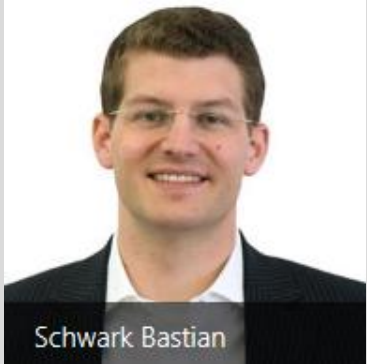


# BGM Partner Meeting 2020



10. November 2020, Aarau, Zoom Online Meeting

# These are your contact persons for balance group management at Swissgrid



Head of Market Operations



Head of Capacity  
Allocation & Market Systems



Head of Capacity & Congestion  
Management

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Balance group registration:  
[bg-registration@swissgrid.ch](mailto:bg-registration@swissgrid.ch)



Responsible for  
BGM Partner Meeting



Head of Balancing  
& Scheduling



Responsible for  
BGM Expert Group a.i.

# Agenda

09:00	Welcome address	Bastian Schwark
09:10	Recent developments in congestion management	Julius Schwachheim
09:25	Updates on NTC methodologies	Constanze Mende
09:40	News on cross-border capacity allocation	Theodoros Sevdas
09:55	EPEX Spot market developments	Davide Orifici, EPEX Spot
10:15	Power break	
10:30	Status of TERRE project	Tobias Ott
10:40	New RTE scheduling system	Najla Hamada, RTE
10:55	Scheduling harmonization project: pending workstreams	Marc Rüede
11:10	Swiss balance group management and operational incidents	Marc Rüede
11:25	Power break	
11:35	Outlook on current projects and revision of Swiss Electricity Supply Act	Wolfgang Elsenbast, SFOE
11:55	Equigy, a European platform using consumer-based devices and storage technologies to stabilize the transmission grid	Susanne Landt
12:10	Feedback and questions	Bastian Schwark
12:20	End of event	





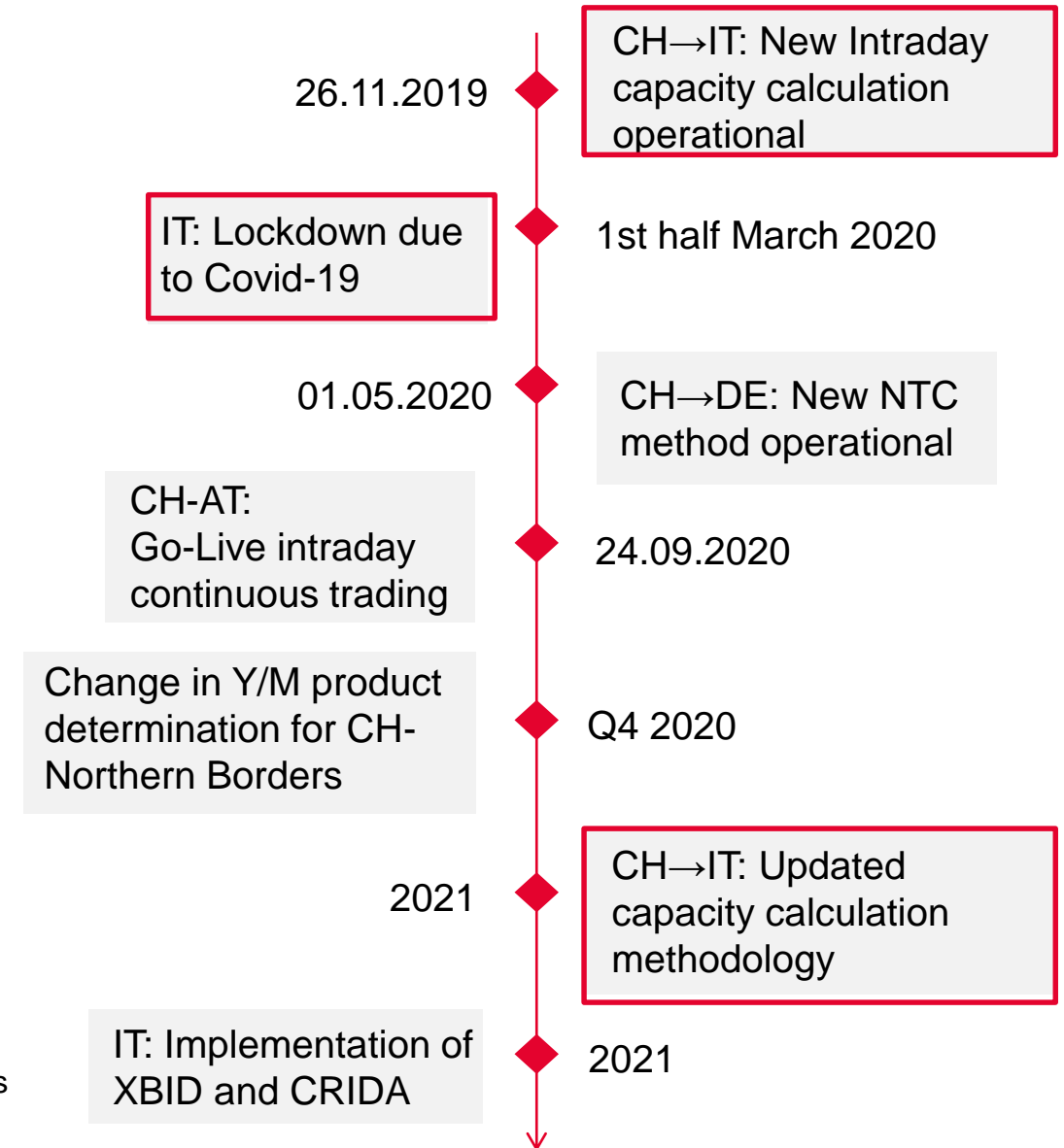
# Recent developments in congestion management

Julius Schwachheim  
Head of Capacity and Congestion Management

# Several new processes have gone live since the last BG Partner meeting in 2019

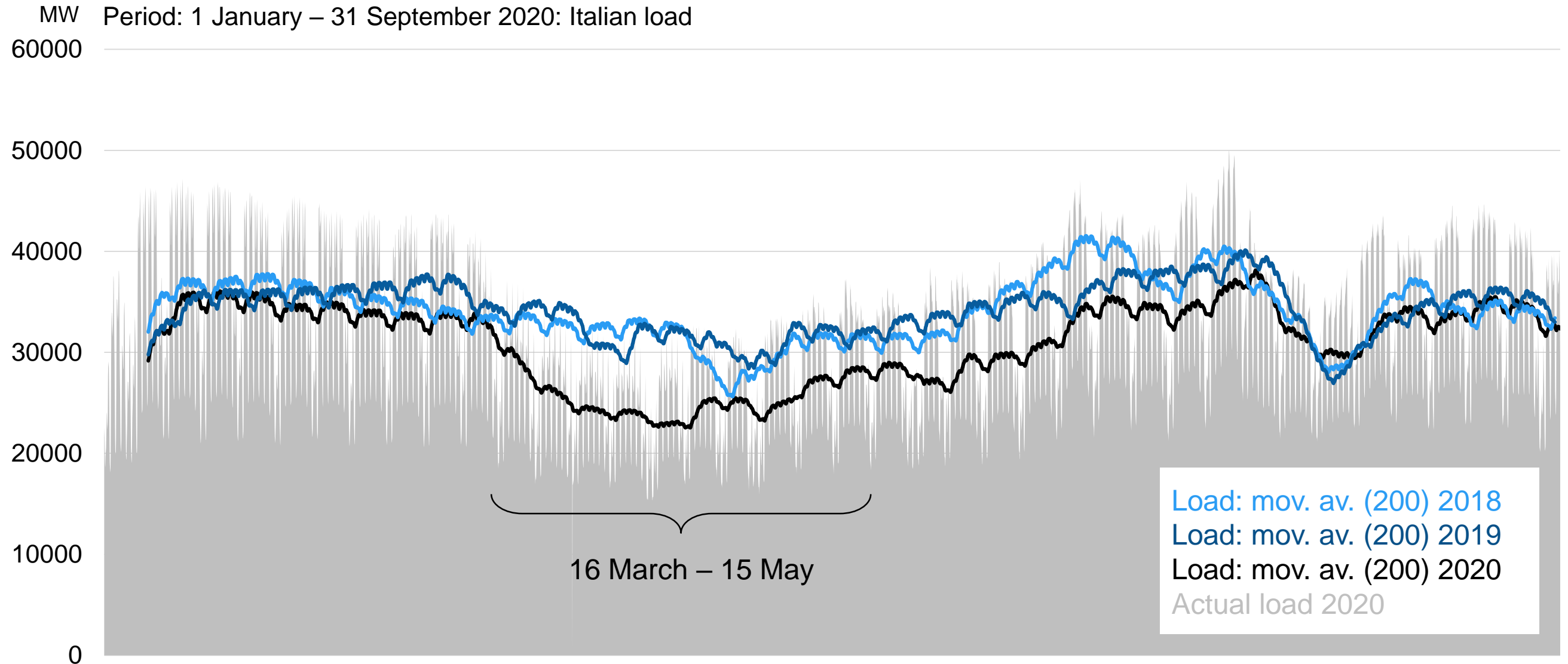


CRIDA = complementary regional intraday auctions  
XBID = cross border intraday

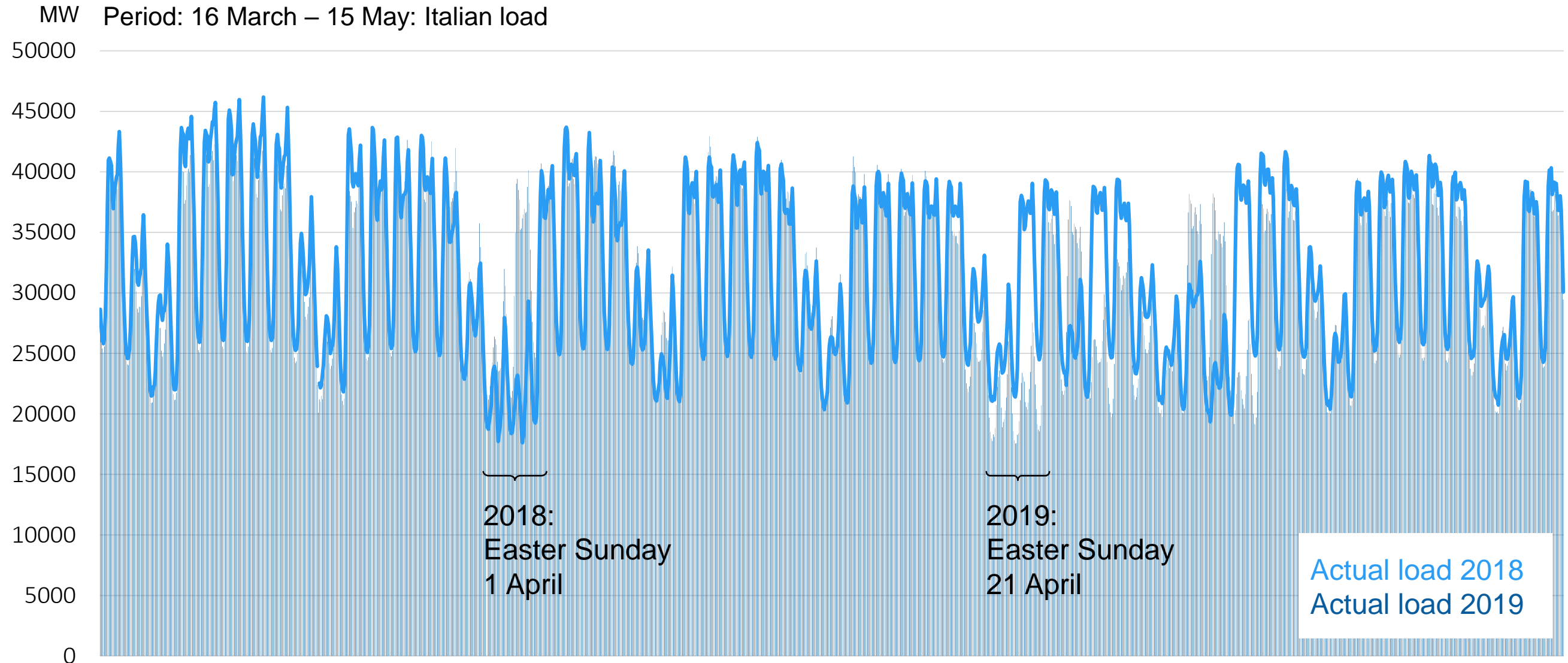


Quelle: Statistical Fact Sheet 2016, ENTSO-E

**Italy has seen drops in its (whole country) load of up to 10 GW on average for certain periods during Q2 2020 – 25% of the seasonal load.**

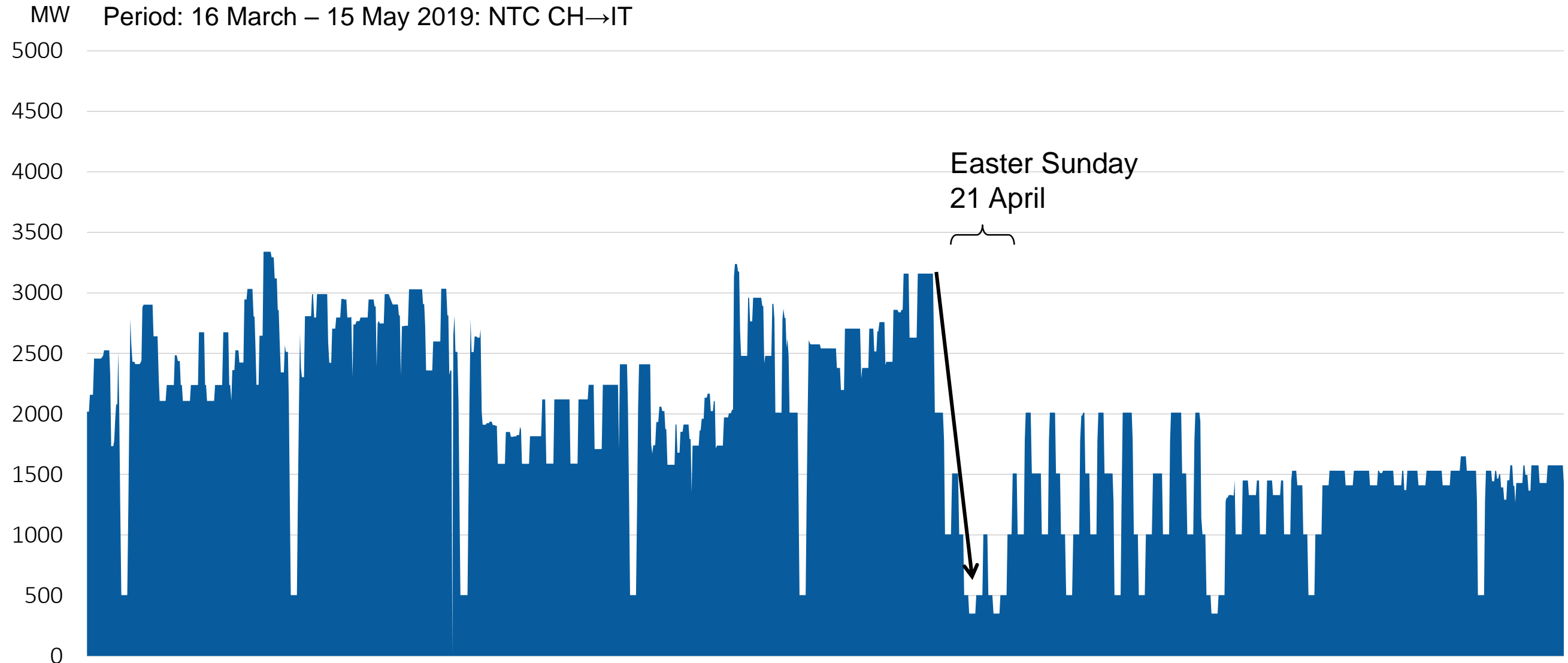


## During the spring period, the Italian load follows a repetitive pattern – including the regular «Easter period»





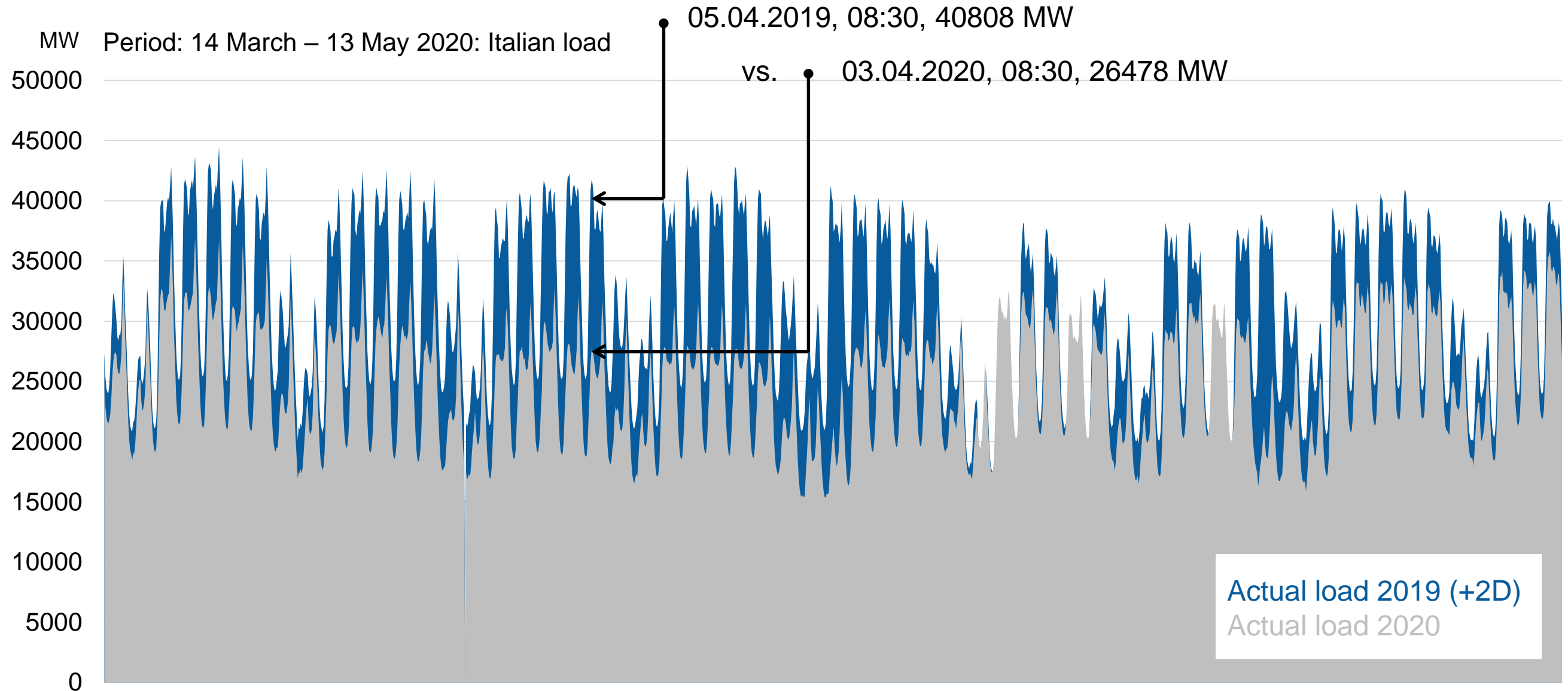
# Reduced load & increased RES lead to less active conventional generators in the grid – stability problems result and therefore the NTC needs to be reduced\*



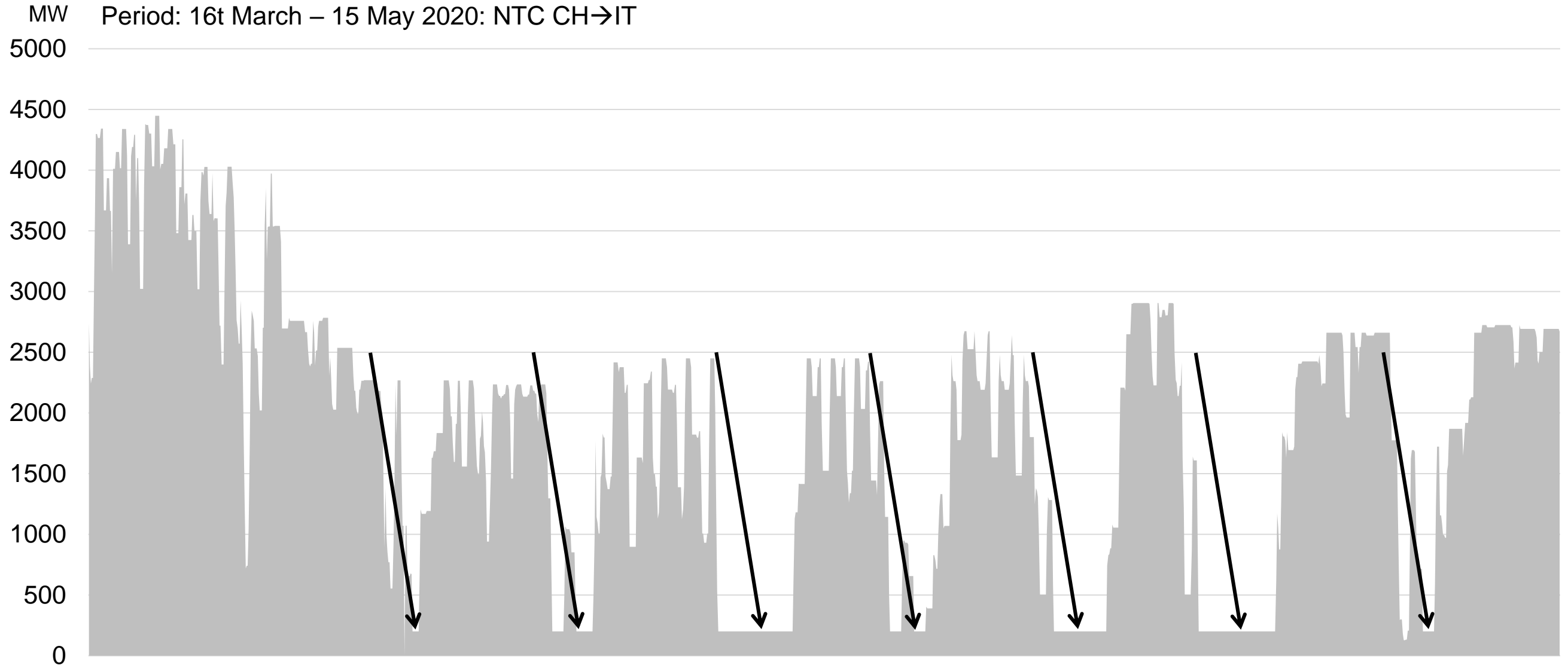
Link for sizing of the capacity reductions:  
<https://www.terna.it/en/electricity-system/electricity-market/capacity-interconnection-abroad>



# The Covid-19 restrictions in Italy led to year-to-year decreases in load of up to 15 GW



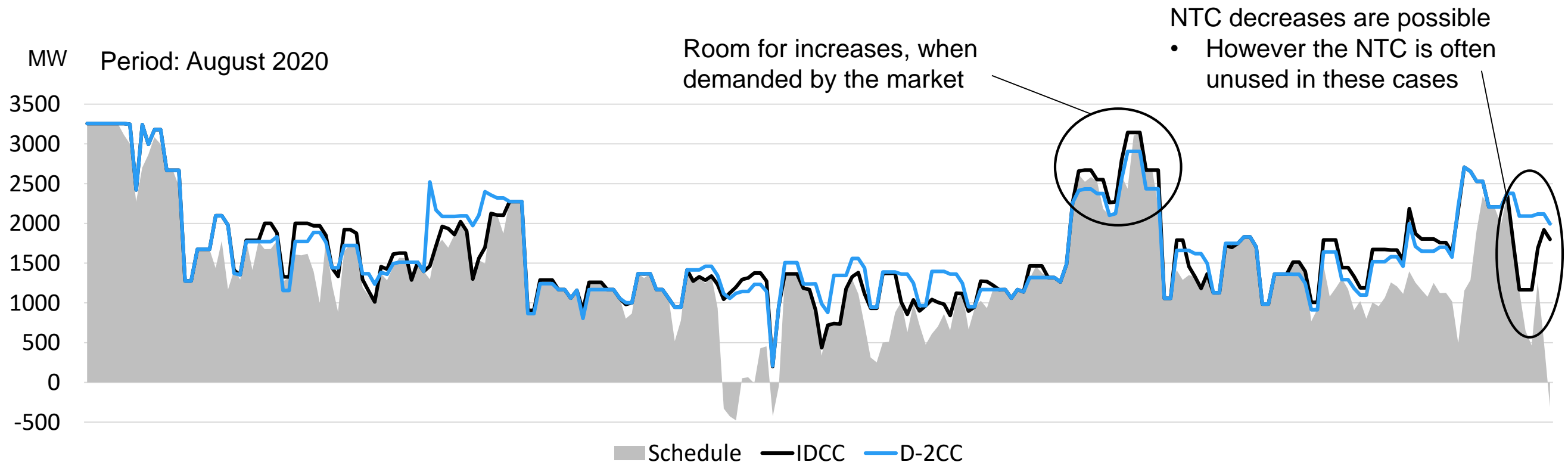
# The Covid-19 restrictions consequently impacted the NTC – just for a longer period. Comparison with previous years impossible due to different maintenance structures.



# A positive development during 2020 is the Intraday Capacity Calculation Process – it went live at the end of 2019 and led to increased capacities compared to day-ahead

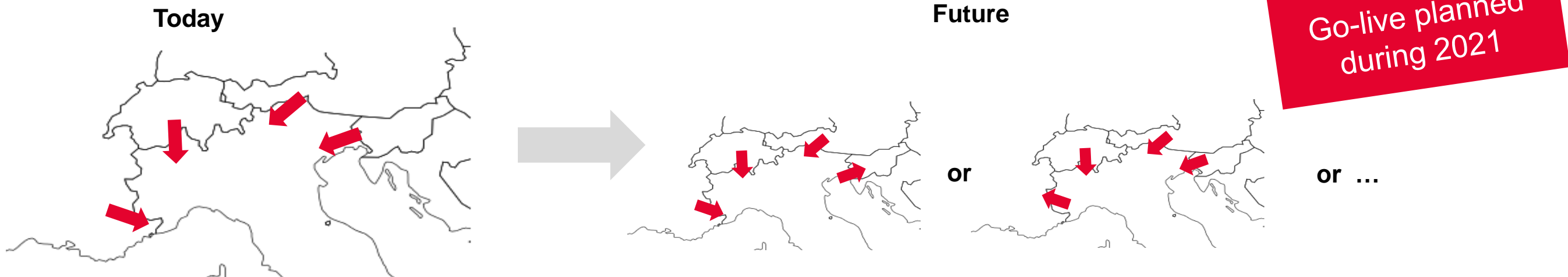
## Short recap of the functionalities:

- IDCC (re-)calculates the NTC for the hours of 16:00 – 24:00
- The resulting NTC cannot be lower than the schedule from Day-Ahead
- Since the go-live, the NTC has **increased** by on average **56 MW** or 45 GWh for relevant hours (relevant means in terms of market use: NTC was used more than 95%)



# In the future, the NTC from Italy will also be calculated in the export direction in specific situations

- Today's Capacity Calculation process in CCR Italy North only optimises the NTC in the **Full Italian Import direction**
- In the future, the algorithm will be extended so that scenarios in which >1 country is importing from Italy can be calculated in the capacity calculation processes («**Export Corner Calculation**»)
- For these countries X an **updated NTC IT → X** will be provided.
- Such calculations will help to optimise the NTC values e.g. in the summer months, when the Balkan region is importing from Italy and the **flow on the SI-IT border is reversed**.
- The algorithm and process will be flexible enough to take any export scenario into account.





# A consultative forum for Italy North will be launched in 2021

The forum focuses on the following topics – to provide stakeholders with information and content discussions:

- Proposals and methodologies pursuant to regional obligations of Network Codes and Guidelines
- Status update on the implementation of regional methodologies pursuant to Network Codes and Guidelines

**Market parties and their associations and NEMOs of the region will be informed soon!**





# Updates on NTC methodologies NTC CH-DE

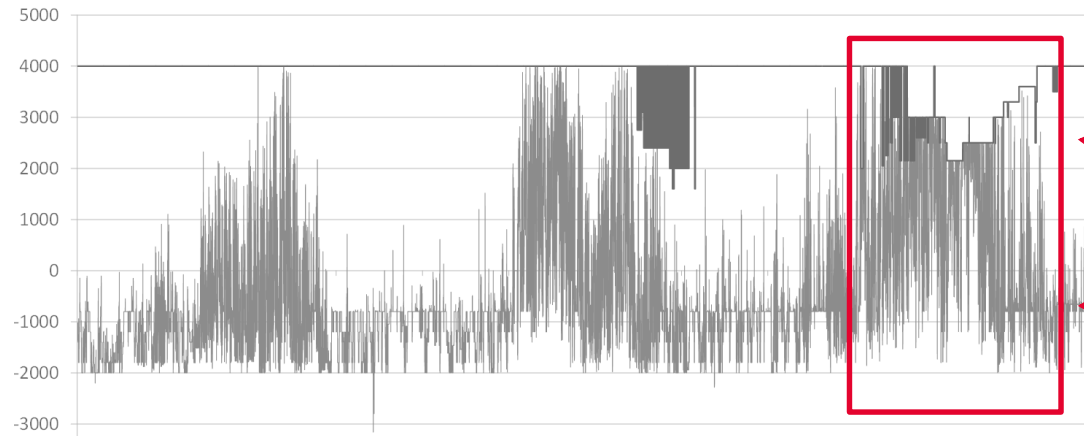
Constanze Mende

Specialist Capacity & Congestion Management Market

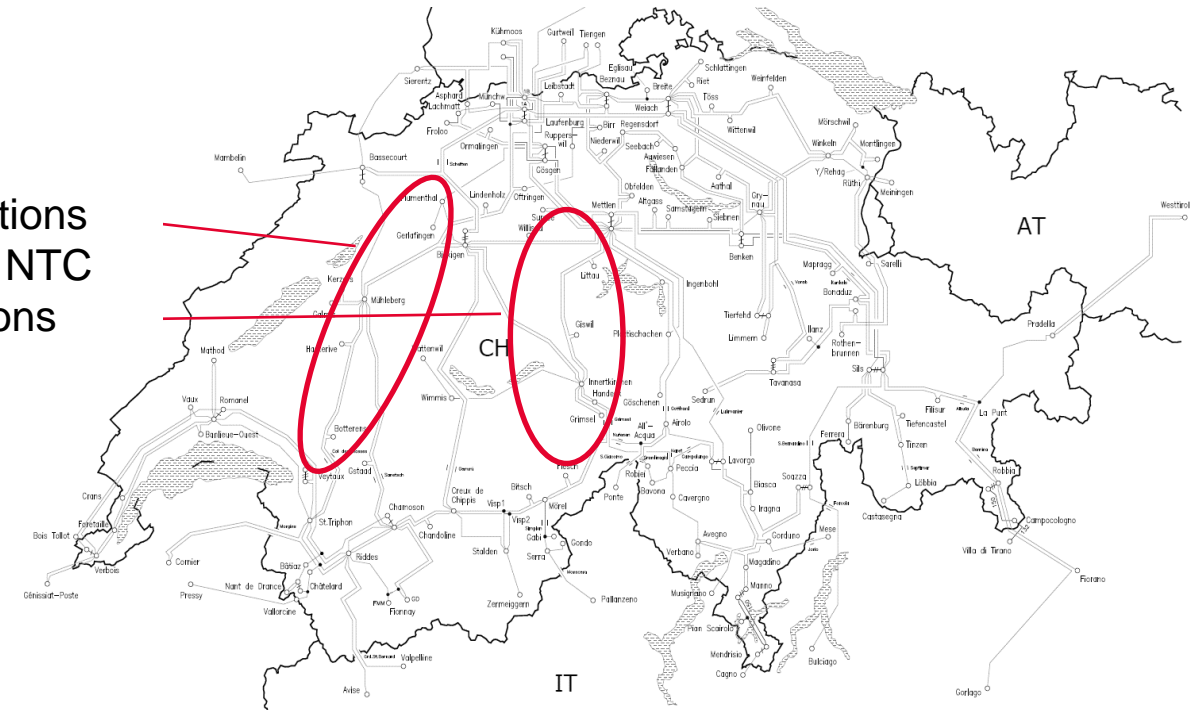


# Motivated by the increasing usage of the NTC CH→DE in recent years, Swissgrid has developed a transparent day-ahead NTC CH-DE determination methodology

Development CH-DE [MW]

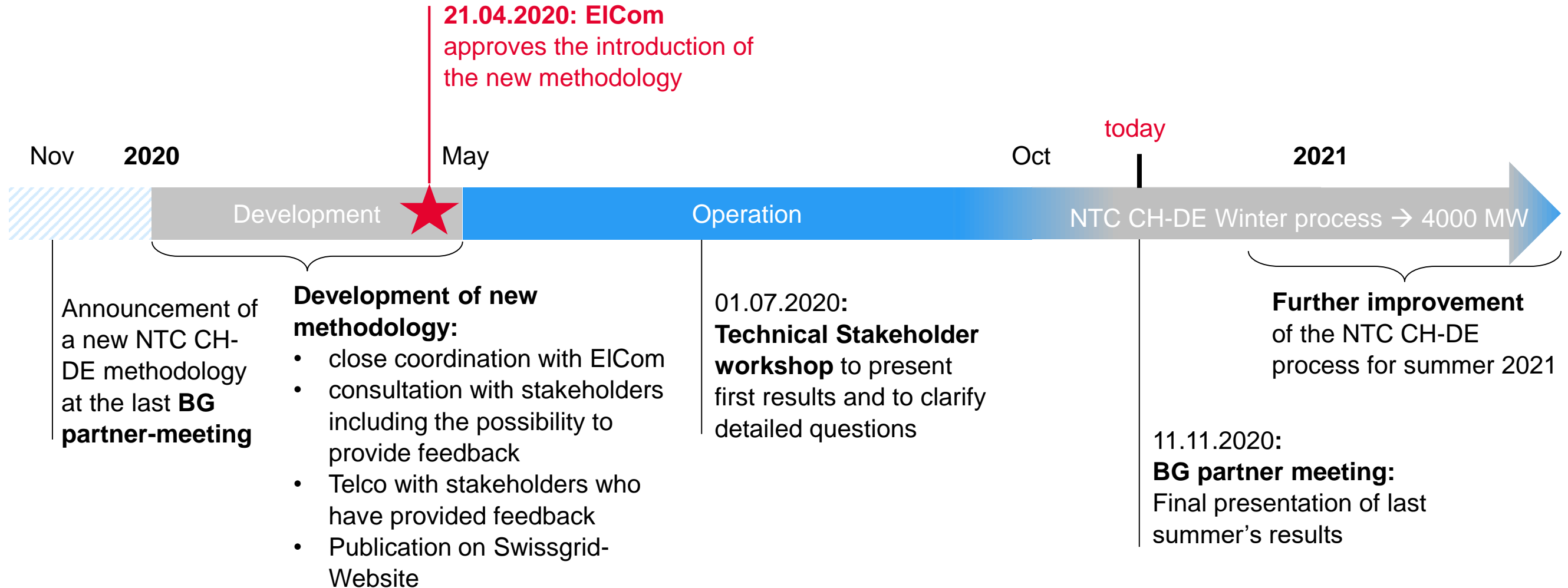


N-1 violations  
triggered NTC  
reductions



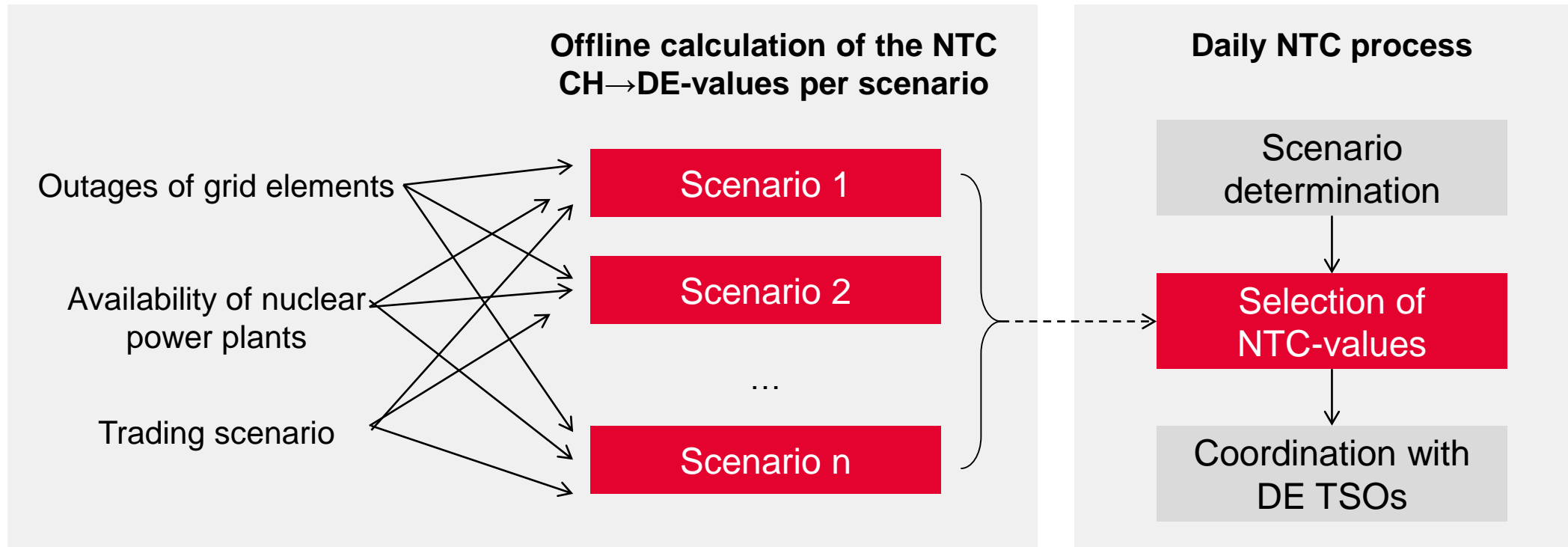
- The **NTC CH→DE** has been determined in the past as **4000 MW**, whereas its usage has increased continuously since spring 2018. The first **N-1-violations already occurred on the south-north-220kV-axis**, which transport hydro energy from the Alps in the direction of Germany, in the late summer of 2018. This consequently led to NTC reductions.
  - In summer 2019 the N-1-violations increased due to the increased German import. This has caused further **ad-hoc NTC-reductions**, which were performed based on daily evaluations of the coming days
- A **transparent and coordinated** methodology for determining the NTC CH-DE has been developed and introduced for **summer 2020**

# New methodology was developed in coordination with ElCom and allows stakeholders to provide feedback – further process improvements are planned next summer





**The determination of the NTC CH→DE is scenario-based. The NTC values are calculated a priori and applied dependent on the expected situation**

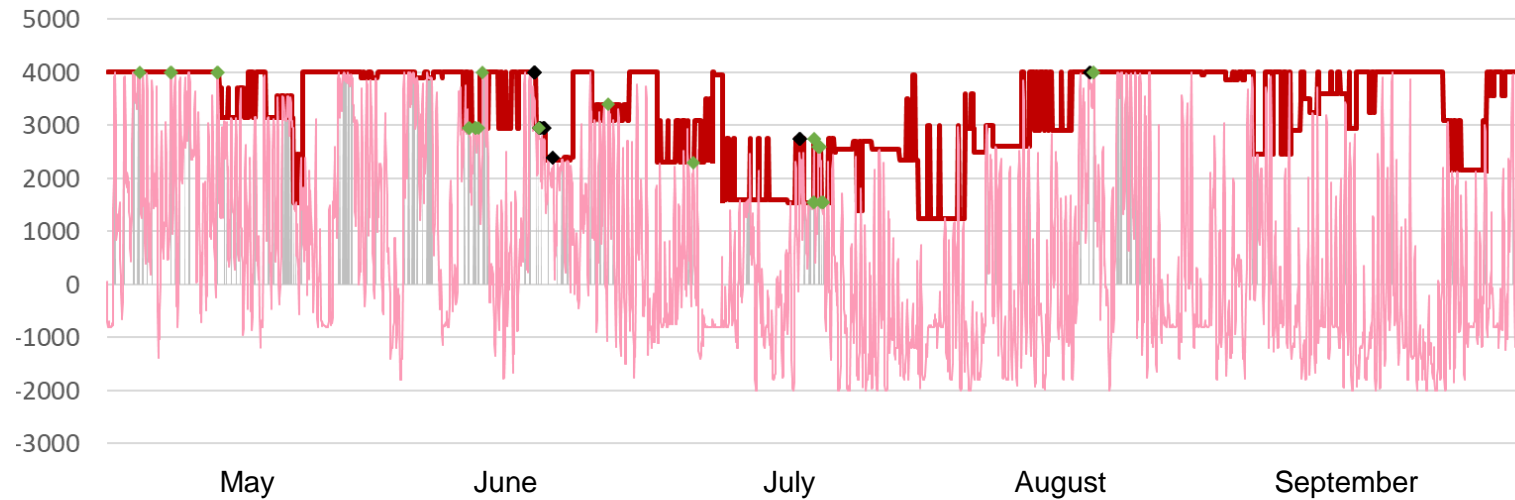


**Basic principles of the NTC calculation:**

- Consideration of only **relevant grid elements**
- **Local CH-internal problems must not trigger NTC-reductions!**
- Application of basic principles defined in the **CACM** and **CEP**
- The aim is to **optimise the NTC** by accepting a certain amount of **redispatch risk**

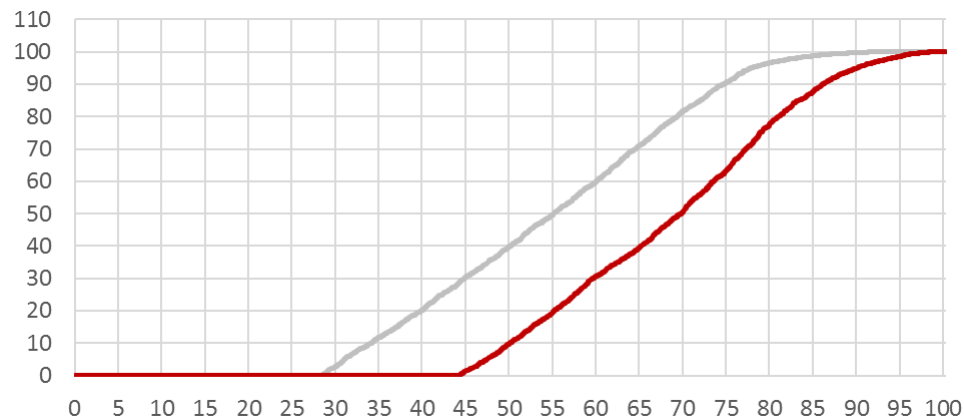
# Swissgrid offered 1365 GWh more capacity to the market than in 2019, but usage decreased

Border CH-DE in 2020 (MW)



- Swissgrid offered **12,165 GWh** capacity to the market in the direction CH→DE for the whole summer 2020 (same period of 2019: 10,800 GWh)
- **3,880 GWh** of this was used (same period in 2019: 4,500 GWh)

Usage NTC CH-DE – duration curve (%)



## Swissgrid took a certain redispatch risk into account during the NTC determination

	May 20	Jun 20	Jul 20	Aug 20	Sep 20	sum
Capacity used by the market in the direction CH→DE [in GWh]	1,300	1,100	326	697	452	3,875
Congestion rent SWG CH→DE [in T€]	1,100	1,022	285	320	221	2,948
Redispatch costs [in T€]	36.6	542	477	71.4	/	1,019

- The redispatch costs over the whole summer were in the range of **35% of the congestion income CH→DE**
- International and national redispatches are summarised in these figures. In the case of national redispatches, the figures only take account of cases that were triggered by overloading on grid elements that were also taken into account in the NTC calculation.
- It is not possible to clearly define the part of the redispatch costs that can be clearly assigned to the NTC CH→DE

# The introduced NTC CH→DE methodology must be seen as an intermediate step towards integration in the CORE region

- The aim for summer 2020 was to implement a transparent and traceable NTC determination methodology within a short timeframe
- The next steps will be to implement several quick-win updates for summer 2021, such as:
  - Improvement of the scenario forecasts
  - More efficient NTC CH-DE calculation
- In the mid-term (2022+), the calculations should be allocated to regional service coordinators (RSCs) and the NTCs calculated and coordinated together with the CORE region.



# News on cross-border capacity allocation



Theodoros Sevdas  
Principal Market Operations

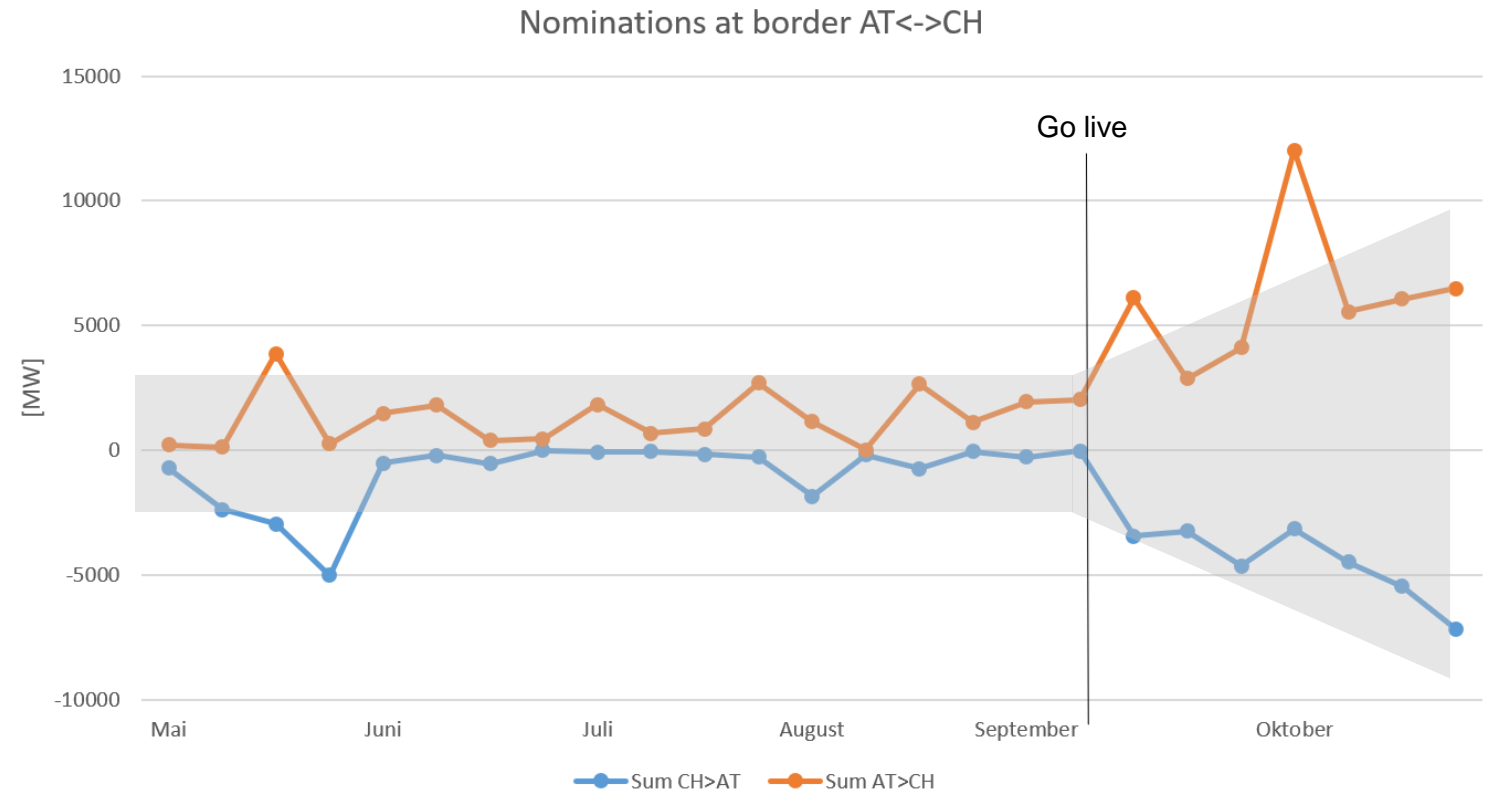
# Create transparency in calculation of yearly and monthly products on CH borders

	Yearly	Monthly
<b>DE &lt;&gt; CH</b> (to be applied to products for 2021)	<ul style="list-style-type: none"> <li>• 50% of minimum yearly NTC*</li> </ul>	<ul style="list-style-type: none"> <li>• 50% of (minimum monthly NTC* minus yearly product)</li> </ul>
<b>AT &lt;&gt; CH</b> (to be applied to products for 2021)		
<b>FR &gt; CH</b> (There is no yearly and monthly product In direction CH>FR, residual capacity is allocated in Day Ahead and Intraday)	<ul style="list-style-type: none"> <li>• Based on proposals of ElCom and CRE</li> <li>• Approximately 33% of (Minimum Yearly NTC* minus reserved capacities for LTCs)</li> </ul>	<ul style="list-style-type: none"> <li>• 75% of (minimum monthly NTC* minus yearly product minus reserved capacities for LTCs)</li> </ul>
<b>IT &lt;&gt; CH</b> (to be applied to products for 2022)	<ul style="list-style-type: none"> <li>• Max. 25 reduction periods</li> <li>• Product shall be valid for min. 80% of hours</li> <li>• Lower product validity only in case of resulting product &lt; 10 MW</li> </ul>	<ul style="list-style-type: none"> <li>• Max 5 reduction periods</li> <li>• Product shall be valid for min. 80% of hours</li> <li>• Lower product validity only in case of resulting product &lt; 10 MW</li> </ul>

\* Yearly/Monthly Minimum NTC are coordinated bilaterally, taking maintenance into account

# Status on intraday allocation on CH northern borders

- Since 23 September, intraday capacity on the Swiss-Austrian border is allocated using an automated and explicit «first come - first served» process via the Deutsche Börse AG platform
- This gives traders in Switzerland and Austria massively improved access to the respective intraday market
- This process has been operating successfully for years on the borders with Germany and France
- For the time being, no changes to these processes are planned
- The long-term goal is to join XBID



# Intraday allocation on CH – IT border will be impacted by XBID go-live in Italy

- Go-live of **XBID** on North Italian borders (without CH-IT) is expected during 2021.
- Together with XBID, «**complementary regional intraday auctions**» (**CRIDA**) will be implemented within Italy (zonal system) and on some Italian borders.
- The number and timing of these auctions will be different from today.
- The introduction of complementary regional intraday auctions (CRIDA) will necessitate a change to the current regulatory framework, as there is a link to CACM
- It is an open regulatory question whether the current intraday allocation can be continued at the CH-IT border
- If the NRAs decide that the current mechanism has to be discontinued Swissgrid and Terna will have to go back to explicit allocation of the intraday capacity
- Swissgrid will keep the market participants updated

	Auction time	Delivery time	Type of product
<b>Implicit auction 1</b>	15:00, d-1	0 – 24	hourly
<b>Implicit auction 2</b>	22:00, d-1	0 – 24	
<b>Implicit auction 3</b>	10:00, d	12 – 24	



# EPEX SPOT

## Market Overview – New Markets & Products

Swissgrid - BGM Meeting

10 November 2020

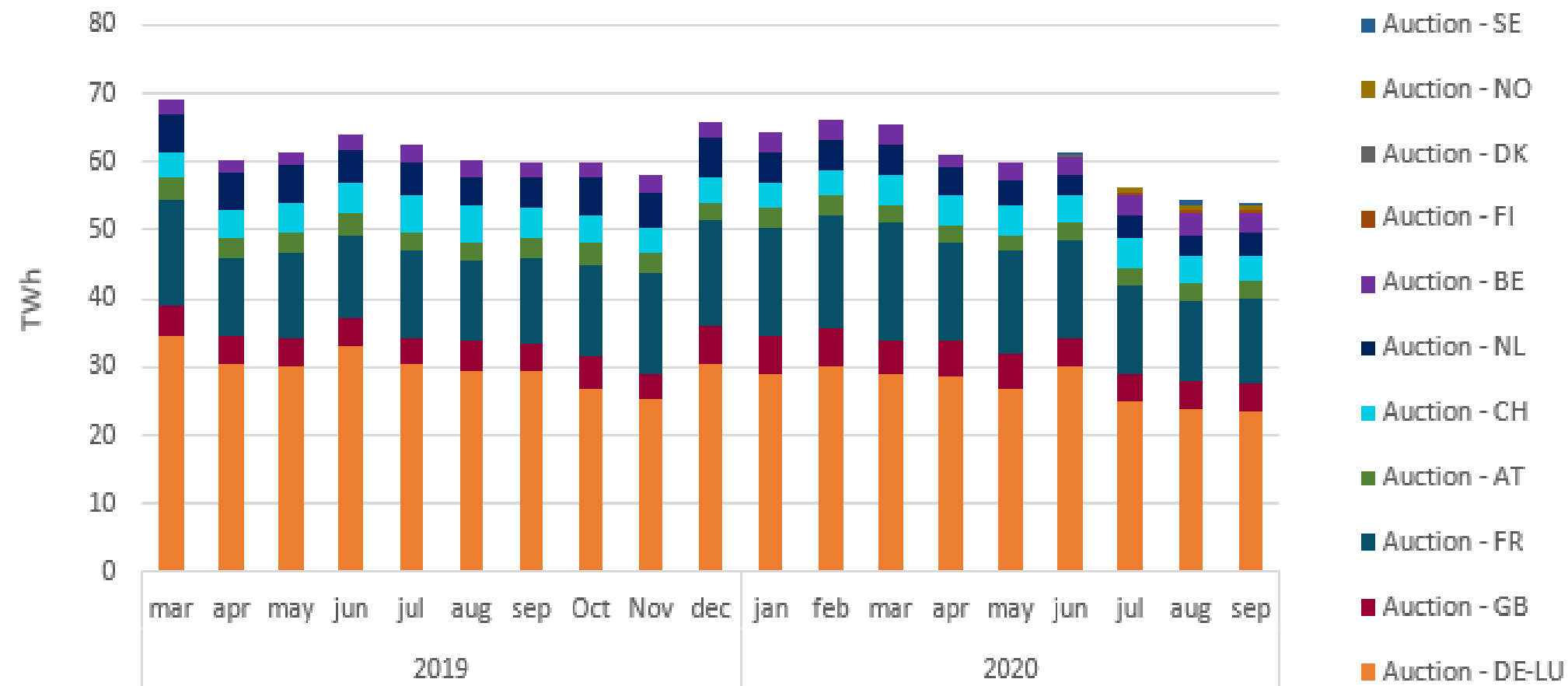
Davide Orifici, Head of Swiss Office

EPEX SPOT Switzerland Ltd.

# 1. Market Overview

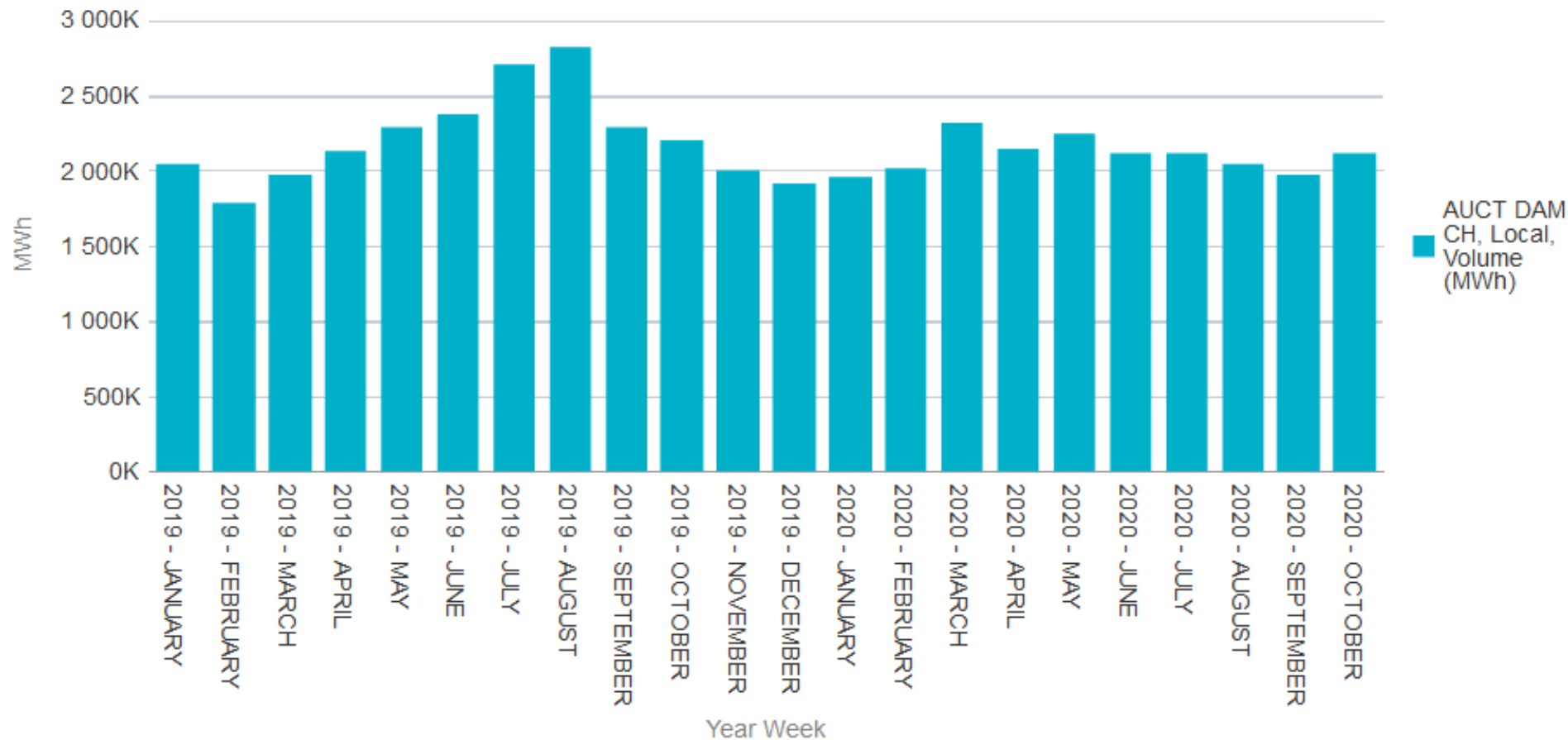
# Day-Ahead Markets

- **Day-Ahead** volumes stable compared to the same period in the previous year
- No significant effects of Covid-19 on Day-ahead volumes



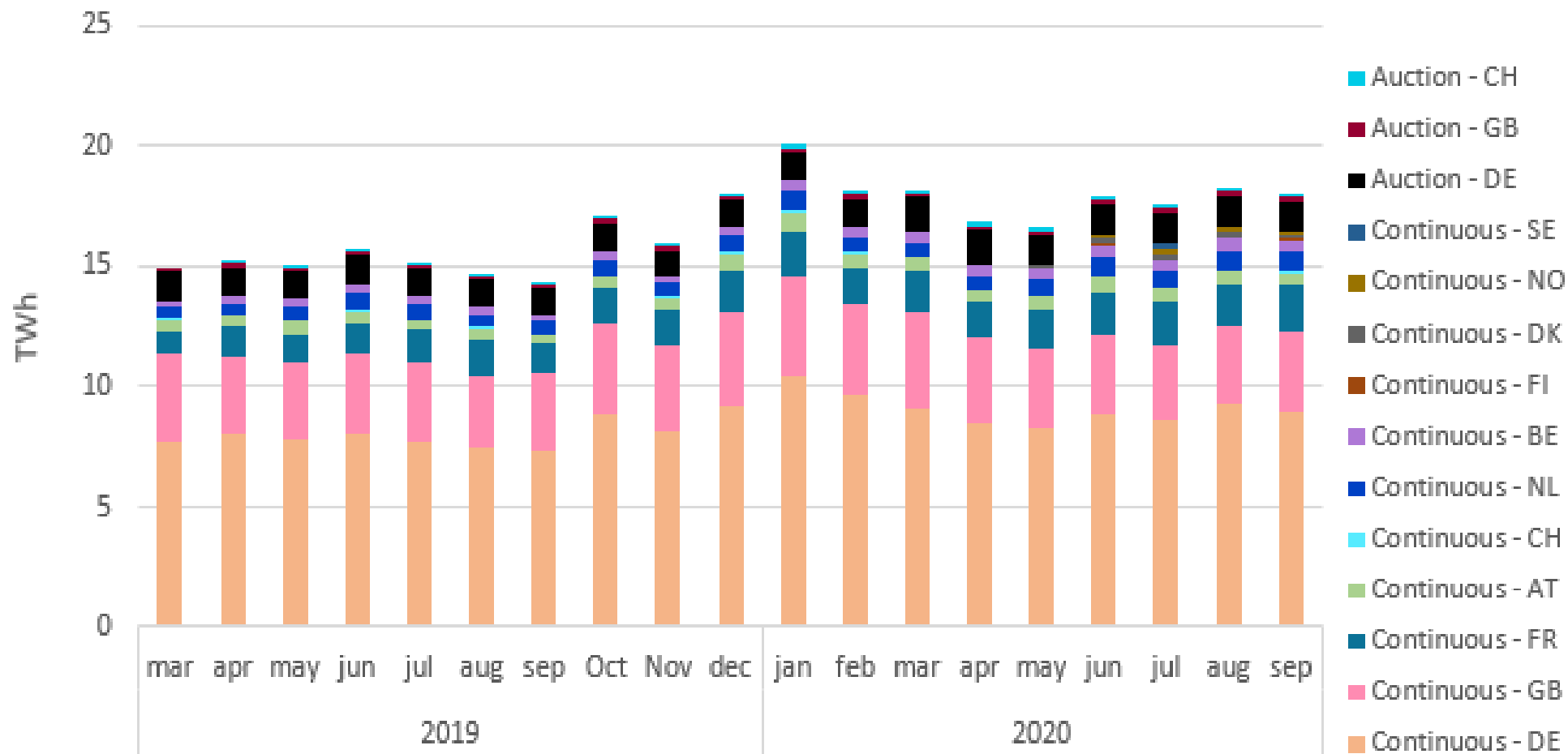
# Day-ahead volumes Switzerland

- Slight decrease yoy in 2020, overall stable market
- Decrease mainly in summer months → linked to low hydro reservoirs? Or low demand?



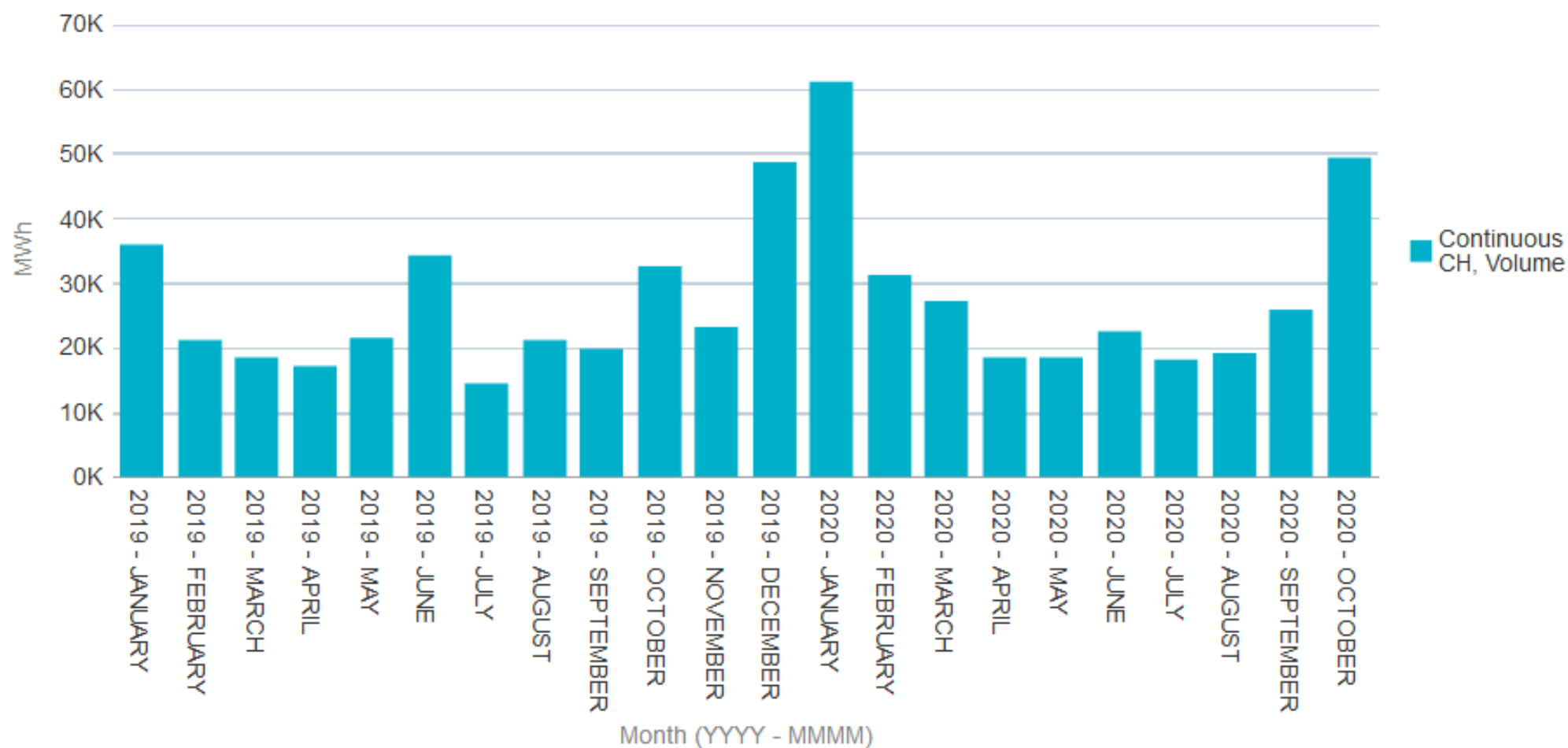
# Intraday Continuous Volumes

- The strong increase in trading volumes in continuous intraday trading continues in 2020
- Intraday traded volume in September increases by 27% YoY. All continuous markets drove the increase of activity, especially Germany and France



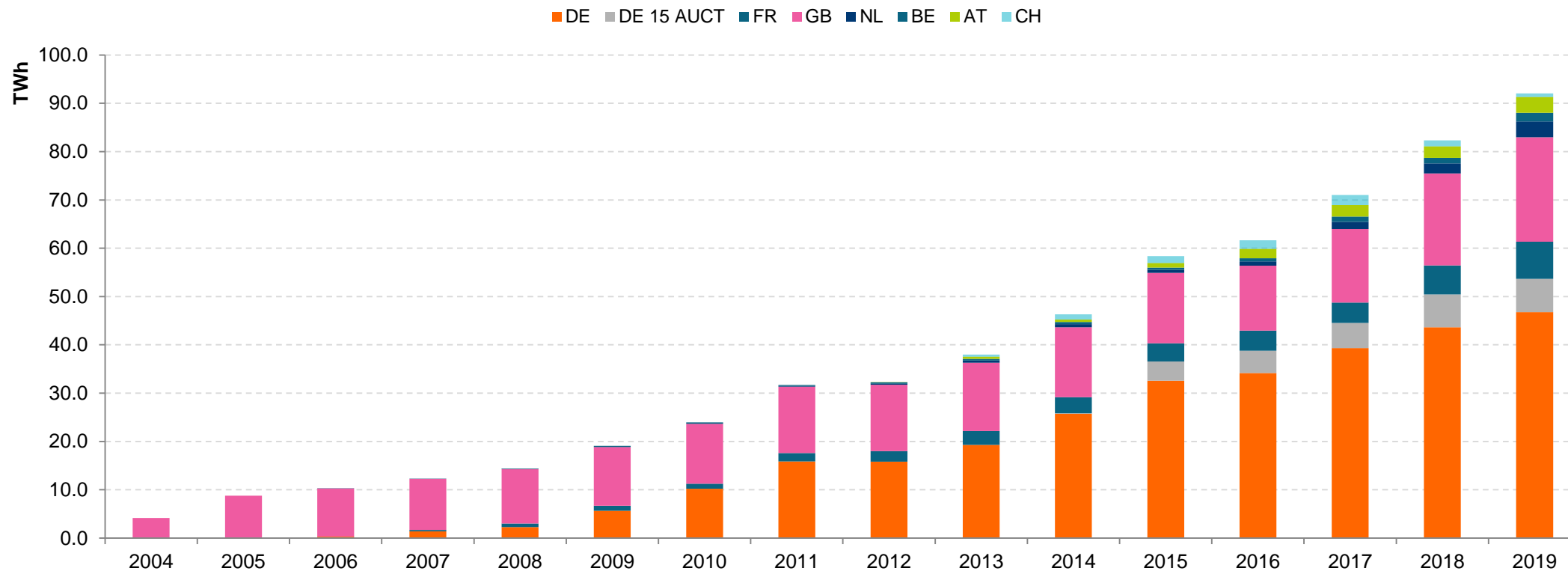
# Intraday Switzerland

- Stable volumes yoy in 2020, at a low level compared to pre-XBID situation
- More volumes on CH-IT auction



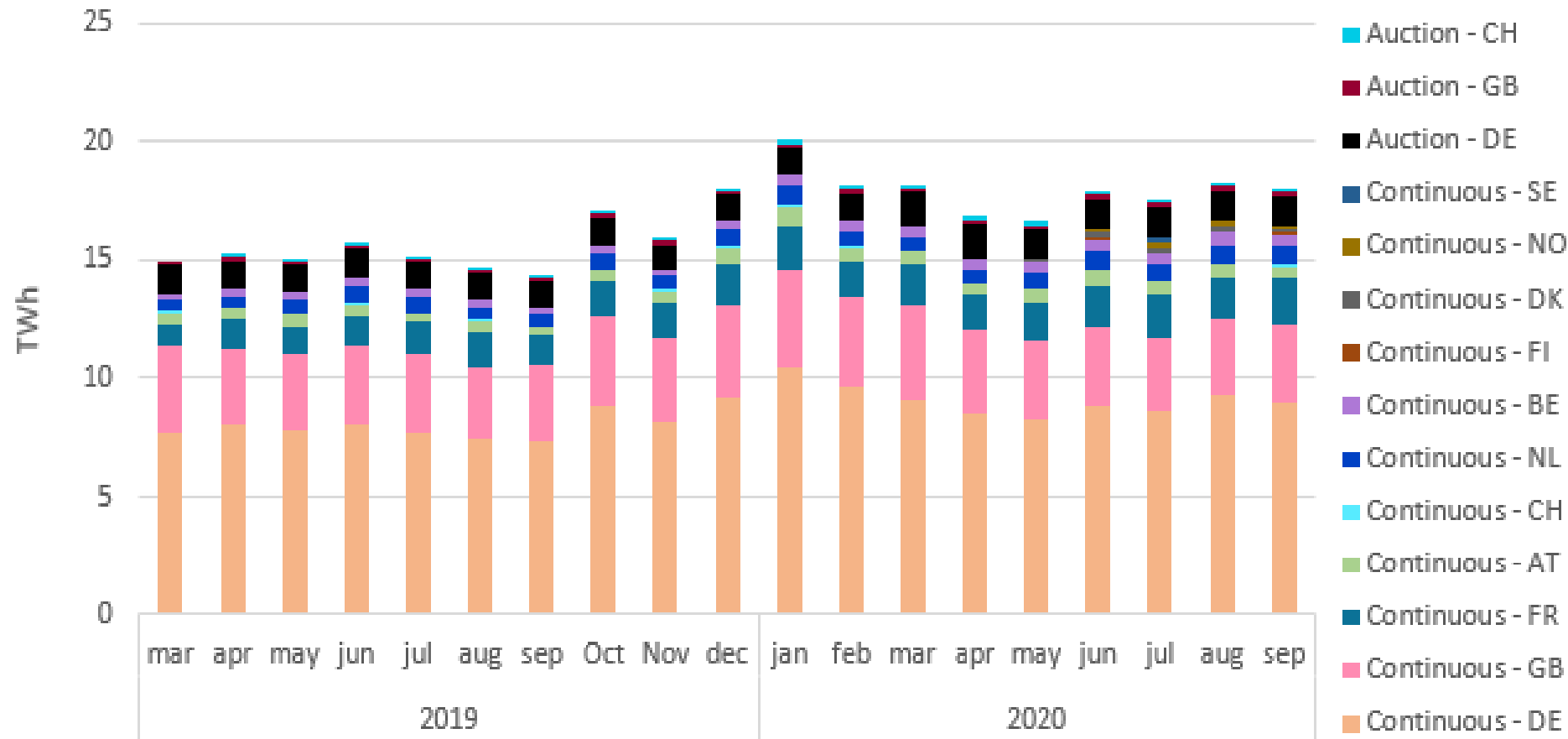


# Intraday markets: Total Traded volumes



- Intraday markets are very active both locally and cross-border
- Cross-border trades represent on average 20% of total traded volume

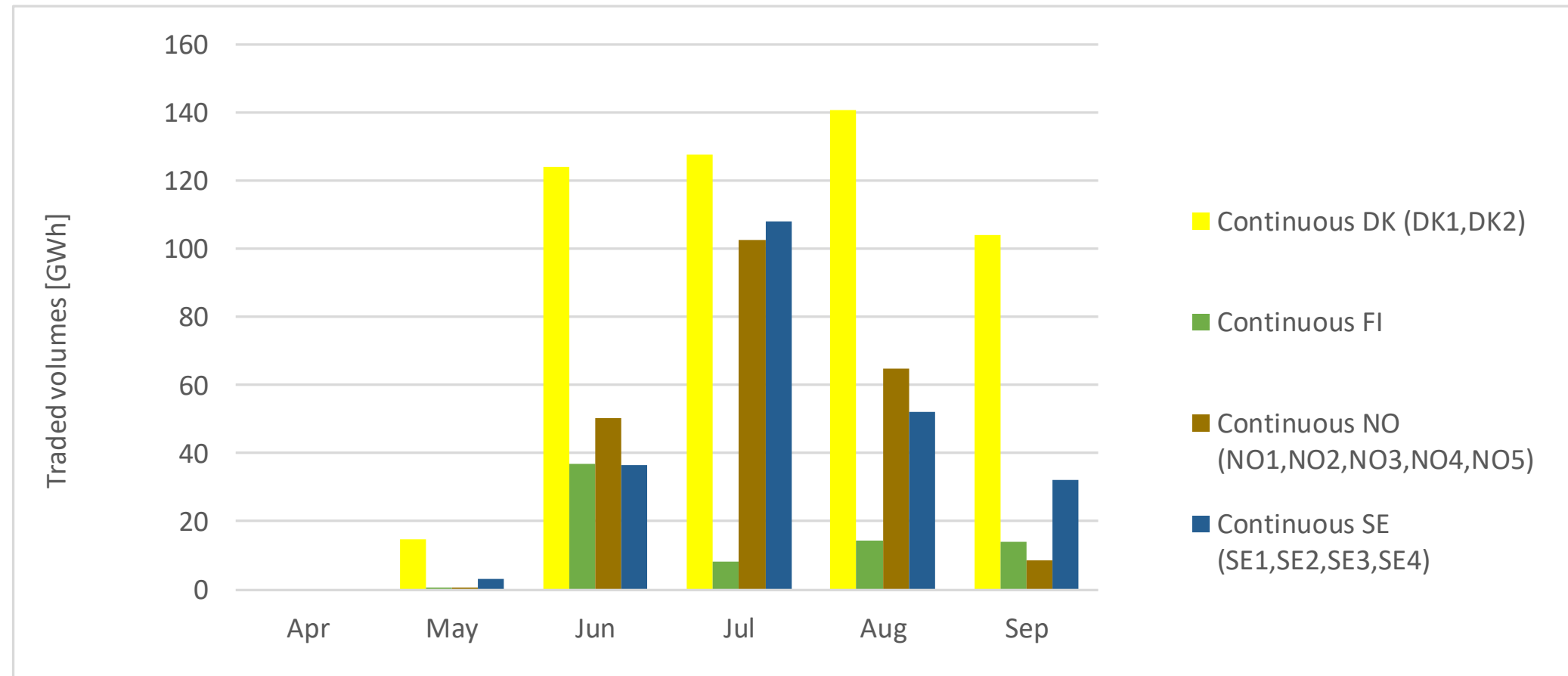
# Intraday markets: CWE/GB Continuous volumes



	Jan-Sep 2020 vs. Jan-Sep 2019
AT	30%
BE	62%
CH	19%
DE	21%
FR	43%
GB	6%
NL	37%

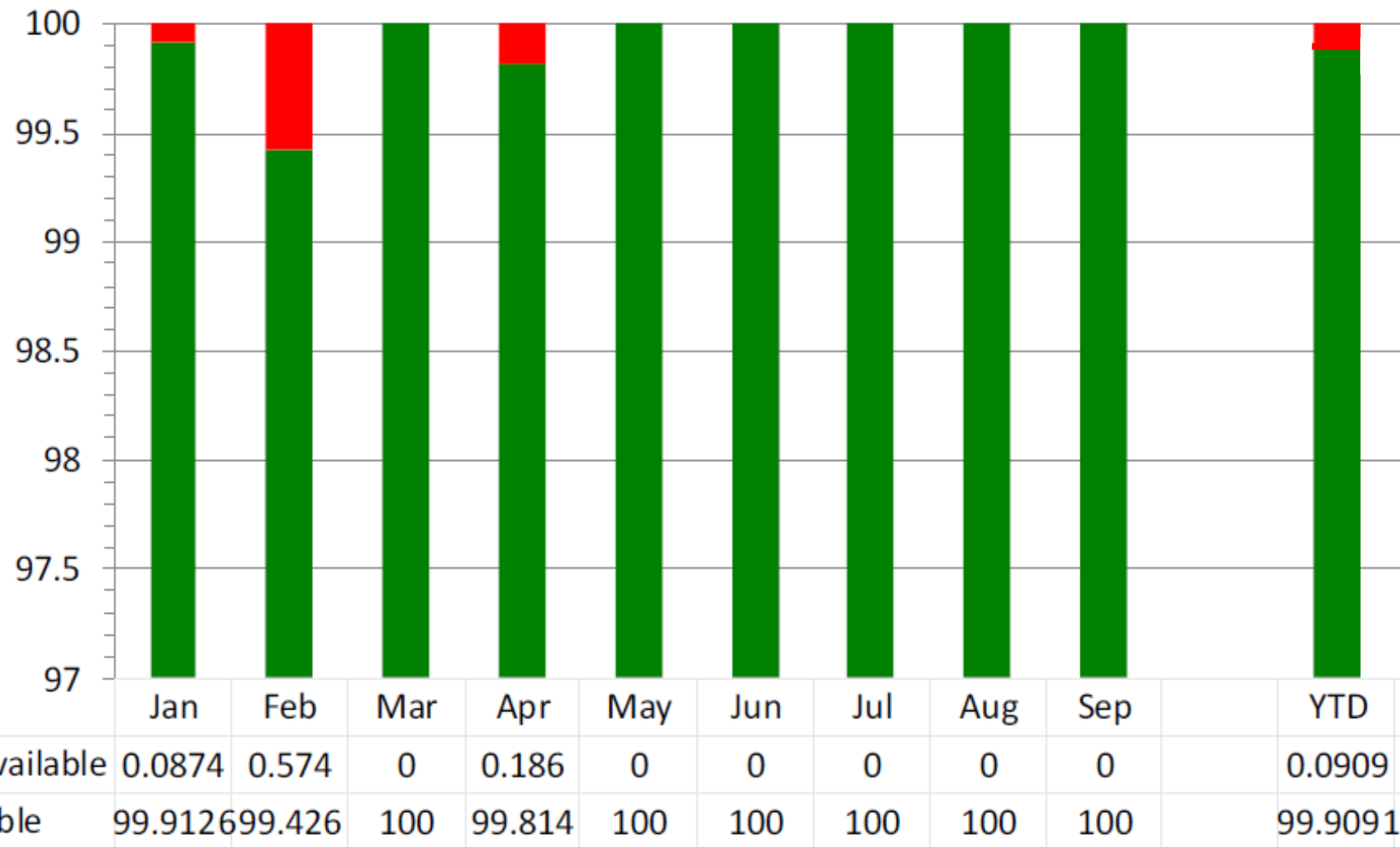
- Strong growth of IDM continuous volumes continues in 2020: volumes from January to September exhibit a year on year increase of 21% (excluding Nordics)

# Intraday markets: Nordic Continuous volumes



- Successfully launch of our Intraday continuous trading and clearing services in Denmark, Finland, Norway and Sweden, on 25.5.2020
- Trades recorded in all 12 Nordic bidding zones
- Since our launch, total Nordic Intraday liquidity has increased by 60% Year-on-Year (June-August)

# Availability, Service Time 24/7 - 2020



## 2. New Markets & Products

# EPEX SPOT has launched mid-October 2020 new local Intraday Auctions

## What & Where?

- 30 min French auction at 14:30
- 15 min Austrian auction at 15:00
- 15 min Belgian auction at 15:00
- 15 min Dutch auction at 15:00

## What's in it for members?

### New **price references**

Finer granularity products offering full flexibility in

### **portfolio optimisation**

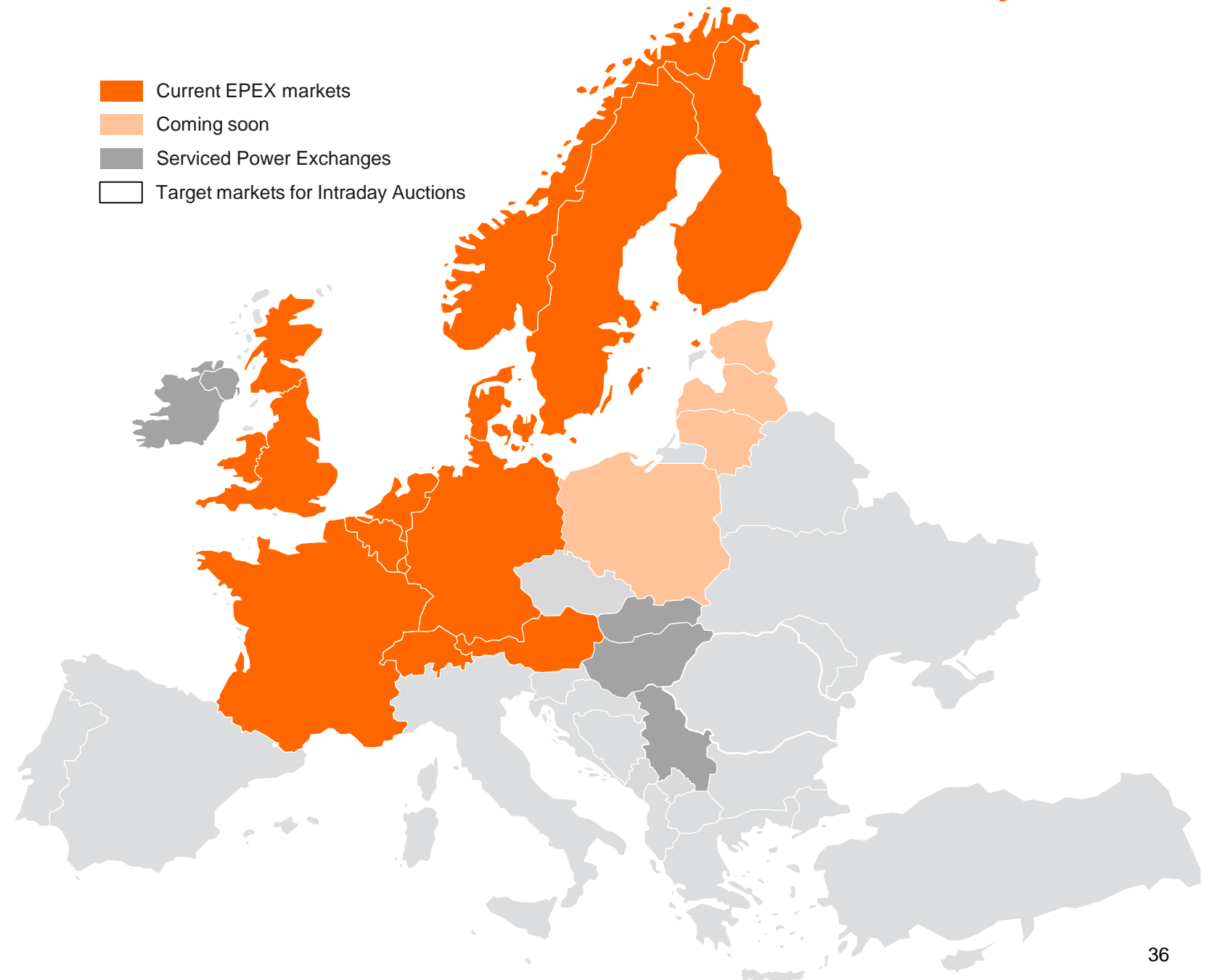
Trading all auctions from 1 screen providing

### **Economies** of scale

Established and robust processes ensuring






### operational & IT **Simplification**

**So you can focus on your trading operations**





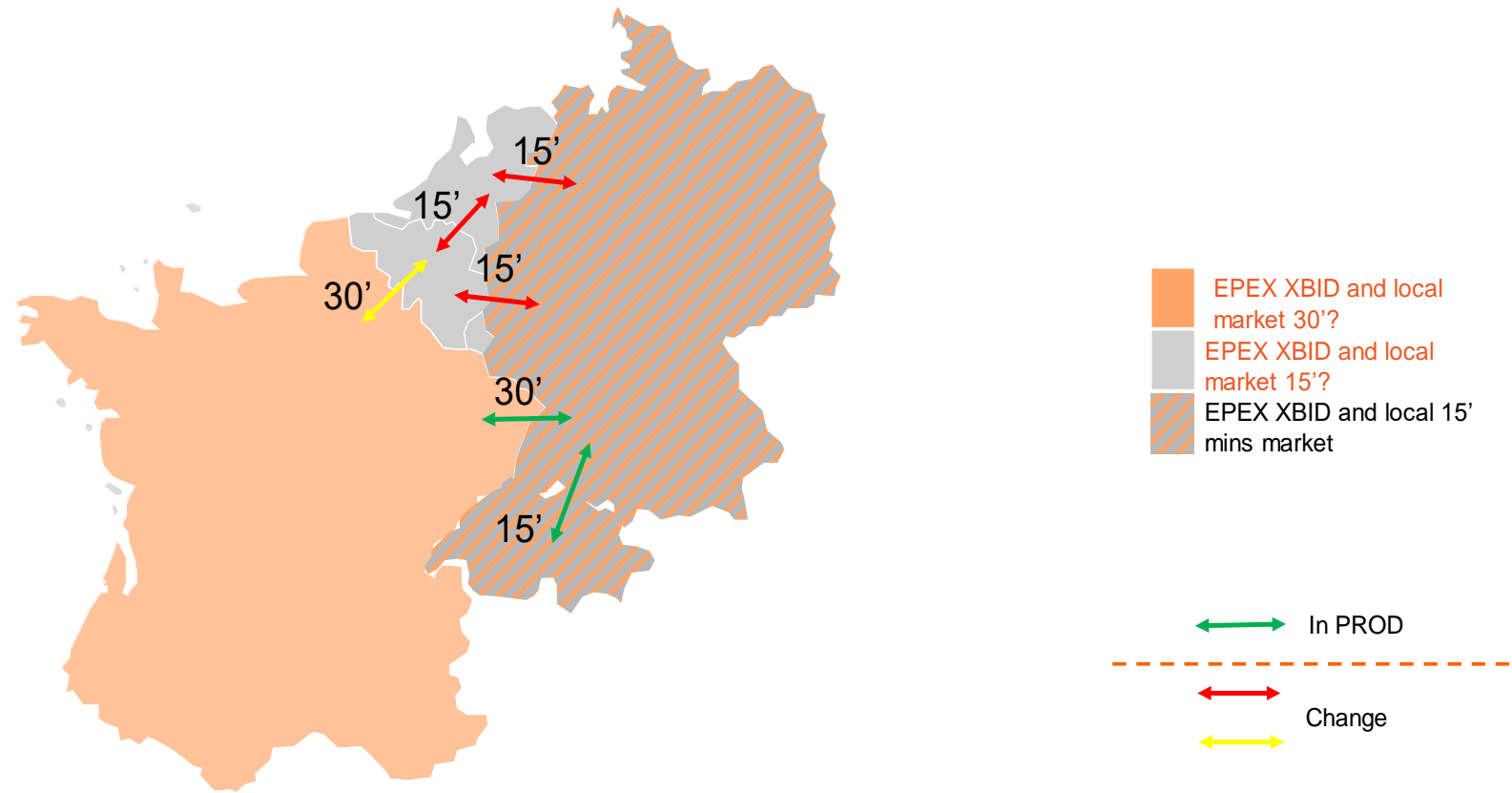
# Product specifications for Local Intraday Auctions

	Product Specifications				
		Austria	Belgium	France	Netherlands
	Trading procedure	Daily Auction			
	Trading days	Year-round			
	Order book opening / closure	45 days before the Delivery Day / daily at 15:00	45 days before the Delivery Day / daily at 15:00	45 days before the Delivery Day / daily at 14:30	45 days before the Delivery Day / daily at 15:00
	Results publication time	15:20	15:40	14:50	15:40
	Products	Linear orders + Block orders			
	Block order parameters	12 x 20 MW	12 x 20 MW	12 x 50 MW	12 x 20 MW
	Submission step	15 min	15 min	30 min	15 min
	Curve type	Piecewise	Stepwise	Piecewise	Stepwise
	Currency	EUR			
	Price tick order submission	0,1 €/MWh			
	Precision published price	0,01 €/MWh			
	Price limits order entry	[-3000 €/MWh ; 3000 €/MWh]			
	Price limits to trigger 2 <sup>nd</sup> auction	[-150 €/MWh ; 1500 €/MWh]			
	Volume tick	0,1 MW			

# Introduction of 15 min DE-NL, DE-BE, NL-BE and 30 min FR-BE as Global Products in SIDC

- Today 15mn products in NL and BE Intraday market are local in the EPEX Spot LTS. Elia and Tennet are now moving forward to allow cross-border trading between NL and BE in 15min contracts. This will allow connecting the NL and BE 15min markets and liquidity during cross border allocation phase. This will require integrating 15min NL and BE products in XBID and the Capacity Module (instead of the LTS).
- ELIA and RTE will also allow the French>>Belgium interconnector in 30min granularity. Therefore EPEX Spot needs to introduce 30min BE Global Products in BE to allow cross-border trading between France and Belgium with 30min products.
- Overall, the borders that will be tradable in finer granularity products are:
  - ID DE-NL that will be in MTU 15'
  - ID BE-NL that will be in MTU 15'
  - ID BE-FR that will be in MTU 30'
  - ID BE-DE (ALEGrO) that will be in MTU 15'

# Introduction of 15 min DE-NL, DE-BE, NL-BE and 30 min FR-BE as Global Products in SIDC



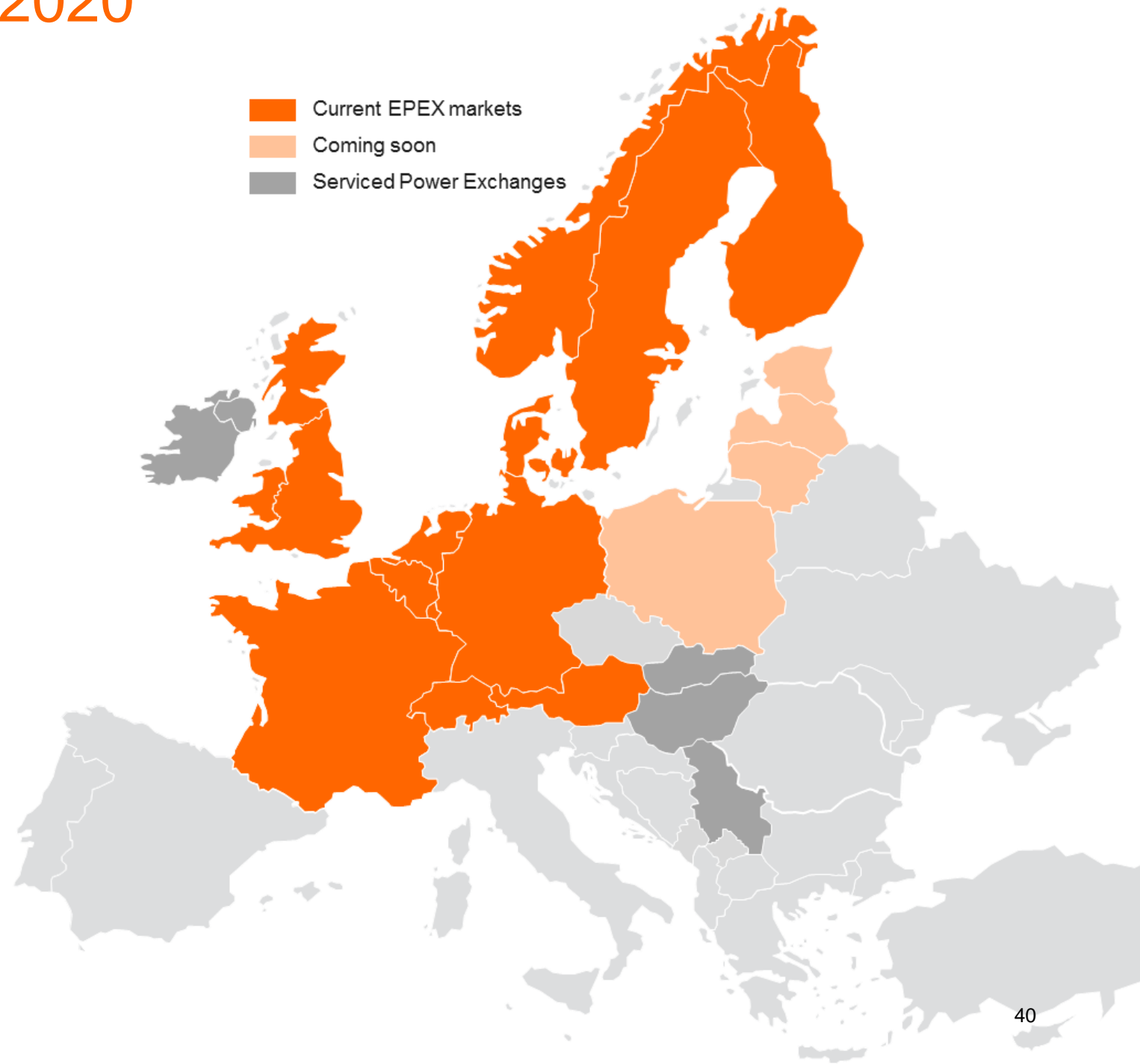
- Target is to implement these products by the go-live date of the TSOs currently planned for 10 December 2020
- Both EPEX and ECC are involved in this project

# Nordic go-live in May and June 2020

- **Intraday Continuous – 25/05** (trading day)
  - Smooth XBID launch (no market halt)
  - 12 Nordic bidding zones coupled
  - Trading until delivery offered in Finland from the start
- **Day-Ahead Auction – 03/06** (trading day)
  - Smooth MRC-MNA coupling operation
  - 12 Nordic bidding zones coupled
  - Single robust Nordic Day-Ahead price

## Members' support from day 1:

- **Intraday Continuous**
  - 7 active trading members from start
  - Trades registered in the 12 Nordic areas on the 1st day
  - 1st trade executed less then 20 seconds after opening
- **Day-Ahead Auction**
  - 5 active trading members from start
  - Trades registered in the 12 Nordic areas on the 1st day



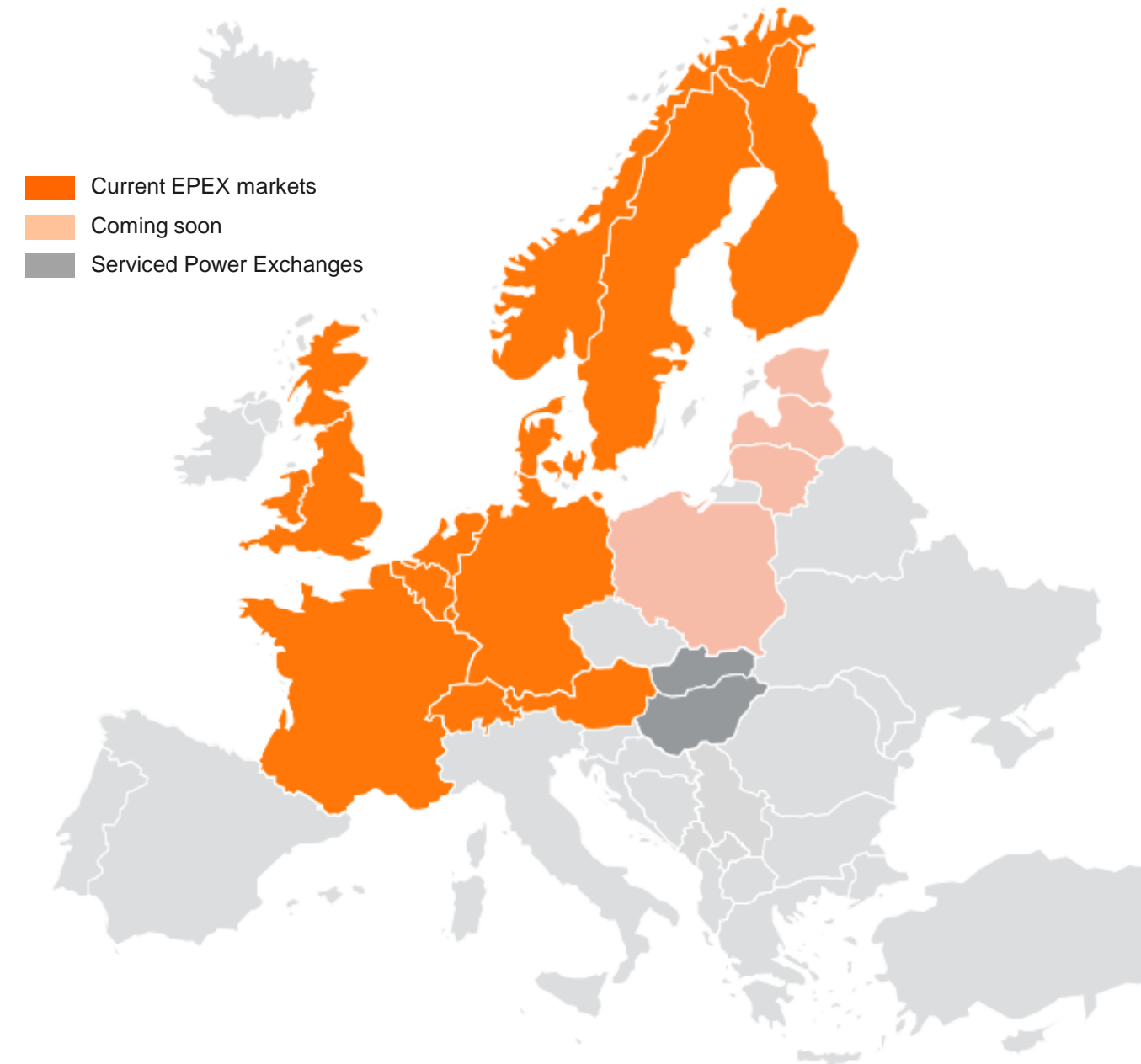
# Expanding our complete spot offer to Poland

## Intraday markets – Continuous, SIDC connected:

- **Nordic**: live since May 2020
- **Poland** : early 2021

## Day-Ahead markets – 12:00, SDAC connected:

- **Nordic** : live since June 2020
- **Poland** : early 2021 depending on the implementation of Multi-NEMO Arrangements



## What's in it for members?

### Operational & IT **Simplification & Economies of scale**

- Pan-European One-Stop-Shop & standard spot products
- Straight-Through Physical Fulfillment of EEX power derivatives

### Enhanced Trading **Experience**

- Pan-European ETS and M7 interfaces
- Largest Day-Ahead blocks offer
- Superior M7 performance, custom API




### Financial **Security**

- Single SDAC reference price secured in Poland
- EMIR-licensed ECC clearing services





Formal Exchange Council approval request to be expected in Dec.2020



# Preliminary product specifications : Intraday

Intraday continuous : Poland		
	Trading Procedure	<b>Continuous</b>
	Trading days	<b>Year-round</b>
	Expiries	<b>1 hour (24 contracts / day) + Blocks</b>
	Opening of the trading session	<b>14:00 CET D-1</b>
	Closure of trading	<b>60mn before delivery</b>
	Minimum and maximum price	<b>-9 999.00 € / 9 999.00 €.</b>
	Minimum price increment	<b>0.01 €/MWh</b>
	Minimum volume increment	<b>0.1MW</b>

# Preliminary product specifications : Day-Ahead

Day-Ahead Auction: Poland		
	Trading Procedure	<b>Auction</b>
	Trading days	<b>Year-round</b>
	Gate Closure Time	<b>12:00 CET</b>
	Products	<b>Linear orders &amp; Block orders (classic &amp; smart)</b>
	Curve type	<b>Piecewise</b>
	Price tick order submission	<b>0,1 €/MWh</b>
	Price limits order entry	<b>[-500 €/MWh ; 3000 €/MWh]</b>
	Volume tick	<b>0,1 MW</b>

# Your contact at EPEX SPOT Switzerland

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Tel. 031 544 30 55 / 079 443 24 63

[d.orifici@epexspot.com](mailto:d.orifici@epexspot.com)

Director Public & Regulatory Affairs and Communications  
– EPEX SPOT SE

DANKE

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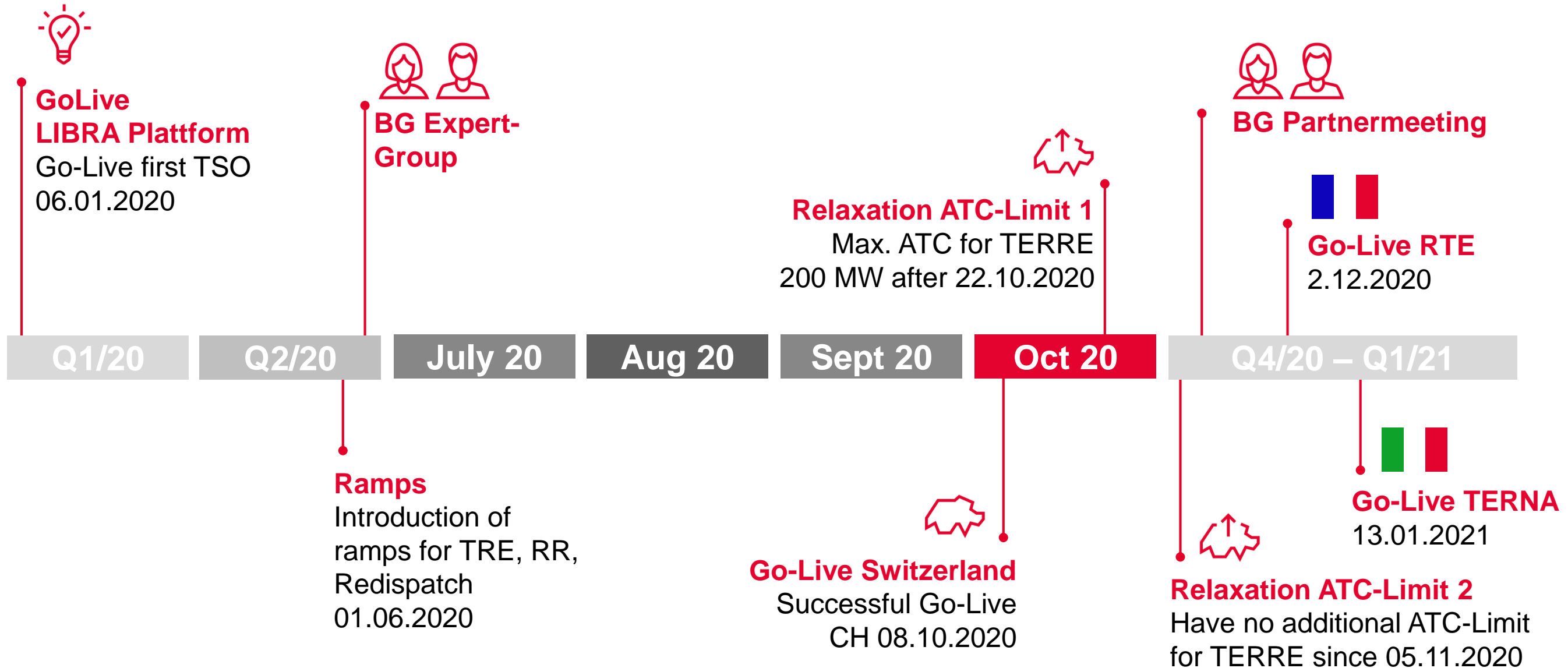
# Status of TERRE project



Tobias Ott  
Head of Product Development

- 
- 1 TERRE planning Swissgrid**
  - 2 Go-live dates TSOs**
  - 3 Participation French balancing market**
  - 4 Political situation**

# TERRE Planning Swissgrid



# Go-live Dates TSOs

TSO	Planned Go-live
Czech Republic (CEPS)	Live since 06.01.2020
Spain (REE)	Live since 03.03.2020
Portugal (REN)	Live since 29.09.2020
Switzerland (SGD)	Live since 08.10.2020
France (RTE)	02.12.2020
Italy (TERNA)	13.01.2021
Great Britain (NG)	2021
Poland (PSE)	Q1 2022



# Participation French Balancing Market

**Possible participation of Swiss BGs in French Balancing Market is reduced in three phases:**

Phase	Date	Participation RTE in TERRE	Participation CH BG in FR Balancing Market
1	from 8.10.2020	RTE provides cross boarder capacity for TERRE	Possible participation with adapted deadlines: <ul style="list-style-type: none"><li>• Activation from RTE until H-60</li><li>• Schedule nomination to Swissgrid: until H-45</li></ul>
2	from 2.12.2020	RTE participates in TERRE for selected time slots	Possible participation with adapted deadlines: <ul style="list-style-type: none"><li>• Activation from RTE until H-60</li><li>• Activation from RTE only if RTE does not participate in TERRE</li><li>• Schedule nomination to Swissgrid: until H-45</li></ul>
3	tbd	Full participation of RTE	No longer possible

# Political Situation



- Decision of European Commission about participation of Switzerland is still pending
- Switzerland continues its participation as long as not explicitly excluded





November 2020

# **Renewal of RTE's nomination and scheduling tools**

RTE





# Agenda

- 1. GENERAL PRESENTATION**
- 2. MAIN CHANGES IN THE NOMINATION AND SCHEDULING TOOLS**
- 3. MAIN MILESTONES**



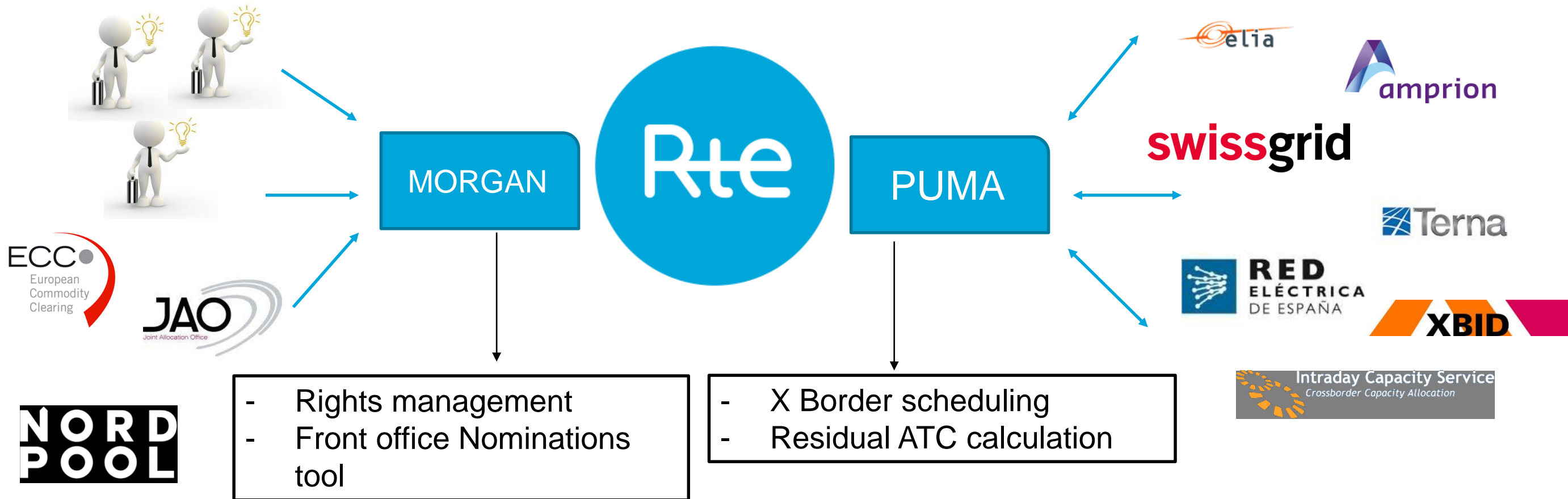
**01**

# General presentation



# General Presentation

For more than a decade, RTE has used 2 different tools for its cross border capacity management :





# General Presentation

- In 2017, RTE decided to renew its X-Border management system in particular to integrate the TERRE project.
- Since 2018, RTE develops one tool, following the AGILE methodology, named OCAPPI, which will gradually replace the two current nomination and scheduling tools.
- The main objective is to develop a tool which:
  - ✓ **centralizes** all X-border functionalities : Nominations, scheduling and real time available capacity calculation.
  - ✓ is able **to process an increasing** number of files at a ever-high frequency.
  - ✓ is **flexible and adjustable** to integrate market changes and future processes.



# General Presentation

- The first version of OCAPPI was launched in production on the 8<sup>th</sup> of September. Since then :
  - ✓ RTE is **connected to TERRE** and communicates its ATC to the platform.  
All the functionalities required for our TERRE Go Live, which is planned on the 2<sup>nd</sup> of December, are ready.
  - ✓ The commercial scheduling management of **IFA 2000** is done by OCAPPI, and soon for **IFA 2**.
- The next version, OCAPPI V3, planned for Q2 2021 covers the following perimeter:
  - ✓ Scheduling on the **FR-CH border**, including LTC management.
  - ✓ **Rights and nominations** management which will induce the decommissioning of MORGAN



**02**

# **Main changes in the nomination and scheduling tools**

# Main changes in the nomination tool

## Present functioning

- ✓ **New interface**
- ✓ **From mails to API**
- ✓ **Mail notifications in case of curtailment**
- ✓ **Curtailment of nominations in case of rights exceedance**



Rejection of the nomination

## Target functioning



Curtailment of the nomination





# What doesn't change in the nomination tool



Same current files, in general terms



Same current valid certificates used for interactions with MORGAN



# Main changes in the scheduling tool

**No direct impact on BRPs**

## **On the TSO level :**

- ✓ Format change of matching files : from "Control Area Schedule" (CAS) to "Scheduling Area Schedule" (SAS)
- ✓ Upgrade of the communication channel : from mails to ECP
- ✓ Immediate matching with Verification Platform, after each successful matching between the two TSO

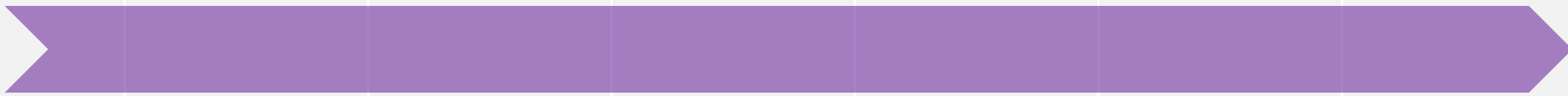


03

# Main milestones

•

# Main milestones

	Nov. 20	Dec. 20	Jan. 21	Feb. 21	March 21	Apr. 21	May 21	June 21
<b>RTE-Swissgrid tests</b>	★							
<b>Training sessions</b> <i>(14<sup>th</sup> dec. to 17<sup>th</sup> dec.)</i>		★						
<b>Opening of training platform</b>								
<b>Deployment of OCAPPI's V3</b>							★	



# Scheduling harmonisation project: pending workstreams

Marc Rüede  
Head of Capacity Allocation and Market Systems

# Scheduling harmonisation project: completed workstreams

- The Intraday rights check at the **CH-FR border** was activated on **22 April 2020**
- **Registration** for secure data communication via **ECP** (ENTSO-E Communication Platform) was launched on **1 September 2020**
- The switch to a **harmonised scheduling process on the CH-AT border** was put into operation on **23 September 2020**
- **Registration** for secure data communication via **sFTP** (secure File Transfer Protocol) was launched on **1 November 2020**

# Scheduling harmonisation project: pending workstreams

## Activation of intraday rights check at the CH-DE border

Swissgrid has implemented and tested the related functionality. Since German TSOs have other project priorities, the cross-border tests have not taken place yet.

→ The goal is to put it into operation in **Q2 2021**

## Switch to harmonised scheduling process at the CH-FR border

Swissgrid has implemented and tested the related functionality. Now we have to wait until RTE's new scheduling system is ready in order to conduct cross-border tests.

→ The goal is to put the new process into operation in **Q2 2021**



# Registration for secure data communication via ECP and sFTP

## Secure communication via ECP and sFTP

Swissgrid has successfully completed a pilot test with a voluntary balance group for both ECP and sFTP

### Information

- The switch to ECP and sFTP communication will be based on operational experiences, e-mail and FTP are still available as alternative channels
- For the time being, Swissgrid provides free installation and operational support on a «best-effort» basis
- Swissgrid will collect the required additional ECP-related information via the customer portal as part of the balance group registration process
- Balance groups are required to accept a contractual amendment before they can use ECP

### Next steps

- Continuous connection of balance groups to our scheduling system via ECP and sFTP
- In mid-2021, Swissgrid will define the next steps in ensuring the secure connection of balance groups, based on the experiences gathered with ECP up to then

# ECP / sFTP registration process

## Available combination of standard- and backup-connection for already active BGMs

Combination	Standard connection	Backup connection	Cyber security / availability
5	ECP	sFTP	Secure connection / redundant
6	ECP	FTP	Partially secure connection / redundant
7	ECP	E-mail	Partially secure connection / redundant
8	ECP	None	Secure connection / no redundancy
9	FTP	E-mail	Non-secure connection / redundant
10	FTP	None	Non-secure connection / no redundancy
11	E-mail	FTP	Non-secure connection / redundant
12	E-mail	None	Non-secure connection / no redundancy

# ECP / sFTP registration process

## Requirements for ECP

- One ECP endpoint with unique EIC V-Code is needed for every application in the integration and production environment

## Requirements for ECP and sFTP

- Public IP address (required during registration process)

## ECP procedure

- **First** registration for the ECP integration environment to familiarise yourself with ECP
- **Second** registration for the ECP production environment to start operation

# ECP registration process

## INT

### Registration

- Swissgrid Customer Portal (request over SDC for ECP connection to **integration system**)

### Installation

- Installation of ECP software on BGM Server (software provided by Swissgrid)

### Testing Integration

- Exchange of messages between scheduling systems
- Connection to Swissgrid **integration system**

### Approval for production

- If testing was successful, approval for testing in production environment

## PROD

### Registration

- Swissgrid Customer Portal (request over SDC for ECP connection to **productive system**)

### Installation

- Installation of ECP software on BGM Server (software provided by Swissgrid)

### Testing Production

- Exchange of messages between scheduling systems
- Connection to Swissgrid **productive system**

### GoLive

- If testing was successful, approval to go live for sending messages via ECP on agreed date

# sFTP registration process

## Registration

- Swissgrid Customer Portal (request over SDC for sFTP connection to **productive system**)

## Configuration

- Configuration of IN and OUT directory for sFTP communication

## Testing

- Exchange of messages between scheduling systems
- Connection to Swissgrid **productive system**

## GoLive

- If testing was successful, approval to go live for sending messages via sFTP on agreed date



# Swiss balance group management and operational incidents

Marc Rüede  
Head of Capacity Allocation and Market Systems



# Capacity Allocation & Market Systems team



Benito Barberio



Timo Caspar



Thomas Eckert



Jürgen Ganter



Pierre Lehnhardt



Marco Lenzin



Dirk Nosek



Marc Rüede



Tobias Schwarz



Monica Talerico



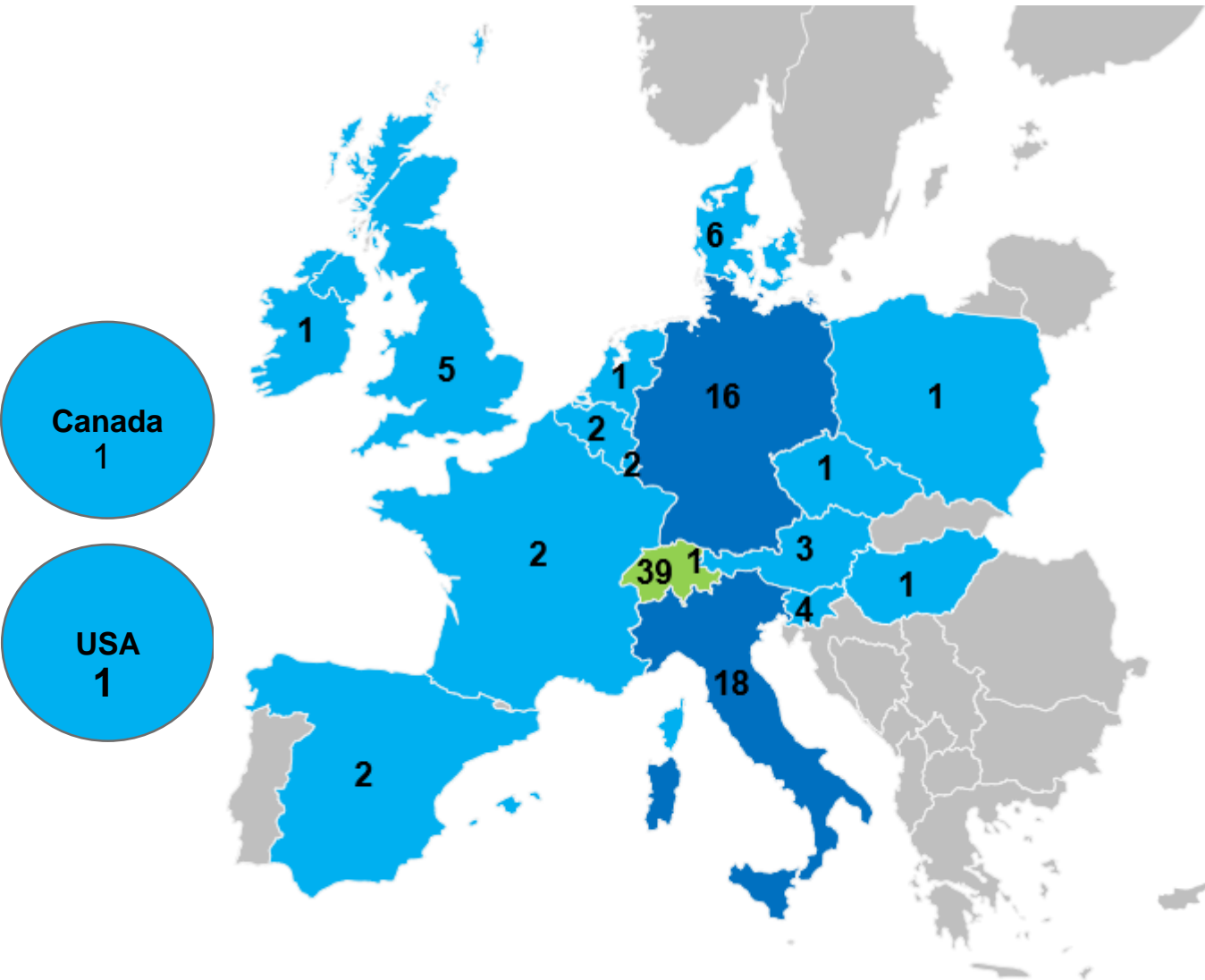
Roman Uhl



# Balance Group Management

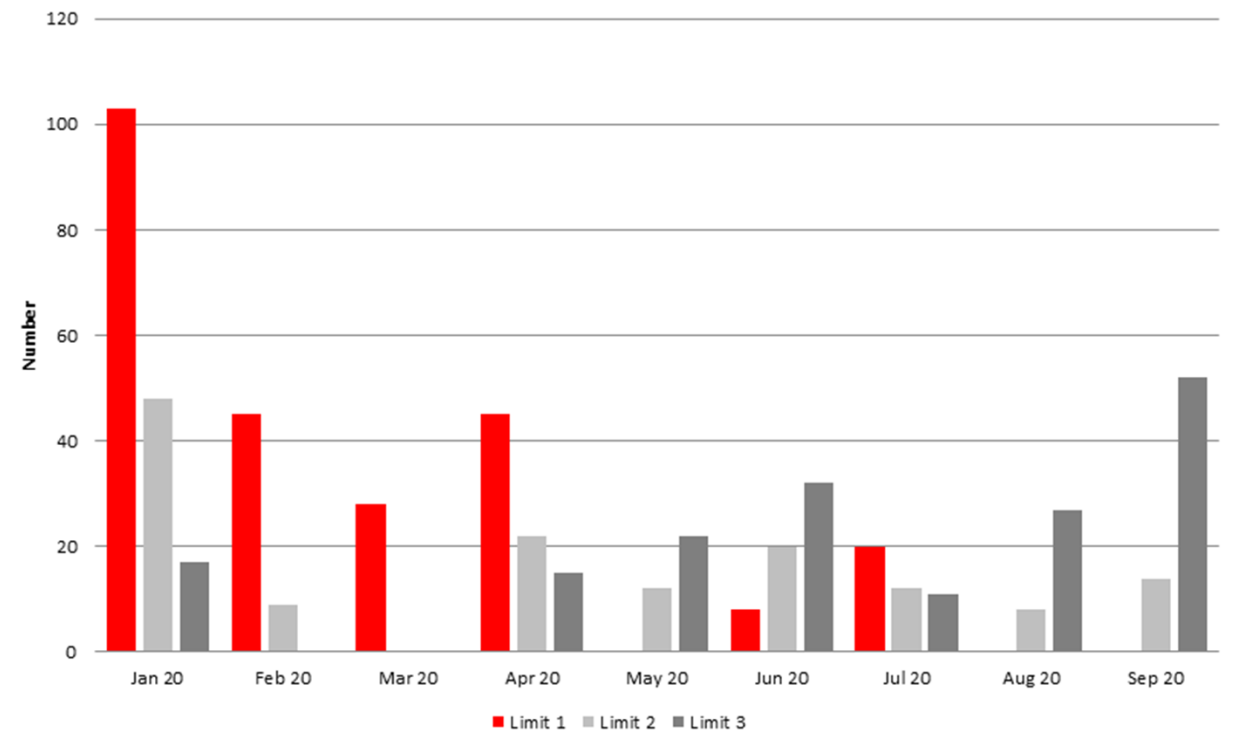
## BG statistics

	# BGs	↓	↑	Mutations
2016	111			163
2017	111	3	3	191
2018	104	13	6	161
2019	107	4	7	108
2020	107	5	5	82
			(+4 planned)	



# Balance Group Management

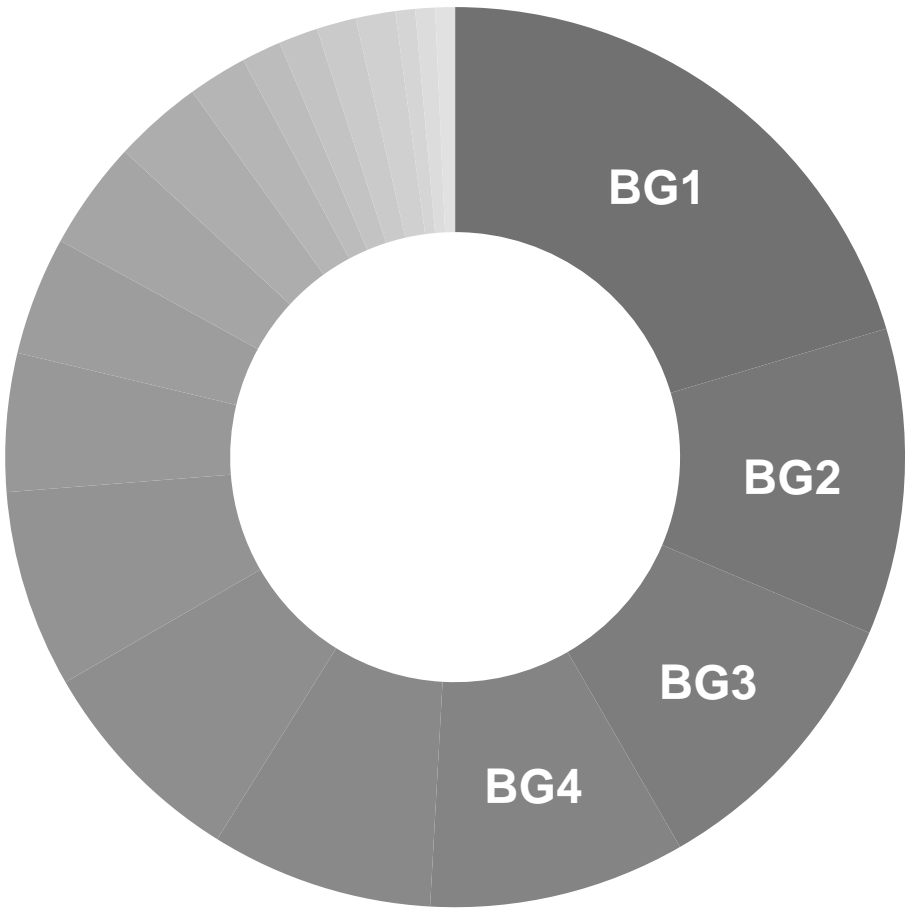
Number of limit violations



## Measures 2020

Written explanation	7 BGs
Meeting with Swissgrid	3 BGs
Intraday suspension	0 BG
Penalties – in case of repeated L3 violations	3 BGs → 7,960 Euro

Number of limit violations per BG



Total 570 violations

# Operational occurrences

## Measures to avoid high balance energy prices

Significant highest balance energy prices:

Highest short price: 26.07.2019 → 5131.40 €/MWh → Unplanned outage KKW Gösgen (TRE+ 400MW)  
14.09.2020 → **6579.20 €/MWh** → **Control area CH is short and MEAS (TRE+ 376MW)**

Lowest long price: 14.01.2019 → -420.10 €/MWh → Unplanned outage hydropumps in Tierfehd (TRL- 270MW)  
05.04.2020 → **-250.40 €/MWh** → **Control area CH is long (TRL- 202MW)**

These are due to calls/requests for TRE bids on high levels of the merit order list.

As a result, the average costs for control energy were reduced after the implementation of the integrated market at the beginning of this year → this also led to lower balancing energy costs for the balance groups.

Average	TRE positiv	TRE negativ
<b>2019</b>	136 €/MWh	1.17 €/MWh
<b>2020</b>	71 €/MWh	7.93 €/MWh

# Calculation of Imbalance Price in case of simultaneous Redispatch/MEAS

## Case Study 14.09.2020

### General principle:

“The first demand gets the best prices”

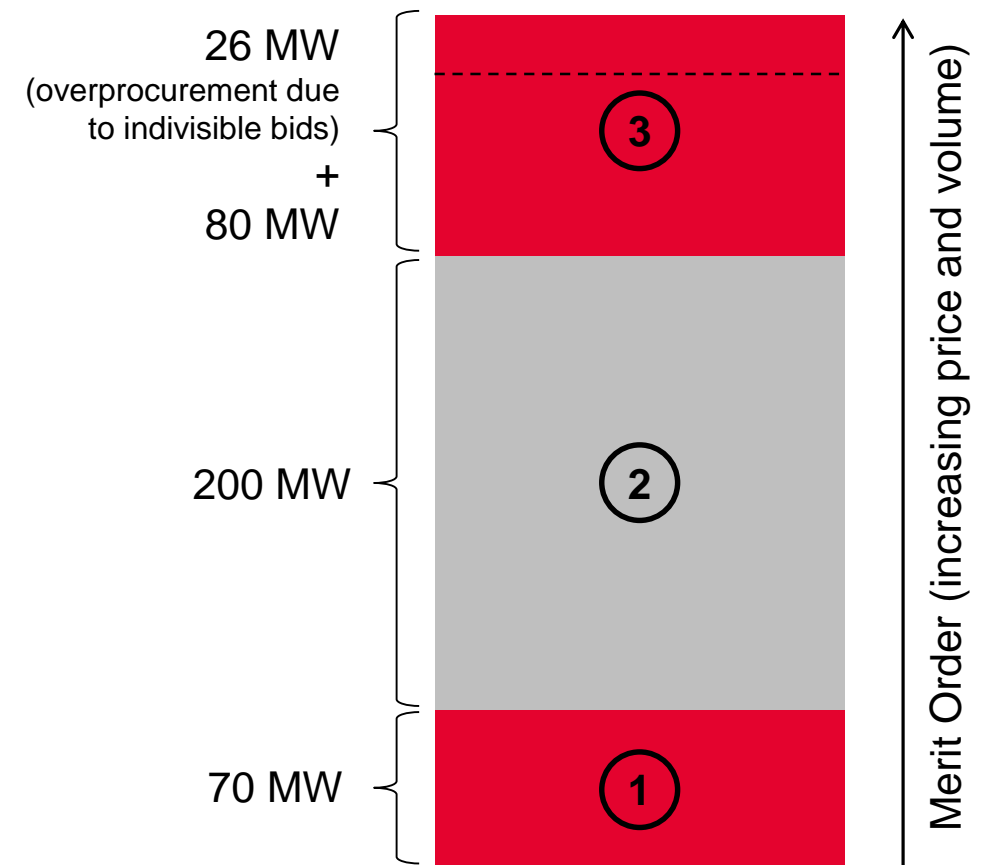
### Case of 14.09.2020

The following demands were registered in the given order:

1	TRE demand	20:00 – 21:00	70 MW
2	MEAS demand	20:15 – 21:00	200 MW
3	TRE demand	from 20:30	<i>increased to 150 MW</i>

For the quarters 20:30 – 20:45 and 20:45 – 21:00, the offers were matched with demands as shown on the right

→ Cheapest 70 MW and most expensive 106 MW activated are reflected in the imbalance price.





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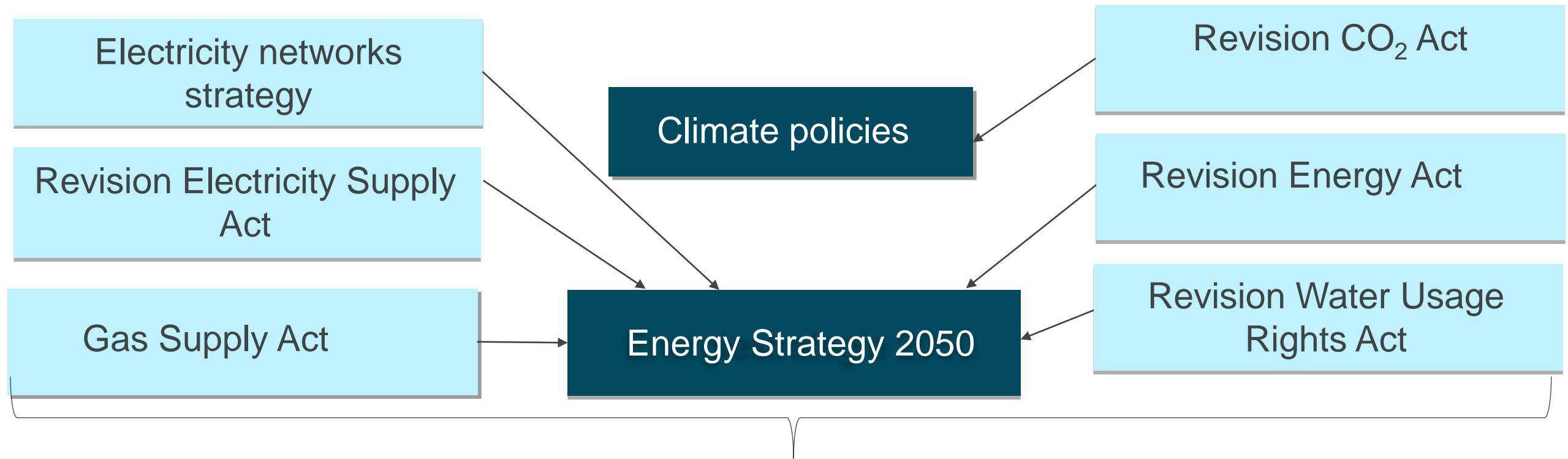
Bundesamt für Energie BFE  
Office fédéral de l'énergie OFEN  
Ufficio federale dell'energia UFE  
Swiss Federal Office of Energy SFOE



# ONGOING DOSSIERS (FOCUS ELECTRICITY/ CLIMATE) - STATUS REVISION ELECTRICITY SUPPLY ACT & ENERGY ACT



# IMPLEMENTATION OF ENERGY STRATEGY 2050 & CLIMATE OBJECTIVES



**Promotion of efficiency, expansion of renewable energy use, reduction of CO<sub>2</sub> emissions, supply security, transparency, promotion of innovation**



# SWISS ENERGY AND CLIMATE POLICY

## GUIDELINES

**Energy policy:**  
Energy transition &  
supply security

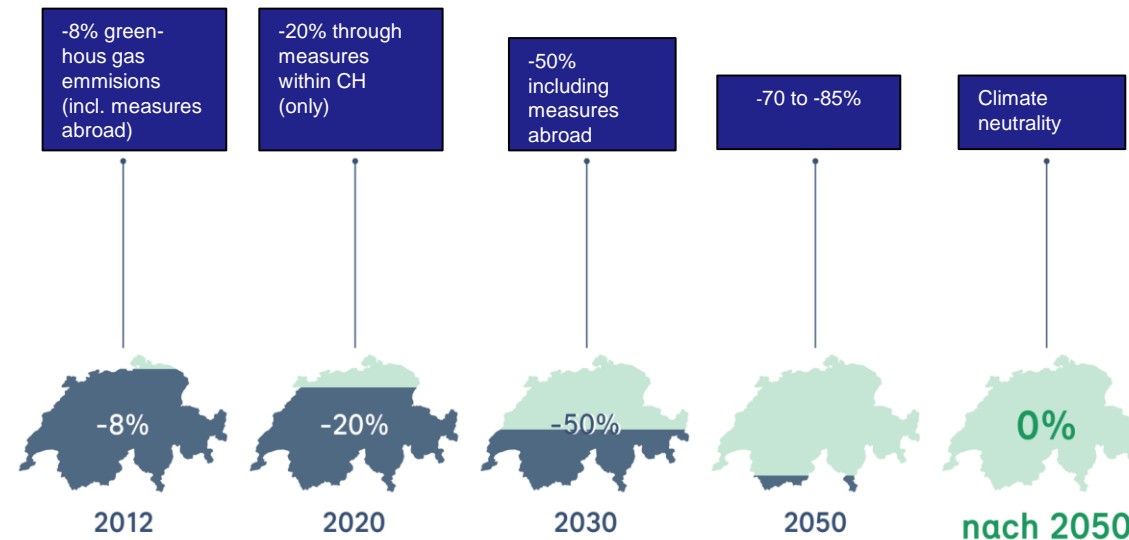


**Energy Strategy 2050:**

**Guidelines for:**

Average per capita energy consumption  
Average per capita electricity consumption  
Average domestic renewable electricity  
production excluding hydropower  
Hydropower

**Climate policy:**  
CO<sub>2</sub> reduction



**CO<sub>2</sub> Act: Binding reduction target for 2030:**

**- 50%** (versus 1990 level)

CO<sub>2</sub> target for 2050 tightened according to Federal Council: net zero emissions





# TOTAL REVISION OF THE CO<sub>2</sub> ACT

## KEY POINTS

**Target:**  
**Reduction of emissions by 50% by 2030**

of which at least 75% within Switzerland.

“Purpose” article (Article 1) contains reference to long-term net zero target

**Emissions trading** to be continued. Linked to EU since 2020

**CO<sub>2</sub> limit level for buildings** from 2023/2026

**CO<sub>2</sub> emission regulations for new passenger and light utility vehicles, and for heavy goods vehicles** as of 2025

**CO<sub>2</sub> compensation for motor fuel imports**, max. 12 cents per litre of fuel

**Climate Protection Fund**

*Revenue: CO<sub>2</sub> levy (1/3), air travel levy (49%) and sanctions*

*Promotion: Buildings programme, other measures relating to buildings & heat, technology and innovation (including civil aviation), climate-related adaptation*

**CO<sub>2</sub> tax on combustibles:** max. 210 Swiss francs per tonne of CO<sub>2</sub> (companies: exemption option)

**Flight ticket levy & general civil aviation tax**

**Financial sector**  
*Finma/Swiss National Bank to examine climate-related financial risks*



# MILESTONES

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## Federal Council

- Consultation procedure: **autumn 2016**
- Dispatch to Parliament: **1 December 2017**



## Parliament

- Final vote: end of September 2020
- **Publication in Swiss Federal Gazette: 6 October**



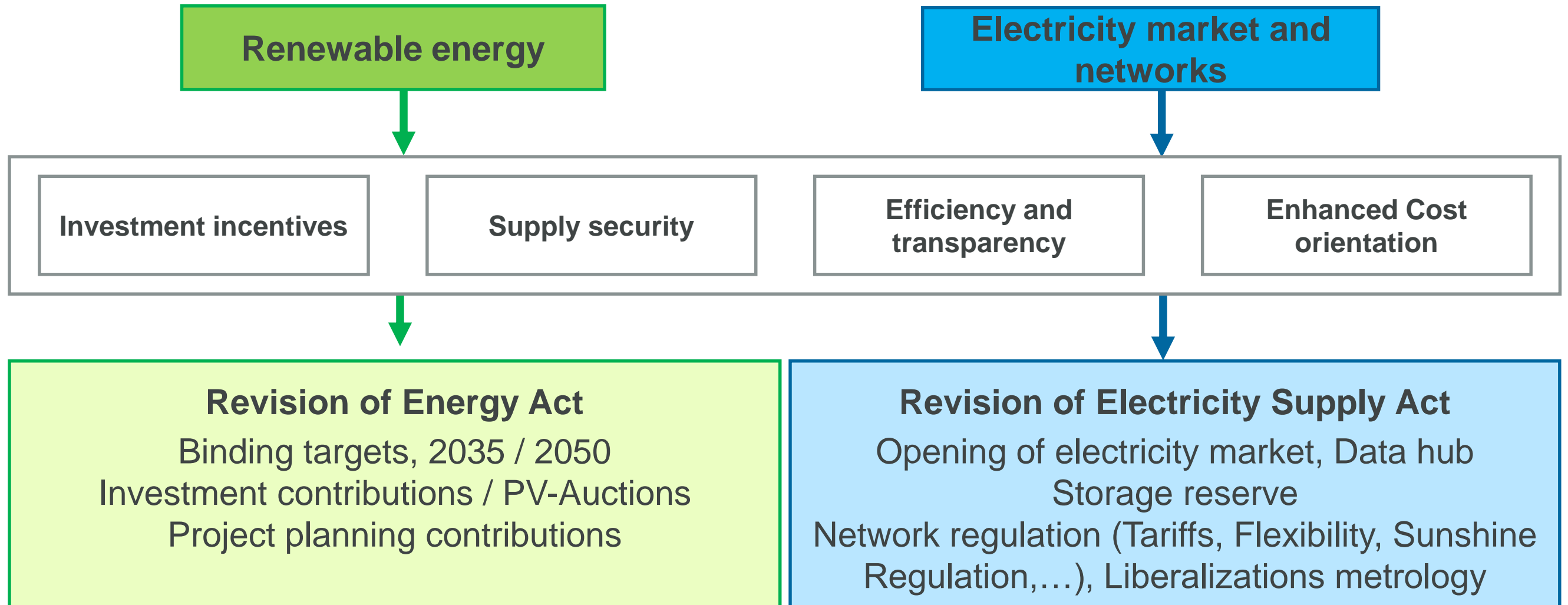
## Federal Council

- Referendum deadline: beginning of January 2021
- Implementation provisions
- Entry into force: **1 January 2022 (target)**



# REVISION OF ELECTRICITY SUPPLY ACT / REVISION OF ENERGY ACT

## OBJECTIVES AND MEASURES





# FULL ELECTRICITY MARKET OPENING

## INNOVATION ASPECTS

---

Free choice of supplier for households, small businesses

New business models to also foster renewable energy use:

- Interconnection of different decentral electricity production units
- Development of new participation models
- Local electricity markets
- Neighbourhood storage facilities
- New electric mobility solutions





# ELECTRICITY SUPPLY SECURITY MEASURES

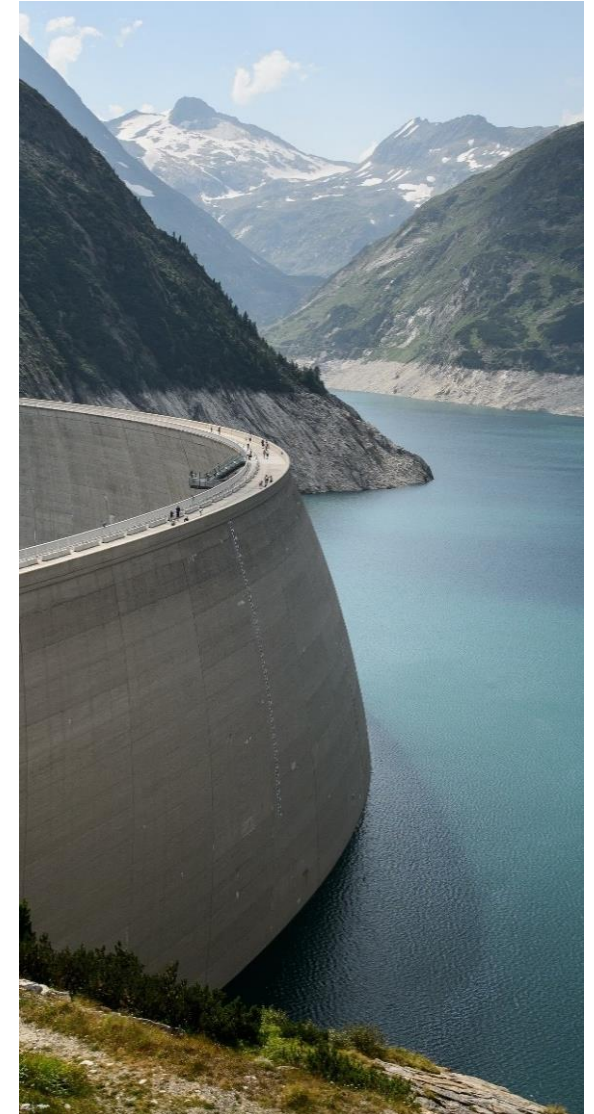
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## Energy reserves

- New energy reserve (storage) facility to ensure the future short-term supply security. Technology-neutral participation.
- Mechanism, roles, responsibilities and financing essentially confirmed in consultation /of the drafts).

## Additional measures (revision of Article 9 Electricity Supply Act)

- In the event of a potential shortage (compared to plans of ES 2050): call for tenders for additional renewable capacities
- With the goal of securing the long-term supply situation during the winter months, DETEC will revise the existing Article 9 until dispatch to Parliament is ready.







# NETWORK TOPICS

## MEASURES

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- Promotion of network tariffs better reflecting long run costs (higher capacity and /or basic charges, new innovative network tariff models)
- Sunshine Regulation (and possible transition to an incentive regulation)
- Flexibility regulation (DSOs)

### Further:

- National data hub
- Liberalizations metrology





# AMENDMENTS IN THE ENERGY ACT

## KEY POINTS

---

### Targets

Binding 2035 target for the expansion of hydropower and other forms of renewable energy, plus specification of a target for 2050

### Project planning contributions

For hydropower plants, wind power plants and geothermal plants

### Funding

Financial support for large-scale hydropower doubled (from 0.1 to 0.2 Rp./kWh)  
Financing via the existing network surcharge of 2.3 Rp./kWh





# AMENDMENTS IN THE ENERGY ACT

## KEY POINTS

---

Technologies that are no longer promoted via feed-in-remuneration after 2023 will receive **investment contributions** (to ensure continuity)

- Wind energy plants
- New small hydropower plants (1 to 10 MW)
- Industrial biogas plants
- Agricultural biogas plants
- Geothermal power plants



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**Promotion of large photovoltaic facilities with auctions** (investment contributions determined through auction; especially facilities without own consumption)

Postponement of expiry of promotion from 2030 to **2035** (long-term planning security)



# MAIN RESULTS OF THE CONSULTATION

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## Promotion system (funding)

- Measures essentially welcomed. Some responses call for higher expansion targets, others for stronger promotion, especially of hydropower.
- System discussion: Flexible market premiums / Contract for differences as alternative to investment contributions

## Article 9, Electricity Supply Act

- Under discussion. Many see it as a limitedly suitable emergency article. Demands for additional expansion with focus on winter electricity supply. Extent and technologies under discussion.

*Comments on aspects of Electricity Supply Act largely in line with consultation of the draft (certain focus on network tariffs, storage...)*



# WORK PROGRAM SFOE

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- **Energy perspectives 2050 +:** by the end of 2020
- **Heat strategy:** in preparation
- **Hydrogen strategy:** in preparation
- **Studies Electricity:** Study on network tariff structure
  - Study on storage and sector coupling
  - Study on verification of WACC-methodology
  - Study on data infrastructure in the future energy market
  - Monitoring of networks, scenarios for network planning, guidelines for implementation of additional costs factor



# ONGOING STUDIES (MARKET REGULATION)

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## Network tariffs

- Distance-based network tariffs (“DSV”-model, “timbre local”) & alternatives
- Examination of tariff elements, roll-over of costs between network levels
- Dynamic network and energy tariffs

## Storage

- Contribution of storage technologies towards fulfilment of flexibility requirement, forecasting of use and economic viability
- Role of existing gas and heat networks in the future energy system, and developments in the field of storage technologies (power-to-gas, etc.)
- Contribution of digitalisation



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Bundesamt für Energie BFE  
Office fédéral de l'énergie OFEN  
Ufficio federale dell'energia UFE  
Swiss Federal Office of Energy SFOE



***THANK YOU FOR YOUR ATTENTION***

*wolfgang.elsenbast@bfe.admin.ch*

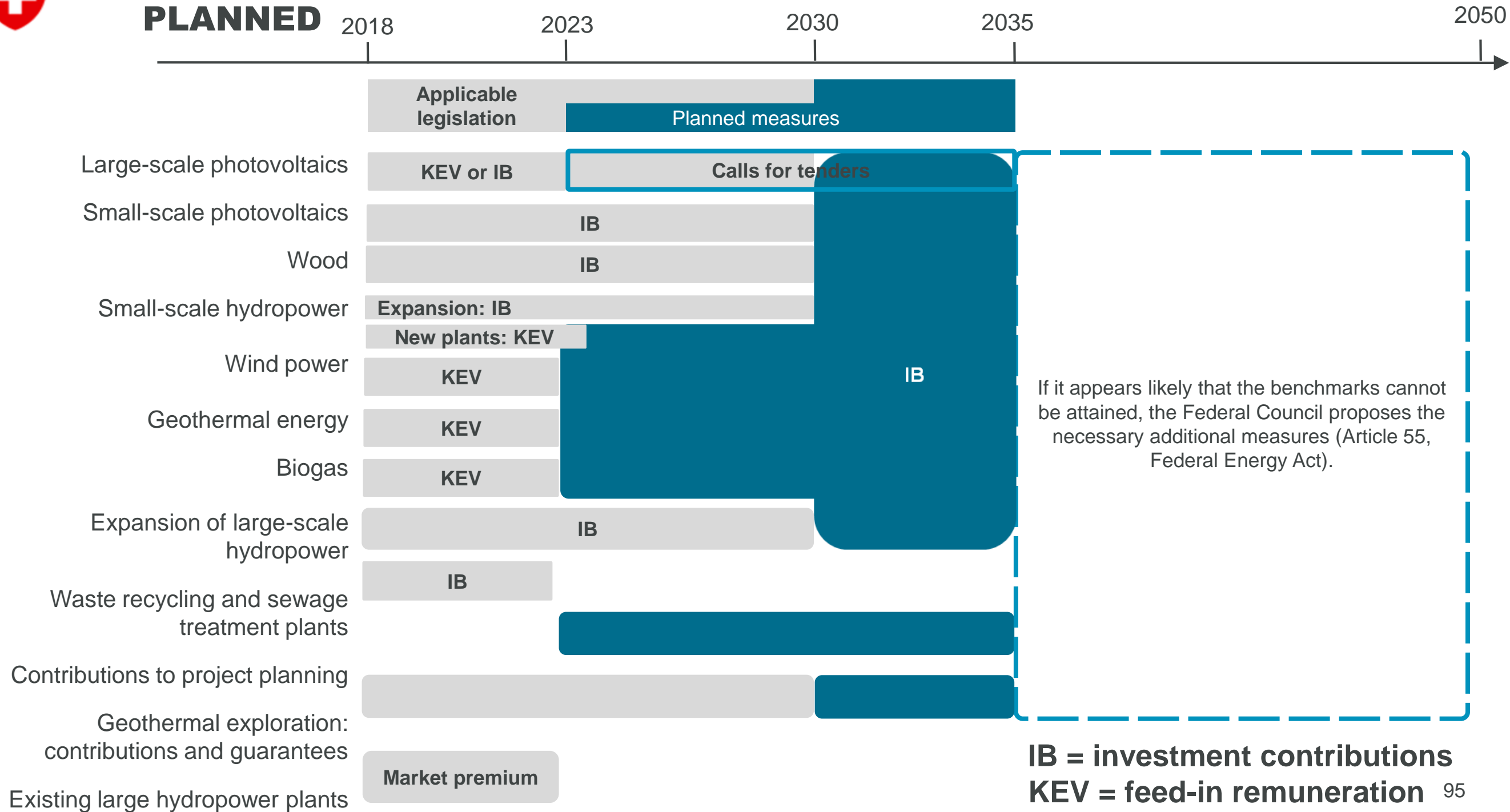


# Back up / Details

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# OVERVIEW OF PROMOTION INSTRUMENTS: EXISTING AND PLANNED







# ENERGY POLICY 2050+ SCENARIOS

## OVERVIEW

Scenario	Variants
<b>Net Zero</b> Depicts potential development paths of Switzerland's energy system which in 2050 are compatible with the target of zero greenhouse gas emissions	<b>Basic variant</b> Incorporates the currently observed trends in technological development and pursues these developments in the future
	<b>Variant A</b> Highest possible degree of electrification of the energy system
	<b>Variant B</b> Alongside electricity, biogas, synthetic gases and hydrogen play an important role as sources in the energy system
	<b>Variant C</b> Alongside electricity, heat networks and liquid biogenic or synthetic fuels and combustibles play an important role as sources in the energy system
<b>Business as Usual scenario</b> Serves as basis for comparison and is based on the currently applicable energy and climate policies. Does not reflect the total revision of the Federal CO <sub>2</sub> Act.	

In all variants:

- Different expansion paths of electricity production from renewable energy
- Different duration of operation of the nuclear power plants



# Equigy, a European platform using consumer-based devices and storage technologies

Susanne Landt  
Head of Stakeholder Affairs Communication & Stakeholder Affairs

## Time for a video

**EQUIGY**  
—  
**crowd  
balancing  
platform**

Video

# TSOs come together

TSOs jointly create the Crowd Balancing Platform (CBP) to set a European standard and enable the balancing of the renewable energy supply of the future.

Founded by:



# EQUIGY

—  
crowd  
balancing  
platform

# Why blockchain?

Blockchain offers a shared distributed ledger to build trust and transparency in transaction data. Security and privacy is also ensured by the use of channels in the blockchain network.

## Replicated

- Entries in the ledger are **synchronized** across network nodes
- Creating a **resilient** ledger
- Consensus ensures all ledgers are **trusted** exact copies

## Shared

- Parties share **one 'truth'**
- Permissions ensure data **privacy** between parties
- Cryptography protects **secure** entries

## Transactional

- Transactions are registered **immutably** in the ledger
- Increasing **trust**, reducing manipulation and ensuring **auditability**
- Business rules are **automated** using smart contracts

**Permissioned-based blockchain: providing privacy for end-consumers and between aggregators and OEMs and near-real-time performance**



# Thank you for your participation

Presentations are available on Swissgrid website:

<https://www.swissgrid.ch/en/home/customers/topics/bgm.html#operational-documents>