Market Initiatives Roadmap Process
Report on Ranking of High Priority Market Initiatives
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1. Executive Summary

The California ISO (CAISO) has now completed the second or "Detailed Ranking" step in the process of ranking the candidate market initiatives described in the Five-Year Market Initiatives Roadmap now renamed the Five-Year Market Initiatives Catalog.[1] In so doing the CAISO has followed the formalized two step ranking process that was approved by the CAISO Board of Governors in March 2007. The two-step ranking process is not intended to be conclusive or prescriptive, but rather to provide critical input to the CAISO for developing work plans and timetables for designing and implementing the most needed and beneficial initiatives, in a manner that is consistent with the CAISO's Five-Year Strategic Plan[2] and other ongoing or committed initiatives. The present Report presents the results of the Detailed Ranking step, explains the rationale for the high-priority rankings that resulted, and describes the upcoming activities the CAISO has planned in the Market Initiatives Roadmap process.

By way of summary, the following initiatives received high-priority rankings in this second step of the process. Each of these initiatives is discussed in greater detail later in this paper.

- Standard RA Capacity Product
- Long Term CRR Auction including Multi Period Algorithm and Flexible Term Lengths
- Ancillary Services Substitution
- 30 Minute Operating Reserve
- Ability to Designate Ancillary Services Contingency Hourly
- Market Power Mitigation of Start-Up and Minimum Load Bids
- Sale of CRRs in the CRR Auction
- Model Constraints of Combined Cycle Units
- Multi-Settlement System for Ancillary Services

Per direction of CAISO executive management, CAISO staff will now turn to developing a proposed work plan and timetable for addressing these initiatives. In so doing, CAISO staff will consider how each of these high-priority initiatives links to the goals and initiatives specified in the CAISO's Five Year Strategic Plan, linkages to ongoing "non-discretionary" CAISO efforts such as renewable integration and other FERC-ordered market enhancements, input from the Board of Governors at the July Board meeting, input from stakeholders in the next round of written comments, preliminary implementation assessments, and linkages to external activities such as CPUC proceedings, WECC initiatives, etc. The CAISO expects to post a draft proposed work plan for stakeholder discussion by Fall of this year. Once such a work plan is finalized and adopted by the CAISO, it will more truly reflect an actual "roadmap" of the initiatives the CAISO plans to undertake with stakeholders.[3]

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1 The current version of the Five-Year Market Initiatives Catalog was posted on June 5 and is available at http://www.caiso.com/1fb1/1fb1856366d60.html

2 The CAISO's 5-Year Strategic Plan is available at http://www.caiso.com/1fa4/1fa4c0d125c80.pdf

3 The document currently known as the "Market Initiatives Roadmap" is in fact more like a catalog of several categories of initiatives, including ones the CAISO has already committed to or have been mandated, ones that are candidates for consideration, and ones that have already been addressed.

In parallel to the more general work planning for all high-priority initiatives, the CAISO will also develop a specific work plan and timetable to address the highest-ranked initiative, the Standard Resource Adequacy Capacity Product. As discussed later in this Report, the CAISO recognizes the need to begin to address this initiative as soon as possible, and therefore is aiming to provide an Issue Paper to stakeholders in July and hold an initial stakeholder meeting near the beginning of August. Between now and the posting of the Issue Paper, CAISO staff will have discussions with representatives of each of the stakeholder sectors to help define the scope of the effort and identify as completely as possible the various issues that need to be addressed.

2. Background

The California ISO (CAISO) has ranked the proposed set of discretionary market initiatives previously described in the *5-Year Market Initiatives Roadmap* and now contained in the *Market Initiatives Catalogue* using the formalized two step ranking process that was presented to the CAISO Board of Governors in March 2007.

After completing the first "High Level Ranking" step of the ranking process, on April 23, the CAISO posted to its website the *Preliminary Results of the High Level Prioritization of Market Initiatives* contained in the Market Initiatives Roadmap. This first step of the ranking process involved applying a simplified ranking process of three benefit criteria: Enhancements to Grid Reliability, Improving Market Efficiency, and the level of desire by Stakeholders and two feasibility (cost) criteria: Market Participation Implementation Impact and CAISO Implementation Impact to the candidate market enhancements described in the 5 –Year Market Initiatives Roadmap. After applying the high level criteria, the CAISO designated the proposed market initiatives as high, medium, or low priority initiatives.

On April 30 the CAISO conducted a stakeholder meeting to discuss the preliminary high level results and stakeholders submitted written comments to the CAISO on May 9.

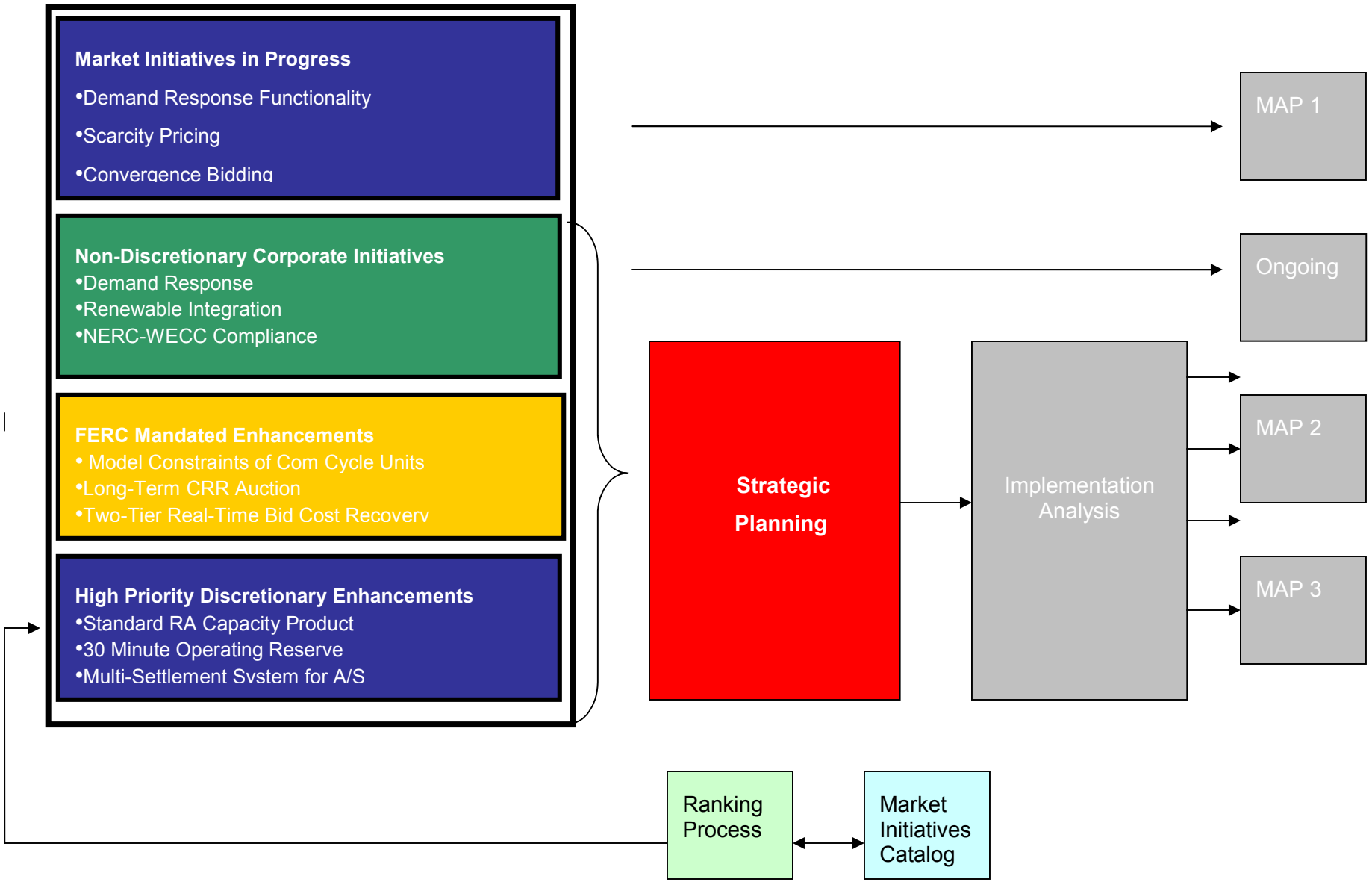
The CAISO revised the preliminary results of the High Level Prioritization based on stakeholder feedback and further internal scoping of the market enhancements. The market enhancements that were determined to be high priority after applying the high level criteria were further evaluated further evaluated in step 2 of the ranking process by applying the more extensive prioritization criteria described in Section 5 below.

This report includes both the revised results of Step 1, the High Level Prioritization of the Market Initiatives and the results of Step 2 which includes the more extensive ranking of market initiatives that were determined to have high priority.

The CAISO is currently engaged in multiple initiatives which are categorized in Figure A below as Non-Discretionary Corporate Initiatives, Market Enhancements in Progress, FERC Mandated Enhancements, and High Priority Discretionary Enhancements. Thus the role of the ranking process is to identify the high priority discretionary enhancements that the CAISO will need to evaluate in combination with all of the other ongoing initiatives to determine how best to achieve the CAISO's strategic plan and vision for operating the grid over the next several years. Several factors will have a significant impact on market and grid operations in the near future including the expanded use of intermittent renewable generation technologies and increased participation of demand response resources in CAISO's markets.

The CAISO proposes to retain this more comprehensive catalog as a vehicle to track all such items in a comprehensive manner, but will probably transition the use of the term "Roadmap" to refer to the more concrete work plan and timetable that reflects active or committed activities.

Figure A – Market Initiatives Roadmap Process



3. Plan for Stakeholder Engagement

The CAISO will finalize the ranking of the discretionary market initiatives prior to the July 9-10, 2008 Board of Governors meeting where the CAISO will brief the board on the roadmap process. The remaining significant dates in this stakeholder process are as follows:

June 11, 2008 – Stakeholder Conference Call

June 17, 2008 – Stakeholder written comments due on Straw Proposal

June 25, 2008 – Revised version of this Report posted

July 9 - 10, 2008 – Briefing at July Board of Governors Meeting

4. Summary of Stakeholder Comments

Stakeholders submitted written comments on May 7 in regards to the *Results of the High Level Prioritization of Market Initiatives* as well as to presentations made by stakeholders at the April 30 stakeholder meeting regarding market enhancements they believe should have high priority.

Multiple stakeholders submitted comments supporting the high ranking of 30 Minute Ancillary Services, Standard RA Capacity Product, Multi-Settlement System for Ancillary Services and Simultaneous RUC & IFM. Multiple stakeholders also requested in comments that Dynamic Pivotal Supplier Test be included in the high rank category. Comments received from stakeholders are summarized by market initiative in the chart below. Details on the changes made to the initial high level prioritization are described in Section 4 below.

Market Initiative	Comments from Stakeholders Round 2	CAISO Response
Standard RA Capacity Product	J. Aron – Strongly supports high ranking and encourages CAISO to target a fall 2008 FERC filing	Retained high rank based on balance between benefit and feasibility. Very high stakeholder interest was indicated in first and second round of comments.
	SCE – Agrees that this item should be given the highest ranking based on majority stakeholder support. Score of 7 rather than 10 for stakeholder support would be more appropriate since implementing the Standard RA Capacity Product may not have a significant impact on current LSE activities.	
	PG&E - agrees with the CAISO's preliminary assessment with respect to the need to begin the effort to develop a standard resource adequacy product.	

	Coral – encourages CAISO to pursue as highest priority	
	AReM – Applauds CAISO for recognizing Standard RA Capacity Product as the highest priority market initiative. Strongly support CAISO staffs suggestion that works could begin before July board meeting	
	CLECA – Based on widespread support from stakeholders and high level of benefit and feasibility it is appropriate for it to receive the highest ranking.	
	CPUC - A standardized RA capacity product and generator performance obligation metrics would increase grid reliability by clarifying resource obligations, increase transparency in compliance and reduce administrative burdens on the CAISO, CPUC as well as other market participants.	
Dynamic Pivotal Supplier Test	Dynegy – Should be high priority item. Dynamic pivotal supplier analysis is a tested part of other ISOs' operating markets.	Assigned medium rank due to low feasibility for implementation. Please see Section 4 for more details.
	J. Aron – supports development and implementation of dynamic pivotal supplier test	
	Coral – supports as high priority	
	SCE – would like to evaluate effectiveness of the current "static" supplier test prior to implementing dynamic test.	
	AReM – Does not support high priority	

	PG&E – Does not consider high priority	
	CPUC - currently satisfied with the move to a seasonal competitive path assessment at this time. Revisit at a later time.	
Voltage Support	Dynegy – should be high priority item. CAISO was ordered by FERC on September 30, 2005 to submit a proposed structure for the implementation of competitive procurement of Black Start and Voltage Support. Item should not be considered discretionary.	Low rank due to limited interest from stakeholders and low feasibility. Black start ranked Medium due to higher feasibility.
	J. Aron – supports market based procurement but supports lower priority as compared to other initiatives	
	Coral- supports market based procurement but supports lower priority at this time	
	SCE – current tariff already has mechanism to secure voltage support. Item should be prioritized and ranked in the same manner as other initiatives.	
	ARem – does not support as high priority	

	PG&E – Does not support as high priority	
	CPUC – Does not support as high priority	
Multi-Settlement System for A/S	Dynegy – supports high rank	Retained high rank. Adjusted stakeholder interested from 7 to 3 to reflect more accurate stakeholder interest. More stakeholders responded in second round of comments that they support high priority for this enhancement.
	J. Aron – supports high rank	
	Coral- supports high rank	
	SCE – disagreed with rank of 7 for stakeholder support. Recommend change to 3.	
	CPUC – Does not object to including on high priority list	
	SWP- supports high priority	
30 Minute Ancillary Services	Dynegy – supports high priority	Retained high rank
	J. Aron – supports high priority	
	Coral – strongly supports high priority especially since ISO must integrate additional intermittent renewable resources into its balancing authority	

	SCE- questions high ranking given to benefit scores. Not clear what problem CAISO is trying to resolve by adding this new product.	
	CPUC –supports high rank and believes will increase DR participation, increase the liquidity of the AS market, improve the reliability of the grid, and assist in the integration of renewable into the CAISO network	
Two-Tier Real-Time Bid Cost Recovery	CDWR – Encourage CAISO to include this in the convergence bidding stakeholder process	Ranked medium relative to other FERC mandated enhancements. CAISO will consider ties to Convergence Bidding stakeholder process when determining a work plan for this effort. Multiple market participants have requested this issue be resolved through the convergence bidding stakeholder process.
Hourly Designation of A/S Contingency	CDWR – Proposes issue be included in Demand Response as part of MAP 1 since this is a significant issue for DR to perform well.	Market Initiative ranked High in revised high level prioritization
Evolution to Auctioning Revenue Rights System	Dynegy – supports high rank	Ranked Medium in revised ranking. Grid Reliability criteria adjusted from 0 to 3.
	CDWR – does not support and believes will over complicate without additional benefits to end users	
	PG&E - little need to transition to an Auction Revenue Right System at this time. Considerable effort was expended in the stakeholder process to design and implement the current CRR allocation process. It makes little sense to scrap the current allocation mechanism and start designing a new process	

	for a market element that is not broken	
	J. Aron - suggests that the grid reliability ranking is too low at "0". ARRs provide a visible indication of the value of the grid to market participants, and thus provide a visible indication of areas of the transmission grid which are likely candidates for improvements.	
	Coral – same comments as J. Aron	
Unaccounted for Energy as part of Metered Demand for cost allocation	CDWR – believes issue is very important and solving this issue will address engineering, economic and legal concerns	Ranked low due to low benefit scores. Second round of comments did not reflect increased stakeholder interest.
Strengthening General Market Power Provisions	J.Aron – CAISO should look to mechanisms to refine market power mitigation such as seasonal determination of competitive paths and dynamic pivotal supplier test.	The CAISO does not view this enhancement as discretionary and will monitor and address market power issues continuously as they are identified. Therefore, this initiative will not be addressed through the ranking process. See Section 4 below under Dynamic Pivotal Supplier Test for more information on CAISO's upcoming plans for LMPM.
	Coral – same as J. Aron	
	PG&E - It is very important that the CAISO begin to enhance the market power mitigation provisions that will go into effect with Release 1 of MRTU. There is currently no mitigation of ancillary services bids, RUC or DEC bids	
	SCE –it is the responsibility of the DMM to review market power provisions on a continuous basis and address immediately if needed.	
	CLECA – support high rank. Due to the amount of generation in constrained reliability areas, there are widespread concerns on load side of exercise of market power in all markets.	

Simultaneous RUC and IFM	Dynegy – Reflecting the actions the CAISO takes in RUC to meet reliability needs not met in the Day-Ahead market in Day-Ahead prices will further improve those prices	Ranked Medium in revised ranking. Overall score of 23 did not meet high criteria.
	Coral – Supports high rank	
	SCE - does not believe the CAISO can reach conclusions on efficiency gains until the process envisioned for simultaneous RUC is better defined.	
	CPUC – seeks additional information before commenting on this issue	
Multi-Day Unit Commitment in IFM	Dynegy – Supports high rank	Ranked Medium in revised ranking. Overall score of 23 did not meet high criteria.
	SCE - believe this item will have a significant impact on market efficiency and should be ranked higher. Moreover, in order to maintain grid reliability, the limited 24-hour optimization horizon of MRTU the optimization may force the CAISO to rely on exceptional dispatch in order to keep certain units committed.	
Economic Methodology for Transmissions Outages	PG&E - If left unaddressed, the lack of an economic methodology for assessing transmission outages could cost consumers of each major Participating Transmission Owner (PTO) hundreds of thousands of dollars annually. These cost consequences to PTOs and their customers occur due to the lack of transmission maintenance/construction outage flexibility introduced by the unsophisticated methodology to be employed with MRTU Release 1. Inflexibility in transmission outage scheduling makes it more difficult for PTOs to efficiently schedule work to be performed by construction and maintenance crews	The CAISO has previously committed to address this issue and will be assessing the effectiveness of 30-day rule exemptions policy for ensuring CRR revenue adequacy. Issue was not included in the ranking process
	CPUC – does not agree should be high priority	
	AReM- does not agree should be high priority	

5. Revised Results of High Level Prioritization

The high level results were adjusted based on stakeholder comments and additional discussions and scoping of the market enhancements. As a result a number of market enhancements that were in the high category in the initial ranking were lowered to medium priority and conversely some market enhancements that were previously ranked as medium

priority moved up to high. Market initiatives with a total score of 25 or higher were determined to be high priority.

In addition the CAISO subjected the FERC mandated market enhancements to the high level prioritization in order to determine their overall score as compared to discretionary market enhancements and to incorporate the desired level of priority that was expressed by stakeholders in their comments. By doing this the CAISO is not suggesting that the FERC mandated market enhancements are optional, but the CAISO found that ranking these items would be useful information for planning the implementation of these enhancements. All FERC mandated enhancements are currently planned to be implemented no later than three years after MRTU start-up. The ranking resulted in 4 out of 10 FERC mandated market enhancements, Long Term CRR Auction, Modeling Constraints of Combined Cycle Units, Sale of CRRs in the CRR Auction and Ancillary Services Substitution getting a high priority rank. As discussed in previous stakeholder meetings, as time goes on and market conditions and priorities change it could be determined that some FERC mandated market enhancements are no longer desirable to stakeholders or as beneficial to the market as initially perceived. The CAISO and stakeholders will need to continue to asses this going forward during future Roadmap discussions.

The complete revised results of the High Level Prioritization are posted as Attachment A to this document. A summary of changes to the preliminary high level prioritization results are as follows:

- Standard RA Capacity Product

The CAISO implementation impact was adjusted from 3 (moderate impact) to 7 (minimal impact) based on further internal discussions on scope and implementation and Grid Reliablity was adjusted from 7 (moderate improvement) to 3 (minimal improvement). Market initiative overall score remained at 37 retaining high rank.

- Transition to Auction Revenue Rights

Grid Reliability rank adjusted from 0 to 3 based on stakeholder feedback. Overall score increased from 19 to 23 resulting in Medium rank.

- Simultaneous RUC and IFM

Grid Reliability adjusted from 7 (Moderate Improvement) to 3 (Minimal Improvement). Desired by Stakeholders criteria adjusted from 0 (no apparent desire) to 3 (supported by small subset of stakeholders) based on second round of stakeholder comments. Although multiple stakeholders supported the initial high priority ranking in comments the CAISO's opinion is that the benefits attributed to this enhancement can not be determined until after MRTU start-up to allow the CAISO and stakeholders to see IFM and RUC results over a period of time. At this point in time anticipated benefits would be largely theoretical. The overall score of 23 did not support a high rank and is now ranked as Medium priority.

- Multi-Settlement System for Ancillary Services

Desired by Stakeholders rank adjusted from 7(majority of stakeholders) to 3 (small subset of stakeholders). Stakeholder comments reflected concern that stakeholder desire was ranked too high at a 7 and should be lowered to a 3. The initial assessment of stakeholder interest included parties that supported Ancillary Services substitution in the first round of comments which may or may not be valid. This initiative was supported by multiple parties in the second round of comments as high priority and retained high rank with an overall score of 27.

- 30 Minute Ancillary Services

Rankings for grid reliability and market efficiency were lowered from 10 (significant improvement) to 7 (moderate improvement). Since the existing market functions effectively with 10 minute Ancillary Services it was determined that ratings of 10 were too high. In addition stakeholder comments raised question on the high ranking. The Desired by Stakeholders criteria was increased from 3 (small subset of stakeholders) to 7(majority of stakeholders). Next to the Standard RA Capacity product this initiative received the most support in stakeholder comments as a desired high priority initiative. After more detailed discussions involving implementation the ISO Implementation impact rank was changed from 3(moderate impact) to 7(minimal impact) The overall score increased from 29 to 31 retaining a rank of high.

- Multi Day Unit Commitment in the IFM

Previously ranked high now ranked medium. Ranking did not change but score of 23 did not meet high criteria. The second round of stakeholder comments did not reflect increased interest.

- Import and Export of Ancillary Services

Previously ranked high now ranked medium. Minimal stakeholder desire reflected in comments resulted in Desired by Stakeholders ranking changed from 3 (small subset of stakeholders) to 0 (no apparent desire).

- Improving Tagging Procedures

Previously ranked high now ranked medium. Ranking did not change but score of 24 did not meet high criteria. The second round of stakeholder comments did not reflect increased interest.

- Ability to bid Start-Up Costs and Minimum Load Costs

Previously ranked medium now ranked high. Desire by Stakeholder ranking changed from 3 (desired by small subset of stakeholders) to 7 desired by majority of stakeholders. In previous stakeholder discussions involving minimum load and start-up cost bid caps, stakeholders, DMM and the MSC expressed widespread support to move towards a more dynamic mitigation process for start-up and minimum load bids.

- Ability to designate A/S Contingency hourly

Previously ranked medium now ranked high. After additional discussion on implementation CAISO implementation impact was changed from 3 (moderate impact) to 7 (minimal impact). This increased overall score from 22 to 26 meeting high criteria.

- Dynamic Pivotal Supplier Test

Multiple market participants supported high rank of this enhancement. This initiative retained a rank of medium priority with a total score of 23 due the CAISO estimate that costs to implement this enhancement would be significant. The CAISO's plans to move towards more dynamic Local Market Power Mitigation are as follows:

During the first 12 months after MRTU implementation, the CAISO will be taking a number of steps to make the make the Local Market Power Mitigation (LMPM) mechanisms more dynamic.

- The CAISO will perform the Competitive Path Analysis (CPA) and designate paths as *competitive* or *non-competitive* on a seasonal basis (rather than annual). FERC has specifically required that the CPA designations be performed on an seasonal basis after the first year of MRTU since "the CAISO will have gathered 12 month of historical data … and will have enough experience to develop a more comprehensive assessment of

competitiveness within 12 months of the initial implementation of MRTU." basis (See FERC's September 26, 2006 Order at ¶1031 pp282-283.)

- As part of a high priority initiative identified in the Roadmap, the CAISO will also seek to make LMPM provisions pertaining to caps for startup and minimum load bids under the bid-based option more dynamic. (See Section 5).

In addition, over the first 12 months that MRTU is implemented DMM will be monitoring other aspects of the overall LMPM plan incorporated in the MRTU market design, and will identify other potential modifications that may be necessary or appropriate to ensure the overall effectiveness of LMPM. The CAISO and its Market Surveillance Committee (MSC) will specifically examine "whether an alternative competitive screen to identify market power opportunities for generation in load pockets should be considered." Findings of the CAISO and MSC's assessment of this issue will be included in the CAISO quarterly post-implementation performance reports. (See FERC's September 26, 2006 Order at ¶1032 p. 283.) Other potential modifications include provisions relating to default energy bids, startup and minimum load bids, and the amount of load use in LMPM runs (e.g. forecast vs. actual).

Thus, within 12 months of MRTU implementation, there may be a variety of modifications to the initial LMPM provisions that should be considered together, as part of an overall package of changes. In light of this overall timeline and the inter-connections between different aspects of the LMPM provisions that may be modified, the CAISO believes that any other specific changes to make the LMPM provisions more dynamic during the first 12 month of MRTU should be developed and considered as part of the process described above. To ensure this issue is explicitly addressed, the CAISO will commit to address this issue in DMM's first annual report issued 12 months after MRTU implementation. Based on results of this experience and analysis, the CAISO will determine what specific changes might be made to make the pivotal supplier test more dynamic.

Until the specific nature of any such changes is determined, the implementation costs and impacts of any such modification cannot be assessed with much certainty. However, if such changes were directly incorporated in the MPM runs of the MRTU software, the implementation costs and impacts of these changes are estimated to be significant.

6. Results of Detailed Ranking

The nine market initiatives described below ranked high in the high level prioritization and were ranked again using the more extensive prioritization criteria show in Figure B below. FERC Mandated enhancements that ranked high in the high level prioritization were included in the detailed ranking to allow the CAISO to assess these market enhancements from a cost benefit perspective as compared to other desired market enhancements.

CAISO costs were estimated based on initial discussions with CAISO Market Operations, Settlements, IT and external vendors. More detailed scoping and requirements analysis will need to be done with external vendors and internal CAISO departments to further refine cost estimates. The complete results of the Detailed Ranking are posted as Attachment B to this document.

Figure B – CAISO Prioritization Criteria

CAISO Prioritization Criteria								
		Criteria	**Strategic Objective**	**Weight**	**HIGH**	**MEDIUM**	**LOW**	**NONE**
					10	**7**	**3**	**0**
	Benefit	Grid Reliability	Desired by Stakeholders	10	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement
		Improving CAISO Market Efficiency	Market Efficiency	10	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement
		Promote Efficient Infrastructure Development	Infrastructure Development	10	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement
		Desired by Stakeholders Process Improvement (ISO & MP)	Customer Care/ Regulatory	10	Universally Desired by Stakeholders	Desired by a majority of stakeholders	Desired by small subset of stakeholders	No Apparent Desire
		Process Improvement (ISO & MP)	Customer Care, Financial & Enterprise Risk Management	5	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement
	Feasibility	Market Participant Implementation Cost		7	No Cost	Minimal Cost	Moderate Cost	Significant Cost
		Market Participant Implementation Impact on Systems and Resources		7	No Cost	Minimal Cost	Moderate Cost	Significant Cost
		Impact on Market Participant Ongoing Operating Costs		7	No Cost	Minimal Cost	Moderate Cost	Significant Cost
		ISO Implementation Costs		10	< 1M	>$1M, <$5M	>$5M<10M	>$10M
		ISO Implementation Impact on Systems and Resources		7	No Cost	Minimal Cost	Moderate Cost	Significant Cost
		Impact on CAISO Ongoing Operating Costs		7	No Cost	Minimal Cost	Moderate Cost	Significant Cost

6.1. Standard RA Capacity Product

Several parties have urged the CAISO to take up the development of a Standard RA Capacity Product to address the limited tradability of RA Capacity between LSEs that exists today due to the extensive variations among such contracts. Currently RA suppliers' performance and availability obligations are enforced through their bilateral agreements with the LSE buyers of RA Capacity, and there is no defined standard for measuring and ensuring that RA capacity is available when called. The advocates of a CAISO role in standardizing the RA Capacity Product believe that development of standardized performance requirements and compliance and penalty provisions within the CAISO tariff would increase capacity market efficiency (in either centralized or bilateral capacity markets) by creating a more liquid and tradable product.

The first effort the CAISO would need to undertake with stakeholders would be to clearly scope the effort and identify all the issues that need to be addressed. For example, a key component of such standardization would be to determine appropriate performance obligations in a "standard" manner that would be applicable to the diverse types of resources that can offer RA Capacity, and to specify the behaviors that would constitute violations of the performance obligations that are subject to compliance actions such as financial penalties. In addition, the CAISO would need to establish business processes for monitoring compliance in accordance with the required tariff provisions, and settlement functions for assessing any penalties.

One main reason for assigning high priority to this item is the fact of broad agreement across the stakeholder community regarding the need to address this item as soon as possible. Beyond acknowledging broad stakeholder desire to move expeditiously on this item, the CAISO notes that there are several important aspects of the CPUC's current RA rules, as well as of the retail electric market more generally, that will be subject to important policy decisions both in the near term and over the next couple of years, and all of these policy matters will benefit from the establishment of a standard tradable RA capacity product. For example, the CPUC is now considering whether to pursue a Central Capacity Market (CCM) as an element of the Long Term RA structure. Although there are diverse views on the merits of a CCM, the CAISO notes that a standard, tradable RA capacity product will enhance the efficiency of RA procurement with or without a CCM structure. Another important policy issue under discussion is the Direct Access market, specifically the timing and extent of any re-opening of retail choice and the various forms it might take, such as Community Choice Aggregation. Again, irrespective of how these debates are resolved, the CAISO notes that a standard tradable RA capacity product can only facilitate retail choice activity and therefore merits high-priority designation.

Standard RA Capacity Product		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	3
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	10
Process Improvement (ISO & MP)	5	7

MP Implementation Cost	7	10
MP Implementation Impact (systems and resources)	7	10
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	7
CAISO Implementation Impact (systems and resources)	7	7
Impact on CAISO Ongoing Operating Costs	7	7
Total Benefit Score		**235**
Total Feasibility Score		**308**
Total Score		**543**

6.2. Auction for Long Term CRR

The CAISO's January 29, 2007 compliance filing on Long Term CRRs noted that several parties wanted the CAISO to implement an auction process for Long Term CRRs, which the CAISO agreed to consider for a future release. FERC's July 6, 2007 Order on CRRs encourages the CAISO to initiate the stakeholder process and file tariff language to implement an auction for residual Long Term CRRs in MRTU Release 2. The current ranking process has demonstrated that this item is considered high priority due to its expected market efficiency benefits and the high level of stakeholder desire for it.

In identifying this item as high priority, the CAISO notes that it would be logical to combine it with two other CRR-related items which individually were not ranked high in the high level prioritization process: (1) multi-period optimization algorithm for Long Term CRRs (section 2.8.4 of the April 15 version of the Roadmap), and (2) flexible term lengths of Long Term CRRs (section 2.8.7). In addition it would also be logical to include a third item with these other items, namely, sale of CRRs in the CRR auctions (section 2.8.3, provided below). In the current ranking process, however, that item ranked high by itself and therefore is retained in the present document as a separate item that could be implemented independently of a Long Term CRR auction. If the CAISO and the stakeholders decide to move forward with a Long Term CRR auction, then the ability to sell CRRs in the auctions would be included in the scope of that effort.

The multi-period optimization algorithm, for which the April 15th Roadmap discussion is provided below, was already recognized by the CAISO as an important CRR enhancement to enable the Long Term CRR release process to recognize future changes in transmission encumbrances over the horizon of the nominated Long Term CRRs (mainly the expiration of ETCs, CVRs and previously-released Long Term CRRs). The multi-period optimization algorithm will thus enable the CAISO to find a more optimal balance between the competing objectives of releasing as many Long Term CRRs to the market as possible while minimizing the risk of CRR revenue inadequacy. In the context of an auction for Long Term CRRs, the multi-period optimization will result in auction prices that more accurately reflect the expected values of the Long Term CRRs being awarded. The CAISO therefore believes that the multi-period optimization algorithm is an essential component of a Long Term CRR auction.

With regard to flexible term lengths for Long Term CRRs the implementation of the multi-period optimization algorithm will make it possible to allow additional choices by market participants beyond the current single 10-year term provided under the existing rules. The exact nature of

the allowable choices will be a topic for discussion with stakeholders as the policy and design of this item are developed.

Long Term CRR including Multi-Period Optimization Algorithm and Flexible Term Lengths		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	3
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	3
Desired by Stakeholders	10	7
Process Improvement (ISO & MP)	5	0
MP Implementation Cost	7	10
MP Implementation Impact (systems and resources)	7	10
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	7
CAISO Implementation Impact (systems and resources)	7	7
Impact on CAISO Ongoing Operating Costs	7	7
Total Benefit Score		**200**
Total Feasibility Score		**308**
Total Score		**508**

6.3. Sale of CRRs in the CRR Auction

This market enhancement which is considered a simplification to the current design would allow parties to offer for sale in the CRR Auction some of the same CRRs that were previously awarded in an auction or allocation process. The current system will allow a party to engage in a financially equivalent transaction that will allow the CRR to net out financially but they can not sell the original CRR.

Stakeholders reflected high support for this FERC mandated market enhancement in their comments ranking it second out of the ten FERC mandated items in desired level of priority. This enhancement is estimated to have minimal implementation costs and that combined with high stakeholder desire allowed this enhancement to rank higher than a number of other FERC mandated enhancements.

Sale of CRR in the CRR Auction		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	0
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	0

Desired by Stakeholders	10	7
Process Improvement (ISO & MP)	5	7
MP Implementation Cost	7	7
MP Implementation Impact (systems and resources)	7	7
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	7
CAISO Implementation Impact (systems and resources)	7	7
Impact on CAISO Ongoing Operating Costs	7	3
Total Benefit Score		**175**
Total Feasibility Score		**259**
Total Score		**434**

6.4. 30 Minute Operating Reserve

During the stakeholder process of various Market Initiatives (CPUC Capacity Market Proceeding, Scarcity Pricing, and Demand Response) stakeholders have raised the potential benefits of a new Ancillary Services Product to address 30 minute reliability contingencies. The capacity needed for the CAISO's recovery from certain contingencies differs from the capacity that is needed to maintain operating reserves through regulation, spinning reserve, and non-spinning reserve. Establishing a new product that ensures the availability of reserve energy within 30 minutes would better align the CAISO markets with operational needs when events such as forced outages result in overloads on transmission interfaces, beyond their normal path rating. When a normal path rating is based on thermal limits, the CAISO has 30 minutes to reduce flows to the normal rating (which can be supplied by a 30-minute reserve), and the CAISO has 20 minutes to recover from overloads of path ratings that are based on system stability (which the CAISO would maintain using a combination of 10-minute and 30-minute reserves). Under the current market ancillary services market structure, potential contingencies that could be covered by a 30 minute product are addressed using 10 minute ancillary services products which could result in the CAISO needing to procure Ancillary Services on a sub-regional basis in higher amounts than would otherwise be necessary to meet WECC operating reserve requirements. Additionally, if the CAISO is unable to procure enough reserves through the market, exceptional dispatch would be used. An alternative that has been suggested is to develop a new 30 minute AS product.

Although the CAISO's needs for purposes of grid reliability can largely be met through procurement of 10-minute reserves, market efficiency can be improved significantly through aligning the procurement of reserves with the CAISO's actual operational needs, through the creation of a new product for 30-minute reserves. Stakeholder support for creating a 30-minute product has been expressed through multiple forums, for reasons including enhancing the ability of market participants to provide services to the CAISO that meet their operational capabilities, in that they can provide additional reserves with 30-minute availability than with 10-minute availability. These benefits are expected to also contribute to infrastructure development and to process improvement by both the CAISO and market participants, by better aligning the CAISO's market products with the CAISO's operational needs and market participants'

operational capabilities. The implementation cost and other implementation impacts, as well as ongoing costs, are limited for both the CAISO and market participants, because the CAISO's bidding mechanisms would be similar to the existing 10-minute reserve products.

Multiple market participants commented that the addition of a 30 minute Operating Reserve product would allow more participation in the market by demand response resources and will better meet the CAISO's needs in managing the grid with the expected increase in intermittent renewable resources.

Due to the known requirement of 20% of energy from renewable resources by 2010 and the CAISO's focus on increasing Demand Response participation in the wholesale markets, the CAISO is considering expanding the concept of a 30 minute product to include additional ancillary services products necessary to meet the needs of renewable integration and demand response in the California energy markets in the future.

30 Minute Operating Reserve		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	3
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	3
Desired by Stakeholders	10	3
Process Improvement (ISO & MP)	5	3
MP Implementation Cost	7	7
MP Implementation Impact (systems and resources)	7	7
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	7
CAISO Implementation Impact (systems and resources)	7	7
Impact on CAISO Ongoing Operating Costs	7	7
Total Benefit Score		**175**
Total Feasibility Score		**287**
Total Score		**462**

6.5. Designation of Ancillary Services Contingency Hourly

In MRTU Release 1, due to software design limitations A/S Contingency Only designation for a resource is restricted to a daily selection. In other words the "Contingency Only" status for a resource must be set to the same value for all hours of an operating day; it cannot vary hourly.

The ability to designate A/S contingency hourly exists in the current (pre-MRTU) market design functionality and market participants have expressed the desire to maintain this functionality in prior stakeholder discussions. Specifically stakeholders have expressed the need for hydro resources and pump resources to have the flexibility to designate a block of hours as contingent versus non-contingent due to their operating characteristics. Stakeholders have also

commented that this feature would allow more flexibility for demand response resources to fully participate in the A/S Markets which will result in the CAISO's full utilization of the DR resources and DR capabilities.

This market enhancement is estimated to be a software refinement that is relatively simple to implement and provides more flexibility for all resource types participating in the Ancillary Services market.

Designation of Ancillary Services Contingency Hourly		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	3
Improving Market Efficiency	10	3
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	3
Process Improvement (ISO & MP)	5	3
MP Implementation Cost	7	10
MP Implementation Impact (systems and resources)	7	10
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	7
CAISO Implementation Impact (systems and resources)	7	10
Impact on CAISO Ongoing Operating Costs	7	10
Total Benefit Score		**105**
Total Feasibility Score		**350**
Total Score		**455**

6.6. Market Power Mitigation of Start Up & Minimum Load Bids

In response to concerns identified as part of the initial Market Initiatives Roadmap developed in 2006, the CAISO developed bid caps for startup and minimum load bids submitted by generators under the six-month bid-based option for startup and minimum load bids (See Five-year Market Initiatives Roadmap, 2008-2012, REVISED DRAFT – April _15_, 2008, Section 2.1.4, p.12). The proposed caps were designed to be implemented by limiting bids that can be entered in the Master File, so that these caps could be applied as part of MRTU Release 1 without changes in the actual MRTU market software. However, as part of the process of developing these bid caps, there was widespread support among stakeholders, DMM and the MSC for pursing a more dynamic approach under which startup and minimum load bids submitted under the six month bid-based option would be mitigated to default cost-based levels only when a unit was committed to meet a non-competitive transmission constraint.

The more dynamic approach that was discussed as part of this process would closely mirror how energy bids will be mitigated under MRTU, as well as how startup and minimum load bids

submitted under the six month bid-based option are mitigated under PJM's market design. Specifically, if a unit was not committed under the Competitive Constraints Run (CCR) of the MPM procedures, but was committed under the All Constraints Run (ACC), the unit's startup and minimum load bids would be subject to mitigation to default cost-based levels. With this approach, it may still be necessary to retain some very high caps on startup and minimum load bids submitted under the six month bid-based option, since these bids would still be in effective.

Desire by Stakeholders for this initiative was set to "7" (desired by a majority of stakeholders) based on information from CAISO DMM and stakeholder feedback provided during the stakeholder process on start-up and minimum-load bid caps.

Market Power Mitigation of Start-Up and Minimum Load Bids		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	0
Improving Market Efficiency	10	3
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	7
Process Improvement (ISO & MP)	5	7
MP Implementation Cost	7	10
MP Implementation Impact (systems and resources)	7	10
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	7
CAISO Implementation Impact (systems and resources)	7	7
Impact on CAISO Ongoing Operating Costs	7	7
Total Benefit Score		**135**
Total Feasibility Score		**308**
Total Score		**443**

6.7. Model Constraints of Combined Cycle Units

In MRTU Release 1 different configurations of a combined cycle unit are modeled collectively as a single resource. An alternative is to model each configuration as a separate resource, and incorporate software capability to ensure changes in configuration during different scheduling and commitment cycles in the course of the optimization process respect all relevant technical and inter-temporal constraints. This approach is of interest to different ISOs, and the CAISO will be monitoring the work of other ISOs in implementing enhanced functionality. Recognizing the software constraints the CAISO is faced with, FERC's 9/21/06 MRTU Order (Paragraph 573) directs the CAISO to continue working with software vendors to develop an application that will accurately detail the constraints of combined cycle units, and to file tariff language for implementation of such improvements no later than MRTU Release 2.

The approach used in MRTU Release 1 has been the most straightforward to implement at the outset of MRTU. However, it has disadvantages in the long term including requiring Scheduling Coordinators that schedule combined cycle generators to anticipate the market conditions that will occur in each hour, and then determine a specific configuration for the combined cycle generator that will be economically optimal for the anticipated market conditions, when preparing their market bids. The generator's Scheduling Coordinator may need to enter derates for reduced operational response of the generator. In the CAISO's operations, the appearance of derated generator capabilities can reduce the generation capacity that is available for dispatch, which may result in increased market prices as well as potentially decreased operating reserves. Therefore, implementing a better model of combined cycle generators can have a moderately high positive impact on grid reliability and market efficiency, as well as being supported by stakeholders due to increased abilities to efficiently participate in the markets. Implementation costs to market participants are expected to be limited, and would be more than offset through more efficient participation in the CAISO markets.

Market Participants ranked this initiative highest out of the 10 FERC mandated items in their comments due to the many benefits of its implementation.

Designing and implementing a software functionality to manage the complex interactions among operational constraints of a combined cycle generator is estimated to be very difficult and costly to implement, particularly since this functionality does not have any proven track record in other ISOs.

Modeling Constraints of Combined Cycle Units		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	7
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	7
Process Improvement (ISO & MP)	5	7
MP Implementation Cost	7	10
MP Implementation Impact (systems and resources)	7	10
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	0
CAISO Implementation Impact (systems and resources)	7	0
Impact on CAISO Ongoing Operating Costs	7	0
Total Benefit Score		**245**
Total Feasibility Score		**140**
Total Score		**385**

6.8. Ancillary Services Substitution

In the initial release of MRTU market participants may not bid to buy back ancillary services awarded in the Day-Ahead Market in the Real-Time market and may substitute one generating unit for another to provide awarded ancillary services only in the event of an unplanned outage. A number of market participants raised concerns with this design and FERC directed the CAISO in the September 21, 2006 Order to address the Ancillary Services flexibility issues in a future MRTU Release.

The CAISO intended to implement in MRTU Release 1 more flexible options for ancillary services substitution but was unable to do so as a result of software implementation constraints. Allowing more flexible substitution options will provide more incentive for market participants to participate in the CAISO Ancillary Services Markets thereby providing more available capacity for ancillary services.

This market initiative ranked fifth in priority by stakeholders in comments as far as desired priority as compared to other FERC mandated market enhancements. The high feasibility scores allowed this FERC mandated enhancement to score higher than others and may make sense as an intermediate step prior to implementing Multi-Settlement System for Ancillary Services another high ranked market initiative that had higher benefit scores but is significantly more costly and complicated to implement.

Ancillary Services Substitution		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	3
Improving Market Efficiency	10	3
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	3
Process Improvement (ISO & MP)	5	3
MP Implementation Cost	7	10
MP Implementation Impact (systems and resources)	7	10
Impact on MP Ongoing Costs	7	10
CAISO Implementation Cost	10	10
CAISO Implementation Impact (systems and resources)	7	7
Impact on CAISO Ongoing Operating Costs	7	10
Total Benefit Score		**105**
Total Feasibility Score		**359**
Total Score		**464**

6.9. Multi-Settlement System for Ancillary Services.

The MRTU Release 1 design procures Ancillary Services in the Day-Ahead to meet 90% of forecasted real-time needs and procures A/S incrementally in Real-Time only as needed due to changes in system conditions. Ancillary Services will be settled at the 15 minute HASP price.

LECG raised concern about the CAISO's lack of a multi-settlement system for Ancillary Services in their February 2005 report *Comments on the California ISO's MRTU LMP Design* pointing out that restrictions on reoptimization of reserves in the hour-ahead scheduling process have the potential to raise the cost of meeting load both in the day-ahead market and in real-time.

A multi-settlement system for A/S would optimize real-time reserves and settle any deviations from day-ahead schedules at real-time prices. As compared to the current market design this enhancement would allow more market flexibility, reduce risk for suppliers, allow market participants more control over their schedules and would allow the CAISO the ability to purchase only the ancillary services needed to operate the system in a specific hour. By allowing market participants more flexibility and less risk allows the market to become more liquid, more competitive, and more economically efficient ultimately reducing the cost to serve load. The re-optimization and purchase of A/S in real-time would allow for the most optimal solution for the provision of Ancillary Services.

Multiple stakeholders reflected support in comments for the high rank of this initiative. Stakeholder support was scored as a "3" based on the volume of comments but may actually be higher based on stakeholder support displayed in previous forums.

Costs and ongoing operational costs for the CAISO to implement this enhancement are estimated to be moderate since the enhancement only effects the Real-Time Market while costs for market participants is estimated to be minimal. The CAISO believes the overall benefits of implementing the two-settlement system are higher than the more simple approach of only providing a means for Ancillary Services substitution as described above.

Multi-Settlement System for Ancillary Services		
Strategic Objective	**Weight**	**Score**
Grid Reliability	10	7
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	3
Process Improvement (ISO & MP)	5	7
MP Implementation Cost	7	7
MP Implementation Impact (systems and resources)	7	7
Impact on MP Ongoing Costs	7	7
CAISO Implementation Cost	10	3
CAISO Implementation Impact (systems and resources)	7	3
Impact on CAISO Ongoing Operating Costs	7	3
Total Benefit Score		**205**

Total Feasibility Score		**170**
Total Score		**375**

7. Next Steps

The CAISO is requesting written comments from stakeholders on the outcome of the ranking process by June 17th to Margaret Miller at mmiller@caiso.com.

As described in Section 1 of this Report, the CAISO is planning on developing a proposed work plan and timetable for addressing these high priority market initiatives for stakeholder discussion in the fall of 2008.