

**Innovation and  
Registered Power Zones**

**Discussion paper  
July 2003**

## Discussion Paper

# Innovation and Registered Power Zones

## 1.0 Introduction

### 1.1 Background

The Open Letter in January from Callum McCarthy to the Chief Executive Officers of the Distribution Network Operators (DNOs) introduced the concept of Registered Power Zones (RPZ)<sup>1</sup>. This discussion paper sets out Ofgem's further thinking on RPZs and the wider subject of innovation. It is intended to promote a focussed debate with interested parties to help Ofgem bring forward detailed proposals later this year. It should be read in conjunction with Ofgem's July 2003 Distribution Price Control Review (DPCR) Initial Consultation document<sup>2</sup>.

The business drivers supporting the RPZ concept can be summarised as follows:

- **To encourage DNOs to integrate appropriate technical development plans as part of their wider business innovation.**
- **To deploy new technologies, and encourage their wider application, where this enables distributed generation to be integrated more effectively and efficiently, to help meet the government's targets for renewables and CHP.**
- **To signal to potential generators and other interested parties a DNO's development intentions or network capabilities at a particular location.**

Ofgem has a statutory duty to promote efficient investment by companies, and is of the view that the network developments necessary to accommodate the growing capacity of distributed generation (DG) are most likely to be achieved efficiently if innovative solutions and technologies are employed. This is supported by analysis that shows, for example<sup>3</sup>, that some three times more distributed generation can be accommodated where a network is converted to active operation.

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<sup>1</sup> Published 13 January 2003. Paper 1 discusses Registered Power Zones

<sup>2</sup> Available from the Ofgem website [www.ofgem.gov.uk](http://www.ofgem.gov.uk)

<sup>3</sup> Integration of operation of embedded generation and distribution networks, MCEE/UMIST, May 2002

Since publication of the Open Letter, formal and informal DNO responses have been received by Ofgem. These have all been very helpful in taking our thinking forward. The comments of the DNOs with respect to RPZs have been supportive. However, quite naturally, more detail has been requested so that they can give proper consideration to practical applications.

## **1.2 Aims of this paper**

This paper is intended to promote discussions with the DNOs and other stakeholders in order that Ofgem's preliminary thinking can be developed more fully. We recognise that the initiatives described here are in some regards more focussed on elements of cost and activity than is usual for Ofgem. In recognition of this and to ensure that our ideas are thoroughly tested, our further analysis following this consultation will include an assessment of regulatory impact.

A key objective in taking this initiative forward is to ensure that consistency is achieved with the overall price control strategy and the incentives for DG. In order to develop the ideas set out here into more formal proposals, responses to the questions in this paper and any additional feedback, particularly from the DNOs and distributed generators, will be important.

Ofgem is aware that the development and demonstration of new technologies and solutions are likely to present different risk profiles to the DNOs compared with their core low risk business. It is this position that may justify special regulatory consideration of development and demonstration activities. However, we will keep in mind at all times that Ofgem's primary role is the protection of consumers' interests. We therefore need to be confident that any incentives put in place in this area deliver positive benefits for consumers.

This paper does not address the important but separate matter of the availability of adequate skills and resources to support effective innovation. This issue, which involves not only the DNOs but also their product and service providers, is more properly being considered by other parties, including the Distributed Generation Co-ordinating Group<sup>4</sup>.

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<sup>4</sup> More information about the work of this group and its Technical Steering Group is available at [www.distributed-generation.org.uk](http://www.distributed-generation.org.uk)

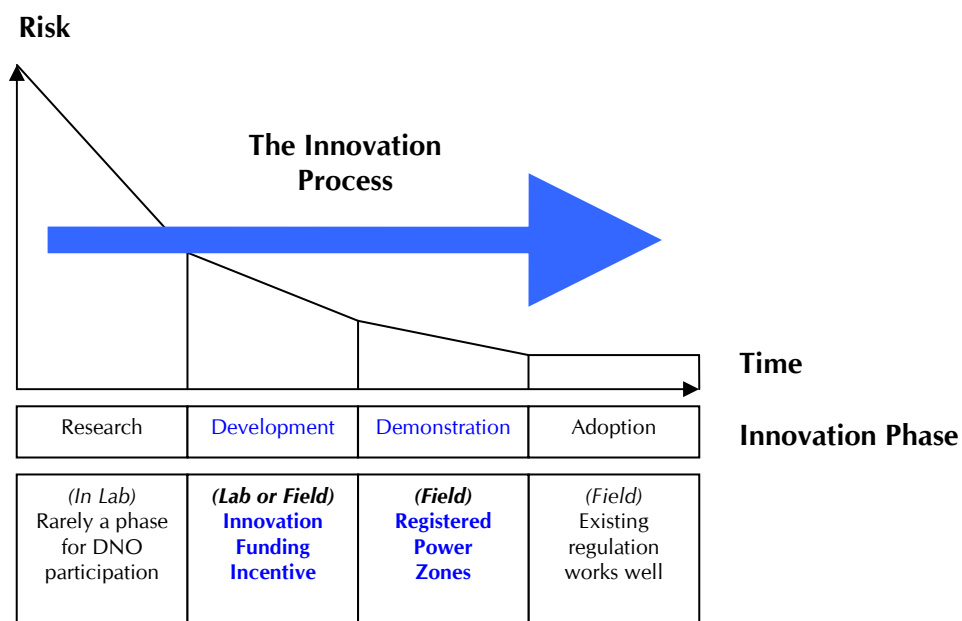
## **Incentives and the Innovation Process**

While developing the RPZ concept, Ofgem, with the Distributed Generation Co-ordinating Group and its Technical Steering Group, has also been considering the broader subject of innovation and the barriers/incentives seen by the DNOs. This has led us to the view that a coherent approach, recognising all the stages of the innovation process, is required to encourage the advancement of new DG connection solutions. To meet this need an additional mechanism, the Innovation Funding Incentive (IFI), is suggested and is described in this paper.

The IFI and RPZ initiatives are intended to act as catalysts, bringing together DNOs, product providers, service providers, and the research community to accelerate the innovation process and deliver new solutions more efficiently. They are transitional arrangements intended to be in place until DG becomes “business as usual”; it is thought unlikely that this would be before 2010.

We believe that the main price control mechanisms will operate effectively with the majority of investment situations and it is our view that they can provide appropriate treatment for the advancement of network development, including the provision of uncommitted network capacity for DG, where a DNO considers this to be efficient forward investment. This is addressed in the DPCR Initial Consultation document.

However, we remain of the view that special treatment may be appropriate where a DNO is pursuing new technologies and connection solutions and is operating in an environment exposed to higher risks than its core business. The development process for networks is represented simply in the diagram following that shows the principal areas of application for the IFI and RPZ initiatives.



The diagram shows the four broad phases that bring an initial idea through to proven equipment operating on a network. The risks are greatest in the research phase, but reduce as the idea is developed into a widely adopted solution. Usually, the financial exposure has a reciprocal profile. This model is particular to network innovation in that the stages necessarily include both laboratory and field activities. Taking each phase in turn:

**Research** – This phase is more naturally the domain of manufacturers, research institutions and universities. It would not be expected that a DNO would be undertaking these activities themselves, although they may be involved as a sponsor.

**Development** – in this phase, network innovation activities require effective inputs from potential users/customers. This helps to focus development activities to meet real world needs and pave the way for successful deployment. In many situations, the development phase may require some financial commitment from a DNO, perhaps in the form of sponsorship, to help fund the development activities and focus them on a particular customer or network need. The Innovation Funding Incentive, described later, will have particular application in this phase of the innovation process.

**Demonstration** – in the final phase of the process, a DNO’s involvement is essential. Though the development phase will address most of the technical challenges and product proving tests, it is a characteristic of network innovation that it is problematic to simulate fully the conditions experienced on an operational power system. Properly controlled demonstration is therefore essential to give the confidence necessary to move to widespread adoption. This is where the Registered Power Zone initiative is designed to operate.

The concept behind the RPZ has not changed from that set out in the Open Letter. The IFI is an additional regulatory mechanism that we judge may be helpful to bridge the gap between research and demonstration.

## **1.4 Intellectual Property Rights**

As a general principle concerning innovation, Ofgem is not seeking to incentivise the network companies to pursue Intellectual Property Rights of their own (e.g. licences and patents). It would be a concern if IPR acted as a barrier to the rapid dissemination of good practices, or the efficient utilisation of collaborative approaches, or resulted in unique network solutions such that there was a loss for connectees of technical commonality between network companies. IPR may be better held by manufacturers or other parties, perhaps with benefits shared by mutual agreement with DNOs where appropriate. Ofgem's preference is that the drive in network companies for innovation should be to achieve effective and efficient solutions, with returns derived by regulatory mechanisms. Views will be welcomed on the matter of IPR. **(Q1 refers)**

## **1.5 Structure of this document**

This paper sets out a number of preliminary proposals for the Innovation Funding Incentive and Registered Power Zones (Sections 2 and 3). Though the IFI and RPZ are separate mechanisms, it is Ofgem's intent that they should be complementary in bringing forward innovative technical solutions nationwide, to meet the DG challenge efficiently.

The paper highlights a number of questions on which we are seeking responses from consultees, particularly the DNOs. These are brought together in Section 4.

Finally Section 5 proposes the next steps and sets out the contact point for responses, which are requested by 22<sup>nd</sup> August.

## 2.0 Innovation Funding Incentive (IFI)

### 2.1 Rationale

The technology employed in DNO networks has been remarkably stable over a long period of time. The slow rate of technological change is in part due to the extended lifetimes that DNO equipment can achieve. It is also a result of the migration of generation to the transmission system that was a continuous system development trend until privatisation in 1990. DG has grown steadily since that time. In 1993/4 there was just 1.2GW of embedded, independent generation<sup>5</sup>. This has now grown to some 8.5 GW<sup>6</sup>. There is a risk that, as the density of DG connections increases, the connection costs per kW could rise. This is principally because network 'headroom' to accommodate the effects of DG will be taken up. Ofgem believes that there is good evidence to show that the achievement of lower connection costs and better performance is most likely to be achieved by employing new solutions and technology in the future.

It is a hallmark of successful companies that progress in better serving their customers goes hand in hand with seeking improved ways of doing things; i.e. by investing wisely in development and innovation. Ofgem therefore considers that it is in customers' interests for the DNOs to invest appropriate resources in technology development activities and to manage such activities to best practice standards. The IFI is intended to encourage this outcome and make DNOs' performance more transparent in this regard. We would welcome views on this rationale. **(Q2 refers)**

### 2.2 Background to IFI

Ofgem recognises that a number of DNOs already pursue innovation at some level. However, there is reason to believe that not all companies are pursuing the development of new ideas at industry best practice levels. This point has been noted in a recent select committee report<sup>7</sup>. Ofgem is aware of the DTI's R&D Scoreboard<sup>8</sup> that provides an indication of research and development spending (usually opex) in a range of business sectors. This is presented as "R&D Intensity" which is the R&D spend expressed as a

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<sup>5</sup> NGC Seven Year Statement – March 1994

<sup>6</sup> Ofgem estimate - 2003

<sup>7</sup> The Science and Technology Select Committee's report of June 2003:

<http://www.parliament.the-stationery-office.co.uk/pa/cm200203/cmselect/cmsctech/55/55.pdf>

<sup>8</sup> [http://www.innovation.gov.uk/projects/rd\\_scoreboard/analysis/analysis.htm](http://www.innovation.gov.uk/projects/rd_scoreboard/analysis/analysis.htm)

percentage of a company's turnover. Data available to Ofgem suggests strongly that on average, DNOs are investing significantly less in innovation than broadly comparable companies on the scoreboard. Examination of data from the companies' regulatory accounts shows that many do not categorise any expenditure as R&D. For those that do, the values range from 0.07% to 0.38% of turnover. Taking this data at face value, gives an average R&D Intensity of less than 0.1%. It is accepted that this may not be a full representation of the situation, perhaps due to research spending at group level, but it does provide some measure of the current status.

### **2.3 Appropriate R&D Intensity for DNOs**

At this stage Ofgem has not come to a conclusion in regard to the R&D Intensity that might be expected to be found in a DNO that is deploying innovation effectively. However, taking account of the companies' current spending, the data from the R&D Scoreboard and the need for initial caution a level of 0.5% might be of the right order. This equates to an average figure of some £1M per year per licensee. (This level of expenditure would not be expected in the early stages of a new innovation programme where most projects are in the research phase.) Views will be welcomed on the IFI approach and the appropriateness of using the scoreboard information for this purpose. **(Q3 refers)**

The IFI, it should be stressed, is not intended to encourage DNOs to establish in-house R&D capabilities. Ofgem envisages a business model in which the DNOs are informed buyers of specialist R&D services from third parties and are proactive partners in collaborative projects. Ofgem recognises that R&D funding in DNO opex budgets comes under great internal pressure as companies respond to RPI-X incentives to out-perform the price control. The IFI is therefore intended to give higher visibility to a DNO's R&D spend, make it allowable but capped at 'good practice' levels and disallow it if it is not spent on innovation or is poorly managed.



## 2.4 IFI Initial Thoughts

Ofgem has given consideration to the structure of an IFI. Our initial thoughts are set out in the panel below.

<b>Panel 1: Innovation Funding Incentive Proposal for Discussion</b>
<ul style="list-style-type: none"><li>a) Ofgem would recognise a modest level of separately identified opex funding for network innovation in DNO businesses. In most cases this would be directed at the Development phase of the innovation process, but for some projects will be applicable to the Demonstration phase also.</li><li>b) This provision would be capped by Ofgem at a level (R&amp;D Intensity expressed as a percentage of turnover) consistent with benchmarked international good practice for similar businesses.</li><li>c) Ofgem considers that the companies should provide some proportion of their total innovation budget. This may be related to the nature of the development activities. The approach adopted in the last NGC price control provides a useful reference and is expanded upon in the section following.</li><li>d) DNOs would be required to demonstrate efficient management of their innovation investment for the costs to be allowed. Work now being progressed by the DGCG will assist in establishing an industry-wide understanding of “efficiency” in this context.</li><li>e) Funding would be allocated on a use it or lose it basis, subject to auditable evidence of actual spend, to allow Ofgem to properly discharge its responsibility to protect the interests of customers.</li><li>f) Companies would be required to publish an annual report of the activities funded by the IFI and their outcomes.</li><li>g) The IFI would operate through the next price control and be subject to reassessment as part of the price control review.</li></ul>

Consideration has been given to monitoring IFI successes (i.e. an output measure) and linking this to the incentive mechanism. However, our initial conclusion is that quantifying the success of innovation itself would not be practical (other than in terms of DG connections achieved) and so a tighter control of input is proposed as an alternative. Ofgem’s view is that a use it or lose it arrangement, together with open reporting, will stimulate management focus and effective spend in the interests of DG connectees and wider consumers.

It is proposed that DNOs set out their year-by-year innovation spending plans as part of the price control. They would publicly report progress each year and would be subject to audit by Ofgem. In the event that a company was found not to be spending its IFI budget in a

manner likely to benefit customers, Ofgem would have the option to disallow those funds deemed to be poorly invested.

## 2.5 Defining Innovation

It will be necessary to establish clarity in the definition of innovation expenditure on networks. Criteria could include the following:

- **Substantial Innovation** in relation to existing network equipment, systems and methods of working. This would be evident from the achievement of a positive step change in performance, cost effectiveness, and environmental or safety performance.
- **New designs** of equipment, system configurations and working methods that offer a step change in performance.
- **Promoting the integration of DG** is an important part of this initiative, but this is not a requirement for qualification. Funding could be allocated to other network developments, such as quality of supply, and to network-associated IT systems, control systems and software as well as network assets.
- **The source of the innovation** should also be considered. For example, it may be an entirely new development, or technology that has been used successfully in another sector, but not proven for DNO network application, or technology that has been used on networks elsewhere in the world but not adapted for the UK situation.

Innovation projects will have a range of risk/reward profiles. It is therefore proposed that the allowable funding should be related to the nature of the project. Three categories of innovation projects are proposed in Table 1 below:

Category	Description	Allowable Funding
A	Projects designed to deliver a product against a clear target and network need; e.g. protection and automation to integrate a DG connection on a particular part of a network.	[F1]%
B	Generic innovation but still focussed on identified problems; e.g. a voltage control solution for networks with wind generation.	[F2]%
C	Other projects which are aimed at establishing enhanced technical understanding; e.g. exploring the capabilities of new insulating materials and systems.	[0%] until the application has been proven, then [F1%]

**Table 1: Innovation Categories**

Ofgem's initial view is that the allowable funding for Categories A and B, shown as F1% and F2% above, should be less than 100% to recognise that some of the benefits of R&D flow to

DNOs and that some R&D expenditure is already undertaken. The data is not available to analyse this in detail but preliminary thinking is that F1 and F2 should be equal and in the range 50% – 75%.

As regards Category C, Ofgem's initial view, which is consistent with the last NGC price control for this element, is that the companies should fund this work themselves as it is more speculative and be allowed retrospectively at F1% when and if proven application with benefits to customers is demonstrated. **(Q4 refers)**

## 2.5 Defining Good Practice

Ofgem's current thinking on the framework for the Innovation Funding Incentive includes a requirement that companies demonstrate the efficient management of their investment in innovation. Ofgem wishes to encourage best practice in this area and its sharing between companies. The principles established in our work with the companies on Asset Risk Management<sup>9</sup> would appear helpful here: Ofgem is concerned not to direct the companies in the detailed management of their activities (which we believe they are in the best position to do efficiently), but Ofgem does seek reassurance that good practice has been developed, is incorporated in policy and procedures, and is being applied consistently.

Topic areas that good practice guidance would be expected to address might include:

- how to establish and foster an innovative culture
- how innovation projects are identified, filtered and short listed
- how project risks and returns are assessed and evaluated
- how risks are managed and mitigated, including contingency plans
- how projects are tracked and controlled, including the work being undertaken by collaborating parties and specialist contractors
- how and when to consider involving partners (e.g. other DNOs, manufacturers, universities, research organisations), how many partners might be involved, a model framework agreement
- how Intellectual Property Rights (IPR) are best managed and, by mutual agreement, how gains can be shared

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<sup>9</sup> <http://www.ofgem.gov.uk/ofgem/work/index.jsp?section=assetriskmanagement>

- how the potential barriers between development and demonstration are best managed
- how to ensure the effective wider roll-out of innovation following successful demonstration

Ofgem is not aware that these issues have been addressed by the sector as a whole, although promising work is in hand through the DGCG/TSG to develop good practice principles for introducing new technology on networks. In particular, this is addressing the downstream end of the activities listed above.

Ofgem would welcome views on whether guidelines exist that address the efficient management of innovation projects and funding and if not, suggestions for how they might be developed. An agreed framework for good practice might be used by Ofgem as the yardstick to assess the approach of companies, perhaps incorporating this with future Asset Risk Management surveys of companies. It might also be the basis for some commonality of approach in structuring the stages of innovation partnership projects. A recognised framework might be beneficial to companies, the regulator and other parties. **(Q5 refers)**

## **2.6 Impact Assessment & Materiality**

The purpose of the IFI is to stimulate innovation that will result in more efficient network investment, while maintaining or improving service to consumers. Ofgem's view is that there is considerable potential for innovation and that quantum technology changes should not be necessary to achieve significant benefits. Its overall impact is therefore expected to be clearly positive. This will be fully addressed in the impact assessment that will support our specific proposals.

A key objective of developing network technology is to increase asset utilisation. This could mean fewer lines, cables and substations for a given generation and demand base. This offers environmental benefits as well as commercial ones. Further, open reporting will ensure transparency and promote best practices.

The materiality of the IFI will be determined by the agreed R&D Intensity cap and the allowable funding percentage factor. The annual cost per customer is expected to be less than £1/year and preliminary indications of investment efficiency gains indicate that this cost will rapidly pay for itself. This will be examined in more detail as the IFI proposal is developed.

## **3.0 Registered Power Zones**

### **3.1 Rationale**

There has been a significant increase in the capacity of DG over the last 10 years, rising from just over 1GW to some 8.5GW. This growth has largely come from CHP and renewable generation schemes.

Most of this capacity has been connected on a 'fit and forget' basis. In other words, the DG plant is connected in such a way that no active control is required by the DNO. This approach has some benefits and is feasible while the penetration of DG is low. However, as the number and capacity of DG plants increases new technical and commercial strategies are required to ensure that network connection, reinforcement and operating costs are maintained at efficient levels.

Ofgem believes that DG connection costs are likely to rise if the 'fit and forget' approach continues and in certain circumstances connection may not be possible unless new technologies and solutions are developed, proven and adopted. **(Q7 refers)**

Ofgem recognises that there are constraints on DNOs relating to the introduction of new connection solutions on networks, particularly at the Demonstration phase. We therefore believe there is a case for DG connection solutions that show genuine innovation, and which could have wide application once proven, to attract different regulatory treatment compared with a DNO's core activities.

Ofgem believes that it is in customers' best interests to encourage new DG connection solutions to be adopted across the industry where they help contain or reduce the cost of DG connection. This rationale is strengthened by the likely introduction of shallower connection charges which will require different treatment of the deep network reinforcement costs.

### **3.2 Background to Registered Power Zones**

As a result of the Open Letter to the CEOs in January, a number of DNOs and other parties have approached Ofgem wishing to pursue the RPZ concept. Ofgem understands that the

risks associated with the application of new technology can constrain their deployment. These risks include the following:

- Business risk (revenue, shareholders, customers, reputation).
- The risk that the connection does not perform to specification – this could affect the connecting generator and other customers too.
- The exposure seen by a connectee as a result of the use of new connection techniques (at present DNOs do not offer liquidated damages for connection works).
- The risk that the connection works will not be completed in the required timescale.
- DNO financial exposure to new technology teething problems through IIP & Guaranteed Standards.
- The risk of stranded assets or the need to write-off assets early in their life.
- Meeting statutory and other requirements for supply quality, safety and environmental impact.
- The 90 day connection offer timescale.

The RPZ proposal is intended to offer DNOs a sufficient incentive to encourage them to pursue network projects with this higher risk profile. This has the potential to achieve significantly more efficient investment while protecting or enhancing the quality of supply to customers. To ensure clarity and simplicity RPZ status has been targeted at situations where a new technology solution is a necessary element to the efficient connection or operation of DG. There may be value in some flexibility in this regard and this is further described later.

### **3.3 RPZ Initial Thoughts**

Ofgem has given initial consideration to the structure of the RPZ. Our initial thoughts are set out in the panel below.

## Panel 2: Registered Power Zones Proposal for Discussion

- a) Targeted at DG connection and/or operation schemes where successful innovation is an integral part of the project and can be demonstrated to offer material advantage compared with a conventional solution.
- b) The generator involved will have to give its support to the RPZ proposal.
- c) Companies propose projects that Ofgem registers (Ofgem will assess the project to confirm that it complies with RPZ criteria but will not evaluate the technical content for likelihood of successful innovation).
- d) A financial incentive would be provided to better balance the DNO risk/reward position. The level at which this might be set is discussed later.
- e) In the event that an RPZ project did not meet its performance objectives, the full incentive would not be applicable.
- f) The DNO will ensure that the RPZ is designed and operated to meet all appropriate industry, statutory and technical standards.
- g) The DNO would take full responsibility to manage the risks of the scheme and would offer the connecting generator commercial terms reflecting these risks (e.g. liquidated damages).
- h) Where the quality of supply of existing customers might be affected by the generation connection the DNO will put in place contingency measures to manage this risk, and measurement equipment to confirm performance.
- i) To protect the interests of consumers, normal IIP and Guaranteed Standards would apply in the RPZ.
- j) Open reporting of RPZ projects would be required annually; this is intended to stimulate good management and promote sharing of innovation good practice.
- k) Where a DNO was successful in obtaining additional grant funding for an RPZ project, Ofgem would not withhold or modify the RPZ incentive. This approach is justified on the basis that UK (DTI) and European RD&D funding is awarded following rigorous and strictly competitive assessment, and where companies win support from these bodies they should be able to utilise this in full.
- l) The number/capacity of RPZs will be limited on a total MW of DG per DNO licensee per year basis, to be determined. Initial thoughts are for a limit of 50MW DG capacity and a maximum of 3 RPZ projects per licensee per year. **(Q8 refers)**
- m) A review and consultation will be carried out in the middle of the next review period to assess the success of the scheme and the continuing suitability of the various parameters.

The fundamental approach here is to enable a DNO to take and manage the higher risks of an RPZ project in which case a higher return can be earned for well managed projects.

Ofgem does not intend separately to underwrite or ring fence the risks. The key issues on which Ofgem is seeking views relate to the level of the appropriate return and the handling of under-performance. **(Q9 and Q10 refer)**

Maintaining or improving the quality of supply to customers is of particular importance in an RPZ. Where an RPZ proposal introduces possible risk in this area it should be formally assessed in advance and monitored once operational. Risk mitigation plans should be developed to counter any foreseeable technical problems. As noted above, consumers would continue to be protected by IIP and Guaranteed Standards.

Ofgem considers that it would be desirable for the technical and commercial performance objectives of a project to be clearly stated at the time of registration. The treatment of project failure requires further consideration and regulatory clarity. It does not seem reasonable that high premiums should be paid for unsuccessful projects, however Ofgem acknowledges the nature of innovation and that success cannot be guaranteed, even in well managed projects.

### **3.4 RPZ Incentive**

We have given consideration to the mechanism and level of the RPZ incentive, whether it should be fixed or variable and for how long it should apply. Our initial view is that it should adopt a mechanism similar to the DG incentive in the main price control. This combines a rate of return below WACC and a £/MW driver. These two devices together would deliver a premium over WACC for successful schemes. It is proposed that for RPZs the £/MW element is enhanced. Views are sought on this idea. **(Q11 refers)**

In the text that follows therefore only the scaling factors for the DG £/MW driver are discussed.

No two RPZ projects will be the same; distinguishing characteristics will include:

1. the level of **innovation challenge** (what is the likelihood of success?);
2. the level of **innovation dependence** (what are the consequences of failure?); and
3. the **MW capacity of DG** connection achieved by the scheme.



A case might be made for a sliding £/MW driver related to these three parameters. However, such an approach would require Ofgem to make judgements, particularly for items 1 and 2, and link them to the value of the £/MW driver. This would be complex. A single enhanced incentive might be a simpler and more transparent mechanism, but has the serious drawback of not providing a reward in proportion to the risks being managed.

### **3.5 RPZ Classification**

A solution to a number of these concerns might be to develop a classification of Power Zones and treat them according to the degree of innovation (i.e. risk) that they present. A possible split into three types of zone is summarised in the table that follows.

The advantages of the split approach are seen to be:

- (i) it overcomes the problem of potentially giving high returns to schemes that are only moderately innovative, and
- (ii) it provides recognition for schemes where there is little or no technical innovation, but where the project will enable more effective utilisation of DG.
- (iii) the three way split assists in assessing schemes coming forward for registration. Only schemes that are clearly in the high innovation/high risk category would receive the highest premium; where a scheme is innovative, but less so, the intermediate premium rate would apply.

This proposal introduces a degree of complexity that Ofgem would need to be satisfied is worth carrying. There are also some qualitative judgements needed to differentiate between categories (e.g. high v. moderate innovation challenge); it is considered that this should not be too problematic to achieve and for it to be transparent to all parties.

**Table 2: Thoughts on Types of Power Zone and their treatment**

Criteria	Regulatory treatment	Rationale/ benefits
<p><b>RPZ – gold</b></p> <ol style="list-style-type: none"> <li>1. High innovation challenge, <b>and</b></li> <li>2. High innovation dependence, <b>and</b></li> <li>3. Material DG contribution enabled</li> </ol>	<p>DG £/MW * RPZ Factor for the project, provided delivery is successfully demonstrated, otherwise regrade to silver or bronze</p>	<p>To provide DNOs with an effective risk/reward balance that incentivises effective innovation where it will bring more efficient investment</p>
<p><b>RPZ – silver</b></p> <ol style="list-style-type: none"> <li>1. Moderate innovation challenge, <b>or</b></li> <li>2. Moderate innovation dependence, <b>and</b></li> <li>3. Material DG contribution enabled</li> </ol>	<p>DG £/MW * RPZ Factor *0.5 for the project, provided delivery is successfully demonstrated, otherwise regrade to bronze</p>	<p>To recognise those innovative schemes that have lesser risk to the DNOs, or enable less material amounts of DG, by providing a correspondingly lower return.</p>
<p><b>RPZ – bronze</b></p> <ol style="list-style-type: none"> <li>1. Little or no innovation challenge, <b>or</b></li> <li>2. Little or no innovation dependence, <b>but</b></li> <li>3. Material DG contribution enabled</li> </ol>	<p>DG £/MW (i.e. no RPZ factor) for the project.</p>	<p>To recognise those schemes where the technical innovation may only be very moderate, or nil, but where there are proposals to harness or facilitate DG in a zone (e.g. utilise DG capacity support or active operation). The RPZ status may be valuable to the companies; for Ofgem it ensures visibility so promoting good practices and peer review, and ensures customer interests are protected (RPZ requirements for monitoring supply quality)</p>

Regarding duration, Ofgem proposes that the RPZ Factor that provides an enhanced value of £/MW drivers should apply for a finite period, recognising that innovative solutions become proven and low risk over time. Ofgem's initial thoughts are that the RPZ arrangements should have a lifespan of between 5 and 10 years. **(Q12 refers)**

The period of time for which DNOs may seek registration also needs to be considered. Options range from a trial period of perhaps 2 years, followed by a review, or a longer period perhaps until 2010.

There may be advantages in the proposed annual limit for 3 RPZ registrations per DNO licensee, being more closely defined as one gold RPZ, one silver RPZ and one bronze RPZ per year.

Views are invited on the magnitude of the RPZ factors that might be considered appropriate. We note in this context the NGC SO incentive scheme, which is commonly agreed to have been successful in bringing forward commercial and technical innovation. Also, the NGT incentive scheme that allows 2 x Weighted Average Cost of capital (WACC) for responding efficiently to market demand for incremental gas entry capacity. **(Q13 refers)**

It would be helpful to develop a shared view of RPZs as an entity and how their boundaries might be defined. Ofgem's initial thoughts are that they should encompass a physical area (rather than simply an electrical node), that all demand affected by the RPZ development should be included within its boundary, and that the definition should not preclude developments such as the aggregation of DG network services (eg capacity support, voltage control), islanded operation, or the integration of other technologies such as energy storage. The activities of design and operation of the RPZ are also a factor to consider and it would be helpful to ensure that boundary definitions do not preclude the option for external specialist service provision. **(Q14 refers)**

### **3.6 RPZ – Limits of the Initiative**

It is important to clarify the limits of the RPZ initiative by highlighting issues that it is not intended to address. These are as follows:

- RPZs do not directly address forward investment, this is handled elsewhere in the price control and would in principle be applicable to RPZs;
- RPZs should not create cross-subsidies or favour any one generating technology;
- RPZ registration should not require Ofgem to 'pick technology winners';
- RPZs would not be applicable to 400kV and 275kV electricity transmission networks (i.e. where active operation is well established);
- RPZs are not envisaged to apply to gas transmission and distribution networks;
- RPZs would not be applied wholesale to large areas of networks, at least initially.

### **3.7 Materiality & Funding**

There is considerable range in the estimates of materiality for the RPZ initiative, depending on the mix of RPZ types and their number. Ofgem sees the RPZ initiative being applied as a catalyst for technical developments rather than a mainstream funding mechanism. Its proposed linkage to new technologies and clearly identified innovation will inherently limit its application.

An issue that needs to be addressed is the funding route for the RPZs. It is expected that, to a large extent, RPZs will be self-financing. However, there are likely to be situations where a conventional connection solution has a lower initial cost than the RPZ solution. There is a case to be made that all generators in the DNO area should share the funding of RPZs as they will benefit going forward from the more efficient connection solutions that result from them. The views of consultees on this point will be very welcome. (Q15 refers)

### **4.0 Consultees' Views on key questions**

All views are welcome on any aspect of this paper. However, there are a number of key questions for which we would particularly like responses. These are referenced in the text and set out here in full.

## **Intellectual Property Question**

1. Do you have any specific views on the management of intellectual property that may be created through the IFI and RPZ initiatives?

## **Innovation Funding Incentive (IFI) Questions**

2. Do you support Ofgem's rationale for introducing the IFI? Do you consider the IFI to be aligned with consumers' interests?
3. What are your views about the use of the DTI's R&D Scoreboard as a yardstick in this context? It would be useful if DNOs could quantify their company's current R&D Intensity and offer their views on an appropriate level for the next DPCR period.
4. Do you think the three category approach (A, B and C) and treatment of allowed funding is a reasonable balance in the interests of all parties? What should the value be of the proposed F1 and F2 factors?
5. What are your views on establishing good practice for the management of innovation and could such a framework be adopted commonly across the industry?
6. Should the IFI percentage cap be varied between companies according to performance or some other criteria?

## **Registered Power Zone (RPZ) Questions**

7. Do you share Ofgem's view that DG is likely to be connected more efficiently if innovation and new solutions/technologies are employed?
8. Do you have a view regarding the annual RPZ MW capacity and numbers of projects that might be appropriate per DNO licensee per year, and whether the number should be allocated by the suggested gold, silver and bronze categories?
9. Should the premium return be common for all RPZs or should it be related to the innovative content of the project? If the latter is considered appropriate, is the gold, silver, and bronze approach helpful, or can you suggest a better alternative?
10. Is it practical to base financial rewards on a project meeting or failing to meet performance objectives?
11. Do you think a mechanism relying on an enhanced £/MW driver to provide a premium return is appropriate, and if not what alternative could be considered?
12. What lifespan do you consider should be assigned to an RPZ and to the premium return?

13. What premium do you consider to be appropriate to encourage innovation in DG connections and how could this be justified?
14. Do you have a view on how, in principle, the boundaries of RPZs might be defined? Should they, for example, encompass a physical area, rather than simply an electrical node? Do you see potential, in design or operation, for outsourced specialist services?
15. In your view, how should the RPZ initiative be funded?

## **General Questions**

16. Can you suggest alternative regulatory mechanisms that might better deliver the stated objectives of the IFI and RPZs?
17. Would it be helpful to consider whether IFI and RPZ arrangements could be introduced on an interim basis, ahead of commencement of the next price control period in 2005?

## **5.0 Next Steps**

### **5.1 Promoting Discussion**

It is Ofgem's primary concern that the IFI and RPZ initiatives efficiently encourage innovation in relation to DG connections that ultimately deliver benefits to all customers. These initiatives cannot be fully developed without the active participation of the DNOs and other affected consultees. It is Ofgem's intention to bring key stakeholders together in the near future to discuss all aspects of these initiatives so that the proposals can be developed in a way that meets Ofgem's obligations.

A workshop is planned for October or November and this will be confirmed through the Ofgem website.

### **5.2 Responding To This Document**

Ofgem would like to hear the views of all those with an interest in the issues raised in this Discussion Paper.

**Responses to this document should be received by 22 August.**

They should be sent to:

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Unless marked as confidential all responses will be published by placing them in Ofgem's library or on our website. It would be helpful if responses could be submitted both electronically and in writing. Any questions on this document should, in the first instance, be directed to John Scott or Gareth Evans at Ofgem.