

## Setting up an exchange about (extreme) scenarios

### 1. Background

Long-term network development planning is one of the primary jobs of a TSO. Via a process of forecasting and modelling they tailor grids to the evolution of demand and generation, whilst securing an affordable supply of energy for the future. Assumptions about the evolution of demand and generation are described via scenarios. These are fundamental to determine the future design of the European electricity grid.

Developing future scenarios, resulting market models and their interplay with grid models, is a complex process. The outcome is highly dependent on assumptions put into the scenarios and the modelling. At the same time, this process is the one tool we have to understand which role an individual grid project or a system of grids play with regards to enabling certain future scenarios.

### 2. The challenge

Scenario development and modeling is being done by TSOs and by ENTSO-E who have privileged access to data which feeds the grid models. Multiple other players (primarily consultancies or research institutes) work with their own models to replicate modeling results or gain insights into the 'what if' of other scenarios.

Despite the resulting wide range of modeling results, insecurity amongst stakeholders remains high for a variety of reasons:

1. Transparency about existing scenarios, the underlying assumptions and design of models is perceived as being too low
2. Extreme scenarios and their grid needs - e.g. what grid is needed in a highly decentralised, automated scenario where DSM and storage play a big role and energy efficiency is given a large role - are not available to the extent requested by some important stakeholder groups
3. Expertise in the fundamentals of scenario development and modeling is possibly much lower amongst stakeholders than amongst the involved experts, making a real dialogue, where the different sides fully understand each other's language in itself challenging

As a result, stakeholders who per se support renewables and understand the need for grids to enable renewables feel insecure in defending grid infrastructure needs that appear in national network development plans or the European TYNDP. This includes RGI's NGO members who are willing to explain infrastructure needs at a local level to a skeptical public, but need to be secure that the energy transition drives these needs.

### 3. Why an approach about extreme scenarios

Much of the work done by TSOs, ENTSO-E and other modelers share a common methodological approach and are full of insights; while they may work with different assumptions - e.g. on the future generation mix or prioritization of in-feed of renewables - they all are valid contributions to a discussion itself, can help to make evident the impacts of different concepts and share some of the general outcomes.

In this context, the RGI members have decided to set up an exchange about extreme scenarios, considering work done for internal purposes by RGI member TSOs, plus further studies which are publicly available.

Setting up an exchange will build common understanding of a range of scenarios and of the ways in which decisions about infrastructure affect generation options, and vice versa.

#### 4. Concept

Following the MA decision, RGI is proposing a set of workshops that look to improve the level of understanding amongst stakeholders with regards to scenario development and modeling and to enable TSOs to learn how their approaches could be adjusted in the light of stakeholders' concerns, and how best to communicate about these topics. This process shall enable all parties to play an increasingly constructive role in their countries/the European debate about what future grid infrastructure is needed.

The core content of this exchange will include:

- Basics of energy scenario development (scenario narratives, influencing factors of scenarios and their underlying assumptions, resulting input parameters)
- Basics of modeling (market models, grid models, their interplay, what they can cover and their limitations)
- Stakeholder expectations of what scenarios and modeling should consider to achieve more legitimate outcomes
- Similarities and differences in scenario development & modeling applied by different TSOs
- Outcomes of extreme scenario modeling done internally by RGI member TSOs
- Exchange about modeling outcomes done as part of public studies (e.g. TYNDP, e-highways project, work done by Greenpeace)

#### 5. Aspired outcomes of this work

- Increased understanding how scenario development and modeling function, what they can consider and the limitations
- Increased understanding of how differing scenarios/input assumptions impact modeling outcomes/resulting grid needs
- Description about information/its format which needs to be available to provide a needed level of transparency
- A 'wish-list' for future scenario development/modeling (what is still missing?)
- NGOs feel more secure in dealing with scenario/modeling and find it easier to interpret the outcomes
- The way in which decisions about grid infrastructure affect generation options/their costs and vice versa how decisions about generation affect needed infrastructure is better understood – NGOs feel more secure to explain this to their respective audiences
- TSOs/Modeling experts have an increased understanding of the importance of their work for public acceptance and learn how to communicate better to stakeholders the outcome of their work and its implications
- If deemed appropriate: description of shared principles what a sound scenario/development modeling process needs to consider to be shared with ENTSO-E as an encouragement on how to further develop the TYNDP modelling

- If they arise out of the exchange: joint 'fundamental' messages about integrating renewables and the need for grids (beyond what is covered in the brochure Connected = Empowered)