

Developing Effective Partnerships

...Working with EirGrid

Peter Harte – SWS Energy

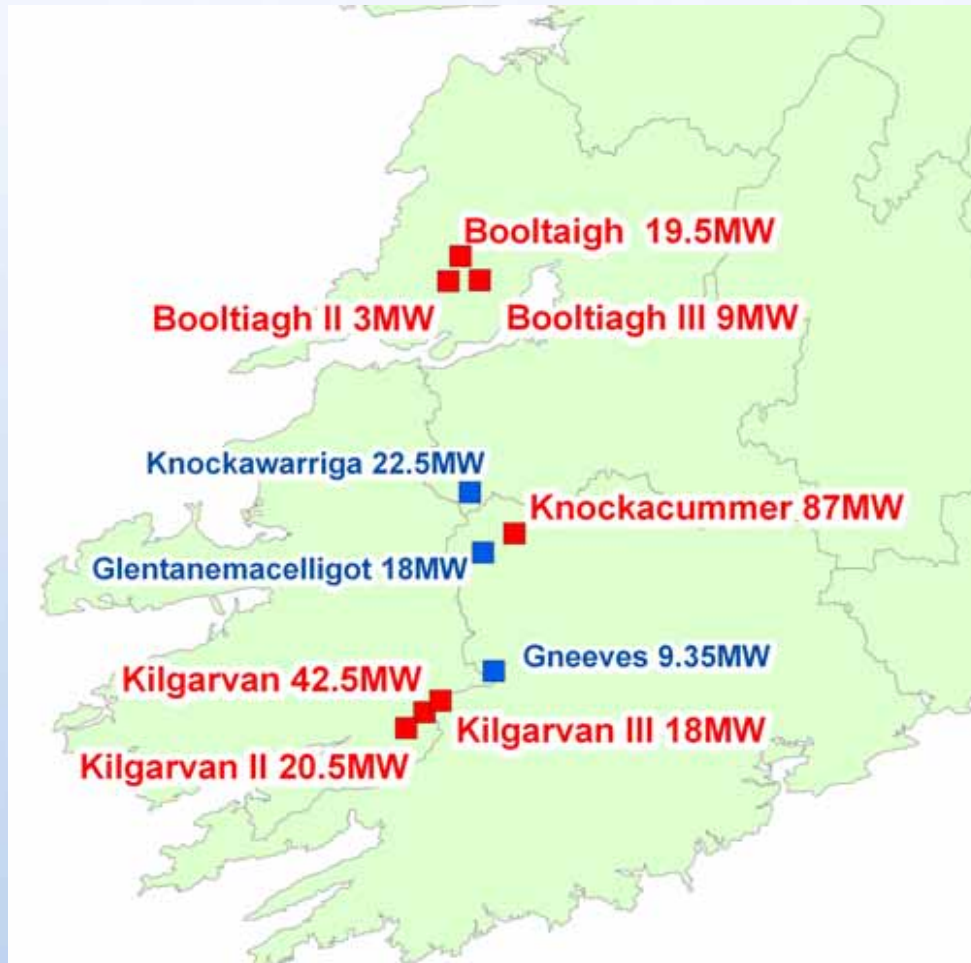


Introduction

- SWS Energy
 - Developing wind since 2000
 - Added 74MW of wind in 2005
- SWS and EirGrid
 - Built 3 contestable 110kV substations
 - Built 6km of 110kV overhead line
 - Projects in Gate 1/2 circa.150MW



Introduction – Gate 0/1/2



Transmission 200MW

Distribution 50MW

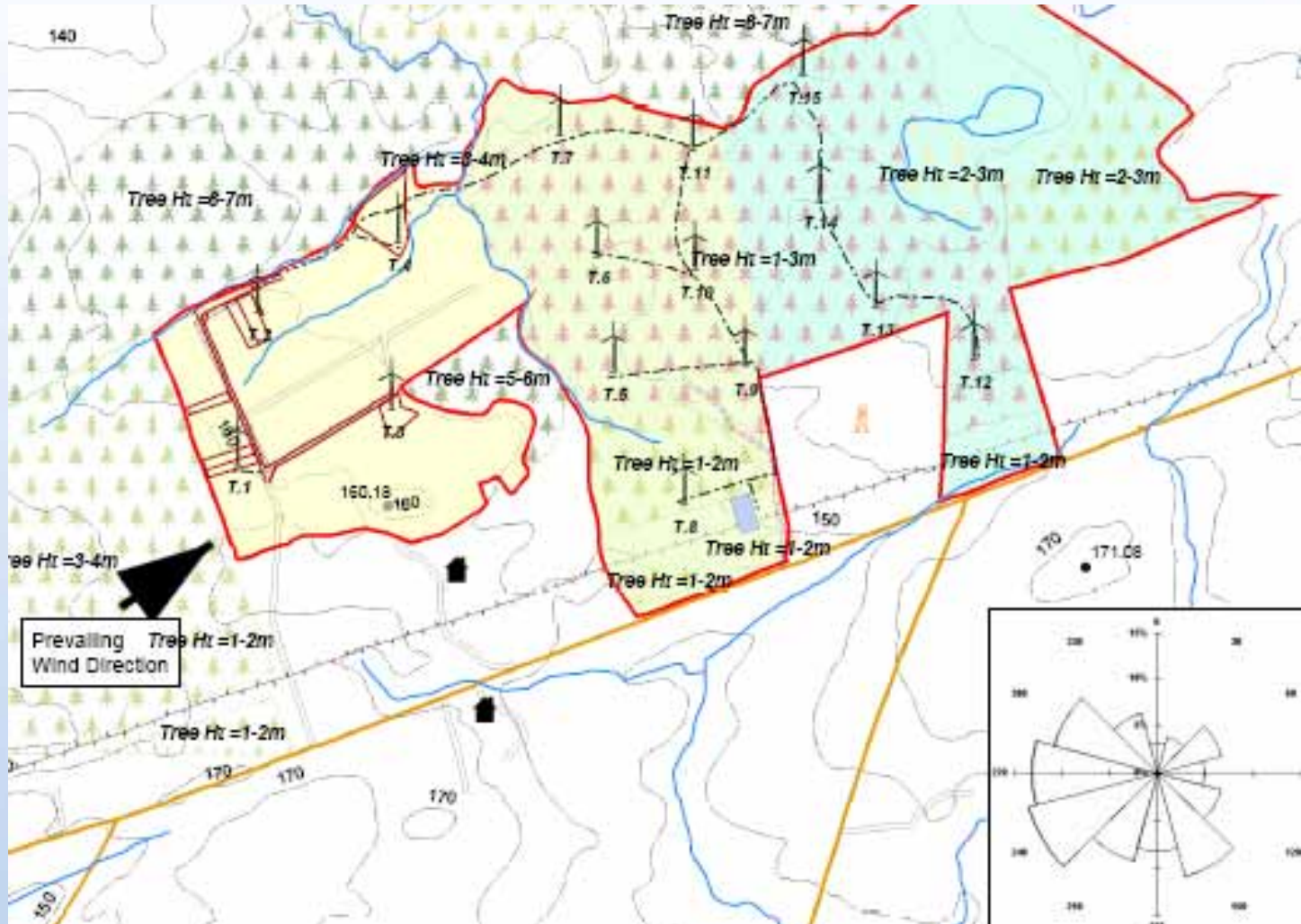


Introduction - Contents

1. Contestable Build Booltiagh
2. Contestable Build Kilgarvan
3. Gate 2 and looking forward



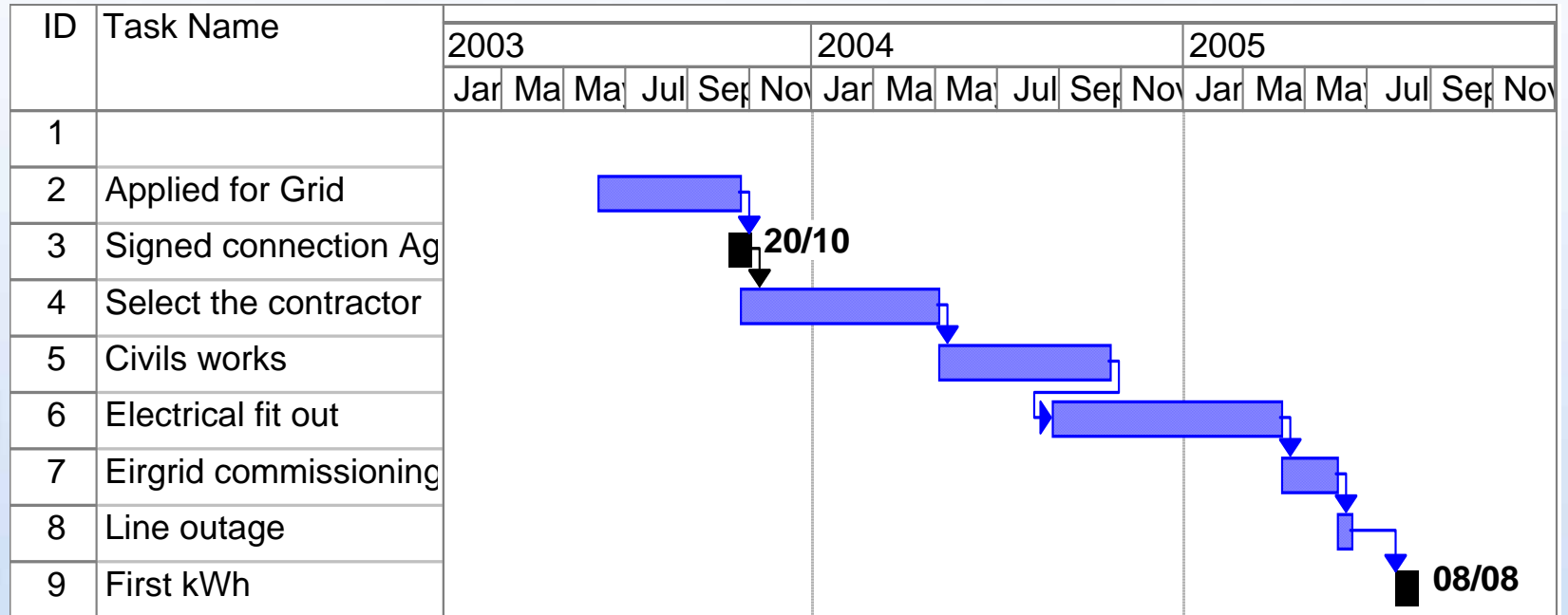
Booltiagh - Contestable Build



Booltiagh – Contestable Build



Booltiagh – Programme



Booltiagh - Contract Structure



€20-25m



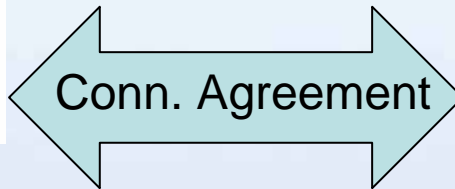
Michael Eustace
Civil Contractor



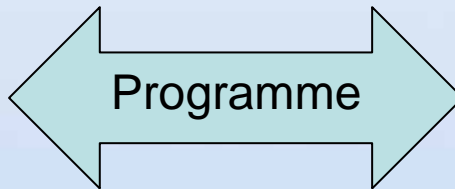
Hivar O'Hara



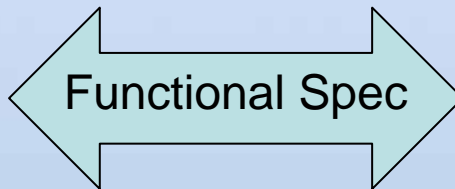
Booltiagh – Eirgrid Interaction



**Codes and
Agreements &
Customer Services**



**New Connections,
Grid Development &
Commercial**



**Engineering and
ESBi/ESB Telecoms**



Booltiagh – Weaknesses

- BOOL c6094
- Unnecessary overlap between layers
- All risk in meeting EirGrid requirements lay with SWS/DP
- Specific gaps for example 110kV down-droppers, spec.
- Lack of sign-off tracking sheet



Booltiagh – Strengths

- 110kV substation met the requirements
- Battery room ventilation delivered above specification, may be retrofitted
- Achieved the economic benefit of a contestable build
- Grid code testing fairly smooth
- Strong working relationship



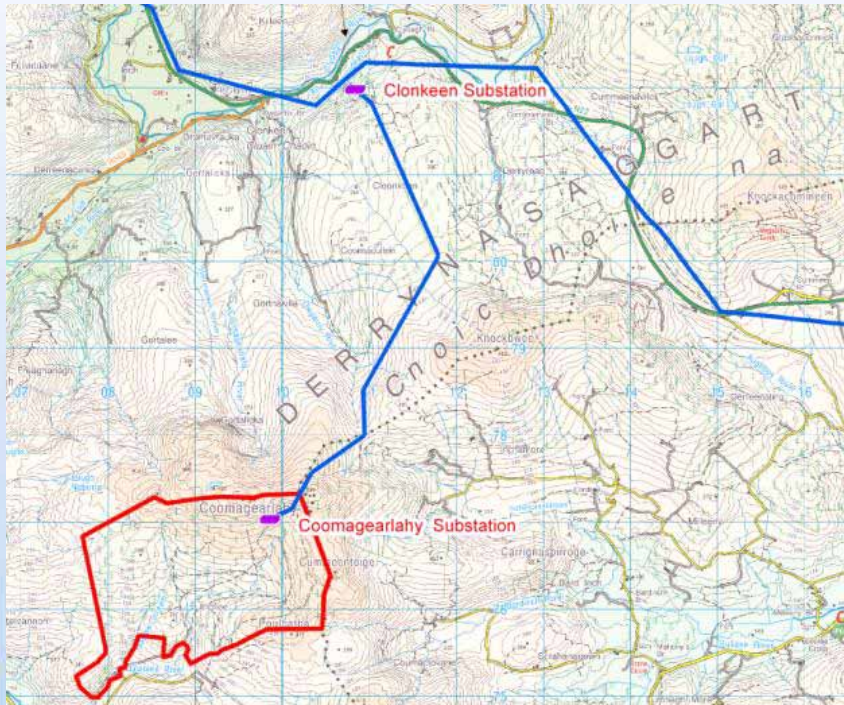
Working with Eirgrid - Contents

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Kilgarvan Windfarm

- 42.5 MW
- Vestas V90 3.0 MW
- 6km 110kV OHL
- Clonkeen 3 bay
- Coomagearlahy 3 bay
- 9 MVAr capacitor bank



Kilgarvan - Contract Structure



€50-60m
turnkey

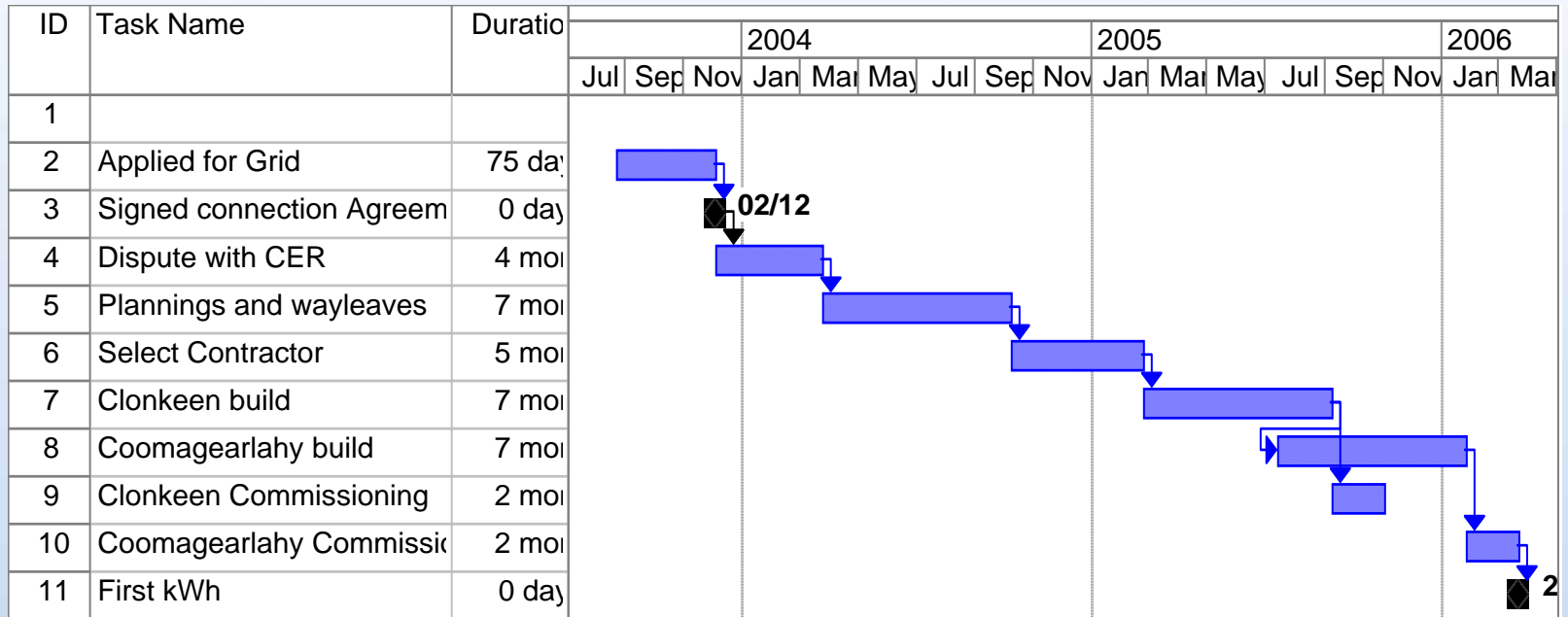


Kilgarvan – Contestable Shared

- Accommodated neighbouring wind-farm Glanlee 31.5MW.
- Group processing allows the shared transmission asset to be built under the contestable rules
- Rules regarding pricing, refunds and allocated costs still under development.
- Will be much more common in Gate 2



Kilgarvan – Programme



Kilgarvan – Working with Eirgrid

- Issue 1: Failed Earth Grid Test
- Impact: Missed 2 week October outage slot for cutting into 110kV line.
- Solution: EirGrid supplied technical support, Power Engineers devised special technique for testing even when 110kV energised.



Kilgarvan – Working with EirGrid

- Issue 2: Grid Code Compliance
- Our turbines needed supplementary reactive power compensation.
- Solution: EirGrid supplied detailed voltage traces against which our software could be tested. Derogation process used.



Kilgarvan – Working with Eirgrid

- Issue 3: PSS/e Modelling
- Vestas PSS/e models were incomplete, windfarm was curtailed to 15MW (of 45MW).
- Solution: EirGrid modelling team worked with SWS and Vestas to complete site specific modelling.



Building Partnerships - Contents

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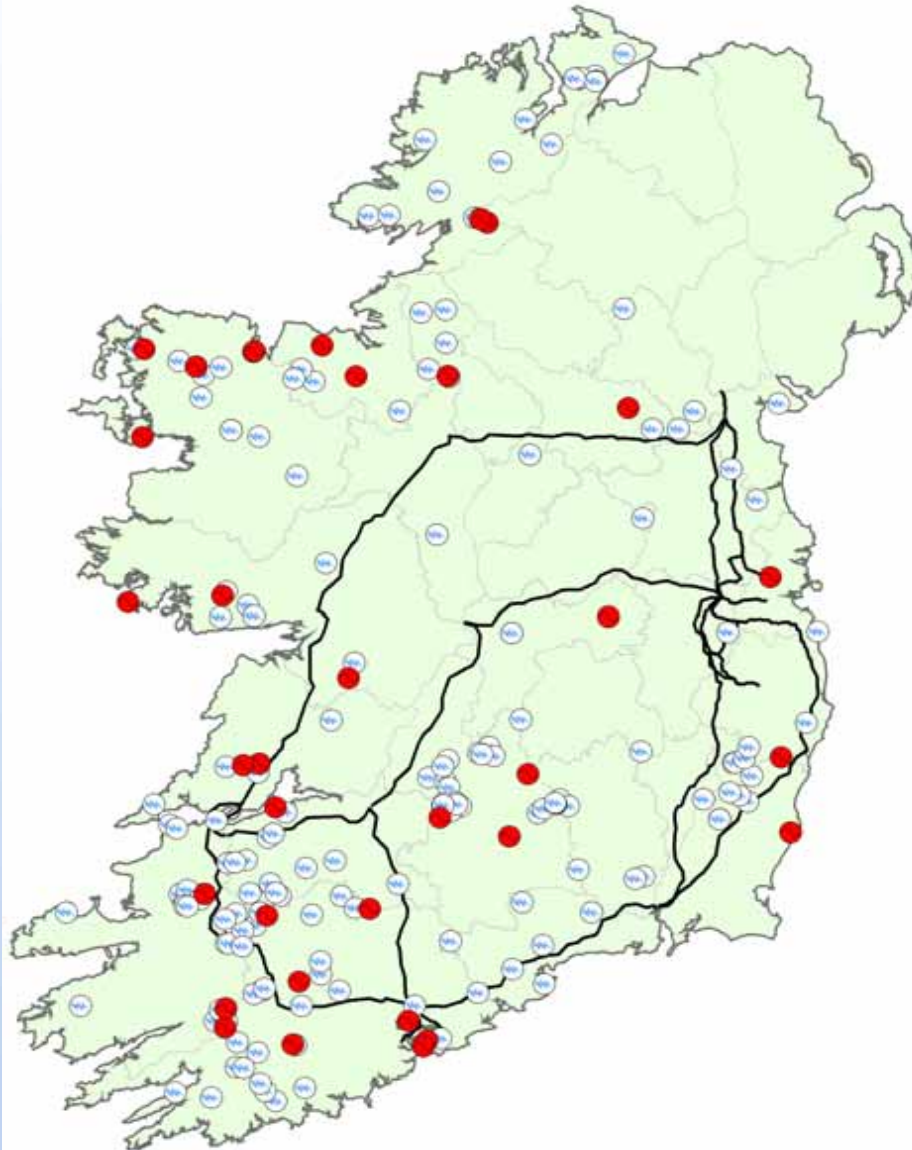
Gate 2 – Not so fast



- Full speed ahead
1300MW
- Group processing
clearly defined
- Offers in 2007
- Deep
reinforcements
- Curtailment
- Way leaving



Gate 2 – Deep Reinforcements



- All apps.
- Groups vital
- South West?



Gate 2 – Deep Reinforcements

- 800MW in the south west
- Requirement for new 220kV substation
- Recent reaction to 220kV line in Cork city was strongly negative – 7-8yrs?
- Strategic Infrastructure Bill 2006
 - Is this “strategic” infrastructure?



Gate 2 – Wayleaving

- Glanta Commons wind farm (38kV)
- Disputed for 3 years with 41 wayleaves
- Forced to go underground
- Forced to make annual €/km payment
- Need for co-ordination between EirGrid, ESB Networks, CER and developers is very important in the next year or two.

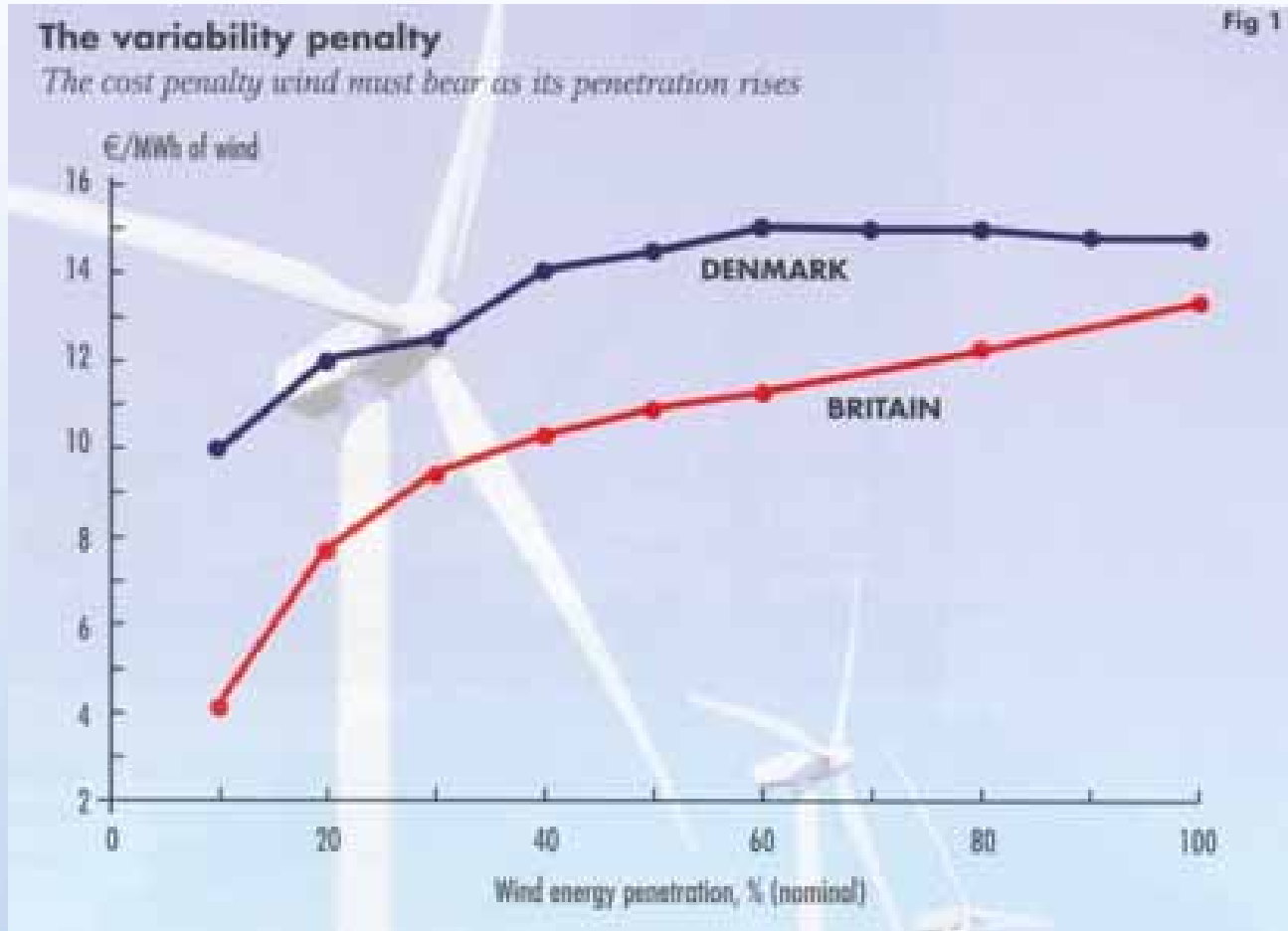


Gate 2 – Constraint/Curtailment

- Certainty on the % is very important for developers ability to raise finance
- Constraint payments required for anything other than system emergencies.
- Call for economic analysis to determine optimum mix of wind (and indeed all fuels).



Gate 2 – Constraint/Curtailment



Millborrow, D. 2006 Wind Power Monthly

Ireland's Generation Mix

- 100% wind (by installed capacity) is technically possible
- Recent report shows 60% wind penetration is economically optimum in both Denmark and UK
- We get one chance every 20-30 years to swap out a generator
- Go and see An Inconvenient Truth...



SWS – EirGrid

- Summary

- SWS and EirGrid added close to €15m of new 110kV infrastructure in 2005, and we hope to add a lot more 2008.
- Only made possible by the close working relationship and EirGrid technical ability



» Best of luck to EirGrid in their new role!



Annual Customer Conference 2006

Croke Park Conference Centre, Dublin

18th & 19th October 2006

