

## WS Forecasting in the Design Phase

WS:	WP1 Weather	WP2 Power	WP3 Applications	Deliverable	#, Due	Collaboration
Forecasting in the design phase (WP3)						Task 50 (hybrids), PV T16, hydrogen TCP

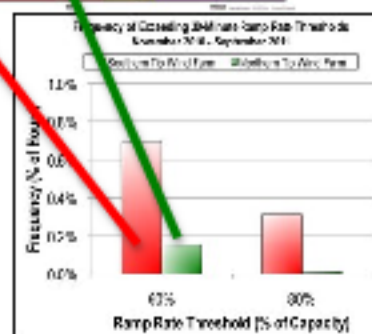
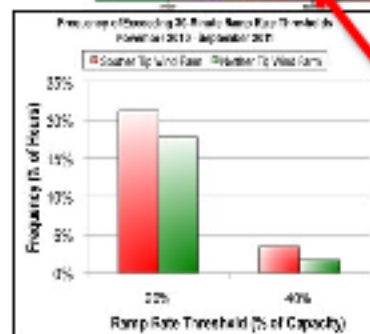
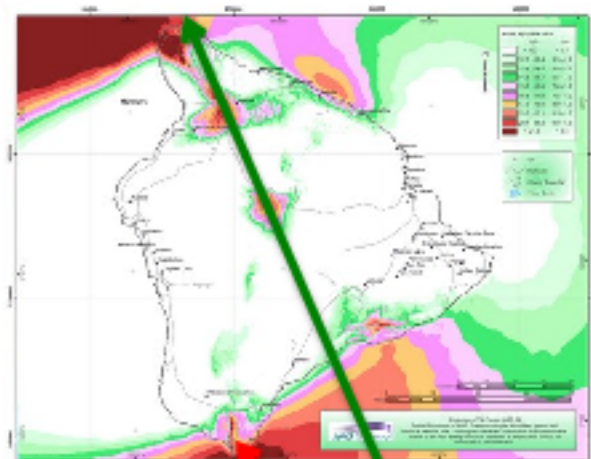
An assessment of the expected forecasting accuracy for a given site was already investigated for a single case in Europe. However, since then it has been quiet.

- Case in Denmark analyzed during SafeWind project

The new Task will analyse the tradeoffs between normal siting of the turbines, and the forecast capability type.

# An Example: Value of Planning Phase Forecast-ability Assessment

- Variability (and therefore predictability) at wind farms can vary significantly even in what appears to be similar large-scale wind regimes and wind resources
- Example: northern tip vs. southern tip of the island of Hawaii (Big Island)
  - Frequency of very large ramps differs by a factor of 5 to 10!
  - Why? Southern location is more sensitive to large scale wind direction (variations in northeasterly trade wind flow)
  - Southern location is less predictable even for hours ahead
  - But 2/3 of island wind capacity built at southern tip (high capacity factor, available land and transmission)
  - RESULT: substantial curtailment during periods of high variability



## Initial Thoughts on Questions to be Addressed

- What is the “predictability” of a site/region/system?
  - What is the definition? (“expected forecast accuracy”?)
  - How is the definition linked to the attributes of the target entity, application & other factors?
  - How can (or how should) predictability be quantified?
- How can the economic value of “predictability” be estimated?
  - For renewable energy plant developers?
  - For system planners?
  - For market design?
  - For energy traders?
- What factors determine the variability in predictability?

## Draft High-level Work Stream Plan

- Months 1-12 (2022): Assemble Team & Gather Information
  - Define scope of predictability attributes/issues to be considered
  - Assemble a (hopefully) diverse team of collaborators
  - Gather information about potential impact of predictability on economic/reliability outcomes
- Months 12-24 (2023): Define specific work stream objectives and scope
- Months 24-36 (2024): Address objectives

## Desired Additional Contributors

- Representatives from collaborating TCPs
  - Hydrogen TCP
  - PV Task 16
  - Task 50 - Hybrid Plants
- Economic analysts for generation plant developers
  - Especially hybrid plants with substantial storage
- System planners – especially from small or island systems
- Current/former participants in market design activities
- Current/former participants in the value of forecasting research projects
- Other electric system stakeholders with an interest in this topic