Technical Working Group on Energy: Subgroup on generation adequacy

ENTSO-E System Adequacy Methodology

22th January 2015, Brussels

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Risks missing in the existing methodology

Changes in:
- Energy mix (eg. RES integration)
- Market structure (eg. IEM)
- Consumption behaviour (eg. DSM)

For the future, which additional risks will need to be addressed?
Residual load: The impact of variability & need for flexibility

Residual load = load – RES
Outcomes of the Consultation: Workshop and Web Survey

- Power plant performance flexibility
- Cross-border exchanges
- Interdependence between countries
- Regulation capacity
- Low inertia
- Europe vs. local
- Intermittency
- Too narrow scenarios
- Data transparency
- Location problems
- Harmonisation of methodology
- Back-up capacity → Out of market
- New grid vs.
- New capacity
- Insufficient ramping capability
- Lowest load
- Residual load
- Capability to deal with intermittent gen.
- Increased system interconnection
- Extreme weather
- Deterministic Vs. probabilistic
- Market not rewarding flexibility
- Plant economic drivers
- Duration of peak load
- Demand response
- Grid development
- Assess generation and demand equally
- Transparent definitions
- Variable RES capacity credit
- National CRM
- Assess generation and demand equally
ENTSO-E Adequacy reports should be strengthened to capture more Security of Supply risks to the pan-European power system – including the increased need for flexibility - as it moves towards increased levels of RES-E.

The treatment of electricity interconnection capacities at times of system stress must be included in future revision of ENTSO-E system adequacy methodology.

**Recommendations**

- Hourly resolution (instead of snapshot).
- Probabilistic method (w/ climate DB) to assess market prices and functioning, including during times of scarcity.
- More detailed view of cross-border contributions to a country’s system adequacy
- Informs about the *need for flexibility*.
- Extensive range of indicators, e.g. LOLE/P, RES curtailments, capacity factor (as indicator for likelihood of units staying online).
- **ENTSO-E methodology** is fully in line with the methodology developed by TSOs in PLEF

**Target methodology for adequacy**

- ENTSO-E adequacy studies will be integrated with appropriate **market-based stochastic models** to assess adequacy
Short and Long term adequacy methodologies

Short term
- 6 months

Long term
- 10 years

3 time horizons:
- 1 year
- 5 years

Operational decisions
- Short term

Investment decisions
- Short and Long term

Policy/political decisions
- Long term

Different risks should be addressed in different time horizons
Inclusion of regional analysis (taking into account cross-border exchanges)

Using consistent scenarios for the renewables infeed (pan-European climate database)

New data templates were used to improve data collection and validation
Winter Outlook Report 2014/2015: Load reduction & Strategic reserves

Belgium

No Imports Needed
Imports Needed, sufficient Cross-Border Capacity
Imports Needed, insufficient Cross-Border Capacity

Bij welke weersomstandigheden kan er deze winter een stroomtekort optreden?

GROENE ZONE: GEEN IMPORT NODIG
- Matig tot veel wind
- Temperatuur boven het vriespunt

BLAUWE ZONE: IMPORT NODIG
Geen acuut probleem

RODE ZONE: IMPORT NODIG
- Weinig tot geen wind
- Temperatuur lager dan -4 °C

-10 -8 -6 -4 -2 0 2 4 6 8 10
12
10
8
6
4
2
0
-2
-4
-6
-8
-10

Gemiddelde dagtemperatuur, in °C

DS-Infografiek i Bron: Entsoe

13 - Probabilistic assessment of strategic reserves sensitivity for Belgium for situation investigated
THANK YOU