

Discretionary Initiatives High Level Ranking Template

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.

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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CalPeak is appending to this Ranking Template additional comments regarding the 2013 Stakeholder Initiatives Catalog and the specific initiatives ranked below.

Initiative 1: 6.7 Voltage Support Procurement (D)

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	10
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
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	7
						Total	34

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

This initiative would provide an improvement in grid reliability because it would:

- 1) Enable CAISO and the Investor Owned Utilities (“IOU”) to meet the required NERC 2.5% and 5% reactive margin requirements by 2020;
- 2) Partially replace inertia and dynamic reactive capability lost from the retirement of over 12,000 megawatts of once-through-cooled generation units;

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- 3) Further integrate renewables by providing dynamic reactive capabilities that typical wind and photovoltaic/solar generation cannot provide;
- 4) Improve import capability by reducing the risk of voltage collapse during high import scenarios; and
- 5) Increase and improve operational flexibility by improving voltage control and increasing the secure operating range.

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

This initiative would provide an improvement in market efficiency by substantially improving renewable integration.

The grid is increasingly stressed by the shift in generation resources from conventional fossil and nuclear units to a large amount of renewable energy sources which are often located great distances from the urban load centers. As reactive power (VARs) cannot be transmitted long distances on the grid, the renewable resources cannot provide reactive support at the urban load centers, therefore weakening the voltage profile and grid stability. A solution to this growing stability and reliability problem can be found in the reactive power sourced from synchronous condensers distributed throughout the grid. This reactive power improves voltage regulation on systems where power must travel long distances from its generation to its use, as is the case with power wheeling, the transmission of electric power from one geographic region to another.

On the other hand, reactive power produced by a capacitor bank is only available in fixed quantities and varies in direct proportion to the square of its terminal voltage, which reduces its effectiveness when voltages are depressed system-wide. Conversely, a synchronous condenser's reactive power declines less rapidly, and can be adjusted to compensate for falling terminal voltage. As the electric grid in California is transformed into a renewables-centric system, increasing the flexibility of existing resources should be a high priority, especially where economical.

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

CalPeak believes that the cost impact to market participants will be negligible because synchronous condenser operation can inexpensively be incorporated into existing interconnected resources. For example, capital costs are anticipated to be between

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\$300,000 to \$500,000 to upgrade generating units owned by CalPeak into synchronous condenser units.

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

CAISO will have costs related to market design/integration and settlement rules that CalPeak is not in a position to estimate. However, the Grid Management Charges would not be expected to be materially impacted by such costs.

Initiative 2: 6.4 Frequency/Inertia Procurement (F)

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	7
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
E		ISO Implementation Impact (\$ and resources)	No Impact	Minimal Impact	Moderate Impact	Significant impact	7
						Total	28

As further explained in the additional comments attached, CalPeak suggests that the CAISO combine its proposed Frequency/Inertia Procurement stakeholder initiative with the Voltage Support Procurement initiative, as well as with the Resource/Supply Adequacy Initiatives.

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Accordingly, CalPeak directs CAISO’s attention to the commentary provided with “Initiative 1” above retarding grid reliability, market efficiency, and implementation impact.

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) –

Initiative 3: 9. Resource/Supply Adequacy Initiatives

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	

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	Total	
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As further explained in the additional comments attached, CalPeak suggests that the CAISO combine its proposed stakeholder Resource/Supply Adequacy Initiatives with the Voltage Support Procurement initiative, as well as with the Frequency/Inertia Procurement initiative. Accordingly, CalPeak directs CAISO’s attention to the commentary provided with “Initiative 1” above regarding grid reliability, market efficiency, and implementation impact.

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) –*