Straw Proposal

Data Release & Accessibility

Phase 1: Transmission Constraints

December 3, 2009

Data Release & Accessibility in ISO Markets

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1. Introduction

This California ISO straw proposal builds on the 11/5 issue paper and the 11/23 stakeholder comments[1] submitted in Phase 1 of the Data Release & Accessibility Initiative on Transmission Constraints.[2] The purpose of this straw proposal is to present a specific proposal for stakeholder review and comment in advance of the 12/10 onsite meeting at the ISO in Folsom, California.

The 12/10 onsite meeting is scheduled from 10:00 AM to 4:00 PM. Most of the meeting will be devoted to Phase 1 Transmission Constraint issues, while to last two hours will focus on Phase 2 Convergence Bidding Information Release.

The Data Release & Accessibility Initiative consists of three phases:

- Phase 1: Transmission Constraints (the topic of this straw proposal),
- Phase 2: Convergence Bidding Information Release (issue paper posted on 12/3), and
- Phase 3: Other types of market data to support well-functioning, competitive ISO spot markets, including Price Discovery and Outage Information. (issue paper expected to post on or before 12/31).

The focus of Phase 1 is on the development of guidelines and the provision of information to market participants regarding the ISO's constraint management practices. More specifically, the issue paper outlined the following three areas:

- **Constraint Enforcement Practices:** What additional information and visibility can be provided with respect to the ISO's transmission constraint enforcement practices to account for system conditions in managing the limits of the transmission system?

- **Constraint and Contingency Lists:** Determine how the ISO can provide the list of (1) enforced and unenforced constraints and (2) active contingencies.

- **Tariff Guidelines on Constraint Management:** Develop high level guidelines for the ISO's constraint management process to be included in the ISO tariff in compliance with FERC's *October 2 Order*.

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[1] On 11/23, 20009, twelve (12) sets of comments were submitted by stakeholders on the 11/5 issue paper: Calpine, Citigroup-Barclays-RBS (Joint Parties), DC Energy, Dynegy, JP Morgan, Morgan Stanley, PG&E, Powerex, RRI, SCE, Shell, and WPTF. All stakeholder comments are available at http://www.caiso.com/244c/244cae3b46bb0.html

[2] Data Release & Accessibility Initiative, Phase 1 Transmission Constraints, http://www.caiso.com/244c/244cae3b46bb0.html

2. Process and Proposed Timetable

The first three milestones for Phase 1, as shown below, are complete. As noted in the issue paper:

> "… the timing for implementation of the data release developed in Phase 1 will be determined later in this process. Specific timelines for Phase 2 and 3 will be released with the issue papers for those phases. At this time the ISO anticipates completing the stakeholder processes for Phases 2 and 3 in the first quarter of 2010."

Phase 1 Timetable

Tentative Date	Milestone
November 5, 2009 - **DONE**	Publish Issue Paper
November 12, 2009 - **DONE**	Stakeholder Conference Call
November 23, 2009 - **DONE**	Due Date for Stakeholder Comments
December 3, 2009	**Straw Proposal**: Publish data release proposal and draft constraint management tariff language
December 10, 2009	On-Site Stakeholder Meeting
December 16, 2009	Stakeholder comments on data release proposal and draft tariff language
December 31, 2009	FERC Compliance Filing in ER09-1542-000

For submitting comments on Phase 1 of the Data Release & Accessibility Initiative the project mailbox is Phase1TC@caiso.com.

3. Constraint Enforcement Practices

Determine what additional information and visibility can be provided with respect to the ISO's transmission constraint enforcement practices to account for system conditions in managing the limits of the transmission system.

3.1. Changes in Constraint Management

Nearly all stakeholders requested that changes in how constraints are managed occur with advance market notice. Many stakeholders strongly support the decision to manage every possible aspect of the system in the IFM. However, market participants note that unnoticed changes in constraint management can create significant and unexpected price movements that do not seem to match current conditions.

ISO Proposal regarding Changes in Constraint Management:

With regard to advance notice, the constraint and contingency proposal described in Section 4 of this paper will result in increased transparency and notice. Some of the key provisions of this approach are described here:

1. A new Full Network Model (FNM) is dropped into production generally every 4 to 8 weeks. To the extent feasible, the ISO will issue a Market Notice ten (10) days before implementation of a new FNM Database in the market software.

2. If the list of changes is different when the model is deployed, an unlikely but possible event, to the extent feasible, the ISO will issue a Market Notice on the Trade Day the model goes into effect.

3. If once a Market Notice is provided and the deployment date changes, the ISO will provide a new Market Notice with the revised date. In some instances, the ISO has needed to model the deployment date for various reasons, including but not limited to, a change required in the model, a software issue, a new issue is raised in end-to-end testing or events on the real-time grid.

4. In some instances, primarily due to operating issues, the ISO may need to add a new constraint or contingency into the model in between FNM Database builds. To the extent possible, the ISO will notify participants in advance if additional changes will be made to the topology. These types of change are changes that are highly likely to become a permanent change in the next FNM Database build. The ISO will make every effort to provide participants with the ten days advance notice prior to deployment into production. However, in some instances the event that requires the new constraint or

contingency may not provide such lead time due to reliability issues. In the case where the ISO cannot provide ten days notice, the ISO will provide notice to the participants as soon as possible outlining the new constraint or contingency.

3.2. Management of Transmission Outages

A number of stakeholders raised outage information questions. SCE stated that the outage data currently posted on OASIS lacks sufficient information to accurately model outages for market participants. Releasing the PSSE raw files will save significant amount of time and effort for market participants to perform market analysis (SCE p.1). It is not possible to release daily PSSE[3] raw files because that would provide clear insight into market participant bid information. The PSSE raw file of the model is made available only as part of the CRR data release. The CRR data release is only for FNM Database builds and is available only with a time lag from actual deployment of the FNM into production. To obtain such data, participants must go through the CRR data release process.

The Joint Parties requested a list of transmission line, capacitor, reactor, breaker, and transformer outages, including facility name(s), line: location to and from; time: to and from; phase: submitted, accepted, in-progress, ended (p.2). The release of outage information will be addressed in the Phase 3 issue paper due out before year end 2009.

3.3. Network Terminology or Nomenclature

Several stakeholders requested that the ISO use more consistent and meaningful network terminology. DC Energy notes that, in the NYISO market, facilities are provided with a unique identifier that is integrated across both outage and constraint management systems. If a facility is down for outage work, the outage file indicates that that facility is not available; if the same facility has an enforced limit element in the published constraint file, that same number is used in the outage posting. DC Energy encourages the ISO to look for similar linkages and build similarly robust and integrated systems. DC Energy urges the ISO to develop consistent and intuitive formatting for the data that it releases (p.1).

RRI Energy makes a similar recommendation: Terminology used to describe the status of each element of the network should be defined and consistently used, and the list of interfaces, branch groups, nomograms, and any other elements and constraints should make clear the relationship between what's published regarding the Full Network Model, and what's published regarding market results (p.1).

Some stakeholders have asked about the nomenclature used for temporary nomograms. In its comments on the issue paper, Calpine mentioned a temporary nomogram: "… many constraints

[3] PSSE refers to the Siemens software product, **P**ower **S**ystem **S**imulator for **E**ngineering (PSSE), http://www.energy.siemens.com/hq/en/services/power-transmission-distribution/power-technologies-international/software-solutions/pss-e.htm

that have been actively monitored by CAISO for months, and even binding in the past, and currently posted on CAISO oasis are not in the FNM either, e.g., the "1012780_limit_5" nomogram as shown in the screenshot," (Calpine, p.3). The seven digit number, "1012780" corresponds to an outage logged in SLIC (Scheduling and Logging for ISO of California).

The ISO will explore the possibility of creating additional data mapping that would correlate the transmission facilities in the outage report with the constraints list. The ISO will strive to evolve the data and nomenclature to use consistent naming conventions and common data elements that could be eventually linked between outages information and other data. The process to coordinate the data will occur over a longer period of time and will likely occur in incremental steps.

4. Constraint & Contingency Lists

Determine how the ISO can provide (1) the list of enforced and unenforced constraints, and (2) the list of active contingencies.

Once this or a similar proposal is finalized, the ISO will conduct an implementation feasibility assessment, including determining business and software requirements, system impact, development, testing, and deployment, to determine the best way to automate the delivery of the constraint and contingency information.

4.1. List Approaches

As noted in the issue paper, stakeholders are seeking greater visibility into the actual constraints that are and are not enforced in ISO markets, as well as the list of active contingencies. Section 5.1 of the issue paper outlined two possible approaches for the provision of constraint information: (1) the Daily All Constraints List or (2) the Default Constraint List and an Incremental Daily Change Report, which are both described below. Under either option, the list would be applicable to the Day Ahead Market. At this time it is not possible to provide such information for the real-time market because of the time granularity of the real-time market intervals (i.e., every five minutes). As noted in the issue paper and reiterated here, between the two options below the ISO has a preference for the Daily All Constraints List as it would, among other things, be less administratively burdensome.

1. **Creation of a Daily All Constraints List**. This would include a list of all enforced and unenforced constraints (All Constraints List) for a given day of the Day Ahead Market. ... This information would be extracted directly from the inputs used for the specific day-ahead market. Therefore, it would provide the complete list of constraints and contingencies enforced or not enforced for the given market. … The all constraints list would be provided after the day-ahead market schedules are posted for each day.

2. **Creation of a Default Constraint List and an Incremental Daily Change Report.** This would be an alternative to the daily All Constraints List. A default list of enforced and unenforced constraints could be prepared for portal publication and would occur each

time a new DB-XX is produced and implemented in the ISO markets, i.e., every six to eight weeks. This approach would also require that a daily incremental change list be prepared relative to the default list, which the ISO's initial thinking suggests could be administratively burdensome.

With regard to contingencies, Section 5.2 of the issue paper described an approach for the provision of contingency information, which is essentially the same in concept as the Daily All Constraints List described above.

In the 11/23 stakeholder comments on the issue paper, two parties (PG&E and SCE) expressed a preference for the Daily All Constraints List approach, while two parties said either approach would be acceptable (Dynegy and Powerex). J.P. Morgan preferred of the Default Constraint List and an Incremental Daily Change Report approach.

4.2. ISO Proposal: Creation of a Daily All Constraints List (Option #1)

The ISO proposes to create a Daily All Constraints List, which is described above under Option #1. The constraint and contingency list information is illustrated in Tables 1 through 4 of Attachment A to this Straw Proposal. This proposal is only for information associated with the Day Ahead Market.

As noted below, three of the four data tables will be published daily at the close of the Day Ahead Market. However, the Transmission Corridor Constraints data table will be made available with each model build.

Table 1: Flowgate Constraints
To Be Published Daily at Close of Market

Table 2: Transmission Corridor Constraints
To Be Made Available with Each Model Build

Table 3: Nomogram Constraints
To Be Published Daily at Close of Market

Table 4: List of Transmission Contingencies
To Be Published Daily at Close of Market

Table 1 provides the name of the flowgate. Type of flowgate: line, transformer, phase shifter holding the controlling flow, series device (capacity reactor), or transmission corridor. Enforcement status and competitive constraint flags (yes/no) are also provided.

Table 2 provides the name of the branch group. Equipment Type: line or transformer. Station name, voltage level, and equipment name are also provided.

Table 3 provides the nomogram name, the resource name, the coefficient, the corridor name, the flowgate, and the station name. Enforcement status and competitive constraint flags (yes/no) are also provided.

Table 4 provides the contingency title, enforcement status flag (yes/no), zone, Equipment Station, Equipment Voltage, PTI[4] From Bus Number, PTI From Bus kV, PTI To Bus Number, PTI To Bus kV, PTI Circuit ID, and Equipment Status.

5. Information on Binding Constraint and Cause

The issue paper presented binding constraints report information for other ISOs. A number of other ISOs provide data on monitored constraints, as well as the associated contingencies in the event that a constraint becomes binding under contingency conditions. In contrast, ISO provides the shadow price and identifies the binding constraint but does not provide the cause for a constraint that was binding or a description of the associated contingency where applicable.

Powerex strongly encouraged the CAISO to adopt best practices from other RTO/ISOs, and recommended an OASIS posting showing each binding constraint and whether it occurred for the base case or a specific defined contingency. Powerex stated that PJM provides good information in real-time, as constraints occur and then, at the end of the day, summarizes the information on all constraints that occurred (p.2). Dynegy would like the CAISO to provide the time, the duration, the congested facility, the facility whose contingency caused the congestion (if applicable) and the congestion shadow price consistent with the information provided by PJM, the MISO and NYISO (p.4). SCE supports the ISO's proposal to provide to market participants the information on the cause and the associated contingency when applicable for binding constraints as other ISOs currently release.

SCE proposes the format in Figure 1 for shadow prices of binding constraints. The format of the monitored description and contingency description can be the same as the current format for binding constraints. for example: 33252_POTRERO3_20.0_33204_POTRERO _115_XF_G3 (p.4):

Table 5: SCE Proposed Binding Constraint & Contingency Report Format

Constraint ID	Constraint Name	Monitored Description	Contingency ID	Contingency Description	HE1	HE2	HE3	...	HE24
999	Line 1 L/O Xfmr 4	Line 1	888	Xmfr 4			21		
1234	IPPDCADLN_BG	IPPDCADLN_BG		Base Case		5			

[4] PTI refers to Siemens Power Technologies International (Siemens PTI), http://www.energy.siemens.com/hq/en/services/power-transmission-distribution/power-technologies-international/

The ISO agrees that this type of information should be provided to market participants. At this time, the ISO is exploring how this data can be provided.

6. Constraint Management Guidelines

What are our high level guidelines for our constraint management process and what detail should we include in the tariff.

The ISO's proposed Transmission Constraint Management guidelines are shown in Attachment B to this Straw Proposal.