



20TH ERRA ANNUAL CONFERENCE

EN ROUTE TO SUSTAINABLE REGULATION
UNDER NEW MARKET PARADIGMS

09-10 October, 2023
BUDAPEST, HUNGARY



Demand-side flexibility in system operation

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#ERRAConference2023

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An aerial photograph of a dense forest with a tall power line tower and its cables stretching across the scene. The text is overlaid on the image.

**Fingrid is Finland's
transmission system operator.**

**We secure cost effectively reliable
electricity for our customers and society
and we shape the clean, market-oriented
power system of the future.**

Key figures

FINGRID



14,500

KILOMETRES OF TRANSMISSION LINES



TRANSMISSION RELIABILITY
RATE OF THE MAIN GRID

99.99993 %



3.2

BALANCE SHEET TOTAL
BILLION EUROS



489

PERSONNEL



1,815.2

NET SALES
MILLION EUROS



45.4

INCOME TAXES PAID IN 2022
MILLION EUROS

WORLD-CLASS IN
CONDITION
MANAGEMENT
EFFECTIVENESS
AND GRID
RELIABILITY.



SOURCE:
INTERNATIONAL
TRANSMISSION
OPERATIONS &
MAINTENANCE
STUDY



1 FINLAND'S MOST INSPIRING
WORKPLACES
A RESPONSIBLE EMPLOYER

IN 2022, FINGRID'S NETWORK
TRANSMITTED

70.1 TWh

ACCOUNTING FOR OF ELECTRICITY

78.4 %

OF TOTAL ELECTRICITY
TRANSMISSIONS IN FINLAND



50

NET PROMOTER SCORE
(NPS)

72

eNPS
EMPLOYEE NET
PROMOTER SCORE

Flexibility in a power system context

- TSO and DSO view: ability to control active power
 - For power balance management including power scarcity situations
 - For power flow management (planning & system operation)
- Market-based flexibility
 - Voluntary basis, is typically compensated
- Various benefits of flexibility
 - Flexibility sales income
 - Electricity price savings
 - Emission reduction
- Sources of flexibility: load, generation, storages, transmission capacity



Regulatory environment in Finland

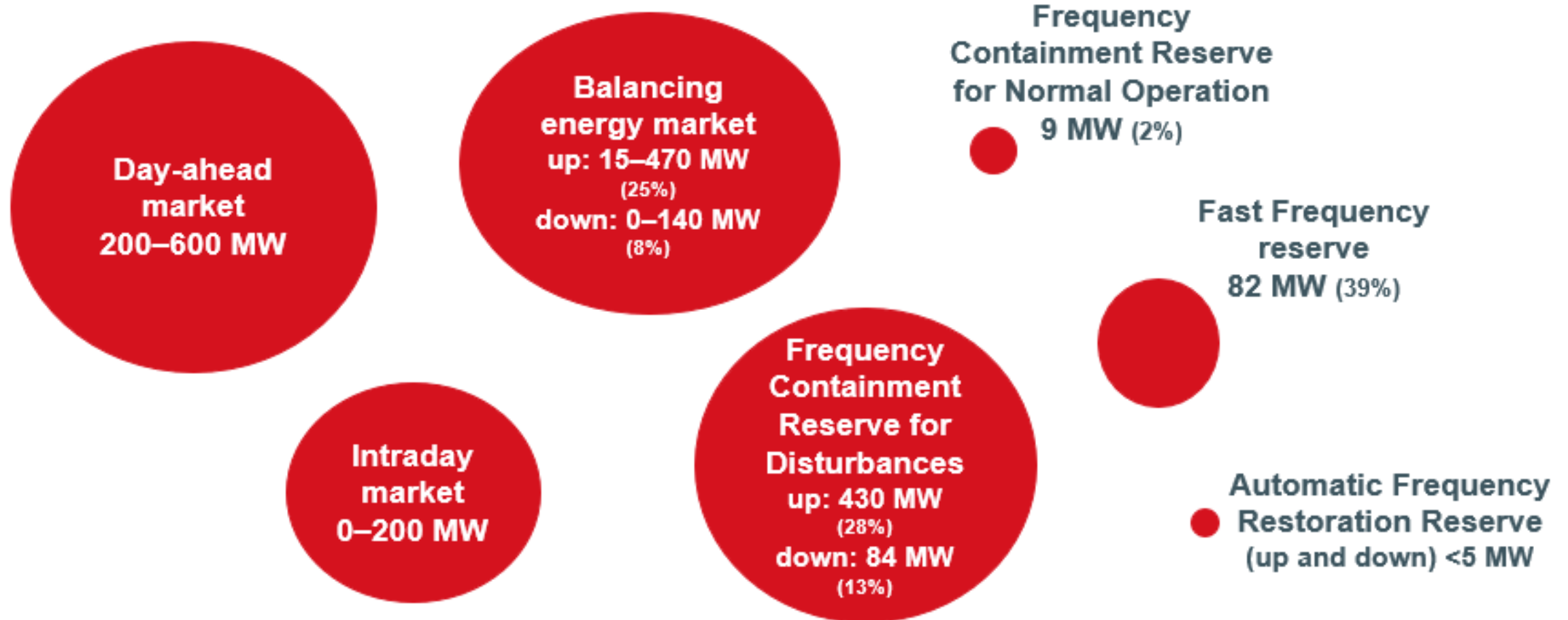
- Finnish TSO is a state-regulated monopoly
 - NRA approves e.g., national terms and conditions for reserves, balancing power and demand-side flexibility
 - NRA monitors e.g., the pricing of TSO during a four-year-period
- Fingrid operates in a regulated environment
 - Finnish law; e.g., the Electricity Market Act and their statutes including NRA interpretation
 - EU legislative framework; e.g., Electricity directive and regulation (2019), Network codes and guidelines.



Organisations of cooperation

	TSOs	Regulators
Regional	Nordic TSO committees (Denmark, Finland, Norway, Sweden)	NordReg (Nordic Energy Regulators group), ERA
European-wide	ENTSO-E (European association for the cooperation of transmission system operators for electricity)	ACER, CEER

Demand-side flexibility available in the Finnish markets (status May 2023)



(share of demand-side flexibility of the whole market in parenthesis)

Case1: Independent aggregator (IA)

- *IA combines flexible resources of end-users outside the conventional electricity delivery chain, i.e., IA is not the electricity supplier nor the balance responsible party of the end-user*
- Regulation related to IA → high level guidance but still room for interpretation/details in a national level
 - Electricity directive (2019/944)
 - National legislation (June 2023)
 - Network Code for Demand-side flexibility (2024)
- National Electricity market Act requires supplements
 - Responsibilities of different roles related to IA?
 - How to ensure transparent and impartial model for all the market players?
- Fingrid must take actions before the complete legislation is in place to ensure timely implementation
 - IA was implemented in three capacity-based reserve products during 2017-2020; aim to increase market liquidity
 - Continuous dialogue with Ministry of Economic Affairs and Employment in Finland (setting the law); iteration between IA development, stakeholder consultation and setting of regulation
 - Target: IA model for energy-based reserve product in use in Summer 2024.



Case2: A voluntary support for the power system

- **More than 500 MW new flexibility available in two months! (of which > 90% from demand)**
- Why? High risk of inadequate generation capacity during winter 2022-2023
 - Delayed commission of NPP -1.6 GW, no import from Russia (-1.4 GW), generation outage (- 1.1 GW), 5.7 GW of wind power capacity
 - Risk of power shortage despite all available capacity from the markets used
- Options: 1) no need for support due to improved circumstances, 2) voluntary power system support, 3) rotating forced power shortages (2h) for consumers
- Option 1 realised due to mild weather & spontaneous energy savings by consumers. 5-10% lower consumption due to energy savings during winter (\approx capacity of a nuclear power plant)
- How? Fingrid publicly informed about the need of special arrangements; voluntary, SMS-based flexibility activation
 - Active discussion about high electricity prices in media
 - National-wide campaigns for energy savings
 - Fingrid and NRA informed about the risk of power scarcity in the coming winter
- To sum up: urgent need led to innovative solution despite the lack of regulation → tens of consumers were willing to help
 - Risk of inadequate generation capacity / flexibility in the current, regulated markets
 - How to minimize forced actions and find quick solutions outside the existing regulation?
 - New market-based solutions and rules are needed for future
 - Any solution should not disturb market -> close cooperation with regulator is a key.

The role of regulation in energy transition **FINGRID**

- from a TSO point of view

Opportunities / best practices

- Direct contacts to NRA and to authority for new legislation in a national level
 - E.g., separate permission from NRA for terms and conditions during “pilot phase”
- Fingrid’s opinion is respected among stakeholders and customers. Trust is a key
- Common positions and endorsements via ENTSO-E

Challenges

- Process of new regulation is too slow
 - When new legislation comes into effect, it may be outdated
 - Long legislation process creates uncertainty for the investors
- No real regulatory sandbox is available → How to pilot & develop new concepts without a proper legislation?
 - Risk1: Conflict between pilots and existing legislation
 - Risk2: Already developed concepts conflict with the upcoming legislation
- Specific topic can be under several regulations, sometimes with small differences.

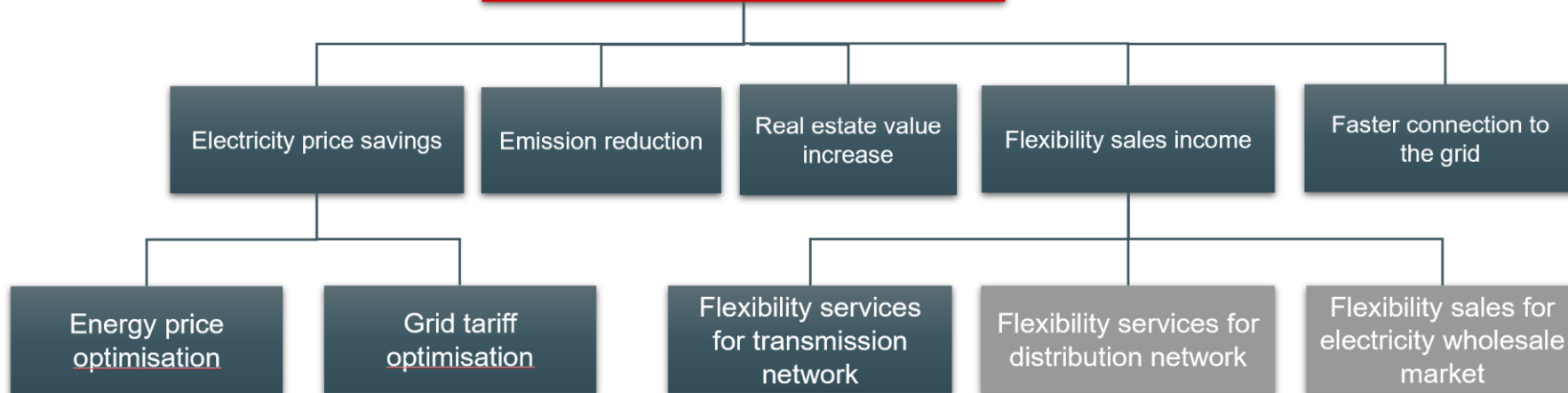


How to get consumers on board?

- not only end-consumers but also large-scale electricity consumers

- Winter '22-'23 with high electricity prices and risk of power shortage improved the awareness
- Understanding the benefits of flexibility
 - Communication, discussion, webinars, forums
- Easy access to markets (simplicity, aggregation, automation)
- Systematic cooperation with customers
 - Common understanding about flexibility needs and opportunities, bilateral discussions
 - Joint pilots to learn and test concepts
- Predictability of the business environment including regulation is a key for investors
 - What can TSO and regulator do to ensure stable future for the investments (in flexibility)?

Benefits of demand-side flexibility (Without compromising comfort and safety)





Agile regulation is needed in an
increasing pace of change

FINGRID



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**THANK YOU
FOR YOUR ATTENTION!**

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