NEW YORK INDEPENDENT SYSTEM OPERATOR

Price-Capped Loads
Virtual Loads

Market Structures Working Group

September 13, 2000

Implementation Order

Then

<u>July 18, 2000</u>

Virtual load

(Oct, 2000)

Price-capped load

Now

<u>September 13, 2000</u>

Price-capped load

Virtual load

(????)

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Price-Capped Load First

- **Consistent with PJM experience**
  - *PJM's has price-cap load using incs & decs*
  - *PJM retained incs & decs with move to 2-settlement system*
- **NY LSEs want the protection of price-capped load bidding**
- **Price-capped load bidding must be implemented before virtual load bidding**

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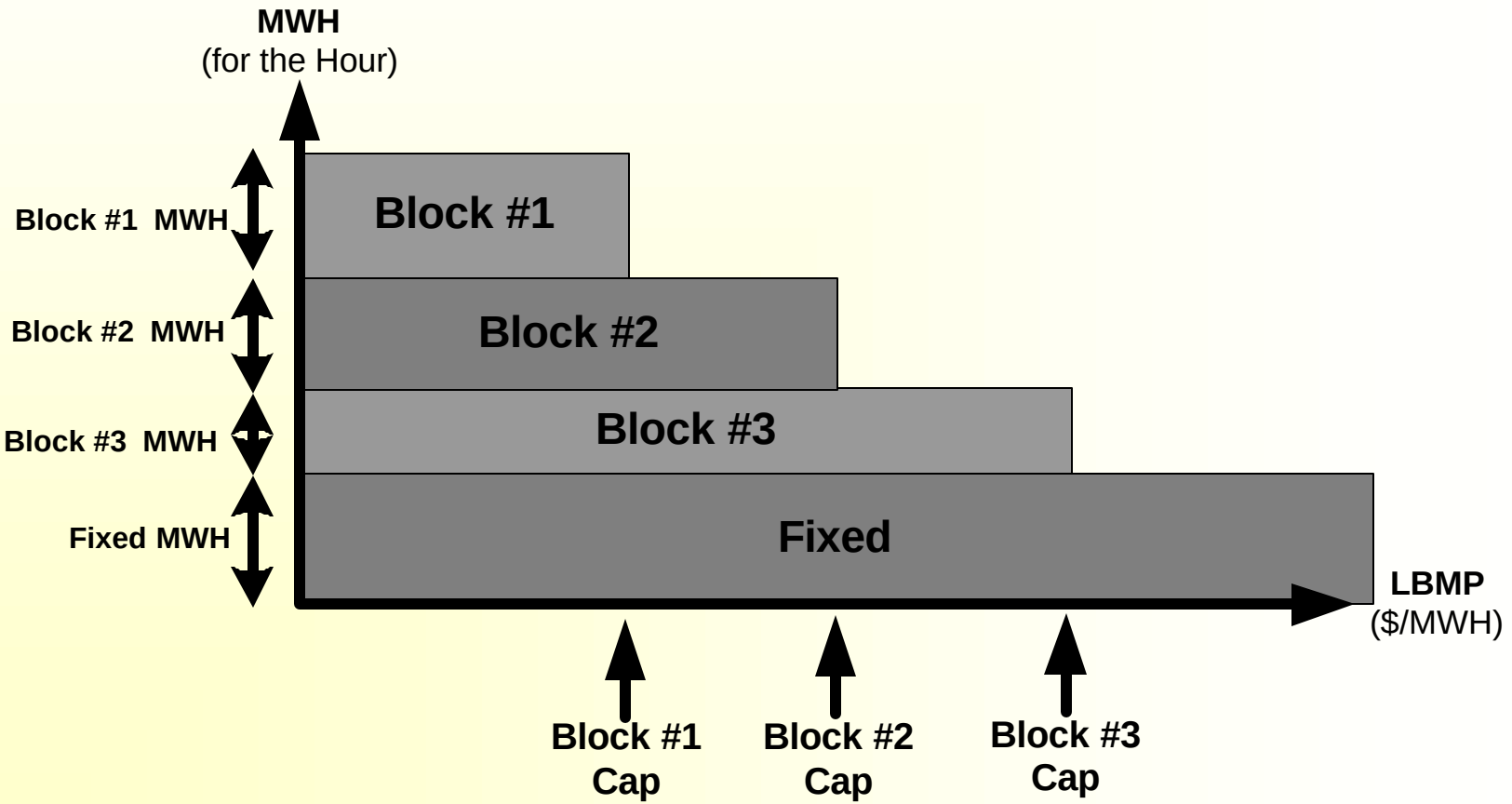
DA Price-Capped Load Bid



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Fixed MWH – the energy in MWH that is to be acquired during the hour in the DA market regardless of price. There is no price sensitivity in this number. Currently most LSE have only the ability to bid fixed loads.

Block #1: MWH and Price Cap – two numbers giving the additional amount of energy (MWH) and a price cap ($/MWH) for that energy. The energy will be acquired in the DA market for the hour if the cost is less than or equal to the specified price cap.

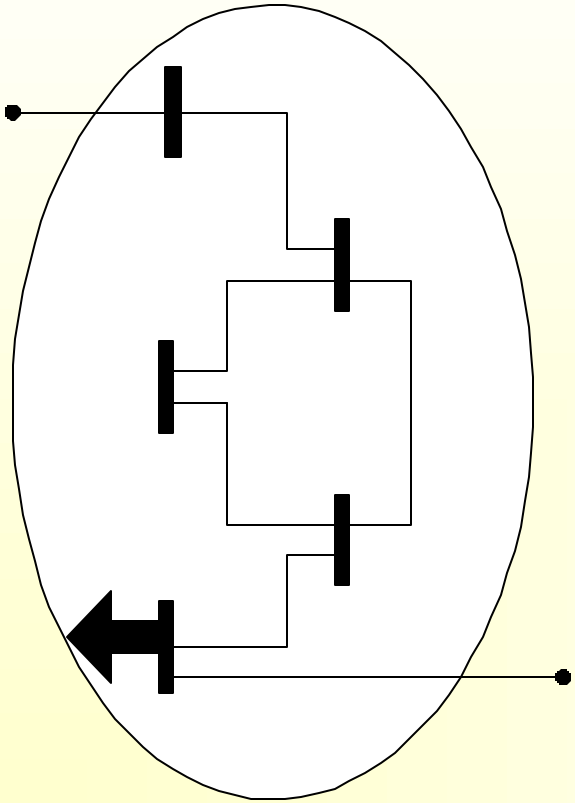
Block #2: MWH and Price Cap – two numbers giving the additional amount of energy (MWH) and a price cap ($/MWH) for that energy. The energy will be acquired in the DA market for the hour if the cost is less than or equal to the specified price cap. The second price cap must be greater than the first price cap.

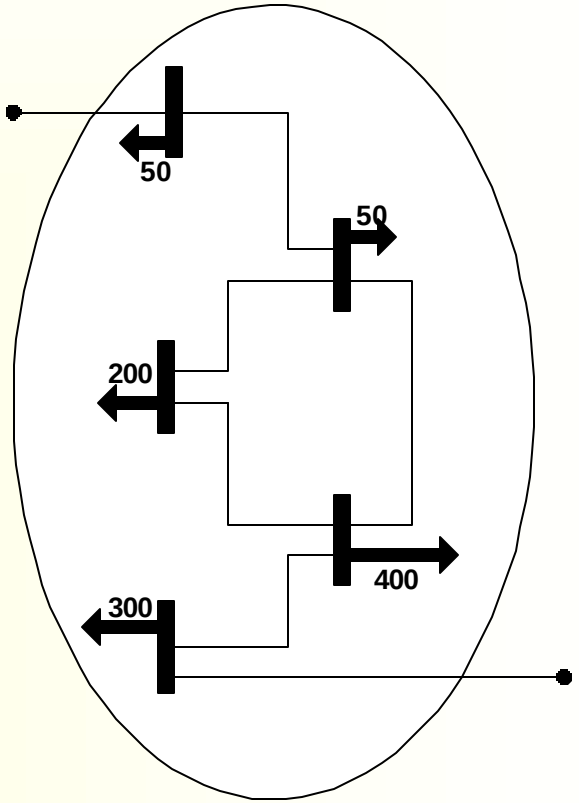
Block #3: MWH and Price Cap – two numbers giving the additional amount of energy (MWH) and a price cap ($/MWH) for that energy. The energy will be acquired in the DA market for the hour if the cost is less than or equal to the specified price cap. The third price cap must be greater than the second price cap.

Current Limitations

- **SCUC knows bus LBMP (not zone LBMP) so price-capped load bids must be bus-specific**
  - *Few buses are able to accept price-capped loads*
  - *Bad for load flow, scheduling & optimization software*
- **Zonal LBMP is calculated after SCUC runs**
- **Only fixed load can get zonal LBMP**
- **Must change SCUC to recognize zonal LBMP before price-capped loads can be widely used**

Bus-Specific & Zonal Load





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Bus-Specific Load

- **Placed at a specific bus**
- **Accurate only for large industrial sites**
- **Can lead to unrealistic concentrations of load in the network model**
  - *Convergence problems*
  - *Intra-zonal congestion*
  - *Invent network weakness where none exists*

Zonal Load

- **Automatically distributed among buses in a zone**
- **Accurately represents load distribution in a zone**
- **More robust solutions because unrealistic concentrations are avoided**
- **Easier to use since distribution among buses is automatic**

Tariff Implications
Price-Capped Load

- **Limited price-capped load bidding is available now so few, if any, tariff changes are expected**
  - *There has been no formal review of the Tariff to verify the extent of changes required*

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Tariff Implications
Virtual Load

- **Tariff does not specifically prohibit virtual entities -- no reference at all**
- **Some tariff provisions require physical entities**
- **Additions to tariff are needed to permit participation of virtual entities**

"LBMP for Generators and Loads will be based on …"

"External Generators and Loads can bid into the LBMP Market or participate in Bilateral Transactions…"

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Bidder Qualification

- **Price-capped (physical) loads**
  - *No change*
- **Virtual loads**
  - *Financial qualifications similar to LSE*
    - **Financially capable of handling 3 highest months of the year**
    - **Waived for corporations with BBB rating or better**
    - **Letter of credit required**
    - **Etc.**
  - *Locations where bidder may bid virtual load must be pre-defined*

Virtual Load

- **Internal only (no imports or exports)**
- **Similar to physical load except that:**
  - *Physical load makes after-the-fact adjustments to forecast load for billing*
  - *Energy consumed by a virtual load is always zero*
    - **Bid load = non-zero**
    - **Forecast load = zero**
  - *Forecasted load-weighted share of uplift and ancillary services is always zero for a virtual load*

Status

- **Need for Tariff changes has been identified**
- **It appears that no significant software modifications are required**
- **Major changes to SCUC are required**
- **Usability issues may eventually lead to bidding software modifications**
  - *Identify virtual load as such*
  - *Automatically set forecast load to zero*
  - *Remove virtual loads from billing true-up process*

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