

Dialogue meeting 2021-05-12



ELLEVIO



VATTENFALL 

sthlmflex

Welcome



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Agenda

1. Short: what is sthlmflex?
2. Results last winter
3. Flexneed next winter
4. mFRR
5. New business models
6. Timeplan

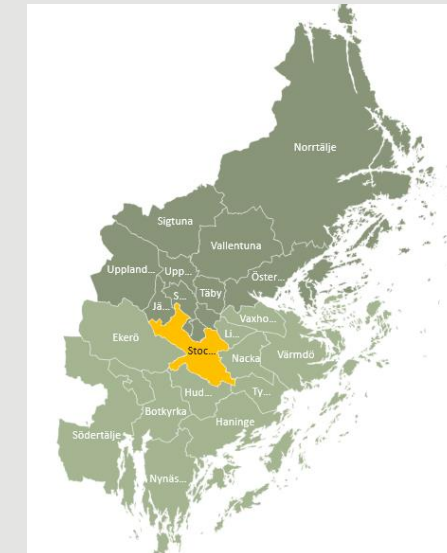
What is sthlmflex?

Svenska Kraftnät, Ellevio and Vattenfall Eldistribution have chosen to jointly find solutions to the **congestion problem** and the **operating situation** in the Stockholm region.

sthlmflex is a research project aimed to create and test a **flexibility market** in "Storstockholm" (all 26 municipalities).

Even though the EU-financed Horizon 2020-project [CoordiNet](#) demonstrates **flexibility markets** in Sweden, the sthlmflex-project is unique since it both tests an increased DSO-TSO coordination as well as coordination and cooperation between DSO and DSO.

The project guarantees the security of delivery for utility customers in the Stockholm region and enables connection of new customers, both by buying flexibility services, but also by increasing capacity with a total regional subscription thanks to increased coordination.



R&D Project: sthlmflex
Project Owner: Svenska Kraftnät in cooperation with Vattenfall Eldistribution and Ellevio
Market Operator: NODES
Supplier of flexibility tools: EON Energidistribution

Roles and market areas

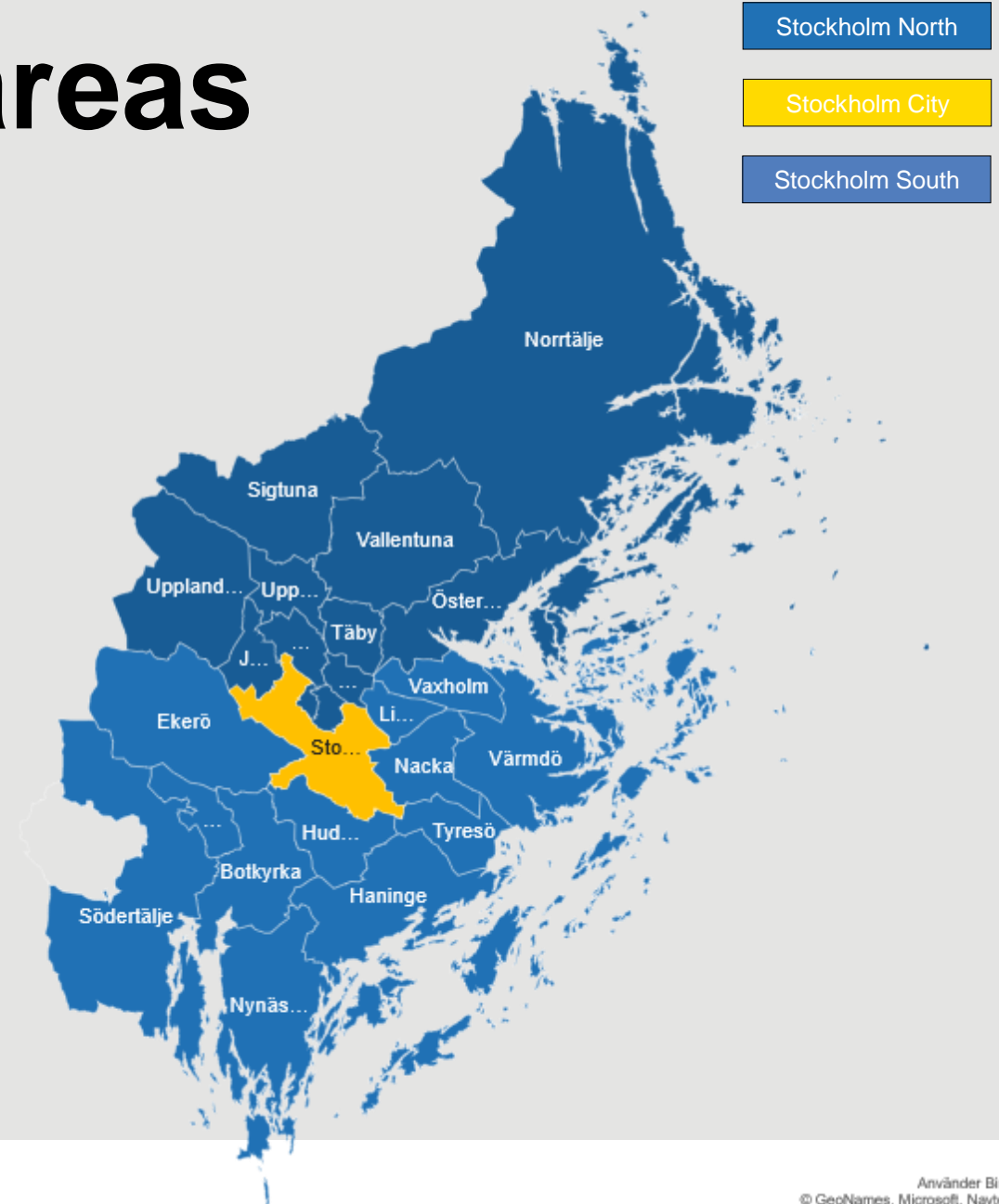
Svenska Kraftnät is the TSO and project owner

Ellevio owns and operates the regional distribution grid in Stockholm City and is a buyer of flexibility, financier, and part of the project lead in sthlmflex.

Vattenfall Eldistribution owns and operates the regional distribution grid in 25 municipalities within the Stockholm region and is a buyer of flexibility, financier, and part of the project lead in sthlmflex.

NODES is the market operator in the project and has a marketplace where the bids from the flexibility providers are matched with the purchase orders from the buyers.

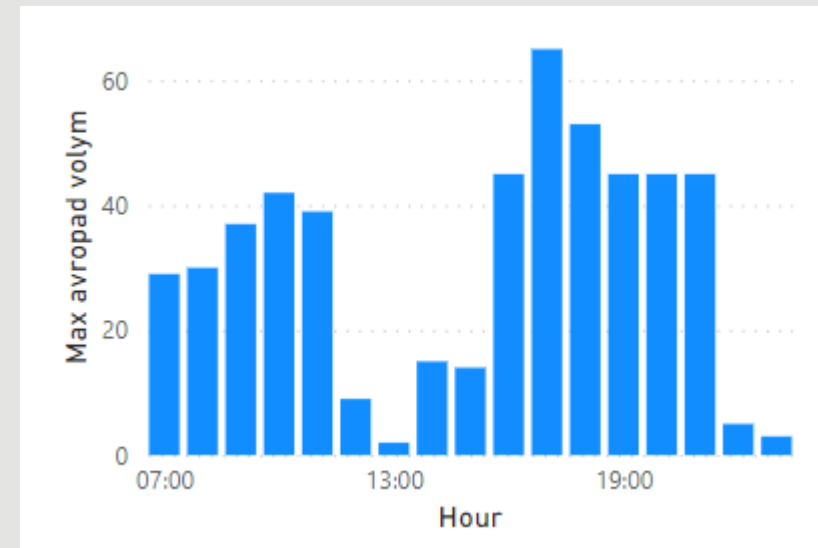
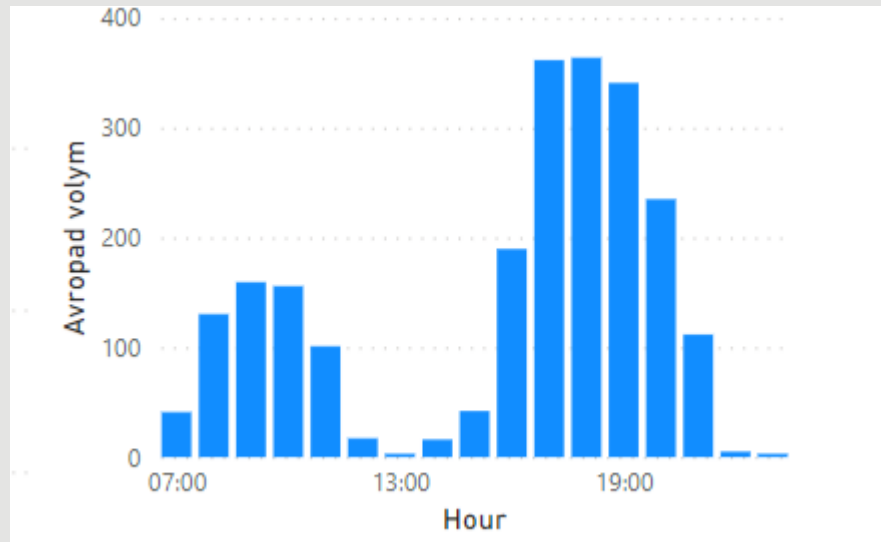
E.ON Energidistribution is the supplier of the tool used by the DSOs for visualizing forecasting, available capacity in the transmission grid and flexibility resources, as well as placing calls in the marketplace.



Prices, needs and calls 20/21

During Jan-Mar 2021, 2276,4 MWh was activated on both the total subscription and individual transmission network stations. The winter was cold, but not a "10-year-winter" and the calls were too scarce this first years and should have been doubled during mornings for instance.

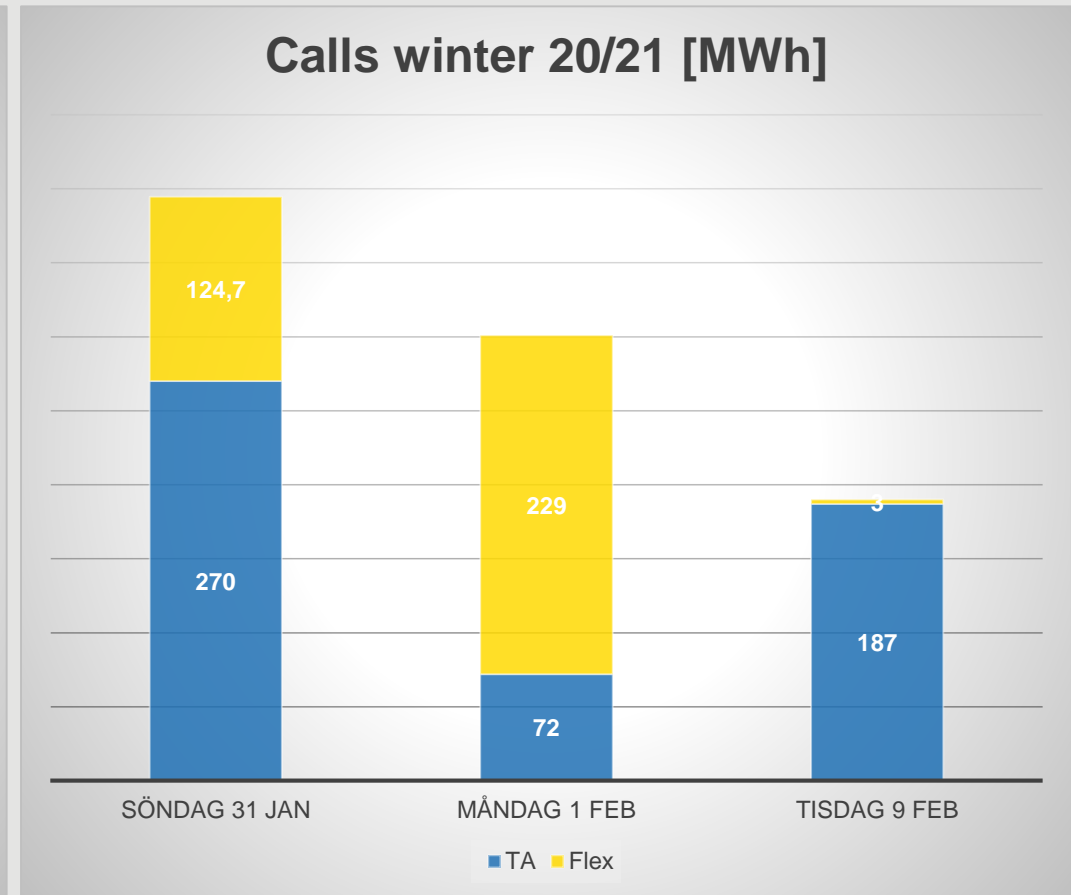
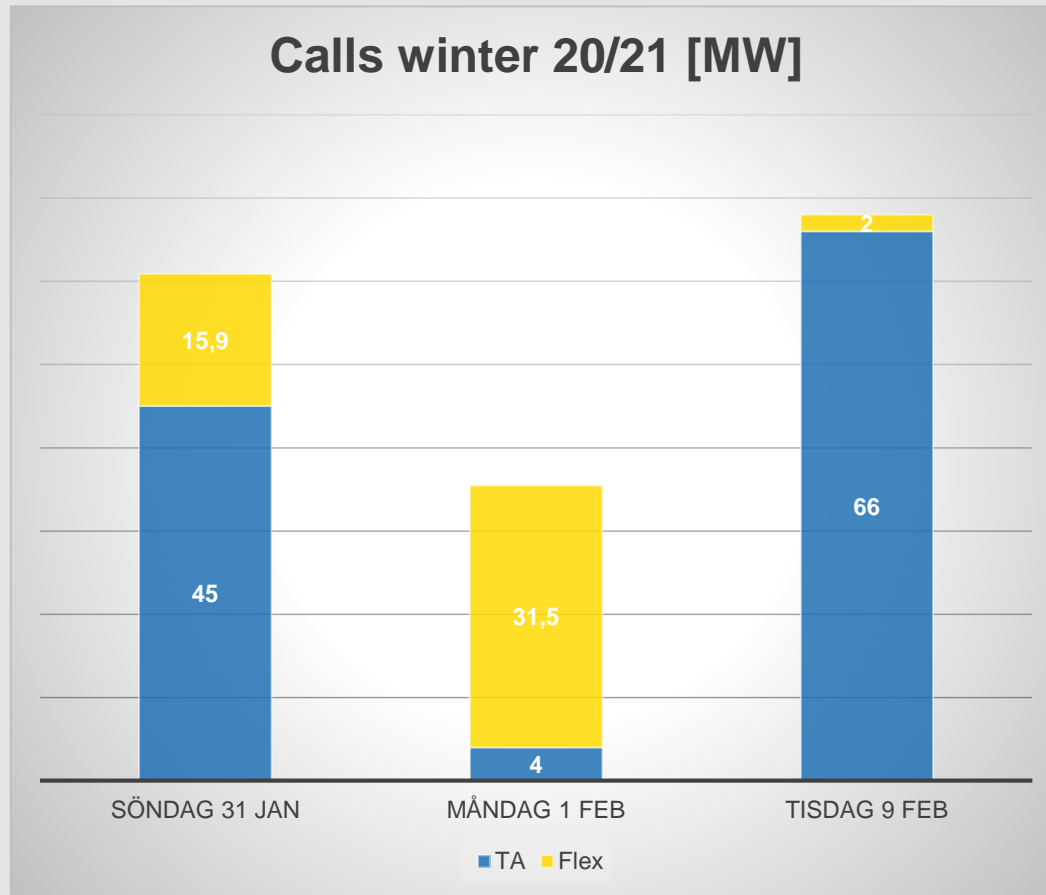
The average call price was 485 SEK/MWh and the price varied between 200 SEK/MWh and 2500 SEK/MWh. The temporary subscription had a cost of 246 and 244 SEK/MWh, respectively (will increase during 2022).



Calls – Winter 2020/2021

About 20% of all call-off were performed under subscription swap

Avropad Volym [MWh/h]	Snittpris [kr/MWh]
2276,4	484,78
KPI 18	KPI 6



Flexibility need

The buyers will guarantee that weekly purchases will be realized at least two times during the 21/22 season. We already have some availability agreements signed before the establishment of sthlmflex.

Beyond these, we have the following indicative flexibility need: Free bids and weekly purchasing:

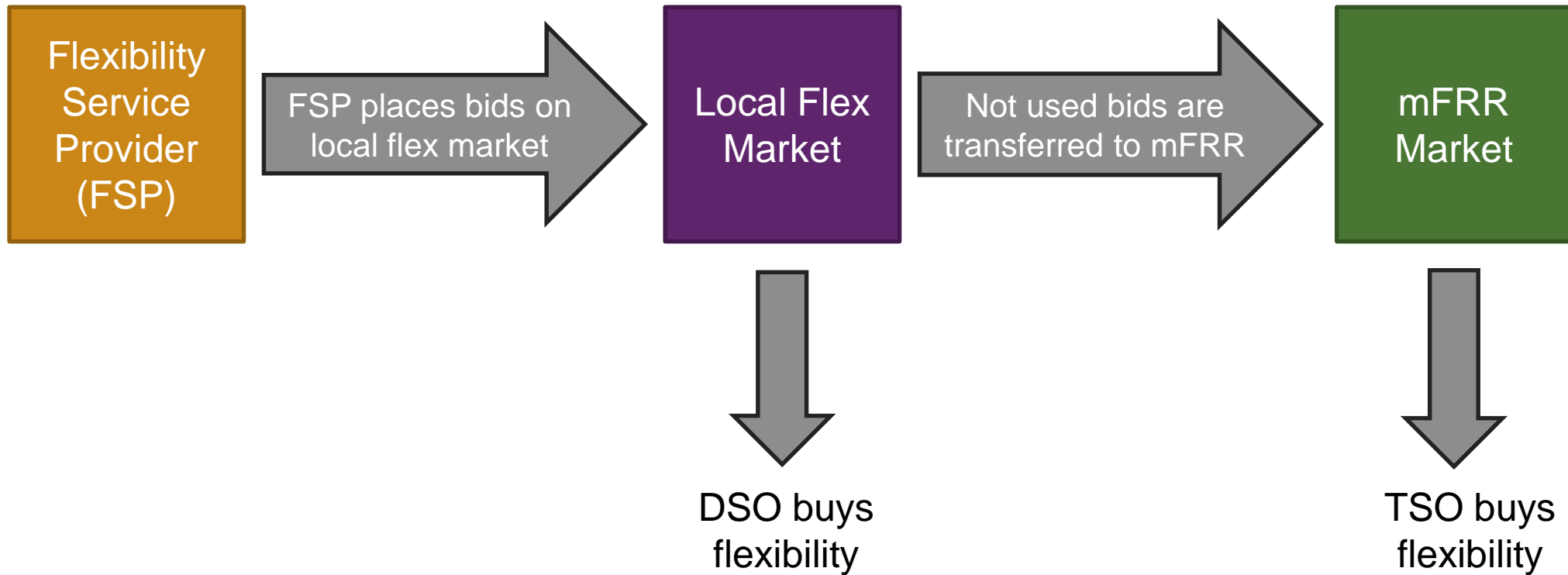
At least 26 MW Procurement of weekly flex week-days 7 – 11 AM and 5 – 9 PM

20 MW Procurement of seasonal availability 8 hours per day

7 MW Call for activation will always be done in regard to the lowest activation price per hour.

During the winter of 2021/22, the sthlmflex market is open between the 30th of November 2021 and the 31st of March 2022. Vattenfall Eldistribution and Ellevio anticipates the greatest flexibility need during weekdays between 7 – 11 AM and 3 – 9 PM.

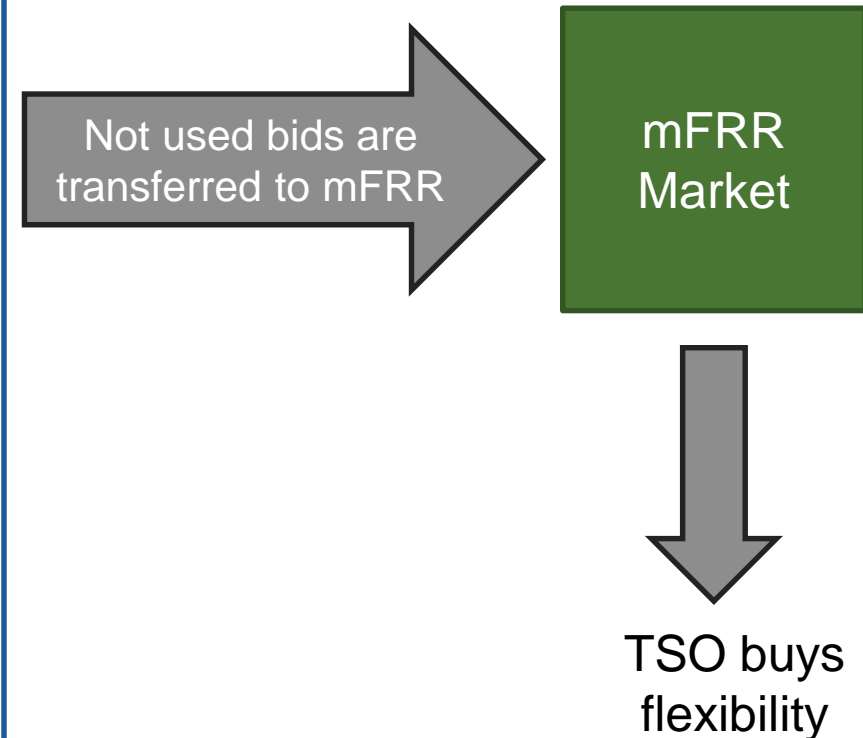
Coordination with mFRR market



Coordination with mFRR market

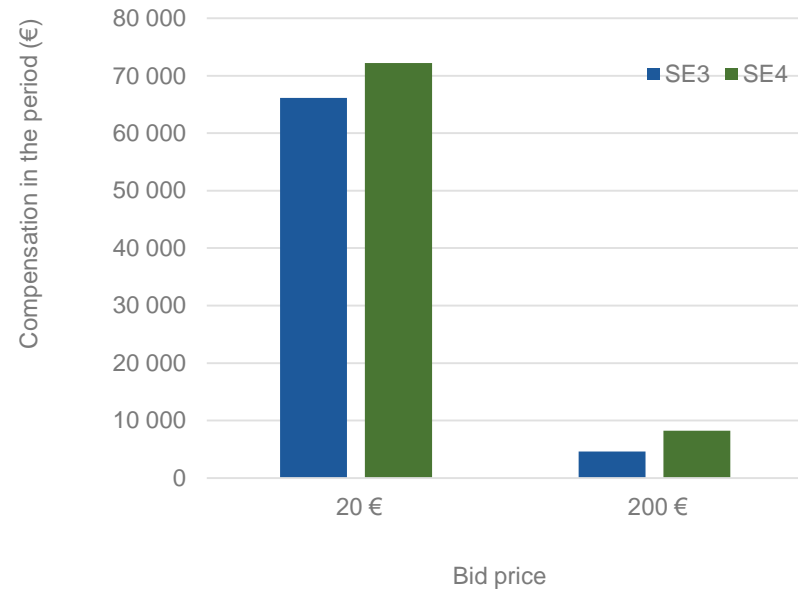
HOW?

- ✓ Pre-qualification is a requirement for participation.
- ✓ Bid size has to be at least 1 MW (ie larger than for the capacity market)
- ✓ The BRP needs to be involved in the process
- ✓ Financial compensation goes to the BRP if bid is called for



Example of compensation from mFRR

Example calculation – maximum compensation from mFRR winter 20/21



Nmbr of activations	20 €	200 €
SE3	1 032	18
SE4	1 034	31

- > The example shows the theoretical compensation for a FSP that participated on mFRR with 1 MW *all hours* during the winter 2020/2021
- > The period is 2,904 h, of which up-regulation purchases were made during 1,111 h (~ 40% of the hours)

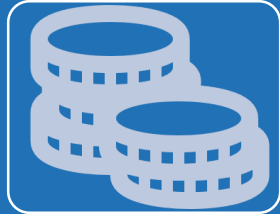
Assumptions

- FSP places either a bid with a price of 20 € or 200 €. If the spot price is higher than the bid price, it is assumed that the bid is placed at the spot price.
- FSP is always called if upregulation is purchased and if the bid price is lower than the call price in the current electricity area
- FSP is always assumed to be called for balance reasons, not for grid reasons (ie always called according to pay-as-cleared)

Se historiska priser för mFRR här:
[Market data | Nord Pool \(nordpoolgroup.com\)](https://nordpoolgroup.com)

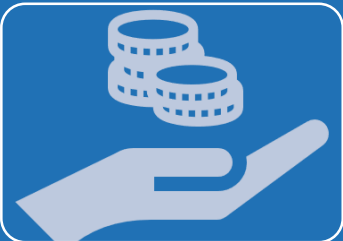


The products on the market



Free bids

- Activation-compensation [MWh]



Availability agreement

- Perennial, seasonal, weekly
- Availability-compensation [MW]
- Activation-compensation [MWh]

New product
21/22



Temporary subscription (the cost for the DSOs to exceed the subscription to the transmission grid is used as a bid on the flexmarket to show that the TSO has given a "Temporary subscription")

- Availability-compensation [MW]
- Actual "activation-compensation" [MWh]

New weekly flex & seasonal flex

We want to build a flexibility market. We want to practice on two types of flex; seasonal flex and free bids

We see that there are conversion costs for those who want to participate in the free bid market and have therefore developed two business models:

Seasonal flex: one-, two-, and three-years

Purchase of availability season weekdays 7-11 and 17-21 20 MW

Purchase of availability season 8 hours per day 7 MW

Weekly flex: There is a guaranteed minimum compensation for those participating in the free bidding market for at least two weeks, we will test weekly flex more weeks in a colder winter (2-8 weeks), but the model and compensation level can be reviewed

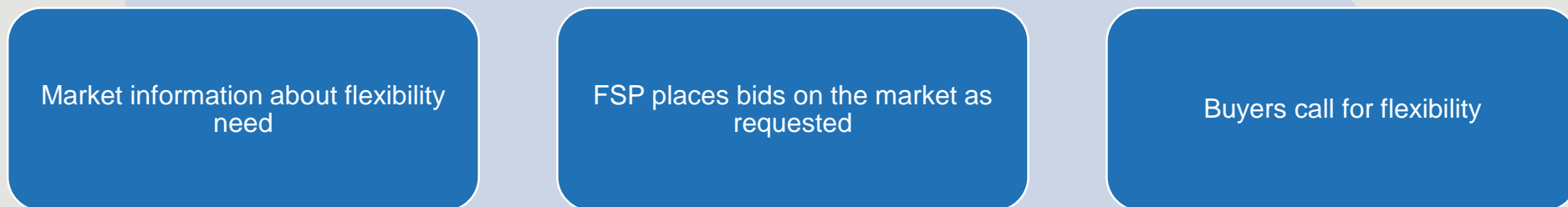
Free bids and weekly purchases 7-11 and 15-21 At least 26 MW

Weekly flex

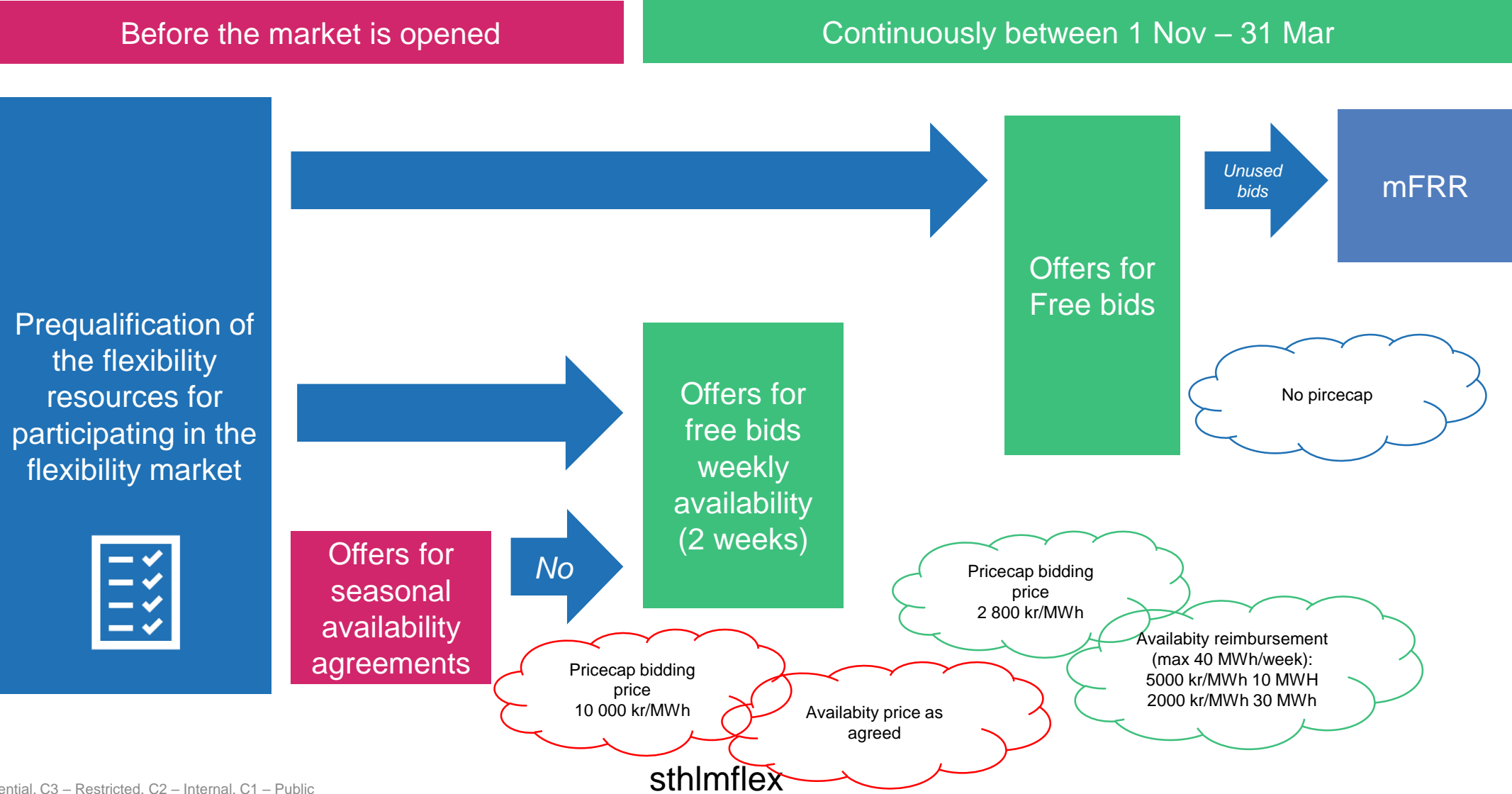
All prequalified to participate with free bids can participate with weekly availability •

- We aim to buy weekly availability during at least 2 weeks
- If the winter is mild, the process will primarily be tested, while a 10-year-winter will result in a need of 6-8 weeks.
- During the winter of 2021 there was a flexibility need for 4 weeks.

The weekly process:



Different business models



Example of reimbursement weekly flex

Bids placed	2 weeks availability reimbursement	Bidding price 500 kr Activation reimbursement	Bidding price 2000 kr Activation reimbursement	mFRR 2000 kr (18 hours during dec-march) Activation reimbursement
1 MW / 40 hours	220 000	20 000	80 000	45 000
2 MW / 5 hours	100 000	5 000	20 000	90 000
0,5 MW / 20 hours	100 000	5 000	20 000	-

Time plan **new flexibility** service providers

2021-04-20	Form for expression of interest is published
2021-05-12	Dialogue meeting sthlmflex
2021-06-07	Register interest both <i>availability agreement</i> and free bids – not binding
2021-06-09	<i>Request for availability agreement opens</i>
2021-08-23	Registration form and agreement / rule book as well as username for each flex resource are sent out
2021-08-30	Dialogue meeting sthlmflex
2021-09-07	<i>Deadline request for availability agreement</i>
2021-10-15	Deadline registration on the NODES marketplace FSP gets access to NODES marketplace
2021-10-29	Deadline agreement with NODES
2021-11-30 till 2022-03-31	sthlmflex market open

Timeplan **existing flexibility** service providers

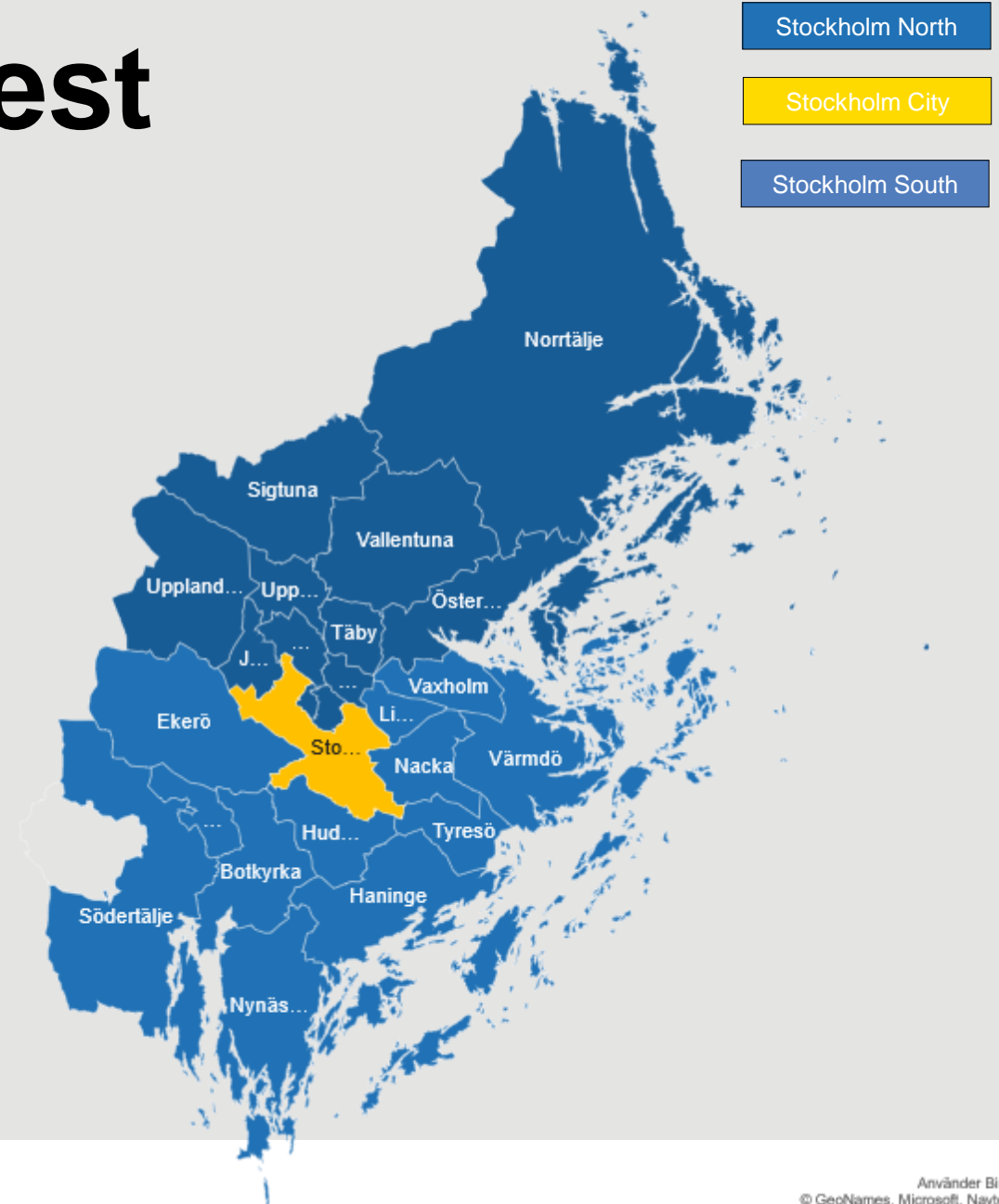
2021-05-12	Dialogue meeting sthlmflex
2021-06-07	Registration of interest for participation with existing resources, information about new flex resources accessibility agreements and free bids - send email to NODES
2021-06-09	<i>Request for availability agreement opens</i>
2021-08-23	Username for each flex resource are sent out
2021-08-30	Dialogue meeting sthlmflex
2021-09-07	<i>Deadline request for availability agreement</i>
2021-11-30 till 2022-03-31 sthlmflex market open	

How to report interest

As a new flexibility provider in sthlmflex: fill in the [form for registering interest](#) no later than the 7th of June 2021 or contact [NODES](#) if you have any questions.

As existing flexibility provider in sthlmflex: confirm interest/continued participation as well as new flexibility resources via e-mail to [NODES](#) before the 7th of June 2021.

Brief information about sthlmflex rulebook is sent out to all participants before the meeting.



Mer information

Project homepages

CoordiNet

[EU financed Horizon 2020 project CoordiNet](#)

sthlmflex

[FoU-projektet sthlmflex](#)

Contact Svenska kraftnät

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[CoordiNet – Svenska Kraftnät](#)

Contact Vattenfall Eldistribution

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Björn Godring (for FSP:s)

bjorn.godring@vattenfall.com

[CoordiNet – Vattenfall Eldistribution](#)

[sthlmflex - Vattenfall Eldistribution](#)

Contact DSO E:ON Energidistribution

Christoffer Isendahl (flextool and market platform CoordiNet)

Karin Hansson (flextool sthlmflex) karin.hansson@eon.se

[SWITCH | En lösning på kapacitetsbristen - E.ON](#)

Contact DSO Ellevio

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Stefan Lindbom (for FSP:s)

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[Kapacitetsbrist elnät | Ellevio](#)

Contact NODES market

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[sthlmflex - NODES](#)