Market Performance and Planning Forum

February 13, 2013
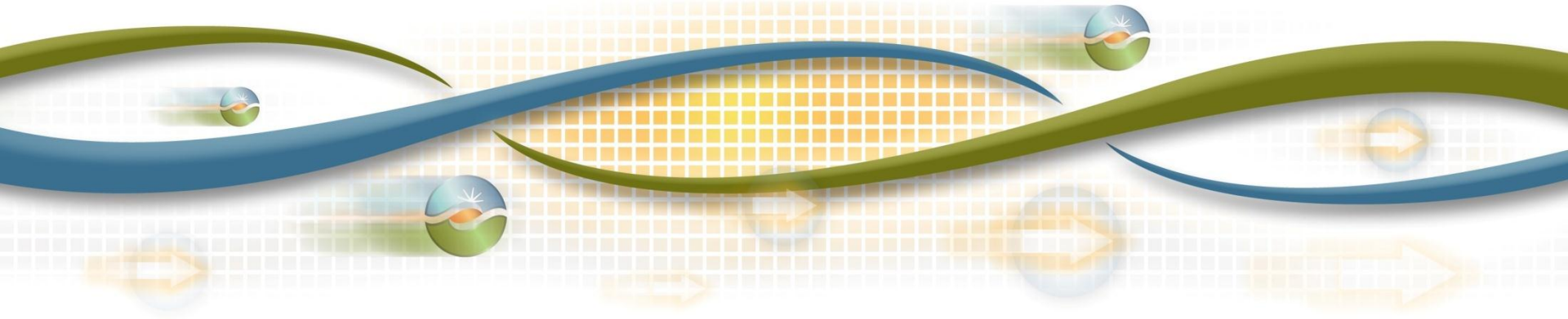
Objective: Enable dialogue on implementation planning and market performance issues

- Review key market performance topics
- Share updates to 2013-2014 release plans, resulting from stakeholders inputs
- Provide information on specific initiatives
  - to support Market Participants in budget and resource planning
- Focus on implementation planning; not on policy
- Clarify implementation timelines
- Discuss external impacts of implementation plans
- Launch joint implementation planning process

Proposed Meeting Schedule for 2013

- February 13
- April 10
- June 5
- July 31
- Sept 25
- Nov 20

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Agenda

10:00- 10:05	Introduction, Agenda	Mercy P. Helget
10:05 – 11:30	Market Analysis	Guillermo Bautista Alderete, Nan Liu, Mark Rothleder
11:30 – 12:00	Policy Updates	Brad Cooper
12:00 – 1:00	Lunch	
1:00 – 2:15	Technical Updates	Khaled Abdul-Rahman, Li Zhou, George Angelidis
2:15 – 3:00	Release Plan Updates	Janet Morris

Note: Agenda is subject to change.

Market Quality and Renewable Integration

Mark Rothleder

Guillermo Bautista-Alderete

Nan Liu

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1. Operation Highlights

2. Market Metrics

   - Price volatility and market convergence

   - RT energy/congestion imbalance offset

   - Convergence bidding

   - Exceptional dispatch

   - Bid cost recovery

   - MIP gap

   - Flex-ramp cost

3. Price Corrections

4. NP15 Minimum Online Capacity Constraint

5. Events and developments

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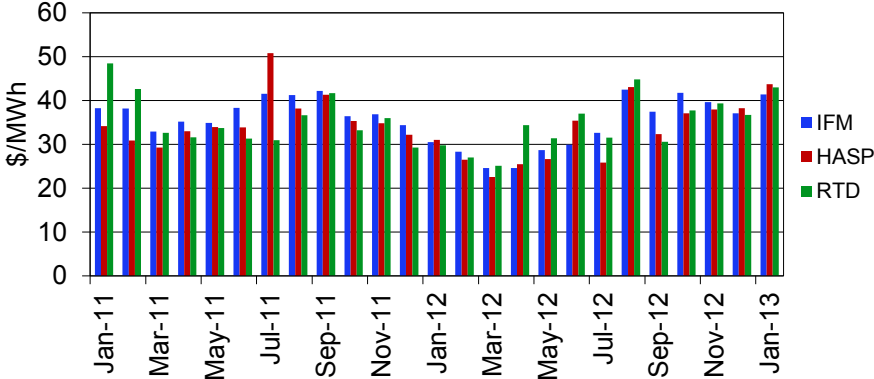
Operation highlights:

- Improvements across most market metrics: price convergence, exceptional dispatch, BCR, real-time congestion offset.

- Real-time congestion offset cost peaked in August, trended lower in the following months but remained at elevated levels.

- Lower seasonal load, winter "needle" evening peak and transmission outages present operational challenges in January.

- Volume and complexity of outages increases constraints modeled in the market.

DLAP LMP Monthly Average:
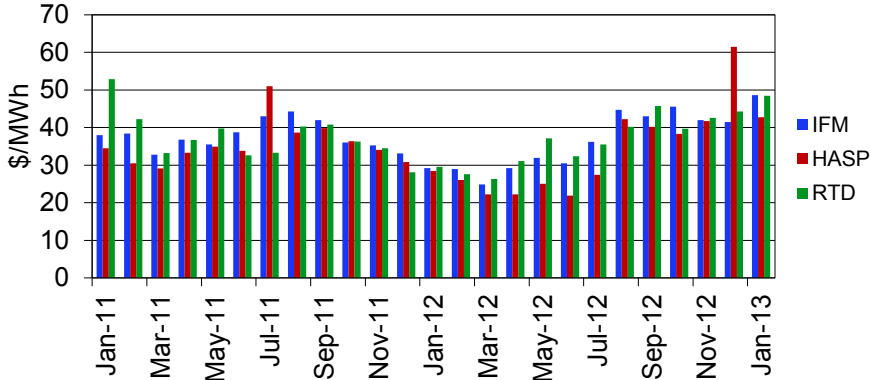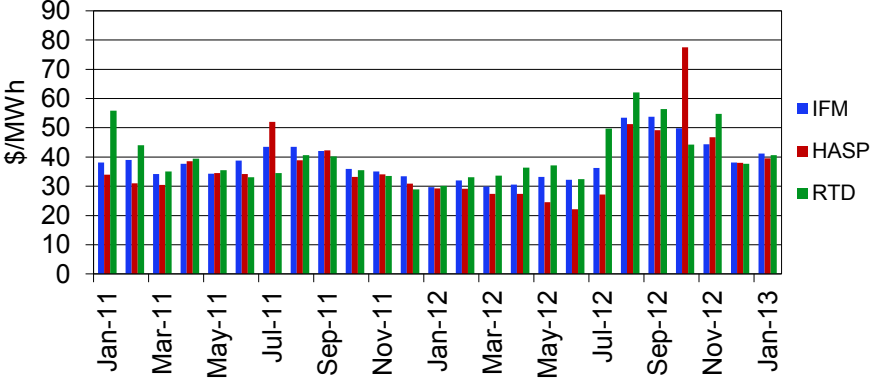# Price convergence improved in January

PG&E

SCE
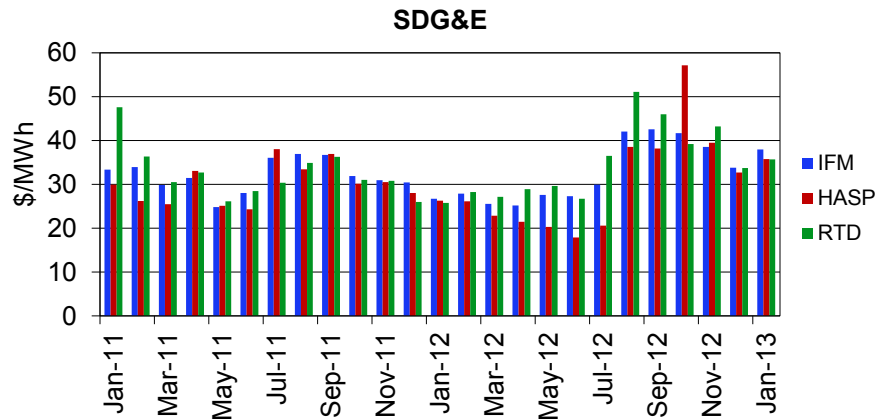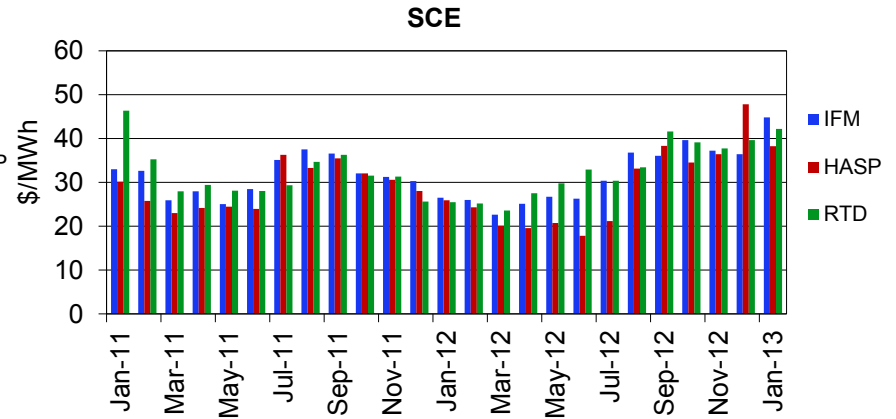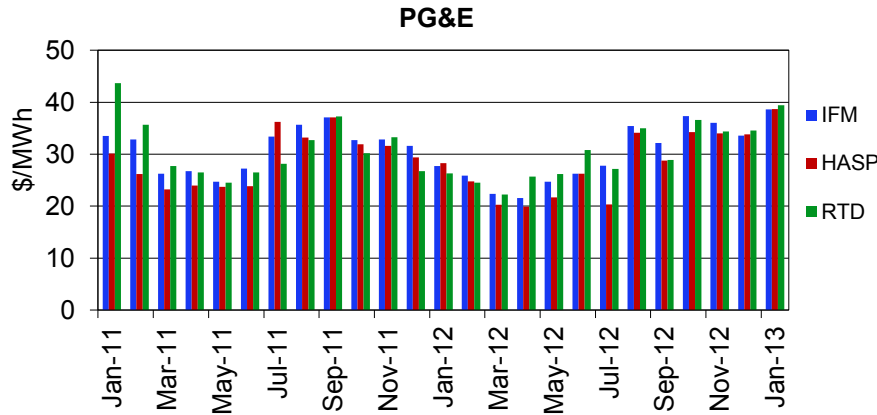
SDG&E

DLAP LMP Monthly Average (**On** Peak)

DLAP LMP Monthly Average (**Off** Peak)
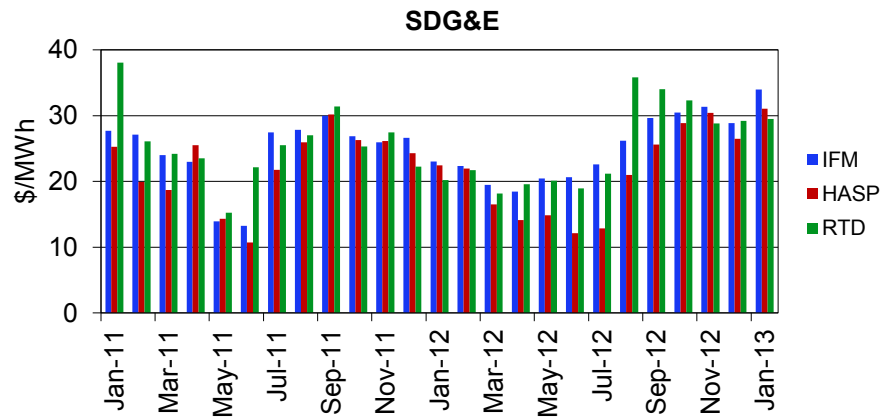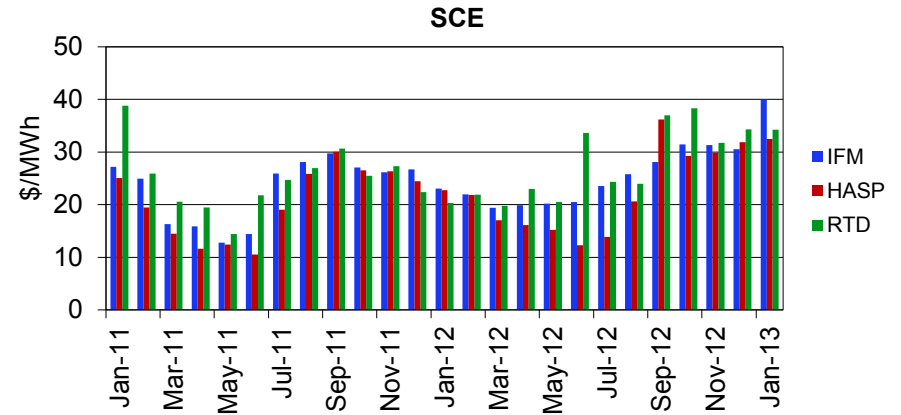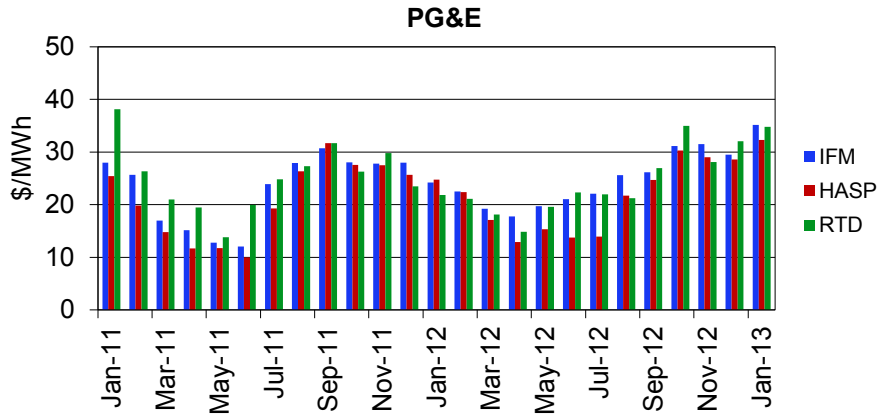
DLAP LMP Hourly Average in January
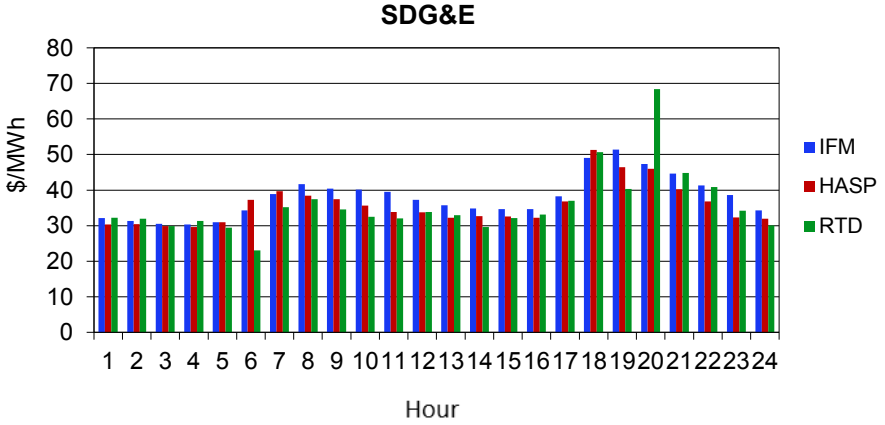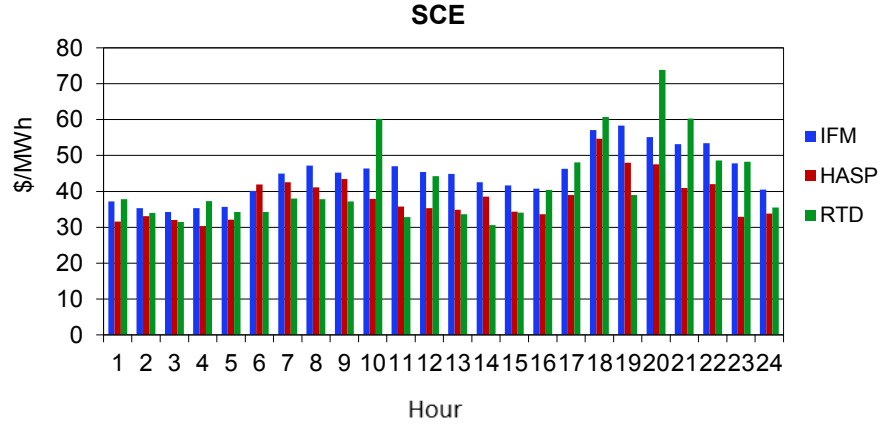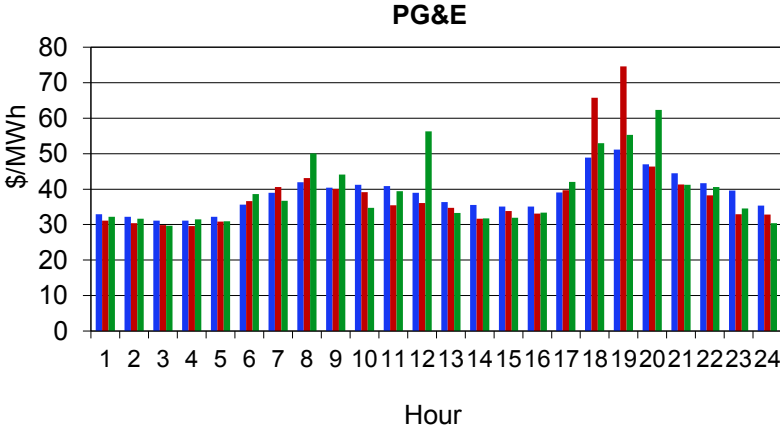
DAM price differences between SP15 and NP15
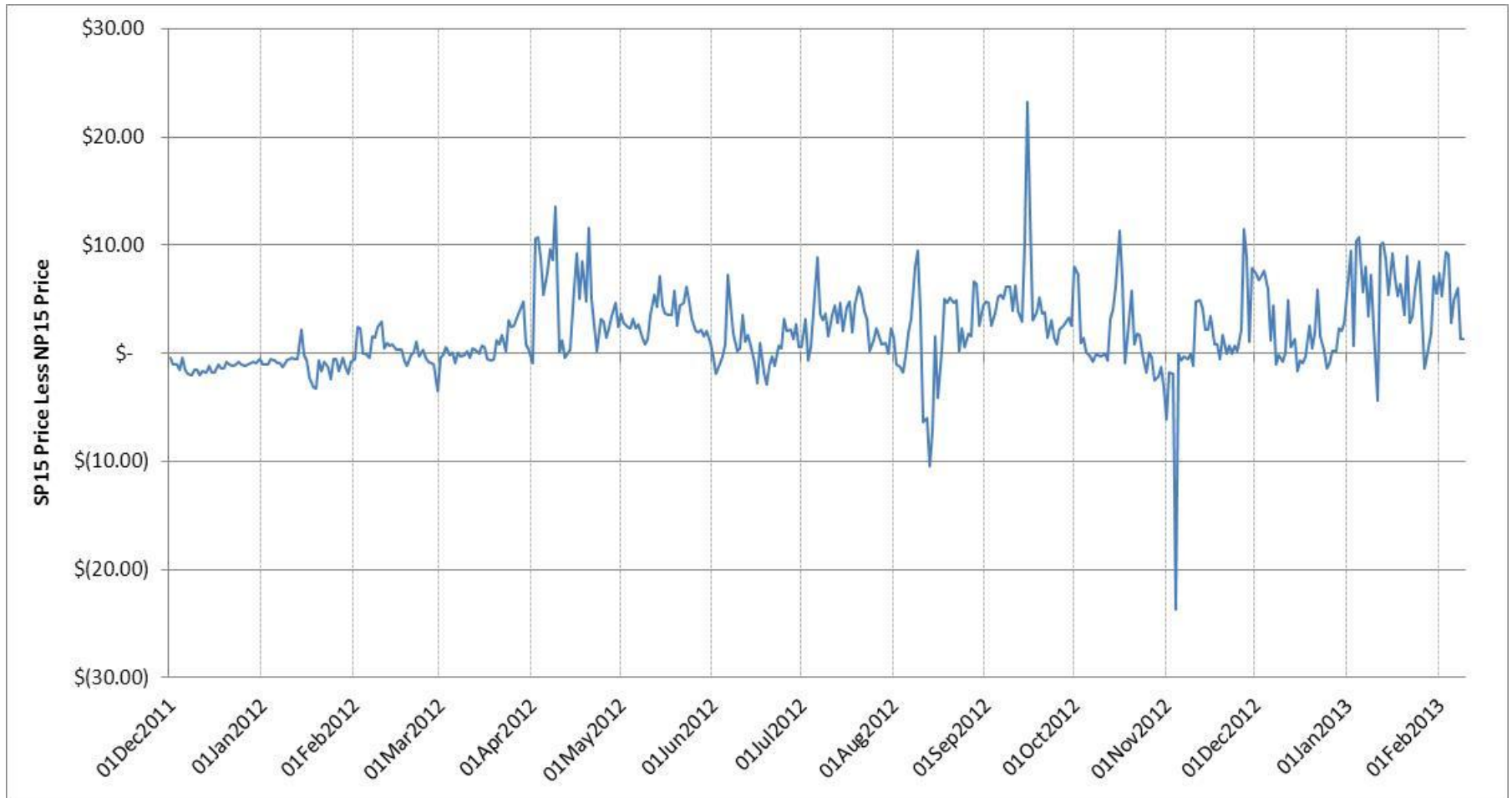
Correlation between SP15/NP15 price difference and Congestion on SCE_PCT_IMP constraint.

Period of November 1, 2012 -- February 2, 2013

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Monthly price distributions: Price volatility declined in January.
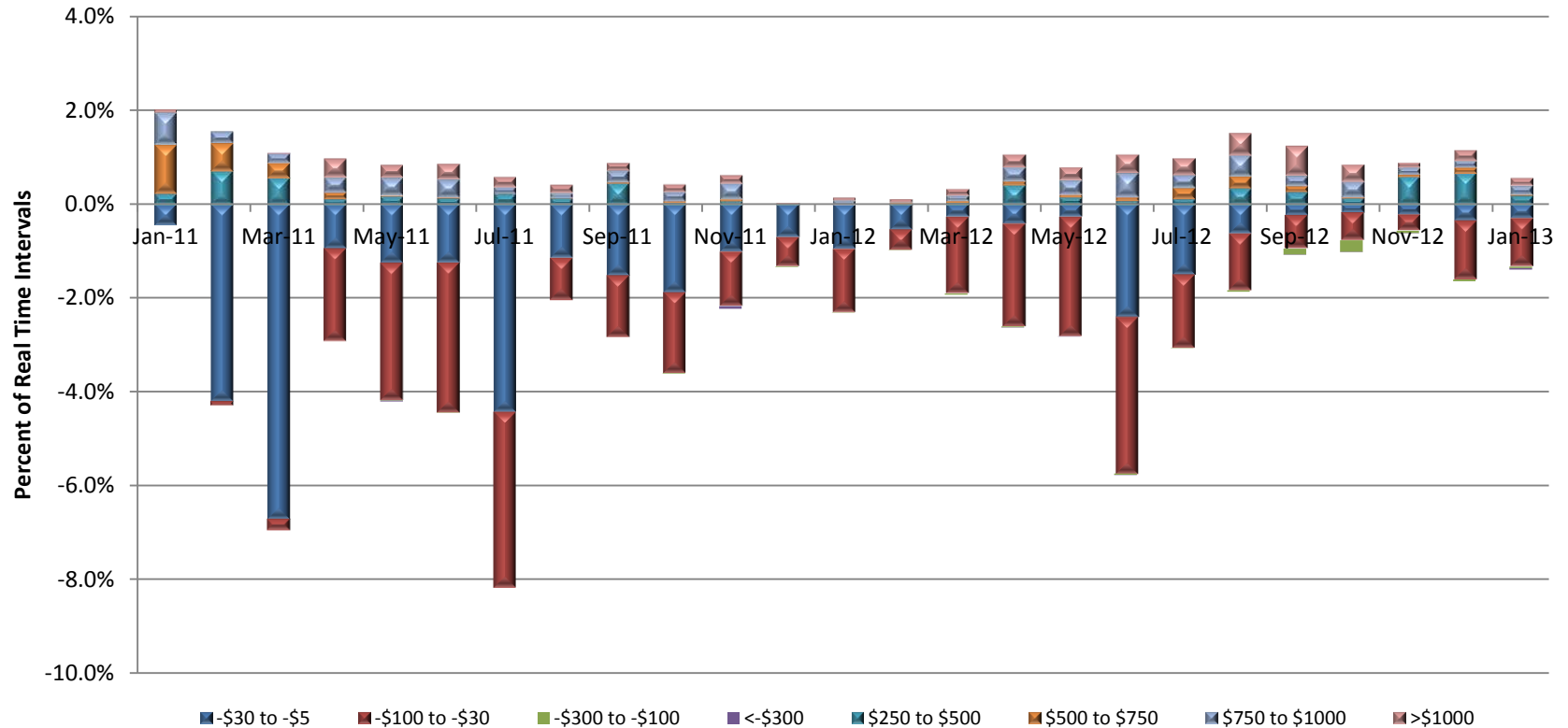
Monthly average of RTD intervals with insufficient up ramping capacity decreased in January.

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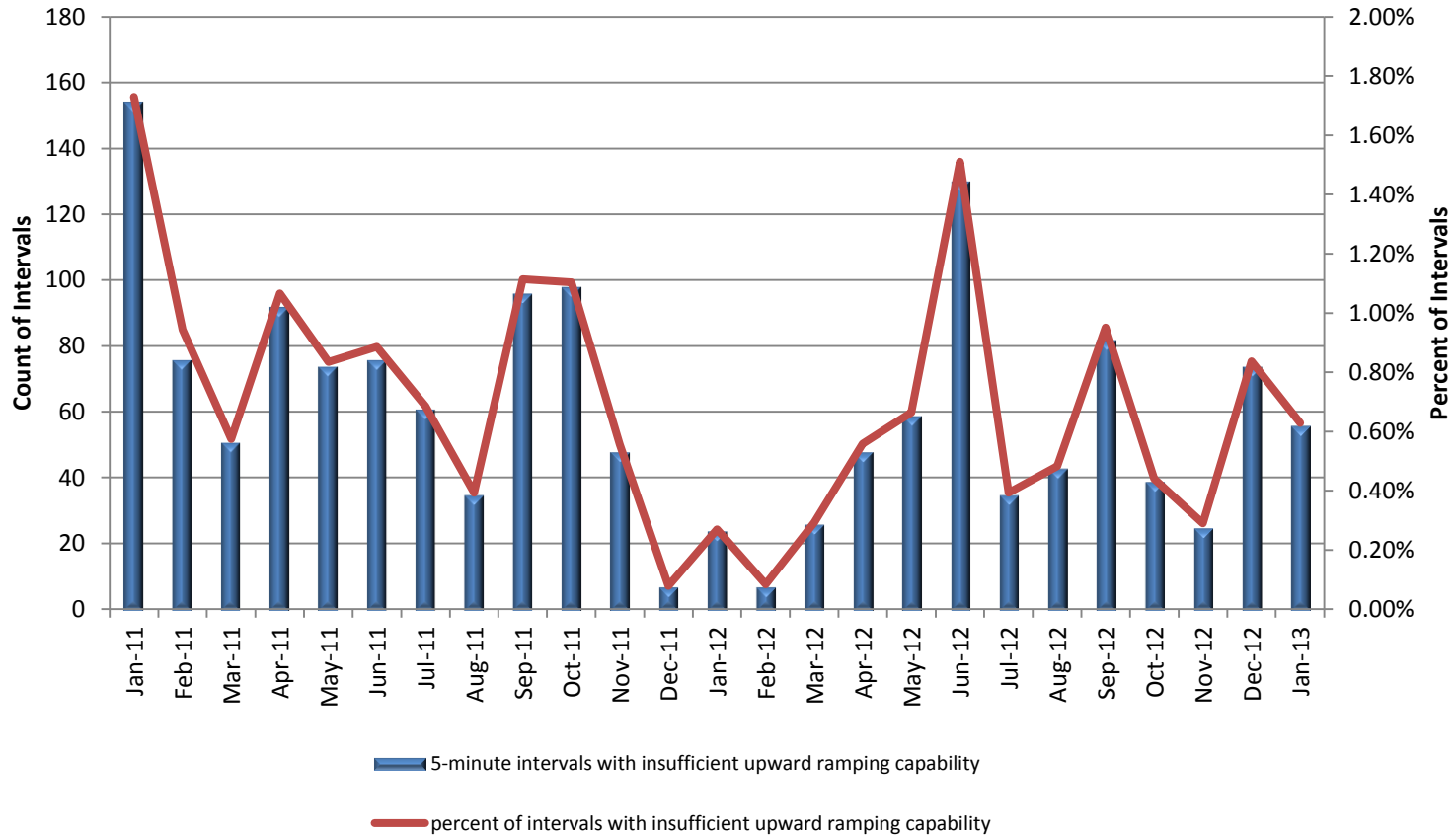
Monthly average of RTD Intervals with insufficient down ramping capacity stayed at low level.
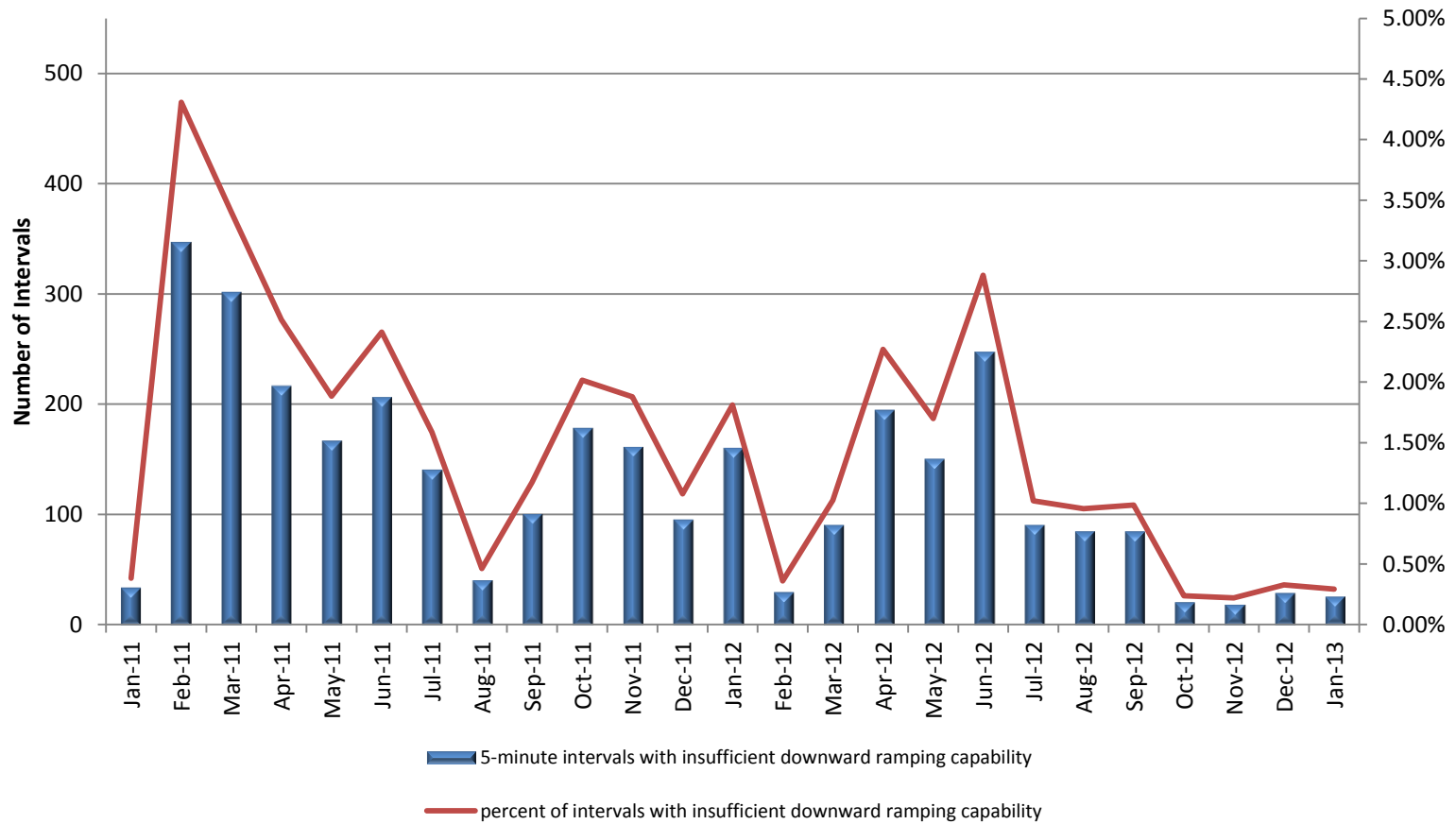
Real-Time congestion offset costs trended downward in recent months with negative costs in January.

Real-Time Congestion and Energy Imbalance Offset Cost

January results subject to T+12 settlement update

Legend: Congestion_Imbalance_offset, Energy_Imbalance_offset

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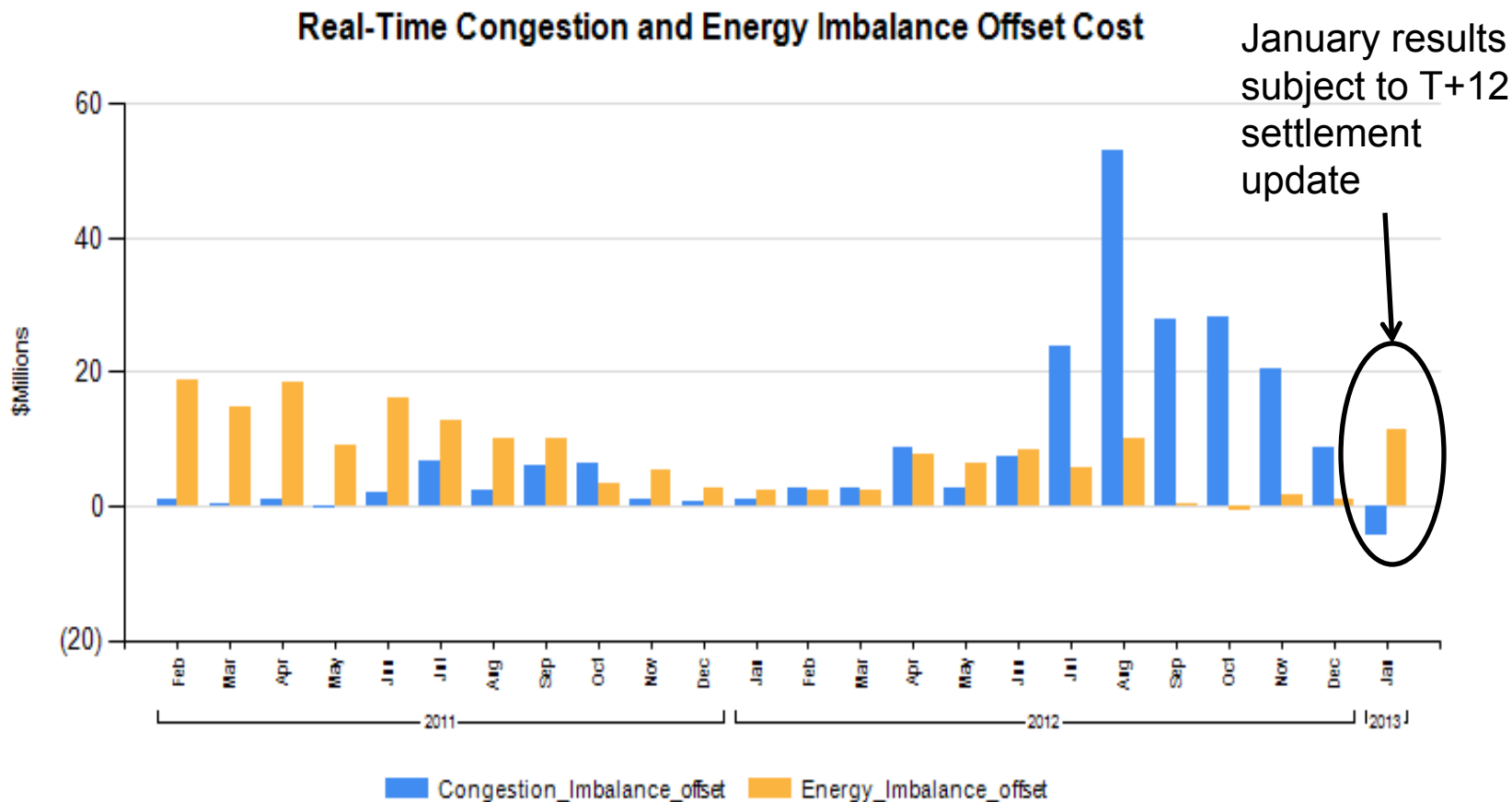
Exceptional dispatch volume was low compared with previous years.

Total Exceptional Dispatch as Percent of Load

Legend: 2009, 2010, 2011, 2012, 2013

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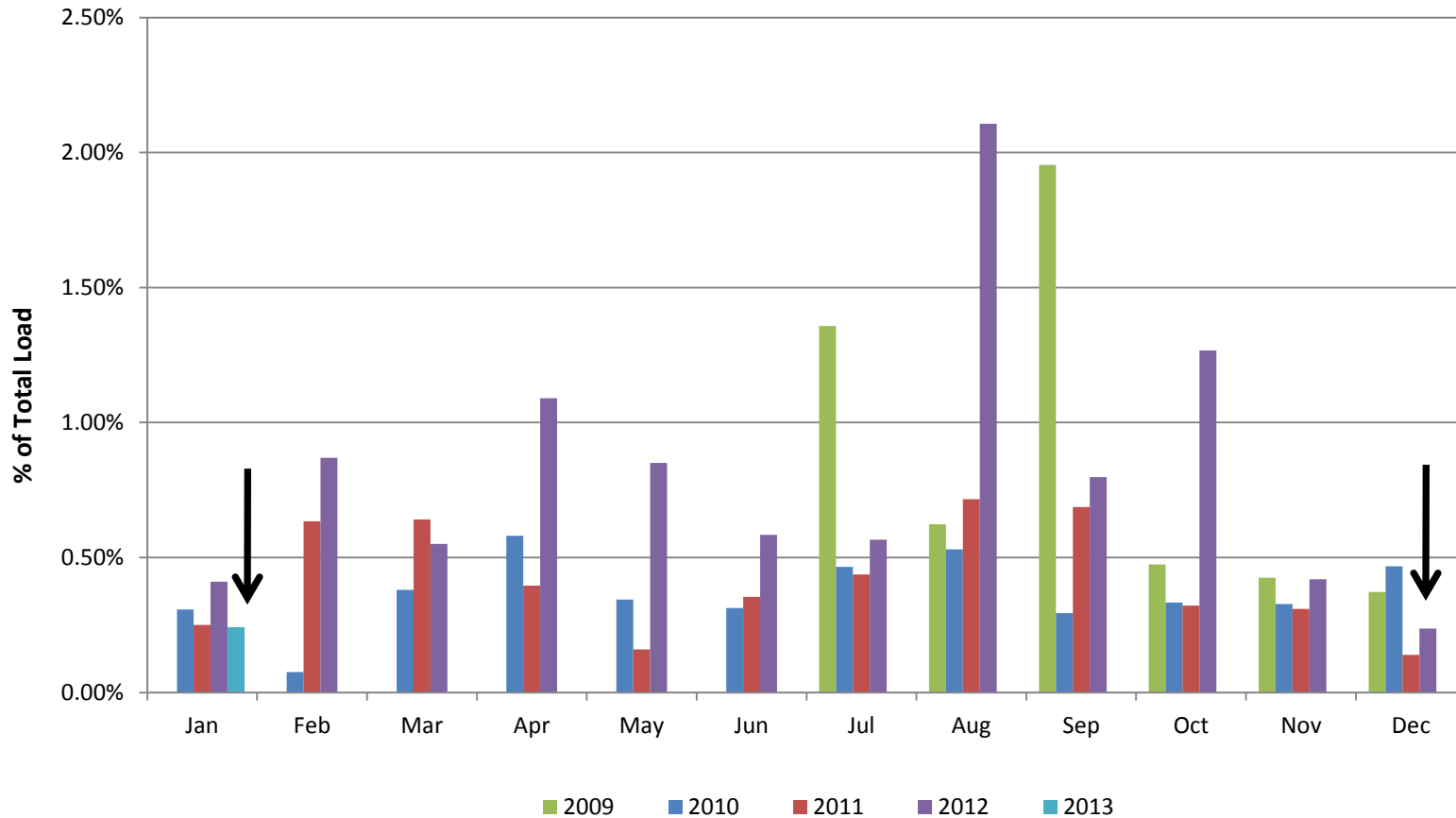
Daily exceptional dispatches in MWh – by reason

Due to cold snap impact of gas supply
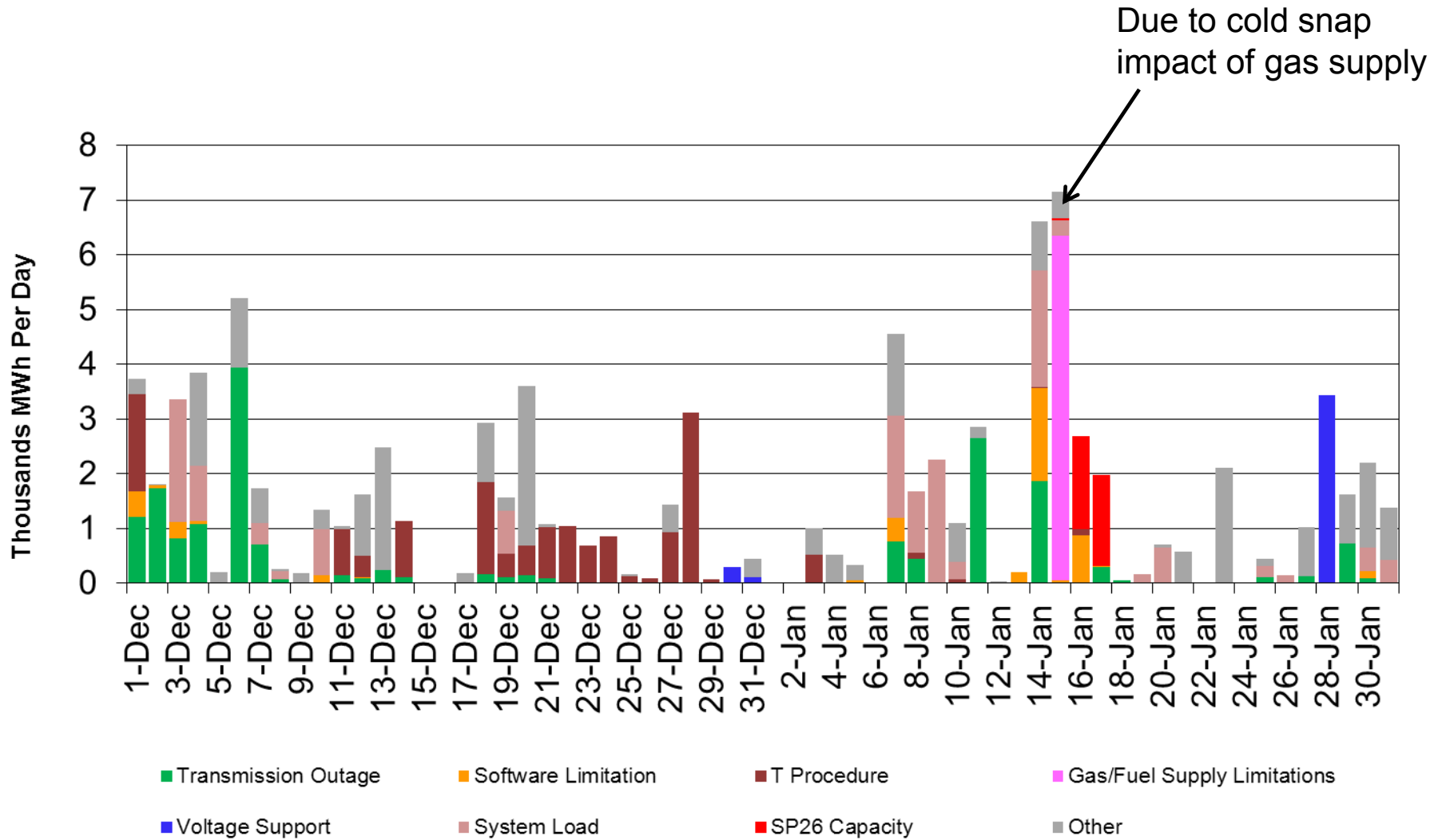
Bid cost recovery (BCR) costs decreased both December and January.
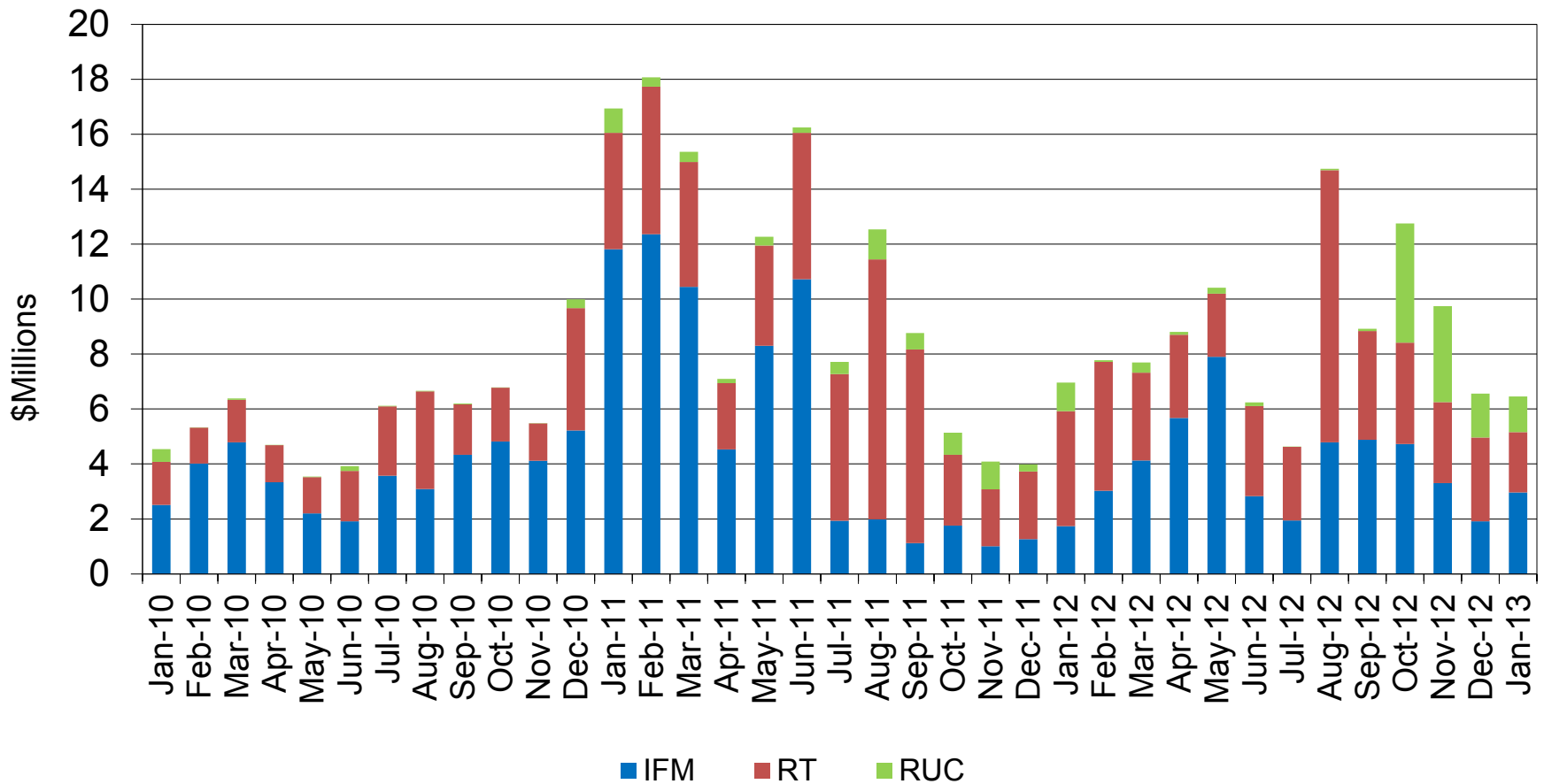
Good MIP gap performance in January.
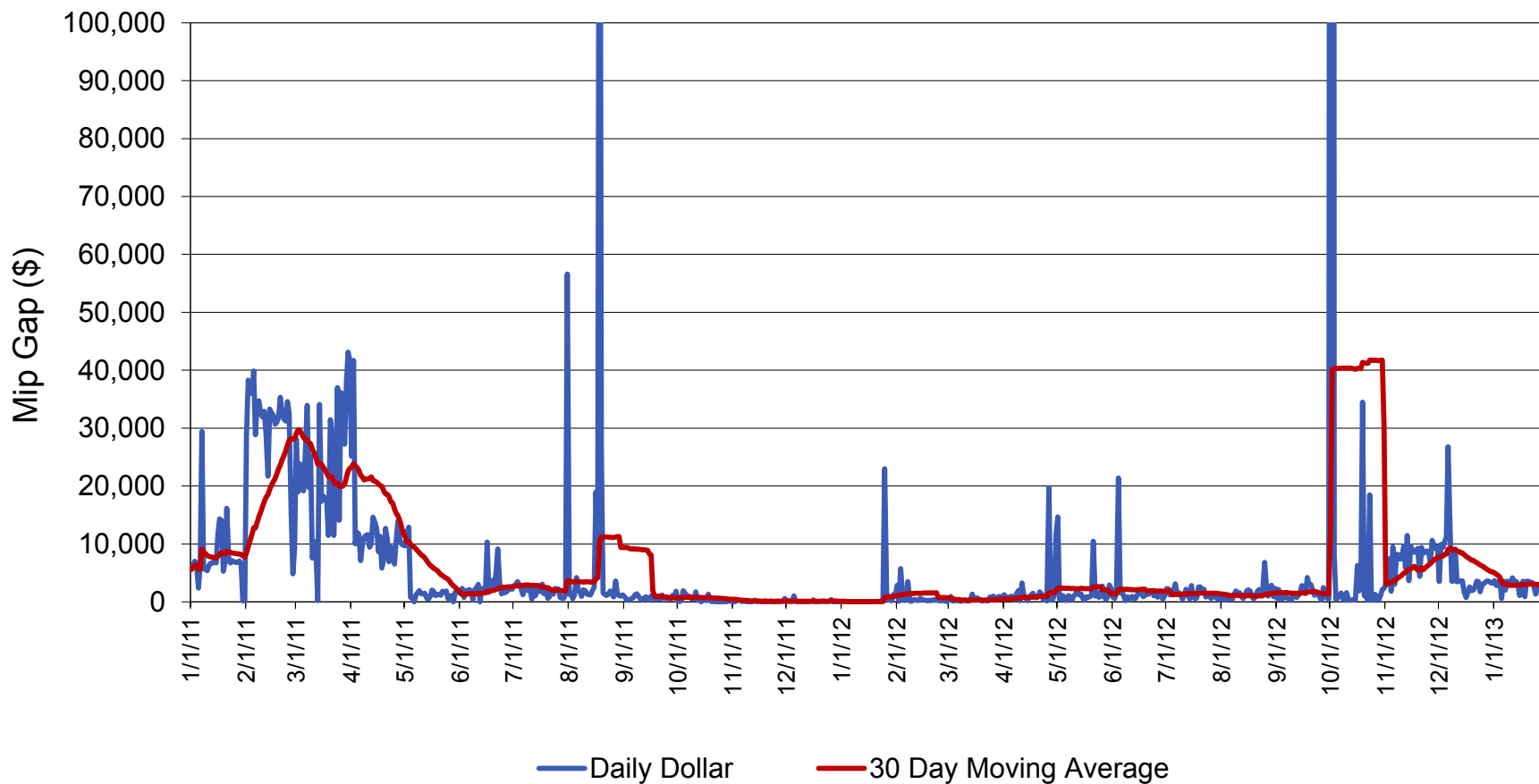
Flexi-ramp constraint costs increased in December and January.
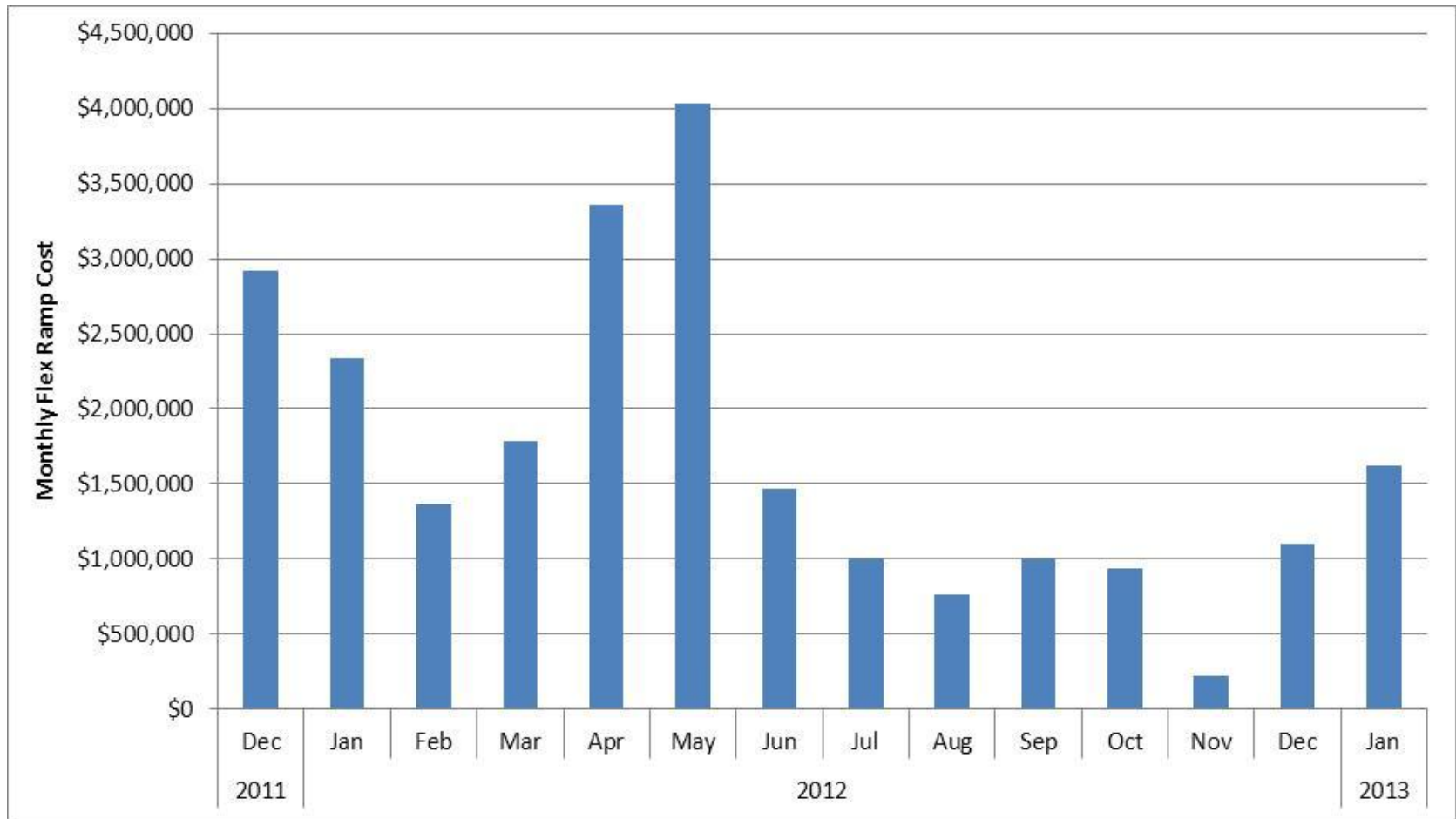
Price corrections increased in January.
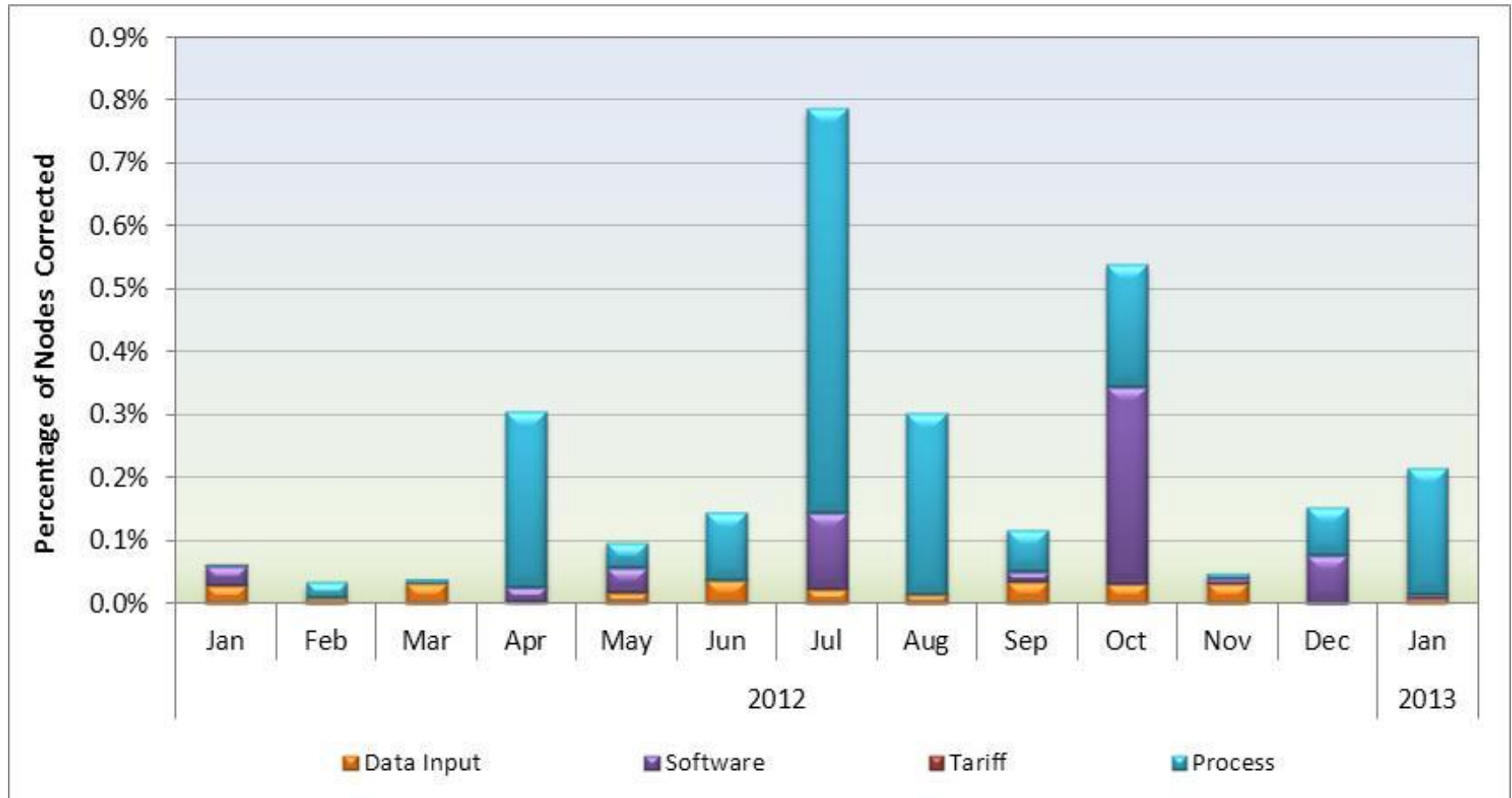
Day-ahead price corrections increased in January.
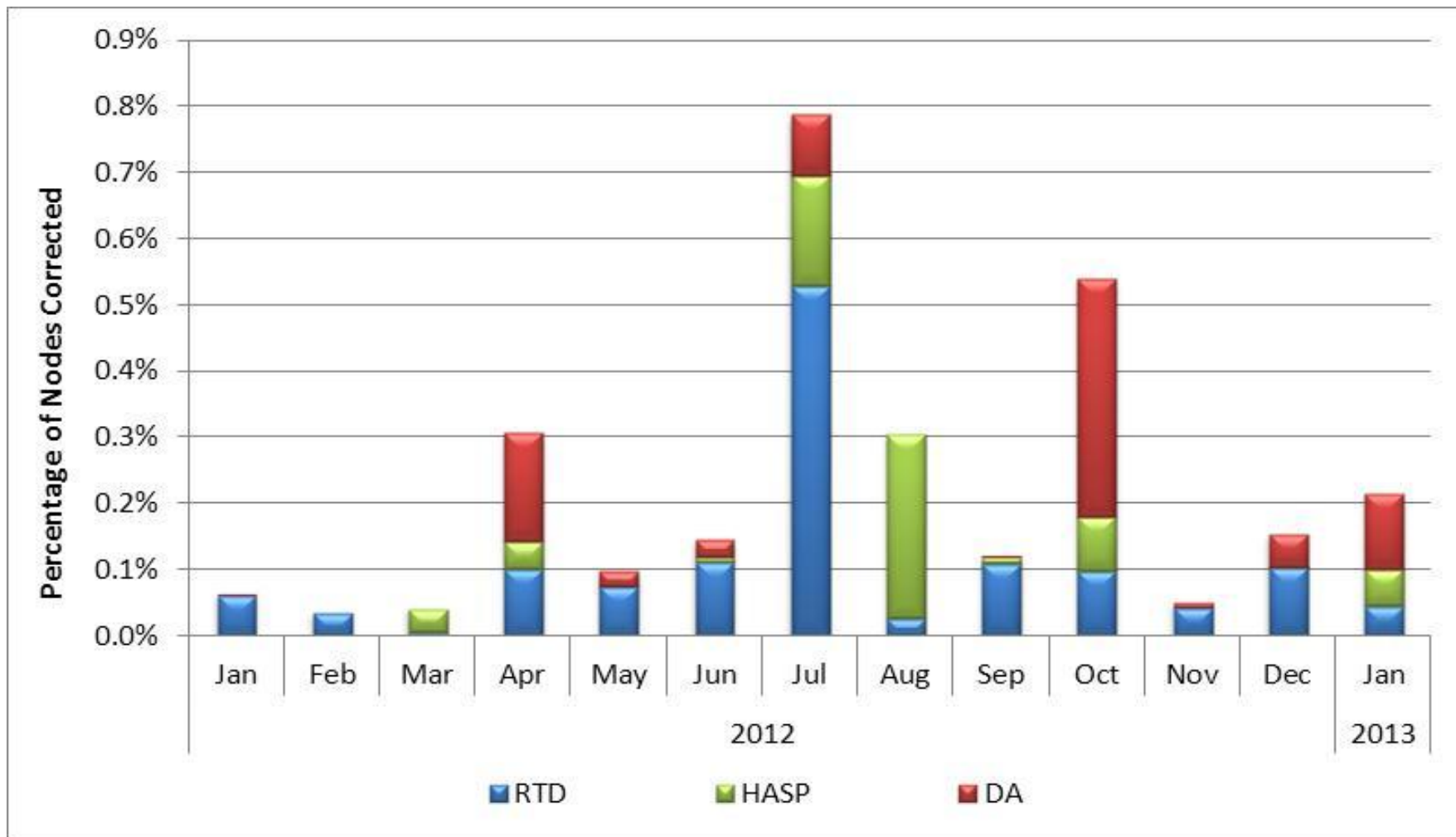
Price Corrections in January

- Incorrect definition of two transmission elements during the implementation of VEA addition.

    - Prices corrected across markets between January 3 through January 12.

    - Delay in processing all the corrections within the 5-day window.

- Incorrect limits used in the DAM of January 11th. DAM prices corrected by rerunning the market.

Lessons Learned

- Additional cycle of validation during testing in Non-Production Environments to identify issues before Production.

- Use of DA+2 process to identify issues before DA+1 run.
  - Pre-requisite to any change to day-ahead market
  - Increase review of DA+2 process

- Root Cause Analysis efforts and ISO's corporate goal focused on addressing root causes of price corrections.

- Provide more timely information to the market about price corrections and processing issues.
  - A change to the BPM for Market Operations underway to reflect this enhanced practice.

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Minimum Online Commitment (MOC) Constraint for NP15

- Maintain sufficient online generation capability in NP15 to respond to a reduction of COI capability following a forced outage.

- MOC Definition:

    Resources in NP15 area

- MOC Requirements:

    (Load forecast in NP15) less

    (Maximum COI Imports) less

    (Path15 northbound capability)

- Adjusted for hydro and variable resource

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MOC Requirements

MOC Requirement (MW)

Implementation of
MOC CAPTAIN JACK 1949748

Enhanced MOC definition

Extension of MOC
MOC VACA TESLA 1943845

Completion of
schedule maintenance
of Path15

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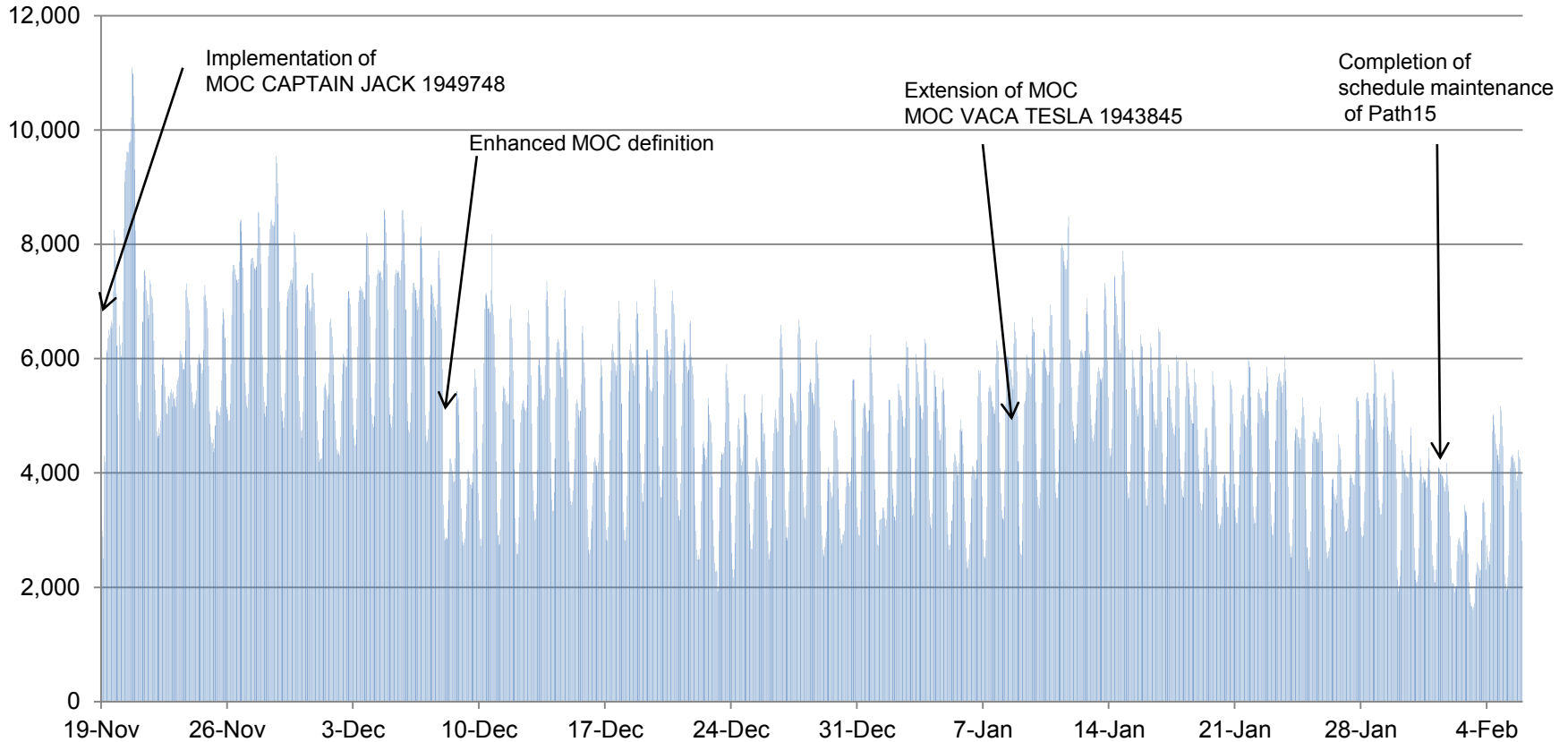
Market often naturally cleared capability in excess of MOC requirement.

MOC Cleared Capability less MOC requirement (MW)
(+ indicates committed capability in excess requirement)

Implementation of
MOC CAPTAIN JACK 1949748

Enhanced MOC definition

Extension for
MOC VACA TESLA 1943845

Completion of
schedule maintenance
of Path15

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Daily Commitment Cost of Units Committed by MOC

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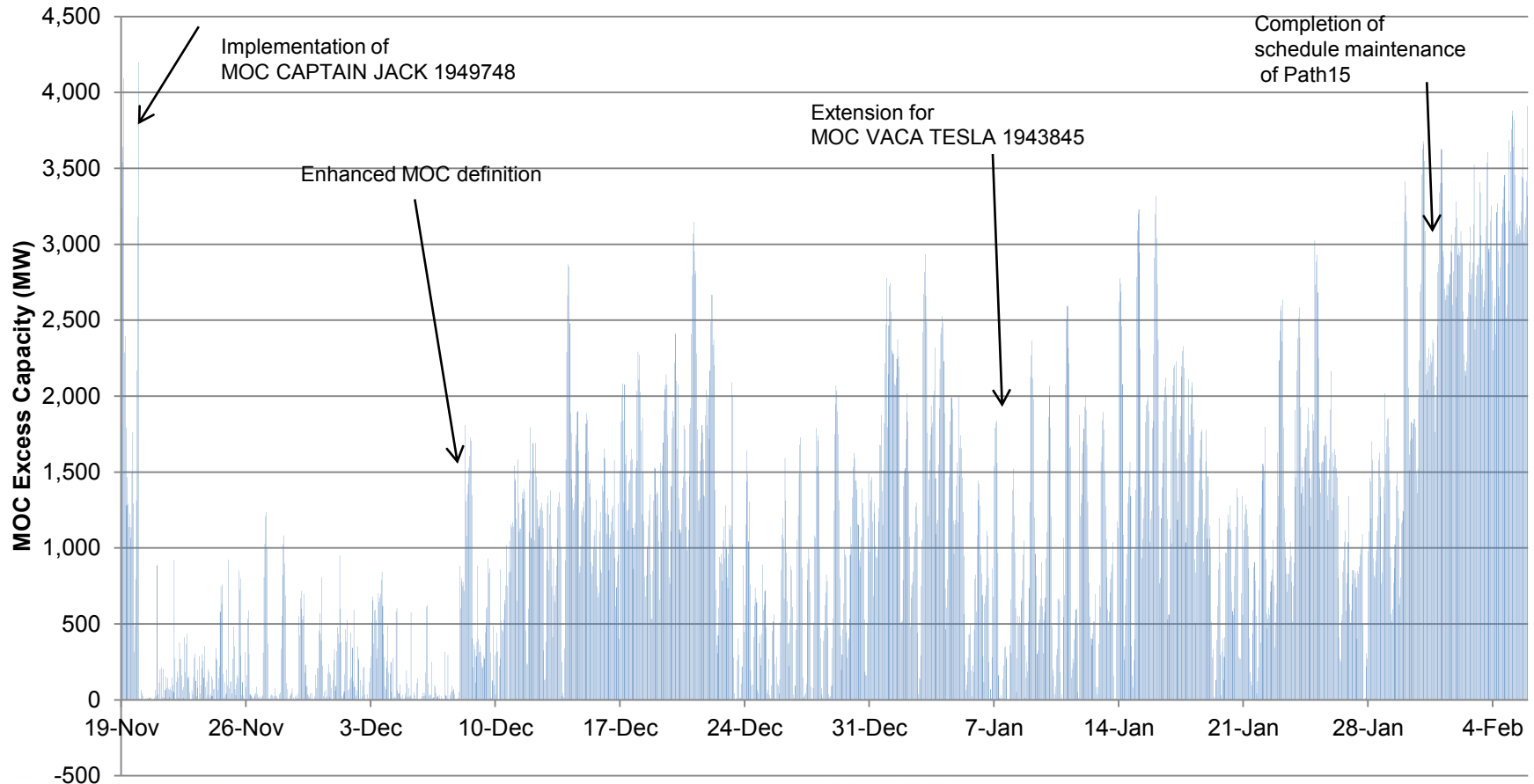
Minimum Load (MW) of Resources Committed by MOC
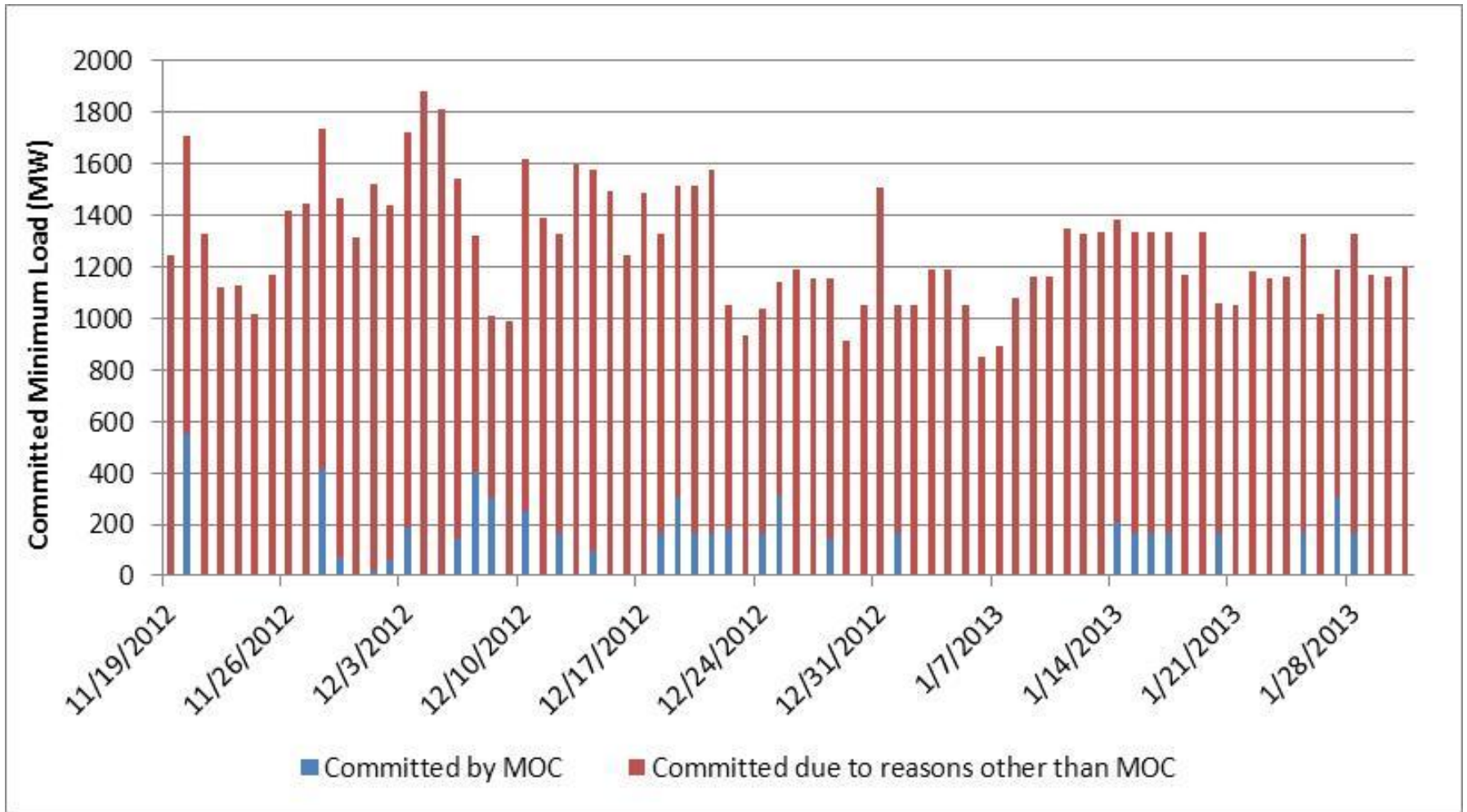
Number of Resources Committed in NP15
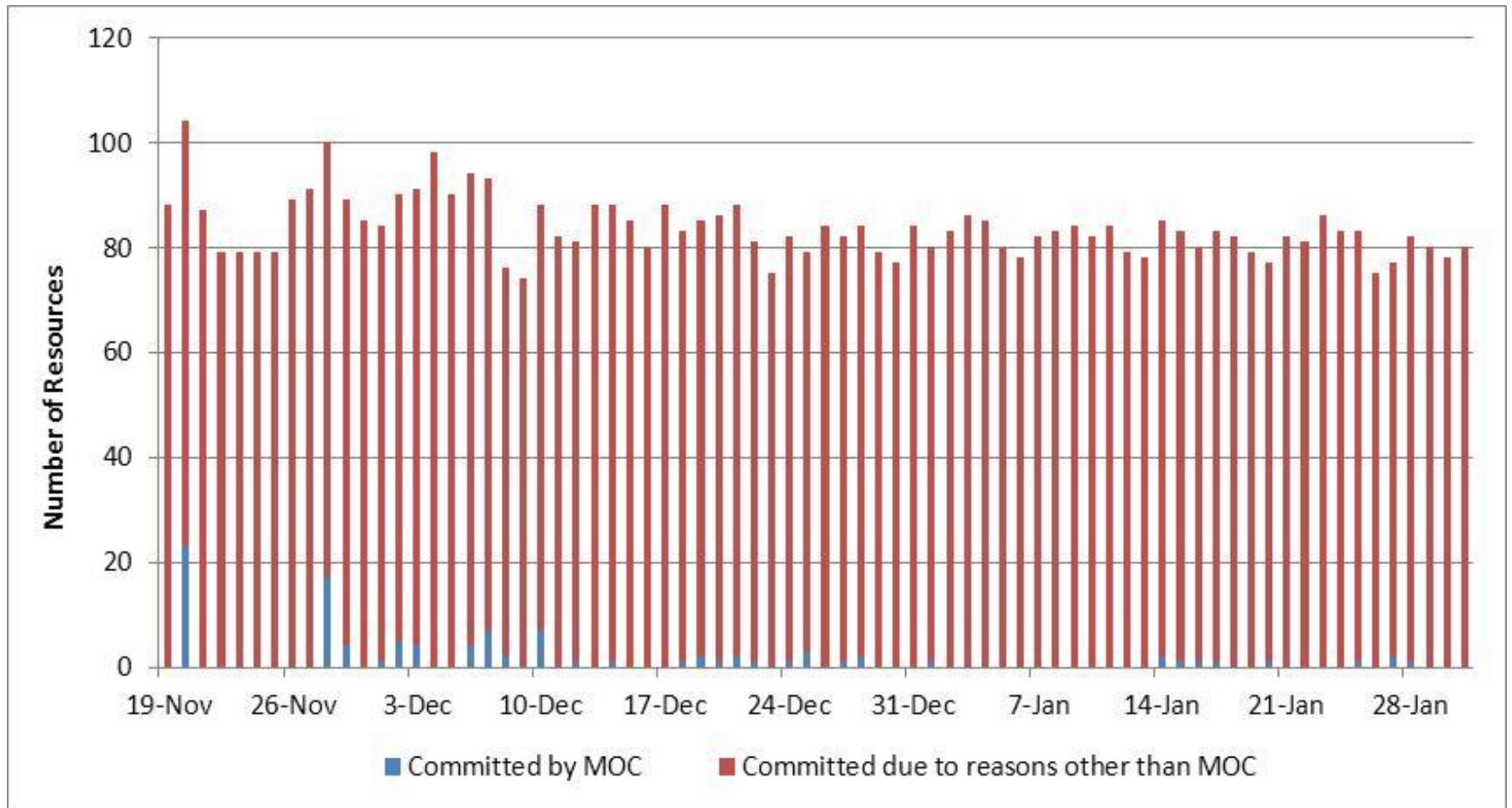
MOC demonstrated to be effective for actual events

Maintain sufficient online generation capability in NP15 to respond to a reduction of COI capability following a forced outage.

- The system has experienced this event 3 times since this MOC has been in place:
  - November 21, 2012 @ 08:07am
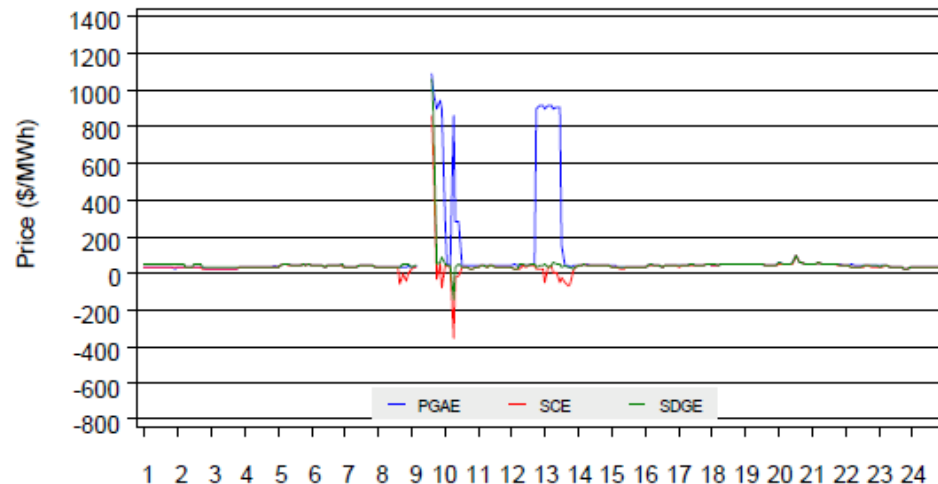
  - December 12th @ 6:33am
  - January 22, 2013 @ 3:41pm

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Events and Developments:

- Green House Gas became effective on January 1, 2013.

    - Import and export levels are stable.

    - Limited impacts on internal and intertie congestion.

    - Number of importers/exporters are stable.

- Additional analysis performed in support of the proposal to reduce the scheduling run transmission relaxation parameter in RTD.

    - Covered nearly 100% of all relaxed transmission constraints occurred in 2012 RTD runs.

    - Results show minimal impacts on congestion reduction with reduced parameter

- Starting a new stakeholder process to develop a constraint to automatically commit/dispatch generation in support of post-contingency limit reduction.

Policy Update

Brad Cooper

Manager, Market Design and Regulatory Policy

Market initiatives going to the Board for approval

Initiative	Board Presentation
FERC Order 1000 (Inter-regional)	March
FERC Order 764 Market Changes	May
Flexible Resource Adequacy Criteria and Must Offer Obligations – Stage 1	May
Post-Contingency Preventive-Corrective Constraints	July

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Market design initiatives coming soon (slide 1 of 2)

- Post-Contingency Preventive/Corrective Constraints
  - Starting later this month

- Multi-year forward reliability capacity pricing mechanism
  - TBD based on outcome of Feb 26 Long-Term Resource Adequacy Summit

- Generator Interconnection Procedures (GIP 3)
  - Targeted to start in March

- RAS Compensation
  - Targeted to start in March

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- Flexible RA Resource Criteria and Must Offer Requirements
  - Phase I ongoing
  - Phase II targeted to start Q2 2013

- Load Granularity Refinements
  - Targeted to start Q2 2013

- Planning for second half of year

Technical Updates

Khaled Abdul-Rahman, Director

Li Zhou, Senior Advisor

George Angelidis, Principal

Power Systems Technology Development

MSG Enhancement 3 versus Mandatory MSG

- MSG Enhancement 3

    - A new modeling option for MSG physical constraint

    - Available in Production on Spring 2013 release date

    - Unstructured market simulation (02/26/13 – 03/01/13)

    - Registration Deadline for existing MSG resources to participate in market simulation (02/01/13)

    - Post go-live, any production MSG can use this feature following standard registration timeline

MSG Enhancement 3 versus Mandatory MSG …*continue*

- Mandatory MSG

  – Existing non-MSG resources must become MSG by CAISO filed deadline if meeting certain criteria

  – Follow standard production registration procedure

  – Market simulation always available

  – Registration and market simulation dates do not need to align with major release dates

MSG Enhancement 3 Detail

- Model Minimum Up Time (MUT) and Down Time (MDT) on a group of configurations

  - A group of configurations can contain a sub-group of configurations;

  - Configuration level MUT and MDT stays. For example, a unit can have MUT(2X1, 2X1 Duct) as 6 hours And MUT(2X1 Duct) as 30 minutes;

MSG Enhancement 3 Detail

- With two groups A and B, assuming that configurations in group B is a subset of configurations in group A

  – MUT(A) >= MUT (B);   MDT(A) <= MDT (B).

- For any group A

  – MUT(Plant) >= MUT(A);   MDT(Plant) <= MDT(A).

- If registered values fail those rules, ISO will contact the market participant for justification.

Mandatory MSG

- The criteria to determine whether a non-MSG resource is required to become MSG is described in,

Draft Final Proposal

http://www.caiso.com/Documents/DraftFinalProposal_Post-EmergencyBidCostRecoveryFilingReview.pdf

Draft Tariff Language

http://www.caiso.com/Documents/DraftTariffLanguagePostEmergencyBidCostRecoveryFilingReviewRedline.doc

- Procedure and Information for how to become a MSG

http://www.caiso.com/Documents/Multi-StageGeneratingResourceReferenceDocument.pdf

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Mandatory MSG

- "Mandatory MSG" does not preclude other non-MSG resources to become MSG if the MSG model better fits their physical characteristics

- MSG model preparation and registration should start earlier. Do not wait until the last minute

- CA ISO encourages the use of a planned outage period to convert from non-MSG to MSG

MSG Enhancement 3 versus Mandatory MSG

- Questions/Answers

Release Plan Updates

Janet Morris

Director, Program Office

The ISO offers comprehensive training programs

Date	Training
February 6, 7	SC Certification Workshop (on-site)
February 14	Pay for Performance (webinar)
February 21	Welcome to the ISO (webinar)

Training calendar - http://www.caiso.com/participate/Pages/Training/default.aspx
Contact us - markettraining@caiso.com

Release Plan – 2013

- **Spring 2013**
  - MSG Phase 3 deployment
  - FERC Order 755 – Pay for Performance
  - LMPM Enhancements Phase 2 / Exceptional Dispatch Mitigation in Real Time
  - Post Emergency Filing BCR changes / Mandatory MSG
  - Price Inconsistency Market Enhancements (not including bid floor cap)
  - FERC Order 745: Changes to the DR Compensation for PDR
  - Access and Identity Management (independent effort)
  - CMRI UI upgrade (does not impact API)
  - Replacement Requirements For Scheduled Generation Outages Phase 2
  - Flexible Capacity and Local Reliability Resource Retention (manual changes)

- **Fall 2013**
  - Flexible Capacity and Local Reliability Resource Retention (system changes)
  - RIMPR-Phase 1 / BCR Mitigation Measures / Bid Floor Cap
  - Circular Scheduling
  - Commitment Cost Refinements (remaining scope)
  - Ancillary Services Buy-Back
  - DRS API deployment

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Release Plan – 2014 (proposed)

- **Spring 2014**
  - FERC Order 764 Compliance / 15 Minute Market
  - Dynamic Transfers

- **Fall 2014**
  - Flexible Ramping Product
  - iDAM (simultaneous IFM and RUC)

- **Subject to further release planning**:
  - Outage Management System (Scoping phase started January 22, 2013 for 8 weeks)
  - Enterprise Model Management System
  - Subset of Hours
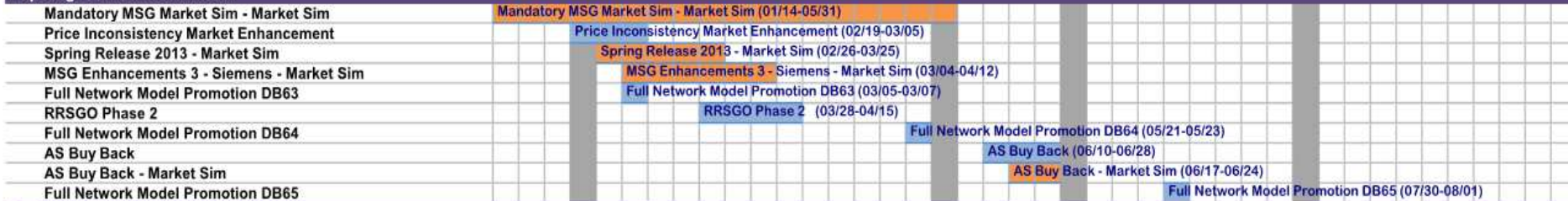 - Flexible Resource Adequacy Criteria and Must Offer Obligation

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2013 Release Schedule

http://www.caiso.com/Documents/ReleaseSchedule.pdf
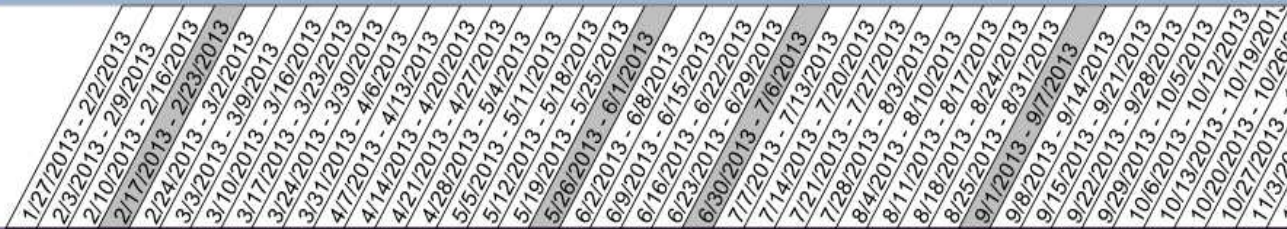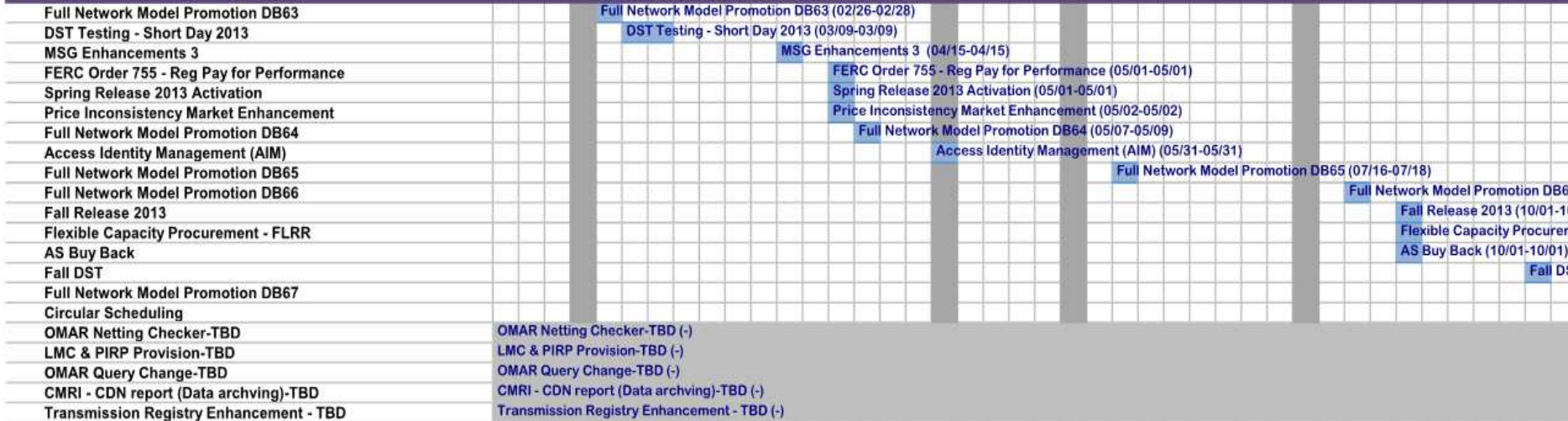
Note: SIBR-Lite is no longer available.

Spring 2013 Release – RDT and API Versioning Alert

RDT	Versioning
Generator V7.0	The ISO will deprecate the current production version of the GRDT with the 2013 Spring Release and will only support a single version which includes CERT_REG_DOWN and CERT_REG_UP, no longer supporting CERT_REG. The ISO will only be supporting v7.0 (previously v6.5) of the GRDT UI and V1 (previously v20121001) of the GRDT API.
IRDT	The ISO will continue to support 2 versions of the IRDT which is not being affected by the Spring Release.

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Spring 2013 – MSG Enhancements (Phase 3)

Milestone	Date
Application Software Changes	**Master File**: System must be extended to allow the registration of minimum up time (MUT) or minimum down time (MDT) on a group of MSG configurations. Registrations would be submitted to the ISO via a separate registration form. **DAM/RTM**: System must be able to recognize the MUT and MDT constraints on a group of configurations (as registered in the Master File) during the optimization.
BPM Changes	Market Instruments, Market Operations
Business Process Changes	Not Applicable
Board Approval	Not Applicable
External Business Requirements	June 15, 2012 (updates made to document) ✓
Registration Form	Draft Available 7/13/12 (subject to change before Market Simulation) ✓
Market Simulation	Registration Due February 1st, 2013 Unstructured - February 26, 2013 – March 1, 2013 ✓
Tariff	Not Applicable
Production Activation	May 1, 2013

Spring 2013 – FERC Order 755 pay for performance

Milestone	Description/Date
Application Software Changes	**SLIC –** Provide a regulation outage flag **CMRI** : provide DA and RT regulation up/down mileage price and awards **DAM/RTM**: include mileage bids and requirements into the optimization and generate mileage price and awards **Master File**: regulation certification based on 10 min ramping capability; provision of compare and validate reports, ability to cancel batches **OASIS**: provide DA regulation up/down mileage price, system mileage multipliers, system mileage requirement, actual system mileage, historical mileage bids, historical resource mileage multipliers **Settlements** : calculate mileage payment, mileage cost allocation and GMC for mileage bids **SIBR**: receive and validate regulation up/down mileage bid
BPM Changes	Market Operations Market Instruments Settlements & Billing Definitions & Acronyms
Business Process Changes	Maintain Master File, Day Ahead Process, Manage Billing and Settlements, Manage Analysis Dispute and Resolution, Market Performance (MAD),Market Performance (DMM), Manage AS Certification and Testing
Board Approval	March 23, 2012 ✓
External Business Requirements	June 7, 2012 ✓ December 10, 2012 (update) ✓
Technical Specifications	Nov 16, 2012- MasterFile technical specifications, SIBR rules, charge code list ✓ Jan 15, 2013 – Settlements configuration guides ✓ Jan 7, 2013 – SLIC, OASIS and CMRI technical specifications ✓
External Training	Feb 14, 2013
Market Simulation	Feb 19, 2013 – March 1, 2013; RDT deadline Feb 8, 2012
Production Activation	May 1, 2013 (Extension approved by FERC 12/3/2012) ✓

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Spring 2013 – LMPM Enhancements (Phase 2) and Mitigation for Exceptional Dispatch in Real Time

Milestone	Date
Application Software Changes	**Real-Time Market:** MPM for 15 min. DCPA for HASP and 15 min. and create and use Default Competitive Constraint List **OASIS**: Display LMPM-related components for nomogram & intertie shadow prices, competitive paths for real-time, and default competitive constraint list **CMRI** : Display real-time mitigated bid curve
BPM Changes	Market Operations Market Instruments
Business Process Changes	Real Time Market & Grid 　　Manage Real Time Market- After Close of Market 　　Manage Real Time Operations- Generation Dispatch
Board Approval	July 14, 2011 (LMPM P2) December 14, 2012 (Mitigation of ExD in RT)
External Business Requirements	November 1, 2012 (LMPM P2) January 8, 2013 (release update for Mitigation for ExD in RT)
Tariff (includes Mitigation for ExD in RT)	Post Draft Tariff December 18, 2012 Stakeholder Comments (January 7, 2013) and Call (January 15, 2013) Post Revised Draft January 28, 2013 FERC filing February 15, 2013
OASIS/ CMRI Technical Specifications	January 8, 2012
Market Simulation	February 19, 2013 – March 1, 2013
Updated BPMs	March 2013
Production Activation	Spring Release 2013 (May 1, 2013)

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Spring 2013 - Post Emergency BCR Filing / Mandatory MSG

Milestone	Date
Application Software Changes	**Master File**: Additional MSG Configuration registrations need to completed by Spring Release 2013. **Reporting:** Monthly Market Reports incorporating greater granularity in reporting BCR components have been made available. **SAMC**: Requires a tune-up on formulas to determine the ON criteria for resources, and the eligibility for Bid Cost Recovery.
BPM Changes	Market Instruments; Settlements & Billing
Business Process Changes	N/A
Board Approval	Feb 16, 2012 ✓
External Business Requirements	February 1, 2013 ✓
Updated BPMs	March 11, 2013
Market Simulation	No market simulation planned for Post Emergency BCR Filing. For Mandatory MSG market simulation, MAP-Stage will be available from January 14, 2103 – May 31, 2013 (MAP-Stage outage from 1/31/13 – 2/19/13)
Tariff	February 15, 2013
Production Activation	Spring 2013

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Spring 2013 – Price Inconsistency Market Enhancements

Milestone	Date
Application Software Changes	**IFM/RTM**: - Use both MW awards and clearing prices from the pricing run - Use ANode prices for settlements of bids at default load aggregate points and trading hubs, contingent upon the ISO ability to generate an Anode for the real-time markets.
BPM Changes	Market Instruments; Market Operations
Business Process Changes	N/A
Board Approval	November 1, 2012
External Business Requirements	December 19, 2012 February 11, 2013 – Updated with Tariff
Updated BPMs	March 8, 2013
Market Simulation	February 19, 2013 – March 1, 2013
Tariff	FERC filing February 15, 2013
Production Activation	Spring Release 2013 (May 1, 2013)

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Spring 2013 – Access and Identity Management (AIM)

Milestone	Date
Application Software Changes	The goal of the AIM project is to improve upon the existing approach for establishing, updating and terminating access to applications as well as providing visibility (transparency), ease of use and self-service where appropriate to POCs (Points of Contact), internal ISO users, business units and IT to manage this process from end to end. **AIM:** New system with UI and workflow
BPM Changes	Congestion Revenue Rights; SC Certification and Termination; Candidate CRR Holder; Definitions and Acronyms
Business Process Changes	IT Access Mgmt. - Certificate based application access; Metering systems access
Board Approval	N/A
External Business Requirements	Jan 31, 2013 ✔
Updated BPMs	TBD
Market Simulation	N/A
Tariff	N/A
Production Activation	Release 1: July 1, 2013 (independent effort) Release 2: TBD

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Spring 2013 – Replacement Requirements for Scheduled Generation Outages (Phase 2)

Milestone	Date	
Application Software Changes	**IRR**: Additional tabs (similar to ISO Modified tab) will be generated and populated with the same content as the manual emails that are sent out at T-25 and after the cure period. **RAAM**: Ability for supplier to designate which LSE the substitution is for and the ability to view current RA MW amount for the original unit in the RAAM tool on the new substitution and existing substitution tab	
BPM Changes	606 - Replacement Requirements - effective 11/21/2012 607 - Resource Adequacy Resource Planned Outage Reporting - effective 11/20/2012	✓✓
Business Process Changes	Not Applicable	
Board Approval	July 12, 2012	✓
External Business Requirements	Not Applicable	
Updated BPMs	Not Applicable	
Market Simulation	Begin April 8, 2013 – unstructured	
Tariff	FERC Compliance Filing December 19, 2012 Request for Rehearing December 19, 2012	✓✓
Production Activation	Spring Release 2013	

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Spring 2013 Release - CMRI Affected APIs (FERC755 & LMPM)

Market notice: **http://www.caiso.com/Documents/Spring2013ReleaseCMRI6_8_0-APISupport.htm**

Report	Release	Affected API Versions	Availability as of Spring 2013
MarketAwards	GoLive	RetrieveMarketAwards_PTR_AP	Version will be retired
	MSG	RetrieveMarketAwards_PTRv20091101_AP	Existing version will remain supported
	Spring 2013	RetrieveMarketAwards_PTRv1_AP RetrieveMarketAwards_PTRv1_DocAttach_AP	New version will be supported
Schedule Prices	GoLive	RetrieveSchedulePrices_PTR_AP	Existing version will remain supported
	Spring 2013	RetrieveSchedulePrices_PTRv1_AP RetrieveSchedulePrices_PTRv1_DocAttach_AP	New version will be supported
MPMResults	GoLive	RetrieveMPMResults_PTR_AP	Version will be retired
	MSG	RetrieveMPMResults_PTRv20091101_AP	Existing version will remain supported
	Spring 2013	RetrieveMPMResults_PTRv1_AP RetrieveMPMResults_PTRv1_DocAttach_AP	New version will be supported

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Spring 2013 Release - CMRI Affected APIs

Spring 2013 "v1" API version technical docs posted:

CMRI 6.8.0 Release Notes document
http://www.caiso.com/Documents/ReleaseNotes_CMRI_6_8_0_v1.pdf

CMRI Spring 2013 Interface Specifications document
http://www.caiso.com/Documents/CMRIInterfaceSpecificationsSpring2013Release.pdf

CMRI Spring 2013 Artifacts Package
http://www.caiso.com/Documents/CMRIArtifactsPackageSpring2013Release.zip

Market participants currently utilizing the MarketAwards and MPMResults GoLive API versions must upgrade to either the MSG or (preferably) the v1 versions to continue retrieving market results from the ISO.

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Spring 2013 – Market Simulations

Comprehensive Spring Release Market Simulation plan to be published by 2/8/13

- **Spring 2013 Initiatives Market Simulation Structured / Unstructured Scenarios**
  - FERC Order 755 – Pay for Performance - One structured scenario, to be published by 2/8/13
  - LMPM Enhancements Phase 2 - Two structured scenarios, published 1/22/13
  - MSG Phase 3 - Unstructured simulation
  - Post Emergency Filing BCR changes / Mandatory MSG - Unstructured Simulation
  - Price Inconsistency Market Enhancements (not including bid floor cap) - Unstructured Simulation
  - Replacement Requirements for Scheduled Generation Outages Phase 2 - Unstructured Simulation
- **Spring 2013 Initiatives Market Simulation Timelines**
  - FERC Order 755 – Pay for Performance, LMPM Enhancements Phase 2, Exceptional Dispatch Mitigation in Real Time, Price Inconsistency Market Enhancements - 2/19/13 through 3/1/13
  - MSG Phase 3 - 2/26/13 through 3/1/13
  - Mandatory MSG - 1/14/13 through 5/31/13
  - Replacement Requirements for Scheduled Generation Outages Phase 2 - 4/8 through 4/12
- **MAP Stage Planned Outages**
  - 1/31/13 through 2/19/13

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Spring/Fall 2013 - Flexible Capacity and Local Reliability Resource Retention

Milestone	Date	
Application Software Changes	The Flexible Capacity and Local Reliability Resource Retention (FLRR) will allow the ISO to pursue tariff changes that will ensure the ISO has sufficient backstop procurement authority to address capacity at risk of retirement that the ISO identifies as needed up to five years in the future to maintain system flexibility or local reliability. **MasterFile:** Designate FLRR resources and input/store the going-forward costs; Define FLRR cost allocation Areas. **Settlements:** New Charge Codes for FLRR payments and allocations. **POTOMAC/RLC:** Energy: LMP – Default Energy Bid, Start up and Minimum Load Costs, Ancillary Services Costs	
BPM Changes	Reliability Requirements, Settlements & Billing	
Business Process Changes	Manage Entity & Resource Maintenance Updates (MMR LII), Manage Long Term Transmission Planning (DI LII), Manage Market Billing & Settlements (MOS LII)	
Board Approval	September 2012	✓
External Business Requirements	TBD	
Updated BPMs	TBD	
Market Simulation	TBD	
Tariff	Filed December 12, 2012 Anticipating FERC decision in April 2013	✓
Production Activation	April 2013 – Addressed using manual measures once tariff is approved October 1, 2013 – Automated solution in place	

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Fall 2013 – RIMPR Phase 1 / BCR Mitigation / Bid Floor

Milestone	Date
Application Software Changes	**IFM/RTM:** Energy Bid Floor to -$150/MWh **MQS:** • Modify MLC calculation and cost allocation rules. • Change DA MLC determination • Program PDM– May need changes to MQS energy algorithm. • Split netting between DA and RT markets. **Settlements**: • Modify and build up to 12 charge codes to implement new BCR netting rules and MLC. • Program PDM (Persistent Deviation Metric) calculation. • Program new RT PM (performance metric) calculation. • Offset DA MLC by MLE revenues. **SIBR:** • SIBR rule changes will be needed to change the bid floor from -$30 (soft) to -$150 (hard).
BPM Changes	Settlements & Billing, Market Operation
Business Process Changes	Manage Billing and Settlements, Market Performance
Board Approval	Bid Floor and BCR netting: December 15-16, 2011 BCR Mitigation Measures: December, 2012
External Business Requirements	April 19, 2013
Updated BPMs	TBD
Market Simulation	TBD
Tariff	TBD
Production Activation	Fall 2013 (October 1, 2013)

Fall 2013 – Circular Scheduling

Milestone	Date
Application Software Changes	**CAS:** Identify a circular schedule for a single SC with Single e-tagged schedule with source/sink in the same BAA (CAISO or any other BAA). Exclude dynamic, DC segments, open interties, pseudo ties and wheeling-through schedules serving outside load. **CRR Claw Back/MQS:** Build new rule to calculate CRR claw-back dollar value. Apply the rule on the SCs that hold CRRs on the paths that the circular schedule contributes to congestion. The evaluation will be at the portfolio-level along with the virtual bids when the claw-back is imposed. **Settlement:** Build settlement rule that applies to a circular schedule; settle the Import to the ISO at the lower of LMPs at scheduling points for import and export for the MW in IFM and HASP. Circular schedule is not eligible for BCR for the interval.
BPM Changes	Market Operations, Market Instruments, Settlements & Billing
Business Process Changes	Manage Interchange Scheduling, Manage MQS, Manage Billing and Settlements
Board Approval	March 2012
External Business Requirements	March 22, 2013
Updated BPMs	TBD
Market Simulation	TBD
Tariff	TBD
Production Activation	Fall 2013 (October 1, 2013)

Fall 2013 – Commitment Cost Refinement

Milestone	Date
Application Software Changes	**Masterfile:** Creation of new field to capture resource specific characteristics. **Settlements:** Operational Flow Orders, NOx, and Sox penalties must be submitted ex post under circumstances attributable to exceptional dispatch and real-time commitments. These costs will be included in a re-evaluation of the real-time BCR calculation for that day with the Operational Flow Orders (OFO) costs added into the calculation of the generator's net shortfall or surplus over that day. Must establish an interface in which Market Participants can enter data to flow directly to Settlements. The long-term service agreement costs refer to the major maintenance costs. The ISO is working with POTOMAC to develop a template and will share the template with Stakeholders at first quarter of 2013.
BPM Changes	Market Instruments Billing & Settlements
Business Process Changes	Manage Reliability Requirements ✔
Board Approval	May 2012 ✔
External Business Requirements	March 29, 2013
Updated BPMs	TBD
Market Simulation	TBD
Tariff	TBD
Production Activation	Fall 2013 Release (October 1, 2013)

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Fall 2013 – AS Buy Back

Milestone	Description/Date	
Application Software Changes	**SLIC:** Operators have the ability to manually force a buy back due to resource or transmission constraints. These manually forced buy backs will be compiled in a new SLIC log, which shall include the modified AS quantity, the interval that the buy back is applied to, and the reason for the manual buy back. **Settlements**: Settlements will need to map to the new SLIC payload. Fourteen Charge Codes related ancillary services are impacted.	
BPM Changes	Settlements & Billing;	
Business Process Changes	Manage Billing and Settlements	
Board Approval	July 13, 2012	✓
External Business Requirements	February 28, 2013	
Technical Specifications	TBD	
Tariff	Filed January 3, 2013 Anticipating FERC decision in June 2013	✓
Market Simulation	Fall 2013	
Production Activation	Fall 2013 Release (October 1, 2013)	