

Chapter 9

NOISE

9.1 INTRODUCTION

Noise by definition, is “unwanted sound,” and is a subjective reaction to acoustical energy or sound levels. Due to the rural nature of the communities and the pristine natural areas in the Lake Tahoe Basin (Basin), noise management is an integral part of the land use planning and the environmental improvement processes at Lake Tahoe. Visitors and residents have expressed concerns about the decline in serenity of their community and their 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, the TRPA developed a noise program that is designed to reduce noise levels and restore and maintain the serenity to the area. The purpose of this report is to provide an evaluation of the current program and provide recommendations on its future improvement.

9.2 BACKGROUND

Over the years, residents and visitors have stated that noise levels should be controlled to preserve the serenity of the community and neighborhood, to prevent disruption of their enjoyment out of doors, and to prevent disturbance to wildlife. The 1982 TRPA Report for the Establishment of Environmental Threshold Carrying Capacities indicated that background noise in the Basin was rising as a result of increased levels of human activity. As a consequence, noise thresholds were created to achieve the following objectives:

- Reduce or eliminate those activities in the Basin that produce damaging or distressing noise levels; and
- Provide for community and neighborhood tranquility.

It is these objectives that are the founding principles that guide the noise program in the Basin.

The Tahoe Regional Planning Agency’s (TRPA) bi-state compact (Compact) requires TRPA to adopt environmental threshold carrying capacities (thresholds) for noise within the Lake Tahoe Basin (Basin) and implement the corresponding ordinances, rules, and regulations necessary to achieve and maintain this threshold. The noise threshold was developed as part of the Compact’s provision to maintain the significant scenic, recreational, educational, scientific or natural value of the region or to maintain public health and safety within the Region. To this end, regulations were developed that included numerical standards for overall community noise (Community Noise Equivalent Level (CNEL)) and for single event noises. Community Noise Equivalent Level standards were developed for all plan areas and vary from place to place depending on the land use and impact of transportation systems. Single Event noise standards were also developed for specific sources such as motor vehicles, off-road vehicles, boats, snowmobiles and aircraft.

TRPA's Goals and Policies, Land Use Element, Noise Sub-Element, restates the Compact requirements for noise in two goals. The first relates to attaining single event noise standards and the latter covers the community noise equivalent levels. Code of Ordinances, Chapter 23, lists specific noise standards and methods of measurement that are applied on a project basis. The Code of Ordinances, Chapter 32, Section 32.3, requires TRPA to keep a list of indicators to be monitored for evaluating the attainment status of thresholds. These are referred to below as the compliance indicators, and are the main tracking mechanism for threshold attainment in the noise threshold compliance forms.

Pursuant to Chapter 32 of the Code, TRPA adopted noise threshold indicators in order to evaluate the noise threshold. The current threshold indicators and associate standards are described in Table 9-1 and in more detail in the following text.

9.2.1 MEASUREMENT AND MONITORING OF INDICATORS AND STANDARDS

N-1 Aircraft Noise

The Aircraft Noise indicator was developed to specifically address noise associated with the Lake Tahoe Airport. The airport is located in an environmentally sensitive region of the Basin adjacent to Highway 50 in the City of South Lake Tahoe. The airport is equipped with the following services; auto rental, aviation fuel sales, and life flight emergency medical transportation, and is categorized by the Federal Aviation Administration (FAA) as "Non-Hub Small". The airport noise standards were developed as part of a cooperative four-party settlement agreement which included the City of South Lake Tahoe, the California Attorney General's Office, the League to Save Lake Tahoe, and the TRPA. This agreement specified not only operation protocols for the airport, but included noise standards as well. It is these noise standards that have been incorporated into TRPA's regulations and threshold indicators. Aircraft noise is measured in decibels and monitored pursuant to the monitoring element of the Lake Tahoe Airport Master Plan. These standards are divided into day and nighttime with nighttime standards shown in Table 9-1 below.

N-2 Single Noise Events

Single noise events are sounds that occur in a non-regular or non-repetitive manner. Examples of single event noise pollution would be snowmobiles, vehicles, motorcycles, aircraft, boats, etc. The TRPA thresholds for single noise events are shown in Table 9-1 and include the maximum allowed noise levels for the above mentioned equipment. For the most part, these noise levels are the same as those adopted by many of the state and local jurisdictions around the Basin and represent noise levels from properly maintained and unmodified equipment. Previous studies indicate the primary sources of single event noises are associated with on-highway vehicles, boats, and aircraft. These same studies also recommended monitoring and enforcement of the current regulations as a solution for complying with the noise thresholds.

N-3 Community Noise Events

Pursuant to Chapter 23 of the TRPA Code, TRPA established CNEL levels in the Plan Area Statements (PAS), which shall not be exceeded by any one activity or combination of activities. These CNELs are based on reasonable noise levels the predominant use within the plan area should attain. In addition, special noise areas may have also been established within a plan area to take into account a special permitted use and along major highways in the Basin allowing additional noise within 300 feet of the highway curb.

Table 9-1: Summary of Existing Noise Indicators and Standards.

THRESHOLD AREA AND INDICATOR	STANDARD																																															
<p>N-1 Single Event Aircraft Noise</p>	<p>Departures (all aircraft): 80 dBA at 6,500 meters from start to takeoff roll. 77.1 dBA at 6,500 meters from start to takeoff roll between 8 p.m. and 8 a.m.</p> <p>Arrivals: 84 dBA at 2,000 meters from the runway threshold approach (general aviation and commuter aircraft). 86 dBA at 2,000 meters from the runway threshold approach (transport category aircraft). 77.1 dBA (all aircraft) 2,000 meters from the runway threshold approach between 8 p.m. and 8 a.m.</p> <p>Note: Within ten years after adoption of the airport master plan, the single - event noise standard for all arrivals shall be 80 dBA.</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>N-2 Single Event Noise - Other</p>	<p>The following are the maximum noise levels allowed:</p> <table border="1" data-bbox="607 1102 1382 1680"> <thead> <tr> <th>Source</th> <th>Overall</th> <th>Less Than 35 MPH</th> <th>Greater Than 35 MPH</th> <th>Monitoring Distances</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Watercraft</td> <td>82</td> <td>--</td> <td>--</td> <td>50 ft.-engine at 3,000 rpm</td> </tr> <tr> <td>75</td> <td>--</td> <td>--</td> <td>At Shoreline</td> </tr> <tr> <td rowspan="2">1993 & Later</td> <td>88</td> <td>--</td> <td>--</td> <td rowspan="2">SAE J2005test</td> </tr> <tr> <td>Prior to 1993</td> <td>90</td> <td>--</td> </tr> <tr> <td>Motor Vehicles less than 6,000 GVW</td> <td>--</td> <td>76</td> <td>82</td> <td>50 feet</td> </tr> <tr> <td>greater than 6,000 GVW</td> <td>--</td> <td>82</td> <td>86</td> <td>50 feet</td> </tr> <tr> <td>Motorcycles</td> <td>--</td> <td>77</td> <td>86</td> <td>50 feet</td> </tr> <tr> <td>Off Road Vehicles</td> <td>--</td> <td>72</td> <td>86</td> <td>50 feet</td> </tr> <tr> <td>Snowmobiles</td> <td>--</td> <td>82</td> <td>--</td> <td>50 feet</td> </tr> </tbody> </table> <p>* All noise values in dBA</p>	Source	Overall	Less Than 35 MPH	Greater Than 35 MPH	Monitoring Distances	Watercraft	82	--	--	50 ft.-engine at 3,000 rpm	75	--	--	At Shoreline	1993 & Later	88	--	--	SAE J2005test	Prior to 1993	90	--	Motor Vehicles less than 6,000 GVW	--	76	82	50 feet	greater than 6,000 GVW	--	82	86	50 feet	Motorcycles	--	77	86	50 feet	Off Road Vehicles	--	72	86	50 feet	Snowmobiles	--	82	--	50 feet
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THRESHOLD AREA AND INDICATOR	STANDARD	
<p style="text-align: center;">N-3 Community Noise Equivalent Level (CNEL)</p>	<p>Background noise levels shall not exceed existing levels or the following levels, whichever is less:</p>	
	<p style="text-align: center;"><u>Average Noise Level or CNEL Range (dBA)</u></p>	
	<p><u>Land Use Category</u></p>	
	<p>High density residential areas</p>	55
	<p>Low density residential areas</p>	50
	<p>Hotel Areas</p>	60
	<p>Commercial Areas</p>	60
	<p>Industrial Areas</p>	65
	<p>Urban outdoor recreation areas</p>	55
	<p>Rural outdoor recreation areas</p>	50
<p>Wilderness and roadless areas</p>	45	
<p>Critical wildlife habitat areas</p>	45	
<p><u>Highway Corridors</u></p>		
<p>Highway 50</p>	65	
<p>Highways 89, 207, 28, 267, and 431</p>	55	
<p>South Lake Tahoe Airport</p>	60	
<p>*All Measurements in dB</p>		

The Community Noise Equivalent Level (CNEL), which is the metric used by TRPA for determining land use compatibility, is the annual average community noise level represented by the repeated number of operations, or measured noise levels throughout a 24-hour period. The CNEL is based upon the weighted average of all noise over a 24-hour period in that area. However, to account for the idea that areas should be quieter during the nighttime hours, the CNEL applies a +4.77 dB penalty to noise levels during the evening period (7:00pm to 10:00pm) and a +10 dB penalty to noise levels during the nighttime period (10 pm to 7 am). Table 9-1 shows the typical noise standard for each of the land use categories and roadways in the Basin.

9.3 THRESHOLD STATUS

Table 9-2 is a brief overview of the attainment status and trend of each indicator. Each of the three indicators is currently out-of-attainment. In addition, the single event noise indicator that includes such equipment as boats, snowmobiles, vehicles and motorcycles has degraded from the 1996 status. The following text provides more detailed information for each threshold indicator.

Table 9-2: 2006 Noise Indicator Attainment Status

#	Threshold Name	1991 Attainment Status	1996 Attainment Status	2001 Attainment Status	2006 Attainment Status	5-Year Trend
1	Single Event Aircraft Noise	Non-Attainment	Non-Attainment	Non-Attainment	Unknown	Unknown
2	Single Event Noise - Other	Attainment	Attainment	Non-Attainment	Non-Attainment	Unknown ¹
3	Community Noise Equivalent Level (CNEL)	Non-Attainment	Non-Attainment	Non-Attainment	Non-Attainment	Unknown ¹

*Information for 1991 to 2001 was from the 2001 Threshold Report
 1. Motor vehicle noise is the primary issue associated with the status and trend of these indicators.

9.3.1 N-1 SINGLE EVENT AIRCRAFT NOISE

Status of Indicators

Unknown

This indicator is directly tied to the monitoring and enforcement of the noise regulations as stipulated by the Lake Tahoe Airport Settlement Agreement. Unfortunately monitoring equipment was not functional from December 1997 to June 2000 and from late 2003 to present. In addition, monitoring data for the remaining periods are currently unavailable due to the failure of equipment used to store the data. For this reason, it is not possible to measure attainment status or the progress of this indicator.

Monitoring equipment remains inoperative at the airport as of this writing. However, the City of South Lake Tahoe's (CSLT) Council approved their staff's recommendation to seek upwards of \$300,000 from the Federal Aviation Administration for the purchase and installation of noise monitoring equipment. In addition, TRPA is in the process of implementing an on-line noise complaint form to monitor public complaints and will be sharing this information with the CSLT in order to mitigate any noise issues at the Airport facility.

2006 Status Evaluation Relative to Threshold Attainment Schedules

Threshold Interim Target Status

The 2001 Threshold Report stated the interim target was; "By August 26, 2002, implement a single-event noise standard of 80 dBA for all aircraft arrivals and establish procedures that allow exceedances in special weather conditions".

The 10 year phase in of the 80 dBA noise standard is complete and is therefore the 80 dBA standard is in effect. As to developing procedures for allowing noise exceedances in special weather conditions none were promulgated due to the fact that the parties to the settlement agreement found it difficult to agree on this exemption.

The proposed 2006 interim targets for this indicator are as follows:

1. By September 2007, the City of Lake Tahoe shall commit funding for airport noise monitoring equipment.
2. By October 2009, reestablish the noise monitoring equipment at the airport.
3. By 2011, complete the evaluation of the two years of monitoring data.

Threshold Target Dates

The proposed target date for threshold attainment is 2012.

9.3.2 N-2 SINGLE EVENT NOISE OTHER

Status of Indicators

Non-Attainment

Several source categories including watercraft, motor vehicles, motorcycle, off-road vehicles, and snowmobiles are covered by this indicator. The TRPA conducted limited monitoring of watercraft, motor vehicles, and snowmobiles over the last four years. These data indicated all of the snowmobiles operated by the commercial operations were in compliance, 64 percent of the watercraft tested were in compliance, and between 94 to 99 percent (depending on location) of the motor vehicles tested were in compliance with the standards. Because all of the sources in this category are overseen by other agencies, staff attempted to obtain enforcement records from them. The TRPA was unable to find any dedicated enforcement activities or violations being issued for any of the categories contained under this indicator. For this reason, TRPA utilized the results of their monitoring to assess attainment. Because there were exceedances in multiple equipment categories during TRPA's monitoring efforts, this indicator was listed as non-attainment. In addition, because this indicator has moved from attainment to non-attainment status over the last 10 years, no trend can be determined.

Status of Additional Factors

The TRPA does not have police powers to delay vehicular traffic in order to perform noise testing. For this reason, it will remain difficult to enforce and/or control this category without the continued support from local law enforcement agencies. The TRPA will continue to work with enforcement agencies on the development of cooperative agreements that will significantly enhance the effectiveness of this threshold.

2006 Status Evaluation Relative to Threshold Attainment Schedules

Threshold Interim Target Status

The 2001 interim target for this threshold stated that; "No more than five monitored single-event noise occurrences per year by December 2003". Because more than five single event noise violations were recorded, the interim threshold target was not achieved.

Threshold Target Dates

The proposed target date for threshold attainment is 2012.

9.3.3 N-3 COMMUNITY NOISE EQUIVALENT LEVEL

Status of Indicators

Non-Attainment

Over the last four years, the TRPA estimated the noise levels of eight areas. Many of these areas were problem areas in previous evaluations. Four of these areas exceeded the adopted noise standard. In addition, six of the eight areas tested indicate increased noise levels from 1991 baseline measurements. Based on the available data, this indicator has been classified as non-attainment with a negative trend. Although there is no single predominant cause of the noise for these areas, traffic noise seemed to be an influence in most areas.

Table 9-3: Plan Areas Monitored for CNEL Attainment

Plan Area	Description	CNEL dB		
		Threshold	Baseline 1991	2004
000	Sand Harbor	55	N/A	50
035	Crystal Bay Condos	55	55	66.1
043	Chateau/Country Club	50	47	48.8
066	Zephyr Cove	55	50	53.4
092	Pioneer / Ski Run	55	56	56.5
107	Black Bart	50	53	53.9
124	Myers Residential #1	50	51	55.8
124	Myers Residential #2	50	N/A	54.5

Status of Additional Factors

Due to limited monitoring of this standard, only limited evaluations are possible to develop noise mitigation programs. TRPA will develop a more comprehensive noise monitoring plan in the future.

2006 Status Evaluation Relative to Threshold Attainment Schedules

Threshold Interim Target Status

The 2001 interim target for this threshold stated that an interagency noise enforcement MOU would be adopted by June 30, 2003, a 2004 Noise Work program would be completed by June 30, 2001, and roadway pavement testing would be conducted by March 2003. The TRPA completed the 2004 Noise Work Program. However, the remaining targets were not completed.

Threshold Target Dates

The proposed target date for threshold attainment is 2012.

9.4 EIP IMPLEMENTATION STATUS

9.4.1 COMPLETED EIP PROJECTS AND CONTRIBUTION TO THRESHOLDS

There are six projects under the heading of noise that have been identified in the Environmental Improvement Program (EIP). The TRPA's records indicate that 50 percent of these EIP projects have been completed as of this writing. The remaining EIP projects include the efforts necessary to correct the majority of improvements needed for the noise program. The EIP program is currently in the process of being updated. Therefore, recommendations for additional projects toward attaining and maintaining the noise thresholds will be made through that process. Table 9-3 below, contains a list of the projects and their status. Additional information regarding benefits of each project is detailed in the following text.

Table 9-4: Completed EIP Capital Improvement Projects

EIP Number	Title	Project Description	Status
547	AMENDMENT OF CNEL THRESHOLD (N-3)	Amend CNEL threshold to change wilderness and roadless areas and critical wildlife habitat to 45 CNEL, and create a tourist/commercial CNEL category of 60 CNEL within transportation corridors. This project was considered complete in the 2001 EIP Update.	Completed
548	STUDY - PERSONAL WATERCRAFT NOISE	Complete noise study of personal watercraft, assess current noise level, and amend code and threshold standard as necessary.	Completed
549	NOISE ENFORCEMENT MOU AND MONITORING	Adopt interagency noise enforcement MOU with CHP and NHP and locals for on-road noise, with the USFS for OHVs noise, and With CSLT for airport noise.	In-Progress
550	AMEND BACKGROUND NOISE LEVEL THRESHOLD	Study Community Noise Equivalency Level (CNEL) threshold requirement that "background noise levels shall not exceed existing levels or the following levels, whichever is less". The CNEL threshold was amended as part of the 1996 Threshold Evaluation.	Completed
551	NOISE REDUCTION PROGRAM	Implement various noise monitoring and reduction strategies in order to attain and maintain compliance with the Noise Threshold	In-Progress
10157	DEVELOP NOISE SCORING STANDARDS	Monitor all current noise in Basin and evaluate data to determine appropriate indicators for threshold updates. Establish regular ongoing monitoring program and determine most feasible and productive noise reduction strategies/regulations where needed.	In-Progress

EIP 547 - AMENDMENT OF CNEL THRESHOLD (N-3)

Previously adopted language included a noise standard of 25 dB for wilderness and roadless areas. However, because a 25 dB noise level is less than a whisper, even the noise generated by wind through the trees violates this standard. For this reason, an amendment to the threshold to increase the allowable noise standard in wilderness and roadless areas from 25 dB to 45 db was completed. This project was listed as complete in 2001.

EIP 548 - STUDY - PERSONAL WATERCRAFT NOISE

TRPA completed a noise study of personal watercraft that included an assessment of the current noise levels and a recommendation on mitigation measures. This study led to the amendment of TRPA's ordinances and a creation of a 600 foot no wake zone around Lake Tahoe which dramatically lowered the noise levels for people living and recreating in the shorezone.

EIP 549 - NOISE ENFORCEMENT MOU AND MONITORING

EIP number 549 is a project to develop and adopt an interagency noise MOU with federal, state, and local enforcement agencies to control noise associated with transportation sources. This is currently an ongoing project.

EIP 550 - AMEND BACKGROUND NOISE LEVEL THRESHOLD

This project was completed in the early 1990s and resulted in amendments to the Code of Ordinances which set CNEL levels for the Basin.

EIP 551 - NOISE REDUCTION PROGRAM

The purpose of this project was to implement various noise monitoring and reduction strategies in order to attain and maintain compliance with the Noise Threshold. This project is closely tied to EIP# 10157 which is the more intensive monitoring program. The primary purpose of this project is to develop and implement the actual strategies necessary to improve the noise levels within the Basin. Staff will continue to move this project forward as quickly as possible.

EIP 10157 – DEVELOP NOISE SCORING STANDARDS

The purpose of this project is to monitor the current noise in the Basin and evaluate data to determine appropriate indicators for threshold updates. This project will also establish an ongoing monitoring program and determine the most feasible and productive noise reduction strategies/regulations where needed. Monitoring is a vital component in order to evaluate areas and individual noise sources in order to adopt the most efficient noise reduction plan possible. As an example, most monitoring techniques employed in the past provide only limited information as to the noise source. Without specific source information, it can only be stated that the noise level has been violated. Although important information, this does not allow the source to be identified and mitigation measures implemented.

9.5 THRESHOLD NEED FOR CHANGE

A major conclusion of this evaluation is that many of the noise threshold standards and policies require only minor adjustments or clarifications in order to dramatically improve their effectiveness. The primary changes include the clarification of the standards and protocols for testing and evaluation and improved enforcement of the standards. These improvements are proposed because the standards for the existing noise thresholds are not sufficient to maintain significant resource values, and additional threshold standards are required to maintain significant values. As noted, amendments are scheduled for action with adoption of the Regional Plan package in 2008, while others will require further development and analysis by TRPA.

Based on information provided by the Forum, there is a need to simplify the noise threshold and combine the N-1 Single Event Noise (Aircraft) indicator with the N-2 Single Event Noise (other than aircraft) into a single indicator. For the most part, standards will remain unchanged. The needed changes fall into three primary categories: change in indicators, adoption of a single set of standards Basin-wide, and improvement of the existing standards, described as follows.

Needed Changes in Certain Indicators The major challenge with the current threshold is monitoring and enforcement. To address this, new indicators were developed which focus on improving our monitoring and enforcement activities:

- *Number of exceedances of the noise standard by category.* In order to improve this threshold, the single-event noise indicator needs to include the number of times that the noise standard is violated for each noise-source category. The indicator needs to become more useful in directing resources toward improving or developing the strategies that preserve the serenity of communities and neighborhoods and provide abundant quiet recreation areas.
- *Number of corrective action taken by category* This improvement would involve monitoring the Basin's law enforcement agencies' responses to noise violations and will provide the necessary feedback on the effectiveness of the program and corrective solutions.
- *Percentage of planned monitoring completed by category* The indicator responds to the public's concern that sufficient monitoring is occurring.

Need for a Single Set of Standards Basin-wide To improve this program, it is recommended that a single set of standards be applied to on- and off-highway vehicles Basin-wide. It is difficult to defend the rationale for varying the standards across the state line within an area that possesses the same values.

Needed Improvement of Existing Standards Needed changes include the clarification of the standards for settlement agreement aircraft and the establishment of standards for non-settlement agreement aircraft. Additional improvements include the adoption of uniform noise standards for on- and off-road vehicles, and implementation of new stationary exhaust standards for snowmobiles and on-highway motorcycles.

It is recommended that TRPA pursue the amendments to the environmental threshold carrying capacities developed as part of the Pathway 2007 process. The sections below summarize the proposed amendments. Most of which are proposed to take effect with adoption of the Regional Plan.

The primary changes that are proposed include the replacement of the current value statements with a more encompassing vision for noise, and more specific desired conditions for single events and cumulative events.

As stated earlier, visitors and residents have expressed concerns regarding the decline in the serenity of their community and their 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, improvements to the existing threshold are being proposed that will help reduce noise levels and restore the serenity to the area. To begin the process, Basin agencies in conjunction with the community developed a vision for the noise program. The purpose of this vision is to guide the overall program and set the tone for future improvements in the noise program and our community.

The following overall statements reflect the proposed changes to the noise threshold.

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

In addition to the vision statement, three separate threshold goals were developed. The threshold goals represent the foundation to which the programmatic elements of the new noise program were built. The following text outlines these changes and provides the rationale for the improvements to the noise threshold.

Threshold Goal 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.

The current noise indicators (N -1 and N - 2) fall under this threshold goal.

Threshold Goal 2 - Cumulative Noise Levels: Community noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

The current community noise equivalent level threshold (N-3) falls under this threshold goal.

Threshold Goal 3 - Effects on Wildlife: Noise levels are controlled to protect wildlife.

There is no existing threshold indicator for this threshold goal.

9.5.1 N-1 AND N-2 SINGLE EVENT NOISE SOURCES

Threshold Recommended Changes

The proposed indicator combines the N-1 Single Event Noise (Aircraft) indicator with the N-2 Single Event Noise (other than aircraft) into a single indicator named N-1 Single Event Noise Sources. This was done primarily to simplify the threshold and limit the number of indicators within the noise threshold. For the most part, very limited changes are proposed for this indicator. These changes fall into three primary categories: (1) change in indicators, (2) adoption of a single set of standards Basin-wide for all single event noises, and (3) improvement of the existing standards.

The public along with the technical working group expressed concern that the major challenge with the current threshold was lack of monitoring and enforcement. To address this, new indicators were developed for each of the single event noise sources. These indicators were specifically designed to monitor the enforcement and monitoring activities of the Basin agencies in order to provide valuable information on where resources should be allocated for the best possible impact. The proposed indicators include:

- Number of exceedances of the noise standard by noise source.
- Number of corrective actions taken by noise source.
- Percentage of planned monitoring completed by noise source.

Additional changes to the Single Event Noise Sources include the recommendation for the adoption of California's single event noise sources noise standards Basin-wide. California's noise standards are considered the most progressive, and are necessary to preserve the serenity of the community and neighborhood.

Table 9-4 shows the proposed standards for single event noise. The primary change to this indicator was the addition of the single event noise sources previously contained in N-2. With minor exceptions, the single event noise standards are identical to those currently in place. The minor changes include the clarification of the standards for aircraft noise as required by the airport settlement agreement, the proposal for standards for non-settlement agreement aircraft which remain in progress as of this writing, the adoption of the current California on- and off-road vehicle noise standards Basin-wide, and the implementation of new stationary exhaust standards for snowmobiles and on-highway motorcycles.

Rationale for Change

Several changes are needed to improve the existing thresholds. The basic rationale is that single event noise impacts are the same around the Basin, regardless of their source. The concern was for controlling noise levels as stated in desired condition 1 above. The current indicators are limited in that there is no tracking of the number of exceedances, corrective actions, or the amount of monitoring as a basis for evaluation of the threshold.

The recommended changes to this indicator are based on the finding that a threshold standard is not sufficient to maintain a significant value of the Region or additional threshold standards are required to maintain a significant value. The following is the rationale for the proposed changes.

Change in Indicators

The current indicators only describe how you capture the noise measurements, but do not provide valuable information on the number of noise violations, how well the threshold is monitored, or what actions were taken to address the problem. The proposed indicators improve this by providing the necessary information to evaluate the current situation and develop appropriate measures to improve this threshold.

Adoption of a Single set of Standards Basin-wide

Currently, there are varying noise standards depending on which area of the Basin you are in. This creates confusion for visitors, residence, and enforcement agencies as to where certain vehicle can legally operate. In addition, this situation creates inequities for those people subject to single event noises. The proposed changes provide equitable standards Basin-wide and make compliance of the regulations easier to understand and achieve by all parties.

Improvement of the Existing Standards

Currently, it is difficult to safely and accurately measure noise associated with on- and off-highway vehicles. This is because the vehicles need to be measured in close proximity while they are moving. For this reason, minor changes are proposed to the way noise is measured for on-highway motorcycles and snowmobiles that improve the safety. This change consists of implementing a stationary test procedure that allows agencies and the public to safely monitor and evaluate the noise from this equipment. These changes are similar to those recently adopted for watercraft and by other agencies for the same reason.

These changes will provide the necessary information to evaluate and correct the current noise issues and are necessary to maintain a significant value.

Table 9-5: Proposed Single Event Noise Standards

Single Noise Events

(The following maximum noise levels are allowed: All values are in decibels)

Source	Threshold - dBA			Monitoring Distances
	Overall	Less Than 35 MPH	Greater Than 35 MPH	
Aircraft	80 ¹	--	--	6,500 m-start of takeoff roll 2,000 m-runway threshold approach
	77.1 ²	--	--	6,500 m-start of takeoff roll 2,000 m-runway threshold approach
Other Aircraft ⁴	TBD			
Watercraft ³				
1. Pass-By Test	82 L _{max}	--	--	50 ft.-engine at 3,000 rpm
2. Shoreline Test	75 L _{max}	--	--	Microphone 5 ft. above water, 2 ft., above curve of shore, dock or platform. Watercraft in Lake, no minimum distance.
3. Stationary Test	88 dBA L _{max} for boats manufactured before January 1, 1993;	--	--	Microphone 3.3 feet from exhaust outlet - 5 feet above water.
	90 dBA L _{max} for boats manufactured after January 1, 1993	--	--	
Motor Vehicles Less Than 6,000 GVW	--	76	82	50 ft.
Motor Vehicles Greater Than 6,000	--	82	86	50 ft.
Motorcycles ⁵	--	77	86	50 ft.
	TBD			20"
Off-Road Vehicles ⁵	--	72	86	50 ft.
	TBD			20"
Snowmobiles ⁵	--	82	--	50 ft.
	73			TBD
<p>1. The single event noise standard of 80 dBA L_{max} for aircraft departures at Lake Tahoe Airport shall be effective immediately. The single event noise standard of 80 dBA L_{max} for aircraft arrivals at Lake Tahoe Airport is not to be effective until ten years after the adoption of an airport master plan by TRPA. The schedule for phasing in the 80 dBA arrival standard shall be based on a review and consideration of the relevant factors, including best available technology and environmental concerns, and shall maximize the reduction in noise impacts caused by aircraft arrivals while allowing for the continuation of general aviation and commercial service. The beginning arrival standard shall not exceed 84 dBA for general aviation and commuter aircraft, and 86 dBA for transport category aircraft.</p> <p>2. Between the hours of 8 p.m. and 8 a.m.</p> <p>3. Failure to meet any one of these three test standards exceeds the single noise event threshold for watercraft.</p> <p>4. Non-Settlement agreement aircraft noise levels & procedures are currently under development for adoption after 2009.</p> <p>5. Additional to be determine standards (TBD) will be completed with the adoption of the Regional Plan Update</p>				

9.5.2 N-3 CUMULATIVE NOISE LEVELS

Threshold Recommended Changes

Unlike single event noise levels, CNELs are averaged noise levels found in a given area. CNELs are the noise level measurements of the “average” noise levels over a 24-hour day, 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 Basin. Periodically the CNEL standards are reviewed and updated based on proposed activities in the Region taking into account site-specific analyses, estimated impacts on affected land uses, consistency with other provisions of the Regional Plan, and reasonable tests of significance of change in noise levels. At this time, no changes to the 24-hour CNEL levels are proposed. However due to concerns by the public, Pathway 2007 Forum, and the noise working groups, new 1-hour standards are currently being developed. The 1-hour standards are necessary to mitigate the noise associated with loud activities that may not last for the current 24-hour noise measurement period.

Table 9-5 shows the proposed standards for the cumulative noise levels. The standards are divided into land use classifications and transportation corridors which are defined as the width of the highway plus 300’ out from the curbs of the highway. These standards are comparable to other areas with similar land uses and no changes are proposed for either the 24-hour or the transportation noise corridor standards at this time.

The addition of 1-hr standards for these areas is proposed. This standard is being developed to address short duration noise sources that have been shown to impact the desired condition for this indicator. The specific numbers for the proposed 1-hr standards are currently being developed and therefore are not shown. This change in indicator and standard is likely to be incorporated into the Regional Plan after further analysis by TRPA.

Table 9-6: Proposed Cumulative Noise Level Standards

Land Use Classification Areas	24-hr CNEL db	1-hr ¹ 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	24-hr CNEL db	1-hr ¹ 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
¹ 1-hr standards are currently being developed and are anticipated in the 2008 timeframe		

New indicators for this threshold goal are proposed. The previous indicators were protocols for measuring noise levels and were not designed to measure progress. Although new indicators are being proposed, the present measurement protocols will not change. The proposed indicators for cumulative noise levels include:

1. Number of exceedances of the 24-hour noise standard. 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.
2. Number of exceedances of the 1-hour noise standard. The actual numerical values for this standard are currently under development and 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.

Rationale for Change

The recommended changes to this indicator are based on the finding that a threshold standard is not sufficient to maintain a significant value of the Region or additional threshold standards are required to maintain a significant value.

A change in the current indicators is proposed because the current indicators only describe how you take the noise measurements, and do not provide information on the source or number of noise violations. In addition, an additional standard to measure single hour noise levels is proposed. Because CNELs are measured by averaging the noise over a 24-hour period, it is possible that the serenity of the community and neighborhood could be disturbed by short duration noises. For this reason, a 1-hour standard is being proposed in addition to the current 24-hour CNEL. This will make it possible to better maintain the serenity of the community, neighborhood, and recreation areas by controlling noises over a shorter 1-hour time period.

9.5.3 OTHER - EFFECTS ON WILDLIFE

Threshold Recommended Changes

Noise associated with human activities dominates the noise environment in the Lake Tahoe Basin. This noise affects not only the visitors and residents, but also has a negative effect on wildlife. In general, the same noise that affects people also affects wildlife. These sources include noise from on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, and aircraft. Although it is known that noise has a negative affect on wildlife, no indicators or standards have been developed due to the lack of appropriate studies. TRPA is currently working with the wildlife experts from multiple agencies to develop the appropriate indicators and standards for this desired condition. However, it is not expected that the necessary studies will begin until 2010 with proposed measures being developed at that time.

Rationale for Change

Although changes to this indicator are not fully developed, there is sufficient evidence to support the addition of a new threshold desired condition. The recommended changes to this threshold are based on the finding that additional

threshold standards are required to maintain a significant value. Based on the fact that we know that noise has an adverse effect on wildlife, it is appropriate to develop indicators and standards to mitigate this impact.

9.6 RECOMMENDATIONS

The recommendations for changes to noise thresholds are described in section 9.5 of this Report and also included in the Draft Pathway 2007 Evaluation Report (Version 1.1, 2006) and Technical Supplement. Some of the recommended changes will be addressed in the 2008 Regional Plan Update. The specific changes to be brought forth in the update will be evaluated in an Environmental Impact Statement to be completed before public hearings and requests for Governing Board action. The Compliance Measure updates listed in this document are intended to provide new information on monitoring, interim targets and to correct previous grammatical and factual errors. Potential changes to threshold standards and indicators will be addressed in the Threshold Update portion of the EIS for the Regional Plan Update.

The TRPA staff, Forum, and working groups agreed that very little regulatory changes were needed for the noise program and that the primary focus of the noise program should be developing and implementing the noise monitoring and enforcement aspects of the program. The TRPA staff will be drafting a monitoring program and will be requesting the help from our local law enforcement agencies who monitor and enforce portions of the program. The following are the major non-regulatory focus areas that are proposed to be implemented:

Monitor for baseline information

Currently there is limited data on which to base an indicator status report on or to provide programmatic enhancements. As a first step, it is recommended that permanent and automated noise monitors be purchased and installed at the airport and various sites around the Basin. This will enable determination of the indicator status and potential solutions if issues are found to exist. In addition, several portable and automated noise monitors are needed to address the issues associated with point source noise pollution. These monitors would primarily address issues associated with single event noise sources and allow us to actively monitor, enforce, and improve noise levels in the Basin.

Enforce current standards

Currently, almost all the standards in place today seem to be appropriate and applicable in order to achieve and maintain the noise threshold. As discussed earlier, one area that could be improved, is working with our Basin partners to help enforce the current standards. As an example, one of the primary causes of noise violations in both our CNELs and Single Event Noise areas is the vehicle noise associated with modified vehicles. Because the local state law enforcement agencies are the only entities that retain the authority to stop and test vehicles, it is imperative that they take an active role in supporting the noise threshold. It is also imperative that the necessary resources be provided so that they can be proactive in this program.

Program Management

As with any program, it is important to reevaluate the program and processes at regular intervals. For this reason, it would be beneficial to assess this program on a yearly basis. This should include the monitoring program as well as the programmatic improvements that have been implemented. This will enable us to make the necessary adjustments to ensure we are attaining and maintaining our noise program objectives at the earliest practical date.

The following is a compilation of the effectiveness and more specific recommendations for each indicator.

9.6.1 N-1 AIRCRAFT NOISE SINGLE EVENT

Status of 2001 Threshold Recommendations

There are three recommendations listed in the 2001 Threshold Evaluation for the aircraft noise single event indicator. As of 2006, one of the recommendations has been completed and the remaining are currently in progress (Table 9-6). Because some of the measures remain in progress at this time, the overall effectiveness of the CNEL measures is being categorized as marginally effective.

Table 9-7: Status of 2001 Threshold Recommendations for the Aircraft Noise Threshold

Recommendation	Comments	Status
TRPA should re-evaluate the threshold and consider adding an exemption for military aircraft, or seek cooperation from the military to reduce flights (August 2002)	TRPA is working with the settlement agreement partners for resolution.	In-Progress
TRPA will work with the South Lake Tahoe Airport to implement the reduced arrival noise levels. (August 2002)	The CSLT does not acknowledge that the reduced arrival noise levels are in effect.	Complete
TRPA should clarify the threshold to establish when noise measurements apply to threshold attainment (August 2002)	TRPA is working with the settlement agreement partners for resolution.	In-Progress

Recommended Changes for 2006

The first recommendation for this threshold would include improving the monitoring, evaluation and recommendations for improvements to this threshold. The second recommendation would be to establish an automated noise monitoring and reporting system for the airport. Previously the airport's control tower played a crucial role in identifying suspected noise violations. Because the tower is not operational at this time, an automated system is important to properly monitor for both attainment status and effectiveness of the control measures.

Implementation of Supplemental Compliance Measures

No supplemental compliance measures listed for this indicator.

Modifications or Deletion of Past Compliance Measures

The following Compliance Measures were identified as "measures in place" in the 2001 Threshold Evaluation Report: 174, 179, 182, 185, and 187. Two of these measures, (179 pertaining to land use planning and controls and 187 pertaining to

exemptions to noise limitations), have been implemented and the remaining are in progress. Because many of the compliance measures remain in progress and are not yet completed, it is difficult to recommend precise modifications or adjustments to them. However, it is recommended that any modifications to these five measures be prioritized as follows:

Airport Master Plan SLT – Currently there is no consensus as to the noise standards that are currently in effect. The TRPA remains actively involved with the settlement agreement partners on the resolution of this. In addition, because much of the previous conditions have changed since the initial master plan, it is recommended that the CSLT remain actively involved in the development of a new master plan in conjunction with the aircraft settlement agreement partners.

Noise Enforcement Program – It is assumed that the installation of equipment and automated monitoring of airport noise is included in this measure. This improvement is crucial as a foundation for enforcement and mitigation measures.

Complaint System - Without an appropriate complaint system, it is difficult to measure the success of this program or to evaluate any adjustments that are made to it. For this reason, a new complaint system needs to be developed.

Exemptions to noise limitations – The original language for this program consisted of mainly of exempting emergency operations and had little to do with the airport. For this reason, it is recommended that this be removed from the N-1 indicator. Noise exemptions for aircraft can be proposed at a later date after noise monitoring and complaint systems are operational and the data has been analyzed.

Land use – No modifications are necessary at this time. This could change upon monitoring information.

9.6.2 N-2 SINGLE EVENT NOISE (OTHER)

Status of 2001 Threshold Recommendations

There are 4 recommendations listed in the 2001 Threshold Evaluation for single event noises (Table 9-7). As of 2006, one of the recommendations has been completed and the remaining are currently in progress. Because some of the recommendations are in progress, the overall effectiveness of the single noise event measures is being categorized as partially effective at this time.

Table 9-8: Status of 2001 Threshold Recommendations for the Single Event Noise Threshold

Recommendation	Comments	Status
TRPA with the input of the Noise Working Group and other consultants shall create and implement a consistent noise monitoring program for single and community noise events. (March 2004)	A new monitoring program is being developed as part of the P7 process,	In-Progress
TRPA shall adopt measurement protocols that allow for boat noise enforcement (November 2002)	Standards have been adopted. More emphasis is needed on enforcement of the program.	Complete
TRPA should develop and implement a program to study the effects of noise on wildlife. (December 2002)	A new program is being developed as part of the P7 process,	In-Progress
Utilize data from the above wildlife study, TRPA shall adopt standards in cooperation with the U.S. Forest Service for wilderness and non-urban areas (December 2004)	TRPA is working with the USFS on the development of new standards and indicators for wildlife	In-Progress

Recommended Changes for 2006

The first recommendation would be to prioritize the current program and focus only on two or three recommendations. The first priority would be to establish a noise monitoring program for single event noises that would include monitoring frequency and the protocols for the actual measurements. The second recommendation should be to develop a plan to monitor, evaluate and recommend improvements to this threshold. Previous noise monitoring included contractor services that sampled for one or two days every five years for each of the N-2 noise categories. This is monitoring effort needs improvement in order to develop appropriate mitigation measures. The third priority should be given to manage the noise associated with on- and off-highway vehicles. Current information indicates that motorcycles and engine brakes on large trucks are the primary source of single event noise violations. Because the TRPA does not have the authority to detain or test these vehicles for compliance, it is imperative that the law enforcement agencies take the lead in enforcement.

Implementation of Supplemental Compliance Measures

Although listed under the 2001 Compliance Measures, Supplemental Measure 190 (Create an interagency noise enforcement MOU for the Tahoe Region.) had inadvertently been left off the previous form. For this reason, it is recommended that it be added to the future compliance measures.

Modifications or Deletion of Past Compliance Measures

The following Compliance Measures were identified as “measures in place” in the 2001 Threshold Evaluation Report: 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, and 189. Six of the compliance measures were completed (179, 180, 183, 184, 187, and 189) and the remaining are in progress.

To achieve the best possible result at the earliest practical date, staff is recommending the compliance measures be prioritized and implemented accordingly.

9.6.3 N-3 COMMUNITY NOISE LEVELS (CNEL)

Status of 2001 Threshold Recommendations

There are three recommendations listed in the 2001 Threshold Evaluation for the CNEL indicator. These recommendations are currently in progress (Table 9-7). Because these programs remain in progress, the overall effectiveness of the CNEL measures is being categorized as marginally effective.

Table 9-9: Status of 2001 Threshold Recommendations for the Community Noise Levels Threshold

Recommendation	Comments	Status
TRPA with the input of the Noise Working Group and other consultants shall develop a more thorough CNEL monitoring program. Noise measurements need to be performed more often, perhaps on an annual basis, in order to determine if standards are being met. (March 2004)	A new monitoring program is being developed as part of the P7 process,	In-Progress
TRPA, with the input of the Noise Working Group and other consultants, should re-evaluate the thresholds for traffic corridors. Any threshold changes should include corrections to then numeric values based upon roadway grades, pavement conditions, etc. (March 2004)	This recommendation needs to include language that states that the numerical values should only be changed if the noise levels cannot be obtained with the use of the best available control technology. .	In-Progress
To help attain the roadway standards, TRPA recommends that a test be performed to evaluate different pavement types and their potential for noise reductions (March 2003)	TRPA is working with the various Departments of Transportation on this issue.	In-Progress

Recommended Changes for 2006

The initial change would be to renumber this indicator as N-2. The second recommendation would be to prioritize the current program and focus only on two or three recommendations. The first priority would be to establish a noise monitoring program for community event noises that would include monitoring frequency and the protocols for the actual measurements. The second recommendation should be to develop a plan to monitor, evaluate and recommend improvements to this threshold. Noise monitoring over the last four years included a one time estimate of the CNEL levels for 9 out of the 180 plan areas. As stated in previous threshold reports, improvements are needed in order to manage the monitoring needs of this threshold. Similar to the single event noise indicator, the third priority should be given to manage the noise associated with traffic which is the primary source of CNEL violations.

Implement a new N-3 indicator for Effect on Wildlife.

TRPA recognizes the importance of our wildlife to our area and will continue to work with the wildlife experts from multiple agencies to develop an appropriate program for the protection of wildlife. Even without completed studies, the TPRA has made progress on this effort by working with our partners who voluntarily altered their flight paths in order to avoid noise within sensitive areas. This is a good example of TRPA working cooperatively with the public to create a viable and non-regulatory solution that benefits everyone.

Implementation of Supplemental Compliance Measures

Because additional work needs to be done, it is recommended that the supplemental compliance measures (229, 230, and 231) be activated.

Modifications or deletion of past compliance measures

The Compliance Measures identified as “measures in place” in the 2001 Threshold Evaluation Report for N-3 are the same as N-2 (see discussion for N-2) above. Over one third of the compliance measures were completed over the last five years (179, 180, 183, 184, 187, and 189) and have contributed to the improvement of this indicator.

In order to provide the maximum benefit of the compliance measures, it is recommended that they be prioritized and activated according to the prioritization.

9.7 REFERENCES

- TRPA. 1982. Study report for the establishment of environmental threshold carrying capacities. Tahoe Regional Planning Agency, Zephyr Cove, NV
- TRPA. 2001. 2001 Environmental Threshold Evaluation. Tahoe Regional Planning Agency, Zephyr Cove, NV
- TRPA 2004. Noise Threshold Update Report (August 6, 2004). Brown-Buntin Associates Inc.

Category: noise
Parameter: single-event (aircraft)

1. STANDARD
 Departures (all aircraft): 80 dBA at 6,500 meters from start to takeoff roll 77.1 dBA at 6,500 meters from start to takeoff roll between 8 p.m. and 8 a.m.
 TRPA threshold - arrivals: 84 dBA at 2,000 meters from the runway threshold approach. (general aviation and commuter aircraft). 86 dBA at 2,000 meters from the runway threshold approach (transport category aircraft). 77.1 dBA (all aircraft) 2,000 meters from the runway threshold approach between 8 p.m. and 8 a.m.
 Note: Within ten years after adoption of the airport master plan, the single - event noise standard for all arrivals shall be 80 dBA

2. INDICATOR (UNITS):
 Aircraft noise measured in decibels monitored pursuant to the monitoring element of the adopted Lake Tahoe Airport Master Plan.

3. MONITORING SUMMARY: Monitoring had been conducted regularly by the City of South Lake Tahoe (CSLT) from June 2002 to until late 2003. At this time they experienced equipment failures that caused the destruction of the historical electronic data and made future data collection impossible. Staff at the CSLT have paper copies of their noise information up to late 2003 and will be reconciling this data as soon as funding for this becomes available. At this time, TRPA cannot locate any airport noise data for the 2001 to 2006 timeframe. Monitoring has been conducted pursuant to the monitoring element of the adopted Lake Tahoe Airport Master Plan. Data from the Lake Tahoe Airport show that in 2000 there were:

- a.—17,705 Annual Aircraft Operations
- b.—2,432 Passenger Enplanements

In a review of transport aircraft operations in 1999, TRPA staff discovered the noise monitoring equipment was not functioning properly, and had not operated correctly since December 1997. By June of 2000, the City of South Lake Tahoe, with the contract assistance of Jim Buntin (Brown-Buntin

Associates, Inc.) had corrected the problems.

~~In July of 2000, the airport contracted Brown-Buntin Associates to perform noise measurements of aircraft from Allegiant Air, a commercial air service that was resuming service in the Tahoe Basin.~~

4. ATTAINMENT STATUS: Unknown Unfortunately monitoring equipment was not functional from late 2003 to present. In addition, monitoring data for the remaining periods are currently unavailable due to the failure of equipment used to store the data. For this reason, it is not possible to measure attainment status or the progress of this indicator.

~~Non-Attainment for transport and commuter aircraft. Non-attainment general aviation aircraft. In the third quarter of 2000, transport aircraft quarterly averages exceeded the noise standards. For all other aircraft that are evaluated on a single event basis, airport documents in 2000 show 11 noise complaints where exceedances had occurred. The airport also issued noise violation letters to six other aircraft operators. Of these 17 exceedances, four penalties were waived contingent on those aircraft not returning to the airport. Of the remaining 13 exceedances, military operations, for which the airport has no enforcement authority, accounted for 85% of the exceedances. However, since data are incomplete and monitoring equipment was not functioning properly from January 1998 through June 2000, more exceedances may have occurred during those years.~~

- 5. TARGET DATE: 2012 2006
- 6. EVALUATION INTERVAL: Five years
- 7. INTERIM TARGETS:

a. By September 2007, the City of Lake Tahoe shall commit funding for airport noise monitoring equipment.

b. By October 2009, reestablish the noise monitoring equipment at the airport.

c. By 2011, complete the evaluation of the two years of monitoring data.

~~By August 26, 2002, attain the single-event noise standard of 80 dBA for all aircraft arrivals and establish procedures which allow exceedances in special weather conditions.~~

8. COMPLIANCE MEASURES: (See Appendix A for complete inventory).
- a. MEASURES IN PLACE: NOISE
The following is a list of the N-1 noise compliance measures currently in place and recommended for continuation: Airport Settlement Agreement and Noise Compliance Measures 174, 179, 182, 185, 187.
- ~~01 Mitigation Measures through Airport Master,~~
- b. EFFECTIVENESS OF MEASURES IN PLACE: The following Compliance Measures were identified as "measures in place" in the 2001 Threshold Evaluation Report: 174, 179, 182, 185, and 187. Two of these measures, (179 pertaining to land use planning and controls and 187 pertaining to exemptions to noise limitations), have been implemented and the remaining are in progress. For this reason, the overall effectiveness of the compliance measures is being categorized as marginally effective.
- ~~The measures in place appear to be effective since far less than 1% of all flights exceeded standards, with a majority being due to military aircraft for which the airport has no enforcement authority.~~
- c. SUPPLEMENTAL MEASURES: None.
- d. EFFECTIVENESS OF SUPPLEMENTAL MEASURES: Not applicable.
9. ADEQUACY OF COMPLIANCE MEASURES: If the standards were enforced, the compliance measures are would likely be adequate to attain and maintain the threshold within the target date.

Category: noise

Parameter: single-event (other than aircraft)

1. STANDARD

The following maximum noise levels are allowed: (All values are in decibels):

Source	Overall	Threshold - dBA		Monitoring Distances
		Less Than 35 MPH	Greater Than 35 MPH	
Boats	82	--	--	50 ft.-engine at 3,000 rpm
Motor Vehicles less than 6,000 GVW	--	76	82	50 feet
greater than 6,000 GVW	--	82	86	50 feet
Motorcycles	--	77	86	50 feet
Off Road Vehicles	--	72	86	50 feet
Snowmobiles	--	82	--	50 feet

2. INDICATOR (UNITS):

Any single-event noise measurement made with a Type I sound level meter using the A-weighting and "slow" response pursuant to applicable manufacturer's instructions, except that for sounds of a duration of two seconds or less, the "fast" response shall be used. See Chapter 23 of the Code of Ordinances.

3. MONITORING SUMMARY: TRPA ~~has currently does~~ not conducted a comprehensive program of single-event noise monitoring; monitoring is conducted on a case-by-case basis. The TRPA conducted limited monitoring of watercraft, motor vehicles, and snowmobiles in 2002 and 2003. This included only one or two days of monitoring for each of these categories for this time period.

~~Meter calibration, location of microphone, and measurement intervals must comply with the provisions of Section 23.4 of the Code.~~

4. ATTAINMENT STATUS: Non-Attainment Monitoring data indicated all of the snowmobiles operated by the commercial operations were in compliance, 64 percent of the watercraft tested were in compliance, and between 94 to 99 percent (depending on location) of the motor vehicles tested were in compliance with the standards. Because all of sources in this category are overseen by other agencies, staff attempted to obtain enforcement records from them. The TRPA

was unable to find any dedicated enforcement activities or violations being issues for any of the categories contained under this indicator. Because staff was unable to find any enforcement activities from other jurisdictions and multiple categories of equipment violated their respective noise standards during TRPA's monitoring efforts, this indicator was listed as non-attainment.

5. TARGET DATE: 2012 ~~2006~~

6. EVALUATION INTERVAL: Five years

7. INTERIM TARGETS:

The proposed 2006 interim targets for this indicator are as follows:

- a. By March 2008; develop and implement a complaint monitoring system.
- b. By January 2009; develop a prioritization and resource estimate for the N-2 compliance measures.
- c. By February 2009; develop a noise monitoring program for single event noise sources
- d. By September 2009, study the development of a stationary tailpipe noise standard for on-highway motorcycles.
- e. By August 2009; develop a draft MOU to present to law enforcement agencies to provide enforcement of on- and off-highway noise standards.

~~No more than 5 monitored single-event noise occurrences per year by 12/03.~~

8. COMPLIANCE MEASURES: (See Appendix A for complete inventory). ~~(See Section II for inventory)~~

a. MEASURES IN PLACE:
NOISE 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, and 190

b. EFFECTIVENESS OF MEASURES IN PLACE:
There are 4 recommendations and sixteen compliance measures listed in the 2001 Threshold Evaluation for single event noises (other than aircraft). As of

2006, one of the recommendations has been completed and 6 of the compliance measures were estimated to be effective or marginally effective. For this reason, the overall effectiveness of the single noise event measures is being categorized as partially effective. To achieve the best possible result at the earliest practical date, it is recommended that the compliance measures be prioritized and implemented accordingly, and a more effective enforcement and monitoring program be put into effect.
~~The measures in place are not effective. Measures require enforcement accompanied by a more thorough monitoring program.~~

- c. SUPPLEMENTAL MEASURES: 190: Create an interagency noise enforcement MOU for the Tahoe Region. ~~None~~

- d. EFFECTIVENESS OF SUPPLEMENTAL MEASURES:
Although listed under the 2001 Compliance Measures, Supplemental Measure 190 (Create an interagency noise enforcement MOU for the Tahoe Region.) had inadvertently been left off the previous compliance form. For this reason, it is not possible to assess this effort.
~~The supplemental measures in place from 1996 have been completed.~~

9. ADEQUACY OF COMPLIANCE MEASURES:
If the standards were enforced, the compliance measures would likely be adequate to attain and maintain the threshold by the target date.

~~The compliance measures, with proper enforcement, are adequate to attain and maintain the interim target adopted in 2001.~~

Category: noise
Parameter: community noise levels

- STANDARD: Background noise levels shall not exceed existing levels or the following levels, whichever is less:

Land Use Category	Average Noise Level or CNEL Range (dBA)
High density residential areas	55
Low density residential areas	50
Hotel Areas	60
Commercial Areas	60
Industrial Areas	65
Urban outdoor recreation areas	55
Rural outdoor recreation areas	50
Wilderness and roadless areas	45
Critical wildlife habitat areas	45

POLICY STATEMENT: It shall be a policy of the TRPA Governing Body in the development of the Regional Plan to define, locate, and establish CNEL levels for transportation corridors. In the Noise Subelement of the Goals and Policies (TRPA, 1986), TRPA established the following average noise level standards for transportation corridors:

Highway 50	65
Highways 89, 107, 28, 267, and 431	55
South Lake Tahoe Airport	60

The highway CNEL values override the land use-based CNEL thresholds, and are limited to an area within 300 feet from the edge of the road. The airport CNEL value applies to areas impacted by the approved flight paths. Pursuant to Chapter 23 of the TRPA Code, TRPA established CNELs in the plan area statements which shall not be exceeded by any one activity or combination of activities. The CNELs established in the plan area statements are based on land use classification, the presence of transportation corridors, and the applicable threshold. Because there is not a direct correlation between the land use categories in the thresholds and the land use categories used in the plan area statements, TRPA set appropriate CNEL criteria in each plan area based on the predominant land use.

- INDICATOR (UNITS): Community noise equivalent levels (CNELs) are calculated pursuant to the Code, ~~Section 23.4.~~

- MONITORING SUMMARY: The monitoring for this indicator consisted of the monitoring 9 plan areas between 2001 and 2006. For this reason, only limited evaluations are possible. The TRPA will be drafting a noise monitoring plan for management's approval and funding. Upon completion and allocations of the necessary resources, staff believes this program can be dramatically improved.

~~Meter setting, meter calibration, location of microphone, and measurement intervals shall be in accordance with Section 23.4 of the Code. A noise monitoring survey was conducted in 2000 as part of the evaluation. Sound level measurements were gathered at 43 sites for 24 hours at each site. For details, see the 2001 Evaluation.~~

- ATTAINMENT STATUS: Non-Attainment.

Over the last four years, the TRPA estimated the noise levels of eight areas. Many of these areas were problem areas in previous evaluations. Four of these areas exceeded the adopted noise standard. In addition, six of the eight areas tested indicate increased noise levels from 1991 baseline measurements. Based on the available data, this indicator has been classified as non-attainment with a negative trend. Although there is no single predominant cause of the noise for these areas, traffic noise seemed to be an influence in most areas.

~~The 2000 monitoring program found community noise levels to be generally consistent with the thresholds, however, 8 of the 43 sites monitored exceeded the CNEL criterion for the plan area. For transportation corridors, noise levels generally complied with the TRPA threshold noise level criteria. In some instances, noise levels appeared to exceed the criteria based on comparing actual data to modeled conditions.~~

- TARGET DATE: 2012 ~~2006~~
- EVALUATION INTERVAL: Five years

7. INTERIM TARGETS:

The proposed 2006 interim targets for this indicator are as follows:

- a. Explore the development of draft language for 1-hr CNEL standards .
- b. By December 2007; have a complaint monitoring system up and operational.
- c. By March 2009; develop a prioritization and resource estimate for the N-3 compliance measures.
- d. By May 2009; develop a noise monitoring program (based on available resources) for CNEL noise areas.

~~Unless modified by the reports below, the interim target is no more than 6 sites exceeding the CNEL standard. By June 30, 2003, adopt an interagency noise enforcement MOU. Complete a 2004 Noise Work program by June 30, 2004. Conduct roadway pavement testing by March 2003.~~

8. COMPLIANCE MEASURES: (See Appendix A for a complete inventory). ~~(See Section II for inventory)~~

- a. MEASURES IN PLACE:
NOISE 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, and 189
- b. EFFECTIVENESS OF MEASURES IN PLACE:
Over one third of the compliance measures were completed over the last five years (179, 180, 183, 184, 187, and 189) and have contributed to the improvement of this indicator.
In order to provide the maximum benefit of the compliance measures, it is recommended that they be prioritized and activated according to the prioritization.

~~The compliance measures in place are moderately effective in attaining and maintaining the applicable thresholds. Revisions are needed to attain and maintain the thresholds.~~

- c. SUPPLEMENTAL MEASURES: NOISE-229, 230, 231
- d. EFFECTIVENESS OF SUPPLEMENTAL MEASURES: Supplemental measures were not envisioned to be necessary; therefore no progress has been made.
~~If supplemental measures were put in place, TRPA would have the ability to enforce current compliance measures and thus reduce noise levels. Also, if~~

~~construction noise were limited and/or accounted for in the Plan Area measurements, CNEL standards may be attainable.~~

9. ADEQUACY OF COMPLIANCE

MEASURES: With the enforcement of the standards, the compliance measures would likely be adequate to attain and maintain the threshold by the target date.

~~The compliance measures, with recommended additions from the list of supplemental measures, are not adequate to attain and maintain the thresholds. Since some of the thresholds may be unrealistic to attain, re-evaluation of the thresholds is necessary. In some cases, TRPA has no enforcement authority over compliance measures. This is covered in supplemental measures.~~