



WG Belgian Grid

13/09/2022

WiFi: 79GVwwze

Agenda

- 1. Public consultation Tariff Proposal**
- 2. Incentives**
 - 1. Hosting Capacity Maps**
 - 2. MVAr-service – design optimisations**
 - 3. Cost Benefit analysis on requirements for generators**
- 3. Status Contracts**
 - 1. Connection Contract**
 - 2. Access Contract**
- 4. Miscellaneous**
 - 1. Next Belgian Grid: Friday 5th of May – 14-17u**



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Consultation Publique Proposition Tarifaire 2024-2027

Consultation publique portant sur les éléments déterminants des évolutions envisagées dans la future proposition tarifaire

Elia Transmission Belgium, WG Belgian Grid

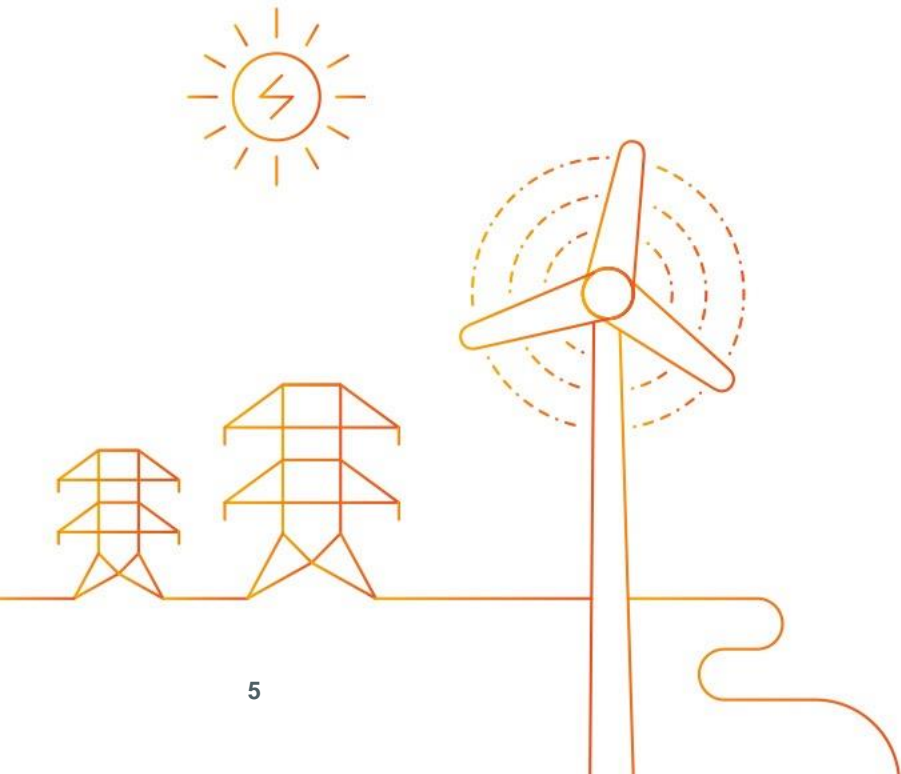
Bruxelles, 16 février 2023

Jessie Moelans & David Zenner



Agenda

1. Introduction et cadre général
2. Evolution des couts, revenus, rémunérations et personnel
3. Volumes: hypothèse et évolution
4. Principes généraux quant à l'allocation des couts et les tarifs
5. Obligation de service public, taxes et surcharges
6. Annexes
7. Réactions sur les documents de consultation



Introduction et cadre général



Introduction

- Elia soumettra le **10 mai 2023** à l'approbation de la CREG une Proposition tarifaire couvrant la période régulatoire 2024-2027
- Cette Proposition tarifaire devra être établie dans le respect de la Méthodologie tarifaire 2024-2027 adoptée par la CREG le 30 juin 2022
- Consultation:
 - ✓ dans le cadre de l'accord conclu entre la CREG et Elia, Elia organise: « une consultation des entreprises d'électricité concernées portant sur les éléments déterminants des évolutions envisagées dans la future proposition tarifaire »
 - ✓ une consultation a déjà été organisée par la CREG dans le cadre de l'élaboration de la nouvelle méthodologie tarifaire 2024-2027

Cadre général

- L'établissement d'une Proposition tarifaire pluriannuelle → s'apparente à un travail prospectif d'anticipation de la réalité future
- L'élaboration de la Proposition tarifaire constitue un exercice complexe réalisé dans un cadre caractérisé par un grand nombre d'incertitudes et de facteurs de risque. L'élaboration tient compte au maximum de ces incertitudes et adopte des mesures anticipatives à cet égard
- Si les facteurs de risque influencent considérablement la capacité d'Elia à accomplir ses activités, Elia souhaite pouvoir en tenir compte et adapter sa Proposition tarifaire en conséquence au cours de la période régulatoire concernée.

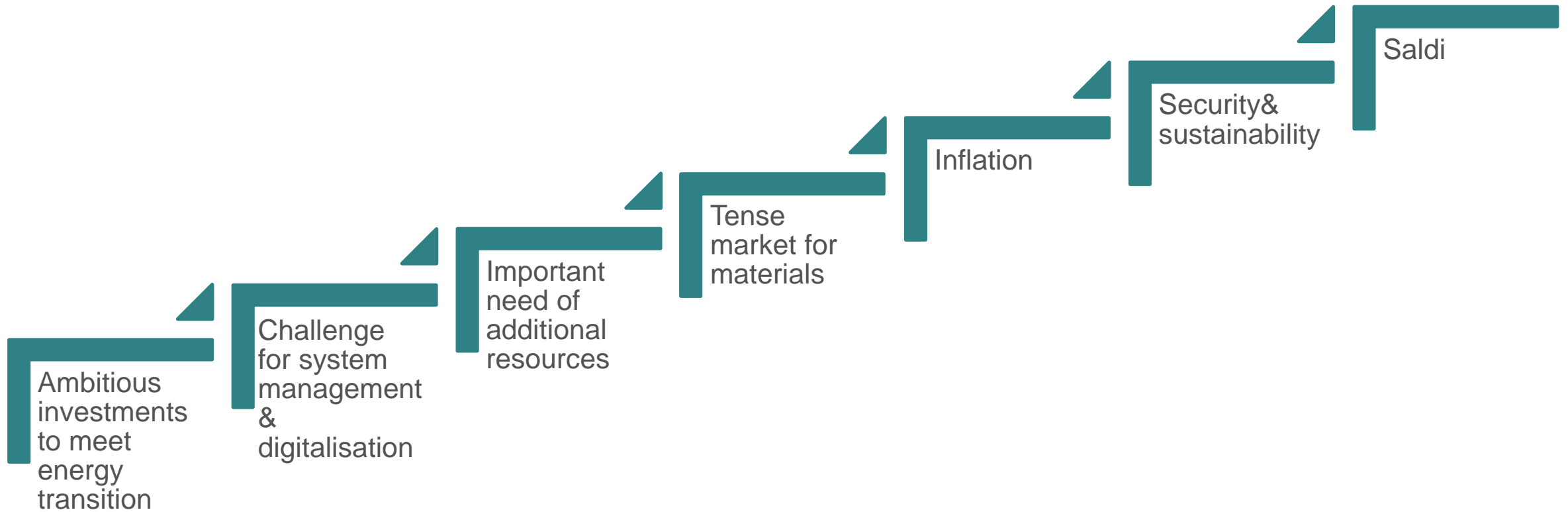
Benefits for society

+50% industrial consumption	Increase of the electricity needs as to decarbonize current industry process and offer new industrial opportunities in the benefit of Belgian economy	2030 onwards
750 to 1.200 M€/y Welfare	Yearly welfare benefit for Belgium brought by realizing cross border projects set in the Federal development plan 2024-2034	2030-2035
-10 to -15€/MWh Electricity price	Reduction of the average yearly price paid by the Belgian consumer thanks to the cross-border projects, corresponding to 15 to 25% reduction on the price that would be expected	2030-2035
-5 to -7 Mtons/y CO2 Emissions	Reduction of carbon emissions at European level brought by the realization of those projects corresponding to around 20 to 30% of Belgian electricity related emissions.	2030-2035
-250M€/y System costs	Reduction of system costs (volume of reserve needed for system management and volume of capacity needed for adequacy purpose) with digitalization and market design evolution (as CCMD)	2032 onwards
+600 Green Jobs	Elia will need 600 extra internal resources to accomplish the challenges ahead of the next regulatory period : invest in the grid, maintain it, manage the electric system & develop digital solutions.	2024-2027
40 Secured Critical infrastructures	Critical infrastructure better protected. Improved cyber-security facing decentralization. Care for sustainable footprint for our activities	2024-2027

Evolution des couts, revenus et rémunérations



Origins of the cost increases



Couts – Programme d'investissement – (1/2)

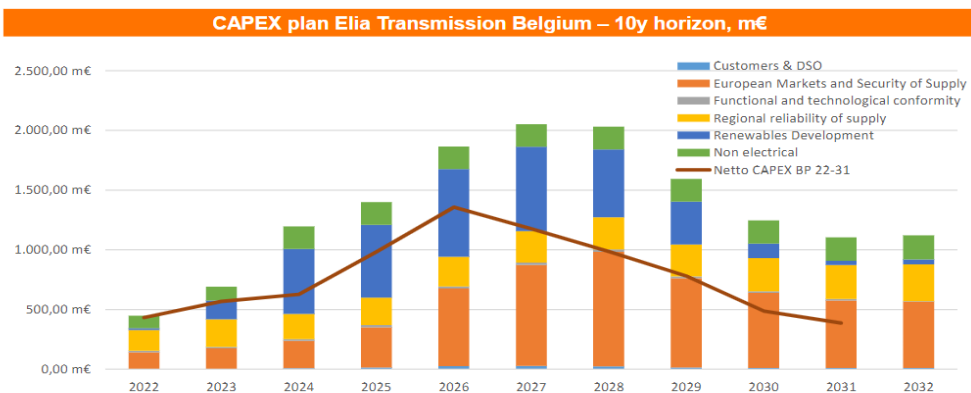
- Fait référence aux plans de développement au niveau fédéral et régional préparés par Elia (le plan de développement fédéral est actuellement en phase d'approbation)
- Le programme d'investissement dans les infrastructures de réseau pour la période tarifaire 2024-2027 est principalement déterminé par les éléments suivants :
 - ✓ les développements offshore, y compris l'île énergétique et les connexions AC et DC au réseau onshore
 - ✓ renforcement supplémentaire du réseau 380kV dans le but de permettre l'intégration du RES dans le réseau belge
 - ✓ augmentation de la capacité et des volumes demandés pour les connexions des utilisateurs du réseau
 - ✓ remplacement d'équipements et démolition de plusieurs lignes
 - ✓ interconnexions supplémentaires pour maximiser l'intégration avec le marché de l'UE

Couts – Programme d'investissement – (2/2)



- Le programme d'investissement global envisagé par Elia dans le cadre des différents plans de développement s'élève à environ 7,2 milliards d'euros pour les cinq prochaines années, dont **6,5 milliards pour la période tarifaire 2024-2027**.
- Ces investissements comprennent principalement des projets d'infrastructure électrique, mais aussi des **projets dits "non électriques"**, plus particulièrement liés à la construction de bâtiments, à la mise à niveau de la sécurité des postes et à la digitalisation.

Total CAPEX net (with inflation and price impact)



- Les couts du plan d'investissement ambitieux (et nécessaire) pour passer à la décarbonation entraînent également des avantages:

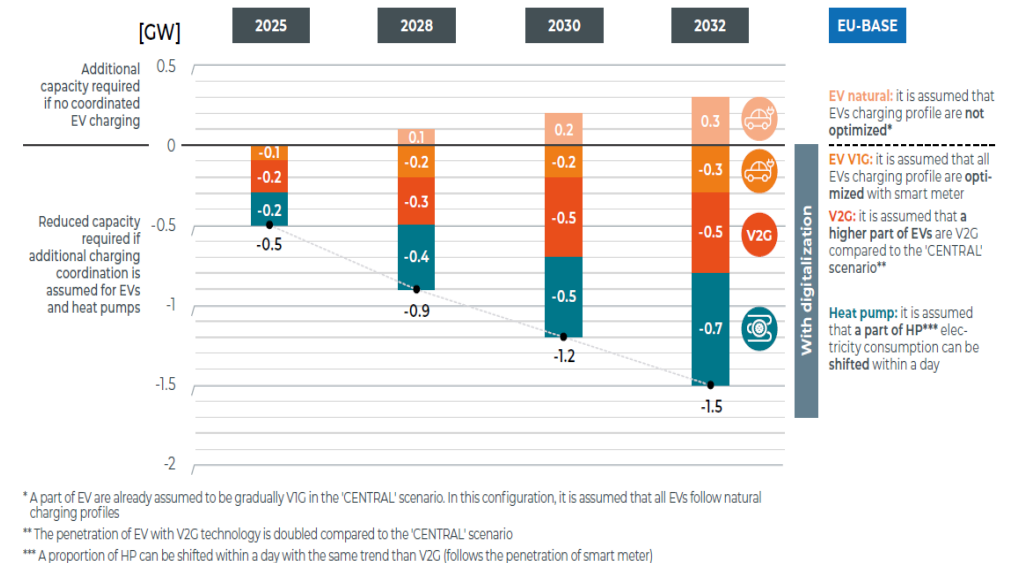
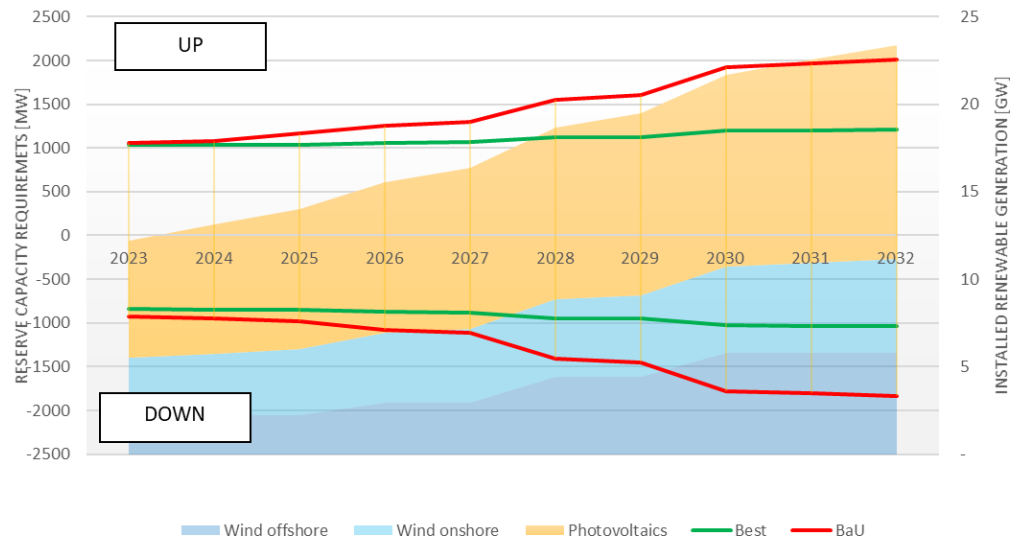
750 to 1.200 M€/y Welfare	Yearly welfare benefit for Belgium brought by realizing cross border projects set in the Federal development plan 2024-2034	2030-2035
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Kosten – Systeembeheer – (1/4)

- De transformaties in de maatschappij en het energielandschap betekenen onder meer dat Elia de komende jaren sterker zal moeten **inzetten op de digitalisering van haar activiteiten** om de complexiteit efficiënt te beheren (vb. om operatoren te voorzien van de nodige ondersteunende systemen voor het nemen van beslissingen). **Efficiënte digitale integratie** is inderdaad noodzakelijk om het systeem management ook in de toekomst te blijven garanderen
- Een **adequate digitale infrastructuur** en een **flexibele architectuur** van nieuwe applicaties of functionaliteiten is essentieel en zal helpen een groeiend aantal kritische gegevens die in zeer korte tijd te beheren en verwerken

Kosten – Systeembeheer – (2/4)

- Tegen 2032 zou de behoefte aan reservecapaciteit bij een ongewijzigd markt design en een uitblijvend adequaat digitale infrastructuur zelfs kunnen verdubbelen. Elia werkt aan een markt design die op lange termijn de bijkomende behoeften aan toereikende capaciteit (tot 250 miljoen euro per jaar) kunnen verminderen.



-250M€/y
System costs

Reduction of system costs (volume of reserve needed for system management and volume of capacity needed for adequacy purpose) with digitalization and market design evolution (as CCMD)

2032
onwards

Kosten – Systeembeheer – (3/4)

- De nood aan **flexibiliteit** en de nood aan te **reserveren capaciteit** (FCR, aFRR en mFRR) wordt verwacht **toe te nemen** in de periode 2024-2027
- Kosten voor het **compenseren van de regionale netverliezen** → vergeleken met de voorgaande tarifaire periode worden deze kosten **verwacht te stijgen**. Deze kost is immers sterk gecorreleerd met het niveau van de energieprijzen, maar gezien de verwachte toenemende elektrificatie wordt ook een graduele stijging van de regionale netverliezen verwacht
- **Kosten voor spanningsbeheer** → het verwachte kostenprofiel evolueert doorheen de jaren in de komende tarifaire periode, waarbij netto wel een **significante kostendaling verwacht** wordt tegen het einde van de tarifaire periode vergeleken met het huidige kostenniveau

Kosten – Systeembeheer – (4/4)

Reservatiekosten:

- 175 miljoen euro per jaar in de periode 2024-2027
- 150 miljoen euro reële kosten per jaar in 2020-2023 waarbij het voorziene budget voor de tarifaire periode 2020-2023 ingeschat werd op ongeveer 80 miljoen euro per jaar

Verliezen:

- 60 miljoen euro per jaar in de periode 2024-2027
- 25 miljoen euro per jaar in 2020-2023 waarbij het voorziene budget voor de tarifaire periode 2020-2023 ingeschat werd op ongeveer 20 miljoen euro per jaar

1 System complexity increase is becoming unmanageable without digitalization



- Complexity of system operations
- Multiplication of market players
- Decentralization and large increase of assets to control in real-time and ex-post

2 Digital infrastructure has to evolve



- More flexible for development and deployment
- More cyber secured
- Faster interoperable
- Efficient and scalable

3 Migration to cloud is needed



- Hybrid cloud is required to benefit
 - from public cloud scalability
 - From sovereignty of private cloud

4 Limitation today require change now to cope with business requirements



- Many applications for 24-27 require cloud shift as there are current limitations
 - Voltage management
 - Ancillaries/ Energy market, scheduling
 - Decentralized assets data streaming
 - Settlement

Inkomsten

- Elia verwacht **minder hoge congestie-inkomsten omwille van:**
 - verwachte, betere convergentie van de elektriciteitsprijzen tussen buurlanden
 - verwachte terugkeer van nucleaire eenheden in Frankrijk
 - verwachte daling van de energieprijzen

- **Congestie-inkomsten**
 - 125 miljoen euro per jaar in de periode 2024-2027
 - 195 miljoen euro per jaar in de periode 2020-2023 als gevolg van de zeer hoge congestie-inkomsten in 2022
 - de tarieven 2020-2023 hielden rekening met congestie-inkomsten van iets minder dan 45 miljoen euro per jaar

Tarifaire schuld

- Die schuld – waarvan het definitieve bedrag bekend zal zijn na de beslissing over de tarifaire saldi voor het jaar 2022 die de CREG naar verwachting in juni 2023 zal nemen – zal in mindering worden gebracht op de tarieven voor de periode 2024-2027. Het geraamde bedrag dat over de periode 2024-2027 moet worden terugbetaald – onder voorbehoud van de herziening van de saldi van 2022 door de CREG – is ongeveer 200 miljoen euro.
- Ter herinnering: de saldi die voor de regelgevende periode 2020-2023 in aanmerking zijn genomen, waren ook een 'tarifaire schuld' in de orde van grootte van 430 miljoen euro

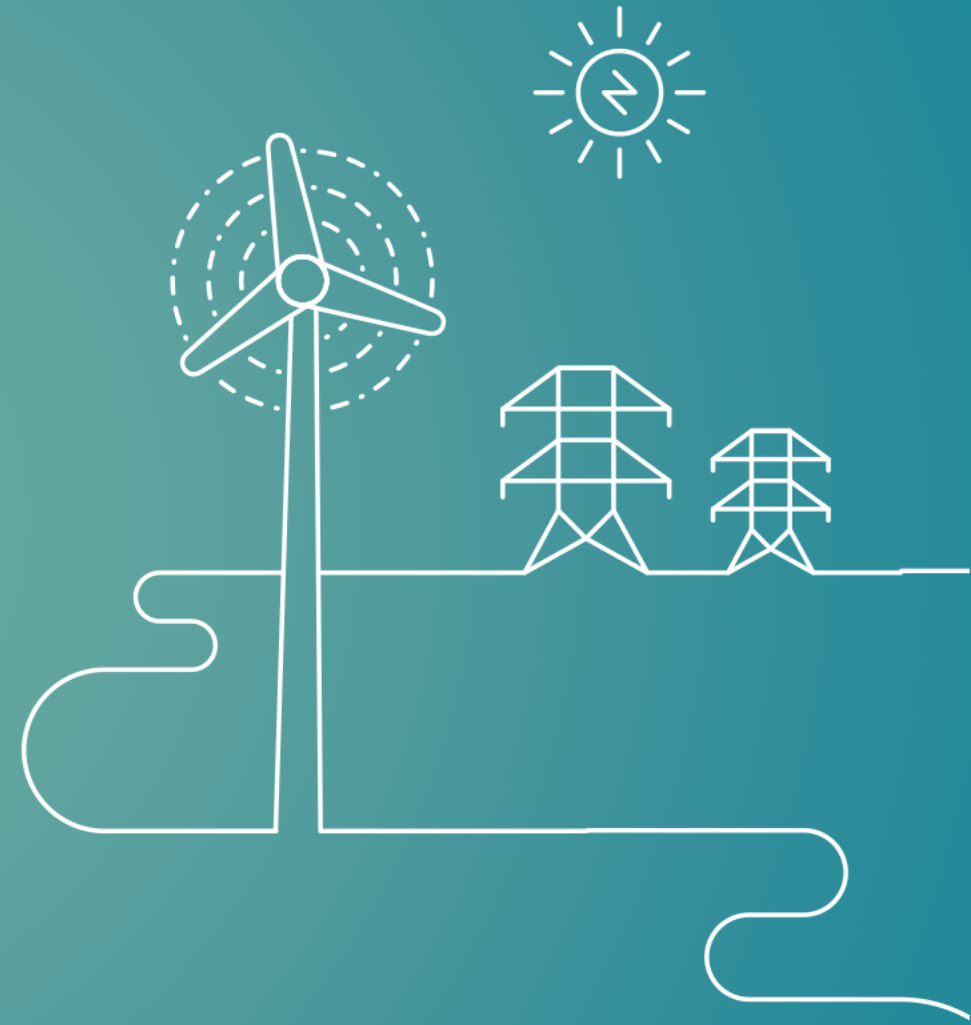
Rémunération

- Marge équitable sur les capitaux investis → définie dans la Méthodologie tarifaire
- Incitants octroyés en contrepartie de l'atteinte d'objectifs fixés par la CREG comme spécifié dans la Méthodologie tarifaire
 - Conformément à ce cadre, la présente consultation publique porte également sur la fixation de la liste des projets entrant en ligne de compte pour l'incitant « réalisation d'investissements visant la fiabilité du réseau »

Transmission tariffs in 2024-2027 – evolution of the costs & impact

- The total transmission costs to be covered by the tariffs are expected to increase:
 - ✓ From +- 760 M€/y in the period 2020-2023
 - ✓ To +- 1350 M€/y in the period 2024-2027
- Uptake in investment in infrastructure:
 - ✓ From +- 1,9 milliards in the period 2020-2023
 - ✓ To +- 6,5 milliards in the period 2024-2027
- System costs (reservations, losses, congestion rents):
 - ✓ From +- 150 million in the period 2020-2023
 - ✓ To +- 175 million in the period 2024-2027
- Increase in workforce
 - ✓ From 1500 in 2022
 - ✓ To 2100 in 2027

Volumes: hypothèse et évolution

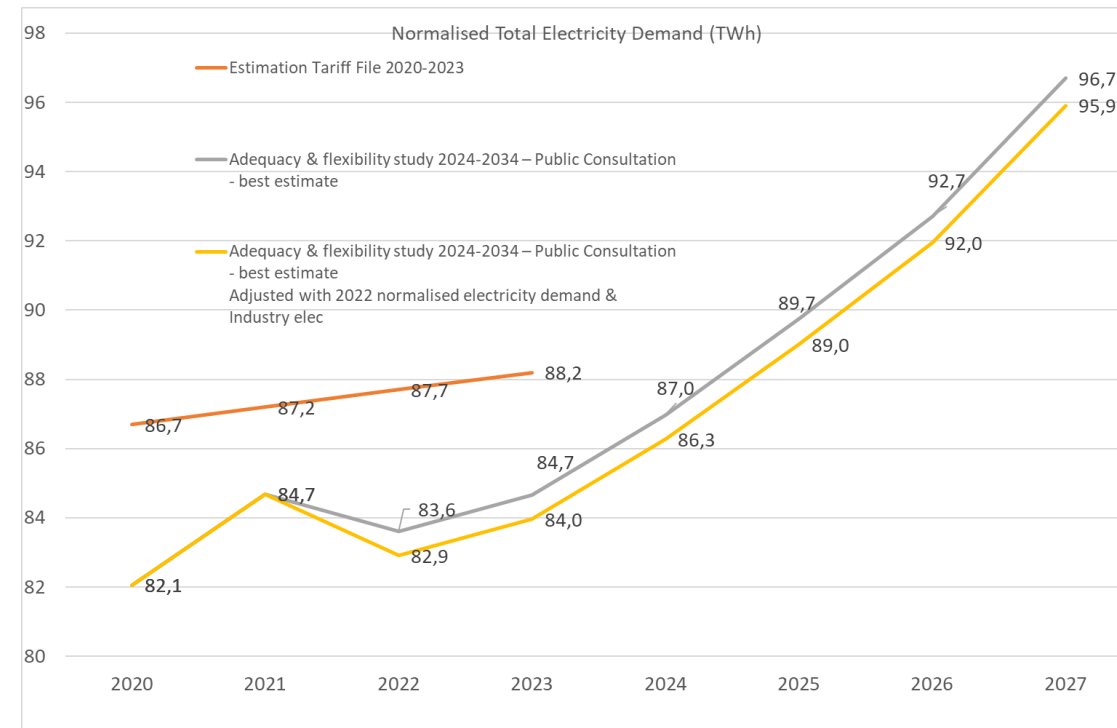


Hypothèse – Charge du réseau et demande en électricité

La « charge totale » ou demande en électricité tient compte de toutes les charges électriques sur le réseau Elia et de toutes les charges connectées sur les réseaux de distribution (y compris les pertes sur le réseau)

La croissance totale de la charge est estimée à 20,3 % entre 2022 et 2027 ; elle devrait essentiellement survenir entre 2025 et 2027 (13,3 %)

Les principaux moteurs de cette évolution à la hausse sont l'électrification des transports, du chauffage et de l'industrie, ainsi que l'augmentation des centres de données



Hypothèse – Energie nette

L'énergie active nette prélevée est calculée sur la base de la charge totale et tient compte de la production locale des sites de prélèvement directement raccordés au réseau Elia, de la production décentralisée sur les réseaux de distribution et des pertes sur le réseau.

Bien que le prélèvement actif net réel était en augmentation au cours des 3 dernières années, celui-ci était en moyenne de 7 % plus faible par rapport aux volumes de la Proposition tarifaire 2020-2023

Elia a mesuré une augmentation significative – plus que proportionnelle – de l'énergie réactive (capacitive) nette prélevée par rapport à l'augmentation de l'énergie active nette prélevée ces dernières années.

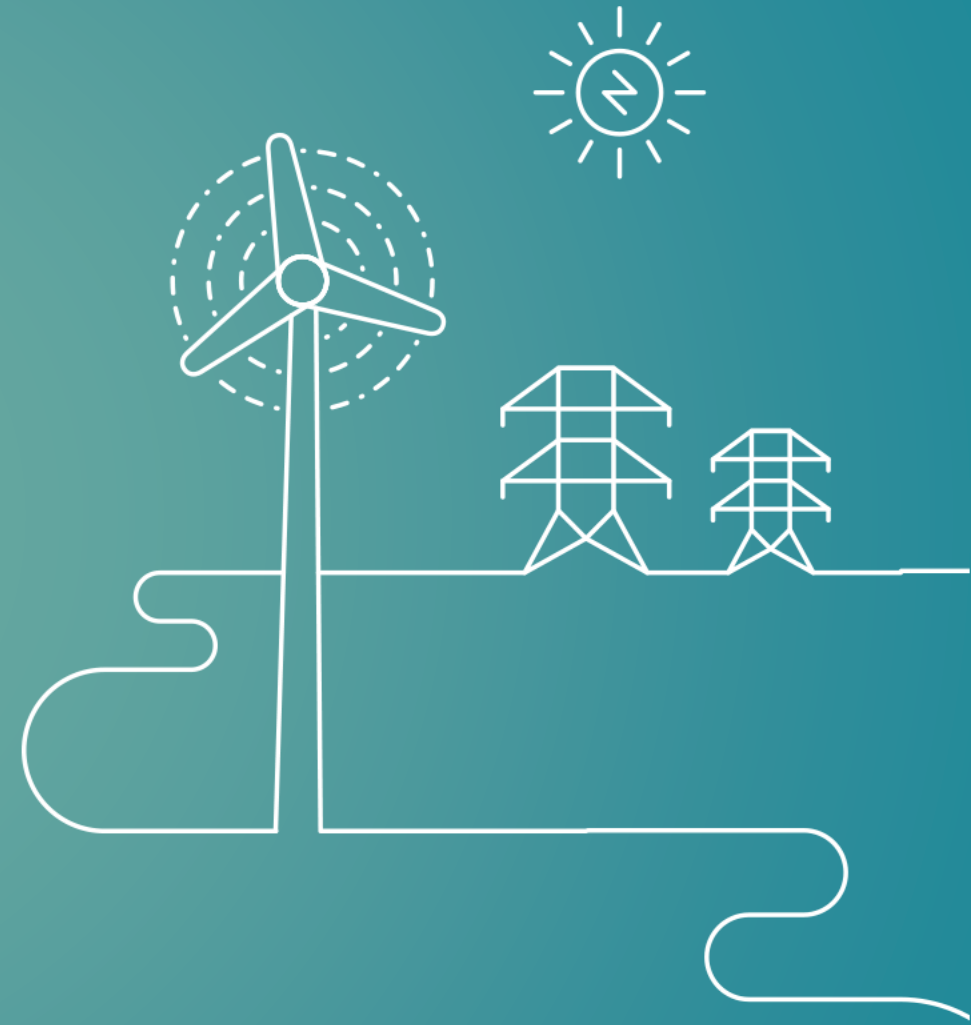
Hypothèse – Injection

Elia a observé une augmentation de l'injection nette de 6 % en moyenne entre 2020 et 2022 par rapport aux volumes mentionnés dans la Proposition tarifaire 2020-2023. Cette augmentation s'explique par une meilleure disponibilité du parc de production nucléaire belge en 2021 et 2022

Pour la Proposition tarifaire 2024-2027, l'estimation de l'injection nette tient compte des développements rencontrés dans les mises à disposition de capacités sur les interconnexions internationales, ainsi que de la fermeture progressive du parc de production nucléaire belge et de l'ouverture de deux nouvelles centrales au gaz dans le cadre du mécanisme CRM (voir aussi la consultation publique pour l'étude « Adequacy & Flexibility Study 2024-2034 §2.2.1 »).

https://www.elia.be/-/media/project/elia/elia-site/public-consultations/2022/20221028_adequacy-and-flexibility-study-2024-2034-assumptions-and-methodology-main-doc.pdf

Principes généraux quant à l'allocation des couts et les tarifs



Principes généraux allocation des couts et tarifs – (1/2)

- Un tarif individuel par année au lieu d'un tarif égal et constant pour toute la période
- Structure tarifaire conformément à la Méthodologie tarifaire:
 - ✓ Tarifs de raccordement;
 - ✓ Tarifs pour la gestion et le développement de l'infrastructure de réseau;
 - ✓ Tarifs de gestion du système électrique;
 - ✓ Tarifs de compensation des déséquilibres;
 - ✓ Tarifs pour l'intégration du marché.

Principes généraux allocation des couts et tarifs – (2/2)

- Structure tarifaire basée sur les principes suivants, conformément à la méthodologie tarifaire:
 - ✓ Output-based
 - ✓ Transparence
 - ✓ Simplicité
- Total des couts nécessaires + rémunération → à couvrir par les tarifs de transport
- Nombre de groupes de clients: 3
 - ✓ En réseau 380/220/150kV;
 - ✓ En réseau 70/36/30kV;
 - ✓ A la sortie des transformations vers la Moyenne Tension.

Allocation entre injection et prélèvement – (1/3)

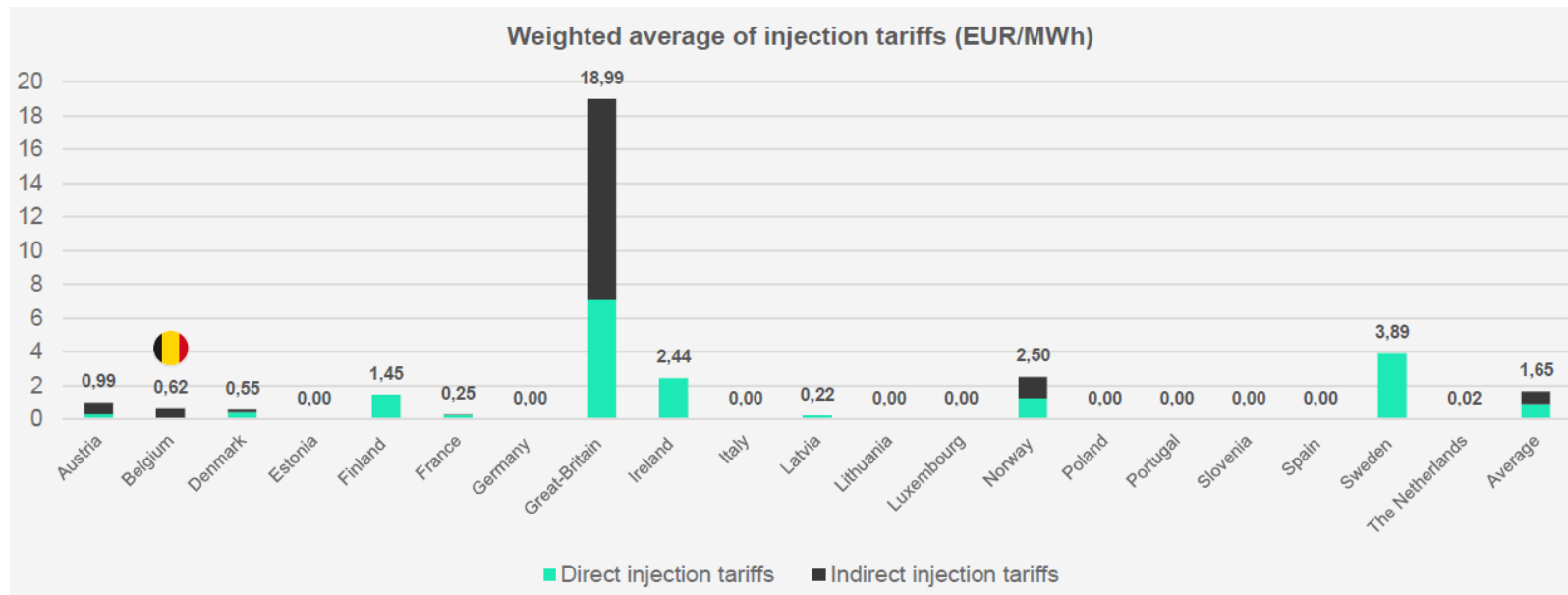
- Proposition d'Elia basée sur **les principes et les choix relatifs aux tarifs d'injection tels que définis dans la proposition tarifaire 2020-2023**:
 - ✓ Seulement un tarif d'injection pour le tarif pour les réserves de puissance et le « black start »
 - ✓ Répartition 50% - 50% entre injection et prélèvement des couts sous-jacents aux puissances de réserve
 - ✓ Tenant compte d'un benchmark international des tarifs d'injection
- Elia propose que **le tarif d'injection ne soit pas supérieur au tarif d'injection moyen révélé par le benchmark**

Allocation entre injection et prélèvement – (2/3)

- Elia a réalisé le benchmark sur base:
 - ✓ De la moyenne pondérée du tarif d'injection tel qu'il figure dans la revue des tarifs de transport applicables dans les pays pertinents, complétée par une évaluation des éventuelles obligations en nature imposées aux producteurs
 - ✓ Périmètre géographique considéré: vingt pays/marchés considérés comme faisant partie du Single Day Ahead Coupling (SDAC)
 - ✓ D'autres arguments peuvent étoffer le benchmark

Allocation entre injection et prélèvement – (3/3)

- Elia présente au travers la note de consultation publique les résultats de l'étude de benchmark aux acteurs du marché
- Elia s'apprête à proposer un **tarif d'injection qui ne sera pas supérieur à 1,65 € / MWh** dans le cadre de sa future Proposition tarifaire 2024-2027



Structure Tarifaire

- Elia propose de maintenir la structure tarifaire applicable pour la Période tarifaire 2020-2023 pour la période 2024-2027
- Elia propose néanmoins 3 évolutions de la structure tarifaire pour la Période tarifaire 2024-2027, afin d'inciter à une meilleur gestion de la flexibilité présente chez des utilisateurs de réseau

Tariff structure adaptations - proposed adaptations –

(1/4)

Power Terms

Tariff for the monthly peak

- Introduction of an exoneration period – no dynamic method → simplicity and clarity for the GUs
- Structural period to apply exoneration assessed : **April to September, weekend, 12 AM – 7 PM**
- Correlation with D/A price evolution assessed

Tariff for the yearly peak

- Assess & confirm yearly peak period → period confirmed : **November to March, weekdays, 5-8 PM**

Tariff structure adaptations - proposed adaptations –

(2/4)

Power Terms

Tariff for the power put at disposal (PPAD) → Introduction of a second level of PPAD

- Goal :
 - ✓ Support electrification by unlocking extra hosting capacity while avoiding or delaying the need to reinforce the grid
 - ✓ Enhance the deployment of flexible assets or flexible industrial processes on grid user's premises
- Concept :
 - ✓ First level = current PPAD : Base @ Full Tariff
 - ✓ Second level = new : Flex @ Reduced Tariff
- Baseline = in any case, PPAD Flex will only be allowed on volumes that are really flexible (see next slide)
 - ✓ Proposal for Flex volumes always based on a TSO analysis (EOS/EDS) and under acceptance by the Grid User of strict contractual & operational rules
 - ✓ Proposal for Storage --> PPAD Flex only (as storage are flexible assets per definition and should not impair access to the grid for other users)

Tariff structure adaptations - proposed adaptations –

(3/4)

Power Terms

- Expected results : Win – Win situation
 - ✓ Grid User is allowed to connect extra load at reduced tariff in grid areas where a standard approach would result in no or delayed connection capacity
 - ✓ Elia avoids grid reinforcement to increase the hosting capacity and relies on the offered flexibility to manage local bulk or N-1 congestion situation
- Flexible means :
 - ✓ that the volume can be technically modulated or totally curtailed :
 - on simple demand of Elia
 - at any time, even without prior notice
 - ✓ without any financial compensation of any kind for the grid user or any other involved third party
 - ✓ that a specific set-up is needed to support the transmission and acknowledgement of the setpoints communicated by Elia, including the capacity to disconnect the volume if needed
 - ✓ that in case of non respect of the order issued by Elia, Elia has the right to disconnect the grid user or a set of predefined installations of the grid user from the grid

Tariff structure adaptations - proposed adaptations –

(4/4)

Energy Terms

- Introduction of a dynamic component on the tariffs in €/MWh for offtake
 - ✓ Tariff for the management of the electric system – differentiated by CIL
 - ✓ Tariff for the power reserves & for the black start – same for all CIL's
 - ✓ Tariff for the market integration – same for all CIL's
- Tariff construction :
 - ✓ $\text{Tariff}_{\text{year } 20xx} = (\text{Cost to be covered})_{\text{year } 20xx} / (\text{Forecasted Volumes})_{\text{year } 20xx}$
 - ✓ $\text{Tariff_Dyn}_{\text{year } 20xx} = X \% \times \text{Tariff}_{\text{year } 20xx} + Y \% \times (\text{Day-Ahead Price})_{\text{hourly}}$
 - Fixed Term
 $X = 80 \%$
 - Variable Term
 $Y = ((1-X \%) \times \text{Tariff}_{\text{year } 20xx}) / \text{Ref_Price}_{\text{year } 20xx}$
- In order to maintain the tariff debt within a predetermined range :
 - ✓ Introduction of Tariff caps (Min & Max prices, corresponding to predetermined amount)
 - ✓ Need to review the “Y” during Tariff Period to cope with Future evolution

Tariff structure adaptations - Dynamic Tariff applied to BS & R for 2022

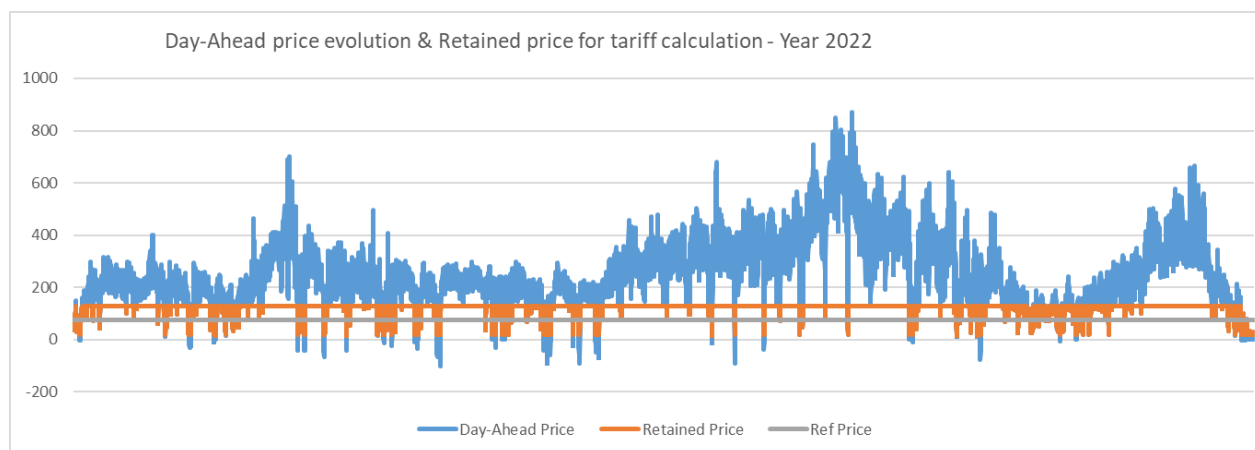
CAL-22 evolution during 2021



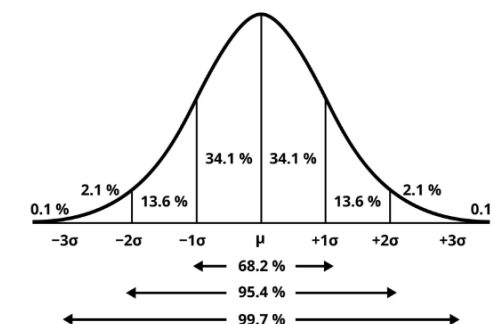
1/12/2021

- Reference Price 2022 = Average CAL-22 on period 30/11/2020– 30/11/2021 = 75,132 €/MWh
- Standard Deviation CAL-22 on period 30/11/2020 – 30/11/2021 = 27,5617 €/MWh
- Price Cap for application of dynamic tariff = Reference Price + 2 x Standard Deviation = 130,255 €/MWh
- Price Floor for application of dynamic tariff = Reference Price - 2 x Standard Deviation = 20,008 €/MWh

Covers 95,4 % of the quoted values



The Normal Distribution



$$\text{Tariff}_{\text{Hourly}} = X \% \times \frac{(\text{Cost to be covered})_{\text{year 2022}}}{(\text{Forecasted volumes})_{\text{year 2022}}} + (1-X) \% \times \frac{(\text{Cost to be covered})_{\text{year 2022}}}{(\text{Forecasted volumes})_{\text{year 2022}}} \times \frac{1}{\text{Reference Price 2022}} \times \text{Day-Ahead Price}_{\text{Hourly}}$$

Fixed Term

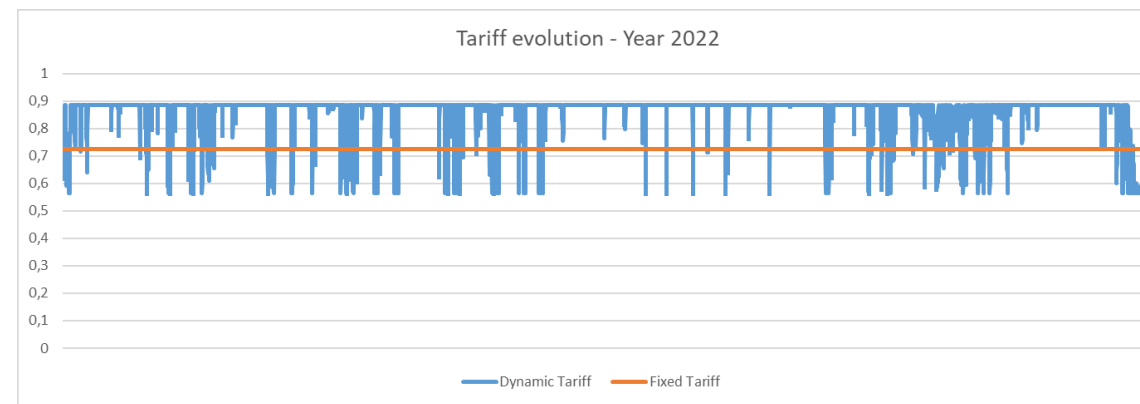
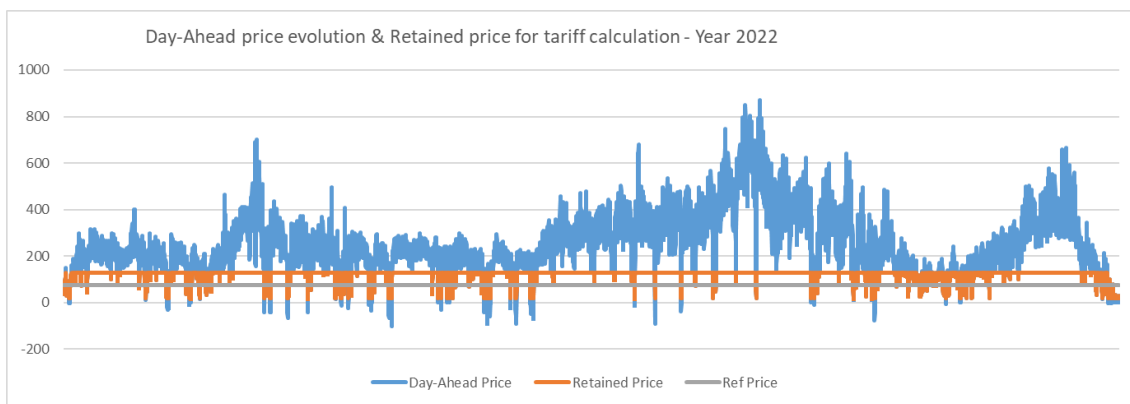
Variable Term

Tariff structure adaptations - Dynamic Tariff applied to BS & R for 2022

$$\text{Tariff}_{\text{Hourly}} = X \% \times \frac{(\text{Cost to be covered})_{\text{year 2022}}}{(\text{Forecasted volumes})_{\text{year 2022}}} + (1-X) \% \times \frac{(\text{Cost to be covered})_{\text{year 2022}}}{(\text{Forecasted volumes})_{\text{year 2022}}} \times \frac{1}{\text{Reference Price 2022}} \times \text{Day-Ahead Price}_{\text{Hourly}}$$

With X = 70 %

$$\text{Tariff}_{\text{Hourly}} = 0,50778 + 0,29\% \times \text{Day-Ahead Price}_{\text{Hourly}}$$



# hours @ Cap Tariff	7245	82,71%	of the time
# hours @ Floor Tariff	208	2,37%	of the time

$$\text{Revenues}_{\text{Hourly}} = \text{Tariff}_{\text{Hourly}} \times \text{Volumes}_{\text{Hourly}}$$

Revenues 2022 Fixed Tariff	43.362.334,22 €	
Revenues 2022 Dynamic Tariff	51.582.581,08 €	
Delta 2022 revenues	8.220.246,86 €	19%

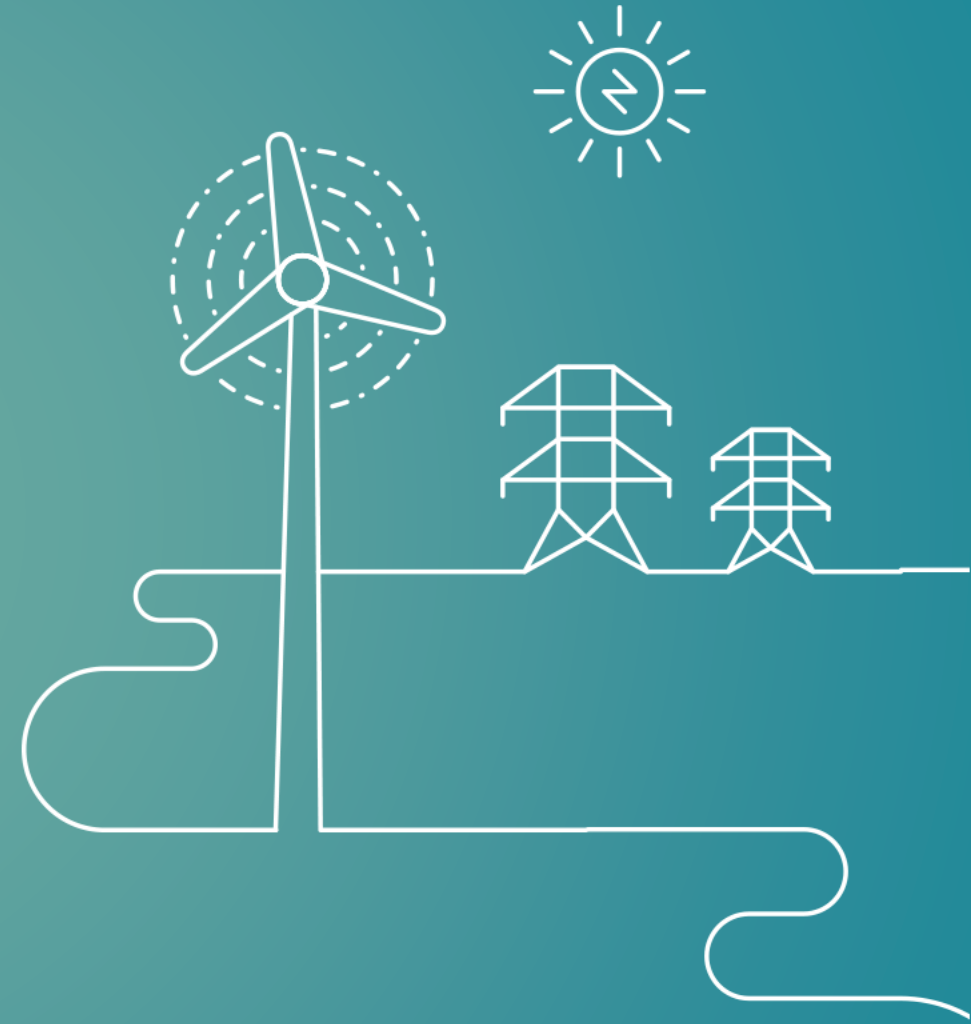
Obligation de service
public, taxes et surcharges



Obligations de service public, taxes et surcharges

- Obligations de service public, taxes et surcharges imposés au gestionnaire de réseau par les autorités compétentes
- Taxes et surcharges: couts ajoutés aux montants facturés par le gestionnaire de réseau
- Obligations de service public : l'ensemble des couts nets (couts de gestion et charges financières) lié à leur exécution est répercuté dans les tarifs

Annexes



Annexes

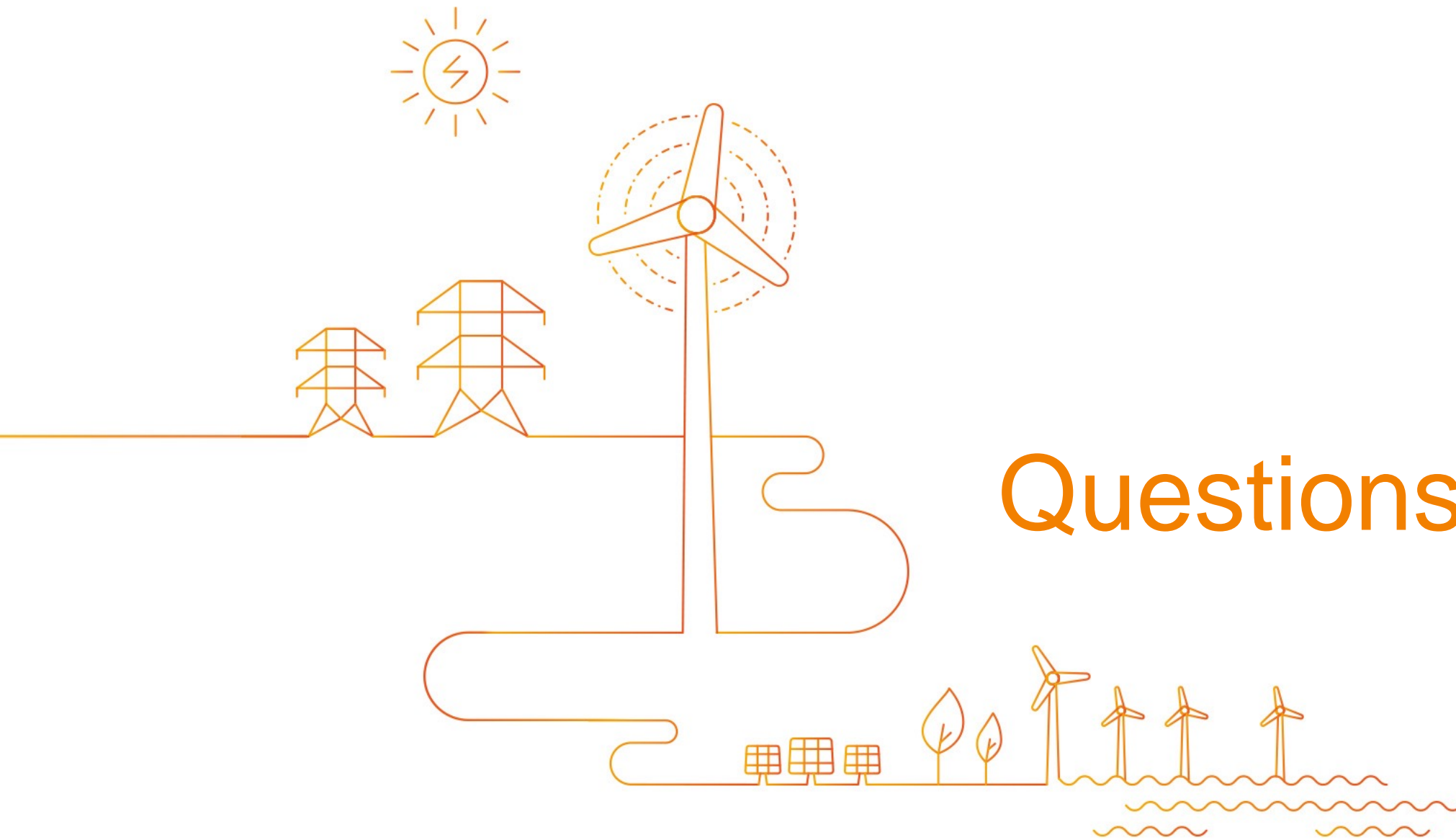
- 1. Sia Partners - Etude de benchmark des tarifs d'injection**
- 2. Grille tarifaire pour les tarifs d'utilisation du réseau et de réservation des services auxiliaires**
 - ✓ afin de permettre aux acteurs du marché de se préparer aussi bien que possible à l'implémentation des nouveaux tarifs de transport pour la période tarifaire 2024-2027, Elia joint une première esquisse provisoire de la grille tarifaire pour les tarifs d'utilisation du réseau et de réservations des services auxiliaires.
 - ✓ cette grille est donc partagée à titre purement informatif et pourra encore être sujette à des changements suite à la présente consultation ou à la décision de la CREG.
- 3. Liste de projets Incitant « Réalisation d'investissements visant la fiabilité du réseau**



Réactions sur les document de consultations

Réactions sur les documents de consultation

- Cette consultation sera organisée du **mardi 14 février au lundi 20 mars 2019** inclus.
- Toutes les réponses doivent être soumis par le page consultation accessible sur le site web d'Elia. Toutes questions supplémentaires peuvent être envoyée à l'adresse e-mail : consultations@elia.be
- Les réactions des parties consultées sont communiquées nominativement à la CREG. Toutefois, la partie consultée peut demander que sa réaction fasse l'objet d'un traitement anonyme dans le rapport de consultation qui est mis à la disposition de toutes les parties consultées.



Questions ?!



Thank you!

Agenda

1. Public consultation Tariff Proposal

2. Incentives

1. Hosting Capacity Maps
2. MVAr-service – design optimisations
3. Cost Benefit analysis on requirements for generators

3. Status Contracts

1. Connection Contract
2. Access Contract

4. Miscellaneous

1. Next Belgian Grid: Friday 5th of May – 14-17u





Incentives 2023

Incentives		
Evaluation des modalités de préqualification, contrôle et pénalités des services mFRR et aFRR	Will be followed in WG BAL	
Étude sur les possibilités et éventuelles évolutions de correction du périmètre du BRP en cas d'activation d'offres d'énergie pour la mFRR ou le redispatching	Will be followed in WG BAL	
MVAR service – review and recommendations for design optimisations	Will be followed in WG Belgian grid	Presented today
Cartes de capacités d'accueil de raccordement de production, consommation et stockage	Will be followed in WG Belgian grid	Presented today
Cost benefit analysis on requirements for generators applicable on existing and new generating units between 1 and 25 MW	Will be followed in WG Belgian grid	Presented today
Prédiction des “deterministic frequency deviation” (DFD) et de la contribution d'Elia	Will be followed in WG BAL	





MVAr service – Review and recommendations for design optimisations

Carsten Bakker

MVAr service – Review and recommendations for design optimisations

Context and goals of the incentive

- Following entry into force of the new design in 2020, some **return of experience** is available
- This study intends to analyze **further possible design improvements** for the voltage and reactive power control service in order to:
 - Optimize the efficiency of the service and the remuneration
 - Increase participation to the service

Content of the study

- Identification of **design improvements** together with market parties and the CREG and proposal of solutions
 - Based on **return of experience** from the current design
 - Including at least a review of the modalities for the penalties
 - Realization of a **EU benchmark** concerning the components (fixed or variable) for an **ideal remuneration** of the service
 - Specific analysis of the potential improvements that **might facilitate the participation of non mandatory units** (such as demand response) to the service
 - Identification of **evolutions of the market design** to facilitate the participation of non-mandatory units
 - Adequate procurement mechanism for the participation of non-mandatory units
 - Other aspects: type of service allowed/recommended (automatic, manual or other), simplified prequalification/communication process/tools for non mandatory units...
- ➔ This analysis will consider a **ratio between the potential** that represent these units for the voltage and reactive power regulation as well as their added value for the service **compared to the additional costs and complexity**



MVAr service – Review and recommendations for design optimisations

Indicative timeline:



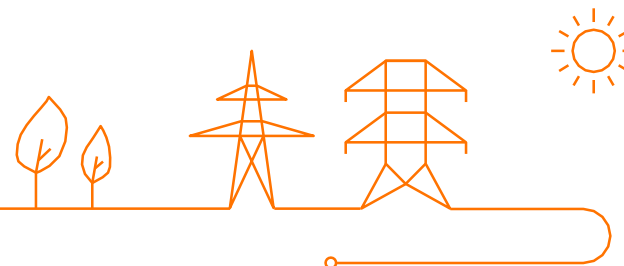
Roadmap to publication of Hosting Capacity Maps

WG Belgian Grid

16/02/2023 | J. Sprooten, Q. Dagnelie, R. Devolder, N. Bragard

Agenda

1. Context & Objectives
2. Principle & Limitations
3. Planning and milestones
4. Request for feedback – Recommendation – Identification of interest
5. Conclusions & Next Steps



Context

Electrification and accelerated development of renewable energy is our main tool to reduce our dependence on fossil fuels in the next 20 years.

In all scenarios explored, electrification will play a major role in decarbonizing the industry. Building a state-of-the-art grid infrastructure is therefore critical to keep pace with the industry's electrification ambitions, attract new innovative projects and anchor the industry in Europe.

- Electricity consumption of Belgium is expected to increase by 50% by 2034
- Domestic onshore wind and PV are expected to more than double by 2034

The grid need to be able to host these new capacities, this implies

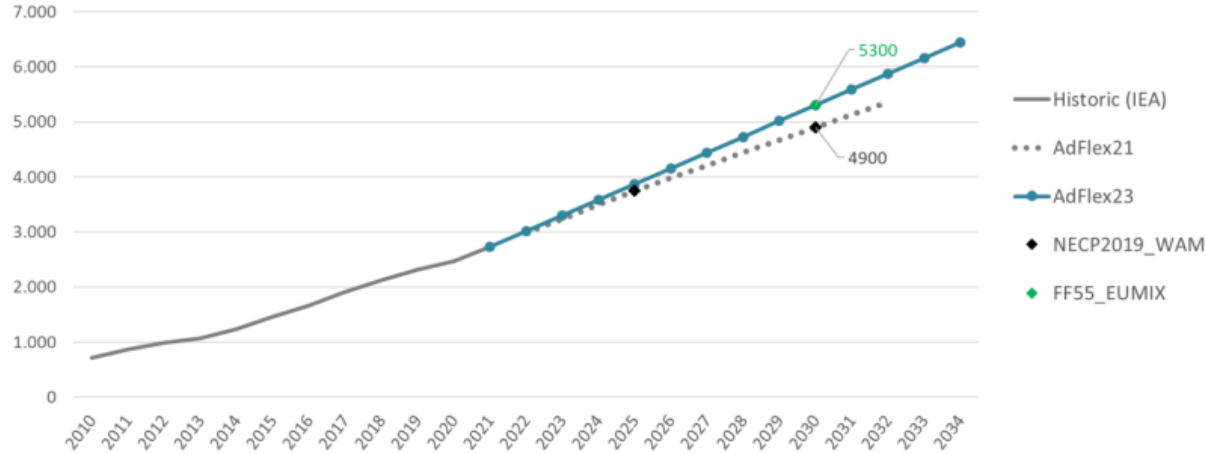
- Development of the grid infrastructure in due time based on scenarios of good quality
- Anticipation of the connection request
- Adequate localization of generation, consumption and storage



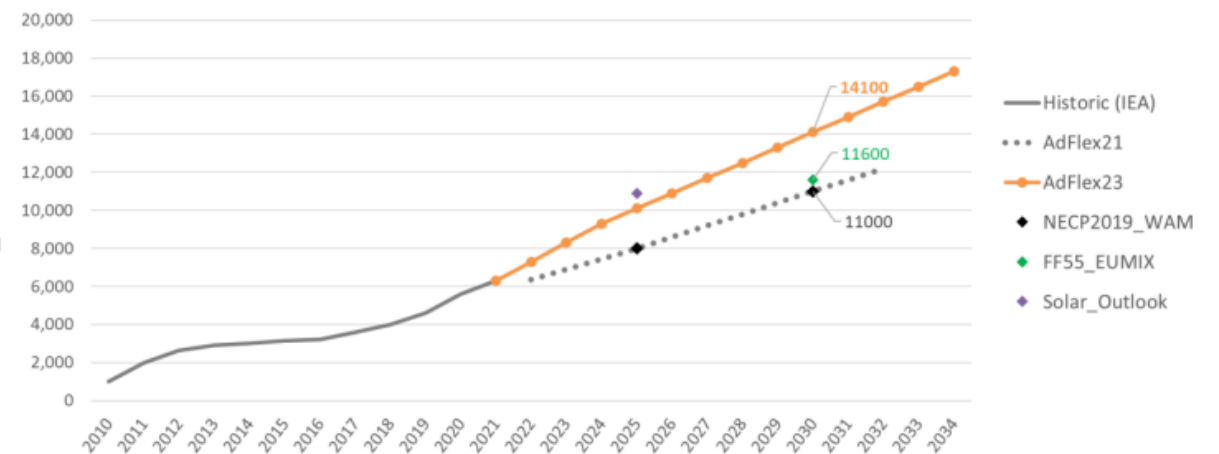
Context

Illustrations from the scenario proposed for consultation for Adeq&Flex study 2024-2034

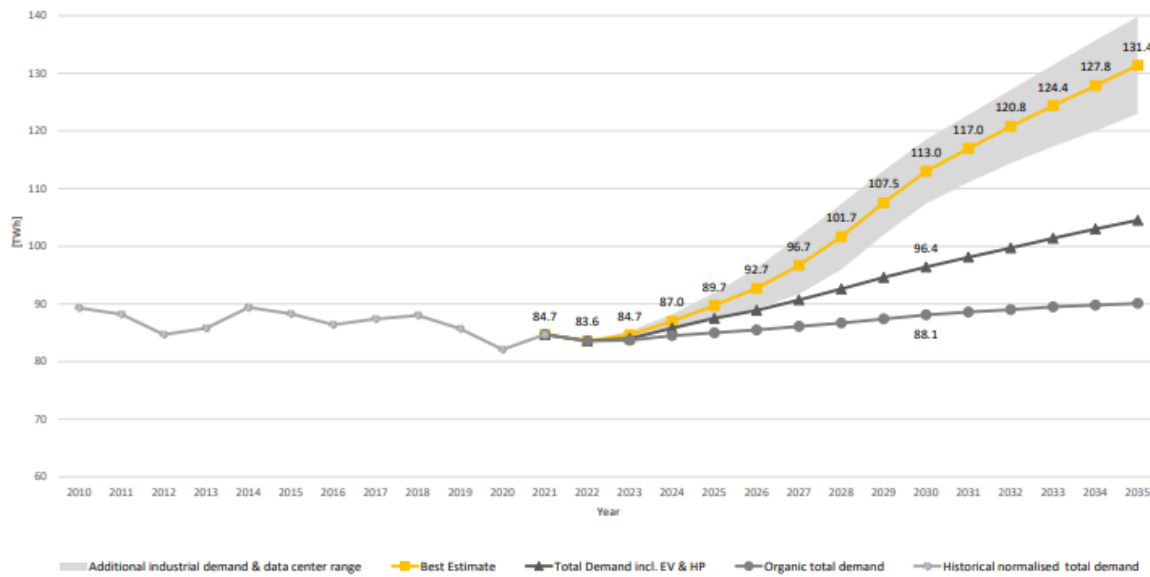
Wind onshore (installed capacity [MW])



Photovoltaics (installed capacity [MWpeak])



Total annual electricity consumption (TWh/y)



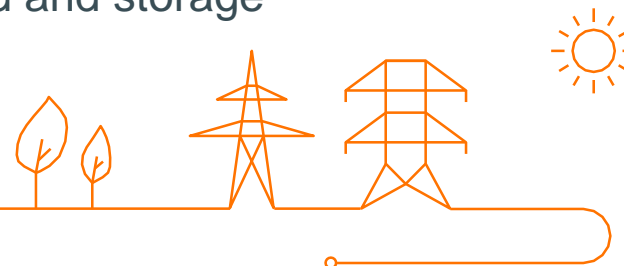
Large-Scale storage (installed capacity [MW])



Objectives

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

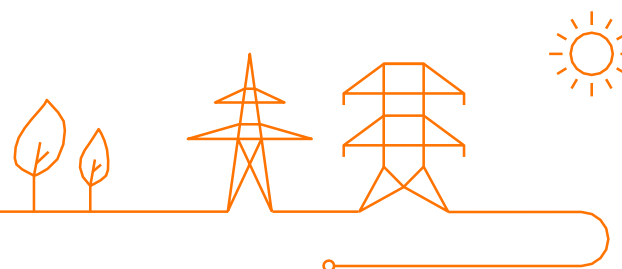


Concretely, what is an hosting capacity maps?

An hosting capacity map

- It is **geo-overview** (per substation or per zone impacted by substation)
- For a given **target year**,
- For a given **type of grid user** (load, generation, storage) and
- For a set of **assumptions** (foreseen infrastructure, evolution of other grid user use, market coupling, connection criteria, ...)

Showing **how many additional MW** consumption or production, **at one location at the time**, respecting planning and operation criteria.



Example of publications by other TSOs (1/2)

50 Hertz

Erzeuger ● Verbraucher

PLZ / Adresse



Umspannwerk (UW)

Anschlusspotenzial *

- ungeeignet
- bedingt geeignet
- geeignet
- besonders geeignet

Umspannwerke / Schaltanlagen in Betrieb

- Anlage 50Hertz
- Anlage nicht 50Hertz

Hinweis: Die Angaben zu Netztransformatoren in den 50Hertz-Umspannwerken beziehen sich ausschließlich auf die Umspannung Höchst-/Hochspannung (Stand Ende 2021)

Leitung

- In Planung
- In Betrieb

[Netzanschluss \(50hertz.com\)](https://www.50hertz.com)

CAPARÉSEAU

Capacités d'accueil pour le raccordement aux réseaux de transport et de distribution des installations de production d'électricité.

Ce poste est dans la commune de SAINT-PIERRE-D'ALBIGNY, au S3REnR AUVERGNE-RHÔNE-ALPES (Coordonnées : 946548.75 ; 6499426)

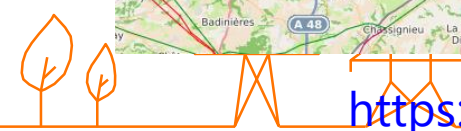
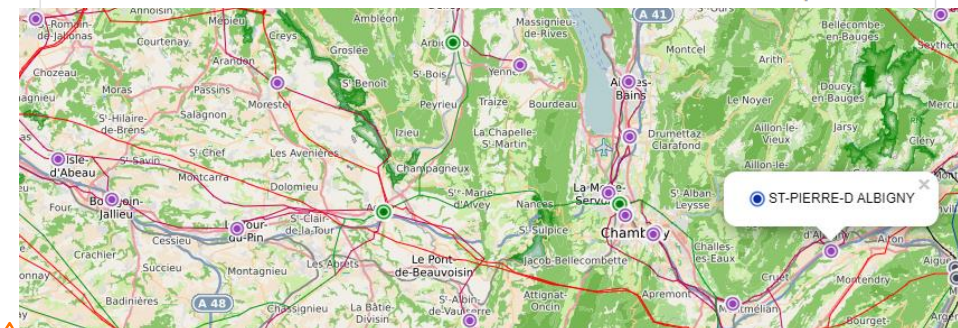
SUIVI DES ENR :



- Puissance des projets en service du S3REnR en cours : 0.0 MW
- Puissance des projets en développement du S3REnR en cours : 0.8 MW
- Capacité d'accueil réservée au titre du S3REnR qui reste à affecter : 26.1 MW

Puissance ENR déjà raccordée	2.1
Puissance des projets ENR en développement	1.6
Capacité réservée aux ENR au titre du S3REnR	26.9
Attention: la valeur de la capacité réservée a été modifiée sur ce poste	--
Quote-Part unitaire actualisée	39.11 k€/MW
dont la convention de raccordement est signée	0.1 MW
Taux d'affectation des capacités réservées	11 %

mis à jour le 23/01/2023

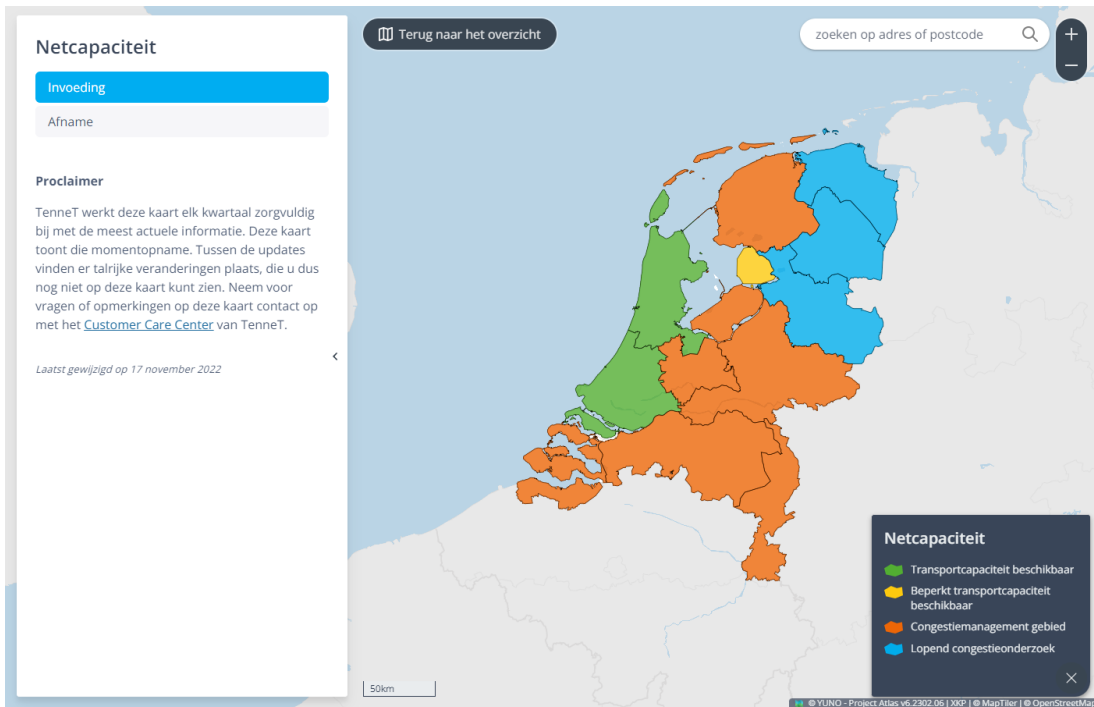


<https://www.capareseau.fr/>

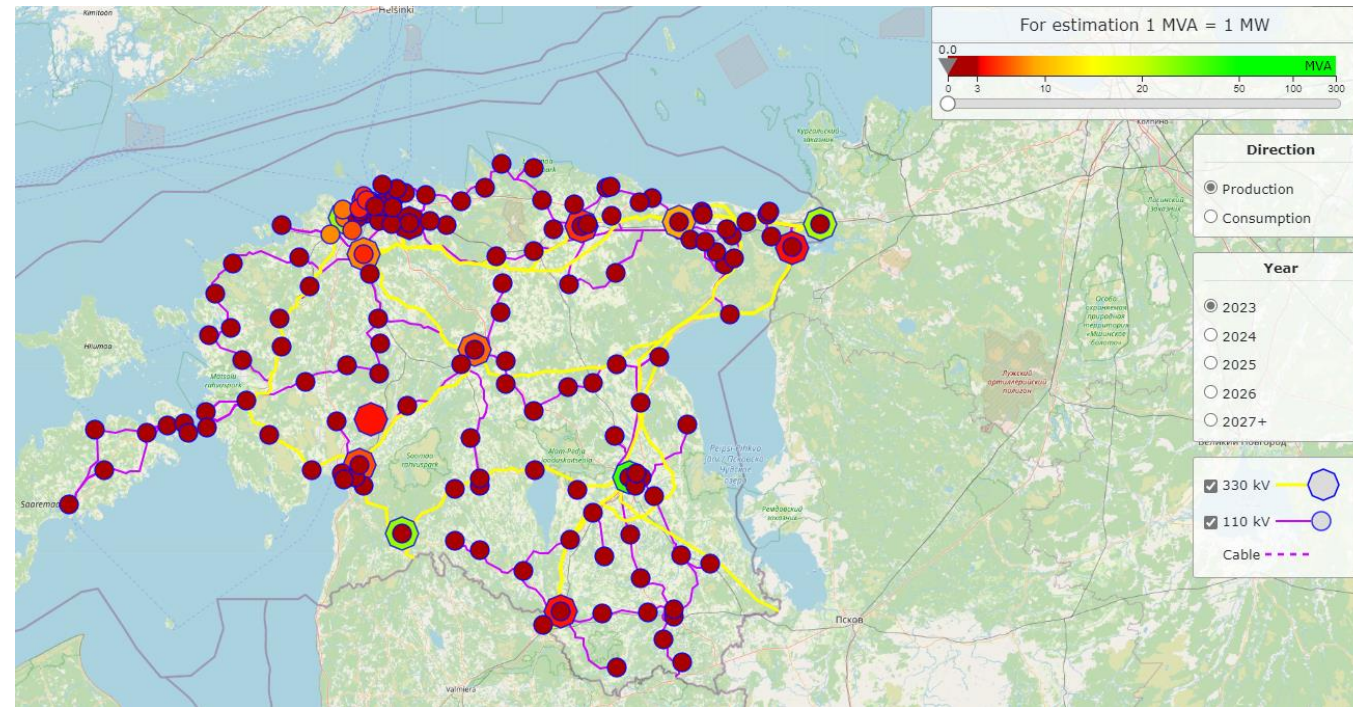
S3REnR: Schéma Régional de Raccordement au Réseau des Energies Renouvelables

Example of publications by other TSOs (2/2)

TENNET



Elering



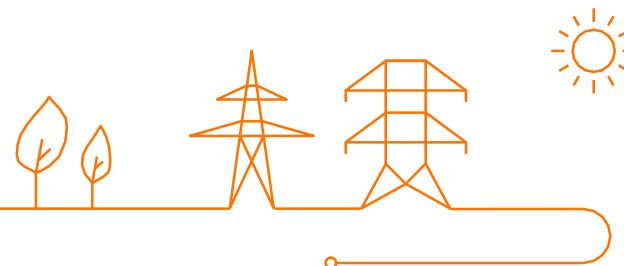
[Netcapaciteitskaart \(tennet.eu\)/](https://tennet.eu/)

[e-Gridmap \(elering.ee\)](https://elering.ee/)

N.B. Non-exhaustive list

Agenda

1. Context & Objectives
2. Principle & Limitations
3. Planning and milestones
4. Request for feedback – Recommendation – Identification of interest
5. Conclusions & Next Steps



Principle

On top of a yearly grid usage*, compute for each target year what can be connected to the grid at a given location, and with a given maximum curtailment risk.

Computation will be done for different type of grid users load, conventional generation, wind, solar & storage with given yearly profile

- Hourly base-case flows in N are computed and compared to grid element ratings
- Impact of contingencies (N-1) on flows are computed and results are compared to grid element ratings
- Impact of increase of injection/consumption compensated sufficiently far away is computed based on a linearization technique (PTDF)
- A max temporary overload is accepted after N-1:
 - Above temporary overload after N-1, preventive curtailment is proposed
 - Between permanent rating and temporary overload after N-1, curative curtailment is proposed. Probability of occurrence of N-1's include an image of planned and unplanned outage for maintenance (not for grid reinforcement project works)



* To be discussed later in this presentation

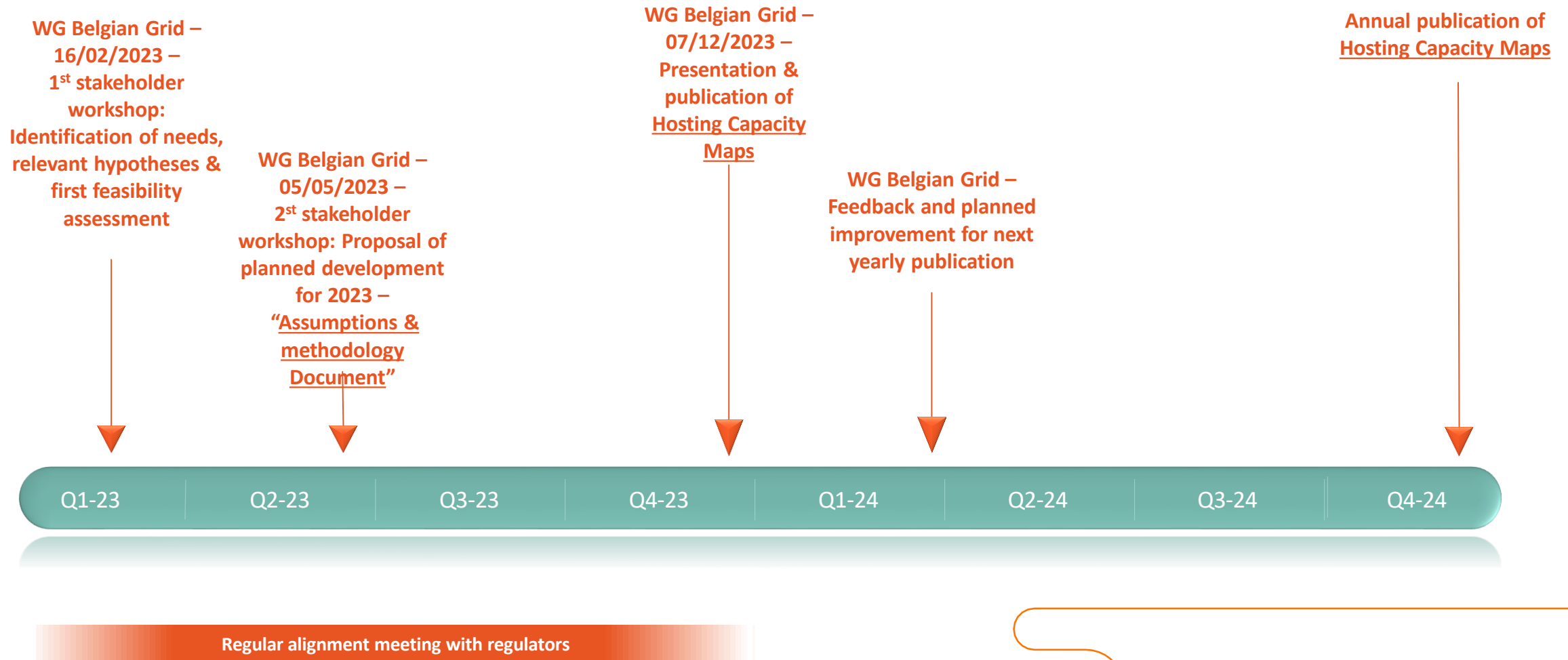
Limitation of the approach

It must be acknowledging that hosting capacity maps are computed semi-automatically, based on simplification and only taking into account some aspects considered in orientation studies (EOS).

Therefore, it shall not replace the EOS:

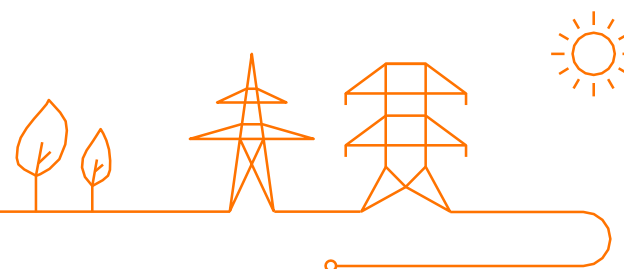
- Only power flows in N and N-1 are considered. Voltage quality, short-circuit power, reactive power, stability aspects, constrains during planned outages are not considered.
- Physical limitations within substations (number of bays) or to reach the substation (permitting, ...) are not considered.
- Market behavior resulting from the new capacity are not recomputed. The impact on price, import, export and resulting flows is therefore approximated. Therefore, this approach only makes sense for limited capacities (< few hundred MWs) above the considered energy mix.
- Not modification of planned grid infrastructure development aiming at facilitating the connection shall be considered. This is one of the main added value of the EOS.
- The validity period of an hosting capacity maps could be limited. As soon as a additional grid use, in competition for the computed capacity, is reserved by an EDS, the hosting capacity map is no more valid. For this reason it must computed considered an expected realistic energy mix evolution.

Planning and milestones



Agenda

1. Context & Objectives
2. Principle & Limitations
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Request for feedback – Recommendation – Identification of interest (1/2)

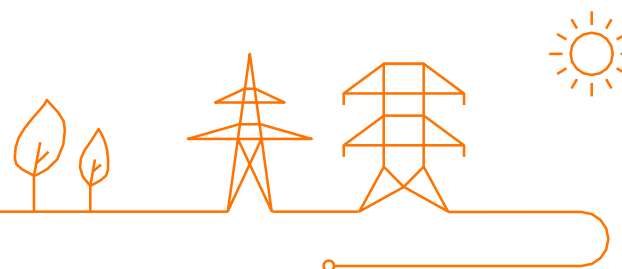
- **Network reference considered**
 - Proposal to represent the grid with the planned network infrastructure as mentioned in the development plans and based on the most up-to-date timing of infrastructure commissioning (same approach as for CRM grid constraint).
- **Target year(s) considered**
 - On which target year would the information be the most useful for grid users and prospects? Y+3? Other timing?
- **Targeted coverage & size of hosting capacity maps**
 - Proposal to compute hosting capacity for connection to 220, 150, 110, 70 & 36kV grid and, in 400kV, up to 300MW.
 - Is the distinction per voltage level relevant? What is the expected geographical granularity?

Request for feedback – Recommendation – Identification of interest (2/2)

- **Proposal for energy mix considered**
 - For all zones, except the one where hosting capacity is computed, the expected grid usage shall be inline with the most future scenario considered.
 - For the zone where the hosting capacity is computed, the evolution of grid usage, in competition with computed capacity, shall be limited to the reserved capacities.
- **Type of proposed capacity**
 - Proposal to computed firm capacity but also capacity connected with limited flexible volume.
 - Which information would be the most useful for grid users and prospects? Permanent and up to 5% flexible annual energy?
 - Which expected profile for the grid users or prospects would make sense? Similar as other grid user of the same type (wind, PV, market-price driven storage), constant profile, ... ?
- **Any other feedback?**
 - Acknowledging the limitations of the hosting capacity map exercise, does this publication would still have an added value to the grid users and prospects?

Agenda

1. Context & Objectives
2. Principle & Limitations
3. Planning and milestones
4. Request for feedback – Recommendation – Identification of interest
5. Conclusions & Next Steps



Conclusions & Next Steps

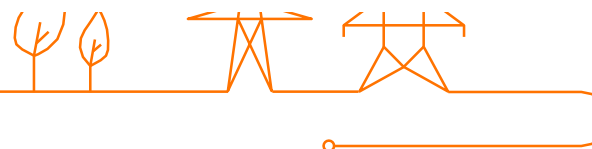
Based on the feedback received today and to be received by mail by 01/03/2023,

Further feedback/recommendations for the assumptions and methodology of the hosting capacity maps can be sent to usergroup@elia.be

Elia will work on a proposal of

- A coherent set of assumptions
- A clearly defined methodology
- A set of variants and sensitivities that can realistically be computed for publication in 2023
- A mock-up/POC for the hosting capacity map

A proposal for planned development for 2023 will be made on the WG Belgian Grid – 05/05/2023



Thank you.





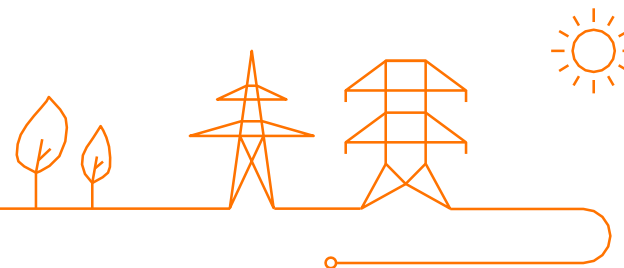
Cost benefit analysis on requirements for generators applicable on existing and new generating units between 1 and 25 MW

WG Belgian Grid

16/02/2023 | N. Bragard, O. Bronckart, C. Hoedenaeken, S. Temtem

Agenda

1. Context
2. Objectives
3. High level methodology
4. Planning and milestones



Context : EU code (RfG) and requirements on new installations

RfG

EU CODE (2016/631)



Directly applicable

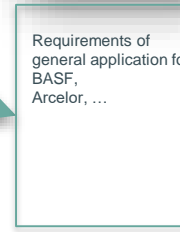
Elia federal level Elia regional level CDS DSOs



Elia federal level (2019):
Requirements of general application directly translated into articles of the Federal Technical Regulation approved by CREG



Elia regional level (2019):
Requirements of general application (2019)
→ approved officially by the 3 regional regulators



CDS level:
Requirements of general application to be defined by each CDSO and approved by relevant regulator

Elia gives statement of compliance for the new PGMs (FON)

CDSO gives statement of compliance

The new requirements are applicable to :

- Power generating modules considered as “new”
- Power generating modules considered as “existing” in several cases (see next slide)



Context : EU code (RfG) and article 4 (application to existing installations)

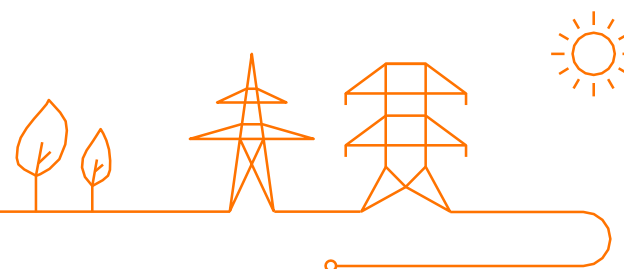
The new requirements are applicable to “existing” PGMs in the following cases:

- Substantial modernisation of PGMs type C & D units (according to the criteria published by Elia) – *RfG Art. 4.1a*
- A regulatory authority decides to apply to existing PGMs some or all criteria applicable to new PGMs – *RfG Art 4.1b*
 - based on evolution of the system requirements such as RES penetration, smart grids, distributed or demand response
 - based on the proposal of the TSO
 - after a transparent cost-benefit analysis
 - after taking into account the legitimate expectations of the PGMs owners
 - after a public consultation
- The cost-benefit analysis should take into account – *RfG Art 3:*
 - The costs of requiring compliance to RfG and new requirements
 - The socioeconomic benefits resulting from applying the RfG and new requirements
 - The potential of alternative measures to achieve the required performances
- Before carrying out the cost-benefit analysis, the relevant TSO should : – *RfG Art 4*
 - Carry out a preliminary qualitative comparison of costs and benefit
 - Obtain approval from regulator



Agenda

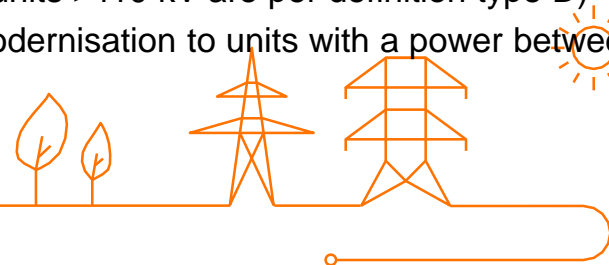
1. Context
- 2. Objectives**
3. High level methodology
4. Planning and milestones



Objective of the incentive

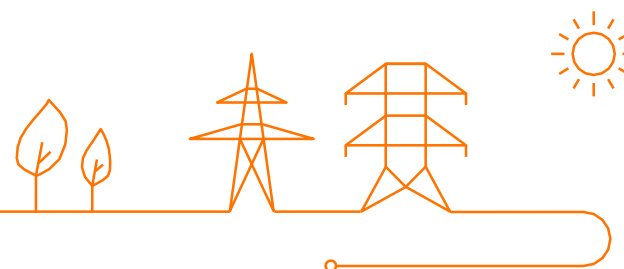
The objective of the incentive is to :

- Identify the differences between the prescriptions applicable to existing and new PGMs between 1 and 25 MW (not included) and connected to Elia grid (Belgium).
- Perform a cost-benefit analysis :
 - Focused on the PGMs with a power between 1 and 25 MW
 - on the possible application on existing PGMs of requirements applicable to new PGMs
 - by applying the methodology described in the EU code RfG (art 4, 38 & 39)
- The outcomes of the CBA will be used as an input for:
 - Application of Art 4.1b of the EU code RfG (application of some new requirements on existing units by the regulatory authority)
 - Possible prolongation of the derogation from the application of the principle of substantial modernisation for PGMs of type D with a maximal installed capacity lower than 25 MW and > 110 kV (all units >110 kV are per definition type D)
 - Evaluate the opportunity to extend the concept of substantial modernisation to units with a power between 1 and 25 MW (currently substantial modernisation is only applicable to type C & D units)



Agenda

1. Context
2. Objectives
- 3. High level methodology**
4. Planning and milestones



What are the requirements applicable to new PGMs between 1 and 25 MW ?

Official requirements (also sent to clients)



Elia all levels : EU Codes (RFG&DCC)



Elia regional level: Requirements of general application
→ approved officially by the 3 regional regulators



Elia federal and regional levels : Grid codes



Elia all levels : Connection contract approved by all regulators



Elia all levels : "Technische richtlijnen voor de aansluiting van decentrale producties" & "Technische specificatie voor de aansluiting van netgebruikers"



Elia all levels : RGIE

Internal notes

Requirements	Requirements Reference Document	Compliance	Overall Status
1) Data Questionnaire			
1	data questionnaire	FGC: Art 354 and Annex 3	Compliance proof
2) PGM internal statement of compliance (RGIE, Icc max, fault clearing time, agreement on protection scheme)			
2	Equipment and protection requirements - RGIE	RFG : Article 32	Compliance proof
2	Equipment and protection requirements - Annexe 1B - Icc max	Grid codes annexes applicable to new installations (FTR : art. 43)	Compliance proof
2	Equipment and protection requirements - Annexe 2B - Protections	Grid codes annexes applicable to new installations (FTR : art. 44)	Compliance proof
2	Specific protections scheme agreement	GR RFG: 4.2.1	Compliance proof
3) Statement of Compliance via simulations or by proof/documentation			
1	Simulation models	Simulation Document	Model
1	Model documentation/Userguide	Simulation Document	Model
3	Frequency withstand capability	GR RFG: 3.1.1	Compliance proof
3	Rate of Change of Frequency (ROCOF)	GR RFG: 3.1.2	Compliance proof
3	Maximum allowable Power Reduction	GR RFG: 3.1.5	Compliance proof
3	Voltage withstand capability	GR RFG: 2.1.1	Compliance proof
3	LFSM-O	GR RFG: 3.1.4	Simulation Needed
3	Reactive Power Capability	GR RFG: 4.4.2	Simulation Needed
3	Fault Ride Through	GR RFG: 4.4.1	Simulation Needed
3	Fault current & dynamic voltage support	GR RFG: 4.4.3	Simulation Needed
3	Post-fault power active recovery	GR RFG: 4.4.4	Simulation Needed
4	Information exchanges (communication channels)	GR RFG: 4.2.2	
4	Information exchanges (content)	GR RFG: 4.2.2	
5	Remote Control Reductions	GR RFG: 4.1.1	Compliance proof
6	Power quality requirements (if required)	Connection contract	Compliance proof
7	Automatic Connection	GR RFG: 3.1.7	Compliance proof
7	Automatic Reconnections	GR RFG: 4.1.2	Compliance proof
8	Loss of Main Protection by ROCOF	GR RFG: 3.1.3	Compliance proof
4) Presence of a decoupling protection			
8	Verification of presence of decoupling protection (Elia standards)		Compliance proof
5) Compliance statement of the connection (VISA for MSI) and requested additional equipment by Elia			
0	Compliance of the connection	FGC : 159	Visa for MSI and/or compliance proof
6) Planned tests			
0	List and agreement of planned tests	FGC: Art. 177	List of tests
ION			
7) Statement of Compliance by field tests			
3	Active Power Control	GR RFG: 4.1.1	Test needed
3	LFSM-O	GR RFG: 3.1.4	Test needed
3	Voltage Control	GR RFG: 4.4.2	Test needed
3	Reactive Power Capability	GR RFG: 4.4.2	Report
4	Telecom tests (communication channels)	GR RFG: 4.2.2	Test needed
4	Telecom tests (content)	GR RFG: 4.2.2	Test needed
6	Power quality tests (if required)	Connection contract	Test needed
7	Automatic Reconnection	GR RFG: 4.1.2	Test needed
0	Test Report		Report
0	Wire Break Test		Test needed
8) Committed Data submission (updated data questionnaire, model tuning and validation)			
1	Availability of updated data questionnaire		Compliance proof
FON			

Example of a check-list for compliance of a type B PPM

Types of requirements for new PGMs type B:

- 1) Data questionnaire & models
- 2) Internal compliance proof (RGIE) & protection scheme
- 3) Voltage & frequency requirements
- 4) Telecom requirements
- 5) Balancing/Congestion management requirements
- 6) Power quality requirements (as from 10 MW)
- 7) Emergency & restoration requirements
- 8) Protections requirements



Comparison with requirements applicable to existing PGMs between 1 and 25 MW?

Requirements applicable to existing units

Comparison table

Official requirements



Elia federal and regional levels: Grid codes (section existing units)



Elia all levels: Connection contract approved by all regulators

Internal notes



Elia all levels: "Technische richtlijnen voor de aansluiting van decentrale producties" &

"Technische specificatie voor de aansluiting van netgebruikers"

Official requirements



Elia all levels: RGIE

Requirements	Applicable to Existing unit ?
1) Data Questionnaire	
1 data questionnaire	Y
2) PGM internal statement of compliance (RGIE, lcc max, fault clearing time, agreement on protection scheme)	
2 Equipment and protection requirements - RGIE	Y
2 Equipment and protection requirements - Annexe 1B - lcc max	Y
2 Equipment and protection requirements - Annexe 2B - Protections	Y
2 Specific protections scheme agreement	Y
3) Statement of Compliance via simulations or by proof/documentation	
1 Simulation models	Y
1 Model documentation/Userguide	Y
3 Frequency withstand capability	Y
3 Rate of Change of Frequency (ROCOF)	N
3 Maximum allowable Power Reduction	Y
3 Voltage withstand capability	Y
3 DeltU/F range	Y
3 LFSM-O	N
3 no equipment that will act against the primary control of the system	Y
3 Reactive Power Capability	Y
3 Fault Ride Through	Y
3 Fault current & dynamic voltage support	Y
3 Post-fault power active recovery	Y
3 Voltage Control	N
4 Information exchanges (communication channels)	N
4 Information exchanges (content)	N
5 Remote Control Reductions	N
6 Power quality requirements (if required)	Y
7 Automatic Connection	N
7 Automatic Reconnections	N
8 Loss of Main Protection by ROCOF	Y
4) Presence of a decoupling protection	
8 Verification of presence of decoupling protection (Elia standards)	Y
5) Compliance statement of the connection (VISA for MSI) and requested additional equipment by Elia	
O Compliance of the connection	Y
6) Planned tests	
O List and agreement of planned tests	N
ION	
7) Statement of Compliance by field tests	
3 Active Power Control	N
3 LFSM-O	N
3 Voltage Control	N
3 Reactive Power Capability	N
4 Telecom tests (communication channels)	N
4 Telecom tests (content)	N
6 Power quality tests (if required)	N
7 Automatic Reconnection	N
O Test Report	N
O Wire Break Test	N
8) Committed Data submission (updated data questionnaire, model tuning and validation)	
1 Availability of updated data questionnaire	N
FON	

For example only... work in progress...

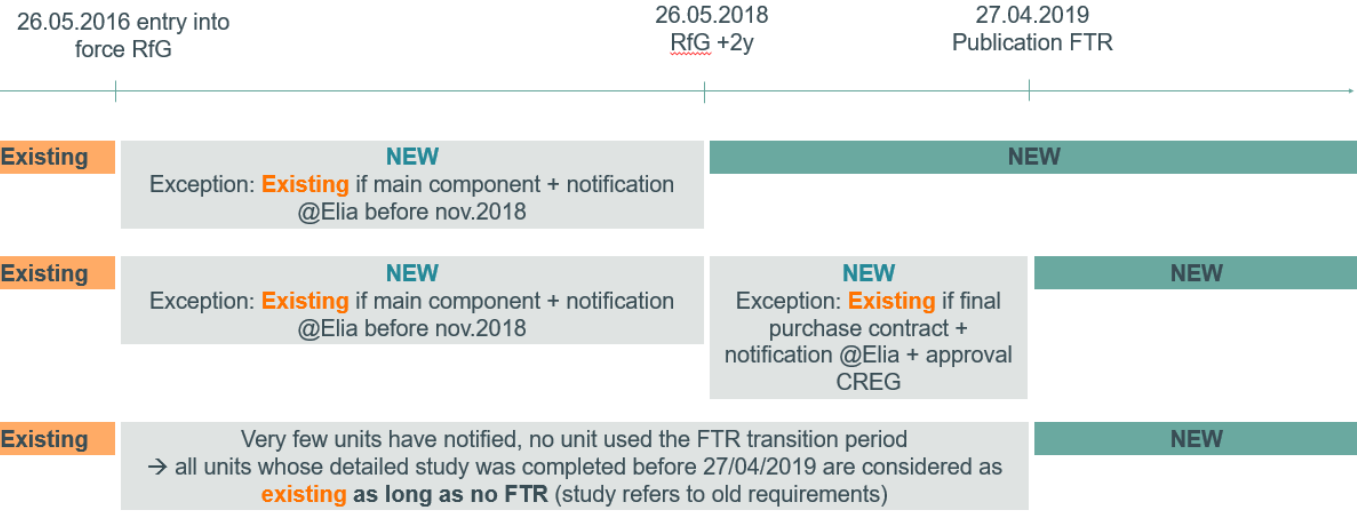
Selection of requirements to be analysed via the CBA:

- Requirements already applicable to existing PGMs : **out of scope**
- Requirements applicable only for new PGMs : **in the scope**
- Requirements already applicable to existing PGMs but in a different way: **in the scope**

→ Elia will propose a list of candidates for the CBA
 → The in depth CBA will focus on the selected candidates



Definition of existing PGMs versus new PGMs

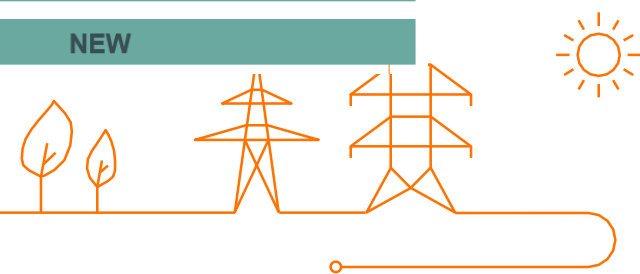
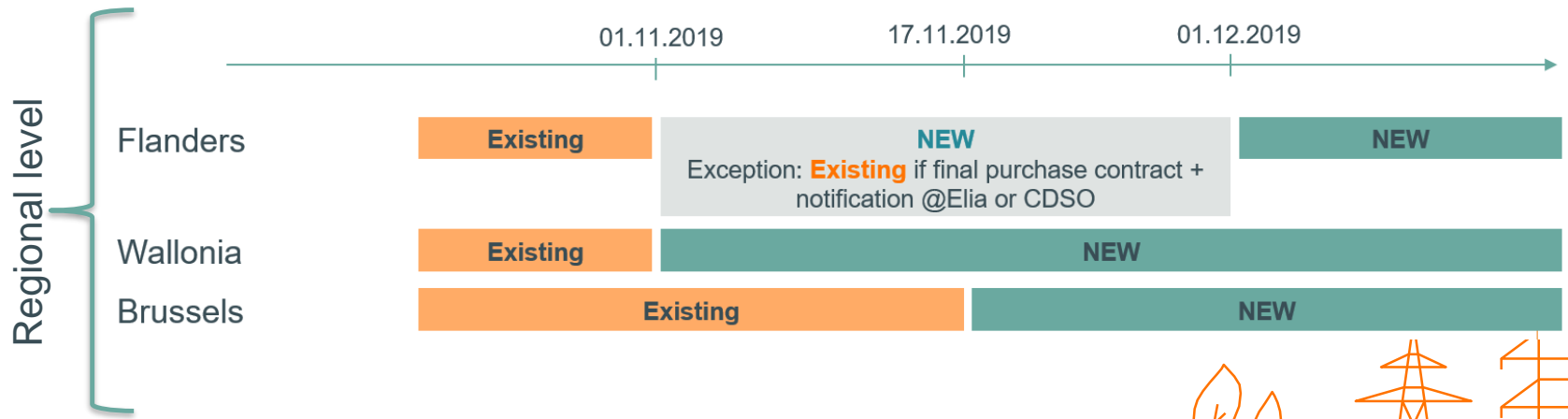


From a pragmatic point of view:

- Elia communicated requirements for new PGMs as from 27/04/2019

Conclusion:

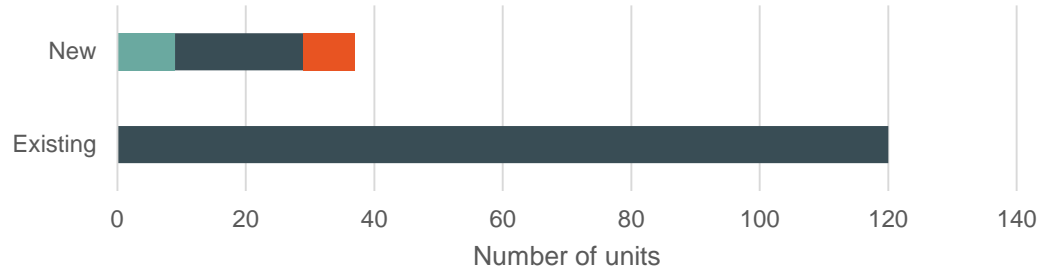
- **All PGMs whose detailed study was still open after 27/04/2019 are considered as new**



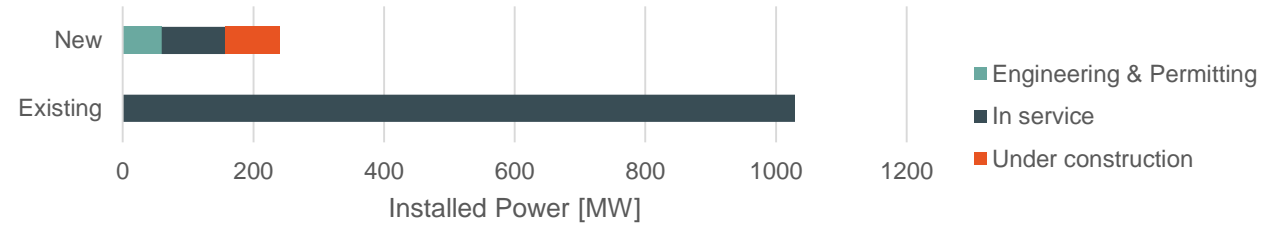
Number of PGMs between 1 and 25 MW

work in progress...

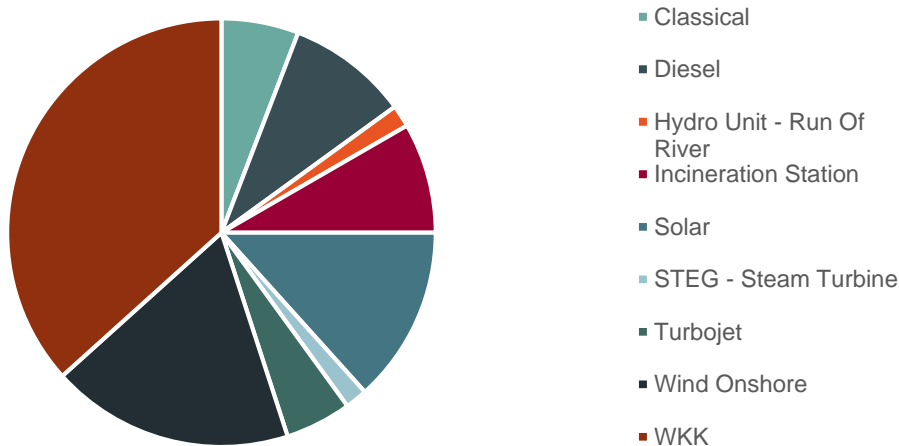
Amount of new and existing PGM per status



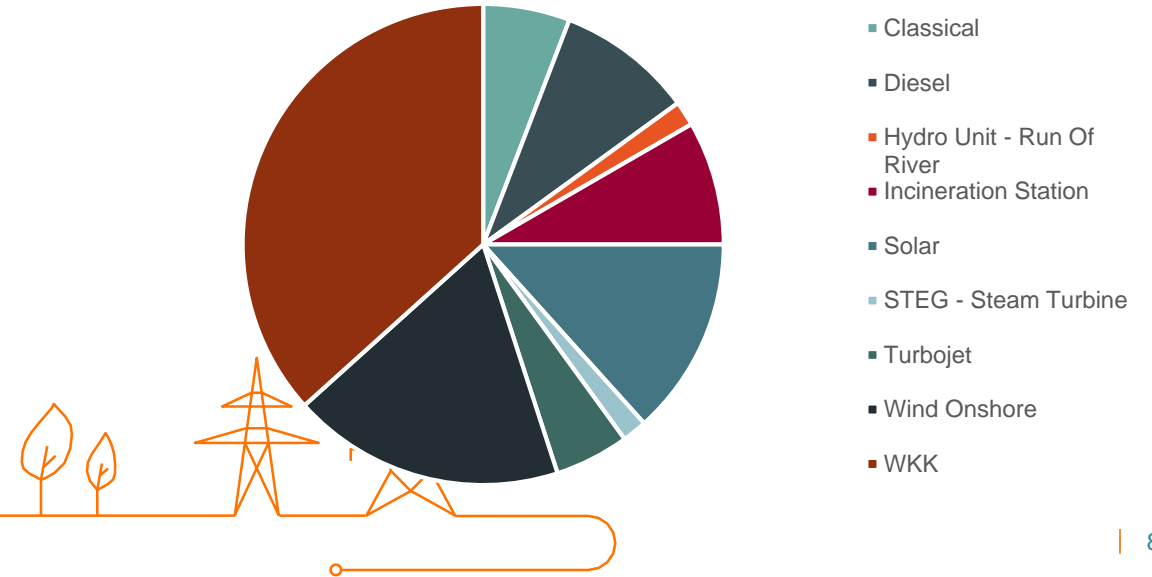
Installed power of new and existing PGM per status



Distribution (in power) of the existing units between 1 and 25 MW per production type

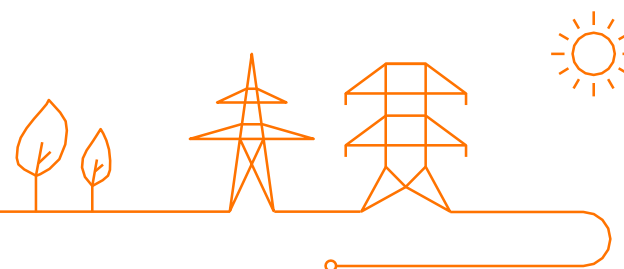


Distribution (in number of units) of the existing units between 1 and 25 MW per production type



Agenda

1. Context
2. Objectives
3. High level methodology
- 4. Planning and milestones**



Planning and milestones

- **Phase 1 : Preparation of work – Elia**

- Inventory of existing and new PGMs between 1 & 25 MW
- Comparison of the requirements applicable to existing and new PGMs
- First evaluation of the requirements in terms of benefits for the grid and selection of candidate requirements for the CBA
- First proposal for the different categories of costs to take into account

- **Phase 2: Evaluation with market parties – Elia & Market parties**

- Of the candidate requirements for the CBA
- Of the CBA methodology
- Of the categories of costs

- **Phase 3: Data collection and CBA – Elia & Market parties**

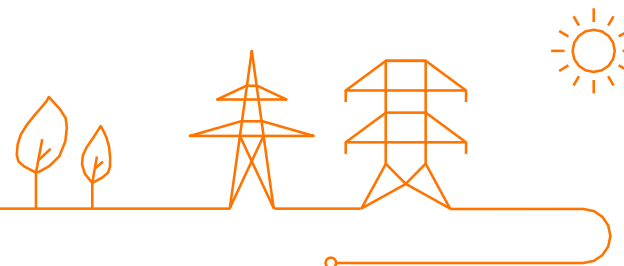
- Data collection with market parties for the costs part for the selected requirements for the CBA
- CBA performed by Elia

- **Phase 4 : Public consultation - Elia & Market parties**

- **Phase 5 : Report and conclusions – Elia**



Workshops & discussions
with market parties
Call for inputs from market
parties !



Planning and milestones

WG Belgian Grid –
16/02/2023 –
1st stakeholder
workshop:
Presentation of the
incentive

WG Belgian Grid –
05/05/2023 –
2st stakeholder
workshop:
Presentation of
conclusion of phase 1

WG Belgian Grid –
07/12/2023 –
Presentation of
the conclusions

23/12/23
Submission of the
report to CREG



Thank you.



Agenda

- 1. Public consultation Tariff Proposal**
- 2. Incentives**
 - 1. Hosting Capacity Maps**
 - 2. MVAr-service – design optimisations**
 - 3. Cost Benefit analysis on requirements for generators**

3. Status Contracts

- 1. Connection Contract**
- 2. Access Contract**

4. Miscellaneous

- 1. Next Belgian Grid: Friday 5th of May – 14-17u**

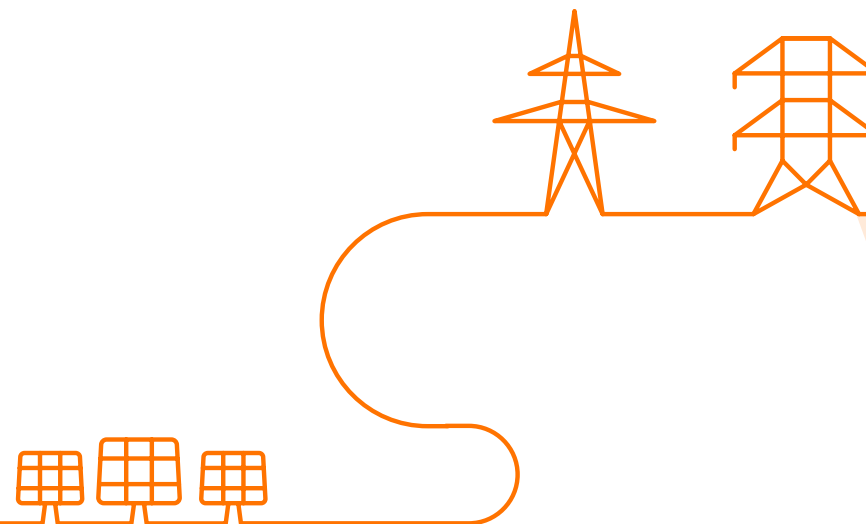


A wide-angle photograph of an offshore wind farm. Numerous wind turbines are visible, stretching across the horizon over a vast expanse of blue ocean. The sky is filled with soft, white clouds. The text "Status Connection & Access Contract" is overlaid in large white font on the lower-left portion of the image.

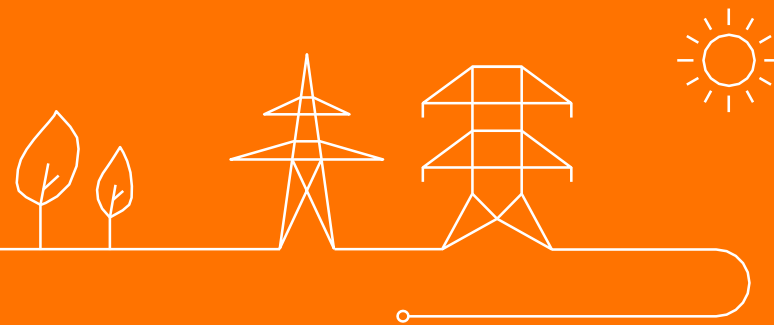
Status Connection & Access Contract

Agenda

- **Connection Contract**
 - A Part (Definitions & General Conditions)
 - B Part (Technical Conditions)
 - Annexes
- **Access Contract – presentation of approach**
 - Include Multiple BRP
 - Remarks from Regulators & Market Parties
 - Harmonize definitions
- **Next Steps**



Connection Contract



Status Connection Contract

- **Part A – general conditions:**
 - Feedback of regulators and market parties has been integrated.
 - Additions made triggered by Part B
 - Still open for discussion during next meeting: liability clauses
- **Part B – specific conditions:**
 - Under revision, first draft expected by end of March
- **Annexes:**
- **NEW: prepare for Icaros: impact on:**
 - Body of the contract (definitions,..)
 - Request for structural data per technical facility in Annex 1 + new Annex 11



Connection – Part A – Key remarks (Top 10)

Article	Count of Remarks
Art.1.1 Définitions	204
Art.1.2 Règles complémentaires d'interprétation	24
Art.4.1 Déclarations et garanties	20
Art.6.1 Absence de divulgation d'informations confidentielles ou commercialement sensibles	43
Art.8.2 État d'alerte, d'urgence, de panne généralisée (black-out) ou de reconstitution	22
Art.8.3 Force majeure	26
Art.12.1 Mise en demeure et suspension en cas d'Installations non conformes ou dommageables	94
Art.12.2.2 Résiliation totale ou partielle du Contrat par ELIA	30
Art.12.3 Conséquences de la suspension et/ou de la fin totale ou partielle du Contrat	40
Art.12.4 Impact d'une participation au mécanisme de rémunération de capacité	35
Grand Total	959



Part A – 1 Definitions and interpretation

Main triggers:

- Alignment new regulation
- Consistency
- Scoping extension
- Stakeholders'/regulators' input

- References to legislation/regulation = as amended from time to time
- Extra definitions have been added linked with new dispositions
 - a.o. BSP Contract, OPA/SA Contract, Code de Bonne conduite, Datalogger, Railway traction grid (including regional), GU installation, CDSU Installation, EPIC, Delivery Point, Submetering, Shared connection, Transparency regulation, Control Area, ...
- Other definitions have been amended based on the remarks from Regulators & Market Parties
 - eg: propriétaire
- Definitions related to amended liability regime (still subject to alignment with CREG)
- Energy storage has been amended as being a recurrent remark
- Extended interpretation rule:
 - contradiction between annexed documents
 - Status of specifications in light of the regulation: no contradiction



Main triggers:

- Feedback public consultation
- Interaction with part B

Part A – 12.1 suspension of contract

EXISTING CONTRACT

Right to suspend for Elia and for GU

- For non-conformity of installations
- Affecting safety, reliability and efficiency Elia Grid/connection/connection third party GU, human safety (AREI, ...),
- End of LON validity

Process:

- Letter of default
- Consultation on works
- In case of default=> total/partly decommissioning or suspension,

NEW TEXT PROPOSAL: additions

- Clarification on the conditions for Elia to take initiative in suspending a contract (see also full size management)
- Scoping: installations GU + generation/storage assets, installations CDSU and connection (if fullsize done by GU) having potential impact on Elia-grid
- Circumstances:
 - Cf existing text, except: ...LON ... => FON...
 - in case of unilateral modification of connection installations,
 - In case of refusal to invest in modifications asked by Elia,
 - In case of impossibility for Elia to perform works due to lack of interruption time
- Clarification on the suspension rights of the GU when using Elia as full size manager, also when risk for CDSU installations and for production/storage assets
- clarification on the process: total/partly decommissioning or suspension 5th day after 2nd letter

Main triggers:

- Feedback public consultation
- Interaction with part B
 - Experience based
 - Reality behind the connection

Part A – 12.2 termination of contract

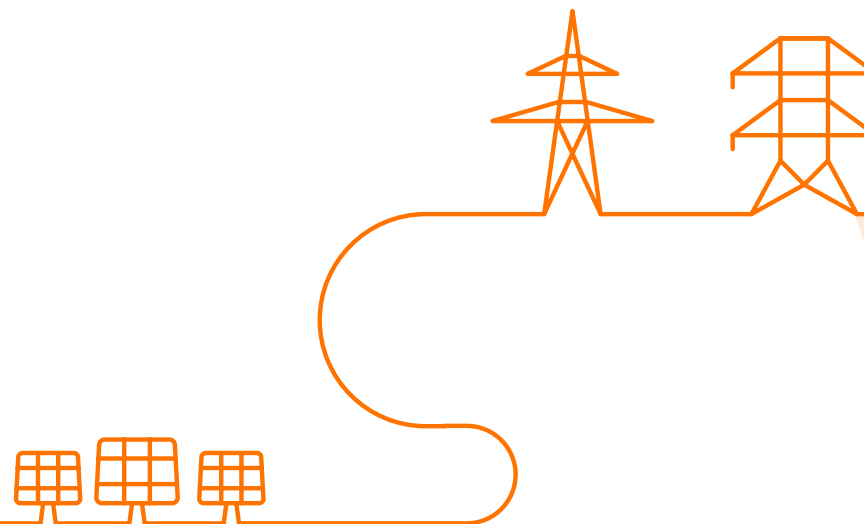
EXISTING CONTRACT

- Resolution
- By GU: 3 months notice when connection not used any more
- By ELIA: ...
 - Stop of the project
 - Non-use of connection (no current)
 - End of use of generation asset
 - Proposal to end contract, subject for the GU to propose maintenance of its rights for 3 reasons => approval by Elia on maintenance
- Based on agreement (essentially linked to stop of project or of activities of the Instalations)

NEW TEXT PROPOSAL: additions

- By GU: ...+ *dismantling agreement*
- By ELIA: rewording
 - Stop of the project *better substantiated*
 - Non-use of connection (no current/*voltage*)
 - End of use of generation+*storage* asset
 - *GU also to inform owner*
 - Proposal to end contract, subject for the GU to propose maintenance of its rights for 4 *reasons* => approval by Elia on maintenance (*right of appeal before CREG*)
 - *Dismantling agreement*
- Based on agreement : linked to end of activities of Installations + *dismantling agreement*
- Resolution : *partial or complete + dismantling agreement*

Connection Contract – Part B – Conditions Techniques



ICAROS Context - Designation of the Outage Planning Agent (OPA) and Scheduling Agent (SA)

- Regulatory framework is not ‘aligned’ regarding **who is responsible to appoint OPA and SA**

	Article	OPA/SA appointed by
SOGL	89 and 110	Asset Owner
Reglement Federal + Vlaams		Grid User

- **Asset and Asset owner** need to be defined

- An Asset refers to a Technical Facility (demand facility or a power generating module (PGM including sPGM and PPM))
 - Technical Facility **is or should be explicitly listed** in the Connection Contract with the relevant system operator. PGMs are identified currently in the Connection Contract, but this is not the case for Demand Facilities
- Assets owners of these Technical Facilities are currently not identified in the Connection Contract
 - Will be translated into amendments to Article 25 and Annex 1 + a new Annex 11
- There is currently no legal relation between Elia and the Asset Owner (nor in the electricity law nor in the Code of Conduct)
 - Role of Asset owner is to be formalized

Modifications to Connection Contract

List of Technical Facilities and Asset Owners

- List of all (sPGM, PPM, Demand facilities) Technical Facilities
- Clear identification and formalization of the role of the Asset owner → per Technical Facility, identification of the Asset owner (the Grid User of a third party) including the necessary contact details

Appointment of OPA/SA per Technical Facility

- By default: responsibility of the Grid User of the Technical Facility
- **Possibility to delegate the appointment** of service providers (SA and OPA) from the Grid User to the concerned Asset owner via a **jointly signed declaration in the Connection Contract (new annex)**.
 - Define if Asset owner or Grid User will have the responsibility to assign the SA and OPA per technical facility.
 - Grid user remains end responsible in the framework of its connection contract in case the Asset owner fails to take up its responsibilities
- Appointment of SA/OPA remains in respective SA/OPA contracts by Grid User or Asset owner (via a Grid User or Asset owner declaration)



For CDS:

- The CDSO is seen as Elia's counterpart and as such as 'Grid User' (as he signs the connection contract with Elia)
- The CDSU (CDS-user), in this framework, will be able (after delegation by the CDSO) to appoint the SA and OPA (as described above for the 'Asset owner').



Triggers:

- Better distinction between capex and opex
- consistency with tariffs

Capex (18.1)

Mainly clarifications of existing concepts

Owner in charge of:

- Realisation
- ★ - Modification (**Notion of substantial is gone**)
 - Adaptation functionalities with physical impact on the installations
 - Relocations/adaptations required by public authorities and third parties
 - Renewal
 - Dismantling
 - Maintenance after guarantee period (10/20 y)
- If Elia is owner => application of tariffs
- ★ - Elia always owner of connection's installations in its substations, except historical situations: 1st connection bay owned by GU: GU invests according to request Elia
- Commissioning subject to access point being part of access contract

Tariff:

- 1st bay: periodic tariff
- Other connection installations:
- Realisation/modification: price estimate
- Existing: fin. Interventions GU taken into account



Triggers:

- Better distinction between capex and opex
- Experience based
- Consistency with tariffs

Light & Fullsize Management (18.2)

- Light :
 - Monitoring of connection
 - Operation ((de-)activation via command of 1st bay, selective (de-)activations via command of other bays for shared connections, management of operation procedures, signaling alarms, clearing and commissioning
- Fullsize: (Includes light, if Elia owner or in charge of fullsize operation of connection installations concerned)
 - Switching operations on connection installations, including management of switching processes, ...
 - Maintenance tasks
 - Administrative tasks (management of plans, schemes, legal doc)
 - Periodic maintenance (including definition policy)
 - Curative maintenance (without change of characteristics, within guarantee period 10/20y)

Separate periodic light tariff (lumpsum) for installations not covered by fullsize operation

Principle:

- Elia on 1st bay: if not owned by Elia=>Elia decides: GU or Elia
- GU for other connection installations it owns; no obligation for Elia to take over/continue fullsize under certain conditions (non-conformity, lack investments, interface point not asset based, ...)
- Fullsize management covered by periodic fullsize tariff



Alignment new regulation

2009 =>2023 : new regulation

⇒ New wording, new references, new definitions,

Eg. Netcodes, code of conduct since split of federal grid code, ...

⇒ Compliance with new regulation

Eg. technical requirements RFG, DCC, commissioning new/ modified connection or installation
GU dependent upon, not only upon inclusion of access point in access contract but also upon
EON, ION, FON depending on applicable rule



General overview of Annex contents

1. Description of connection and installations GU : more detailed and restructured
2. Management of connection: general rules moved to core of the contract
3. Maintenance of connection: general rules moved to core of the contract
4. Metering and 4bis submetering: more detailed and restructured, new references, general rules moved to core of the contract.
5. Power Quality: general rules moved to core of the contract
6. Tariffs: PM
7. (old 8) Modalities for the execution of works: cf. infra
8. (old 9) Plans and diagrams
9. (NEW) Shared connection: specific arrangements (see also new chapter in code of conduct)
10. (NEW) Offshore connections: based on existing documents
11. (NEW) OPA/SA declaration

Former annex 7 (contact details) embedded in EPIC



Link between the annexes and the core of the contract

- General clauses moved to the relevant articles
- **Art 20 - description of the connection:** (identification of connection installations, installations of GU and, if and when, third party installations behind connection, which can have impact on security, reliability and efficiency grid) contains 'must haves' to be detailed in the Annexes 1, 4 and 8.
- **Art 21 - Metering :** basis for both Annex 4 (metering) and Annex 4bis (new – submetering); includes general clauses of annex 5 (power quality) and describes (potential) interfering installations requiring conformity study, role of Elia RE technical specs on protections, complementary technical requirements for Installations, calibration and precision control of metering equipment, transition regime for non-conform metering equipment
- **Art 22 - conformity of installations:** conformity with (new) regulatory framework; information duty on non-conformity, deterioration and modifications; clarifications
- **Art 23 - protection of and access to installations:** clarifications
- **Art 24 - management and maintenance:** clarifications on management (see Annex 2) and maintenance (see annex 3); sharing of electric diagrams of installations; clarification of switching process and of rules in case of planned outages; in general, better distribution of content between annexes and this article
- **Art 25 - data exchange:** cf. infra (see Annex 11)
- **Art 26 - permitting:** some clarifications

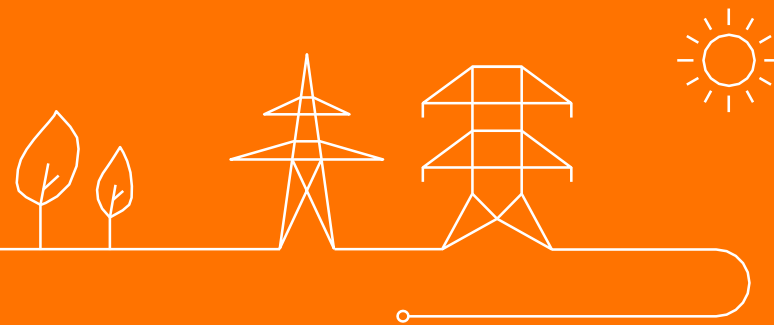
Annex 7 : modalities and timing works (former annex 8)

- Deadlines: regime already integrated at the occasion of CRM related modifications has been further clarified and completed with assumptions.
- Deadlines and scoping of GU's works (Installations and/or connection) clarified
- General requirements and information exchange
- Financial modalities (< GC detailed study)
- Complementary works (< GC detailed study)

=> Technical specs of detailed study will be integrated in other annexes, after commissioning.

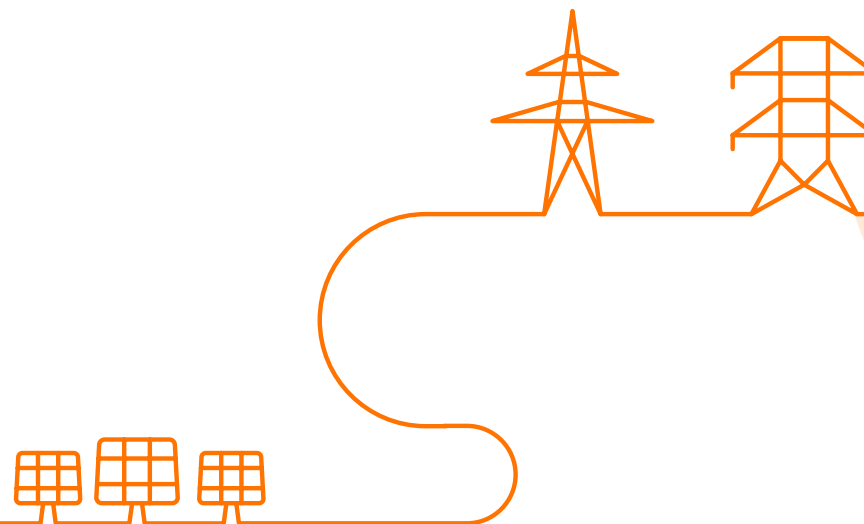


Access Contract



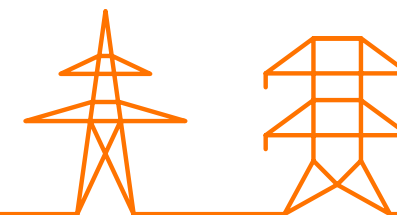
Access contract

- Current approach
- ★ • Include Multiple BRP
 - Modifications following Regulator's questions/objections from previous consultation
 - Harmonize definitions



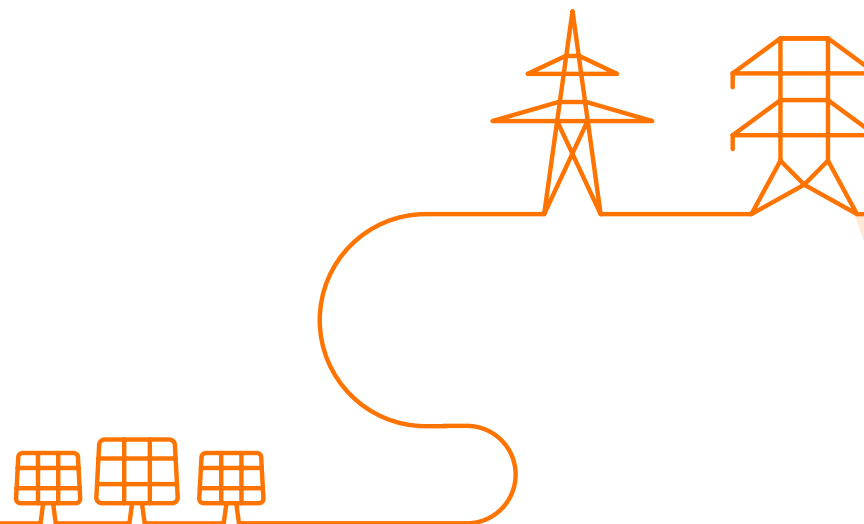
Key articles to be modified

Article	Count of rem
Art.1 DÉFINITIONS	31
Art.4.2 Dispositions complémentaires concernant les déclarations et garanties	4
Art.6.1 Absence de divulgation d'informations confidentielles ou commercialement sensibles	4
Art.6.5 Protection des données à caractère personnel	4
Art.12.1 Factures/notes de crédit	6
Art.12.2 Conditions et délai de paiement	4
Art.17.2.1 Modalités d'ajout de(s) Point(s) d'Accès au portefeuille du Détenteur d'Accès	5
Art.24 MODALITÉS APPLICABLES À LA PUISSANCE MISE À DISPOSITION	4
Annexe 3 DÉSIGNATION ET/OU MODIFICATION DE LA DÉSIGNATION DU RESPONSABLE D'ÉQUILIBRE CHARGÉ DU SUIVI ET DE L'IDENTIFICATION DU FOURNISSEUR CORRESPONDANT	13
Annexe 6 COLLABORATION ENTRE LE GESTIONNAIRE DU CDS RACCORDÉ AU RÉSEAU ELIA ET ELIA POUR ORGANISER L'ACCÈS DES UTILISATEURS DE CE CDS	9

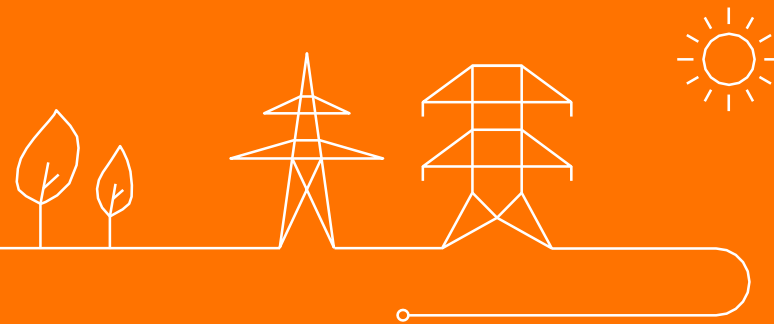


Multiple BRP – Defined approach

- Minimize impact on access contract => procedure to assign BRP will be moved to BRP contract
- Access contract to describe the Roles & Responsibilities of the ACH in terms of assigning supplier & BRP in line with BRP contract
- Deadline Q4 2023



Way forward



Next steps

Connection contract:

- Document expected to be sent to Forbeg & Belgian Grid by end of March for informal consultation

Access Contract

- Document expected to be sent to Forbeg & Belgian Grid by end of March for informal consultation

Agenda

- 1. Public consultation Tariff Proposal**
- 2. Incentives**
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 - 2. MVAr-service – design optimisations**
 - 3. Cost Benefit analysis on requirements for generators**
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- 4. Miscellaneous**
 - 1. Next Belgian Grid: Friday 5th of May – 14-17u**



Thank you

