

Chapter 7 - NOISE

Figure 7-1. Pathway Recommendations for Noise

Noise Vision: Noise levels provide for community and neighborhood serenity, abundant quiet recreational areas, and are not harmful to wildlife.

Proposed Desired Conditions

1. Single Event Noise Sources

Single event noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

2. Cumulative Noise Levels

Community noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

3. Effects on Wildlife

Noise levels are controlled to protect wildlife.

Proposed Indicators

All data for the indicators shown below shall be compiled by the monitoring protocol and be reported no less than annually by category, noise areas, and species of concern.

Single Event Noise Sources

1. Number of individual exceedances.
2. Number of corrective actions taken.
3. Percent of planned monitoring completed:
 - a. On-Highway Vehicles
 - b. Off-Highway Vehicles
 - c. Over-Snow Vehicles
 - d. Watercraft
 - e. Aircraft

Cumulative Noise Levels

1. Number of exceedances of the CNEL noise standards.
2. Number of exceedances of the 1-hr noise standards.

Effect on Wildlife

Further investigation of the appropriate limits will be done by wildlife experts at a later date as resources become available.

Proposed Standards

On-Hwy Vehicles – Same as the current CA stds Basin-wide & a new 20" exhaust std for motorcycles.

OHVs – Same as the current CA stds. Basin-wide

Over-Snow Vehicles – 73 db and/or equivalent std.

Watercraft – Same as current TRPA stds.

Settlement Agreement Aircraft- Same as current standards

Non-Settlement Agreement Aircraft-

(Recommendation complete by November 2007)

Numerical standards will be based on those currently found in the plan area statements for each specific area including transportation corridors. In addition, hourly noise levels for each area will be developed and proposed at a later date.

Under Development

The Standards will be jointly developed with wildlife programs for appropriate levels. These are not expected to be adopted before 2010.

7.0 Noise Overview

Noise by definition, is “unwanted sound,” and is a subjective reaction to acoustical energy or sound levels. Due to the nature of the community and the pristine natural areas in the Lake Tahoe Basin, noise management is an integral part of the land use planning and the environmental improvement process in the region. Visitors and residents have expressed concerns about the decline in the serenity of their community and enjoyment of the outdoors due to excessive noise from sources such as on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft and aircraft. For this reason, Pathway agencies in cooperation with the community are developing new plans that encompass improvements to the current noise program to reduce noise levels and restore the serenity to the area. The following text represents an overview of the efforts by the Pathway agencies and the community.

7.1 Noise Vision

To begin the process, Pathway agencies in conjunction with the public developed a vision for the noise program. The purpose of this vision is to provide the foundation for the overall program and set the tone for future improvements for the noise program and our community. The vision is as follows:

Noise Vision

Noise levels provide for community and neighborhood serenity, abundant quiet recreational areas, and are not harmful to wildlife.

7.2 Need For Change

During the Noise program evaluation process, the public expressed interest in improving several components. These improvements primarily focused on the following areas:

- a. Update the regulations to utilize the most progressive standards and available technologies basin-wide: Currently, there are different noise standards and protocols established by each state as well as the TRPA. This makes it very confusing for the residents and visitors to understand the requirements and makes it difficult for the regulatory agencies to effectively conduct enforcement activities. For this reason, a more standardized approach to the noise program is being proposed. Examples of these improvements include the adoption of the more stringent California on- and off-road vehicle noise standards for the Nevada portion of the Lake Tahoe Basin. In addition, new noise measurement techniques are proposed for on-road motorcycles and snowmobiles to enable quick and accurate noise measurements and new standards are being developed to limit noise associated with aircraft.

- b. Establish new 1-hr noise standards: Community and agency representatives expressed concern that there was no program to address short duration noise disturbances. To address this, new 1-hr noise standards are being proposed. These standards are designed to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas by limiting intrusive short-duration noise levels that are not limited by the current Cumulative Noise Equivalent Level (CNEL) standards.
- c. Establish and implement a robust monitoring and enforcement program: At almost every public and agency meeting, one of the top concerns was that no comprehensive noise monitoring and enforcement program existed in the Lake Tahoe Basin. To this end, the Pathway and other regulatory agencies in the Lake Tahoe Basin need to develop new protocols and programs to address this issue. Because it will take some time to organize and implement a robust enforcement program between the multiple jurisdictions in the Lake Tahoe Basin, several new indicators are being proposed in order to monitor this effort and specifically address this concern. These indicators are discussed in more detail further on in this document.

7.3 Desired Condition 1: Single Event Noise Sources

Noise from identifiable sources such as motor vehicles, watercraft and aircraft can cause annoyance or interfere with recreational activities and the serenity of the neighborhoods and community. Because of the natural beauty of the area and the increasing concerns of the visitors and residents to maintain a serene and quiet experience, it is important that noise regulations adopted in the Lake Tahoe Basin be designed and implemented to utilize the most advanced noise reduction technologies and practices available. To this end, the proposed improvements to this program will help achieve this goal.

7.3.1 Proposed Indicators for Single Event Noise Sources

There are five different categories of single event noise sources that are being proposed. They include on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, and aircraft. For each of these categories, the proposed indicators are:

Number of exceedances of the noise standard by category.

This indicator will monitor the number of violations of the noise standard for each category. This indicator will be used to direct resources in order to improve or develop the necessary strategies to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

Number of corrective actions taken by category. This indicator is designed to monitor Basin Agencies' response to noise violations and provide the necessary feedback on the effectiveness of the program and corrective solutions.

Percentage of planned monitoring completed by category.

This indicator was specifically developed in response to the public's concern that adequate monitoring levels need to exist in order to evaluate and manage the problem.

7.3.2 Current Conditions Related to Single Event Noise Sources

TRPA presently has two indicators that relate to single event noise sources. These include N1 - Single Event (aircraft) and N2 - Single Event (other than aircraft).

The status of N1 - Single Event (aircraft) indicator is presently unknown. This is due to the airport experiencing equipment failures that caused the destruction of historical data and rendered future data collection impossible. For this reason, it is impossible to provide an accurate assessment of this indicator. In addition to the noise monitoring, there are five compliance measures in place for this indicator. An evaluation of these measures indicated that one has been assessed to be somewhat effective and the remaining have been found to be ineffective.

The status of N2 - Single Event (other than aircraft) indicator is presently non-attainment. Monitoring was conducted in 2004 on on-highway vehicles, snowmobiles, and watercraft. This data concluded that between .3 and 6 percent (depending on location around the Lake Tahoe Basin) of the on-highway vehicles monitored were out of compliance, all of the snowmobiles used for commercial snowmobiling operations were in compliance, and 36 percent of the boats tested were out of compliance. This indicator was listed as non-attainment due to the large amount of boats that were shown to be in non-attainment. In addition, there are 16 compliance measures in place for this indicator. An evaluation of these measures indicated that one (Project Review) was assessed to be effective and the remaining were assessed to be ineffective. The primary reason for this assessment was that the majority of effectiveness measures were not monitored or enforced. For historical reference, Table 7-1 presents the attainment status of these indicators from previous periods.

Table 7-1 Single Event Attainment Status					
#	NAME	1991 Attainment Status	1996 Attainment Status	2001 Attainment Status	2006 Attainment Status
N-1	Single Event Aircraft Noise	Non- Attainment	Non- Attainment	Non- Attainment	Unknown
N-2	Single Event Noise - Other	Attainment	Attainment	Non- Attainment	Non- Attainment

7.3.3 Technical Range of Feasibility Regarding Single Event Noise Sources

Of the categories of vehicles and equipment covered by this indicator, there appears to be no issue with regard to the technical feasibility of complying with the current and proposed standards. In most cases, the proposed standards are

the same standards currently adopted by the federal, state, and local agencies and have proven to be realistic. In most cases, the excessive noise generated by this equipment is due to either defective equipment (broken muffler, etc.) or to a product that has been intentionally modified by the owner (altered exhaust system, etc.). The noise associated with the remaining equipment (aircraft) could be mitigated by altering flight paths and/or adopting minimum altitude requirements.

7.3.4 Proposed Desired Condition & Standards for Single Event Noise Sources

A desired condition statement has been developed that addresses the concerns of both the public and regulatory agencies. The proposed Desired Condition for Single Event Noise Sources is as follows:

Desired Condition for Single Event Noise Sources

Single event noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

Table 7-2 presents the proposed standards for single event noise sources. With minor exceptions, the single event noise standards are identical to those currently in place on the California side of the Lake Tahoe Basin. The minor changes include the adoption of California's vehicle noise standards basin-wide, implementation of new stationary exhaust standards for snowmobiles and on-highway motorcycles, and the adoption of standards for non-settlement agreement aircraft that will be developed at a later date.

7.4 Desired Condition 2: Cumulative Noise Levels

Unlike single event noise levels, CNELs are average noise levels found in a given area. CNELs are noise level measurements of the "average" noise levels over a 24-hour period, with adjustments for potential annoyance or intrusion being added for noise that occurs during evening and night-time hours. This type of noise measurement system is employed by many communities around the world and is currently being used in the Lake Tahoe Basin. Periodically the CNEL standards are reviewed and updated based on proposed activities in the region. These standards take into account, site-specific analyses, estimated impacts on affected land uses, consistency with other provisions of the regional plans, and reasonable tests of significance of change in noise levels. At this time, no changes are proposed for the CNELs. However due to concerns over short duration noise disturbances, new 1-hour noise standards are being developed for adoption. These standards are necessary to control noise associated with activities that affect the serenity of the community and neighborhood but do not violate the current CNELs standards.

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Table 7-2 Proposed Single Event Noise Standards																																																						
#	NAME	STANDARDS																																																				
N-1	Single Event Noise Sources	<p>Aircraft All aircraft operating between the hours of 8:00 am and 7:59 pm shall not exceed 80 dBA on arrivals or departures</p> <p>All aircraft operating between the hours of 8:00 pm and 7:59 am shall not exceed 77.1 dBA on arrivals or departures.</p> <p>Noise levels will be measured at 6,500 meters from start to takeoff roll and at 2,000 meters from the runway threshold approach.</p> <p>Non-Settlement agreement aircraft noise levels & procedures will be developed at a later date.</p>																																																				
		<p>Motorized Vehicles</p> <p>The following are the maximum noise levels (Measurements in dBA)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Source</u></th> <th style="text-align: center;"><u>dB</u></th> <th style="text-align: left;"><u>Monitoring Procedures</u></th> </tr> </thead> <tbody> <tr> <td>Watercraft Moving</td> <td style="text-align: center;">82</td> <td>SAE J-34</td> </tr> <tr> <td> At Shoreline</td> <td style="text-align: center;">75</td> <td>SAE J-1970</td> </tr> <tr> <td> Stationary Test</td> <td></td> <td>SAE J-2005</td> </tr> <tr> <td> 1993 & Later</td> <td style="text-align: center;">88</td> <td></td> </tr> <tr> <td> Prior to 1993</td> <td style="text-align: center;">90</td> <td></td> </tr> <tr> <td>Motor Vehicles less than 6,000 GVW & less than 35 MPH and greater than 35 MPH</td> <td style="text-align: center;">76 82</td> <td>CA Vehicle Code</td> </tr> <tr> <td>Motor Vehicles greater than 6,000 GVW & less than 35 MPH and greater than 35 MPH</td> <td style="text-align: center;">82 86</td> <td>CA Vehicle Code</td> </tr> <tr> <td>On-Highway Motorcycles</td> <td></td> <td></td> </tr> <tr> <td> less than 35 MPH and</td> <td style="text-align: center;">77</td> <td>CA Vehicle Code</td> </tr> <tr> <td> greater than 35 MPH</td> <td style="text-align: center;">86</td> <td>CA Vehicle Code</td> </tr> <tr> <td> Stationary 20" Exhaust</td> <td style="text-align: center;">tbd</td> <td>tbd</td> </tr> <tr> <td>Off-Road Vehicles</td> <td></td> <td></td> </tr> <tr> <td> less than 35 MPH and</td> <td style="text-align: center;">72</td> <td>CA Vehicle Code</td> </tr> <tr> <td> greater than 35 MPH</td> <td style="text-align: center;">86</td> <td>CA Vehicle Code</td> </tr> <tr> <td> Stationary 20" Exhaust</td> <td style="text-align: center;">tbd</td> <td>SAE J-1287</td> </tr> <tr> <td>Snowmobiles 15MPH or less</td> <td style="text-align: center;">73</td> <td></td> </tr> <tr> <td> Stationary Exhaust Test</td> <td style="text-align: center;">tbd</td> <td>SAE J-2657</td> </tr> </tbody> </table>	<u>Source</u>	<u>dB</u>	<u>Monitoring Procedures</u>	Watercraft Moving	82	SAE J-34	At Shoreline	75	SAE J-1970	Stationary Test		SAE J-2005	1993 & Later	88		Prior to 1993	90		Motor Vehicles less than 6,000 GVW & less than 35 MPH and greater than 35 MPH	76 82	CA Vehicle Code	Motor Vehicles greater than 6,000 GVW & less than 35 MPH and greater than 35 MPH	82 86	CA Vehicle Code	On-Highway Motorcycles			less than 35 MPH and	77	CA Vehicle Code	greater than 35 MPH	86	CA Vehicle Code	Stationary 20" Exhaust	tbd	tbd	Off-Road Vehicles			less than 35 MPH and	72	CA Vehicle Code	greater than 35 MPH	86	CA Vehicle Code	Stationary 20" Exhaust	tbd	SAE J-1287	Snowmobiles 15MPH or less	73		Stationary Exhaust Test
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7.4.1 Proposed Indicators for Cumulative Noise Levels

There are two proposed indicators for Cumulative Noise Levels. These include:

Number of exceedances of the CNEL noise standards. This indicator will be used to monitor the threshold and direct resources in order to improve or develop the necessary strategies to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

Number of exceedances of the 1-hour noise standard. The actual numerical values for this standard are currently under development. When developed, this indicator will be used monitor the threshold and direct resources in order to improve or develop the necessary strategies to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

7.4.2 Current Condition and Trend for Cumulative Noise Levels

The status of Cumulative Noise Levels indicator is presently non-attainment. Monitoring was conducted in 2004 in nine separate areas; 4 high-density residential, 3 low density residential, 1 urban outdoor recreation area, and 1 rural outdoor recreation area. The results indicated that all nine of the sites measured violated the standard for their area. In addition, six of the measured sites were higher than previous measurements. Although further studies are necessary, it appears that traffic noise was the predominate cause for the out-of-attainment status. Construction noise was also mentioned as a probable cause of increased noise. Table 7-3 presents attainment status for these indicators from previous periods, for historical reference.

Table 7-3 CNEL Attainment Status					
#	NAME	1991 Attainment Status	1996 Attainment Status	2001 Attainment Status	2006 Attainment Status
N-3	Community Noise Equivalent Level (CNEL)	Non- Attainment	Non- Attainment	Non- Attainment	Non- Attainment

7.4.3 Technical Range of Feasibility Regarding Cumulative Noise Levels

There appears to be no issue with regard to the technical feasibility of improving CNELs. If vehicular noise is the predominate cause of CNEL violations within the

Lake Tahoe Basin, there are several approaches that may be used to reduce these violations. They include the use of low noise pavement, reduced speed limits, restriction of large commercial vehicles from neighborhood streets, implementation of engine brake restrictions, implementation of low noise landscaping, a requirement for noise abatement materials for homes, and active enforcement of the noise standards for modified vehicles. As previously stated, in most cases, the excessive noise generated by vehicles is due to either defective equipment (broken muffler, etc.) or to a vehicle that has been purposely modified by the owner (altered exhaust system, etc). Both of these concerns are easily remedied with proper enforcement of the current regulations. Similarly, ensuring all construction equipment operates with the original mufflers and noise shields in place can mitigate construction noise. Additionally, non-emergency construction activities can be restricted on Sundays and Holidays, which have shown to be the most disturbing days to residents.

7.4.4 Proposed Desired Condition and Standards for Cumulative Noise Levels

The proposed Desired Condition for Cumulative Noise Levels is similar to that of the Single Event Noise and is as follows:

<p style="text-align: center;">Desired Condition for Cumulative Noise Levels</p> <p>Community noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.</p>
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Table 7-4 presents the standards for Cumulative Noise Levels. These standards are very similar to other areas with similar land uses. No changes are proposed for these standards. However as part of the adaptive management process, the TRPA will evaluate information from the World Health Organization which found lower noise levels provide better protection for the community. The standards are divided into land use classifications and transportation corridors that are defined as 300' out from the curbs of the highway.

7.5 Desired Condition 3: Noise Effects On Wildlife

Noise associated with human activities dominates the noise environment in Lake Tahoe Basin. This noise affects not only the visitors and residents, but also effects wildlife. In general, the same noise source that affects people also affects wildlife. These sources include on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, and aircraft. Although we know that noise certainly has a negative affect on wildlife, additional studies are needed prior to implementing new standards.

Table 7-4		
Cumulative Noise Level Standards*		
Land Use Classification		
Areas	CNEL dB	1-hr¹ db
High Density Residential	55	TBD
Low Density Residential	50	TBD
Hotel/Motel Facilities	55	TBD
Commercial Areas	60	TBD
Industrial Areas	65	TBD
Urban Outdoor Recreation Areas	55	TBD
Rural Outdoor Recreation Areas	50	TBD
Wilderness and Roadless Areas	45	TBD
Critical Wildlife Habitat Areas	45	TBD
Transportation Corridor Standards		
Highway	CNEL dB	1-hr¹ Db
50	65	TBD
28	55	TBD
89	55	TBD
207	55	TBD
267	55	TBD
431	55	TBD
South Lake Tahoe Airport	60	TBD
Per TRPA Goals and Policies		
¹ 1-hr standards are currently being developed and are anticipated in the 2007 timeframe		

7.5.1 Proposed Noise Indicator for Effect on Wildlife

Studies have not been completed on this topic. Therefore no indicators are proposed.

7.5.2 Current Condition and Trend for Noise Effect on Wildlife

This is a new indicator, and therefore no studies have been completed for this topic. No present conditions or trend analysis available.

7.5.3 Technical Range of Feasibility Regarding Noise Effect on Wildlife

This is a new indicator, and therefore no studies have been completed for this topic. No information on the technical feasibility of any mitigation measures is available.

7.5.4 Proposed Desired Condition and Standard for Noise Effect on Wildlife

The proposed desired condition for the effects on wildlife is as follows:

Desired Condition for the Protection of Wildlife

Noise levels are controlled to protect wildlife.

Upon allocation of the necessary resources, TRPA in conjunction with other regulatory agencies in the Lake Tahoe Basin will develop standards and indicators for this desired condition. Based on previous resource allocations to the noise program, this work is not expected to be completed for several years.

7.6 Further Considerations Regarding Noise

Noise can be a very complex issue. That said, most of the baseline policies are already in place. The primary focus of Pathway has been on improving the current programs used to implement the policies. The programs necessary to bring the noise threshold into attainment center around three areas:

1. Acquiring the necessary equipment and resources to develop and implement a robust monitoring program. With adequate resources and a robust monitoring program in place, agencies will be able to identify the source of the noise and place active measures in place to either reduce the noise levels or mitigate the issues.
2. Engaging all partners in the Lake Tahoe Basin to help educate, monitor, and enforce the standards. To have a functional noise program, it requires the coordination of multiple partners. The TRPA does not have police powers and therefore does not have the authority to stop and test vehicles or other equipment. For this reason, if we are to control modified vehicles, off-road equipment, or boats, the cooperation of the local law enforcement authorities is essential.
3. The willingness to implement innovative methods in solving the noise problem. This may include alternate planning designs, the use of new products, and educational programs.