Kick-Off Meeting

Task Force Local Redistribution of Injections and Offtakes

May 15th, 2025

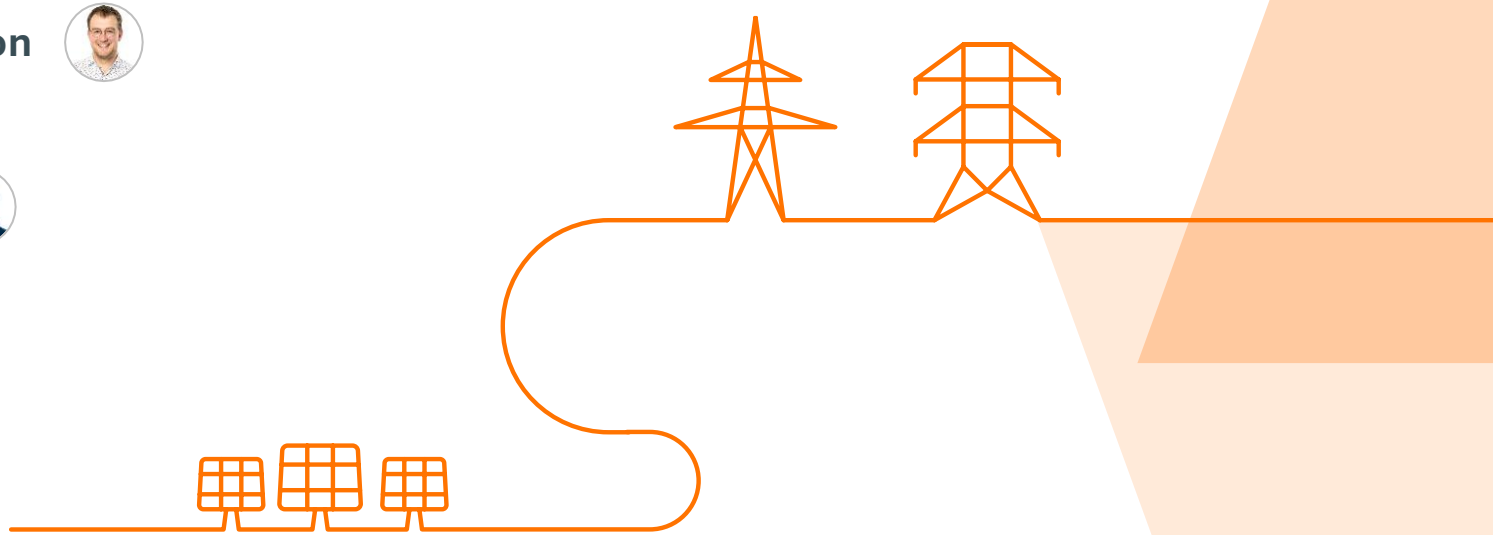
Workshop Agenda

A Setting the Scene & Context 

B Local Redistribution of Injections & Offtakes 

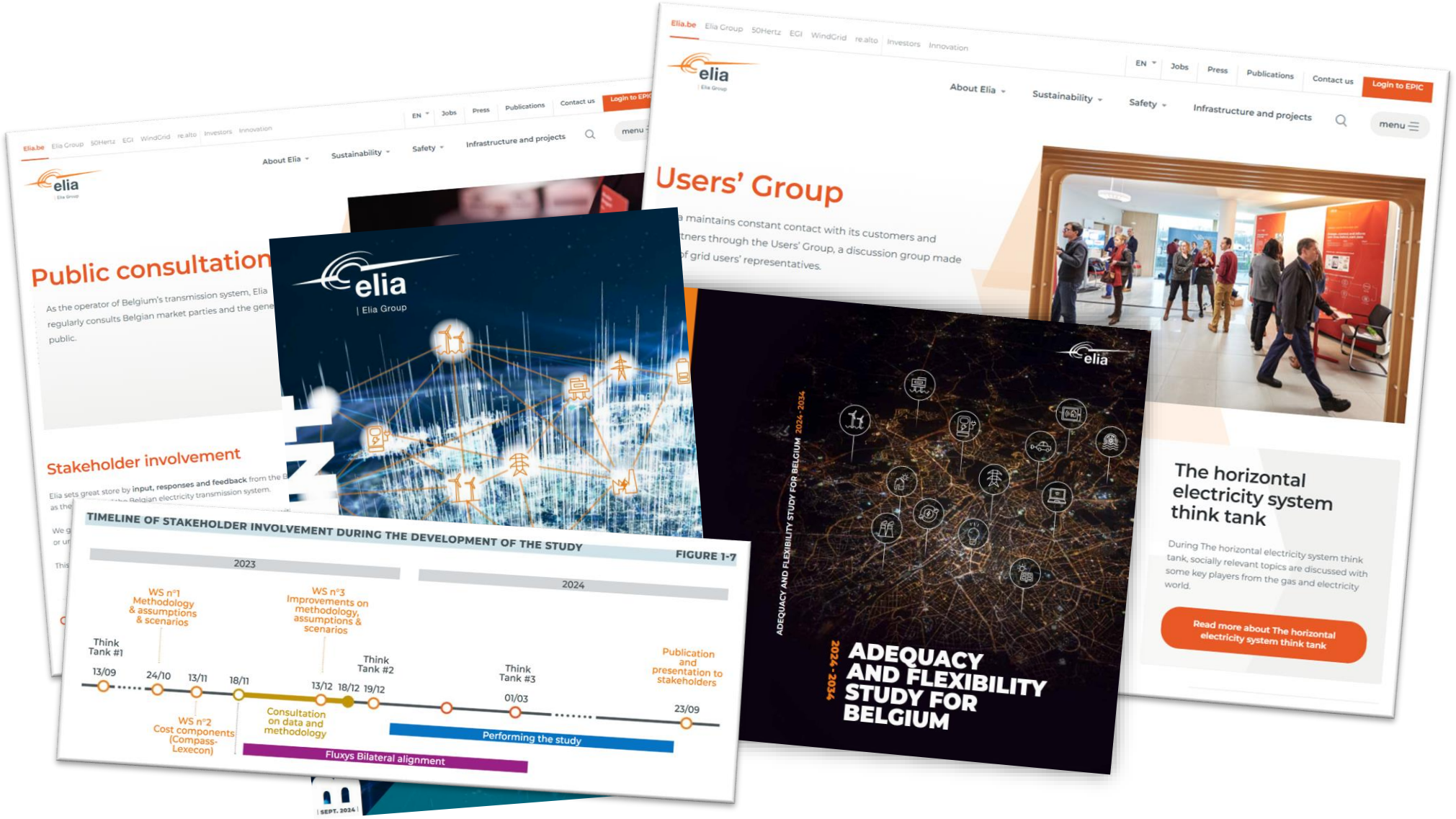
C Reference Context Creation 

D Wrap-up & Next steps 



Setting the Scene & Context

General need for transparency and dialogue as a key enabler for the Energy Transition!



In a complex electricity system, advanced methods and extensive dialogue are essential for timely grid development!

From

1970 – **1980**

Grid follows nuclear development

- 3GW in Doel & 3 GW Tihange
- Interconnections as international back-up
- Flexibility by means of centralized pumped hydro

1990 – **~2025**

Focus on Market- & RES-integration

- Relative stable load evolution
- Strong development of interconnections
- Growth of renewables
- Nuclear phase-out 2003-2025

To (?)

~2025 – **2050**

Evolution towards net zero (RES, Electrification), energy autonomy (nuclear, …) and affordability

Examples

- Transitioning fossil fuel applications to electric power
- Emergence of new loads following the digitalization of society
- Central & decentral flexibility as a fundamental element of the system
- Interconnections for RES integration & SoS
- …

Continuous evolutions are accompanied by with an increase in methodological complexity (*)

- Well-defined production, load & storage centers
- Deterministic top-down perspective based on annual peaks
- Development of market simulation as input for grid development use cases
- Pre-reservation & geographical redistribution for RES
- Competition for short-term available grid capacities require innovative solutions to allow faster grid connection
- Increased long-term anticipation also required for other categories
- Increased local focus requires intensified dialogue with DSO's, grid users, …

Taskforce LRIO will, in the long term, support in developing the grid where it is needed.

(*) This is a non-exhaustive list, only for illustrative purposes

The new Task Force Local Redistribution of Injection & Offtake

Why a new Taskforce?

- Grid capacities are critical to the **economic & sustainable development of society**
- **Long lead times for grid development** compared to residential and industrial development, making early accurate assumptions crucial
- With rapid and broad changes in the electricity sector, it is essential to **combine expertise**

Objectives of the Taskforce

- Address a growing need for **transparency on local capacity hypothesis & constraints**
- Involve the relevant stakeholders to **improve the processes** for Local Redistribution of Injections & Offtakes
- Collect **forward looking evidence** that can inform long-term studies

Deliverables

- **Methodologies for Local Redistribution of Injections & Offtakes**
- **Repartition keys** to distribute geographically the expected load, storage & generation growth (capacity & energy)

Attention points for the 1st iteration

1. **Acknowledge this is a trajectory - constructive & collaborative mindset of all stakeholders is essential.**
2. **First focus will be the existing methodologies; improvements can only be applied in future applications of the methodology.**

Planning

2025 | 2026

May | June | July | Aug | Sep | Oct | Nov | Dec | Jan | Feb

W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4

15/05 — 24/6 — 4/09 — 3/10 — 17/11 — 4/12 — 8/01

Public Consultation

Kick-Off & call for evidence

- Overarching processes
- Concepts & definitions

Workshop 1: Generation & Storage

- Onshore & offshore wind
- Solar production
- Thermal production
- Storage

Workshop 2: Load

- Electric vehicles
- Heat pumps
- Residential load
- Industrial load

Workshop 3: Interconnectors & Public consultation

- Interconnectors & Reference Context
- Launch of the public consultation
- Open points from Previous Workshops

Workshop 4: Next reference context

Presentation of the **Repartition keys** as determined by application of the presented methodologies on the Adequacy & Flexibility 2025 study

Workshop 5: Feedback consultation

Presentation of the results of the public consultation & proposal for **methodological evolutions** for the next reference context

Meetings, Governance and rules

- The Task Force will meet at Elia's headquarters, unless a different venue is decided on by the Chairman, in consultation with the members of the Task Force.
- Participation to meetings through online platforms will be possible.
- Meetings will be conducted in English, although participation will be possible in Dutch or French
- Specific dates for meetings and workshops will be announced at least 3 weeks in advance.
- The meetings will begin and end in time.
- An atmosphere of trust, respect and confidentiality is asked of the participants.
- Participants will respect differences of opinion by acknowledging the other person's stance and not pushing the acceptance of theirs.
- The Chairman will ensure that these guidelines are respected.

Local Redistribution of Injections & Offtakes

Agenda

Local Redistribution of Injections & Offtakes

1. Grid development studies require translating **macro-level scenarios** into a **local reference context** through local redistribution

   Needs Detection

   Infrastructure Adaptation

   Dynamic portfolio management

2. Local redistribution

   Growth potentials capacities in case capacity reservations & allocations remain below the expected capacity

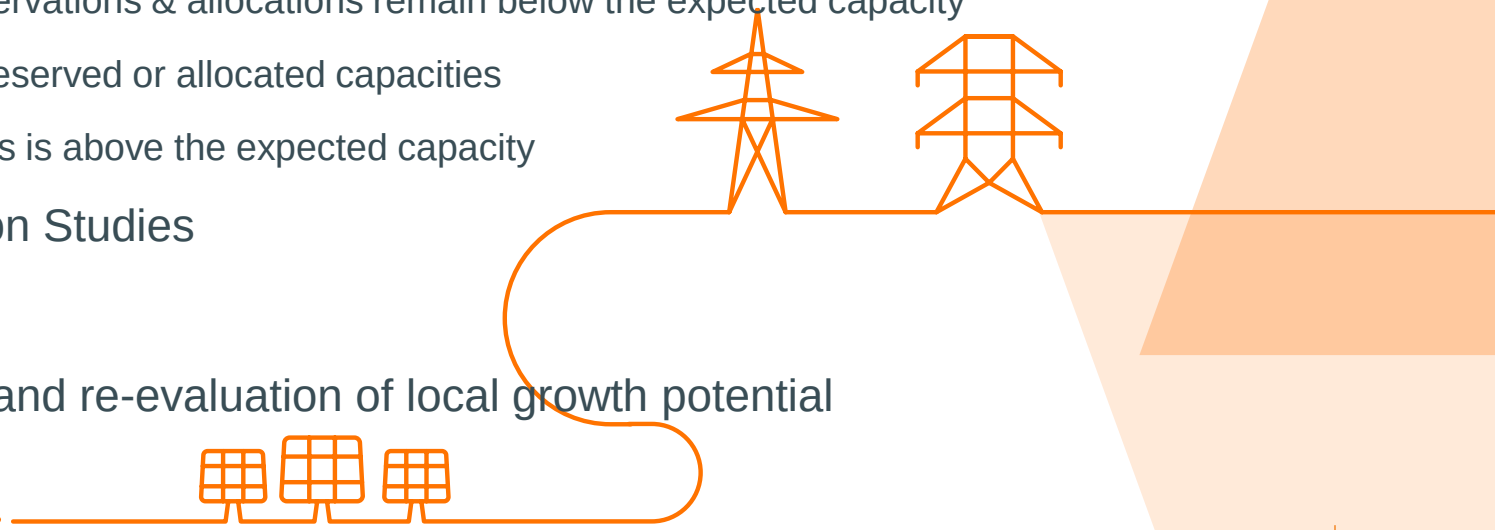
   Adaptation of Growth potentials capacities after reserved or allocated capacities

   Case for which capacity reservations & allocations is above the expected capacity

3. Example of local referential for Connection Studies

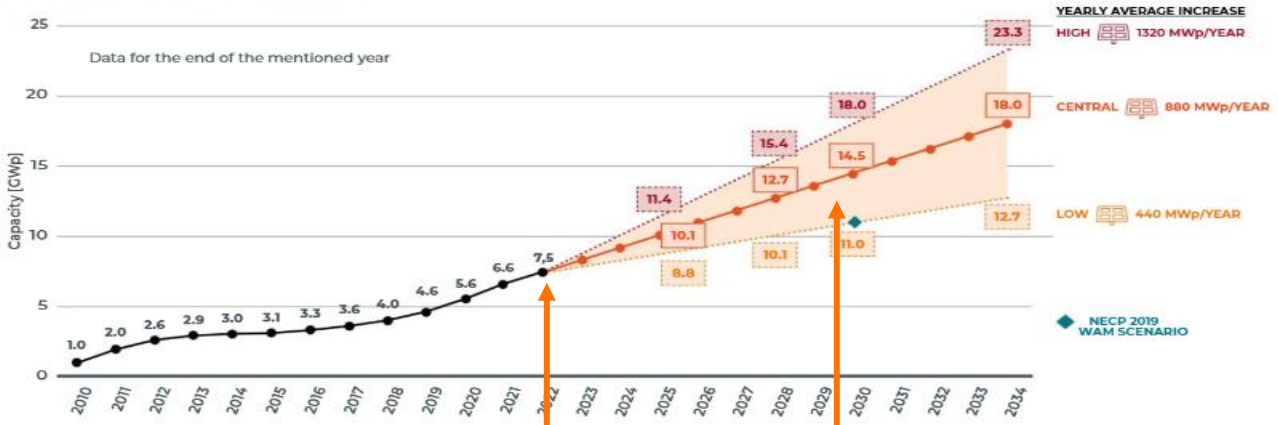
   Growth potential vs pre-reserved capacities

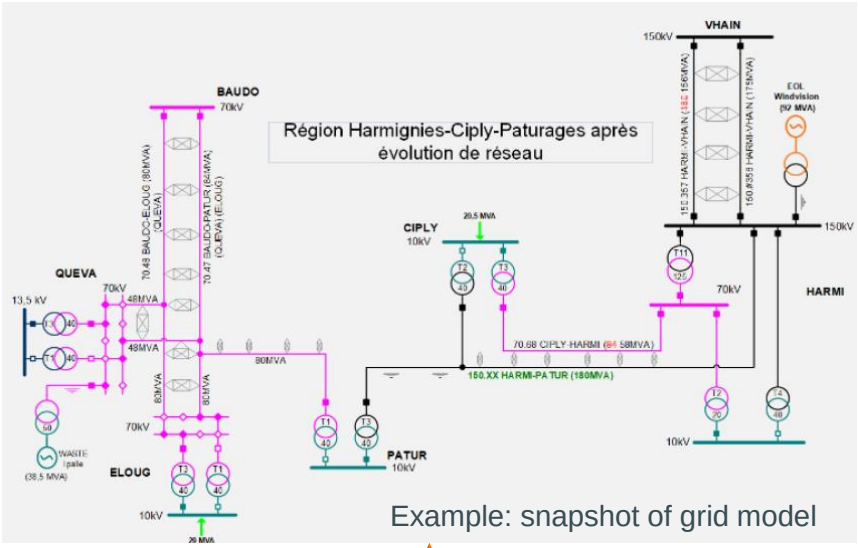
4. Timings for update of local redistribution and re-evaluation of local growth potential



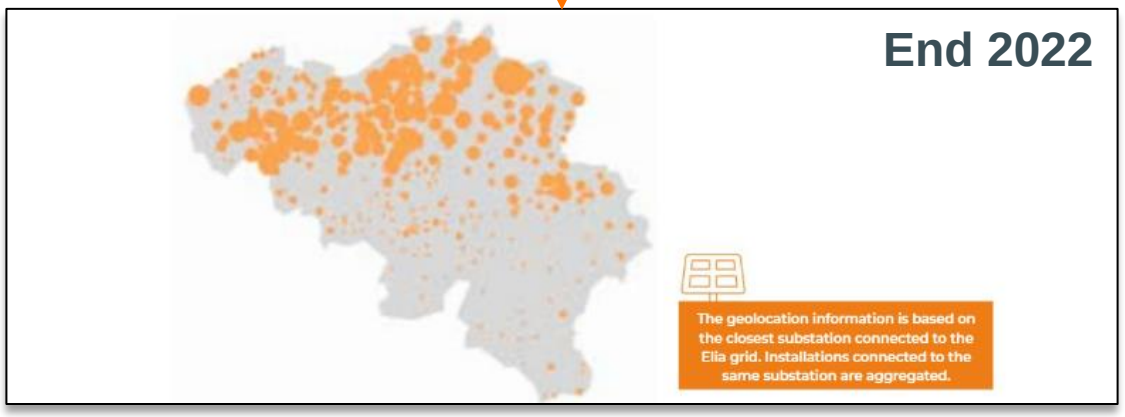
Local redistribution is a process that geographically splits aggregated grid usage values, with the aim to assign a potential transmission grid connection point.

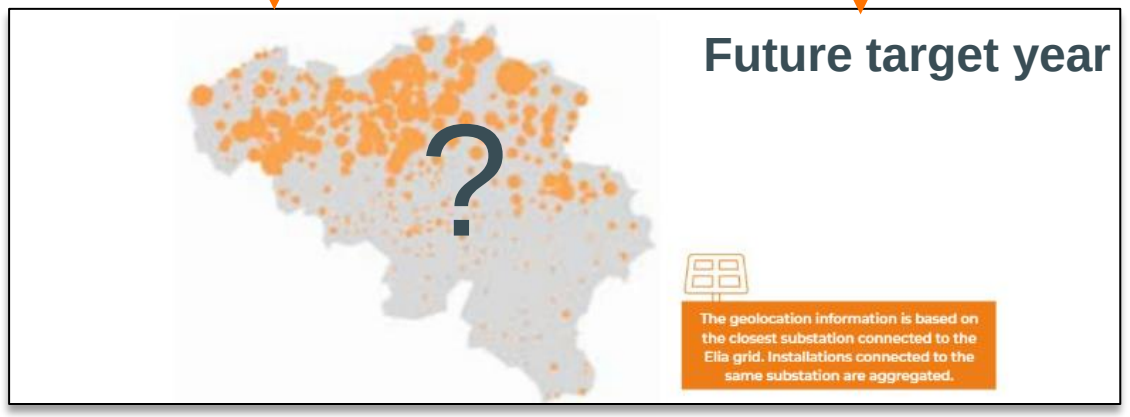
FIGURE 3-54 — ASSUMED EVOLUTION OF THE INSTALLED PHOTOVOLTAICS CAPACITY IN THE CENTRAL SCENARIO AND SENSITIVITIES FOR BELGIUM





Example: snapshot of grid model





Example for PV, Source: AdeqFlex2024-2034, Plan adaptation Wallon

Grid development studies require translating macro-level scenarios into a local reference context through local redistribution.

Client connection studies follow a simplified process, but the principle of reference & local reference context remains applicable.

Macro-level Scenarios

Needs detection

Infrastructure adaptation

Dynamic portfolio management

Geographical redistribution

1

Target year power profiles on hourly basis for load, generation & storage at aggregated level - Belgium, Flanders, Wallonia, Brussels

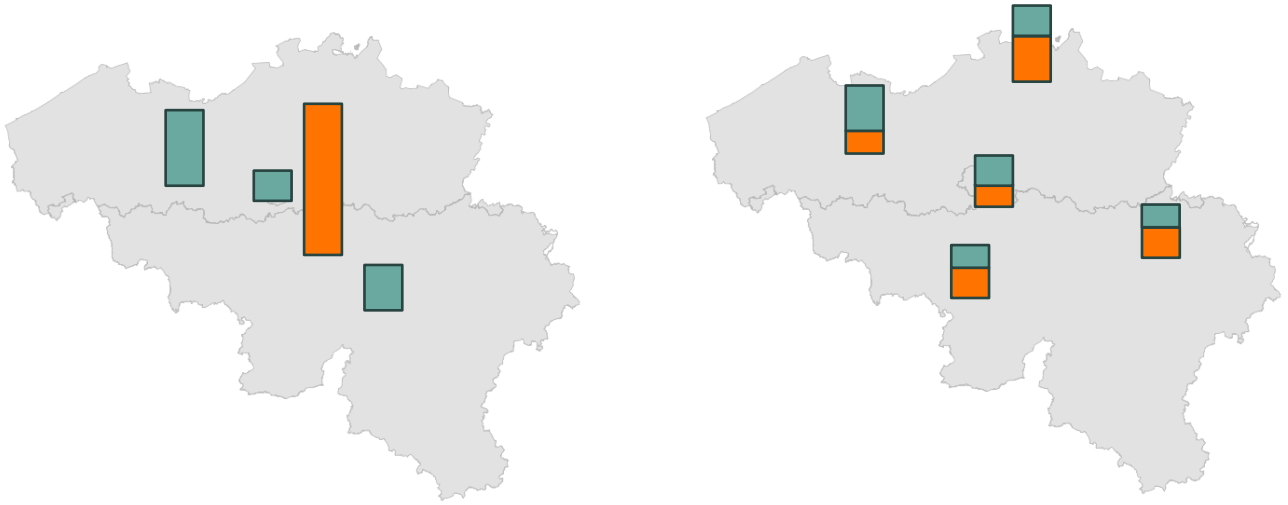
2

Best estimate redistribution of forecasted profiles for all injections and offtakes for a certain target year
=
“Reference Offtake and Injection”

Local redistribution uses technology-specific methodologies, that are depends on a variety of factors.

1 **Aggregate National/Regional for a certain target year**

2 **Redistributed Values**



Additional Usage - Category 1
Regional Targets

Additional Usage - Category 2
National Targets

Factors influencing additional uses or repartition keys for aggregates references - non exhaustive

- Evolution of existing Usages
- Client connection requests
- Inputs from Customers and DSOs
- Electrification potentials (industry and residential)
- Economic Indicators
- Input Factors (wind, irradiation, land,…)
- Legal Constraints
- **NEW** Stakeholders' Input

!

- **Different technologies require tailored methodologies**
- **Deep-dive in thematic workshops**

Grid development studies require translating macro-level scenarios into a local reference context through local redistribution – Several reference for different studies.

Macro-level Scenarios

Needs detection

Infrastructure adaptation

Dynamic portfolio management

Geographical redistribution

1

Target year power profiles on hourly basis for load, generation & storage at aggregated level - Belgium, Flanders, Wallonia, Brussels

2

Best estimate redistribution of forecasted profiles for all injections and offtakes for a certain target year

=

“Reference Offtake and Injection”

3

Local best estimate redistribution forecasted profiles for all injections and offtakes for a certain target year optimized for the local zone

=

“Local Reference Offtake and Injection”

Grid development studies require translating macro-level scenarios into a local reference context through local redistribution – Several reference for different studies.

2 Best estimate redistribution of forecasted profiles for all injections and offtakes for a certain target year
=
"Reference Offtake and Injection"

versus

3 Local best estimate redistribution forecasted profiles for all injections and offtakes for a certain target year optimized for the local area
=
"**Local Reference Offtake and Injection**"

Input data are identical - if reference is created at the same moment - (e.g. Load Mgt from Direct Grid Users & DSOs, reserved & allocated capacities, growth potential by technology - geographically distributed, Input from Public Authorities & associated Agencies, …)

Alignment between local information & macro-level scenario aims at reaching a best-estimate redistribution at **macro-level** without privileging information from one area more than another

Alignment between local information & macro-level scenario aims at reaching a best-estimate redistribution at **area-level** and being aligned while respecting macro-level values

Grid development studies require translating macro-level scenarios into a local reference context through local redistribution.

Macro-level Scenarios

Needs detection

Infrastructure adaptation

Dynamic portfolio management

Geographical redistribution

1

Target year power profiles on hourly basis for load, generation & storage at aggregated level - Belgium, Flanders, Wallonia, Brussels

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Best Estimate redistribution of forecasted profiles for all injections and offtakes for a certain target year
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“Reference Offtake and Injection”

3

Local best estimate redistribution forecasted profiles for all injections and offtakes for a certain target year optimized for the local zone
=
“Local Reference Offtake and Injection”

4

Reference Grid:
Freeze of the updated project portfolio & associated timings after yearly portfolio management process. This process is performed to balance available resources & portfolio constraints

The combination of a “Reference Offtake and Injection” and a “Reference Grid” is called a “Reference Context”

Grid development studies require translating macro-level scenarios into a local reference context through local redistribution.

1 Target year power profiles on hourly basis for load, generation & storage at aggregated level - Belgium, Flanders, Wallonia, Brussels

+

2 Best estimate redistribution of forecasted profiles for all injections and offtakes for a certain target year = "**Reference Offtake and Injection**"

+

4 **Reference Grid:** Freeze of the updated project portfolio & associated timings after yearly arbitration process.

Used for

- Identification of System Needs
- Arbitration of project portfolio & associated timings
- Best estimate scenario of EHV grid reinforcement & interconnections studies

1 Target year power profiles on hourly basis for load, generation & storage at aggregated level - Belgium, Flanders, Wallonia, Brussels

+

3 Local best estimate redistribution forecasted profiles for all injections and offtakes for a certain target year optimized for the local zone = "**Local Reference Offtake and Injection**"

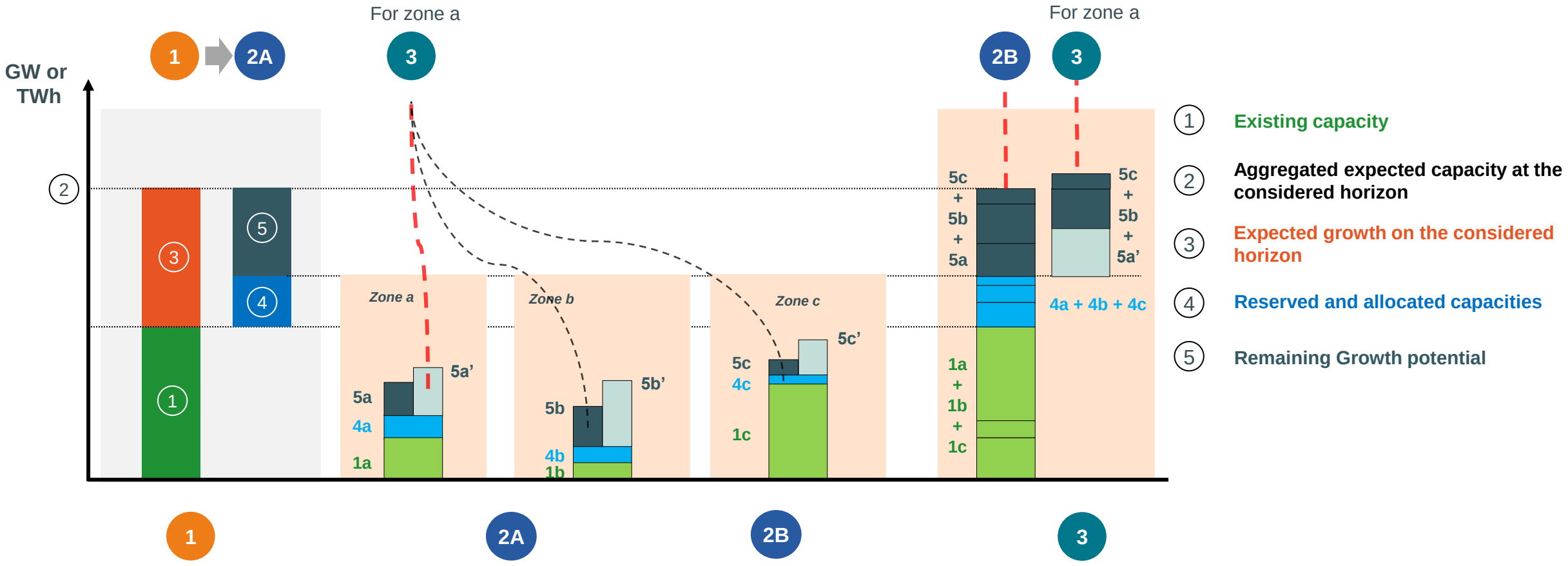
+

4 **Reference Grid:** Freeze of the updated project portfolio & associated timings after yearly arbitration process.

Used for

- Zone under EOS/EDS study
- Fine-tuning adaptation of arbitration of project portfolio & associated timings
- Best estimate scenario of zone under infrastructure development study

Local redistribution: if reservations and allocations are lower than the aggregated expected capacity, growth potentials are used to compensate for the difference.



1

Target year values for load, generation & storage as a "best estimate" on aggregated level - Belgium, Flanders, Wallonia, Brussels from scenario building process.

2A

Determine the already allocated and reserved capacity. Location of (1) and (4) is known.

2B

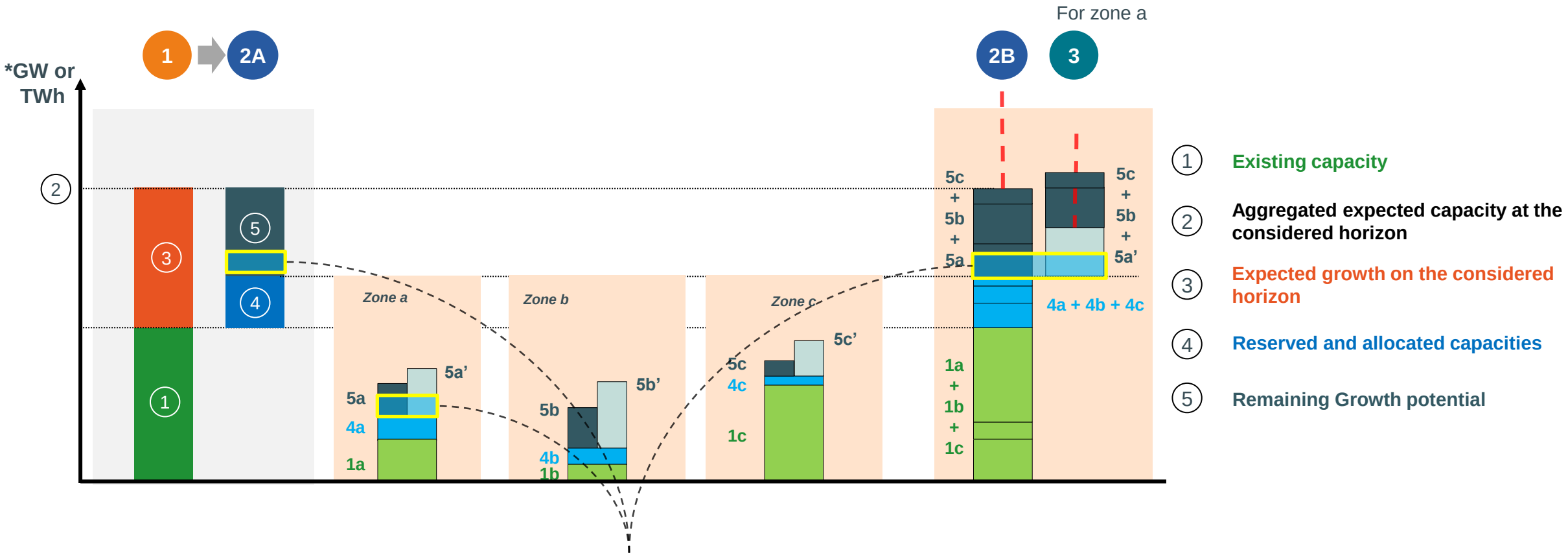
The remaining potential is then distributed over the zones via a set of rules, depending on the technology

3

Local Reference are created based on bottom-up info

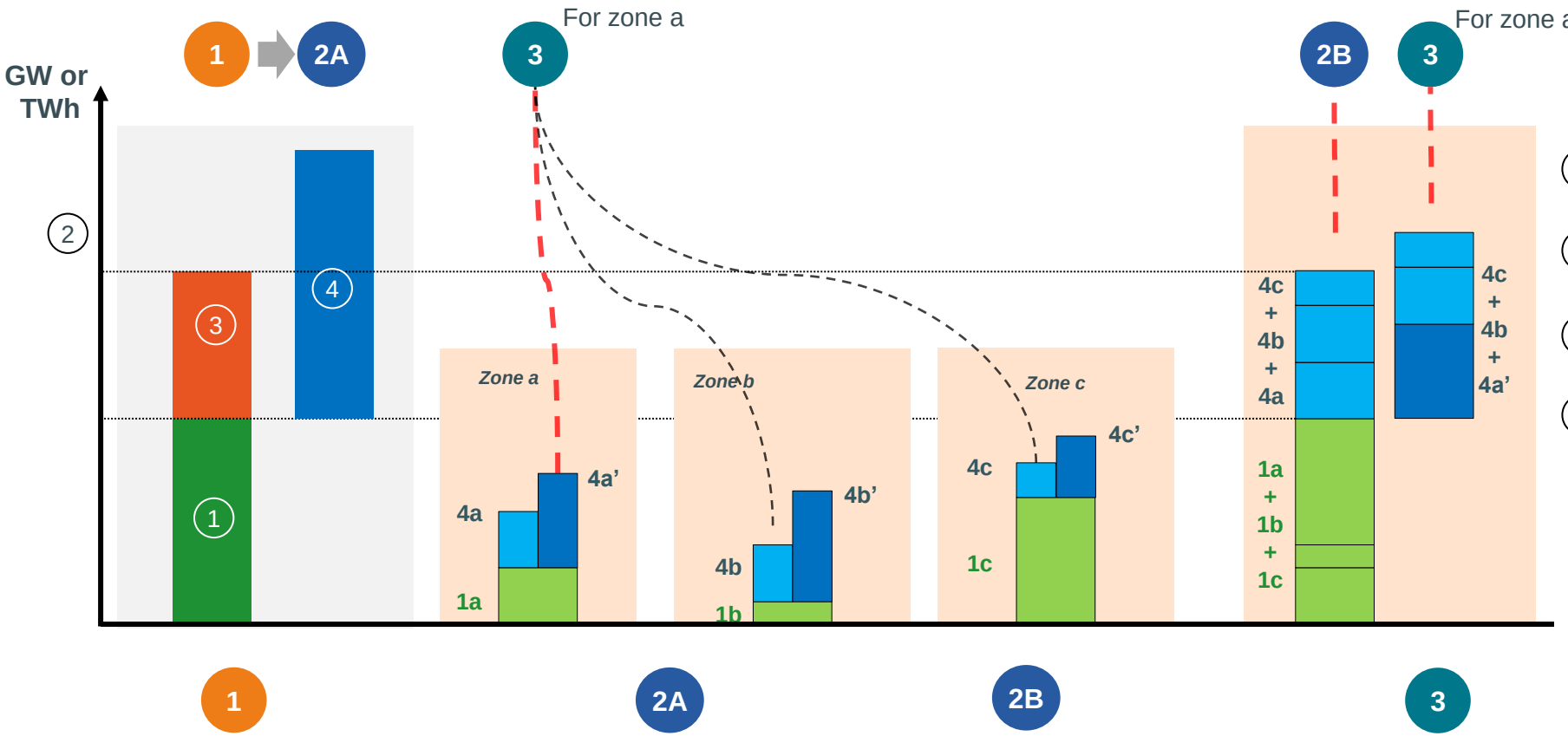
Local redistribution: growth potentials are progressively filled in by reserved and allocated capacities.

After each reservation or allocation of capacity of a same technology and zone as the potential, zonal growth potential are adapted



New EDS is added in zone a, leading to a decrease of 5a and 5a' and an increase of 4a

Local redistribution: case for which capacity reservations & allocations is above the expected capacity.



1. Existing capacity
2. Aggregated expected capacity at the considered horizon
3. Expected growth on the considered horizon
4. Reserved and allocated capacities

1 Target year values for load, generation & storage as a "best estimate" on aggregated level - Belgium, Flanders, Wallonia, Brussels from scenario building process.

2A Determine the already allocated and reserved capacity. Location of (1) and (4) is known.

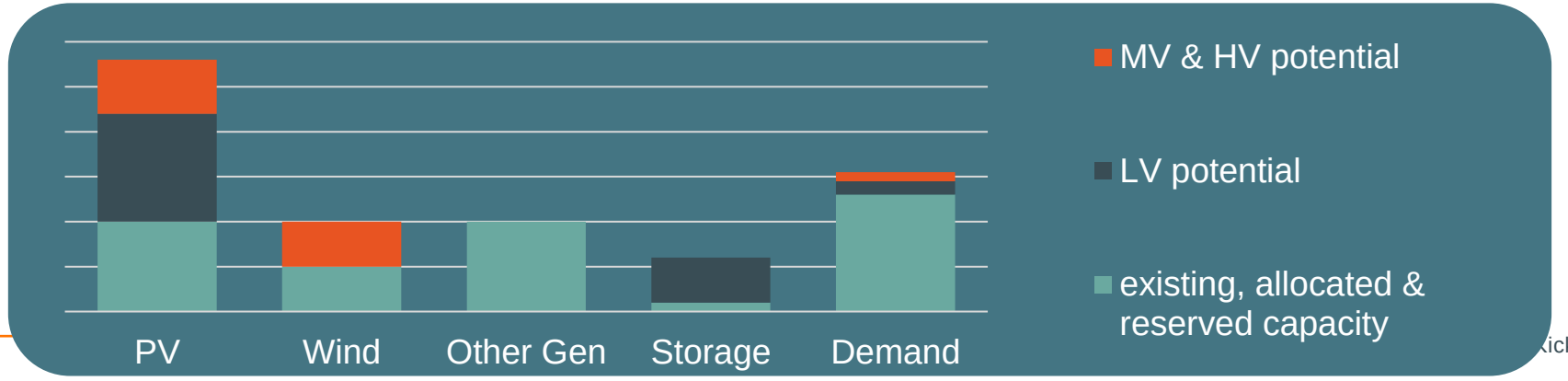
2B Capacities considered for the reference context are ranked based on project likelihood of realization (REA, flex, …)

3 Local Reference are created based on bottom-up info, all reserved and allocated capacities are considered

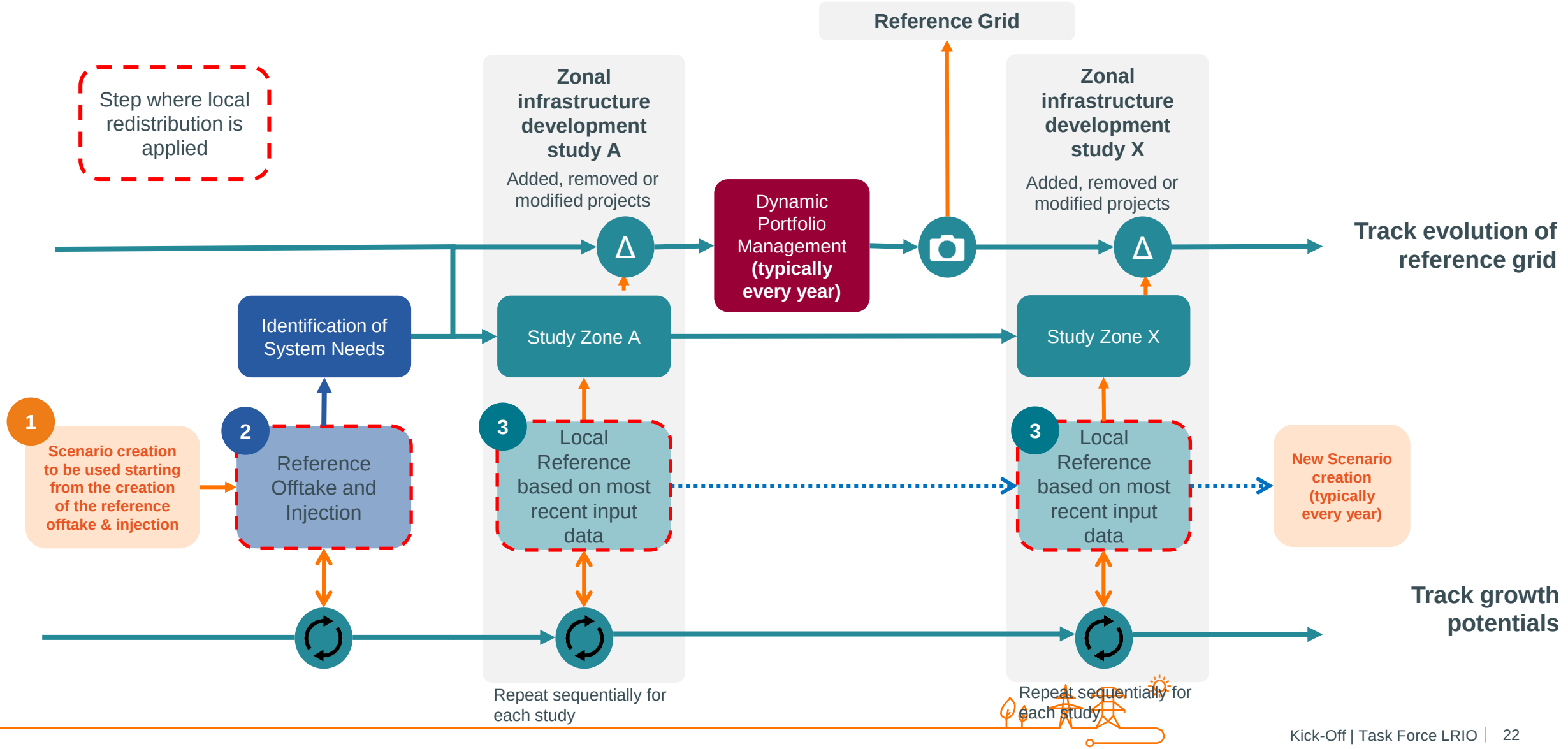
Example of local referential for connection studies & Difference between growth potential vs pre-reserved capacities.

Example of connection studies (EOS-EDS)

1. **The scenarii building process**, including public consultation on hypotheses, defines the evolution of the consumption and production to be accounted for in Belgium and Europe.
2. On a regular basis the offtakes and injections context is reviewed based on the latest scenarii. **This context is composed by existing, allocated and reserved capacities and by the other foreseen evolutions (growth potential)** on different time horizons**.**
4. **The reference grid is developed to host those capacities** (existing, reserved, allocated and foreseen evolutions) in order to be able to realize the Belgian and EU ambitions in terms of the energy transition, **in the interest of society.**
3. **For a given connection study**, this offtakes and injections context is updated at local level
   - **the best estimate growth potential for other technology than the one of the connection request within the local zone of influence of the connection request and which shall be considered as pre-reserved capacities**
   - **the latest information on capacity reservation and allocation within or without growth potential**



The studies that use local redistribution and re-evaluation of local growth potential happen at different periodicities.



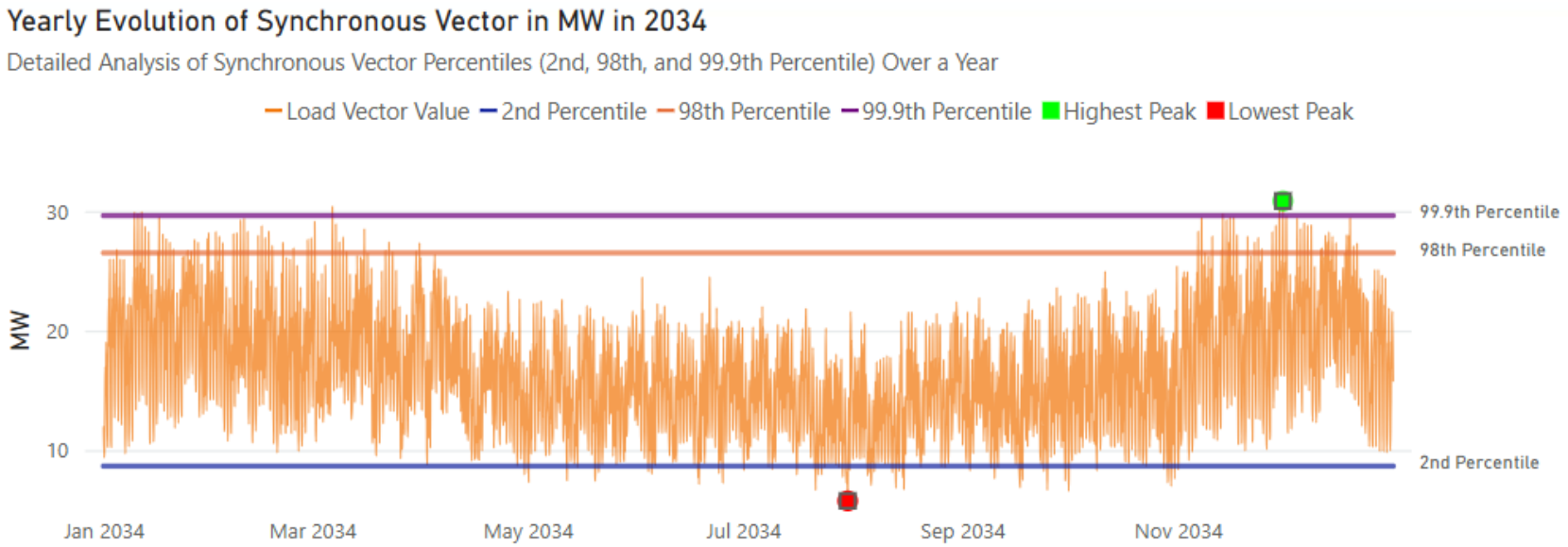
C. Reference Context Creation

From Data to Decisions: Reference Offtake and Injection creation

What: Injection and Offtakes for every node of the grid, categorized by technology and analyzed on an hourly basis for different target years

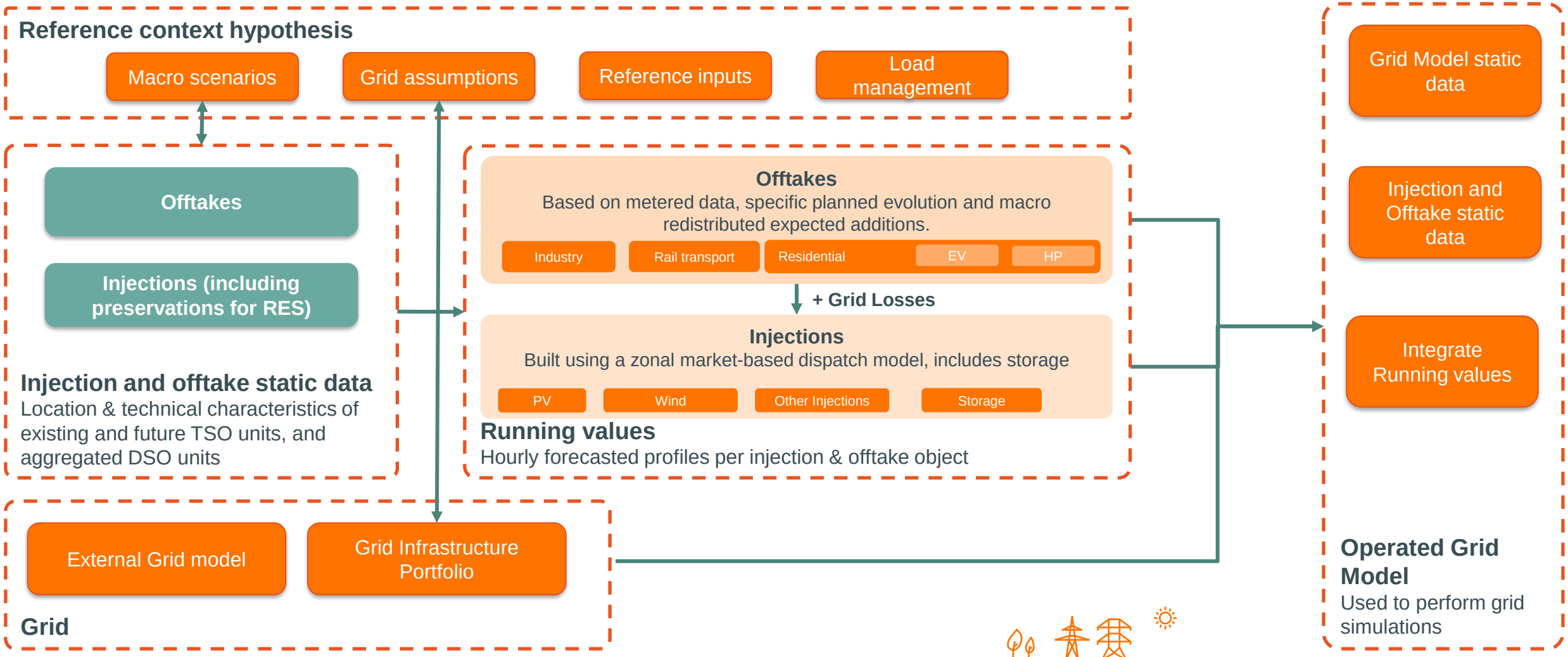
How: By using advanced methodologies and products (macro to micro products, market flow-based product) & validated assumptions (macro scenarios, consumption trends, demand management, potentials,…)

Deep dive in next workshops



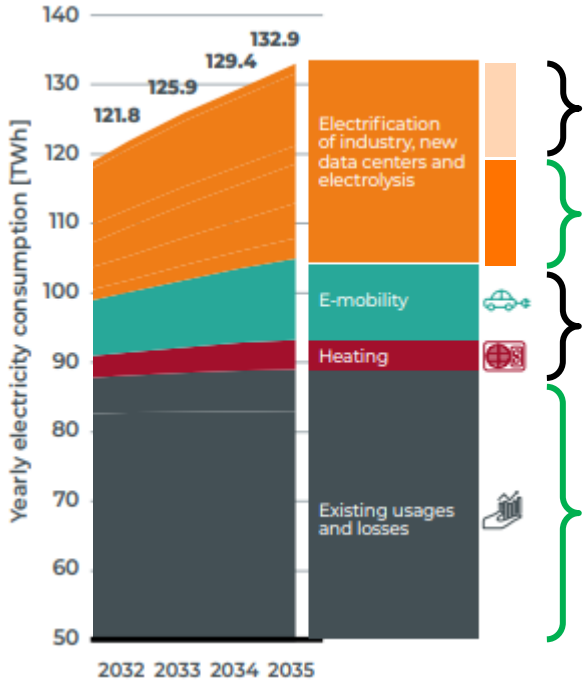
Example: Offtakes projection for a load in 2034 – Data Source: Elia

The Reference Context constitutes the expected injections or offtakes for each hour of the forecasted horizon, for each substation.



The Offtake Reference Context is built from existing offtakes, specific planned evolutions & redistributed aggregated macro targets.

Example of a national consumption scenario



Unknown location, remaining potential of a category is redistributed on existing offtakes per technology to meet macro targets

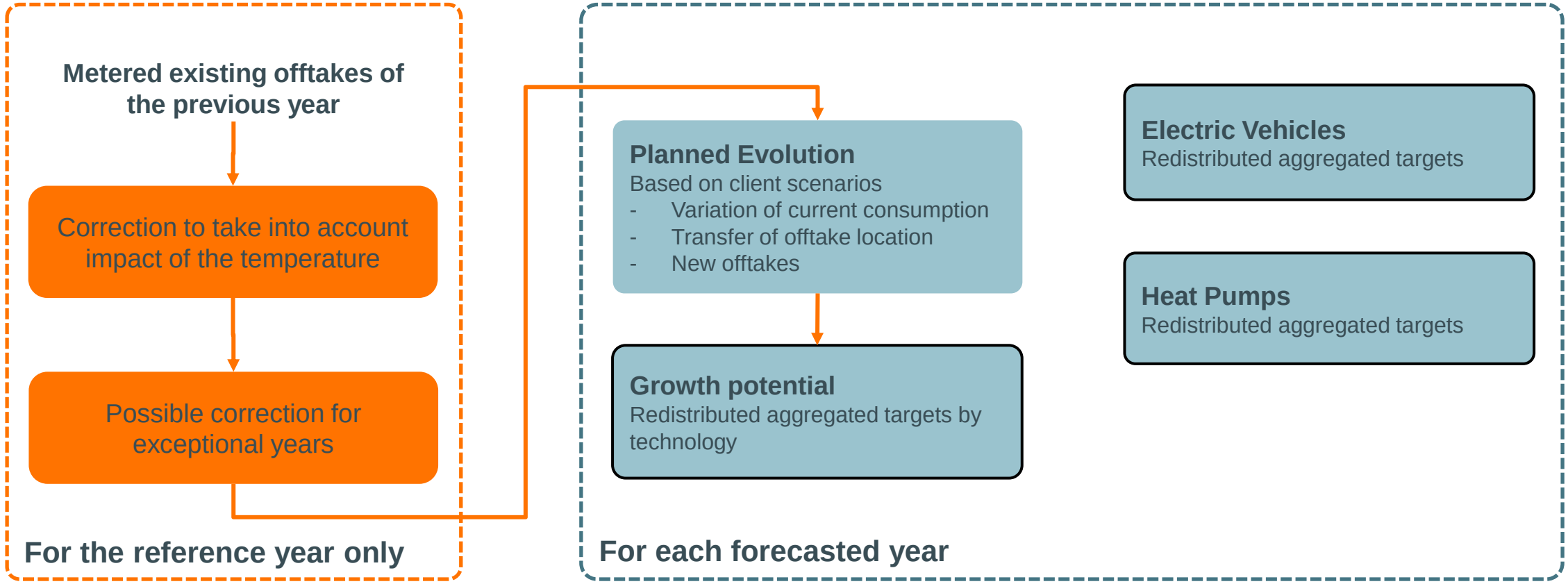
Known location, planned evolution linked to existing connections

EV – HP : Decentralised unknown location, a technology-specific methodology is used to distribute these offtakes

Existing offtakes - Known location and running values

Source: AdeqFlex24-34, truncated

The Offtake Reference Context is built from existing offtakes, specific planned evolutions & redistributed aggregated macro targets.



The output of each step is a table, giving the expected offtake by voltage level for each hour of the year. There is one file per step (that represents the addition), forecasted year and sensitivity.

The Injection Reference Context is computed by running an economic dispatch.

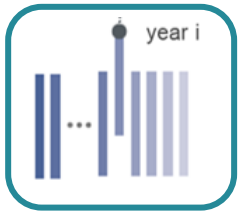
The model includes Belgium and neighbouring countries, Belgium being subdivided into 22 parts. Market simulations use a flow-based methodology at bidding zone level and cover the European Union

Input data (by subdivision)
- Consumption
- Renewable generation (existing & **redistributed target**)
- Hydro
- Centralised thermal generation facilities
- Decentralised thermal generation facilities
- Storage (existing & additional **redistributed target**)
- Demand flexibility
- Interconnections

Weather data impacting consumption and RES

3 climate years clustered into 'points in time'

antaressimulator



Monte Carlo years

SIMULATIONS

Hourly dispatch optimisation to minimise total costs of the system

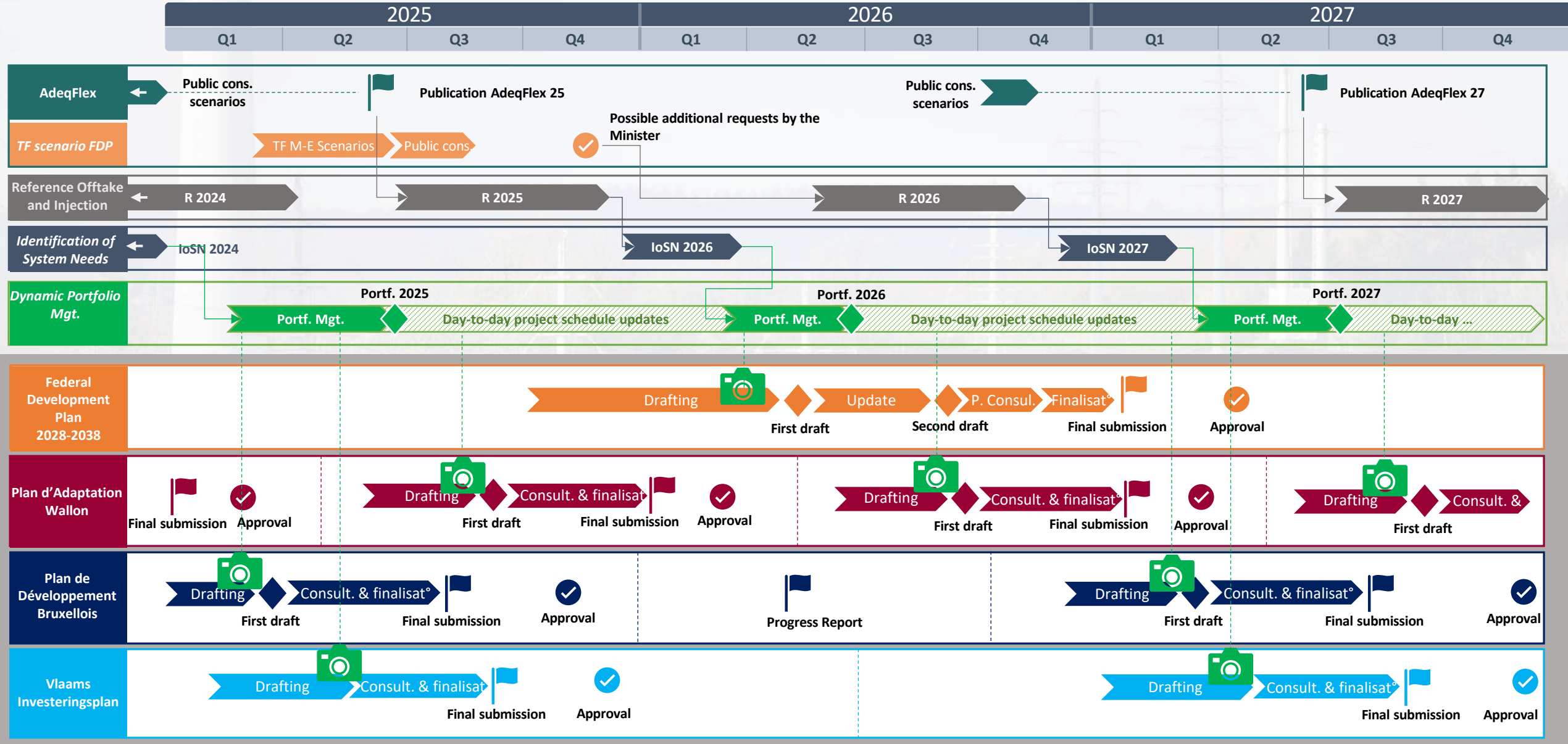
MODEL OUTPUT

- **Hourly dispatch** for all units
- **Exchanges**

D. The Bigger Picture

Geographical redistribution is part of a interlinked methodology package for grid development.

Final portfolio photo for plan (after this, normally only minor updates in timings)



E. Next Steps

Next Steps

2025 | 2026

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W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4 W1 W2 W3 W4

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Kick-Off & call for evidence

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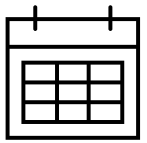
Public Consultation

When?



October 3rd, 2025 → November 17th, 2025

What?

Report describing the current redistribution methodologies

Published on the Task Force's webpage on October 3rd

How?

By email: usersgroup@elia.be

Call for Evidence

What?

Additional information that can **improve the local redistributions processes**, such as:

- Sectoral Knowledge
- Infrastructure Requirements
- Excluding Factors
- Other relevant information

How?

Presentation in session

- Discuss of shared information to know the view of the different stakeholders
- Communicate your presentation by email one week before the workshop: usersgroup@elia.be

Provide background information by email

- Finishes on Sep 15th
- Disclosure if confidential information
- Email: usersgroup@elia.be

Follow-up

- Integration in the **Consultation Report**, with Elia comments on their integration in the future methodologies.
- Presentation of the Consultation Report, in the Workshop 5: Feedback Consultation.