



RENEWABLE
ENERGY GENERATION

Construction and Operations

9th September 2011

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Overview of Construction and Operations

🔍 Health and Safety

- 🔍 Compliance with latest UK health and safety legislation

🔍 Construction

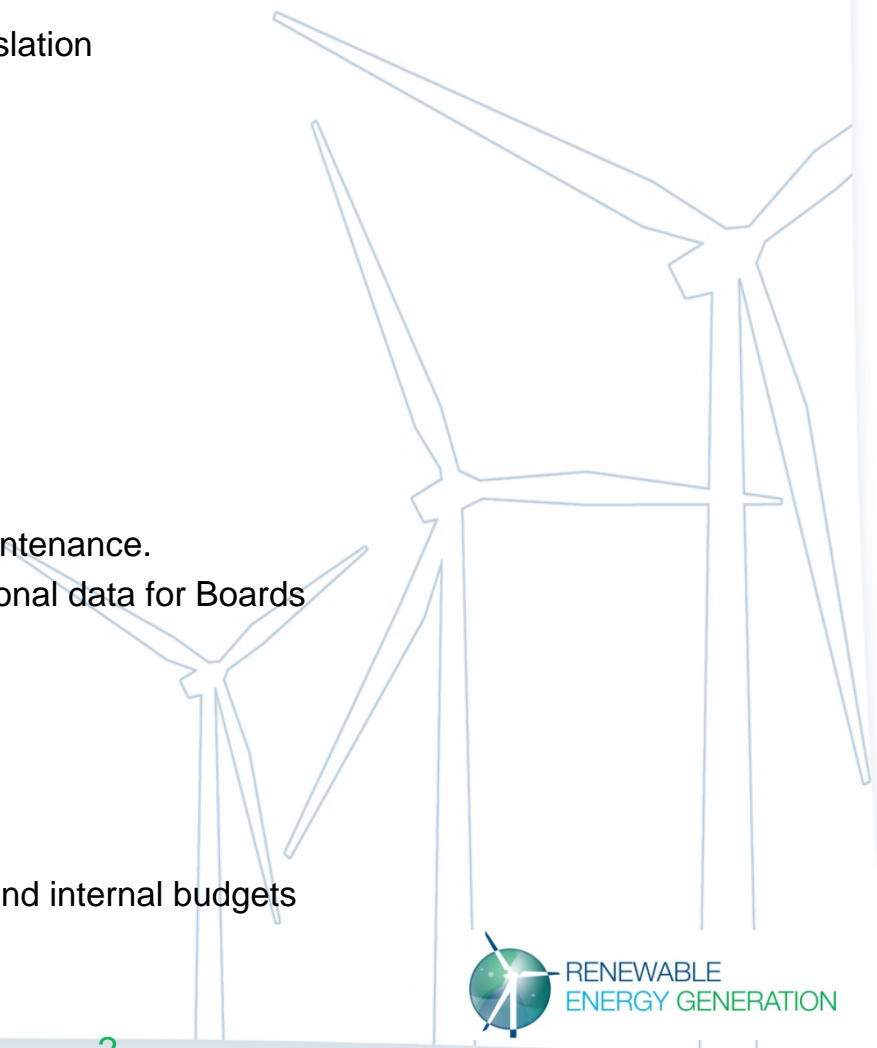
- 🔍 Turbine procurement
- 🔍 Balance of plant procurement
- 🔍 Grid
- 🔍 Daily responsibility for new project construction

🔍 Operations

- 🔍 Daily operation of REG's wind farm fleet
- 🔍 Management of scheduled and unscheduled maintenance.
- 🔍 Compilation of daily, weekly and monthly operational data for Boards

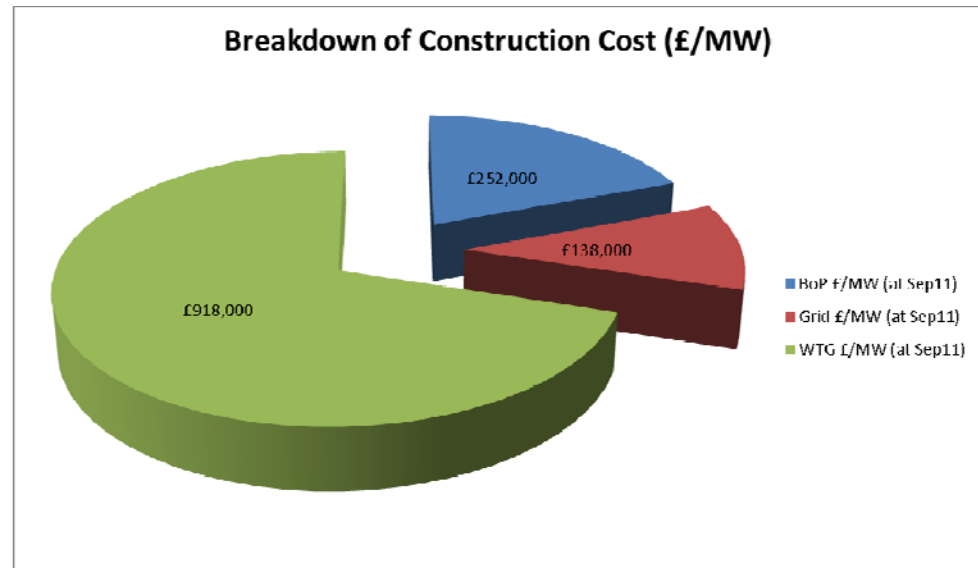
🔍 Wind resource

- 🔍 Oversight of REG's portfolio of 17 met masts
- 🔍 LIDAR
- 🔍 Garrad Hassan/SKM reports
- 🔍 Output of wind fleet against anticipated outputs and internal budgets



Wind farm construction optimisation

- Turbines
 - Maximisation of project return critical
 - Significant variance between manufacturers
- Balance of plant
 - Foundations
 - Electrical
 - other
- Grid
 - Grid can be a significant constraint
 - Good relationship with DNO's critical
 - REG devotes significant effort here
- Future construction costs?
 - Grid costs
 - Turbine financing
 - Noise compliance



2010/11 construction review

Goonhilly

- 6 x 2MW Vestas turbines
- Commissioned October 2010
- 35,000MWh per annum



Loscar

- 3 x 1.5MW Acciona turbines
- Commissioned October 2010
- 10,300MWh per annum



High Haswell

- 2 x 2MW Vestas Turbines
- Commissioned March 2011
- 9,900MWh per annum
- Projects on time and to budget



Achieve cap ex target of £1.25m/MW installed



2012 construction programme

Sancton Hill, East Riding of Yorkshire

- 5 x 2MW Vestas turbines
- 100m to tip
- 28,100MWh per annum



South Sharpley, County Durham

- Adjacent to existing High Sharpley site
- 3 x 2MW turbines – 100m to tip
- 16,400MWh per annum



Draperstown, Northern Ireland

- 3 x 2MW turbines (66% REG owned)
- 110m tip height
- 15,100MWh per annum



Turbine markets

- ⑦ Remain highly competitive
- ⑦ Pricing stable at present
- ⑦ Delivery dates under 12 months from signing of contracts
- ⑦ Currency risk from £/€
 - ⑦ Hedged at point of signing binding contract
- ⑦ New competition
 - ⑦ REG likely to add one further manufacturer
 - ⑦ Unlikely to use Far Eastern manufacturers yet
 - ⑦ Warranty issues
 - ⑦ Build quality – service team availability
- ⑦ Manufacturers offering longer term all inclusive contracts.
 - ⑦ Advantageous when financing schemes
 - ⑦ Assess against alternative service providers

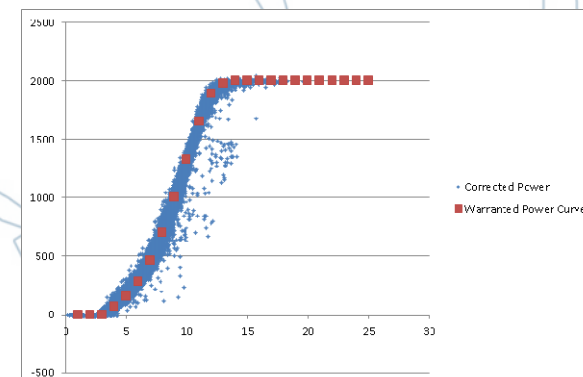
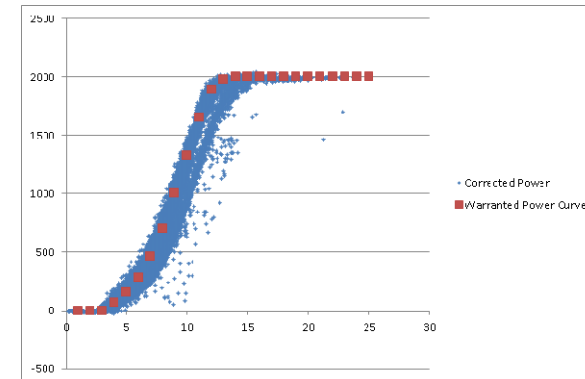


Turbine market outlook remains positive for REG



Management of operating projects

- Annual energy production budgets
 - Derived from Garrad Hassan reports
 - Monthly variation based on historic UK wind data
- Monitoring performance
 - Monitor production.
 - Wind resource – “windiness”
 - Availability – AEPs based on 95%.
 - Power curve
- Comparing actual outputs to budget
 - Weekly, monthly and annual reporting to Boards
 - Implementation of Windhelm system.
- Health and safety compliance
 - Constant updating for new legislation
 - Risks analysed and managed.
 - Control of access to all operational sites.



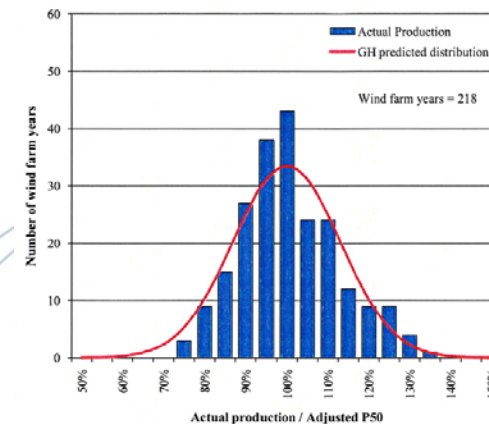
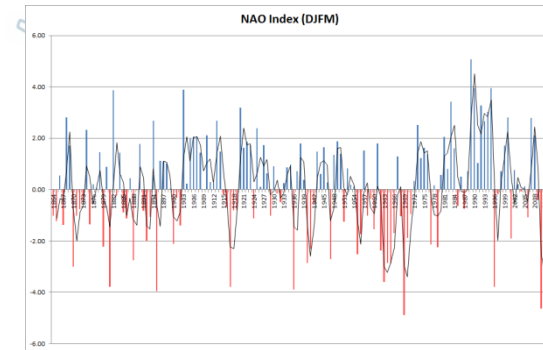
Operating project costs

- Operations and maintenance
 - Manufacturers' SAA agreements.
- Land rents
 - Generally rising
 - REG's historical portfolio comprises low-cost land leases
- Insurance costs stable
- Community Funds
 - Industry recommended minimum of £2,000/MW per annum
 - REG typically pays more – tactically used to secure consents
 - Ability to capitalise part of this cost upfront – big attribute

Rise in UK power prices affords protection against project cost increases

REG wind resource / AEP assessment

- 1 Feasibility assessment stage uses NOABL/ Garrad Hassan Windmap
 - 2 Reasonable initial estimate of output to assess feasibility
- 2 Development phase
 - 3 Uses 15 metre met masts supplemented by LiDAR
 - 4 An approach that Garrad Hassan is comfortable with
- 3 LiDAR
 - 4 How does it work?
 - 5 Interface with 15 metre data
- 4 Recent low wind years
 - 5 Why?
- 5 Confidence in annual energy production assessment
 - 6 All REG Wind Farms have full Garrad Hassan wind reports
 - 7 REG data correlated with established met sites



REG long term outputs should be accurate but significant short term – year on year – volatility inevitable

Summary

- ❶ REG construction and operational capability now established to deliver projects emerging from development pipeline – equipped to achieve Business Plan goals and beyond
- ❷ Easy integration of further operational MW into existing team
- ❸ Significant focus on potential bottlenecks such as grid and noise
- ❹ Budgetary and operational controls have been enhanced over last two years
- ❺ Outlook for key equipment markets appears stable at present
- ❻ REG operating at cutting edge of UK health and safety legislation
- ❼ Long term meteorological and output data for operational and consented sites well established
- ❽ Procurement for 2011/12 well advanced