Reliability Must-Run and Capacity Procurement Mechanism Enhancements

Stakeholder Working Group Meeting
August 27, 2018

Keith Johnson
Infrastructure & Regulatory Policy Manager

ISO PUBLIC

Agenda

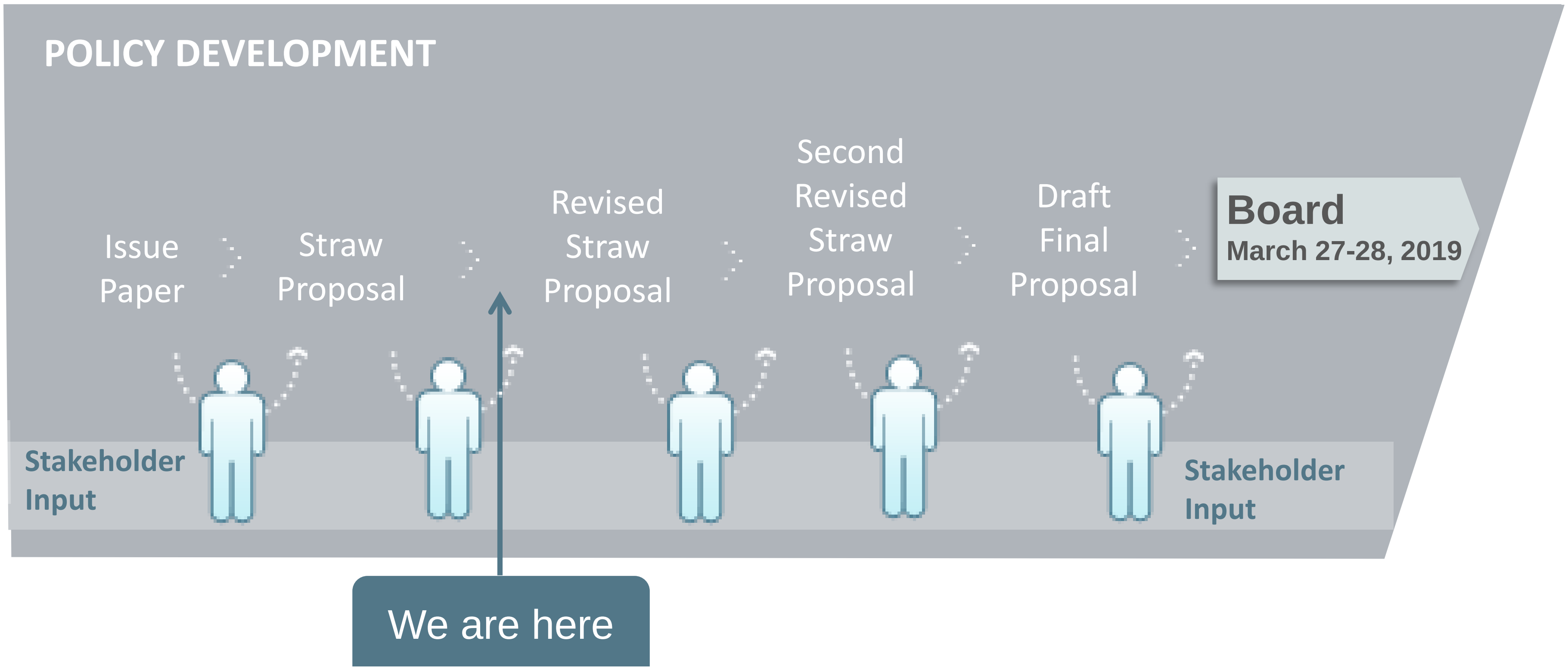
Time	Item	Presenter
10:00-10:10	1. Introduction and stakeholder process	Jody Cross
10:10-10:15	2. Scope of initiative	Keith Johnson
10:15-10:45	3. Enhancements to RA program	Karl Meeusen
10:45-11:40	4. Streamline and automate RMR settlement process	Bob Kott
11:40-12:00	5. Flexible and system RA credits from RMR designations	Keith Johnson
12:00-1:00	Lunch break	(on your own)
1:00-2:00	6. Use of RMR and CPM	Keith Johnson Catalin Micsa
2:00-2:45	7. RMR and CPM compensation	Keith Johnson Gabe Murtaugh
2:45-3:45	8. RMR resources subject to MOO and RAAIM	Gabe Murtaugh Keith Johnson
3:45-4:00	9. Next steps	Jody Cross

1. INTRODUCTION AND STAKEHOLDER PROCESS

Jody Cross

Stakeholder Engagement & Policy Specialist

Stakeholder Process for Items going to March 2019 Board Meeting



Schedule for Items going to March 2019 Board Meeting

	Date	Milestone
Milestones prior to May 30	Nov 2, 2017	ISO commits to review RMR and CPM
	Nov - Apr	See June 26, 2018 straw proposal for milestones
Straw proposal	May 30	Hold working group meeting
	Jun 26	Post straw proposal
	Jul 11	Hold stakeholder meeting
	Aug 3	Discuss initiative at MSC meeting
	Aug 7	Stakeholder written comments due
Revised straw proposal	Aug 27	Hold working group meeting
	Sep 19	Post revised straw proposal
	Sep 27	Hold stakeholder meeting
	Oct 23	Stakeholder written comments due
Second revised straw proposal	Nov 1	Hold working group meeting
	Nov 19	Post second revised straw proposal
	Nov 26	Hold stakeholder meeting
	Dec 21	Stakeholder written comments due
Draft final proposal	Jan 23, 2019	Post draft final proposal
	Jan 30	Hold stakeholder meeting
	Feb 22	Stakeholder written comments due
Final proposal	Mar 27-28	Present proposal to Board of Governors

Schedule for Interim Pro Forma RMR Agreement Filing

Stage	Date	Milestone
Proposal	May 30, 2018	Provide proposal in presentation at RMR/CPM working group mtg.
	Jun 12	Post draft of interim pro forma RMR agreement language
	Jun 25	Stakeholder written comments due on draft agreement language
	Jun 26	Post straw proposal for Review of RMR and CPM initiative
	Jul 10	Hold stakeholder call on draft agreement language
	Jul 11	Hold stakeholder meeting for Review of RMR and CPM initiative
Final Proposal	Jul 25-26	Present interim pro forma agreement proposal to Board
File at FERC	Aug 1	Post revised draft of interim pro forma RMR agreement language
	Aug 10	Stakeholder written comments due on revised draft agreement
	By Aug 31	File at FERC

List of Acronyms

AFRR	Annual Fixed Revenue Requirement
ARC	Applicable Reliability Criteria
AS	Ancillary Services
BCR	Bid Cost Recovery
BPM	Business Practice Manual
CCA	Community Choice Aggregator
CEC	California Energy Commission
CHP	Combined heat and power
CPM	Capacity Procurement Mechanism
CPUC	California Public Utilities Commission
CSP	Competitive Solicitation Process
DAM	Day-Ahead Market
DEB	Default Energy Bid
DMM	Department of Market Monitoring
EFC	Effective Flexible Capacity
ELCC	Effective Load Carrying Capability
FERC	Federal Energy Regulatory Commission
GFFC	Going-forward fixed costs
GHG	Greenhouse gas
GMC	Grid Management Charge
ISO	California Independent System Operator Corporation
LAR	Local area requirement
LCR	Local capacity requirements
LSE	Load serving entity
MIC	Maximum Import Capability

List of Acronyms (continued)

MMA	Major maintenance adder
MOO	Must-offer obligation
MSG	Multi-stage generator
NRG	NRG Energy, Inc.
OCC	Opportunity cost component
O&M	Operation and maintenance
ORA	Office of Ratepayer Advocates
OTC	Once-through cooling
PG&E	Pacific Gas and Electric
PRR	Proposed Revision Request
PTO	Participating Transmission Owner
PURPA	Public Utility Regulatory Policies Act
QF	Qualifying Facility
RA	Resource Adequacy
RAAIM	Resource Adequacy Availability Incentive Mechanism
RMR	Reliability Must-Run
ROR	Risk of retirement
RTM	Real-Time Market
RUC	Residual Unit Commitment
SC	Scheduling Coordinator
SCE	Southern California Edison Company
SIBR	Scheduling Infrastructure Business Rules
Six Cities	Cities of Anaheim, Azusa, Banning, Colton, Pasadena and Riverside, California
TAC	Transmission Access Charge
WPTF	Western Power Trading Forum

2. SCOPE OF INITIATIVE

Keith Johnson

Infrastructure & Regulatory Policy Manager

Scope of RMR and CPM Ehancements initiative

RMR and CPM items

- Provide notification to stakeholders when a resource informs ISO it is retiring or mothballing
- Clarify when RMR procurement is used versus CPM procurement*
- Explore whether Risk of Retirement CPM and RMR procurement can be merged into one mechanism*
- Evaluate compensation paid for RMR and CPM services*

RMR items

- Develop interim pro forma RMR agreement, i.e., change termination and re-designation provisions
- Update certain terms of pro forma RMR agreement
- Make RMR resources subject to a must offer obligation*
- Make RMR resources subject to Resource Adequacy Availability Incentive Mechanism*
- Consider whether Condition 1 and 2 options are needed for RMR
- Update allowed rate of return for RMR compensation*
- Ensure RMR designation authority includes system and flexible needs*
- Allocate flexible RA credits from RMR designations*
- Streamline and automate RMR settlement process*
- Lower banking costs associated with RMR invoicing

CPM items

- Evaluate CPM year-ahead local collective deficiency procurement cost allocation for load migration
- Evaluate if load serving entities are using CPM for their primary capacity procurement

*** Items ISO will discuss during August 27 working group meeting**

3. ENHANCEMENTS TO RA PROGRAM

Karl Meeusen

Senior Advisor, Infrastructure & Regulatory Policy

The ISO is proposing the CPUC adopt in Track 2 of its RA proceeding the following items for RA year 2020.

- Establish multi-year procurement for all RA capacity types, including local, system and flexible capacity
- Establish a central buyer and specify its roles, responsibilities, and authority
- Require local capacity procurement at the more granular sub-area levels to prevent ineffective procurement
- Update its “transitional” ELCC values for wind and solar resources

The ISO is proposing the CPUC adopt in Track 3 of its RA proceeding the following items for RA year 2021.

- Revise RA timeline to better accommodate RA processes and decision making

- Adopt updated ELCC methodology for solar and wind resources that includes accounting for behind-the-meter solar

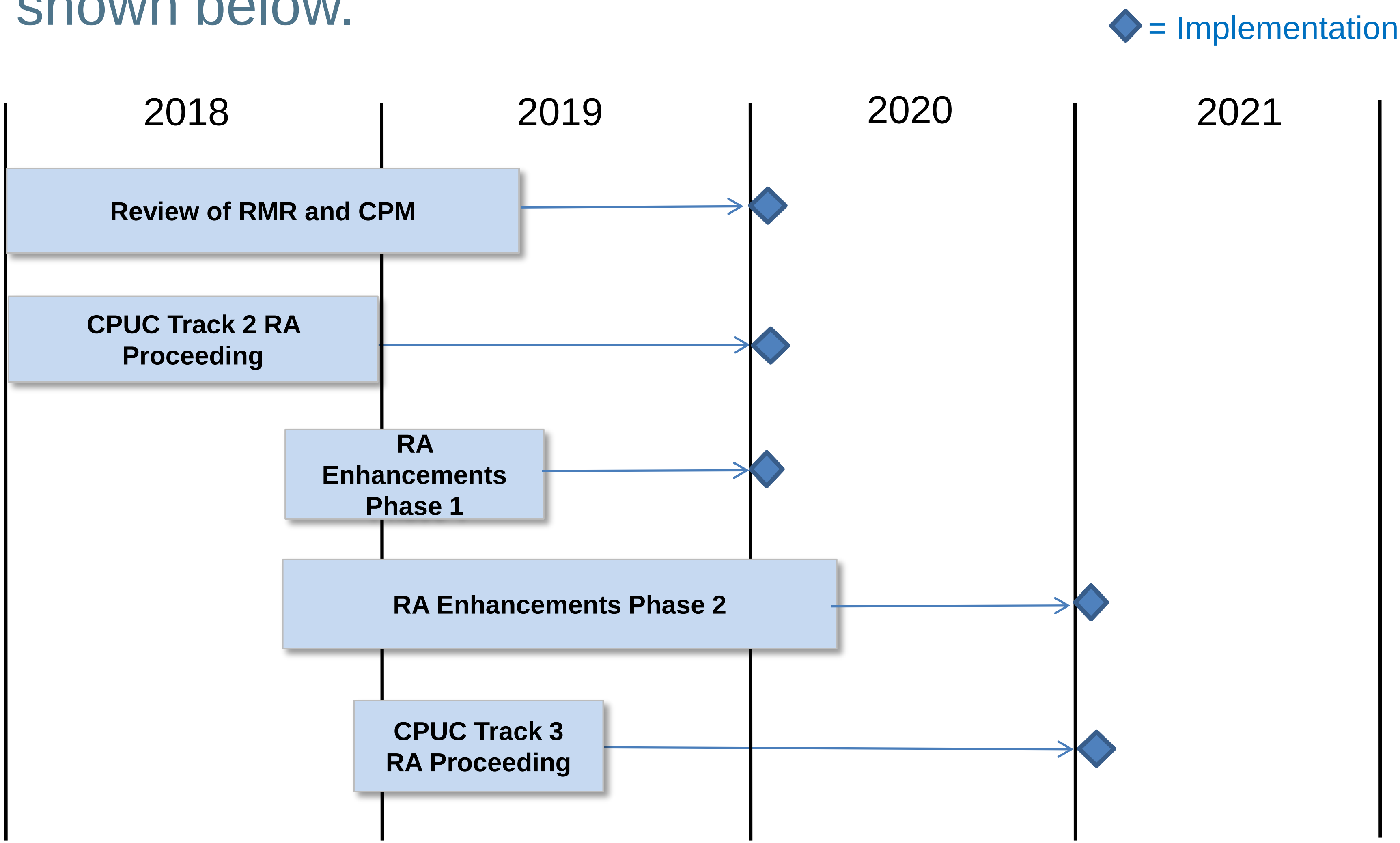
- Consider availability limitations such as maximum run time and call events in meeting local capacity needs

- Adopt higher demand forecast for system RA requirements in months that exhibit greater peak demand variability

The ISO will soon be starting the RA Enhancements initiative that will consider changes to the ISO tariff.

- Multi-year RA and backstop procurement
- Multi-year needs assessments and load forecasting
- Review Maximum Import Capability
- RA validation to assess showings against ISO operational needs
- Slow response resources counting as local RA
- Clarify RA MOO obligations for system, local and flexible capacity from all resource types

The timing of the RA work at the CPUC and ISO is shown below.



4. STREAMLINE AND AUTOMATE RMR SETTLEMENT PROCESS

Bob Kott

Operations Policy Manager

Prior to today the ISO has not presented a detailed proposal, so thus far stakeholder comments are limited.

- Calpine supports the ISO’s intention to streamline and automate the RMR settlement process
- NRG supports the ISO’s intention to streamline and automate the RMR settlement process

The ISO's vision is to align RMR with RA and CPM.

Align RMR to extent possible with RA/CPM paradigm for bidding, dispatch, penalties/incentives, settlements, and payment to streamline RMR functionality for efficient market and reliability systems operations and maintenance

- Bid/dispatch using RA/CPM rules and operating procedures
- Simplify RMR compensation structure
  - Fixed: hourly to monthly similar to CPM
  - Variable: BCR for Startup/Min Load; claw back market revenue above cost for Condition 2
  - Penalties: eliminate and use RAAIM
- Align RMR invoice/timeline with ISO market

RMR Bidding and Dispatch Ideas

- Represent RMR resources in ISO systems the same way as RA and CPM resources
- SIBR bidding rules for RA/CPM would apply to RMR units
- MMAs and opportunity cost components would apply
- MOO would ensure use of market and reliability mechanisms to dispatch resources when needed

RMR Compensation Revision Ideas

- Use Schedule F formula to develop full cost of service values for fixed and variable costs
- Fixed costs to be recovered through fixed monthly payments similar is structure to CPM payments
  - Eliminate target available hours and payments based on resource availability
  - Resource subject to RAAIM incentives/penalties and substitution requirements
- Variable compensation will be covered through market mechanisms, including BCR with credit back for market revenues above costs for Condition 2

RMR Invoicing Ideas

- Replace RMR invoicing template by leveraging ISO market settlement process
  - New RMR line item similar to CPM for fixed costs to include AFRR and capital item monthly amounts
  - DEB, opportunity costs, BCR, and MMA as designed in market to ensure cost recovery for variable costs
  - Termination fee line item as needed
  - Repair item line item as needed
- Replace RMR payment calendar and replace prior period change process by using market settlement timeline and future revisions

RMR Agreement Terms under consideration

- Article 1 - Definitions: Revise/eliminate/add as needed
- Article 2 – Term: Termination fee may be okay as listed, but need to discuss invoicing practice transition to standard settlement timeline
- Article 3 – Conditions of Operation: Needs revision to address market transaction and transfer of conditions
- Article 4 – Dispatch of Units: Revise to remove limitations and align with RA and CPM dispatch practices; remove service limits, air emissions provisions and discuss how these are addressed; align test dispatch with tariff; remove forecast, remove determination of service limits

RMR Agreement Terms under consideration (cont'd)

- Article 5 - Delivery of Energy and AS by Owner: Align with dispatch of RA/CPM resources including substitution; remove counting rules and reports
- Article 6 – Market Transactions: Revise to define compensation for Condition 2 resources to credit back market revenues above costs
- Article 7 – Operation and Maintenance: Review and determine need for any revisions including provisions for capital items and repairs

RMR Agreement Terms under consideration (cont'd)

- Article 8 – Rates and Charges
  - Revise to align with CPM paradigm for fixed payments with RAAIM
  - Cover both Condition 1 and Condition 2 options
  - Compensation for startups and minimum load to tariff bid cost recovery mechanism
  - Removal of the excess service payments
  - Determination of hybrid and billable to be removed and aligned with CPM
  - Remove prepaid startups, nonperformance penalty and long term planned outage adjustment

RMR Agreement Terms under consideration (cont'd)

- Article 9 – Statements and Payments
  - Refer to tariff for invoicing, statements and disputes
  - Revise payment structure to CPM style
  - Remove prior period change worksheet
  - Revise switching between Condition 1 and 2
  - Use finance proposal for facility trust accounts
  - Refer to tariff process for remaining terms: adjustments, corrections, payment default, provisions on collection, insurance, indemnity, credit rating, interest, disputes, payment security, errors, termination fee, final invoice

RMR Agreement Terms under consideration (cont'd)

- Evaluate the provisions to determine whether necessary or if a reference to tariff provisions can be used for
  - Article 10 – Force Majeure Events
  - Article 12 – Covenants of the Parties
  - Article 13 – Assignment
  - Article 14 – Miscellaneous Provisions
- For Article 11 – Remedies
  - Align dispute resolution with ISO tariff provisions to eliminate different process and evaluate other provisions to determine whether they are necessary

RMR Agreement Terms under consideration (cont'd)

<u>Schedules</u>

- A – Remove elements covered either in PGA and/or Master File and retain others
- B – Simplify to cover only AFRR and monthly payment amount
- C – Simplify to align with market settlement calculations
- D – Simplify to align with market settlement calculations
- E – Evaluate need for changes
- F – Evaluate need for changes
- G – Evaluate need and eliminate if possible
- H – Evaluate need and eliminate if possible

RMR Agreement Terms under consideration (cont'd)

Schedules

- I – Evaluate need and eliminate if possible
- K – Evaluate differences with ISO tariff process and eliminate if possible
- L – Evaluate whether changes are needed
- M – Evaluate use of market bidding rules with bid mitigation and eliminate if possible.
- N – Evaluate whether changes are needed
- O – Evaluate need for the process and modify or eliminate
- P – Evaluate need and eliminate if possible

5. FLEXIBLE AND SYSTEM RA CREDITS FROM RMR DESIGNATIONS

Keith Johnson

Infrastructure & Regulatory Policy Manager

Stakeholder comments on allocating flexible RA credits from RMR designations

- Calpine supports allocation of flex, local or system attributes
- CPUC Staff supports allocation of flexible benefits and requests clarify that system benefits also will be allocated
- NRG does not oppose allocating flexible credits, but opposes imposing cost-based obligation to offer all hours
- ORA supports allocation of flexible RA value
- SCE believes all attributes of a procured resource should be allocated, regardless of reason for procurement
- Six Cities support ISO's proposal

The ISO supports allocating flexible and system RA credits from RMR resources.

- All RMR designations will not automatically qualify for flexible credits; to qualify an RMR unit must
  - Have an approved Effective Flexible Capacity value that qualifies unit as eligible to provide flexible RA capacity
  - Agree in RMR agreement to fulfill RA flexible capacity requirements such as offering economics bids
  - RMR units eligible for flexible RA credits must submit economic bids based on assigned flexible category and may choose to self-schedule for remaining hours; RAAIM is assessed only for flexible category hours
- Credits will continue to be allocated as they are today

6. USE OF RMR AND CPM

Keith Johnson

Infrastructure & Regulatory Policy Manager

Catalin Micsa

Senior Advisor, Regional Transmission Engineer

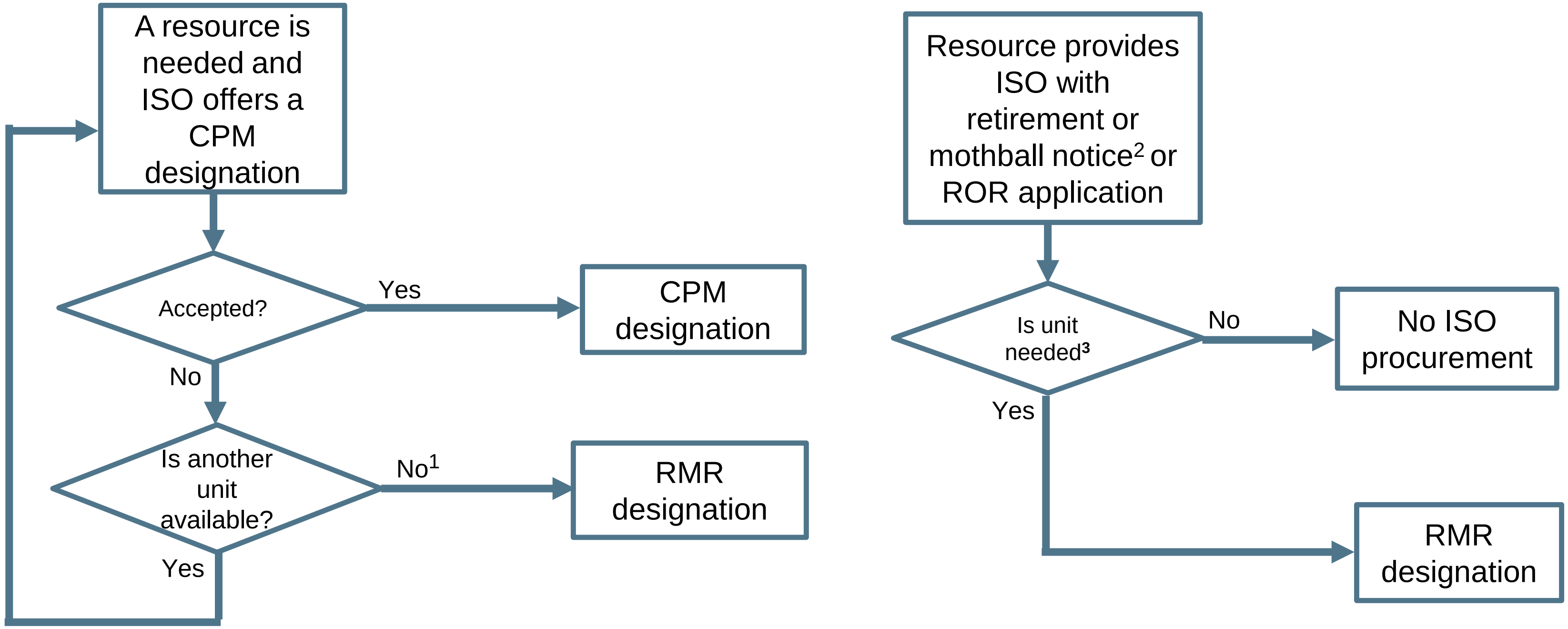
The following items will be covered today under this agenda topic.

- Clarify when RMR procurement is used versus CPM procurement
- Explore whether ROR CPM and RMR procurement can be merged into one procurement mechanism
- Consider whether Condition 1 and 2 options are needed for RMR resources
- Ensure RMR designation authority includes system and flexible needs, in addition to local needs

Overview of Proposed RMR and CPM Construct

- CPM will be used to backstop the RA program
- RMR will be used to address resource retirements, meet special reliability needs (such as voltage support and flexible needs), and as last resort procurement
- All retirement procurement authority, including ROR, will be handled through the RMR tariff
- All RMR and CPM resources will have a MOO
- All RMR and CPM resources will be subject to RAAIM

Flow Chart of CPM and RMR Procurement



[1] The ISO is proposing to change its proposal: In this circumstance, a resource would not have to submit a retirement letter to be eligible for an RMR designation.

[2] QFs are not required to give a 90-day notice of retirement because they are not bound by the ISO tariff notice requirements, but there could be a need to RMR such resources. Therefore, an alternative to a formal retirement notice may be required for certain PURPA/QFs and CHP generation.

[3] For the ISO study for a potential RMR designation, all available resources are used in the analysis.

All retirement procurement authority, including ROR, will be merged into one mechanism under RMR tariff.

- Will move to RMR tariff authority that is currently in ROR CPM tariff to designate a resource in year 1 for an essential reliability need in year 2 (the “bridge”)
- Change will eliminate current ROR authority under the CPM tariff
- Length of ROR RMR procurement will be for a maximum of one year (as it is now)
  - ISO is changing its proposal and will no longer propose to look at need in year 3 as previously proposed

Condition 1 and 2 options will be available for RMR agreements, with Condition 2 as the default.

- Default will be a cost of service agreement with a MOO where resource will have all of its cost of service paid and must credit back market revenues earned above its cost of service
- At ISO's discretion resource, and in limited circumstances, resource may be able to negotiate an agreement where resource is not paid all of its cost of service and may keep market revenues earned above its cost of service

RMR designation authority currently includes ability to address system, local and flexible needs.

<u>Current RMR authority for system and flexible requirements</u>

- ISO Tariff Section 41.1 – RMR procurement
  - "to ensure that the reliability of the CAISO Controlled Grid is maintained"
- ISO Tariff Section 41.2 – RMR designation
  - Based on "CAISO Controlled Grid technical analysis and studies"
- ISO Tariff Section 41.3 – Reliability studies
  - "In addition to the Local Capacity Technical Study under 40.3.1, the CAISO may perform additional technical studies, as necessary, to ensure compliance with Reliability Criteria"
  - Where: Reliability Criteria is "Pre-established criteria that are to be followed in order to maintain desired performance of the CAISO Controlled Grid under Contingency or steady state conditions."

Current RA criteria for system and flexible requirements

- ISO Tariff Section 40 – RA Demonstrations for all SCs
  - CPUC and other Local Regulatory Authority must provide Reserve Margin to the ISO in order to check compliance. If one is not provided "the Reserve Margin for each month shall be no less than fifteen percent (15%) of the LSE's peak hourly Demand for the applicable month"
  - LSEs must provide annual and monthly RA showings
  - Resources on the RA showings must bid in the ISO markets
- ISO Tariff Section 40.10 – Flexible RA Capacity
  - The CAISO shall annually conduct a study to determine the Flexible Capacity Need of the CAISO Balancing Authority Area for each month of the next calendar year and provide the results of the study in the Flexible Capacity Needs Assessment.

Tariff Section 42 – Adequacy of facilities to meet Applicable Reliability Criteria

- Tariff Section 42.1 – Generation Planning Reserve Criteria
  - First use market forces however if not available or not enough
- Tariff Section 42.1.3 – ISO to take necessary steps to ensure criteria compliance
  - "Notwithstanding the foregoing, if the CAISO concludes that it may be unable to comply with the Applicable Reliability Criteria, the CAISO shall, acting in accordance with Good Utility Practice, take such steps as it considers to be necessary to ensure compliance, including the negotiation of contracts through processes other than competitive solicitations. These steps can include the negotiation of contracts for Generation or Ancillary Services on a Real-Time basis."

Backstop RMR procurement mechanisms for system and flexible capacity are a prudent measure.

- Currently there is excess system and flexible capacity available
  - Planning reserve margins and flexible capacity needs are being met today
- Once-through-cooling policy compliance will reduce gas-fired fleet by a net 5000 MW in addition to retirement of Diablo Canyon
- ISO studies have demonstrated capacity issues emerging if an additional 2000 MW retires, depending on study assumptions. http://www.caiso.com/Documents/SupplementalSensitivityAnalysis-Risksofearlyeconomicretirementofgasfleet.pdf
- RMR mechanism would only be used as the last resort
  - When system and/or flexible capacity runs low ISO must use market mechanisms first: CPM bids. If CPM bids do not exist ISO will use standard CPM offer price for remaining resources
  - Multiple resources would have to refuse CPM standard offer before ARC is not met given today's fleet, but known and potential retirement risks are a concern
- RMR mechanism needs to be in place as a prudent backstop

Stakeholder comments on clarifying when RMR procurement is used versus CPM procurement

- **Calpine** encourages ISO to consider independent and autonomous action to implement RA enhancements
- **CPUC Staff** believes ISO should combine RMR with CPM into one mechanism, make all types of CPM mandatory, establish RMR approval and designation process that occurs only after bilateral procurement process has concluded, and require generators to submit retirement requests by certain date each year and if notice is not submitted in timely fashion need for resource would not be assessed in planning process
- **DMM** recommends ISO consolidate annual backstop procurement into single mechanism and new timeline created in conjunction with reforms to broader RA process for studying and awarding CPM contracts
- **NRG** believes ISO's rationale for using RMR as ROR mechanism and CPM as a short-term backstop mechanism seems appropriate, and ISO underestimates complexity of turning RMR contract into means to take RA-equivalent service from units at ROR
- **PG&E** believes only units that have given their 90-day termination notice under PGA should be eligible to receive an RMR and requests ISO clarify anticipated timeline for fall designation window for units and for units whose PGA termination is received close to 90-day deadline
- **ORA** requests ISO clarify its proposal because there is confusion ISO might designate units as RMR simply because resource rejects a CPM designation
- **SCE** believes ISO should eliminate annual CPM, which would eliminate incentive for resources to inappropriately seek annual CPM when they would be more suited for RMR
- **Six Cities** support making RMR designations only for needed resources that have notified ISO of plans for retirement
- **WPTF** asks ISO to articulate which type of resources should use each mechanism as current lack of clarity is leading to concern over requiring a MOO and RAAIM for RMR resources

Stakeholder comments on exploring whether ROR CPM and RMR procurement can be merged into one mechanism

- **Calpine** supports elimination of ROR CPM and retention of RMR
- **CPUC Staff** strongly opposes expanding RMR to years 2 and 3 as it believes this will expand current front running issue that is occurring and urges ISO to remove any backstop authority for multi-year products at this time
- **NRG** believes ISO has made a credible case for retaining two backstop mechanisms and rules for each must be specified
- **ORA** opposes allowing ISO to designate resource as RMR that is needed for years 2 or 3 as this is a major departure from current tariff and extending RMR to multiple years could motivate some resources to seek multi-year RMR contracts rather than offer competitive multi-year RA bids in LSE solicitations
- **PG&E** does not support expanding ISO's authority for needs in year 2 or 3 because generator will know whether it has received RMR designation prior to bilateral market operating and action by ISO could prevent ISO from considering cost-effective transmission alternatives
- **SCE** feels it may be more effective to merge the two mechanisms
- **Six Cities** support ISO's proposal for authority for ISO to make RMR designations for needs anticipated during up to three years

Stakeholder comments on considering whether Condition 1 and 2 options are needed for RMR

- **Calpine** sees no reason to eliminate Condition 1, supports the continued availability of Condition 2, and supports unit-owner's discretion to choose between the two options
- **NRG** does not oppose ISO's position to keep both options but use Condition 2 as the default
- **Six Cities** support ISO's proposal for a default compensation mechanism, but with discretion for ISO to negotiate in appropriate circumstances a different compensation arrangement

Stakeholder comments on ensuring RMR authority includes system and flexible needs

- **Calpine** supports proactive expansion of ISO’s designation authority to include both system and flexibility needs
- **CPUC Staff** does not support ISO expanding its authority, as expanding RMR will lead to further front running of competitive bilateral process
- **NRG** does not oppose designating units that would otherwise be retired as RMR to meet system and flexible capacity needs, but such units should be required to submit cost-based offers only when they are required to operate to cure deficiency for which they were designated RMR
- **ORA** believes it is not clear that ISO’s proposal is necessary or beneficial, and seems unlikely ISO would ever reach a point where it would need to RMR a unit for system or flexibility reasons; ISO should address duration of contract for system or flexible needs
- **PG&E** does not support expanding ISO’s authority because current excess in system capacity precludes possibility of RMR designation being needed to preserve system reliability and flexibility is not a transmission reliability attribute for which an RMR would be an appropriate remedy
- **SCE** believes all attributes of RMR resource should be considered procured, even if procurement decision is for only a specific attribute; bid should be set at default energy bid to appropriately reflect resource’s marginal cost in optimization of market; will be certain periods that default energy bid may not be appropriate
- **Six Cities** support ISO’s proposal

7. RMR AND CPM COMPENSATION

Keith Johnson

Infrastructure & Regulatory Policy Manager

Gabe Murtaugh

Senior Infrastructure & Regulatory Policy Developer

The following items will be covered today under this agenda topic.

- Compensation for CPM and RMR designations
- Pricing formula to use for a resource that files at FERC for a CPM price above the $75.68 kW-year soft-offer cap price
- Rate of return for RMR resources

Overview of Proposed Compensation for CPM and RMR Services

CPM

- Will be based on bids submitted into competitive solicitation process ("CSP"), or GFFCs if a bid is not submitted into CSP, as CPM procurement is ***voluntary***, short-term procurement
  - Resource can file at FERC for CPM compensation above the soft-offer cap price based on GFFCs of its unit using same cost categories and 20% cost adder used for CPM reference unit and keep market revenues

RMR

- Will be based on cost of service, as RMR procurement is ***mandatory***, annual procurement

Currently there are three pricing options for CPM designations (and ISO is not planning to change the options).

1. Unit can submit a bid into CSP
   - If bid is selected the CPM designation offered is not voluntary
2. Unit can be paid soft-offer cap price of $75.68/kW-year if unit does not have a bid in the CSP
   - Unit can decline the CPM designation offered
3. Unit can bid price higher than soft-offer cap price in CSP and can then file at FERC for approval of that price
   - If bid is selected the CPM designation offered is not voluntary

Current CPM Compensation Components

Market Revenues
Unit keeps all market revenues earned

BID

Price bid into Competitive Solicitation Process
- Price is consider "good" (safe harbor) if the price bid is below soft-offer cap price of $75.68 kW-year

Bid into CSP
(at or below $75.68 kW-year)

Market Revenues
Unit keeps all market revenues earned

20% Adder

Going Forward Fixed Costs

Which is the sum of the amounts shown below for the reference unit specified in the ISO's CPM tariff:
- Fixed O&M costs
- *Ad valorem* costs
- Insurance

Soft-Offer Cap Price
($75.68 kW-year)

Market Revenues
Unit keeps all market revenues earned

Annual Fixed Revenue Requirement

Amount determined using cost of service methodology in Schedule F of Appendix G of the RMR agreement
- This methodology does not include paying for Capital Items (like major maintenance capital expenditures)

Above Soft-Offer Cap Price
(above $75.68 kW-year)

The ISO proposes to change pricing formula for a resource that files for a CPM price above the soft-offer cap price.

- Currently: Can file for cost of service compensation and keep all market revenues earned
  - Some stakeholders concerned this existing CPM provision provides excessive compensation because market revenues earned above cost of service are not clawed back
- ISO Proposal: Can only file for GFFC compensation using cost categories and 20% adder used for CPM soft-offer cap reference unit, and keep all market revenues earned
  - Will make all CPM pricing based on CSP bids or GFFCs, i.e., will no longer be mixing GFFC and cost of service methodologies

Proposed CPM Compensation Components
"Going Forward Fixed Costs, plus Adder" Compensation

Bid into CSP
(at or below $75.68 kW-year)

Market Revenues
Unit keeps all market revenues earned

BID

Price bid into Competitive Solicitation Process
- Price is consider "good" (safe harbor) if the price bid is below soft-offer cap price of $75.68 kW-year

Soft-Offer Cap Price
($75.68 kW-year)

Market Revenues
Unit keeps all market revenues earned

20% Adder

Going Forward Fixed Costs

Which is the sum of the amounts shown below for the reference unit specified in the ISO's CPM tariff:
- Fixed O&M costs
- *Ad valorem* costs
- Insurance

Above Soft-Offer Cap Price
(above $75.68 kW-year)

Market Revenues
Unit keeps all market revenues earned

20% Adder

Going Forward Fixed Costs

Which is the sum of the amounts shown below for the actual unit (and not the reference unit specified in the ISO's CPM tariff):
- Fixed O&M costs
- *Ad valorem* costs
- Insurance

Proposed Pricing for CPM Designations, including Year-Ahead 12-Month CPM Designations

Type of Designation	Voluntary or Mandatory	Type of Compensation	Components of Compensation
System monthly	Voluntary (but mandatory if unit has bid into CSP and bid is accepted)	1. As bid into CSP 2. If no bid in CSP, unit will be offered soft-offer cap price of $75.68/kW-year 3. Unit can submit bid above soft-offer cap price and file at FERC for that price (FERC approves price)	1. "Safe harbor" price at or below soft-offer cap price 2. $75.68/kW-year price is based on GFFC of reference unit in tariff ~~3. Can file for cost of service compensation per RMR Schedule F~~ Can file at FERC for compensation based on GFFCs of its unit using same cost categories and same cost adder as was used for reference unit in tariff and also keep market revenues
System annual	Same as above	Same as above	Same as above (not proposing to change to cost of service)
Local monthly	Same as above	Same as above	Same as above
Local annual	Same as above	Same as above	Same as above (not proposing to change to cost of service)
Local annual collective deficiency	Same as above	Same as above	Same as above (not proposing to change to cost of service)
Cumulative flexible monthly	Same as above	Same as above	Same as above
Cumulative flexible annual	Same as above	Same as above	Same as above (not proposing to change to cost of service)
Significant event	Same as above	Same as above	Same as above
Exceptional dispatch	Same as above	Same as above	Same as above

Current RMR Compensation Components

"Cost of Service" Compensation

(ISO is not proposing to change components)

All market revenues earned by unit are clawed back

Capital Items

AFRR

Which is the amount determined as the following difference:

- Total Annual Revenue Requirements, less
- Total Annual Variable Costs

Condition 2 RMR Unit –
Unit paid 100% of its AFRR

Market Revenues
Unit keeps all market revenues earned

Capital Items

AFRR

Which is the amount determined as the following difference:

- Total Annual Revenue Requirements, less
- Total Annual Variable Costs

Condition 1 RMR Unit –
Unit paid <100% of its AFRR

* AFRR is Annual Fixed Revenue Requirements.
* RMR agreements also include a Termination Fee that may be owed to unit under certain circumstances.
* There also is a Variable O&M Rate that is used to reimburse RMR units for variable O&M costs.

Proposed RMR Components

Type of Designation	Voluntary or Mandatory	Type of Compensation	Agreement Options (Condition 2 or Condition 1)
Local, system, flexible **ISO can designate for ROR for year two needs (removing previous proposal for year 3 needs)**	Mandatory	Cost of service	Default RMR pro forma agreement will be cost of service contract with a MOO where resource will have its cost of service paid and any market revenues earned above its cost of service will be credited against monthly fixed costs. At ISO's discretion, and in limited circumstances when appropriate, resource owner may negotiate an RMR agreement where resource is not paid all of its cost of service and may_keep market revenues earned above its cost of service.

Stakeholder comments on evaluating compensation paid for RMR and CPM services

- **Calpine** believes resources needed for reliability must have a reasonable opportunity to recover their costs-of-service including a return of (depreciation) and on (rate of return) its investment. CPM should allow for full cost-of-service, but if resource does seek recovery of costs above soft offer cap any market revenues must be returned. Views ISO's straw proposal that RMR would only be used if the unit owner submits a retirement letter as an unjust and unreasonable free call-option, and if ISO intends to use Exceptional Dispatch to meet otherwise unmet reliability needs that it adopt complementary changes to its tariff
- **CPUC Staff** recommends for CPM designations where resource files at FERC for a payment above soft-offer cap price the 20% adder be removed from compensation calculation. For RMR ISO should change compensation from full cost recovery (AFRR) to GFFC, plus provisions for any needed capital additions to extent not already including in GFFC
- **DMM** believes current RMR compensation should be replaced with single mandatory CPM annual framework where compensation is based on GFFC. ISO should consider two GFFC-based approaches: (1) compensate resources GFFC plus a reasonable fixed profit and credit net market revenues back to ratepayers (the ISO's current proposal of including an adder to GFFC of 20% of GFFC while also allowing the resource to keep net market revenues may be excessive); or (2) compensate a resource at its GFFC and allow it to keep net market revenues. When current CPM soft-offer cap is paid to a resource for all 12 months of an annual CPM this compensation is likely to significantly exceed annual GFFC of many resources; therefore, ISO should reconsider soft-offer cap price for annual CPMs. Resources may be compensated for multi-year maintenance or environmental retrofits if those items are deemed necessary over period the resource needed for reliability ISO should consider granting limited exceptions to all-hours MOO in instances where easing MOO will be more cost effective than having resource undergo major maintenance when resource is only projected to be needed for one to two years

The ISO is reviewing the allowed rate of return.

- The current pre-tax rate of return is “hard-wired” into pro forma agreement at 12.25%
- Value has not changed in many years, despite changing economic conditions and corporate tax rates
- FERC outlines a methodology for calculating utility rates of return using zones of reasonableness via a discounted cash flow model
- Post-tax rates of return used in recent RMR agreements struck outside of ISO have been at lower than pre-tax rate of return of 12.25% specified in current tariff

The ISO has identified six potential options for updating the rate of return for RMR resources.

	Potential Options for Updated Allowed Rate of Return
1	Leave current 12.25% rate of return in place, i.e., “no action” option
2	Determine a base rate that is allowed to float – up or down - relative to a benchmark rate
3	Have an independent expert construct a rate of return to use, which is inserted and periodically updated
4	Require market participants to propose and justify a rate of return in RMR filings
5	Use a blended rate from recent transmission projects, plus an agreed upon risk adder (or could use responsible utility’s rate of return)
6	Determine a methodology for an “in-house” calculation to determine a rate of return to use, which is periodically updated

The ISO received mixed feedback from stakeholder comments.

- **Calpine** does not believe review is needed, must recognize differences between pre-and post-tax rate, should be cautious of “proxy” post-tax rate, vigorously objects to any obligation to establish from blank slate post-tax rate for each RMR unit
- **NRG** does not oppose review, rate must account for it being a pre-tax rate, strong preference is unit be allowed to offer a proposed rate in its FERC filing
- **PG&E** supports revising rate, recommends setting at PTO’s return on equity, rate should be reduced to reflect lower federal tax rate, supports a pre-tax rate of return of 10.5 percent
- **Six Cities** support updating rate, provide general principles, use a discounted cash flow model to determine rate, determination of rate is generally a settlement product, requiring units to submit proposed rate to FERC may prove to be most workable solution

Based on stakeholder comments thus far, three potential options may be more preferable than others.

Potential options for updating rate of return

1. Retain current 12.25% rate of return
2. Update 12.25% rate of return to a new fixed rate
   - 10.5% based on changes to tax code (PG&E)
   - A rate based on PTO's rate of return (PG&E)
3. Have resources propose a rate of return in FERC filing for each RMR unit (supported by NRG and not supported by Calpine)

8. RMR RESOURCES SUBJECT TO MOO AND RAAIM

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The ISO seeks to increase the alignment of the MOO, bidding rules and performance incentives for all capacity resources.

- On March 13, 2018 the ISO posted a proposal to have RMR resources subject to
  - A MOO similar to the MOO for RA resources
  - Bid insertion when not bid into market
  - RAAIM resource performance incentive mechanism, like RA resources are subject to
- Several stakeholders supported the ISO moving forward with these proposals
- Several stakeholders requested the ISO
  - Clarify how maintenance costs will be treated in bids
  - Explain how RAAIM would be applied to RMR resources

Resources bidding into the market will have different bids depending on Condition 2 or Condition 1 status.

- Condition 2 resources are paid cost of service through an RMR agreement
  - Will submit cost-based bids into energy and AS markets
  - All market revenues above variable costs are clawed back
    - All RUC revenues above $0 are clawed back
  - ISO will insert cost-based bids if none inserted by unit
  - May be instructed by ISO to not run
- Condition 1 resources are not paid cost of service through RMR agreement
  - Resources will bid into market at market-based bids
  - ISO will insert cost-based bids if bids are not submitted by unit
  - May be instructed by ISO to not run

Functionality for ISO-generated bids for MOO RA resources that have not bid into the market

- ISO-generated bids include
  - Start-up costs
  - Minimum load costs
  - Energy costs
  - MSG transition costs (registered default values)
- ISO will generate and submit AS bids at $0/MWh
- ISO generated RUC bids translate to $0 offers
- Energy bids will include the following components
  - Fuel Costs
  - O&M
  - GHG Costs
  - GMC
  - Opportunity Costs

Treatment of MMAs, opportunity costs and BCR in RMR bids

- MMAs and opportunity costs, if applicable, will be reflected in bids to ensure true cost of operation is considered in market decisions
  – Actual MMA costs will be compensated as they are incurred, similar to current RMR construct
  – Any market revenues from MMAs bid into market will be clawed back to prevent double recovery of these costs
  – Market revenues from bid opportunity costs will also be clawed back
- Resources with RMR agreements will be eligible for BCR payments when market earnings are insufficient to cover fuel costs

RMR resources will be required to bid into market at total cost, including variable, MMA and Opportunity Costs

Opportunity Costs
Negotiated values that account for lost opportunities from running

Major Maintenance Adders
Negotiated values that approximate historic average maintenance costs

Variable Costs (DEB)
Calculated similar to the DEB with inputs specified in Master File data including:

- Heat rate
- Fuel Costs
- O&M
- GHG Costs
- GMC

- Variable costs are compensated through energy market revenues
- The actual costs of major maintenance are compensated for RMR resources
- Opportunity Costs are not compensated

The ISO proposes to make RMR units subject only to RAAIM.

- The two resource performance incentive provisions that are currently in RMR pro forma agreement will not apply
  - Will delete Non-Performance Penalty and Long-term Planned Outage Adjustment
- Will ensure RAAIM penalty price recognizes when RMR price exceeds CPM soft-offer cap price
  - Will revise RAAIM penalty price in ISO tariff section 40.9.6.1 so it becomes appropriately high enough to incent RMR performance (like the penalty price does for RA and CPM capacity)
  - Could revise to state something like “60% of applicable RMR agreement price”

Stakeholder comments on making RMR resources subject to a MOO

- **Calpine** believes MOO for Condition 1 is not objectionable and bids submitted by unit can be at any level subject only to bid caps; believes forcing Condition 2 units to bid at costs all hours would unduly suppress energy market prices and supports bid insertion for Condition 2 units only when a reliability need is in evidence
- **Cogentrix** believes detailed studies should be completed prior to implementing a MOO to determine extent of market distortions, as Cogentrix sees possibility of RA price suppression
- **CPUC Staff** supports proposal to add a MOO
- **NRG** does not support proposal as: (1) nothing in current RA program design compels RA units to submit cost-based offers for energy and AS; (2) it represents significant departure from current Condition 2 which require cost-based offers only when unit is required to operate to maintain local reliability or mitigate non-competitive congestion; (3) forcing full-time cost-based offers has potential to unduly impact energy and AS market prices. Units ISO forces into continued operation should be operated only when they are required to operate to maintain local reliability. ISO is essentially looking to turn RMR contract into a vehicle to take generic RA service and would be better off scrapping the RMR contract and creating a wholly new contract for this purpose
- **PG&E** supports extension of the full RA MOO to both RMR Condition 1 and 2
- **SCE** believes MOO should be consistent between RMR and CPM resources
- **Six Cities** support proposal
- **WPTF** does not oppose a MOO for Condition 1, but forcing Condition 2 resources to bid in at cost during all hours will suppress market revenues. ISO could explore other modifications to differentiate between resource types, such as an additional mandatory CPM category and two more distinct RMR types

Stakeholder comments on making RMR resources subject to RAAIM

- **Calpine** believes tailoring RAAIM to RMR unit is incongruous because RMR unit: (1) must self-schedule when market does not support operation but unit is required for reliability and because it is not considered an economic bid a self-schedule would unjustly expose unit to penalties when complying with a dispatch order; (2) could receive RAAIM incentive payments for high availability in addition to other fixed cost recovery; and (3) has no ability to substitute in order to manage or avoid RAAIM. Believes incentives in current RMR pro-forma are better tailored to RMR units and under no circumstance would support exposure to both RAAIM and pro-forma availability charges
- **CPUC Staff** supports proposal and advocates for RMR pro forma performance penalty provisions in addition to RAAIM
- **NRG** strongly agrees with premise that RMR units should be subject to either availability incentive mechanism in RMR contract or RAAIM but not both. Cannot now say that it supports subjecting RMR units to RAAIM instead of RMR availability incentive mechanism because: (1) RAAIM is going to undergo significant modification soon; (2) RAAIM penalty price may be misaligned with imputed capacity price paid under RMR contract; and (3) RAAIM is currently intended to create an incentive for a resource to offer in all hours which is something that NRG opposes being applied to RMR
- **PG&E** believes RMR unit should be exempt from RAAIM and subject to non-performance penalties in RMR pro forma because RAAIM penalties are lower than non-performance penalties and RMR resources do not have ability to provide replacement
- **SCE** supports RAAIM-like performance incentives, but not a fixed penalty price, and supports instead a claw back of contract payments commensurate with period of unavailability. ISO should develop standard for maintenance outages that if outage request is approved by ISO would not result in contract revenue claw back
- **Six Cities** support proposal
- **WPTF** believes RAAIM is not best way to provide such incentives and current RMR pro-forma availability charges may be more appropriate

9. NEXT STEPS

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Next Steps

Date	Milestone
September 19	ISO posts revised straw proposal
September 27	ISO holds stakeholder meeting
October 23	Stakeholder written comments due
November 1	ISO holds working group meeting
November 19	ISO posts second revised straw proposal