

Drought Preparedness in Northern California: People, practices, principles and perceptions

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Introduction – Setting the stage

California is known in for many things. Sunshine, agriculture, Hollywood, aerospace, Silicon Valley, beaches, kayaking, cars, music, fancy homes, snow-boarding, racial conflicts, fishing, electronic devices, political dynamics, educational institutions, and communities that provide the backdrop for television shows viewed across the country. These California icons and many more are seemingly different, but they are united by one thing – they all need water. Yet, many of the folks at the top of their game in most of the state’s commercial and industrial enterprises are probably not aware that the state’s water supply is riddled with many challenges and uncertainties. Not unlike many other parts of the country, most of the water-rich areas are located some distance from the largest population centers. And, not unlike many other areas in the west and throughout the country, California’s water supplies are subject to naturally occurring droughts that can extend close to a decade in duration.

Northern Californians are intensely interested in water supply and may comprise some of the most interested and engaged members of the general public. While the days of “we” and “they” are beginning to mellow slightly, there is still a sense of entitlement by Northern Californians regarding the water supplies that originate in their back and front yards and flow downstream to the high population centers in Southern California. El Dorado County covers the area between Sacramento, the state capitol, and South Lake Tahoe. It is a strikingly beautiful area that still sports vast areas of forest land, supporting rich wildlife and fish populations and serves as a key bedroom community for people working in California’s state capitol. In the past El Dorado county was known as the site of California’s gold discovery and today the gold has been replaced with acres of tree crops, burgeoning vineyards and wine production, water-based recreation, and systematic residential and commercial growth.

In 1976-1977 the phrase ‘if it’s yellow let it mellow; if it’s brown flush it down’ descriptively pronounced the conservation measures northern Californians were taking to cope with the worst drought of historical record. In the late 1980’s and into the 1990’s, over the course of about 7 years, California experienced a daunting prolonged drought that heightened the water supply awareness for many water users. In 1998 and again in 2005 California’s Department of Water Resources modified the requirements for water utilities regarding the legislatively mandated Urban Water Management Plans. The plans must be updated at least every 5 years and, since 2005, must include a chapter on water shortage contingency plans and address a 50% water reduction situation.

Today, California’s Governor has elevated water supply issues substantially with his direct involvement in climate change issues and global warming regulations. With the experiences of Northern California, and now coupled with the statewide spotlight of our Governor, it was

certain that a comprehensive drought preparedness program for El Dorado County had to be something that relied on intensive collaborative dialogs, data sharing and significant scenario planning.

In 2004 the El Dorado Irrigation District and El Dorado County Water Agency joined together to update previous drought and conservation plans and develop and fund a comprehensive drought preparedness program. A key part of this program has been development of a Shared Vision Model and collaborative dialogs with many interested parties, or stakeholders, and both local and national experts.

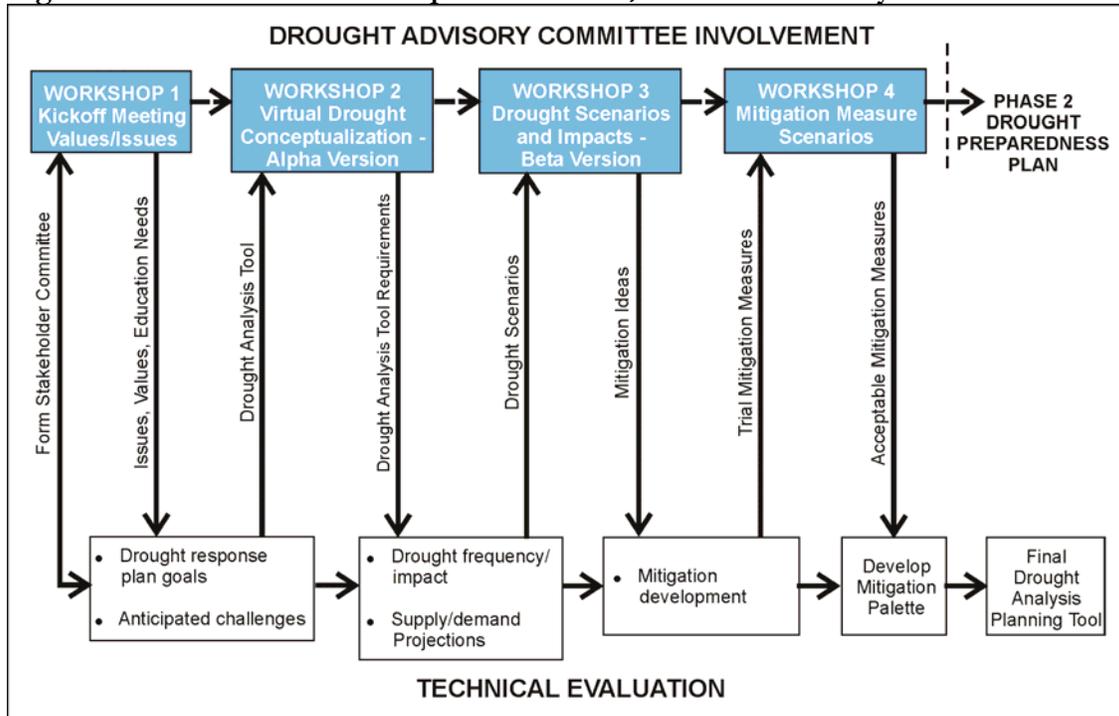
Shared Vision Planning – using diverse views to strengthen the whole

One of the characteristics of an engaged and highly interested community is the view by many participants that they are as knowledgeable and informed as practicing experts in the fields of climatology, water resource engineering, computer modeling, climatology, and other similar ‘ologies’. Some may see that as a challenge; and others as an opportunity. El Dorado chose to see it as opportunity, and worked to find a way to capture public input, incorporate scientific information, and develop ‘what if’s’ to generate discussion on preferences and expectations. Developing a shared vision model allows diverse participants to weigh in early in the process, buy in at each stage, and ultimately support the products, and implementation when completed.

The shared vision model, also called SVM for short, takes advantage of new, user-friendly, graphical simulation software to bridge the gap between specialized water models and human decision-making. It is an effective way to integrate multiple factors into the process including potential economic, environmental and social impacts associated with droughts and contingency measures. It provides an integrated framework upon which sound drought preparedness decisions may reside.

Figure 1 graphically depicts the manner in which the drought preparedness participants developed a ‘shared vision’. This vision considered the past drought experiences and economic impacts to El Dorado County residents and businesses, coupled with their concerns for future impacts considering climate change and the increasing demands for water throughout the state.

Figure 1. Shared Vision Development Process, El Dorado County California

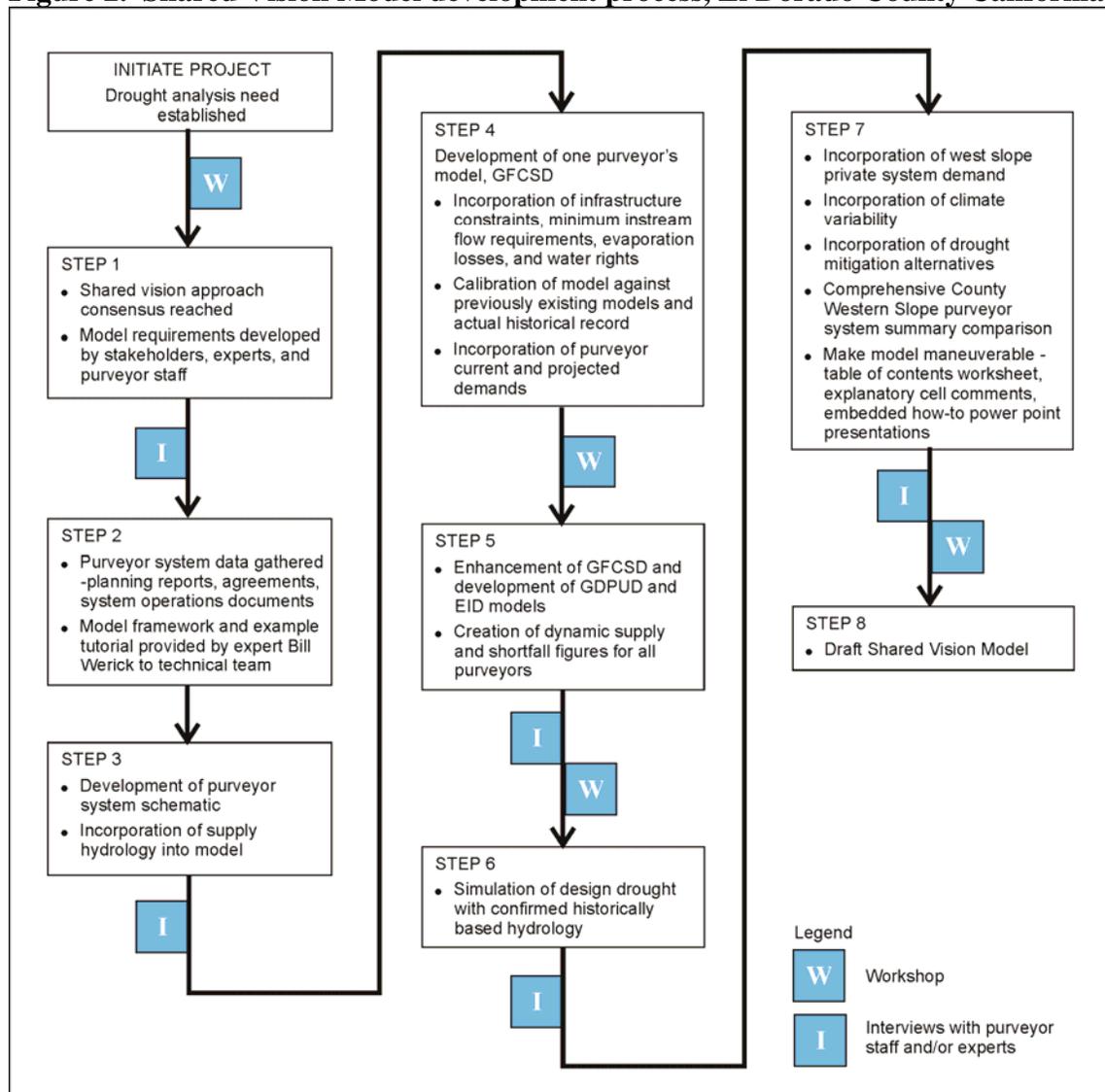


The key to acceptance by the diverse interest groups was an iterative, interactive process of data presentation, discussion of the data, sharing of personal experiences and rigorous scientific perspectives provided by several key experts. Having a stable of solid, well respected, nationally recognized practitioners to help guide the process resulted in serious, lively, and well versed communications. The expert team El Dorado used included: Dr. David Jones, former UC Berkeley professor and USGS state hydrologist, and current local winery owner; Dr. Jay Lund, UC Davis climate change professor; John Olaf Nelson, former water utility general manager and current water resource consultant; Bill Werick, former long time water resource expert with the US Army Corps of Engineers and present shared vision planning consulting expert; Dr. Donald Wilhite, Director of the National Drought Mitigation Center at the University of Nebraska at Lincoln and drought planning expert.

Shared Vision Model Overview – clear, open, technical applications

Moving from a conceptual shared vision into practical application involved the use of a Microsoft Excel based model. It allows users to review information and assumptions that may be embedded in the model, and provides flexibility to separate inputs and impacts for each water provider in a given area. Figure 2 graphically depicts the steps used in developing the SVM.

Figure 2. Shared Vision Model development process, El Dorado County California



Applying the model – success through simulations and transparency

Once the model was developed the participants worked collaboratively to apply the results of the intensive data analysis phase of the project and translate the science of drought into practical drought preparedness solutions. Through the use of ‘virtual drought’ simulations the group of experts and other participants tested the vulnerabilities of each water entity’s supply management and delivery systems. Identifying predictable outcomes provides an objective basis upon which the group developed contingencies and mitigation measures to lessen and/or better manage the adverse impacts of drought on various community components.

The SVM process provides a graphical tool that incorporates key features important to consensus building and widespread acceptance, foundational to the project's success. The following qualities were realized through the SVM process:

- Transparency of diverse information, assumptions and decision factors
- Ease of use for both model experts and non-experts
- Ability to quantitatively predict shortfalls
- Clear depiction of the water utilities and providers in the area
- Ability to demonstrate the manner in which shortfalls would occur
- Ability to evaluate effectiveness of various drought responses
- Ease in updating the model tool
- Ability to test existing drought plans against proposed, improved plans
- Ability to integrate climate change scenario influences

The overall success of the drought preparedness project, beginning with an intensive drought analysis project and development of the Shared Vision Model for El Dorado County, was due in large part to the enthusiastic, informed stakeholder participation process. Consensus was reached through integration of financial, environmental, scientific, commercial, agricultural, and social equity concerned stakeholders who worked collaboratively in the Drought Advisory Committee. The close attention to detail, which was time consuming, led to enhanced public confidence and buy in. The end result is El Dorado County is better prepared for the next inevitable drought and will be able to serve the public with assurance that their expectations and concerns were valued and integrated into the agencies' business operations.

NOTES FROM THE PRESENTATION

The following provides additional information covered during the presentation and through audience questions.

Description of the Shared Vision Model:

The data loaded into the model was depicted in a dashboard graphic using green, yellow and red indicator “lights” to indicate if the activity was within acceptable levels of performance – indicated by green; whether a measurement indicated a level of concern regarding performance – yellow; or whether the measurement was in the red zone – requiring immediate action. Data being monitored included such things as: flows in the American River, storage levels in Jenkinson Lake, levels in various storage basins, pressure levels in the distribution system, and a variety of regulatory measurements required as part of the hydroelectric plant operating license.

Explanation of the Shared Vision Development Process (Figure 1):

The primary forcing functions in this model involves communication, facilitation, and identifying and developing consensus on the data, the analytical tools used to assess the trends from the data, description of drought preparedness tools, identification of potential levels of drought based on historical and predictive trends, and potential actions that might be taken to reduce vulnerabilities of drought, plus potential response actions to augment the preventive measures.

Explanation of the Shared Vision Model Development Process (Figure 2):

The “W” and “I” indicators in the model depict the key forms of communication and facilitation occurring with the project. At times there was a need for a full participant level workshop – where all the stakeholders participating on the Drought Advisory Committee received information, discussed it, engaged in a facilitated two-way dialog to reach consensus. Other times it was necessary to interview stakeholder participants one-on-one to identify where a key point of conflict may exist in order to develop alternative approaches to resolve the dispute. Other times the use of caucuses or small groups would be used in an interview style, to better understand a particular interest or view point, as a way to develop alternative dispute opportunities and dialogs.

Q: Who were your stakeholders that the “expert team” led through the process?

A: The stakeholders included local agricultural growers, rafting/water recreational interests, land developers, community interest groups, environmental groups, Chambers of Commerce, local planners, former elected and appointed officials, Resource Conservation District members, County Agricultural Council, former state hydrologist, climatologist, former US Forest Service District Administrator, and general public members.

Q: Please clarify who comprised the “Drought Advisory Committee,” the “Expert Team,” and the “Stakeholders.” What roles did they play, and how did these groups interact?

A: The drought advisory committee was comprised of the stakeholders. The experts gave presentations at each of the workshops, served as facilitators and assisted the group identifying the problems, potential solutions and priorities for actions. Sometimes the participants represented their technical area of expertise, other times they served as facilitators and small group leaders to ensure the various stakeholder comments were voiced and understood. The people that participated in the virtual drought simulations including the stakeholder drought advisory committee members, elected officials from El Dorado Irrigation District, County Board of Supervisors, County Water Agency, Grizzly Flats Community Service District, Georgetown Divide Water District, staff from each of the agencies, and the drought /model experts.

Q: Was the model developed beforehand or with the stakeholders?

A: The model was developed full on with the participants at the table. Once parameters were agreed upon they would be implemented at the next meeting to ensure there was still agreement.

Q: How long did the whole process take?

A: The process of working with the stakeholders, developing the model and reaching consensus on the model and its inputs occurred over a two year time frame. The reason for that length of time is because the process had to be vetted periodically with the elected boards of directors of three public agencies, based on their publicly noticed meeting schedules.

Q: Describe the outcomes of the process. What drought plans were developed? What things were learned? How was the model integrated into ongoing decision-making or planning activities, and did it change or influence decisions made during drought?

A: The results of the model were presented in a full participatory publicly noticed workshop in late October 2007. Each of the water entities are in the process of drafting implementing regulations to be adopted by the various elected boards of directors and county supervisors. Each of the agencies will adopt their own implementing regulations, as they have different jurisdictions, legal authorities and mandates.

Q: What role did the model play in developing consensus?

A: The model provided the shared framework upon which each of the legally constituted entities could develop their own regulatory and administrative procedures.