



EUROPEAN TECHNOLOGY & INNOVATION
PLATFORM ON WIND ENERGY

Breakout 1

Grids systems, infrastructure and integration

Scope of the discussion

- Considered R&I areas must
 - benefit from a collaborative approach including industry and academia
 - fit for a funding period **starting in 2018**.
- Timeframes:
 - Short term = results expected by 2020-2025
 - Mid term = results expected between 2025-2030
 - Long term = results beyond 2030

Grids - Defining the timelines

Priority	Delivery by 2020-2025	Delivery by 2025-2030	Delivery post 2030
Wind power grid integration solutions, including energy management and balancing with other renewable sources, control, architectures for provision of ancillary services and standardization	X		
Improved long distance transmission systems for on- and offshore wind farms, incl. installation & O&M		X	
Energy storage and conversion, including storage at turbine, wind farm and central levels	X	X	X
Innovative, comprehensive and re-configurable energy system level test facilities		X	X

Wind power integration solutions

Topic	Description	Delivery by
Energy management and balancing with other renewable sources	Ancillary services <ul style="list-style-type: none"> • Technical capabilities today and in the future • Market design and regulation • Turbine vs Farm vs Cluster – optimize the functionality • Services vs Costs; Technology vs Regulation 	2020 – 2025
	Wind farm management until the point of connection: <ul style="list-style-type: none"> • Turbine + Grid + other devices – spread of functionality 	2020 – 2025
	Virtual power plants from physical to virtual point of connection <ul style="list-style-type: none"> • How to share functionality between participants in a virtual power plant depending on the local and overall goal of the fleet 	2020 – 2025
	Smart Substations <ul style="list-style-type: none"> • Plug in ready systems to provide grid support functionalities 	2020 – 2025
	Continue to improve renewable power forecasting (plant and fleet level)	2020 – 2025
	Regulatory issues and public acceptance as a cross cutting to all topics <ul style="list-style-type: none"> • Consider the ecosystem and break the silos between technology and other aspects of the industry 	2020 – 2025

Grids for wind power

Topic	Description	Delivery by
Improved long distance transmission systems for on- and offshore wind farms, incl. installation & O&M	Offshore grids to reduce cost and increase reliability of offshore wind power connections (mix ac and dc) <ul style="list-style-type: none"> • Grid architecture design and interaction among technologies • Regulatory compatibility among all countries to be connected to 	2025 – 2030
	Wind farm collection systems <ul style="list-style-type: none"> • Integration between turbine and the grid (DC collection, Synchronous turbines) • New electrical concepts (e.g. integrated substation in the turbine) 	2025-2030
	Reliability of cables and substations (e.g. condition monitoring systems)	2020 – 2025
	HV super grids across EU <ul style="list-style-type: none"> • ETIP Wind to look at this? Needs coordination with other ETIPs? 	2025 – 2030
	Assess the need for further stability studies ??? <ul style="list-style-type: none"> • Spread opinions 	2020 – 2025

Energy storage

Topic	Description	Delivery by
Energy storage	Understand applications and key requirements for energy storage and wind: <ul style="list-style-type: none"> • Short term, e.g. System support services, black start, frequency support 	2020 – 2025
	<ul style="list-style-type: none"> • Mid term, e.g. Energy balancing storage 	2025-2030
	<ul style="list-style-type: none"> • Long term: Bulk energy storage, e.g. power to gas 	Post 2030

Testing facilities

Topic	Description	Delivery by
Testing facilities	Improve modelling (grid and turbines)	2020 - 2025
	Certification of system components	2020 - 2025
	Can we use existing wind farms as testing facilities?	2025 - 2030



Join the conversation

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Thanks for your attention

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