Revised Straw Proposal

A New Scheduling Priority Class for Regulatory Must-Run Pump Load in the Integrated Forward Market and Modifications to the Definition of Regulatory Must-Take Generation

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Table of Contents

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1 Background

The California Independent System Operator Corporation (ISO) has evaluated potential modifications to its tariff in light of two situations that suggest some urgent clarifications. These clarifications would maintain reliability of the state water system and also provide clarity of must-take status for non-dispatchable generation capacity of qualifying facilities and other facilities due to the obligation to provide thermal energy or heat to an industrial or commercial host or electric energy as part of a process to capture and inject carbon dioxide for enhanced oil recovery.

1.1 Scheduling priority for regulatory must-run pump load

Certain pumping facilities within the ISO service territory provide water services that are vital to the state and the health and welfare of California residents. The services may also be subject to federal and state laws. While the schedules of some existing pumping facilities are protected by Existing Transmission Contracts (ETCs), concerns have been raised with the expiration of such contracts in the near future that the schedules of these critical pumping facilities may be interrupted prematurely without special priority consideration in the ISO scheduling process. The interruption could cause violation of various federal and state legal and regulatory requirements that govern stream flow, water temperature, water quality and quantity, flood control space, after-bay, reservoir, or lake elevation, and other environmental and wildlife constraints.[1]

The ISO recognizes that these pumping facilities require a reliable and flexible supply of energy in order to perform their functions. The ISO has the obligation to ensure energy supply to such pump facilities in the energy scheduling process through its markets, in the absence of a system contingency that affects the facilities. The ISO tariff states the obligation as follows:

> Nothing in this CAISO Tariff is intended to permit or require the violation of federal or California law concerning hydro-generation and Dispatch, including but not limited to fish release requirements, minimum and maximum dam reservoir levels for flood control purposes, and in-stream flow levels. In carrying out its functions, the CAISO will comply with and will have the necessary authority to give instructions to Participating TOs and Market Participants to enable it to comply with requirements of environmental legislation and environmental agencies having authority over the CAISO in relation to Environmental Dispatch and will expect that submitted Bids, including Self-Schedules will support compliance with the requirements of environmental legislation and environmental agencies having authority over Generators in relation to Environmental Dispatch. In contracting for Ancillary Services and Imbalance Energy the CAISO will not act as principal but as agent for and on behalf of the relevant Scheduling Coordinators.[2]

[1] ISO tariff sections 9.3.1.2.1 and 22.13.

[2] ISO tariff section 22.13.

One of the purposes of this stakeholder process is to develop revisions to the ISO tariff so that it can provide necessary protection for the schedules of the critical pump load regardless of the status of ETC. The ISO expects that these tariff revisions may be applicable to other pump load schedules that also have regulatory must-run type of requirements. Based on the ways of scheduling different types of generation and load in its markets by pre-defined priorities, the ISO proposes to create a new scheduling priority class.

Currently the definition of Regulatory Must-Run Generation in the ISO tariff applies to generation only. However certain pump load as discussed above may also be subject to similar federal and state laws that govern irrigation and water supply. As a result, the ISO proposes an extension of the Regulatory Must-Run definition to applicable pump load.

1.2 Definition of Regulatory Must-Take Generation

The second purpose of this stakeholder process is to develop revisions to the ISO tariff provisions regarding Regulatory Must-Take Generation and its application to qualifying facilities (QFs). Currently, the ISO tariff specifies that "Regulatory Must-Take Generation" has special treatment with regard to certain tariff requirements. The tariff currently defines Regulatory Must-Take Generation as follows:

> Those generation resources identified by CPUC, or a Local Regulatory Authority, the operation of which is not subject to competition. These resources will be scheduled by the relevant Scheduling Coordinator directly with the CAISO on a must-take basis. Regulatory Must-Take Generation includes generation from Qualifying Facility Generating Units subject to a mandatory purchase obligation as defined by federal law, nuclear units and pre-existing power purchase contracts with minimum Energy take requirements.[3]

Recently, the ISO has been approached by representatives of QFs and other facilities that intend to produce electricity in conjunction with an industrial or commercial process. These representatives are seeking clarity concerning how their resources will be treated in light of the evolution of state and federal policies affecting QFs. The ISO has been considering the need for these changes for quite some time in light of California Public Utilities Commission (CPUC) policies requiring QFs to comply with the ISO's tariff, thus ending grandfathering QF exemptions from the ISO tariff. Another motivating factor is the settlement agreement filed with the California Public Utilities Commission (CPUC) on October 8, 2010 by representatives of QFs, utilities, and ratepayer advocates in CPUC Application 08-11-001 and related proceedings. This settlement agreement anticipates that the utilities will seek to have the Federal Energy Regulatory Commission (FERC) declare that the mandatory purchase obligation of the Public Utility Regulatory Policies Act of 1978 (PURPA) will no longer apply to them. Instead, the utilities will conduct procurement of energy from QFs including combined heat and power facilities through alternative processes. This settlement agreement was approved by the CPUC on December 16, 2010 in Decision 10-12-035, and is subject to an application for rehearing. Although the rehearing may delay the contracting process for some resources, many QFs are transitioning to ISO tariff compliance now and many will be entering new power purchase agreements independently of the QF settlement. Accordingly, the ISO will move forward expeditiously with this initiative.

These changes in the regulatory framework applicable to combined heat and power facilities create a significant uncertainty how the current tariff definition of Regulatory Must-Take Generation would apply to these facilities. Moreover, the ISO believes that this definition would

[3] ISO tariff appendix A "Master Definitions Supplement."

benefit from updating to make it applicable based on the configuration of the technologies and processes of industrial facilities that are capable of producing electricity but also provide heat, electricity or other product or service to an industrial or commercial host, thereby ending regulatory must-take status simply based on QF status or any contractual must-take requirement set forth in a power purchase agreement. Importantly, for those resources eligible for regulatory must-take status, only the non-dispatchable generation from these types of facilitieswill be eligible for Regulatory Must-Take Generation status. The ISO intends classification of a portion of a facility's generation as Regulatory Must-Take Generation to provide a higher degree of assurance that physically non-dispatchable generation will not be curtailed. The ISO strongly encourages the provision of dispatchable generation from these types of facilities while retaining the current regulatory must-take scheduling priority for their non-dispatchable generation. This treatment is comparable to the protection against curtailment currently afforded QFs in section 4.6.3.4.4 of the ISO tariff and section 4.2.5 of the QF PGA. The ISO would need to amend the tariff and QF PGA provisions to be consistent with any changes to the definition of Regulatory Must-Take Generation.

Another particular category of facilities that the ISO considers appropriate to include within the definition of Regulatory Must-Take Generation is the category of facilities producing electric energy as part of a process to capture and inject carbon dioxide for enhanced oil recovery. Representatives of Hydrogen Energy California LLC have described to the ISO the special nature of the design and operation of these types of facilities, including the non-dispatchable nature of a portion of the generation from these facilities tied to the process described above and, therefore, the need for a higher level of protection against curtailment of that non-dispatchable generation for the same reasons the ISO proposes to maintain the regulatory must-take priority for non-dispatchable generation from combined heat and power facilities. Although the ISO is considering expanding eligibility for regulatory must-take status to resources that are not QFs, the ISO is limiting eligibility to the non-dispatchable generation. The ISO anticipates that this group of resources will provide significant dispatchable generation that has not historically been available to the ISO.

Perhaps the most difficult issue raised by the ISO's effort to focus treatment as Regulatory Must-Take Generation on technological and process aspects of a generating facility and its associated industrial or commercial host is the matter of determining the portion of generation from the facility that is truly non-dispatchable. The ISO recognizes that this is a matter that will require significant further consideration, including the development of at least general standards for this determination and establishment of some mechanism for monitoring and enforcement of this determination.

The ISO posted a straw proposal on December 16, 2010 and held a stakeholder conference call to discuss the proposal on December 22, 2010. This Revised Straw Proposal identifies the ISO's recommendations, building on the previous versions of proposals and stakeholder inputs.

2 The ISO Proposal

2.1 New IFM scheduling priority class for regulatory must-run pump load

The ISO proposes to create a new scheduling priority class in the Integrated Forward Market (IFM) for pump load with regulatory must-run requirements. The new scheduling priority class will ensure that schedules of regulatory must-run pump load will not be curtailed unless there is a system contingency that affects the physical capability of transferring energy to the locations of the pumping facilities, or there is severe shortage of energy supply such that the demand of the ISO system cannot be met.

The proposed new scheduling priority class for regulatory must-run pump load has the following characteristics.

1) It has a scheduling priority just below ETCs and Converted Rights, but above transmission constraints. The parameter value ("penalty price") of the class is $5100/MWh in the scheduling run and $750/MWh in the pricing run.[4]

2) The new priority class exists only in the IFM. In the Real Time Market (RTM), the IFM schedules of regulatory must-run pump load are fixed values that are not a part of the RTM optimization.

3) Regulatory must-run pump load must submit self-schedule demand bids into the IFM. The schedules do not need to be balanced as ETC schedules do.

4) The portion of pump load intended to provide non-spinning reserve in the IFM will not be protected under the new priority class.[5]

Also, regulatory must-run pump load will have the same priority as other Load Serving Entities (LSEs) in Congestion Revenue Right (CRR) allocation. The transmission capacity associated with the expired ETCs will be available for CRR allocation and auction. The regulatory must-run pump load will be subject to the same resource adequacy requirements as other LSEs.

Revised tariff sections 31.4 and 34.10 will reflect the priority of such regulatory must-run pump load in the IFM relative to other priorities and constraints. In addition, modifications to Section 6.6.5 of the Business Practice Manual for Market Operations, "Adjustments for non-priced quantities in IFM," will reflect the new priority class.

In implementing the proposed new scheduling priority class, the ISO will develop procedures to certify regulatory must-run pump load and will monitor its performance. The details will be discussed with stakeholders in the ISO's formal change management process for developing revisions to its business practice manuals. The eligibility will be based on the obligations of pumping load to meet health and safety or other regulatory obligations and environmental or other regulatory constraints that limit the pumping opportunities.

2.2 Revised definition of Regulatory Must-Take Generation and related changes

The ISO proposes to revise the tariff definition of Regulatory Must-Take Generation to remove the limitation based on PURPA and to make it more generally applicable to industrial facilities with the capability to produce electricity in conjunction with the operation of their industrial processes and to other facilities producing electricity in conjunction with useful thermal energy. The revised definition would include the following characteristics:

1) The ISO proposes to remove the limitation that these types of facilities are not subject to competition. The ISO proposes that any industrial facility or other facility producing useful thermal energy with non-dispatchable generation capacity be eligible for this classification.

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[4] The $750/MWh parameter value in the pricing run is set equal to the value of the maximum energy bid price, which will be raised to $1000/MWh on April 1, 2011. Some of the existing and proposed IFM parameter values are listed in Section 1 of the Appendix.

[5] This is because the IFM schedules of regulatory must-take pump load are fixed in the RTM and cannot be curtailed to provide non-spinning reserve.

2) The ISO proposes to remove the limitation that this definition only applies to QFs subject to a mandatory purchase obligation as defined by federal law. If the utilities are successful in obtaining FERC direction that the PURPA mandatory purchase obligation no longer applies to them pursuant to the settlement agreement described above, the ISO does not intend for the current definition of Regulatory Must-Take Generation to end QF eligibility for must-take treatment of non-dispatchable generation capacity.

3) The ISO proposes to revise the definition to emphasize and clarify the distinction between non-dispatchable and dispatchable generation capacity from these types of facilities. The ISO believes that the special treatment of must-take generation should be focused on the truly non-dispatchable portion of a facility's output and that a facility for which a portion of its generation is dispatchable should be encouraged to submit economic bids (or self-schedules) for that portion of generation in the ISO's markets and not have that portion of generation capacity be subject to a blanket must-take requirement.

4) The ISO is willing to consider whether to continue must-take treatment of generation from facilities that are subject to any new QF power purchase agreement that is implemented pursuant to the mandatory purchase obligation of PURPA, including any new power purchase agreement for a QF 20 MW or smaller if the proposed termination of the mandatory purchase obligation does not extend to those units. The ISO request additional comment on this issue.

For discussion purposes, the ISO offers the following potential revisions to the definition of Regulatory Must-Take Generation:

> ~~Those~~ The following G~~g~~eneration resources ~~identified by CPUC, or a Local Regulatory Authority, the operation of which is not subject to competition. These resources will be scheduled by~~ that the relevant Scheduling Coordinator may bid or schedule directly with the CAISO on a must-take basis~~. Regulatory Must-Take Generation includes~~ : (1) G~~g~~eneration from Qualifying Facility Generating Units subject to an Existing QF Contract or a new QF power purchase agreement pursuant to a mandatory purchase obligation as defined by federal law~~,~~; (2) the non-dispatchable Generation from (a) other QF Generating Units, (b) other Generating Units that produce electric energy and forms of useful thermal energy (such as heat or steam), used by an industrial or commercial host for industrial, commercial, heating, or cooling purposes through the sequential use of energy, or (c) Generating Units producing electric energy as part of a process to capture and inject carbon dioxide for enhanced oil recovery; (3) Generation from nuclear units; and (4) the minimum take Generation from Generating Units subject to pre-existing power purchase contracts with minimum Energy take requirements.

One logistical aspect of the ISO's proposal is that the ISO does not propose to revise the name of the term "Regulatory Must-Take Generation." This approach would minimize the need for revisions to tariff sections just to revise the references to this term and would avoid the need to have to review agreements and other external documents to consider whether references to that term in those documents will also need to be revised to conform to a change in the name of this term. In addition, the ISO's scheduling software refers to this priority as "RMT."

In conjunction with the proposed revisions to the definition of Regulatory Must-Take Generation, the ISO anticipates having to make other minor revisions to the tariff to implement its intended revision to the scope and treatment of must-take generation. Provisions that the ISO anticipates revising include sections 4.6.3, 9.3.5.2, and 10.1.3.3 with regard to the references in those provisions to existing agreements with the Regulatory Must-Take Generation resources. The ISO also anticipates revising provisions of the tariff linking

Regulatory Must-Take Generation status to QF status, including revising the applicability of the provisions of section 4.6.3 and the pro forma Qualifying Facility Participating Generator Agreement in appendix B.3, which currently apply only to QFs, to other Regulatory Must-Take Generation.

In connection with these anticipated additional revisions, the ISO also anticipates the need to revise the terms "QF PGA" and "Qualifying Facility Participating Generator Agreement" to be consistent with the proposed revisions to the definition of Regulatory Must-Take Generation. Just as the ISO has had to consider whether to revise the term Regulatory Must-Take Generation, the ISO needs to determine whether it would be less complicated to retain the term QF PGA but to revise its meaning to reflect the new scope of Regulatory Must-Take Generation. Depending on the ISO's determination, there may also be a need to revise article 3.4 of the Large Generator Interconnection Agreement. Finally, the ISO will need to determine whether revisions are needed to tariff section 40.8.1.8 regarding qualifying capacity for resource adequacy purposes and, if so, what those revisions should be. The ISO will address these issues in the tariff stakeholder process following ISO Board approval of the policy changes

The ISO anticipates that these revisions will not require substantial changes to the ISO's systems. The ISO's systems are already programmed to recognize the special category and treatment of Regulatory Must-Take Generation. The ISO expects that its proposal will simply continue to recognize must-take generation capacity for resources that have non-dispatchable generation capacity—but only for the non-dispatchable generation capacity--while ending this treatment for resources that do not have non-dispatchable generation capacity and no longer qualify for regulatory must-take status under any other prong of the revised definition.

As noted above, the ISO recognizes that it will need to develop at least general standards for the determination of the portion of a resource's generation that is truly non-dispatchable and will need to establish some mechanism for monitoring and enforcement of this determination. The ISO anticipates developing a process similar to the process used to validate whether generation resources are eligible for treatment as "use-limited" under the tariff and related business practices manuals. This would involve development of criteria, submission of an application, and ISO assessment of eligibility. See ISO tariff section 40.6.4 and section 6.1.3 of the Business Practice Manual for Reliability Requirements. These provisions describe how resources apply for status as use-limited resource adequacy resources. The ISO proposes to engage in further stakeholder discussions of this matter in the process of developing the specific tariff language to implement the intent of this proposal and in the formal change management process for developing revisions to its business practice manuals.

3 Curtailment of Regulatory Must-Run Pump Load

The proposed new scheduling priority will provide sufficient protection for regulatory must-run pump load. The likelihood of curtailing the schedules of such pump load should be very small.

The proposed scheduling run parameter value of the new priority class is higher than that of transmission constraints. When there is insufficient energy supply to serve regulatory must-run pump load due to transmission congestion, the IFM will relax relevant transmission constraints before curtailing the regulatory must-run pump load. Therefore curtailing regulatory must-run pump load will happen only if there is a system contingency that actually limits energy being transferred to the pump facilities or there is a severe system-wide energy supply shortage.

To curtail regulatory must-run pump load in the IFM, the scheduling run LMPs at the locations of the pump facilities must reach the proposed parameter value, $5100/MWh. An ISO

review shows that since the implementation of the ISO's new markets on April 1, 2009, the IFM scheduling run LMPs at locations of the California Department of Water Resources (CDWR) pump facilities have never reached $5100/MWh. In other words, the regulatory must-run pump load at these locations would never have been curtailed if this priority class had existed since the implementation of the new ISO markets.

The regulatory must-run pump load is price-taking self-schedule demand in the IFM. When relevant transmission constraints are relaxed to preserve the regulatory must-run pump load schedules, the pump load will be charged for the high congestion cost. The rest of the system will likely be unaffected.

For example, on April 19, 2010, at Hour-Ending 6, the IFM scheduling run LMP at CDWR07_2_GEN-APND Aggregated Pricing Node reached $1500.09/MWh. It is the highest IFM scheduling run LMP at all CDWR pump locations since April 1, 2009. The pricing run LMP at that node was $750.10/MWh, of which the congestion component was $721.33/MWh. It is due to the fact that the transmission constraint leading to the node was tightly binding (not relaxed yet).[6] At the same hour, the LMP at PG&E Default Load Aggregation Point (LAP), DLAP_PGAE-APND, was $32.00/MWh. The congestion component of it was only $2.57/MWh.[7] In this case the pump load at CDWR07_2_GEN-APND would be charged for the high congestion cost if it were regulatory must-run pump load. The impact of the congestion on the rest of the ISO system was not obvious, as indicated by the LMP in the PG&E Default LAP.

4 Next Steps

The following is a proposed schedule for this stakeholder process.

December 15, 2010	ISO posts the Straw Proposal
December 22, 2010	Stakeholder conference call
January 11, 2011	Stakeholder comments due
January 26, 2011	ISO posts Revised Straw Proposal
February 2, 2011	Stakeholder conference call
February 10, 2011	Stakeholder comments due
February 22, 2011	ISO posts Draft Final Proposal
March 30, 2011	ISO Board of Governors meeting for decision

The ISO will discuss this revised straw proposal with stakeholders on February 2, 2011. Stakeholders are welcome to submit written comments to sliu@caiso.com by close of business on February 10, 2011. The ISO will develop and post a draft final proposal based on the discussion and written comments. The ISO plans to present a final proposal to the ISO Board of Governors for decision in March 2011.

[6] The shadow price of the transmission constraint was $1493.73/MWh in the scheduling run and $732.31/MWh in the pricing run.

[7] See Section 2 of the Appendix for details.

Appendix:

1 Some of the Integrated Forward Market (IFM) Parameter Values[8]

Penalty Price Description	Scheduling Run Value	Pricing Run Value	Comment
Transmission Ownership Right (TOR) self schedule	5900, -5900	750, -30	A TOR Self-Schedule will be honored in the market scheduling in preference to enforcing transmission constraints.
Existing Transmission Contract (ETC) self schedule	5100 to 5900, -5100 to -5900	750, -30	An ETC Self-Schedule will be honored in the market scheduling in preference to enforcing transmission constraints. The typical value is set at $5500, but different values from $5100 to $5900 are possible if the instructions to the ISO establish differential priorities among ETC rights. For some ETC rights the ISO may use values below the stated scheduling run range if that is required for consistency with the instructions provided to the ISO by the PTO.
Converted Right (CVR) self schedule	5500, -5500	750, -30	A CVR Self-Schedule is assigned the same priority as the typical value for ETC Self-Schedules.
Regulatory Must-Run Pump Load	5100	750	Such identified pump load schedules that are required to operate to satisfy state and federal statutory obligations.
Transmission constraints: branch, corridor, nomogram (base case and contingency analysis)	5000	750	In the scheduling run, the market optimization enforces transmission constraints up to a point where the cost of enforcement (the "shadow price" of the constraint) reaches the parameter value, at which point the constraint is relaxed.

[8] "Business Practice Manual for Market Operations" v13

2 IFM LMPs of April 19, 2010, HE06

Location	Run	LMP ($/MWh)	Energy Component	Congestion Component	Loss Component
CDWR07_2_GEN-APND	Scheduling Run	1500.09	28.69	1471.33	0.07
CDWR07_2_GEN-APND	Pricing Run	750.10	28.69	721.33	0.07
DLAP_PGAE-APND	Pricing Run	32.00	28.69	2.57	0.74