



**California ISO**  
Shaping a Renewed Future

# **Data Release Phase 3 Straw Proposal**

**February 1, 2011**

## Data Release Phase 3 Straw Proposal

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## 1 Introduction

Data Release Phase 3 is the final phase of an initiative established in 2009 to address the request of market participants to review ISO data release and accessibility policy following the implementation of MRTU. The objective is to release data which will enable market participants to better understand market results and participate more effectively in the ISO markets. Phase 3 will address additional market data which will further improve overall market efficiency.

A stakeholder working group was established prior to commencing this initiative to establish a baseline of market data release enhancements to meet the objective of improving overall market efficiency. The working group documented data requests and segmented items in to policy/tariff and implementation buckets. This resulted in three activities the ISO will be commencing. First, the ISO started the Data Release Phase 3 stakeholder initiative to address a group of policy/tariff issues. Secondly, the ISO will begin the Market Results Redesign Project in 2011 to address enhancements to OASIS and CMRI. Thirdly, the ISO will establish and document an ongoing process to review, respond, and implement future data requests such as providing additional system information on the ISO website.

The scope of the Data Release Phase 3 initiative includes the following items which have policy/tariff implications: (1) release of additional market model data beyond the data released through the CRR full network model release process and the transmission constraints, nomograms and contingencies release process, (2) timing of access to market data to ensure comparable price discovery across market participants, (3) clarify the ISO tariff with regards to releasing CRR bid data, and (4) release of Variable Energy Resource (VER) forecasting data and changes to the cost recovery of the forecasting service.

The ISO proposes to release day-ahead load distribution factors (LDFs), day-ahead and real-time shift factors, provide additional branch groups in the existing Current Transmission Usage report in OASIS, add To/From bus data to the existing Transmission Outage report, publish a daily generation outage report by trading hub, release CRR bid data, and publish wind/solar forecasting data by trading hub. At this time, the ISO is not proposing additional release of information regarding nomograms and monitored constraints. The ISO believes the currently released information meets the need to allow market participants to adequately shadow the ISO's market operations. Nor are we proposing any further enhancements to address comparable timing because the ISO has already implemented functionality which publishes trading hub pricing within 30 seconds of generation dispatch which the ISO believes is sufficient at this time.

## 2 Plan for Stakeholder Engagement

Item	Date
Post Straw Proposal	February 1, 2011
Stakeholder Meeting	February 8, 2011
Stakeholder Comments Due	February 15, 2011
Post Draft Final Proposal	February 28, 2011
Stakeholder Conference Call	March 7, 2011
Stakeholder Comments Due	March 14, 2011

Board Meeting	May 19-20, 2011
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### 3 Background

With the start up of the California ISO's new market system based on Locational Marginal Pricing (LMP) on April 1, 2009, stakeholders have expressed a desire for the release of additional information that would enable them to better understand market results and participate more effectively in the ISO markets. In response, the ISO committed to conduct a stakeholder process to explore the issue of data release and accessibility in ISO markets and to implement appropriate enhancements to its current data provision practices.

The ISO commenced the stakeholder initiative in December 2009. Due to the breadth of issues, the initiative was divided in to three phases. Phase 1 addressed the reporting of transmission constraints and was implemented in July 2010. Phase 2 addressed specific Convergence Bidding issues and designed the release of a daily market summary report and the hourly net cleared virtual quantities. Phase 2 will be implemented in February 2011 with Convergence Bidding. Phase 3 was intended to address the broader scope of additional data to improve overall market efficiency.

Documentation from Phase 1 is available at <http://www.caiso.com/244c/244cae3b46bb0.html> and Phase 2 is available at <http://www.caiso.com/2479/2479df7147660.html>.

### 4 Establishment and Results of Working Group

The ISO established on September 13, 2010 a Working Group to collect data requests and determine the appropriate scope for Data Release Phase 3. The working group held two teleconferences and a full day meeting. All material has been posted to the CAISO website and is available at <http://www.caiso.com/2479/2479dde53d4d0.html>.

Working group members submitted data requests in a common template. The ISO then categorized the data requests with input from the working group into one of two areas 1) data requests with policy/tariff implications and 2) enhancements to existing data that is already released to market participants through Oasis, CAISO website or CMRI. The ISO also presented a decision flow chart highlighting how ISO legal assesses data requests for potential confidentiality issues and reviewed our internal software development and implementation process.

The segmentation of the data requests in to either the policy/tariff or implementation buckets led to three activities the ISO will be commence over the next few months. First, the ISO will begin the Data Release Phase 3 stakeholder initiative to address the data release issues that were identified to have policy/tariff implications. Second, the ISO will begin the Market Results Redesign Project in 2011 to address enhancements to OASIS and CMRI. Third, the ISO will establish and document an on-going process to review, respond, and implement future data requests and plans to begin updating stakeholders on data release requests from the new process beginning at the February 2011 Market Performance and Planning Forum.

#### 4.1 ISO Legal Confidentiality Compliance Process

During the working group meeting, ISO Legal reviewed the process for evaluating data requests to ensure compliance with tariff Section 20 – Confidentiality. The following section discusses the decision process which was reviewed with the working group.

The ISO receives data requests from a variety of sources and forums. The four main types of requestors for data are: (1) Market Participants, (2) Federal Energy Regulatory Commission

(FERC), (3) North American Electric Reliability Corporation (NERC), and (4) other third party sources.

The analysis that the ISO must apply to each data request begins with a simple question to classify the data: "Is the data public information or is the data confidential?" The easy answer is if the data is already public or not protected as confidential, in which case the ISO can simply direct the requestor to where the information is kept (i.e., on [www.caiso.com](http://www.caiso.com)) or provide the data via CD, email, hard copy or some other means.

If, however, the answer is that the data is confidential the analysis is more complex. Data can be confidential for a variety of reasons. Data can be confidential if it falls under one of these categories:

- 1) Market Sensitive Data - any data considered under Section 20 of the ISO tariff to be confidential or commercially sensitive. This tends to be data that contains individual bids, congestion revenue right bids, scheduling coordinator transactions, outage plans, and resource adequacy information. This type of data, if made available, could allow market participants to manipulate the market.
- 2) Critical Energy Infrastructure Information (CEII) - specific engineering, vulnerability, or detailed design information about proposed or existing critical infrastructure (physical or virtual) that relates details about the production, generation, transmission, or distribution of energy. This data could be useful to a person planning an attack on critical infrastructure and is therefore exempt from mandatory disclosure under the Freedom of Information Act (FOIA). In short, it is data that if made available to terrorists could threaten the reliability of America's electric grids.
- 3) Transmission Planning Data - non-public data used for transmission planning, may encompass CEII data, and may include pending or potential transmission studies, plans or projects.
- 4) Reliability Data - data that captures real time telemetry, real time traffic at certain pricing nodes and a variety of other data types related to the reliability of operating the grid.
- 5) Proprietary Data - data owned by the ISO such as analytical tools, computer codes or other material that is protected as the intellectual property of the ISO.
- 6) Personnel Data - data related to the employees of the ISO, personnel records, social security numbers, marital status, benefits and other employee related records not publicly available.

If it is determined that the data is confidential, it does not automatically mean that the information cannot be released. Whether the information can be released and if so, however, depends on the source of the request and the purpose. For example, if a market participant is asking for the full network model (FNM) of the ISO, the FNM is considered confidential, but if it is for transmission planning purposes only and only the transmission side (not the market side) of the company will have access to the information, then the FNM can be released, subject to a non-disclosure agreement. A market participant may also request bid data for a certain study. Bid data is classified as commercially sensitive and confidential, so one would conclude that it cannot be released. This is true to a certain degree. After a period of time, the bid data may be released if it is aggregated and does not expose a single source for the data (See ISO tariff Section 20). For example, aggregated wind data may not be released if there is only one wind resource covering the area in question. Alternatively, if FERC requested the wind data,

although the data is confidential and must be protected, if FERC requests the information, the ISO is compelled to comply with the data request because FERC is the governing body overseeing the operation of the California ISO. However, FERC would protect this type of data from being publicly available through a FOIA request.

Although not with the same latitude to access nearly all information as FERC, if the data requested is required to comply with a reliability standard (i.e. a NERC TOP-0005-1), the ISO can release the data to NERC and to any other market participant that legitimately needs the data to satisfy a legal reliability requirement.

The ISO may also be compelled by law to release otherwise protected confidential information if the request is pursuant to a proper subpoena or other court order requiring the data.

It is evident that if the data requested is classified as confidential then a detailed analysis must be conducted and if the data can be released, the ISO must determine in what manner, whether it needs to be protected by a non-disclosure agreement, whether a market notice must be issued or whether certain affected parties must be notified.

Please refer to the illustrative decisional flow chart for further information about the process at <http://www.aiso.com/2856/28569fe21b560.pdf>.

## **4.2 Data Release Request Template and Categorization**

In order to document data requests of working group members, the ISO developed a data request template. The template included a description of the request, the timeframe the data is needed, the frequency the data is provided, if query functionality is needed, who should have access to the data, benchmarks of similar data provided by other ISOs, and most importantly the user benefit of implementing the data request. Each working group member completed the template and the ISO consolidated and categorized the submissions. The consolidated data release template is available as an Excel spreadsheet at: <http://www.aiso.com/2479/2479dde53d4d0.html>.

## **4.3 Categorization of Issues**

During the working group in person meeting, the team reviewed the consolidated data release template and discussed individual items. During the discussion, the team talked through potential policy/tariff issues with requests. The items identified by the group that require policy/tariff changes established the scope of the Phase 3 Issue Paper. Items that did not appear to have tariff or policy implications were classified as implementation issues and will be addressed through the Market Results Redesign Project or through an on-going Data Release Process that the ISO will develop. The Market Results Redesign Project will address enhancements to the release of market results through OASIS and CMRI. The on-going Data Release Process will evaluate the remaining data release items and future requests.

## **5 Overview of Market Results Redesign Project**

The ISO plans to commence the Market Results Redesign Project in 2011 which will be led by ISO Business Solutions group. The project will address enhancements to Open Access Same-Time Information System (OASIS) and CAISO Market Results Interface (CMRI) applications. Key areas of enhancements will include developing a common reporting interface (look-n-feel) across both OASIS and CMRI, establishing software functionality that would meet documented business use cases in terms of usability and performance, and incorporating new reports. The *Market Results* category of the working group data request template will serve as the starting point for documenting stakeholder enhancement requests.

The ISO will establish a redesign stakeholder working group to collaborate and validate requirements from both a business and software level. The working group will also participate in usability testing activities. Additional details will be communicated through the weekly Systems Interface User Group (SIUG) conference call.

## **6 Establishment of an On-Going Data Release Process**

The Data Release Phase 3 working group highlighted that there will be on-going data release requests and as a result the ISO should establish an interactive process with stakeholders to collect, prioritize, and implement new data release requests. The ISO will establish an internal team that will include participants from legal, policy, business, and IT to evaluate on a regular basis data requests received. The ISO plans to utilize the Market Performance and Planning Forum held approximately every six weeks to update stakeholders on implementation activities and provide stakeholders the opportunity to comment on prioritization of data release requests. The straw proposal for the business process has been posted.

A data request item evaluated through the on-going Data Release Process does not necessarily conclude that tariff or policy issues will not arise during the implementation process. Prior to evaluating requests through the on-going process the ISO will evaluate the request and determine whether or not the data is necessary to increase market efficiency. Subsequently, data requests will be evaluated through the on-going Data Release process. It is possible that during the evaluation that the ISO may determine that there are policy impacts or a tariff change is required. If policy or tariff issues do arise the ISO will seek stakeholder comments through this process in order to drive closure of the issues. Stakeholders will be able to assist in making the case for needed enhancements to market efficiency and inform how or if the data will be released as the process is conducted.

## **7 Scope of Data Release Phase 3 Initiative**

### **7.1 Additional Market Model Data**

During Phase 1 of the data release stakeholder initiative, the ISO and stakeholders agreed to allow broader access to the Congestion Revenue Rights (CRR) network model. Previously, the CRR network model was made available under a Non-Disclosure Agreement (NDA) only to CRR market participants for the sole purpose of participating in the CRR allocation and auction market. The CRR network model is now made available under a NDA without restrictions for which of the ISO markets the data may be used. Market participants are now allowed to use the CRR network model as a basis to simulate the day ahead and real time markets where previously they were only able to utilize the CRR network model for the purpose of the CRR market. While allowing the CRR network model to be more broadly used was an improvement, the CRR network model is approximately six weeks removed from the actual network model utilized for the day ahead and real time markets. In addition, the CRR network model is a simplified DC model whereas the actual market model is AC. Phase 3 will address both the timing and modeling difference to provide market participants with a market model more reflective of the actual model used for the day ahead and real time markets.

There are five areas of network model data which will be addressed through this initiative. The areas are 1) Load Distribution Factors (LDF), 2) shift factors, 3) nomogram definitions and constraint monitoring, 4) transmission modeling and outages, and 5) generation outages. The ISO proposal for each item is detailed below.

### 7.1.1 Release of Day Ahead Load Distribution Factors

Load Distribution Factors (LDFs) are used to distribute load forecasts at load aggregation points to individual load nodes which are utilized to solve the full network model. The LDFs are based upon load patterns from seasonal base cases and are input in the day ahead and real time markets. Market participants have highlighted several market efficiency benefits of releasing LDFs. LDFs can allow market participants to more accurately analyze and simulate ISO markets. This will enable market participants to help identify and improve LDF modeling issues, evaluate the impact bids on a particular constraint, and better understand the outcomes of virtual bids.

The ISO currently provides typical LDFs for nodes on OASIS. The ISO proposes to release the actual day ahead LDFs after the day ahead market closes. The LDFs for each of the D-LAPs underlying nodes will be provided for all nodes which are not a single customer node. For single customer nodes, the nodes will be aggregated into a single LDF for each of the D-LAPs. By consolidating single customer nodes, the ISO addresses the concern of releasing commercially sensitive information.

### 7.1.2 Release of Day-Ahead and Real-Time Shift Factors

Shift factors model the relative benefit of an individual bus in resolving a specific constraint. For example,  $SF_{ij}$  is the shift factor for bus  $i$  (with respect to the reference location) on constraint  $j$  (the incremental amount of power flow on constraint  $j$  when an additional unit of power is injected at bus  $i$  and withdrawn from the reference location). Shift factors can allow market participants to more accurately analyze and simulate ISO markets. In addition, as part of the Convergence Bidding market enhancement, a rule will be implemented to pull back CRR revenue if the market participant used virtual bids to increase the value of their CRR holdings. The CRR settlement rule determines the impact of virtual bids on CRR holdings by evaluating the impact of the virtual activity utilizing the shift factors of the network model. By releasing hourly day-ahead and 5-minute interval real-time shift factors, market participants will be able to validate the CRR settlement rule calculation and perform related market analysis.

The ISO proposes to release day-ahead shift factors by binding constraint and the real-time shift factors by binding constraint after each of the markets close. The day-ahead report will include the constraint, node, and shift factor for each hour. The real-time report will include the constraint, node, and shift factor for each 5-minutes interval. The shift factor reports will include a significant quantity of data which must be considered during the implementation phase of these new reports.

### 7.1.3 Nomogram definitions and monitored constraints

A nomogram is a set of operating or scheduling rules which are used to ensure that simultaneously two or more operating limits are respected.<sup>1</sup> The nomogram decision variables based on numerous variables including reliability requirements, tariff requirements, resource specific restrictions, operations engineer assessments and operator judgment. The resulting constraints define an operating safe region that ensures after a contingency event, the resulting flows would not cause a violation of established thermal, voltage, and/or stability limits. Market participants have asserted that in order for a market participant to effectively simulate the ISO

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<sup>1</sup> The ISO tariff defines a “Nomogram” as “[a] set of operating or scheduling rules which are used to ensure that simultaneous operating limits are respected, in order to meet NERC and WECC reliability standards, including any requirements of the NRC.”



markets, it is important for them to understand how the nomogram implements the simultaneous constraints. Stakeholders further argue that it is important to understand which contingencies are currently being monitored to assess potential risks to a market participant's strategy.

In phase 1 of this effort the ISO explored these same concerns thoroughly and developed a mechanism that provides additional visibility into these operational elements, without disclosing confidential information.<sup>2</sup> This led to the daily issuance (subject to a non-disclosure agreement) of all nomograms, constraints and contingencies the ISO plans to enforce in the Day-Ahead Market and those that it then actually enforces. These requirements are provided in Section 6.5.3.3 of the ISO tariff and the ISO has been continuously providing this information since July 2010. At this time, the ISO believes this information provides the information needed to allow market participants to adequately shadow the ISO's market operations. The ISO encourages participants to examine more closely the information provided through that process and state more specifically what information regarding nomograms and the constraints the ISO actually enforces is required for better participation in the ISO markets and how the lack of this is hampering participation.

#### 7.1.4 Transmission limits

Participants have requested access to changes in transmission limit assumptions asserting that this information will allow market participants to update their base market models to more accurately reflect system conditions for the day ahead and real time markets. This request was also identified through the Data Release Phase 1 initiative, in which the ISO made available additional reports to market participants, including the Daily Constraint and Contingency List, a Conforming Constraint Report, and adding Binding Constraint Data with the shadow price previously published on OASIS.<sup>3</sup> At that time, the ISO committed to address additional release of this information in subsequent phases of this initiative. The release of transmission limits may require different treatment for limits internal to the ISO and limits shared with external entities as the ISO would need to receive agreement from neighboring balancing authorities on the release of shared data.

The ISO currently publishes Current Transmission Usage through OASIS which includes the Total Transfer Capability (TTC), Capacity Budget Margin (CBM), Operating Transfer Capability (OTC), and additional information. The report is available at <http://oasis.caiso.com/mrtu-oasis/?doframe=true&serverurl=http%3a%2f%2fartp10%2eoa%2eca%2ecom%3a8000&volume=OASIS>. The report provides data for interties, select branch groups and market scheduling limits. The ISO proposes to provide TTC, CBM, and OTC data for additional internal branch groups and market scheduling limits. The list of internal branch groups and market scheduling limits is still under internal review and will be included in the draft final proposal.

The ISO publishes daily Transmission Outage Reports at <https://www.caiso.com/transout/>. The report includes the Outage ID, Facility Owner, Due Out DTS, Due Back DTS, Resource Name, Voltage, Outage Status and Short Description. The ISO proposes to add the To Bus and From Bus to this existing report to allow for easier mapping to the CRR full network model.

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<sup>2</sup> See Phase 1 stakeholder process documentation : <http://www.caiso.com/244c/244cae3b46bb0.html>

<sup>3</sup> For additional information on the reports, see the Phase 1 Revised Draft Final Proposal at <http://www.caiso.com/2718/2718ef3844a00.pdf>.

### 7.1.5 Aggregated Generation Outage Data

Stakeholders have requested additional generation outage data to provide the ability to better align the base market model with actual system conditions. The release of generation specific data would not be allowed under existing confidentiality requirements; however, aggregated generation data could be allowed.

The ISO proposes to release aggregated generation outage data at 5:00 AM prior to the day-ahead market. The data will be aggregated for each trading hub (NP15, SP15, ZP26). The report will identify the fuel source and will include the current day plus 29 additional days. The ISO's experience is that the majority of generation outage data is submitted within 72 hours, thus providing a rolling 30 day window provides sufficient long term visibility for market participants.

### 7.2 Comparable Timing of Market Data

Market participants have expressed an interest in greater price discovery tools at the ISO. Price discovery is the general process market participants use to determine spot prices, which are dependent on market conditions affecting supply and demand. In ISO markets, price discovery can take place over a longer period of time than other traditional commodity markets.

Market participants have asserted that generators have an advantage because they receive advanced price discovery through unit dispatch instructions communicated by the ISO via the Automated Dispatch System (ADS) (i.e., the secure communication connection that provides day ahead and real time dispatch notices). These dispatches provide a potential indication of future market activity. Based upon this information, supply resources could forecast where the market is heading and to what degree. Therefore, market participants claim that participants that receive instructions through the ADS could then opt to manage their risk through another market such as IntercontinentalExchange (ICE), [www.theice.com](http://www.theice.com). This results in generation resource market participants having a price discovery advantage over non-generation market participants because they receive the dispatch signal before market results are publicly available.

The ISO recently added functionality to reduce the time between the issuance of dispatch instructions and the posting of market prices. In Summer 2010, the ISO added functionality to OASIS that has reduced the time delay between ADS dispatch instructions and posting of trading hub prices on OASIS to approximately 30 seconds. Market participants are now able to access an HTML page which provides access to trading hub pricing significantly earlier than through the cached pricing data for all nodes. To the extent participants want to use these tools for the purposes of price discovery, they are available to all participants. Therefore, the ISO believes that the information currently provided is sufficient for price discovery purposes and is not proposing any further enhancements in regards to comparable timing as part of this effort. The ISO requests that market participants please submit in written comments more information on what additional data they believe is needed to participate in the ISO markets more efficiently.

### 7.3 Release of CRR Bid Data

Several stakeholders have requested the release of Congestion Revenue Rights (CRR) bid data similar to what is currently released for energy and ancillary services bids. The release of CRR bid data will allow market participants to understand why bids did or did not clear the auction and modify bidding behavior in future CRR auctions.

The ISO proposes to release CRR bid data 90 days after the close of the annual and monthly auctions. The report will provide for each bid segment the source, sink, time-of-use, MW

quantity, and MW price. The ISO will not release the name of the market participant that submitted the bid. Some stakeholders have argued that providing the CRR bid data above will enable stakeholders to easily identify the market participant that successfully cleared the auction. However, published auction results already identify the market participant and MW quantity that cleared the market and based upon the nodal price data of the simultaneous feasibility test, the market participant's clearing price can be calculated. Thus any market participant that cleared the market must have submitted a bid that was greater than the clearing price, so minimal additional information is released on cleared CRRs by providing the bid data.

The ISO reviewed the CRR bid data released by the other ISOs. The ISO's proposal is consistent with the CRR bid data released by PJM, MISO, and ISO-NE. Only NYISO provides additional masking of both the market participant identity and source/sink pair. The ISO believes the NYISO approach is overly complex and does not provide incremental benefit towards masking market participant identity on cleared CRRs.

## **7.4 Release of Wind and Solar Forecasting Data**

In the Renewable Integration Market and Product Review initiative, the benefits of releasing Variable Energy Resources (VER) forecast data has been highlighted as a means to drive day ahead and real time price convergence. Currently the ISO receives meteorological data from a subset of VERs which is then provided to the ISOs forecasting service provider. The forecast is not included in the day ahead and real time markets; however, the forecast is used for unit commitment purposes. The availability of forecast data to all market participants will enable a more efficient market for both physical and financial players.

Currently the ISO receives meteorological data from approximately 1200 MW of wind and solar resources or 25-30% of the total wind and solar resources currently interconnected to the ISO grid. Only resources under the Participating Intermittent Resource Program (PIRP) and new Eligible Intermittent Resources (EIR) are required to provide meteorological data in order to participate in ISO markets. As a result, the forecast data provided will include only resources which provide meteorological data and not the total fleet of wind and solar resources. In addition, the definition of VERs includes other resource types such as small hydro, geothermal, and biomass which will not be included in the wind and solar forecast.

The ISO proposes to release an aggregated day ahead forecast at 5:00 AM prior to the day-ahead market, an hourly aggregate forecast at T-105 minutes, and the actual aggregated supply the following day. Since these resources are generation resources, the forecast will be aggregated by trading hub (NP15, SP15, ZP26). The forecast will provide separate values for wind and solar. The trading hub forecast will take in to consideration any diversity benefits of the wind and solar resources within each trading hub. Therefore, the forecast will not equal the total of each individual wind and solar resource forecast in the trading hub, but rather be a trading hub specific wind and solar forecast.

If resources still request individual site forecasts, the ISO will continue to collect a forecasting fee. The forecasting fee is currently \$0.10 per MWh and may be modified based upon a cost assessment of providing this additional service. Any costs associated with providing the trading hub level forecasts will be absorbed within the overall Grid Management Charge (GMC) applied to all market participants.

## **8 Next Steps**

The ISO will discuss the Data Release Phase 3 Straw Proposal with stakeholders during a teleconference to be held on February 8, 2011. The ISO is seeking comments on each of the

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proposals outlined in Section 7. Stakeholders should submit written comments by February 15, 2011 to [DataRelease3@caiso.com](mailto:DataRelease3@caiso.com).