



Preliminary Results of Detailed Ranking of High Priority Market Enhancements August, 2009

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Catalogue of Market Design Initiatives

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Catalogue of Market Initiatives

August, 2009

1. Executive Summary

The California ISO has now performed the second or “Detailed Ranking” step in the process of ranking discretionary market initiatives described in the “Updated Catalogue of Market Design Initiatives, July, 2009”. In doing so the ISO has followed the formalized two step ranking process that was approved by the California ISO Board of 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 ISO for developing a corporate strategic plan followed by market design and implementation planning. This report presents the results of the detailed ranking step, explains the rationale for the high-priority rankings and describes the upcoming activities the ISO 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.

- Enhancement to the Standard RA Capacity Product
- Rules to Encourage Dispatchability of Wind and Solar Resources
- Load Aggregation Point Granularity
- Rules and Procedures for Applying the Resource Adequacy Must Offer Obligation for a Subset of Hours
- Enhanced Day Market (new)
- Multi-Day Unit Commitment in the IFM
- Potential Modifications to Market Rules for Day Ahead Intertie Schedules
- Bid Cost Recovery for Units Running Over Multiple Operating Days
- Simultaneous RUC and IFM

Readers will note that the results of the high level ranking included four initiatives but are not included in the detailed ranking. Two of these initiatives, “Ability to Bid Start Up and Minimum Load Costs and Market Power Mitigation for Start Up and Market Power Mitigation for Start Up and Minimum Load Cost Bids” and “Use of Weighted Least Squares CRR Optimization Algorithm” are already in progress and are beyond the ranking process. It was determined that it made sense to combine “Day Ahead Scheduling of Intermittent Resources” with “Rules to Encourage Dispatchability of Wind and Solar Resources”. Finally, “Addressing Ramping Capacity Constraints” was broadened to include consideration of potential new A/S products and has been changed to a non-discretionary item.

2. Introduction

Each year the ISO and stakeholders set aside time to review all the market design issues that have been compiled in the Market Design Initiatives Catalogue ensure that it is complete. A subset of these market design initiatives are designated as “discretionary” meaning that they are not required on a specific timeline. These initiatives are ranked to assess their relative priority

based on two sets of ranking criteria. The first ranking, commonly referred to as the “high level ranking” is performed using general criteria to determine if an initiative falls into a high, medium or low priority status. The second ranking process, the “detailed ranking” is completed to further prioritize the initiatives with the highest priority using a detailed set of criteria. Stakeholder comment at each stage of the process is critical to assist in refining these results. This purpose of this paper is to provide the results of the detailed ranking performed by staff in 2009. Stakeholders will utilize this document to comment on the results of the detailed ranking process.

3. High Level Ranking Process

The CAISO conducted its high level assessment of proposed market initiatives published in the 2009 Market Design Initiatives Catalogue¹ by applying a simplified ranking process of three benefit and two feasibility criteria based on stakeholder input. In this iteration of the ranking process, each initiative will be graded “High”, “Medium” or “Low” based on the results of their criteria ranking. The high level benefit criteria are “Grid Reliability”, “Improving Market Efficiency”, and “Desired by Stakeholders” as shown in Figure A below. The high level feasibility criteria utilize two measures: “Market Participant Implementation Impact” and “CAISO Implementation Impact”.

Figure A - CAISO HIGH LEVEL PRIORITIZATION CRITERIA						
#		Criteria	HIGH	MEDIUM	LOW	NONE
			10	7	3	0
1	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement
2		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact
3		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire
4	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact
5		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact

4. Detailed Ranking Process

Like the process for the high level ranking, the detailed ranking process was performed by ISO staff comprised of subject matter experts from many departments including Market Design,

¹ All documents related to the market design initiatives process can be found at <http://caiso.com/1fb1/1fb1856366d60.html>.

Operations, Project Management, and IT. They evaluated the list of initiatives using the detailed criteria described below and were also guided by the key corporate goals established for 2009 focusing on renewable integration. The detailed ranking criterion incorporates all of the elements of the high level ranking process and includes other criteria that further define the benefits and feasibility of each initiative.

The criterion have not changed from previous years although some of the impact definitions have been modified in the feasibility area. This was done to provide a better range for each element. For instance, in past years the Market Participant Implementation Cost with a ranking of "10" was described as "No cost". In the 2009 ranking criteria it has become "0 to minimal cost". Here is how each description changed:

Pre-2009 Description	2009 Description
No Cost	0 to Minimal Cost
Minimal Cost	Minimal to Moderate Cost
Moderate Cost	Moderate to Significant Cost
Significant Cost	Significant Cost

The following table displays the criteria used in the detailed ranking process: Each of the initiatives was evaluated using these criteria and the evaluation will be described in the sections that follow.

DETAILED RANKING CRITERIA							
#		Criteria	Weight	HIGH 10	MEDIUM 7	LOW 3	NONE 0
1	Benefit	Grid Reliability	10	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement
2		Improving CAISO Market Efficiency	10	Significant improvement	Moderate improvement	Minimal improvement	No impact
3		Promote Efficient Infrastructure Development	10	Significant improvement	Moderate improvement	Minimal improvement	No improvement
5		Desired by Market Participants	10	Universally desired by MP	Desired by majority of MP	Desired by a small subset of MP	No apparent desire
6		Process Improvement (ISO & MP)	5	Significant improvement	Moderate improvement	Minimal improvement	No impact
#		Criteria	Weight	NONE 10	LOW 7	MEDIUM 3	HIGH 0
7	Feasibility	Market Participant Implementation Cost	7	No impact to Minimal Impact	Minimal Impact to Moderate Impact	Moderate Impact to Significant Impact	Significant Cost
8		Market Participant Implementation impact on systems and resources	7	No impact to Minimal Impact	Minimal Impact to Moderate Impact	Moderate Impact to Significant Impact	Significant Impact
9		Impact on Market Participant ongoing operating costs	7	0 to Minimal ongoing operating costs	Minimal to Moderate ongoing operating costs	Moderate to Major ongoing operating costs	Major ongoing operating costs
10		ISO Implementation Cost	10	< \$1M	>\$1M, <\$5M	>\$5M, <\$10M	>\$10M
11		ISO Implementation impact on systems and resources	7	No impact to Minimal Impact	Minimal Impact to Moderate Impact	Moderate Impact to Significant Impact	Significant Impact
12		Impact on ISO Ongoing Operating Costs	7	0 to Minimal ongoing operating costs	Minimal to Moderate ongoing operating costs	Moderate to Major ongoing operating costs	Major ongoing operating costs

5. 2009 Detailed Ranking Results

Eight of the nine market initiatives described in this section ranked high in the high level prioritization that was performed in July, 2009 and one, “Enhanced Dec Market” which was added to the catalogue more recently, underwent the primary ranking process at a later date. It was determined that the Enhanced Dec Market also ranked high (as opposed to medium or low).

Note that in the initial results of the high level ranking process there were four additional initiatives that ranked high that are not represented in this section because they are no longer “discretionary” rankable items. Two of these initiatives, “Ability to Bid Start Up and Minimum Load Costs and Market Power Mitigation for Start Up and Market Power Mitigation for Start Up and Minimum Load Cost Bids” and “Use of Weighted Least Squares CRR Optimization Algorithm” are already in progress and no longer need to be prioritized against the other initiatives. The first initiative is tentatively scheduled to go the CAISO Board of Governor in October 2009 and the second initiative is part of the current CRR stakeholder process.

Because they both deal with a similar set of resources it made sense to combine “Day Ahead Scheduling of Intermittent Resources” with “Rules to Encourage Dispatchability of Wind and Solar Resources” (which was also ranked high).

Finally, “Addressing Ramping Capacity Constraints” was broadened to include consideration of potential new A/S products and has been changed to a non-discretionary item. The ISO is currently considering how to effectively deal with the ramping issues that are impacting grid and market operations.

The following table shows the ranking of the high level initiatives. The sections that follow describe each initiative individually with a discussion of the scores.

(A) High Level Prioritization of Market Enhancements	(B) Catalogue Section	(C) Grid Reliability	(D) Improve Market Efficiency	(E) Promote Efficient Infrastructure Development	(F) Desired by Market Participants	(G) Process Improvement	(H) Total Benefit (C)+(D)+(E)+(F) +(G)	(I) MP Implementation Impact \$	(J) MP Implementation Impact Systems & Resources	(K) MP Implementation Impact Ongoing Costs	(L) ISO Implementation Impact \$	(M) ISO Implementation Impact Systems & Resources	(N) ISO Implementation Impact Ongoing Costs	(O) Total Feasibility (I)+(J)+(K)+(L)+ (M)+(N)	(P) Total Score
Weight		10	10	10	10	5		7	7	7	10	7	7		
Enhancements to Standard RA Capacity Product	8.1	3	7	7	7	7	275	7	7	7	10	7	10	366	641
Rules to Encourage Dispatchability of Wind and Solar Resources	4.1	10	10	10	7	7	405	3	3	7	7	3	7	231	636
Load Aggregation Point Granularity	2.11	7	10	10	3	7	335	3	3	7	10	3	10	282	617
Procedure to Apply RA MOO for a Subset of Hours	8.3	7	3	0	7	7	205	7	7	10	10	7	7	366	571
Enhanced DEC Market	4.6	7	7	0	3	7	205	7	7	7	10	7	10	366	571
Multi-Day Unit Commitment in the IFM (2 - 3 days)	2.4	7	7	0	7	7	245	3	7	7	7	3	7	259	504
Potential Modifications to Market Rules for Day-Ahead Intertie Schedules	2.15	7	3	0	3	3	145	7	7	7	10	7	7	345	490
Bid Cost Recovery for Units Running over Multiple Operating Days	2.8	0	3	0	7	0	100	7	7	7	10	7	7	345	445
Simultaneous RUC and IFM	5.2	3	3	3	3	3	135	7	3	7	3	0	7	198	333

5.1 Enhancements to the Standard RA Capacity Product

In 2009 FERC substantially approved a tariff amendment to implement a standard resource adequacy capacity product. The intention of this product (among other things) is to provide availability standards for all RA resources. The ISO's filing on this matter deferred the implementation of availability standards for some types of generation, including wind, solar, demand response and qualifying facilities. FERC directed the ISO implement these standards for the deferred resource types as soon as possible.

The high level ranking showed that this initiative provided moderate improvement in the areas of grid reliability and improve market efficiency; it was desired by a majority of the market participants and had minimal feasibility impact on both the ISO and market participants. During the detailed ranking the Grid Reliability score was changed to reflect minimal improvement rather than moderate and the ISO Implementation Impact (\$) went from a minimal impact (7) to a <\$1million(10).

Market participant comments primarily agreed with the high level ranking, although some cautioned that the timeline would need to be coordinated with the CPUC. CMUA, CalWEA and NCPA felt that our ranking was too high for this item.

The detailed ranking came out as follows:

Objective	Weight	Score
Grid Reliability	10	3
Improving Market Efficiency	10	7
Promote Infrastructure Development	10	7
Desired by Stakeholders	10	7
Process Improvement (ISO & Market Participants)	5	7
Market Participant Implementation Impact (\$)	7	7
Market Participant Implementation Impact (Systems & Resources)	7	7
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	10
ISO Implementation Impact (Systems & Resources)	7	7
ISO Implementation Impact (Ongoing Costs)	7	10
Total Benefit Score		275
Total Benefit Feasibility Score		366
Total Score		641

This can be found in the Market Design Initiatives Catalogue in Section 8.1.

5.2 Rules to Encourage Dispatchability of Wind and Solar Resources

This initiative was grouped with “Day Ahead Scheduling of Intermittent Resources” during the detailed ranking process because both initiatives focused on the same types of resources and issues. As there is increased integration of renewable resources that reduce the dispatch flexibility there is a need for flexibility to re-dispatch such resources in the case of over-generation or congestion.

The high level ranking showed that these efforts would have a significant impact on grid reliability and that ranking still stands in the detailed ranking; however the improvement to market efficiency increased from moderate to significant. The staff changed the Market Participant impact from minimal to moderate based on stakeholder’s comments. The ISO’s implementation impact was corrected from a moderate (3) impact to between \$1 and \$5 million (7) to reflect the input from subject matter experts during the detailed ranking sessions.

Objective	Weight	Score
Grid Reliability	10	10
Improving Market Efficiency	10	10
Promote Infrastructure Development	10	10
Desired by Stakeholders	10	7
Process Improvement (ISO & Market Participants)	5	7
Market Participant Implementation Impact (\$)	7	3
Market Participant Implementation Impact (Systems & Resources)	7	3
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	7
ISO Implementation Impact (Systems & Resources)	7	3
ISO Implementation Impact (Ongoing Costs)	7	7
Total Benefit Score		405
Total Benefit Feasibility Score		231
Total Score		636

This can be found in the Market Design Initiatives Catalogue in Section 4.1.

5.3 Load Aggregation Point Granularity

FERC direct the ISO to increase the number of LAP zones within three years of the start of the new market to provide more accurate price signals and assist participants in the hedging of congestion charges.

When the ISO performed the high level ranking on this item the improvement to grid reliability was estimated to be moderate with a significant improvement to market efficiency. From a feasibility standpoint, the ISO believed that this would have a moderate implementation impact on market participants and a minimal implementation impact on the ISO. We also believed that it was desired by a majority of stakeholders.

After listening to stakeholders at our stakeholder meeting, reading the comments that were submitted and further internal discussions, some of the scores have changed. In the detailed ranking the “desired by stakeholders” category was changed to reflect that a small subset of stakeholders want this initiative but changed the ISO implementation impact from minimal to \$0 to minimal.

Objective	Weight	Score
Grid Reliability	10	7
Improving Market Efficiency	10	10
Promote Infrastructure Development	10	10
Desired by Stakeholders	10	3
Process Improvement (ISO & Market Participants)	5	7
Market Participant Implementation Impact (\$)	7	3
Market Participant Implementation Impact (Systems & Resources)	7	3
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	10
ISO Implementation Impact (Systems & Resources)	7	3
ISO Implementation Impact (Ongoing Costs)	7	10
Total Benefit Score		335
Total Benefit Feasibility Score		282
Total Score		617

This item can be found in the catalogue in Section 2.11

5.4 Rules and Procedures for Applying the Resource Adequacy Must Offer Obligation for a Subset of Hours

Currently RA resources that are subject to the RA Must Offer Obligation are required to provide that capacity 24 hours per day, seven days a week. In order to better align with the CPUC rules for RA, the ISO is considering a way to develop policy provisions to designate an RA resource as subject to the RA MOO for a subset of hours.

The high level ranking shows that this initiative would provide moderate improvement to grid reliability and market efficiency. The ISO suggested that it was desired by a majority of stakeholders and the feasibility impact would be insignificant to market participants and minimal for the ISO.

Based on stakeholder comments the market participant implementation impact was changed to minimal. There were few written comments regarding this initiative, but they were all supportive of the ranking.

Objective	Weight	Score
Grid Reliability	10	7
Improving Market Efficiency	10	3
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	7
Process Improvement (ISO & Market Participants)	5	7
Market Participant Implementation Impact (\$)	7	7
Market Participant Implementation Impact (Systems & Resources)	7	7
Market Participant Implementation Impact (Ongoing Costs)	7	10
ISO Implementation Impact (\$)	10	10
ISO Implementation Impact (Systems & Resources)	7	7
ISO Implementation Impact (Ongoing Costs)	7	7
Total Benefit Score		205
Total Benefit Feasibility Score		366
Total Score		571

This item can be found in the catalogue in Section 8.3

5.5 Enhanced Dec Market

As a default, economic energy bids cleared in the IFM will be rolled over to the real time market to be included in the real time optimization. Parties who want to override this default will be able to submit real time bids or self schedules. This initiative is not contemplated to include changes to the DEC bid floor.

The rankings below reflect the results of both the high level and detailed ranking on this item. While we did not have the benefit of written stakeholder comments on this item, it was reviewed at the July 23, 2009 stakeholder meeting and there were little or no objections to this initiative.

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 & Market Participants)	5	7
Market Participant Implementation Impact (\$)	7	7
Market Participant Implementation Impact (Systems & Resources)	7	7
Market Participant Implementation Impact (Ongoing Costs)	7	7

ISO Implementation Impact (\$)	10	10
ISO Implementation Impact (Systems & Resources)	7	7
ISO Implementation Impact (Ongoing Costs)	7	10
Total Benefit Score		205
Total Benefit Feasibility Score		366
Total Score		571

This item can be found in the catalogue in Section 4.6.

5.6 Multi-Day Unit Commitment in the IFM

Currently the forward looking time horizon in IFM is one day, taking into account the impact of prior commitment of units with very long start up times. Stakeholders requested that the ISO make commitment decisions in the IFM that look out two to three days in order to create a commitment decision that is more efficient.

The high level ranking shows that this initiative would provide moderate improvement to grid reliability and market efficiency. The ISO suggested that it was desired by a majority of stakeholders and the feasibility impact would be minimal to market participants and moderate for the ISO.

There were few stakeholder comments on this initiative, but all the comments received supported that this initiative should be ranked high.

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 & Market Participants)	5	7
Market Participant Implementation Impact (\$)	7	3
Market Participant Implementation Impact (Systems & Resources)	7	7
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	7
ISO Implementation Impact (Systems & Resources)	7	3
ISO Implementation Impact (Ongoing Costs)	7	7
Total Benefit Score		245
Total Benefit Feasibility Score		259
Total Score		504

This item can be found in the catalogue in Section 2.4.

5.7 Potential Modifications to Market Rules for Day Ahead Intertie Schedules

To improve reliable grid operation and clarify market rules, the ISO is considering tariff changes to clarify the timeline for submitting e-tags for imports and exports that are scheduled or accepted in the Integrated Forward Market (IFM).

The high level ranking shows that this initiative would provide moderate improvement to grid reliability and minimal improvement to market efficiency. The ISO suggested that it was desired by a subset of stakeholders and the feasibility impact would be insignificant to market participants and less than \$1 million for the ISO.

Subsequently, in the high level ranking the market participant implementation impact was changed from insignificant (10) to between \$1 and \$5 million (7) and the ISO implementation impact was changed in the opposite direction based on stakeholder comments.

Objective	Weight	Score
Grid Reliability	10	7
Improving Market Efficiency	10	3
Promote Infrastructure Development	10	0
Desired by Stakeholders	10	3
Process Improvement (ISO & Market Participants)	5	3
Market Participant Implementation Impact (\$)	7	7
Market Participant Implementation Impact (Systems & Resources)	7	7
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	10
ISO Implementation Impact (Systems & Resources)	7	7
ISO Implementation Impact (Ongoing Costs)	7	7
Total Benefit Score		145
Total Benefit Feasibility Score		345
Total Score		490

This item can be found in the catalogue in Section 2.15.

5.8 Bid Cost Recovery for Units Running Over Multiple Operating Days

This initiative aims to institute a change to the Bid Cost Recovery calculation to reflect the true net revenue of units with run times that cross operating days.

When the ISO performed the high level ranking on this item, it scored as a moderate improvement to grid reliability and market efficiency. The ISO believed that it would be desired by a majority of stakeholders and it would have minimal impact on feasibility for both the ISO and market participants.

When this was re-ranked with additional subject matter experts present, the benefits rankings on this initiative dropped. Most market participants who commented felt that the feasibility had been underestimated.

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 & Market Participants)	5	0
Market Participant Implementation Impact (\$)	7	7
Market Participant Implementation Impact (Systems & Resources)	7	7
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	10
ISO Implementation Impact (Systems & Resources)	7	7
ISO Implementation Impact (Ongoing Costs)	7	7
Total Benefit Score		100
Total Benefit Feasibility Score		345
Total Score		445

This item can be found in the catalogue in Section 2.8.

5.9 Simultaneous RUC and IFM

In the current MRTU design Residual Unit Commitment (RUC) is performed after completion of the IFM and does not impact day ahead market energy, ancillary services (A/S), and congestion/CRR pricing and settlement. The issue here is whether to perform IFM and RUC simultaneously, and if so, how.

When the ISO performed the high level ranking on this item, it scored as a moderate improvement to grid reliability and market efficiency. The ISO believed that it would be desired by a majority of stakeholders and it would have minimal impact on feasibility for market participants and moderate impact for the ISO.

When this was re-ranked with additional subject matter experts present, the benefits rankings on this initiative dropped considerably and the feasibility had been somewhat underestimated.

Objective	Weight	Score
Grid Reliability	10	3
Improving Market Efficiency	10	3
Promote Infrastructure Development	10	3

Desired by Stakeholders	10	3
Process Improvement (ISO & Market Participants)	5	3
Market Participant Implementation Impact (\$)	7	7
Market Participant Implementation Impact (Systems & Resources)	7	3
Market Participant Implementation Impact (Ongoing Costs)	7	7
ISO Implementation Impact (\$)	10	3
ISO Implementation Impact (Systems & Resources)	7	0
ISO Implementation Impact (Ongoing Costs)	7	7
Total Benefit Score		135
Total Benefit Feasibility Score		198
Total Score		333

This item can be found in the catalogue in Section 5.2.

6. Next Steps

The following schedule is planned for the 2009 Market Design Initiative Roadmap Process:

August

- 8/21– Publish straw proposal for high priority enhancements
- 8/28 – Stakeholder Conference Call regarding high priority enhancements

September

- 9/4 – Stakeholder comments due on straw proposal
- 9/18– Publish Draft Final proposal
- 9/25 – Stakeholder conference call to review Draft Final proposal

Fourth Quarter

- Internal process to coordinate results of Draft Final Proposal and High Priority Enhancements with Corporate Strategic Planning Process