

Winter Outlook 2014-2015

National Control Centre

UG Belgian Grid & WG System Operations

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Contents

1. Winter Outlook vs. LOLE Calculations
2. Elia Winter Outlook results - Simulations
3. ENTSO-E Winter Outlook Report - Current stage of the process

Winter Outlook Simulations vs. LOLE Calculations

Winter Outlook vs. LOLE calculations

Differences in basic principle

Winter Outlook

- No temporal correlations: no “memory” in time.
- Pure instantaneous probability of occurrence
- Results can be judged on the basis of a single time point. Therefore potential issues can be localized in time (with limited calculation effort)
- Calculating aggregated risk over a longer period is not possible. Risks and probabilities can only be expressed on a single time point basis.

The goal is to spot risky time points, identify the causes and find solutions

LOLE calculations

- Temporal correlations included: “memory” between hour x and hour $x+1$, day x and day $x+1$
- Probability of occurrence of a simulation run as a whole (runs of 1 year)
- Results can only be judged on the basis of an entire simulation run. Therefore potential issues can only be localized in time in a limited manner*
- Aggregated risks/probabilities can be calculated over a longer period (entire simulation run)

The goal is quantify the overall risk given a scenario of hypothesis

* In theory this is possible, but a prohibitive amount of simulation runs are necessary.

Winter Outlook vs. LOLE calculations

What does this mean in practice?

Winter Outlook

- Normal Conditions:
 - A winter of which every day is an average day
 - Therefore there are no extreme days

→ **Probably no issues at all**

- Severe Conditions:
 - A winter of which every day is an extreme (cold) day

→ **A lot of days with issues**

LOLE calculations

- Average LOLE:
 - An average winter
 - In this average winter, some extreme days can always occur

→ **A few days with issues**

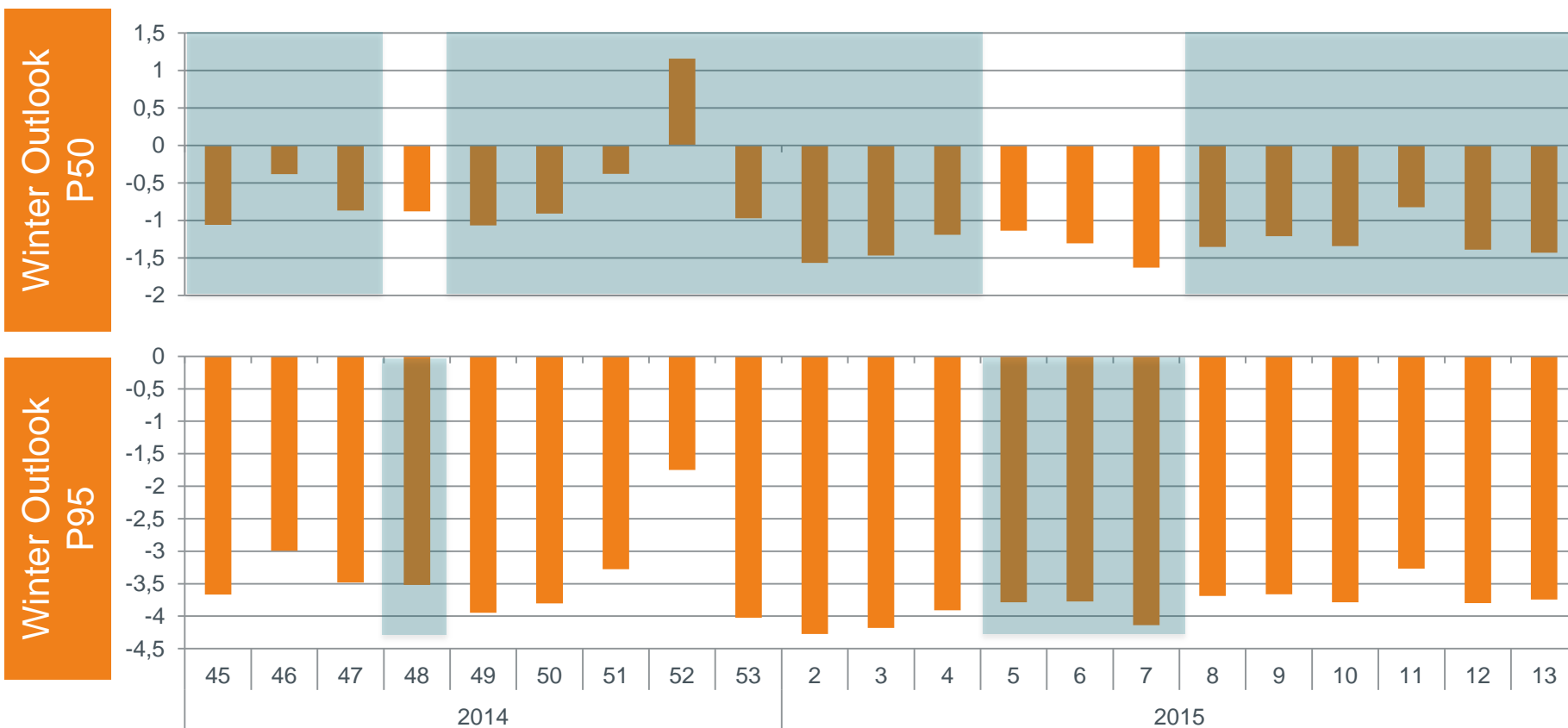
- Extreme LOLE:
 - An extreme winter
 - In this extreme winter, several extreme days probably occur

→ **Several days with issues**

Winter Outlook vs. LOLE calculations

Interpretation example

Winter Outlook variant:
No Doel 4, Peak load

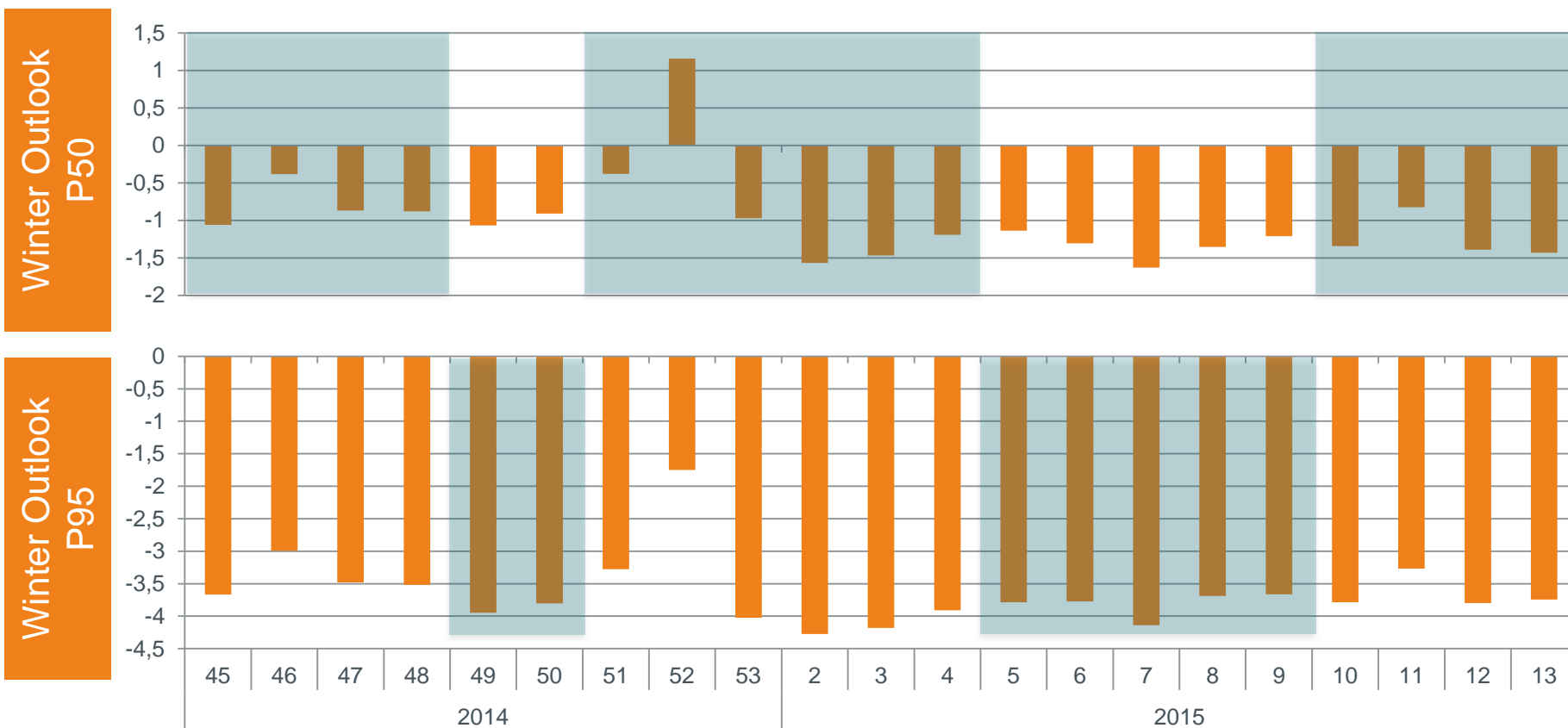


LOLE “Average year”: 4 cold weeks → 20 days of load loss (on average)

Winter Outlook vs. LOLE calculations

Interpretation example

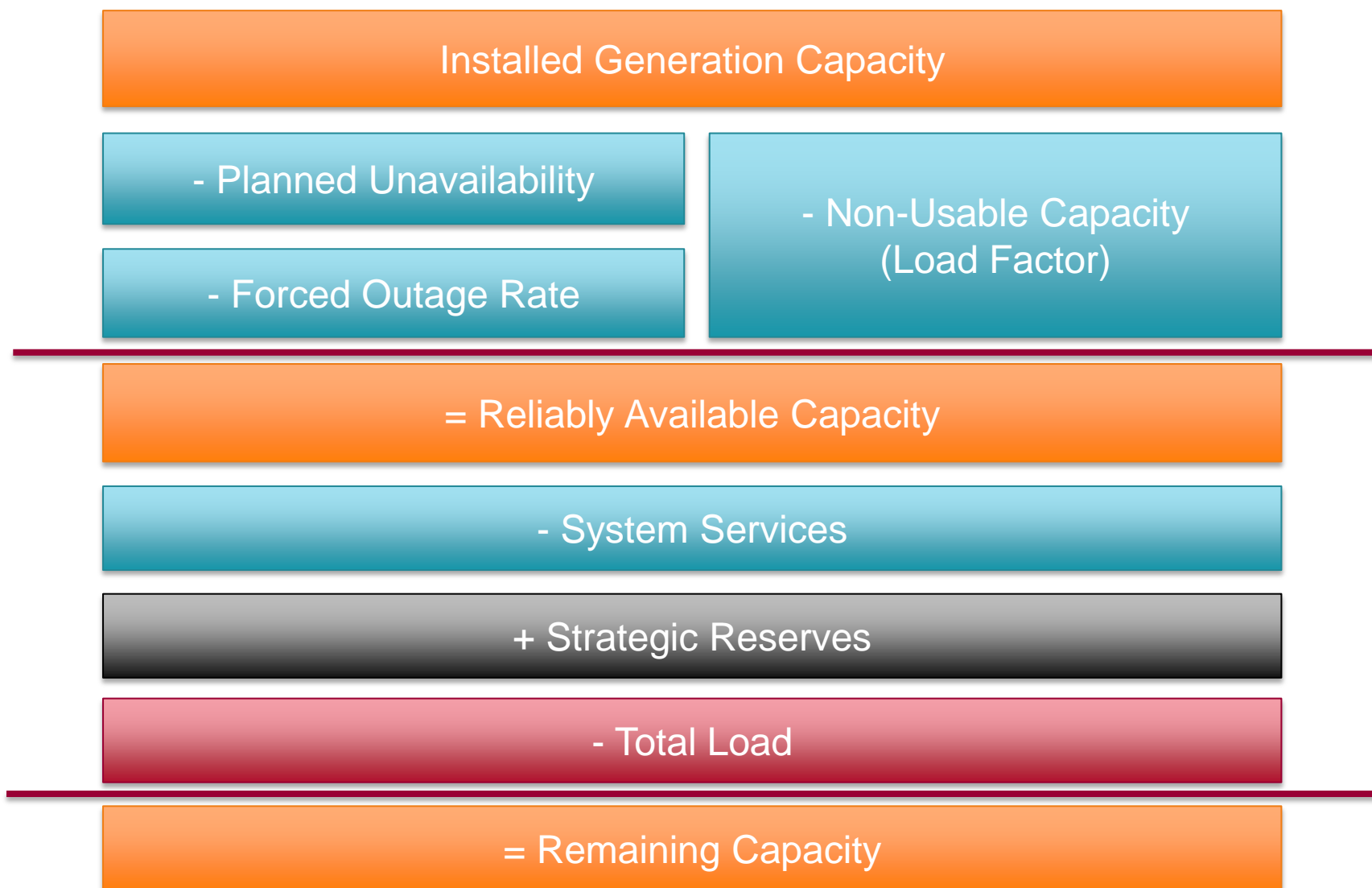
Winter Outlook variant:
No Doel 4, Peak load



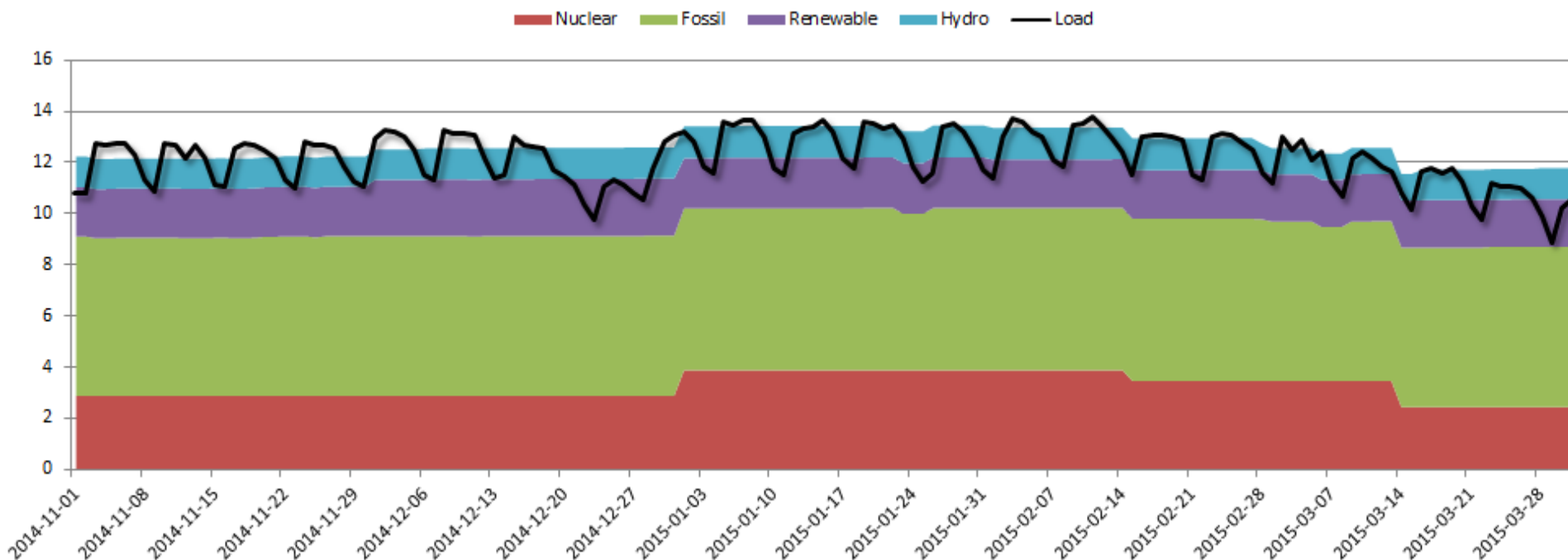
LOLE "Severe year": 7 cold weeks → 30-40 days of load loss (on average)

Elia Winter Outlook Results Simulations

Calculation principle



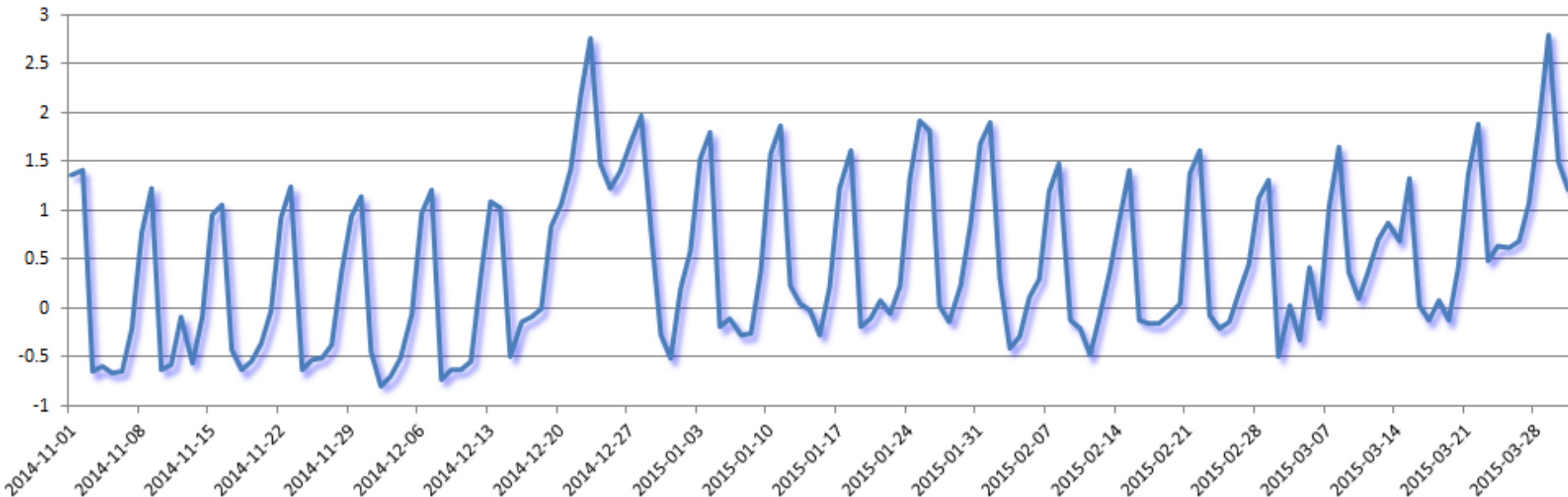
Normal Conditions (2)



Under Normal Conditions, the simulation shows that level of available generation (incl. Strategic Reserves) is most of the time adequate to cover Belgian load. Sometimes a very limited amount of imports is needed

Normal Conditions (3)

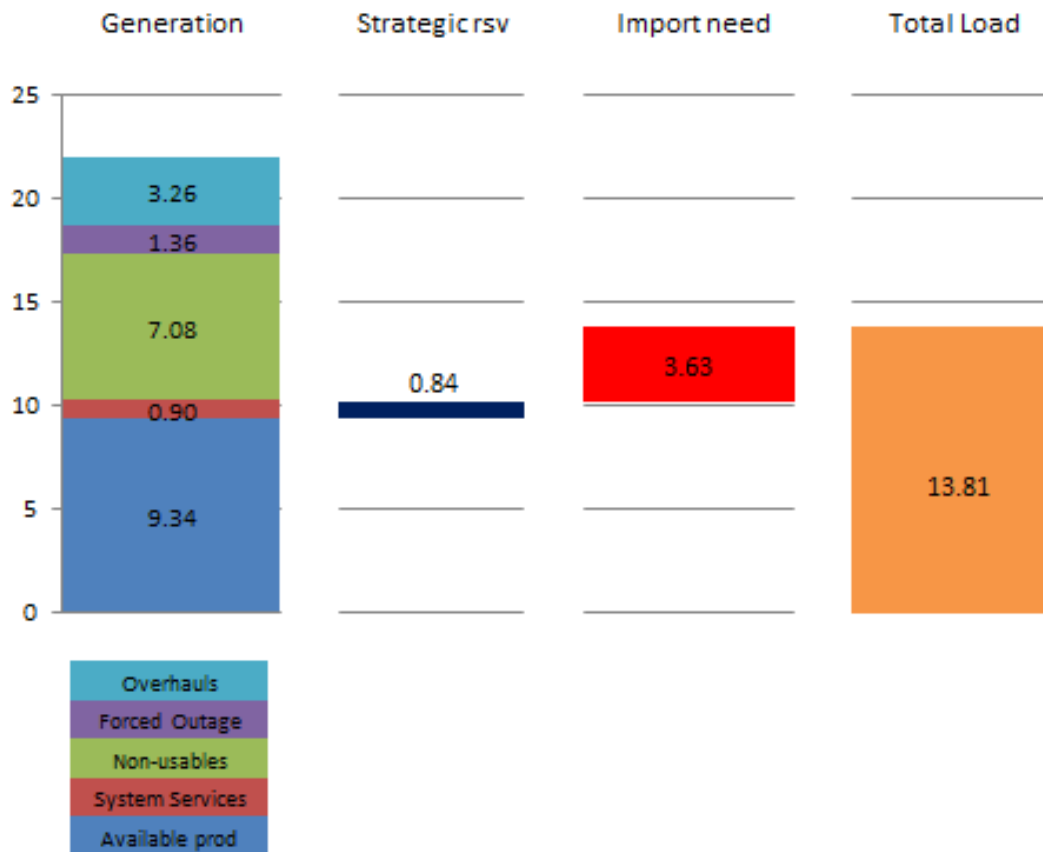
Import need



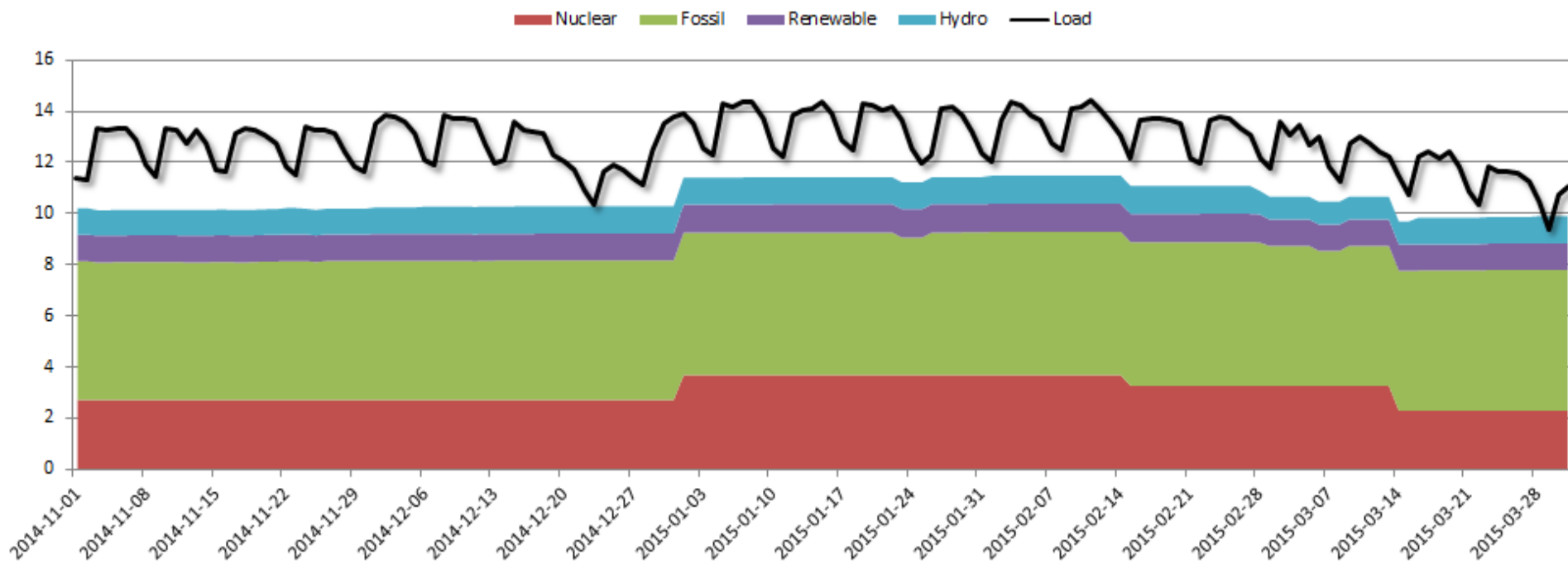
Under Normal Conditions, the maximal import needed always remains below 1 GW, which should be guaranteed volume- and energy-wise throughout the winter period

Severe Conditions P95

Worst day: Tue 02 dec 2014 (simulation)



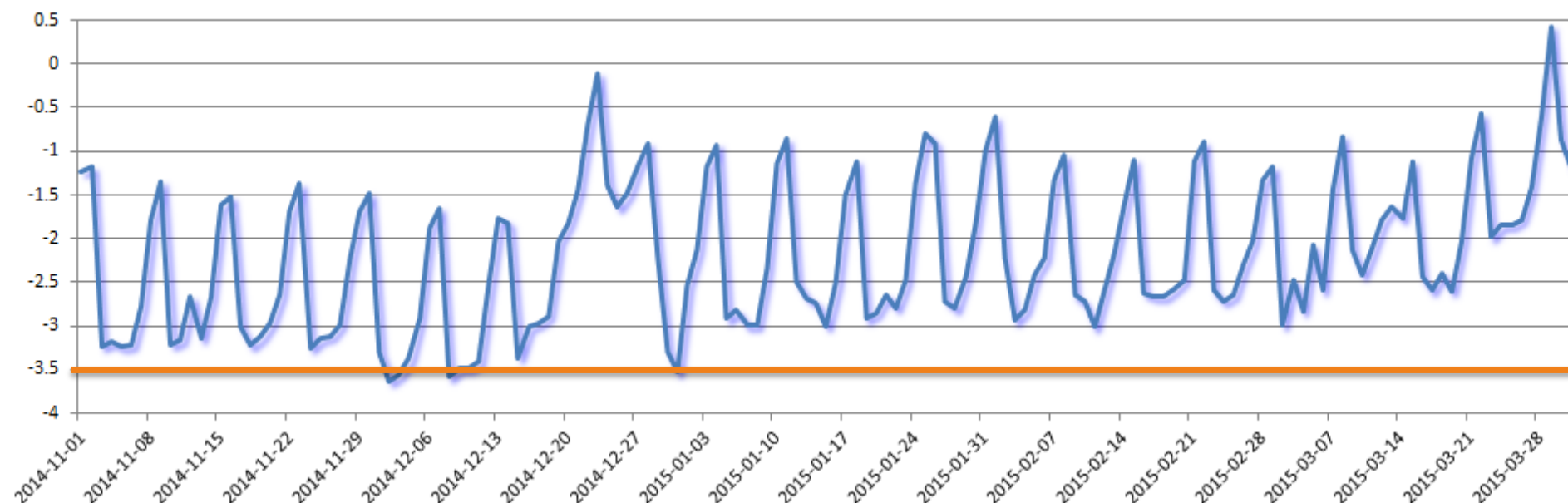
Severe Conditions P95 (2)



Under Severe Conditions, imports are needed almost all winter long to cover the Belgian load

Severe Conditions P95 (3)

Import need



Under Severe Conditions, the simulation shows that the maximal import needed reaches levels above 3.5 GW. Situations might arise where this level of imports cannot be obtained volume- or energy-wise.

ENTSO-E Winter Outlook Report

Current stage of the process

ENTSO-E Winter Outlook Report

Status & Timeline

- Data collection phase has just finished
- Publication expected at the end of November
- No draft report available yet

ENTSO-E Winter Outlook Report

Purpose

- The purpose of the WOR is to put the estimations of all countries together, and to assess the risk for the European system, taking into account the possibility of **Cross-Border Exchanges (simulations)**
- Based on **quantitative** information contributed by the individual countries
- Guidelines are provided to enable creating a **consistent dataset** throughout Europe

ENTSO-E Winter Outlook Report

Expected improvements

- A Task Force has been established within ENTSO-e to work on an evolution of the Winter Outlook Methodology
- Workshops were organized with stakeholders and a public consultation has been held
- Specifically for Winter 2014-2015, the following improvements/additions are expected:
 - Use of the **Pan-European Climatic Database** to improve consistency of hypotheses
 - **Addition of a “probabilistic” assessment**, varying renewables infeed and load to detect problem “drivers” and probability of issues
 - Investigation of effect of **Gas Supply disruption**

Many thanks for your attention!

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