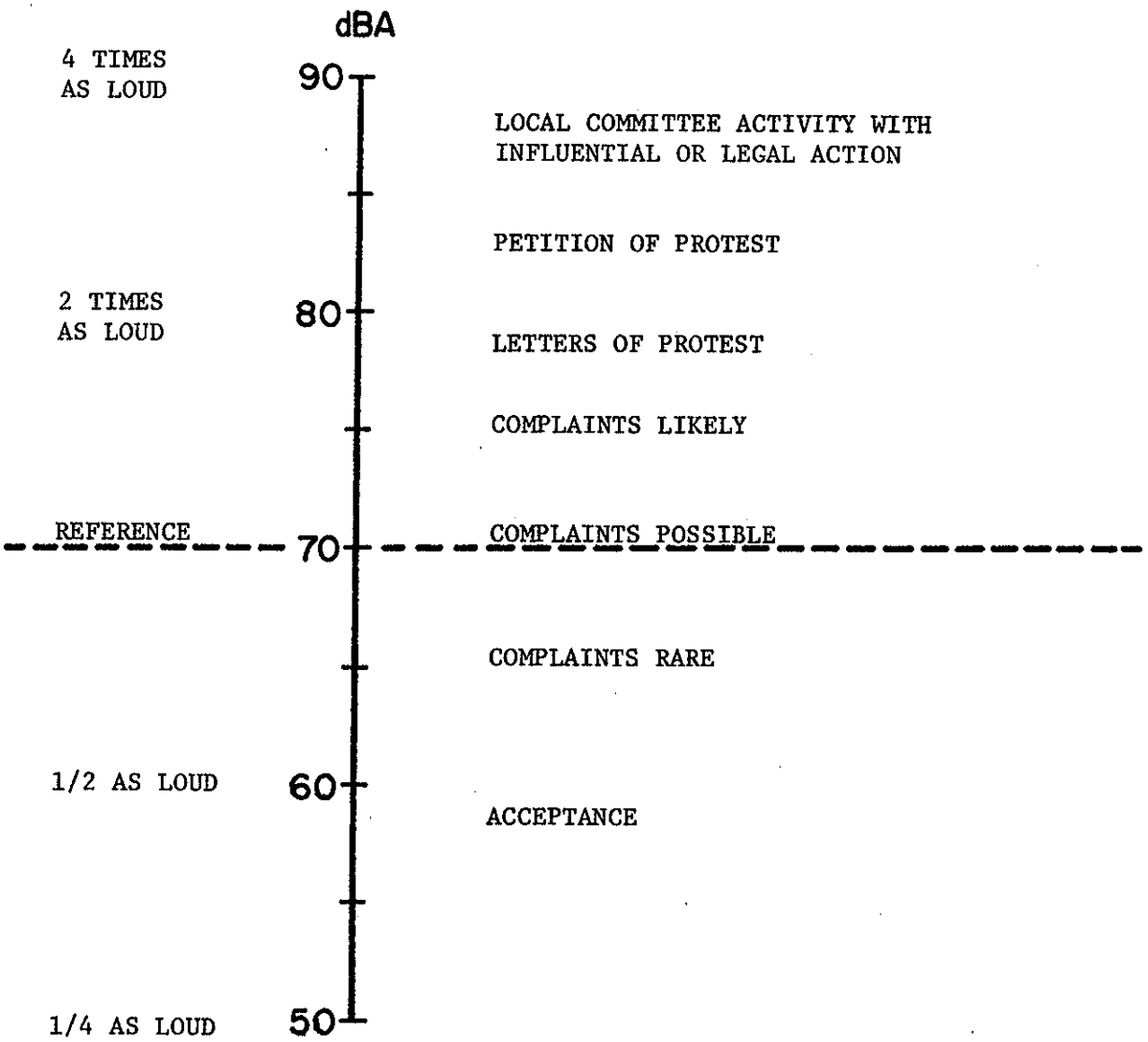


Figure 8 - TREND OF PUBLIC REACTION TO PEAK NOISE NEAR RESIDENCES

SOURCE: Southern California Association of Governments, 1974

Adopted MCC May 27, 1975

mitigate adverse noise effects. For example, industrial and commercial uses are relatively insensitive to noise impacts. Where residential uses are in noise impact zones, building design or alterations can incorporate noise reduction features such as double windows and insulation.

A summary of significant noise sources/activity categories and possible mitigation measures is contained in Figures 9 and 10.

GOALS:

Goals reflect broad aims and basic values. They establish emphasis and tone for policy and program formulation. The decisions and activities of the city's government should be guided by the intent of these goals:

1. Reduce noise to a level that does not jeopardize health and welfare.

2. Minimize noise levels of future transportation facilities and other noise sources.

3. Establish compatible land uses adjacent to transportation facilities and other noise sources.

4. Allocate noise mitigation costs among those who produce the noise.

5. Alert the public regarding the potential impact of transportation and other noise.

6. Protect areas that are presently quiet from future noise impact.

OBJECTIVES:

Objectives focus on more specific areas of attention and/or concern. Objectives are consistent with the goals and provide a framework for policies.

1. Residential Zones

   a. Residential areas must be generally quiet.

Adopted MCC May 27, 1975

NOISE SOURCES, IMPACT AND MITIGATION - CITY OF MONTEBELLO

Source/ Activity Category	Source Description	Impact	Mitigation
A. Santa Ana and Pomona Freeway Traffic Noise	Freeway traffic noise levels at setbacks from the freeway (about 40 ft.) are about 75 dB(A) with peak noise levels to 79 dB(A).	CNEL values at residential locations bordering the Pomona Freeway may exceed 65 dB(A). Recognized standards indicate that these exposures are excessive and that the locations are unsuitable for residential use.	The installation of noise barriers ought to be considered as a mitigation measure.
B. Train movements along the Santa Fe and Union Pacific Railroads and Spur Lines	Train noise levels approach 80 to 90 dB(A) at residential locations bordering the right-of-way.	Noise levels at residential locations are excessive. Recognized standards are exceeded. The primary annoyance to residents involves late night and early morning train passbys.	Late night and early morning train movements should be discouraged. Redevelopment and/or noise barriers ought to be considered for spaces within 600 feet of the right-of way.
C. Los Angeles International Airport Operations	Peak noise levels at locations within the city are as high as 60 to 65 dB(A).	Impact of aircraft operations is not considered significant. Growth of activity may have an adverse impact.	Encourage the minimization of late evening and early morning operations at the airport.

Figure 9

SOURCE: J. J. Van Houten & Associates, 1974.

NOISE SOURCES, IMPACT AND MITIGATION - CITY OF MONTEBELLO

Source/ Activity Category	Source Description	Impact	Mitigation
D. Construction Activity	Noise level of construction approach 100 dB(A) at distances to 50 ft. and about 80 dB(A) at locations to 500 ft.	Minimal impact for two or three months of activity during daytime hours.	Heavy construction should be limited to the weekday hours from 7:00 A.M. to 6:00P.M., with minimal activity on weekends. Noise of construction equipment should be considered in the procurement of equipment by the City Departments.
E. Commercial Industrial Noise Producing Elements	Car wash facilities and industrial conditioning equipment may produce noise levels to 75 dB(A) at nearby residential locations.	In general, commercial/ industrial noise within the city is not considered excessive except where residential locations are adjacent to heavy industrial zones.	The adoption and effective implementation of a noise ordinance will insure that fixed sources of noise will remain at acceptable levels.
F. Schools, Hospitals and Parks	Noise at these locations is generated by traffic on the arterials adjacent to the spaces or facilities.	In general, the noise levels at most locations of concern is not considered excessive.	Noise ought to be a consideration in the selection or relocation of school sites and parks within the city.

Figure 10

SOURCE: Ibid, Figure 9.

b. Residential areas should be quieter at night than during the daytime.

c. Residential areas should be quieter than commercial and industrial areas.

d. The interiors of residential structures should be substantially free from internal and external noise. This includes all residential development, regardless of density or dwelling type.

e. Noise levels transmitted beyond or across a residential property line should be limited to the noise level considered acceptable in the receiving zone.

2. Commercial Zones

a. The noise level permitted in commercial zones may exceed that of a residential area but should be less than that of an industrial area.

b. The noise level in commercial areas should not interfere with normal business activity.

c. Noise levels transmitted beyond or across a commercial property line should be limited to the noise level considered acceptable in the receiving zone.

3. Industrial Zones

a. Noise levels within industrial zones may be higher than that in residential and commercial zones.

b. Noise levels within a building should be in compliance with State and Federal Health and Safety regulations.

c. All areas of an industrial building to which the public has general access should be acoustically protected so as to limit the noise level in those areas to that of a commercial zone.

d. Noise transmitted beyond or across an industrial property line should be limited to the noise level considered acceptable in the receiving zone.

4. Special Land Use

a. Schools, hospitals, libraries, churches and convalescent homes, should be protected from noise.

b. In general, the noise levels in and around these special land use structures, should be no greater than is considered acceptable in a residential zone.

5. Circulation Elements

a. Recognizing that the city does not have control over major vehicle noise standards, due to state preemption, the city should require that noise protection and mitigating residential and commercial designs be provided along the major traffic routes in accordance with the uses permitted.

b. Truck traffic should not be permitted in residential and commercial zones except on designated truck routes or unless making deliveries within the area.

c. New residential developments should not be permitted where traffic generated noise levels already exceed the residential zone noise level unless that residential development contains means for the mitigation of noise.

CONSTRAINTS:

Constraints can be viewed in terms of noise source, path and receiver. A summary of jurisdictional responsibility is contained in Figure 11.

Adopted MCC May 27, 1975

SUMMARY ANALYSIS OF JURISDICTIONAL RESPONSIBILITY IN NOISE CONTROL

	AIRCRAFT	MOTOR VEHICLE	NOISE IN GENERAL
FEDERAL	- NCA 1972, EPA to propose noise control regulations for aircraft, amends S 611 FAA Act of 1958, asserts that FAA and EPA preempt local control (U.S.C. 1973)	- Federal Aid Highways Act, P.L. 91-065 directs Secretary of Transportation to make standards for highway noise control; promulgated in PPM 90-2 of February 1973. - NCA 1972 regulates noise from surface carriers and motor vehicles engaged in interstate commerce.	- Walsh Healy Act applies noise standards to Fed. contracts. - O.S.H.A. applies noise standards to businesses affecting interstate commerce. - NCA 1972 gives EPA authority to prescribe standards for new products: + construction equipment + transportation equipment + any motor or engine + electric/electronic equipment. Also label noise emitting or noise abating equipment.
STATE (Calif.)	- Subchapter 6, Noise Standards, Department of Aeronautics. Regulate noise for all aircraft operations to the extent not already limited by federal law.	- Motor Vehicle Code regulates noise limits for new vehicles and all motor vehicle operation. - Cal. Streets and Highways Code S 216 regulates noise within schools near freeways. - Harbor and Navigation Code S2:654.05 regulates noise emission from motorboats in or upon inland waters.	- Division of Industrial Safety publishes noise regulations. - S 415 Penal Code prohibits loud and unusual noise that disturbs the peace. - Environmental Quality Act encourages local agencies to control environmental quality.
LOCAL	- Airport authority as <u>proprietor</u> may impose curfew. (Issue has yet to be resolved in court.)	- Local jurisdiction may enact regulations for off-highway motor vehicles, refuse vehicles and sound trucks. - May regulate the use of roads and highways based on noise considerations.	- May enact ordinances to control: + construction noise + amplified sound + fixed noise sources + loud/unusual noise + other noise sources whose control is not preempted by state or federal government.

Figure 11

SOURCE: Comprehensive Planning Organization, San Diego, 1974.

1. Source: Traffic is the major source of noise, and reduction of noise at the source is the most effective control. Montebello is, however, preempted in control of most traffic noise at the source. The city's major power in traffic noise control at the source lies in applying pressure for appropriate state and/or federal legislation.

   Local jurisdictions may enact noise regulations to secure and promote the public health and welfare as an exercise of their police power. Cities may prohibit the unnecessary, excessive and annoying noises of horns and signaling devices on private property, drums, animals and fowl, steam whistles, and engines in non-moving motor vehicles. There is a question, however, whether such noises can be controlled by decibel standards or only by disturbance-of-the-peace ordinances.

   The local authority may enact standards limiting noise emissions which cross property lines. The use of property is generally required to conform with the performance standards stated in the noise ordinance. These performance standards are meant to apply to noise-generating apparatus or activities within a particular area and are not to be confused with the new product standards of EPA. License and permit type provisions may be used to limit or require compliance with performance standards as a condition to the installation or operation of equipment. In addition, curfews may be set to prohibit certain noise-generating activities during a specific time interval, usually at night.

2. Path: Local jurisdiction have much latitude in terms of affecting the transmission path of noise. Implementation of noise barrier requirements generally does not, however, place the burden of noise control on the source. The economic burden of noise barriers often falls on the affected property's developer, or the state or local jurisdiction. Cost of noise barriers is a major constraint.

3. Receiver: The State of California has taken the major role in noise control at the receiver. Through the noise insulation standards, effective August 22, 1974, "Interior Community Noise Equivalent Levels (CNEL) attributable to exterior sources shall not exceed an annual CNEL of 45 dB in any habitable room". The enforcement of this provision is a local responsibility.

Adopted MCC May 27, 1975

Federal activities in control of noise at the receiver are presented in the HUD policy statement:

> It is the finding of the Department of Housing and Urban Development (HUD) that noise is a major source of environmental pollution which represents a threat to the serenity and quality of life in population centers. Noise exposure may be a cause of adverse physiological or psychological effects as well as economic losses. Accordingly, it is the purpose of departmental policy to call attention to this threat, to encourage the control of noise at its source in cooperation with other federal departments and agencies, to encourage land utilization patterns for housing and other municipal needs that will separate uncontrollable noise sources from residential and other noise-sensitive areas, and to prohibit HUD support to new construction on sites having unacceptable noise exposures.

In summary, constraints of jurisdictional responsibility are primary factors in noise control at the source. Interference of the noise transmission path places the economic burden on individuals other than those causing the problem. Control of noise at the receiver is covered by state regulations but enforced by local jurisdictions.

POLICIES:

Constrained to degrees by other jurisdictions, Montebello's policies focus on viable approaches to noise control and reduction. Montebello's policies are to:

1. Actively pursue and support legislation whose effect will enhance our noise environment through the reduction of transportation and other noise sources. The economic burdens of noise control should not fall on the City or the adversely impacted receiver.

2. Enforce and encourage enforcement of all existing noise control regulations designed to bring about attainment of acceptable noise standards.

3. Develop an enforceable Noise Ordinance, and implement this ordinance to control noise to reasonable levels in areas where the City's jurisdiction has not been preempted.

Adopted MCC May 27, 1975

4. Utilize comprehensive planning, Environmental Impact Reports, redevelopment, and land use decisions to minimize adverse impact of noise in all areas of the community.

5. Promote increased public awareness of the adverse effects of noise.

6. Support and encourage federal, state, county and other programs to voluntarily reduce noise impact through modification of the noise source, transmission path or receiver.

7. Require all city departments to include noise control requirements, where applicable, in the procurement of equipment. Noise minimization should be considered in the conduct of all city activities.

Adopted MCC May 27, 1975

SOURCES/REFERENCES

1. Background Information for The Workshop on the Noise Element. Los Angeles: Southern California Association of Governments, 1974. 42 pp.

2. Community Noise Study for The City of Manhattan Beach. Anaheim: American Acoustics Company, 1973. 66pp.

3. Environmental Noise Policy Study. San Diego: Comprehensive Planning Organization, 1974

4. Freeway Traffic Noise Reduction; Policy and Procedure Memorandum Number P74-47. Sacramento: California Department of Transportation, 1974. 5 pp.

5. Greenwald, Alvin G. "Law of Noise Pollution." Environmental Reporter, May, 1960. p.g.

6. Motor Vehicle Noise: A Report to the Assembly Committee on Transportation. Sacramento:

7. "Noise abatement and Control: Department Policy, Implementation Responsibilities and Standards." Circular, U.S. Department of Housing and Urban Development. September, 1971.

8. Noise Element - Proposed Element, Draft Environmental Impact Report. Los Angeles: Los Angeles County Department of Regional Planning. 1974. 103 pp.

9. Quiet City Report. Los Angeles: Quiet City Committee, Los Angeles County Division, League of California Cities (no date) 28 pp.

10. Schultz, Theodore J. and Nancy M. McMahon. Noise Assessment Guidelines. Washington, D.C.: U.S. Department of Housing and Urban Development, August 1971. 20 pp.

11. Transportation Noise and Its Control. Washington, D.C.: Office of the Secretary, U.S. Department of Transportation, 1972. 27 pp.

12. Van Houten, J.J. and Associates. Technical Background Study for the Noise Element of the City of Montebello. (Prime Source). Anaheim: J.J. Van Houten and Associates, 1974. 29 pp.

Adopted MCC May 27, 1975