

Discretionary Initiatives High Level Ranking Template

Submitted by	Company	Date Submitted
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Instructions

Please use this template to rank your top five discretionary market design initiatives.

1. Select five market design initiatives¹ from the November 5, 2013 version of the Stakeholder Initiatives Catalog.
2. Provide the name of the initiative.
3. In the “High Level Prioritization Criteria Matrix” provide a score of 0, 3, 7, or 10 for each of the four criteria in green boxes.
4. Provide a total tally of your score for each initiative.
5. Below the matrix, provide detailed explanations for each criterion using as much space as you need. Providing a rationale for the ranking and considering these initiatives over others is critical to this ranking process. Since dollar and resource estimates are understandably approximate at this level, the qualitative discussion will be given more emphasis. Similarly, the numerical rankings are informative and may help to organize discussion but the qualitative information will be critical for the ISO as we compare initiatives.

Initiative 1: [Storage Generation Plant Modeling \(11.1\)](#) [Aggregated Pumps and Pumped Storage \(12.2\)](#)

Eagle Crest supports comprehensive studies of the role that large pumped storage projects can play in maintaining system reliability in light of increased penetration of Variable Energy Resources (VERs) such as wind and solar, to 33% and beyond. Those studies require proper modeling of the resource as a starting point, which could be encompasses in either or both of the initiatives listed above. These efforts should be expanded beyond modeling to encompass use of those models in expanded studies.

¹ Infrastructure and planning initiatives will not be ranked as they are considered separately and there are only two discretionary initiatives.

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High Level Prioritization Criteria Matrix

		Criteria	HIGH	MEDIUM	LOW	NONE	Your Score
			10	7	3	0	Use 0, 3, 7, or 10
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	10
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	7
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	7-10
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	3-7
						Total	27-34

Grid Reliability (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Numerous CAISO studies have documented the need for additional ramping and Regulation services with increased penetration of Variable Energy Resources (VERs) such as solar and wind generation. However, the CAISO has not conducted any studies to date that consider the unique benefits of energy storage – and, in particular, large-scale pumped storage – in meeting those identified needs.

Typically, storage generally has been grouped together with renewables and demand-side resources as “preferred resources and energy storage.” Storage is not modeled separately from generation, so that its unique benefits have not been recognized.

For example, 1,000 MW of generation can simply provide 1,000 MW of generation, or (if it is fully dispatchable and flexible, with no minimum operating point) 1,000 MW of curtailment, ramping, or Regulation services. By contrast, 1,000 MW of energy storage can provide 2,000 MW of such services, usually at faster speeds than conventional generation. Thus, it can be a more economical overall solution even if it costs more than generation.

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Moreover, CAISO studies to date have examined the system-wide need for reliability services at 20% and 33% RPS levels. The proposed studies should consider capabilities needed at the higher RPS levels now being contemplated to meet the state's post-2020 carbon emissions targets, and the relative reliability benefits of locating storage and other resources at different places on the grid (e.g., as substitutes for costly transmission upgrades, if dispatchable by the CAISO when needed).

Long-standing CAISO tariff provisions require consideration of storage and other integration resources in determining high-priority transmission additions. Having the proper tools for modeling pumped storage resources would be an important and necessary first step in complying with those requirements.

Improving Overall Market Efficiency (*provide a detailed explanation of how and why this initiative provides an improvement in grid reliability market efficiency (typographical error in template)*) –

In addition to studying the reliability benefits of storage (as described above), the recommended modeling improvements and resulting studies should also examine possible market benefits of storage. For example, the recent “duck belly” and related CAISO studies imply, not only increased reliability issues related to increased VER penetration, but also potential curtailment of valuable RPS-compliant energy if needed to manage those issues. These curtailments could be caused by over-generation system-wide and/or congestion in specific areas of the grid at times of high VER production.

It makes no sense for the state to be compliant with RPS targets “on paper,” through execution of sufficient Power Purchase Agreements (PPAs), and then jeopardize attainment of those objectives through curtailment of those facilities because of operational limits on the grid. Large-scale energy storage advances market efficiency by enabling the system to store energy when the grid is unable to otherwise handle it, thus preserving the value of renewable generation output that would otherwise be lost through curtailment.

Market Participant Implementation Impact (\$ and resources) (*provide a detailed explanation of what you expect the impact to be in terms of \$ and resources*) –

The impact on Market Participants should be minimal. The CAISO should draw on Market Participant information, where helpful, to gather data for the modeling work and subsequent studies, e.g., details on pumped-storage capabilities and costs, but otherwise Market Participant resources should not be required to implement this proposal.

ISO Implementation Impact (\$ and resources) (*provide a detailed explanation of what you expect the impact to be in terms of \$ and resources*) –

The proposed studies could be conducted with existing CAISO resources, or through use of outside resources if needed to supplement them. Eagle Crest estimates that their cost should be \$500,000 or less.

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Initiative 2: _____

High Level Prioritization Criteria Matrix

	Criteria	HIGH	MEDIUM	LOW	NONE	Your Score	
		10	7	3	0	Use 0, 3, 7, or 10	
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
					Total		

Grid Reliability (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Improving Overall Market Efficiency (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Market Participant Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

ISO Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

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Initiative 3: _____

High Level Prioritization Criteria Matrix

	Criteria	HIGH	MEDIUM	LOW	NONE	Your Score	
		10	7	3	0	Use 0, 3, 7, or 10	
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
					Total		

Grid Reliability (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Improving Overall Market Efficiency (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Market Participant Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

ISO Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

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Initiative 4: _____

High Level Prioritization Criteria Matrix

	Criteria	HIGH	MEDIUM	LOW	NONE	Your Score	
		10	7	3	0	Use 0, 3, 7, or 10	
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
					Total		

Grid Reliability (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Improving Overall Market Efficiency (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Market Participant Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

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ISO Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

Initiative 5: _____

High Level Prioritization Criteria Matrix

		Criteria	HIGH	MEDIUM	LOW	NONE	Your Score
			10	7	3	0	Use 0, 3, 7, or 10
A	Benefit	Grid Reliability	Significant Improvement	Moderate Improvement	Minimal Improvement	No Improvement	
B		Improving Overall Market Efficiency	Significant improvement	Moderate improvement	Minimal improvement	No impact	
C		Desired by Stakeholders	Universally desired by stakeholders	Desired by majority of stakeholders	Desired by a small subset of stakeholders	No apparent desire	X
D	Feasibility	Market Participant Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	
						Total	

Grid Reliability (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Improving Overall Market Efficiency (provide a detailed explanation of how and why this initiative provides an improvement in grid reliability) –

Market Participant Implementation Impact (\$ and resources) (provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –

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ISO Implementation Impact (\$ and resources) *(provide a detailed explanation of what you expect the impact to be in terms of \$ and resources) –*