

Adequacy calculations for Belgium - Strategic reserves volume

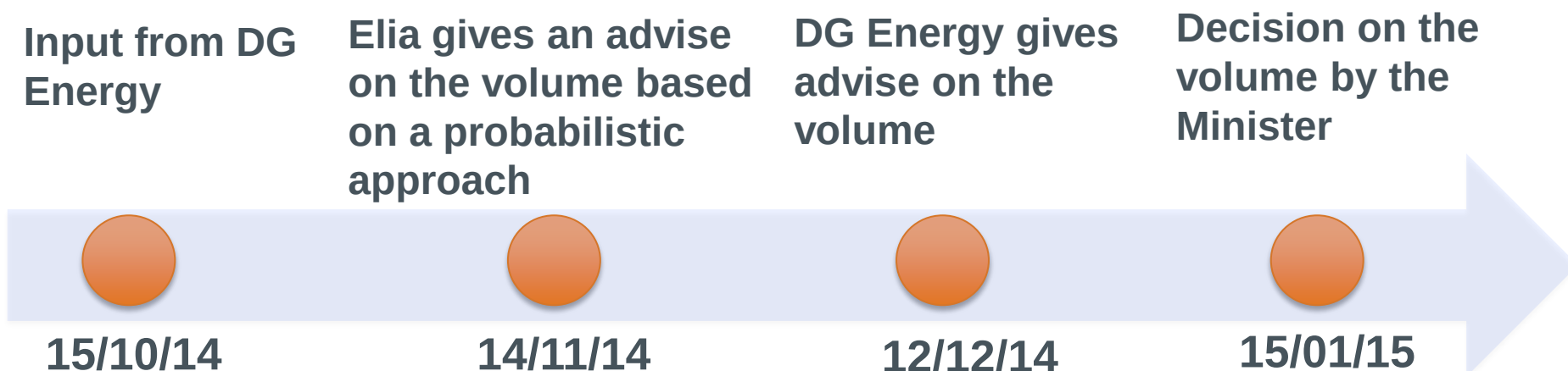
WG Belgian Grid – 02/02/2015

Agenda

- 1. Modelling and hypotheses**
- 2. Strategic reserves volume evaluation**

Introduction and timeline

The exercise of strategic reserves volume evaluation is **made every year** in November. The evaluation is sent to the minister of energy in order to take a decision on the volume to be contracted for next year.



Publication on the website of the FPS Economy of the 3 documents:
http://economie.fgov.be/nl/ondernemingen/energie/Energiebevoorradingsekerheid/strategische_reserve_elektriciteit/#.VM5vqZ0VHIV

Input data for the simulations



Available sources

- ✓ **Generation**
 - Nuclear and fossil production
 - Renewables
 - Pump/turbine
 - Production in distribution network
- ✓ **Operational reserves**
 - Necessary to balance the system
- ✓ **Interconnections**
 - Market capacities



Variables

- ✓ **Climatological variables**
 - Solar production
 - Wind production
 - Temperature
- ✓ **Economical activity**
 - Working day/holiday
 - Day/night
- ✓ **Outage of units**
 - Planned outages (maintenance)
 - Un-planned outage

A **probabilistic tool** is used to evaluate the adequacy in Belgium. The tool is a market model that can handle different variables and is able to generate a big amount of future states.

Not only Belgium is modelled. Data are coming from different sources



Belgium and neighboring countries are modelled in detail.

Flows between countries are determined **by the market**.

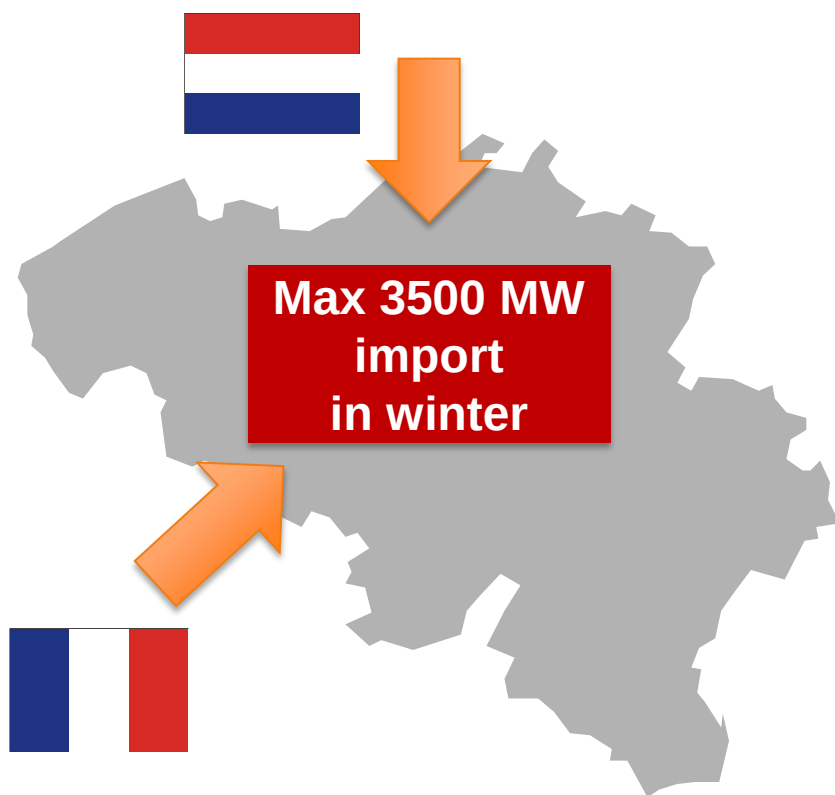
Strong cooperation with other TSOs is needed to assess the shortage risk in other countries:

- FR: gap in capacity 2015
- NL: surplus capacity is decreasing
- DE: decommissioning if units

Data used from different sources:

- ENTSO-E (ES, IT, GB)
- Pentalateral Energy Forum (PLEF) for AT, CH, FR, DE, NL and LU
- DG Energy and internal data for BE
- Latest information on decommissioning
- External forecasts

Purely market exchanges. The maximum simultaneous import capacity used in BE is 3500 MW

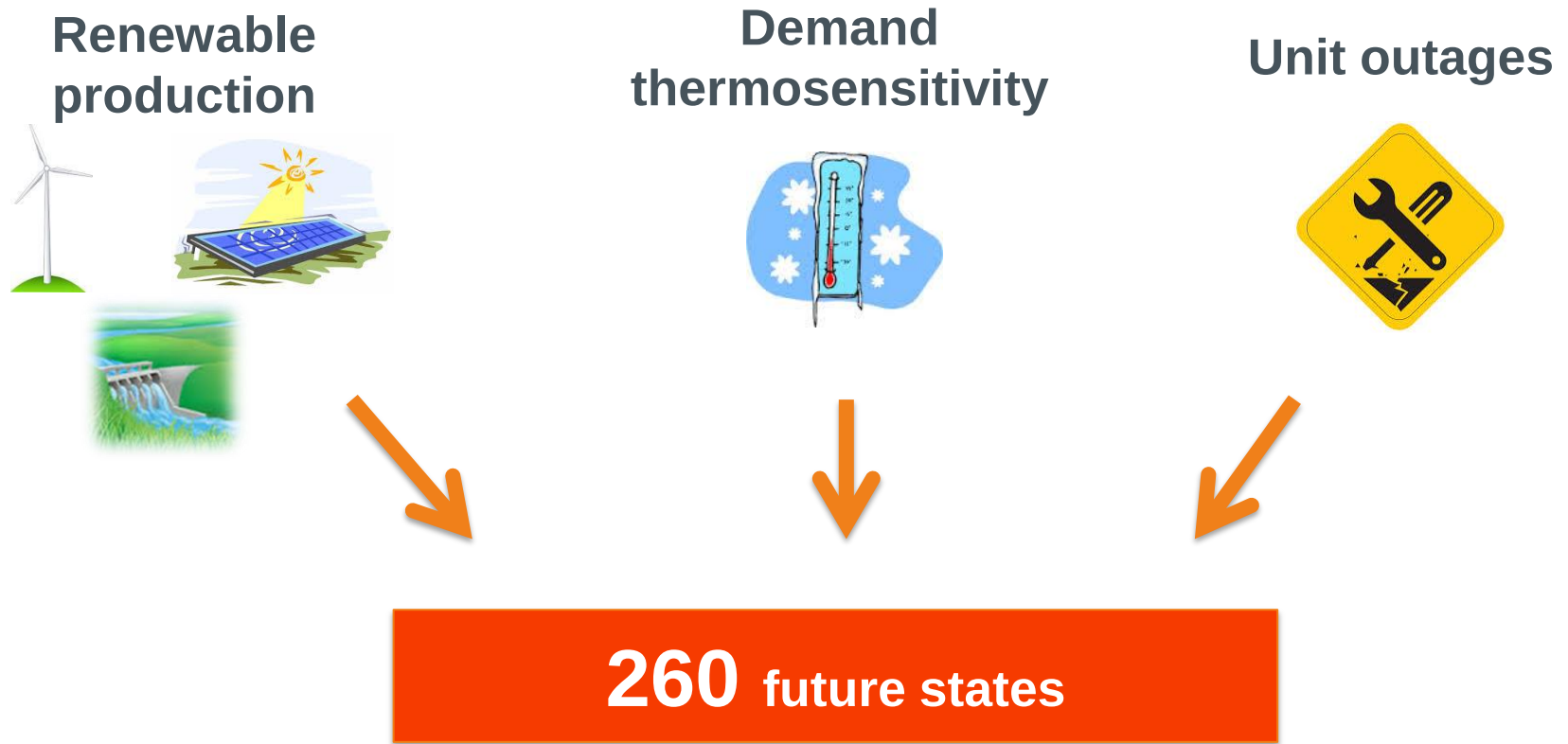


Market import capacities are used in the modelling. The Maximum simultaneous import capacity used in the simulations for Belgium (sum of FR + NL flow) is 3500 MW in winter. This value is given by Elia to the market and is complying the European security criteria.

- **Most critical points:** advise to limit the import to **2700MW**
- **Less critical points:** possible to count on more than 3500MW

Uncertainty modelling

A big amount of future states are taken into account by using different profiles of renewable production, demand and outages of units.

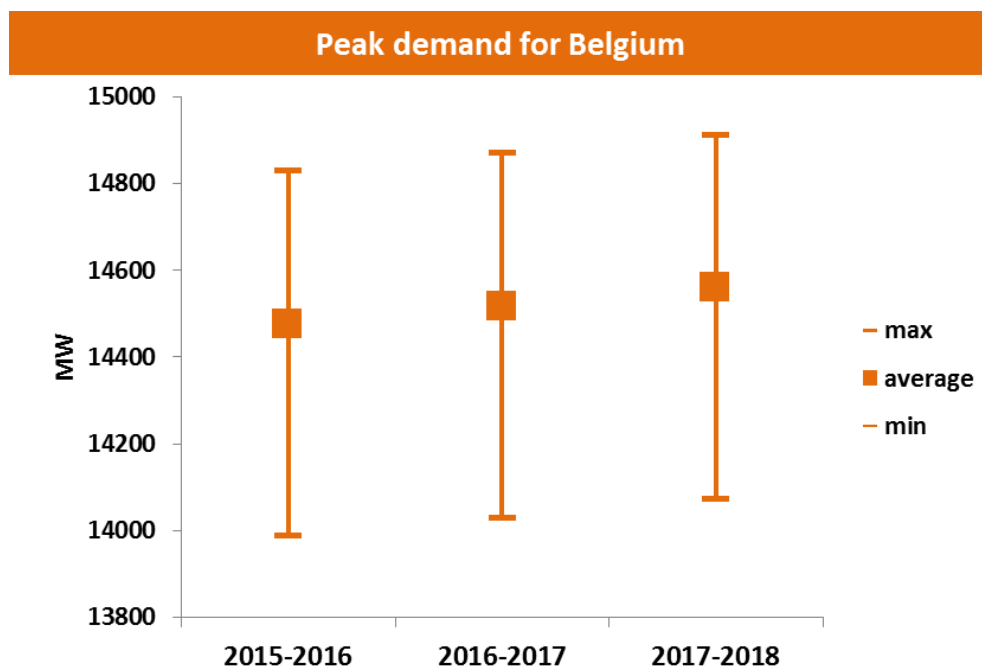




The hypothesis on the level of the yearly demand are conservative and discussed with the DG Energy

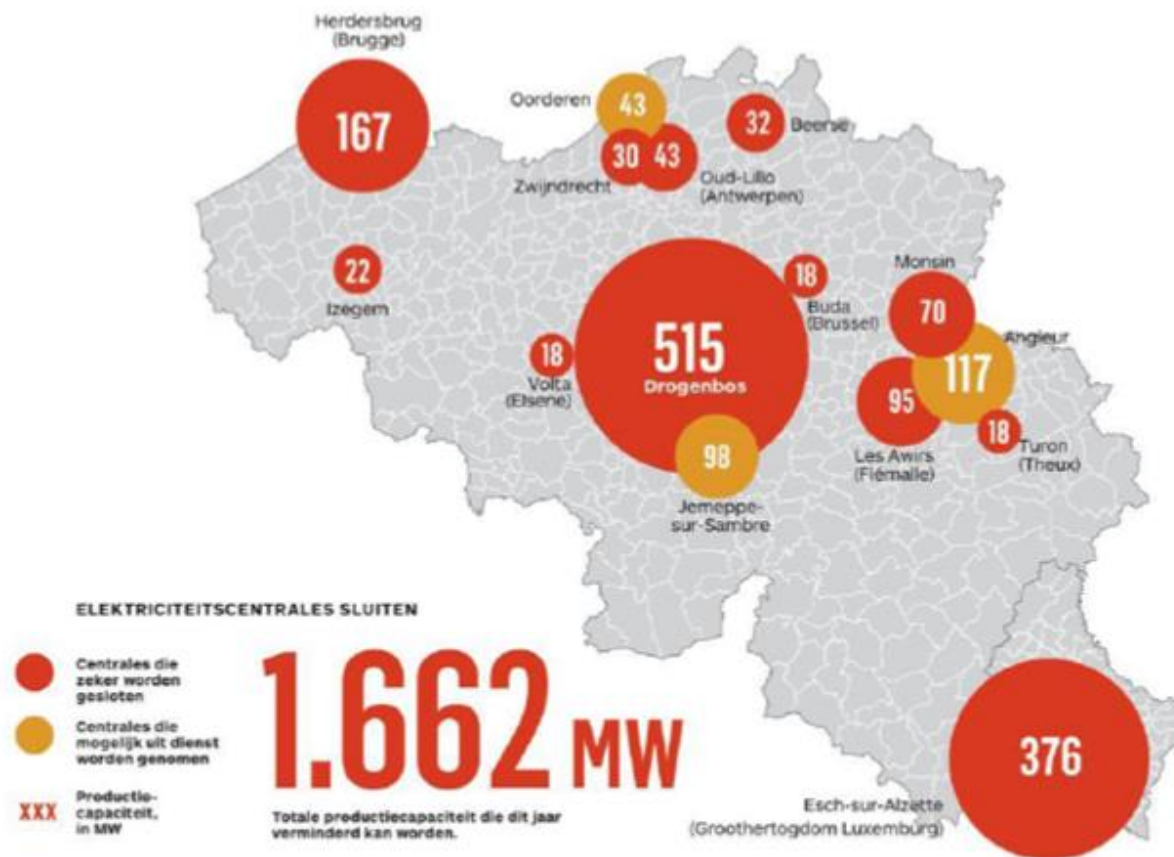
The reference level of 2010 (90,4 TWh) is taken as level for the next winter. A growth of 0.31% is considered for the next winters.*

No demand side response nor other initiatives on demand reduction are taken into account.



* http://www.plan.be/admin/uploaded/201410171035340.For_Energy_2014_10736_F.pdf (high GDP variant)

Some 'out of service' are announced for the coming winter

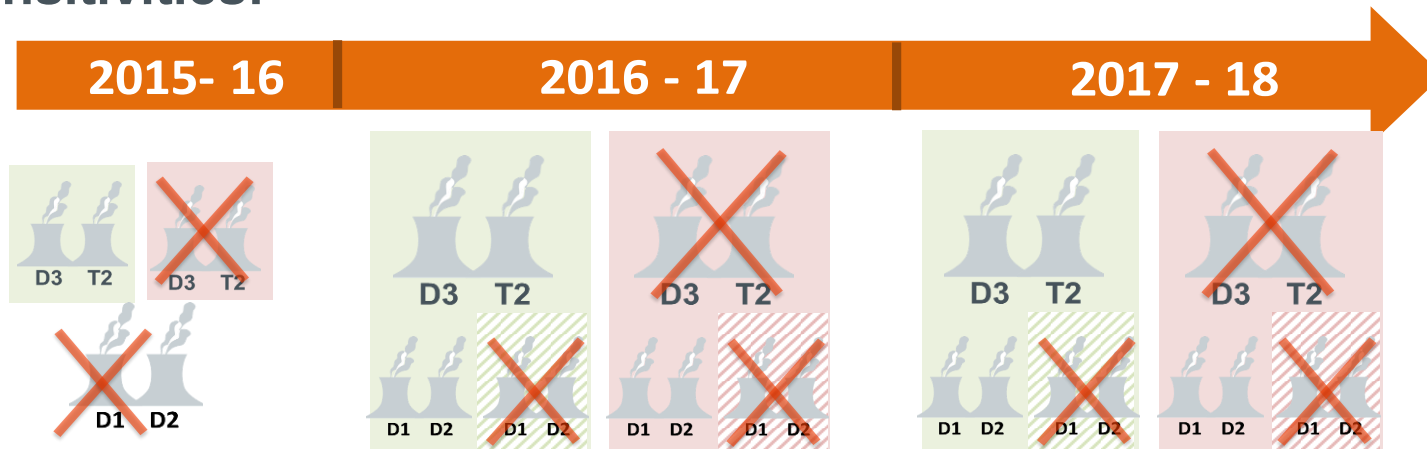


There are some uncertainties on the availability of nuclear units.

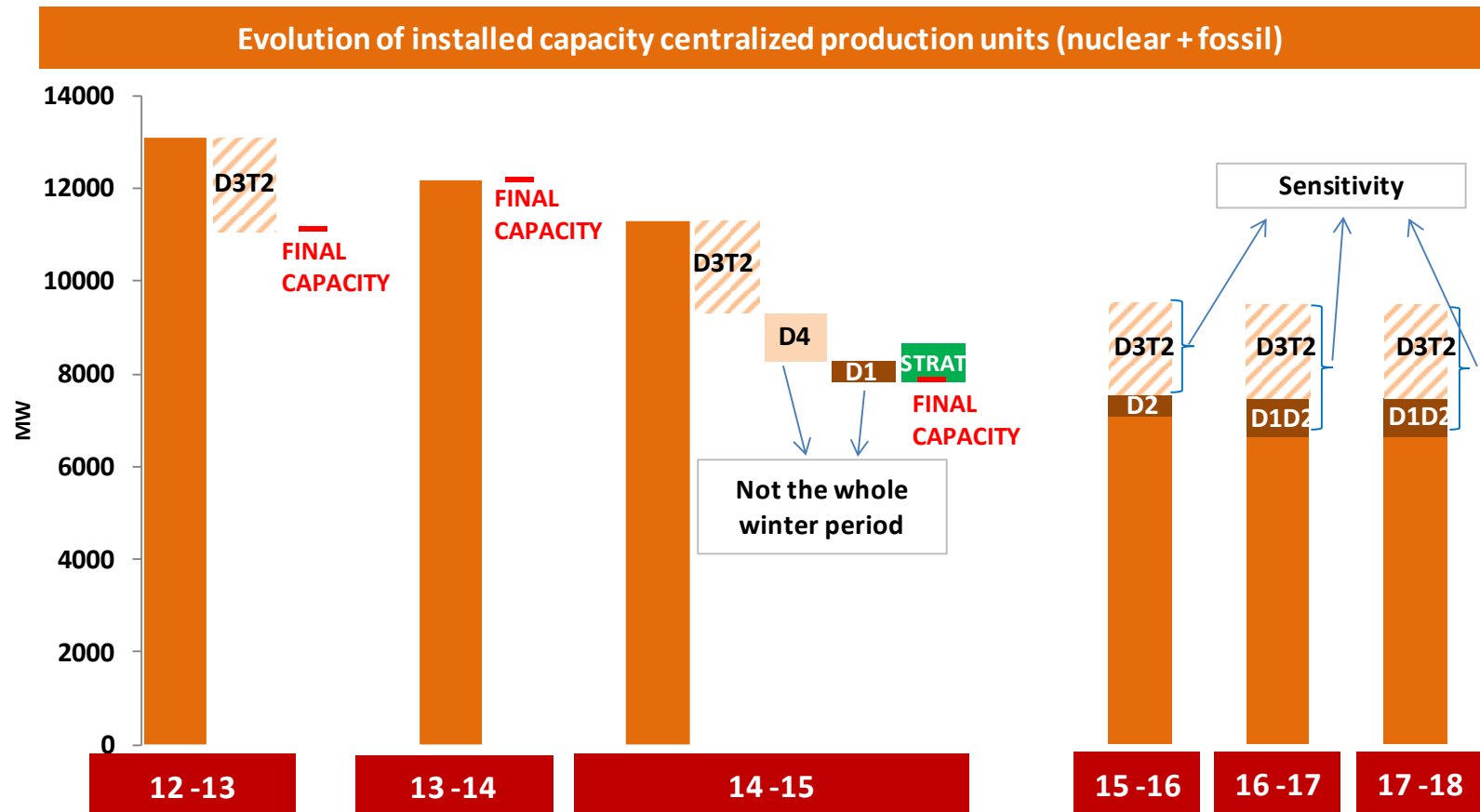
Hypotheses:

- D2 – available for the winter 15-16 (info DG Energy)
- D1 – unavailable for 15-16 (not yet refueled by next winter) (info: DG Energy)
- D4 – back online
- D3/T2 – unavailable until 2017 (transparency data Electrabel)

Sensitivities:



The installed capacity of thermal and nuclear units 'in service' is decreasing



Strategic reserves volume evaluation

The strategic reserves volume is evaluated for Belgium in order to satisfy the following criteria (according to the law):

Average LOLE < 3 hours

LOLE P95 < 20 hours

LOLE (Loss of Load Expectation): it is the expected total duration in hours of unserved energy over the winter.

Only the volume in order to satisfy the criteria is published in the advise from Elia to the Minister and not the LOLE.

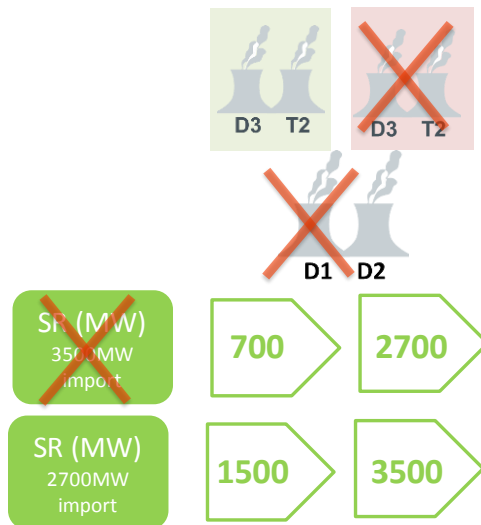
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Needed volume for winter 2015/2016

Volume for 2015-2016 without maintenance in winter



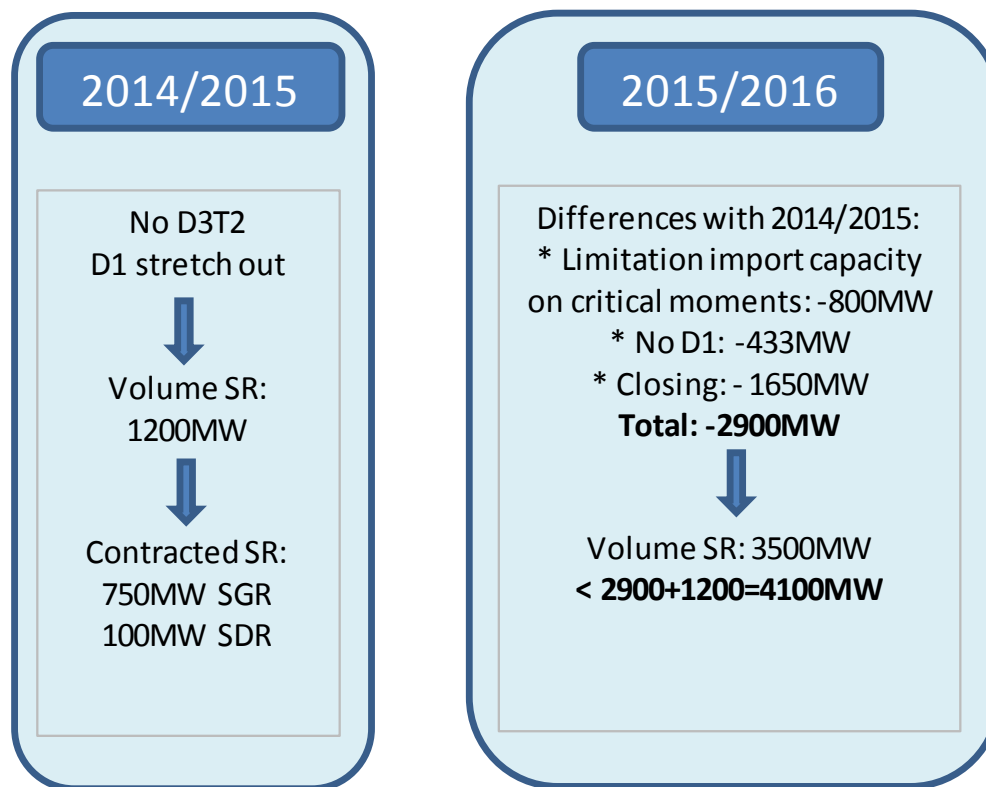
Decision of the Minister

Extra 2750MW for 1 year from which 300MW to 500MW for 2 years
-> total of 3500MW

Decision of the Minister 30/06/2015

Possible revision of the decision based on Doel 3 and Tihange 2

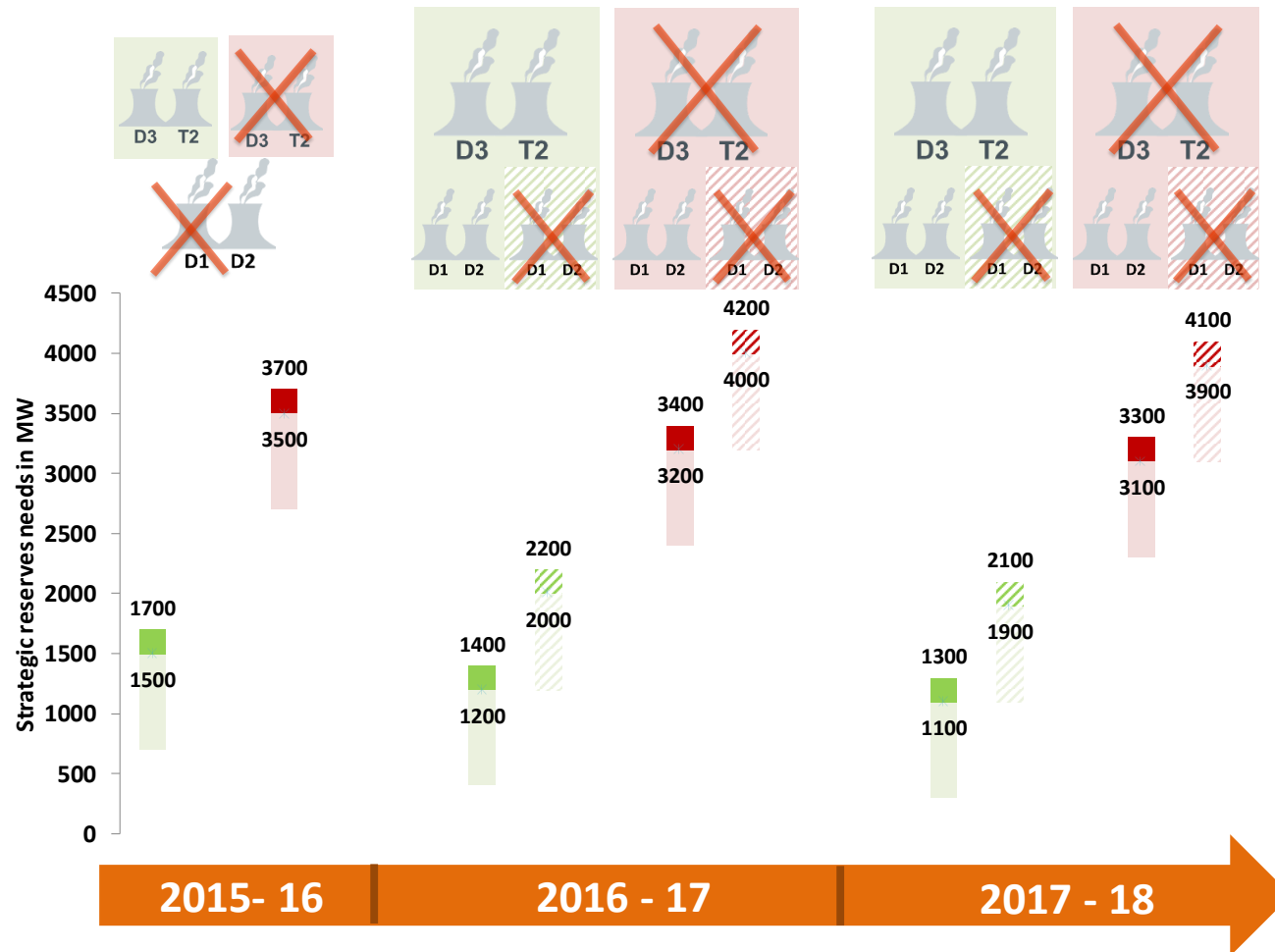
Difference with winter 2014/2015



Extra need in strategic reserves is smaller than the loss of MW between 2014/2015 and 2015/2016.

Needed volume for next winters

Needs of Strategic reserve capacity for the 3 next winters depending on the nuclear availability



Many thanks for your attention!

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What about next winters?

A exercise is currently held in order to assess the volume needed for the 3 next winters based on the latest information available in order to provide an advise to the minister before the 15th of November as stated in the law.

The **previous evaluation** of strategic reserves volume for the next 3 winters was made on 20/03/2014 with the information available at that date. The needed volumes for next winters are shown on this chart.



Results from 20/03/2014:

- With D4
- With D3/T2

Needed capacity for strategic reserves in Belgium for the next 3 winter periods

