

I 2 NOISE

This element outlines a comprehensive program of achieving acceptable noise levels throughout Pittsburg, and ensures compliance with State noise requirements. Significant noise sources in Pittsburg include major transportation corridors, such as State Route 4 and arterial roadways.

12.1 NOISE MEASUREMENT

Noise can be defined as a sound or series of sounds that are intrusive, irritating, objectionable and/or disruptive to daily life. Noise varies widely in its scope, source, and volume, ranging from individual occurrences such as a lawn mower to the intermittent disturbances of rail yard whistles to the fairly constant noise generated by traffic on freeways.

Noise is primarily a concern when in the vicinity of noise-sensitive uses such as residences, schools, churches, and hospitals. Noise is controlled around other uses as well, although levels rarely exceed the recommended maximum. The known effects of noise on humans include hearing loss, communication interference, sleep interference, physiological responses, and annoyance.

NOISE MEASUREMENT

Three aspects of community noise are important in determining responses, and are therefore measured and described when assessing the noise environment:

1. *Level* (that is, magnitude or loudness) of the sound. Sound levels are measured and expressed in decibels (dB), with 10 dB roughly equal to the threshold of hearing and 120 dB the threshold of pain.
2. *Frequency* composition or spectrum of the sound. Frequency is a measure of the pressure fluctuations per second, measured in units of hertz (Hz).
3. *Variation* in sound level with time, measured as noise exposure. Most community noise is produced by many distant noise sources, including identifiable events of brief duration, such as power plant stack “blows”, which cause the community noise level to vary from instant to instant. A single number called the equivalent sound level or Leq describes the average noise exposure level over a period of time.

When noise levels are reported, they are expressed as a measurement over time in order to account for variations in noise exposure. Levels also account for varying degrees of sensitivity to noise during daytime and nighttime hours. The

Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) both reflect noise exposure over an average day with weighting to reflect this sensitivity. The CNEL is the reference level for State Noise Law and is used to express major continuous noise sources, such as aircraft or traffic.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived:

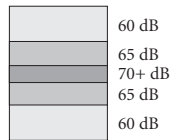
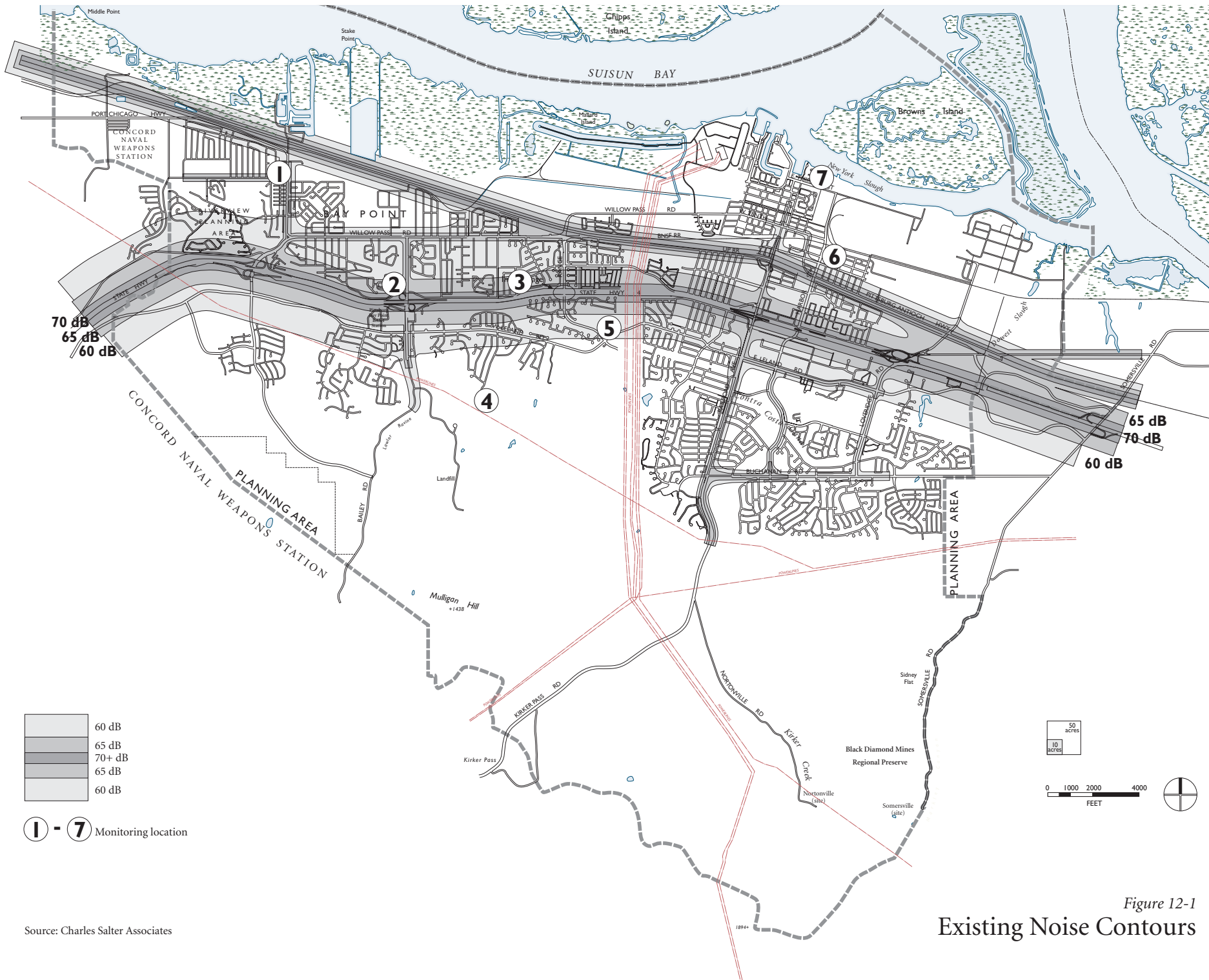
- Except under special conditions, a change in sound level of 1 dB cannot be perceived;
- A 3 dB change is considered a “just-noticeable” difference;
- A 5 dB change is required before any noticeable change in community response would be expected. A 5 dB change is often considered a significant impact; and
- A 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

12.2 EXISTING NOISE

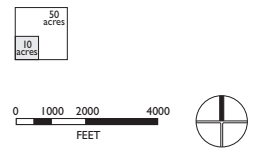
The major sources of noise in Pittsburg include auto traffic on arterial streets and State Route 4, and railroad pass-bys. Noise produced by industrial facilities has an insignificant effect on the City’s noise environment. As part of the General Plan Update process, a community noise analysis was performed to evaluate existing noise conditions in the City, as shown in Figure 12-1.

TRAFFIC NOISE

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic; traffic volume does not have a major influence on traffic noise levels. The primary source of noise from automobiles is high frequency tire noise, which increases with speed. In addition, trucks and older automobiles produce engine and exhaust noise, and trucks also generate wind noise. While tire noise from autos is generally located at ground level, truck noise sources can be located as



① - ⑦ Monitoring location



Source: Charles Salter Associates

Figure 12-1
Existing Noise Contours

high as to 15 feet above the roadbed due to tall exhaust stacks and higher engines; sound walls are not effective for mitigating such noise unless they are very tall.

According to common practice, maximum noise levels of 60 dB are considered “normally acceptable” for unshielded residential development. Noise levels from 60 to 70 dB fall within the “conditionally unacceptable” range, and those in the 70 to 75 dB range are considered “normally unacceptable.”

Traffic Noise Levels

The Pittsburg Planning Area is subject to noise impacts from a number of transportation corridors. Roads and highways, or portions thereof, that impact sensitive receptors (that is, produce noise levels greater than 60 dB) include:

- State Route 4;
- Port Chicago Highway;
- Pittsburg-Antioch Highway;
- Bailey Road;
- Willow Pass Road;
- East Leland Road;
- Railroad Avenue;
- Buchanan Road;
- Harbor Street; and
- Loveridge Road.

By far the greatest contributor to noise in the Planning Area is traffic on State Route 4, producing noise levels exceeding 60 dB over approximately 2,000 feet (more than one-third mile) both north and south of the highway. This area includes adjacent neighborhoods throughout the length of the highway. Neighborhoods located at the convergence of State Route 4, Railroad Avenue, and



Train traffic, a source of noise in the City, is shown in this rail overpass at Harbor Street (just north of East Santa Fe Avenue).



The BART Station is a high traffic area (with 75 trains in service during a weekday) and a source of City noise.

the BNSF railroad tracks are particularly susceptible to noise levels above 60 dB. Much of Bay Point is also susceptible to high noise levels due to its proximity to the BNSF and Southern Pacific railroads, State Route 4, Bailey Road, and Port Chicago Highway.

RAILROAD NOISE

Activity on the BNSF and Southern Pacific railroads represents significant sources of noise in the Planning Area. Noise levels reaching 70 dB exist along the length of both railroads, affecting adjacent noise-sensitive uses. Residential neighborhoods are located south of the railroad tracks in both Pittsburg and Bay Point, and north of the tracks in Pittsburg's Downtown. Factors that may influence the overall impact of railroad noise on noise-sensitive uses include its intermittent nature and the lack of sound walls or other barriers between the tracks and adjacent uses.

Pittsburg/Bay Point BART Station

The Pittsburg/Bay Point BART Station, which began operations in 1996, is located at the southwest corner of the State Route 4/Bailey Road interchange. On a typical weekday, 75 trains provide service from this station to other stations in the BART system. BART rail tracks are located in the median of State Route 4, contributing to the general noise environment of the Planning Area between the western city limits and the BART station. A new station, proposed for the State Route 4/Railroad Avenue intersection, would extend the BART noise corridor over three miles into the center of the City.

BART has established maximum pass-by exterior noise levels for its transit operations. These noise levels are higher than typical standards for noise sensitive uses because they are based on individual noise events rather than average noise levels over a period of time. The impact of BART pass-by noise on CNEL levels will depend on the frequency and duration of the train pass-bys.

INDUSTRIAL NOISE

Intermittent noise occurrences from local industrial activities are by themselves insignificant, but contribute to overall noise levels within the City. Truck traffic generated by local industrial uses also contributes to noise levels along arterial

roadways within the eastern portion of the City. The Mirant (formerly PG&E) Power Plant located along the northern waterfront emits stack “blows” which can be heard in Downtown and adjacent areas.

12.3 PROJECTED NOISE

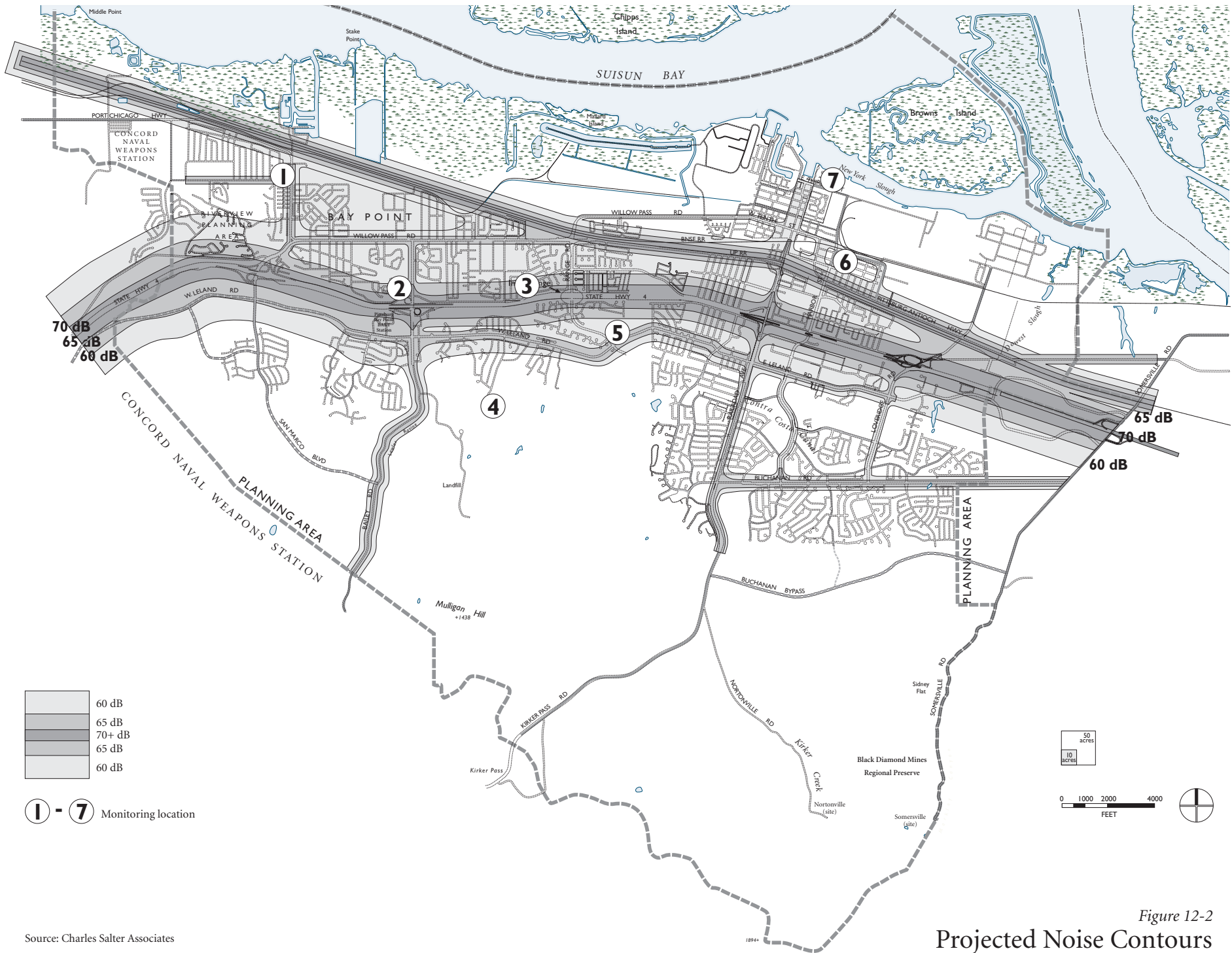
Traffic forecasts to accommodate projected growth in the City were used to generate noise projections at General Plan buildout. Projected noise levels on local roadways are shown in Table 12-1. Two separate measurements (100 feet and 1,000 feet) were used to determine noise severity. The projected noise contours in Figure 12-2 reflect these measurements; however, the scale of the map restricts placement of additional contours above 70 dB along major transportation corridors.

Highest noise levels in Pittsburg will result along the State Route 4 corridor (90 dB), while above-acceptable noise levels will also result along many major arterial roadways (75 to 80 dB). The excessive noise levels estimated along State Route 4 result from two primary factors: 1) BART rail lines running down the center median, with train pass-bys increasing average daily noise levels; and 2) heavy vehicle traffic along the highway corridor, which lies within a narrow right-of-way with residential development built up on either side. If train activity along the BNSF railroad right-of-way is increased, noise-sensitive land uses in proximity to the line could be exposed to excessive noise levels. Noise levels along the route would depend on the type of train vehicle and track improvements, the frequency of train pass-bys, and the location of train stations.

**Table 12-1
Projected Traffic Noise Level Changes at
Buildout, City of Pittsburg**

<i>Affected Roadway Segments</i>	<i>Predicted Noise Level at 100 ft. (L_{dn})</i>	<i>Projected Noise Level at 1,000 ft. (L_{dn})</i>
1 State Route 4	90 dB	75 dB
2 Pittsburg-Antioch Highway	79 dB	64 dB
3 Railroad Avenue	79 dB	64 dB
4 Willow Pass Road	79 dB	64 dB
5 Buchanan Road	78 dB	63 dB
6 East Leland Road	77 dB	62 dB
7 Bailey Road	77 dB	62 dB
8 Loveridge Road	75 dB	60 dB

Source: Charles Salter & Associates, 2000.



Source: Charles Salter Associates

Figure 12-2
Projected Noise Contours

12.4 NOISE POLICIES

GOALS: NOISE

- 12-G-1 Protect public health and welfare by eliminating or minimizing the effects of existing noise problems, and by preventing increased noise levels in the future.*
- 12-G-2 Encourage criteria such as building design and orientation, wider setbacks, and intense landscaping in lieu of sound walls to mitigate traffic noise along all major corridors, except along State Route 4.*
- 12-G-3 Continue efforts to incorporate noise considerations into land use planning decisions, and guide the location and design of transportation facilities to minimize the effects of noise on adjacent land uses.*

POLICIES: NOISE

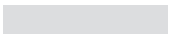
- 12-P-1 As part of development review, use Figure 12-3 to determine acceptable uses and installation requirements in noise-impacted areas.*


Figure 12-3 is based on land use and noise exposure compatibility levels in Appendix A of the State of California General Plan Guidelines. The table is consistent with the provision of State law that requires special noise insulation for new multi-family housing units within 60 dB Ldn noise exposure contours. The table's land use categories do not correspond to the land use classifications on the General Plan Land Use Diagram, but to actual uses in development projects.


- 12-P-2 Work with Caltrans to provide sound walls designed to reduce noise by 10 dB in residential areas along State Route 4.*
- 12-P-3 Support implementation of State legislation that requires reduction of noise from motorcycles, automobiles, trucks, trains, and aircraft.*


Land Use Category	Exterior Day/Night Noise Levels DNL or Ldn, dB					
	55	60	65	70	75	80
Residential— Single Family						
Residential— Multiple Family						
Transient Lodging— Motels, Hotels						
Schools, Libraries, Churches, Hospitals*, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing,						

INTERPRETATION

 Normally Acceptable:
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements

 Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

 Normally Unacceptable:
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

 Clearly Unacceptable:
New construction or development clearly should not be undertaken.

Source: Office of Planning and Research, State of California General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1998.

*Because hospitals are often designed and constructed with high noise insulation properties, it is possible for them to be satisfactorily located in noisier areas.

Figure 12-3
**Land Use Compatibility for
Community Noise Environments**

- 12-P-4 Require noise attenuation programs for new development exposed to noise above normally acceptable levels. Encourage noise attenuation programs that avoid visible sound walls.*
- 12-P-5 Require that applicants for new noise-sensitive development, such as schools, residences, and hospitals, in areas subject to noise generators producing noise levels greater than 65 dB CNEL, obtain the services of a professional acoustical engineer to provide a technical analysis and design of mitigation measures.*
- 12-P-6 Ensure that new noise-sensitive uses, including schools, hospitals, churches, and homes, in areas near roadways identified as impacting sensitive receptors by producing noise levels greater than 65 dB CNEL (Figure 12-1), incorporate mitigation measures to ensure that interior noise levels do not exceed 45 dB CNEL.*
- 12-P-7 Require the control of noise at the source through site design, building design, landscaping, hours of operation, and other techniques, for new development deemed to be noise generators.*
- 12-P-8 Develop noise attenuation programs for mitigation of noise adjacent to existing residential areas, including such measures as wider setbacks, intense landscaping, double-pane windows, and building orientation muffling the noise source.*
- 12-P-9 Limit generation of loud noises on construction sites adjacent to existing development to normal business hours between 8:00 AM and 5:00 PM.*
- 12-P-10 Reduce the impact of truck traffic noise on residential areas by limiting such traffic to appropriate truck routes. Consider methods to restrict truck travel times in sensitive areas.*

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