

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

Work Package (WP) Activities

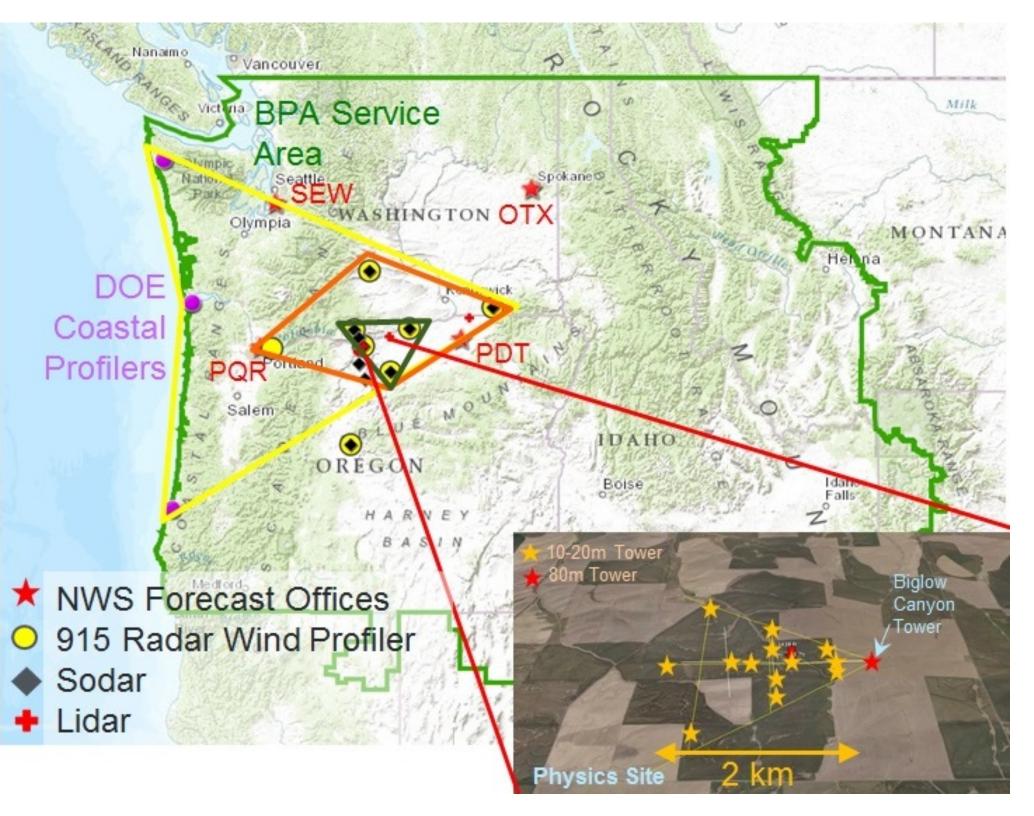
NWP Improvements (WP1)

Forecast Selection Process (WP2)

Use of Uncertainty Forecasting (WP3)

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-todate 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.



In the second WP a three-part series of recommended practices guides (RP) for the selection process of forecasting solutions was developed:

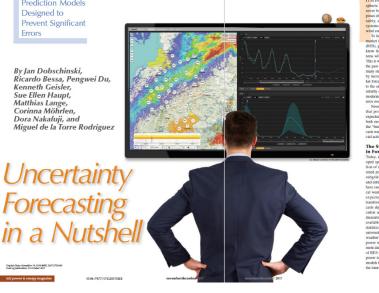
The first part, the "Forecast Solution Selection Process" deals with the selection and background information necessary to collect and evaluate when developing or renewing a forecasting solution for the power market. The second part of the series "Benchmarks and Trials" offers recommendation on how to 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.

Initial

recast system plan withou

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

Towards Improved Understanding of the Applicability of Uncertainty Forecasts in the Electr

http://www.mdpi.com/199 6-1073/10/9/1402/

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

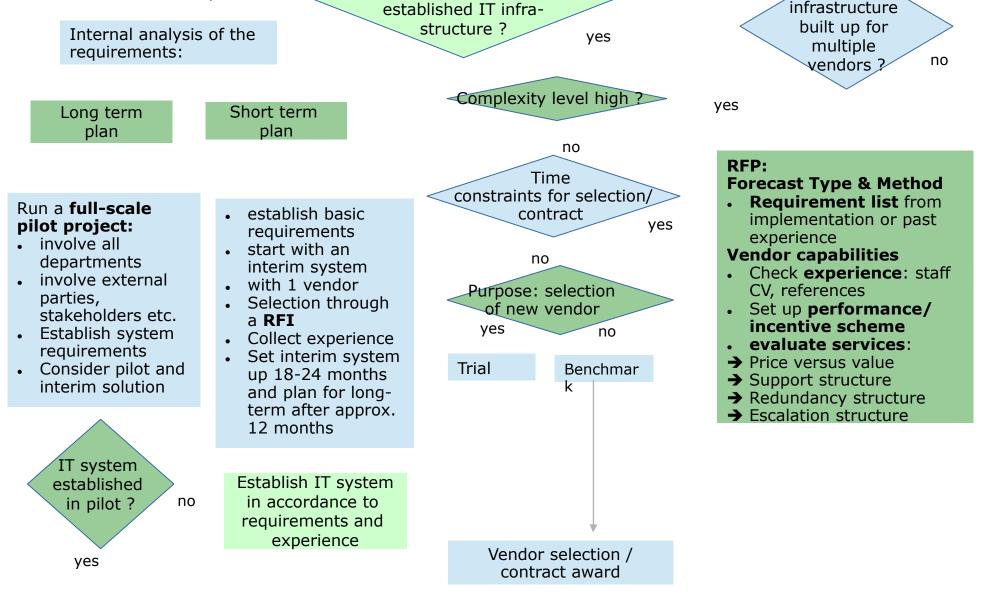


Figure 2:

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.

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.

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:

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.

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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• 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. **energies**
- Data quality is a major issue, incl. sensor availability (e.g. for Lidars).

Journal paper is published in Energies "Minute-Scale Forecasting of 2019: Received: 14 December 2018; Accepted: 14 February 2019; Published: 21 February 2019 Abstract: The demand for minute-scale forecasts of wind power is continuously increasing with the growing penetration of renewable energy into the power grid, as grid operators need to ensure grid stability in the presence of variable power generation. For this reason, IEA Wind Tasks 32 Power – Results from the Wind and 36 together organized a workshop on "Very Short-Term Forecasting of Wind Power" in 2018 IEA Wind is an international platform for the research community and industry. Task 32 tries t collaborative workshop of IEA Wind focuses on improving the value of wind energy forecasts to the wind energy industry. The worksho identified three applications that need minute-scale forecasts: (1) wind turbine and wind farm control these applications range from around 1 s for turbine control to 60 min for energy market and gri control applications. The methods that can be applied to generate minute-scale forecasts rely o Task 32 and 36".



• 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.

Energies 2019, 12, 712; doi:10.3390/en1204071

owards enhancing quality and reliability of the input measurement dat

numerical weather prediction models

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

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dentify and mitigate barriers to the use of lidars in wind energy applications, while IEA Wind Task 3

power grid balancing, (3) energy trading and ancillary services. The forecasting horizons

neasurements from met masts, turbines or profiling remote sensing devices. Upstream data nee to be propagated with advection models and point measurements can either be used in statistica time series models or assimilated into physical models. All methods have advantages but also

shortcomings. The workshop's main conclusions were that there is a need for further investigatior into the minute-scale forecasting methods for different use cases, and a cross-disciplinary f different method experts should be established. Additionally, more efforts should be direct

Keywords: wind energy; minute-scale forecasting; forecasting horizon; Doppler lidar; Doppler rad

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