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446.01 Traffic Noise Background

Noise is defined as unwanted sound. Noise levels near roadways depend on six variables:

1. Traffic volume
2. Traffic speed
3. Amount of heavy trucks (as a percent of total traffic)
4. Distance from the roadway
5. Intervening topography
6. Atmospheric conditions

Generally, traffic noise increases with heavier traffic volumes, higher speeds, and more heavy trucks.

WSDOT uses several strategies to control traffic noise at nearby noise sensitive receivers:

- Construct noise barriers (walls or earthen berms)
- Reduce traffic speeds
- Coordinate with local agencies to prevent “noise sensitive” development near highways.
- Preserve existing buffer zones and beneficial topographic features.
- Support local jurisdictions to establish principal routes for buses and trucks.

For detailed information see WSDOT’s [Noise](#) web page

446.02 Traffic Noise Requirements

Federal regulations [23 CFR 772](#) (2010) require states to adopt their own state noise policy that have the force of federal law in that state. WSDOT’s most current noise policy is the 2011 WSDOT Noise Policy and Procedures, available online at WSDOT’s [Noise](#) web page.

A traffic noise analysis is required for all projects that:

1. Construct a new highway
2. Significantly realign an existing highway, either horizontal or vertical realignment
3. Increase the number of through traffic lanes on an existing roadway
4. Change near road topography to create new line-of-sight to roadway

When noise impacts are expected, noise abatement that meets WSDOT criteria as feasible, reasonable, and acceptable to the public must be incorporated into the highway improvement project. Criteria are defined in the 2011 WSDOT Noise Policy and Procedures, available online at WSDOT's [Noise](#) web page.

Currently, the Federal Highway Administration (FHWA) does not allow WSDOT to use pavement options, or "quieter pavements, as noise abatement. WSDOT began researching quieter pavements in 2005 and continues to evaluate their acoustic performance and physical durability. For additional information on quieter pavements, see the WSDOT [Quieter Pavement](#) website.

446.03 Noise Technical and Policy Guidance

(1) WSDOT Guidance

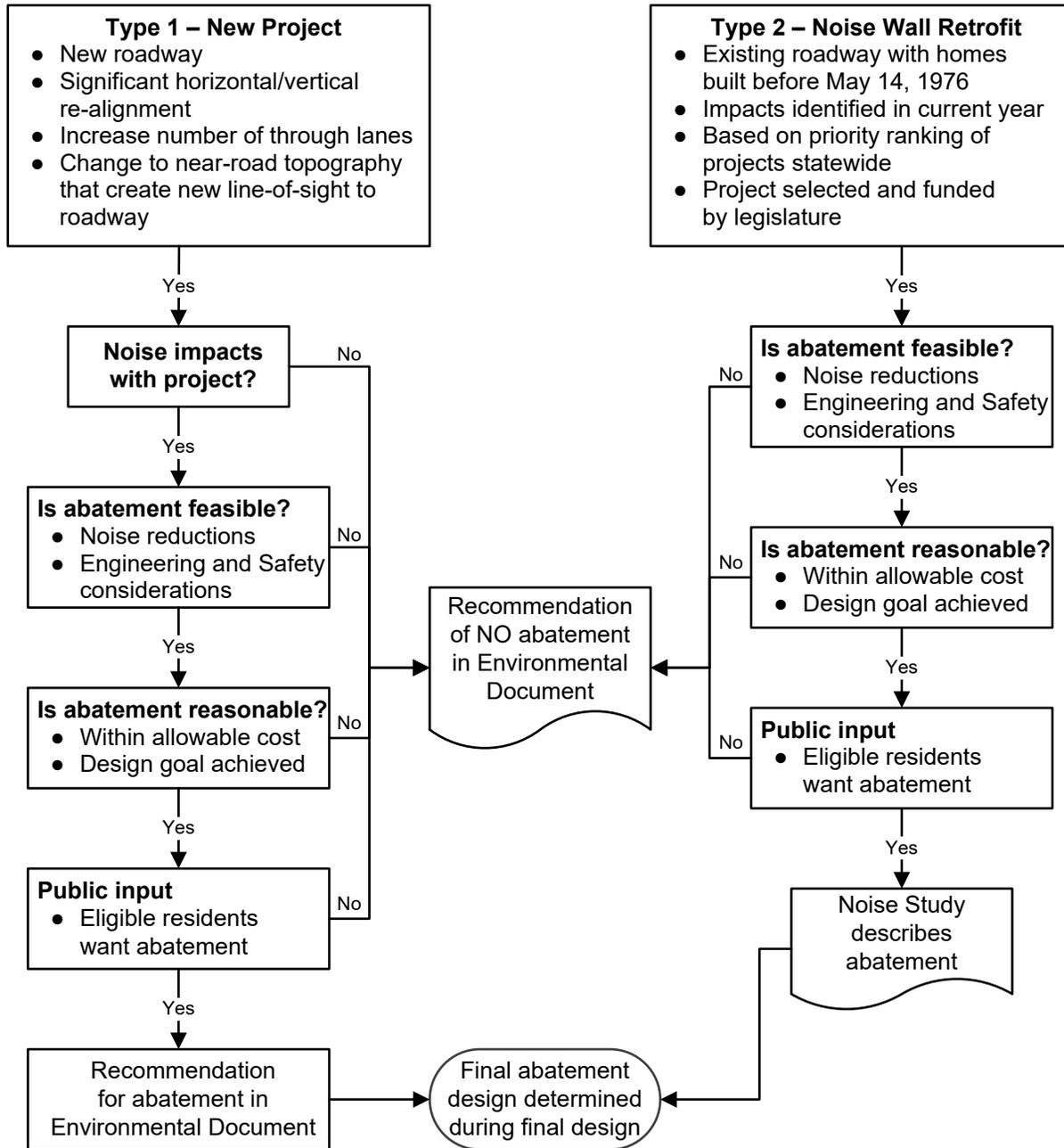
The general policy is to minimize and avoid noise impacts from transportation systems and facilities. Many of the Technical Guidance documents in [Section 446.03](#) also function as Policy Guidance.

Related guidance is available in the following documents.

1. [Noise Policy and Procedures \(2011\)](#) – Both technical procedures and policy guidance for addressing roadway traffic and construction noise is included in the document.
2. [Biological Assessment Manual](#) – Evaluation of noise impacts for fish and wildlife is located in the *Biological Assessment Manual*, Part 2: Guidance on Specific Biological Assessment Topics, under Chapter 7: Noise Impact Assessment.
3. [Roadside Manual M 25-30](#) – Chapter 460 Noise Abatement, provides additional information on safety, visual quality, and maintenance that may be useful for designers of noise barriers.
4. [Development Services Manual M 3007](#) – Chapter 3-3 Environmental Issues, gives general guidelines that local jurisdictions and private developers should follow when considering development and noise impacts on state highways.

(2) FHWA Guidance

1. [FHWA Highway Traffic Noise Analysis and Abatement, Policy and Guidance](#) – The basis for all state noise policies and the accompanying guidance used to support state DOT policy development.
 - Federal Rule [23 CFR 772](#), July 2010
 - [Highway Traffic Noise: Analysis and Abatement Guidance](#), January 2011
2. [FHWA Guidance on Construction Noise](#) – FHWA guidance on highway construction noise from the FHWA Special Report Highway Construction Noise: Measurement, Prediction, and Mitigation (May 2, 1977).
3. [FHWA Guidance on Quieter Pavement](#) – Outlines when states can consider the use of quieter pavements for noise abatement (2005).
4. [FHWA Environmental Guidebook](#) – contains links to numerous references on highway construction and traffic noise analysis and abatement.



Summarizes the Noise Analysis Process
Exhibit 446-1

446.04 Noise Permits and Approvals

The only permits required for noise are variances or exemptions from state and local noise regulations for construction and maintenance activities during nighttime hours ([WAC 173-60](#)). For details, see the WSDOT [Federal, State, and Local Permits](#) web page.

446.05 Noise Considerations for Non-Highway Projects

(1) *FTA lead/co-lead projects*

For many projects involving passenger rail, transit, and/or park and ride facilities, FTA criteria applies as outlined in [FTA Transit Noise and Vibration Impact Assessment](#). Noise studies are also required for these facilities.

An Interagency Agreement for coordinated noise analysis and abatement policy and procedures has been developed by FTA, FHWA, WSDOT, and Sound Transit. The current agreement (as of February 2001) documents an agreed upon noise methodology and criteria for integrated highway and transit projects. A copy of the agreement can be requested from the WSDOT Air, Noise, Energy Program.

FTA technical guidance for mass transportation noise analysis is available in [Transit Noise and Vibration Impact Assessment](#), May 2006 (FTA-VA-90-1003-06). The [FTA General Noise Assessment Spreadsheet](#) designed as an aid in using the FTA General Noise Assessment Procedures.

(2) *FRA Lead/Co-Lead Projects*

Evaluation of railroad sound levels is regulated under [42 USC 4916](#) and [WAC 173-58](#). Rail projects may require a vibration analysis. Rail projects may also require a horn noise analysis if a new rail crossing is created or an existing crossing is modified to introduce new horn warning signals. A process to address train horn noise and establish community quiet zones is now available through the Federal Rail Administration (FRA).

(3) *WSF Projects*

Ferry projects may require a permit for pile driving. Biological Assessments (BA) should address noise impacts to species listed under the Endangered Species Act. Ferry vessels are regulated for noise under [RCW 88.12](#).

(4) *WSDOT Airports*

WSDOT airports have noise abatement guidelines.

446.06 Applicable Statutes and Regulations

- National Environmental Policy Act and State Environmental Policy Act
- Federal Noise Control Act ([42 USC 4901](#)) and companion legislation ([23 USC 109\(i\)](#))

FHWA [Procedures for Abatement of Highway Traffic Noise And Construction Noise \(23 CFR 772\)](#)

- State Noise Legislation ([RCW 70.107](#)) and implementing regulations

The Washington State Department of Ecology (Ecology) is responsible for implementation under the following regulations:

- [WAC 173-58](#) – Establishes standard procedures for measuring sound levels of sources regulated by Ecology, including, but not limited to, environmental noise, motor racing vehicles, construction, float planes, and railroads.
- [WAC 173-60](#) – Establishes the maximum noise levels allowed in different environments and EDNA standards as measured at the property line. Highway traffic is exempt from this regulation, but it does apply to highway construction noise at night from 10 p.m. to 7 a.m.
- [WAC 173-62](#) – Sets noise emission standards for new motor vehicles operating on public highways and provides methods for evaluating motor vehicle noise levels.
- Local Noise Ordinances – Noise from construction or maintenance on transportation facilities during nighttime hours (typically, 10 p.m. to 7 a.m.) are subject to local ordinances and may require a noise variance or exemption.

446.07 Abbreviations and Acronyms

BA	Biological Assessment
CFR	Code of Federal Regulations
EDNA	Environmental Designation for Noise Abatement
dba	A-weighted decibel
FRA	Federal Rail Administration
FTA	Federal Transit Administration
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
SEPA	State Environmental Policy Act
TNM	Traffic Noise Model
WSF	Washington State Ferries

446.08 Glossary

Abatement – Reduction in degree or intensity.

Background Noise – All noise in an area that is not associated with state highway traffic.

Barrier – A solid wall or earth berm located between the roadway and receiver location that provides noise reduction.

Design Year – The future year used to estimate the probable traffic volume for which a highway is designed, usually 20 years from the beginning of construction for WSDOT projects.

Environmental Designation for Noise Abatement (EDNA) – an area or zone within which maximum permissible noise levels are established.

Existing Noise Level – Modeled traffic noise level(s) based the Existing year traffic data.

Roadway – The entire width between the right of way boundary lines of every publicly maintained travel way when any part thereof is open to the public use for purposes of motorized vehicular travel. May also be referred to as a street, road, or highway.

Impacted Community – Noise sensitive receptor sites (such as schools or neighborhoods) where people would be exposed to substantially increased noise levels or noise levels that approach abatement criteria due to a project.

Noise Abatement Criteria – Noise levels that when approached or exceeded are considered to be traffic noise impacts. NAC vary by activities and/or land use.

Traffic Noise Impacts – When the predicted Design Year traffic noise levels approach (≤ 1 dBA) or exceed the NAC or when the predicted Design Year traffic noise levels substantially exceed (≥ 10 dBA) the Existing Year noise levels.

Type I Project – Construction of a new highway; significant realignment of an existing highway (either horizontal or vertical realignment); increasing the number of through traffic lanes on an existing roadway; or changing the near road topography to create a new line-of-sight from noise sensitive receivers to the roadway.

Type II Project (noise wall retrofit) – Noise abatement on an existing highway targeting residences that existed before 1976 when traffic noise evaluations were first required.

Type III Project – Federal projects that do not require a noise analysis.