



California ISO

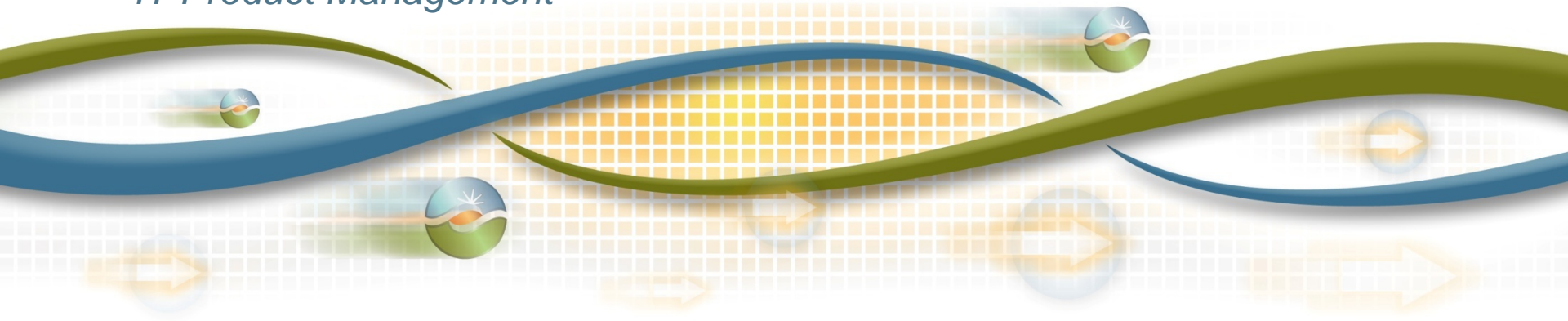
Reliability Requirements Customer Partnership Group

May 2017

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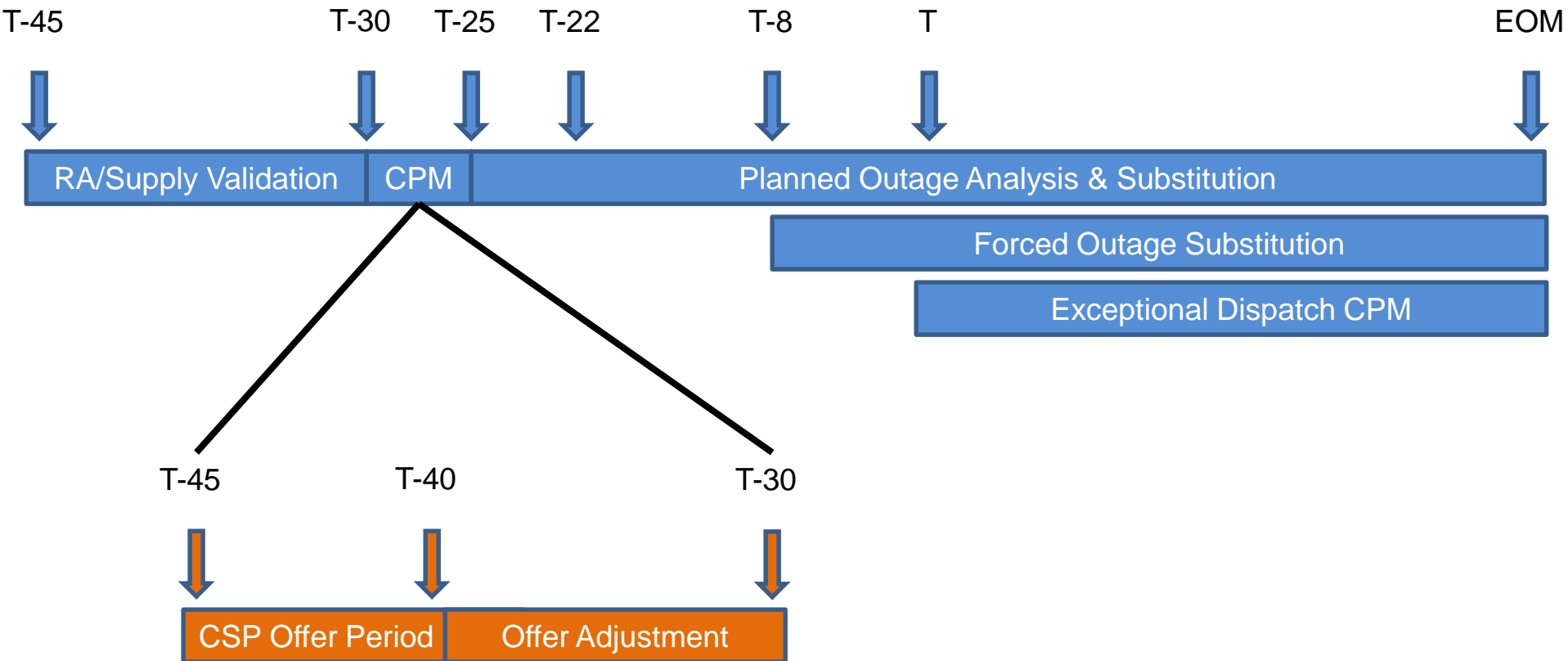


Agenda

- Resource Adequacy Timeline & Data
- RSI 1B design discussion
 - Planned Outage Substitution
 - Resource Adequacy Availability Incentive Mechanism (RAAIM) Pre-calculation Changes
 - Competitive Solicitation Process (CSP) Offer Publication to Open Access Same-time Information System (OASIS)
- Product Backlog

Resource Adequacy Timeline

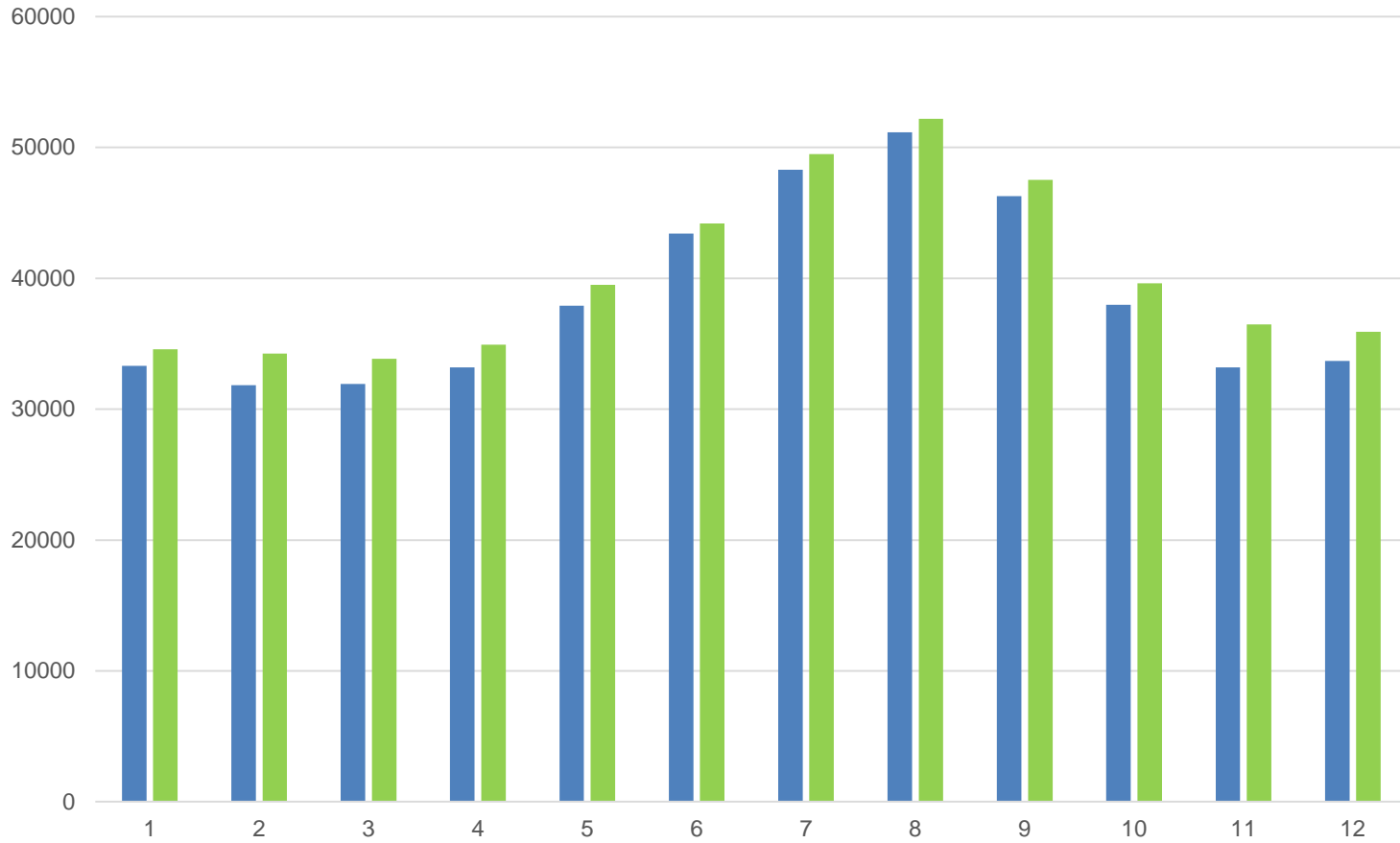
Resource Adequacy Timeline



Resource Adequacy Report for 2016 RA year

System Requirement and System RA

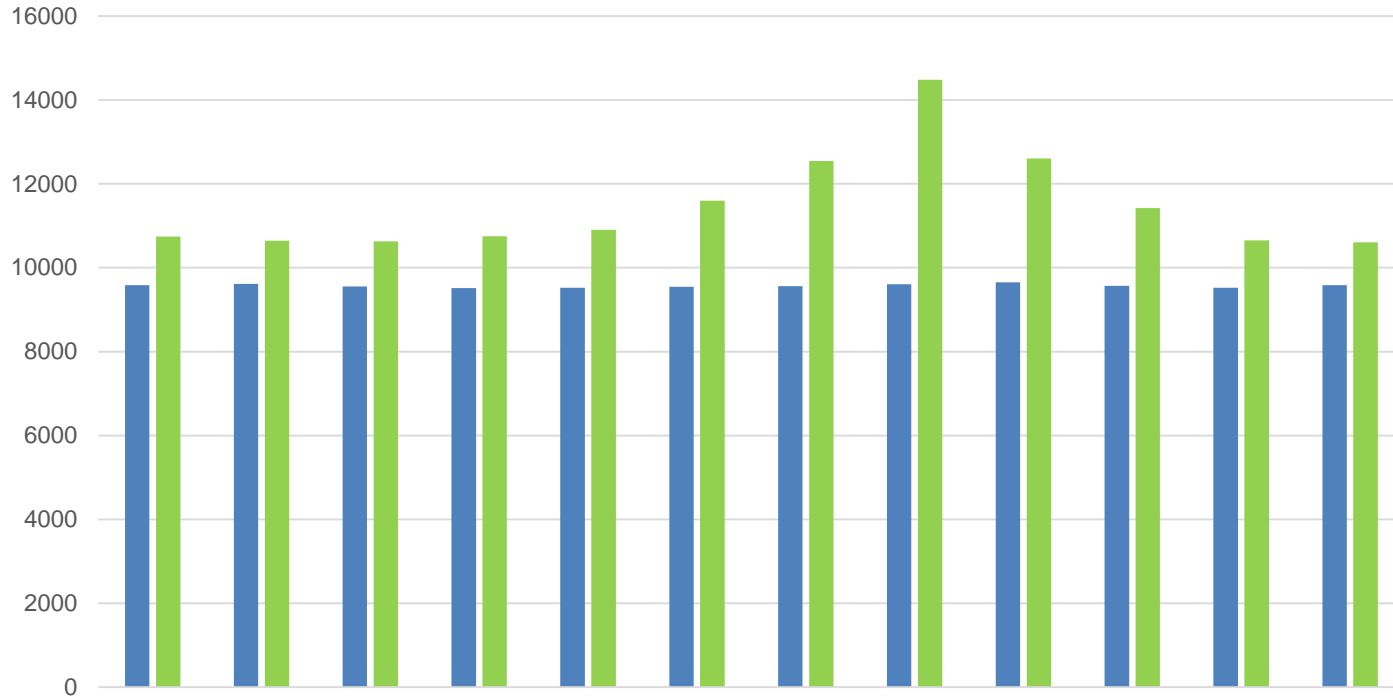
■ OBLIGATION ■ PLAN_RA



	1	2	3	4	5	6	7	8	9	10	11	12
■ OBLIGATION	33298	31839	31922	33194	37916	43414	48285	51149	46283	37987	33198	33682
■ PLAN_RA	34576	34244	33848	34920	39501	44199	49491	52182	47513	39609	36478	35920

SCE TAC Local requirement and Local RA

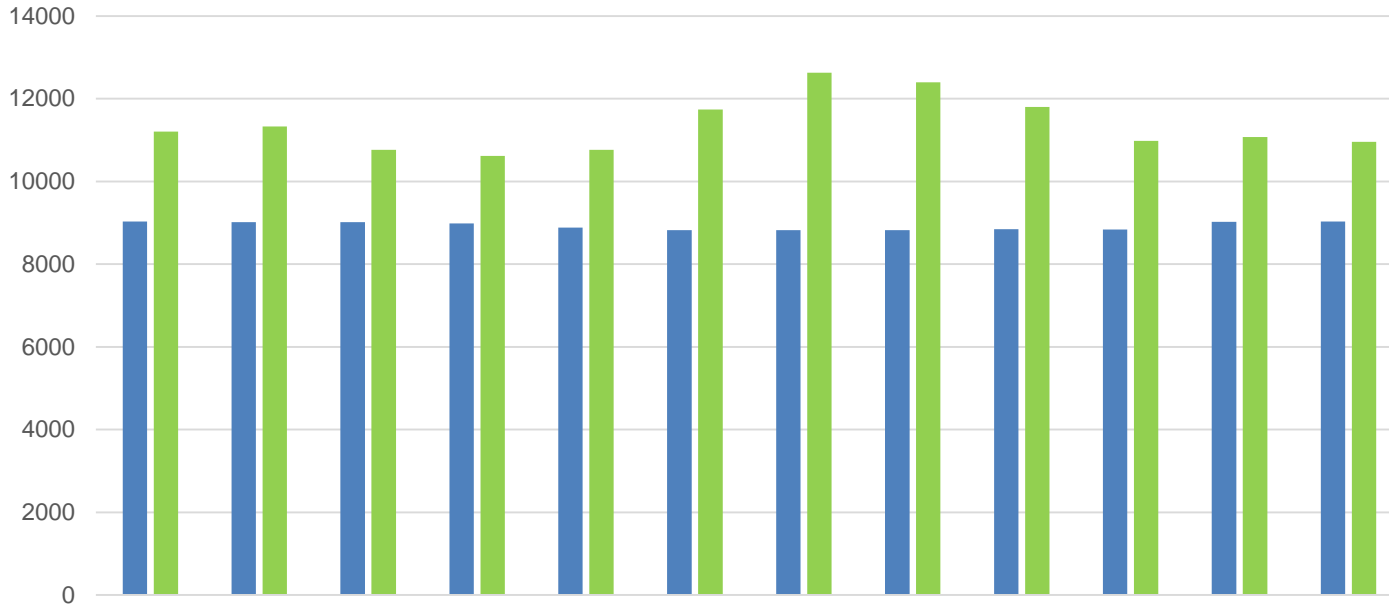
■ OBLIGATION ■ PLAN_RA



	1	2	3	4	5	6	7	8	9	10	11	12
■ OBLIGATION	9587	9616	9555	9517	9526	9549	9563	9604	9649	9572	9525	9580
■ PLAN_RA	10745	10644	10633	10752	10906	11602	12549	14483	12609	11423	10652	10606

PGE TAC Local requirement and Local RA

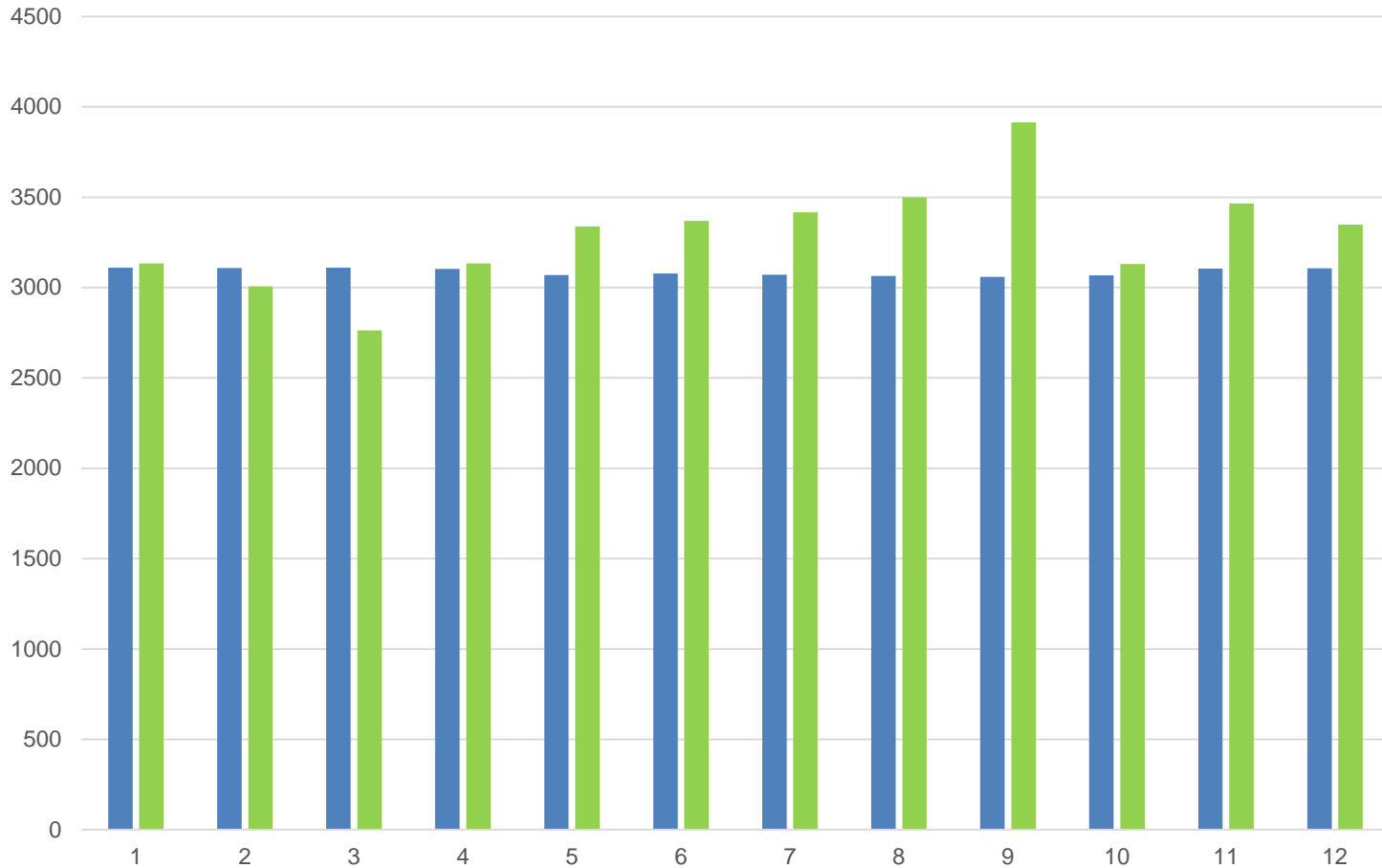
■ OBLIGATION ■ PLAN_RA



	1	2	3	4	5	6	7	8	9	10	11	12
■ OBLIGATION	9032	9015	9014	8990	8883	8826	8823	8826	8847	8842	9022	9031
■ PLAN_RA	11208	11332	10764	10622	10764	11743	12629	12396	11802	10985	11075	10961

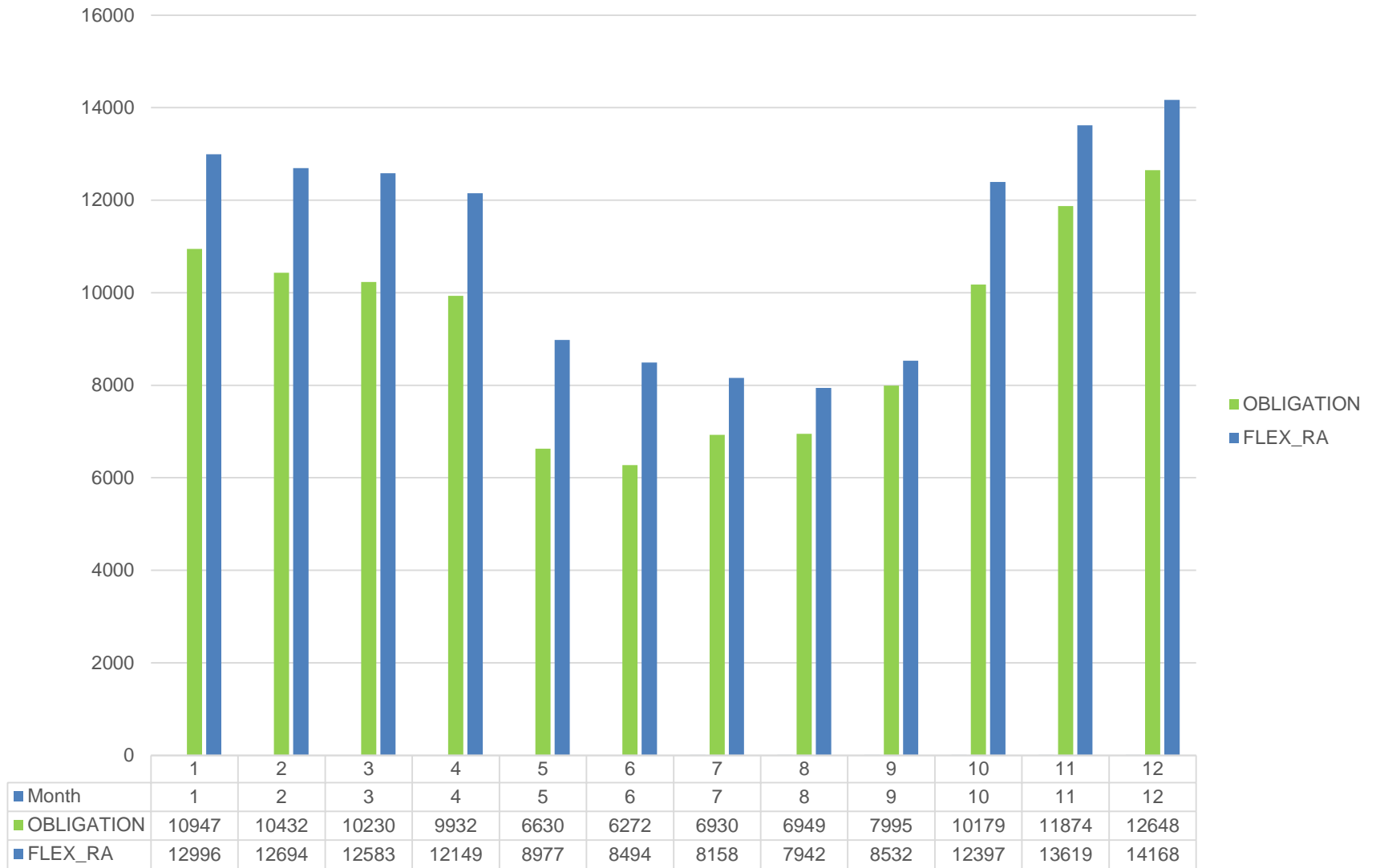
■ OBLIGATION ■ PLAN_RA

SDG TAC Local requirement and Local RA

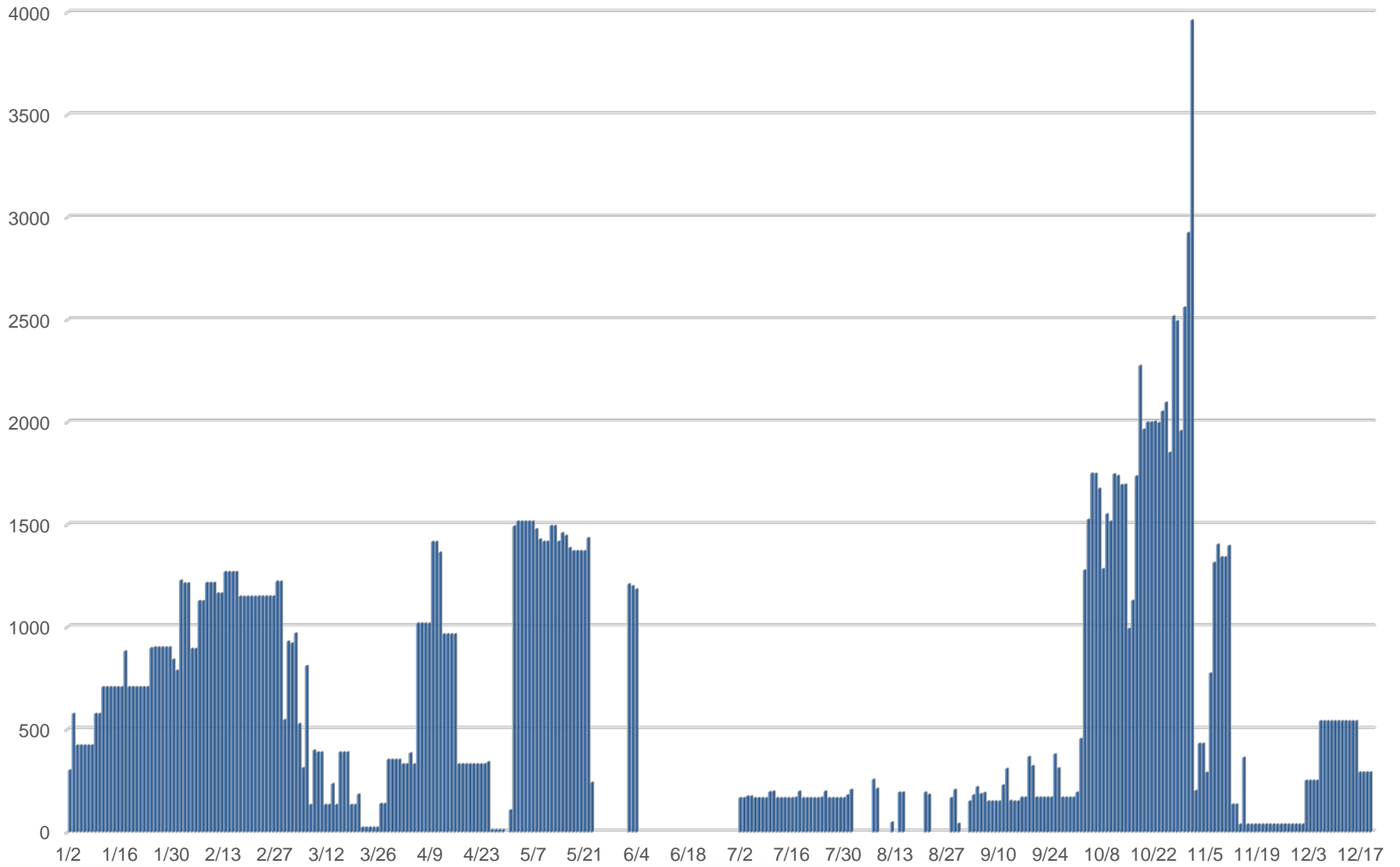


	1	2	3	4	5	6	7	8	9	10	11	12
■ OBLIGATION	3109	3109	3110	3103	3070	3077	3070	3065	3060	3068	3104	3107
■ PLAN_RA	3135	3008	2764	3134	3339	3369	3417	3500	3913	3130	3466	3348

Flex Obligation and Flex RA



Replacement RA Capacity



RSI 1B design discussion: Planned Outage Substitution

Planned Outage Substitution User Interface (UI)

1. Submit substitution

- Select Planned outage
- View POSO MW as either:
 - Initial POSO (first POSO analysis)
 - Latest POSO (most up-to-date POSO analysis)
- Search substitute resources and enter substitute MW
 - Substitute RA MW and CPM substitute MW

User Interface – Planned Outage Substitution (Create)

Outage Resource Selection

Trade Month: Trade Year: Outage ID:

Resource ID: Supplier SC:

[Review POSO Substitution](#)

POSO Calculation Type: Latest Initial POSO

Link to Search Planned Substitution Request Report

Outage Information

Select Outage	Res ID	Res Name	Outage ID	Outage Start	Outage End	Nature of Work	Opportunity Fla	Area	SCID
<input type="radio"/>	Res A	Res Unit A	123546	3/13/2018	5/14/2018	ICCP	Short Notice Opportunity		SC1
<input type="radio"/>	Res A	Res Unit A	123549	5/1/2018	7/10/2018	RTU/RIG			SC1

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Only physical generator units located within the CISO BAA may participate in **Planned Outage Substitution Obligation (POSO)**; also, Planned Substitutions only apply to Generic RA.

Supplier SC of the resource in outage may view the **Initial POSO** MW values calculated (at or around T-25) OR the **Latest POSO** MW (last calculated by CIRA).

Planned Substitute Resource Selection

Resource ID: SCID: Area:

Non-RA Capacity Only Third Party Resources Only

Sub Start Date: Sub End Date:

[Link to Generic RA Information pop-up](#)

SCID	RES ID	RES NAME	RA Info	Outage ID	Area	Select
PBS1	CAISO 123	CAISO Unit 123	RA Info	456789	Bay Area	Add
PBS1	CAISO 124	CAISO Unit 124	RA Info	456790	Bay Area	Add
PBS4	CAISO 125	CAISO Unit 125	RA Info	456791	Fresno	Add

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Start DTS	End DTS	NQC	RA MW	CPM MW
5/1/2018	5/5/2018	25	0	30
5/6/2018	5/15/2018	25	15	9
5/16/2018	5/31/2018	20	0	10

In *Substitute Resource Selection* display, Supplier SC may **select start and end dates for the planned substitution request** (which must be within the outage period AND RA Month).

Substitution dates may not span month boundaries.

User Interface – Planned Outage Substitution (Create)

Substitute MW						
Day	13	14	15	16	17	18
Resource on Outage: RES_A Outage SCID = SC1						
RA MW	15	20	20	20	20	20
CPM MW	0	5	0	0	0	5
POSO MW	10	15	15	15	15	15
Total Cumulative Sub Cap	10	15	10	20	25	25
CAISO_124 Remove Resource						
Availability MW	35	35	35	45	45	50
Eligible Non-RA Capacity	25	25	25	35	35	40
Substitute MW	5	5	5	10	10	10
CPM Substitute MW	0	0	0	0	5	5
CAISO_567 3rd party Email*, Phone*, Name* Remove Resource						
Availability MW	30	30	30	30	45	50
Eligible Non-RA Capacity	25	25	25	25	40	45
Substitute MW	5	5	5	10	10	10
CPM Substitute MW	0	5	0	0	0	0

Submitter Information			
Name	<input type="text"/>	Email	<input type="text"/>
Phone	<input type="text"/>	Notes	<input type="text"/>
<input type="button" value="Submit"/>			

DAY: 18

∑ Substitute MW = 20 MW <= RA MW
 ∑ CPM Substitute MW = 5 MW <= CPM MW

Status: VALID

Total Substitute MW = 20 + 5 = 25 MW

RES A (SC1)	Old	New
POSO MW	15 MW	0 MW
RA MW	20 MW	0 MW
CPM MW	5 MW	0 MW

CAISO_124 (SC1) Old	New
POSO MW	0 MW
RA MW	5 MW
CPM MW	1 MW

CAISO_567 (SC2) Old	New
POSO MW	0 MW
RA MW	2 MW
CPM MW	5 MW

** CAISO_124 approved prior to CAISO_567*

Submission Validations:

- ∑ Substitute MW <= Original Resource Non-CPM RA MW ("RA MW")
- ∑ CPM Substitute MW <= Original Resource CPM MW ("CPM MW")

Where:

- Total RA MW = RA MW + CPM MW, and
- Total Substitute MW = Substitute MW + CPM Substitute

For Substitute Resource with same SCID as Original Resource:

- Substitution requests auto-approve once successfully validated

For Third Party Substitute Resources:

- Third Party SC contact information required for request submission
- Substitution requests require approval from Third Party SC

Planned Outage Substitution User Interface (UI)

2. Review substitution

- Review, Cancel (update), Approve/Reject third party substitution
- Allows for substitution cancellation prior to substitution start
- Third Party SC may Approve/Reject substitution

User Interface – Planned Outage Substitution (Review)

Search Substitution Request

Substitution ID Original Resource ID Sub Resource ID Outage ID

Trade Month Trade Year Pending Third Party

Fields are only viewable by Supplier SC and ISO Users					Fields are viewable by Supplier SC, Third Party SC, and ISO Users						
Select	Outage ID	Outage Start Date	Outage End Date	Nature of Work	Sub ID	Orig SCID	Original Res ID	Original Res Name	Sub SCID	Sub Res ID	Description
<input checked="" type="checkbox"/>	12345	12/1/2016	12/19/2016	Planned Maint...	654321	SCID 1	CAISO_GEN 1	ISO Gen Unit 1	SCID 1	SUB_GEN 1	Test 1-2-3
<input type="checkbox"/>	12345	12/1/2016	12/19/2016	Planned Maint...	654322	SCID 1	CAISO_GEN 1	ISO Gen Unit 1	SCID 2	SUB_GEN 2	Test 1-2-3
<input type="checkbox"/>	12345	12/20/2016	12/31/2016	Planned Maint...	654323	SCID 1	CAISO_GEN 1	ISO Gen Unit 1	SCID 1	SUB_GEN 3	Test 1-2-3
<input type="checkbox"/>	12346	12/1/2016	12/15/2016	Planned Maint...	654324	SCID 1	CAISO_GEN 1	ISO Gen Unit 1	SCID 2	SUB_GEN 4	Test 1-2-3
<input type="checkbox"/>	12347	12/16/2016	12/31/2016	Planned Maint...	654325	SCID 1	CAISO_GEN 1	ISO Gen Unit 1	SCID 2	SUB_GEN 5	Test 1-2-3

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States for Planned Substitutions are defined *only at the substitution resource level*. Possible states are APPROVED, PENDING, REJECTED, and CANCELLED.

View Substitution Request

Outage ID: 12345 | Resource on Outage: CAISO_GEN 1 | Outage SCID: SCID 1

Day	12/01	12/02	–	12/19
POSO MW	20	20	–	20
Total Substitution MW	20	18	–	17

SUB_GEN 1 | SCID 1 | GENERIC | CANCELLED

	10	10	–	
Substitute MW	10	10	–	
CPM Substitute MW	0	0	–	

SUB_GEN 2 | SCID 2 | GENERIC | CANCELLED

	10	8	–	
Substitute MW	10	8	–	
CPM Substitute MW	0	0	–	

TASK: Planned Outage Substitution Request is **Cancelled** by Supplier SC

STEPS:

- Supplier SC (“SCID 1”) submits substitution request #654321
- Prior to the market timeline passing the substitution’s start date, SCID 1 invokes the CANCEL REQUEST function.

OUTCOMES:

- All APPROVED and PENDING substitution resources enter CANCELLED status
- Pending successful validation, any RA and POSO Transfers from previously APPROVED substitutions are revoked from the substitute resources and returned to the Original Resource (e.g. “CAISO_GEN_1”).

Planned Outage Substitution UI

3. Release substitution

- Substitution may be released if original resource outage ends early
- Release rules similar to forced outage substitution release functionality
- Initiated by either Original or Substitute (Third Party) SC

User Interface – Outage Substitution (Release)

Release Planned/Forced Substitution Resources

Outage ID Substitution Req ID Sub Resource ID Substitution Type

 Outage Type Resource ID Substitution Start Date Substitution End Date

VIEW requires at least one of the following fields to be defined before providing results:

- Outage ID
- Original Resource ID (e.g. not Substitution Resource)
- Substitution Request ID

May 2017

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

May 2017

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Release display location is the same for both Planned and Forced Substitutions (select by new OUTAGE TYPE field). *Display functions for both Generic and Flex RA.*

* Substitution must commence prior to requesting a release.

Planned/Forced Substitution Release Requests

Only Original SC/ISO View Fields are viewable by Supplier SC , Third Party SC (related substitute resources only), and ISO Users

Outage ID	Outage Type	Substitution ID	Original Resource ID	Original SC ID	Original SC Approval	Substitution Resource ID	Substitution SC ID	Substitution SC Approval	Release Date	Comments	Sub Start Date	Sub End Date	RA Type
123	Planned	4444	RES_A	SC1	APPROVE	RES_111	SC2	.SELECT.	5/15/2018	Early outage end	5/1/2017 00:00:00	5/31/2017 23:59:59	GENERIC
123	Planned	4444	RES_A	SC1	APPROVE	RES_222	SC1	APPROVE	5/15/2018	Approved for release	5/1/2017 00:00:00	5/31/2017 23:59:59	GENERIC
123	Planned	4444	RES_A	SC1	APPROVE	RES_333	SC2	.SELECT.	5/15/2018	Approval is pending 3rd Party SC response	5/1/2017 00:00:00	5/20/2017 23:59:59	GENERIC
111	Forced	8888	RES_B	SC1	.SELECT.	RES_222	SC1	.SELECT.			5/5/2017 00:00:00	5/31/2017 23:59:59	FLEX
222	Forced	9999	RES_C	SC1	.SELECT.	RES_444	SC1	.SELECT.			5/1/2017 00:00:00	5/31/2017 23:59:59	GENERIC
333	Planned	1010	RES_D	SC1	.SELECT.	RES_555	SC3	APPROVE	5/14/2018	early release for RES_555	5/5/2017 00:00:00	5/10/2017 23:59:59	FLEX

<< Prev 1 2 3 4 5 6 7 8 9 10 Next >>

Access: Only Original Resource SC shall access outage information. Both Original and Substitution Resource SCs shall access their own resource's substitution information.

Release Request: Initiated when APPROVED is selected by either the Original Resource SC or, if applicable, the Third Party SC. Requests are submitted at the substitution resource level.

Approval of Release Request: The non-initiating party receives an email notification of the request, and may respond with "APPROVED" to execute substitution release beginning on Release Date. Otherwise, no action is needed and the substitution continues until completed. Approvals will be automatic if the SC for both the Original and Substitute Resources are the same.

Validations: CIRA confirms (1) the market timeline has not passed the requested Release Date and (2) the Original Resource currently has available capacity to receive the returned RA MW substitutions for the release date(s).

User Interface – Outage Substitution (Release)

Release Planned/Forced Substitution Resources

Outage ID Substitution Req ID Sub Resource ID Substitution Type

Outage Type Resource ID Substitution Start Date Substitution End Date

* Substitution must commence prior to requesting a release.

Planned/Forced Substitution Release Requests

Only Original SC/ISO View **Fields are viewable by Supplier SC, Third Party SC (related substitute resources only), and ISO Users**

Outage ID	Outage Type	Substitution ID	Original Resource ID	Original SC ID	Original SC Approval	Substitution Resource ID	Substitution SC ID	Substitution SC Approval	Release Date	Comments	Sub Start Date	Sub End Date	RA Type
123	Planned	4444	RES_A	SC1	APPROVE	RES_111	SC2	.SELECT.	5/15/2018	Early outage end	5/1/2017 00:00:00	5/31/2017 23:59:59	GENERIC
123	Planned	4444	RES_A	SC1	APPROVE	RES_222	SC1	APPROVE	5/15/2018	Approved for release	5/1/2017 00:00:00	5/31/2017 23:59:59	GENERIC
123	Planned	4444	RES_A	SC1	APPROVE	RES_333	SC2	.SELECT.	5/15/2018	Approval is pending 3rd Party SC response	5/1/2017 00:00:00	5/20/2017 23:59:59	GENERIC
111	Forced	8888	RES_B	SC1	.SELECT.	RES_222	SC1	.SELECT.			5/5/2017 00:00:00	5/31/2017 23:59:59	FLEX
222	Forced	9999	RES_C	SC1	.SELECT.	RES_444	SC1	.SELECT.			5/1/2017 00:00:00	5/31/2017 23:59:59	GENERIC
333	Planned	1010	RES_D	SC1	.SELECT.	RES_555	SC3	APPROVE	5/14/2018	early release for RES_555	5/5/2017 00:00:00	5/10/2017 23:59:59	FLEX

<< Prev 1 2 3 4 5 6 7 8 9 10 Next >>

10
50
100

TASK: Third Party SC Initiates Release Request

ACTIONS:

- For the Sub #1010/RES_555 record in the Release display, Third Party SC (“SC3”) performs the following:
 - defines target Release Date (“5/14/2018”)
 - selects “APPROVE” in its approval field
- SC3 then clicks on the SAVE button
- SC1 receives release request notification for Sub ID #1010/RES_555

OUTCOMES:

- SC1 receives email notification regarding substitution release request for RES D
 - If SC1 ultimately approves, release is APPROVED once validations are passed
 - If SC1 ultimately disregards, substitution is not released

RA Substitution Transfer Business Rules

CIRA shall allow resources on outage to transfer RA MW based on the following general rules:

- Planned Substitution's shall prioritize the transfer of the Original Resource's System RA before Local RA
- All RA MW transfers to substitute resources shall convert to System RA
- CPM Substitution RA transfers shall be handled separately from the Local and System RA transfers

In the RA MW transfer business rules below, "R1" is considered the original/requesting resource and "R2" is the receiving substitute resource. *Planned substitution transfers are applied at the substitute resource level.*

RA MW Transfer Business Rules:

If CPM Substitute MW > 0,

- Reduce R1 **CPM** requirement by Min (Current R1 CPM MW, CPM Substitute MW)
- Increase R2 **CPM** requirement by same MW amount as reduction.

If Substitute MW > 0,

- Reduce R1 **System RA** by Min (Current R1 System RA MW, Substitute MW)
- Increase R2 **System RA** by same MW amount as reduction.

If Substitute MW – R1 System RA > 0,

- Reduce R1 **Local RA** by Min (Current Local RA MW, Substitute MW – R1 System RA MW)
- Increase R2 **System RA** by same MW amount as reduction.

In instances when substitution's are cancelled/released, previously transferred MWs will return to the original resource exactly as they were provided.

RA and POSO Substitution Transfer Business Rules

CIRA shall determine the current POSO for the outage resource based on the following inputs:

- Existing POSO on the original resource (“R1”)
- MW Curtailment changes in the substitution’s underlying outage
- Total RA Substitution, which is the sum of the Substitute MW + CPM Substitute MW
- Remaining approved POSO assignments (for cancel and release events)

In the POSO MW update business rules below, “R1” is considered the resource on outage.

POSO MW Update Business Rules:

- Reduce R1 POSO by $\min(\text{Current POSO value}, \text{Total Approved Substitute MW})$, *where Total Substitute MW = Substitute MW + CPM Substitute MW*

When substitutions are either **cancelled or released**, the returned obligation may be a different value from the initial transfer as an outage’s MW impact on RA can change over time (see examples).

- Increase R1 POSO MW = Current R1 POSO + Min (Substitution’s R1 Transfer reduction amount, Current Total Outage Impact MW - \sum Approved POSO Reductions for remaining substitutions)

RA and POSO Transfer Examples: 1 of 4

Example 1: POSO Substitution from System RA Only

“R1” is considered the original/requesting resource and “R2” is the receiving or substitute resource.

Per Supply Plan submitted prior to T-45, initial resource RA requirements are as follows:

- R1 Local RA = 10 MW; System RA = 10 MW
- R2 Local RA = 2 MW; System RA = 2 MW

Prior to T-25, where T is the start of the planned substitution, the R1 SC submits outage #123 which has a 20 MW Curtailment and results in an RA outage impact (or POSO) of 10 MW.

@T-20, SC of R1 requests a planned substitution with **Substitute MW = 10 MW**. Substitution is auto-approved.

Original Resource (“R1”) RA Assignments (Pmax = 30 MW; NQC = 25 MW)

Date	Local RA	System RA	L+S RA	CPM	POSO
T-25	10	10	20	0	N/A
T-20	10	0	10	0	10 → 0

@T-20, substitution is approved and R1 reduces its POSO and System RA by 10 MW. POSO = 0 MW.

Substitute Resource (“R2”) RA Assignments (Pmax = 20 MW; NQC = 18 MW)

Date	Local RA	System RA	L+S RA	CPM
T-25	2	2	4	0
T-20	2	12	14	0

@T-20, substitution is approved and R2 increases its System RA by 10 MW.

RA and POSO Transfer Examples: 2 of 4

Example 2: POSO Substitution from System RA and Local RA

“R1” is considered the original/requesting resource and “R2” is the receiving or substitute resource.

Per Supply Plan submitted prior to T-45, initial resource RA requirements are as follows:

- R1 Local RA = 10 MW; System RA = 7 MW
- R2 Local RA = 2 MW; System RA = 2 MW

Prior to T-25, where T is the start of the planned substitution, the R1 SC submits outage #123 which has a 23 MW Curtailment and results in an RA outage impact (or POSO) of 10 MW.

@T-20, SC of R1 requests a planned substitution with **Substitute MW = 10 MW**. Substitution is auto-approved.

@T-20, substitution is approved and R1 reduces its POSO by 10 MW, System RA by 7 MW, and Local RA by the remaining 3 MW. *POSO is now 0 MW.*

@T-20, substitution is approved and R2 increases its System RA by 10 MW.

Original Resource (“R1”) RA Assignments ($P_{max} = 30$ MW; $NQC = 25$ MW)

Date	Local RA	System RA	L+S RA	CPM	POSO
T-25	10	7	17	0	N/A
T-20	7	0	7	0	10 → 0

Substitute Resource (“R2”) RA Assignments ($P_{max} = 20$ MW; $NQC = 18$ MW)

Date	Local RA	System RA	L+S RA	CPM
T-25	2	2	4	0
T-20	2	12	14	0

RA and POSO Transfer Examples: 3 of 4

Example 3: POSO Substitution includes Third Party SC with Approval

"R1" is considered the original/requesting resource; "R2" and "R3" are the receiving or substitute resources (R3 is Third Party SC).

Per Supply Plan submitted prior to T-45, initial resource RA requirements are as follows:

- R1 Local RA = 10 MW; System RA = 5 MW
- R2 Local RA = 2 MW; System RA = 2 MW
- R3 Local RA = 0 MW; System RA = 0 MW

@ T-12, R1 receives 1 MW of CPM requirement.

@ T-11, R1 SC submits outage #123 which has a 23 MW Curtailment and results in an RA outage impact (or POSO) of 10 MW.

@ T-11, R1 SC submits planned substitution #111 for R2 with **Substitute MW = 6 MW** and **CPM Substitute MW = 1 MW**. R2 auto-approves.

@ T-11, R1 SC planned substitution #111 also requests R3 with **Substitute MW = 2 MW**. R3 substitution is set to pending status.

@ T-9, R3 SC approves substitution request

@T-12, R1 receives 1 MW of CPM. POSO = 10 MW.

@T-11, R1 reduces System RA by 5 MW, Local RA by 1 MW, and CPM by 1 MW. POSO = 3 MW

@T-9, R1 reduces Local RA by 2 MW. POSO reduces to 1 MW

@T-11, R2 increases System RA by 6 MW and CPM by 1 MW.

@T-11, R3 SC receives substitution request notification

@T-9, R3 increases System RA by 2 MW.

Original Resource ("R1") RA Assignments ($P_{max} = 30$ MW; $NQC = 25$ MW)

Date	Local RA	System RA	L+S RA	CPM	POSO
T-25	10	5	15	0	N/A
T-12	10	5	15	1	N/A
T-11	9	0	9	0	10 → 3
T-9	7	0	7	0	3 → 1

Substitute Resource ("R2") RA Assignments

Date	Local RA	System RA	L+S RA	CPM
T-25	2	2	4	0
T-11	2	9	11	1

Third Party SC Substitute Resource ("R3") RA Assignments

Date	Local RA	System RA	L+S RA	CPM
T-25	0	0	0	0
T-11	0	0	0	0
T-9	0	2	2	0

RA and POSO Transfer Examples: 4 of 4

Example 4: Outage is “Improved” and POSO Substitution is Cancelled

Per Supply Plan submitted prior to T-45, initial resource RA requirements are as follows:

- R1 Local RA = 5 MW; System RA = 5 MW
- R2 Local RA = 2 MW; System RA = 2 MW
- R3 Local RA = 0 MW; System RA = 0 MW

@ T-20, R1 SC submits Outage #123 which has a 23 MW Curtailment and results in POSO of 10 MW.

@ T-20, R1 submits planned substitution #111 for R2 with **Substitute MW = 7 MW**. R2 substitution auto-approves and R1 POSO reduces to 3 MW.

@ T-15, R1 submits planned substitution #222 for R3 with **Substitution MW = 3 MW**. R3 receives and approves request. R1 POSO = 0 MW.

@ T-14, Outage #123 MW Curtailment reduced by 4 MW. Outage #123's R1 impact MW would now have been 6 MW.

@ T-9, R1 SC cancels Substitution #111. R1's POSO amount does not revert to its prior 7 MW reduction from #111, but instead R1 POSO = 3 MW.

Recall, upon cancellation/release of substitution, POSO transfers are as follows:

- R1 POSO = Current R1 POSO + Min (Substitution's R1 Transfer reduction amount, Total R1 Outage Impact MW - \sum Approved POSO Reduction amount for remaining substitutions)

$$= 0 \text{ MW} + \text{Min} (7 , 6 - 3) = 3 \text{ MW}$$

@T-20, Sub #111: R1 reduces System RA by 5 MW, Local RA by 2 MW. POSO = 3 MW

@T-15, Sub #222: R1 reduces Local RA by 3 MW. POSO = 0 MW

@T-14, Outage #123 MW Curtailment reduces by 4 MW. No changes to R1's POSO.

@T-9, Sub #111 cancelled. System RA increases 5 MW, Local RA MW increases 2 MW.
R1 POSO = 0 MW + Min (7 , 6 - 3) = 3 MW

@T-20, R2 increases System RA by 7 MW.

@T-9, Sub #111 cancels. R2 decreases System RA by 7 MW.

@T-15, R3 increases System RA by 3 MW.

@T-9, R3 has no changes.

Original Resource ("R1") RA Assignments ($P_{max} = 30 \text{ MW}$; $NQC = 25 \text{ MW}$)					
Date	Local RA	System RA	L+S RA	CPM	POSO
T-25	5	5	10	0	N/A
T-20	3	0	3	0	10 → 3
T-15	0	0	0	0	3 → 0
T-14	0	0	0	0	0
T-9	2	5	7	0	0 → 3

Substitute Resource ("R2") RA Assignments

Date	Local RA	System RA	L+S RA	CPM
T-25	2	2	4	0
T-20	2	9	11	0
T-9	2	2	4	0

Third Party SC Substitute Resource ("R3") RA Assignments

Date	Local RA	System RA	L+S RA	CPM
T-25	0	0	0	0
T-15	0	3	3	0
T-9	0	3	3	0

RSI 1B design discussion: RAAIM Pre-calculation Changes

User Interface for RAIM Pre-Calculation

RAAIM Calculations Details

Run ID	<input type="text"/>	Resource ID	<input type="text"/>	Market Timeframe	<input type="button" value="DAM"/> <input checked="" type="button" value="RTM"/>
Date From	<input type="text" value="4/26/2018"/>	Date To	<input type="text" value="4/26/2018"/>		

Resource	Outage Info	Run	Market	Date	Pre-Calc Values	HE01	HE02	HE03	HE04	HE05	HE06	HE07	HE08	...	HE23	HE24
RES A	View Outages	123012031	RTM	4/26/2018	Gen Exempt	100.02	100.02	100.02	100	100.02	100.02	100.02	100.02		100.02	100.02
RES A	View Outages	123012031	RTM	4/26/2018	Flex Exempt	120.56	120.56	120.56	121	120.56	120.56	120.56	120.56		120.56	120.56
RES A	View Outages	123012031	RTM	4/26/2018	Use Limit	0	0	0	0	0	0	0	0		0	0
RES A	View Outages	123012031	RTM	4/26/2018	Gen RA	50	50	50	50	50	50	50	50		50	50
RES A	View Outages	123012031	RTM	4/26/2018	Gen CPM RA	0	0	0	0	0	0	0	0		0	0
RES A	View Outages	123012031	RTM	4/26/2018	Flex RA	0	0	0	0	0	0	0	0		0	0
RES A	View Outages	123012031	RTM	4/26/2018	Flex CPM RA	0	0	0	0	0	0	0	0		0	0

Changes are:

- Exempt MW split to Gen & Flex Exempt
- Removed Non- Use Limit MW

RAAIM Pre-Calculation Changes

- CIRA will compute Generic & Flex Exempt Curtailment MW per resource per hour
 - Exemptions based on:
 - Qualifying Nature of Work (NOW)
 - Opportunity Flag (Short Notice/ Off Peak)
 - Overrides/ Corrections
 - All planned outages except POSO assignments for POSO assigned outages (for Generic only)

RSI 1B design discussion:

CSP Offer Publication to Open Access Same-time Information System (OASIS)

CSP Offers to OASIS

- Accessible from the current “PUBLIC BIDS” tab
- User selects ‘Offer Period type’ & provides a date for month and/or year
- Latest offers visible is 15 months old
- There is no output on the UI. The results can be downloaded to .csv or .xml

User Interface CSP Offers to OASIS

Input:

Competitive Solicitation Process Offer

Date Offer Period

Output:

1	STARTTIME	ENDTIME	OFFERPERIODSTARTTIME	OFFERPERIODENDTIME	REGISTEREDRESOURCE	RESOURCEADEQUACYPERIODTYPE	XAXISDATA	Y1AXISDATA	FLEXIBLECATEGORY	SCHEDULETYPE	AREA	GENERATIONTYPE
2	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	1	FLEXIBLE	TAC	WIND
3	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	MONTHLY	99.99	20	1	GENERIC	TAC	SOLAR
4	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	INTRAMONTHLY	99.99	20	1	FLEXIBLE	TAC	HYDRO
5	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	1	GENERIC	TAC	GAS
6	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	MONTHLY	99.99	20	1	FLEXIBLE	TAC	WIND
7	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	INTRAMONTHLY	99.99	20	1	GENERIC	TAC	SOLAR
8	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	1	FLEXIBLE	TAC	HYDRO
9	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	MONTHLY	99.99	20	2	GENERIC	TAC	GAS
10	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	INTRAMONTHLY	99.99	20	2	FLEXIBLE	TAC	WIND
11	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	2	GENERIC	TAC	SOLAR
12	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	MONTHLY	99.99	20	3	FLEXIBLE	TAC	HYDRO
13	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	INTRAMONTHLY	99.99	20	3	GENERIC	TAC	GAS
14	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	3	FLEXIBLE	TAC	WIND
15	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	MONTHLY	99.99	20	1	GENERIC	TAC	SOLAR
16	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	INTRAMONTHLY	99.99	20	2	FLEXIBLE	TAC	HYDRO
17	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	3	GENERIC	TAC	GAS
18	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	MONTHLY	99.99	20	3	FLEXIBLE	TAC	WIND
19	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	INTRAMONTHLY	99.99	20	2	GENERIC	TAC	SOLAR
20	2017-01-28T09:00:00	2017-01-28T10:00:00	2017-01-28T17:00:00-00:00:00	2017-01-28T18:00:00-00:00:00	23456789	ANNUAL	99.99	20	1	FLEXIBLE	TAC	HYDRO

CSP Offer Data Elements

Output Data Element Name on Report	Data Element Field or Calculation / Mapping
STARTTIME	'Start of Month' for which the offer data is applicable.
ENDTIME	'End of Month' for which the offer data is applicable.
OFFERPERIODSTARTTIME	For 'Annual' Period type, this will be the first month; for Monthly and Intra-monthly, this will match the STARTTIME.
OFFERPERIODENDTIME	For 'Annual' Period type, this will be the first month; for Monthly and Intra-monthly, this will match the ENDTIME.
REGISTEREDRESOURCE	Pseudo ID of the Resource for the Registered Generator or Intertie
RESOURCEADEQUACYPERIODTYPE	Offer Period (annual/ monthly/ intra-monthly)
XAXISDATA	The value on x-axis is the MW. Only one segment will be returned per REGISTEREDRESOURCE
Y1AXISDATA	The value on y-axis is price (\$). Only one segment will be returned per REGISTEREDRESOURCE
FLEXIBLECATEGORY	Flexible Category of the resource. This can be 1, 2 or 3. This value will be populated only for the schedule type 'FLEXIBLE' 1 - Base Ramping Flexibility 2 - Peak Ramping Flexibility 3- Super Ramping Flexibility
SCHEDULETYPE	Schedule type is either FLEXIBLE or GENERIC
AREA	TAC Area for the resource
GENERATIONTYPE	Generation Type in Master File. E.g. WIND, GAS, SOLAR, HYDRO, etc.

Questions?

Product Backlog and Roadmap

<(http://www.caiso.com/Documents/CIRA_Roadmap_ProductionBacklogMay172017.xlsx)>