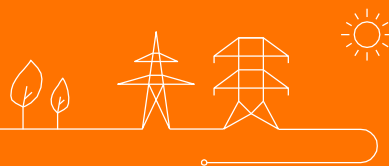


Users' Group

Working group Belgian Grid

26 januari 2024



Username: usersgroup@elia.be
Password: [bqK0lr68](#)

1

Agenda



1. **Hosting capacity maps** – stakeholder feedback
2. **Aansluitingsproces** – eerste reflecties
3. **Grid User Flex for congestion management** – stand van zaken en next steps
4. **Connection contract** – eerste feedback naar aanleiding van de consultatie
5. **Miscellaneous**
 - 5.1. **CREG – gedragscode** – stand van zaken ontwerpbeslissing - aansluiting met flexibele toegang
 - 5.2. **Volgende meetings**



| 2

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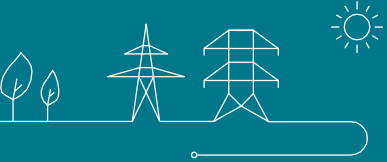
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3



Hosting Capacity Maps

Stakeholder feedback



| 4

4



Roadmap to publication of Hosting Capacity Maps

WG Belgian Grid: 26/01/2024

R. Devolder & I. Verbruggen

5

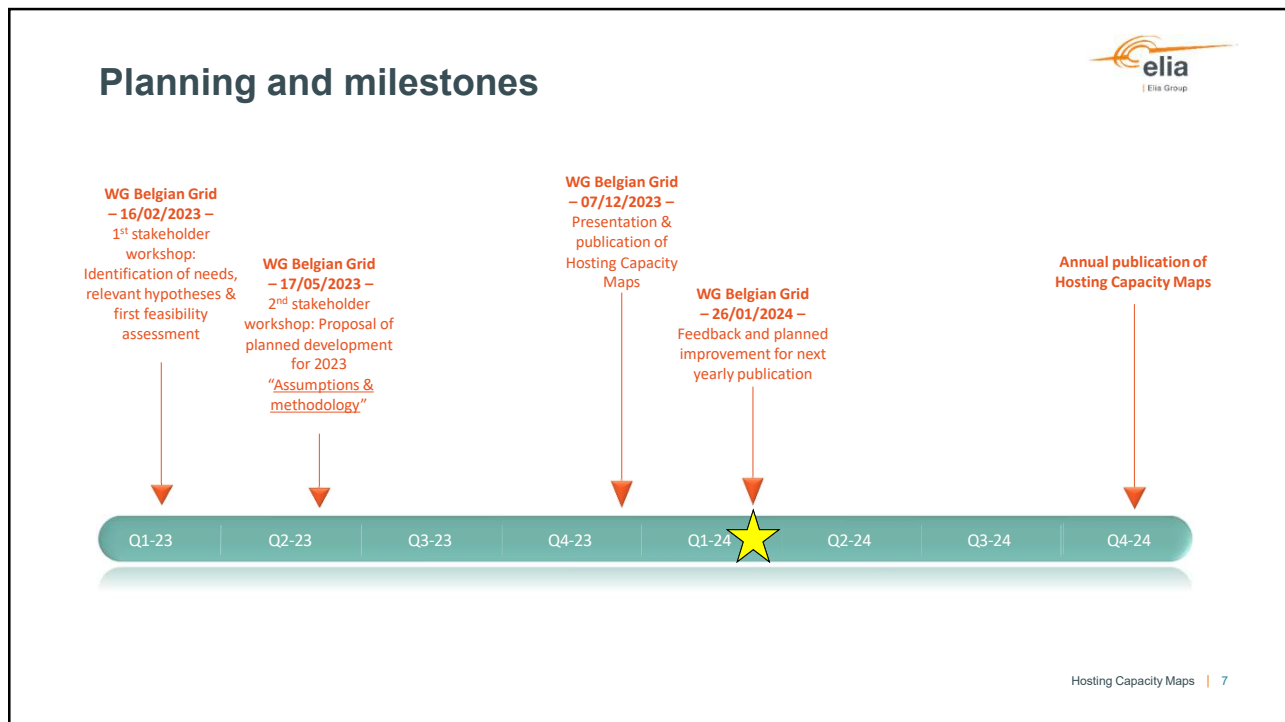
Context

The main objective of this initiative is

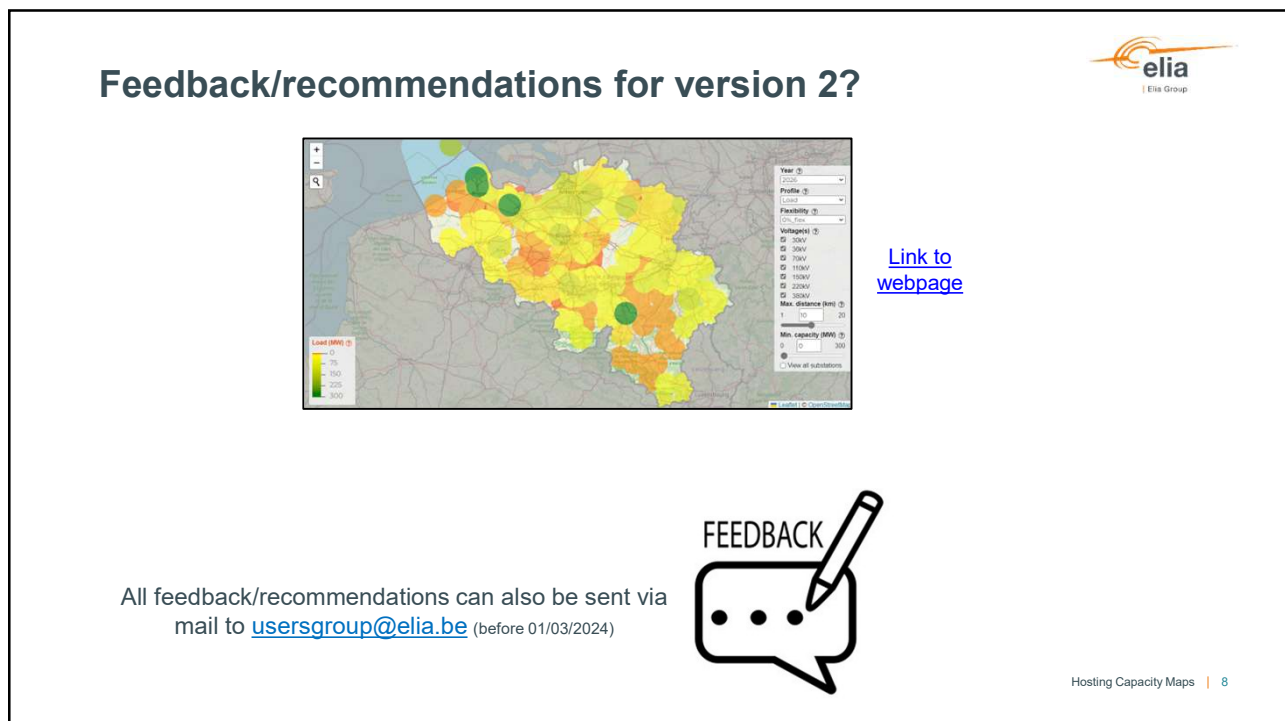
- to pro-actively support the evolution of the Belgian energy mix as well as the electrification of consumption
- by communicating, in a transparent way,
 - the connection points potentially available for new connections or for increased capacities of existing grid users and,
 - the connection points for which an anticipation of the connection request is to be recommended so that the reinforcement of the network can take place before the commissioning of this connection.
- It aims to target generation (of different types), load and storage
- It does not replace the official connection process (EOS/EDS): in this process much more detailed assessments are performed, taking into account an increased set of factors (e.g. spatial/voltage/short-circuit constraints, potentially new infrastructure projects, etc)

Hosting Capacity Maps | 6

6



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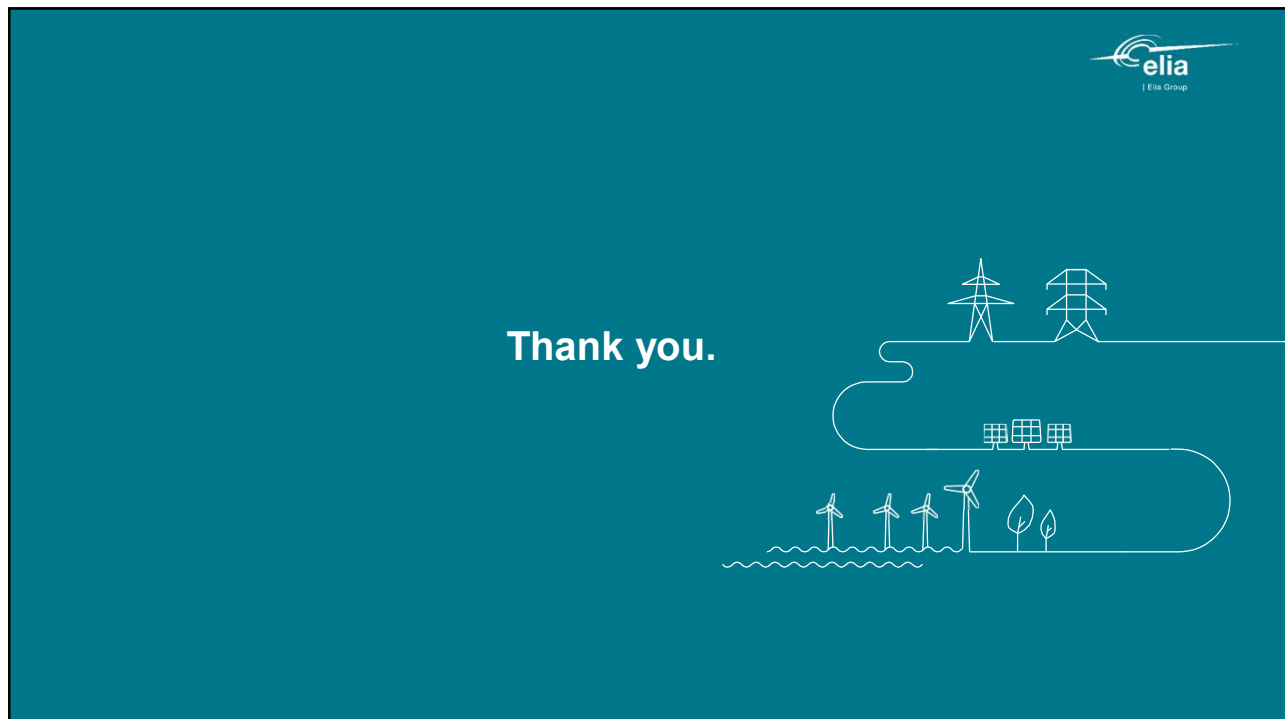


8

Next steps



- All feedback/recommendations can be sent to usersgroup@elia.be before **01/03/2024**
- For any further questions, existing grid users can contact their Key Account Manager
- New grid users/others can contact Elia through hostingcapacitymap@elia.be
- Q4/2024: publication of the V2 of the hosting capacity map



Agenda




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Aansluitingsproces

Eerste reflecties

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Connection proces

WG Belgian Grid: 26/01/2024


C. Bastiaensens

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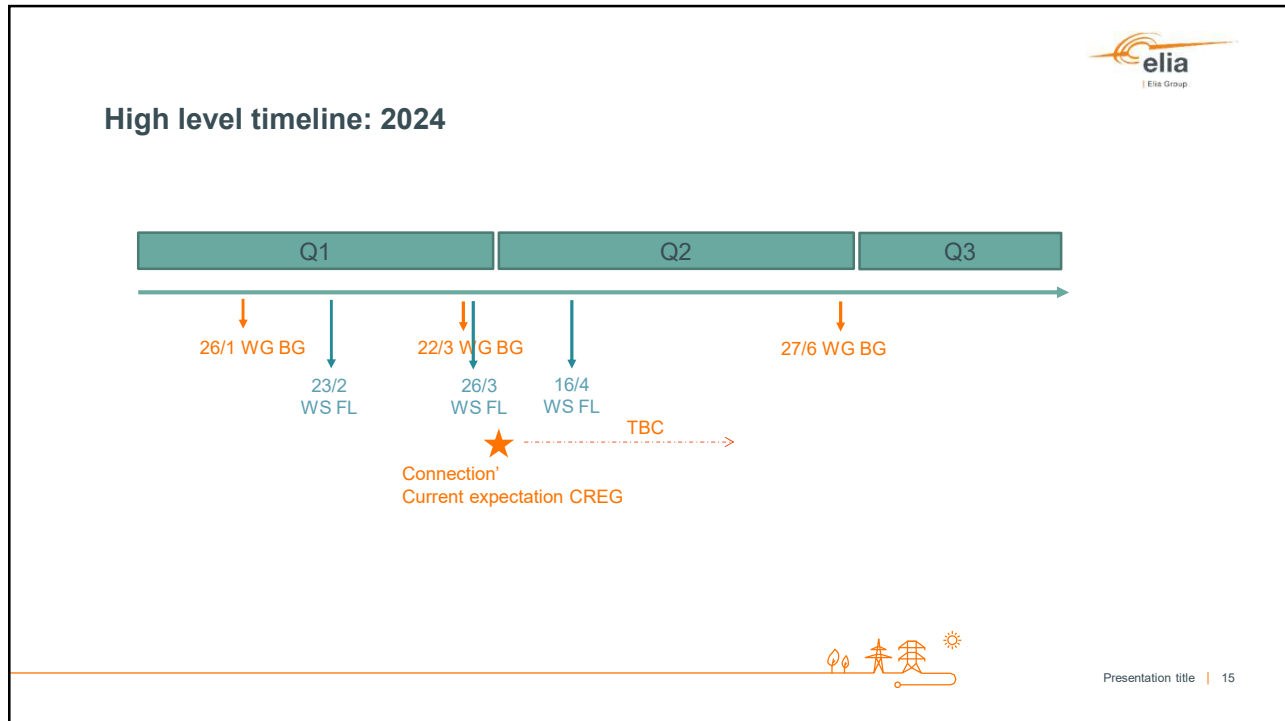
Connection process: first reflections

- Elia wants to thank market parties for the feedback received
 - This is very valuable to take into account in our ongoing reflections
 - Feedback is still very welcome!
- A lot of synergies with discussions on flexible access
 - > strong preference to link both initiatives
 - > workshops foreseen to collaborate with market parties
 - > timing of expectation is not very different
- Most solutions envisaged can be found without the need to drastically adapt the Code of Conduct (evolution not revolution)

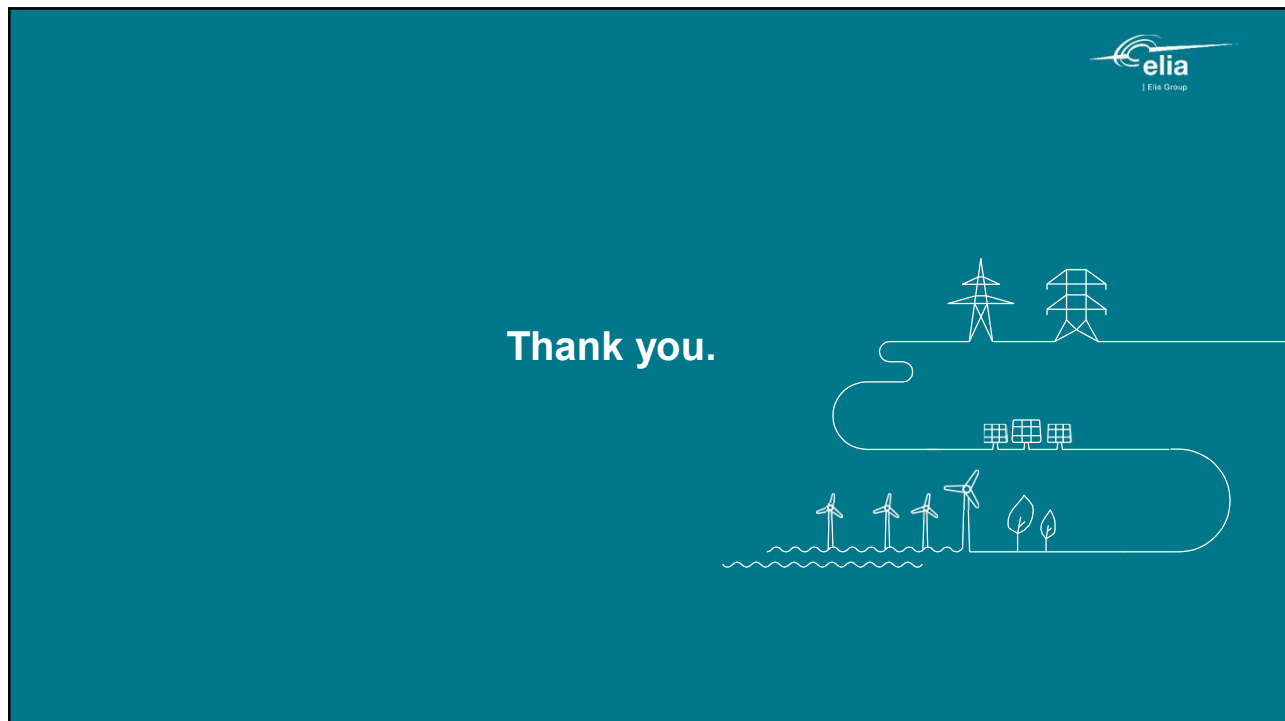


Presentation title | 14

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Agenda




1. **Hosting capacity maps** – stakeholder feedback
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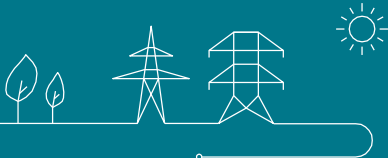
| 17

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Grid User Flex for congestion management

Stand van zaken en next steps



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Public Consultation and Incentive on Flexible Access

WG Belgian Grid– 26/01/2024

26.01.2024 | A. Weynants

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Agenda

1. Public consultation on the design note flexible access
2. Workshop on connections with flexible access
3. Congestion Management concepts


WGBG - Grid User Flexibility - 26.01.2024 | 20

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Pre read




Design Note on Connections with Flexible Access on the Federal Transport Grid : content

1. The **Criteria** justifying a **limitation in guaranteed/permanent connection capacity**
2. The **methodology and assumptions** used by Elia in estimating the **curtailed energy volumes**
3. The **impact** (if any) of the estimated **curtailed volumes** on **the business case** of the **grid user**
4. The **operational and financial modalities** of a **flexible access** for the grid user, including the practical and technical modalities to limit the power in production or offtake by Elia, possible compensation modalities, possible impact on the BRP perimeter and possible impact on grid tariffs;
5. The **criteria justifying a restriction in access** in the operational phase, taking into account the objective of guaranteeing grid security at the lowest cost at system level and thus the principle of efficiency;
6. **The rights and obligations** of the **grid user towards Elia**, on the one hand, regarding, for example, the follow-up of a shutdown request; and **those of Elia towards the grid user**, on the other hand, regarding, for example, reporting or justification, following the use of the possibility to restrict access.


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Pre read




Public consultation wrap-up



Goal of the Public Consultation :

- Describe our current way of working w.r.t. client with flexible access at Federal Grid Level (e.g. EOS/EDS, contract, flex activation...)
- Identify short/mid term adaptation needs in the Code of Conduct

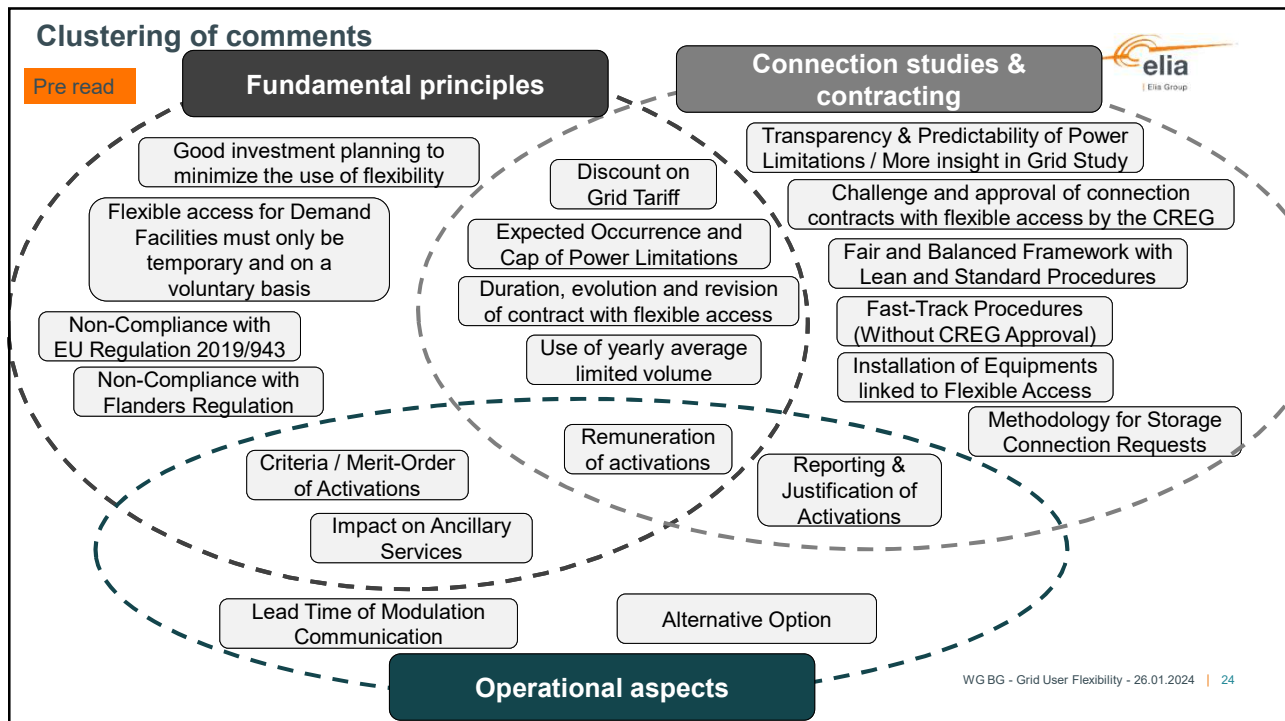


Duration of the Public Consultation and received answers

- The Public Consultation took place from 14/07/2023 to 18/09/2023
- 5 Market Players reacted (Febeliec, FEBEG, Bnewable, BSTOR, ODE)

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Next steps

- ❑ Report of the public consultation will be **published soon**

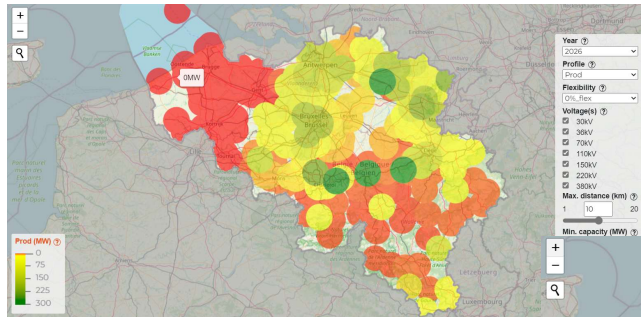
- ❑ The **feedback from the Market Parties** are an **important input** in order to **prepare and initiate the workshops** in the context of the incentive on connection with flexible access

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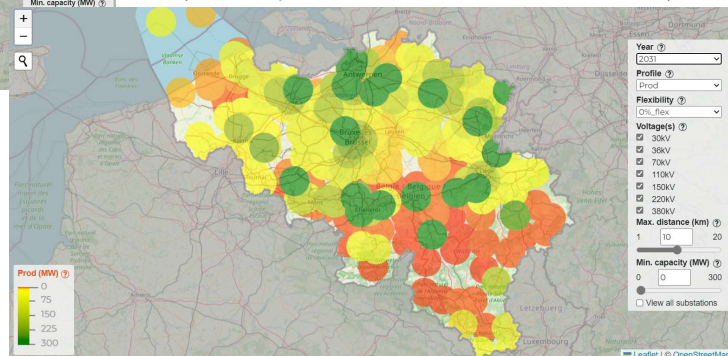
The Grid is reaching the limits of its Hosting Capacity The completion of planned investments will create additional Hosting Capacity



Hosting Capacity for production - 2026



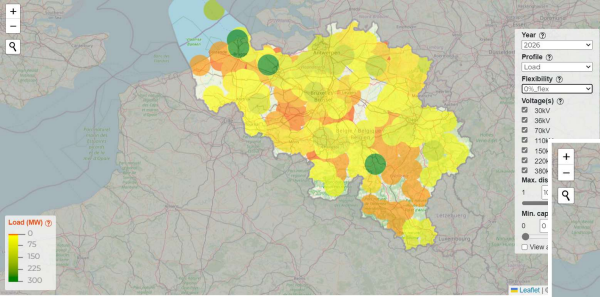
Hosting Capacity for production – 2031
(after completion of Ventilus and Boucle du Hainaut)




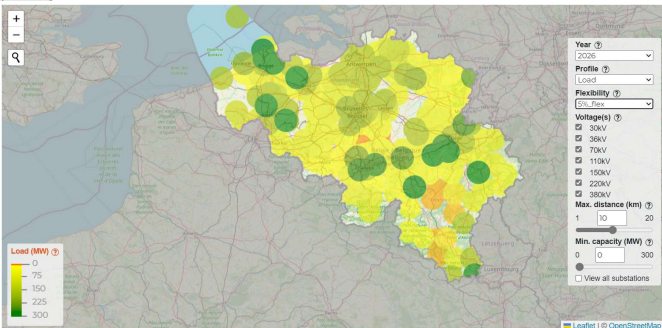
26

Limited flexibility can unlock additional hosting capacity

Hosting Capacity for load without flexibility - 2026








Hosting Capacity for load with 5% flexibility* - 2026

➔ During the workshops, we will assess the **role of connection with flexible access in long term grid planning** and evaluate in **what extent the remuneration of flexibility can be a proportionate alternative** compared to **grid reinforcements**

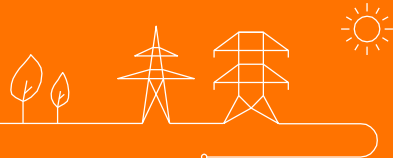
* Curtailment of 5% of the yearly consumption (MWh)

WGBG - Grid User Flexibility - 26.01.2024 | 27


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2. Workshop on Flexible access

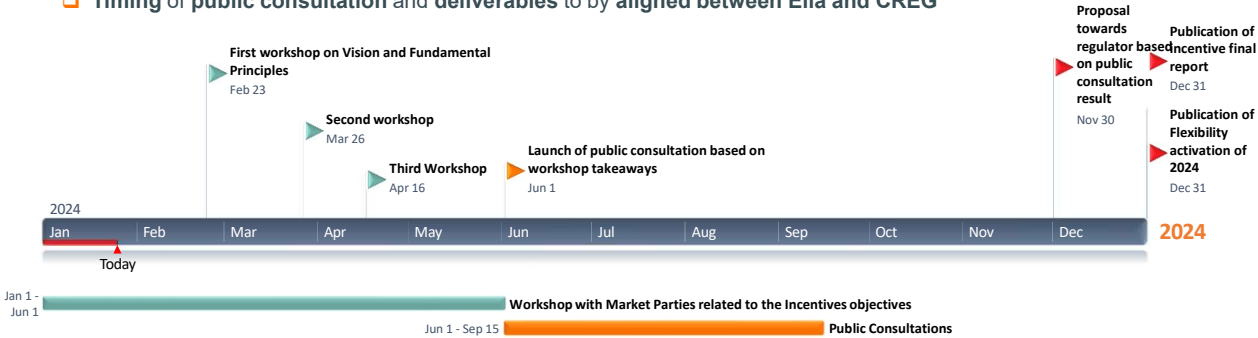


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Coming workshops

- **First workshop** planned on the **23/02/2024**
 - **Clarification** on the **planning and milestones** of the **ongoing initiatives** related to **flexible access** and **connection process**
 - **Vision** on **Fundamental principles** on connection with **flexible access**
- **Second and third workshops** planned on **26/03/2024** and **16/04/2023**
 - Content to be defined depending on takeaways of first workshop
- **Timing of public consultation and deliverables** to be **aligned between Elia and CREG**



▶ **Proposal towards regulator based on public consultation result** Nov 30
▶ **Publication of incentive final report** Dec 31
▶ **Publication of Flexibility activation of 2024** Dec 31

WG BG - Grid User Flexibility - 26.01.2024 | 29

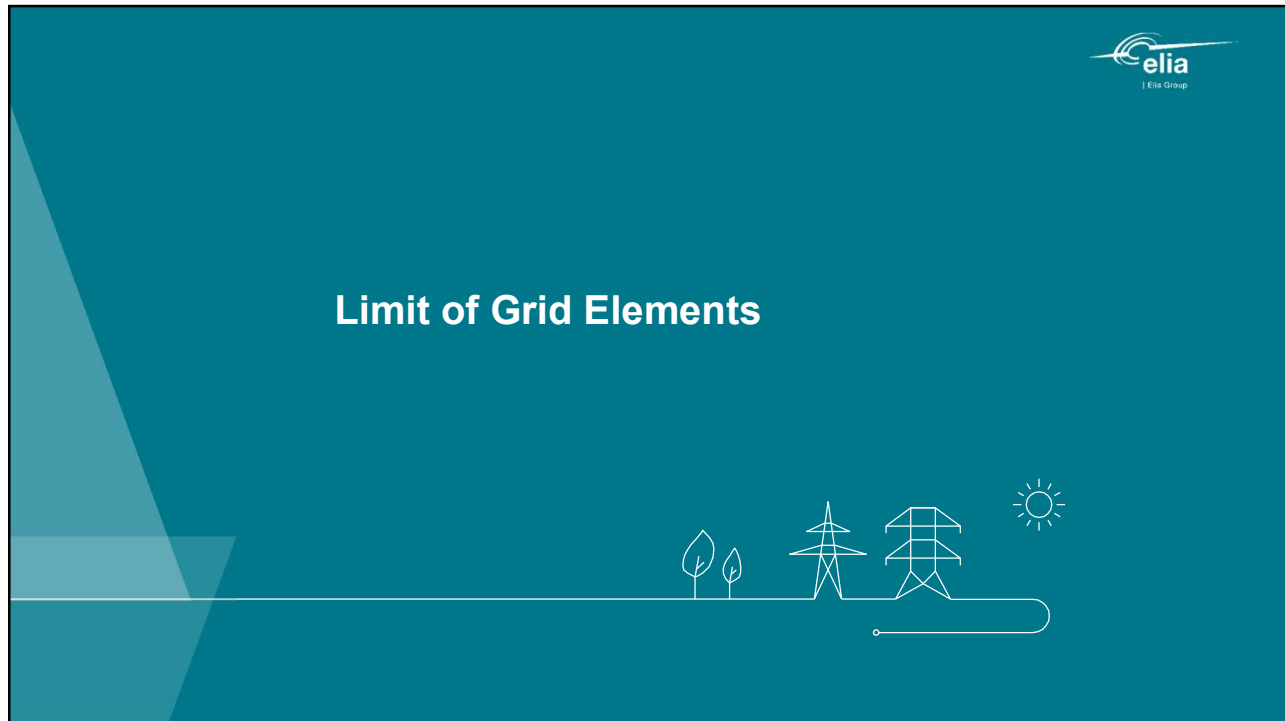
29



3. Congestion Management concepts



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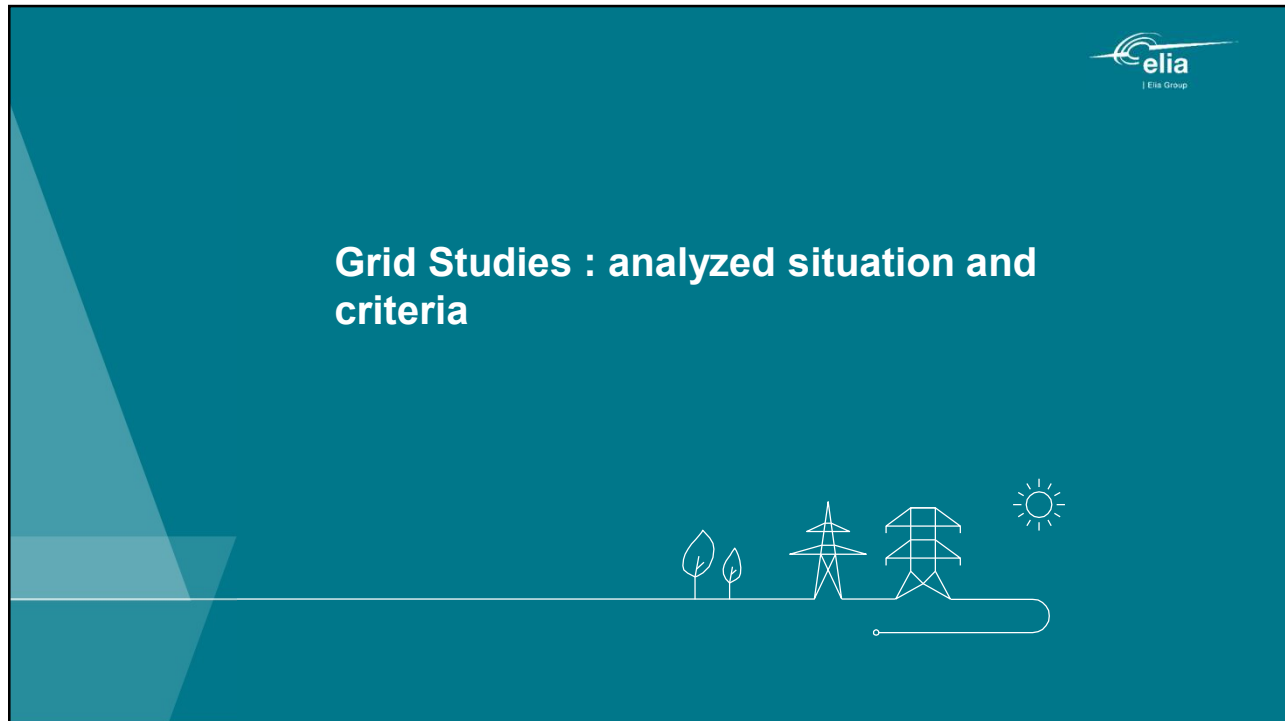
Permanent and temporary limits of Grid Elements

- ▣ **Permanent admissible limits** : loading (in A or MVA) that can be **accepted by a Grid Element** for an **unlimited duration without any risk for the material**
 - For some **types of Grid Elements** (e.g. overhead lines), the **permanent limits depend on the temperature** (we therefore have **seasonal limits**)

- ▣ **Temporary admissible limit** : loading (in A or MVA) that can be **accepted by a Grid Element** for a **certain limited duration** (e.g. **115 % of permanent limit during 15 min**). This loading depends on the **initial operating conditions** of the considered Grid Elements (e.g. linked to thermal inertia)
 - The temporary limits also depend on the temperature
 - Some **types of Grid Elements** don't have temporary admissible limits

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Grid Connection Studies – analyzed situations

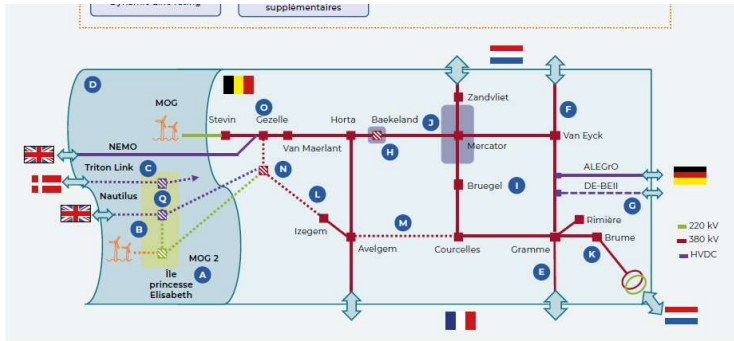
The following grid situations are analyzed within the Grid Connection studies :

- ❑ **N state : all the grid elements are available**
 - For each planned step of grid evolution, a new N state is studied
- ❑ **N-1 state : with respect to N state, one grid element or one Grid User is disconnected (in a planned or unplanned way)**
- ❑ **N-1-1 state: with respect to N state, one grid element is preventively taken out of service (for *maintenance, work or repair*) and then an **unplanned outage** takes place**
 - This state must be “respected” during sufficient time period so that the Grid Operator can plan the needed work, outages ...

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Practical case : study in North sea area



Considered steps of the planned Grid evolution

- 1) Asis
- 2) With Ventilus (2028)
- 3) With Boucle du Hainaut (2030)
- 4) With MOG 2 (as of Boucle du Hainaut)



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Operation limits for the analyzed states

The following **technical planning criteria** are respected for the different analyzed states if :

- Contingency list (N-1) defined in line with SOGL principles
- The **voltage** on each node remains between the operational limits
- The **short-circuit currents** don't exceed the maximal admissible values
- The **dynamic** and **transitory limits** of the production units is ensured
- The **power quality** requirements are satisfied
- The **current** in the **grid elements** don't exceed the **maximal admissible values**




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How to solve congestions ?



General philosophy :

- ❑ **Preventive actions** : in N state – to avoid unacceptable situations
 - All Grid Elements are below their permanent limits
 - All Grid Elements are below their temporary limits for each simulated N-1 situation
 - Preventive action is needed if the temporary limits of Grid Elements are exceeded in N-1
- ❑ **Curative actions in N-1** : actions taken when problematic situation appears in order to get back to safe state
 - ❑ All Grid Elements should be put back below their permanent limits

In practice

- ❑ **Curative** action situation if overload is below temporarily limits (15')
 - 1 topology action (Tap TFO or PST adjustment + close or open breaker)
 - Curtailment*
- ❑ If the temporary limits are exceeded in case of N-1 situations, Elia performs preventive actions in N
 - 1 topology action
 - Redispatching* or curtailment*

* Curtailment = Gflex, Redispatching = CIPU/iCAROS

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Keep the grid N-1 safe

If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

N situation

Upstream Network

Line B 55%

Line A 65%

R1

R2

R1


R2

80%

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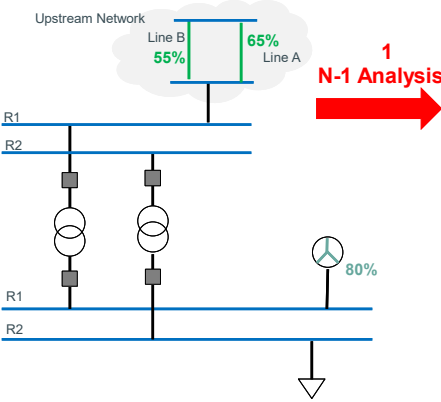
Keep the grid N-1 safe



If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

N situation is safe




1 – Security Analysis
N-1 safe if outage?

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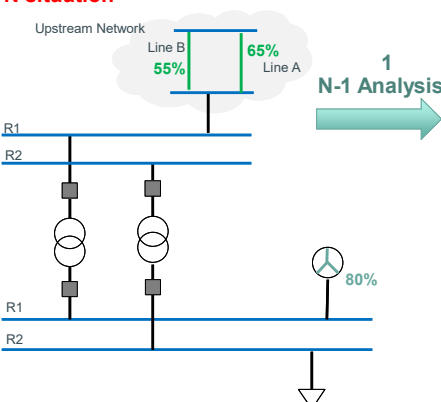
Keep the grid N-1 safe



If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

N situation



Charge on line "A"

Upstream Network
Line B 55% | Line A 105%

Limit 15 minutes

Measurand If outage **2 ?** Permanent limit

Measurand in N

- Security Analysis
N-1 safe if outage?
- Optimal Power Flow
If needed, curative action
- Calculate effort to solve this case
Curtailment of unit

Next outage

1 – Security Analysis
N-1 safe if outage?
2 – Optimal Power Flow
If needed, curative action
3 – Calculate effort to solve this case
Curtailment of unit
Next outage

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Keep the grid N-1 safe

If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

N situation

Charge on line "B"

- 2 ? Measurand If outage
- Limit 15 minutes
- Permanent limit
- Measurand in N

- 1 – Security Analysis
N-1 safe if outage?
- 2 – Optimal Power Flow
If needed, preventive action

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Keep the grid N-1 safe

If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

N situation

Charge on line "B"

- 2 ? Measurand If outage
- 3
- Limit 15 minutes
- Permanent limit
- Measurand in N
- 3
- Value in N to keep the grid safe in case of line A outage

- 1 – Security Analysis
N-1 safe if outage?
- 2 – Optimal Power Flow
If needed, preventive action
- 3 – Calculate effort to solve this case
Calc. setpoint for this case N-1

WG BG - Grid User Flexibility - 26.01.2024 | 44

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Keep the grid N-1 safe

If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

N situation

WG BG - Grid User Flexibility - 26.01.2024 | 45

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Keep the grid N-1 safe

If outage,

- All grid elements stay under 15min limits
- N-1 safe again within 15 min.

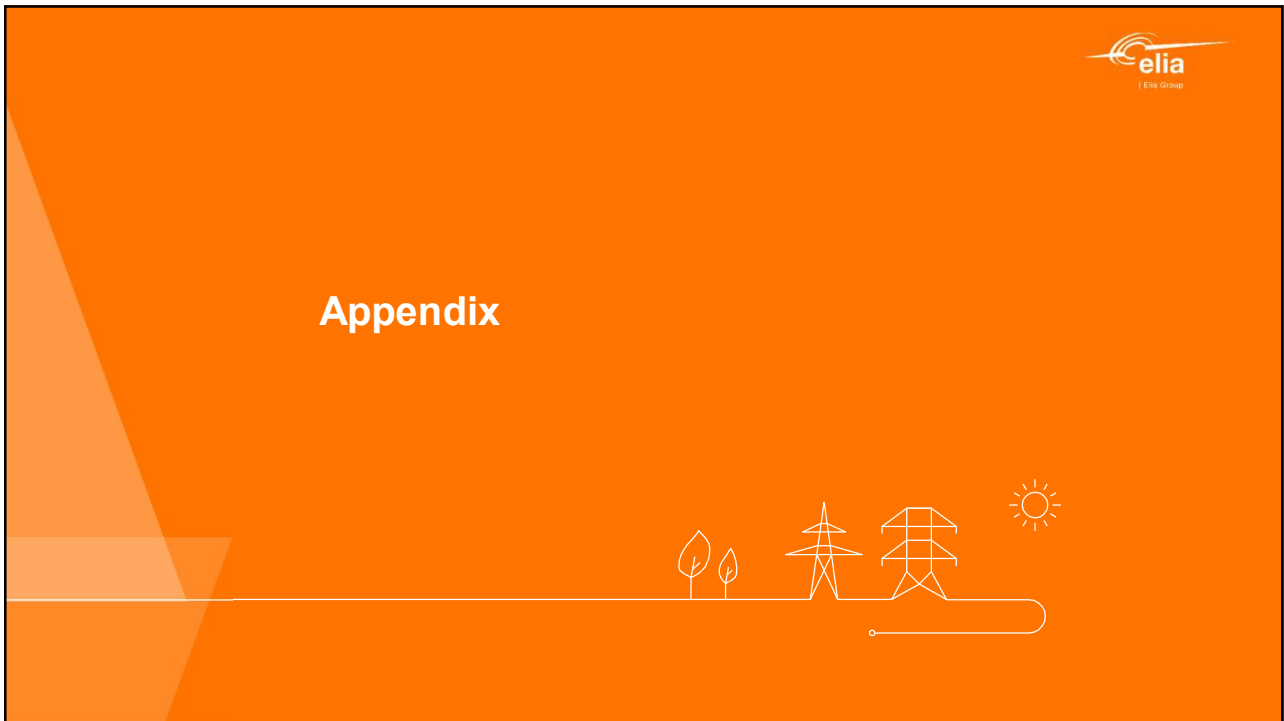
New N situation

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CREG Incentive 2024 : “Vision et Roadmap sur la flexibilité pour la gestion des congestions et communication transparente sur l’activation de la flexibilité dans le cadre des contrats avec accès flexibles”





3 Objectives




Assurer la transparence des activations des installations raccordées avec accès flexible en cas de congestions (Scope = activation des raccordements avec accès flexible, hors scope: redispatching)

- Pour les clients Elia: publication des activations (MW, durée, MWh) et comparaison avec les valeurs contractuelles
- Pour les clients DSO: publication des consignes de limitation de puissance au point d'accès DSO (MW&durée)



Développer une vision et méthodologie pour intégrer la flexibilité dans les CBA supportant les variantes de raccordement proposées aux UR dans le cadre des EOS/EDS

- Méthodologie pour le calcul de la capacité flexibilisée et leur valorisation
- Principes pour allouer les coûts d'investissement pour le raccordement/renforcement du réseau
- Méthodologie pour intégrer la flexibilité dans les analyses coûts-bénéfices des variantes de raccordement au réseau et Identification des éléments à modifier dans le cadre réglementaire existant



Vision et roadmap sur le rôle de la flexibilité des raccordements avec accès flexible dans le développement du réseau (objectif: optimum technico-économique)

- Rôle des raccordements avec accès flexible dans l'optimisation du développement du système électrique
- Trade-off entre capacité d'hébergement suffisante et le risque de stranded assets

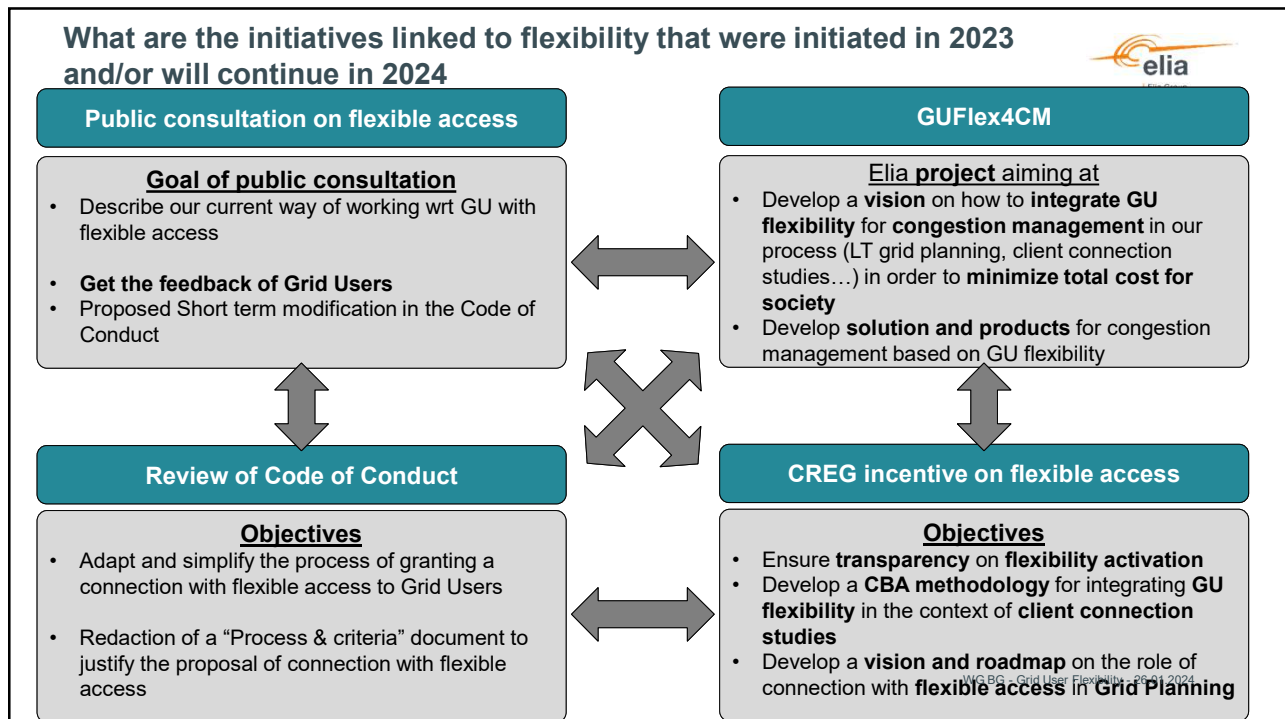
→ Incentive focus on Vision and Concepts

→ Co creation between Elia and Market Parties

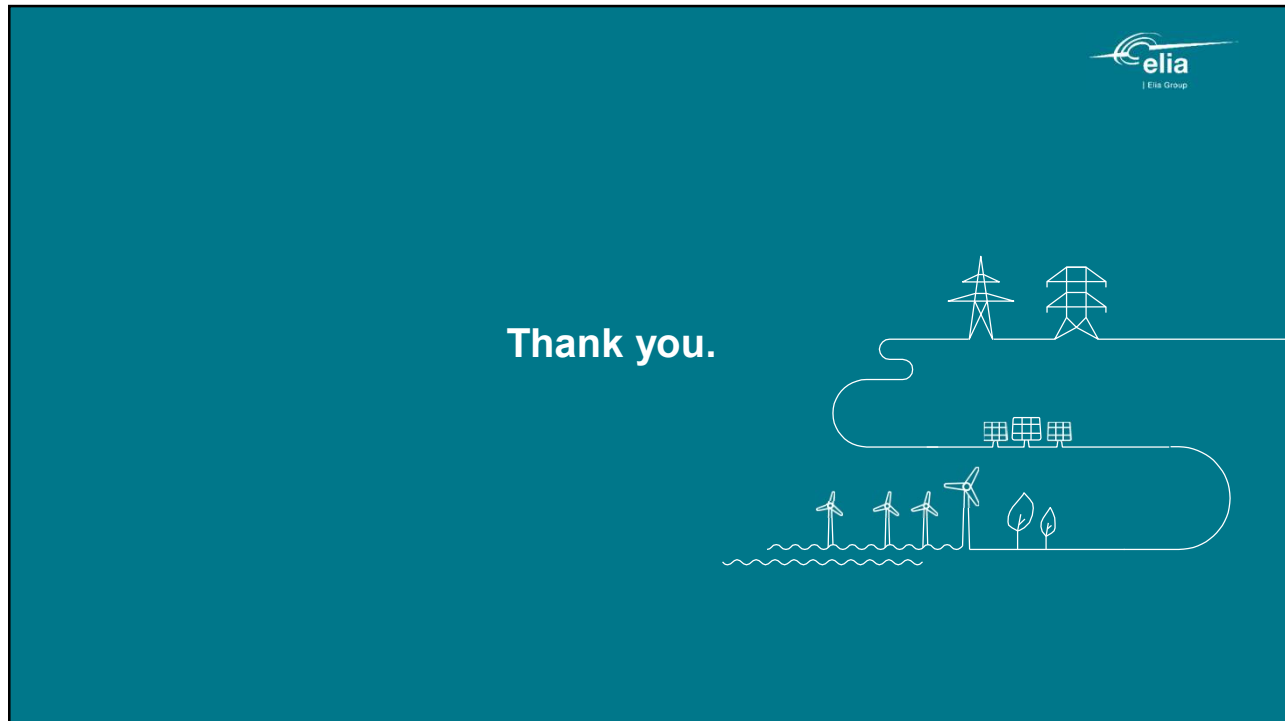
→ Organization : dedicated workshops to be planned and recurring follow up in WG BG

WG BG - Grid User Flexibility - 26.01.2024 | 49

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The slide has a white background with a thin black border. In the top left corner, the word 'Agenda' is written in orange. In the top right corner is the Enea Group logo. The main content is a list of five items, with the fourth item highlighted by an orange rectangular border. At the bottom right, there is a small orange icon depicting a leaf, a person, and a gear, with a line extending from the gear. The page number '52' is located in the bottom right corner.

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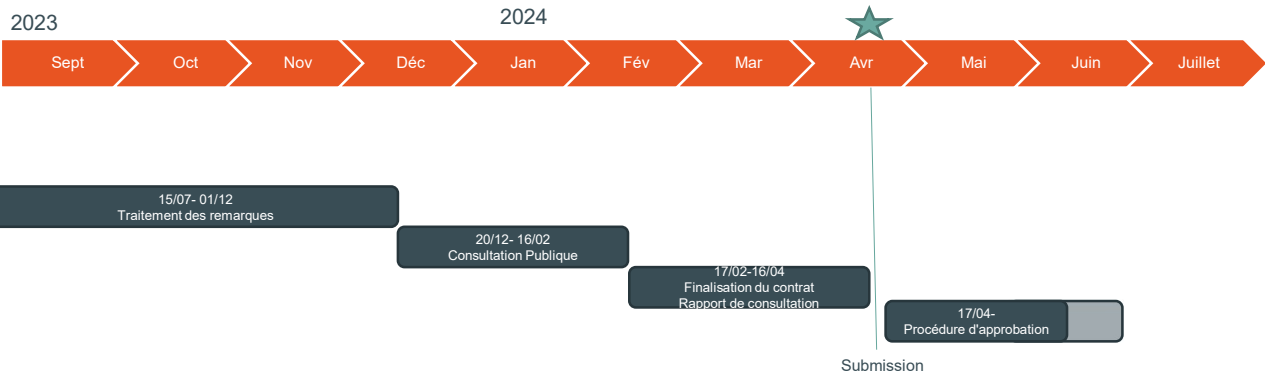
Objective for today's meeting

- Capture first reactions on the text submitted for consultation on Dec 20th
- Go through answer to comments received during the informal consultation (sent Jan 24)
- Next steps/timing

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Timeline

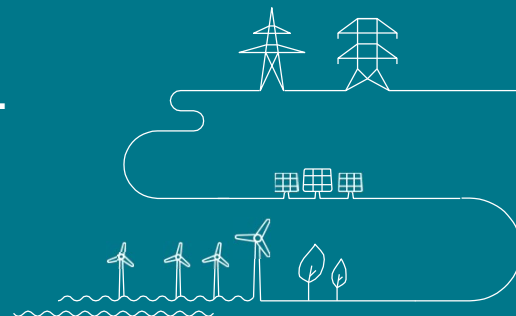


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Topics triggering the most comments

- Art. 8.2 Alarm-, nood-, black-out- of hersteltoestand
- Art. 8.3 Overmacht
- Art 12.1 Ingebrekestelling en/of schorsing van de uitvoering van het Contract in geval van niet-conforme of schadeverwekkende Installaties
- Art. 13.1 Wijziging van het Contract
- Art. 18.1 Het tot stand brengen van, wijzigen en het ter beschikking stellen van de Aansluitingsinstallaties
- Art 18.2 Beheer van de Aansluiting
- Art. 20.2 Planning
- Art. 24 Aanwijzing van de OPA/SA

Thank you.



Agenda



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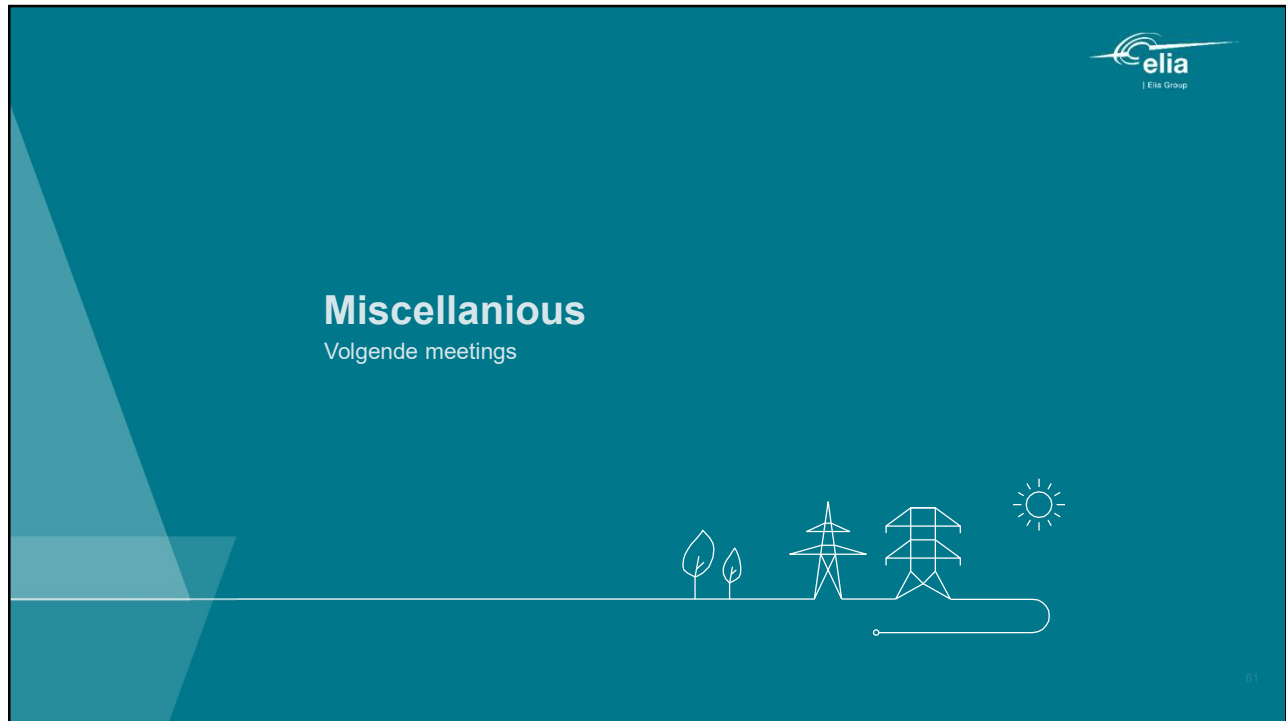
Miscellaneous

CREG – gedragscode – stand van zaken ontwerpbeslissing - aansluiting met flexibele toegang



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Volgende meetings

Werkgroep Belgian Grid

- 22/03/2024 09:30u – 12:30u
- 27/06/2024 13:00u – 16:00u
- 01/10/2024 09:30u – 12:30u
- 13/12/2024 09:30u – 12:30u

Workshops Incentive Flexibele toegang

- 23/02/2024 09:00u – 13:00u
- 26/03/2024 09:00u – 13:00u
- 16/04/2024 09:00u – 13:00u

Title of presentation | 62

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