



**ELLEVIO**



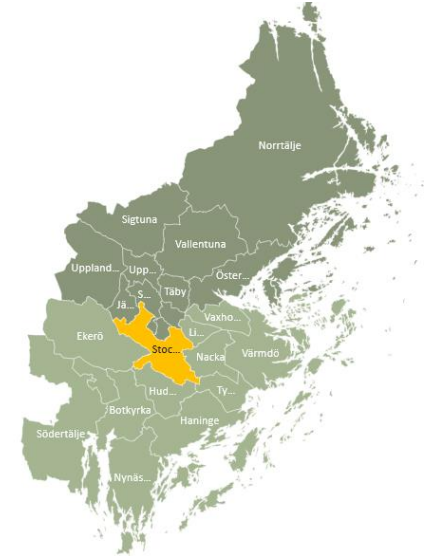
# What is sthlmflex?

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

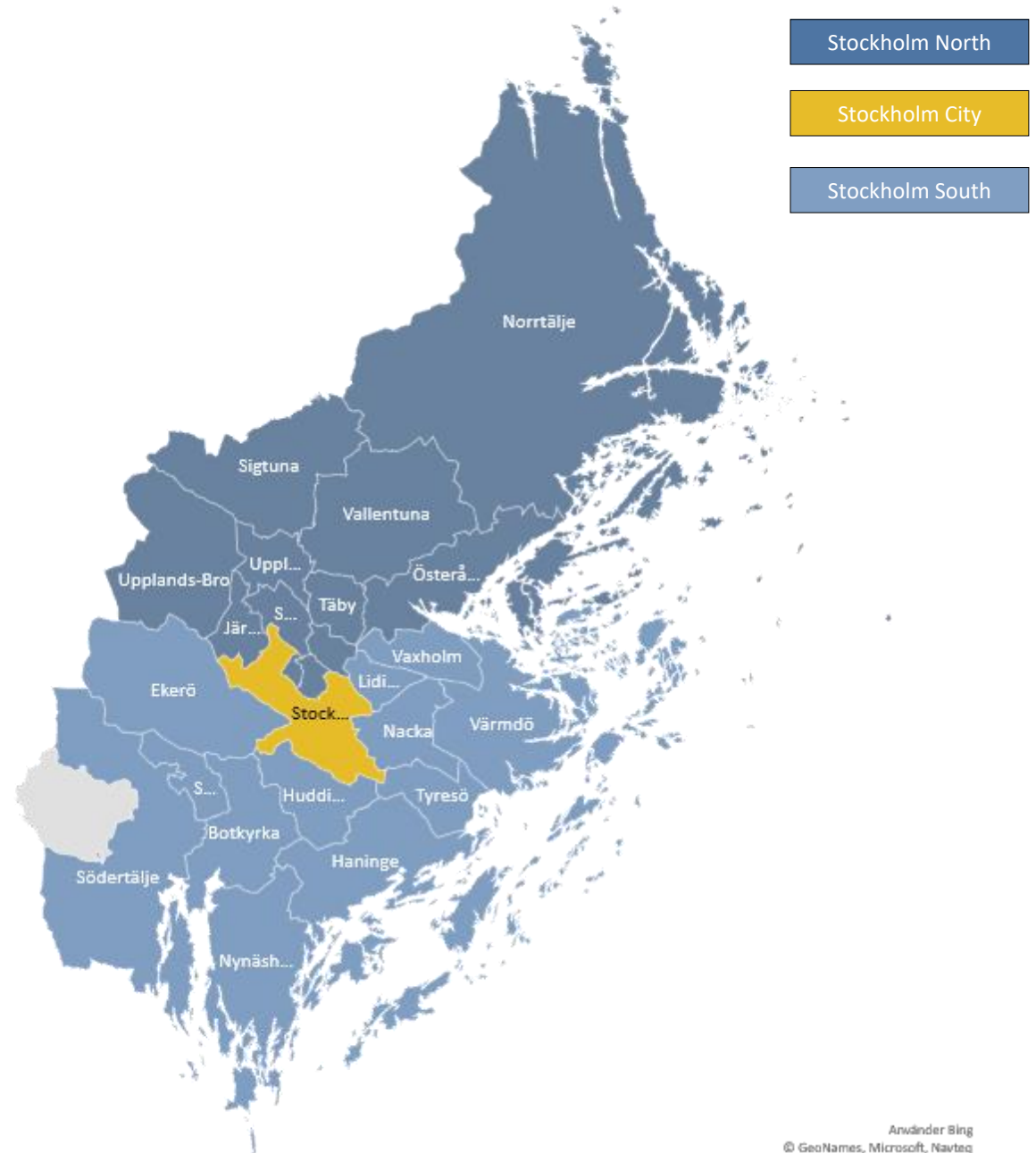
**Svenska Kraftnät** is the TSO and project owner

**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.



# Flexibility need

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.

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.

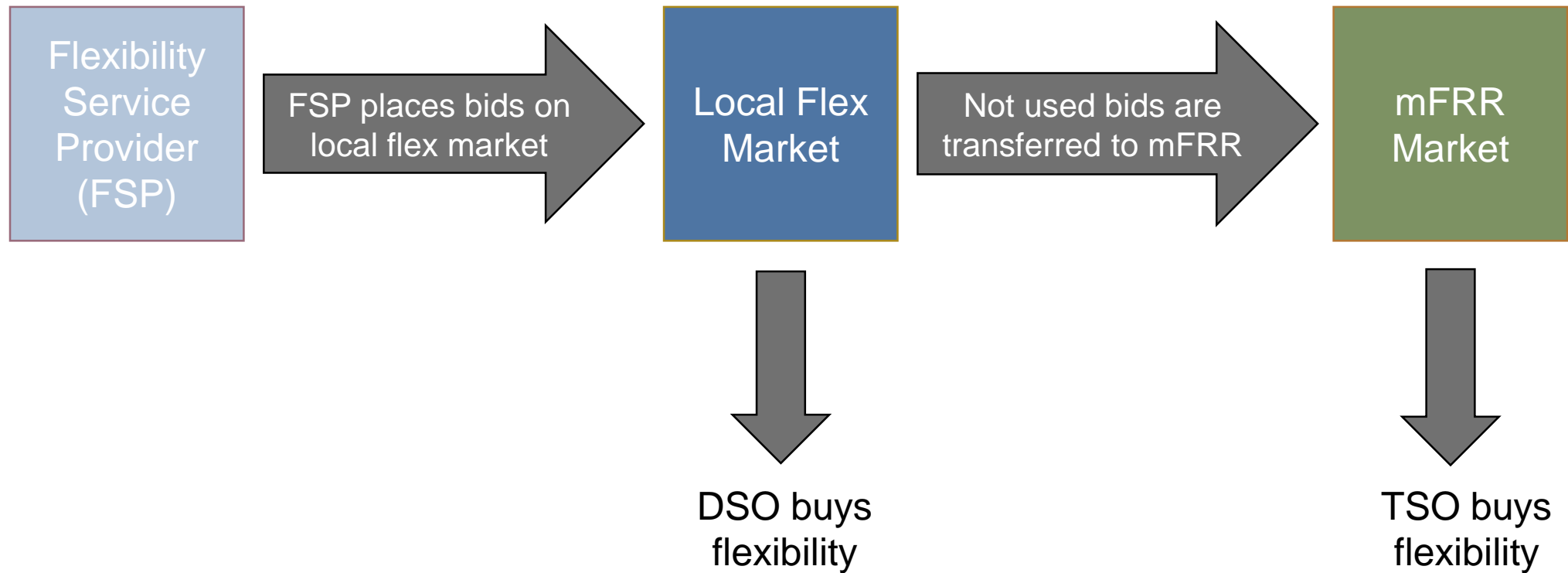
Beyond these, we have the following indicative flexibility need: Free bids and weekly purchasing:

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.

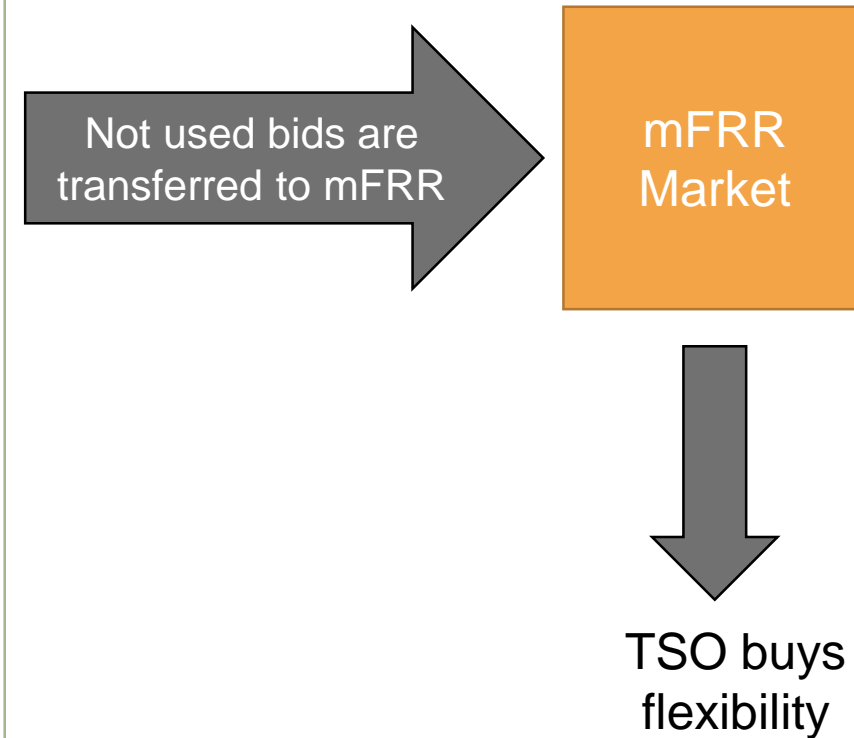
# Coordination with mFRR market



# Coordination with mFRR market

## HOW?

- ✓ Pre-qualification is a requirement for participation.
- ✓ Bid size has to be at least 1 MW (i. e. 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

- 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:

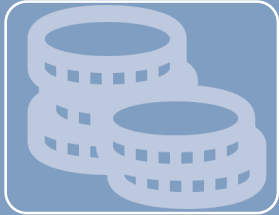
[Market data | Nord Pool \(nordpoolgroup.com\)](https://nordpoolgroup.com/)



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

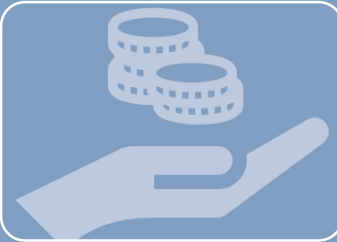


# The products on the market



## 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
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Purchase of availability season 8 hours per day	7 MW
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**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
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# Weekly flex

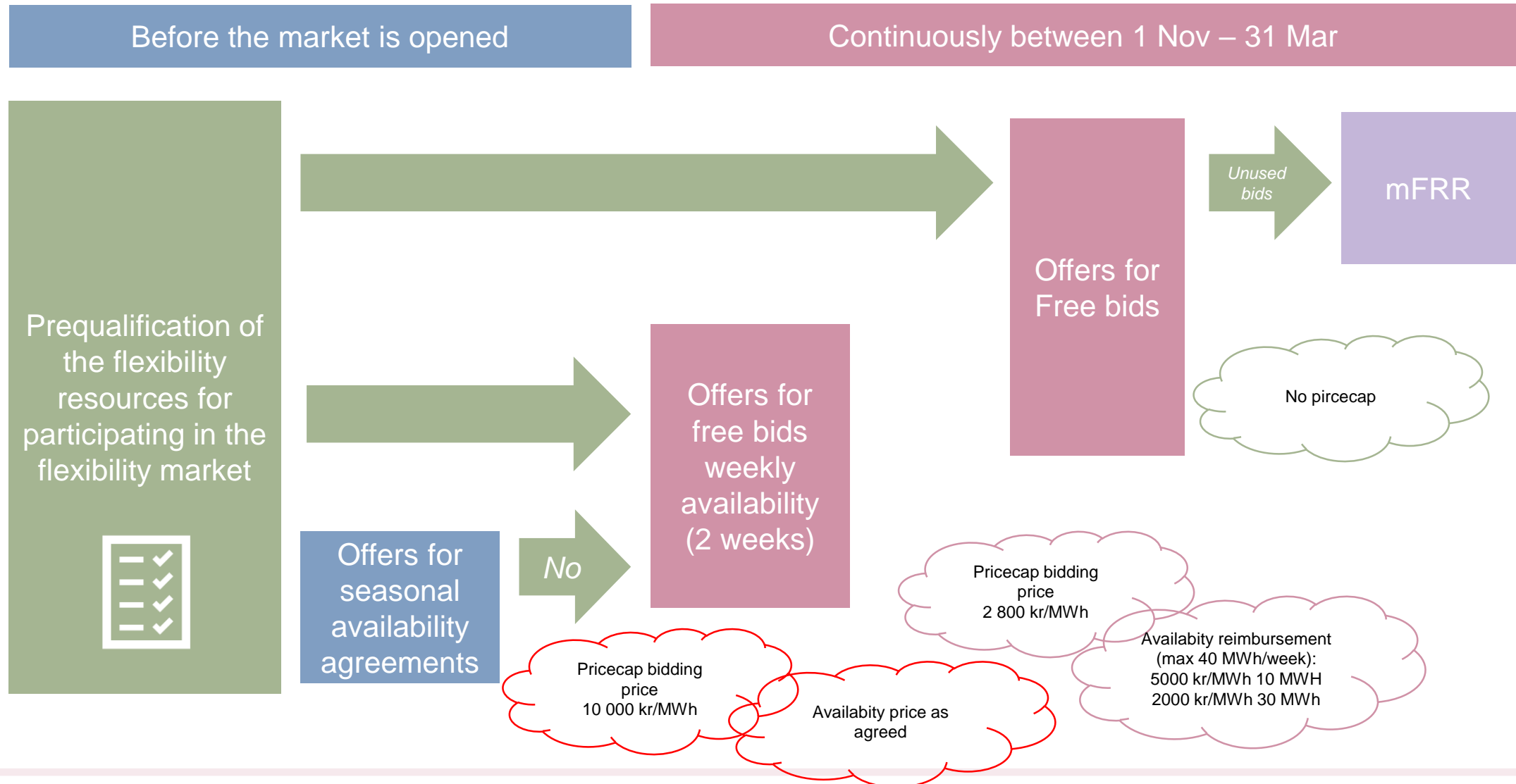
All prequalified to participate with free bids can participate with weekly availability •

- 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 2020/2021 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	-

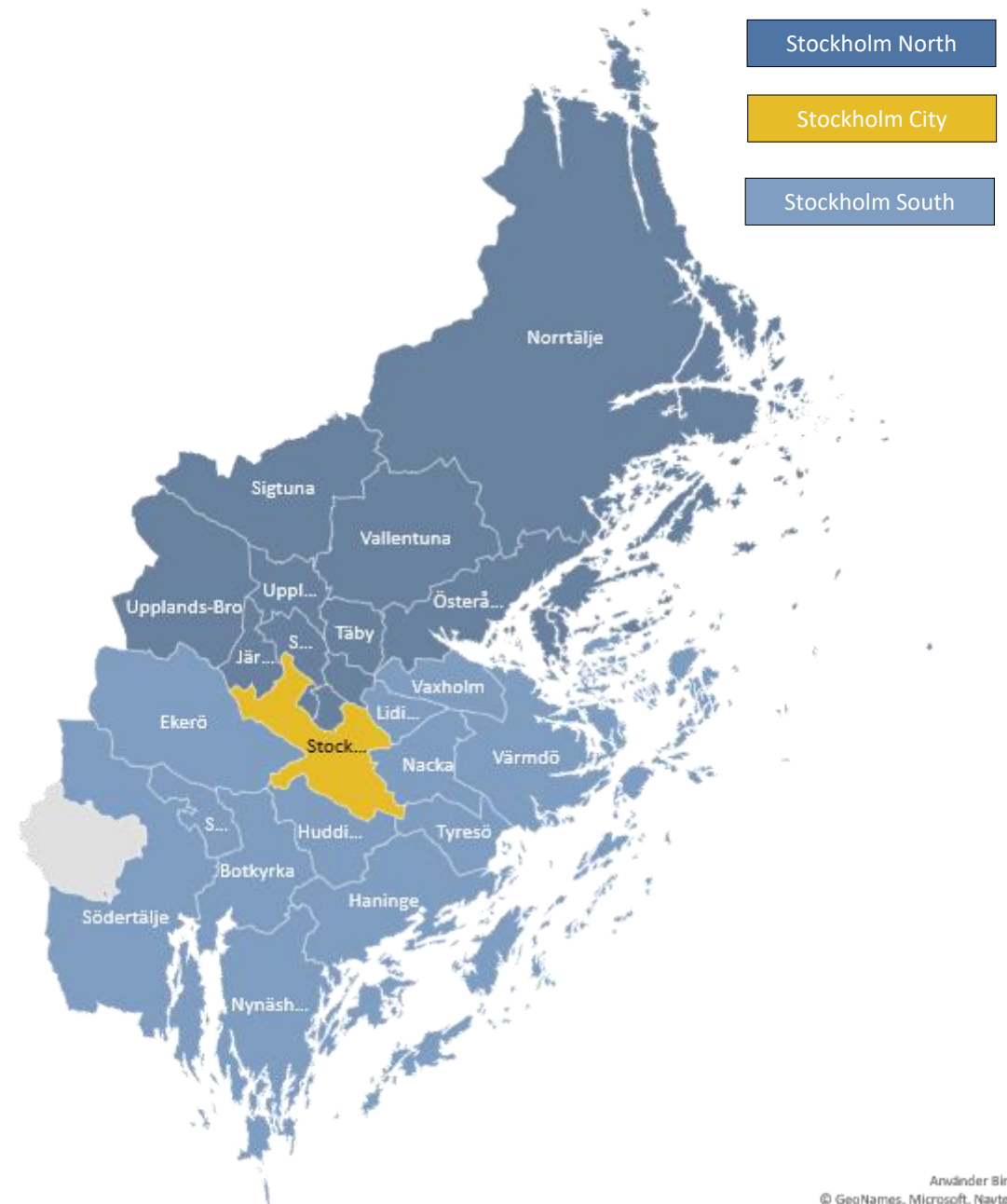
# Time plan flexibility service providers

2021-04-20	<a href="#"><u>Form for expression of interest</u></a> is published
2021-05-12	Dialogue meeting sthlmflex
2021-06-17	Registration for availability agreement opens
2021-08-30	Dialogue meeting sthlmflex
2021-09-03	Rule book is distributed
2021-09-15	Register interest both <i>availability agreement</i> and free bids – not binding
2021-09-21	<i>Deadline request for availability agreement</i>
2021-10-01	Username for each flexibility resource is sent out
2021-10-01	Deadline signed power of attorney
2021-10-01	Deadline baseline
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 to 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 15<sup>th</sup> September 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 15<sup>th</sup> of September 2021.



# Contact information

## Project homepages

### CoordiNet

[EU financed Horizon 2020 project CoordiNet](#)

### sthlmflex

[FoU-projektet sthlmflex](#)

## Contact Svenska kraftnät

Magnus Lindén [magnus.linden@svk.se](mailto:magnus.linden@svk.se)

Linda Schumacher [linda.schumacher@svk.se](mailto:linda.schumacher@svk.se)

[CoordiNet – Svenska Kraftnät](#)

## Contact Vattenfall Eldistribution

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Björn Godring (for FSP:s)

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[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](mailto:karin.hansson@eon.se)

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

## Contact DSO Ellevio

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[Kapacitetsbrist elnät | Ellevio](#)

## Contact NODES market

Market operator sthlmflex

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[sthlmflex - NODES](#)