The 15th International Workshop on Electric Power Control Centers
Reykjavik, Iceland, May 12-15, 2019

Leveraging weather for a better power management in Europe

Sophie Voirin
Weathernews

With the increase of renewable energies, the balance between power generation and demand becomes more and more tricky and could even be critical sometimes due to bad anticipation of renewables production, or non optimised demand forecasts. Furthermore, since electric lines have been built much earlier than renewables raised, new issues occurred like Dynamic Line Rating (DLR). The goal of the latter is to take advantage of existing electric line by a better power transportation management. DLR or renewables power require to have very local and very accurate weather conditions from a few hours ahead up to some days ahead.

For all these issues, and because the energy market is changing dynamically, weather become more and more critical and strategic. Energy players are requesting always more accurate weather forecasting at very local basis. And since now, we have more and more local energy data, this allows to develop new and efficient approaches for the benefit of energy actors.

Weather science is continuously changing and state of the art of meteorology can already allow to meet energy market needs. Since weather information can be accessed for free or not, from various providers, it could be difficult to know how to use these weather data. That's why, weather experts are needed:

- To leverage each weather source's strength to the most adapted use of the energy market,
- To select the most adapted weather network to customer's issue and limit the costs for weather data purchase,
- To locally adapt weather forecasts, since weather models provide data on a grid and not necessary locally adapted to a specific location,
- To take advantage of the last releases of weather sources from the different Met Offices,

- To adapt the weather sources to the horizon which is requested by the final customer. Indeed, all weather sources don't provide same forecast horizon,
- To handle spatial information, coming from various sources like radar, satellite, or even pictures to provide very accurate observed and forecasted weather data,
- To take advantage of new deep learning techniques to globally improve weather forecasts, including AI progress which is now a way to improve very short-term forecasts.

Weathernews, which is the biggest private company (listed on Tokyo Stock Exchange), has been working during more than 20 years for the energy market. Especially, WNI's experts have been working very closely with big European TSO in order to design adapted and accurate weather-driven services like demand forecasts at point of delivery or regional level, from one hour ahead up to one month ahead. To do so, WNI developed both state-of-the-art weather techniques to have the best weather forecasts, and in-house machine learning systems to provide decision making tools.

Through this presentation, and based on our experience, we propose to show how weather could be one of the keys to improve Power management for TSO, and DSO in Europe.

Please send the Abstract to **dsobajic@gridengineering.com** by April 12