

## Day-Ahead Market PRL Programs

The NYISO provides a mechanism for LSEs to utilize its day-ahead market (DAM) and real-time markets (RTP) for its commercial purposes, thereby providing them a form of liquidity. The price cap load bid (PCLB) allows the LSE to supplement its submission for fixed bid load, which becomes a forward contract at the DAM price, with bids for additional, but price conditional, blocks of power. The LSE specifies the block size and its willingness to pay for a forward contract on that block. The NYISO processes those bids as supplemental demands and if the market clearing price in the DAM is below the block price, it awards the LSE the a forward contract at the DAM price. If the DAM price exceeds the LSE's PCLB price, then no forward contract is awarded. In the latter case, the LSE pays the next day's RTP price if its load exceeds its fixed bid forward contract. Alternatively, if the LSE is awarded a bid but its actual served load does not consume the bid quantity, then it receives a credit equal to the RTP price. However, if the load bid under the PCLB is truly discretionary and is only (or exactly) consumed if the strike price is met, then the LSE undertakes no risks.

The PCLB forward contract bid mechanism offers a means for bringing customers into the market to provide additional liquidity. LSEs can offer this service to its customers by entering bids in their behalf and making arrangements for reconciling settlement differences that arise if the customer does not consume an awarded block of energy, or consumes when the block was not awarded. Customers who have highly discretionary loads, or whose interday substitution elasticity is very high, could utilize this flexibility to avoid paying capacity costs that invariably (and justifiably) are included in retail prices. They could buy energy on a day-ahead basis at their implicit strike price. Customers who undertake this level of load management are the prototype for price responsive load (PRL), the level and pattern of which is determined by prevailing market prices.

They are undoubtedly customers that fit the profile for participation in the PCLB aspect of the NYISO wholesale electricity market. A waste incinerator with surplus capacity could bid for incremental loads contingent on agreed electricity strike prices. A wastewater treatment plant could hold wastes in storage when prices are high and fulfill its treatment obligation by buying incremental blocks when prices are lower, for example overnight. An air extraction plant could schedule its automated plant operations around low cost electricity, or even optimize the output of several regional plants based on relative prices in adjacent electricity markets. The PCLB auction is suited to customers that either can do without consuming electricity altogether (foregone consumption) or that can reschedule electricity and incur relative low transaction costs. They can get access to low electricity prices because they incur low opportunity cost.

For customers whose usage is less fungible and manageable, the risk inherent in PCLB is too large to undertake. Outage costs, the cost associated with an electric outage or shortfall that causes the customer's operations to run below normal, are generally higher than the prevailing price of electricity. Most customers have already factored electricity price into their operating plans, and have optimized plant or business service output using the retail (generally fixed) price for electricity. The level and pattern of electricity usage is inherently factored into schedule, along with other input costs, and as a result on a day-to-day basis electricity is not treated as an independent and variable input. The fact that marginal electricity can be purchased at very low prices is of no use unless the other inputs that are bundled with electricity are also dispatchable at low transaction costs. But, the prospect of having to do without electricity is of great concern, due to the high outage costs incurred. As a consequence, most customers are far more concerned about the consequences of an electricity outage than those associated with the availability of bargains for incremental load.

This focus on outage costs, the cost of having to do without some or all electricity supply, suggests that while customers may not be prepared to bid daily for additional supplies, they may indeed be able to enter bids that reflect their willingness to reduce their electricity consumption. We would expect that these bids to forego or shift their consumption of electricity would generally be higher, perhaps several times the average price routinely paid for their normal consumption level. But, such bids are likely to be representative of expected costs, and therefore if a bid is proffered and accepted, we would expect that the customer will fulfill its intent and reduce its usage accordingly. In other words, customers who can estimate their outage costs, at least periodically, represent another good source of PRL because when they are dispatched, there is a high likelihood that they will respond in a predictable manner. However, because these customers are anchored around their typical usage, and prepared only to proffer bids for less, not more electricity, the PCLB will not attract them into the market.

Neenan Associates recommends expanding access to NYISO markets by PRL customers by modifying slightly the existing Price Cap Load Bid (PCLB) program and adding a companion Generation Offset Load Bid (GOLB) program. Customers would then have two ways to participate in the NYISO's Day-Ahead Market (DAM):

**Price Cap Load Bid (PCLB)** – allows a customer to bid for a forward contract for usage the next day at the subsequently established DAM price. The customer bids specific block periods, sizes and prices for a forward contract for supply the next day. Currently bids are offered in three ascending blocks. If a bid is accepted, then the customer is deemed to have a take-or-pay contract for that block of load at the DAM market-clearing price. Those TOP rights are settled either by the customer using the energy it contracted for, in which case there is no further transfer of money, or receiving the RTP settlement price applicable to that block for unused load. If the bid is rejected, RTP settlement prices apply to the metered usage equal to any part of the bid block, or any amount greater than the bid block.

**Generation Offset Load Bid (GOLB)** – allows a customer to bid its load as a supply resource under a forward supply contract agreement. Based on its CBL (customer base load), the customer bids specific block periods, sizes and prices for a forward contract to provide supply the next day by curtailing its usage from the base load in the indicated amount. If the bid is accepted, then the customer is deemed to have agreed to a TOP contract to supply power by reducing its load by the bid block amount for the bid block time period in return for payment equal to the DAM market-clearing price times the block size. This TOP transaction is settled either by the customer providing the required load curtailment, in which case no additional transfers occur, or paying the higher of the RTP LBMP or 150% of its bid price for noncompliance energy resulting from its failure to curtail to its TOP obligation.

### **Subscription and Participation**

The goal is to set up a parallel, but separate market that accommodates customer bidding into the DAM, but does not preclude other bid strategies involving the use of PCLB by LSEs representing other non-PRL loads. All PCLB and GOLB bids must be entered by, or on behalf of, end-use customers with established consumption intentions, from which they are willing to vary as specified prices. DG resources may be used to fulfill the customer's load curtailment obligation under the GOLB program, provided that the result is a net reduction in metered usage equal to or greater than the bid, and that such generation does not violate any other provisions that govern the use of such resources.

End-use customers participate in this market through an approved agent who sponsors subscription to the program, arranges for metering, submits their bids, conveys information about the disposition of those bids, and handles all settlement issues with the NYISO. LSE's may serve as agents for these programs, and customers can participate directly (be their own agent) by becoming a direct serve customer. The NYISO will also register aggregators who can serve as an agent for one or several customers under specified guidelines. When an entity other than the NYISO acts as the sponsoring agent for a participant (an end-use customer), the NYISO settles all transactions with the agent under the provisions of the program, which will be generally known. Agents are free to restructure the retail program and product to suit their commercial needs and those of their customers, but they bear any risks that result from the product transformation; they will settle with the NYISO according to its market provisions.

Table 1 further defines and compares the features of these two programs.

### **Major Issues to resolve**

The PCLB program is already in place in some parts of the market, and its application for end-use loads appears to be straightforward. However, the introduction of the GOLB alternative raises several issues that require investigation and resolution before both programs can be fully and simultaneously implemented. To wit, a partial list included:

1. Why are GOLB participants' overages (failures to comply with their forward curtailment contract) charged the higher of LBMP, or 150% of their bid price, and not the RTP LBMP, as the market theory would seem to militate for?
2. Why are bids in programs limited to blocks of at least four hours? Can subsequent blocks be split?
3. Can a customer participate in both the LBMP and GOLB programs? Can a customer bid into both the PCLB and GOLB programs for the same block of hours? Into different blocks on the same day?
4. Must participants submit bids every day, or just when they want to enter a nonzero bid? Do chads count as bids if they are hanging or pregnant?
5. Should the number of bid blocks be expanded from the three currently used in LBMP to a larger number, perhaps six, for both PCLB and GOLB?
6. How is the Customer Baseline Loads established? Adjusted over time? Adjusted in response to the customer performance when a bid is selected?
7. Is telemetry required for either PCLB or GOLB?
8. Can a customer bid PCLB through one agent and GOLB through another? Does either agent have to be the customer's CBL supplier?
9. If a shift in usage under PCLB or GOLB results in an increase in the customer's metered demand (because he makes up the load at another time); will that higher demand be used in assessing the customer's wires charges?

**Table 1. Comparison of PCLB and GOLB Program Features**

<b>Feature</b>	<b>Role</b>	<b>PCLB</b>	<b>GOLB</b>
<b>Notice</b>	Defines when the customer is notified that its forward bid has been accepted or rejected	Day-ahead – when DAM prices and schedules, including bid awards, are released	Same as PCLB
<b>Duration</b>	The period for which the bid is in effect	The block of hours for which bids were awarded	Same as PCLB
<b>Frequency</b>	How often can bids be awarded	Bids are blocks of a minimum of four hours length and include restart limits for subsequent bid awards	Same as PCLB
<b>Window-block bid requirements</b>	Restrictions on how bids are entered	Bids are in four-hour blocks corresponding to prescribed diurnal blocking pattern	Same as PCLB
<b>Exposure</b>	How often customer faces market prices as a result of its bidding	No limit on how often bid is accepted except as imposed by customer's specified bid parameters and limits	Same as PCLB
<b>Bid Submission and Notification</b>	How does a customer submit a bid and how is it informed of the outcome	Advisory bids submitted weekly. Binding bids are submitted daily. Default bid is zero.	Advisory bids submitted weekly. Binding bids are submitted daily. Default bid is market cap.
<b>Capacity Payments</b>	Payments (\$/kW) for capacity under contract	none	none
<b>Energy Payments</b>	Rate (\$/kWh) applied to performance during bid award period	Final DAM price for consumption	Final DAM price for load reduction
<b>Non-compliance penalty (explicit)</b>	What does the customer pay (of forego) if it fails to comply with the terms of its forward contract	Market RTP settlement prices apply to usage corresponding to bid block during periods for which a bid has been rejected.	Higher of 1) 150% of accepted bid price, 2) RTP LBMP during bid period applies to any usage during awarded curtailment bid period.
<b>Eligibility</b>	Participation requirements	Agent load > 1 MW. Customers must accept a baseline load contract	same
<b>Load Metering and Monitoring</b>	Measuring performance on awarded bids	Approved interval meter.	Approved interval metered and telemetry interconnection with NYISO
<b>Bid Basis</b>	Definition of the customer's bid basis	No restrictions on bids.	Customers' baseline load for the bid block must be included in the LSE's Fixed Bid Load