IEA R,D&D WIND: Tasks 24/25 summary

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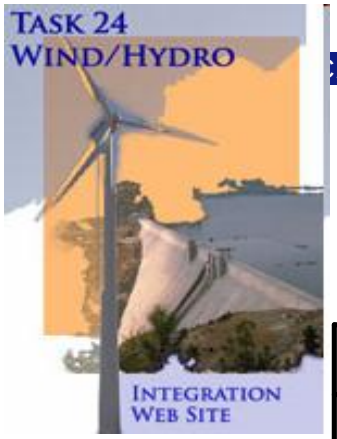
OA, Task 25

Business from technology



IEA WIND Task 24: 2005-2008. Participating Countries

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Country	Contracting Party	Participant
Australia	Australia Wind Energy Assoc.	Hydro Tasmania
Canada	Natural Resources Canada	Natural Resources Canada Manitoba Hydro, Hydro Quebec
Finland	TEKES National Technology Agency in Finland	VTT Technical Research Centre of Finland
Norway	Norwegian Water Resources and Energy Directorate	Sintef Energy Research Statkraft Energy
Sweden	Swedish Energy Agency	KTH Swedish Institute of Technology
Switzerland	Swiss Federal Office of Energy	EW Ursern
United States	U.S. Department of Energy	National Renewable Energy Laboratory Arizona Power Authority Bonneville Power Administration Grant County Public Utility District GE Global Research Sacramento Municipal Utility District

Task 24 homepage at www.ieawind.org

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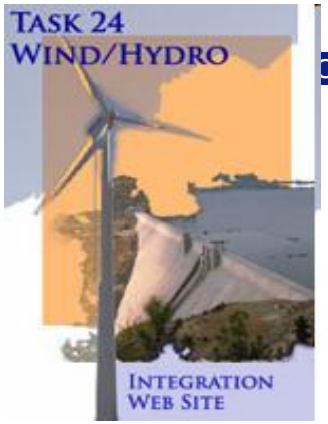

IEA WIND Task 24: Results expected

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- Establish an understanding of the issues, costs, benefits, challenges and opportunities directly related to integrating wind and hydropower systems and best ways to manage them;
- Technical and economic feasibility of integrating wind and hydropower systems in specific case studies;
- Identification of practical wind/hydro system configurations;
- Determination of ancillary services required by wind energy, and the reliability impacts, in utility grids that include hydro generation;
- Investigate enhancing flexibility of power planning through simulation of reservoir operation and wind/hydrological forecasting;
- Formulation of consistent method of studying and comparing the technical and economic feasibility of integrating wind and hydropower systems;
- A database of reports describing case studies and system analyses.
- Final report expected December, 2008

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IEA WIND Task 25

OBJECTIVE:
to analyse and further develop the methodology to assess the impact of wind on power systems

Started in 2006, duration 3 years. 11 countries + EWEA participate.

GOALS:

- Provide an international forum for exchange of knowledge
- State-of-the-art: review and analyse the studies and results so far
  - methodologies and input data, system operation practices
  - REPORT published in Oct, see link below
- Formulate guidelines:
  - recommended methodologies and input data when estimating impacts and costs of wind power integration
- Quantify the impacts of wind power on power systems
  - range of impacts/costs; rules of thumb

www.ieawind.org/AnnexXXV

IEA WIND Task 25:
Design and operation of power systems with large amounts of wind power

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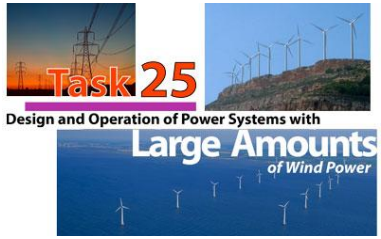
Final report expected December 2008

	Country	Participating institution
	Denmark	Risø National Laboratories (Peter Meibom) TSO Energinet.dk (Antje Orths)
	EWEA	European Wind Energy Association (Frans van Hulle)
	Finland, OA	VTT Tech. Research Centre of Finland (H.Holttinen)
	Germany	ISET (Kurt Rohrig), TSOs RWE (Bernhard Ernst) and E.ON Netz
	Ireland	ECAR (Mark O'Malley), TSO Eirgrid (Paul Smith, Jody Dillon)
	Norway	SINTEF (John Olav Tande), Statkraft (Espen Hagstrøm)
	Netherlands	we@sea, ECN (Jan Pierik), TUDelft (Bart Ummels)
	Portugal	INETI (Ana Estanquiero), UTL-IST (Rui Castro), TSO REN (João Ricardo), INESC-Porto (J. Pecas Lopes)
	Spain	University of Castilla La Mancha (Emilio Gomez)
	Sweden	KTH (Lennart Söder)
	UK	DG&SEE Centre for Distrib.Gener. & Sustainable Electrical Energy (Goran Strbac)
	USA	NREL (Brian Parsons), UWIG (J. Charles Smith)



Task 25 State-of-the-art report – main messages

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- The wind integration case studies are not easy to compare
  - Different methodology, data, assumptions on interconnection
- Integration costs to be compared to f.ex. production costs or market value of wind power, or integration cost of other production forms
  - **Cost-benefit analysis**: integration costs vs. benefit from reducing total operating costs and emissions
- Issues impacting the amount of wind that can be integrated:
  - Large balancing areas: aggregation benefits help reducing variability and forecast errors of wind power as well as help pooling more cost effective balancing resources.
  - System operation/electricity markets at less than day-ahead time scales help reduce forecast errors of wind power.
  - **Transmission is the key** to aggregation benefits, electricity markets and larger balancing areas.

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Integration costs

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- Costs for power system for accommodating wind power
  - Not covered by wind power producers (investment costs for grid connection, …)
  - Part of the these costs may be allocated to wind power in some power systems (network charges, imbalance payments, …)
- Should be compared with the benefits of wind power
- Information needed for
  - Policymakers to ensure that the benefits of increasing wind energy will not be offset by negative impacts
  - System operators, regulators to ensure fair treatment of all producers: market design and rules, tariffs, allocation of costs

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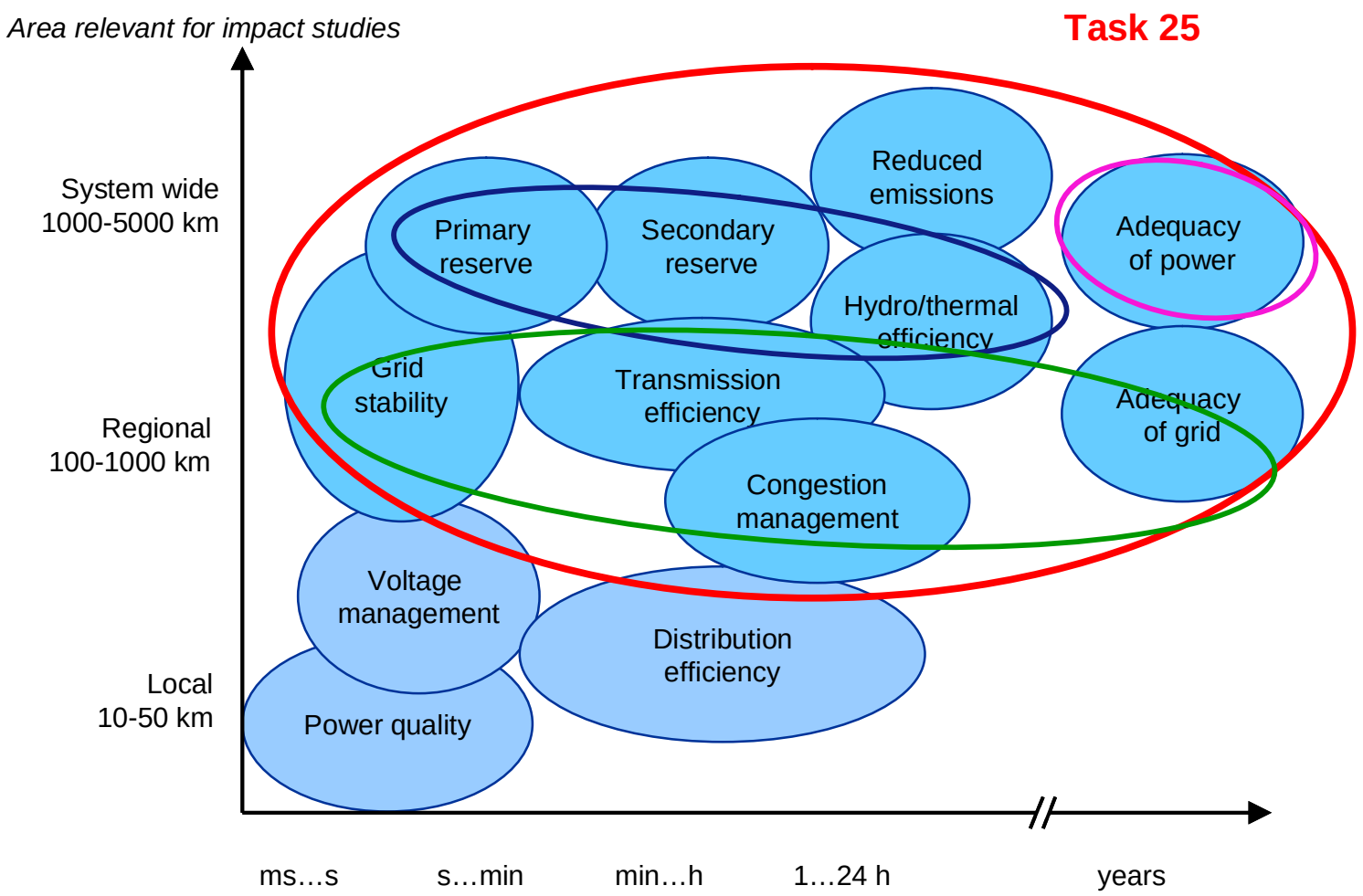
Wind power in the power system: impacts on reliability and efficiency



Adequacy

Balancing

Grid