

# ***INCENTIVES AND MANIPULATIONS OF CBL IN DEMAND RESPONSE IN PJM TERRITORY***

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## **Overview**

Demand response (DR) plays an important role in the current electric market. DR reduces the peak load, defers costly infrastructure upgrade, enhances system reliability, and increases social welfare. The current historical CBL determination method, however, induces manipulations, reduces social welfare and may at the same time jeopardize system reliability. Manipulation strategies lead demand response program far from being effective.

## **Methods**

This paper examines a DR data set from the energy market in PECO territory in PJM. The authors find empirical evidence for the implementation of DR manipulations. CBL can be systematically higher than the DR participant's normal usage, especially for participants who are experienced in DR activities.

## **Results**

Regressions from PECO data further state the imprecise of historical CBL, and imply the participants' are utilizing manipulation strategies. Experienced participants manipulate the CBL more than inexperienced participants. The following findings indicate manipulation: 1) CBL dramatically increases with learning experience; 2) high SUMO significantly increases current CBL; 3) "uneconomic" behaviors about the correlation between bidding behavior and LMP are observed among experienced participants; and 4) experienced participants bid in SUMO days to earn an extra profit.

## **Conclusions**

Most of the DR participants provide energy in system peak hours, generating a large amount of social welfare and deferring costly infrastructure construction. However, the manipulations in DR are undermining the programs.