



**California ISO Payment Acceleration Project  
Final Proposal – Version 1.1  
December 5, 2008**

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## Background

The California ISO (CAISO) recognizes that the current payment calendar takes too long between trade dates and Market Clearing. This time delay presents undue credit risk to market participation. This increased risk may hinder resource availability from out-of-state resources, challenges credit management, and exposes Market Participants to additional risk in the event of defaults or bankruptcies. The CAISO has identified the need for an efficient cash clearing timeframe and to reduce the Settlement Statement timeframe as part of Strategic Objective 1.0, Excellence in Grid & Market Operations in *CAISO's Five-Year Strategic Plan 2008-2012*<sup>1</sup>.

The CAISO began the stakeholder process by publishing a discussion draft containing an initial Payment Acceleration proposal. Market Participants reviewed the paper, participated in stakeholder meetings, and provided their feedback. CAISO published a feasibility analysis paper in response to Market Participant feedback and held a stakeholder meeting to review and discuss. After a thorough evaluation of all stakeholder feedback, comments, and proposals, the CAISO published the Payment Acceleration straw proposal. Market Participants were given the opportunity to provide feedback on the Straw Proposal through comments and additional stakeholder meetings. This final proposal is the result of a CAISO and Market Participant collaboration effort representing a solution that meets the objectives of Payment Acceleration.

The objective of the final proposal is to present the CAISO's position after a comprehensive evaluation of Market Participant feedback through the CAISO stakeholder process. Market Participants will have the opportunity to comment on the final proposal prior to presenting to the CAISO Board of Governors.

## Outcome

The final proposal recommendation comprises of an increased Settlement calculation and Invoice timeline that reduces the current (MRTU) average cash clearing time from 56 to 17 business days. In addition, the initial Settlement Statement publication timeline decreases to 7 business days from 38 in the MRTU implementation.

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<sup>1</sup> The CAISO's Five Year Strategic Plan 2008-2012 can be located at <http://www.caiso.com/1fa4/1fa4c0d125c80.pdf>

## Payment Acceleration Implementation Options

The CAISO conducted a comprehensive stakeholder process, evaluated all stakeholder feedback, and reviewed Payment Acceleration objectives. Below are the three options initially proposed in the straw proposal:

	<b>Statement Timeline</b>	<b>Bifurcation of DA/RT</b>	<b>Meter Data Substitution</b>	<b>Credit Run</b>	<b>Interest</b>	<b>Invoicing *</b>	<b>Sunset Provision</b>
SP #1	T+7B T+38B T+76B T+18M T+35M	No – T+7B includes all Charge Codes.	Yes – for data not available at T+5B.  Reflected on T+7B initial statement.	T+7B Settlement Statement also acts as Credit run.	With or without.  If with Interest, between initial (T+7B) and 1 <sup>st</sup> true-up (T+38B)	Fixed Date Semi-monthly  Monthly CCs remain on a monthly schedule.	Yes at 36M
SP #2	T+2B T+9B T+50B T+100B T+18M T+35M	Yes – T+2B includes DA only charges.	Yes – for data not available at T+5B.  Reflected on T+9B statement.	T+9B Settlement Statement also acts as Credit run.	With or without.  If with Interest, between initial (T+9B) and 1 <sup>st</sup> true-up (T+50B)	Fixed Date Semi-monthly  Monthly CCs remain on a monthly schedule.	Yes at 36M
SP #3	T+2B T+7B (Credit) T+38B T+76B T+18M T+35M	Yes – T+2B, but only includes Charge Codes 6011 & 6301.	Not needed, due to T+38B using SQMD, and T+2B only DA Charge Codes.	T+7B is a credit run.	No, since Meter Data substitution is not required.	Fixed Date Semi-monthly  Monthly CCs remain on a monthly schedule.	Yes at 36M

\* Any of the three options can be accomplished with monthly or weekly Invoicing.

After further review and additional stakeholder input on the straw proposal, the CAISO determined the following four options (Table 1.0) meet the overall sentiment of participants, while best meeting the objectives of payment acceleration. This document provides details on the change of options between the final and straw proposals, as well as the reasoning for the recommended option. .

Table 1.0 – Payment Acceleration Options

	<b>Statement Timeline</b>	<b>Bifurcation of DA/RT</b>	<b>Meter Data Substitution</b>	<b>Credit Run</b>	<b>Interest</b>	<b>Invoicing *</b>	<b>Sunset Provision</b>
Option #1	T+7B T+38B T+76B T+18M T+35M	No – T+7B includes all Charge Codes.	Yes – for data not available at T+5B.  Reflected on T+7B initial statement.	T+7B Settlement Statement also acts as Credit run.	Yes  Interest applied on deviations between initial and first true-up, and first and second true-up.	Floating Date  Semi-monthly for Initial & monthly for true-ups  Monthly CCs remain on a monthly schedule.	Yes at 36M
Option #2	T+7B T+38B T+76B T+18M T+35M	No – T+7B includes all Charge Codes.	Yes – for data not available at T+5B.  Reflected on T+7B initial statement.	T+7B Settlement Statement also acts as Credit run.	No	Floating Date  Semi-monthly for Initial & monthly for true-ups  Monthly CCs remain on a monthly schedule.	Yes at 36M
Option #3	T+7B T+38B T+51B T+18M T+35M	No – T+7B includes all Charge Codes.	Yes – for data not available at T+5B.  Reflected on T+7B initial statement.	T+7B Settlement Statement also acts as Credit run.	Yes  Interest applied on deviations between initial and first true-up, and first and second true-up.	Floating Date  Semi-monthly for Initial & monthly for true-ups  Monthly CCs remain on a monthly schedule.	Yes at 36M
Option #4	T+7B T+38B T+51B T+18M T+35M	No – T+7B includes all Charge Codes.	Yes – for data not available at T+5B.  Reflected on T+7B initial statement.	T+7B Settlement Statement also acts as Credit run.	No	Floating Date  Semi-monthly for Initial & monthly for true-ups  Monthly CCs remain on a monthly schedule.	Yes at 36M

\* Any of the options can be accomplished with monthly or weekly Invoicing.

## Settlement Timeline

The Payment Acceleration Settlement timeline of the initial statement must improve on the current MRTU timeline of T+38B. An improved initial statement timeline is essential in meeting the primary Payment Acceleration objective of shortening the payment calendar and reducing undue credit risk to market participation. In determining a reduced timeline, statement accuracy must be considered.

In addition, the gap between an initial and the first true-up must take into consideration credit exposure. This is particularly significant if the initial statement only includes Day-Ahead charges and the first true-up is the earliest introduction of Real-Time charges. A delay in the Settlement between the Day-Ahead and Real-Time markets could impact Market Participants' behavior and market performance. Actual trading in the Day-Ahead and the Real-Time markets occur only one day apart, therefore, a long delay in the financial Settlement between these two markets create incentives for market participants to behave differently than if they are settled together or not too far apart. The longer the time span between the financial Settlement of the Day-Ahead and the Real-Time markets, the greater the incentive for Market Participants to adjust their bidding and scheduling strategy. This could have a significant impact on market prices and market performance. As such, to minimize the impact on market performance, it is recommended that the Day-Ahead and the Real-Time markets settle as closely as possible to one another.

Another consideration is the current MRTU timeline; in order to reduce intrusiveness to current processes & procedures, an effort should be made to stay in-line with current timelines where possible. And, the number of Settlement calculations must be controlled to allow for statement manageability by both the CAISO and Market Participants.

Finally, the Settlement timeline must provide sufficient time to both Market Participants and the CAISO for dispute submittal and resolution.

## Bifurcation of DA/RT

The concept of bifurcating the Day-Ahead and Real-Time Settlements was introduced by Calpine in the Aug. 18<sup>th</sup>, 2008 Stakeholder meeting. Benefits of bifurcation have been clearly stated in Calpine's proposal and CAISO's feasibility study. These documents can be found at <http://www.caiso.com/docs/2005/03/23/2005032307323521863.html>. However, bifurcation also introduces software complexities to split the Day-Ahead (DA) and Real-Time (RT) Charge Codes, credit exposure due to the delay of RT Settlements, and potential issues with the future implementation of virtual bidding. Increasing the Settlement Statement timeline, together with more frequent Invoicing will meet the objectives of bifurcation as defined in Calpine's proposal while avoiding some of the identified issues.

Under all options listed in Table 1.0, Day-Ahead and Real-Time virtual bids are proposed to be settled together to ensure efficient performance of Convergence Bidding. Convergence Bidding provides a financial tool for the physical hedging of production by suppliers of energy as well as the arbitrage of prices between the Day-Ahead and Real-Time markets. Convergence bidding allows buyers and sellers to purchase or sell energy in the forward spot market, with the explicit requirement that they sell or buy back the same energy in Real-Time as a price taker. The term "Convergence" refers to the convergence of energy prices in the two spot markets, which is an intended outcome of the underlying bidding practice. A long delay in the Settlement between Day-Ahead and Real-Time markets will impact the liquidity of the market when traders have to wait a long time between paying Day-Ahead and receiving payment in the Real-Time market. Since virtual bids are purely financial and are not dependent on Meter Data, this problem could be remedied if virtual bids could be settled immediately based on the known Real-Time prices.

## Meter Data Substitution Methodology

The CAISO has identified potential methodologies for estimating Meter Data at T+5B absent polled or SC submitted data availability. Options are as follows:

- Using only DA IFM Schedules
- Using DA IFM + adjustment based on CAISO Actual Load
- Use current credit liability Meter Data estimation (uses the IFM DA schedule and adder of +/-10% factor (or other % Factor).
- Hourly forecasts and Real-Time Schedules

Meter Data estimation, since it is never 100% accurate, has the potential of creating challenges to an accelerated Settlement and payment that may not be resolved with any estimation methodology. The following challenges were considered in determining the estimation methodology of choice:

- Need to minimize deviation of Real-Time calculations due to differences between expected energy and Day-Ahead schedules for generators
- Need to minimize impact of Day-Ahead charges, such as Bid Cost Recovery (BCR) payments to Generators and Bid Cost Recovery uplift charges due to their reliance on Real-Time data.
- Need to minimize imbalances between payments made to suppliers and charges to Demand due to estimations.
- Increase incentive for Scheduling Coordinators to accelerate submittal of accurate Meter Data.

## Credit Run

In order to provide transparency on credit liabilities, a credit calculation must be executed on a regular basis. This can be a separate run, or combined with a regularly scheduled Settlements calculation.

## Interest

In the case Meter Data is estimated, interest payments would provide a mechanism to ensure that there are no financial incentives to submit unreasonable estimates of Load or Generation. Interest applied between Invoice cycles will serve as a deterrent for any SCs obtaining 'interest free loans' and account for the time value of money when market participants are initially over or under charged.

## Invoicing

Market (cash) Clearing is directly related to Invoicing. Therefore, a more frequent Invoice schedule must be executed in order to gain large improvements in the payment calendar. Keeping Invoice frequency at monthly limits the average cash clearing to 25 days (assuming a T+7B initial statement). CAISO's goal is to be a leader in the area of cash clearing and can improve greatly by exploring increased Invoicing options. Improved Invoicing, in conjunction with an accelerated Settlement timeline, will greatly reduce credit risk to the market.

Table 1.1 shows average cash clearing timelines with different Invoice frequency options.

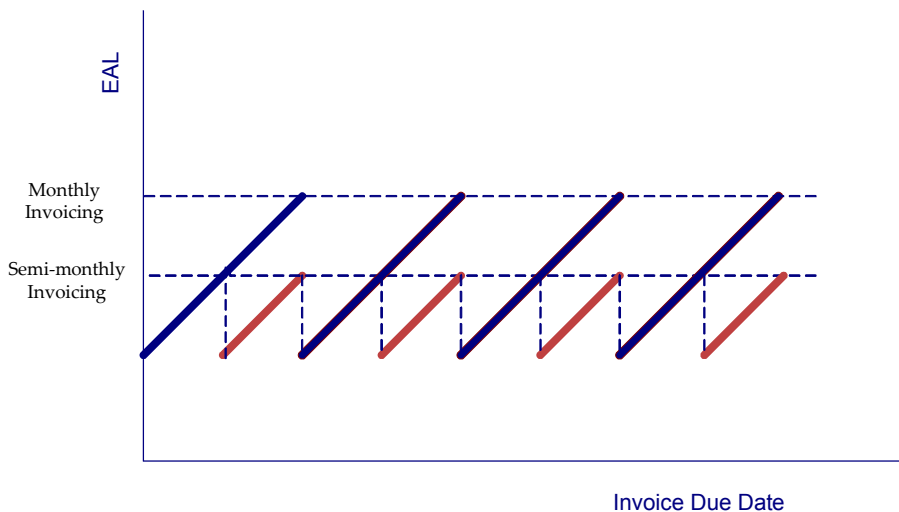
Table 1.1 – Average Cash Clearing

Initial Statement	Monthly	Semi-Monthly	Weekly
T+2B*	20 days	12 days	8 days
T+7B	25 days	17 days	13 days
T+9B	27 days	19 days	15 days
T+38B	56 days	48 days	44 days

\* A T+2B timeline would not include RT charges

### **Impact of Invoicing Frequency on EAL**

Market Participants' Estimated Aggregated Liability (EAL) will be affected by Invoicing frequency. In general, more frequent Invoicing reduces EAL. With semi-monthly Invoicing, the first Invoice will include daily Charge Codes for the first half of the month, and the second Invoice will include daily Charge Codes for the second half of the month as well as monthly Charge Codes. The following chart shows that semi-monthly Invoicing significantly reduces EAL compared to monthly Invoicing.



### **EAL & Collateral Improvements**

Payment Acceleration greatly reduces Estimated Aggregated Liability (EAL) and collateral requirements. Under MRTU, average cash clearing of the Initial Settlement Statement occurs at approximately 3 months following the Settlement Statement publishing date. Table 1.2 compares average cash clearing timelines for each proposed option versus MRTU.

Table 1.2 - Average Cash Clearing\* - by Option\*\*

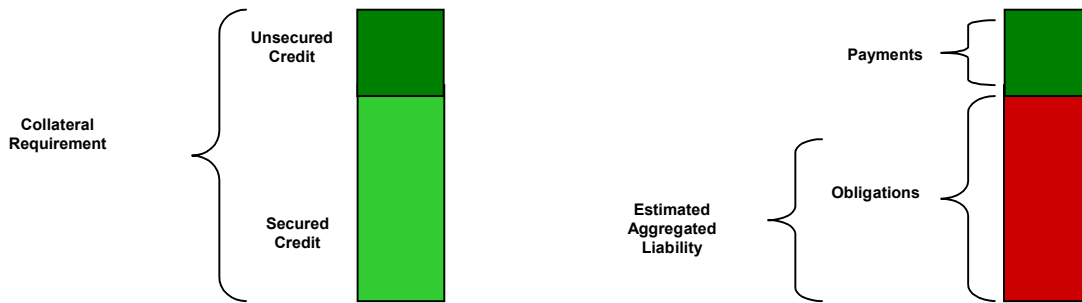
	Initial Statement	1 <sup>st</sup> True-up w/SQMD	2nd True-up w/SQMD	Comments
Option #1	17 days	56 days	94 days	
Option #2	17 days	56 days	94 days	
Option #3	17 days	56 days	69 days	
Option #4	17 days	56 days	69 days	
MRTU	56 days	69 days	94 days	Initial - T+38B True-ups - T+51B & T+76B

\* Average days are calculated using calendar days following the statement publishing timeline of business days.

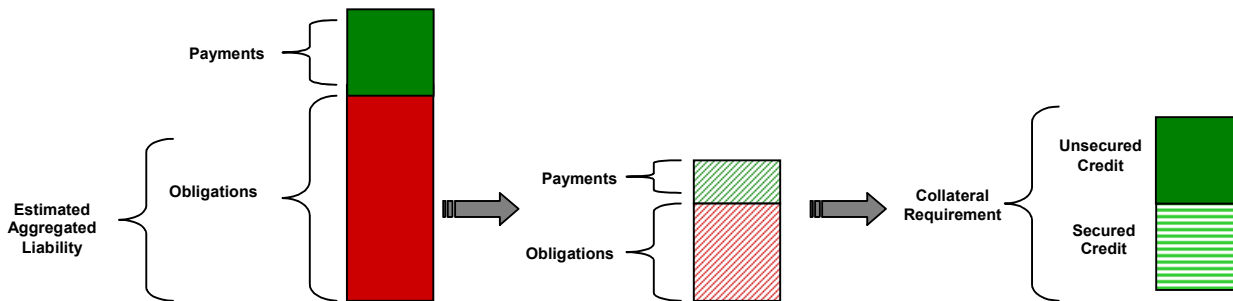
\*\* Assumes semi-monthly Invoice schedule.



Each Market Participant's collateral on hand must be greater than the Estimated Aggregated Liability



Payment Acceleration decreases each participant's EAL and subsequently reduces the collateral required.



### Sunset Provision

CAISO will implement a sunset provision effective at T+36M. The final true-up Settlements Statement will publish at T+35M to allow time for settlement disputes, and adjustments if necessary, prior to the sunset. In the case where an adjustment is required, another Settlements Statement will publish and the adjustment will be reflected on a subsequent semi-monthly Invoice. This adjustment will be final and not subject to dispute. The only exception to the sunset timeline will be in accordance with FERC orders/rulings.

# Recommendation

After a thorough stakeholder process, CAISO recommends Option #1 for Payment Acceleration implementation.

Statement Timeline	Bifurcation of DA/RT	Meter Data Substitution	Credit Run	Interest Payments	Invoicing	Sunset
T+7B T+38B T+76B T+18M T+35M	No – T+7B statement includes all Charge Codes.	Yes – for Meter Data not available at T+5B.  Reflected on T+7B statement.	T+7B Settlement Statement also acts as Credit run.	Yes – through second true-up.	Floating Date  Semi-monthly for Initial Monthly for true-ups  Monthly CCs remain on a monthly schedule.	Yes at 36M

## Statements, Invoicing, and Billing Inquiries

Below is a description of the CAISO proposed Settlement Statement, billing, and Invoice cycles, which are also summarized in Table 1.3 at the end of the section.

### Invoices

The CAISO will publish Invoices on a semi-monthly basis. Initial Settlement Statements will be Invoiced twice per month and appear on the Invoice as billing periods (1<sup>st</sup>-15<sup>th</sup> or 16<sup>th</sup>-31<sup>st</sup>). True-up Invoices will remain as monthly (i.e. 10/1 – 10/31) and be reported on one of the semi-monthly Invoices along with the initial Invoice. Monthly Charge Codes will always be Invoiced on the 1<sup>st</sup> semi-monthly Invoice and include charges from the previous month. GMC and FERC Fee charges will not be on a separate Invoice, but included with all other Charge Codes similar to the MRTU design. Invoicing date will be ‘floating’ and occur on the calendar day that trade dates 15<sup>th</sup> and 31<sup>st</sup> are calculated. Following current standards, payment of all Invoices is due within 5 business days after the Invoice publishes.

Introducing semi-monthly Invoicing may impact existing process and procedures. However, the mixing of Invoice types (i.e. initial, 1<sup>st</sup> true-up, etc.) on the same Invoice is already being introduced in MRTU (T+76 on same Invoice as the initial or recalculation) and will not impact current accounting procedures. In addition, this practice is consistent with the majority of other ISO’s Invoicing policies.

CAISO’s future plans are to ultimately Invoice on a weekly basis. However, the initial deployment will be semi-monthly and a weekly cycle will be planned after the initial Payment Acceleration implementation. Links to a sample payment calendar and mock Invoice are located at the end of this document.

### Initial Statement and Semi-Monthly Invoice

The initial Settlement Statement will use available Meter Data (ISO polled + SC submitted) at T+5B and estimate remaining obligations based on substitution methodology (defined in section ‘Accelerated Meter Data Submission and Estimation’ below). Initial statement will publish seven (7) business days after each trade date (T+7B). This initial statement also acts as the credit run. Initial statements are included on the semi-monthly Invoices as billing periods (1<sup>st</sup>-15<sup>th</sup> or 16<sup>th</sup>-31<sup>st</sup>). The semi-monthly Invoice publishes on the date the last trade date of the billing period is calculated and published. SCs can submit billing inquiries identifying discrepancies based on this initial statement until T+21 business days for any item except those specifically dependent upon the Meter Data that is estimated by the CAISO. The CAISO will make corrections on the next true-up statement at T+38B for the impacted trade date, if possible given the complexity of the issue, for any valid issues identified in billing inquiries received before the predefined deadline. If an SC disagrees with the CAISO’s resolution of its billing inquiry, that SC has 3 months from the CAISO response to initiate a good faith negotiation (GFN).

## **First True-up Statement & Invoice**

The second Settlement Statement (“First True-up”) uses actual SQMD submitted by SCs no later than T+43 calendar days, as well as SQMD for CAISO polled Meter Data, and will publish 38 business days after the trade date (T+38B). This T+38B timeframe allows enough time for SCs to submit actual SQMD and still limits the time gap between the initial Settlement Statement and the first true-up statement. The first true-up Settlement Statements will be reflected on the next semi-monthly Invoice published and includes a billing period of an entire month. SCs can submit billing inquiries to the CAISO on or before T+56B, and the CAISO will make corrections, if possible, on the next true-up statement at T+76B. If an SC disagrees with the CAISO’s resolution of its billing inquiry, that SC has 3 months from CAISO response to initiate a good faith negotiation (GFN). The timeline provides sufficient time to both Market Participants and CAISO for dispute submittal and resolution.

## **Second True-up Statement & Invoice**

The third Settlement Statement (“Second True-up”) includes any changes to SQMD, and any corrections due to valid issues identified through the billing inquiry process. This statement will publish 76 business days after the trade date (T+76B), and will act as the final statement for purposes of RMR Invoicing. The second true-up statements will be reflected on the next semi-monthly Invoice published and includes a billing period of an entire month. SCs can submit billing inquiries based only on incremental changes between the T+38B and T+76B statements, and these must be submitted by T+12M. Valid billing inquiries will be included on the next true-up statement at T+18M. If a Market Participant disagrees with the CAISO’s resolution of its billing inquiry, that SC has 3 months from CAISO response to initiate a GFN.

## **Third True-up Statement (If needed) and Invoice**

The fourth Settlement Statement (“Third True-up”) would be generated only if there were changes due to billing inquiries filed based on the second true-up statement, if corrected SQMD is submitted by a SC, or if other errors were caught by the CAISO. It will publish 18 months after the trade date (T+18M), and the statements will be reflected on the next semi-monthly Invoice published and includes a billing period of an entire month. Based on this statement, SCs can submit billing inquiries based only on incremental changes between the T+76B and T+18M statements, and these must be submitted by T+19M. The CAISO must respond to billing inquiries no later than T+20M. Valid billing inquiries will be included on the next true-up statement. If a Market Participant disagrees with the CAISO’s resolution of its billing inquiry and wishes to pursue it further that Market Participant must file a GFN within 1 month of the CAISO response.

## **Fourth True-up Statement (If needed) and Invoice**

The fifth Settlement Statement (“Fourth True-up”) would be generated 35 months after the trade date (T+35M) only if there were changes due to valid billing inquiries from the T+18M statement, Meter Data issues identified through the audit process, or any GFN or ADR Settlements. The fourth true-up statements will publish on the T+35M monthly Invoice cycle and include a billing period of an entire month. If a Market Participant disagrees with the CAISO’s resolution of its billing inquiry, that Market Participant must follow the alternative dispute resolution (ADR) process to pursue the matter further.

## **Note about True-ups**

The CAISO seeks to adopt a more orderly true-up approach to Settlement revisions that will replace the cumbersome and less predictable rerun approach that we currently use. The concept is to collect any changes for a certain trade date and recalculate them according to a predefined calendar as true-ups to SC’s in an orderly and predictable manner. True-up timelines were determined by three factors; allowing for a sufficient dispute timeline, consistency with existing (MRTU) true-up dates, and SQMD submittal dates.

## RMR Impact

Each RMR Invoice is for one facility for one entire month and will not change under Payment Acceleration. Estimated RMR Invoice timeline will not be impacted by Payment Acceleration. Currently the estimated RMR Invoice is submitted within 14 calendar days after the end of each month and the Invoice is paid 30 days later. So payment can be as early as T+31. The adjusted Invoice timeline will change. Currently the adjusted Invoices are submitted within 7 days of the final Settlement Statement for the last day of the month (T+51B). Under MRTU the adjusted Invoices will be submitted within 7 days of the Recalculation Settlement Statement (T+51B). Under Payment Acceleration, the adjusted Invoice should be submitted after the statement that is no longer subject to dispute (T+76B).

Table 1.3 - Payment Acceleration Statement, Billing & Invoice Schedule

SQMD Date	Statement Generated	Billing Inquires Due	Data Changes incorporated	Invoice Date
N/A	T+7B	T+21B Anything, but estimated Meter Data related issues	Meter Data (ISO polled + SC submitted) at T+5B and estimate remaining obligations based on schedules	Semi-Monthly
T+43C (SQMD)	T+38B	T+56B	Actual SQMD, Corrections based on Billing Inquiries, data clean up	Next semi-monthly Invoice cycle – entire month
T+61B (SQMD)	T+76B	T+12M (incremental changes)	Corrections based on billing inquiries, SQMD corrections, data clean up	Next semi-monthly Invoice cycle – entire month
T+17M (SQMD)	T+18M (if needed)	T+19M (incremental changes)	Corrections based on billing inquiries, SQMD Corrections, GFN, ADR	Next semi-monthly Invoice cycle – entire month
T+34M (SQMD)	T+35M (if needed)	T+35M + 7 days (incremental changes)	SQMD Corrections based on MDAS Audit findings, GFN, ADR	Next semi-monthly Invoice cycle – entire month

## Bifurcation of DA/RT

The initial Settlement Statement at T+7B will contain all Charge Codes. The objective of bifurcation is to accelerate payment of the Day-Ahead Market (DAM) due to the natural separation of data between the two markets. Option #1 meets this objective by accelerating both the Settlement timeline and Invoice frequency. Appendix A provides details on how option #1 resolves issues raised in stakeholder comments and meetings on bifurcation of DA/RT Settlements:

## **Accelerated Meter Data Submission and Estimation**

The CAISO will require that a Scheduling Coordinator (SC) submit estimated Settlement Quality Meter Data (SQMD) and make it available within the SQMDS (OMAR application) five (5) business days after the relevant Trading Day (T+5B). When Meter Data is not available within this timeframe, the CAISO will estimate outstanding metered Demand and Generation.

The SCs will use the same Meter Data submittal process currently available today, utilizing either OMAR on-line or their FTP functionality, to submit their estimated data files to the CAISO no later than T+5B. Submittal of Meter Data anytime after T+5B will not be used in the accelerated payment calculation but will remain in the SQMDS (OMAR application) until such time that it is updated and/or provided to Settlements for the T+38B second Settlement Statement ("First True-up") calculation.

The CAISO metered entities' revenue quality meters will be directly polled by the CAISO's RMDAPS as specified in the CAISO Tariff and Business Practice Manuals. The CAISO remains responsible for the validation, estimation and editing of that Meter Data in order to produce Settlement Quality Meter Data. The CAISO will ensure that estimated Settlement Quality Meter Data is made available to Scheduling Coordinators in the SQMDS (OMAR application) within five (5) business days after the relevant Trading Day (T+5B).

### **SC's responsibility for compliance to T+5B submittal of estimated Settlement quality Meter Data**

Tariff, SC self audit and Business Practice Manual (BPM) changes will be made to support the requirement and responsibility of the SC to ensure that submitted Meter Data for payment acceleration at T+5B reasonably represents the Load or Generation they serve. In addition, monitoring measures currently in place for under scheduled Load penalty will be leveraged at T+38B to determine impact of unscheduled Demand that remains un-submitted at T+5B.

The CAISO will not dictate the exact method to calculate the SC submitted estimated SQMD, however, the CAISO provides the following guidelines:

- Use of interval metering at each SC metered entities metering facility (both Load and Generation) that is polled and processed prior to T+5B would be the preferred option and would be providing actual SQMD.
- Use of city gate metering, if there is a meter at the points of interconnection with the CAISO grid (or the UDC distribution system), with adjustments for behind the meter Generation and any Load not represented by the SC.
- Use of EMS or plant information (PI) data that is available with calculations to account for any behind the data point Generation and Load that is served by another SC.
- Use of bids, schedules, forecasts, temperature data, operating logs, recorders, historical data.

An estimated Settlement Quality Meter Data submittal can be accomplished in the T+5B timeframe using interval metering when available and sound estimation practices that blend a variety of available information to make a reasonable representation of the Load used and Generation delivered.

### CAISO Estimation Methodology

Estimated metered Generation will be based on expected energy, the total energy that is expected to be generated or consumed by a resource, based on the dispatch of that resource, as calculated by the Real-Time Market (RTM) modified by any applicable dispatch operating point corrections, for that resource ID.

Estimated metered Demand not submitted by an SC, in non-compliance with the requirement to submit this Meter Data at T+5B, will have estimated Settlement Quality Meter Data created by the CAISO using the value of that SCs Scheduled Demand, the MW of energy of Demand cleared through the IFM and set in the Day-Ahead scheduled for the next Trading Day, by LAP and/or CLAP. This value will be increased by 15% if the total actual system Demand in Real-Time (RT), as determined by the CAISO each hour, is greater than 15% of the total estimated meter demand (TEMD) at T+5B. Where, TEMD = value of SC submitted metered Demand + CAISO polled estimated Settlement quality metered Demand + Scheduled Demand for un-submitted metered Demand, available at T+5B.

Table 1.4 demonstrates the proposed Meter Data Estimation methodology using a comparison between total actual system Demand (ASD) against the total estimate metered demand (TEMD) at T+5B with resulting estimation rule using the SC's Scheduled Demand as the basis.

Table 1.4 – Meter Data Estimation Methodology

<b>IF,</b>	<b>THEN,</b>
ASD < TEMD	Estimated metered Demand = SC Scheduled Demand
ASD > TEMD, by less than 15%	Estimated metered Demand = SC Scheduled Demand
ASD > TEMD, by more than 15%	Estimated metered Demand = SC Scheduled Demand plus 15%

Where,

*ASD - Actual System Demand = the total actual Load determined by the CAISO in Real-Time on an hourly basis*

*TEMD = SC submitted metered Demand + CA ISO polled estimated Settlement quality metered Demand + Scheduled Demand for un-submitted metered Demand*

### Benefits to accelerated Meter Data submission and estimation proposal

- Provides flexibility allowing SC's the ability to be part of the solution
- Recognizes technology advancement in Meter Data collection and estimation (i.e. advanced metering infrastructure AMI and smart metering)
- Follows current SQMD submittal requirements and processes
- No additional submittal or compliance processes required, leverages current compliance programs and enforcement protocols
- Leverage current metering infrastructures and file formats

## Interest Payments

Interest will be applied to any deviations through the second true-up Invoice. Interest is included in the Payment Acceleration proposal to help ensure that no financial incentives exist to submit unreasonable Meter Data and that the time value of money is accounted for when Market Participants may be initially overcharged or undercharged due to estimated Meter Data, updates to SQMD Meter Data, and price adjustments. The CAISO is proposing that initially, interest stop after the second true-up Invoice and not carry on into subsequent Invoices that could occur for the T + 18 month and T+ 35 month statements. Since payment acceleration will be implemented sometime between two and five months after MRTU start-up, the CAISO will have time to evaluate prior to the first T + 18 month statement whether or not interest charges are necessary beyond the second true-up Invoice by evaluating Settlements and market data.

Interest will be charged or paid through separate Charge Codes in the CAISO Settlements system. The first true-up Invoice will contain interest charges on deviations between the initial (T+7B) and first true-up with SQMD (T+38B). This first true-up Invoice will charge interest separately for the time period of the 1<sup>st</sup> through the 15<sup>th</sup> and the 16<sup>th</sup> through the end of the month since the initial Invoice for the first half of the month versus the second half of the month is issued on different dates. The second true-up (T+76B) will include interest charges reflecting variations between the 1<sup>st</sup> and 2<sup>nd</sup> true-up Invoices. Again, on the 2<sup>nd</sup> true-up Invoice interest will be charged separately for each half of the month. Interest charged or paid will be calculated back to the first due date of the initial Invoice. Table 1.5 provides an example of interest payments.

Table 1.5 – Interest Payment Example

Trade dates	Initial Invoice # 1	1st True-up Invoice	2nd True-up Invoice
June 1 – 15	Issued on June 24, 2008 Due Date = July 1, 2008	(June 1 – June 30 ) August 26, 2008 Due Date = Sept 3, 2008 6% interest Daily rate = .00016438	(June 1 – June 30 ) October 24, 2008 Due Date = October 31, 2008 6% interest Daily rate = .00016438
June 16 - 30	Initial Invoice # 2 Issued on July 10 Due Date = July 17, 2008		
SC# 1	Initial Invoice # 1 Amount Due = \$25,000 No interest charged or paid  Initial Invoice # 2 Amount Due = \$30,000 No interest charged or paid on initial Invoice	Amount Due = \$50,000  Delta from Initial Invoice # 1 = -\$7000  Interest paid for period July 1 – September 3 (64 days) = \$-73.64  Delta from Initial Invoice # 2 = \$2000  Interest charged for period of July 17– Sept 3 (48 days) = \$ 15.78	Amount Due = \$40,000  Delta from First True-up Invoice for June 1 -15 = - \$2000  Interest paid for period July 1 – October 31 (122 days) = - 40.26  Delta from First True-up Invoice for June 16 – 30 = - \$8000  Interest paid for period July 17 – Oct 31 (106 days) = \$-34.97

Interest rates will be calculated in accordance with FERC's regulations for the calculation of interest for refunds specified in 18 C.F.R. § 35.19a (a)(2)(iii). These rates can be obtained from FERC at <http://www.ferc.gov/legal/acct-matts/interest-rates.asp>. If the interest period spans multiple quarters the interest rate will be prorated for the period of days in each quarter.

# Deployment Schedule

Payment Acceleration will not be implemented until after MRTU go-live. The following criteria will be used to determine the exact deployment timeline:

## 1. CAISO Readiness

- BOG Approval (targeted for 12/16/08)
- FERC Filing (targeted for 4/1/09)
- System/Process changes – project plan will be finalized upon completion of Final Proposal

## 2. Market Simulation (1-2 months)

## 3. Meet Payment Acceleration exit criteria which the CAISO will determine in consultation with Market Participants.

- Exit Criteria established during first implementation workshop scheduled for January 14<sup>th</sup>, 2009.
- MRTU Settlement Statement & Invoice schedule
  - Based on the 3/1/2009 MRTU go-live date, the first MRTU Invoice will publish on 5/22/09 for trade dates 3/1/09 – 3/31/2009. True-up will publish on June 11<sup>th</sup>, 2009.
  - Second MRTU Invoice for TD 4/1/09 – 4/30/09 will publish on 6/24/2009. True-up will publish on 7/14/2009.

## 4. Market Participant Readiness

- Checkpoint meeting after MRTU go-live.

## Initial Project Implementation Schedule

- Planning Phase– 1/31/2008
  - Final Proposal / BOG Approval (12/16/2008)
  - Stakeholder process complete (12/5/2008)
  - Business & System Requirements complete (1/31/2009)
- Design Phase – completion on 2/28/2009
  - Draft Tariff
  - Implementation Workshops
- FERC Filing – by 4/1/2009
- Construction/System Testing Phase – completion on 4/30/2009
  - System/Business Process changes
  - Unit & System Testing complete
- Market Simulation: completion on 5/31/2009 or 6/30/2009
- Implementation: between 6/1/2009 – 8/1/2009

Upon completion of the final proposal, a detailed project plan will be developed and published. The plan will include both CAISO and Market Participant efforts required to prepare for Payment Acceleration. The CAISO plans to present their final Payment Acceleration proposal at the Board of Governors meeting currently scheduled for December 15<sup>th</sup> – 16<sup>th</sup>, 2008 and upon BOG approval file with FERC by April 1<sup>st</sup>, 2009.



## Payment Calendar Transition Timeline

The current MRTU payment calendar and the Payment Acceleration payment calendar will overlap for a period of time in 2009. The transition period is currently under design and will be released at a later date.

## Payment Calendar & Sample Invoice under PA

The following links provide an example of the Payment Acceleration payment calendar and mock Invoice. Please click on the following links to view the excel documents from the CAISO website:

Sample Payment Calendar: <http://www.caiso.com/207e/207e7ea14f640.pdf>

Mock-up Invoice: <http://www.caiso.com/207f/207f926db5a0.pdf>

## Future Considerations

The following items are included in the CAISO's project roadmap for consideration post Payment Acceleration implementation:

1. Interest Provision – evaluate need for interest on the final two true-up Settlement Statements within the first year after Payment Acceleration implementation.
2. Credit Run – include a separate credit run at the T+3B timeframe.
3. Weekly Invoicing – increase Invoicing of initial statements from semi-monthly to a weekly basis.
4. Timeline of second true-up Settlement Statement – evaluate need to accelerate from T+76B.

## Appendix A – Bifurcation Q/A

### ***How will Bid Cost Recovery payments to Generators and charges to Load be settled since some of these calculations are reliant on Real-Time data?***

The CAISO will use all available Market Data (including both Day-Ahead and Real-Time) to settle at T + 7B. Additionally, metered Demand and metered Generation submitted, polled and/or estimated will closely reflect actual Load and expected energy in Real-Time. Therefore, the CAISO will be able to determine Bid-Cost Recovery payments to generators and initial charges to Demand for both RUC and Real-Time Bid Cost Recovery. These charges will be true-up when Load metered data is available at T + 38B.

### ***Will the initial Settlement Statement be revenue neutral?***

CAISO recommended implementation proposal uses ISO polled and Schedule Coordinator (SC) submitted Meter Data that is available at T+5B. If Meter Data is not available within this timeframe, the CAISO will estimate outstanding metered Demand and Generation using a methodology to closely reflect Actual Load and Expected Energy in Real-Time.

Using polled, submitted and estimated data for the accelerated Settlement timeline will more closely reflect actual market activity and will reduce the amount of MW imbalance between what is paid to generators and charged to Load. Imports and Exports will be settled on their deemed delivered quantities including real-time adjustments which will be available to settle at T + 7B. Any imbalance that results will be settled through the standard process to ensure revenue neutrality.

### ***A long delay in the Settlement between the Day-Ahead and Real-Time markets could change virtual bidding behavior and impact the liquidity of virtual bidding market.***

This was a valid concern under the original bifurcation proposal where Settlements would occur for Day-Ahead only at T + 2 and then true-up using Real-Time data at T + 50. This problem is eliminated under Option #1 by settling both Day-Ahead and Real-Time charges at T+ 7B.

### ***How will the CAISO handle small LSE's with peak Load less than 500MW that are exempted from the Day-Ahead under scheduling provision?***

The CAISO will not impose any additional penalties or provisions on the small LSE's with peak Loads less than 500MW. FERC approved the exemption for these small Loads from the under-scheduling provision in their July 17<sup>th</sup> Order. FERC stated the following in their July order in support of the exemption: *"We find the CAISO adequately demonstrates that small LSEs have a minimal impact on day-ahead prices when compared to LSEs with more than 500 MW of Demand. Under these circumstances, we find the exemption for small LSEs is necessary because the interim plan was not intended to penalize small LSEs that experience significant deviations based on relatively small changes in Demand that cannot affect prices in the day-ahead market"*.

Since the CAISO is proposing to charge interest on the delta between the initial Settlement and true-up Settlement this should provide additional incentive, in addition to the added risk of serving Load at Real-Time prices, to schedule accurately in the Day-Ahead market. When convergence bidding is implemented one-year after MRTU start-up, the under scheduling provision will be eliminated for all LSE's.

***How will the CAISO address large deviations in Generation and Load between Day-Ahead and the Real-Time markets? For example, if a generator trips off-line between Day-Ahead and Real-Time will the CAISO still provide an initial payment to the generator even though they didn't produce?***

Under Option # 1, both Day-Ahead and Real-Time data will be used to settle at T + 7B. Therefore the CAISO will adjust Settlements based on Real-Time expected energy and will capture adjustments for any generators that may have tripped off-line.

## **Appendix B - Definitions**

### **ADR**

Alternate Dispute Resolution - In the event a dispute is not resolved through good faith negotiations, a party may submit a Statement of Claim which commences a California ISO ADR proceeding.

### **Bid**

An offer for the Supply or Demand of Energy or Ancillary Services, including Self-Schedules, submitted by Scheduling Coordinators for specific resources, conveyed through several components that apply differently to the different types of service offered to or Demanded from any of the CAISO Markets.

### **BPM - Business Practice Manual**

A collection of documents made available by the CAISO on the CAISO Website that contain the rules, polices, procedures and guidelines established by the CAISO for operational, planning, accounting and Settlement requirements of CAISO Market activities, consistent with the CAISO Tariff.

### **CAISO polled estimated Settlement quality metered Demand**

Revenue quality Meter Data for Load that is directly ISO polled and for which the CAISO has completed validation, estimation and editing within T+5B and made available in the SQMDS (OMAR application).

### **CLAP – Custom Load Aggregation Point**

An aggregation of Load PNodes created by the CAISO based on a set of custom LDFs submitted by a Scheduling Coordinator, at which such Scheduling Coordinator may submit a single Bid and settle Demand consistent with the CAISO Tariff rules, and for which the Scheduling Coordinator is required to submit to the CAISO Meter Data for the nodal Load represented in such aggregation.

### **EMS- Energy Management System**

A computer control system used by electric utility dispatchers to monitor the real-time performance of the various elements of an electric system and to control Generation and transmission facilities.

### **Expected Energy**

The total Energy that is expected to be generated or consumed by a resource, based on the Dispatch of that resource, as calculated by the Real-Time Market (RTM), and as finally modified by any applicable Dispatch Operating Point corrections. Expected Energy includes the Energy scheduled in the IFM, and it is calculated the applicable Trading Day. Expected Energy is calculated for Generating Units, System Resources, Resource-Specific System Resources, and Participating Loads. The calculation is based on the Day-Ahead Schedule and the Dispatch Operating Point trajectory for the three-hour period around the target Trading Hour (including the previous and following hours), the applicable Real-Time LMP for each Dispatch Interval of the target Trading Hour, and any Exceptional Dispatch Instructions. Expected Energy is used as the basis for Settlements.

### **Estimated metered Generation**

Estimated Settlement Quality Meter Data for Generation.

### **Estimated metered Demand**

Estimated Settlement Quality Meter Data for Load.

### **Estimated Settlement Quality Meter Data**

Hourly estimated SQMD files submitted by SCs or by T+5B.

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**GFN**

Good Faith Negotiation

**LAP – Load Aggregation Point**

A set of Pricing Nodes as specified in Section 27.2 that are used for the submission of Bids and Settlement of Demand.

**MV90 – Multi-Vendor 90**

Data collection software used to directly poll CAISO metered entities revenue quality meters and perform validation, estimation and editing of that data to create Settlement quality Meter Data.

**OMAR – Operational Meter Analysis and Reporting**

Acronym used to indicate application to which Settlement quality Meter Data is submitted to or downloaded from via OMAR-Online, FTP'd via OMAR's ECN-FTP, and requested via OMAR's ECN-FTP.

**RQMD - Revenue Quality Meter Data**

Meter Data meeting the standards and requirements established and maintained by the CAISO.

**RMDAPS - Revenue Meter Data Acquisition and Processing System**

A collective name for the set of CAISO systems used to collect, validate, edit and report on Revenue Quality Meter Data (currently referenced as MV90 application).

**RMR**

Reliability Must Run

**Scheduled Demand**

The MW of energy of Demand cleared through the IFM and set in the Day-Ahead scheduled for the next Trading Day.

**Scheduled Generation**

The MW of Energy of Generation cleared through the IFM and set in the Day-Ahead Schedule for the next Trading Day.

**SC - Scheduling Coordinator**

Any entity certified by the CAISO to schedule energy transactions on behalf of generators, supply aggregators (wholesale marketers), and retailers in the California energy market.

**SC self audit**

The ISO Tariff requires Scheduling Coordinators to annually complete a self-audit of Settlement Quality Meter Data (SQMD) processes. The audit requires the examination of Meter Data processes to demonstrate appropriate controls to assure accurate SQMD reporting.

**SQMD - Settlement Quality Meter Data**

Meter Data gathered, edited, validated and stored in a Settlement-ready format, for Settlement and auditing purposes.

**SQMDS - Settlement Quality Meter Data Systems**

A collective name for the set of CAISO systems used to accept, analyze and report on Settlement Quality Meter Data (Currently referenced as MV90 and OMAR applications)

**T + (X)B – Trading Day + (X) business days**

(X) - number of business days after the relevant Trading Day.

**Trading Day**

The twenty-four hour period for which any given DAM or RTM is executed and settled, beginning at the start of the hour ending 0100 and ending at the end of the hour ending 2400 daily, except where there is a change to and from daylight savings time. For any given DAM, the Trading Day will be the next Operating Day following the Operating Day during which that DAM is executed. For any given RTM, the Trading Day will be the same Operating Day during which that RTM is executed.

**TEMED - Total Estimated Meter Demand**

Value of SC submitted metered Demand + CAISO polled metered Demand + Scheduled Demand for un-submitted metered Demand, available at T+5B.

**UDC – Utility Distribution Company**

An entity that owns a Distribution System for the delivery of Energy to and from the CAISO controlled grid. The three major UDCs in the market are PG&E, SCE, and SDG&E.