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# Market Initiatives Roadmap - Detailed Ranking Results

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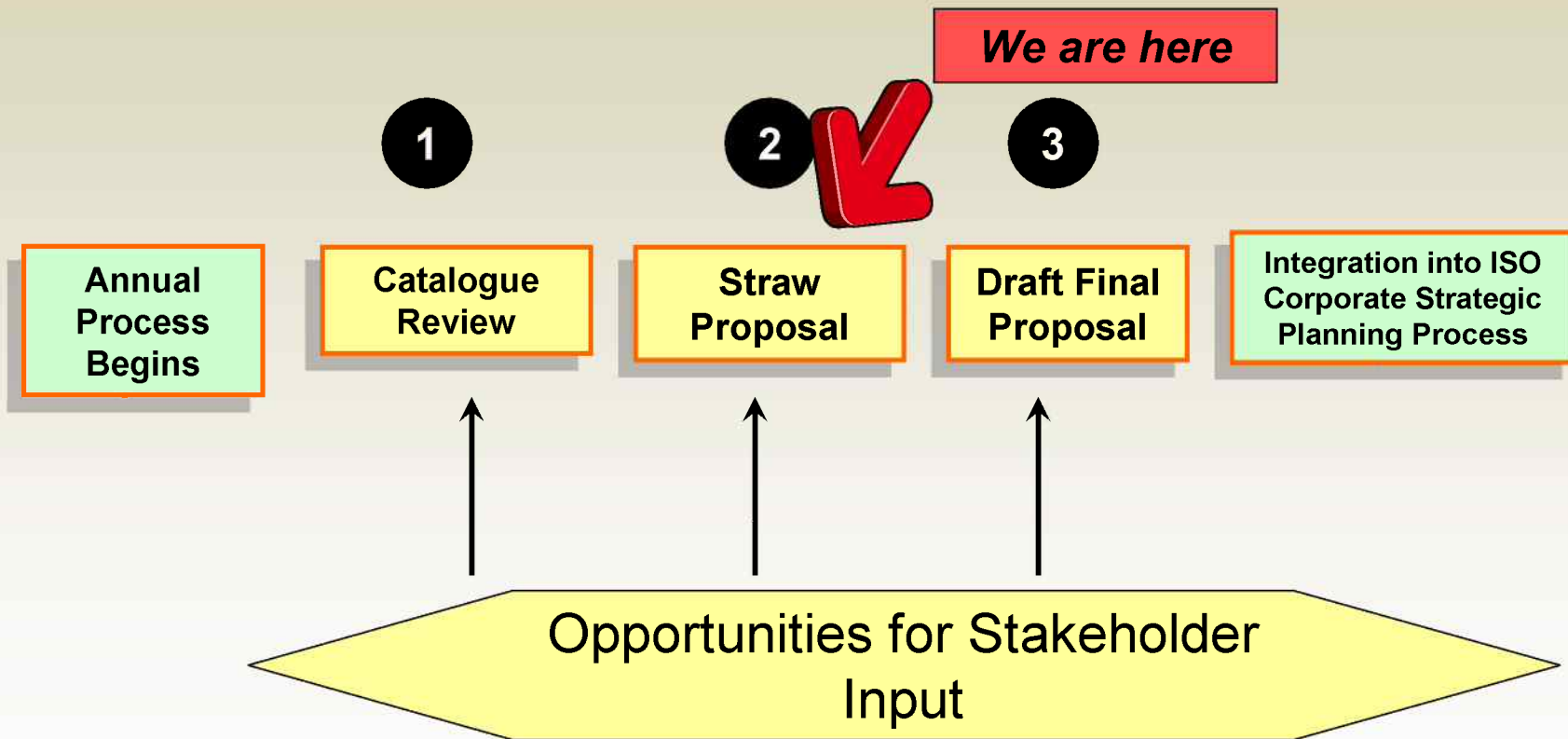
Stakeholder Conference Call  
August 28, 2009

# Meeting Agenda

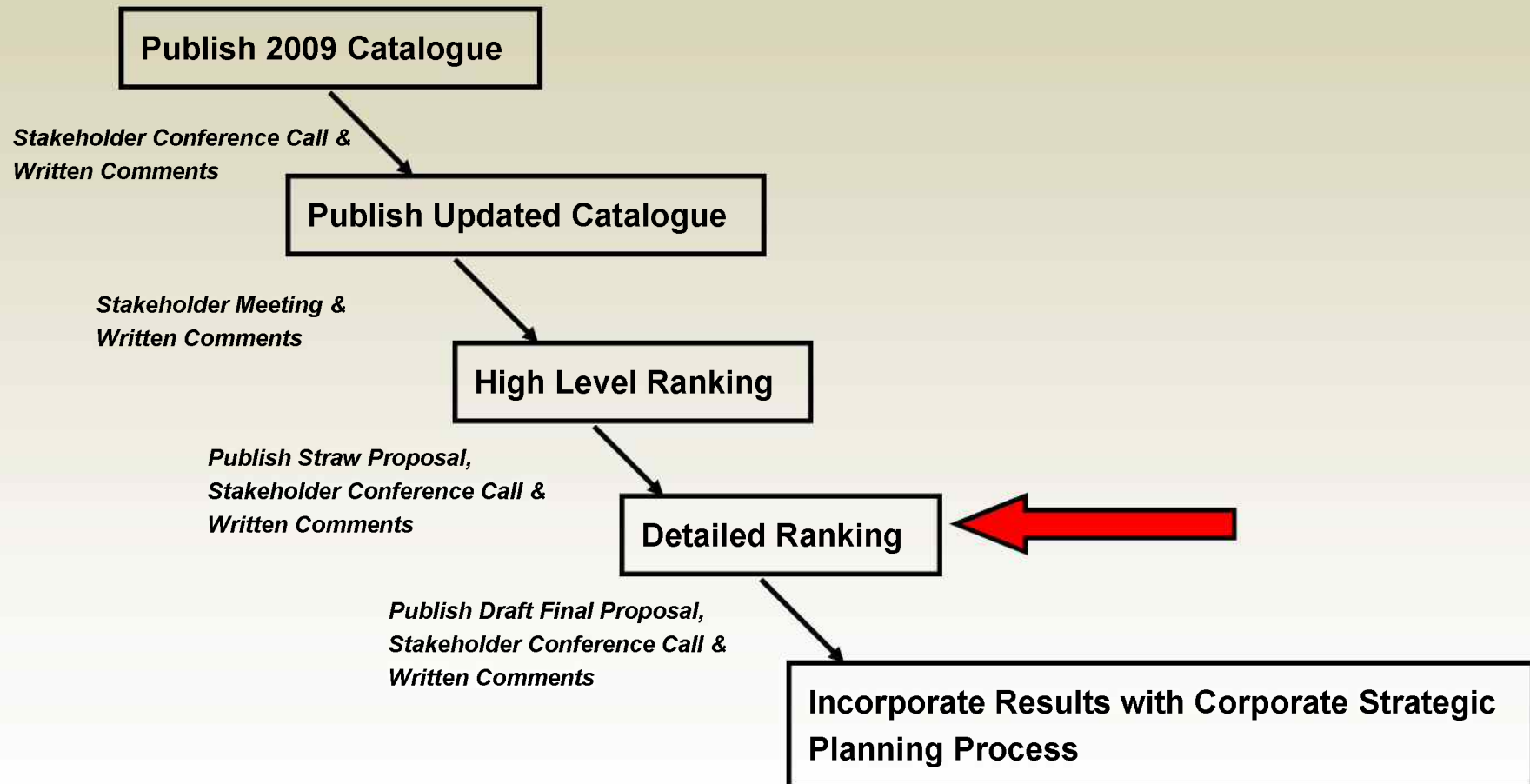
- Review of the Roadmap Process
- Review High Level Ranking Results
- Discussion of Detailed Ranking Results
- New Initiatives in the Catalogue
- Next Steps

# ISO Stakeholder Process

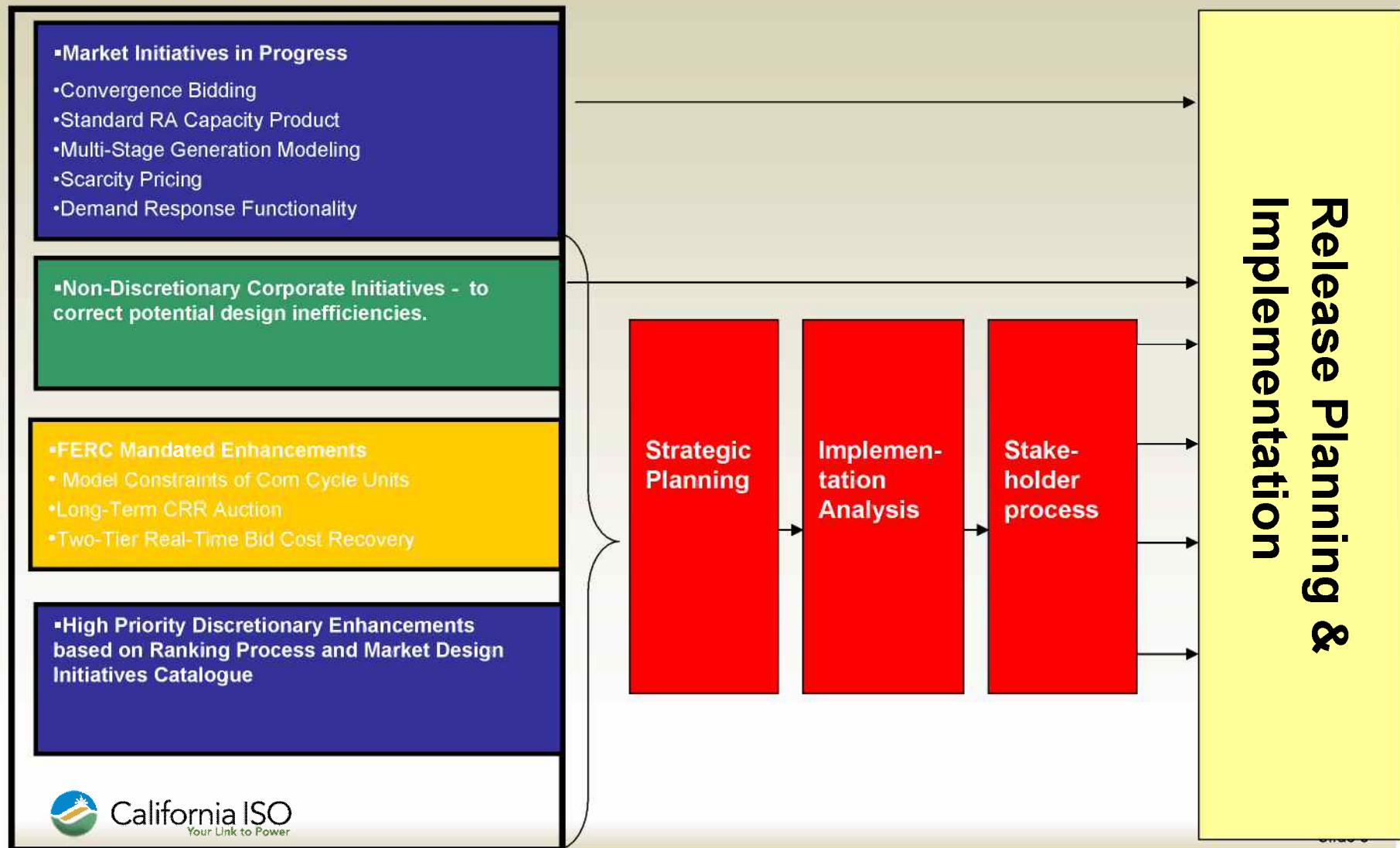
## Market Initiatives Roadmap



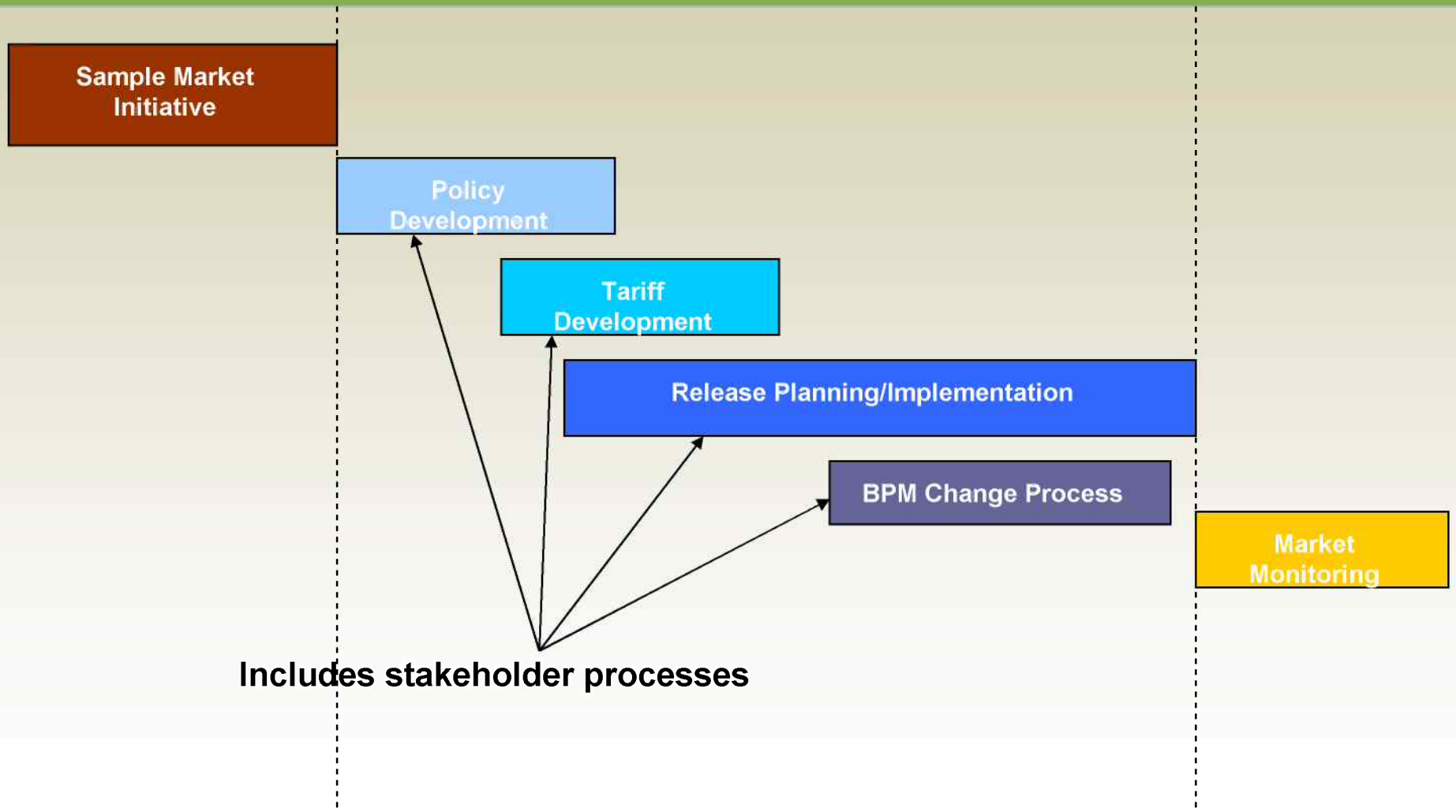
The purpose of this process is to prioritize the outstanding market design initiatives.



# Market Initiatives Roadmap Process



The progress of a sample initiative destined for implementation generally looks like this:



# Overview of Ranking Methodology

- High Level Prioritization
  - Categorize proposed initiatives as High, Medium and Low based on certain criteria
- Detailed Ranking
  - High priority initiatives are evaluated more thoroughly by applying ranking criteria methodology
- Strategic Planning Process
  - Analysis of initiatives with corporate goals in mind

All discretionary initiatives are ranked against these criteria.

ISO 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 Market Participants	Universally desired by Market Participants	Desired by majority of Market Participants	Desired by a small subset of Market Participants	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

## Recall the initiatives that ranked “high” in the High Level Ranking.

- Rules & Procedures for Applying RA Must Offer Obligations for a Subset of Hours
- Enhancements to Standard RA Capacity Product
- Bid Cost Recovery Units Running Over Multiple Operating Days
- Rules to Encourage Dispatchability of Wind and Solar Resources
- Load Aggregation Point Granularity
- Simultaneous RUC and IFM

## Recall the initiatives that ranked “high” in the High Level Ranking (cont’d).

- Multi-Day Unit Commitment in the IFM
- Potential Modifications to Market Rules for Day Ahead Intertie Schedules
- *Day Ahead Scheduling of Intermittent Resources*
- *Ability to Bid Start-Up and Minimum Load & MPM*
- *Use of “Weighted Least Squares” CRR Optimization Algorithm*
- *Addressing Ramping Capacity Constraints*
- **NEW** – Enhanced Dec Market

Some stakeholders suggested that the high level criteria addressing stakeholder implications be removed.

- Removed “Desired by Stakeholders” estimated ranking
  - Raised relative score of “Potential Modifications to Market Rules for DA Intertie Schedules” (already a high priority initiative)
  - Raised relative score of “Black Start Procurement”, “Interchange Transactions after RT Market”, “Pumped Storage Generation Plant Modeling”, “Dynamic Pivotal Supplier Test”
- Removed “Desired by Stakeholders” and “Stakeholder Implementation”
  - Raised relative score of “Black Start Procurement”, “Interchange Transactions after RT Market”, “Pumped Storage Generation Plant Modeling”
  - Lowered “Use of ‘Weighted Least Squares’ CRR Algorithm”

# ISO staff suggested the Detailed Ranking Criteria should be adjusted.

- Criteria adjustment to these feasibility criteria:
  - Market Participant Implementation Cost
  - Market Participant Implementation Impact on Systems and Resources
  - Impact on Market Participant Ongoing Operating Cost
  - ISO Implementation Impact on Systems and Resources
  - Impact on ISO Ongoing Operating Cost
- A range has been implemented:

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 highly ranked discretionary initiatives are ranked using this table.

### 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

# Enhancements to Standard RA Capacity Product

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
<b>Total Score</b>		<b>641</b>

# Enhancements to Standard RA Capacity Product

- Stakeholder Comments

- AReM, PG&E, CPUC – Supports High Level Ranking
- CMUA, CalWEA, NCPA – Does not support High Level Ranking
  - Reduce Grid Reliability score
  - Reduce Market Efficiency score
  - Reduce Market Participant Implementation score

- Detailed Ranking Update

- Reduced Grid Reliability Score

# Rules to Encourage Dispatchability of Wind & Solar Resources

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
<b>Total Score</b>		<b>636</b>

# Rules to Encourage Dispatchability of Wind & Solar Resources

- Combined with Day Ahead Scheduling of Intermittent Resources
- Stakeholder Comments
  - All written comments supported a high ranking
  - Some believed it should have a higher score
- Detailed Ranking Update
  - Increased Market Efficiency Score
  - Decreased Market Participant Implementation impact (i.e., more significant impact to MPs than original ranking)

# Load Aggregation Point Granularity

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
<b>Total Score</b>		<b>617</b>

# Load Aggregation Point Granularity

- Stakeholder Comments
  - BAMx, CMUA, PG&E, CPUC, NCPA, SCE - suggested that benefits were overstated and feasibility was understated
    - Need more experience with current market
- Detailed Ranking Update
  - Desired by MP – changed to reflect a small subset of MP rather than a majority
  - MP implementation impact (\$) & systems/resources – moderate to significant impact
  - MP ongoing impact – minimal to moderate impact
  - ISO implementation impact (\$) – less than \$1 million
  - ISO Implementation impact – Minimal to Moderate Impact on Systems and Resources
  - ISO implementation impact – \$0 to minimal ongoing costs

# Rules & Procedures to Apply RA MOO to a Subset of Hours

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
<b>Total Score</b>		<b>571</b>

# Rules & Procedures to Apply RA MOO to a Subset of Hours

- Stakeholder Comments
  - PG&E, CPUC, SCE - Supported a high ranking
- Detailed Ranking Update
  - Decreased Market Efficiency Score
  - ISO Implementation Impact (\$) – less than \$1 million

# Enhanced Dec Market

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
<b>Total Score</b>		<b>571</b>

# Enhanced Dec Market

- Presented at July Stakeholder meeting and added to the catalogue after the meeting.
- High Level Ranking (7, 7, 3, 7, 10)
  - Grid Reliability and Market Efficiency – Moderate Improvement
  - Desired by a small subset of Market Participants
  - Minimal ISO implementation impact
  - No implementation impact on Market Participants
- Detailed Ranking Update
  - No Updates

# Multi-Day Unit Commitment in the IFM

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
<b>Total Score</b>		<b>504</b>

# Multi-Day Unit Commitment in the IFM

- Stakeholder Comments

- PG&E, CPUC, SCE – written comments support high ranking
- PG&E stakeholder meeting comment – Impact on MP implementation needs to be a lower score (indicates more impact)

- Detailed Ranking Update

- Market Participant Implementation impact change from minimal to “minimal to significant” (from 7 to 3)
- ISO Implementation Impact changed from moderate to “minimal to moderate”

# Potential Modifications to Market Rules for DA Intertie Schedules

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
<b>Total Score</b>		<b>490</b>

# Potential Modifications to Market Rules for DA Intertie Schedules

- Stakeholder Comments
  - CMUA, NCPA – Market Participant impact is understated
  - PG&E - supports high ranking
  - CPUC – suggests bringing the issue to WECC
- Detailed Ranking Update
  - Market Participant Implementation impact change from “no impact” to “minimal to moderate impact”
  - ISO Implementation Impact changed from minimal to “\$0 to minimal impact”

# Bid Cost Recovery for Units Running Over Multiple Operating Days

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
<b>Total Score</b>		<b>445</b>

# Bid Cost Recovery for Units Running Over Multiple Operating Days

- Stakeholder Comments

- CMUA, NCPA, SCE – Market Participant impact is understated
- PG&E - supports high ranking

- Detailed Ranking Update

- Grid Reliability changed from moderate improvement to none
- Improve Market Efficiency changed from moderate improvement to minimal improvement
- ISO Implementation Impact changed from minimal impact to less than \$1 million.

# Simultaneous RUC and IFM

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
<b>Total Score</b>		<b>333</b>

# Simultaneous RUC and IFM

- Stakeholder Comments

- PG&E, CMUA – ISO may be underestimating difficulty of implementing for both ISO and Market Participants
- CPUC – supports a high level ranking (but a lower high score)
- SCE – Market Efficiency should be scored higher

- Detailed Ranking Update

- Grid Reliability and Market Efficiency changed from moderate improvement to minimal
- Desired by Market Participants changed from a majority to a subset of stakeholders

## Some new initiatives were added to the current version of the Market Design Initiative Catalogue.

- *Ex Post* Price Correction “Make Whole” Payments (N) – replaces Extension of Bid Cost Recovery to Transactions Other than Internal Supply
- Consider Modifying Rules Designating the Supply Pool in the IFM (I)
- Enhanced Day Market (D)
- Directional Bidding (D) – proposed by NCPA
- Real-Time Imbalance Energy Offset (N, I)
- A/S Procurement in HASP (N, I)
- Non Generation Resources in A/S Markets (F)
- Forward Capacity Market (no category) – proposed by Calpine
- Lossy vs. Lossless Shift Factors (N,I)
- Enhanced Inter-SC Trades (D) – proposed by NCPA

## Proposed schedule for the roadmap process

- August 28 – Conference call to discuss straw proposal
- September 4 – Stakeholder comments due on straw proposal
- September 18 – Publish draft final proposal
- September 25 – Conference call to review draft final proposal
- 4<sup>th</sup> Quarter – Integrate into corporate strategic planning process