User Meeting 2015

Bidding in SHARM

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Short-term models

Two applications for short-term models

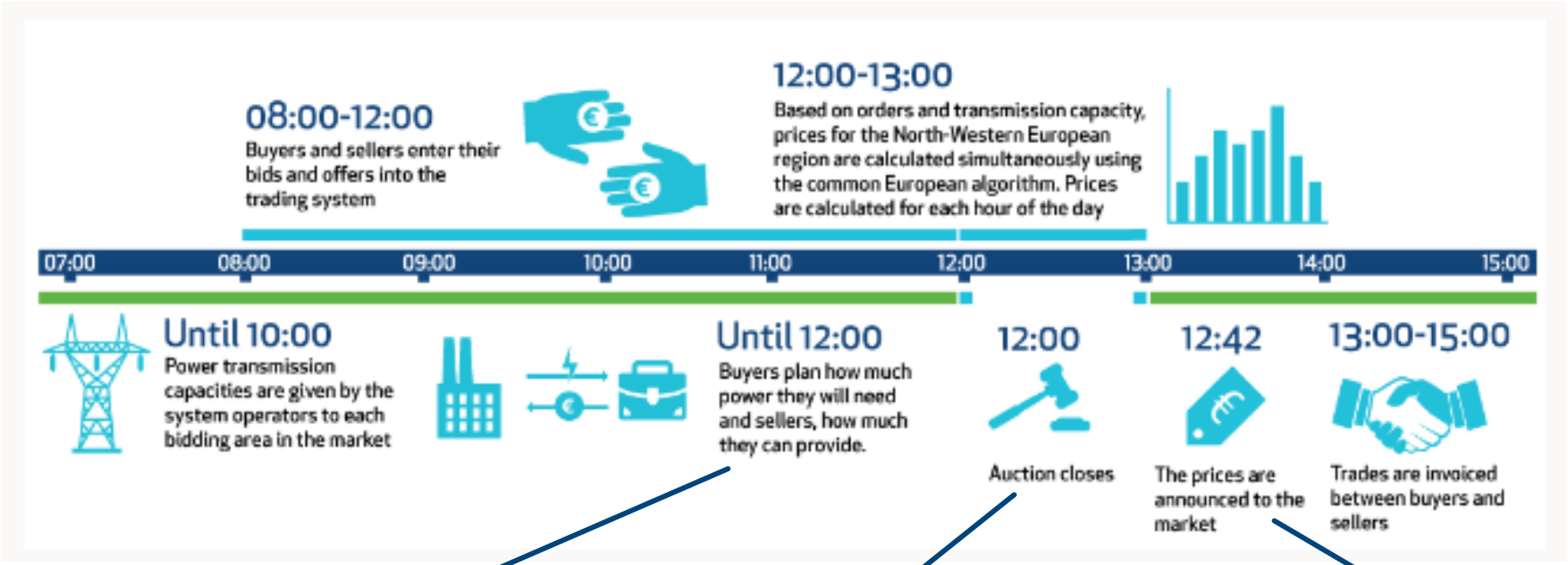
- Bidding (pre-spot)
- Optimal dispatch(post-spot)

Interconnected, but not the same. Should result in physically feasible production schedules.

Both task are undertaken under uncertainty of future prices and inflow.

Must make a decision today that is good (optimal) for an uncertain situation tomorrow.

SHARM

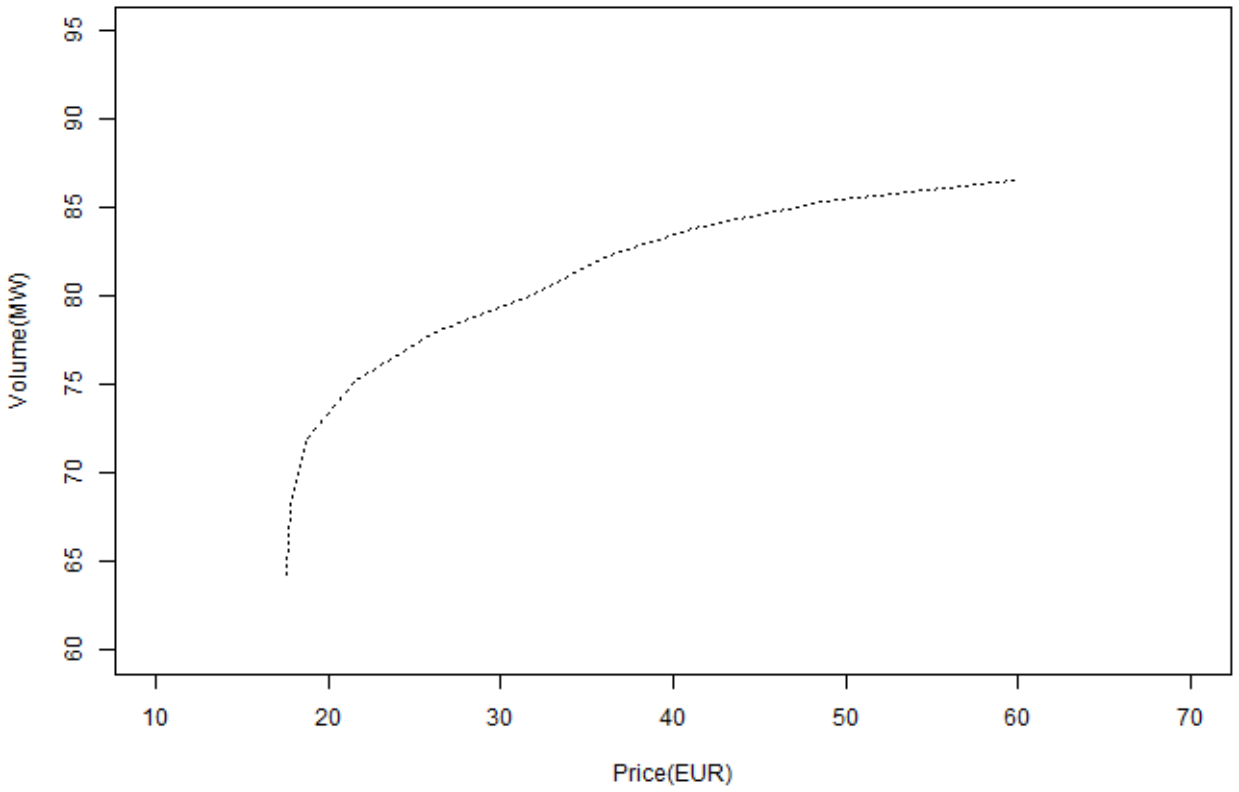


Pre-spot:
Price uncertainty for tomorrow and rest of week
Inflow uncertainty for tomorrow and rest of week

Market clearing

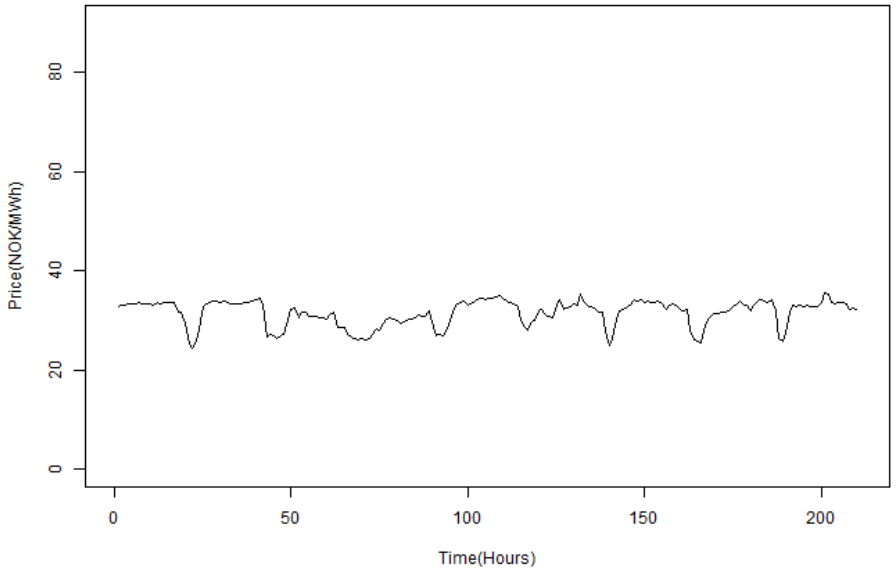
Post-spot:
Price uncertainty for rest of week
Inflow uncertainty for tomorrow and rest of week

What's a good bidding strategy?

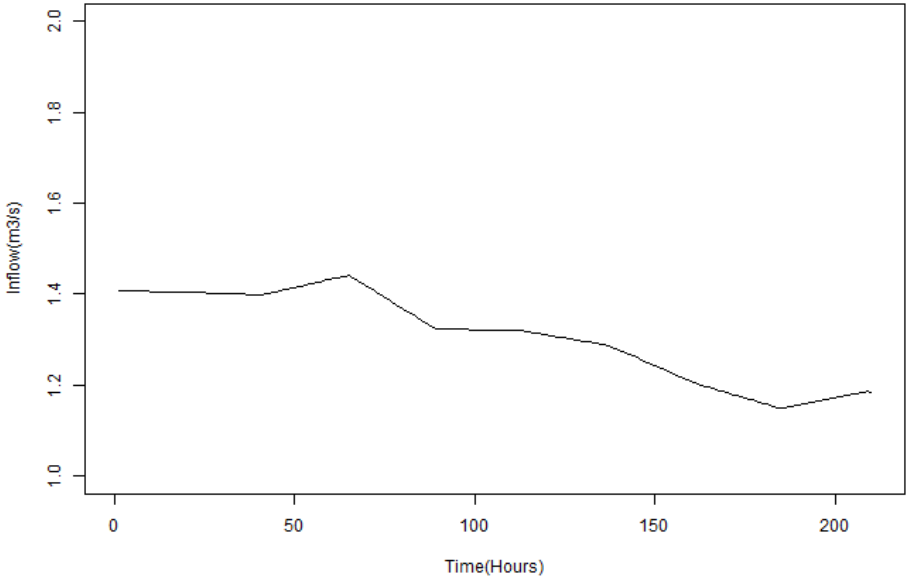


Input to SHOP

Price

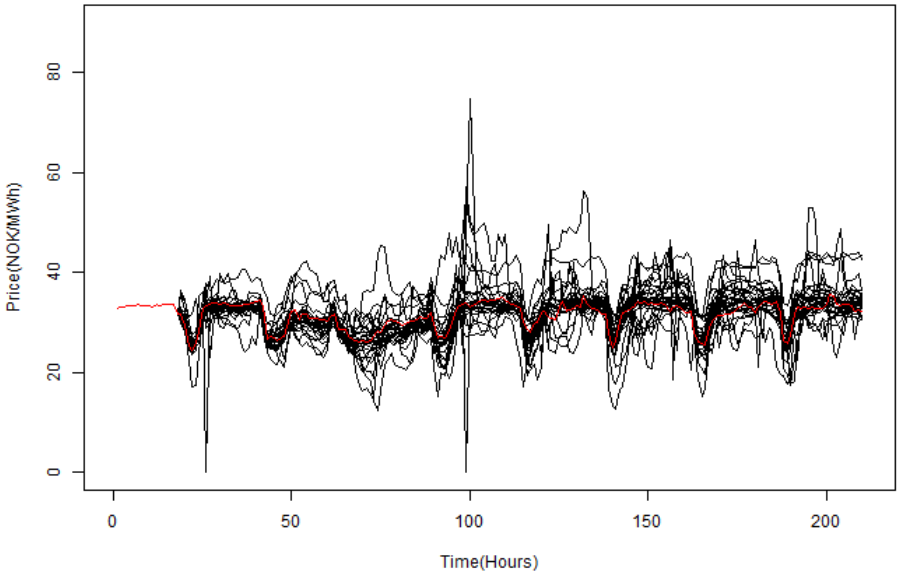


Inflow

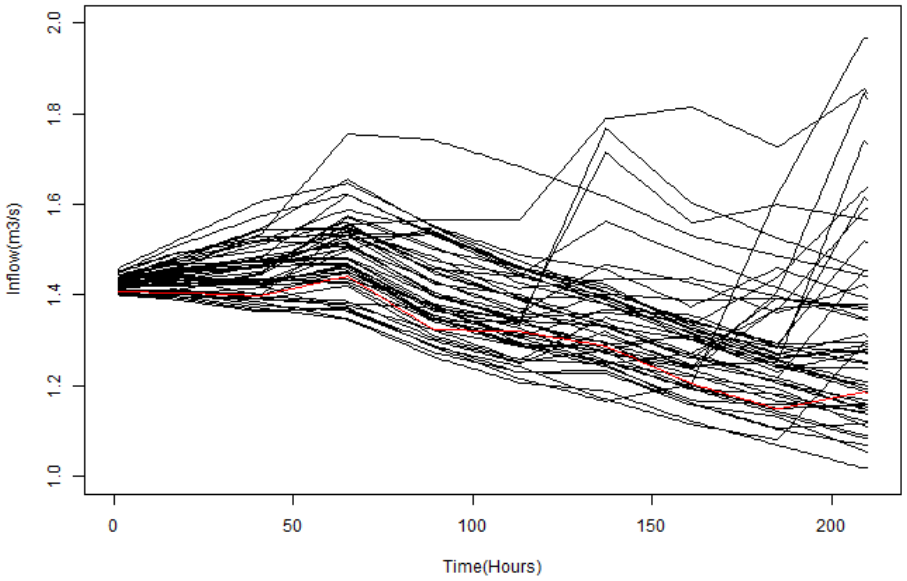


Input to SHARM

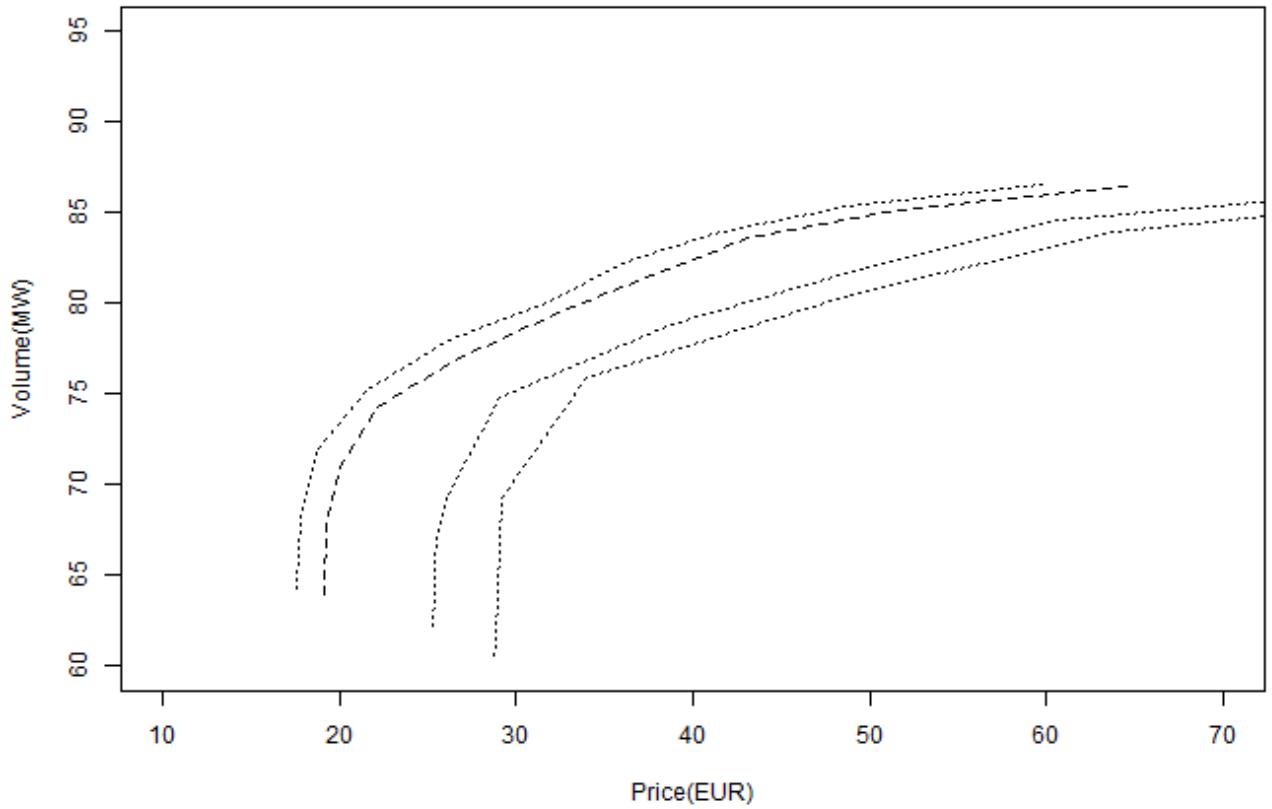
Price



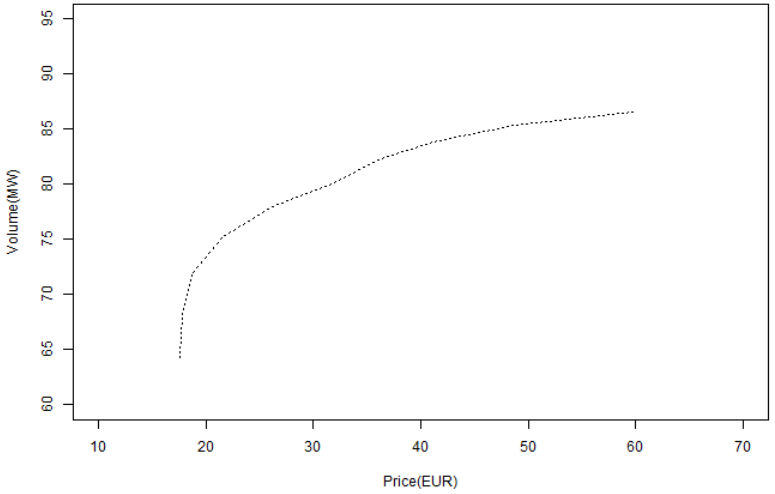
Inflow



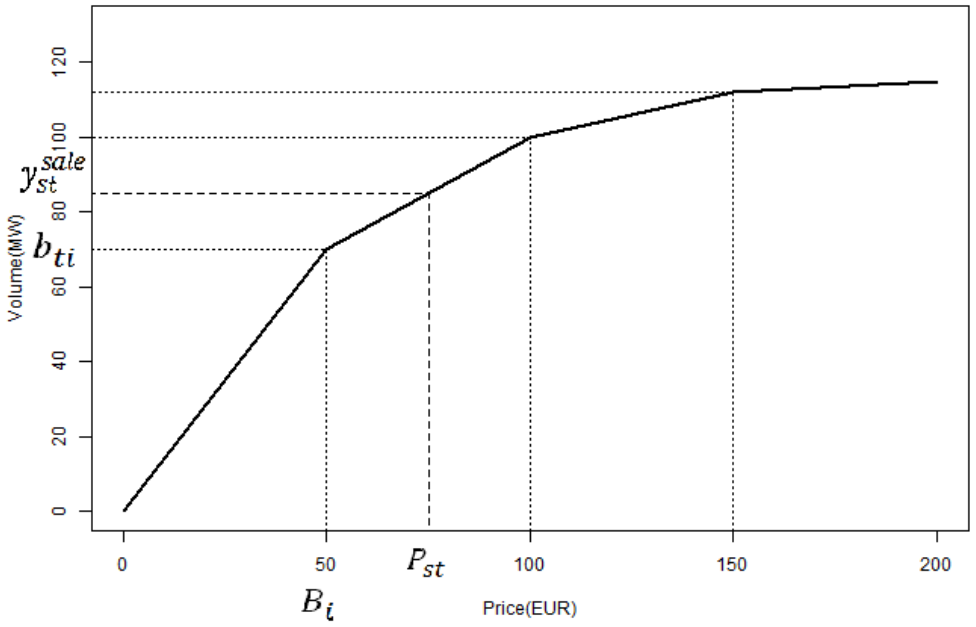
MC-curves for different values of price and inflow



What does SHARM do?

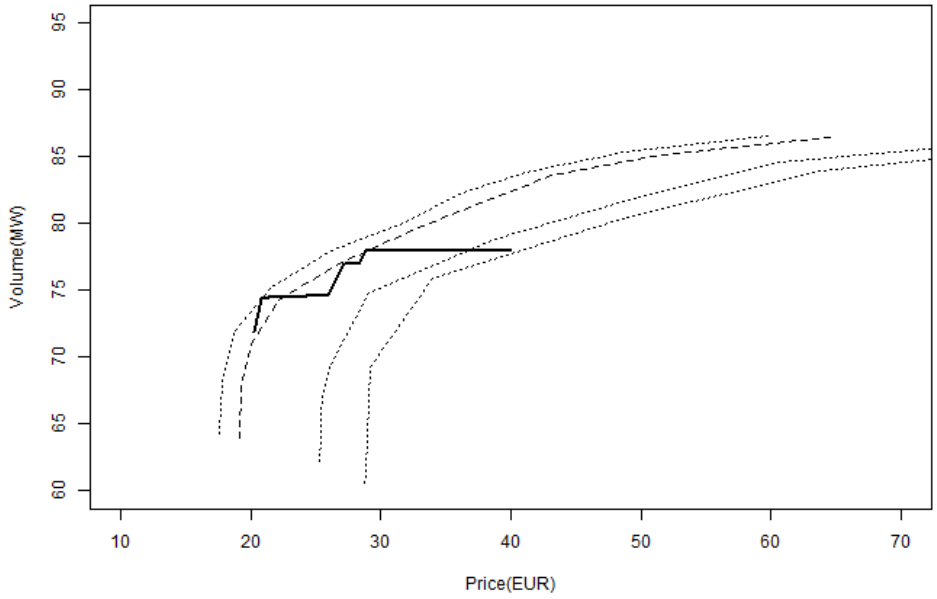


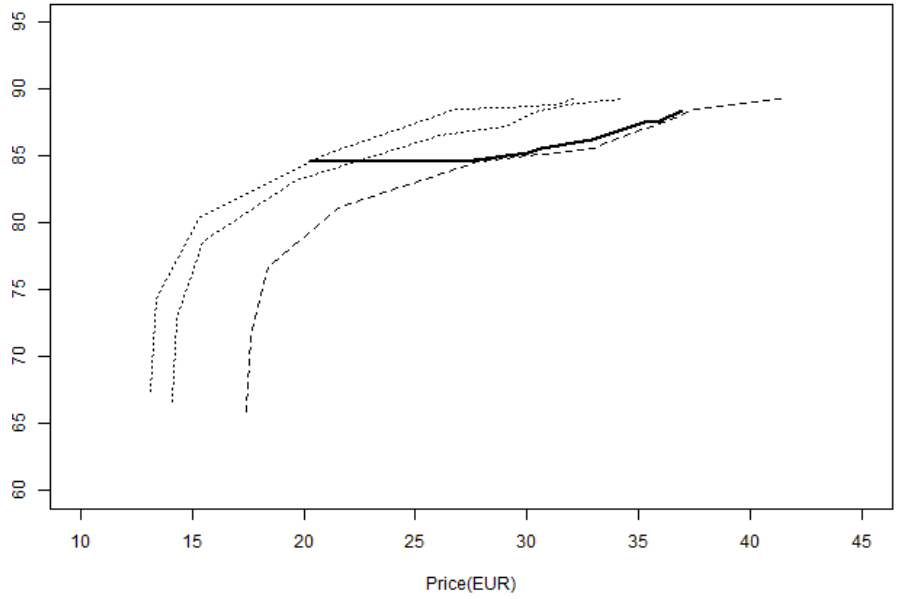
Price		-500	50	100	150	200	3000
Hour	1	0 MW	70 MW	100 MW	112 MW	118 MW	120 MW
	2	0 MW	70 MW	100 MW	112 MW	118 MW	120 MW
	...	0 MW	70 MW	100 MW	112 MW	118 MW	120 MW
	23	0 MW	70 MW	100 MW	112 MW	118 MW	120 MW
	24	0 MW	70 MW	100 MW	112 MW	118 MW	120 MW



$$y_{st}^{sale} = \frac{P_{st} - B_{i-1}}{B_i - B_{i-1}} b_{ti} + \frac{B_i - P_{st}}{B_i - B_{i-1}} b_{ti-1},$$

Results – 2 situations





Low reservoir level

High reservoir level

Conclusion

SHARM

- Distributional information of uncertain price and inflows
- Explicit representation of marginal cost curve
- Formal optimization of bids