

# Offshore Wind Accelerator

## Large-Scale Demonstration of Innovative Technologies

Benj Sykes  
Innovations Directorate

A decorative graphic at the bottom of the slide consisting of three overlapping, wavy bands in shades of blue, ranging from a light sky blue to a dark navy blue.

# About the Carbon Trust



- An independent company set up by government in 2001



- Our mission:  
*To accelerate the move to a low carbon economy*

# The Carbon Trust aims to accelerate the move to a low-carbon economy

## **We cut carbon emissions now**

- By providing business and the public sector with expert advice, finance and accreditation
- By stimulating demand for low carbon products and services

## **We cut future carbon emissions**

- By developing new low carbon technologies through project funding and management, investment and collaboration
- By identifying market barriers and practical ways to overcome them

# The Offshore Wind Accelerator



- Launched 21<sup>st</sup> October 2008
- Objective: To reduce cost of energy from offshore wind (£/MWh) by 10%+ through a set of targeted RD&D activities
- Collaboration between the Carbon Trust and five major offshore developers



- Total planned spend of ~£30M
- Phase 1 Feasibility Studies running to early 2010
- Phase 2 Demonstration Projects running to 2013/2014

# OWA Areas of Focus

## Offshore foundations

- Develop and demonstrate novel forms of wind turbine foundation with potential for lower lifecycle costs (up to 30%) than designs currently in use, focussing on deep water sites typical of Round 3 zones
- Stimulate the supply chain, particularly in volume manufacturing and installation, to provide more competition and flexibility within the market

## Access, logistics and transportation

- Develop and demonstrate access systems for wind farm construction and operation that are both economic and safe, to maximise turbine availability
- Focus on the challenges of operations for late Round 2 and Round 3 sites

# OWA Areas of Focus

## Wake effects

- Improve wake effects analysis tools to improve the accuracy of yield assessment, allowing optimised layouts and financing cost reductions
- Built on the OWA partners' real data

## Electrical systems

- Develop and demonstrate opportunities to maximise the efficiency of offshore wind farm electrical systems, minimising losses in both the intra-farm array and transmission to shore
- Evaluate options for improving the cost-effectiveness of deploying optimised electrical systems

# OWA project delivery

- The OWA projects will be delivered in 2 Phases over 4 years:

2009

2010

2013

Phase 1

Phase 2

- Feasibility studies on project areas
- Technical Delivery Consultants appointed for the four workstreams
- Work commenced in early March 2009
- To be completed in Q1 2010

- Shaped by the outcomes of Phase 1
- Large-scale demonstration projects
- Work will commence in 2010
- New consortia of Partners
- To be completed in 2-3 years

# Foundations Programme



2009

2010

2013

**Phase 1**

**Phase 2**

- Competition to find innovative design concepts
- Undertake detailed feasibility assessments of the best 5-8 designs
- Select up to three of the best designs to take into Phase 2

- Build Funding groups for each Demonstration Project
- Fabricate, install, and test at large or full scale
- Evaluate foundation designs for different Round 3 zone conditions

# Foundations competition

- We are running a competition to find the most innovative foundations design concepts
  
- We are seeking design concepts which are
  - Suitable for operating in 'typical' Round 3 metocean and soil conditions
  - Suitable for operating in 30-45m or 45-60m water depth ranges
  - Suitable for 3.5MW and 5MW turbine loads
  - Capable of delivering significant cost reductions over existing designs

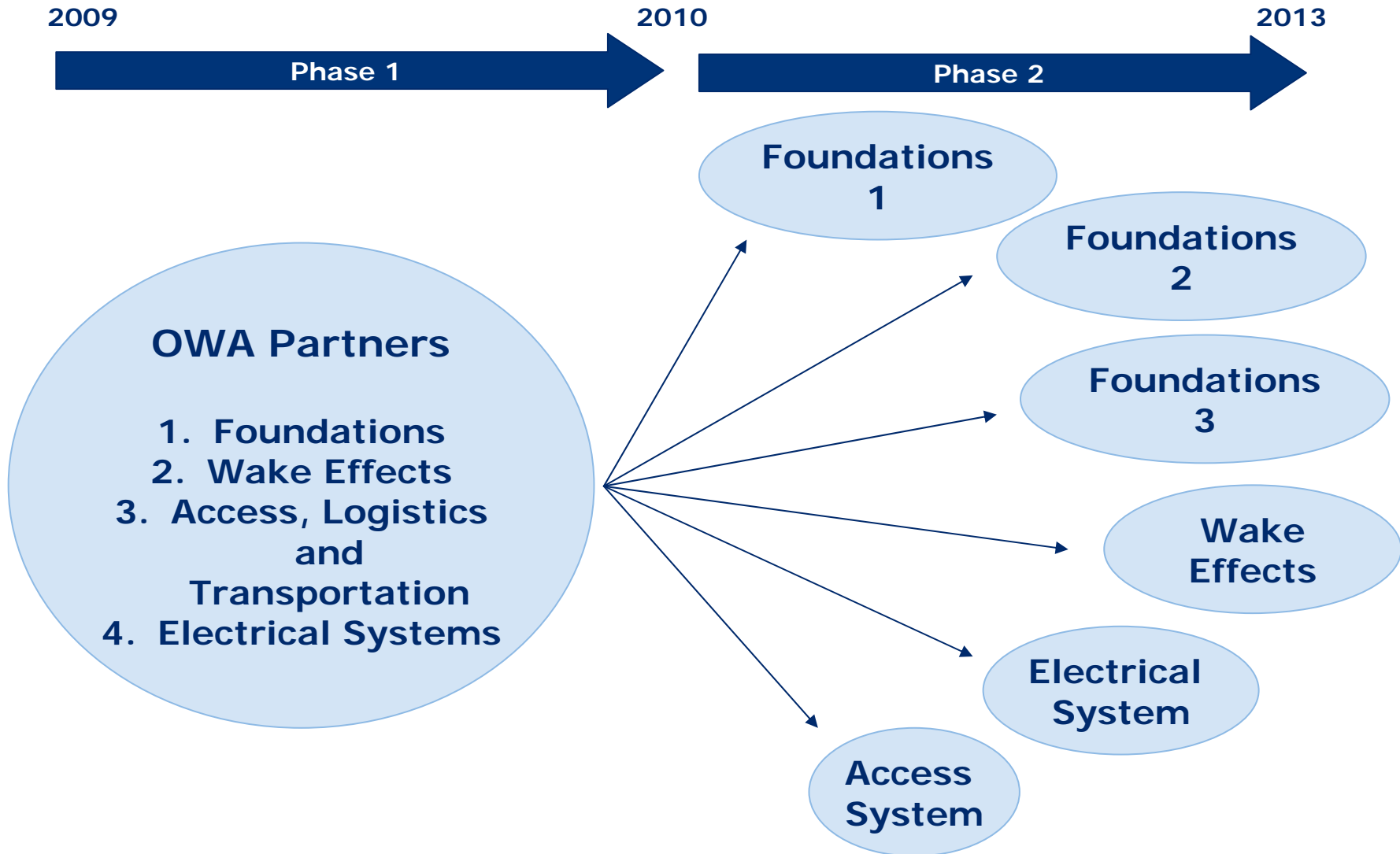
# Foundations competition

- The best 5 to 8 concepts will be selected on the basis of
  - Manufacturing costs
  - Transport and installation costs
  - Potential for volume cost savings
  - Structural durability
  - Maintainability and turbine accessibility
  - Decommissioning feasibility
  
- Shortlisted design concepts will be contracted to undertake a detailed feasibility study

# Feasibility Studies

- The OWA partners will spend up to £100K on each design concept
  
- Three-stage gated programme:
  - **Stage 1:** Detailed assessment to define further engineering and development requirements
  - **Stage 2:** Optimisation and redesign work as defined in Stage 1
  - **Stage 3:** Cost and feasibility/risk analysis based on outputs from Stage 2; benchmarking of shortlist to provide recommendations for Demonstration Programme

# Demonstration Programme



# Demonstration Programme

- Up to three design concepts will be taken into the Large-scale Demonstration Programme
- The concepts will be selected by the OWA Partners in early 2010
- The Carbon Trust will bring together consortia to fund the programmes
- We may wish to integrate demonstration of one or more Access Systems
- Site selection is ongoing

# More Details

- To find out more, register, and find out how to enter, visit

[www.carbontrust.co.uk/wind](http://www.carbontrust.co.uk/wind)

- Email your enquiries to

[OWACompetition@carbontrust.co.uk](mailto:OWACompetition@carbontrust.co.uk)



CARBON  
TRUST