

# Entering the Quiet Zone



## *Noise Compatible Land Use Planning*



U.S. Department of Transportation  
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# Entering the Quiet Zone

*Noise Compatible Land Use Planning*

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## **Purpose**

This brochure has been developed to provide information to elected officials, planners, developers, and the interested public about the problem of highway traffic noise and effective responses to that problem. This report: 1) summarizes the general nature of the problem, 2) provides examples of Noise Compatible Land Use strategies either constructed or planned, and 3) encourages a proactive posture by local decision makers, developers and citizens to share in and actively influence land use next to highways.

## **Acknowledgements**

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# Noise Compatible Land Use Planning — What It Is and Why You Should Consider It

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## Introduction

Highway traffic noise is an important issue for communities across America. If not properly addressed, highway noise can disrupt our daily routines by interrupting sleep, recreational activities, and even our conversations.

Local planners, developers, and residents attend numerous meetings and spend many hours considering methods to address existing or anticipated noise from nearby roads.

Effective control of highway traffic noise requires a three-part approach:

1. Implementing source control and quieting vehicles at the source.
2. Incorporating noise reduction measures in highway construction projects.
3. Developing land adjacent to highways in a manner that reduces or eliminates noise problems (i.e., noise-compatible land-use planning).

**There's something else to consider that reduces noise? Noise compatible land use planning!**

### **What is Noise Compatible Land Use Planning?**

Noise compatible land use planning is planning that eliminates or reduces the undesirable effects of highway traffic noise by:

- Encouraging the location of less noise-sensitive land uses next to highways.
- Promoting the use of open space or special building construction techniques to minimize noise impacts.

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Much emphasis has been given to the first two parts. First, trucks and tires have become quieter. Second, through the end of 1998, 44 State departments of transportation and the Commonwealth of Puerto Rico have constructed more than 1,620 linear miles of barriers at a cost of more than \$1.4 billion. However, sufficient attention is often not given to the noise compatible land use planning option.

Avoiding a problem is frequently more effective than trying to correct an existing one. Though we accept that new growth and development often occur next to

busy, existing highways, we can help communities address highway traffic noise before—rather than after—a frustrating noise problem has occurred.

FHWA wants developers, government officials, planners, and private citizens to know that the best way to reduce highway traffic noise is usually by advance planning and shared responsibility. Local government and developers working cooperatively with Federal and State governments can plan, design, and construct new development projects and new roadways so that traffic noise is

reduced. How? One key way is by using **noise compatible land use planning**.

FHWA has prepared this booklet to explain noise compatible land use planning, offer strategies, and outline advantages of a proactive approach for sharing in and actively influencing land use next to highways. Read on to learn the “what,” “how,” and “why,” of this important noise-control method.

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## What Is Noise Compatible Land Use Planning, and How Is It Done?

Noise compatible land use planning is a community planning method that helps reduce or eliminate traffic noise along highways. This type of planning means considering land-use options and noise issues more effectively so that the right kinds of development are set up next to highways. Several strategies can be used if you want to start using noise compatible land use planning.

A good first step when beginning this process is to identify land uses that are well suited for areas adjoining highways—uses that are less sensitive to highway traffic noise. Many times, these uses can create a benefit from their proximity to the roadway and the access it provides. Shopping malls or office space, for instance, are good choices near highways.

Another useful early strategy is to designate open space next to a highway so there is room for noise to dissipate before it reaches sensitive areas.

Local governments can use the following approaches to encourage noise compatible land use planning in their communities:

- Planning, zoning, or other legal means (such as, subdivision or development standards, building codes, health codes, or occupancy permits).
- Municipal controls that include land or easement purchases or the acceptance of land donations.
- Community education to inform citizens, developers, and local planners of the

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**Question: *What is Noise Compatible Land Use Planning?***

**Answer:** *Reducing noise in areas along highways by using adjacent land for activities, services, or businesses that are not disrupted by noise.*

options for structures and land uses that will be harmonious next to a roadway.

- Acoustical site planning, architectural design, or acoustical construction.

These construction-related techniques address where structures are located, how structures are designed, and what types of materials are used in the structures.

### **What Are the Benefits of Noise Compatible Land Use Planning?**

Noise compatible land use planning can have positive effects on a community's finances, aesthetics, and quality-of-life.

For instance, when communities use noise compatible land use planning to create a “quiet zone” instead of buying noise barriers, State departments of transportation can use the money saved for additional roadway improvements or maintenance programs. Noise compatible land use planning can be used to attractively design open space next to a road or highway for both passive and active recreational uses. Open spaces can also be designed to make commercial or business properties more visible to existing and future customers.



## Reduce the Noise and Create a Quiet Zone

*Effective noise compatible land use planning can reduce the need for construction of many noise barriers in highway programs*

Using land in planned, predetermined ways allows greater development flexibility for neighboring communities, since the planning practices are known in advance.



*Open space, slightly depressed construction.*

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Finally, noise compatible land use planning provides appealing alternatives for reducing traffic noise when compared to noise barriers, which are more visually and physically restrictive.

As vacant land in many communities disappears, the pressure to use areas next to highways may increase. But communities can use noise compatible land use strategies creatively, with very positive results.

## **What Are The Costs Of Noise Compatible Land Use Planning?**

Several types of costs that need to be considered before a community undertakes noise compatible land use planning. The following is a summary of costs that communities and developers can expect:

- Local governments may need to fund administrative costs for including noise compatible land use standards in their guidelines and ordinances.
- Developers may bear a cost for design alternatives that result

in fewer homes (or the same number of homes, if denser development is allowed).

- Developers may incur costs for using different materials in construction that are more sound-absorbent than traditional materials. In many instances, however, these costs can be offset by an increase in rental or sales rates, resulting from the reduced effects of highway traffic noise. When developers set a standard for sensitivity and high quality in initial construction, these actions can contribute to long-term value.



### Why Noise Compatible Land Use? Because it . . .

- Improves community character
  - Protects neighborhood from highway noise.
  - Eliminates restrictive, “hemmed-in” feeling created by noise walls.
  - Reduces complaints about noise from highway neighbors.
- Frees money for other highway needs
- Provides value now **and** later
  - Enhances commercial and retail visibility and easy access to the highway.
  - Improves aesthetics.
  - Designing quieter structures helps to secure current and increase future property value.
- Complies with changing Federal requirements
  - Recent legislation often prohibits most Federal funding of noise barriers next to existing highways.

*Windowless rear exterior;  
fence to bottom of first  
floor rooflines.*

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## Has Noise Compatible Land Use Planning Been Used Successfully?

The implementation of formal programs for noise compatible land use planning has been limited. However, there are examples where noise compatible land use practices have been used. Commercial entities, industrial space, office parks, and open space are the most common and desirable uses near roadways. These activities, which benefit from locations next to a

highway, do not require a quiet ambiance, so highway traffic noise is usually not disruptive. As vacant land becomes scarcer in many communities, new residential development is frequently constructed adjacent to highways. Modern construction techniques allow residential properties to coexist next to highways, using strategies other than traditional noise barriers.

Illustrations from Eugene, Oregon; Houston, Texas; and Kansas City, Missouri, offer innovative concepts that can be used as models by other communities wanting to

### Important Note:

*Federal legislation bans FHWA from participating in construction of most noise barriers related to development or construction next to existing highways.*

apply noise compatible land use planning principles. Houston and Kansas City are typical large urban communities, with populations of 1.7 million and 500,000, respectively. Eugene is a small urban area with a

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population of 130,000. Examples from Houston and Kansas City illustrate typical designs for commercial developments near roadways, while examples from Eugene and Houston illustrate typical designs of residential developments near roadways.

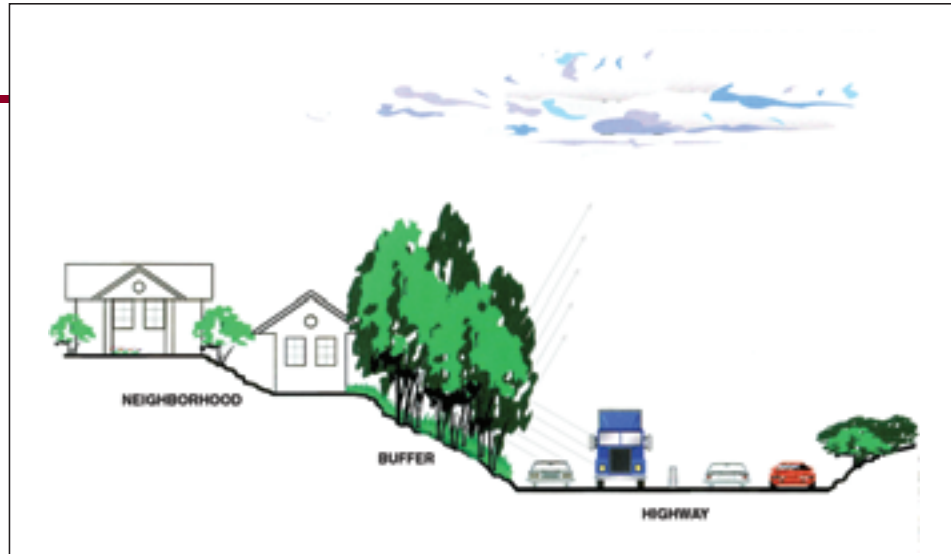
## **Why Use Noise Compatible Land Use Planning Now?**

Communities across the country are seeking non-traditional solutions to traditional challenges. Effective planning before development occurs can help create more livable communities, with improved aesthetics and a greater sense of openness. Municipalities and developers can benefit from noise compatible land use planning—and, almost always, the benefits will far outweigh the initial costs. If communities want to eliminate

that “walled in” feeling from the use of noise barriers, this noise reduction strategy will be a good fit.

Some communities are beginning to reexamine the use of noise barriers for this reason and due to a loss of visibility for commercial establishments. Residents can be happier, and complaints about noise can go down. Limited highway funds can be used for needs other than noise abatement. Developers can market “quiet developments” and can recover additional development costs in sales and rental prices.

Noise barriers are often perceived as an answer to eliminating or reducing highway traffic noise impacts. Many miles and types of barriers have been constructed over the years. However, there are indications that Federal and State funding that finance noise barriers may be restricted. In fact, Federal legislation has already been enacted to prohibit participation in the construction of most noise barriers for new development that occurs next to existing highways.\*



*Residential neighborhood separated from highway traffic noise by space and terrain.*

\* For more information about legislation, see Title 23 of the Code of Federal Regulations, 23 CFR 772.13(b).

## Commercial, Industrial, and Retail Noise Compatible Land Uses — What Has Worked?

Commercial, industrial or retail developments can act to cushion the effects of highway traffic noise on adjacent buildings that may be used for activities sensitive to

noise. Municipalities can implement zoning, other control ordinances, or financial incentives to encourage land uses that are more compatible with noise from roadways. Vegetation between commercial, industrial, or retail land uses can serve as a visual buffer.

*Highway noise does not pose a problem for many retail establishments.*



*Retail use benefits from highway access and visibility.*



*Highway adjacent to low density commercial.*

Commercial uses can include office space or consumer-oriented retail, as found in many locations in Houston and Kansas City. This strategy is particularly valuable when applied before roadway construction. When communities can plan or anticipate roadways, they gain greater benefits from exercising control over land use. The reason is simple. They can ensure that transportation and commercial growth conforms with local goals—all while minimizing the effects of highway traffic noise.



## Residential Strategies

In many areas of the country, competitive use of land means that residential areas are being developed next to highways. This proximity is a benefit for residents, because it helps increase their mobility.

Today many cities feature well-designed residential developments near highways. One example is Eugene, Oregon. Community leaders in Eugene are aware of the impact of noise pollution on adjacent residential development. While no official

*Exterior wall of townhomes (seen between the trees) is designed to reduce effect of highway traffic noise. Trees and vegetation act as a visual buffer.*



*Side and rear view of townhomes. Rear wall has special insulation; in addition to solid surface.*



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rules govern residential development near major arterials in Eugene, developers consistently work to reduce the negative impacts of noise from nearby roadways and freeways. Open space buffers are widely used along I-5, a north-south arterial in the city's east side.

Another important method of noise abatement used in Eugene involves the positioning and design of buildings. Along I-5, developers designed multi-family buildings with no windows on the sides facing highways. One development of townhomes is

uniquely constructed to curb the noise from I-5, which is directly behind the units. In addition to the solid blocks used as the outside building surface, several layers of high quality, sound-absorbent insulation almost eliminates roadway noise from the interior of the townhomes. Also, a row of existing trees was left to serve as a visual buffer.

Developers in Houston address the negative impacts of noise and the visual effects along roadways. Although Houston has no zoning or ordinances requiring design modifications in such locations,

the developers use the design of their developments to lessen the impact of highway traffic noise. Homes are designed so they do not face the freeway right-of-way (ROW). Homes that back-up to the ROW are completely bricked on the rear exterior surfaces. This serves two purposes: (1) visually the homes are more desirable because of the greater quantity of brick exterior and (2) the presence of the brick material minimizes the effects of traffic noise. Another design feature that minimizes noise is increasing the height of the residential property fences facing the ROW. Fences facing

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the ROW are 10 feet tall, as compared to 6 feet throughout the remainder of the housing development, providing both mitigation and privacy.

## Open Space Strategies

Open space reduces highway traffic noise levels by increasing the distance between the noise source and the noise sensitive activity. An open space method of noise reduction can be used in combination with commercial/ industrial, residential, or construction mitigation strategies to reduce impacts from highway traffic noise.

Planners, decision makers, and community stakeholders should think innovatively about open

space and look for ways to put it to productive use. Examples of successful uses include walking trails, bike paths, and other leisure options. Planners and designers should take advantage of natural features, such as “rolling hills”— or should feel free to create such effects. Adding vegetation to the open space strategy can dramatically increase its attractiveness. For example, trees planted intermittently can provide shade for recreational activities and give a linear park appearance.



*Open space buffer between highway and residential community.*

# What Can You Do?

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## The Charge to Begin

An essential element for noise compatible land use planning is a local government or developer that is interested in new options for community planning and design. There must be an understanding of the “big picture” and a willingness to plan ahead to successfully implement this approach to noise reduction.

FHWA hopes that this brochure provides a first-step toward using noise compatible land planning. We want to spread the word that you can abate noise without

totally enclosing your communities within barriers. You can preserve more open landscapes. Considering and using a full range of noise abatement options is part of improving the environmental quality of a community.

Planners, elected officials, developers, and community residents have choices. It is important to analyze options in advance of construction to identify the best long-term approach for maintaining quiet, aesthetically pleasing, and accessible neighborhoods. Clearly, there will be occasions when noise barriers

or other highway construction techniques are desirable. *The key is to consider a range of options, discuss the options with all affected groups, and identify the most appropriate response.*

## Next Steps

Here are some steps your community can take to make your neighborhood a quiet zone:

- Include noise compatible land use as a key option during planning meetings.

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- Advocate noise compatible land use options to developers.
  - Educate elected officials and community residents about noise compatible land use planning.
  - Enhance zoning or other legal measures that encourage noise compatible land use planning.
  - Include municipal land use or easement purchases as an active strategy to promote noise compatible land use planning.

**Administrative tools that can help your community build a quiet zone:**

- Health Codes
- Property Tax Incentives
- Zoning Ordinances
- Subdivision Regulations
- Building Codes
- “Set Back” Regulations

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**For more information about reducing noise in your community, contact the FHWA:**

**Federal Highway Administration**

Office of Natural Environment

400 Seventh St., SW

Washington, D.C. 20590

[www.fhwa.dot.gov/environment/noise.htm](http://www.fhwa.dot.gov/environment/noise.htm)

**Your Community Deserves Noise Compatible Land Use Planning**

Communities deserve for city officials, developers, planners and other stakeholders to incorporate noise compatible land use planning options into the growth and development process. Doing so will make it possible to:

- Create more livable communities
- Increase options for reducing the problems of highway traffic noise.
- Improve community aesthetics.
- Use funding for highway needs other than noise abatement.

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