Transmission Arrangements for Distributed Generation

Working Group Meeting

5th March 2010













Agenda

No.	Agenda Item	Lead	Time
	Arrival and Coffee	-	15 minutes 10:00
1.	Housekeeping and Introductions	Patrick Hynes	10 minutes 10:15
2.	Description of issue the proposals seek to address	Ivo Spreeuwenberg	60 minutes 10:25
3.	Break	-	10 minutes 11:25
4.	High Level Overview of Responses to Pre-Consultation	Adam Sims	20 minutes 11:35
5.	Review Terms of Reference	Ivo Spreeuwenberg	30 minutes 11:55
6.	Overview of National Grid's models: I)Gross Nodal Supplier Agency Model	Ivo Spreeuwenberg	30 minutes 12:25
7.	Lunch		35 minutes 12:55
8.	Overview of National Grid's models: ii) Net DNO Agency Model	Adam Sims	30 minutes 13:30
9.	Indicative Timeline and Future Meetings	Ivo Spreeuwenberg	20 minutes 14:00
10.	AOB	-	10 minutes 14:20
	Finish	-	14:30

1. Housekeeping and Introductions

- Chair Patrick Hynes
- Governance
- Housekeeping
 - Fire drills, procedures
 - Facilities
- Aim of Meeting
 - Understand the Issue
 - Leave detail for following meetings
- Agenda



Agenda

No.	Agenda Item	Lead	Time
	Arrival and Coffee	-	15 minutes 10:00
1.	Housekeeping and Introductions	Patrick Hynes	10 minutes 10:15
2.	Description of issue the proposals seek to address	Ivo Spreeuwenberg	60 minutes 10:25
3.	Break	-	10 minutes 11:25
4.	High Level Overview of Responses to Pre-Consultation	Adam Sims	20 minutes 11:35
5.	Review Terms of Reference	Ivo Spreeuwenberg	30 minutes 11:55
6.	Overview of National Grid's models: I)Gross Nodal Supplier Agency Model	Ivo Spreeuwenberg	30 minutes 12:25
7.	Lunch		35 minutes 12:55
8.	Overview of National Grid's models: ii) Net DNO Agency Model	Adam Sims	30 minutes 13:30
9.	Indicative Timeline and Future Meetings	Ivo Spreeuwenberg	20 minutes 14:00
10.	AOB	-	10 minutes 14:20
	Finish	-	14:30

2. Description of the Issue



a) Use of System Charges

b) Background / The Problem

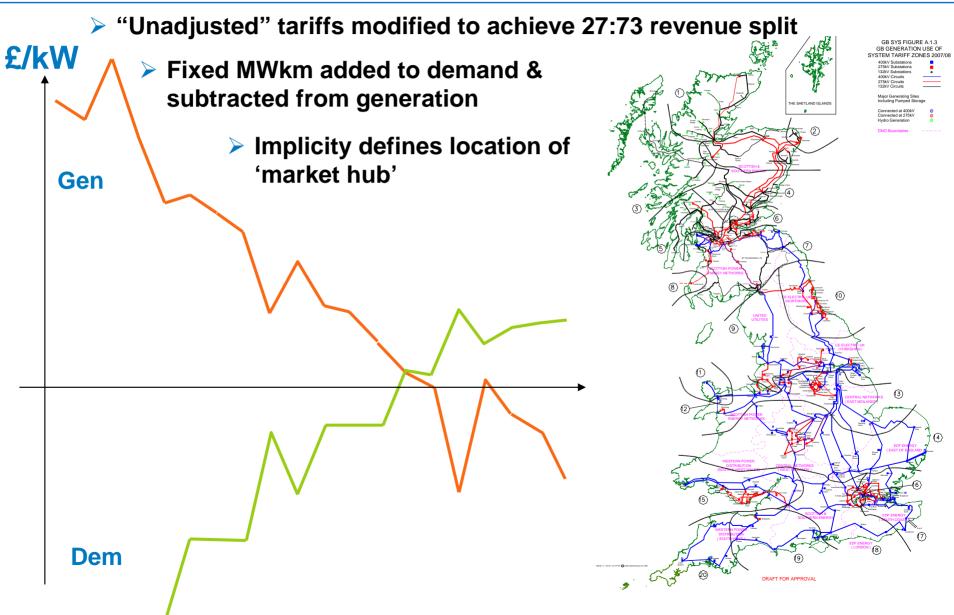
c) National Grid's Proposals



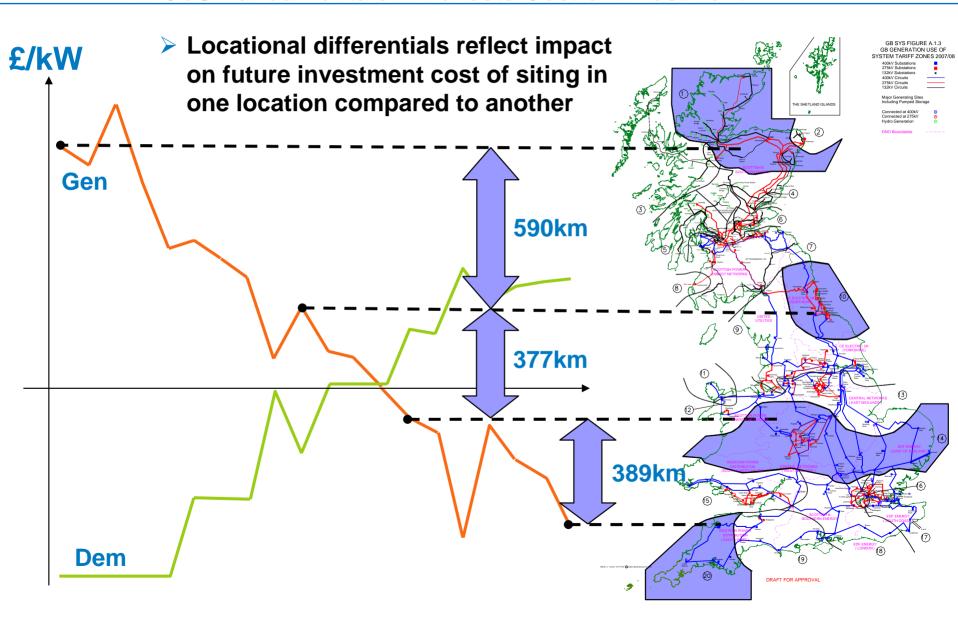
TNUoS Fundamentals

- Transmission costs are shared between generators and suppliers (demand) 27:73
- Use of system charges have two main functions:
 - Signal the impact on investment costs at different locations
 - Collect allowed transmission revenue
- TNUoS methodology aims to expose generators and suppliers to locational differentials which reflect impact on future investment costs of choosing one site compared to another
 - Provides economic signal to choose generation sites which optimise station costs (including ease of obtaining consent) with network extension/maintenance costs

TNUoS Fundamentals – The Locational Element

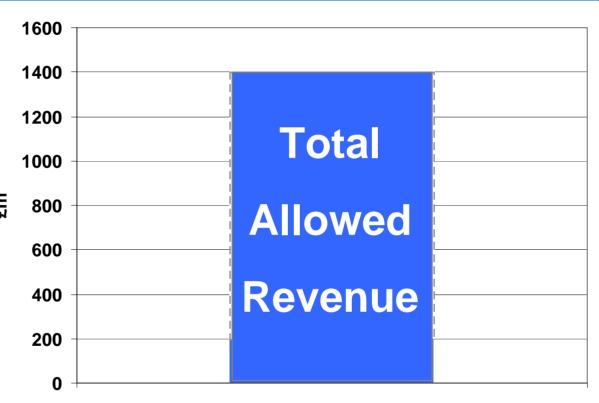


TNUoS Fundamentals – Reflects Cost of Investment



TNUoS Fundamentals – Revenue Recovery

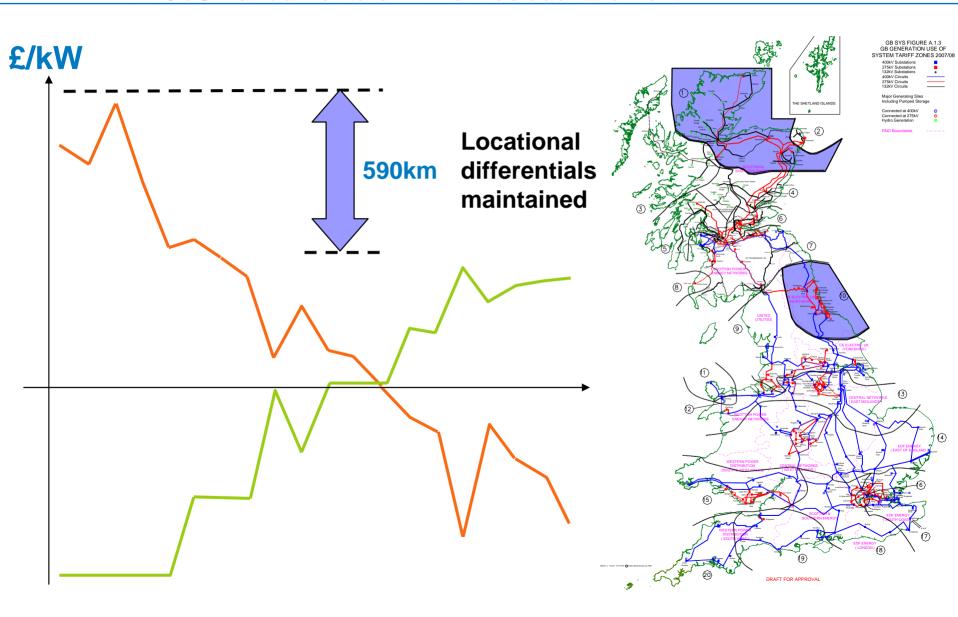
- ✓ Locational elements provide good economic signal
- Allowed revenue for 2010/11 ~ £1.4bn
- Locational elements not ideal for revenue recovery



 'Flat' (i.e. non-locational) residual element needed to recover the total allowed revenue



TNUoS Fundamentals – The Residual Element



Two Problems - Inextricably Linked

Cost Reflectivity



- Pre-BETTA exemptible embedded generation in E&W treated as negative demand and 'pay' negative (i.e. receive) demand TNUoS
 - This embedded benefit is cost-reflective between different EG
 - Not cost reflective of different impact of EG compared to directly conn.

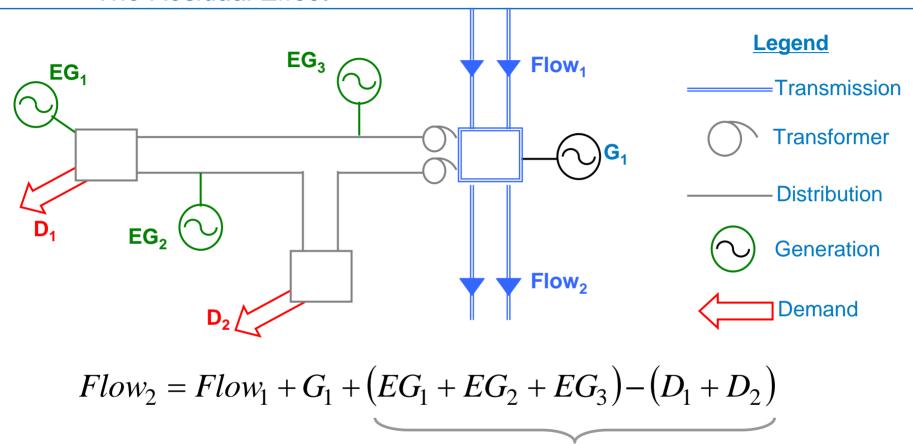
SLC C13 - 'Small Generator Discount'



- Extended to Scotland through BETTA
- Different definitions of transmission in two regions mean:
 - Small 132kV connected generators in Scotland pay transmission charges
 - Similar generators in E&W avoid generation charge and are paid demand charge (perpetuating lack of cost reflectivity)
 - Currently addressed with discount for Scottish generators, expiring in April 2011

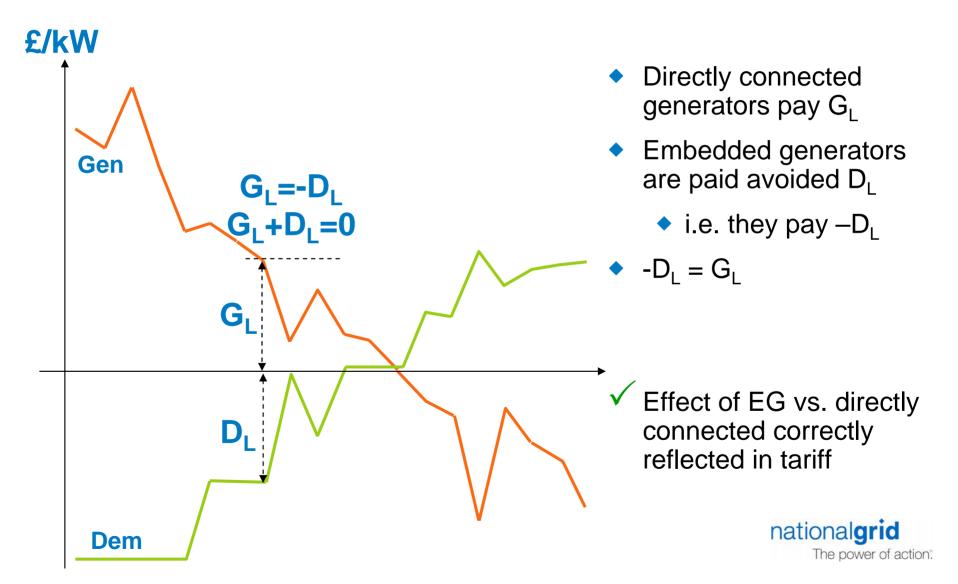
Enduring solution needs to address the root of the problem → RESIDUAL

The Residual Effect

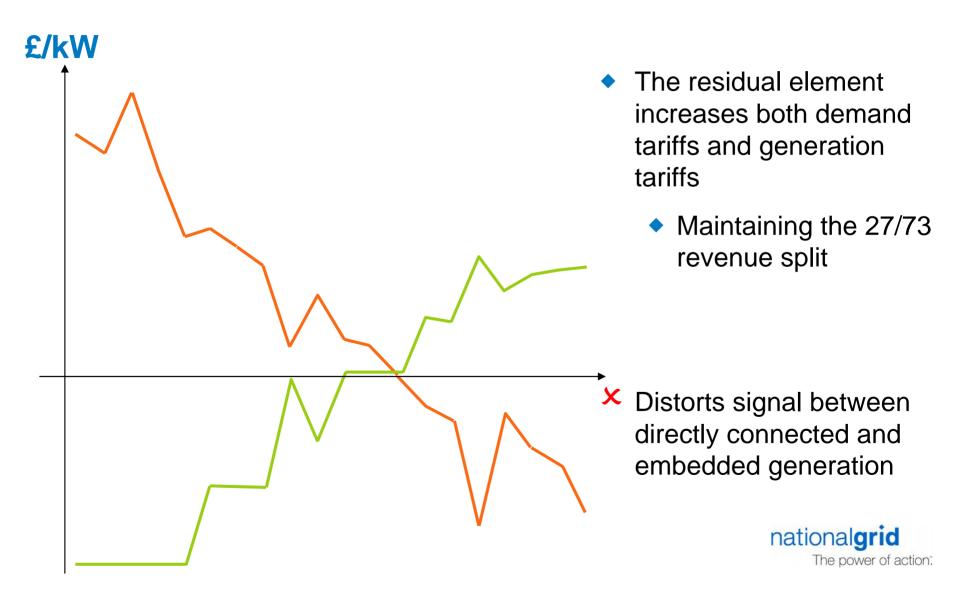


- Adding embedded generation has the same physical effect on transmission power flows as reducing demand at the GSP
- If charges were purely locational (i.e. with no residual) this physical effect would be reflected in tariffs

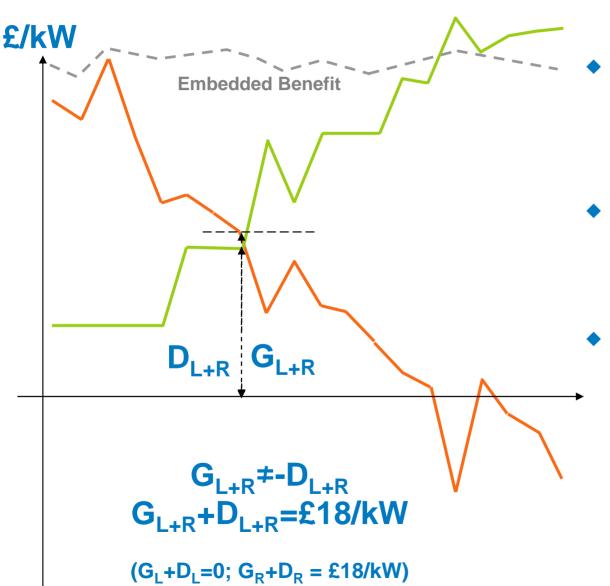
The Residual Effect – Illustration of Locational Elements only



The Residual Effect – Addition of the Residual Element



The Residual Effect – Addition of the Residual Element



- Addition of residual leads to embedded benefit of G_R+D_R ≈ £18/kW
- Regardless of 27/73 or location

 £18/kW incentive to embed does not reflect the difference in cost impact between embedded and directly connected generation

nationalgrid

The power of action.

Quantification of the Physical Effect – The 'De-facto' Benefit

The cumulative impact on the <u>wider</u> transmission network of DG is the same as directly connected generation





Wider Network

Power Flows = Generation - Demand



- Avoided GSP investment
- Avoided generation connection investment
- Preliminary analysis on these two elements to estimate the 'de-facto' benefit
- Further analysis is necessary in this area



Quantification of the Physical Effect – The 'De-facto' Benefit

Avoided GSP Investment



- Avoided transmission investment associated with reduced demand
- Supergrid transformers should already be reflected through DUoS (connection assets)
- Use of demand forecasts and planned expenditure for these forecasts levels of growth
- Analysis previously undertaken suggests England and Wales average of ~£60/kW
- Annuitised over 40 years £5/kW



Quantification of the Physical Effect – The 'De-facto' Benefit

Avoided Generation Connection Investment



- Avoided costs of connecting new generation
- Use of local element of NG revenue drivers as proxy*
- England and Wales average of £18.50/kW
- Annuitised over 40 years ~£1.50/kW

	Local (£/kW)
South & South West	15
Thames Estuary	15
London	60
South Wales	15
East England & Home Counties	10
West Midlands	5
East Midlands	5
North West & North Wales	30
Yorkshire & Lincolnshire	15
North East	15

Indicative de-facto embedded benefit £5/kW + £1.50/kW = £6.50/kW



Further Issues – Contractual Arrangements

- CAP97 & CAP167 'Statement of Works'
 - More info for NGET address some planning & operational practicalities
 - Decision of 'materiality' of generation connection rests with DNO under CAP97
 - National Grid believe DNO is not sufficiently informed to make this decision and have raised CAP167 which seeks to address this issue
 - Still with Ofgem for decision (initial delay due to interaction with TAR process)
- Actual physical effect on power flows aside, there are no contractual arrangements for exporting Grid Supply Points (GSP)
 - Whether or not a GSP is exporting is immaterial to the issues discussed up to this point
 - The exporting GSP issue is simply a contractual one, but must also be addressed as part of an enduring solution

nationalgrid

The power of action.

3. Responses to Pre - Consultation



a) Summary

b) Main Issues Raised

c) National Grid's Preliminary View



3. a) Summary

Total of 17 nonconfidential Responses Received by Feb. 26th*

Number	Organisations	
1	Renewable Energy Association	
2	RWE Group	
3	Dong Energy	
4	International Power First Hydro	
5	Renewable Energy Systems (RES)	
6	Magnox North Ltd.	
7	Good Energy	
8	Statkraft	
9	Western Power Distribution	
10	Eon	
11	Highlands and Islands Enterprise	
12	West Coast Energy	
13	Fred Olsen Renewables	
14	CE Electric	
15	EdF Energy	
16	Scottish Power Energy	
17	Community Energy Scotland	

Late Responses will be available shortly



3. b) Main Issues Raised

- No change
 - Both models cause investment uncertainty
 - Barrier to new investment
 - Too many other changes going on
- GNSAM & Net DNO
 - Not proven that all generators use the transmission system
- BSUoS
 - Distribution Generation (DG) gets paid BSUoS at present, how would this change
- Access rights
 - DG has non-firm access



3. b) Main Issues Raised

- Connection incentives
 - Charging generators DUoS and TNUoS could create incentive to connect to transmission system
- Change needs to be developed as part of wider review
 - C13 does not require this much change
 - Cost Benefit Analysis required
 - More discussion of other models
 - Review of demand charging



3. c) National Grid's Preliminary View

- Never a good time to change arrangements, but investment uncertainty exists today – proposal will provide clarity
- Increasing levels of DG are causing transmission investment / constraints as already discussed
- Whilst C13 is relevant, Licence requires continuous review or arrangements
- Gross approach reflects benefit through discount and solves residual tariff inconsistency
- Agree that further analysis is required, however a proposal will be raised at the end of the working group process



4. Establish Terms of Reference

a) Review of circulated draft terms of reference for working group



6. Lunch













nationalgrid

The power of action.

Agenda

No.	Agenda Item	Lead	Time
	Arrival and Coffee	-	15 minutes 10:00
1.	Housekeeping and Introductions	Patrick Hynes	10 minutes 10:15
2.	Description of issue the proposals seek to address	Ivo Spreeuwenberg	60 minutes 10:25
3.	Break	-	10 minutes 11:25
4.	High Level Overview of Responses to Pre-Consultation	Adam Sims	20 minutes 11:35
5.	Review Terms of Reference	Ivo Spreeuwenberg	30 minutes 11:55
6.	Overview of National Grid's models: I)Gross Nodal Supplier Agency Model	Ivo Spreeuwenberg	30 minutes 12:25
7.	Lunch		35 minutes 12:55
8.	Overview of National Grid's models: ii) Net DNO Agency Model	Adam Sims	30 minutes 13:30
9.	Indicative Timeline and Future Meetings	Ivo Spreeuwenberg	20 minutes 14:00
10.	AOB	-	10 minutes 14:20
	Finish	-	14:30

8. Indicative Timeline and Future Meetings

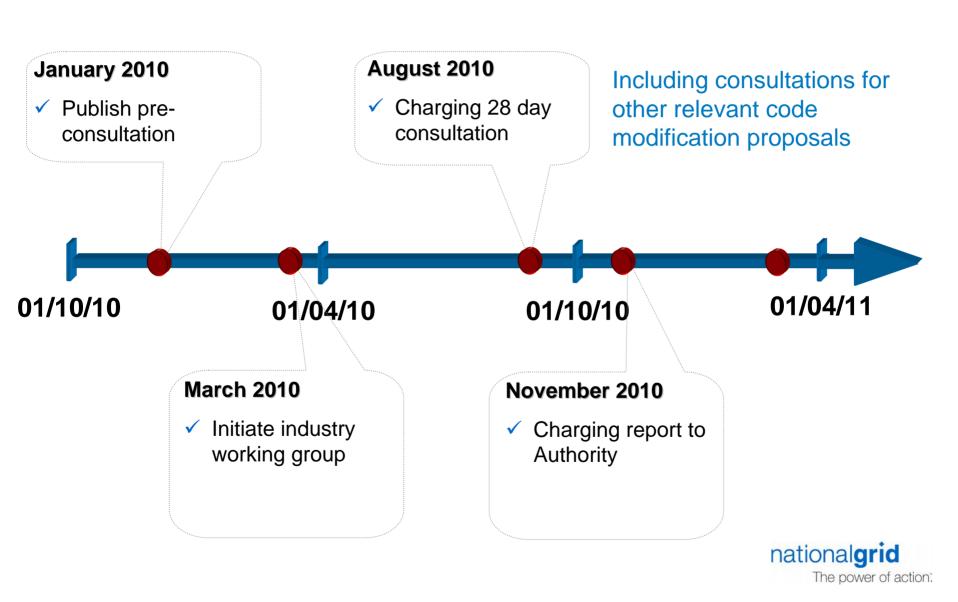


a) Indicative timeline

b) Future meeting dates



8. a) Indicative Timeline



8. a) Future Meetings

- Meeting 2 − 22nd March 2010
 - Review change requirements for GNSAM
- ◆ Meeting 3 9th April 2010
 - Review change requirements for Net DNO
- Meeting 4 − 22nd April 2010
 - Further work on change requirements
- Review need for and pencil in further possible meeting dates in May



A.O.B.













nationalgrid

The power of action.