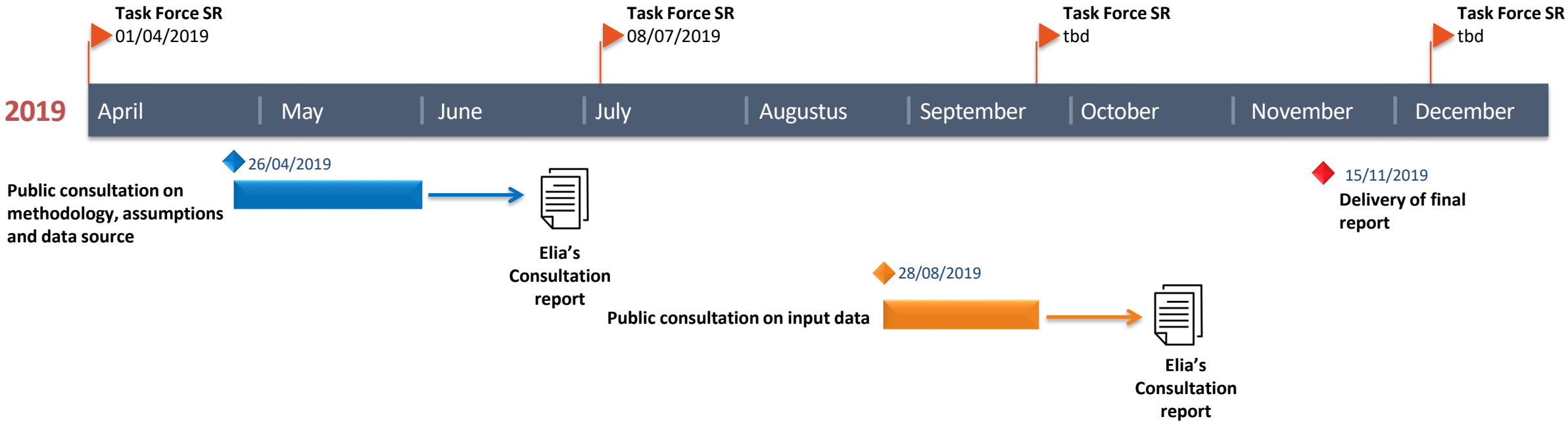
Strategic Reserve Public Consultations: planning

Planning of the public consultations

- **April 2019:** Methodology, assumptions & data sources
- **August 2019:** Input data



Public Consultation: Methodology Volume Assessment Strategic Reserve 2020-21

Overview of the Q&A

General

Elia received 4 non-confidential answers to the public consultation from

- FEBEG
- FEBELIEC
- CREG
- Belgian Offshore Platform (BOP)

A total of 33 questions were received, which were divided into 5 categories

Category	# questions
Data and Assumptions	13
Publication of data	5
Publication of results	3
Market response	4
Flow based modelling	8

All questions & answers can be found on the Elia website in the consultation report.

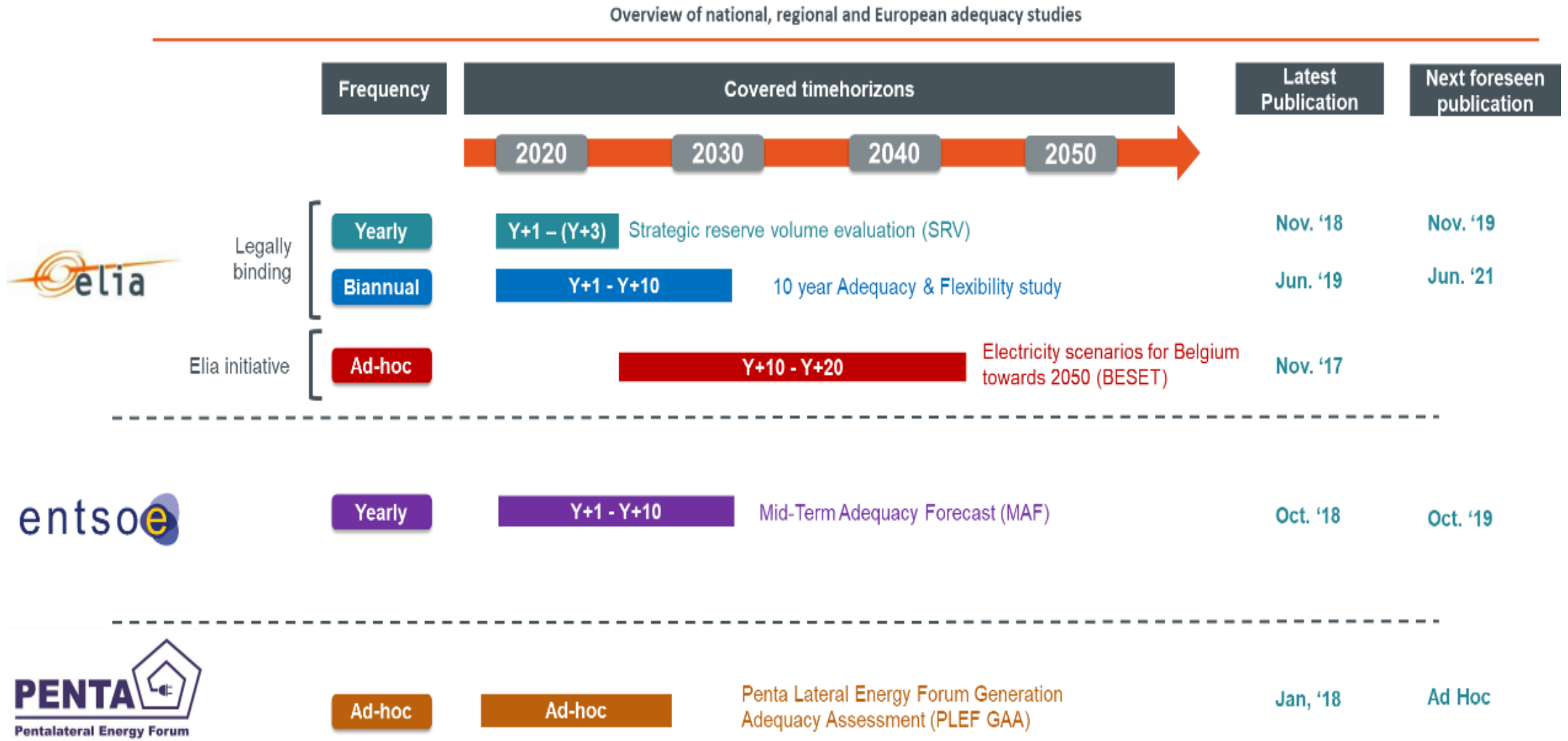
Total load / demand forecasting framework

- IHS is the main solution for now
  - Renowed consultancy firm
  - Multi-sectoral approach highlighted during last year's consultation
  - Forecast error very low
  - Other forecasts are very similar (see image)
  - Short term impact negligible in terms of energy
- Remaining remarks
  - Lack of transparancy due to proprietary model

Total demand

- The first workshop with stakeholders on the new Elia demand forecasting framework, currently under development, is planned to be held in September.

Relationship between different adequacy assessments



Incorporation of CRMs in foreign countries

Many different CRM mechanisms exist – a pragmatic way of modelling these is pursued.

Elia performs a **model calibration** in order to have adequacy levels for foreign countries which are in line with the adequacy assessments performed by the respective TSOs. To achieve this, additional production units are added in these areas. In this way, market wide CRMs are modelled.

On the other hand, out of market reserves are unable to contribute to foreign adequacy situations, as in operations these are dispatched after the market. Therefore, it is impossible for Belgium to benefit from the German “Kapazitätsreserve” much like it is impossible for France to benefit from Belgium’s Strategic Reserve in times of isolated (or even shared) curtailment.

Market response modelling

For Belgium, these products are **not just modelled as very expensive units**.

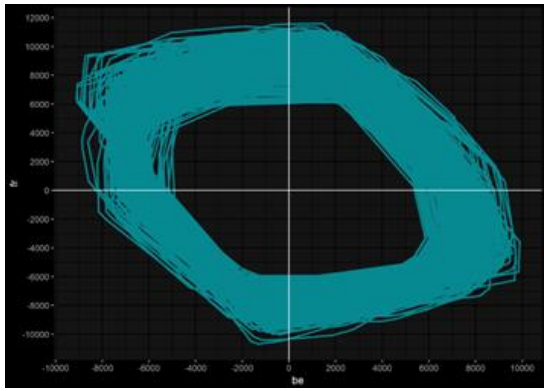
We identify 7 categories, each with

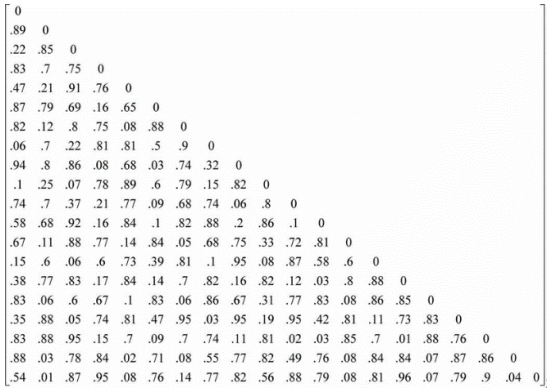
- A capacity as a share of the total identified capacity
- A different cost per MWh
- Different hourly activation constraints (maximum number of consecutive hours the product can be activated)
- Different maximum number of weekly activations

This approach is a huge step forward from the granularity of Market Response modelling in other European models.

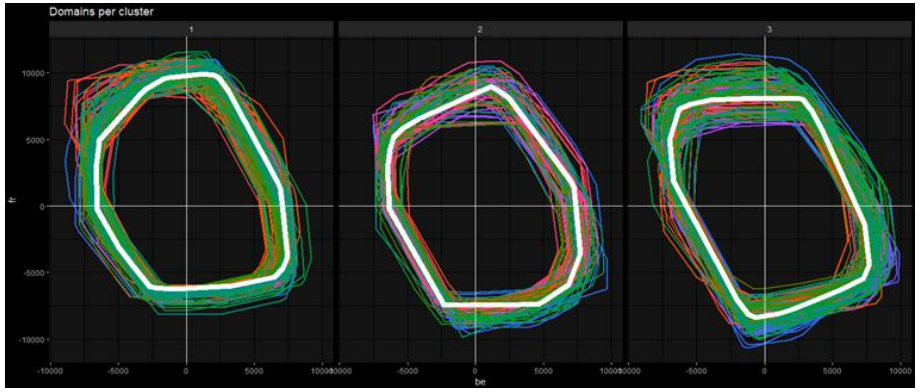
Flow based using SPAIC typical days: new challenges arising with the DE/AT split

Phase 1: typical day selection: “what is a sensible distance metric when comparing 6 dimensional polytopes?”

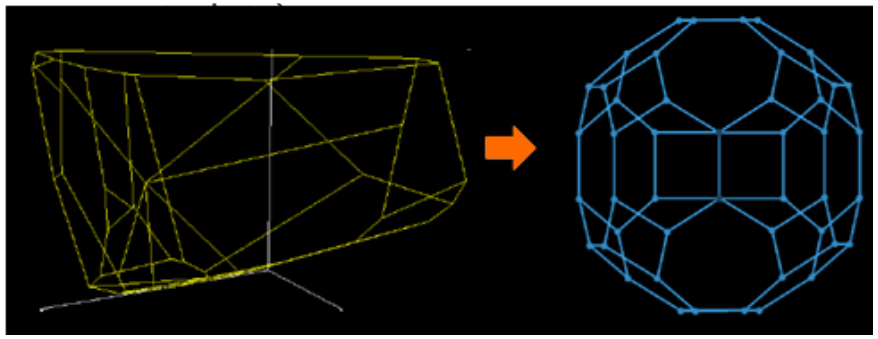


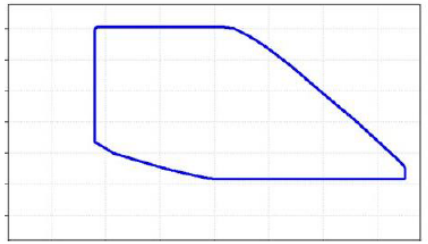


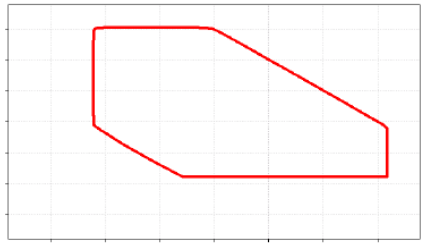
0																		
.89	0																	
.22	.85	0																
.83	.7	.75	0															
.47	.21	.91	.76	0														
.87	.79	.69	.16	.65	0													
.82	.12	.8	.75	.08	.88	0												
.06	.7	.22	.81	.81	.5	.9	0											
.94	.8	.86	.08	.68	.03	.74	.32	0										
.1	.25	.07	.78	.89	.6	.79	.15	.82	0									
.74	.7	.37	.21	.77	.09	.68	.74	.06	.8	0								
.58	.68	.92	.16	.84	.1	.82	.88	.2	.86	.1	0							
.67	.11	.88	.77	.14	.84	.05	.68	.75	.33	.72	.81	0						
.15	.6	.06	.6	.73	.39	.81	.1	.95	.08	.87	.58	.6	0					
.38	.77	.83	.17	.84	.14	.7	.82	.16	.82	.12	.03	.8	.88	0				
.83	.06	.6	.67	.1	.83	.06	.86	.67	.31	.77	.83	.08	.86	.85	0			
.35	.88	.05	.74	.81	.47	.95	.03	.95	.19	.95	.42	.81	.11	.73	.83	0		
.83	.88	.95	.15	.7	.09	.7	.74	.11	.81	.02	.03	.85	.7	.01	.88	.76	0	
.88	.03	.78	.84	.02	.71	.08	.55	.77	.82	.49	.76	.08	.84	.84	.07	.87	.86	0
.54	.01	.87	.95	.08	.76	.14	.77	.82	.56	.88	.79	.08	.81	.96	.07	.79	.9	.04	0



Phase 2: domain approximation: “how to approximate 6 dimensional domains with 1 fixed regular 6D polytope?”







$A_t \cdot x < a_t$

$\mathrm{B} \cdot x < b_t$

Adequacy patch - Curtailment sharing rules

The adequacy patch solution implemented in the study follows the implementation in EUPHEMIA within Flowbased market coupling (FBMC) and follows the curtailment sharing principles that already existed under ATC/NTC.

Without adequacy patch, in situations with scarcity in one bidding zone,'flow factor competition' could lead to a situation where buyers which are ready to pay any price to import energy (the market price cap) called 'Price Taking Orders' would be rejected while lower buy bids (below market price cap) in other bidding areas are selected instead, since this solution maximizes the total welfare for the given level of congestion and usage of the scarce transmission capacity.

The adequacy patch mechanism aims to 'fairly' distribute the curtailments across the involved markets by equalizing the ratio of curtailed price-taking orders while ensuring maximal imports for zones experiencing curtailment under the active FB constraints.

The situation becomes even more complex when two or more markets are simultaneously in curtailment, meaning two or more markets rely on import simultaneously to ensure their adequacy, since they cannot cover all their demand by all their available local generation. For these situations, the objective of the adequacy patch is to equalize the ratio of curtailment between bidding zones as much as possible while respecting the FB active constraints.

The adequacy patch makes sure that countries can first cover its demand by all local generation, before sharing any curtailment. This is referred as **"local matching constraint"**. Countries that have no adequacy issues, will maximise their exports to the country(ies) in scarcity, only in case they have any margin left for export, *ie* after they have guaranteed their local demand first. Thus countries will not be brought into scarcity to help Belgium if they were originally not in curtailment.

TRAPUNTA

What is TRAPUNTA ?

TRAPUNTA stands for Temperature REgression and loAd Projection with UNcertainty Analysis.
It is a software that allows to easily perform electric load prediction starting from data analysis of historical time series (electric load, temperature, climatic variables and other)

- **TRAPUNTA has been developed on the request of ENTSOE**
- **This new tool will provide key inputs for the MAF and future ENTSOE studies**

What is the main added value of this new software ?

- Multiple historical climate and load time series are used to derive forecasted load profiles for each market node.
- Automatic identification of different climate variables needed for the forecasting process (temperature, irradiance, wind speed, etc)
- Better treatment of historical profiles used in the forecasting process (correction of holiday periods, exceptional events, etc.)
- Split of the load forecast into temperature-dependent and temperature-independent components.
  - The final load profiles are adjusted, taking into account added consumption from heat pumps and electric vehicle charging.
  - The forecasts also consider the interdependencies of historical temperatures of each climate year and historical load patterns.