

Response of the GTMax Expert Review Panel to Comments on Our 2012 Report

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At the invitation of the Grand Canyon Monitoring and Research Center (GCMRC), three independent experts reviewed the GTMax power operation model and its uses for economic analysis of issues relevant to the Glen Canyon Dam Adaptive Management Program (GCDAMP). The basis for this review was a workshop held on August 31 and September 1, 2011 in Flagstaff, Arizona. In January 2013, GCMRC released our report along with comments by workshop participants.

This present document represents the response of the expert panel to these comments.

The comments in total attest to the difficulties involving communications on complex technical matters such as those at issue here despite the best efforts of all involved. We do not feel that point-for-point rebuttals would be a productive use of anyone's time. We recognize that there were areas where our knowledge was less deep than that of Workshop participants. The comments, however, display some semantic confusions and rhetorical excess. We particularly feel that the commenters have made some unfortunate inferences about our motives. We would like to limit our response to a few points, and leave further discussions to stakeholders in the GCDAMP.

We address three issues here: (1) the scope of our assignment, (2) the alleged advocacy of the expert panel, and (3) our continuing uncertainty about the role of institutional constraints on the issues relevant to the GCDAMP.

A number of the comments assert that the expert panel has wandered "too far afield" from the more narrow scope of simply assessing GTMax capabilities by some unnamed scientific standard. We were encouraged by our initial contact at the GCMRC to take an expansive view of our assignment and to place our remarks in a broad institutional and analytic perspective. We were provided a copy of the December 2009, ***Final Report of the GCMRC Socioeconomic Research Review Panel***, which endorses a more comprehensive scope for review for valuation and production simulation tools. We attach a document

that we received in advance of the workshop which also endorses the broad view of our assignment. We took such a view, addressing issues that were both near term in nature and those that were and are on the horizon as the economic and policy environment evolves.

Several commenters allege that the expert panel was advocating specific policies toward markets and institutional behavior to which these commenters object. We distinguish between recommendations to *consider* alternatives from recommendations to *adopt* alternatives. It was our intention to advocate the former, and not the latter. We felt it was our duty to highlight potential opportunities for reducing customer rates. We feel the Report met that standard.

Many of the conflicting perspectives center on the nature of the institutional constraints under which the various participants operate; in particular, the obligations of a federal power marketing agency. While we make no claim to expert knowledge of the legal issues that may be involved here, we are familiar with the activities of the Bonneville Power Administration (BPA), which is quite active in the power markets of the Western Interconnection (WI). Our underlying presupposition in the Report is that anything BPA does, any other federal power marketing agency may also do.

Our Report acknowledges our confusion about studies we have reviewed which sometimes claim that only customer load serving actions are proper, but then also invoke “economic” principles that rely on dispatch and valuation based on wholesale market prices. If only customer load serving is allowable, then the market based dispatch and valuation is irrelevant. Of course, dispatching to load means foregoing opportunities that are conservative and traditional utility practices for increasing net revenues and thereby reducing customer rates. If market based valuation is relevant, then why should some markets be excluded from consideration? This is the context in which we mention ancillary services markets accessible in the WI. If Palo Verde energy market prices represent economic markets, why shouldn’t these other market prices also be relevant?

We believe that only stakeholders in the GCDAMP can answer these questions. Our job as outside experts is to raise relevant questions. Nothing in the comments received changes our view that there is more than a little confusion, if not outright self-contradiction on these important matters. As outsiders to the GCDAMP we have tried to bring an independent perspective. Perhaps our report will serve the constructive purpose of stimulating discussion within the GCDAMP.

Scope-of-Work for GTMAx Model Review

The US Geological Survey's Grand Canyon Monitoring and Research Center (GCMRC) is organizing a workshop to evaluate the utility and applicability of a specific electrical energy generation and transmission model known as "GTMax" for assessing economic implications of changing dam operations at Glen Canyon Dam. This model was originally developed by Argon National Laboratories at the request of the Department of Energy (Western Area Power Administration) for the purpose of modeling and predicting how to maximize electrical power generation and transmission under varying load conditions and operational constraints. Western Area Power Administration (Western) is now proposing to use a modified version of this model to evaluate the economic implications of changing operations at Glen Canyon Dam to meet various social and environmental objectives, as specified in the 1957 Colorado River Storage Protect Act, the 1992 Grand Canyon Protection, and other legal and regulatory requirements.

GCMRC, as the designated science provider to the Department of Interior's Glen Canyon Dam Adaptive Management Program, is conducting an independent assessment of this model and its applicability for addressing economic information needs of the GCDAMP. In order to accomplish this, USGS is soliciting the temporary services of 3-4 individuals with highly specialized expertise and experience in electrical energy economics and electrical systems modeling to participate in this workshop and provide independent advice to USGS/GCMRC staff about several topics (see below). In their capacity as reviewers, the selected individuals are expected to listen to several technical presentations over a two-day period concerning the model and the specific methods that are being used by Western to derive economic values from the output of the model. They will ask probing questions of the presenters to elucidate critical information about the structure, assumptions, functions, and potential and actual applications of the model and the accompanying economic analyses. During and after the workshop, the reviewers will coordinate with one another to provide USGS/GCMRC with a written assessment of their findings. The resulting report will concisely discuss (using generally non-technical language) the strengths and weaknesses of the model and evaluate the appropriateness of the overall approach proposed by Western to arrive at economic assessments for the Glen Canyon Dam Adaptive Management Program.

In addition to assessing the strengths and weaknesses of the model, GCMRC would like the report to include an assessment of the following: 1) appropriateness of the proposed model and overall approach for meeting economic information needs of the Glen Canyon Dam Adaptive Management (GCDAMP) related to hydropower values, costs, and benefits; 2) whether the model could or should be modified in certain respects to produce better (more accurate/relevant) information, and if so, what modifications should be considered; 3) if the reviewers know of other models or approaches that would be better suited to meet the needs of the GCDAMP, the report will include recommendations about these other models or approaches and explain why they might be better suited to the needs of the Glen Canyon Dam Adaptive Management Program. The report can include any other relevant information that the reviewers feel is important to convey to

the US Geological Survey to assist them in determining how best to evaluate the economic implications of varying operations at Glen Canyon Dam.

Workshop Schedule and Deliverables

August 30: Travel to Flagstaff, arrive in time for a group dinner (7 pm) - if possible

August 31-September 1: Participate in Model Review Workshop (this will include at least one, possibly 2 evening sessions to begin outlining the contents of the report)

September 2 (optional): Hydropower Knowledge Assessment Workshop*

*This is a separate workshop that will follow immediately after the model review, in which GCMRC and Western will assess the current state of knowledge regarding hydropower values and impacts under various operating regimes. If reviewers wish to stay over and listen in on this workshop, GCMRC will cover additional per diem and hotel costs; however, reviewers are not required to participate on this second workshop.

Report Schedule (*these proposed dates can be refined if needed*):

- Draft Report to USGS by October 1, 2011 (GCMRC will have up to 30 days to review and provide comments)
- Comments provided by GCMRC on draft report NLT October 31, 2011
- Final report due November 18, 2011