



Promoting choice and value
for all gas and electricity customers

DEPARTMENT FOR BUSINESS
ENTERPRISE & REGULATORY REFORM

Regulation of Offshore Electricity Transmission

External Communication Session #2

10 August 2007

Agenda

- **Introduction - Duarte Figueira, BERR**
- **Overview of July Policy Statement - Robert Hull, Ofgem**
- **Transitional Offshore Regime and tender process – Colin Green, Ofgem**
- **An Introduction to GB Transmission Charging Arrangements – Hêdd Roberts, National Grid**
- **Offshore Transmission Charging Issues – Tom Ireland, National Grid**
- **Coffee Break**
- **Enduring Offshore Regime - Graham Knowles, Ofgem**
- **Other issues – Panel Q&A**
- **Next Steps/Concluding remarks**
- **Lunch**



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Introduction

Duarte Figueira
Director, Renewables Deployment Team
BERR

Purpose of today

- Provide additional clarity on:
 - the framework set out in the Joint policy document
 - the scope of further work to be undertaken
 - the key stages and dates in the implementation process
- Encourage discussion
- Answer preliminary queries
- Enable stakeholders to submit a fully informed response.
- Further external communication sessions are planned.

Overview of the Joint Policy Statement

Robert Hull
Director, Transmission
Ofgem

Where are we in the process?

- **July 2007 Joint Policy Statement** – builds upon the Government decision on licensing and Ofgem's Second Scoping Document in March 2007 (informed by industry responses);
- **Objective of the document** – our policy proposals provide greater detail and clarity on the proposed regime and its implementation for further consultation. Views are sought to inform development of the regime;
- **Next steps** – we welcome responses and continued industry engagement over the coming weeks and months. A policy update document is planned for October 2007 and a final proposals document for January 2008; and
- **Implementation** – we envisage the new regime will commence in October 2008 ('go active' date) so the process for awarding licences can commence. We then expect the new regime would come into force in October 2009 ('go-live' date).

Policy principles for the offshore regime

- In the context of Government renewable targets, to ensure the efficient and effective connection of offshore renewable generation to the onshore Grid;
- A regulatory regime which strikes an appropriate balance between protection of consumers' interests and promoting connection of renewable generation;
- Developing an effective competition for the appointment of OFTO's which will deliver value for money and fit for purpose infrastructure;
- Designing a regime to attract prospective OFTO's by providing sufficient clarity and certainty in terms of risk and rewards;
- Ensuring that industry process operate effectively to support the proposed regulatory framework

Key proposals from the joint policy statement (1)

Design of the regulatory regime

- Offshore Transmission Owner (OFTO) is responsible for the design, construction, financing and maintenance of the offshore transmission assets;
- OFTO is appointed by competitive tender and awarded a transmission licence. This will set out the obligations and entitlements of the OFTO, including 20 year revenue stream and performance requirements;

Design of the OFTO tender process

- It would be run by Ofgem;
- Triggered by offshore Generator application;
- Annual tender windows to co-ordinate the process and minimise costs;
- Competition to select preferred bidder.

Key proposals from the joint policy statement (2)

Transitional arrangements

- Transitional projects that reach full financial close by 'go-active' will enter transitional tender process at that time;
- Transitional projects that reach financial close after 'go-active' but by 'go-live' can enter a transitional tender process that will begin shortly after 'go-live'; and
- We will provide comfort for transitional schemes that they will receive the greater of 75% of Ofgem's ex-ante estimate of the efficient capital cost and the full ex-post efficient level of cost.

Other policy proposals

- Onshore connection application process
- Charging access and compensation arrangements
- Technical rules

Next steps in the process

- Presentations today will focus on the key aspects of the joint policy statement:
 - Transitional and tender arrangements;
 - Charging; and
 - Development of the enduring framework;
- We welcome feedback on our current proposals;
- We recognise that designing a regime of this nature has several dimensions and interactions – but by considering the issues in detail as we do onshore, we are aiming to provide certainty to all parties seeking to benefit from it;
- Work continues to develop the licences, codes, tender documentation and regulations necessary to implement the regime – we need industry support in these processes.

The background features a large, semi-transparent white arrow pointing to the right. Behind the arrow, there are two distinct images: on the left, a perspective view of a modern building with a grid of windows; on the right, a close-up of a large, white, multi-layered turbine or fan component. The overall color palette is light and airy, with soft blues and whites.

Transitional Offshore Projects

Colin Green
Head of Offshore Transmission &
Projects
Ofgem

Introduction

- Key issues
- Tender process
- Comfort on costs
- Pre-conditions for tender
- Issues to be resolved

Transitional Offshore Projects – Key issue

- Any assets constructed, or under construction, before the new regime is in place will have to be “adopted” by licensed TO’s into the new regime. These are referred to as “transitional offshore transmission assets”;
- Second Scoping Document set out our initial thoughts:
 - Transitional assets would be adopted – i.e. an OFTO would be appointed to maintain the assets constructed;
 - An OFTO would be selected by competitive tender process – but modified to reflect the different stage of development;
 - There would be comfort that projects would receive the greater of 75% of Ofgem’s ex-ante estimate of the capital costs of the project or 100% of the efficient ex-post cost;
 - That projects should reach full financial close by the ‘go-active’ date to qualify for this process;
- Joint policy document set out our further thoughts in these areas.

Summary of the Tender Process (1)

- Tender Process will be established in the form of Tender Regulations (once section 92 of the Energy Act is activated);
- Tender will be for the award of an offshore transmission licence – bidders will not be pre-licensed, must meet a prequalification criteria;
- Standardised tender documentation will be provided;
- Tender process over the following stages:
 - Prequalification and expression of interest
 - Invitation to Tender (ITT) and evaluation of bids (optional best and final offer stage)
 - Preferred bidder and appointment of OFTO
- Ofgem to manage the process and approve each stage of bidder selection
 - Welcome views.

Summary of Tender Process – Transitional Schemes(2)

- Three classifications of transitional projects:
 - Projects constructed by 'go-active'
 - Projects that are not constructed, but achieve financial close by 'go-active'; and
 - Projects that achieve financial close after 'go-active' but before 'go-live';
- Two tender processes would commence at 'go-active' and 'go-live' for the appointment of an OFTO to adopt transitional projects;
- Enduring tender process will also commence at 'go-active' for those seeking the early appointment of an OFTO;
- Developer would be the OFTO of last resort;

Projects that do not achieve financial close by the 'go-live' date will be deemed to fall within the enduring regime

Pre-conditions for comfort on costs (1)

- Ofgem intends to assess the value of the assets to be adopted by an appointed OFTO:
 - Projects that are fully constructed would be subject to an ex-post assessment of the efficient capital costs of the project and tender on the basis of 100% of this ex-post value;
 - Projects that reach financial close but not fully constructed:
 - would be given comfort (i.e. greater of 75% of ex-ante estimate and 100% of the ex-post efficient cost); and
 - be tendered on the basis of 100% of the ex-ante estimate of the projects capital value;
- Why only 75% of ex-ante estimate?
 - Recognises the less rigorous process that Ofgem will undertake and the scope for detailed assessment to identify inefficiency

Pre-conditions for comfort on costs (2)

- Developers will need to show:
 - It has an onshore connection agreement;
 - It has all necessary property rights;
 - Entered into contacts for construction of the offshore transmission assets;
 - Evidence of full financial close (or equivalent);
 - All financial and technical data necessary to undertake an efficiency assessment of the cost of construction
- It is also important that developers can demonstrate that they are able to separate agreements and property rights, where necessary, to achieve a clean separation between generation and transmission activities.

Pre-conditions for entering the transitional tender process (1)

- Developer has an important role in facilitating an effective tender process. It is therefore important that it can satisfy the following:
 - Agree to populate a data room with all relevant data necessary for a prospective OFTO to develop an accurate bid;
 - Has provided all information necessary for Ofgem to undertake its efficiency assessment;
 - Sets out terms for the transfer of assets, leases, licences etc;
 - An appropriate fee for the process; and
 - Independent engineering audit reports on the functioning and performance of the assets (where appropriate)
- **Ofgem will only let developers that have met the criteria participate in the tender process**

Issues to be resolved

- What information will be required to undertake the RAV assessment?
- The timing of the RAV assessment
 - Balance between speed of process and costs of the process. Windowing of assessments?
 - Quality of information and availability of consultants;
- The information required to tender these projects;
- The process for transferring assets; and
- Dealing with non-compliance with GBSQSS and codes

Intend to progress discussions through bi-lateral meetings with developers, working groups and workshops

Questions?

GB System Operator Issues

Control and Data Requirements

Offshore SYS Information

Transmission Charging

GBSO Operational Role

- National Grid's responsibilities as the GB System Operator will extend to the new offshore transmission networks
 - safe, economic and efficient operation of the transmission networks
- In order to do this we will need
 - Technical data to model and monitor the transmission networks
 - circuit connectivity, electrical parameters, operating limits for example
 - Real-time indications
 - operational metering signals provided by Generators (as per the Grid Code)
 - real time indications of system measurements, plant status and alarms supplied by offshore transmission network owner (OFTO)
 - Agreed processes for the co-ordination of maintenance
- We propose to build on the existing SO-TO philosophies embodied in the current System Operator – Transmission Owner code (STC)
 - <http://www.nationalgrid.com/uk/Electricity/Codes/sotocode/>

Next Steps

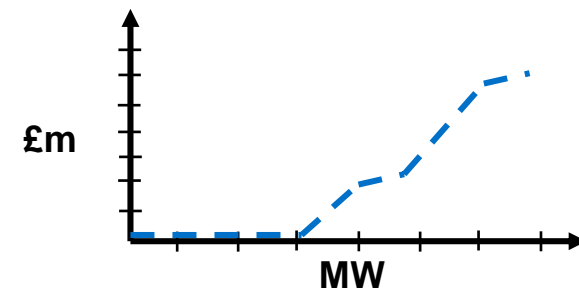
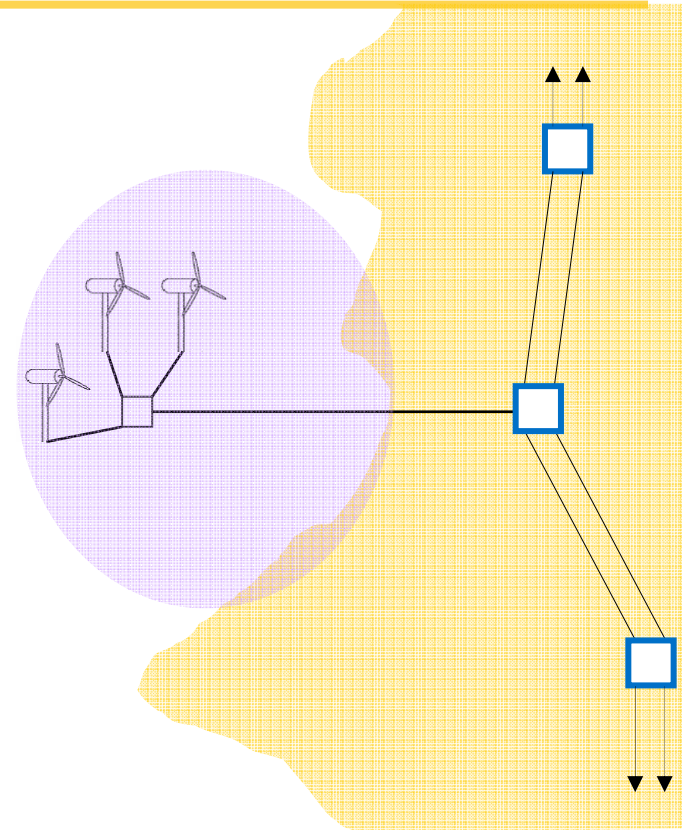
- We intend to engage with developers, current operators and other interested parties
 - Our thoughts will be presented in a workshop in early Autumn

For further information contact:

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Network Operations
National Grid
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brian.taylor@uk.ngrid.com

Offshore Opportunities Statement

- ◆ We are assessing whether there is value in the GBSO publishing additional information
- ◆ SYS currently covers connection opportunities with range of system capacity in different regions
- ◆ Opportunities Statement could provide additional information e.g:
 - ◆ Indicative unit costs for onshore works
 - ◆ Go/no-go areas given prevailing environmental conditions
- ◆ Ongoing work to develop detail



An introduction to the GB transmission charging arrangements

Hêdd Roberts
National Grid

GB Transmission Charging Arrangements

Charging Statements

◆ Connection Charges

- ◆ Calculated as cost of providing and operating connection (sole user) assets, including reasonable rate of return
- ◆ Connection Charging Methodology defines boundary between connection (sole user) and infrastructure assets

◆ Use of System Charges

◆ Balancing Services Use of System (BSUoS) Charges

- ◆ NG incentivised on procurement and utilisation of services to maintain energy and system balance, and other operating costs
- ◆ Users pay for cost of these services and any incentivised payment/receipt through BSUoS charge
- ◆ BSUoS charge is non-locational and is based on energy taken or supplied in half-hour settlement period

◆ Transmission Network Use of System (TNUoS) Charges

Transmission Network Use of System Charges

Principles

- ◆ TNUoS charges reflect the cost of installing, operating and maintaining the transmission system
- ◆ Economic and efficient signals are provided to Users when services are priced to reflect the incremental costs of supplying them
 - ◆ Charges should reflect impact Users at different locations have on TO costs if they were to increase (or decrease) their use of the respective systems



Locational Element

- ◆ TNUoS charges set to recover Allowed Revenue
 - ◆ set by the Authority at the time of the TO Price Control



Residual Element

Transmission Network Use of System Charges

Steps

- ◆ Locational element
 - ◆ Calculate **Unadjusted Zonal Tariffs**
 - ◆ Calculate **Re-referenced Zonal Tariffs**
 - ◆ To achieve 27:73 generation:demand split
- ◆ Residual element
 - ◆ Calculate **Final Zonal Tariffs**
 - ◆ Residual element added to ensure total allowed revenue is recovered
 - ◆ Separate demand and generation residuals added (£/kW) to preserve the 27:73 G:D split

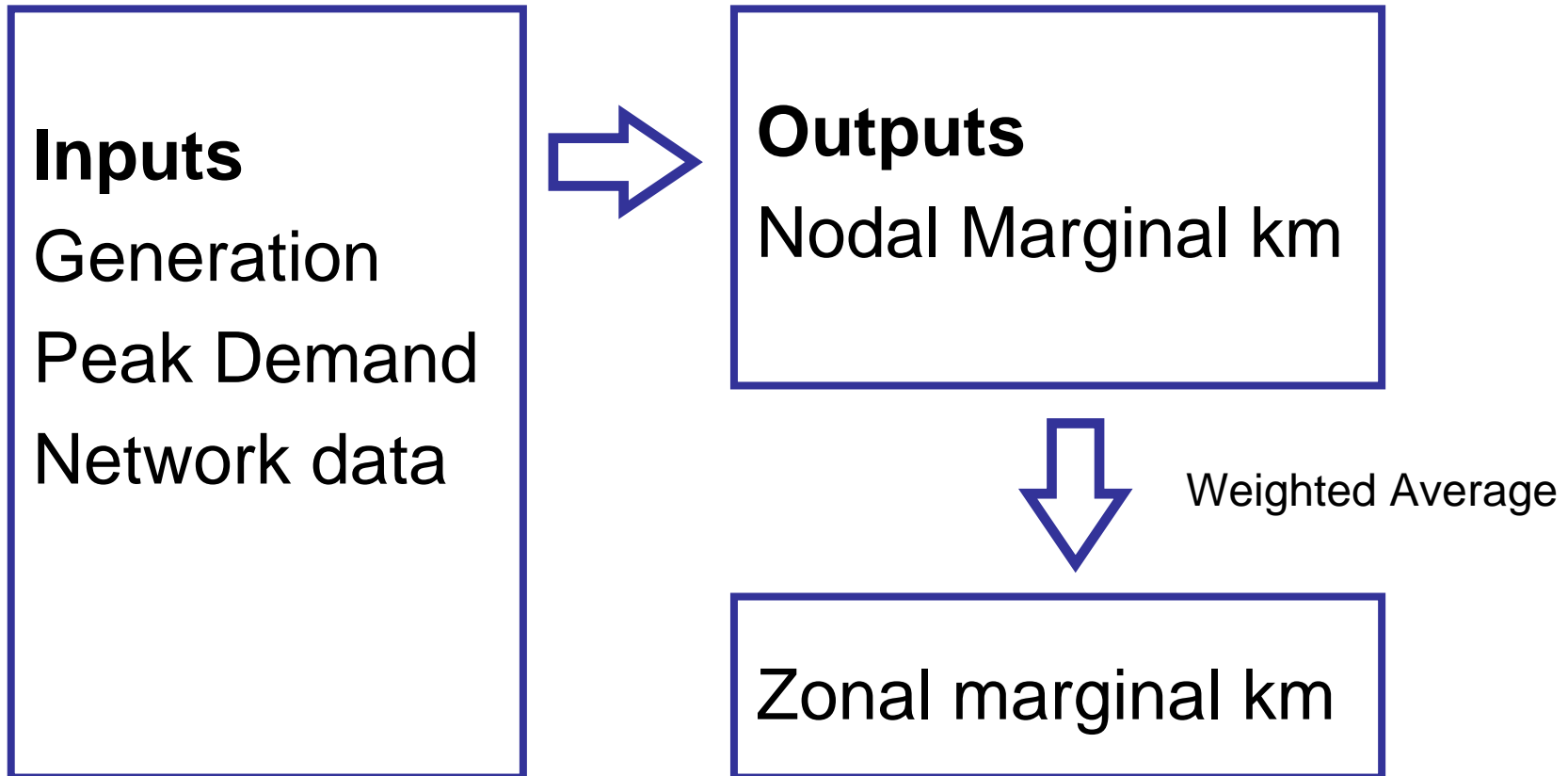
Transmission Network Use of System Charges

Unadjusted Zonal Tariff Calculation

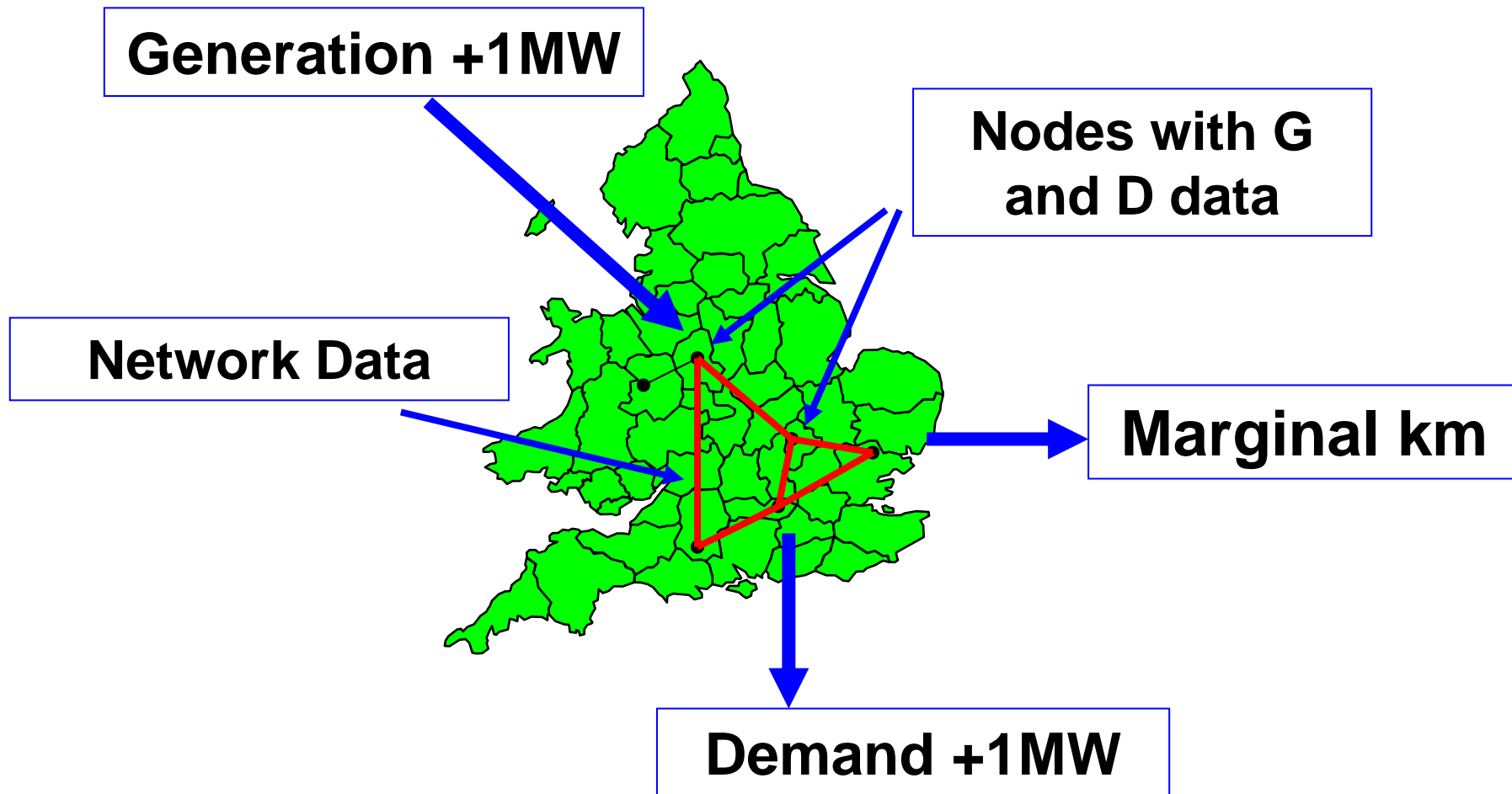
- ◆ Unadjusted Zonal Tariff (£/kW)
= Zonal marginal costs (MWkm) × Expansion
Constant (£/MWkm) × Security Factor ÷ 1000
- ◆ Calculation of Zonal marginal costs
 - ◆ Investment Cost Related Pricing (ICRP) DC Loadflow (DCLF) Model
 - ◆ Calculates the marginal cost of investment at each node
 - ◆ Measure of investment cost is MWkm

Transmission Network Use of System Charges

ICRP DCLF Model Inputs & Outputs



Transmission Network Use of System Charges Overview ICRP DCLF Transport Model



Transmission Network Use of System Charges

Expansion Constant

- ◆ Expressed in £/MWkm
- ◆ Represents the annuitised investment cost required to transport 1MW over 1km
 - ◆ Derived from the projected cost of 400kV overhead line, including an estimate of the cost of capital
 - ◆ Costs provided via externally audited process
 - ◆ Includes information provided from all TOs
 - ◆ Based on historic costs and tender valuations adjusted by a number of indices
- ◆ Individual calculation carried out for each circuit type and voltage
 - ◆ Normalised against 400kV OHL to establish Circuit Expansion Factors
 - ◆ e.g. 400kV Cable Expansion Factor = 22.39

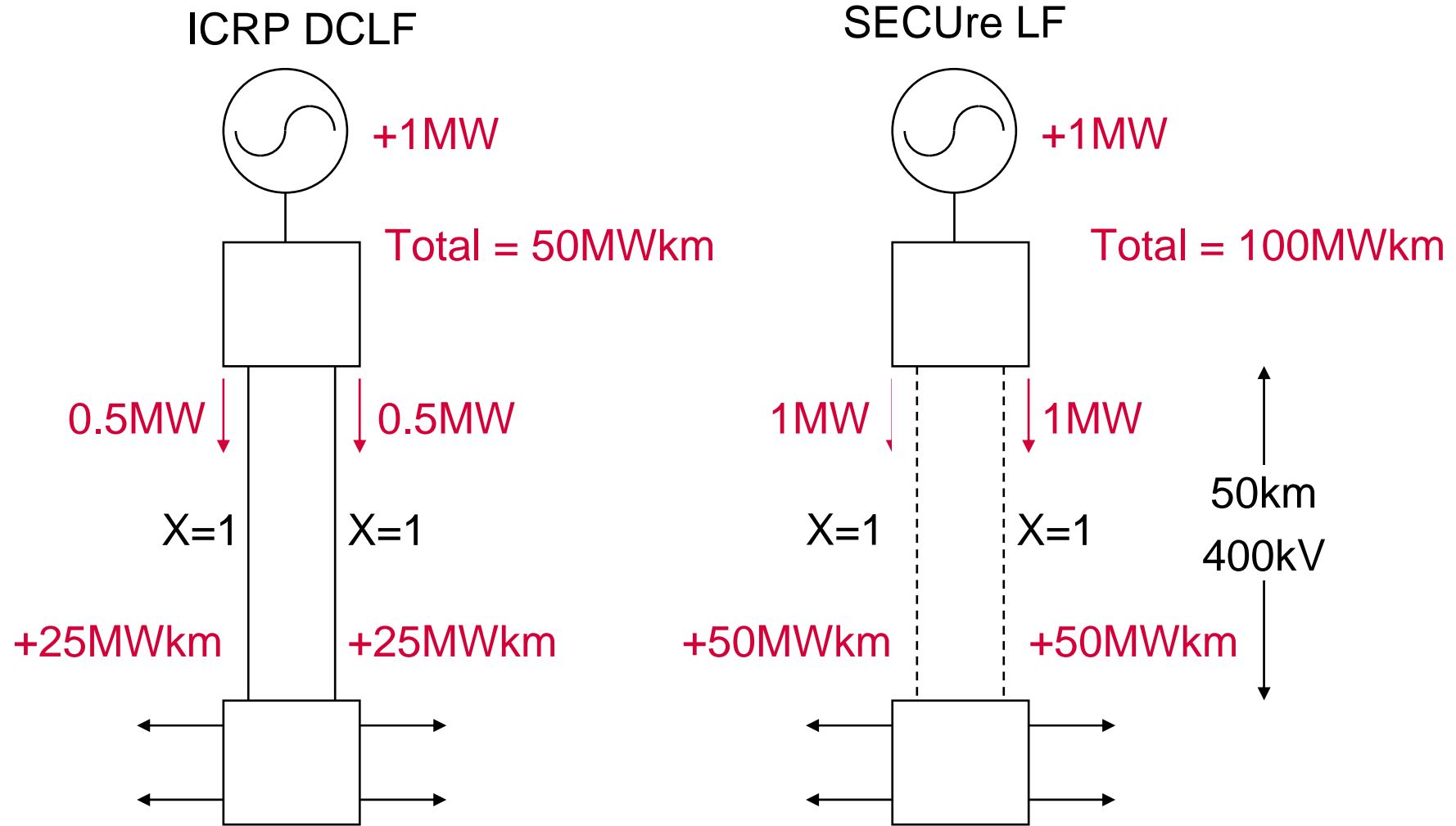
Transmission Network Use of System Charges

Security Factor

- ◆ Represents the cost of network security provided by the SQSS (rather than a network of single circuits)
- ◆ Derived by running a secure DCLF model
- ◆ Calculates nodal marginal costs where peak demand can be met despite worst case Security and Quality of Supply Standard contingencies
 - ◆ Single and double circuit faults
- ◆ Secured nodal cost compared with that produced by ICRP DCLF model to give nodal ratio
- ◆ Least squares fit used to derive GB average
 - ◆ For 2007/08 this is 1.8

Transmission Network Use of System Charges

Security Factor - Example



Security Factor for spur = $100\text{MWkm} / 50\text{MWkm} = 2$

Transmission Network Use of System Charges

Re-referenced Zonal Tariff Calculation

- ◆ Unadjusted Zonal Tariff (£/kW)
= Zonal marginal costs (MWkm) × Expansion Constant (£/MWkm) × Security Factor ÷ 1000
- ◆ Adjust to 27:73 generation/demand split
 - ◆ Single constant calculated and added to (or subtracted from) total zonal marginal km
 - ◆ Differentials between Unadjusted Zonal Tariffs maintained

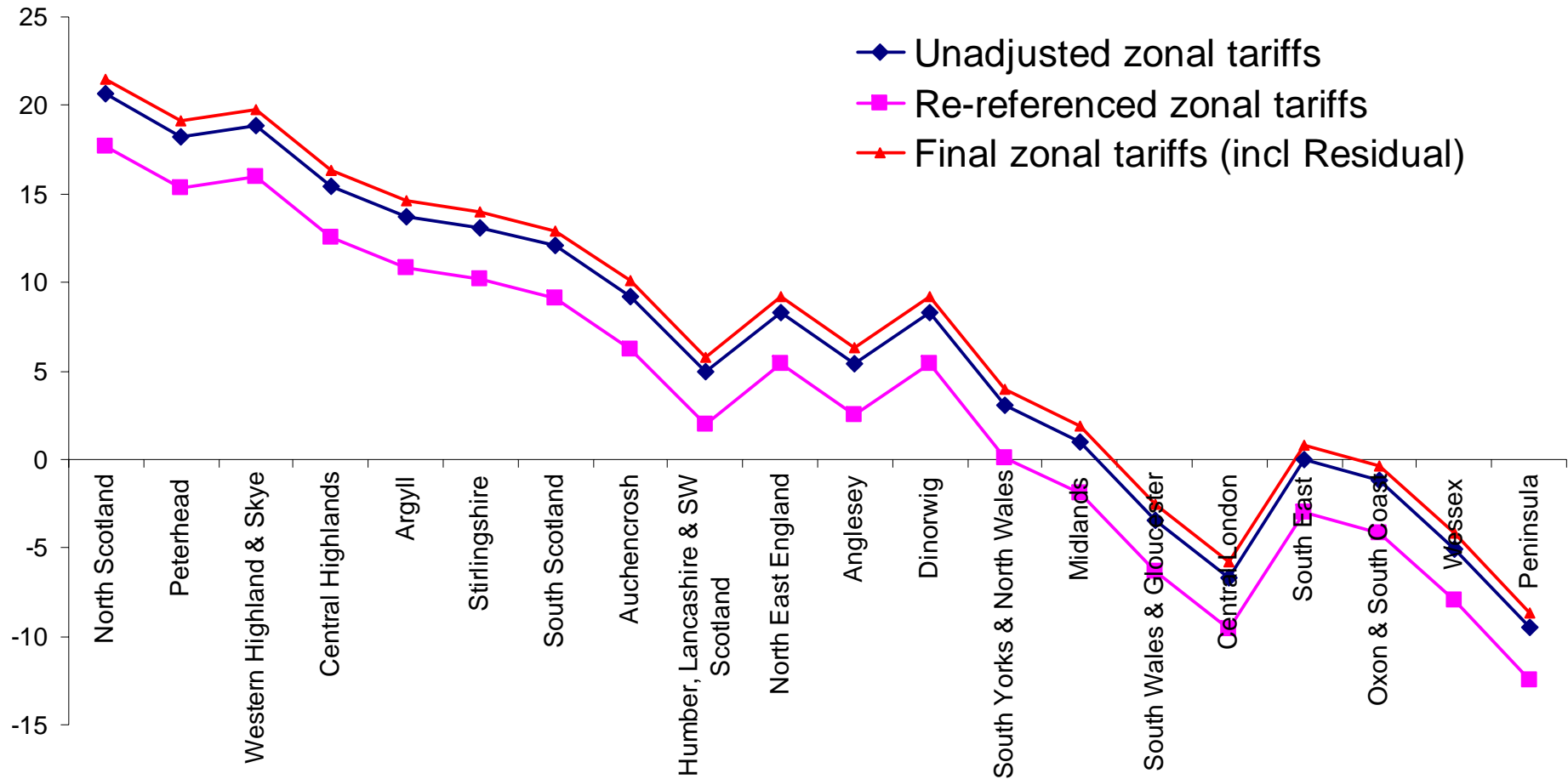
Transmission Network Use of System Charges

Final Zonal Tariff Calculation

- ◆ Residual element added to ensure total allowed revenue is recovered
 - ◆ Separate demand and generation residuals added (£/kW) to preserve the 27:73 G:D split
- ◆ For 2007/08, residuals are:
 - ◆ £3.81/kW for generation
 - ◆ £14.04/kW for demand

Transmission Network Use of System Charges

Putting it all together.... Generation TNUoS



Transmission Network Use of System Charges

Illustrative offshore tariffs

- ◆ Assumptions
 - ◆ 200MW offshore generator
 - ◆ Offshore cable length = 60km
 - ◆ Offshore cable expansion factor = 27.07
 - ◆ Based on cost analysis performed by Econnect for RAB in 2004
 - ◆ 20 year asset life
 - ◆ Offshore maintenance cost factor = 1.8%
 - ◆ Cost of capital = 6.25%
 - ◆ Same Security Standard as for onshore generation connections

Transmission Network Use of System Charges

Illustrative offshore tariffs

Strategic Area	Onshore Connection Node	TNUoS Zone	2007/08 Onshore Tariff (£/kW)	Illustrative Offshore Tariff (£/kW)
North West	Pentir	11	6.41	34.58
	Heysham	9	5.88	35.05
Greater Wash	Walpole	13	4.00	31.99
	Killingholme	9	5.88	34.62
Thames Estuary	Sizewell	14	1.97	31.09
	Kemsley	17	0.91	29.10

Offshore transmission charging issues

Tom Ireland
National Grid

Offshore transmission charging issues

Agenda

- ◆ Offshore Connection / Use of System Charging Boundary
- ◆ Circuit Expansion Factors
- ◆ HVDC
- ◆ Security Factors
- ◆ Next Steps

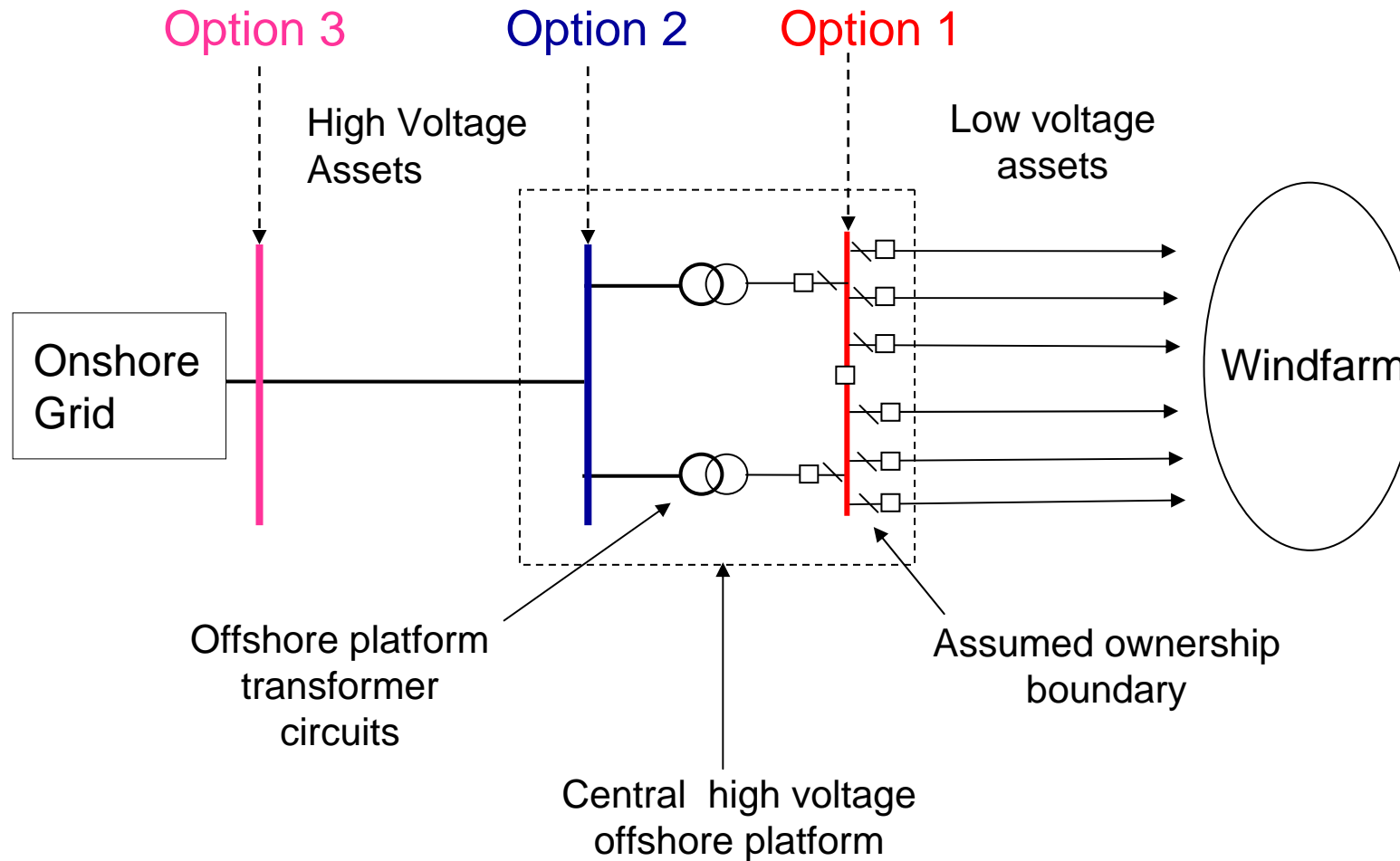
Offshore transmission charging issues

Connection / Use of System Charging Boundary

- ◆ Defines the Transmission boundary between Infrastructure and Connection ('single user') assets
- ◆ First step in setting charges
- ◆ Three options are being considered:
 - ◆ Option 1: Offshore substation LV busbar
 - ◆ Option 2: Offshore substation HV busbar
 - ◆ Option 3: Onshore connection point

Offshore transmission charging issues

Connection / Use of System Charging Boundary



Offshore transmission charging issues

Circuit Expansion Factors

- ◆ As mentioned earlier, individual calculation of Expansion Constant carried out for each circuit type and voltage
 - ◆ Normalised against 400kV OHL to establish Circuit Expansion Factors
- ◆ Onshore values derived from a weighted average of historic data
 - ◆ Low cost variance
- ◆ Data does not exist for offshore
- ◆ Two options are being considered:
 - ◆ Option 1: Specific Approach
 - ◆ Set precisely to recover OFTO allowed revenue
 - ◆ Option 2: Generic Approach
 - ◆ Best available data used to establish generic offshore generic circuit expansion factors
 - ◆ Any differences with OFTO allowed revenue would be funded by the residual element

Offshore transmission charging issues

High Voltage Direct Current (HVDC)

- ◆ For Generic Circuit Expansion Factor approach, charging arrangements must be developed to deal with the possible future use of HVDC
- ◆ HVDC requires the same substation assets as an AC equivalent with additional converter stations
 - ◆ For 2007/08 residual charge for generation £3.81/kW
 - ◆ Estimated converter annual cost of approx £10/kW

Offshore transmission charging issues

Security Factor

- ◆ Charging arrangements to ensure cost reflective treatment of:
 - ◆ SQSS design variation connections onshore
 - ◆ 'Zero redundancy' connections offshore
- ◆ National Grid developed Charging Methodology Modification during 2006
 - ◆ Vetoed by Ofgem following Impact Assessment
 - ◆ Agreed principle but expressed concerns regarding cost reflectivity
- ◆ Further work being performed with Scottish TOs and the Industry to develop further proposals

Offshore transmission charging issues

Next Steps

- ◆ Pre-consultation on Offshore Charging Arrangements closed 6 August
- ◆ On-going discussions at Transmission Charging Methodologies Forum (TCMF) and Charging Issues Standing Group (CISG) Meetings
 - ◆ Next TCMF
 - ◆ 14 August; 10am; National Grid House, Warwick
 - ◆ Contact: Jan Gascoigne at National Grid
- ◆ Formal Consultations on Offshore Charging Arrangements and SQSS Design Variation Charging Arrangements
 - ◆ Summer / Autumn 2007

Enduring arrangements

10 August 2007

Graham Knowles
Senior Manager, Offshore Transmission

Today's presentation

- Competitive transmission
- Basic features
- Tender process
- Issues to consider

Competitive transmission

- What are we doing?
- Why are we doing it?

Basic features

1. OFTOs will design, build, finance and maintain offshore networks
2. In return they will receive a licence and a regulated revenue stream for a period of 20 years
3. OFTOs will have performance targets and be liable for penalty payments to generators
4. Licences (and associated revenue streams) will be awarded via a competitive tender process

Tender process

1. A generator applying for connection will trigger a notice inviting expressions of interest from prospective OFTOs
2. Tenders will run simultaneously from an annual window. In order to qualify, a generator must sign its indicative connection offer by a certain date
3. Upon final agreement by all parties, the Authority will award a licence and revenue stream to the winning bidder

Issues to consider

1. Is an annual process appropriate?
2. Is Ofgem best placed to run the tender?
3. Should OFTOs make penalty payments directly to generators where they fail to meet performance targets?

Questions?



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Other issues

Panel Q&A session



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Next steps

Colin Green
Ofgem

Timetable

- Key milestones:
 - Government response to joint policy statement – October '07
 - Initial proposals on licences – October '07
 - Industry code proposals – December '07/January '08
 - Draft licences, draft code modifications, draft regulations and final policy proposals – January '08
 - Final consultation on code modifications and licences – June '08
 - Further consultation on draft regulations – June '08
 - 'Go-active' – expected October '08
 - 'Go-live' – expected October '09

Industry Engagement

- Proposed refined work-streams based on outputs:
 - OFTO Licences and regulatory regime;
 - Industry Codes;
 - OFTO Tender regulations and documentation; and
 - Regulatory processes.
- Industry engagement is important and welcome efforts to date.
 - Existing Industry groups e.g. Charging, Grid Code
 - Proposed new groups:
 - STC working group;
 - Licensing working group (October); and
 - Joint tender process group.
- Communication with other stakeholders e.g. prospective OFTO's and their financiers

Points of contact - Ofgem

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Concluding Remarks

Duarte Figueira/Robert Hull
BERR/Ofgem

The background of the slide is a composite image. On the left, there are rows of solar panels under a bright sun. On the right, a hand is shown holding a white document. In the foreground, a glowing lightbulb is visible. The overall theme is energy and customer service.

ofgem

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