

CHAPTER 1

Introduction

Located between the Carson Range on the east and the Sierra Nevada on the west, the Tahoe Region is divided by the California-Nevada state line. Approximately one-third of the Region is in Nevada, and two-thirds in California. The total land area of the Region is about 202,000 acres, with about 85 percent as open space and in public ownership (Figure 1-1).

Lake Tahoe and its surrounding natural landscapes are treasured because they provide for an extraordinary Sierra Nevada mountain recreation and visual experience. The Lake itself is one of the largest and deepest in the world, and the unique water transparency and stunning natural landscape has drawn people to its shores for centuries.

Lake Tahoe is the dominant feature of the Region and is approximately 12 miles wide and 22 miles long, with a surface area of 192 square miles and 75 miles of shoreline. With a maximum depth of 1,645 feet, Lake Tahoe is the tenth-deepest lake in the world. Maximum elevation of the Lake's surface is 6,229 feet above sea level. The topography of the Region consists chiefly of steeply sloping mountains with a few flat or moderately sloping areas where most development has occurred. Elevations of the peaks surrounding Lake Tahoe range from about 8,000 feet to nearly 11,000 feet above sea level. Long, relatively mild winters and short, dry summers generally characterize the climate of the Region.

History

The Washoe people are the first known human inhabitants of the Region dating back more than 8,000 years (USDA 2000). The Basin was a spiritual retreat for the Washoe during snow-free months, and was also used to gather food and materials to survive winter months at lower elevations on their tribal lands. The Washoe people considered themselves stewards of the land because they maintained a balanced relationship between their society and the land.

Euro-American settlement in the Lake Tahoe Basin started in earnest in the 1860s as a result of the Comstock silver rush. From 1860 until after the turn of the century, the Basin was intensely grazed with livestock and logged to support Comstock era mining operations outside of the Basin. It was estimated that during the Comstock era about two-thirds of the Basin was clear-cut (USDA 2000). Substantial alterations to wetlands and streams attributed to logging operations and livestock grazing were also noted during the Comstock era. It is during this time that major human-induced alterations to Lake Tahoe's watersheds began to have a measurable effect on Lake Tahoe, as demonstrated from lake bed sedimentation studies (Hayvaert 1998). In response to the devastation left behind by Comstock era logging, a forest management policy of fire prevention and vegetation preservation was endorsed to restore Lake Tahoe's forested landscape. As a consequence of this well-intended policy, today's forest

in the Region no longer represents the forest conditions that preceded Euro-American settlement; instead the forest is over-stocked with trees of a similar age class because the natural fire regime known to shape the species composition and structure of Tahoe's forest has been substantially altered.

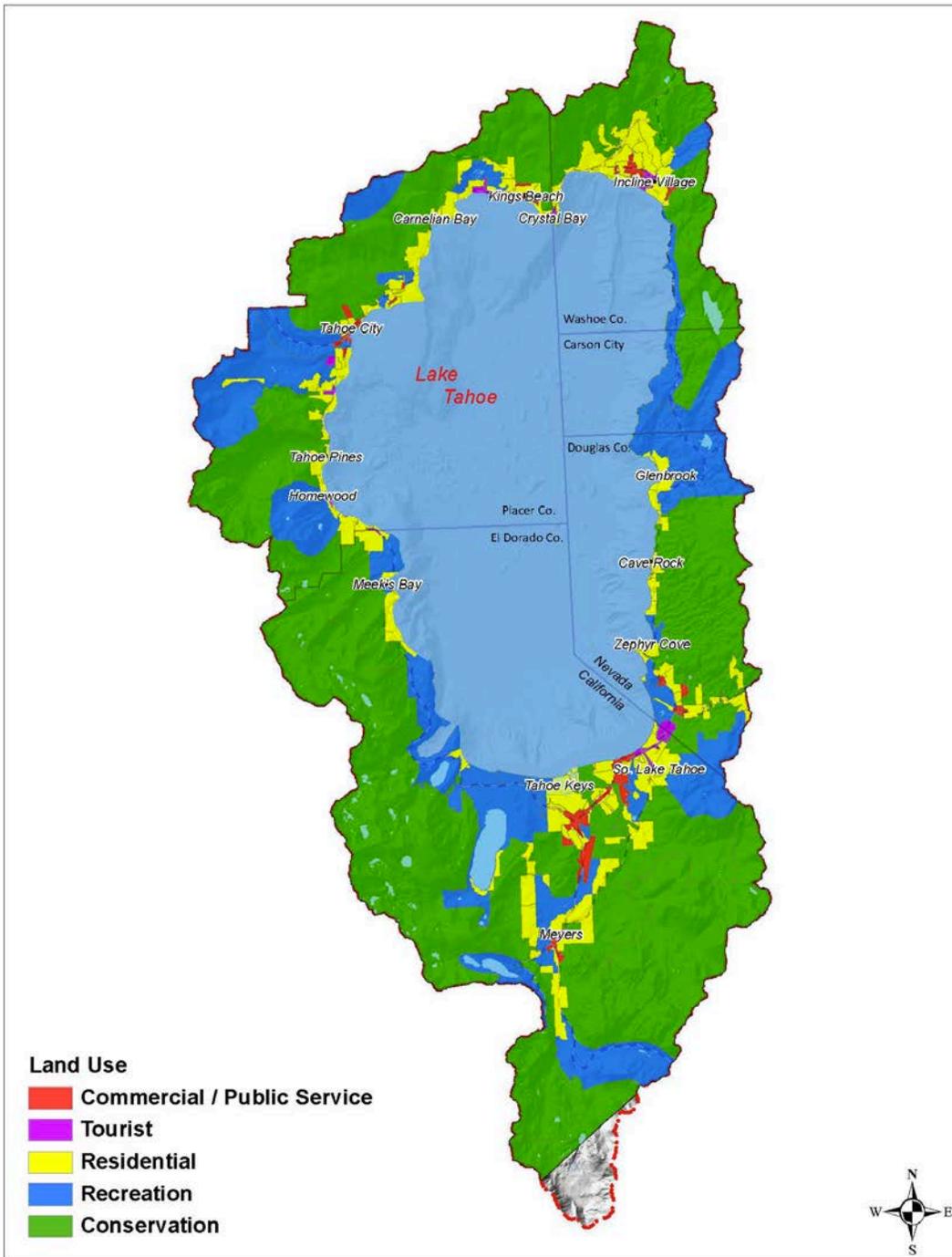


Figure 1-1. Tahoe Regional Planning Agency Regional Plan Map. Plan areas are shown, with each color representing an individual land use classification.

Tahoe Regional Planning Agency (TRPA) and the Bi-State Compact

Between 1900 and 1960, Lake Tahoe became a recreation destination. Following World War II and improvements in automobile transportation infrastructure, Nevada casinos and small recreation retreats were developed to better accommodate a more mobile and affluent society. The economic momentum of the 1960 Winter Olympics at Squaw Valley spawned a significant uncontrolled expansion of development at Tahoe; including the completion of the Tahoe Keys subdivision that was responsible for the fragmentation of a significant freshwater marsh system critical for filtering sediment and nutrients from entering Lake Tahoe. Late in the 1960s, rapid development and lax regulatory standards spurred the governors of California and Nevada to enter into the first bi-state, federally ratified agreement, the Tahoe Regional Planning Compact, resulting in the creation of the Tahoe Regional Planning Agency in 1969.

Since the 1950s, researchers working on Lake Tahoe have advanced scientific knowledge about the Lake and its surrounding ecosystem, and used this understanding to initiate the current day awareness of the need for actions to protect Lake Tahoe's famed transparency. Most notable of scientists and organizations contributing to our understanding of Lake Tahoe and factors that affect its condition is Dr. Charles Goldman, and the research team he assembled from the University of California, Davis: Tahoe Research Group (now known as the UC Davis - Tahoe Environmental Research Center).

By the 1960s, the worldwide debate regarding the effects of untreated and treated municipal wastewater (point-sources) on lakes intensified. It is Dr. Goldman that called out the need for policy makers to address point-source pollutants in the Region, such as sewage effluent, and non-point pollutant sources, like unregulated development, to stem the impact of what is known as the *cultural eutrophication* of Lake Tahoe. Even though Dr. Goldman's findings generated substantial controversy between environmental groups and urban developers, efforts were initiated by policy-makers to address these sources of Lake degradation. For example, the Porter-Cologne Act in California, and an executive order by the Governor of Nevada (dated January 27, 1971), each prohibit discharges of domestic, municipal, or industrial wastewaters to Lake Tahoe, its tributaries, groundwater, or the portion of the Truckee River within the Tahoe Region. This policy action alone made an enormous contribution to turning around the decline in Lake Tahoe's water quality.

Since the 1960s, the population of the Region has increased over five times, with the most rapid expansion of population by more than 70 percent occurring in the 1970s, as development proceeded virtually unchecked. Today, there are about 20 developed towns and small communities in the Basin. The City of South Lake Tahoe is the only incorporated city wholly within the regional jurisdiction of TRPA. As of 2010, an estimated 54,862 people reside year-round in the Lake Tahoe Region (see also Appendix A for additional details of socioeconomic conditions in the Region).

Despite the two states' resolve to control development pressures in the late 1960s, the 1969 Compact and subsequent planning approach were found insufficient to protect Lake Tahoe's irreplaceable ecosystem. So in 1980, the *Bi-State Compact* was revised to update the planning agency with the mission to lead the cooperative effort to preserve, restore, and enhance the unique natural and human environment of the Lake Tahoe Region. The revised *Bi-State Compact* directed the agency to adopt environmental quality standards known as Environmental Threshold Carrying Capacities (or Threshold Standards) to better focus environmental quality objectives, and to mitigate the impacts resulting from urban development through regional land use planning. Threshold Standards set environment quality targets to protect the unique natural values of the Tahoe Region while still providing for appropriate and orderly development. By protecting environmental quality, it was reasoned that socioeconomic conditions would be improved and sustained because the Region's economy and community was

highly dependent on visitors' and residents' natural outdoor recreation experience and the quality of life provided by a functioning and unspoiled ecosystem. In response to the revised *Bi-State Compact*, the *Regional Plan* implemented a broad suite of policies, ordinances, and land use zoning requirements designed to guide the Region toward achievement and maintenance of adopted Threshold Standards, while at the same time sustaining community and economic values. The *Regional Plan* advanced the mandate of the Threshold Evaluation to evaluate progress in achieving adopted Threshold Standards and to put forward appropriate *Regional Plan* course corrections in response to best available science and monitoring.

Between 1987 and 2010, TRPA adopted amendments to the *Regional Plan* to incorporate best available science, and to accommodate environmentally beneficial projects and programs. Starting in the 1990s, Threshold Evaluations and other studies made it clear that regulation alone would not achieve and maintain adopted Threshold Standards, because the environmental impact of legacy land uses and urban development that was built in the 1960s and 1970s, prior to the *Regional Plan*, continued to adversely impact the Region. To address legacy impacts, TRPA adopted the Environmental Improvement Program (EIP) in 1997. The EIP secured public and private funding for on-the-ground implementation of stormwater treatment infrastructure, stream area restoration, transportation, forest health, and other environmentally beneficial programs and projects.

TRPA is uniquely positioned to evaluate environmental and economic trade-offs as few agencies or governing bodies can. The Agency governs at an ideal scale—a Region mostly contained by watershed boundaries—to evaluate the big picture of land use practices and their implications on environmental quality and socioeconomic outcomes. Too small a scale can lose the context and introduce an isolated perspective, and too big a scale moves on to other issues (national connections, markets, and larger scaled processes). Additionally, TRPA's decision-making structure is uniquely designed to take advantage of a continuous flow of knowledge delivered through research and monitoring across a range of spatial scales. TRPA's decision-making body, the Governing Board, meets monthly, allowing for adjustments in policy and management action in a relatively short time frame. But TRPA's decision-making is often difficult because it occurs in the scrutiny of a polarized political crucible. The challenge for the Agency is to question the perspective that standards, policies, and planning approaches adopted almost 25 years ago are forever appropriate. The Agency's charge is to use its unique decision-making structure and authority in concert with best available research and monitoring findings to continually improve the *Regional Plan* in order to fulfill mandates outlined in the *Bi-State Compact* to achieve environmental and socioeconomic goals for the Region.

2011 Threshold Evaluation

This Report presents the results of the Tahoe Regional Planning Agency's fifth Regional Plan and Threshold Review known as the "Threshold Evaluation." This Threshold Evaluation presents indicator monitoring data from multiple reliable sources and includes contributions from members of academic universities, government research institutions, land management and regulatory agencies, and private consultants. The purpose of the Threshold Evaluation is to:

- Report the degree and rate of progress toward attainment of adopted Environmental Threshold Carrying Capacities (known as "Threshold Standards" or "Thresholds") and applicable local, state, and federal air and water quality standards
- Summarize progress on the implementation of the *Regional Plan*
- Assess the effectiveness of *Regional Plan* elements in achieving Threshold Standards
- Provide recommendations on additional actions that will facilitate Threshold Standard attainment or otherwise improve the effectiveness of the agency

As prescribed by the *Regional Plan* (TRPA 1986; TRPA 1987a as amended in 2012), this evaluation summarizes current and available monitoring data and information that addresses required reporting elements, and includes recommendations to the TRPA Governing Board to support adjustments to Threshold Standards and the *Regional Plan*. This evaluation focuses on addressing reporting requirements outlined in the *Regional Plan*, and as a consequence, should not be viewed or considered to be an exhaustive and integrated synthesis of all available research and monitoring conducted in the Lake Tahoe Basin—it is primarily focused on addressing progress in the attainment of Threshold Standards as adopted. However, where appropriate, references to current and related applied research are provided to guide the reader toward more in-depth discussion materials.

TRPA staff made a concerted effort to improve the presentation format of this Threshold Evaluation in order to better address the list of Threshold Standards as adopted by TRPA in Resolution 82-11 (Appendix B). The Governing Board used Resolution 82-11 as the mechanism to adopt Threshold Standards. This Threshold Evaluation standardizes the methodologies used to determine the status of adopted Threshold Standards—Numerical Standards, Management Standards, and Policy Statements—and also standardizes aggregation methods (Figure 1-2). An explicit effort was made to differentiate Numerical Standards, Management Standards, and Policy Statements for evaluation purposes.

Threshold Standards

According to the *Bi-State Compact*, a Threshold Standard is "*...an environmental standard necessary to maintain a significant scenic, recreational, educational, scientific or natural value of the region or to maintain public health and safety within the region.*" The *Bi-State Compact* directed TRPA to adopt Threshold Standards as a means to encourage wise land use and conservation of the waters of Lake Tahoe and resources of the surrounding area.

In 1982, the TRPA Governing Board, through Resolution 82-11, adopted Threshold Standards. The *2011 Threshold Evaluation* standardizes the methodologies used to determine the status of adopted Threshold Standards—Numerical Standards, Management Standards, and Policy Statements. The following provides a brief narrative description of the organizational structure of environmental threshold carrying capacities (i.e., Threshold Standards).

Threshold Standards are hierarchically organized (Figure 1-2). At the top of the hierarchy, are the nine Threshold Categories:

- water quality
- soil conservation
- air quality
- vegetation preservation
- wildlife
- fisheries
- noise
- recreation
- scenic resources

Each threshold category is then divided into Indicator Reporting Categories or indicator themes as reflected in TRPA Resolution 82-11. Each Indicator Reporting Category contains one to several standards. For each standard there is an associated indicator because according to the *Code of Ordinances* (TRPA 1987, as amended in 2012), Section 16.4, "*TRPA shall adopt sufficient indicators for*

each threshold [standard] and [local, state, and federal air and water quality] standard so that, evaluated separately or in combination, the indicators will accurately measure, on a continuing basis, the status of attainment or maintenance of the threshold [standard] or [local, state, and federal air and water quality] standard.” As can be seen in the right-hand column of the example in Figure 1-2, Threshold Standards may be one of three types: “Numerical Standards,” “Management Standards,” or “Policy Statements.” Each type of standard has different implications for how standard “attainment” is assessed.

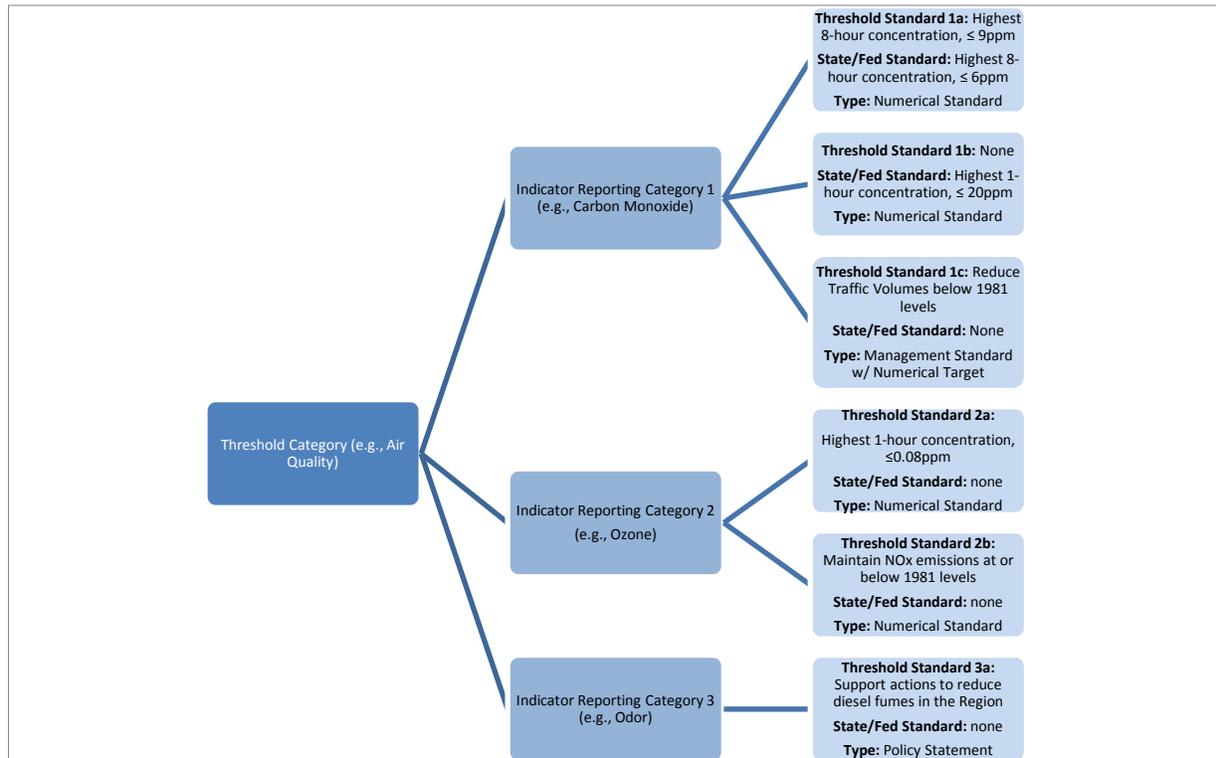


Figure 1-2. Example of how Threshold Standards are hierarchically organized under indicator reporting categories and threshold categories.

Neither Resolution 82-11 nor other preceding documents defined Threshold Standard types. The following definitions are provided based on historical interpretations of Resolution 82-11, precursor documents, and definitions provided by other agencies (e.g., U.S. Environmental Protection Agency, U.S. Forest Service, U.S. National Park Service):

- **Numerical Standard** – is an adopted standard that represents in numeric terms the value or condition(s) to be achieved in order to maintain a beneficial level of environmental quality, ecosystem function, socioeconomic sustainability and public health and safety or experience. A classic example of a Numerical Standard is the winter water quality objective for pelagic Lake Tahoe: achieve a winter (December - March) mean Secchi disk transparency of 33.4 m.
- **Management Standard** – is an adopted best practice, regulation, norm or requirement intended to protect or conserve a valued natural resource or socioeconomic value or experience. Examples of Management Standards include requiring development setbacks from sensitive lands (e.g., Stream Environment Zones), restricting the amount of land that can be developed on a parcel, or restricted detrimental uses in buffered areas around sensitive wildlife areas.
- **Policy Statements** – were identified to provide specific direction to the agency in developing

the *Regional Plan*. Policy Statements are not Numerical Standards or Management Standards, but are principles or rules intended to guide decisions needed to achieve desired outcomes or values. For example, the following is a Policy Statement under the Recreation Threshold Category: *"It shall be the policy of the TRPA Governing Body in development of the Regional Plan to preserve and enhance the high quality recreational experience including preservation of high-quality undeveloped shorezone and other natural areas. In developing the Regional Plan, the staff and Governing Body shall consider provisions for additional access, where lawful and feasible, to the shorezone and high quality undeveloped areas for low density recreational uses."*

Chapters 3 through 11 of the Report examine the status and trends of Threshold Standard-associated indicators for each Threshold Category. Information in these chapters is presented in a standardized format. For each Threshold Category, an introduction includes a description of the Indicator Reporting Categories that were addressed and includes an overview list of the Numerical Standards, Management Standards, and Policy Statements adopted for the Region for that Threshold Category.

Each chapter provides an introduction to each Indicator Reporting Category (in previous Threshold Evaluations these were loosely termed "Threshold Indicators"), which provides background information on the factors and activities that affect indicators within the Indicator Reporting Category. Indicator Reporting Categories reported in this evaluation mirror the categories adopted in TRPA Resolution 82-11 - Exhibit A. Included in the introduction for each Indicator Reporting Category is a figure or table that summarizes the status of each numerical indicator relative to adopted standards (or interim target) and provides an overview status and trend characterization of the Indicator Reporting Category based on the aggregation of the status and trends of individual indicators relative to adopted standards.¹ It is important to note that although the status of indicators relative to adopted standards is aggregated to the Indicator Reporting Category in the Threshold Evaluation, the status and trend determination is made at the Threshold Standard level. Past Threshold Evaluations would comingle the status of individual standards with "Threshold Indicators" leading to a less precise characterization of Threshold Standard attainment status. Appendix C of the Report provides a crosswalk table to show the relationship between "Threshold Indicators" reported in past Threshold Evaluations and Indicator Reporting Categories reported in the *2011 Threshold Evaluation*.

Following the introduction to each Indicator Reporting Category are "Indicator Summaries" for each Numerical Standard, and Management Standards with numeric targets within the Indicator Reporting Category. For narrative Management Standards and Policy Statements, an assessment summary is provided that characterizes the extent to which a Management Standard or Policy Statement has been implemented within the context of the *Regional Plan*. If information on the effectiveness of the Management Standard or Policy Statement existed, it was included or otherwise referenced in the Management Standard summary or Policy Statement summary. A description of the content included in Indicator Summaries, and Management Standard and Policy Statement summaries, is provided below.

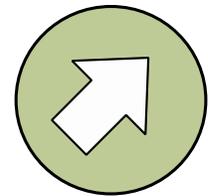
Description of Indicator Summaries

One major purpose of this Threshold Evaluation is to assess the attainment status of Threshold

¹ Note: aggregations used to characterize overall status, trend and confidence were intended to provide an overview representation of status, trend and confidence at the Indicator Reporting Category level and should not be interpreted as a determination of "attainment" status. Attainment status is determined at the more fine-grained scale of the standard.

Standards and associated indicator trends. To fulfill this purpose and other related reporting requirements outlined in Chapter 16 of the *Code of Ordinances (as amended in 2012)*, Indicator Summaries were used to organize and concisely convey the current status and trends of each Numerical Threshold Standard-related indicator and indicators related to Management Standards with numerical targets. The following is a brief description of reporting elements included in the Indicator Summaries.

- **Reporting Icon** – New to the *2011 Threshold Evaluation* is the use of a reporting icon that was designed to succinctly communicate the status of each indicator relative to the applicable standard or interim target, the trend of the indicator relative to the standard or target, and the level of confidence the Agency has in the determination of status and trend. The possible combinations of status, trend, and confidence determinations in the reporting icon are illustrated in Figure 1-3. The determination of status, trend, and confidence for each numeric indicator is based on criteria summarized in Chapter 2 of the Report.
 - **Status** – the background color of the reporting icon is used to characterize the status of an indicator relative to an adopted standard or interim target
 - **Trend** – an arrow and its orientation are used to convey an indicator’s trend relative to an adopted standard or interim target
 - **Confidence** – the ring surrounding the status dot and trend arrow is used to convey the level of confidence the agency has in the determination of both status and trend. A thicker ring represents higher confidence in the determination, while a dashed ring represents lower confidence



The sample reporting icon on the right illustrates the three aspects of the indicator:

- 1) The light green background shows that the indicator’s status is at or somewhat better than its target (or standard).
 - 2) The angled up arrow shows that the indicator's data exhibit a trend of moderately improving condition relative to the standard or interim target.
 - 3) The thin solid line border shows there is moderate confidence in the data quality and in the determination of the indicator’s status and trend.
- **Trend Graphic Box** – is used to display actual data and the associated analyses used to determine an indicator’s status and trend relative to the standard or interim target. Typical elements of a trend graphic include time (year or evaluation interval) along the horizontal axis and indicator values on the vertical axis, and lines that represent the Threshold Standard.
 - **Map Graphic Box** – is used to show the spatial distribution of indicator monitoring efforts or resource conditions relative to standards in the Region.
 - **Data Evaluation and Interpretation Box** – provides a summary of required reporting elements and supporting narrative for indicator status and trend determinations. The following elements are included in the Data Evaluation and Interpretation Box.
 - **Relevance** – describes the reasons why it is important to measure and analyze the status and trend of an indicator. Generally, the relevance of an indicator is based on its ability to inform us about the status of a Threshold Standard, and/or a standard based on state or federal standards that aim to protect human health or environmental quality.

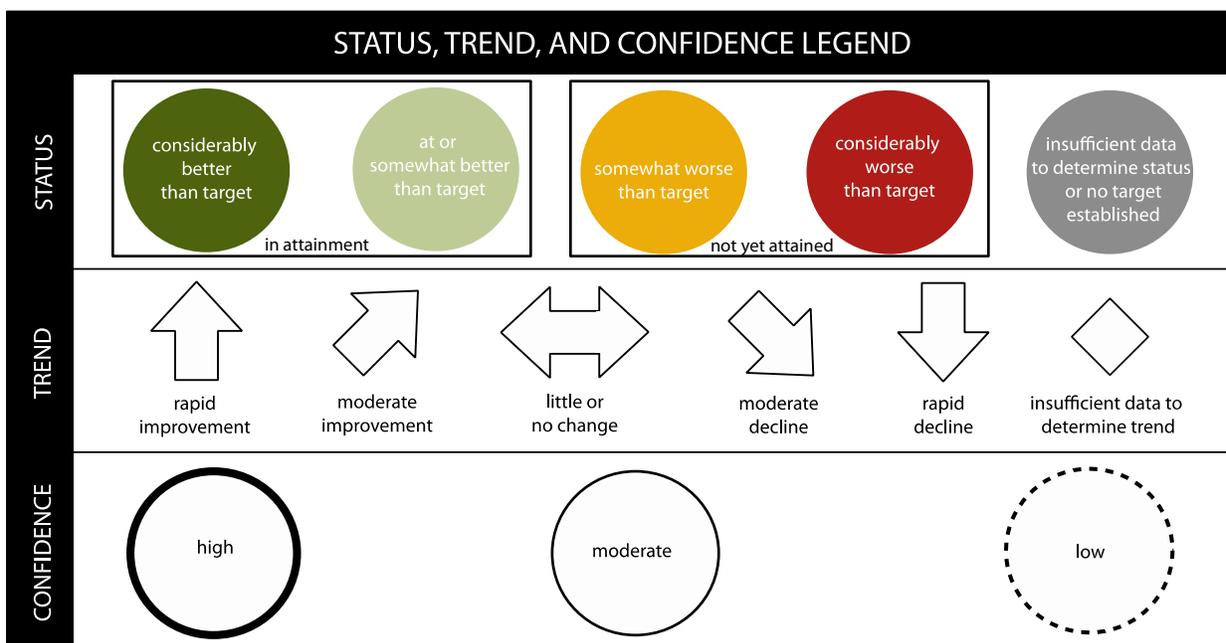


Figure 1-3. This figure illustrates the colors and symbols used to communicate the three components of a reporting icon: status, trend, and confidence. Each Indicator Summary presents an analysis of an indicator's current condition and trend relative to a standard. This information is used to guide which status and trend graphics are represented in the reporting icon. An evaluation of data quality and the robustness of the status and trend analysis are used to guide the level of confidence assigned to a reporting icon.

- **Threshold Category** – identifies the topic area that the standard and associated indicator and Indicator Reporting Category are affiliated with. TRPA has established nine Threshold Categories including water quality, air quality, soil conservation, wildlife, fisheries, scenic resources, noise, recreation, and vegetation.
- **Indicator Reporting Category** – Indicator Reporting Categories or indicator themes are subcategories of threshold categories, which provide a narrowing of topical focus (e.g., Ozone is an Indicator Reporting Category of the Air Quality Threshold Category). An Indicator Reporting Category can include from one to several standards and associated indicators. The *2006 Threshold Evaluation* identified 36 indicator reporting categories, but referred to them as “Threshold Indicators.” The *2011 Threshold Evaluation* uses the 30 Indicator Reporting Categories identified in TRPA Resolution 82-11 (as amended).
- **Adopted Standards** – identifies the specific standards that the Indicator Summary addresses. TRPA has adopted more than 100 standards for various Indicator Reporting Categories and Threshold Categories. For air and water quality standards, the Indicator Summary will address the attainment status of each standard (TRPA, state or federal), typically focusing on the status of the indicator relative to the most conservative standard.
- **Type of Standard** – identifies the type of standard that is being evaluated in the Indicator Summary. TRPA Resolution 82-11 has identified three types of Threshold Standards including Numerical Standards, Management Standards, and Policy Statements. Local, state, and federal air and water quality standards considered in this evaluation are numerical. There are numerous examples in TRPA Resolution 82-11 where a standard is labeled as a management standard, but also identifies numeric targets (e.g., Management Standards for Common Vegetation). In this evaluation,

Management Standards with numeric targets are evaluated in the same way as Numerical Standards. In such instances, the Type of Standard is labeled as a "Management Standard with a numeric target."

- **Indicator (Unit of Measure)** – identifies the specific constituent or parameter that the Indicator Summary addresses. TRPA defines an indicator as "*...any measurable physical phenomena within the Tahoe Region whose status, according to best available scientific information, has a direct relationship to the status of attainment or maintenance of one or more thresholds (i.e., threshold standard) or standard (i.e., local, State or Federal air and water quality standard).*" TRPA (1987 as amended in 2012) provides "traffic volume" as an example of an air quality indicator. The unit of measure (in parenthesis) is also included in the indicator description, and is defined as a standardized unit for the measurement of an indicator. For example, parts per million, or ppm, is a standardized measurement used to describe the concentration of a pollutant in an air or water sample.
- **Status** – describes the current status of the indicator relative to the standard(s) addressed in the Indicator Summary and the supporting rationale for the status determination. Details on methods used to determine status are included in Chapter 2 of the Report.
- **Trend** – describes the magnitude and direction of change associated with the indicator through time relative to the standard. This section may also include a description of long-term versus more recent trends to explore potential effects of significant policy or management events in the Tahoe Region (e.g., adoption of the *Regional Plan*) or major trajectory shifts. The narrative also provides a rationale for the trend determination. Details on methods used to determine trend are included in Chapter 2 of this Report.
- **Confidence** – describes how much confidence there was in the determination of status and trend, and reasons why the confidence level was assigned. Details on methods used to determine confidence are included in Chapter 2 of the Report.
- **Interim Target** – is a numeric goal, expressed in terms of the applicable measurement unit reflecting the level of an indicator value that TRPA expects to achieve at a major evaluation interval specified for that standard. It identifies a target indicator level that is expected to be achieved at a future date. In most cases in this Report, interim targets are estimated indicator values expected to be achieved by 2016 (the next major evaluation date). Details on methods used to estimate interim targets are included in Chapter 2 of this Report.
- **Target Attainment Date** – is a date in the future that, based on best available information, the adopted Threshold Standard will be achieved. Chapter 16 in the *Code of Ordinances (as amended in 2012)* defines a target attainment date as "Target Date," "*...a specific calendar date on which TRPA expects to attain a threshold (standard) or standard (local, State or Federal air and water quality standard) at a later date.*" Details on methods used to estimate Target Attainment Dates are included in Chapter 2 of the Report.
- **Human & Environmental Drivers** – briefly describes the known human and natural factors and activities that influence the Region's ability to meet the adopted Threshold Standard or otherwise influence the variation in an indicator.
- **Monitoring Approach** – provides a general description of the sampling design used to carry out the monitoring effort. Included is a description of the spatial distribution of sampling effort, sampling frequency, lab procedures (as appropriate), and references to data sources, monitoring plans, and/or protocols used to guide monitoring.

- **Monitoring Partners** – provides a list of agencies and/or entities that fund, collect and/or analyze monitoring data.
- **Programs and Actions Implemented to Improve Conditions** – describes major regulations, programs and/or actions that currently exist to beneficially affect the subject indicator. TRPA broadly refers to such regulations, program and activities as “Compliance Measures” (*Code of Ordinances*, 16.3).
- **Effectiveness of Programs and Actions** – uses best available information to describe and interpret the evidence to support or refute the effectiveness of implemented programs and actions (i.e., compliance measures) for achieving and maintaining the subject Threshold Standard.
- **Recommendations for Additional Actions** – generally describes additional actions that TRPA and/or partner agencies could take to improve the Region’s ability to achieve a specific Threshold Standard. TRPA refers to these actions as “Supplemental Compliance Measures.” In addition, recommendations related to monitoring approach or adequacies of the Threshold Standards were noted as appropriate.

Evaluation of Management Standards

At the time when Threshold Standards were adopted in 1982, the revised *Bi-State Compact* had just been approved, the new *Regional Plan* was not in place, and the science needed to establish certain Numerical Standards was not complete. In instances where a Numerical Threshold Standard could not be identified, some Threshold Standards were set forth in TRPA Resolution 82-11 as “Management Standards.” By definition, Management Standards do not have a numeric target and thus attainment status cannot be evaluated in the same way as Numerical Standards. As a result, the following qualitative evaluation questions were addressed:

- *Has TRPA included provisions and requirements in permit-processing that adhere to the Management Standard in Resolution 82-11?*
- *Have TRPA and/or other agencies adopted programs that satisfy the Management Standard?*
- *Is there evidence to suggest these actions are effective in achieving the intent of the Management Standard?*

There are many instances in Resolution 82-11 where Management Standards provide management directives and numerical targets together. In these instances, the Management Standards were evaluated similarly to a Numerical Standard if data were available and of sufficient quality. The status of Management Standards is summarized in a format similar to that used for Indicator summaries, differing only in that they do not characterize trends or confidence. The following elements were included in Management Standard summaries.

- Reporting Icon Box – is used to rapidly convey the implementation status of the Management Standard (Table 1-4), and is similar to the reporting icon box used for numerical indicator summaries.
- Map Box – is used to present a map representing the spatial extent for which the Management Standard has been applied (e.g., a map showing the boundaries of stream environment zones or wildlife habitat protection buffers).
- Images Box – is used to show real-world examples of the application and influence of the Management Standard (e.g., pre- and post- forest fuels treatment or stream restoration actions).
- Interpretation and Commentary Box - provides a summary of required reporting elements and supporting narrative for determinations related to the Management Standard. This section is essentially similar in type and intent to the Data Evaluation and Interpretation Box in the

Indicator Summaries, omitting the Indicator, Trend, and Target sections.

Table 1-1. Reporting icon categories used to characterize the implementation status of a TRPA adopted Management Standard.

Status Category	Description	Reporting Icon
Implemented	The Management Standard has been integrated into the <i>Regional Plan</i> as policy and/or as an ordinance or regulation and is consistently applied to a project design or as a condition of project approval as a result of project review process. Greater than three examples of programs or actions can be represented to support the Management Standard’s implementation. Adopted programs or actions support all aspects of the Management Standard’s implementation, or address all major threats to implementation of the Management Standard.	
Partially Implemented	The Management Standard has been integrated into the <i>Regional Plan</i> , but is not consistently applied during the course of the project review process. No more than two examples of programs or actions can be identified to support the Management Standard’s implementation and/or adopted programs or actions support some aspects of the Management Standard or address some major threats to implementation of the Management Standard.	
Not Implemented	The Management Standard has not been integrated into the <i>Regional Plan</i> and is not applied during the course of project review. No examples of programs or actions can be identified to support implementation of the Management Standard.	

Evaluation of Policy Statements

In Resolution 82-11, the TRPA Governing Board adopted Policy Statements to provide specific direction to Agency staff in developing the *Regional Plan*. Policy Statements are not Numerical Standards or Management Standards, rather they are principles intended to guide decisions toward desired outcomes or values. To evaluate Policy Statements, the following questions were addressed:

- *Have TRPA and/or other agencies adopted policies, regulations or implemented other programmatic efforts to satisfy the Policy Statement adopted in Resolution 82-11?*
- *Is there evidence to suggest these actions are effective at achieving the intent of the Policy Statement?*

A qualitative evaluation and narrative description of the Policy Statement’s implementation is included as an element of each Threshold Category related chapter in the Report.

Peer Review of the 2011 Threshold Evaluation

The *2011 Threshold Evaluation* is the fifth evaluation report completed by TRPA and the first to undergo an independent scientific peer review (Appendix D). The purpose of the peer review was to ensure the status and trend determinations presented in this document were scientifically supportable and to identify areas where TRPA can improve the quality of information presented to the TRPA Governing Board and the public. Most of the peer review comments have been addressed in this Report (Appendix E); peer review input not addressed will need to be addressed as a component of the overall agency monitoring program.