

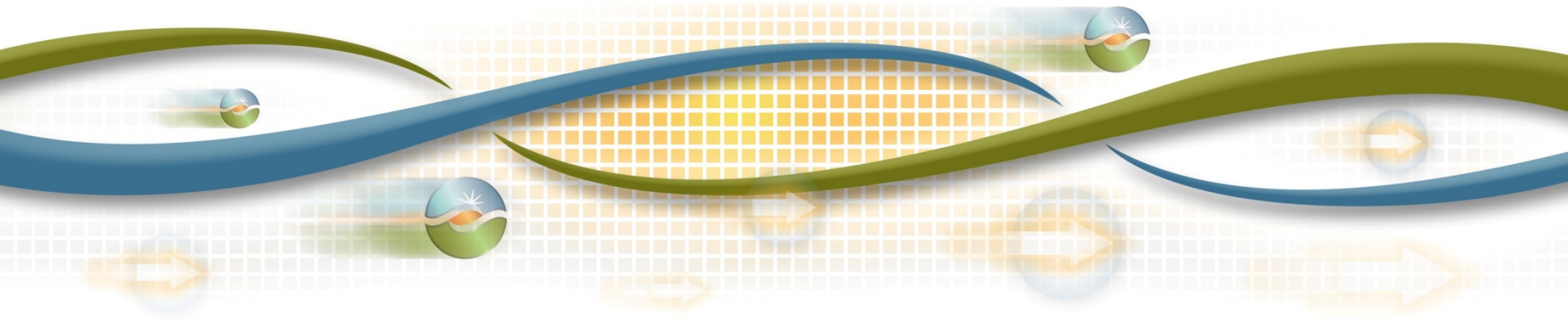


Review of Reliability Must-Run and Capacity Procurement Mechanism

Issue Paper and Straw Proposal for Phase 1 Items

Stakeholder Meeting
January 30, 2018

Keith Johnson
Infrastructure and Regulatory Policy Manager

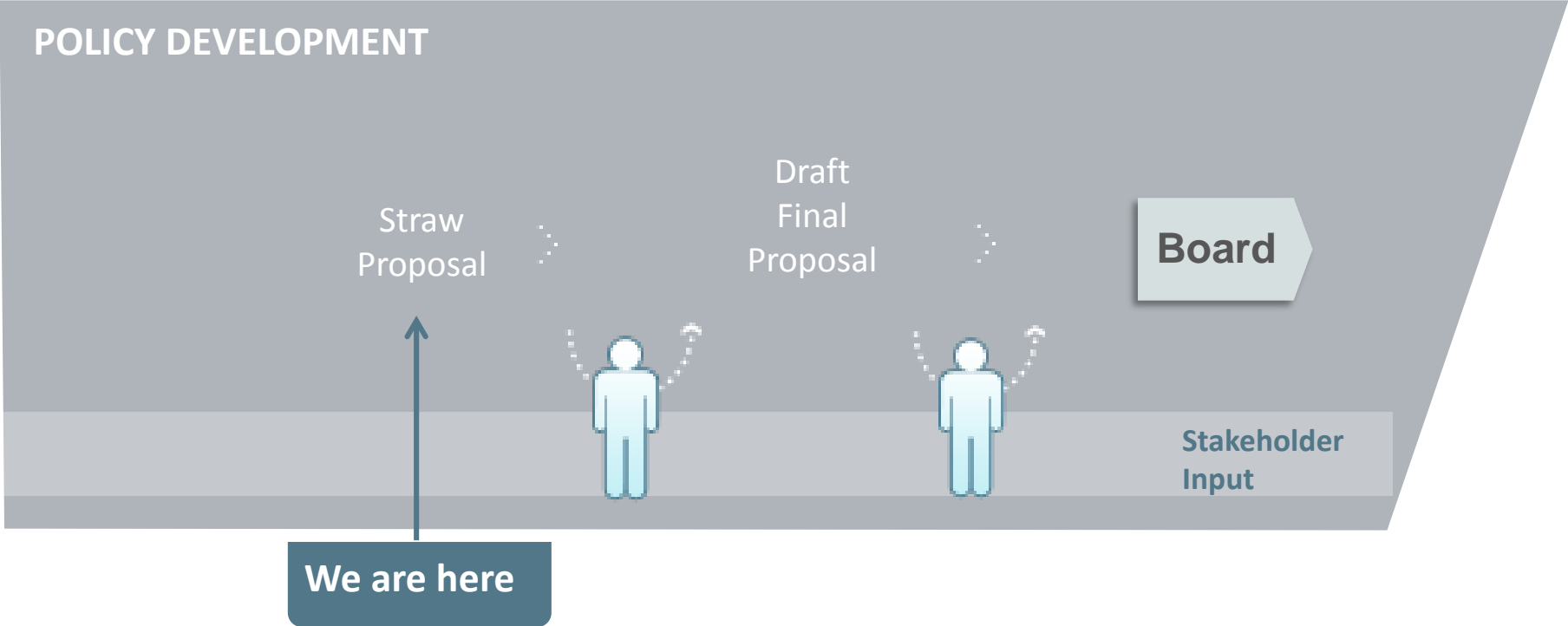


Agenda

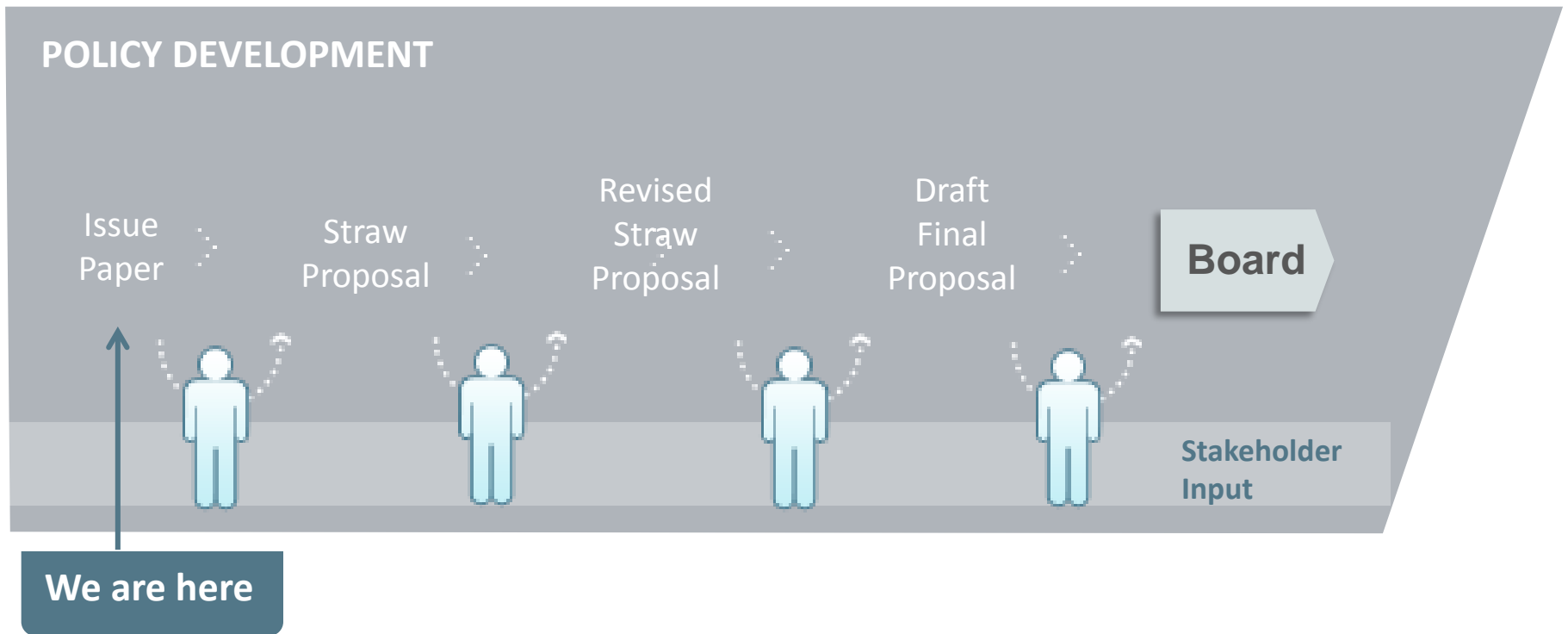
Time	Item	Speaker
10:00-10:10	Introduction and Schedule	Jody Cross
10:10-10:20	Scope of Initiative	Keith Johnson
10:20-10:50	Background on RMR	Riddhi Ray
10:50-11:15	Interplay of RA, RMR and CPM	Keith Johnson
11:15-12:00	Straw Proposal for Phase 1 Item	Keith Johnson
12:00-1:00	Lunch Break	(on your own)
1:00-2:45	Potential Phase 2 Items	Keith Johnson
2:45-3:00	Next Steps	Jody Cross

INTRODUCTION AND SCHEDULE

Stakeholder Process for Phase 1



Stakeholder Process for Phase 2



Schedule

Stage	Date	Milestone
Kick-off	Nov 2, 2017	ISO commits to undertake review of RMR and CPM
	Jan 2, 2018	Issue market notice announcing this initiative
Issue paper and straw proposal for phase 1 items	Jan 23	Post issue paper and straw proposal for Phase 1 items
	Jan 30	Hold stakeholder meeting 
	Feb 20	Stakeholder written comments due
	Mar 13	Post draft final proposal for Phase 1 items
Draft final proposal for phase 1 items	Mar 20	Hold stakeholder meeting
	Apr 10	Stakeholder written comments due
	May 16-17	Present proposal to Board of Governors
Final proposal for phase 1 items		
Develop proposal for Phase 2 items	After May 17	Continue initiative, focused on Phase 2 items

SCOPE OF INITIATIVE

The ISO is reviewing and considering improvements to its existing capacity procurement mechanisms.

- In light of
 - Experience gained with implementing new reliability must-run (“RMR”) agreements and year-ahead capacity procurement mechanism (“CPM”) designations
 - To address concerns identified by ISO and other stakeholders
- Will review
 - RMR tariff provisions, pro forma agreement and procurement process
 - Seek to clarify and align use of RMR procurement and backstop procurement under CPM tariff

The initiative will proceed in two phases.

Phase	Scope
Phase 1	RMR items that require immediate attention and implementation, such as having a must-offer obligation (“MOO”) on RMR units comparable to MOO applicable to resource adequacy (“RA”) and CPM resources
Phase 2	<p>Address potential additional refinements to RMR tariff provisions and pro forma agreement and procurement process</p> <p>Evaluate creating a cohesive RMR and CPM procurement framework, including possibly integrating RMR and CPM into a single ISO procurement mechanism</p>

Scope of Review of RMR and CPM Initiative

Phase 1 (in place in Fall 2018 for 2019 – Board approval on May 16-17, 2018)

- Make RMR Condition 1 and 2 units subject to a MOO for energy and ancillary services

Phase 2 (in place in Fall 2019 for 2020 – Board approval TBD)

- RMR and CPM
 - Clarify when RMR is used versus CPM procurement
 - Explore whether RMR and CPM can be merged
 - Review allowed rate of return on capital for RMR and CPM
 - Explore expanding RMR and CPM tariff authority
- RMR
 - Consider whether both Condition 1 and Condition 2 units are needed
 - Review cost allocation
 - Streamline and automate RMR settlement process
 - Lower banking costs associated with RMR invoicing
 - Expand designation authority to include flexibility needs
- CPM
 - Align CPM tariff to RMR rules to allow recovery for needed capital additions
 - Review cost allocation

BACKGROUND ON RMR

The ISO has broad authority under Section 41 of the tariff to designate a unit as RMR.

- ISO has the right at any time based upon ISO controlled grid technical analyses and studies to designate a unit as RMR to maintain grid reliability
- Pro forma RMR agreement is in Appendix G of tariff
- Agreement is between ISO and RMR owner and filed at FERC as rate schedule of RMR owner
- Responsible utility identified in RMR agreement is responsible for costs paid to RMR owner under agreement

The RMR agreement allows unit to operate under one of the following options: Condition 1 or 2.

- RMR owner has sole right to designate condition
 - Selected prior to effective date of RMR agreement
- Service
 - Condition 1 free to bid energy and ancillary services (“AS”) into available markets at any time subject to no conflict with requested RMR service and retains all revenues from market transactions
 - Condition 2 shall submit cost based bids for energy and AS (per Schedule M formula) into available markets only when issued a dispatch notice and shall not retain revenues from market transactions - ISO can limit owner’s market transactions if an RMR unit could exceed its contract service limits
- Transfers between Condition 1 and 2
 - Must be subject to existing condition selection for at least 12 months prior to transfer
 - 30-days notice for transfers effective January 1, 90-days notice otherwise and must be effective on first day of month following required notice period

The ISO currently has four facilities that are under an RMR agreement.

Name of Owner and Facility	RMR Capacity (Megawatts)	Condition 1 or 2
Dynegy Oakland	165	Condition 2
Calpine Feather River EC	47	Condition 2
Calpine Yuba City EC	47	Condition 2
Calpine Metcalf Energy Center	593	Condition 2

The ISO has broad dispatch rights for RMR units.

- ISO can dispatch a unit for energy solely for meeting local reliability needs or managing non-competitive congestion constraints
 - Dispatch includes any local reliability need - not just local reliability reason for RMR designation
- RMR dispatches for AS, except for voltage support or black start, require bid insufficiency test
- For other than service provided under RMR agreement Condition 2 units, ISO may Exceptionally Dispatch an RMR unit for reasons
 - Unit could be required for energy or operating reserve or to manage congestion and no other generating unit is available to meet the need

The RMR agreement has provisions for unit owners to make substitutions.

- Owners have a right to substitute an RMR unit with another unit
 - Applies to both Condition 1 and 2 units
 - Substituted unit may not necessarily be RMR unit under the agreement
 - Unit must be capable of providing equivalent system reliability benefits
- Condition 1 units can substitute RMR dispatches with market transactions only for energy
 - Rules are provided for market transactions substituting for RMR dispatch in RMR agreement

The agreement pays for fixed and variable costs as submitted through invoices.

- Schedule F calculates annual fixed revenue requirements (“AFRR”) for RMR unit
- Schedule B
 - RMR owner recovers fixed costs based on unit availability and capacity
 - Available capacity, available hours, capital item cost and AFRR factor into payment calculations
- Schedule C calculates variable costs based on unit operation
- Schedule L-1
 - Capital item additions and unplanned repairs are included here
 - Repair items reimbursed through one-time RMR invoice
- Schedule O defines RMR owner’s invoice process

A comparison of Condition 1 and Condition 2 RMR units is provided below.

	Condition 1	Condition 2
Expectation and requirement to bid	No requirement, but expectation is unit will bid to earn market revenues	Required and expected to bid only during RMR dispatch operating hours (hours determined by ISO)
Market revenues	Retain all market revenues	Credit to Participating Transmission Owner any market revenues from a RMR dispatch
Substitution with market transactions*	Can substitute market transaction for RMR dispatch notice for energy only	Market substitution provisions only available to Condition 1 RMR units
Market bids	Submit market bids subject to local market power mitigation	Required to submit cost-based energy and AS bid (Schedule M of RMR agreement)

*This provision provides Condition 1 RMR Unit to elect to retain market revenues in lieu of crediting them to responsible utility and being paid the variable cost payment defined in RMR agreement Schedule C.

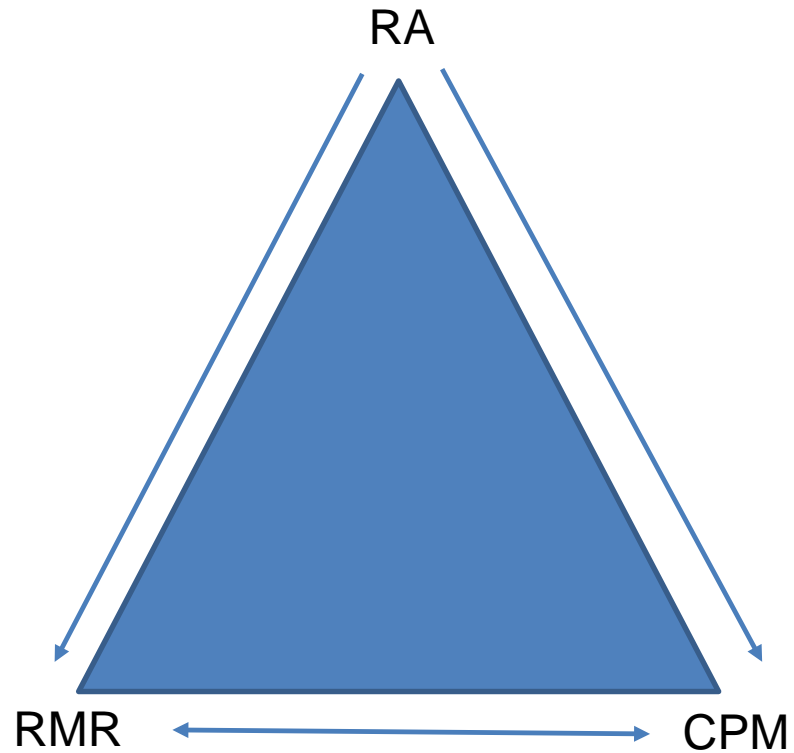
Comparison of Condition 1 and Condition 2 RMR units

(continued)

	Condition 1	Condition 2
Startup charge	Prepaid startup charge and adjustments	No prepaid startup charge (invoiced based on actual starts)
Fixed option payment factor	Custom factor based on net or estimated market revenues	Factor is always 1.0
Surcharge payment factor for capital items	Equals fixed option payment factor	Factor is always 1.0
AS payments	Has preempted dispatch payments to make RMR owner whole with respect to original market transaction	No preempted dispatch payments

INTERPLAY OF RA, RMR AND CPM

RA, RMR and CPM work together to ensure reliability.



RA = Resource Adequacy Program
RMR = Reliability Must-Run Agreements
CPM = Capacity Procurement Mechanism

RA is a mechanism to procure sufficient capacity in advance of operating month to reliably operate grid.

- Capacity requirements established in advance to procure
 - System capacity
 - Local capacity
 - Flexible capacity
- Capacity is procured by load-serving entities (“LSEs”) to meet their pre-established RA capacity requirements
- Designated RA capacity has explicit MOO to offer its capacity into the ISO’s markets

RMR is used to procure resources to meet an unmet reliability need.

- ISO procurement authority is under the following situations
 - Capacity from specific unit is needed and unit is not contracted for RA
 - Unit is contracted as RA, but voltage support, black start or dual fuel capability services not provided
 - Unit may exercise market power
 - Protect availability of given unit that could be jeopardized or reduced without RMR agreement
- Designated RMR resources do not have an explicit MOO to offer into the ISO's markets

CPM is used as a last resort to ensure reliable operation of the grid.

- ISO procurement authority is under the following situations
 - RA showing deficiency for local, system or flexible capacity in year-ahead or month-ahead showings
 - Significant Event occurs on grid
 - Reliability or operational need for Exceptional Dispatch
 - Capacity needed for future year is at risk of retirement
- Designated CPM capacity has explicit MOO to offer its capacity into the ISO's markets

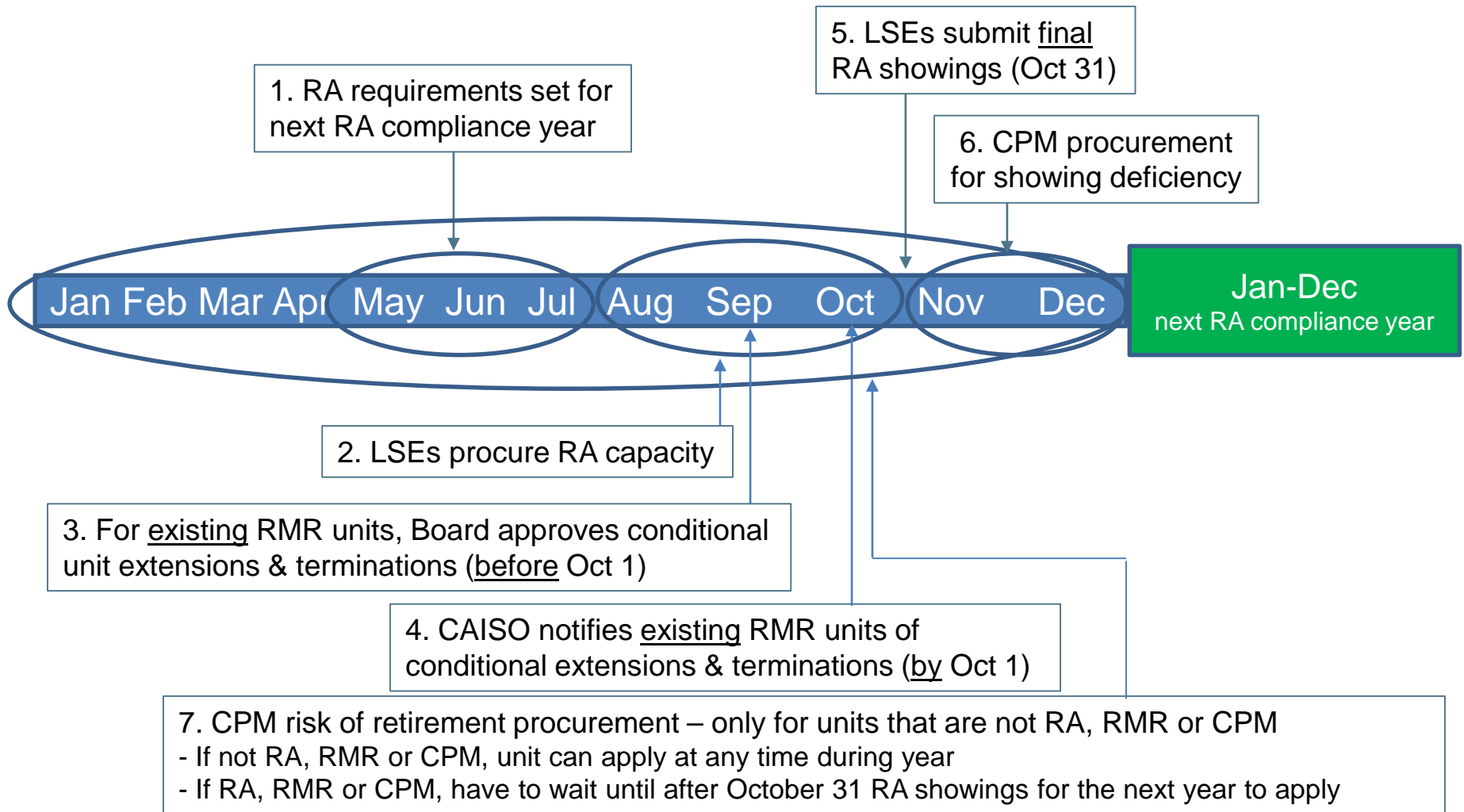
Summary of RA, RMR and CPM Characteristics

Process	Role	Use	Procured By	MOO
RA	Primary capacity	<ul style="list-style-type: none"> • System capacity • Local capacity • Flexible capacity 	LSEs	Yes
RMR	Unmet reliability need	<ul style="list-style-type: none"> • Capacity from specific unit is needed and unit is not contracted for RA • Unit is contracted as RA, but voltage support, black start or dual fuel capability services not provided • Unit may exercise market power • Protect availability of given unit that could be jeopardized or reduced without RMR agreement 	ISO	No
CPM	Last resort capacity	<ul style="list-style-type: none"> • RA showing deficiency for local, system or flexible capacity in year-ahead or month-ahead showings • Significant Event occurs on grid • Reliability or operational need for Exceptional Dispatch • Capacity needed for future year is at risk of retirement 	ISO	Yes

RA, RMR and CPM operate under different, but coordinated timelines.

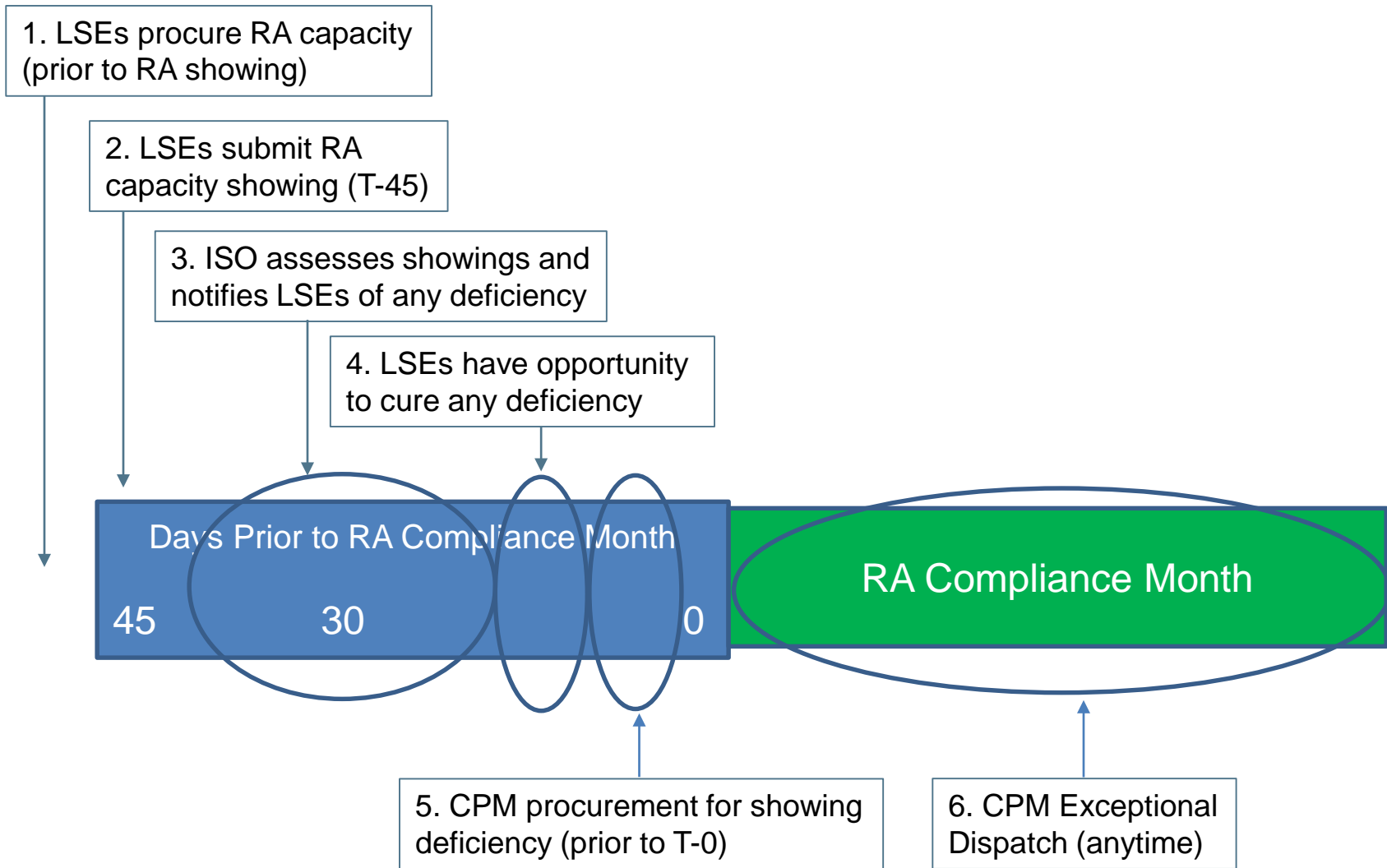
- RA program provides for both a year-ahead and month-ahead showings process where resources that have been procured are demonstrated
- New RMR procurement can occur at any time of the year, while renewals of existing RMR agreements must occur within a specific timeline
- CPM procurement can occur at any time in the year subject to triggering events
- The interplay of the timelines for these three items is shown in the next two slides

Year-Ahead Timeline



* RMR procurement of new RMR unit can occur at any time during year

Month-Ahead Timeline



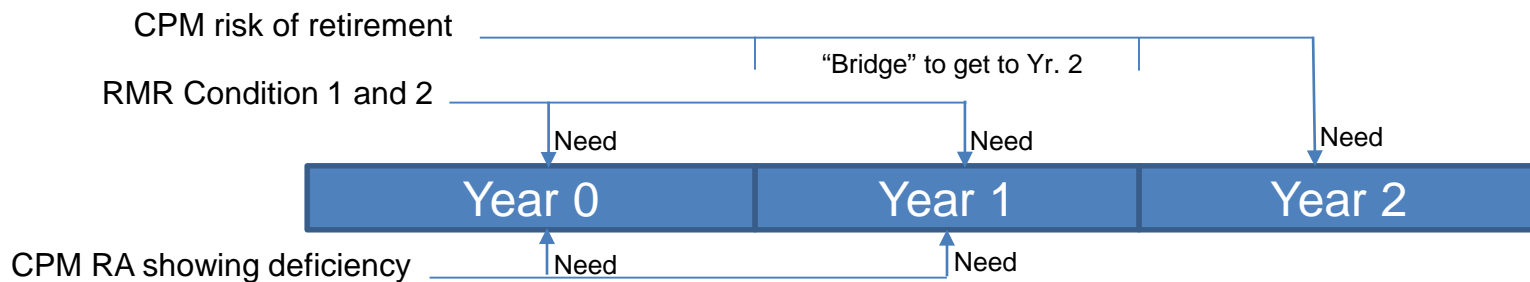
Summary of RA, RMR and CPM Attributes

Attribute	RA	RMR Condition 1 and 2	CPM RA Showing Deficiency	CPM Risk of Retirement
Reliability Need	System, local and flexible	Local	System, local and flexible	System, local and flexible
Timing of Need	Year-ahead and month-ahead	Near-term (year 0, year 1)	Near-term (year 0, year 1)	Longer term (year 2)
Timing of Procurement	Year-ahead and month-ahead	Any time of year	Year-ahead or month-ahead	Year-ahead
Application Process/Affidavit	N/A	No	N/A	Yes
MOO	Yes	No explicit MOO	Yes	Yes
Term of Procurement	Monthly, multiple-month, annual (negotiated)	Annual contract, with extension provisions	Annual or monthly, maximum of 12 months	Annual or monthly, maximum of 12 months
Compensation	Negotiated bilateral price	Cost-of-service pricing	Market pricing	Market pricing (proposed cost-of-service pricing)*
Compensation for Major Capital Additions	May be factored into agreed-upon price	Yes, and can be over several years	No	No
Acceptance of Procurement	Voluntary	Mandatory	Voluntary	Voluntary (proposed mandatory)*

* ISO filed a tariff amendment on January 12, 2018 to change the tariff to what is shown in parentheses.

RMR and CPM procurement have different timing of need requirements.

Type of Procurement	Near-Term Need (Year 0 – Year 1)	Long-Term Need (Year 2)
RMR Condition 1 and 2 procurement	Yes	No
CPM RA showing deficiency	Yes	No
CPM risk of retirement	No	Yes



STRAW PROPOSAL FOR PHASE 1 ITEM

Current RMR does not include a MOO because it was developed prior to development of the RA program.

- Given that LSE are now procuring RA for reliability needs and RMR must be used to retain capacity unmet through the RA program, it is appropriate to now update the RMR paradigm to include a MOO for energy and AS similar to RA and CPM MOO

The ISO proposes to make RMR Condition 1 and 2 units subject to a MOO for energy and AS.

- ISO will pay all fixed costs of a Condition 2 unit
- ISO will pay a fixed payment contribution to a Condition 1 unit based on a “net of market” analysis
- ISO will have ability to instruct a unit to not run, such as for reliability or environmental limitation or if unit would exceed its contract service limits
- Current RMR penalties in RMR agreement will be used to incent performance
 - RMR unit will be exempt from RAAIM performance penalties and bonuses

Condition 2 RMR units will have a MOO as described below.

- ISO will generate and submit cost-based energy bids using ISO-generated bid calculation the same way ISO does for RA units that have not submitted bids
- Bids will include
 - Start-up costs
 - Minimum load costs
 - Energy costs
- ISO will generate and submit AS bids at \$0/MW per hour price for all AS services for which unit is certified to provide
- As is case today, above-cost market revenues earned by Condition 2 unit will be “clawed” back from unit

Condition 1 RMR units will have a MOO as described below.

- Scheduling coordinator for RMR unit will submit energy and AS bids
- If energy and AS bids are not submitted up to full RMR contract capacity, ISO will generate and submit bids so unit has bids up to the full RMR contract capacity
- ISO will generate energy and AS bids the same way ISO generates energy and AS bids when RA unit fails to submit bids (and in same manner as ISO proposes above for Condition 2 RMR units)

POTENTIAL PHASE 2 ITEMS

The January 23 paper discusses 11 items that may be candidates for phase 2 of this initiative.

- Stakeholders are encouraged to
 - Comment on potential items identified by ISO
 - Identify additional items they believe should be considered and why they should be included
- Plan to take phase 2 items to ISO Board for approval in 2019 – goal is to implement in fall 2019 and have in effect for 2020
- Potential items are divided into
 - Combined RMR and CPM items
 - RMR items
 - CPM items

The ISO has identified four potential RMR and CPM items for phase 2.

1. Clarify when RMR is used versus CPM procurement - Some stakeholders are concerned that it currently may be unclear when ISO may use RMR procurement versus CPM procurement – ISO will consider process interplay between RMR and CPM to ensure that mechanisms work properly
2. Explore whether RMR and CPM can be merged - ISO would like to explore with stakeholders whether it is possible to integrate RMR and CPM into a single, cohesive ISO procurement mechanism (or merge certain aspects of each)

Four potential RMR and CPM items for phase 2 (continued)

3. Review allowed rate of return on capital for RMR and CPM - ISO would like to explore updating the number as some stakeholders have stated in response to RMR agreements effective for 2018 that the current fixed number is too high for today's conditions
4. Explore expanding RMR and CPM tariff authority - ISO would like to consider tariff bases for RMR and CPM to potentially expand ISO's authority to designate RMR and CPM resources to reliably operate the grid

The ISO has identified five potential RMR items for phase 2.

1. Consider whether both Condition 1 and Condition 2 Units are needed - Explore whether there should continue to be two options, or there should be only Condition 2 units going forward
2. Review cost allocation - Some stakeholders have suggested there may a better way to allocate RMR costs than current method – ISO is open to exploring
3. Streamline and automate RMR settlement process - Explore automating validation and invoicing processes so done within ISO's settlements system and timeline rather than done manually outside ISO's settlement system and on a different timeline

Five potential RMR items for phase 2 (continued)

1. Lower banking costs associated with RMR invoicing - Explore eliminating tariff requirement where ISO now must open new accounts for each RMR contract and in its place have ISO establish a bank trust account specific to administering RMR related transactions
2. Expand designation authority to include flexibility needs - Explore expanding ISO's authority to include RMR procurement to meet flexible capacity needs

The ISO has identified two potential CPM items for phase 2.

1. Align CPM tariff to RMR rules to allow recovery for needed capital additions - Explore treating recovery of needed capital additions, including costs for major maintenance, similar for both RMR and CPM
2. Review cost allocation – Explore changes to year-ahead CPM cost allocation for situations where there is load migration

NEXT STEPS

Next Steps

- Feb 20 - Stakeholders submit written comments by close of business
 - Use template provided on website at:
<http://www.caiso.com/Documents/CommentsTemplate-ReviewReliabilityMustRunandCapacityProcurementMechanism-issuepaperandstrawproposal.docx>
 - Submit to mailbox: initiativecomments@caiso.com
- Mar 13 - Post draft final proposal
- Mar 20 – Hold stakeholder meeting