Electrification: The perspective of a national TSO

Electric Future of Finland

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

OUR VISION
The energy system is clean, reliable and creates economic prosperity for Finland. Fingrid is the cornerstone of the energy system.
Key Figures 2023

Transmission reliability rate: 99,9995%

14,500 Km of power lines

71,7 TWh Transmitted electricity

83,1% Of total electricity consumption of Finland

527 personnel

NPS employee 75
NPS customers 45

75,1% Of total electricity consumption of Finland

Turnover 1,193 M€

Balance sheet total 2,900 M€

Income taxes paid 30,4 M€

Investments to transmission grid 310 M€

Vision
The energy system is clean, reliable and creates economic prosperity for Finland. Fingrid is the cornerstone of the energy system.

Values
Transparent
Fair
Efficient
Responsible
Power system of Finland
Power generation capacity growth set to continue in Finland

- **2022**: 69 TWh
  - Wind power: 24 TWh
  - Solar power: 13 TWh
  - Other thermal power: 20 TWh
  - Nuclear power: 12 TWh
  - Hydro power: 13 TWh
  - Growth: +13%

- **2023**: 78 TWh
  - Wind power: 33 TWh
  - Solar power: 14 TWh
  - Other thermal power: 15 TWh
  - Nuclear power: 15 TWh
  - Hydro power: 15 TWh
  - Growth: +28%

- **2026-2027**: ~100 TWh
  - Wind power: 32 TWh
  - Solar power: 4 TWh
  - Other thermal power: 17 TWh
  - Nuclear power: 14 TWh
  - Hydro power: 14 TWh

FINGRID
Energy transition requires significant reinforcements in the electricity grid

2024–2033 in figures

6,100 km
new transmission lines

400 kV 3,800 km
110 kV 2,300 km

€4bn
investments

51% Transmission line
42% Substation
5% HVDC
2% Reserve power

80% new investments
20% replacement investments

46 new substations
18 substation modernisations
26 refurbishments
37 extensions
1 substation demolitions
128 substation projects

In addition, several smaller refurbishment projects and numerous projects likely to be initiated due to new customer requirements.

40% In existing rights-of-way
30% Alongside existing lines
30% In new rights-of-way

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Finland – the best place in the EU to increase production of green electricity?

- Finland:
  - Most sparsely populated EU-country
  - 5th largest EU-country by geographical size
  - Long coastline for offshore wind
  - Competitive wind conditions
- Fingrid has received 350 GW of grid connection inquiries!
  - 170 GW onshore wind, 90 GW offshore wind and 90 GW solar
  - Market is working!

At least 300 TWh of new, clean and competitive electricity

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23.4.2024

Tommi Asp
Electrification of industry and hydrogen production are the main drivers for demand increase

- Electrification of industry, heating & transport
- Existing industry changing fossil fuels to electricity in heating and other processes
- New industry based on electricity: data centers, hydrogen production (huge potential!)
- District heating companies and households moving to electric boilers and heat pumps
- EVs gaining foothold in Finland

Fingrid has received 25 GW / ~100 TWh of connection inquiries of new consumption
Finland has many competitive advantages in electricity!

- ... is highly electrified
- ... has clean and efficient electricity generation and excellent competitiveness of onshore wind power
- ... has strong grid and top-class electricity reliability
- ... is part of the efficient European electricity markets

Finland can offer emission free and reliable electricity with a very competitive price!
Fingrid Hot topics 2024

1. **Does Finland need mechanism to support security of supply?**
   - A capacity mechanism to support reliable and controllable power production might be needed.

2. **Efficient utilization of grid infrastructure requires locational incentives**
   - For example locational grid connection fees.

3. **Dimensioning principles of grid has to be renewed**
   - From power based dimensioning towards energy based dimensioning.
Thank you! Any Questions?
Further reading


