7/17/2003

Charge for CALSIM External Review Panel

The CALSIM is a model of California's State Water Project and the Federal Central Valley Project, developed jointly by the California Department of Water Resources (DWR) and U.S. Bureau of Reclamation (USBR). While these agencies developed the model for several purposes, the model also has been proposed and employed for various other purposes. As the central official model available for large project, statewide, and Central Valley water operations and planning, CALSIM is in the milieu of many technical and policy controversies. As such, CALSIM merits and has been receiving considerable scrutiny. The range of issues raised has been diverse, but includes a variety of issues and perspectives related to water supply reliability, environmental management and performance, water demands, economics, documentation, hydrology and climate, and regulatory compliance.

The CALFED Science Program, at the request of the Department of Water Resources (DWR) and the Bureau of Reclamation (USBR), has commissioned this external review panel to provide an independent analysis and constructive suggestions about the strengths and weaknesses of CALSIM and CALSIM II, appropriate uses of these models, ways their use might complement or be complemented by other models, and provide advice and suggestions for further development, quality assurance, and use of operations and planning models for California and its major water systems. The panel will be presented with background readings, including a background survey of technical and policy purposes and concerns for CALSIM, and meet for several days in California for discussions and presentations leading to preparation of theoretical and methodological assessments of CALSIM and related planning and operations modeling technologies for current and proposed uses in California. As part of these meetings, there will be presentations by DWR and USBR and discussions with technical and policy professionals from the stakeholder and technical communities. Policy professionals will present their immediate and long-term desires and uses for model results. Technical presentations will focus on CALSIM's development, theory, data, testing, modeling procedures and protocols, interactions with other models, and ideas for future development. The CALFED Science Program will provide a note taker to help keep track of the discussions, if that suits the panel. Draft panel and individual panelist reports will be presented to CALFED at the conclusion of their visit, with a limited opportunity to revise and extend these reports in the following month (extended with CALFED approval).

Major Questions for the External Review Panel

The purpose of the review is to provide balanced, considered, and constructive technical advice for the following questions:

1. Is CALSIM a reasonable modeling approach for current and proposed applications and problems?
2. Do other modeling approaches show similar or greater promise and flexibility for such problems? If so, how?

3. What are the major comparative strengths and weaknesses of the current CALSIM approach and alternative approaches?
4. What are major scientific, technical, and institutional limitations, uncertainties, and impediments for current and proposed applications of CALSIM?
5. What model, software, and data developments, special studies or tests would be beneficial to improve CALSIM for current and proposed uses?
6. How might CALSIM development and applications be managed and overseen to improve the quality assurance of model results for current and proposed applications?
7. What are your suggestions for long-term use, development, or replacement of the current suite of models and data available for the current and proposed uses of CALSIM?

Where panel members have major divergences of opinion on these matters, it is important that these be explained. Areas of consensus also should be noted.

Qualifications of the External Review Panel

The review panel shall be limited to 7-10 members. All members shall have a national or international reputation in operations and planning modeling for large water resource systems, as evidenced by strong professional and scholarly publications and long-standing professional activities and leadership. All reviewers will have substantial experience participating in technical reviews of operations and planning models and their applications, a track record of fair and unbiased, yet constructive criticism, and absence of financial involvement in development of simulation models for the State Water Project or Central Valley Project or stakeholder involvement in these projects.

Individual panel members will be selected with consideration for expertise in application of optimization-driven simulation models for large multipurpose water resource systems; application of other approaches to large multipurpose water resource systems; integration of operations and planning models with economic, water quality, and environmental quality models; and expertise and experience within and outside of California. Breadth of panel membership will span academics and practitioners, knowledge of California and non-California water systems, and strengths in various operations and planning modeling approaches for large water resource systems.

Dr. Pete Loucks (Cornell University and South Florida Water Management District) has accepted the CALFED Science Program's invitation to chair the panel. Other members are being contacted by the Science Program staff.

Public Involvement

The review proceedings will be open to the public, although there will be periods for internal panel discussions that will not be open. Selected stakeholders may be invited to participate in the presentations as part of the review. Open discussion will be restricted to the panel and the participants during the presentation period. Time will be set aside for the public to provide comments directly to the panel, and for the panel to present their draft review comments to the CALFED community.