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STAFF REPORT

Date: March 2, 2022

To: TRPA Advisory Planning Commission

From: TRPA Staff

Subject: Update on Measuring What Matters: The Thresholds and Monitoring Update Strategic Initiative

Summary and Staff Recommendation:

Staff will provide an update on Measuring What Matters: The Thresholds and Monitoring Update Strategic Initiative, and the work to leverage the partnership's significant investments in science and planning that will guide the update of threshold standards in the first six categories; air quality, fisheries, soil conservation, vegetation preservation, water quality, and wildlife.

Requested Action:

Discuss and nominate three members to the Threshold Update Initiative Stakeholders Working Group.

Background:

Following the 2015 Threshold Evaluation, the TRPA Governing Board identified the review and updating of the threshold standards and performance measures as a strategic initiative for the agency. The goals of the initiative are:

- A representative, relevant, and scientifically rigorous set of threshold standards.
- An informative, cost-efficient, and feasible monitoring and evaluation framework to support adaptive management towards threshold standard attainment.
- A robust and repeatable process for review of threshold standards in the future.

Since the initiative began, significant progress has been made on the clean-up of dated standards and the design of a revised structure for new standards. The first substantive revision – conversion of the air quality nitrogen emission standard to a new Transportation and Sustainable Communities goal -- took a number of years. In order to better keep up with the changing challenges to the Basin, our goal is to accelerate the pace of other substantive threshold modifications and we look to you to help support this goal.

While TRPA and partners have been working on the strategic initiative to update threshold standards, the Environmental Improvement Program (EIP) partnership has been working to refine the plans, priorities, and science that underpins the actions the partnership implements to achieve the thresholds

and improve the Region's resiliency. That work complements the revised threshold standards work on system structure and provides the groundwork for updating a broad swath of the threshold standards. At the December 2021 Tahoe Interagency Executive Steering Committee (TIE) meeting, the partnership endorsed making the threshold standard update a central component of its 2022 workplan, and at the February meeting it reviewed the proposal for updating the standards (Attachment A). The proposal reflects a survey the current EIP goals and plans and new categories of threshold standards oriented to current and anticipated future challenges. The proposal sets the stage for the next phase of the partnership's work and charts the course for creating a more resilient Tahoe. The following sections of this staff report (Proposal Framework, Proposal Content, and Proposal Process) outline that course.

The threshold standards establish goals for environmental quality and express the desired outcomes for the Tahoe Region. The standards shape the goals and policies of the Lake Tahoe Regional Plan. The first set of threshold standards were adopted in 1982. To help reach these goals, a collaborative partnership of over 80 entities implements projects as part of the Environmental Improvement Program. The EIP has been the organizing program for the basin's restoration priorities for the last twenty-five years and guides millions of dollars of public and private investment in the basin.

After the Bi-State Compact was amended in 1980, TRPA and partners were afforded 18 months to develop the first set of threshold standards. Multi-agency teams worked diligently to meet the timeline and adopted standards that reflected the issues at that time. The region had just emerged from a post Olympics development boom, during which it was widely believed that development was causing environmental degradation and threatening Tahoe. The findings and declarations of the Compact summarized the sentiment of the time succinctly, "*Increasing urbanization is threatening the ecological values of the region and threatening the public opportunities for use of the public lands.*" It was the threat from unconstrained development that was front of mind when the original thresholds were developed. The nearly 150 threshold standards adopted in 1982 articulate goals that can be broadly grouped into two categories, 1) the desire to protect something that might be lost to development, and 2) the desire to restore something that was damaged by development.

The 1982 threshold standards guided the development of the 1987 Regional Plan which included specific development caps and controls. The Regional Plan complemented action by many partners to control development through land acquisitions, permitting and enforcement, and advocacy for further environmental protections. While these actions alleviated much of the pressure, it soon became clear that more proactive capital improvement projects would be necessary to reach the desired outcomes set in 1982.

Ten years later after the 1987 Regional Plan was adopted, the Environmental Improvement Program (EIP) was born. The program is rooted in the collective desire to accelerate attainment of the threshold standards through cooperative action. Twenty-five years later, EIP partners have invested over \$2.6 billion to complete more than 700 lake-saving projects. These investments are critical to building

systemic resiliency in the Tahoe Basin and preparing for new threats posed by climate change, population growth, and visitation. While our projects and programs have grown to address these emerging threats, we have not been as diligent in reviewing our threshold standards to ensure they continue to reflect what we are trying to accomplish.

The initial threshold standards set the course for the Region forty years ago but were never intended to be immutable. The multi-disciplinary team that authored the 1981 threshold study report suggested the standards should be reassessed at least every five years and wrote: “environmental thresholds are not static standards that once in place remain forever.”

Over fifty years ago lawmakers wrote: “The waters of Lake Tahoe and other resources of the region are threatened with deterioration or degeneration, which endangers the natural beauty and economic productivity of the region.” The sentiment is as true today as it was fifty years ago. The Region is still threatened, but the threats have changed. Challenges such as climate change, catastrophic wildfire, traffic congestion, lack of affordable housing, population growth and redistribution, invasive species, and biodiversity loss, have replaced “deficiencies of environmental control” related to development as the primary dynamics.

As the EIP partnership has matured and adapted over time to address the needs of today, partners have centered much of their focus around building resilience in the Tahoe region. Resilience refers to the capacity of systems to cope with and adapt to stressors and disturbance while retaining the functions and benefits that people value. The interdependence and interconnectedness of the natural and social systems of our Region and beyond inform what we do and how we work. Creating healthy functioning environmental and social systems increases their ability to withstand the threats of today and tomorrow. The new thresholds should reflect our desired outcomes for social and ecological resilience: resilient forests, resilient lake ecosystems, and resilient communities.

Proposal Framework:

The proposal recommendations are rooted in our ongoing engagement with the Tahoe Science Advisory Council to review and update the threshold standards and how we measure and report progress towards those goals. Following two years of work with the Council, in April 2019 TRPA adopted a new adaptive management structure for managing information related to the threshold standards. Subsequently, the TIE endorsed the use of a complementary structure for EIP performance measures. The structure clearly defines three types of metrics and what role they play in our system.

Metric Types

Input Performance Measures (PMs) are the resources and quantity of work done. They are the basic measures of resources used, actions taken, and funds expended. Input PMs are important because they enable managers to meet grant reporting requirements, and track funds expended

and project activity. For example, the number of Projects Implemented, Dollars Spent, and Miles of Street Sweeping are input PMs.

Output Performance Measures are the benefits or value arising from work done. They are the core performance reporting metrics. They provide the right combination of implementer control, attribution to actions, and relevance to desired outcomes to justify their reporting and incentivize effective actions. These metrics represent the multi-benefit value produced through the actions/strategies of project implementers. For example, fine sediment load reduction and volume of urban stormwater reduced are output PMs.

Threshold Standards

Threshold standards articulate the goals of the Tahoe partnership. They are used to:

- (1) Describe desired social and ecological conditions.
- (2) Articulate shared statutory goals and how progress toward meeting those goals should be measured; and
- (3) Inspire focused action to drive progress towards meeting shared goals.

Threshold standards are the quantifiable goals that are publicly valued and accepted as the end-result of programs. They are the long-term indicators of success. They provide a numeric perspective on quantifiable environmental and social values. They are often slow in responding to actions taken, challenging to attribute to individual management actions, and relatively expensive to measure. For example, (annual average) secchi depth is a threshold standard.

The adaptive management system structure that is the foundation of the proposed framework draws heavily from best practices and integrates four elements: (1) conceptual models – that ground threshold standards in the scientific understanding of ecosystem function, (2) results chains – that link management actions to desired outcomes, (3) management actions – that are the implementation strategies rooted in results chains to promote attaining and maintaining clearly articulated, specific and measurable goals (threshold standards), and (4) monitoring, evaluation, and learning – which provide the structure for incorporating new information into the conceptual models, results chains, and implementation strategies (i.e., design of policies, programs, and other means to accelerate threshold attainment). As adopted, the adaptive management structure provides specific criteria that new or revised thresholds standards must meet. The minimum criteria ensure that threshold standards embody three qualities:

Specific - The standard establishes a specific numeric target, and benchmark/baseline values are documented where necessary.

Measurable – The standard has clearly defined indicator(s) that link to the standard, and there are practical ways to measure progress towards attainment objectively and accurately.

Outcome-based – Standards establish a desired condition for an environmental or socioeconomic end state. Standards do not establish a means to achieve the desire outcome.

Proposal Content

Using the above structure as guide, the attached proposal is an outline around which threshold standards will be developed. The outline incorporates standards that are currently found in six categories: air quality, fisheries, soil conservation, vegetation preservation, water quality, and wildlife. Past feedback from partners suggested that the current structure of the threshold standards felt too restrictive and reflected a siloed world view that was not reflective of systems-based approaches used for management in the Region today. The proposal includes a reorganization of the forty-year-old category structure to better reflect the integrated systems that are the focus of management. In addition to the revised structure, the proposal includes “tagging” of potential standards as included in multiple systems. For example, standards for aquatic invasive species were placed in the “Watersheds and Water Quality” system but also include a “tag” for “Biodiversity” because control and removal of aquatic invasive species not only improves water quality, but also supports recovery and resilience of native species. The standards outlined leverage the significant time and investments the partnership has made in specific focus areas and the proposal draws heavily from EIP planning documents and EIP program activity over the last ten years as well as looking ahead to needs for the future.

The proposal is based on the significant body of work listed below.

Standard Structure

- EIP Blueprint for Climate Resilience (Lake Tahoe EIP, 2020).
- Guidance on Technical Clean Up of Existing Threshold Standards (TSAC, 2018a).
- Natural Resource Evaluation Systems: Assessment of Best Practices for the Tahoe Regional Planning Agency (TSAC, 2017).
- Structuring Data to Facilitate Management of Threshold Standards (TSAC, 2018b).
- Summary Science Report on Lake Tahoe Clarity and Associated Conditions, 2021 (TSAC, 2021).
- A Proposed Watershed Protection Program Evaluation Approach - An approach for funders, regulators, and permittees to design, evaluate and report watershed protection programs (EI, 2020).
- Tahoe Climate Adaptation Primer (California Tahoe Conservancy, 2021).
- Peer Review of the Tahoe Regional Planning Agency’s 2015 Threshold Evaluation Report (Hall et al., 2016).

Watersheds and Water Quality

- Final Lake Tahoe Total Maximum Daily Load Report (Lahontan and NDEP, 2010).
- Lake Tahoe Seasonal and Long-Term Clarity Trend Analysis (TSAC, 2020a).
- Report on the Status of the Lake Tahoe Clarity Model (TSAC, 2020b).

- Lake Tahoe Aquatic Plant Monitoring Program: 2018 Lake Tahoe Nearshore Aquatic Plant Status Report (MTS, 2020).
- Lake Tahoe Aquatic Plant Monitoring Program: Aquatic Plant Monitoring and Evaluation Plan MTS, 2019).
- Lake Tahoe Region Aquatic Invasive Species Management Plan (TRPA, 2014).
- Lake Tahoe Region AIS Action Agenda, 2021–2030 (DeBruyckere, 2019).
- Restructure of the Water Quality Threshold Standards (TRPA, 2020a).
- Lake Tahoe Basin Stream Environment Zone (SEZ) Baseline Condition Assessment (TRPA, 2020b).
- SEZ Basin-wide Monitoring and Assessment Plan (TRPA and NCE, 2021).
- Threshold Standards and Regional Plan (TRPA, 2019).

Forest Health

- Lake Tahoe West Collaborative Landscape Resilience Assessment (Gross et al., 2017).
- Lake Tahoe West Collaborative Landscape Resilience Assessment Landscape Restoration Strategy (LTW, 2019).
- Lake Tahoe West Science Summary of Findings Report (LTW Science Team, 2020).
- Fire Adapted Communities: The Next Step in Wildfire Preparedness (TFFT, 2017).
- Lake Tahoe Basin Forest Action Plan: Protecting Communities Restoring Landscapes (California Tahoe Conservancy, 2019).

Biodiversity

- Lake Tahoe Region AIS Action Agenda, 2021–2030 (DeBruyckere, 2019).
- Lake Tahoe West Collaborative Landscape Resilience Assessment (Gross et al., 2017).
- Lake Tahoe West Collaborative Landscape Resilience Assessment Landscape Restoration Strategy (LTW, 2019).
- Lake Tahoe West Science Summary of Findings Report (LTW Science Team, 2020).
- Threshold Standards and Regional Plan (TRPA, 2019).
- Updated Goals and Objectives for the Conservation of Lahontan Cutthroat Trout (LCTMOG and LCTCC, 2019).
- Conservation strategy for Tahoe yellow cress (*Rorippa subumbellata*) (Stanton and TYCAMPWG, 2015).

Air Quality

- Threshold Standards and Regional Plan (TRPA, 2019).

Proposal Process

The proposal identifies focal points for development of threshold standards for review by stakeholders. Initial review should focus on the completeness of the proposal in capturing the focus of management today. The proposal details the areas that will be the focus of standard development. Following feedback from stakeholders and discussion with relevant working groups, the proposal will be refined by

April 2022. The revised proposal will be used to develop threshold standards. Standard development will work through the relevant EIP working groups, partners, and stakeholders. The process will include and an expanded engagement with the Tahoe Science Advisory Council, and a reconvening of the APC led Threshold Update Initiative Stakeholders Working Group. The APC first convened the Threshold Update Initiative Stakeholders Working Group in 2018.

The March 9, 2022 APC presentation will provide an overview of the workplan and the role of the Threshold Update Initiative Stakeholders Working Group. The APC will then be asked to nominate three members to serve on the Stakeholders Working Group. The APC will also be asked to nominate one of the three to serve as chair of the Working Group. As the standard development progresses, staff will provide updates of progress on a quarterly basis between May and December of 2022. Beginning in January 2023 we plan to bring the new standards forward through TRPA's formal adoption process.

Contact Information:

For questions regarding this item, please contact Dan Segan, Principal Natural Resource Analyst, at dsegan@trpa.org, (775) 589-5233.

Attachments:

- A. Outline for Threshold Standard Development

Attachment A

Outline for Threshold Standard Development

AGENDA ITEM NO. VI.A.

Attachment A: Outline for threshold standard development

The proposed outline below groups threshold standards into four cross-cutting categories. To show that the proposed thresholds cross multiple categories as part of a system, icons or “tags” are used as indicators. The tags are as follows:

Watersheds and Water Quality

Goal: Maintain and improve lake clarity and water quality. Enhance ecosystem health and promote resilience. Prevent the introduction of new aquatic invasive species and reduce the abundance and distribution of known aquatic invasive species. Abate harmful ecological, economic, social, and public health impacts resulting from aquatic invasive species. Attain all applicable state water quality standards.

Forest Health

Goal: Protect communities from damaging wildfire, restore ecosystem health and resilience, improve and enhance wildlife habitat.

Biodiversity

Goal: Maintain and restore native species populations and habitat, including threatened, endangered, and sensitive species.

Air Quality

Goal: Preserve and improve air quality and regional and subregional visibility. Attain all applicable state and federal air quality standards.

Watersheds and Water Quality

THRESHOLD STANDARDS	SYSTEM TAGS
1) DEEP LAKE CLARITY – TAHOE TMDL TARGET FOR LAKE CLARITY	 
2) NEARSHORE ALGAE – TARGET FOR ALL NEARSHORE ALGAE (METAPHYTON/PERIPHYTON)	 
3) NO NEW AIS – RETAIN CURRENT STANDARD	 
4) AIS CONTROL GOAL – TARGET FOR REDUCTION IN THE ABUNDANCE AND DISTRIBUTION OF AIS FROM AIS ACTION PLAN	 
5) TRIBUTARY HEALTH – SEZ CONDITION INDEX / BIOASSESSMENT SCORE	  
6) MEADOW AND STREAM RESTORATION – USE SEZ CONDITION INDEX TO ESTABLISH A NEW RESTORATION GOAL FOR THE REGION	  

Forest Health

THRESHOLD STANDARDS	SYSTEM TAGS
1) COMPOSITION AND AGE – PROMOTE A RESILIENT MIX OF SERAL STAGES IN THE FOREST.	 
2) STAND DENSITY – STAND DENSITY TARGETS FOR GENERAL FOREST AREA TO BE IN RESILIENT CONDITION.	  
3) STAND STRUCTURE – LANDSCAPE RESILIENCE AS MEASURED BY HORIZONTAL HETEROGENEITY.	 
4) WILDLAND URBAN INTERFACE WILDFIRE PROTECTION – PREDICTED FLAME LENGTHS ARE UNDER 90TH PERCENTILE FIRE WEATHER CONDITIONS ARE LESS THAN FOUR FEET HIGH ACROSS 90% OF THE WILDLAND-URBAN INTERFACE DEFENSE ZONE. THE AREAS WITH PREDICTED FLAME LENGTHS OVER FOUR FEET ARE GENERALLY-WELL DISTRIBUTED, DO NOT EXCEED ONE ACRE PER PATCH, AND ARE NOT WITHIN 100 FEET OF STRUCTURES OR INFRASTRUCTURE.	  
5) LANDSCAPE FIRE DYNAMICS STANDARD – LIMIT HIGH SEVERITY PATCH SIZE TO NO MORE THAN 40 ACRES.	 

Biodiversity

THRESHOLD STANDARDS	SYSTEM TAGS
1) INDEX OF BIRD DIVERSITY – SURROGATE OF ECOSYSTEM HEALTH, INCORPORATES POPULATION TRENDS OF A SUITE OF REPRESENTATIVE SPECIES	  
2) PLANT (OR OTHER SPECIES) BIODIVERSITY INDEX – SURROGATE OF ECOSYSTEM HEALTH, INCORPORATES POPULATION TRENDS OF A SUITE OF REPRESENTATIVE SPECIES	 
3) LAHONTAN CUTTHROAT TROUT – ALIGN WITH VISION OF RECOVERY ENDORSED BY THE LAHONTAN CUTTHROAT TROUT MANAGEMENT OVERSIGHT GROUP.	 
4) TAHOE YELLOW CRESS – ALIGN TAHOE YELLOW CRESS GOAL WITH CONSERVATION STRATEGY.	 
5) DEEPWATER COMMUNITIES – PROTECTION OF DEEPWATER ENDEMIC PLANTS/INVERTEBRATES OF LAKE TAHOE.	 

Air Quality

THRESHOLD STANDARDS	SYSTEM TAGS
1) CARBON DIOXIDE - 8 HR AVERAGE – RETAIN CURRENT STANDARD	  
2) OZONE – 1 HR STANDARD – RETAIN CURRENT STANDARD	  
3) REGIONAL VISIBILITY – 50% STANDARD – RETAIN CURRENT STANDARD	
4) REGIONAL VISIBILITY – 90% STANDARD – RETAIN CURRENT STANDARD	
5) SUBREGIONAL VISIBILITY – 50% STANDARD – RETAIN CURRENT STANDARD	
6) SUBREGIONAL VISIBILITY – 90% STANDARD – RETAIN CURRENT STANDARD	

Bi-State Compact Definition - “Environmental threshold carrying capacity” means 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. Such standards shall include but not be limited to standards for air quality, water quality, soil conservation, vegetation preservation and noise.”