

Red Zones Mechanism

WG System Operations & European Market Design

2 December 2016

Context & Agenda

Context

2/9 Workshop Green/Red Zones Policy:

- Process description and clarification by Elia demonstrating complexity and non-exact science of setting green/red zones.
 - Concerns from market parties on the number of Red Zone declarations and the impact of Stevin on the occurrence of red zones in Langerbrugge.
 - Elia is looking into possibilities to reduce the geographic scope of the zones and/or to increase time granularity (taking into account software and resource constraints).
- ⇒ Commitment of Elia to work on alternatives in response to the market concerns and present feedback to the market during today's meeting.

Agenda for today

1. Impact of Stevin
2. Short-term modifications to Red Zones Mechanism
 - Geographic granularity
 - Time granularity
 - Intraday updates
3. IT implementation 2017



Impact of Stevin

Stevin

In response to **market comments**:

The most constrained zone is ‘Langerbrugge’, where the growth of the offshore wind parks increases the occurrence of network constraints. The market questions whether the commissioning of Stevin will improve the situation.

The Stevin project

to upgrade the high-voltage grid in West and East Flanders so that greater quantities of electricity can be transported from the coast inland

For more information, visit <http://www.stevin.be/>



| Sub-project | 2015 | 2016 | 2017 | 2018 | 2019 |
|-------------|---|--|------|------|------|
| 1 | Shore up existing 380-kV line between Horta and Eeklo | | | | |
| 2 | New 380-kV line between Eeklo and Van Maerlant | | | | |
| 3 | Van Maerlant transition station | | | | |
| 4 | Tunnel constructed beneath the Baudouin Canal | | | | |
| 5 | New underground 380-kV cable | | | | |
| 6 | Gezelle transition station | | | | |
| 7 | Existing 150-kV line replaced by a 380-kV line | | | | |
| 8 | Stevin high-voltage substation | | | | |
| | | New 150-kV underground cable between Stevin and Blondeellaan | | | |

Impact study: method & hypotheses

Model used for the Federal Development Plan (detailed 30kV-380kV Elia grid; impact 5 neighboring countries)

Use of market model 2020 from TYNDP 2014 for hypotheses on future load, production, and impact of Nemo

Simulation of 100 representative situations

Results shown here: Focus on the 150 kV grid from Zeebrugge-Brugge to Koksijde and Gent

Estimation of congestion constraints 2018-2020 (reference year = 2016)

⇒ **given the following known evolutions**

- Stevin in service end of 2017
- Nemo in service in 2019
- Gradual growth of offshore wind park until 2020: partly on 150kV grid but most parks connected to 220/380kV grid

⇒ **depending on the occurrence of possible incidents:**

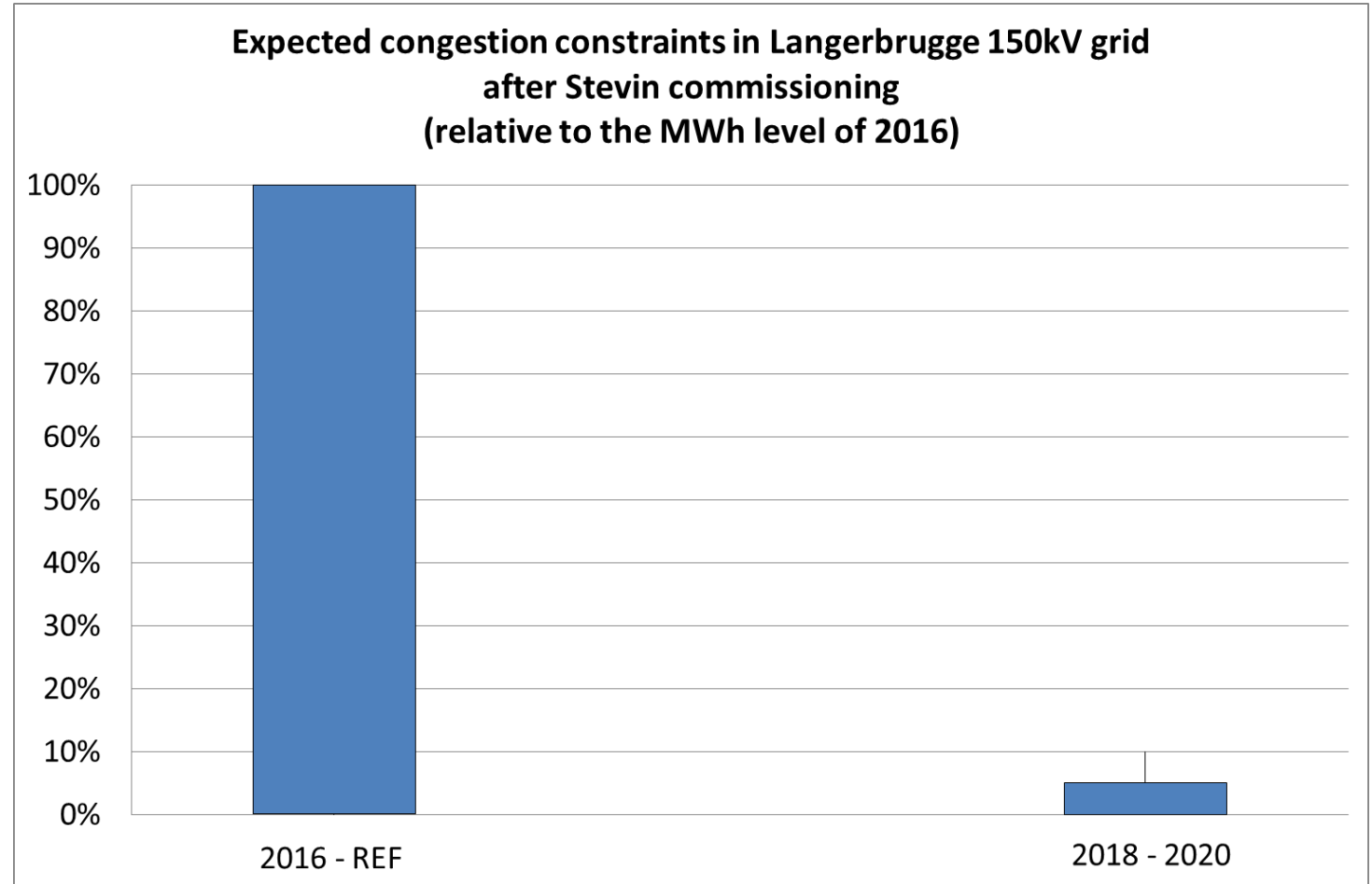
- Forced outages: incident probability & recovery duration per type of incident

Impact study: results

The congestion risk in Langerbrugge 150kV would be significantly reduced by Stevin.

The expected remaining risk in the period 2018-2020 is around 5-10% of the risk in 2016.

Elia continues to evaluate the need for further grid investments.



Short-term modifications to Red Zones Mechanism

Short-term modifications to Red Zones Mechanism (1)

In response to **market comments**:

Large zones are constraining more production units than needed.

1. Geographic granularity

From 8 to 10 zones isolating the most problematic areas at Langerbrugge and Hainaut.

| | | |
|--|---------|--------------------------------------|
| Langerbrugge 1 (Herdersbrug, wind offshore) | Merksem | Ruien |
| Langerbrugge 2 (Rodenhuize, Ringvaart, Knippegroen) | Liège | Hainaut 1 (St. Ghislain) |
| Schaerbeek | Stalen | Hainaut 2 (Amercoeur, Marcinelle) |
| 380 kV | | |

Short-term modifications to Red Zones Mechanism (2)

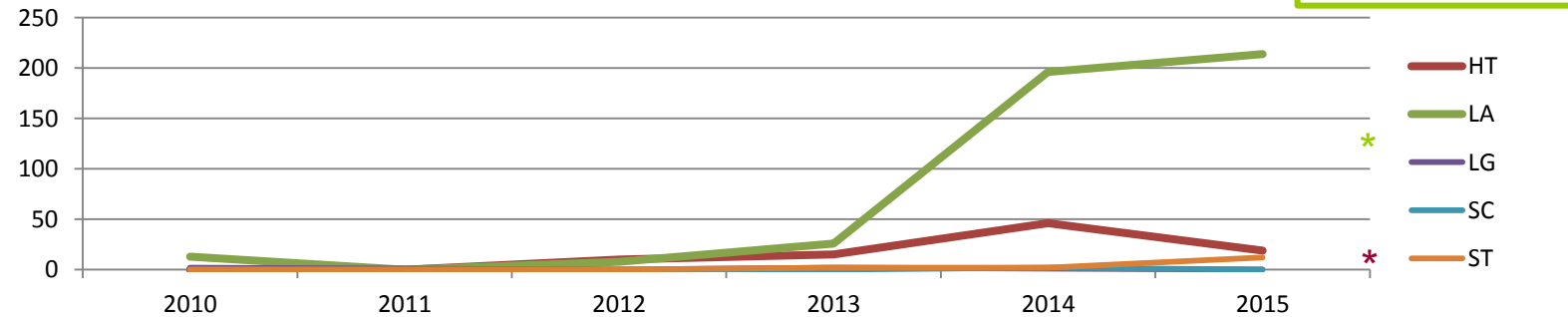
Why focus on Langerbrugge & Hainaut?

Historical data show that the number of red zones increased since 2014.

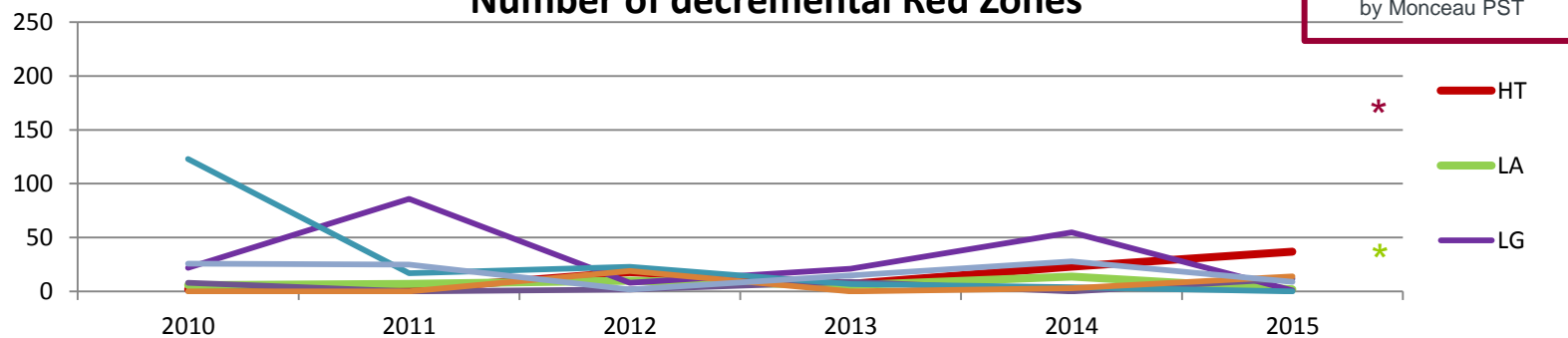
Two zones are mainly impacted by the increase:

- **Langerbrugge:**
Congestions especially affecting Herdersbrug, allowing the separation of Ringvaart, Rodenhuize, and Knippegroen.
- **Hainaut:**
The schedule of St. Ghislain is a determining factor in the congestion actions in Hainaut.

Number on incremental Red Zones



Number of decremental Red Zones



* Period from 01/16 to 07/16

Short-term modifications to Red Zones Mechanism (3)

In response to **market comments**:

Peak-Off peak inflexibility: Large time blocks are constraining production units for more time than needed.

2. Time granularity

From two fixed 12-hour time blocks (peak/offpeak) to multiple time blocks of variable duration (min. 1 hour).

Time blocks will still be used but the start and end hour are not fixed.

| | | Examples | | |
|-------|----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 0:00 | OFFPEAK | P e r i o d 1 | P e r i o d 1 | P e r i o d 1 |
| 1:00 | | | | |
| 2:00 | | | | |
| 3:00 | | | | |
| 4:00 | | P e r i o d 2 | P e r i o d 2 | P e r i o d 2 |
| 5:00 | | | | |
| 6:00 | | | | |
| 7:00 | | | | |
| 8:00 | PEAK | P e r i o d 3 | P e r i o d 3 | P e r i o d 3 |
| 9:00 | | | | |
| 10:00 | | | | |
| 11:00 | | | | |
| 12:00 | | P e r i o d 4 | P e r i o d 4 | P e r i o d 4 |
| 13:00 | | | | |
| 14:00 | | | | |
| 15:00 | | | | |
| 16:00 | OFFPEAK (SAME AS ABOVE) | P | 3 | P e r i o d 4 |
| 17:00 | | | | |
| 18:00 | | | | |
| 19:00 | | | | |
| 20:00 | OFFPEAK (SAME AS ABOVE) | 4 | 3 | 4 |
| 21:00 | | | | |
| 22:00 | | | | |
| 23:00 | | | | |

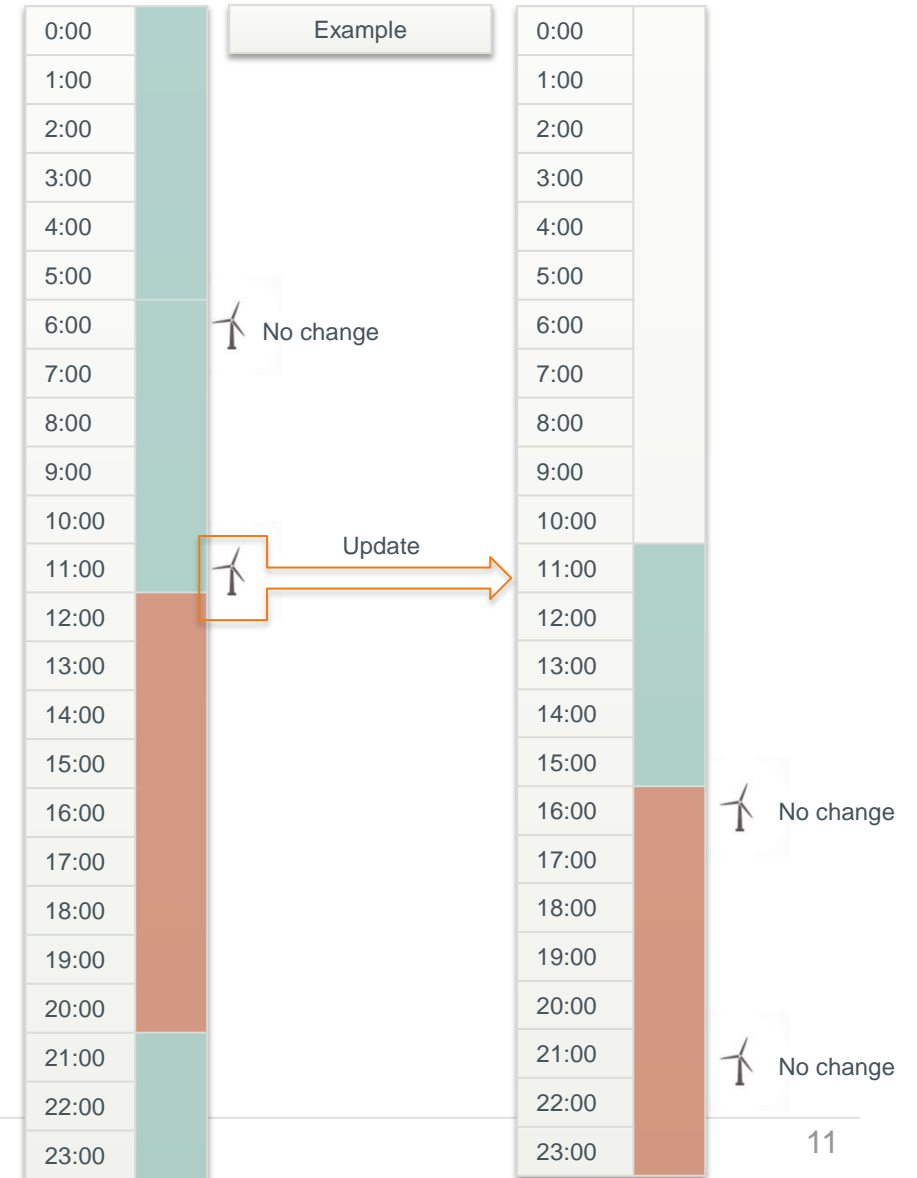
Short-term modifications to Red Zones Mechanism (4)

In response to **market comments**:

Insufficient reassessment of Red Zones and lacking communication when a Red Zones constraint is lifted.

3. Intraday updates

If input for NCC's security analysis substantially changes in ID (e.g. new wind forecast , major IDPCR), NCC will rerun the analysis and confirm/add/eliminate red zones.



IT implementation 2017

Timing & contact

Indicative planning for implementation of short-term modification:

- Geographic granularity by April 2017
- Time granularity & Intraday updates by June 2017

⇒ Elia will contact the ARP for implementation on ARP side and concrete planning.

⇒ In case of questions, contact Amandine.Leroux@elia.be