

Day-ahead Offers, Bids and Schedules

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Market Code Chapter 9 – Day Ahead Market

South African Wholesale Market Code, Chapter 9, page 57

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Some starting concepts

- **Trading Period** (Scheduling interval) = one hour

- **Trading facility**

One or more sites (for electricity generation or consumption) aggregated within a network constraint area

- **Trading unit**

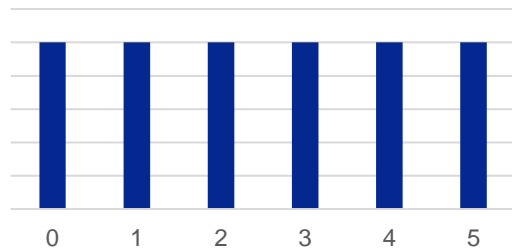
- A Trading Facility may comprise one or more trading units, but a Trading Unit (and components) may only apply to one Trading Facility
- The Trading Unit cannot be greater than 930 MW unless approved by the SO



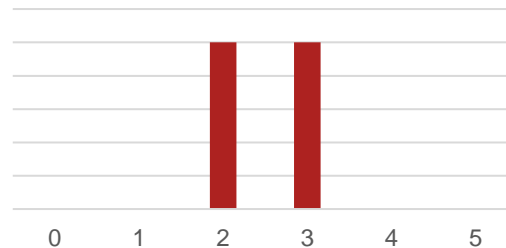
Rationale for day-ahead market

- Trading day system risks
- Central dispatch vs self-dispatch
- Discrete hourly schedules vs least cost optimization

Gen A: 50 MW @ R1000/MWh
Min Run Time 6 hours

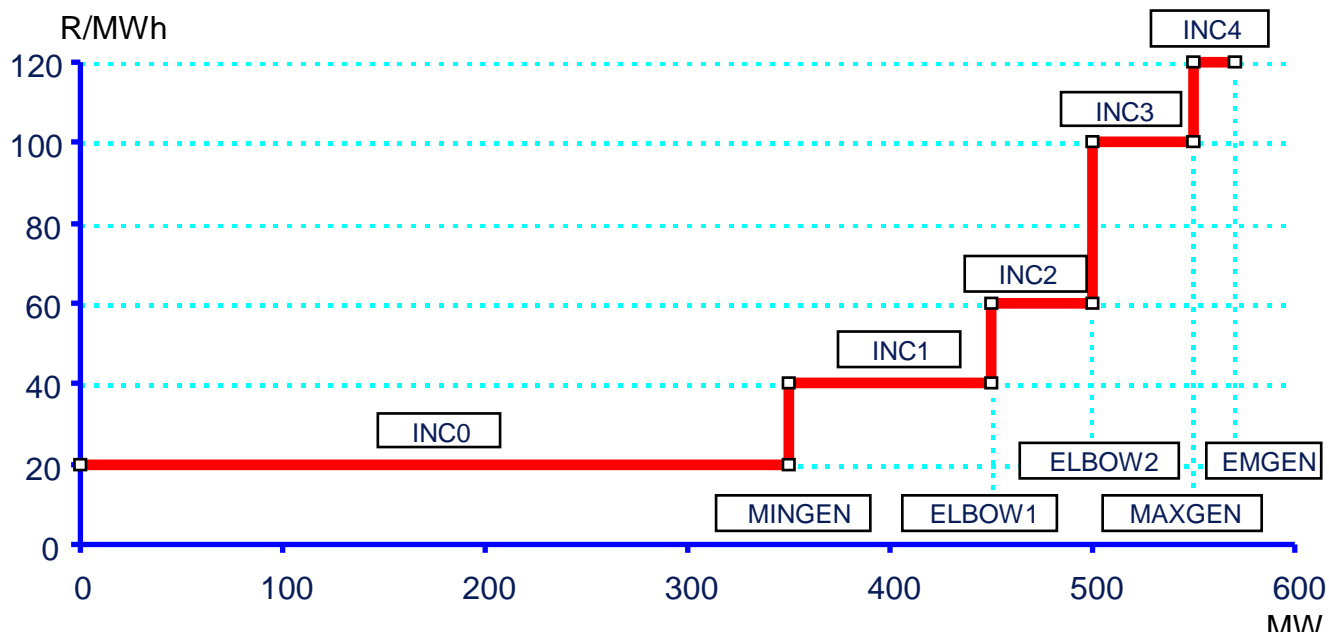


Gen B: 50 MW @ R2000/MWh
Min Run Time 1 hour



Day Ahead Supply Offer

- Price curve (*applicable over the day or for specific trading periods*)
- Energy availability, flexibility indicators
- Reserves availability



Technical parameters

- Standing data for Trading Unit
 - Max generation / consumption
 - Minimum stable generation point
 - Start-up ramps (MW/h), costs and lead time for hot, warm and cold conditions
 - Minimum run time
 - Minimum down time
 - Loading ramp-rate
 - De-loading ramp-rate
 - Shut down ramp-rate
 - Certification for reserves (Regulating, Instantaneous, 10 minute, Supplemental and Emergency)
 - Special conditions for energy constrained and storage facilities

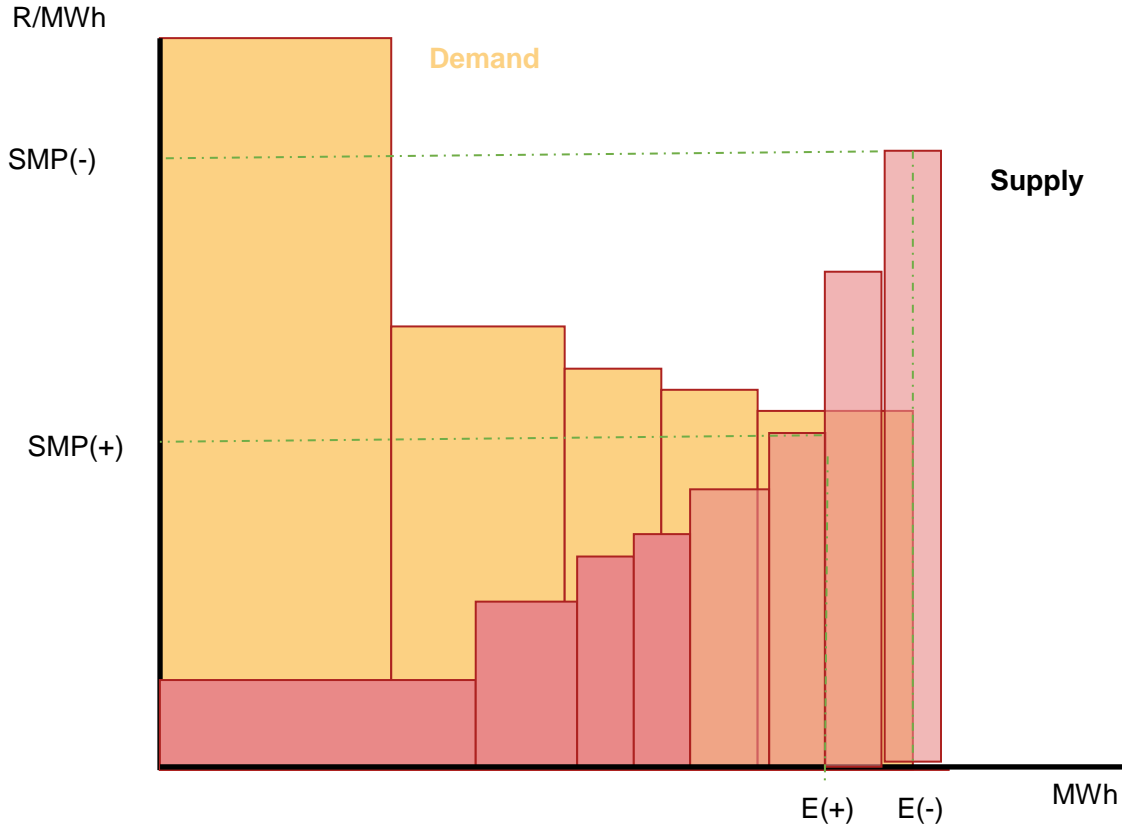


Dispatch algorithm

- Optimisation objective = minimize total cost of generation to meet expected demand, constrained by technical capabilities of the Trading Units and reserve requirements
- Dealing with extreme conditions:
 - Total available supply < required demand (with reserve requirements)
 - Flexible generation at minimum generation and only “non-dispatchable” generators able to reduce (spreading the reduction)



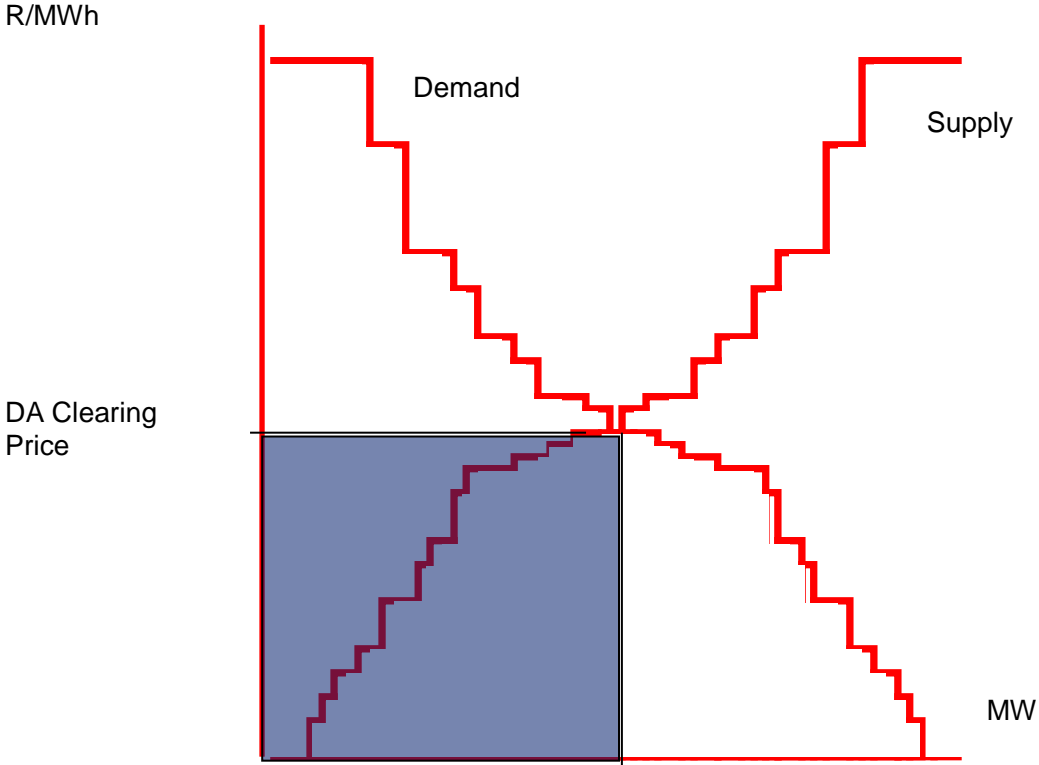
Day-ahead Market: Supply side and demand side



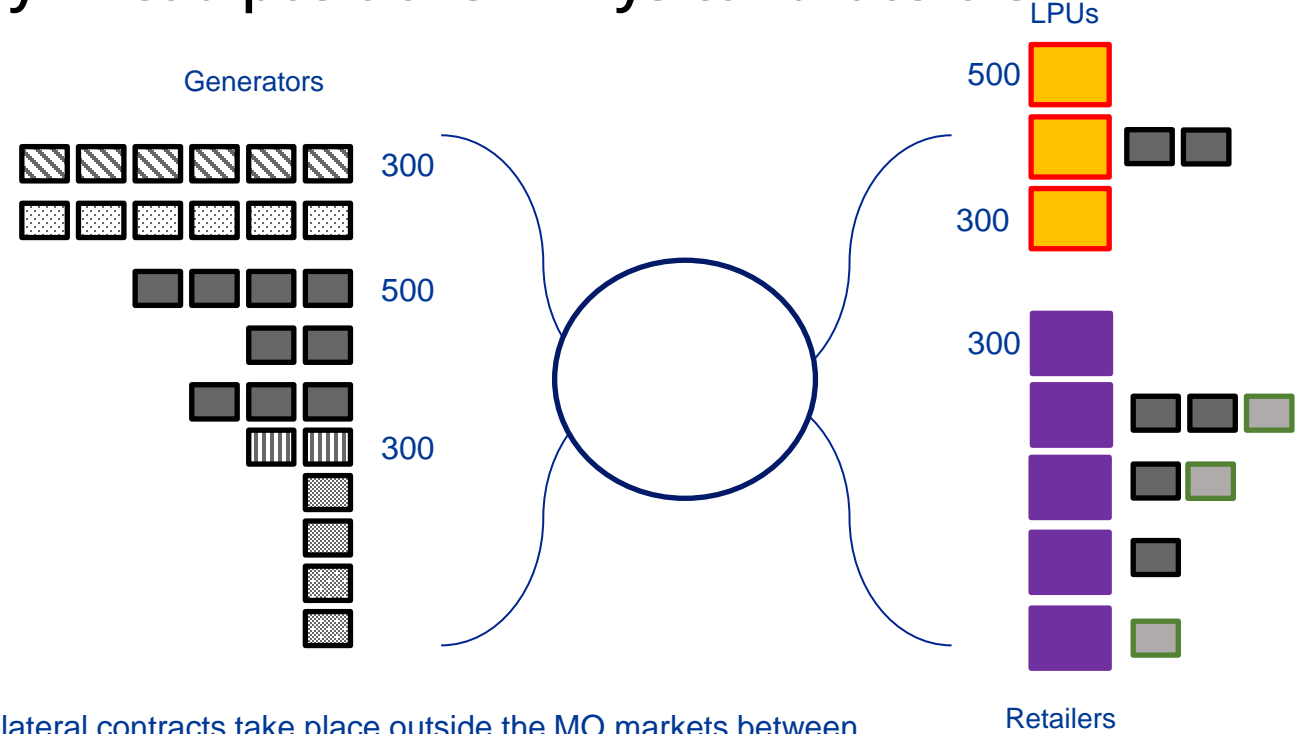
- Supply curve: price increments offered by generators / traders, bound by technical parameters
- Demand curve: expected demand for consumers / traders / retailers adjusting for price responsive capability
- Price set by marginal generator (after accounting for price responsive demand and technical parameters / constraints)



Day Ahead Market clearing



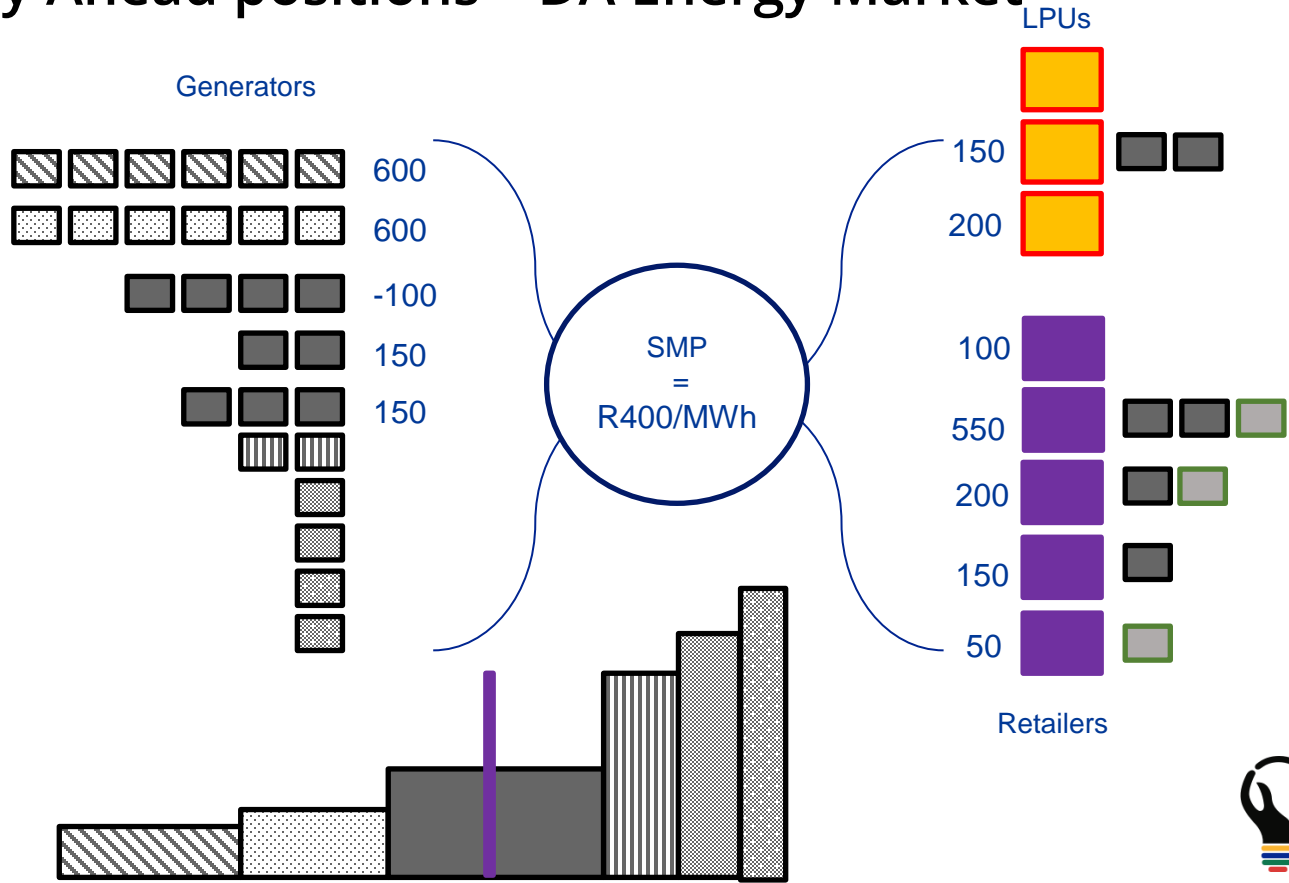
Day Ahead positions – Physical bilaterals



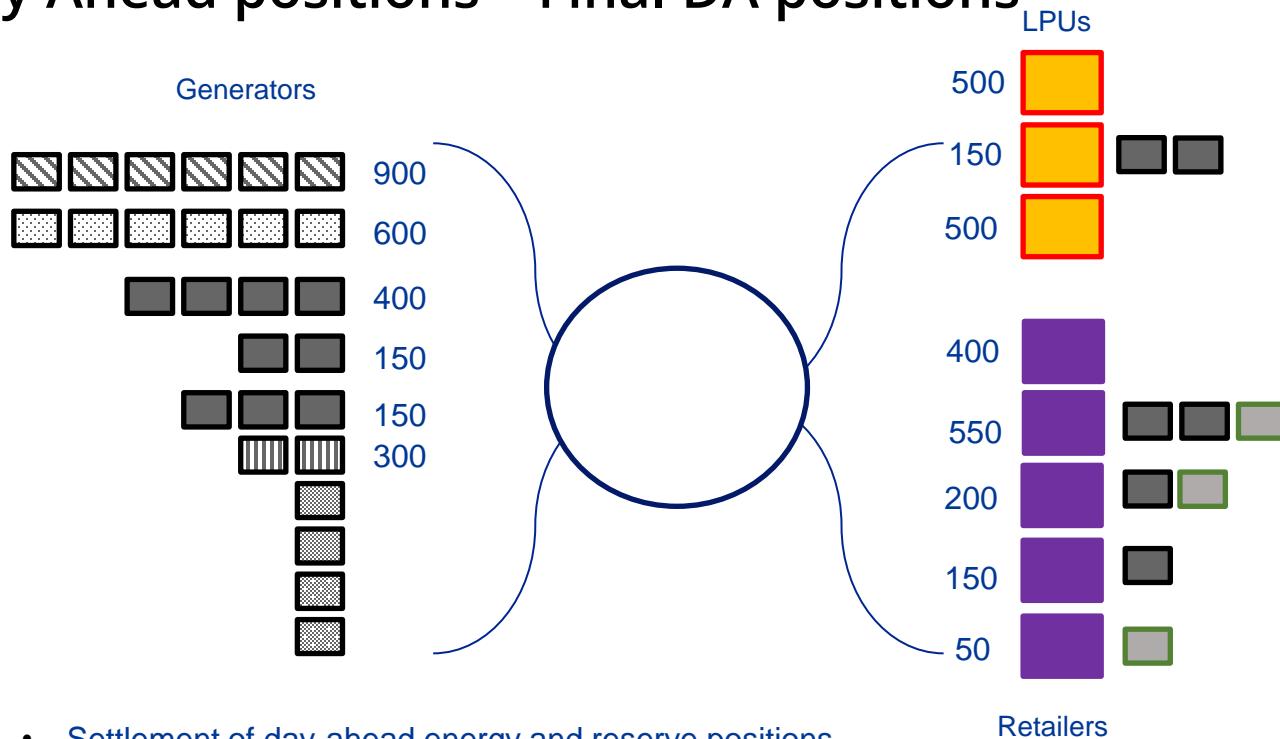
- Physical bilateral contracts take place outside the MO markets between willing buyers and sellers
- Declarations submitted before day-ahead gate closure
- Matching declarations required (or countersigning of one declaration)



Day Ahead positions – DA Energy Market



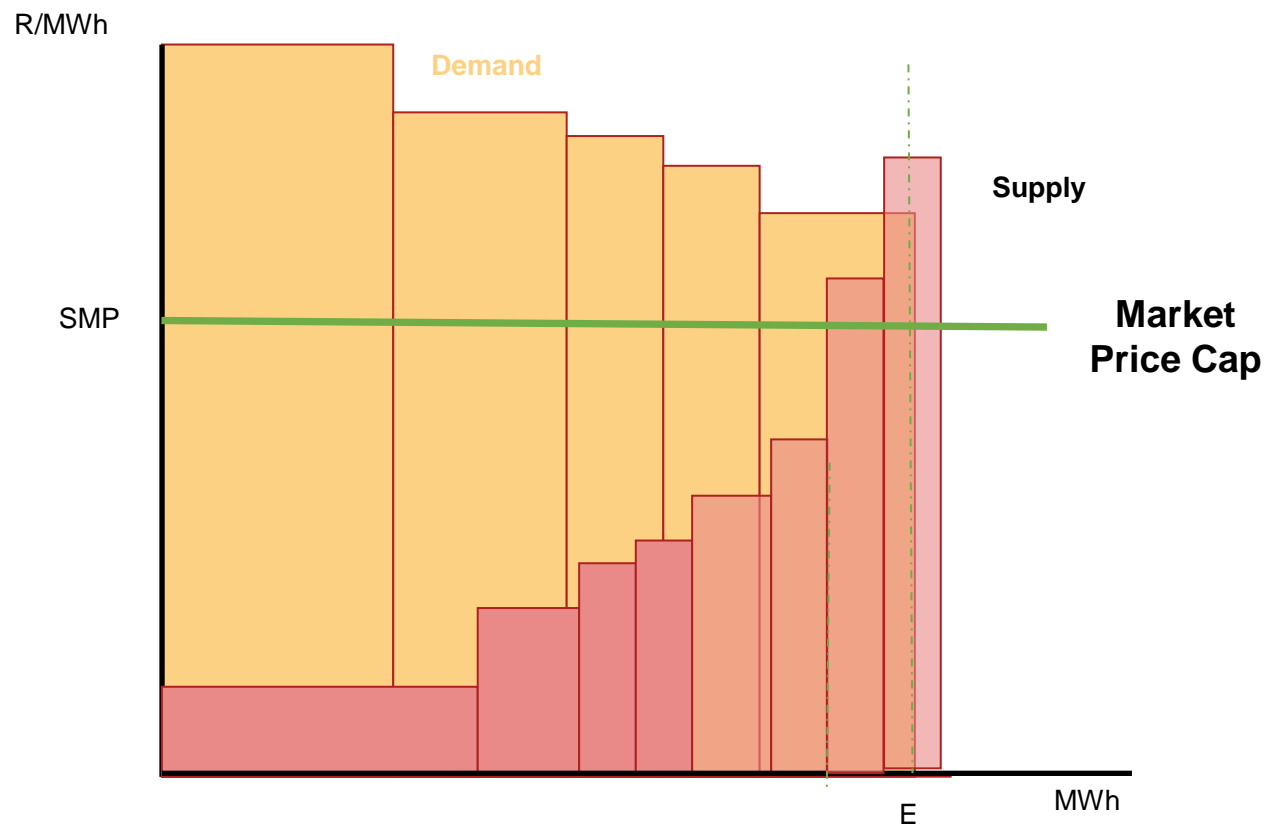
Day Ahead positions – Final DA positions



- Settlement of day-ahead energy and reserve positions occurs before day of operation for those traded on market



Application of market price cap



Thank you



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