Phase 2 of Comments on the Commitment Costs and Default Energy Bid Enhancements – Issue Paper

Department of Market Monitoring

December 12, 2016

I. Overview

The California ISO Department of Market Monitoring (DMM) welcomes the opportunity to comment on the ISO's Commitment Cost and Default Energy Bid Enhancements Issue Paper. This paper is the second set of comments posted by DMM on the Issue Paper.[1] This second set of comments goes into more detail on two topics: 1) Allowing entities with market power to choose the gas prices used for their Default Energy Bids (DEBs) and commitment costs; and 2) Dynamic commitment cost mitigation.

II. Market participant submitted gas costs

The ISO suggests in the Issue Paper that some issues reported by stakeholders might be eased by using participant specific gas cost expectations when setting parameters for mitigation. In other words, instead of calculating DEBs and commitment cost bid caps based on an index price for gas, the ISO would allow market participants to tell the ISO what price they expect they will have to pay for gas if they need to purchase it. That price from the participant would then be used in the calculation of DEBs and commitment cost bid caps.

As described in Phase 1 of DMM's comments on the Issue Paper, DMM encourages the ISO to first implement improvements to the index. The appropriate gas price to use is the one that best represents the market value of the gas. Using a market based price, such as an index, would be more accurate than using specific numbers from one or more market participant's individual transactions because the market as a whole is better positioned to determine the value of gas than any individual participant.

A. Market prices versus individual transactions

Role of the market in signaling value

Gas buyers can make transactions at prices that are not necessarily representative of market value. Market participants' valuations of gas may be based on many things,

[1] For Phase 1 of DMM's comments on the Issue Paper, see *Comments on the Commitment Costs and Default Energy Bid Enhancements – Issue Paper*, Department of Market Monitoring, November 29, 2016: http://www.caiso.com/Documents/DMMComments-CommitmentCostsandDefaultEnergyBidEnhancementsIssuePaper.pdf.

including expectations of electricity prices and characteristics of a particular generating resource. Different market participants can have different views on the value of gas at the same time.

Price indices are meant to reflect a reasonable idea of what a commodity should cost, and are informed by many transactions. Gas buyers can reasonably expect that they can buy or sell gas for at or around the value of a good index price. While specific transactions for gas may take place with a different price, the index price is meant to be representative of the value of the commodity to the market instead of to a single participant. This representative value is appropriate for an estimate of the reasonable costs of running a gas powered resource, which is what the DEBs and proxy cost estimates of commitment costs are meant to be.

Gas prices are used when participants have market power

If market participants who have market power are allowed to submit their own incurred or expected gas costs, they will not have the incentive to incur gas costs at or below the market value of the commodity. Instead, they will often have the incentive to incur artificially high marginal gas costs. Artificially high DEBs and commitment costs will lead to less efficient markets and higher costs to ratepayers.

DEBs are used in determining bid caps for resources that have been determined to have structural market power.[2] Thus, a resource's DEB is the minimum amount of money it can make for running at a given level of output. When a resource does not have market power, the bids submitted by the resource, and not the DEB, determine the output of the resource and the resource's revenue potential. Because DEBs are only used when a resource has been determined to have market power, it is best to avoid using any parameters in the DEB calculation that can be affected by the resource owner or market participant. Gas price indices are more difficult to affect than individual transaction prices.

Market participant incentives

Market participants currently have clear incentives to procure gas at the lowest possible cost. Changing the DEBs in a way that would use a participant submitted gas price would alter that incentive structure. The new structure could change how participants procure gas and could encourage strategies that may involve manipulation.

Using the gas price index to establish mitigation parameters encourages participants to carefully approach gas procurement and to keep those costs down. When the expected electricity cost is based on average or index prices for gas, a participant that can keep its costs below average can earn more profit. If all resources were to be compensated according exactly to incurred costs, this would eliminate the efficiency incentives

[2] Energy bids submitted by participants are capped at the greater of (1) the resource's DEB or (2) the competitive market price calculated by excluding congestion on non-competitive constraints.

provided by the design of the market and would move back towards the incentive issues that existed with regulated rate of return based approaches.

Generation unit owners or operators can invest time and effort into their gas procurement strategies. Whenever a generator can procure gas for lower overall costs than the average, but can sell electricity based on the average price of gas, this efficiency can be rewarded with earned profits. If all market participants can recover whatever cost they have to pay, then it would be reasonable to decrease efforts to procure gas at lower costs.

If electricity producers are willing to pay higher prices for gas, then electricity prices will increase under this system. If resources can recover gas price plus ten percent, then marginal resources may have an incentive to drive gas prices up to increase the dollar amount of that ten percent margin. DMM believes that eliminating the efficiency incentives provided by the use of an index price will lead to a less efficient market, and higher overall prices for ratepayers.

A single market participant may make multiple transactions for gas to power a resource. Each of these transactions could have a different price. In this case, it may be difficult to determine which of these individual transactions should apply to the DEB and the commitment costs. Multiple gas transactions may allow a market participant to artificially increase their DEB and commitment cost estimates. In a single clearing price auction, this would allow generators to inflate the resulting electricity market prices by buying relatively small amounts of fuel at artificially high prices.

When a participant incurs a higher gas price by buying a small amount of gas at an artificially high price, or by reducing its efforts to procure gas at the lowest possible price, the higher incurred gas price can lead to higher DEBs and higher commitment cost estimates. If a market participant can inflate their DEB and commitment cost estimates, they can push up electricity prices when they have market power. These artificially high electricity prices will result in a transfer of wealth from load to entities that sell power or gas.

B. Standards of validation

User submitted gas prices could play a large role in determining electricity prices in situations where a resource has market power. It is vital to have some check in place to validate that the costs submitted are reasonable and are incurred prudently, as an important check against market power. A possible first step in accepting a submitted price is to confirm that the price is being offered. But it is vital to also confirm that the price is in line with other market transactions.

DMM opposes a system in which the market participant merely has to provide evidence that gas was offered at that price, or even that they purchased gas at that price. This approach does not validate that the price is representative of market value, but only that at least one seller was willing to sell at that price. Any reasonable seller is willing to sell a good above the market price if they know the buyer is willing to pay above the market price. When the gas buyer has market power in the electricity market in which it is going to sell the electricity, and the gas buyer knows that it can be reimbursed for expenses, that buyer has no incentive to search for lower gas costs.

One way to validate a gas price is to compare it to known market prices. Index prices can be used for a comparison, when reasonable index prices are available. If the process for determining DEBs and commitment costs were to rely on user submitted gas prices on a regular basis, rather than only under special limited circumstances, a reasonable routine validation would involve comparing the user submitted prices to index prices in an automated process.

At times, index prices are not available. Most indices publish a price at a regular frequency. If conditions change after the index is published, prices may deviate from the index price. In this case, any information about trades occurring in the market at that time can be used by the ISO to develop a reasonable estimate of potential gas prices. At times when gas trades are thin, it may be necessary to rely on information from market participants. In that case, similar information coming from multiple participants with different roles in the market may help to reinforce price information. This collective information from different entities would provide the ISO with better information on expected gas prices than a gas cost estimate by any single generator.

C. Gas transactions made with and without market power

If the ISO were to design processes for using participant submitted gas costs to inform the determination of DEBs and commitment costs, many features may integrate with whatever system is designed to validate energy bids over $1,000 as a result of FERC Order 831. However, it would clearly be appropriate to have much more stringent standards for validating gas costs that inform the determination of DEBs and commitment costs than the standards for validating gas costs that support energy bids over $1,000.

Gas costs submitted to inform the determination of DEBs and commitment costs would only apply when a resource had been deemed to have market power. Gas costs submitted to validate energy bids over $1000 could only impact electricity market outcomes in scenarios when the resource has not been deemed to have market power.[3]

Validation of gas costs used for DEBs and other situations where a resource has market power will need to adhere to the strict standards described in the section above. It would be appropriate to have slightly less strict standards for times when gas costs are high and resources have not been deemed to have market power, because those resources' actions will be tempered by competitive market forces.

[3] Validated energy bids over $1,000 could be still affect electricity market prices in scenarios when the market power mitigation procedures failed to detect market power. As a result, DMM does support a mechanism for validating gas costs submitted in support of energy bids over $1,000.

III. Dynamic testing and mitigation of commitment cost bids

A good market power mitigation system will only change bids when market power is present. The first step then is to measure market power. Measuring whether a participant has market power involves asking if another participant could have provided the same good or service as the participant in question at a similar price.

In the case of resource commitments, measuring market power means determining how much supply was available from other resources and how many other resources could have been committed at the same time to satisfy the demand (or constraint) for which the resource was committed. For resource commitments in the ISO markets, the demand is defined by the constraints in the optimization which the resource commitment satisfies. Other commitments or supply that could also satisfy those constraints are then part of the potential supply. Thus, identifying exactly what constraint caused the resource commitment is essential.

Resource commitments are part of the solution to a complicated multi-period optimization problem. All constraints are in place simultaneously, including transmission constraints as well as other mathematical constraints that are part of the optimization program. Isolating exactly which constraint or constraints determine a resource commitment is difficult at best and in some cases may not be feasible.

Determining the relevant constraint or set of constraints that causes a resource commitment would first involve establishing a list of all constraints against which a resource is effective. The market could then be rerun with each of these constraints, and each possible combination of these constraints both activated and deactivated to determine the minimum relevant set that will commit the resource when active but not commit the resource when inactive. In the multi-interval optimization it may also be necessary to build this out to determine which constraint-interval pairs are necessary and which are not for resource commitment.

Many constraints and circumstances, in addition to normal transmission constraints, can play a role in determining resource commitment.

A. Types of constraints that can cause issues in commitments

MOCs and other capacity constraints

Minimum Online Capacity constraints (MOCs) are a type of constraint in the ISO software that ensure some amount of capacity is online from a defined set of resources. All the resources that are effective against one of these constraints can potentially be committed for the MOC, but can also be committed for other reasons. After resources are committed there is no easy way to determine whether any specific resource was committed specifically for the MOC or if it was committed for another constraint or was part of the most economic dispatch in general. MOCs may grant market power to resources that can satisfy the constraint, and testing MOCs for competitive supply conditions would be a necessary step in mitigating market power in commitments.

Commitments that completely relieve non-competitive constraints

When a resource is committed, its output goes from 0 to at least its minimum output in one interval in the market. If the resource is committed for a noncompetitive constraint, it is even possible that the minimum output of the resource will provide more than enough counterflow to completely relieve the constraint. For example, if 10 MWs of counterflow will relieve the constraint but the only resource on the downstream side has a minimum output of 20 MWs, whenever that resource is on there will be no congestion on the constraint. Since the constraint is not congested when the resource is on, it could be difficult to identify the fact that the constraint is granting the resource market power, even though it is the only resource that can satisfy that demand.

Multi-interval optimization/optimization complexity

If a resource is needed by the market to resolve a given constraint, the resource may be committed for a period of time that is longer than the period in which the constraint is active or congested. For example, imagine the real time market needs a resource to relieve a non-competitive constraint in hour 10 interval 1. For hour 9 interval 4, the market can either commit the resource early or use other resources to meet incremental needs. Since the startup of the resource is essentially a sunk cost to the optimization at that point, running the resource for an additional interval or more may be more economic than starting or incrementing other resources. If the resource is started earlier than hour 10 interval 1, the constraint for which the resource is necessary may not be congested when the resource is started. However, the resource will have market power due to that constraint and may be able to increase commitment costs. Measuring competitive supply for all constraints within the market outlook is another necessary piece of measuring market power in commitments.

Resource characteristics and limitations

Resource characteristics may cause a resource to remain on for a longer period of time than would otherwise be chosen by the optimization. An easy example is a resource with a minimum run time. Once the resource is committed, it will not turn off until that minimum run time is expired. This kind of constraint is relatively easy to account for, but all possible resource limitations like this need to be accounted for when determining whether a resource should be considered free from market power and able to submit bids above cost estimates.

B. Flexibility is good, but a bid cap is important backstop

The situations above are only a partial list. When a resource is committed, determining exactly why it was committed can be difficult. Measuring market power necessitates determining whether a significant number of other resources could have satisfied the reason for commitment. Because of that, determining whether or not the resource had market power when it was committed is also difficult. If we cannot determine whether a resource has market power, then the resource may be allowed to exercise that market power and may be committed when it has placed a high bid for startup or minimum load.

Allowing participants more flexibility to bid commitment costs can improve the market. The additional flexibility does not mean that the cap should be removed, but instead the level of the cap could be increased. As explained above, determining exactly how or why a resource has been committed is difficult at best, and at times is probably not feasible to do within the market. Other conditions may exist that are not described here, and that may not be easy to anticipate, that could cause a resource to be committed even with a high bid.

Because of these difficulties, continuing to impose a cap on commitment cost bids is important. Choosing the right level for a new cap involves judgements about the effectiveness of a dynamic mitigation system for market power in commitment costs. The cap on commitment cost bids should only be raised if there is significant confidence that most instances of commitment cost market power can be detected. The level to which the ISO raises the commitment cost cap should be a function of how effective the dynamic commitment cost mitigation system is expected to be in detecting commitment cost market power.

C. Questions about how to measure impacts of high commitment costs on uplift payments

Often resources do not recover all of their commitment costs in the energy market. In these cases, the resource will be made whole through uplift payments. DMM believes that any system that attempts to measure market power in commitment should consider how commitments cost bids impact uplift payments. Uplift payments are calculated on a daily basis, so estimating the impact of bids in real time on uplift will require careful thought and consideration. Simple options that involve lots of assumptions may be possible but may also be so restrictive that it would offset the benefits of increased flexibility.