

Table 3. Proposed Socioeconomic Plan for FY2011-2014, as recommended by the TWG Socioeconomic Ad Hoc Group.

ROW #	Proposed Study/Activity	AMP Info Needs	TWG Questions to be addressed	Proposed Use by AMP (SEAGH Perspective)
1	<p>Socioeconomic research overall and its application to GCDAMP decision-making.</p> <p>Cost: TBD</p>	N/A	Resolving questions of how market, non-market, use and non-use values should be integrated into Grand Canyon policy formulation would address questions J and F.	How will the market, non-market use and nonuse values be integrated into policy analysis? Policy should be developed in a collaborative effort between the AMWG, DOI and DOE/WAPA on how the dollar values of market, non-market and non-use values will be used in the different decision making processes such as NEPA analysis, adaptive management and in any benefit-cost analysis.
2	<p>Staffing.</p> <p>Cost: TBD</p> <p>Time: FY 2012 and beyond</p>	N/A	N/A	As GCMRC shifts to greater emphasis on socioeconomic studies, GCMRC staff with resource economics expertise will be required to conceptualize the required studies, to initiate RFPs and help secure study funding, and to provide study oversight. Resource economics staff, or outside consultants, may be needed to help interpret study results and to outline the implications of these results for agency policy. Additional resource economics staff or contractors may be required to do this effectively. This assumes that most of the socioeconomic research will be conducted by outside consultants. If some of the studies were to be conducted in-house, the requirement for additional staff would be much greater.
FY 2011				

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3	<p>Economics 101 educational workshop.</p> <p>Cost: TBD</p> <p>Time: FY 2011</p>	<p>IN 12.1 Develop information that can be used by the TWG, in collaboration with GCMRC, to establish current and target levels for all resources within the AMP as called for in the AMP strategic plan.</p> <p>IN 12.2 Determine what information is necessary and sufficient to make recommendations at an acceptable level of risk.</p> <p>RIN 12.1.1 What is the economic value of the recreational use of the Colorado River ecosystem downstream from Glen Canyon Dam?</p> <p>RIN 12.1.2 What are the use (e.g., hydropower, trout fishing, rafting) and non-use (e.g., option, vicarious, quasi-option, bequest and existence) values of the Colorado River ecosystem</p>	<p>C. Do we need to determine the value of "specialness" of resources, such as, hydroelectric power generation; visitor satisfaction; value of beaches to support rafting; values of high visibility wildlife e.g., peregrine falcon, big horn sheep; and value of a blue ribbon trout fishery?</p> <p>D. What are points of disagreement on methodologies and assumptions in regard to power analysis?</p> <p>E. What would a consensus interagency methodology for modeling hydropower and recreation (e.g., fishing & rafting) economic outcomes look like?</p> <p>J. What are the requirements for economic information in GCPA, ESA, NHPA, NEPA, CRSPA,?</p> <p>M. Can the values of dependable power and water supplies be reflected in future economic analysis?</p> <p>N. How much weight should non-use values be given compared to market and non-market use values?</p> <p>T. What are the non-use values for different resources (including the tribal perspective) so we can include these values in trade-off analysis?</p>	<p>The panel recommended that GCMRC host a Non Use Values 101 workshop to help TWG & AMWG understand the relevance and value of this type of study for informing future decision making. However, the TWG felt that a more general workshop/training was needed initially to provide AMP stakeholders with a basic introduction to the concepts and rationales underlying socioeconomic studies in general, to clarify terminology, and to provide an overview of how various types of analyses (market, non-market, non-use studies) are conducted and how the resulting data could be to interpreted and applied to inform AMP decisions. This workshop is currently scheduled for March 7, 2011 in Phoenix. This educational workshop is not intended to cover non-use economics in-depth, that will be covered during the non-use workshop now scheduled for FY 2012. Western may provide support for the Economics 101 workshop and to help GCRMC to identify presenters specifically to address power system economics. CREDA will also provide professional opinion to GCRMC on potential power system experts.</p>

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4	<p>Define GCD operational base case and change cases.</p> <p>Cost: TBD</p> <p>Time: FY 2011</p> <p>Policy</p>	<p>IN 10.1 Determine and track the impacts to power users from implementation of Record of Decision dam operations and segregate those effects from other causes such as changes in the power market.</p> <p>RIN 10.1.1. What would be the effects on the Colorado River ecosystem and marketable capacity and energy of increasing the daily fluctuation limit?</p> <p>RIN 10.1.2. What would be the effects on the Colorado River ecosystem and marketable capacity and energy of increasing the upramp and downramp limit?</p> <p>RIN 10.1.3 What would be the effects on the Colorado River ecosystem and marketable capacity and energy of raising the maximum power plant flow limit above 25,000 cfs?</p> <p>RIN 10.1.4 What would be the effects on the Colorado River ecosystem and marketable capacity and energy of lowering the minimum flow limit below 5,000 cfs?</p> <p>RIN 10.1.5 How do power-marketing contract provisions affect Glen Canyon Dam releases?</p>	<p>I. What is the base case on optimal power generation?</p> <p>W. (partly) Determine impacts on marketed hydropower and recreation values of alternative flow scenarios in real time to support decision making.</p> <p>S. (partly) What is the total economic impact to upper basin water users from changes to power generation from base case?</p>	<p>This task addresses the fundamental need to define a base case (i.e., a “standard”) against which proposed changes in GCD operations can be evaluated in the future. The panel recommended that TWG select an operational scenario that reflects current (MLFF) operations. The base case needs to define monthly volumes, hourly (or even within hourly) outputs, amount of peak and off-peak power production, etc. There is disagreement of what the base case should reflect; pre-rod conditions or MLFF. We recommend developing a base cast that captures current MLFF operations. The TWG also believes there would be value in using this base case in the future to assess change relative to pre-rod operation such that the change from various operations could be assessed to show how moving from one scenario to the other either results in net benefits or costs. This step, defining the base cases and the change cases to be analyzed in the future is essential to further analyses.</p> <p>TWG – we need to discuss this further as the ad hoc group did not reach consensus on this approach. We have disagreement over the base case, pre-rod or MLFF or potentially both.</p>

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5	<p>Peer review of the WAPA GTMax power model.</p> <p>Cost: \$30,000</p> <p>Time: FY 2011</p>	<p>SSQ 3-4. What are the projected hydropower costs associated with the various alternative flow regimes being discussed for future experimental science (as defined in the next phase experimental design)?</p> <p>IN 10.1. Determine and track the impacts to power users from implementation of ROD dam operations and segregate those effects from other causes such as changes in the power market.</p> <p>CMIN 10.1.1 (as redefined by SPG). Determine and track the marketable capacity and energy produced through dam operations in relation to the various release scenarios (daily fluctuation limit, upramp and downramp limits, etc.).</p>		<p>Workplan: HYD 10.R2.11-12 p. 150</p> <p>WAPA will provide the GCMRC with a full description of the GTMax model including equations. GCMRC will organize and host a workshop involving technical staff from WAPA, a representative from National Argonne Laboratories, and a small group of independent hydropower modeling experts. During this workshop, the functions, assumptions, and data needed to run the GTMax model and possibly other models will be described in detail and demonstrated through hands-on involvement of all subject experts. GCDAMP stakeholders will be invited to observe the workshop, but the focus of this workshop will be on providing an opportunity for independent experts to become thoroughly familiar with and be able to independently assess GTMax and other relevant models in terms of their potential suitability for use as an electrical power system economic forecasting tool and post hoc assessment tool in the AMP.</p>

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6	<p>Power modeling: conduct the base case analysis and initial power modeling using currently available models and test “spill over” effects with the WECC.</p> <p>Cost: TBD</p> <p>Time: FY 2011</p> <p>WECC = Western Electrical Coordinating Council (i.e., western grid).</p>	<p>IN 10.1 Determine and track the impacts to power users from implementation of Record of Decision dam operations and segregate those effects from other causes such as changes in the power market.</p> <p>RIN 10.1.1. What would be the effects on the Colorado River ecosystem and marketable capacity and energy of increasing the daily fluctuation limit?</p> <p>RIN 10.1.2. What would be the effects on the Colorado River ecosystem and marketable capacity and energy of increasing the upramp and downramp limit?</p> <p>RIN 10.1.3 What would be the effects on the Colorado River ecosystem and marketable capacity and energy of raising the maximum power plant flow limit above 25,000 cfs?</p> <p>RIN 10.1.4 What would be the effects on the Colorado River ecosystem and marketable capacity and energy of lowering the minimum flow limit below 5,000 cfs?</p> <p>RIN 10.1.5 How do power-marketing contract provisions affect Glen Canyon Dam releases?</p> <p>CMIN 10.1.1 (as redefined by SPG). Determine and track the marketable capacity and energy produced through dam operations in relation to the various release scenarios (daily fluctuation limit, upramp and downramp limits, etc.).</p>	<p>I. What is the base case on optimal power generation?</p> <p>W. (partly) Determine impacts on marketed hydropower and recreation values of alternative flow scenarios in real time to support decision making.</p> <p>S. (partly) What is the total economic impact to upper basin water users from changes to power generation from base case?</p>	<p>Workplan: HYD 10.R2.11-12 p. 150</p> <p>Implement the report recommendation to complete the base case study for hydroelectric operations in FY 2011. The detailed description of the base case study will be prepared by GCMRC, with input from WAPA and appropriate experts, based on the description in the Socioeconomic Panel's report, and input from the GTMax workshop results, and any additional specifications by the TWG/AMWG. This base case study will also include an analysis of "spill over" with the WECC. The base case and spill over analysis will be completed by WAPA and a report prepared at no cost to the AMP. The report will be submitted by WAPA to GCMRC for peer review. GCMRC will oversee the peer review process and use the Science Advisors as needed. WAPA will incorporate changes into the report based on comments received from the peer review process.</p> <p>If WAPA’s power flow models demonstrate changes in flows at the border of WAPA’s system, or at interconnection points with other systems, then a more extensive modeling effort may be required, to check for changes in four indicators throughout the WECC (generation, transmission, reliability, and hub prices).</p> <p>If needed in a second step, the panel recommended that GCMRC solicit outside consultants to perform the broader WECC analyses using models that are most appropriate for this purpose. The panel also suggested that GCMRC enlist additional expertise to develop the RFQs for the power modeling work.</p>
	FY2012			

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7	<p>Non-use values workshop to incorporate review of the 1994 Non Use Value Survey and update the questionnaire.</p> <p>Cost: \$0</p> <p>Time: FY 2012</p>	<p>RIN 12.1.2 What are the use (e.g., hydropower, trout fishing, rafting) and non-use (e.g., option, vicarious, quasi-option, bequest and existence) values of the Colorado River ecosystem</p> <p>RIN 12.1.3 How does use (e.g., hydropower, trout fishing, rafting) and non-use (e.g., option, vicarious, quasi-option, bequest and existence) values change in response to an experiment performed under the Record of Decision, unanticipated event, or other management action?</p>	T, Q, G, C, N	<p>A new non-use value study is needed to properly assess resource values associated with Grand Canyon, and potential impacts to those values from dam operations. The focus would be on values that are important to tribes and the broader American public that are not dependent on human use or consumption for their value. Data on tribal values may be gathered as part of this study depending on the outcome of preliminary investigations. Preparing for this study will take considerable time; therefore the panel recommended that GCMRC and TWG start planning early for a future non-use value study, taking into account changes that have occurred in the canyon and to dam operations since 1995. Initiating Step #1 – discussion and review of old questionnaire – could be done at no additional cost to the AMP. However, TWG is recommending that this be accomplished in a workshop format to include a more detailed review of non-use economics.</p>
8	<p>Scoping activity: identify tribes for specific surveys of preferences and attitudes and determine if separate tribal studies are needed.</p> <p>Cost: \$5,000</p> <p>Time: FY 2012</p>	<p>RIN 11.2.1 What are traditionally important resources and locations for each tribe and other groups?</p> <p>RIN 11.2.2 What is the baseline measure for resource integrity?</p>	<p>B. How do high flow and other experiments affect recreation (river rafting fishing guides and other associated businesses, including tribes)?</p> <p>O. What is the economic benefit of river recreation to tribes?</p> <p>L. What is the sociocultural impact of recreational use in the Colorado?</p> <p>R. What are the socioeconomic benefits and costs of hydropower generation from HFE to tribal communities?</p> <p>T. What are the non-use values for different resources (including the tribal perspective) so we can include these values in trade-off analysis?</p>	<p>There is a need to better integrate tribal values in AMP decision making. This task is intended as a scoping activity to determine how tribal values should be assessed and then integrated into AMP decision making. Future activities per the panel’s recommendations are provided below but they are placeholders if scoping finds that a separate process is needed to specifically address tribal preferences and values. This scoping process should fully include the tribes and any similar processes they may be involved in (such as the surveys currently being conducted by the Hopi Tribe as part of their monitoring project).</p>
9	<p>Recreation Use Analysis:</p> <p>Part A (Market):</p>	<p>CMIN 9.1.1 Determine and track the changes attributable to dam operations in recreational quality, opportunities and use, impacts, serious incidents, and</p>	<p>A. What are the attributes of the river that are important to recreational users?</p> <p>B. How do high flow and other experiments affect recreation (river rafting fishing guides</p>	<p>The panel proposed that GCMRC undertake socioeconomic studies focused on recreational values that include both market and non-market <i>use</i> values for specific river reaches. While the</p>

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	<p>initiate recreation expenditure analysis of Glen Canyon anglers, day-use rafters, and Grand Canyon and Marble Canyon white water users including Diamond Creek to Mead rafters.</p> <p>Part B (Non-Market): initiate development of survey instrument for recreation non-market use analysis and obtain OMB clearances.</p> <p>Cost: \$150,000 - \$200,000</p> <p>Time: FY 2012-2013</p>	<p>perceptions of users, including the level of satisfaction, in the Colorado River Ecosystem.</p> <p>CMIN 9.1.4 Determine and track the economic benefits of river related recreational opportunities.</p> <p>RIN 12.1.1 What is the economic value of the recreational use of the Colorado River ecosystem downstream from Glen Canyon Dam?</p>	<p>and other associated businesses, including tribes)?</p> <p>C. Do we need to determine the value of "specialness" of resources, such as, hydroelectric power generation; visitor satisfaction; value of beaches to support rafting; values of high visibility wildlife and value of a blue ribbon trout fishery?</p> <p>G. (partly) What are the use and nonuse costs and benefits of HFE including the marginal costs and benefits of changes in HFE duration and size?</p> <p>L. What is the sociocultural impact of recreational use in the Colorado River on Native American values associated with resources and places in the Grand Canyon?</p> <p>O. What is the economic benefit of river recreation to tribes?</p> <p>W. (partly) Determine impacts on marketed hydropower and recreation values of alternative flow scenarios in real time to support decision making.</p>	<p>panel suggested that economics of scale could be had by gathering recreational data on both market and non market aspects at the same time, this is really a program decision. Market data are easier to gather and can be analyzed easily. Data on recreational consumer surplus (preferences) will require a proper survey design and additional input from stakeholder groups. The expenditure data be gathered and analyzed while the nonmarket survey instrument is being developed</p> <p>The regional economic effects of GCD experiments and other DOI actions will be analyzed. This analysis would be devoted to the impact on the regional economy as a result of changes in expenditures resulting from these actions.</p> <p>The groups of interest for this study would be Glen Canyon day use rafters and anglers and Grand Canyon Whitewater rafting of commercial and private boaters from Lees Ferry to Diamond Creek or Lake Mead and the Hualapai white water recreational enterprise that services Diamond Creek to Lake Mead. This expenditure data can be used in the IMPLAN regional input-output model to estimate the positive economic impacts to the surrounding counties and Indian Reservations in terms of direct and indirect personal income and employment generated. Indirect effects would capture the multiplier effects from subsequent rounds of spending in the surrounding region. Separate interviews with the guides and the tribes will be needed to obtain their expenditures associated with the guiding, access fees, food, and other costs. We recommend that the economic impact analysis use two impact areas. For consistency with past research, it would be appropriate to use the counties surrounding the Grand Canyon. However, since many outfitters have their base</p>

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				of operation in Nevada or Salt Lake City, it would be appropriate to show results using a broader multi-state economic impact area (Report page 16)
10	<p>Power modeling: conduct change case analyses, and power flow studies that show the financial and economic consequences of GCD management alternatives on WAPA and WAPA customers.</p> <p>Cost: TBD Time: FY 2012</p>	RINS 10.1.1-10.1.5	<p>I. What is the base case on optimal power generation?</p> <p>W. (partly) Determine impacts on marketed hydropower and recreation values of alternative flow scenarios in real time to support decision making.</p> <p>S. (partly) What is the total economic impact to upper basin water users from changes to power generation from base case?</p>	This task would evaluate economic outcomes from alternative GCD operations in relation to the base case. TWG/AMWG/or DOI first need to define what “change cases” they want to analyze before this can be initiated (see task above).

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11	<p>[Contingent upon power modeling in FY 2011]</p> <p>WECC power analysis: GCMRC to solicit firms for future WECC analysis and work with WAPA to establish framework for future economic and financial analyses if deemed necessary by power modeling completed in FY 2011.</p> <p>Cost: TBD</p> <p>WECC = Western Electrical Coordinating Council (i.e., western grid).</p>	<p>IN 10.1 Determine and track the impacts to power users from implementation of Record of Decision dam operations and segregate those effects from other causes such as changes in the power market.</p> <p>RIN 10.1.1. What would be the effects on the Colorado River ecosystem and marketable capacity and energy of increasing the daily fluctuation limit?</p> <p>RIN 10.1.2. What would be the effects on the Colorado River ecosystem and marketable capacity and energy of increasing the upramp and downramp limit?</p> <p>RIN 10.1.3 What would be the effects on the Colorado River ecosystem and marketable capacity and energy of raising the maximum power plant flow limit above 25,000 cfs?</p> <p>RIN 10.1.4 What would be the effects on the Colorado River ecosystem and marketable capacity and energy of lowering the minimum flow limit below 5,000 cfs?</p> <p>RIN 10.1.5 How do power-marketing contract provisions affect Glen Canyon Dam releases?</p>	<p>I. What is the base case on optimal power generation?</p> <p>W. (partly) Determine impacts on marketed hydropower and recreation values of alternative flow scenarios in real time to support decision making.</p> <p>S. (partly) What is the total economic impact to upper basin water users from changes to power generation from base case?</p>	<p>This project is contingent upon the power modeling done by WAPA in FY 2011 to determine “spill over” effects to the WECC.</p> <p>The panel believed there was a need to more fully analyze how proposed changes in GCD operations may affect the larger western electrical grid, thus influencing power market values. The need to evaluate the impacts on the WECC would be assessed in step 1 under power modeling in FY 2011 and 2012. During FY2011, information generated by the WAPA modeling effort would be used to develop budgets for FY2012 and beyond, once a determination is made about the potential geographical scope of economic effects and whether the expanded WECC-level analysis is deemed necessary to influence GCDAMP decision-making.</p> <p>If determined that WAPA’s models are not sufficient to capture “spill over” effects, GCMRC should solicit outside consultants to perform the WECC analyses using models that are appropriate for this purpose. If these tasks are needed, GCMRC should enlist additional expertise to develop the RFQs for the power modeling work (see staffing).</p>
FY2013				

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12	<p>Recreation Use Analysis Continues:</p> <p>Part B (Non-Market): initiate recreation surveys of Glen Canyon anglers, day-use rafters, and Grand Canyon and Marble Canyon white water users including Diamond Creek to Mead rafters.</p> <p>Cost: ≈\$150,000 - \$200,000</p> <p>Time: FY 2013-2014</p>	<p>CMIN 9.1.1 Determine and track the changes attributable to dam operations in recreational quality, opportunities and use, impacts, serious incidents, and perceptions of users, including the level of satisfaction, in the Colorado River Ecosystem.</p> <p>CMIN 9.1.4 Determine and track the economic benefits of river related recreational opportunities.</p> <p>RIN 12.1.1 What is the economic value of the recreational use of the Colorado River ecosystem downstream from Glen Canyon Dam?</p>	<p>A. What are the attributes of the river that are important to recreational users?</p> <p>B. How do high flow and other experiments affect recreation (river rafting fishing guides and other associated businesses, including tribes)?</p> <p>C. Do we need to determine the value of "specialness" of resources, such as, hydroelectric power generation; visitor satisfaction; value of beaches to support rafting; values of high visibility wildlife and value of a blue ribbon trout fishery?</p> <p>G. (partly) What are the use and nonuse costs and benefits of HFE including the marginal costs and benefits of changes in HFE duration and size?</p> <p>L. What is the sociocultural impact of recreational use in the Colorado River on Native American values associated with resources and places in the Grand Canyon?</p> <p>O. What is the economic benefit of river recreation to tribes?</p> <p>W. (partly) Determine impacts on marketed hydropower and recreation values of alternative flow scenarios in real time to support decision making.</p>	<p>GCMRC should undertake socioeconomic studies focused on recreational values that include both market and non-market <i>use</i> values for specific river reaches. In FY 2013, work would focus on the second phase of this project implementing the non-market use values surveys. This recommendation combines areas from Glen Canyon down to Mead in order to maximize efficiency in developing surveys.</p> <p>The intent of the non-market use work is to determine the broader value of the resource to recreation users beyond the simple expenditure analysis under the market use analysis (above). This broader analysis of "willingness to pay" for changes in resource conditions would help the AMP in determining economic consequences of actions by including overall changes in benefits. For example, changes in operations might increase the value of power but might have a negative consequence on the overall benefits to recreational visitors or other user groups. This analysis would put dollar amounts on those changes in benefits and allow an economic analysis to be performed on GCDAMP decisions.</p>

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13	<p>[Contingent on scoping results FY 2012] Prepare surveys of tribal preferences and social values. The analysis could include consideration of both use and non-use values and include sociology and socioeconomics.</p> <p>Cost: \$40,000 Time: FY 2013</p>	<p>RIN 11.2.1 What are traditionally important resources and locations for each tribe and other groups?</p> <p>RIN 11.2.2 What is the baseline measure for resource integrity?</p>	<p>B. How do high flow and other experiments affect recreation (river rafting fishing guides and other associated businesses, including tribes)?</p> <p>O. What is the economic benefit of river recreation to tribes?</p> <p>L. What is the sociocultural impact of recreational use in the Colorado?</p> <p>R. What are the socioeconomic benefits and costs of hydropower generation from HFE to tribal communities?</p> <p>T. What are the non-use values for different resources (including the tribal perspective) so we can include these values in trade-off analysis?</p>	<p>This activity is dependent on the outcome of the scoping exercise in FY 2012. Although it is important to consider tribal values in AMP decision making it is unclear whether these values require separate analyses or whether these values could be adequately considered during the use and non-use tasks described elsewhere in this plan. It is important that this research program incorporates tribal values so that decisions can incorporate those values in a meaningful way. A socioeconomic research program needs to recognize not only the economic impacts but also the social impacts on the tribes that result from changes in dam operations. Socioeconomic impacts to Tribes may suggest both opportunities and constraints that should be considered as changes in river operations are contemplated. Information to be covered in this survey could include attitudinal questions about preferences and impacts of flow regimes. Tribal representatives would be invited to participate in the development and testing of the survey.</p>
14	<p>Initiate OMB clearance to conduct surveys with focus groups in FY 2014 in order to develop a non-use values survey in FY 2015.</p> <p>Cost: \$20,000</p>			
FY2014				

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15	<p>[Contingent on scoping results FY 2012] Conduct tribal surveys for preferences and social values potentially affected by GCD operations.</p> <p>Cost: \$100,000</p> <p>Time: FY 2014-2015</p>		O, L, R, B, T	A socioeconomic research program for GCMRC needs to recognize not only the socioeconomic impacts but also the social impacts on the Tribes that result from changes in dam operations.
16	<p>Conduct focus groups and piloting of Non-Use Value survey, and initiate OMB clearance for full survey implementation.</p> <p>Cost: \$200,000</p>		T, Q, G, C, N	The panel recommended that GCMRC start to plan for a future non-use value study to be ready for actual implementation. These FY2014 tasks are part of the preparatory phase preceding implementation of the actual survey.
17	<p>Develop "real-time decision-making spreadsheet" for power impacts and benefits.</p> <p>Cost: \$50,000 - \$100,000</p>			To the extent that repeated analyses of power market impacts are required as part of the future decision-making it may well be possible to ease the calculations by developing a simplified response-surface model, embodied in a spreadsheet, linking changes within the CRSP service area to impacts on prices and capacity requirements within WECC. The GTMax Lite model may be applicable to develop this, but only after adequate testing is done in tasks above.
FY2015				

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18	<p>Conduct full non-use value survey.</p> <p>Cost: \$500,000</p> <p>Time: FY 2015-2016</p>		T, Q, G, C, N	<p>By 2015, it will have been 20 years since the Welsh et al. (1995) study was conducted. Much has changed including the management scenarios in the Grand Canyon and the demographics of the U.S. population, especially in the Four Corners Region. As recommended by the National Research Council in its report “Downstream”, these nonuse values are quite important to understanding the public benefits of alternative management strategies in the Grand Canyon. By tying flow-related changes to the environment to the non-use value survey, the incremental or marginal nonuse values can be estimated that are most useful for evaluating potential management actions in the Grand Canyon.</p>
19	<p>Implement Core Monitoring Plan for Socioeconomics.</p> <p>Cost: TBD</p>		B, W, A, O, L, G, C, R	<p>The panel recommends that socioeconomic surveys be repeated every 2-3 years as a monitoring tool to assess how changes in GCD operations affect recreational values. This should be integrated into the Core Monitoring Plan. A placeholder for socioeconomics should be kept in the initial General Core Monitoring Plan.</p>