Minutes

2nd SJWS for the development of TYNDP 2017

Brussels, 26 January 2016, from 10:30 to 16:30

Thon Hotel EU, Rue de la Loi 75, 1040 Brussels

Introduction
Céline Heidrecheid, ENTSOG Business Area Manager

Introduction to supplies
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Slides are available for download

Edison

Q: How do you consider the new discoveries of Egypt, Cyprus and Israel? Is it part of LNG or not considered at all?

A: We differentiate between supply sources that are likely and those that may come into the equation, this will be covered more in the more detailed supply presentation at a later SJWS. For Egypt, our current assumptions would be for LNG and also Cyprus as LNG via Egypt…

Q: The East Med Pipeline is a PCI project so it should be taken into consideration, with these sources coming to Europe by pipeline, with the new discoveries in Egypt close to Aphrodite fields…

E-Control

Q: With regards to Indigenous Production, what is the share connected upstream…as in how is the supply connected to the distribution system handled or considered?

A: Demand is collected from TSO's as gross demand and supply from indigenous production is also gross as well, which would include the supply connected to the distribution networks.

DG ENER

Q: It was mentioned that public information is used for the supply sources – where is this from?

A: Due to the lack of study or detailed information on supply ranges, ENTSOG look at a variety of publicly available information for each of the sources in order to determine the range accessible to the EU.

Q: EC: Firstly, for the 6 sources of supply mentioned as Extra-EU in the presentation, how are some of these handled in the modelling? For example, if we intend to introduce some Azeri gas this is not suitable for all areas of Europe, it won't reach certain countries?

Secondly, regarding LNG – the map that showed potential terminals, particularly in the Baltics, some of them will not be constructed, how will they be considered in the assessment? Dates of expected completion?

A: This will be covered more in a later part of the presentation

CREG

Q: Do you differentiate between the prices of sources depending on the connection point to the EU?

A: The price of sources is handled through price configurations, which will be covered in more detail in a presentation later today. However, the same price per source for all import points is used in one configuration but we have other configurations that differentiate.

Introduction to modelling

Céline Heidrecheid, ENTSOG Business Area Manager

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Q: ACER: Are costs of proposed projects considered as part of the modelling, in addition to the supplies and demand, as it's still an important input?

For outputs from the modelling and capacity indicators, would it be possible to describe as regulation criteria e.g. security of supply etc to make it more intuitive?

A: TYNDP is a cost benefit analysis, costs will be collected as part of the project data collection, but it's not an input to the model. As a result, this is not part of the benefit produced by the model but for exactly this reason, it allows you to compare this benefit to the cost at the end of the exercise. This is aligned with methodology applied by ENTSO-E in their TYNDP.

When it comes to the regulation criteria, an exercise was completed which defined which outputs best fit these criteria and is considered relevant regarding the alignment.

Q: Storage – do the deliverability curves come from storage operators or TSO's? Are obligations or minimum delivery agreements factored in?

A: Deliverability comes from storage operators, through GIE. GIE response: deliverability and injection rates and curves are collected yearly and these are sent to ENTSOG (technical curves). GIE are not aware of anything regarding storage obligations or conditions being taken into account regarding this data:

Q: Can you explain the meaning of the terminals connected to the LNG source?

A: For each supply source, a range of potential supply is defined based on public information. For LNG, this range is allowed by the model to be sent to all the LNG Terminals that exist in the model and take part in the simulation. Low/high infrastructure level simulation (TYNDP 2015) will determine which terminals exist and can be reached by supply source potentials in the model.

Q: In the simulation cases, demand and supply are balanced at the lowest possible cost – is this on an EU level or member state or balancing zone?

A: Simulations are run on an EU Level with a geographical basis (e.g. Switzerland has to be considered etc.)

Q: Disrupted demand is available on member state level?

A: Disrupted demand is optimised on an EU Level, but results available at country level, due to nodal construct of the model. However, it is at an EU level that the EU bill is calculated.

Q: In terms of Gas Quality, I assume this is handled by the definition of the arcs used by the model (odourisation not just H/L Gas)?

A: The simulation tool is performing market modelling, not flows. The tool does not currently distinguish between H/L Gas, although it is technically feasible it's currently not a top priority considering value). Odourisation information from TSO that cannot go to other countries can be considered on the arcs.

Q: I assume you now consider Belgium and Luxembourg as one node for H-gas?

A: Ultimately this decision will be up to our Belgian and Luxembourg colleagues, it is one market zone but there may some bottlenecks that mean two zones are kept within the model.

Q: I have some problems to understand the modelling, it's clear on a commercial basis, but costs and long term contracts are not considered…

A: The modelling completed is not hydraulic, it is market modelling under the assumptions mentioned. Hydraulic functions of the network come from the capacities submitted by our TSO's (firm cross border capacities).

The objective function of the model is to find a solution to balance supply and demand. The system does not always allow every countries demand to be covered in a high demand situation – in this case it is not related to supply cost, but can demand be covered 100%, 80%, etc? This is where remaining flexibilities are generated.

It is the same case for supply disruption, where cost is not an interest, but rather how much is this country dependant on a given source.

For Supply price sensitivity analysis (EU Bill/Marginal Price. SSPDe/SSPDi.), supply cost will play a role in results, but this will be discussed more later on in the presentation

Q: When you assume a limit of 80% for LNG send out capacity for whole year simulation, is this based on historical information? (Later added that it would be imagined as lower than 80%...)

A: The observation is that LNG terminals are not used at their capacity, 80% is a modelling assumption that has been applied in order to assume periods of maintenance etc, but we will listen to suggestions if better information is available. 80% reflects what ENTSOG incorporated for TYNDP 2015, which we are happy to refine and improve.

Q: Regarding LNG, regasification level was stated as 80% of the capacity, as discussed earlier due to things like maintenance periods etc. However, actual utilisation is currently around 20-30%...

A: Issue of terminology, regasification capacity limits are set on a terminal by terminal basis, which is up to 80% - this is a technical limit. Actual utilisation of the terminal is based on the potential range for the LNG source and the price configuration used by the model, therefore actual usage is an output of the model, dependant on the simulation case and price configuration. This will be covered in more detail later…

Q: As we have seen in recent history, LNG flows are not just driven by market prices. Other factors such as liquidity of markets, leads to differing use at terminals across Europe – how could this be taken into consideration? It's an open question as I do not have any particular ideas, just opened for discussion…

A: The model assumes perfect market behaviour. This applies to LNG send out along with everything else, although current practices may differ, we do not want to consider the liquidity of markets – this is partly due to how these may change rapidly, but equally as discussed as part of the presentation - we only want to consider infrastructure gaps not problems that should be solved by 'software' e.g. implementation of the 3rd Energy Package

Q: How is reverse flow modelled?

A: Within the model, the arcs can be bi-directional, with the multiple arcs for each direction containing the relevant directional capacities. Contractual reverse flows can be modelled as reduced flows.

Supply Price configurations

Céline Heidrecheid, ENTSOG Business Area Manager

Adam Balogh, ENTSOG Adviser

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Q: For each source you consider, is it constant for the year and the access you have in summer to store gas is available to use in winter?

A: For each source, the model is incentivised to go to the same volumetric level on the price curve, which leads to storage filling in summer and being used for supply in winter.

Q: What are the assumptions of the cost of using storage?

A: As for the other infrastructure within the model, there is no tariff for the use of storage, but the model does determine the use of storage between summer and winter.

Q: Does the model produce an annual price?

A: Model incentivised to produce the same price during summer and winter.

Q: Price configuration – how do you assess the demand forecast, the increase of the line. When the price increases, then the yearly supply source increases?

A: There is a fixed demand that needs to be covered for the year, at the least expensive option for the EU. All national production, then cheapest source, does infra allow cheap source, then I go to other sources…then balanced use of other sources u to the demand level. Model determines.

Q: The gas demand does not respond to price signals?

A: Gas demand is fixed.

Q: Can you explain why for the price spread configuration is +/-5 Euro?

A: To trigger a contrasted supply mix the value of +/-1 Euro is used. To produce the cheap or expensive configurations, the value needs to be higher than 2…it could be 3, it could be 2.5, it just needs to be able to define the configuration but when the calculations are applied then this value needs to be known and clear to all so it can be worked back from when/if required. This value can be changed with good reason.

Q: Can you have competing projects in high infra with access to the same source?

A: Yes

Q: Example given around HIGH supply from Azeri gas

A: The format of the potential volume percentage means that you will never exceed the maximum supply.

Q: Is the national production prices the same on the Source S cheap/expensive as shown on slide 16 (Title EU Supply Bill)

A: Yes it is the same price, chart issue on the slide that will be updated

Q: Could you explain the calculation of the marginal price in the different balancing zones and explain the differentials between the pipelines in the model?

A: This is a natural output of the simulation tool, in order to cover demand at the lowest possible cost. Marginal price is of the last gas that reaches the country, neighbouring countries may not have the same price due to bottlenecks etc.

Q: Is the differential only caused by lack of capacity?

A: There is the assumption of perfect market function, so there should be no barrier for the flow of gas apart from infrastructure.

Q: ENTSOG does not consider long term contracts, but they have an influence on price setting. So there is a gap between that reality and model reality. With respect to outcome, how can they be incorporated?

A: Long term contracts (LTC) are not included, it is a standardised model – LTC may change and the impact of this is impossible to predict. Gas still has to come from somewhere and needs to use existing infrastructures. Access to non-public information would be required in order to build in LTC parameters, ENTSOG would question what added value would this give beyond access to the different sources e.g. Russian gas has to come from Russi**a:** In order to

incorporate, LTC could be considered as a price configuration but this would multiply the configurations.

Standardised approach is required to trigger supply mixes that enable the assessment of the infrastructure, this would not be affected by LTC? LTC are relevant for monetisation of the benefits. There is a standardised approach though the price spread, these may be affected by the LTC, but the minimum range set for the supply potential could be seen as the take or pay obligations attached to LTC.

Q: Regarding the price configuration, could you clarify the +/- 5 Euro would have an effect on the monetisation benefits of a given infrastructure level e.g. what would happen if +/- 10 Euro was used instead?

A: Yes using +/- 10 Euro would double the monetised benefits produced by the model. This spread is triggering supply mixes, 3/5/7 Euro could be used and will produce the same result in supply mix, but the monetisation will change.

Q: Have you considered the wholesale gas prices in the different countries to make an estimation about how a new project could bring more market integration?

A: Wholesale prices are shown through marginal prices as output of the model. The slide from ACER shows that wholesale prices are not the same in neighbouring countries – this is a spread price configuration which we want to present a proposal for at a later date. The spread is based on competitive/monopolistic supplier sources, so yes it has been considered…

Q: The price configurations sound more like supply mix configurations. The level of price spread does not impact the supply mix, minimum and maximum values will have more influence of what will come out of the configuration. Could you present the configurations as such and allow users to input the price spread they want?

A: Technically ENTSOG does not want to have flat price curves otherwise the balanced use of sources cannot be triggered. CBA needs consistent assessment across all projects, harmonised spreads for competing projects.

Q: Why not five configurations, but label them as supply mix types, this would be clearer for assumptions and the configuration?

A: ENTSOG can follow your reasoning on this, expensive/cheap is how it is handled within the model, compared to last TYNDP that refers to the configuration by what is triggered in the supply mix.

Conclusions

- There is support of the move to 6 + 1 configurations.
- Order of the price is what matters, not the price itself.
- Continue with technical parameters of +/-1 and +/-5 Euros
- There are a number of LNG questions, but this topic will be covered in more detail at a later SJWS
- General agreement with modelling assumptions – perfect market, cost of projects separate
- LTC not considered in the modelling