IEA Wind Task 36 Forecasting – Phase II

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Summary

This poster gives an overview of the IEA Wind Task 36 for Wind Power Forecasting. Collaboration in the task is amongst forecasting experts and those interested in the forecasting business. The second phase of the Task runs for three years, 2019-2021.

In the first phase an IEA Recommended Practice on the forecast solution selection and evaluation process, an information portal for many forecasting related issues and a review article and position paper regarding the use of probabilistic forecasts were developed. Additionally, dissemination of relevant information in both the forecasters and the end-users community has been paramount with special sessions, workshops and webinars.

The Operating Agent is Gregor Giebel of DTU, Co-Operating Agent is Will Shaw of PNNL. Participation is open for all organisations in member states of the IEA Annex on Wind Power, see ieawind.org for the up-to-date list.

Work Package (WP) Activities

NWP Improvements (WP1)

This WP brings together global leaders in NWP models as applied to the wind industry to exchange information about future research areas. The emphasis is on improvements of the wind-related forecast performance of these models especially at typical rotor heights.

Two lists for tall met masts and experiments of up-to-date data are maintained. Additionally, this WP verifies and validates the improvements through a common data set to test model results upon and discuss at IEA Task meetings.

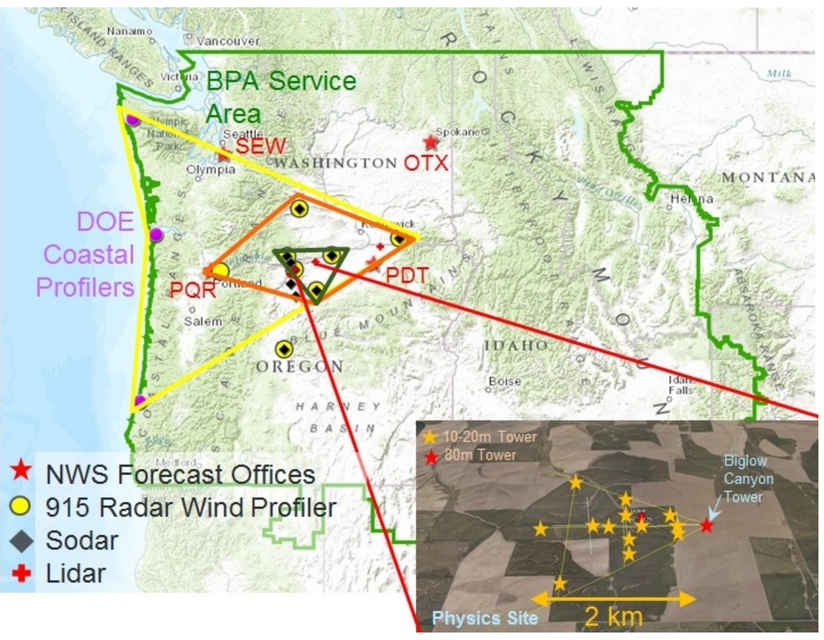


Figure 1: The instrumentation of the Second Wind Forecast Improvement Project (WFIP2), in the Northwest of the USA. Source: Joel Cline.

Forecast Selection Process (WP2)

In the second WP a three-part series of recommended practices guides (RP) for the selection process of forecasting solutions was developed:
The first part, the "**Forecast Solution Selection Process**" deals with the selection and background information necessary to collect and evaluate when developing or renewing a forecasting solution for the power market.
The second part of the series "**Benchmarks and Trials**" offers recommendation on how to best conduct benchmarks and trials.
The third part, the "**Forecast Evaluation**" provides information and guidelines regarding effective evaluation of forecasts, forecast solutions and benchmarks and trials.

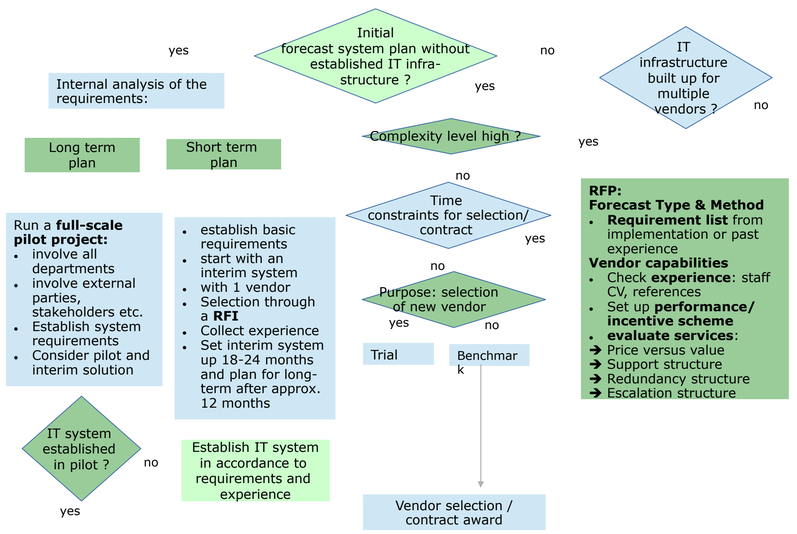
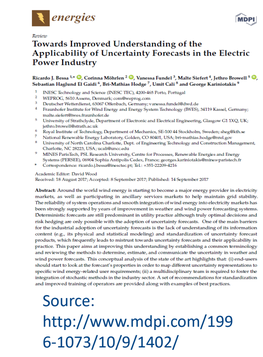


Figure 2:
Overview of a simple decision support scheme illustrating common difficulties when deciding for or against trials or common procurements. Cost, validity and output of trials are often over estimated in their usefulness, because fair evaluation requires a lot of resources, and complex problem solving can often not be verified by simple tests. A guideline for decision making is therefore under preparation by the task.

Use of Uncertainty Forecasting (WP3)

The third WP surveyed the current state of use of forecast uncertainties by the power systems sector and documents and publishes results in a report and publications. This WP also provides outreach to users of forecasts via webinars or other means to enhance their knowledge and ability to use all available information for operations.

Source:
DOI: 10.1109/MPE.2017.2729100



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Review

Towards Improved Understanding of the Applicability of Uncertainty Forecasts in the Electric Power Industry

Source:
http://www.mdpi.com/1996-1073/10/9/1402/

More from IEA Wind Task 36 at ICEM

RP Part 1 & 2 Presentation: Building 101, Room M1, Tuesday 14:00-15:50
RP Part 3: Poster

ICEM IEA Task 36 Workshop: Building 101, Room S1, Wednesday 16:15-18:00

Part of the IEA Pathway

Results

Information Portal

A list of met masts useful for validation of forecasts is publicly available and maintained. The list currently contains more than a dozen masts on- and off-shore.

A list of currently running or recently finalized meteorological experiments to either participate or to verify a flow model against is available, e.g. the Perdigao experiment of the New European Wind Atlas or the Wind Forecast Improvement Project 2.

A list of current or finished research projects in the field of wind power forecasting is published and maintained

All publications from the Task group is available with Open Access

Also, check out our recorded **webinars** on YouTube!

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Minute Scale Forecasts

In June 2018, IEA Wind Task 32 Lidars and 36 Forecasting held a combined workshop on Very Short Term Forecasting of Wind Power. The main tools employed were lidars, radars and SCADA data. Main results were:

- Forecasts on the minute time scale are getting more important in high-wind-penetration power systems.
- A combination of weather models and instrumentation provide important information when persistence fails, namely in fast changing weather conditions, ramping and high speed wind events.
- Data quality is a major issue, incl. sensor availability (e.g. for Lidars).

Journal paper is published in Energies 2019: "Minute-Scale Forecasting of Wind Power – Results from the collaborative workshop of IEA Wind Task 32 and 36".

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Article

Minute-Scale Forecasting of Wind Power—Results from the Collaborative Workshop of IEA Wind Task 32 and 36

Phase II

The second phase of the Task adds some new targets:

- Discussion of possible parts of the forecasting processes to be standardised in the future.
- Online verification and benchmarking of current NWP models with met mast data (details --> home page).
- Detailed review of uncertainty propagation through the modeling chain.
- Assessment of the value of probabilistic forecasts, both on a theoretical basis as well as through description of actual use cases and examples.
- Development of an IEA Recommended Practice for the requirements of data and instrumentation for real-time forecasting.