

Attachment F (Response to Q.30) – Impact on LBMP

Simulated Price Impact of Proposed Program Changes

The NYISO requested Neenan Associates to evaluate the impacts of these proposed program changes using the supply model developed for its PRL program evaluation. The actual event days and circumstances of 2001 were used to characterize market conditions (loads, generation, the marginal bid price, and the supply flexibility, which describes how prices change as load served changes). Then, this year's PRL resources (560 MW of SCR resources and a net EDRP capacity of 997, see the table below) were imposed on the market circumstances assumptions to simulate what would have transpired if they were available last year and were dispatched by the proposed new rules. Table F-1 divides the available zonal SCR loads into thirds so that they can be incrementally dispatched in the simulations to reveal the resulting price impacts.

To illustrate the impacts of the new protocols on RT LBMP, five cases were examined:

1. Base Case where no PRL resources are dispatched
- ~~1.2.~~ SCR Only, 1/3 needed case where only 1/3 of available ICAP/SCR resources is assumed and to be needed and therefore only that amount is dispatched to maintain reliability, and no EDRP is dispatched
- ~~1.3.~~ SCR Only, 2/3 Needed and is dispatched
- ~~1.4.~~ SCR Only All Needed and is dispatched
- ~~1.5.~~ All SCR and all available EDRP resources are dispatched.

Table F-1

Simulated Load Reductions by Program

Superzone	SCR Only MWs			EDRP MWs
	1/3 Needed	2/3 Needed	All Needed	
Capital	17	34	52	77
NYC	17	35	53	98
LI	6	13	20	62
Western NY *	141	282	424	731
Hudson River **	3	7	11	29
Total	184	371	560	997

* Western NY "superzone" is comprised of Zones A - E

** Hudson River "superzone" is comprised of Zones G - I

The different SCR cases shown are dispatched at prices of \$300, \$400, and \$500
EDRP is voluntary but is submitted into SCD with a \$500 bid price.

Under the proposed new protocols, SCR participants will be required to provide a strike price at which they would be called upon to curtail. This curve will be used to determine which customers to call upon in the case that all SCR resources are not needed. A bid curve for ICAP/SCR resources was developed by using the behavioral models developed from last year's program analysis. The resulting strike prices associated with the

ICAP/SCR dispatch intervals characterized in the table above, and which are used in the simulations, are as follows:

- 1/3 of the SCR load would bid a strike price of \$300 or less
- 2/3 of the SCR load would bid a strike price of \$400 or less
- All available SCR load would be bid at a strike price of \$500 or less.

Finally, to demonstrate the impact of applying the hybrid pricing rules to PRL resources, simulations were performed assuming that 50% and 100% of the SCR resources dispatched were ~~deemed to be~~ needed. ~~When they were so deemed~~ Under this assumption, the SCR or EDRP payment rate would set the RT LBMP for the simulation case, otherwise, LBMP was assumed to be set by the usual last bid criteria, as characterized by the supply flexibility model.

The results of the simulation are provided in Table F-2 (the base case LBMPs where PRL resources never set LBMP), Table F-3 (the case where PRL resources are deemed to be needed in 50% of all event hours and therefore set LBMP in those hours) and Table F-4 (the case where PRL resources are deemed needed and therefore set LBMP in all event hours).

The important results of these simulations are as follows:

1. As more SCR resources are dispatched and then EDRP resources are called upon, but they are not deemed to be needed so they do not directly affect LBMP, the simulations show that they do, however, influence market prices. LBMPs drop (Table F-2) in each zone as the level of SCR resources increased for 1/3 to 2/3 to full dispatch, and continue to drop when the EDRP resources are dispatched. For example, in the Capital zone, the LBMP drops from the base level of \$368/MWH first by \$18 when the first 1/3 SCR is curtailed, and subsequently by \$16 and \$29, respectively, as the second and third segments of available SCR are dispatched, and Capital LBMP drops finally to \$298 when EDRP resources are called upon. This reflects the unintended consequences that spurred the new proposal. Note that the price drop is more than 10% ~~only in~~ only the Capital and Western Zones, ~~zones~~ these that have a high proportion of EDRP resources relative to load served.
- ~~1.2.~~ The impact of SCR and EDRP resources setting LBMP 50% of the time (Table F-3) is that prices now increase from the Base level as more PRL resources are dispatched. For example in the Capital zone the dispatch ~~of~~ 1/3 of SCR resources raised the LBMP from \$368 to \$390/MWh, and subsequent SCR dispatched raised the price to \$437. If the EDRP is then dispatched, the Capital LBMP falls to \$417, reflecting the impact of the large amount of EDRP, only half of which is deemed to impact the LBMP. Moreover, LBMPs increase in all zones relative to the base case by from 27% (L.I.) to 89% (Western) (Table F-3), even though PRL payments set LBMPs in only 50% of the event intervals.
- ~~1.3.~~ Finally, when PRL resources affect LBMP 100% of the time that they are dispatched, prices rise even more than in the base case (Table F-4). The Capital LBMP increases as a result of the dispatch of 1/3 of SCR resources from \$368 to \$430, almost as much as resulted from the dispatch of the entire SCR resources available in the previous case. Moreover, simulated market clearing prices are

from 70%(NYC) to 178% (Western zone) higher than in the base case when both all SCR and EDRP resources are dispatched and they are allowed to set LBMP. This result is predicated on the strike price curve used for SCR resources simulations, and the provisions for paying EDRP customers the higher of LBMP or \$500.

The simulation results approximate how the hybrid pricing mechanism would be implemented, so the impacts should be considered as illustrative of the relative impacts. Moreover, the SCR bid curve is derived from models developed from the limited experience of EDRP participants in 2001. Customers that participate in ICAP/SCR may be inclined to bid lower strike prices under the new protocols. Lower SCR strike prices would reduce the impacts in LBMP when only those resources are needed. However, as long as EDRP offers the \$500 floor price, whenever those resources are called upon, LBMPs can be expected to increase, the amount of that increase depending on how much of those resources are deemed to be needed.

Even with these caveats, the simulations suggest that the new protocols will reduce or eliminate the downward pressure on LBMPs that result from the current coincident dispatch of SCR and EDRP resources with no provision for explicitly adjusting LBMP.

Table F-2

Avg. Simulated RT LBMPs when PRL Sets LBMP 0% of SCD Intervals

Superzone	Base LBMP	SCR Only			All EDRP & All SCR
		1/3 Needed	2/3 Needed	All Needed	
Capital	\$ 368	\$ 350	\$ 334	\$ 315	\$ 289
NYC	\$ 354	\$ 348	\$ 343	\$ 338	\$ 322
LI	\$ 366	\$ 365	\$ 362	\$ 360	\$ 348
Western NY *	\$ 273	\$ 256	\$ 240	\$ 225	\$ 191
Hudson River **	\$ 311	\$ 309	\$ 307	\$ 305	\$ 296

* Western NY "superzone" is comprised of Zones A - E

** Hudson River "superzone" is comprised of Zones G - I

Under the hybrid pricing scheme, the bid that results from calling the indicated level of MWs is submitted to SCD. In this scenario, these MWs can never set LBMP, only depress it.

Table F-3

Avg. Simulated RT LBMPs when PRL Sets LBMP 50% of SCD Intervals

Superzone	Base LBMP	SCR Only			All EDRP & All SCR
		1/3 Needed	2/3 Needed	All Needed	
Capital	\$ 368	\$ 390	\$ 412	\$ 435	\$ 417
NYC	\$ 354	\$ 388	\$ 412	\$ 444	\$ 434
LI	\$ 366	\$ 384	\$ 412	\$ 450	\$ 442
Western NY *	\$ 273	\$ 320	\$ 347	\$ 382	\$ 360
Hudson River **	\$ 311	\$ 353	\$ 384	\$ 422	\$ 417

* Western NY "superzone" is comprised of Zones A - E

** Hudson River "superzone" is comprised of Zones G - I

Under the hybrid pricing scheme, the bid that results from calling the indicated level of MWs is submitted to SCD. Under this scenario, the LBMPs shown represent an equally weighted average between the hourly simulated price and the bid price.

Table F-4

Avg. Simulated RT LBMPs when PRL Sets LBMP 100% of SCD Intervals

Superzone	Base LBMP	SCR Only			All EDRP & All SCR
		1/3 Needed	2/3 Needed	All Needed	
Capital	\$ 368	\$ 430	\$ 490	\$ 555	\$ 545
NYC	\$ 354	\$ 428	\$ 482	\$ 550	\$ 545
LI	\$ 366	\$ 404	\$ 462	\$ 539	\$ 537
Western NY *	\$ 273	\$ 384	\$ 454	\$ 540	\$ 530
Hudson River **	\$ 311	\$ 397	\$ 461	\$ 539	\$ 538

* Western NY "superzone" is comprised of Zones A - E

** Hudson River "superzone" is comprised of Zones G - I

Under the hybrid pricing scheme, the bid that results from calling the indicated level of MWs is submitted to SCD. Under this scenario, the LBMPs shown represent the higher of the bid price or the simulated LBMP in each hour.



