



California ISO
Your Link to Power

Data Release Phase 3 Issue Paper

December 10, 2010

Data Release Phase 3 Issue Paper

Table of Contents

1	Introduction	3
2	Plan for Stakeholder Engagement	3
3	Background.....	3
4	Establishment and Results of Working Group	4
4.1	ISO Legal Confidentiality Compliance Process	4
4.2	Data Release Request Template and Categorization.....	6
4.3	Categorization of Issues.....	6
5	Overview of Market Results Redesign Project	6
6	Establishment of an On-Going Data Release Process	7
7	Scope of Data Release Phase 3 Initiative	7
7.1	Additional Market Model Data	7
7.2	Comparable Timing of Market Data	9
7.3	Release of CRR Bid Data	9
7.4	Release of Variable Energy Resource (VER) Forecasting Data.....	9
8	Next Steps	10

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 CRR full network model, (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.

2 Plan for Stakeholder Engagement

Item	Date
Post Issue Paper	December 10, 2010
Stakeholder Conference Call	December 17, 2010
Stakeholder Comments Due	December 28, 2010
Post Straw Proposal	February 1, 2011
Stakeholder Meeting	February 8, 2011
Stakeholder Comments Due	February 15, 2011
Post Draft Final Proposal	February 28, 2011 Tentative
Stakeholder Conference Call	March 7, 2011 Tentative
Stakeholder Comments Due	March 14, 2011 Tentative
Board Meeting	May 19-20, 2011

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 into 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.aiso.com/244c/244cae3b46bb0.html> and Phase 2 is available at <http://www.aiso.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.aiso.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 into either the policy/tariff or implementation buckets led to three activities the ISO will 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.aiso.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 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. The bid data may be released if it is aggregated and does not expose a single source for the data. 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 over-seeing 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 decisional flow chart for further information about the process at <http://www.caiso.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.caiso.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 will be shared with stakeholders during the December 17th conference call for Data Release Phase 3.

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. The assumption was made that these items are appropriate for release and through the on-going Data Release process stakeholders will continue to influence how or if the data will be released.

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 NDA without restrictions for which 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.

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. However, in determining how to release LDFs, the ISO must take in to consideration releasing confidential data since some load nodes may contain only one large end- use customer. The initiative will determine how to mask end customer specific load nodes by aggregating with other customer specific load nodes or combining with an electrically close load node with multiple end users.

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. Through this initiative we will work with stakeholders to determine how shift factor data can be efficiently provided to market participants.

A nomogram is a set of operating or scheduling rules which are used to ensure that simultaneously two or more operating limits are respected. The nomogram graphically represents the two or more decision variables and represents the tradeoff that must be made when transferring power over the two paths. 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. Thus in order for a market participant to effectively simulate the ISO markets, it is important for them to understand how the nomogram implements the simultaneous constraints. In addition, it is important to understand which contingencies are currently being monitored to assess potential risks to a market participant's strategy. Through this initiative the ISO will evaluate improvements to existing release of nomogram definitions and the release of monitored constraints prior to running of the day ahead and real time markets.

The release of changes in transmission limit assumptions allows market participants to update their base market models to more accurately reflect system conditions for the day ahead and real time markets. Through the Data Release Phase 1 initiative, additional reports were made available to market participants. The reports included a Daily Constraint and Contingency List, a Conforming Constraint Report, and adding Binding Constraint Data with the shadow price previously published on OASIS. For additional information on the reports, see the Phase 1 Revised Draft Final Proposal at <http://www.caiso.com/2718/2718ef3844a00.pdf>. Through this initiative, the ISO will determine how to release actual transmission limits and forward looking transmission outage data. 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 next level of data needed to align the base market model with actual system conditions is generation outage data. The release of generation specific data would not be allowed under existing confidentiality requirements; however, aggregated generation data could be allowed. The ISO will work with stakeholders to balance the need to protect proprietary generator data through aggregation while having a level of aggregation which still provides meaningful information to market participants for decision making. As with transmission data, the ISO will also look at how the aggregated generation outage data can also take in to consideration forecasted outage data.

For more detailed information regarding the market model review the Business Practice Manual for Managing the Full Network Market available at <https://bpm.caiso.com/bpm/bpm/version/000000000000103>.

7.2 Comparable Timing of Market Data

An emerging issue is arising across all ISOs/RTOs with regards to price discovery. 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. The longer period of time to report out price data can lead to market participants not having comparable market data timeliness.

The ISO communicates unit dispatch instructions to generators via the Automated Dispatch System (ADS). This is a secure communication connection that provides day ahead and real time dispatch notices. The ISO dispatchers signal generators to prepare to turn on/off or ramp up/down in some future time periods. These dispatch instructions are a potential indication of future market activity and based upon this information a market participant could forecast where the market is heading and to what degree. A market participant could then opt to manage their risk through another market such as IntercontinentalExchange (ICE), www.theice.com. This could result in a generator having a price discovery advantage over non-generation market participants because generators receive the dispatch signal earlier than market results are publicly available.

The ISO will evaluate options to ensure comparable timing to market related data while balancing the need to maintain confidentiality of individual market participants.

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 released energy bid data is masked to not identify specific market participants and is released 90 days after the bids have been submitted. This initiative will develop the process and structure of the CRR bid data release taking in to consideration the unique nature of the CRR market timeline and allocation/auction processes.

7.4 Release of Variable Energy Resource (VER) 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 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. In addition, resources under the Participating Intermittent Resource Program (PIRP) are required to submit in HASP an hourly schedule which matches the forecast provided by the forecasting service provider in order to be eligible to net deviations for settlement purposes. The availability of forecast data to all market participants will enable a more efficient market for both physical and financial players.

As with other data release elements, it will be necessary to ensure that individual market participant data is masked. In addition, Eligible Intermittent Resources (EIR) and resources in PIRP are allocated a portion of the forecasting costs through a \$0.10 per MWh forecasting fee. The cost of the forecasting service not directly recovered through the forecast fee is absorbed within the overall Grid Management Charge (GMC) applied to all market participants. If the forecasting data is provided to all market participants it is appropriate for the cost of the

forecasting service to be collected through the GMC applied to all market participants rather than as a separate fee applied to VERs which is the case today.

8 Next Steps

The ISO will discuss the Data Release Phase 3 Issue Paper with stakeholders during a teleconference to be held on December 17, 2010. The ISO requests comments on the scope of the Data Release Phase 3 initiative, the establishment of the Market Results Redesign Project, and the on-going data release process. In addition, the ISO requests stakeholders to provide their proposals to address the data release items and highlighted issues with release in section 7. Please also include sample reports or templates to illustrate how you would like to receive the data. Stakeholders should submit written comments by December 28, 2010 to DataRelease3@caiso.com.