5. TSO reflections

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Concerns / points raised by Swedenergy & Finnish Energy

1. FB simulations overestimates the SEW of FB

2. Socio economic welfare is not restricted to the DA-market

3. Duration of EPR

4. Merger with Core

5. In what way are effects on competition incorporated in the calculated SEW

6. If FB is further delayed…

1. FB simulations overestimates the SEW of FB

❖ In the slides from Swedenergy & Finnish Energy, it mentions:

- ✓ **"EPR shows overuse of hydropower in the northern regions**
- ✓ *Leaving only 1% of $SEW_{DA\ SE}$ and 67% of $SEW_{DA\ Nordic}$*
- ✓ *What are the effects if we consider Norway?*
- ✓ *…*
- ✓ ***How does the overproduction of hydro affect the calculated SEW***?"

1. FB simulations overestimates the SEW of FB
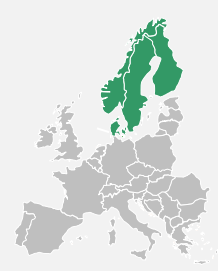# What is FB basically and how to compute the social impact?

❖ **FB essentially increases the domain for trade**
- ✓ Compared to NTC, FB allows for larger exchanges in the power system, thus FB can be regarded as investment in physical grid, as the social impact will be the nearly same as with physical investments.
  - ➢ Conventional wisdom is that increased trading opportunities is a welfare economic improvement
  - ➢ As the Nordic system contain many technologies with different MC, it is highly unlikely that an increased trading domain will not cause a welfare economic gain

❖ **The welfare economic impact of NTC→FB is assess based on the best practise approach**
- ✓ Computation of change in PS, CS and CI
- ✓ These numbers are computed as these numbers reveals the difference in value for society and cost for society and thus the social surplus. The computation of Δsocial surplus is therefore the impact of NTC→FB

❖ **However, we do remind that the purpose of // run is not to estimate SEW as such, but to apply these simulations as input for stakeholder (and TSO) learning**
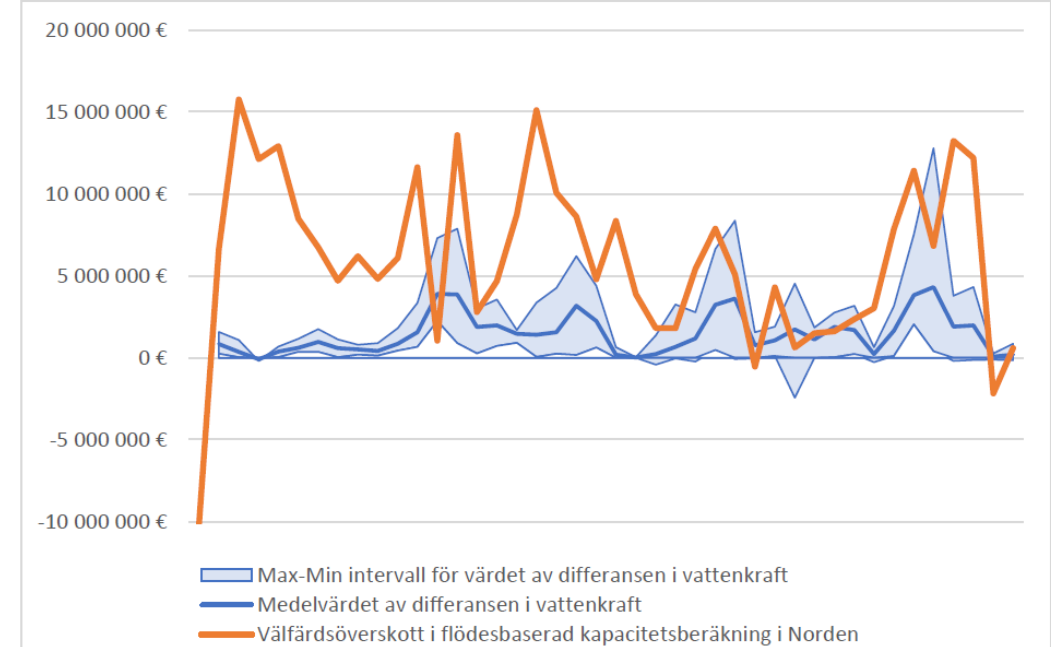
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1. FB simulations overestimates the SEW of FB

❖ **In figure 2 Energiföretagen compares the value of additional water with social welfare numbers.** In other words, in the note additional *turnover* from hydro producers in SE1 it is compared with the additional *welfare* numbers NTC→FB in the Nordic

❖ This figure is the main argument in the paper by Energiföretagen and we note that the headline talks about "Välfärdseffekterna av det ökade vattenkraftsuttaget i SE1"

❖ The blue graphs are not the welfare impact, but the already-considered monetization of additional water consumption; additional turnover

❖ Turnover is typically a higher number than PS, thus the impact of "wrong" water value is exaggerated

Figur 2 Välfärdseffekterna av det ökade vattenkraftsuttaget i SE1
Källa: Energiföretagen, Nordic RCC

Max-Min intervall för värdet av differansen i vattenkraft
Medelvärdet av differansen i vattenkraft
Välfärdsöverskott i flödesbaserad kapacitetsberäkning i Norden

# 1. FB simulations overestimates the SEW of FB Reservoir fillings in NTC & FB

❖ **If the method is applied on all hydro-dominated areas, the effects on areas where water is saved (NO2, NO5) is still larger than those where supply is increased (NO4, NO3, SE1, SE2)**

❖ As stated, calculating turnover is not the same as SEW, and can be even more misleading if only applied to 1 area.

Impact in hydro dominated areas(w50 2022-w52 2023)
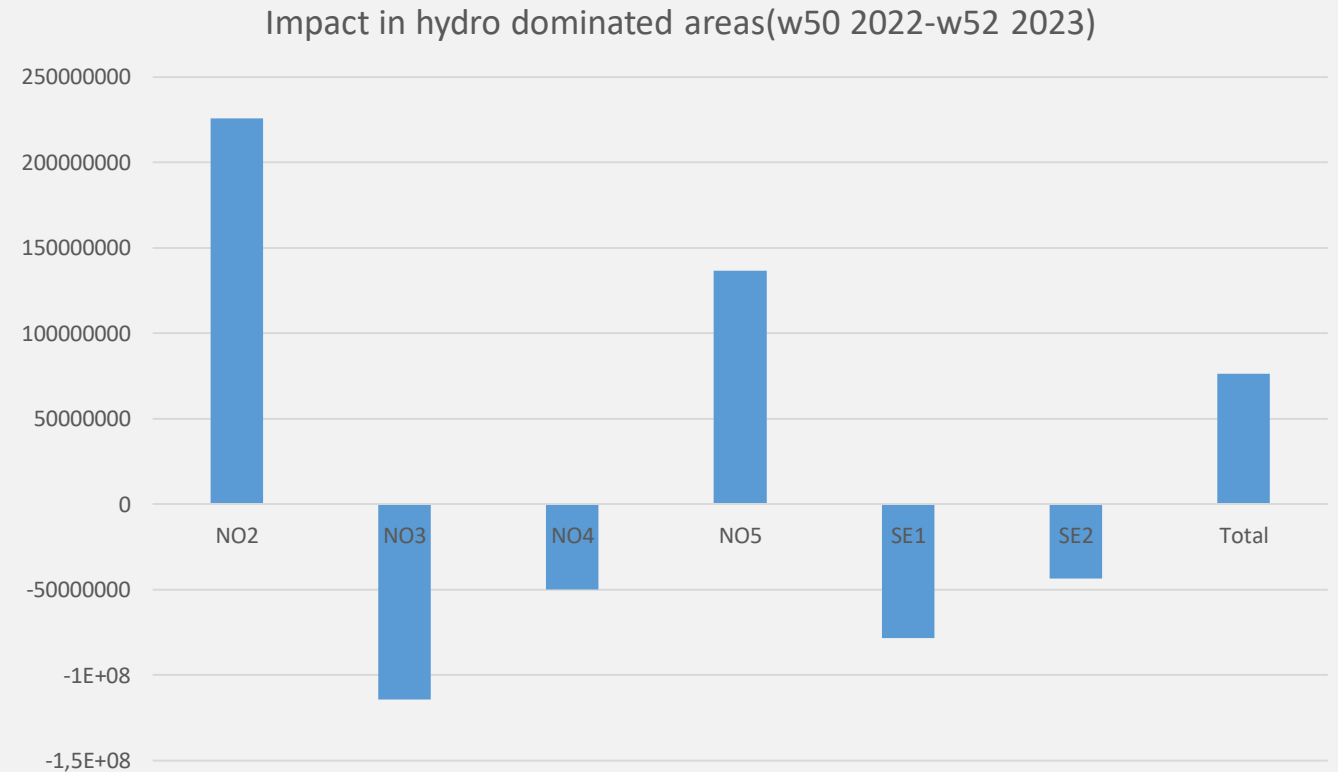
# 1. FB simulations overestimates the SEW of FB
What is "water values"?
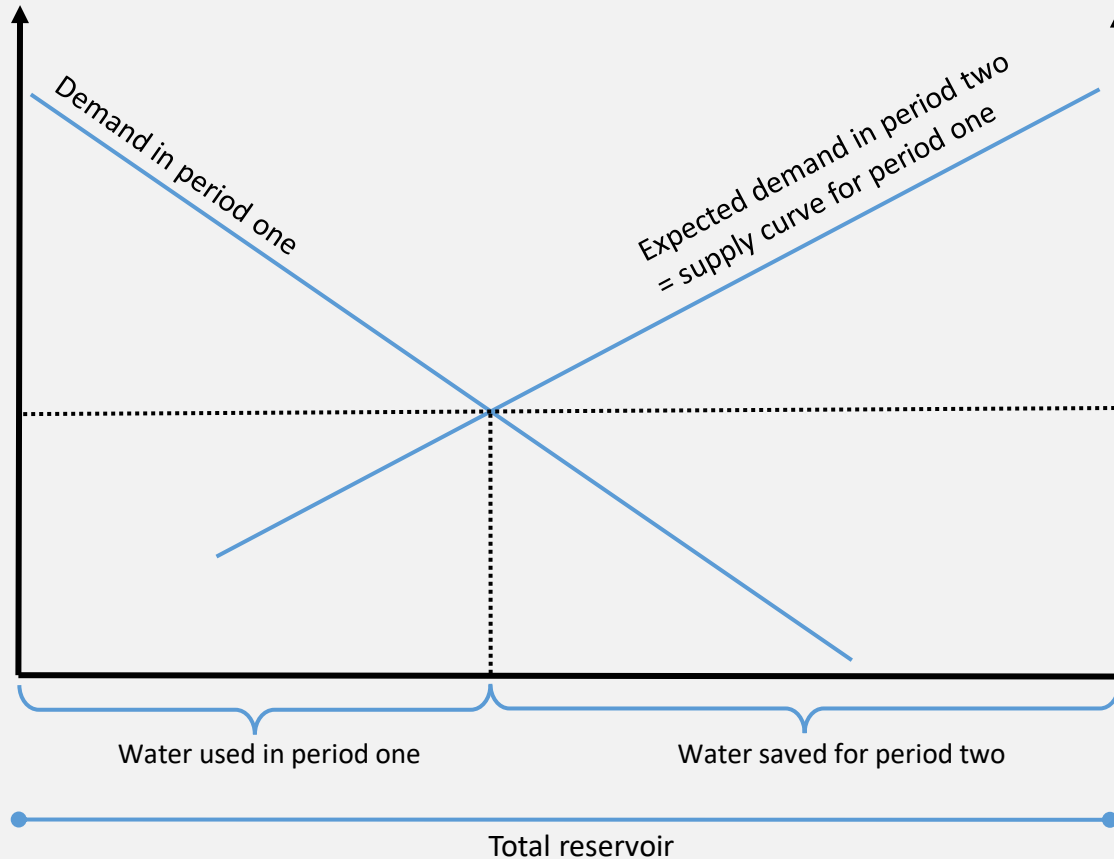
- For simplicity, all inflow is in period one, and

- The horizontal axis represent the size of the reservoir

- The supply (curve) for hydro production is given by "Water Values"

- Water values are the value of water in best alternative use

➔ Expected demand in period two

➔ A water value can be understood as the MC for hydro with storage, thus we model the supply curves to show the social impact of correcting water values

1. FB simulations overestimates the SEW of FB
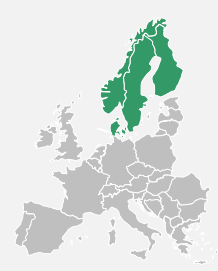# What Energiföretagen does compute
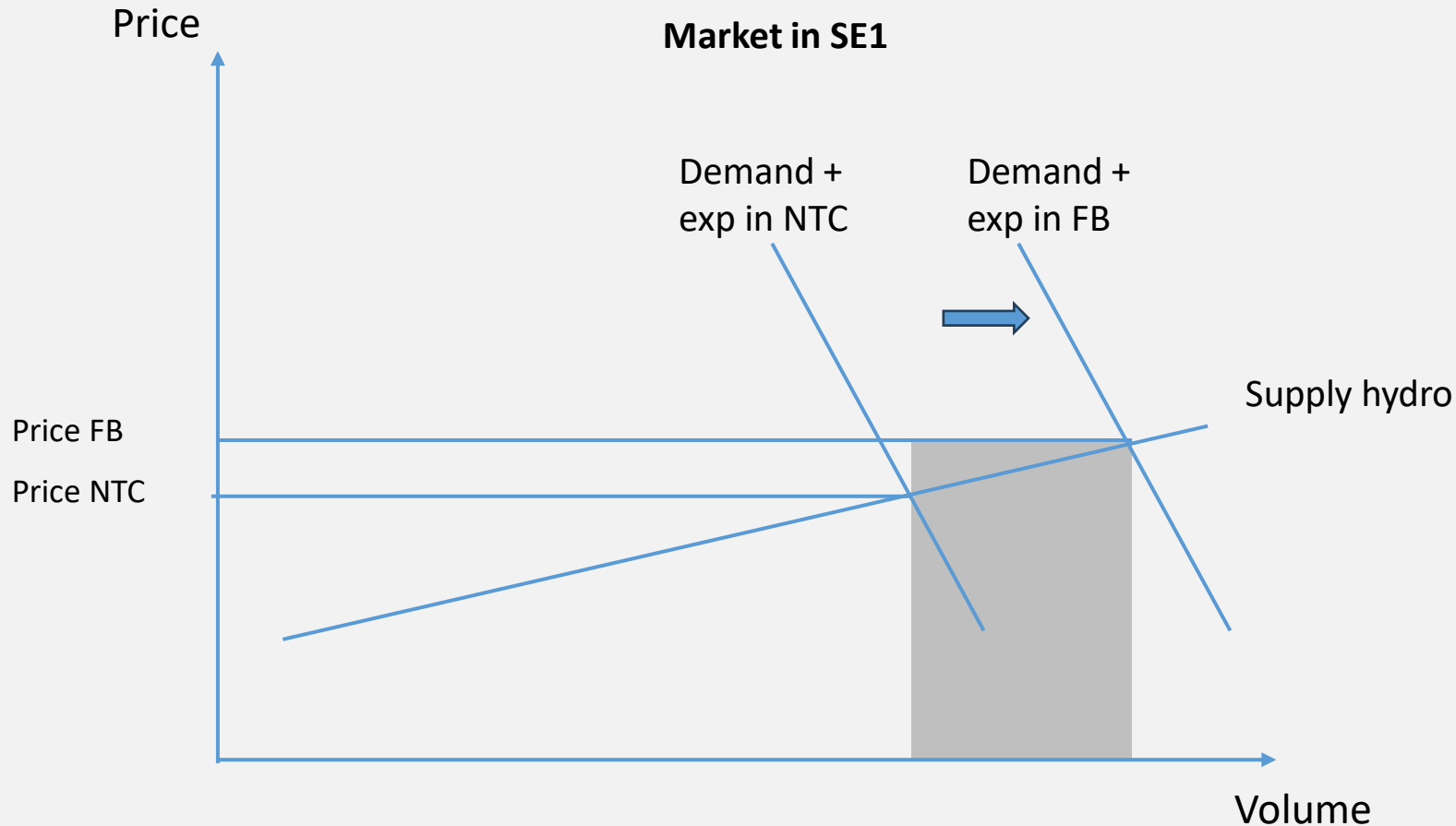
Market in SE1

- The diagram illustrates the generic market impact in SE1 in one hour from applying FB parameters in //run
- FB increases the domain and as SE1 is a low-price BZ this will entail increased export as illustrated by the demand curves
- The increased export is done by hydro producers and the grey area illustrates the additional turnover, which is the one that is computed by Energiföretagen.
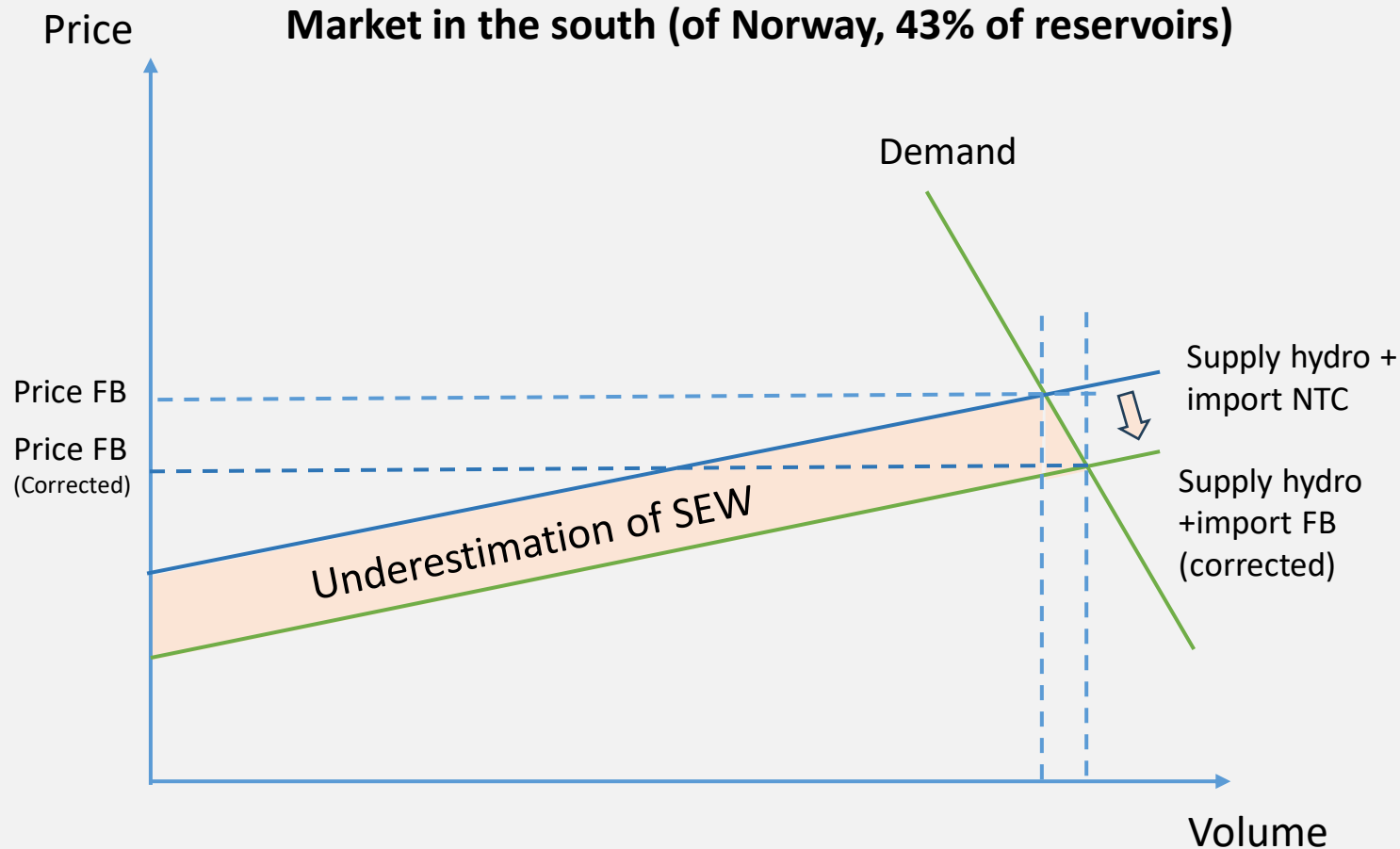- **The grey area is not a welfare economic computation**

Market in the North (38% of reservoirs)
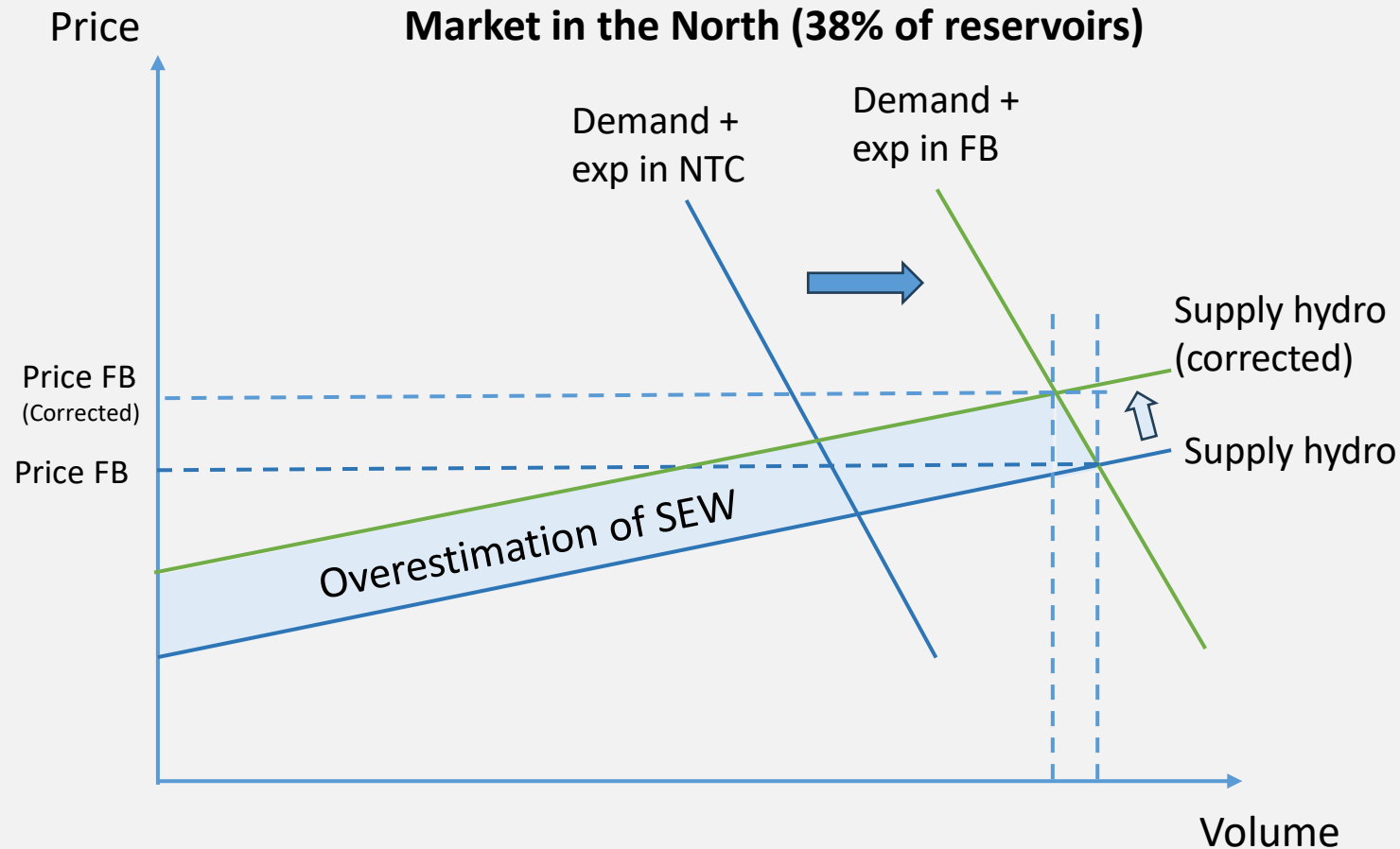
- The "problem" by calculating the welfare impact from FB is that the water value stays at NTC, thus the welfare impact coming from producer surplus is overestimated in areas with increased production.
- So, what Energiföretagen should have done, was firstly to correct the supply curve taken a new water value into account.
- In an area with increased production this would shift the supply curve vertically upwards, illustrated by the green line.
- Next, new simulation should be performed, finding a "corrected" FB price and the subsequent correct SEW, which is lower
- The overestimation of SEW is illustrated by the blue area and is not included in EPR.

Market in the south (of Norway, 43% of reservoirs)

Price

Demand

Price FB

Price FB
(Corrected)

Supply hydro +
import NTC

Supply hydro
+import FB
(corrected)

Underestimation of SEW

Volume

- In an area with increased production this would shift the supply curve vertically downwards, illustrated by the green line.
- Next, they should have done a new simulation, finding a "corrected" FB price and the subsequent correct SEW, which is higher
- This increase in SEW is illustrated by the blue area and is not included in EPR

The impact of changing water values is therefore depended on if the change is positive or negative. Most of the SEW effects are therefore netting each out. The positive addition to SEW is not included in the Energiföretagen analysis

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1. FB simulations overestimates the SEW of FB Reservoir fillings in NTC & FB

Hydro level SE1, %

15 TWh

— SE1 NTC — SE1 FB

Hydro level NO2, %

33 TWh

— NO2 NTC — NO2 FB
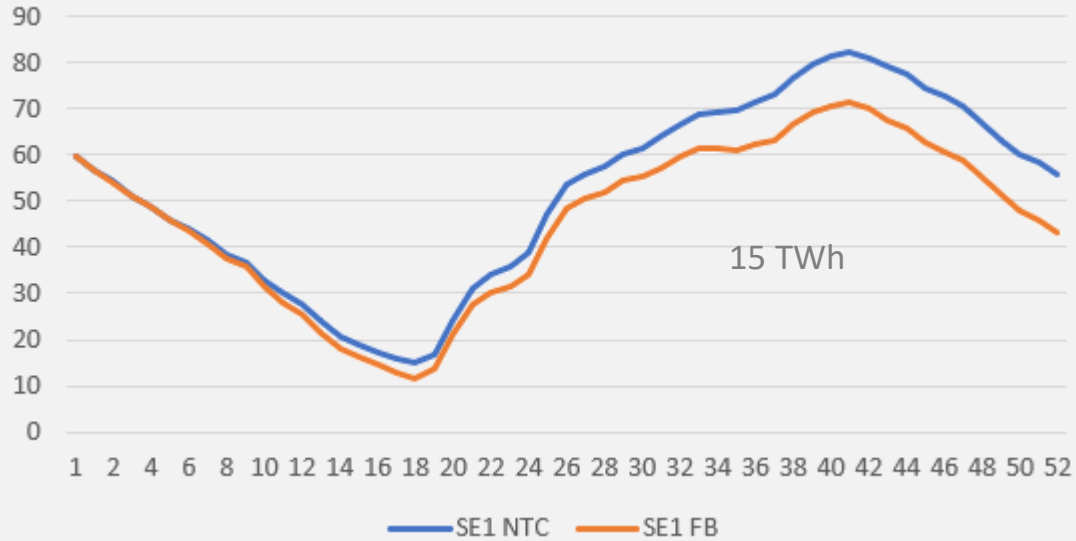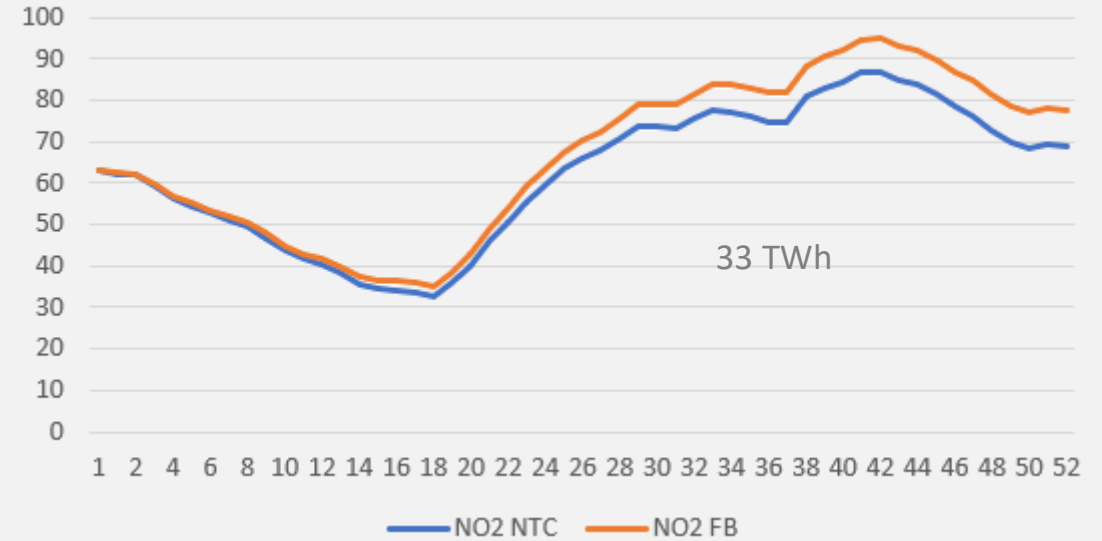
More water used in FB	Less water used in FB	Unchanged
SE1, (SE2), NO3, NO4	NO2, NO5	NO1
61 TWh Reservoir	51 TWh Reservoir	6 TWh
52% of reservoirs	43% of reservoirs	5% of reservoirs

Hydro level SE2, %

16 TWh

— SE2 NTC — SE2 FB

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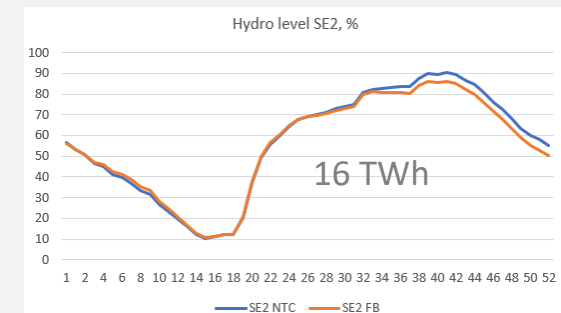
2. Socio economic welfare is not restricted to the DA-market

❖ In the slides from Swedenergy & Finnish Energy, it mentions:
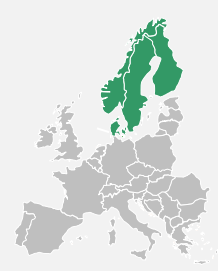
- ✓ *"$SEW_{TOT} = SEW_{DA} + SEW_{ID} + SEW_{FM}$*

- ✓ *SEW incorporates other costs e.g. reduced transparency and consequences for competition*

- ✓ *SEW also comprises costs and benefits outside the electricity market*

- ✓ *…*

- ✓ *How can SEW_{TOT} be appreciated without "decision" on ID-capacities?"*

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2. Socio economic welfare is not restricted to the DA-market

From the Agreement by all Regulatory Authorities of CCR Nordic on the implementation of a final checkpoint for go-live of CCR Nordic flow based capacity calculation methodology as approved pursuant to Article 20 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management, dated 2020-10-14:

✓ *"We acknowledge that one of the purposes of introducing a new methodology for capacity calculation, according to CACM GL, is to provide welfare benefits to society. Thus, comparing the socioeconomic welfare of the current NTC methodology to the estimated results from using the new methodology, is an indicator to capture potential shortcomings in the implementation of the new methodology. However, we note that this comparison cannot be performed with perfect precision, partly due to the two methodologies operating at different levels of operational security. We will therefore need to broaden our analysis to include more parameters than just the net difference in socioeconomic welfare. If deviations to the expected outcome of improved socioeconomic welfare with the new methodology compared to NTC occur in the period covered in the TSOs report, the NRAs shall analyse the reasons for the outcome not being in line with expectations based on the analysis and explanations received from the TSOs."*

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2. Socio economic welfare is not restricted to the DA-market

Intraday

❖ **The proposed FB solution will be rolled-out to the subsequent timeframes - intraday and balancing – in a stepwise manner**

  ✓ FB cannot be applied in ID for the moment

❖ **The current EU market arrangement is such that the maximum amount of capacity is provided and allocated to the timeframe to come**

  ✓ This implies that for the ID timeframe, the maximum amount of capacity available for the intraday timeframe is provided and allocated

  ✓ What has already been used at earlier timeframes cannot be used at the timeframes following – unless the market frees up some of that capacity

3. Duration of EPR

❖ In the slides from Swedenergy & Finnish Energy, it mentions:

✓ *"FB should only be introduced after market participants have been given sufficient preparation to allow for a smooth transition. (Whereas (7) of EU 2015/1222)"*

3. Duration of EPR

❖**The External Parallel Run (EPR) in the Nordics started in March 2022**
  - ✓ Indeed, an EPR period of at least 12 months needs to be performed, of which 6 months are required by CACM
  - ✓ The NRAs have introduced a checkpoint during the EPR: TSOs needed to deliver an evaluation report covering a 3-months period – to demonstrate that their criteria have been met

❖**Representativeness of the EPR**
  - ✓ The EPR is not a market forecast of what FB will bring
  - ✓ It does provide a learning-by-doing opportunity for the stakeholders to get acquainted to the FB parameters and their market impact
    - Indeed, no changes are made to the capacity calculation engine used today in EPR
    - There are input data changes, like today (regular process): the grid is not a static model, as it is facing temperature changes, topological alterations, and so on

❖**For the ID capacity (DA left-over capacity), data as of July 2023 will be made available to demonstrate the resulting gate-opening capacities for the ID timeframe**

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4. Merger with Core

❖In the slides from Swedenergy & Finnish Energy, it mentions:
  ✓ *"Merging with CORE in accordance with CACM art 15 and 20:5*
    • *Is there a plan and does it include stakeholders?"*

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4. Merger with Core

❖**No request has been received yet – and there is no plan – to prepare for a merger with the Core methodology**

   ✓Please note that CACM article 20:5 is not relevant for a merger as it addresses CCRs applying FB within the same synchronous area

❖**In case a merger would have to take place, this would require a change of CCRs (CACM article 15) implying also change in the CCM methodology.**

   ✓ Art. 15(d): Merging them is more efficient than keeping them separate. The competent regulatory authorities may request a joint cost-benefit analysis from the TSOs concerned to assess the efficiency of the merger.

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5. In what way are effects on competition incorporated in the calculated SEW

❖ In the slides from Swedenergy & Finnish Energy, it mentions:
- ✓ *"In what way are effects on competition incorporated in the calculated SEW?*
  - *Secrecy of CNECs*
  - *More complicated model*
  - *Less transparency! Less competition, uncertain pricing-> higher risk premiums"*

5. In what way are effects on competition incorporated in the calculated SEW
Secrecy of CNECs

❖ Classification of names and physical location of Swedish CNECs are enforced by Swedish security legislation, **not by Svk**

❖ Only the names and physical location of Swedish CNECs are classified. All necessary information to assess market prices are still revealed by information of each CNECs impact on trade between all bidding zones

❖ **Names and physical location is redundant information in relation to price formation in FB**

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5. In what way are effects on competition incorporated in the calculated SEW
Complexity vs transparency

❖The physical grid, and thus the physical limitations, are the same in the current NTC and in the new model (FB)

❖In the current model the fundamental grid limitations are interpreted by operators and transferred to limits on the bidding zone borders

❖In the new FB model, all grid limitations (CNECs) are provided directly to the market in the form of flow-parameters and limitations

❖**More grid information is revealed to the market in FB than in NTC; Please don't mix complexity with decreased transparency**

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6. If FB is further delayed…

❖In the slides from Swedenergy & Finnish Energy, it mentions:
  - ✓ *"If FB is further delayed what is the plan for*
    - *mFRR EAM*
    - *NBM projects dependent on mFRR EAM"*