

Agenda Item: Item 2
Meeting Date: July 17, 2007

Delta Vision Assessment

NOTE TO ISB: The following memos are informal thoughts provided by Mike Healey to John Kirlin on ways to conduct an assessment of various scenarios being considering under the Delta Vision process. These memos are for discussion purposes only. It is expected the assessment team currently being put together by the Science Program will review this document and ISB input and then come to agreement on the process it will use to conduct the vision assessment.

To: John Kirlin, Executive Director, Delta Vision

From: Mike Healey, CALFED Lead Scientist

I want to follow up on your request that the Science Program work to develop a methodology for assessing scenarios that come out of the Delta Vision process. I have given this problem some thought and I want to sketch out my thinking in this email to stimulate some exchange so that we can set appropriate boundaries on the process.

First, I assume that by assessment you mean one based largely on expert judgment at this stage. To do something analytic would, I think, take too much time.

Second, I assume that you are thinking of an assessment that examines the economic, social and environmental implications of each scenario. These are supposedly the 3 pillars of sustainability so that any sustainable vision for the Delta must be robust in each of these areas. This means we need a framework for evaluation that includes economic, social and environmental attributes.

With help from various sources (Experts? The Task Force? Stakeholders?) We could construct list of valued attributes of the Delta in each of the categories. An illustrative set is sketched below.

Economic	Social	Environmental
Value of agriculture in Delta	Jobs in the Delta	Status of native species
Value of shipping through Delta	The Delta "way of life"	Status of economically valued alien species
Value of recreation in Delta	Access to the Delta	Status of undesirable alien invaders
Value of Delta real estate	Risk of flood or other disaster	
	Level of public health	

Cost of water Quality of water for human uses	Water supply reliability	Environmental water quality Delta biodiversity Ecosystem function
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The listed attributes might need to be further subdivided for evaluation but, more important is getting the right list of attributes. This might be a task that the stakeholder group could help with. Determining the list of attributes by which to judge any scenario is, I think, critical to the success of the process. First, the number of possible attributes against which scenarios could be judged is huge. In practical terms, however, a team of evaluators could probably not exercise judgments about more than about 20 indicators. Second, if the stakeholders are not satisfied that the attributes capture most of the important values in the Delta they will probably reject the assessment. Third, the attributes need to be at the right level of aggregation. Attributes that are too broad (e.g., overall economic cost/benefit) will be too difficult to judge well. Attributes that are too narrow (e.g., response of individual life stages of fish) will make the assessment too complex.

Once a suitable set of attributes by which to judge any scenario is decided a way to compare among very different kinds of variables (e.g., dollars vs. fish) is needed. Formally one could develop utility curves for each variable and aggregate across variables by assigning importance weights to each variable. Going through the formal process would, however, probably take too long given the deadlines under which we are working. The alternative will be simply to judge each attribute independently. This won't help much with tradeoffs but would provide some guidance to the Task Force.

The Science Program could help set all this up. However, deciding on a set of attributes against which to judge scenarios involves value judgments more than science. We could put together an evaluation team and have them simply choose attributes. But I wonder if it would be better to get input from the Task Force and the Stakeholder Coordination Group?

There are also various ways we might structure the assessment of scenarios. Assuming that performance on attributes will be assessed in a qualitative way we could try to assess each scenario independent of the others. This would mean giving the scenario a "score" for each attribute and then finding some way to give an overall assessment of the scenario. Alternatively, we could assess scenarios in a comparative way. The Table below lays out how this could work:

Attributes	Scenarios		
	Scenario 1	Scenario 2	Scenario 3
Economic 1	Best		Worst
Economic 2	Best	Worst	
Economic 3	Worst	Best	
Social 1	Best	Worst	
Social 2		Worst	Best
Social 3	Worst		Best
Environment 1	Worst	Best	

Environment 2		Best	Worst
Environment 3		Worst	Best
Environment 4	Best		Worst

It might also be possible to say something about the difference between “best” and “worst” to help with final aggregation of scores.

I am not at all sure how deep you think it would be necessary to go with these preliminary assessments as there will surely be a lot of debate about their pros and cons once they are made public and any preliminary assessment would probably not be a very solid basis for supporting one over another.

Some dialogue about how best to approach the kind of evaluation you have in mind would help.

Mike Healey

John

I have given some additional thought to the matrix approach to evaluating scenarios that I sketched out in a previous memo. On reflection, it seems to me that a comparative approach to assessing scenarios would be the easiest and most effective given the time constraints and need to use expert judgment. I expect that the experts will find it easier to rank alternatives and say something about relative differences than to give absolute values to scenarios.

Also, as the Task Force has been given a particular set of general attributes to consider in developing scenarios (e.g., environment, land use, etc.), these should probably form the foundation of the assessment. However, each of these needs to be characterized in terms of a set of more particular attributes that would form the basis of assessment. In the table below I lay out the general design of an assessment matrix. It needs to be fleshed out by defining the specific assessment attributes but when this is done I think it would be a tool for scenario evaluation that a group of experts could use (or lay people for that matter if they wanted to use their own judgment about how scenarios ranked against the attributes).

As I mentioned in my previous memo, I think developing the specific assessment attributes is something that the stakeholder group could (should?) help with. As there is obviously a very long list of potential assessment attributes one of the challenges will be to create a set of attributes that provides a reasonable assessment of each scenario but is also small enough to be workable. The numbers I have included for each general attribute in the table is illustrative only, some attributes (like environment) may need several more. Also the examples I have given were simply ideas and may not be useful at all. However, I think it is fair to say that the assessment attributes should be things to which knowledgeable experts can relate and that will be important in deciding among scenarios.

I have included the status quo as one scenario for the Delta. I think this could be a useful benchmark for assessment. Obviously only scenarios that clearly dominate the status quo on most attributes would be good alternatives. I don't expect that the Task Force will envision Delta futures that would not be better than the status quo but having it in the mix for comparison provides a convenient bench mark.

General Attribute	Assessment Attribute	Vision Options		
		Status Quo	New Vision 1	New Vision 2
Environment	e.g., acres of tidal marsh			
	Environment – 2			
	Environment – 3			
Land Use	e.g., Agriculture			
	e.g., Urban			
	e.g., Protected			
Transportation	e.g., miles of roads			
	Transportation – 2			

Utilities	e.g., pipeline crossings			
	Utilities – 2			
Water Supply	e.g., acre feet exported			
	e.g., annual variation			
Water Quality	e.g., toxic substances			
	e.g., salinity			
	e.g., DOC			
Recreation and Tourism	e.g., miles of accessible channel			
	e.g., boat moorage			
	e.g., park areas			
Flood Risk Management	e.g., levee standard			
	e.g., floodplain structures			
	Flood Risk – 3			
Emergency Response	e.g., escape routes			
	Emergency Response – 2			
State Economy	e.g., marginal contribution to GDP			
	State Economy – 2			
Local Economy	e.g., marginal value of Delta agriculture			
	e.g., marginal value of urban lands			
	Local Economy – 3			
Governance	e.g., beneficiary pays			
	Governance - 2			

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