

Senate Transportation and Housing Committee
Informational Hearing on the Caltrans Peer Review Process

State Capitol

John L. Burton hearing Room—4203

November 28, 2012

10a.m.-1p.m.

Today's hearing will provide follow-up to an August 2012 hearing of the Transportation and Housing Committee on issues related to the new East Span of the San Francisco-Oakland Bay Bridge, which is expected to open for public use in 2013. Although the Legislature cannot make judgments on the safety of that bridge or any other large infrastructure project, as this is the province of engineers, it can endeavor to ensure that the peer review processes used by the Department of Transportation (Caltrans) to address issues of design and construction are transparent, include well qualified experts, and are working in the public interest.

To this end, the committee will hear from the representatives of Caltrans, the Toll Bridge Program Oversight Committee (TBPOC), representatives of the engineering community, and a representative of a citizens group that has dealt with the peer review process.

Framework for Hearing

Peer review groups are not usually the topic of legislative inquiry, but California may be embarking several megaprojects that will likely require the level of legislative scrutiny being given to the East Span. Typically, the features of megaprojects include being extraordinarily expensive, technically challenging, often very disrupted to the area in which they are constructed, and frequently characterized by overestimated benefit and underestimated costs. They often require substantial commitments of public funds and public credit. The peer review process has the possibility of supporting effective legislative oversight.

In preparing this report, the staff learned that the use and integrity of peer review groups has been a concern of other legislative institutions. Congress has been especially concerned with the US Army Corps of Engineers (USACE) use of peer review groups. To address this issue in a systematic fashion, Congress commissioned a review by the National Academy of Sciences of the use of peer review groups by the corps. That report concluded:

There is a strong and direct correlation between the independence of reviewers—in terms of both knowledge and association with a project and organizational affiliation—and the credibility, both real and perceived, of review.

The focus of our panel’s report is on a review of Corps of Engineers studies, with careful attention given to the need for independent, external reviews by panels of well-qualified and impartial experts for large, complex, and sensitive projects.¹

This quote establishes a framework and raises several issues that are pertinent for today’s hearing:

- How does the state secure impartial expert advice on complex infrastructure projects that is credible in the professional community and with the public?
- How should the question of conflicts of interest or the appearance of conflicts be addressed?
- Is it incompatible with a peer review process to allow public access to the deliberations with the peer review panel?
- What are the lessons learned from the use of peer review groups on the Bay Bridge project that may be transferable to other public megaprojects in California?

Projects Potentially Requiring Peer Review

Developing an understanding of the preview process associated with large infrastructure projects may take on a special significance because there are several megaproject being discussed in the state, including twin water transfer tunnels under the Sacramento-San Joaquin Delta, a highway tunnel under South Pasadena and Pasadena linking the I-710 and I-210 highways, and a truck lane on the Long Beach Freeway, among others. Typically, the features of megaprojects include being extraordinarily expensive, technically challenging, often very disrupted to the area in which they are constructed, and frequently characterized by overestimated benefits and underestimated costs. They usually require the substantial commitments of public funds and public credit. A well-crafted peer review process can enhance legislative oversight of megaprojects in the future.

Evolution of Peer Review Process for State Highway Bridges

The use of peer review panels is a standard practice when designing and constructing complex projects. In fact, Caltrans has guidance entitled *Memo to Designers* that states, “Seismic Safety Peer Review is an

¹ **Review Procedures for Water Resources Project Planning**, Panel on Peer Review, Committee to Assess the U.S. Army Corps of Engineers Methods of Analysis and Peer Review for Water Resources Project Planning, National Academy of Sciences, 2002, page 1.

independent review and assessment of bridges or other structures to meet project seismic performance goals.”² The memo indicates that a peer review should consider a project specific seismic hazards and seismic design criteria. The mission of a peer review panel should include, according to Caltrans policy, an assessment of the analytical methodology used on a project, the character of quality assurance used on the project, the project’s design details, a retrofit strategy, if appropriate, and other possible issues. The memo suggests that the need for a peer review panel should be identified during the preparation of a project initiation document, the initial phase of project development. Projects that are not especially complicated will require rely on internal staff, but complicated projects require an outside panel of experts, and on occasion, a combined panel of outside experts and Caltrans staff.

Loma Prieta Earthquake—Broad of Enquiry

After the 1989 Loma Prieta Earthquake, Governor George Deukmejian created the Governor’s Board of Enquiry to review the status of seismic and structural engineering practices used by Caltrans to ensure that it was using the most advanced practices available. An important outcome of the board was the formation of a permanent group referred to as the Caltrans Seismic Advisory Board (Board). The mission statement of the Board is as follows:

- Continued review of earthquake engineering and seismic design as practiced by Caltrans
- Formulation of recommendations for improvement in Caltrans earthquake engineering and seismic design practices
- Policy review of seismic hazard definitions and mitigation directives
- Technical review of seismic design guidelines and standards for transportation structures
- Review and comment on Caltrans seismic research agenda and priorities
- Being available to provide the general public with explanations regarding Caltrans’ seismic safety policies and procedures for maintaining safety and functionality of California’s transportation structures

The Board’s mission is broad, including being a conduit for ensuring the transfer to Caltrans of the most important, up-to-date knowledge of seismic design. Perhaps, because it does not reference technical issues, the last point of the Board’s mission statement relating to being available to the general public to explain seismic issues is very interesting. As we will see later in this report, the issue of public access to the peer review process has been a concern to members of the public.

² See Memo to Designers 20-16, June 2009, page 1.

Toll Bridge Seismic Advisory Panel

The Toll Bridge Seismic Advisory Panel is a group of expert engineers that Caltrans has assembled to provide advice on the design and construction of the new East Span of the Bay Bridge. This group was originally formed to focus exclusively on East Span issues, but over time it has also become involved with seismic issues on the other toll bridges being constructed or being retrofitted with seismic safety features.

The group has four members', some, but not all, of whom are members of the Board. According to Caltrans, the members of the group are the considered to be pre-eminent experts in their specialty.³ Among the experts are individuals with specialized knowledge in seismic engineering, structural engineering, and geotechnical engineering. The group meets as requested by Caltrans, and Caltrans publishes no minutes of the meetings, not even recommendations of the Board or the actions taken by Caltrans in response to the recommendations.

Toll Bridge Program Oversight Committee

AB 144 (Hancock), Chapter 71, Statutes of 2005, established the toll Bridge Oversight Committee (TBPOC). The TBPOC is not the typical technical peer review group, rather its function is to provide project oversight and be a conduit for information on the construction status of the East Span and the toll bridge seismic safety retrofit program. TBPOC is charged with reviewing project status, addressing issues related to project costs and schedule, risk assessment, determine cash flow requirement, and provide program direction. To carry out its responsibilities, the TBPOC may create a project management team, which it has done. Finally, on a quarterly basis, the TBPOC publishes a report on the status of the projects under its purview. The members of TBPOC include the director of Caltrans, the executive director of the California Transportation Commission, the executive director of the Bay Area Toll Authority.

Issues Regarding the Peer Review Program

Each of several issues regarding the peer review process as it relates to the East Span project are discussed below.

Selection of Peers and Possible Conflicts

One key question is the process for the selecting peers. Caltrans chose to draw some members from the existing Board and to appoint other individuals with well-earned professional reputations in the technical fields appropriate for the project. The process was informal and not structured. For example, according to Caltrans staff, little attention was given to issues of conflicts of interest. In fact, the peers were not required to file the Fair Political Practice Commission's Form 700 Statement of Economic Interests until July 2012, even though the peers are influencing government decision-making. In

³ Two members have recently resigned from the Board.

contrast, most consulting engagements with public agencies in California require the filing of the conflict of interest statement.

Groupthink

In addition to possible conflicts arising from economic interests, there is the question of the appearance of professional conflict. Three of the peers served on a previous panel of engineers, architects, and local elected officials that selected the bridge design. This may introduce the phenomena of groupthink. Groupthink occurs within working groups when the desire for harmony in decision-making may override a realistic appraisal of alternatives. Essentially, members of a group seek to minimize conflict and reach a consensus decision without critical evaluation of alternative ideas, which erodes independent thinking. When applied to the peer review group, the fact that three members of the group were involved with selecting the final design opens the possibility of Groupthink when addressing complex engineering issues with the design or construction of the bridge. Caltrans argues that one of the three members did not support the design that was selected, a self-anchored suspension bridge, so it is unlikely that that groupthink occurred among the peers and Caltrans. Caltrans also argues that if one were attending peer review committee meetings, it would be obvious from the debate among the peers and with the bridge engineers that there is a good deal of independent thinking. Unfortunately, the public is not allowed to attend, and there are no minutes of the meetings.

Community involvement

Although there is interest in involving the community in the peer review process, it may be difficult to achieve. People familiar with the peer review process will argue that open meetings will dampen the dialogue among the peers and clients. In addition, they argue that the decisions of a peer review meeting may result in design changes and subsequent change orders to construction contracts. Publicly discussing the issues will reduce the negotiating strength of Caltrans during the negotiation of a change order with a contractor. These are important reasons to consider when addressing the desirability of opening peer review meetings to the public.

Caltrans argues that there has been public outreach. A member of the peer review group, residing in the Bay Area, has spoken at professional engineering and architectural societies regarding the issues associated with the design and construction of the bridge. This is a form of public involvement, but it is done with knowledge of the engineering technology involved with the bridge. As far as engaging public groups, Caltrans argues that the public information function serves that purpose. The public information function is to communicate with the public through the media. There is been no access, similar to that enjoyed by the Bay Area's professional community, provided to concerned community groups.

No documentation of meetings

According to Caltrans there is no documentation of peer review group meetings. Evidently, there are neither minutes nor a summary of actions taken or recommendations made at these meetings. This lack

of documentation makes it difficult to track the factors influencing decisions. It is unclear the nature of the advice given and how it is used by Caltrans. Further, it limits the public's knowledge of what transpired between the peers and Caltrans and the project's consulting engineers. If decisions need to be revisited or come under scrutiny by the Legislative Analyst Office or other third party, they would be difficult to reconstruct.

The TBPOC, which oversees the East Span project, essentially provides high level management oversight. TBPOC's meetings are not open to the public for essentially the same reasons cited for closing the peer review process. TBPOC, however, keeps summary minutes of its meetings. Unfortunately, the minutes have not been made available to the public. At the request of the committee, the minutes have been made available for review. It is difficult for the committee staff to discern exactly what is deleterious to the project by release of the minutes to the public.

The lack of documentation and the closure of meetings to the public create a seemingly impenetrable shell around the project decision-making. The decisions made on the basis of the peer review recommendations and the decisions by the TBPOC may affect project scope, schedule and the budget.

Other Peer Review Programs

Two other peer review programs are briefly reviewed, the Bay Conservation and Development Commission's (BCDC) Engineering Criteria Review Board (ECRB) and the peer efforts associated with the high-speed rail project.

Engineering Criteria Review Board

BCDC's enabling statute give the agency broad authority to regulate the filling of the San Francisco Bay, including the formation of advisory groups. The ECRB is among the advisory groups. The membership of the ECRB includes geologists, civil engineers specializing in soils engineering, structural engineers, and architects. The ECRB establishes safety criteria for structures constructed on bay fill, determines and reviews safety criteria, prescribes inspection systems for the placement of fill, and coordinates with local, state, and federal agencies. The applicants seeking permits must submit detailed plans to the BCDC staff for analysis prior to the applicant's hearing before the ECRB review, and the hearings are public meetings. The recommendations of the ECRB are forwarded to the BCDC board which either approves or denies the application.

The East Span project was required to go through the BCDC process in order to obtain a construction permit.

California High-Speed Rail Project

The high-speed rail project has a statutorily mandated peer review group. The mandate includes both a mix of expertise and appointing authorities. The eight-member peer review group has two members with experience in the construction and operation of high-speed trains, both of whom the Treasurer

appoints, two persons appointed by the Controller, one with experience in the engineering and construction of high-speed trains and one with experience in project finance, a member with experience in financial services appointed by the Director of Finance, and one appointee by the with experience in environmental planning by the Secretary of Business, Transportation & Housing (BT&H). Lastly, the BT&H Secretary appoints two individuals from agencies that operate commuter or intercity passenger rail service.

The group has wide latitude to examine various aspects of the high-speed rail project and is specifically mandated to advise the Legislature on project finance. The group has had very direct impact on the nature of the project. For example, during a budget subcommittee hearing in which there was a debate over whether commuter rail and high-speed rail can operate over the same tracks, an engineer on the peer review group who has experience on high-speed rail projects in Great Britain, pointed out that high-speed and conventional rail operate over the same tracks in the London region. The creditability and the expertise of the peer resulted ultimately in the adoption by the High-Speed Rail Authority (HSRA) of a blend strategy for high-speed rail development.

Use of Peer Review by the Senate Transportation and Housing Committee

Because of uncertainty over the reliability of the HSRA's ridership forecast, the committee engaged the Institute of Transportation Studies (ITS) at the University of California, Berkeley to review the model HSRA used to forecast ridership. ITS concluded that the model was unreliable. This peer review influenced the debate about the creditability of aspects of the project and resulted in the HSRA establishing its own peer review committee to examine the model as with the Toll Bridge Seismic Advisory Board, the panel meets in private. It issues a quarterly report which is not widely distributed, but is available upon request. Similar, to the Toll Bridge Seismic Advisory Board, It is unclear what the value that the HSRA receives from the peer review since there is no information on the nature of the advice and how it is used.

Conclusion

While the state used a variety of peer review processes, generally the peer review process is not a transparent process. Part of the reason for this is to ensure professional debate can be carried out without second guessing, but even after the peer review groups make their decisions, they are reluctant to document by issuing minutes or decision reports. The public or oversight agencies have no way to judge the value or the peer review process. The issue of ensuring that there are not conflicts of interest among the peers is hazy. There appears to no format to select peers that address the concerns about actual conflicts of interest on the East Span project or the appearance of conflicts, both of which are highlighted in the National Academy of Sciences report cited at the beginning of this paper. Peer review processes established by the Legislature, in the case of the high-speed rail project, or by the BCDC board, are transparent, documented, and have had material impact on projects, and therefor serve as questions for the committee to consider, as follows:

- Is it possible to establish a process for selecting peers that addresses concerns of conflict of interest and group think?
- Is it possible to provide greater public access to peer review group meetings without weakening the nature of the process?
- Is there a downside to publishing detailed minutes (unedited by the agency) of a peer review group's meeting, their recommendations, and the action taken by the agency on the recommendations?