Lake Tahoe Clarity Workshop – Executive Summary (May 2025)

The Tahoe Science Advisory Council convened a two-day workshop of scientists and managers to evaluate the status of Lake Tahoe clarity science and predictive tools. The goal was to strengthen the link between monitoring, modeling, and management decisions.

Sponsors

- Nevada Division of Environmental Protection
- League to Save Lake Tahoe
- University of Nevada Reno
- Southern Nevada Public Lands Management Act

Management Issues and Questions

- Despite significant investments in watershed restoration and stormwater controls, the lake's clarity has not improved as expected.
- How important are processes that occur in the lake, such growth of phytoplankton and losses of particles by zooplankton grazing or particle sinking, to clarity changes?
- Can predictive tools connect restoration and pollutant load reductions to expected clarity gains?

Workshop Insights

- **Clarity Trends:** Secchi depth decline has slowed but varies by season.
    - Episodic events can influence clarity.
    - Modeling particle behavior, ecological factors, and climate conditions need improvement.
- **Modeling Tools:**
    - *Process-based models* (3D hydrodynamics and ecology) are critical for mechanistic understanding but are resource intensive.
    - *Data-driven tools* (statistical and machine learning) can provide forecasts but depend on long-term datasets.
    - Both approaches, applied in parallel, can inform management.
- **Recent Research:** Zooplankton dynamics, particle fate and transport, and fine particle behavior may be key missing pieces in explaining clarity trends.

Implications for Basin Leadership

- Previous monitoring, modeling, and management frameworks may no longer support contemporary lake conditions, limiting the ability to track and demonstrate clarity improvements.

Next Steps

- Seek funding to support projects to update predictive tools.
- Hold a complementary workshop to address particle and nutrient loading estimates.