



DSM and benefits for the cross-border market integration

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UMM: Market Management

Agenda

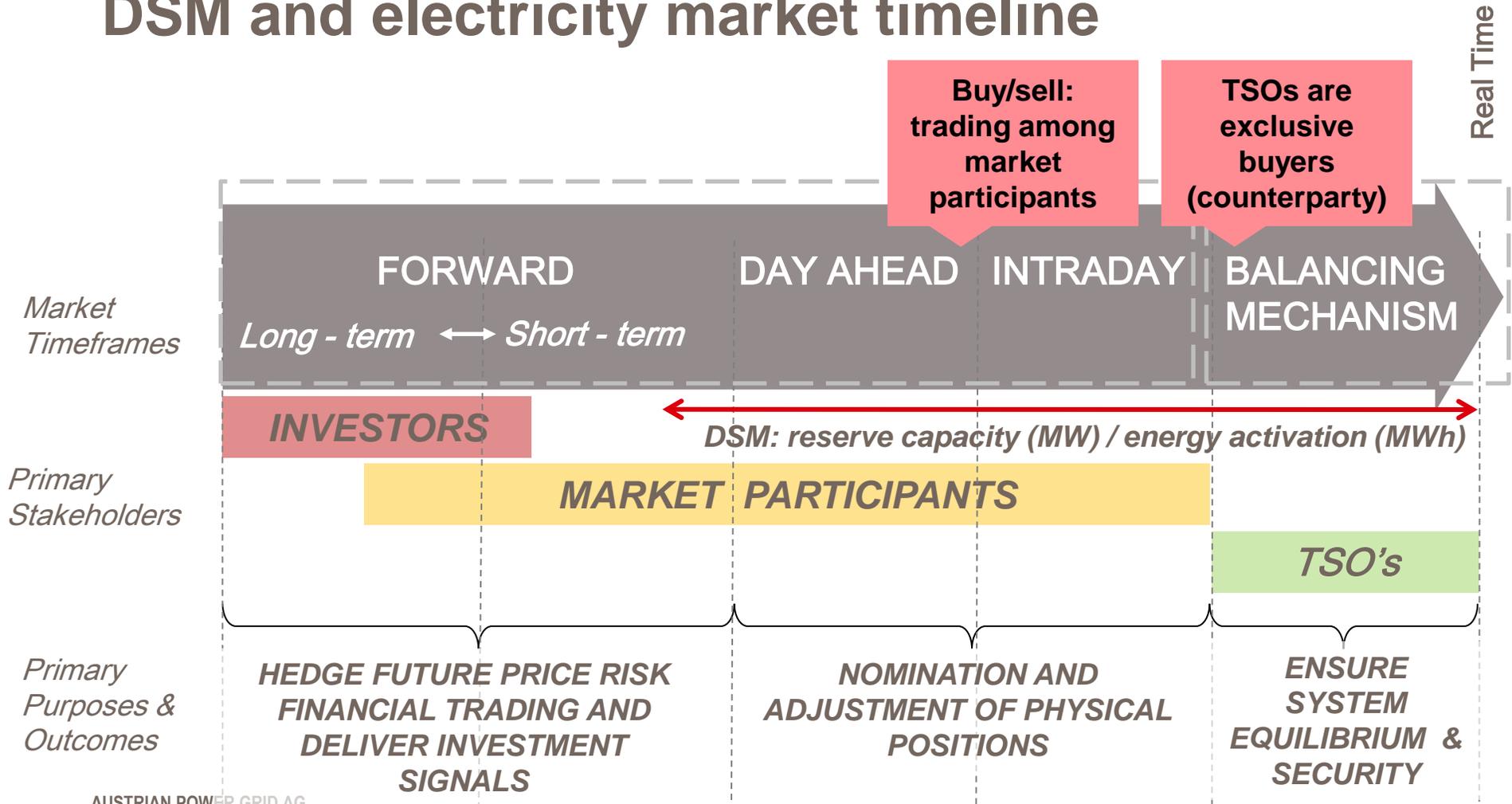
- Why Demand Side Management (DSM)?
 - Benefits of Demand Side Management ;
 - DSM and electricity market timeline;
- Integration of DSM within control area
 - possible concept for commercial integration;
 - possible concept for technical integration;
- Cross-border balancing
 - potential benefits of implementation;
 - reservation of transmission capacity;
 - models for balancing energy exchange;

Benefits of Demand Side Management

- Change consumption patterns from peak to off-peak times:
 - reduce the need for investments in networks and/or power plants;
 - energy efficiency increase;
- Congestion management (redispatching):
 - Increase in system security;
- Ancillary services:
 - Decrease in total balancing costs;



DSM and electricity market timeline

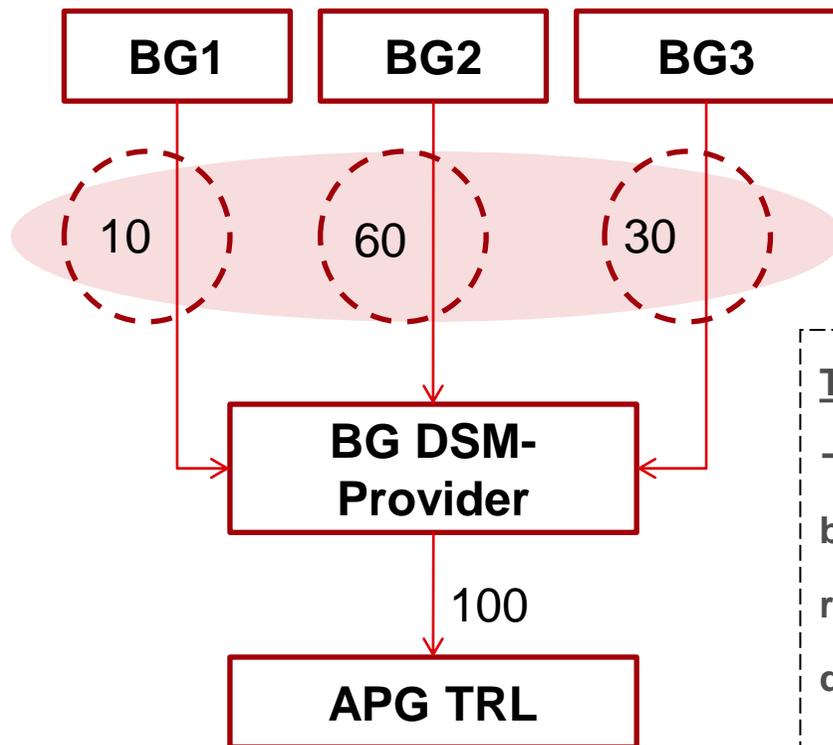


Integration of DSM within control area

Demand-side management: possible concept for commercial integration (1/2)

- Provider of DSM reserve:
 - fulfils technical preconditions written in prequalification documents → a.o ramp definition („green-card“);
 - Register commercial balance group (BG) within control area of APG;
 - takes part at the tenders for capacity reservation for certain periods (weekly; monthly);
- All three above-mentioned preconditions are fulfilled and provider of DSM has been awarded during tender (f.e. with 100 MW) for upward regulation;

Demand-side management: possible concept for commercial integration (2/2)

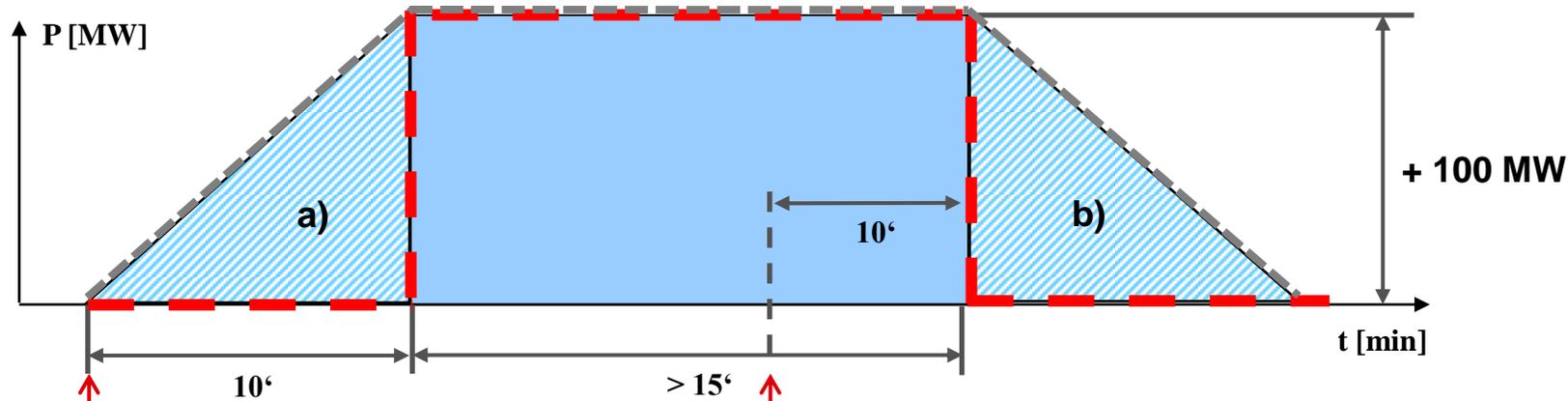


- Example of DSM-activation:
 - APG calls 100 MW DATCR from DSM provider;
 - DSM provider makes „pooling“ or resources beforehand in order to always fulfil request of APG → delivery of 100 MW with technical preconditions (ramp);

Target/ actual deviation:

→ Balancing energy to be booked in case that requested DATCR is not delivered/ or not delivered in line with technical preconditions;

Demand-side management: possible concept for technical integration



Request #1

Request #2

 Schedule of DSM-BG for clearing and settlement

 Path1: no deviation from schedule (no imbalance in DSM-BG)

 Path_2: a) + b) = imbalance (booked in DSM-BG);

Ramp definition:

- Request no.1: +100 MW to deliver (Inc GEN or Dec CON);
- Tertiary energy has to be fully delivered 10' after request;
- Request no.2 : +100 MW to take over (Dec GEN or Inc CON);

Cross-border balancing energy exchange

XB-balancing mechanism:

→ potential benefits of implementation

1. Minimise total costs of procured balancing energy;
2. Possible decrease in amount of activated tertiary and/or secondary control (over netting of CA-balance);
3. Increase efficiency (with available cross-border transmission capacity);
4. Increase in security of connected systems: efficient use of different PPs portfolio (RES; hydro; thermal);

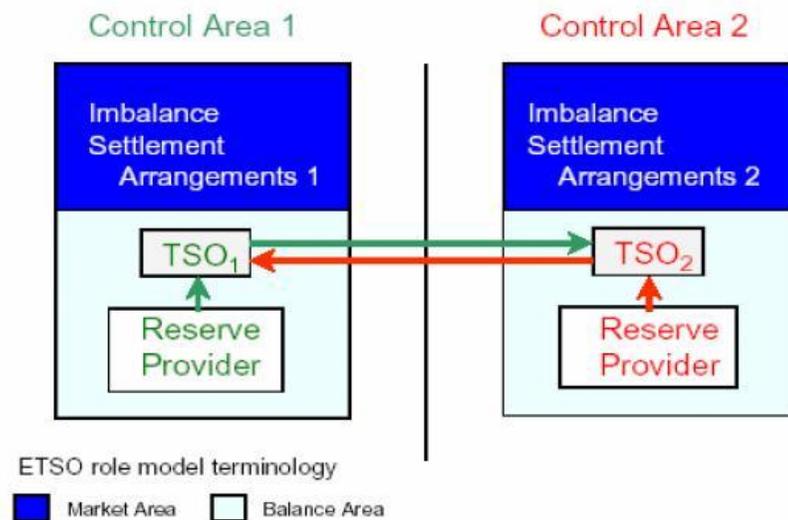
→ If several control areas are sharing balancing resources: higher level of security of supply; efficiency increase/cost decrease and possible decrease in activated balancing energy;

XB-balancing mechanism:

→ reservation of transmission capacity

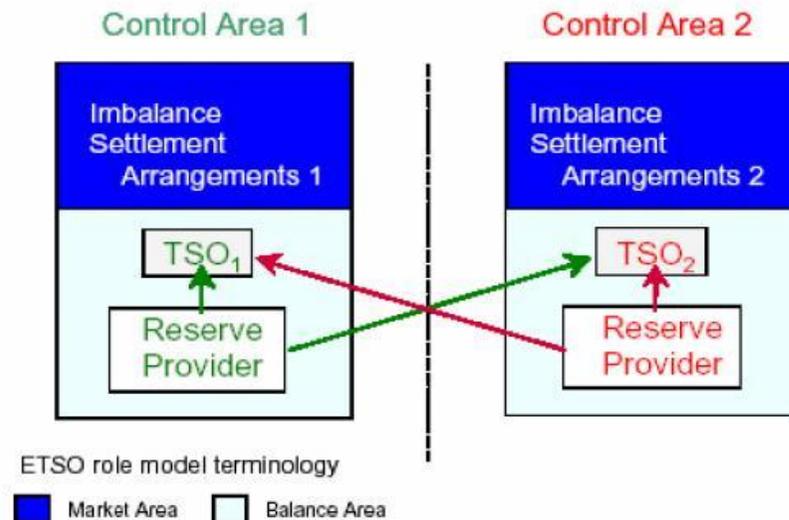
- Cross-border capacity must be reserved for automatically activated reserves (f.e. primary control over TRM);
- Manually activated **capacity** (mostly tertiary control) could be contracted over-the-border, but under the preconditions:
 - Portion of Available Transmission Capacity (ATC) has to be taken out of commercial activities (market) and reserved ex-ante → approval of NRA is needed (social welfare increase has to be demonstrated as there is high uncertainty regarding the use of contracted XB-reserves);
- Without reservation of transmission capacity → manually activated **energy** could be exchanged;

XB-balancing mechanism: → models for balancing energy exchange (1/2)



TSO to TSO model

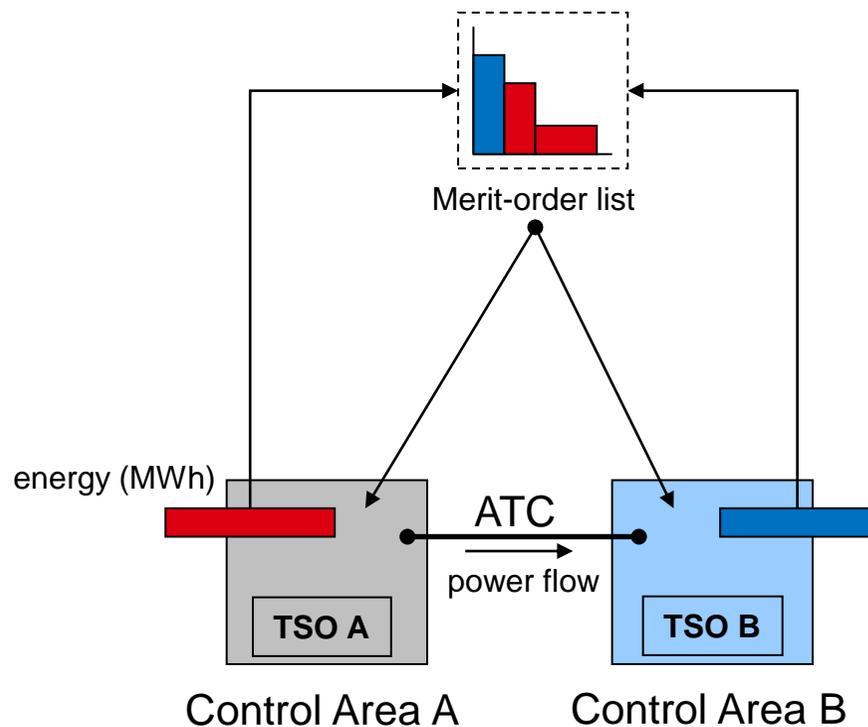
- Reserve providers (RPs) make bids to local TSO
- Local TSOs call off reserves and perform the settlement with RPs in their control areas



RP to TSO model

- RPs make bids to local and other TSOs
- Local TSOs call off reserves (in coordination with TSO where RP is located) and could perform the settlement directly with RPs

XB-balancing mechanism: → models for balancing energy exchange (2/2)



Intermediate model: TSO to TSO w/o CMOL

- TSOs have an exclusive right to use their own share of the reserve and based on forecast (f.e. 15' before real-time) they can offer surplus to CMOL;
- Energy could be exchanged only in case of a sufficient cross-border transmission capacity;
- Total costs of reserve energy will be decreased;
→ example: TSO B with more expensive reserves can use bids from control area A;



Thank you for your attention

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Back-up slides

Balancing mechanism in Austria (2011)

Ancillary Services	Procurement volume	Timeframe	Products	Provider	Prequalification
Primary control	76 MW (since 2010 market is open)	Weekly tender (min offer = 1 MW)		G inside the control area	
Secondary control	+/- 200 MW	Weekly tender from 2012.	Weekly / Four weekly products: Peak/ Off-Peak Week and Weekend;	G inside the control area (+ suppliers outside the CA in the 2 nd phase)	energy to be available 5 min after request
Minutes reserve	+100 /- 125 MW (+ 180 MW to cover outage of the biggest unit)	Weekly tenders (MM) and daily tenders (day-ahead market);	daily products (energy only); Marketmaker (energy + capacity): weekend and week (blocks of 4 hours)		energy to be available 10 minutes after telephone call