FlowBased or NTC?

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Vidar Hansen
E-CO Energi AS
Dep. manager Market Operations

E-CO

E-CO Energi AS

Generation in Norway: ~10 TWh/year
Installed capasity: ~2500 MW

Owned by Oslo municipality (100%)

Desember 2013
2000 MW - 6 TWh (E-CO) was
transferred from NO1 to NO5.

CNEs within NO1

1 year later NO1A was introduced

E-W capacity within Norway was
permanently reduced with 700-1100
MW

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NTC

- Pros
  - Transparent, «easy» to understand (price zone max net position)
- Cons
  - Loop flow calc. based on worst case scenarios
  - No economical calculations;

    Reduces capasity between zones based on grid «efficiency». The zone-to-zone tielines with highest PTDF is redused.

Flowbased – In theory

FB solution domain > NTC solution domain

Closer to «real time» capacity allocation
->less risks -> less RAM
->better grid utilization for the Day ahead - market

Common nordic gridmodel
->Better loop flow analysis

Ensure level playingfields for all zones

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Flowbased - Complexity cost

- Transition from nodal to zonal PTDF – generation shift keys
- 70-90 CNE (Nordic), 11 AC-connected pricezones
- -> Black (Box) matrix

- FRM – Flow Reliability Margin –
  - Less uncertainty –> Less FRM?

- FAV – Final Adjustment Value
  - Allow manual adjustment of the RAM
  - Operational skills and experience
  - «Transparent way»

- Will the grid be better utilized with FB than NTC?

Flowbased - Complexity cost cont.

- Hydro Power Optimalization

- Water Value Calculation
  - Price forcasts
  - Trading capacities
    - Not in PTDF format, but capacity on tielines between pricezones or max Net Positions for each price zone
    - Day ahead, short term and long term capacity forecasts

- Will FB give too unclear signals to hydro power producers to achive optimal water value calculation?

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Future possibilities?

Flowbased versus countertrade
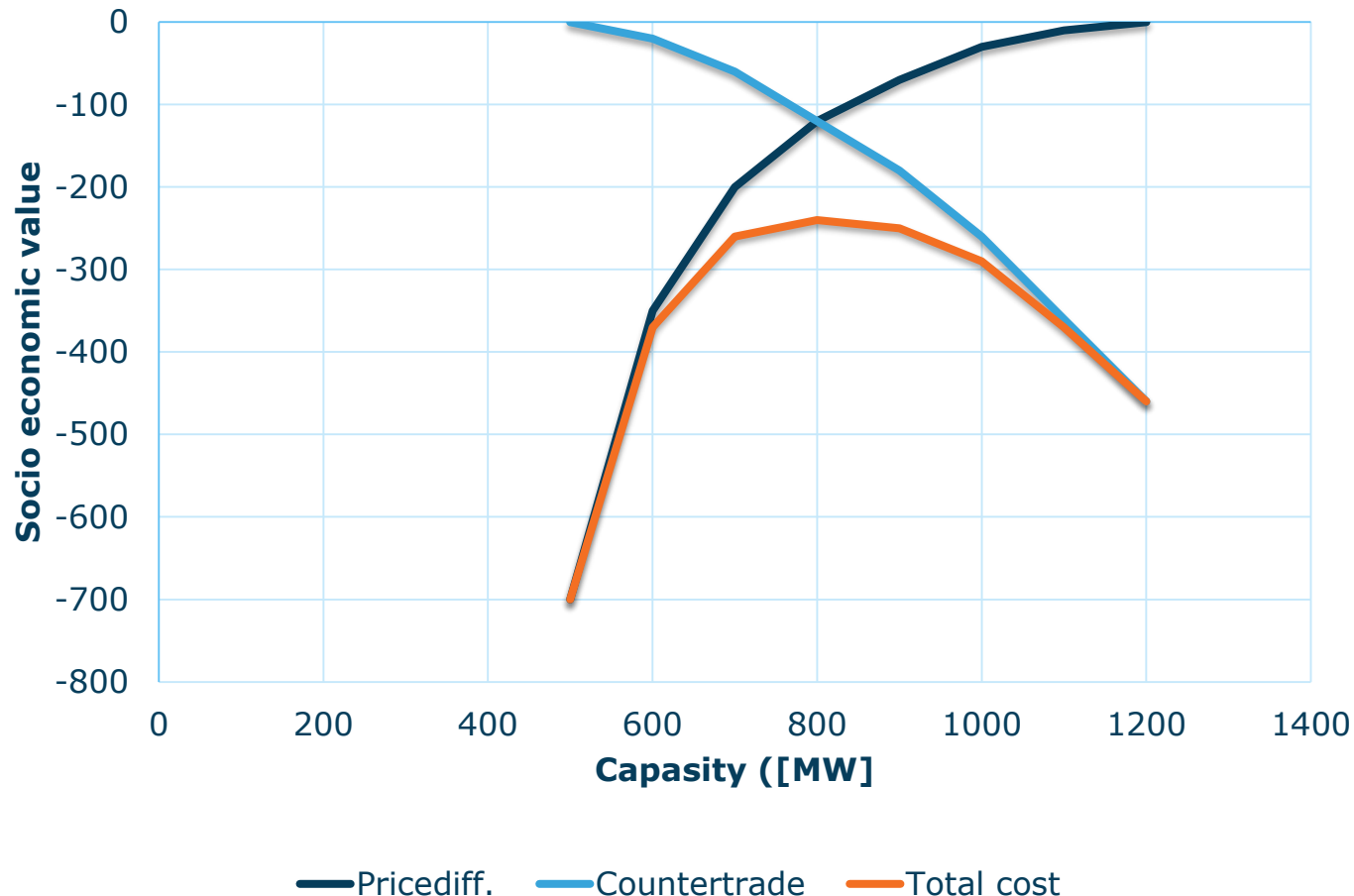
Common TSO opinion that countertrade is very expencive

There is valuable information in bidding curves to estimate countertrade cost

When pricesignal has little value, like short-lived congestion, grid maintenance etc., countertrade should be an option.

Gives TSOs better incentives to work harder and faster.