National Grid Transco – Potential sale of gas distribution network businesses

Offtake arrangements

Regulatory Impact Assessment

June 2004

Summary

This document consults upon Ofgem's Regulatory Impact Assessment (RIA) on the offtake arrangements from the National Transmission System (NTS) if Transco were to sell one or more of its gas Distribution Networks (DNs). It considers various options for the commercial and regulatory arrangements to apply particularly at the NTS/DN interface to address different ownership and the potential for undue discrimination, including:

- the arrangements for the offtake of gas from the NTS by the DNs and other loads connected to the NTS;
- the arrangements for diurnal storage and operational flows[1];
- the degree of separation required between Transco's NTS business and its retained distribution network businesses (RDNs).

This document contributes to the development of an operational, commercial and regulatory framework that could support a divested industry structure, in the event that Transco sells one or more of its DNs.

Authority's objective

The principle objective of the Gas and Electricity Markets Authority's (the Authority) is to protect the interests of customers in relation to gas conveyed through pipes, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas. Therefore, when deciding whether to consent to the proposed disposal of one or more DNs, the Authority will consider whether the interests of present and future customers are protected.

It is also essential that the post-sale industry structure should:

- be consistent with the Authority's general duties; and
- permit each network owner to fulfil its own statutory and licence obligations.

[1] Where diurnal storage is defined as being flexibility in the rate of offtake, to the extent that gas offtake over the day still equals that implied by a flat application of the planned rate.

Key issues

The key issues to be considered when assessing the various options for offtake arrangements are:

- **Undue discrimination between networks.** Ofgem considers that the offtake arrangements should limit the opportunity for undue discrimination by Transco as the owner of both the NTS as well as the RDNs. Undue discrimination could, for example, take the form of Transco providing favourable commercial terms to an RDN or number of RDNs over Independent Distribution Networks (IDNs), which could lead to inefficiencies in both the level and allocation of costs borne by end customers across the network.

- **Undue discrimination between NTS offtake points.** The offtake arrangements should deliver a framework in which Transco is unable to unduly discriminate between DNs and parties who hold agreements with Transco at other NTS exit points. The arrangements should therefore be developed in a way that delivers consistency of treatment between the DNs and holders of Network Exit Agreements (NExAs), Connected System Agreements (including those applicable to interconnectors) and Storage Connection Agreements (SCAs). Once again, the arrangements must ensure that Transco is unable to commercially favour RDNs over other connected users (such as storage sites and/or large connectees), as this would have the potential to create market distortions and increased costs to end customers.

- **Economic and efficient development and operation.** Consistent with the statutory duty on gas transporters, Ofgem considers that the offtake arrangements should ensure the economic and efficient development of the transmission system.

- **Security of Supply.** Security of supply is a key issue in the development of the offtake arrangements. The form and content of the arrangements should be developed in such a way that ensures each DN and the NTS is operated in a way that efficiently manages the risk to security of supply.

- **Effect on competition.** Ofgem considers that the offtake arrangements should be developed in such a way that protects, and where possible promotes, competition in wholesale markets and retail markets.

- **Accountability and regulatory involvement.** The offtake arrangements should specify the commercial and operational arrangements that apply at the NTS/DN interface in a transparent manner. A clear allocation of roles and responsibilities under the offtake arrangements enables parties to be held accountable for the full and timely undertaking of their allocated roles. Further, roles and responsibilities should be allocated in a way that aligns with commercial incentives. Accountability and correct alignment of commercial incentives will reduce the need for regulatory involvement in decision making.

- **Governance of the offtake arrangements.** It is important that the governance arrangements allow the offtake arrangements to evolve in a manner which is efficient and not unduly discriminatory as the wholesale and retail gas markets continue to develop.

Analysis of Options for the allocation of NTS exit capacity

In the event that Transco sells one or more of its DNs, it will be necessary for the first time to establish a process through which DNs can indicate their requirements for NTS exit capacity and be allocated that NTS exit capacity outside of a single commercial entity. Based on discussions in the workgroups, Ofgem has developed four options for the allocation of NTS exit capacity:

- **Option 1 - Transco's initial proposal.** This option was proposed by Transco on the basis that it most closely reflects existing arrangements within Transco. It formalises current internal arrangements, and gives the NTS a central role in the determination of NTS exit capacity levels.

- **Option 2 - DN booking model.** This option gives the central role in the arrangements to the DNs and NTS direct connects, with the NTS providing the level of exit capacity requested by the DNs. This option has two variants, which differ in terms of payment flows between participants.

- **Option 3 - Shipper and DN booking model.** This is a hybrid model, in which exit capacity requests can be made by shippers, and DNs make additional capacity requests to ensure offtake capacity is consistent with the 1 in 20 obligation.

- **Option 4 - Shipper booking model.** This option gives shippers the responsibility for booking NTS capacity. Under this option, the 1 in 20 obligation is removed from DNs.

Table 1 summarises Ofgem's assessment of the costs and benefits associated with each option relative to Option 1 (which we have treated as the "baseline" option). Ofgem does not consider that it is appropriate to use the status quo of a "no sale" scenario as a base case for assessing cost and benefits of different options for the offtake arrangements. This is because this RIA has been developed in order to contribute to the development of a framework that will facilitate the broader DN sales decision; hence Ofgem does not consider the status quo (in which Transco retains ownership of all the DNs) as an appropriate baseline. Instead, in each case, the alternatives are assessed relative to the option which most closely reflects Transco's existing arrangements.

The assessment of these options has both qualitative and quantitative features. As more fully described below, Ofgem considers that Option 4 has the potential to deliver the greatest benefit to customers. However, Ofgem recognises that as it may be impractical to move directly to Option 4 at this stage it may be preferable to adopt Option 2 initially, whilst also allowing shippers the opportunity to book capacity directly from the NTS if they should wish to do so. This would allow further consideration to take place concerning the current network planning obligations and the appropriateness or otherwise of such obligations going forward. However, Ofgem considers that Option 4 delivers the greatest level of customer benefit, and is therefore of the view that Option 4 should be implemented in the longer term.

Table 1 Summary of evaluation of options for the allocation of NTS exit capacity[2]

Issue	Option 2	Option 3	Option 4
No undue discrimination between networks	✓ ✓	✓ ✓	✓ ✓
Economic and efficient network operation and development	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Security of supply	-	-	-
Effect on competition	✓ ✓	✓ ✓	✓ ✓
Accountability			
♦ Less regulatory involvement	✓ ✓	✓ ✓	✓ ✓
♦ Implementation cost	✖	✖ ✖	✖ ✖
Net increase in potential benefit relative to Option 1	**£27.1m**	**£18.6m**	**£33.2m**

Analysis of options for diurnal storage and operational flows

In the event that Transco sells one or more of its DNs, it will be necessary to establish arrangements that govern the allocation of diurnal storage and operational flows between the NTS and DNs. In this RIA, we propose two high level alternatives for the allocation of diurnal storage and operational flows:

- **Option A - Administered approach.** Under this option, rights to diurnal storage and operational flows are allocated in accordance with rules that are based on Transco's existing internal procedures.

- **Option B - Commercial approach.** An alternative approach would be to define diurnal storage and operational flows as capacity products distinct from NTS exit capacity, and enable market participants to purchase these products on a non-discriminatory basis at NTS offtake points. Further consideration would be needed particularly for diurnal storage as to whether this product is only available to network owners, or whether it should be available to market participants more widely.

[2] The rating system assesses each category on a sliding scale from "much better" to "much worse", with a middle assessment of "no change". For a full description of the rating system used in this table see Chapter 6.

Option A has been used as the "baseline" option, given that this represents the option closest to current arrangements. Ofgem considers that Option B is the preferred way of designing offtake arrangements for diurnal storage and operation flows. As outlined in Table 2 below (which summarises our assessment of Option B relative to Option A) this option has clear quantitative advantages over Option A.

Table 2: Summary of evaluation of diurnal storage and operational flow options

Issue	Option B
No undue discrimination between networks	✓ ✓
Economic and efficient network operation and development	✓ ✓
Security of supply	-
Effect on competition	✓ ✓
Accountability	
♦ Less regulatory involvement	✓ ✓
♦ Implementation cost	✗
Net increase in potential benefit relative to Option A	**£11.7m**

Analysis of options for business separation

The potential costs associated with undue discrimination between networks can be reduced by requiring Transco to separate in some form its NTS and RDN businesses. This RIA therefore sets out three options for business separation:

- **Option 1 - Transco's proposal.** This option would permit Transco to retain its existing level of business separation between NTS and RDNs, with further safeguards being provided through the adoption of targeted rules and licence conditions.

- **Option 2 - Structural separation**. This option would put in place structural separation between the NTS and the group of RDNs, including information separation, operational separation and physical separation.

- **Option 3 - Legal and structural separation.** In addition to the requirements of Option 2, the NTS and the group of RDNs would be in two separate legal entities with two separate gas transporters licences.

The benefits of each form of business separation are described in Table 3 below.

Table 3 Benefits of different forms of business separation

Form of separation	Benefits
Non-discrimination licence conditions	- restricts undue discrimination by prohibiting certain forms of behaviour (however, requires a robust compliance regime)
Information separation	- minimises the potential commercial advantages that the NTS can confer on any RDN by placing limitations on information sharing
Operational separation	- establishes a transparent interface between the businesses by placing limitations on the sharing of staff between NTS and DN businesses
Physical separation	- limits opportunities for NTS and DN staff to develop close working relationships because staff may not work together in the same offices - ensures that all Transco employees are aware of their obligation to behave in a manner that is not unduly discriminatory
Legal separation	- reinforces the delineation between businesses - creates an enhanced requirement for separate accounts with a clear audit trail - promotes robust corporate governance - ensures that licence conditions apply equally to all DNs in practice.

The benefits of business separation in terms of mitigating undue discrimination need to be balanced against any costs for customers. If business separation is required, Ofgem considers that the implementation costs that Transco incurs in order to separate its NTS and RDN businesses should not be passed through to customers.

Ofgem's initial views

Based on the analysis described in Chapter 6, Ofgem's initial view is that:

- Option 4 is the most appropriate option in terms of the allocation of NTS exit capacity, although given the extent of change required, Option 2 represents an acceptable transitional option – so long as shippers are able to request their NTS exit requirements directly from the NTS should they so wish;

- Option B is the most appropriate option in terms of diurnal storage and operational flows; and

- Option 3 is the most appropriate option in terms of business separation.

Way forward

Ofgem welcomes views to this RIA, to be received by close of business on 9 July 2004. Ofgem will continue to use the workgroups to consult on these issues, however it intends to make all significant policy decisions relating to the commercial and regulatory arrangements that could support a divested industry structure by the end of July 2004. Following these significant decisions, detailed work will be necessary to develop these arrangements further.

The framework that is developed through this consultation process will form the basis of an alternative to the status quo to be considered in a future RIA, encompassing the broader DN sales decision. This document will be issued later in the DN sales work programme.

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1. Introduction

1.1. The purpose of this document is to consult upon Ofgem's Regulatory Impact Assessment (RIA) on the offtake arrangements, which would be required, were National Grid Transco (Transco) to sell one or more of its gas Distribution Networks (DNs).

1.2. This RIA is intended to contribute to the development of a possible operational, commercial and regulatory framework that could support a divested industry structure. This framework will form the basis of an alternative to the present Transco owned and operated transmission and distribution arrangements, to be considered in Ofgem's future broader RIA on whether the Gas and Electricity Markets Authority (the Authority) should consent to Transco's proposed disposal of a number of its DNs.

Background to this document

1.3. In May 2003, Transco publicly announced that it would consider the sale of one or more of its DNs if it were to maximise shareholder value. Any such sale would require the consent of the Authority, the Health and Safety Executive and the Secretary of State.

1.4. In July 2003, Ofgem issued a consultation document on the regulatory, commercial and operational changes required to facilitate the sale of one or more DNs.[3] Following this consultation, in December 2003 Ofgem issued its Next Steps document setting out responses to the July consultation, Ofgem's current views and a proposed way forward for considering Transco's proposals including the establishment of workgroups to take forward the development of a commercial and regulatory framework.[4]

1.5. Ofgem subsequently established several workgroups including a Development and Implementation Steering Group (DISG), a Commercial Interfaces Workgroup

[3] *National Grid Transco – Potential sale of network distribution businesses, A Consultation Document*. Ofgem, July 2003.
[4] *National Grid Transco – Potential sale of network distribution businesses, Next Steps* Ofgem, December 2003.

(CIWG), a Regulatory Architecture Workgroup (RAWG) and an Agency Workgroup to continue the proposed DN sales consultation process.

1.6. The workgroups have been successful in providing industry participants with an opportunity to contribute to the development of a possible commercial and regulatory framework that would enable the implementation of Transco's proposals, should Transco obtain the necessary consents.

1.7. Among other things, the workgroups have discussed the commercial and regulatory arrangements that may be necessary at the NTS/DN interface to address different ownership and the potential for undue discrimination, including:

- the arrangements for the offtake of gas from the NTS by the DNs and other loads connected directly to the NTS;
- the arrangements for diurnal storage and operational flows; and
- the degree of separation required between Transco's NTS business and its retained distribution network (RDN) businesses.

1.8. Workgroup discussions have highlighted the importance of these issues to the development of the possible commercial and regulatory framework. Consequently, Ofgem has formed the view that it would be appropriate and consistent with its obligations under the Utilities Act[5] to issue an RIA that considers the high level options for resolving these matters.

1.9. In April 2004, Ofgem released two RIAs relating to the potential sale of one or more DNs. These assessed different options for both agency and governance arrangements, and the appropriate allocation of roles and responsibilities between the NTS and the DNs, following the sale of one or more DNs. In May 2004, following a period of consultation, Ofgem released decision documents for both of these issues.[6] The options, and recommendations outlined in this RIA

[5] This obligation is contained in Section 5A of the Utilities Act 2000, as amended by the Sustainable Energy Act 2002.

[6] *National Grid Transco – Potential sale of gas distribution network businesses, Allocation of roles and responsibilities between transmission and distribution networks* Ofgem, May 2004 and *National Grid Transco – Potential sale of gas distribution network businesses, Agency and Governance Arrangements* Ofgem, May 2004

have therefore been developed specifically to be consistent with the favoured options as outlined in the two decision documents.

Document outline

1.10. This document is structured as follows:

- Chapter 2 provides background to the offtake arrangements;
- Chapter 3 sets out Ofgem's objectives with respect to the offtake arrangements;
- Chapter 4 describes the key issues associated with the offtake arrangements;
- Chapter 5 describes the different options that could be adopted in relation to the allocation of NTS exit capacity, diurnal storage and operational flows, and business separation;
- Chapter 6 evaluates the potential costs and benefits associated with the various options; and
- Chapter 7 sets out Ofgem's current view.

Views invited

1.11. Ofgem welcomes views on this RIA, to be received by close of business on 9 July 2004. Respondents are requested to provide views in a timely manner. Responses should be addressed to:

Sonia Brown

Director, Transportation

Office of Gas and Electricity Markets

9 Millbank

London SW1P 3GE

(Telephone: 020 7901 7412)

1.12. Electronic responses may be sent to tracey.hunt@ofgem.gov.uk

1.13. Respondents are free to mark their reply as confidential, although we would prefer, as far as possible, open responses that can be placed in the Ofgem library. Ofgem would also prefer that non-confidential responses are sent electronically so that they can be placed on the Ofgem website.

1.14. If you wish to discuss any aspect of this paper, Mark Feather (telephone 020 7901 7437) or Jessica Hunt (telephone 020 7901 7431) would be pleased to help.

2. Background

2.1. In this Chapter we set out the background to this RIA. In it we discuss, the current arrangements for the interface between the NTS and the offtake points (to both DNs, and other loads). In addition we briefly set out the arrangements for entry onto the NTS and the arrangements that apply to the electricity network[7].

2.2. Hence, in the following sections we set out the:

- physical characteristics of the network (both NTS and DNs);
- current arrangements for exit from the NTS;
- current arrangements for entry onto the NTS; and
- corresponding arrangements for the electricity sector.

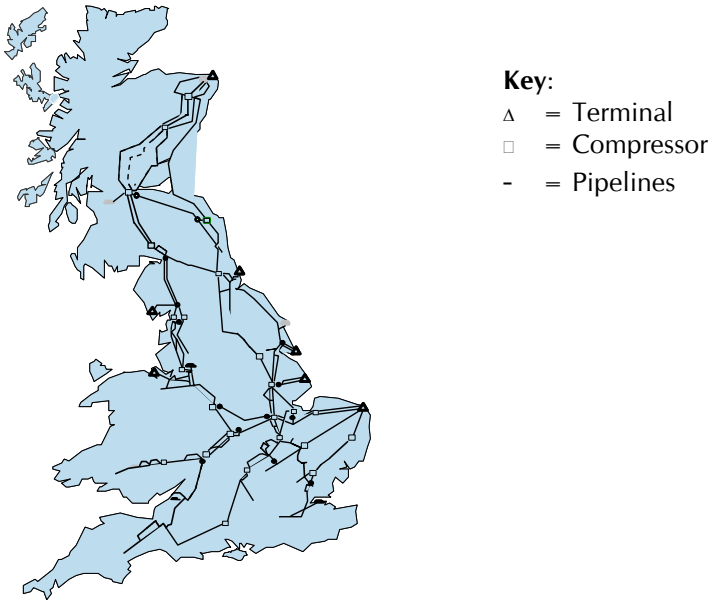
Physical characteristics of the network

Network overview

2.3. The NTS is the national high pressure gas transmission system. It comprises of approximately 6,800 kilometres of pipeline that transports gas from the seven entry terminals to 180 NTS offtake points. The NTS system is illustrated in Figure 2.1 below:

[7] This background section describes arrangements for the allocation and charging of firm NTS exit capacity. Arrangements for interruptible rights will be covered in a forthcoming Ofgem Regulatory Impact Assessment.

Figure 2.1: National Transmission System



2.4. Gas transmission within the NTS is assisted by 25 compressor stations, placed at key locations throughout the network. From the NTS, gas either leaves the system at direct offtakes or passes into one of the 13 Local Distribution Zones (LDZs). These LDZs are grouped into 8 DNs, as depicted by colour grouping in Figure 2.1 below.

Figure 2.1: LDZs and DNs

2.5. Transco distinguish between two types of offtakes from the NTS. These are:

- **NTS/DN offtake points**. These are offtake points that connect the high pressure NTS with the DN's low pressure local transmission system (LTS) and the DNs of the LDZs, for onward transportation to customers; and
- **NTS "direct connect" offtake points**. At these points, gas exits the NTS and is either consumed at the offtake point by customers (e.g. power stations or large industrial and commercial load) or enters another system (e.g. the interconnector which carries an equivalent load to a DN).

2.6. The Section below provides more detail on the offtake arrangements from the NTS.

NTS/DN offtake points

2.7. There are 116 offtake points that directly link the DNs with the NTS. The dispersion of these offtake points across the network is described in Table 2.1.

Table 2.1: DN / LDZ offtakes by region

DNs	Offtakes	LDZs	Offtakes
Scotland	15	Scotland	15
North of England	24	Northern	15
		North East	9
North West	11	North West	11
Wales and the West	15	Wales North	1
		Wales South	3
		South West	11
South of England	11	Southern	7
		South East	4
London	5	North Thames	5
East of England	24	Eastern	10
		East Midlands	14
West Midlands	11	West Midlands	11
Total	**116**		**116**

NTS "direct connect" offtake points

2.8. The remaining 64 NTS offtake points comprise supply points, Connected System Exit Points (CSEPs), interconnectors and storage sites. At these offtake points, shippers offtake gas directly from the NTS; hence gas does not pass through the gas distribution systems of the LDZs. The distribution of these connections to the NTS is indicated in Table 2.2.

Table 2.2: NTS offtakes by direct connects

Location (by DN Zone)[8]	**Offtakes**
Scotland	6
North of England	12
North West	13
Wales and the West	8
South of England	5
London	2
East of England	18
West Midlands	0
Total	**64**

Current NTS exit arrangements

2.9. In this Section, we describe the current arrangements applicable to the offtake of gas from the NTS. We divide this Section into:

- the arrangements for NTS/DN offtake points;
- the arrangements for other NTS exit points; and
- the charging arrangements for NTS exit capacity.

[8] The UK-Continent Interconnector and GB-Ireland Interconnector are direct NTS connection points within the geographical areas associated with the East of England and Scotland DN zones respectively.

Current arrangements at NTS/DN offtakes

2.10. In the following subsections we discuss the current arrangements that apply to the offtake of gas from the NTS to the DN. Given the current ownership structure, these arrangements reflect Transco's current internal processes and procedures. We discuss in turn:

- the process for planning and allocating capacity at each NTS/DN offtake point;
- the process for planning and allocating diurnal storage at each NTS/DN offtake point;
- the determination of operational flows from the NTS to the DN for each offtake point;
- the nature of the connection facilities at NTS/DN offtake points;
- the measurement arrangements at the NTS/DN offtake point;
- safety and emergency arrangements; and
- maintenance arrangements.

Capacity planning

Annual product

2.11. Transco has a Gas Transporter (GT) licence obligation to develop its pipeline system (which comprises both the NTS and the DNs) to meet the peak aggregate daily demand for gas to be conveyed to premises that is likely to be exceeded on one or more days in only one year in every 20 years[9]. This is referred to as the 1 in 20 obligation.

2.12. Transco is obliged, in the determination of this demand, to have regard to its expectations as to the number of premises to which gas is conveyed by it will be supplied, the consumption of gas at those premises and the extent to which such supplies might be contractually interrupted. The demand determination must

also have regard to other relevant factors, including historical weather data derived from at least the previous 50 years.

2.13. Transco also has a licence obligation to publish in so far as is reasonably practicable on an annual basis, a Ten Year Statement setting out a ten year forecast of:

- the use likely to be made of any individual pipeline system which includes high pressure pipelines operated by Transco; and
- the likely developments of that system which Transco expects from time to time to be taken into account in determining the charges for making connections to that system and in pursuant of transport arrangements.

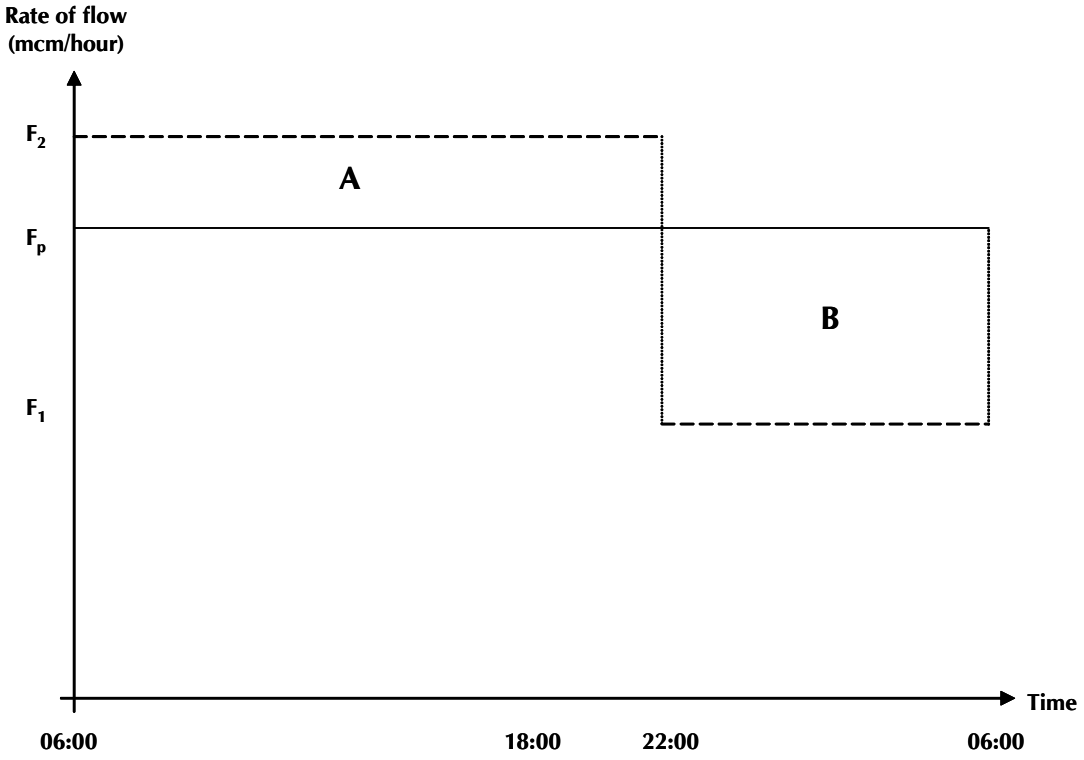
2.14. Transco has established a planning process through which it meets these licence obligations. The process involves generating demand forecasts at a LDZ level over a ten year horizon and at a range of demand conditions (including the 1 in 20 peak day) in each of the ten years. This information is collated and assessed in conjunction with supply information to determine the supply/demand position for the NTS over the 10 year period. These LDZ and NTS forecasts form the basis for the Ten Year Statement. LDZ demand forecasts are used by Transco for development of DN investment plans to ensure the 1 in 20 peak day capacity provision obligation is met, at NTS offtake points where customers are connected directly

Diurnal storage

2.15. While the peak day demand is expressed as a quantity over a 24 hour period, consumers do not tend to take gas at uniform hourly rates. Rather, overall consumption is higher during the daytime and reduces overnight. This is illustrated in Figure 2.3, below.

[9] Standard Condition 16, clause 2 of Transco's licence.

Figure 2.3: Diurnal storage



2.16. In this diagram, assume that flow rate F_p is the "planned" level of offtake for a particular day at an NTS offtake point. Diurnal storage represents the scope for which the rate of offtake from the NTS can vary across the day, whilst leaving total offtake of gas across the day to equal that implied by the flat rate F_p. In this example, gas is taken off the NTS at high rate F_2 from 06.00 to 22.00, and then at a lower rate (F_1) for the period 22.00 to 06.00. If this offtake profile is followed, areas A and B are equal, hence total offtake volume through the day equals the hourly flow rate "F_p" multiplied by the number of hours in the day.

2.17. The system is designed to accommodate this uneven demand (known as the diurnal swing profile) through application of different design criteria for the various pressure tiers of the system so that:

- tiers operating at pressures lower than 7 bar[10] are designed to meet the peak 6 minute flow;
- the LTS on the DNs are designed to meet the peak hour flow; and

[10] I.e. at pressures suitable for distribution to domestic customers.

- the NTS is designed to meet the peak day flow (i.e. at uniform hourly rates throughout the day).

2.18. Although the NTS is designed to flow gas at uniform hourly rates there is in practice, as discussed further below, some capability to vary this.

2.19. Given these pipeline capacity design criteria, the DN nominally receives gas from the NTS at uniform hourly rates and makes it available to consumers at the rate demanded. This creates a requirement for diurnal storage within the DNs from which gas can be supplied to supplement the flow of gas from the NTS at high consumer demand rates during the daytime and which can be refilled during the night. These requirements are met through a combination of storage facilities within the DNs, including LTS linepack[11], high pressure storage bullets and low pressure gas holders. However, to the extent that the NTS can provide variable flows to a DN (without prejudicing its capability to meet transmission requirements or investing expressly for the purpose of diurnal storage provision), the NTS can in effect supplement the DN's diurnal storage capability. In turn, this allows investment in diurnal storage within the DN to be deferred or avoided.

Planning process

2.20. It is essential in the DN planning process to take account of both daily demands and their possible diurnal variation (given that the highest diurnal variation of consumer demand may occur at demand levels lower than the 1 in 20 peak conditions). Hence, the DN planning processes are structured to ensure that the DNs provide adequate local transmission and local storage availability taking into account the diurnal variation that the DN can take from the NTS.

2.21. The detailed investment planning process at the NTS/DN interface therefore covers a range of demand conditions over a 5 year period for:

- daily demand;

[11] Linepack is the volume of gas within the NTS and LTS at any time. This volume can be varied, within strict limits, to provide additional storage on the network.

- DN diurnal storage requirements not met via DN facilities (including associated pressure requirements); and
- diurnal storage availability from the NTS (including associated pressure availability).

2.22. This process defines the individual requirements at each NTS/DN offtake.

2.23. Through an iterative process conducted between NTS and DN planning staff, parameters for each NTS/DN offtake point are established. The parameters established through this process for each NTS/DN offtake enable investment plans to be drawn up for both the NTS and the DNs.

2.24. Current planning requirements for NTS offtake onto the DNs are set out in Table 2.3 below.

Table 2.3: Peak NTS offtakes by DN and planned diurnal storage allocations

	2004/5		2005/6		2006/7		2007/8		2008/9	
DN Network	**Demand (MDQ[12])**	**Diurnal Storage**	**Demand (MDQ)**	**Diurnal Storage**	**Demand (MDQ)**	**Diurnal Storage**	**Demand (MDQ)**	**Diurnal Storage**	**Demand (MDQ)**	**Diurnal Storage**
Scotland	345	40	351	37	357	36	362	37	367	29
North of England	538	18	545	19	550	17	558	22	563	18
North West	543	15	555	17	558	17	562	18	568	19
Wales and the West	517	12	526	13	531	14	536	15	542	15
South of England	914	15	937	17	946	20	952	15	959	16
London	484	11	488	11	495	0	504	0	509	0
East of England	844	21	858	23	865	24	874	22	880	23
West Midlands	446	16	452	17	455	17	461	17	465	17
Totals	4630	147	4712	154	4758	144	4810	145	4854	138

Source: Transco GWh/day requirements, based on 1:20 peak day

[12] Maximum daily quantity

Operational flows

2.25. The planning process establishes the daily quantities and the diurnal storage and associated profile and pressures to be provided by the NTS at NTS/DN offtakes over the full range of demand conditions in any year. These, together with additional operational flow rules, are used in the daily operation of the NTS and DN systems.

2.26. The NTS is remotely operated from the Gas National Control Centre (GNCC). The flows from the NTS to the DNs at the NTS/DN offtakes are controlled by four Area Control Centres (ACCs). These ACCs are responsible for the control operation in respect of that part of the LDZs that can be monitored and controlled remotely.

2.27. Approximately 18 hours ahead of each gas flow day, the ACCs plan operations for the following gas flow day, determining for each LDZ:

- the demand forecast;
- the required stock change over the day (if any);
- the amount of gas required from the NTS to meet the demand and stock change;
- the capability to take safely more or less gas from the NTS;
- the amount of diurnal storage required from the NTS; and
- the amounts to be taken from the NTS at each NTS/DN offtake point and the profiles for the gas take over the gas day. These must be within the parameters established through the planning process.

2.28. The ACCs then notify these requirements to the GNCC to enable NTS operational plans to be established. Subject to the change process described below, gas then flows in accordance with the ACC operational plan.

2.29. The ACC updates its demand forecasts at regular intervals and notifies the GNCC of required changes to flows at the NTS/DN offtake points as follows:

- in the period 1 October to 31 March, the GNCC must be notified by the ACC 2 hours in advance of any change in rate of offtake for the LDZ of up to 5% of the prevailing rate; and

- in other months rate changes are agreed between the GNCC and ACC control rooms[13].

2.30. There are no system-wide limits on the ramp rate (rate of change of offtake rate). For certain sensitive offtakes (e.g. those close to compressor stations) ramp rate limitations are included in the ACC operating procedures. In general, any required ramp rate limitations are agreed on the day in conversations between the GNCC and the ACCs.

2.31. The ACC can request to make changes that would take the rates outside the operational rules. The GNCC will agree to these deviations provided the operation of the NTS is not compromised. Similarly, the GNCC can request that the ACC changes its rates of offtake to the LDZ. The ACC will agree to this request if the change can be accommodated.

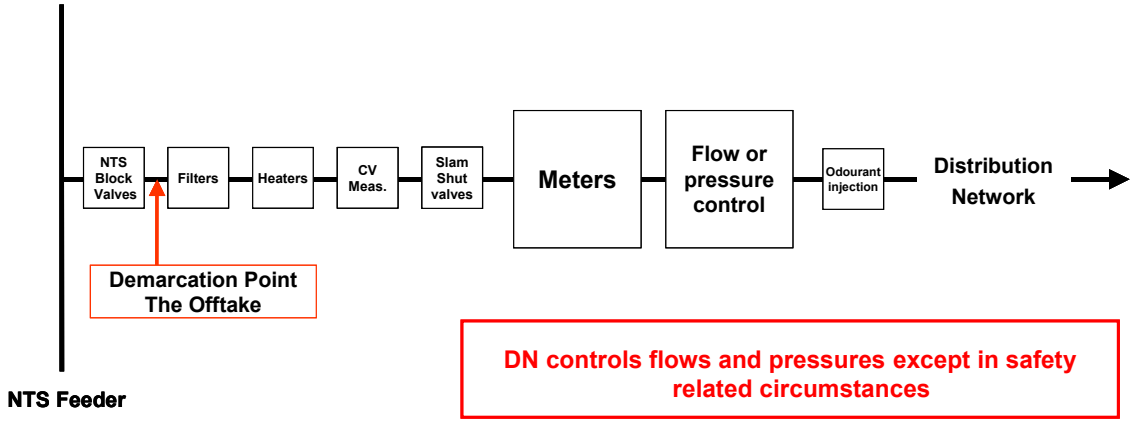
2.32. The process of review and update of the operational plan in respect of a particular gas flow day continues until the day ends.

Connection Facilities

2.33. The facilities located at offtake sites where gas passes from the NTS to the DNs typically comprise of a set of assets as shown in Figure 2.4. As Figure 2.4 illustrates, the boundary between the NTS and the DN is defined as the point immediately downstream of the NTS block valves.

[13] A rate change notification may not be repeated until the first change has taken place.

Figure 2.4: NTS/DN offtake point demarcation



2.34. At present, with all the facilities solely owned by Transco, NGT's organisational structure assigns responsibility for management of the facilities downstream of the NTS block valves to its UK Distribution business, and responsibility for the block valves and upstream equipment lies with NGT's UK Transmission business.

Measurement at NTS/DN offtake points

2.35. Gas flow and calorific value (CV) measurements made at offtake sites play an important role in determining the Network Code[14] energy balances for shippers across the system on a day and the determination of the volume of NTS shrinkage[15]. Where inaccurate volume or CV readings arise Transco is exposed to additional cost under its NTS system operator (SO) incentive scheme[16]. Transco's UK Transmission staff continuously monitor measurement data and initiate rectification of measurement equipment faults.

2.36. In accordance with arrangements set out under the Gas (Calculation of Thermal Energy) Regulations, Transco must determine the daily CV for each declared charging area[17]. The regulations permit the application of the "daily CV" (also known as the flow weighted average calorific value (FWACV) or the area CV) for

[14] The Network Code defines the rights, responsibilities and obligations for all users of Transco's gas transportation system.
[15] Shrinkage gas is that which is lost or otherwise unaccounted for from the Transportation System.
[16] The NTS SO incentive scheme is a mechanism designed to incentivise Transco to operate the NTS efficiently.
[17] LDZs (as defined under the Network Code) are currently the declared charging areas.

a charging area, determined using the daily average CV and volume for each relevant input to, and output from, the charging area. Transco determines the daily CV for each charging zone centrally, using readings from CV measurement equipment located mostly at the NTS/DN offtake points, but also at NTS above ground installations.

Safety and Emergency

2.37. The Gas Safety (Management) Regulations 1996 place a requirement on gas transporters to prepare a Safety Case addressing the measures necessary for dealing with emergency situations. There is also a duty on gas industry participants to cooperate with gas transporters and the Network Emergency Coordinator. Gas transporters must set out in their Safety Cases the arrangements that enable them to comply with these duties of cooperation.

2.38. Transco fulfils these obligations currently through preparation of its Safety Case and a suite of underpinning Emergency Procedures. The procedures currently developed, tested and implemented by Transco are:

- Network Gas Supply Emergencies Procedure (E1), covering circumstances involving loss of pressure in the primary system (the NTS) which may impact on secondary systems (the DNs). All industry participants, both upstream and downstream of the NTS, are involved when the procedures are implemented. These procedures are referenced in Transco's Network Code;

- Transco Local Gas Supply Emergencies Procedure (E2), covering loss of pressure in a DN system. This involves Transco, shippers, and operators of systems connected to DNs. These procedures are also referenced in Transco's Network Code; and

- Internal procedures (E3), setting out how each function within Transco will comply with the requirements of E1 and E2.

2.39. The procedures contain details of planned emergency steps to be taken to address emergency circumstances. The procedures are maintained and updated by Transco, and tested through industry-wide emergency exercises.

Maintenance

2.40. Transco's internal procedures involve collaborative development of NTS and DN maintenance plans. Maintenance is planned and carried out in accordance with Transco's Safe Control of Operations (SCO) procedures.

2.41. Transco's Network Code sets out maintenance arrangements insofar as they affect shippers. These are that:

- Transco is required to establish and publish to shippers a two year plan of NTS relevant maintenance works; and
- Transco must also notify the relevant shipper of maintenance affecting availability of gas at supply points within the shipper's portfolio.

2.42. Provided notification of maintenance works is appropriately given, Transco is granted relief from its obligations to make gas available at supply points for a set period.

Current Arrangements at NTS direct connections

2.43. The arrangements for offtakes from the NTS at points other than the NTS/DN offtake points are treated differently to the NTS/DN offtake points.

Documentation of arrangements

2.44. The exit arrangements that apply between Transco and shippers are specified in Transco's Network Code and typically rely on additional site specific details that are contained within ancillary documents to Transco's Network Code. These ancillary agreements specify the parameters that apply to the rights of offtake from the NTS under Transco's Network Code at that NTS offtake point. The types of ancillary agreement which contain such additional detail are:

- Network Exit Agreements (NExA);
- Storage Connection Agreements (SCA); and
- Connected System Exit Point (CSEP) Agreements (which also include those that apply at interconnectors).

2.45. Transco's Network Code specifies the types of provisions that such ancillary agreements may address. These are similar to the requirements that Transco specifies internally when assessing the offtake arrangements at the NTS/DN offtake points. They include:

- specification of points of offtake from the NTS for Network Code purposes;
- flow capacity at the exit point (this is the physical capability of the equipment but does not imply any rights of offtake);
- minimum pressure of gas normally to be made available;
- operational flow management requirements including notice periods for offtake rate changes and maximum ramp rates;
- responsibilities for maintenance and operational control of equipment at the point of offtake;
- equipment ownership and access arrangements at the point of offtake;
- arrangements for planned maintenance;
- measurement provisions;
- communication arrangements; and
- emergency arrangements.

2.46. The parties to each ancillary agreement described above are Transco and either:

- the downstream operator only;
- the relevant shipper(s) at the relevant supply point ; or
- both the downstream operator and the relevant shipper(s).

2.47. The different classes (NExAs, SCAs, and CSEPs) of ancillary agreements address a range of provisions. Within each class ancillary agreements are broadly similar in structure but feature site specific parameters. These have been derived taking

account of customer requirements and network capability at the time of the agreement.

2.48. The duration of ancillary agreements are generally unspecified, as they are intended to give effect to Network Code provisions and can only be modified by mutual agreement. Alternatively, a Network Code modification could amend the ability of NExAs to contain relevant provisions[18].

Current arrangements for allocation of NTS exit capacity

2.49. As outlined above, physical NTS exit capacity is provided by the NTS to both DN exit points and to NTS Direct Connects. In this Section we outline the process by which capacity is allocated and charged at these two types of offtake points.

DN offtakes

2.50. At present, the physical capacity that is allocated at NTS/DN exit points is defined in Transco's internal processes in terms of a maximum daily quantity (MDQ). The level of MDQ allocated to NTS/DN offtake points is determined by these internal Transco processes and designed to ensure that the capacity at NTS/DN offtake points is consistent with the Transco 1 in 20 obligation.

2.51. Given that DNs and the NTS currently have common ownership, there are no commercial arrangements that apply to the provision of capacity at these NTS offtake points. Rather, charges to shippers for NTS capacity are determined by the "exit zone" in which a customer is sited, which represents a group of NTS/DN offtakes. The charges for these zones are set based on the long run marginal costs of providing NTS capacity to these zones.

[18] Note that modification proposals can be raised by users or by Transco, are assessed through a defined process, and may only be agreed with the consent of the Authority.

2.52. The amount of NTS exit capacity held by a shipper at an exit zone is determined by the shipper's supply point portfolio within the DN. A shipper's exit capacity for a given exit zone is set at a level equal to the aggregate of supply point capacities for the shipper's supply points associated with that zone. There is therefore no discretion for shippers to book different amounts of NTS exit capacity and LDZ supply point capacity. Gas flow against capacity entitlement is measured and overrun charges and capacity ratchets are applied at the supply point level.

NTS direct connects

2.53. NTS offtake capacity for direct connects is also specified in terms of a maximum daily offtake quantity – the supply point capacity. Typically, an NTS direct connect constitutes a single NTS exit zone for the purposes of calculating the level of the NTS capacity charges. The Network Code requires that the maximum instantaneous hourly rate of offtake, for direct connects is 1/24th of the supply point capacity.

2.54. As described above, Transco has an obligation to develop and maintain a system that can meet peak demands (defined in terms of the gas day). It also has a duty to provide for all reasonable demands for gas. In the event that direct connect suppliers require additional exit capacity from the NTS, they may request capacity through a process defined in Transco's Network Code. This is through amendments to Supply Offtake Quantity (SOQ) requests made directly to the NTS, i.e. the maximum daily consumption for a supply point.

2.55. However, within day, Transco does not have a specific obligation to make additional exit capacity and flexibility available. Indeed, Transco may limit the rights of large (firm) customers to vary their offtakes within day through the imposition of ramp rates specified within NExA agreements. An implication of this is that, for example, the operator of a gas generation plant may want the flexibility to be able to vary its use of gas within day (ramp up or down) and may be willing to pay the additional costs associated with providing this flexibility. Under current arrangements, Transco has no incentive to provide this level of service.

Current DN exit arrangements

2.56. In this Section we discuss the current arrangements that apply to the offtake of gas from the DN.

2.57. Transco's DN networks comprise of a number of separate pressure tiers (with gas flowing from higher to lower pressure tiers):

- the Local Transmission System (LTS) which operates at pressures from 38 bar to 7 bar;
- the Intermediate Pressure System (IPS)[19] which operated at pressures from 7 bar to 2 bar;
- the Medium Pressure System (MPS) which operates at pressures from 2 bar to 75 mbar; and
- the Low Pressure System (LPS) which operates at pressures below 75 mbar.

2.58. Currently, the right of offtake (supply point capacity) from the DN system is specified by shipper supply point, in the case of daily metered (DM) sites and is calculated from the Annual Quantities (AQa) for non-daily metered (NDM) sites. Shippers have some scope for appeal against the eventual allocation of capacity to a particular NDM site.

Charges for NTS and DN exit capacity

NTS charges

2.59. Charges for the use of the NTS are split into entry capacity charges, exit capacity charges and commodity charges. Transco's transmission asset owner (TO) revenue is received through charges for exit and entry capacity, with a target of 50% for entry capacity and 50% for exit capacity.

2.60. NTS exit capacity charges apply to loads supplied through NTS offtakes into the DNs and to large loads and interconnectors supplied directly from the NTS. Transco sets exit capacity charges on an administered basis using a methodology

which seeks to reflect the estimated long run marginal cost (LRMC) of developing the system to meet a sustained increase in demand.

2.61. The NTS exit capacity charge applying to each offtake point is determined by the exit zone to which a particular offtake point belongs. NTS exit points which deliver gas into the DNs are grouped into 33 exit zones for charging purposes, and investment costs for each zone are based on flow weighted averages of all individual exit points in that zone. Generally, individual exit zones and charges are set for NTS direct connects.

DN charges

2.62. Since 1994 Transco has used postalised charges for the use of its DN systems. Customer's charges depend on their annual and peak load sizes, which are used as a proxy for average use of different parts of the system. DN charges are not affected by geographical location.

2.63. In May 2004, Ofgem published a consultation paper to review the structure of Transco's distribution charges.[20] This ongoing consultation raised a number of issues relating to the impact of the separation of Transco's distribution price control and potential sale of one or more DNs on Transco's ongoing distribution charges. In particular, that the separation of the distribution price control will result in the gradual introduction of regional differences in distribution charges over a 25 year period.

2.64. Transco levies two types of charge for the use of the DNs: system charges and customer charges. Approximately 70% of DN revenue is recovered through the system charges and the remaining 30% through the customer charges. Both types of charges are based on supply point 'capacity' or supply point 'commodity'. Capacity charges for each customer are applied to their estimated peak demand. Commodity charges for each customer are based on their annual demand. The system charges are set so as to recover approximately 50% of the system charge revenue from the capacity charges and 50% from the commodity charges. The customer charge is a commodity charge for small users and a

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[19] Not all networks contain an IPS system.
[20] *Review of Transco's structure of distribution charges, Consultation Paper*, May 2004.

capacity charge for large users, but over 90% of the revenue from the charge is commodity based.

2.65. The structure of the system charges, both capacity and commodity, is based on analysis by Transco to assess the costs which customers in different load bands impose on the system. In general, smaller customers tend to be connected further down the system than large ones, and therefore more of the system is used in delivering gas to them. Transco's analysis used survey and cost data to estimate the pattern of unit costs of supplying customers in different load bands. The DN charges are structured to reflect this pattern of costs.

2.66. The customer charges are also structured to try to provide a reasonable reflection of the costs of transporting to supply points of different sizes.

Current NTS entry arrangements

2.67. Transco allocates entry capacity rights to its NTS through a series of long and short term auctions. The long term auctions, supplemented by subsequent trading of entry capacity rights in secondary markets, and demand for capacity in subsequent auctions closer to gas flow provide Transco with an indication of the demand for entry capacity at different locations on Transco's NTS (and hence provide investment signals).

2.68. Under the entry capacity regime established in Transco's GT licence, Transco is funded to provide a series of baseline output measures of entry capacity for each system entry point. These baseline output measures are based on the maximum physical capability at each system entry point and are referred to as Transco's transmission asset owner (TO) baseline entry capacity output measures. Transco is obliged to offer 90% of these output measures for sale as entry capacity rights.

2.69. Transco has an SO entry capacity investment incentive, under which it has the potential to earn higher rates of return on the sale of obligated incremental entry capacity rights. These rights are additional to the baseline output measures outlined above, and can be sold where there is demand for such capacity. In addition, obligated incremental entry capacity rights are released in response to auction signals

2.70. Transco may also sell incremental entry capacity rights as non-obligated incremental entry capacity. Transco may choose, for example, to sell these rights close to the gas flow day in anticipation that it can accommodate increased flows onto its system, without necessarily needing to invest to expand the capability of its system.

2.71. To the extent that Transco is unable to accommodate expected flows against firm entry capacity rights at a system entry point, Transco must buy back these rights at market determined prices or take other actions to resolve the constraint. It has an SO incentive to minimise the net cost of buy-back actions (the entry capacity buy-back incentive), under which it has a target for buy-back costs, less the revenue derived from sales of non-obligated incremental entry capacity and all sales of obligated entry capacity released within day and interruptible capacity. To the extent that its net costs fall below the target, Transco shares the gains equally with shippers, whereas it is exposed to a percentage of the costs above the target (subject to a cap and collar).

2.72. Transco also releases daily system entry capacity (DSEC) on a day ahead and within day basis. Transco's Network Code provides that Transco should make available as day ahead capacity any unsold obligated entry capacity, as well as any additional capacity that Transco in its sole discretion chooses to make available.

2.73. Transco's Network Code also provides for the release of daily interruptible entry capacity, based on the extent to which holdings of daily firm entry capacity exceed the quantity of deliveries of gas at each system entry point. This is referred to as 'use it or lose it' (UIOLI) capacity and is intended to operate as an anti-hoarding device. The release of UIOLI capacity does not affect the rights of firm entry capacity holders and Transco is able to scale back interruptible capacity for no cost in order to alleviate an entry capacity constraint. The revenue from UIOLI capacity also nets off against Transco's buy back costs under its buy-back incentive.

Current electricity transmission exit and entry arrangements

2.74. Since 1993, charging for the use of National Grid Company's (NGC) transmission network has been based upon Investment Cost Related Pricing (ICRP) principles.[21]

2.75. In effect, ICRP estimates the long run marginal costs of developing the transmission system to meet changes in the pattern of electricity flows around the country. Consequently, it provides some signals of the long term need for generation and demand in different locations.

2.76. At present, charges relating to the use of the transmission system are split between Transmission Network Use of System (TNUoS) charges and Balancing Services Use of System (BSUoS) charges, broadly relating to NGC's transmission asset owner (TO) and system operator (SO) roles respectively. Both generators and suppliers pay both of these charges. The allowed revenues that NGC recovers are determined by its TO price control and the Balancing Services Incentive Scheme, that are set and reviewed by Ofgem on a regular basis.

2.77. Ofgem considers that it would be beneficial to review NGC's current arrangements for access to transmission capacity. In March 2001 and February 2002 Ofgem set out some initial thoughts on the current arrangements. Ofgem considered that the current transmission access administered arrangements could be seen to distort efficient transmission allocation and could be seen to be discriminatory because:

- the current arrangements are administered on a first come first serve basis;
- there are no defined firm short or long-term rights;
- there are currently no tradable rights;

[21] Note that, since October 2002, National Grid Company and Transco have both operated as businesses of National Grid Transco plc.

- there are no transparent arrangements to address competing requests for access rights[22]; and

- the current arrangements do not provide efficient long or short-term signals for constraint management, the provision of incremental capacity or longer term investment.

2.78. Ofgem considers that NGC could seek to develop transmission entry and exit arrangements which:

- establish a framework that would provide more accurate targeting of short and long-term costs imposed on the system by locational patterns of generation and demand; and

- provide effective signals and incentives to allow NGC to make transmission capacity available in the short-term and to invest appropriately in transmission capacity in the long-term.

2.79. In February 2003, Ofgem directed implementation of an amendment to the Connection and Use of System Code (CUSC)[23] in which two separate capacity products "Transmission Entry Capacity" (TEC) and "Connection Entry Capacity" (CEC) were defined[24]. The amendment had no direct implications on the current administered system and charging arrangements for access to NGC's electricity transmission system. However the amendment removes ambiguity in the definition of the capacity product, and in particular, the nature of the rights and obligations that flow from the holding of such rights.

[22] CUSC amendment proposal 068 'Competing requests for TEC' is currently under consultation.
[23] The Connection and Use of System Code (CUSC) is the legal document which forms the basis of the contractual framework for connection to, and use of, National Grid's high voltage transmission system.
[24] CUSC amendment proposal 043 'Transmission Access – Definition' Ofgem decision published 6 February 2003.

3. Objectives

3.1. This Chapter sets out the objectives that the Authority must fulfil when it decides whether to consent to the DN sales process. It additionally sets out Ofgem's objectives with respect to determining options for the form and content of the offtake arrangements. As previously described, these arrangements will describe and govern the commercial and operational arrangements applicable at the interface between the DNs and the NTS, following a DN sale.

Regulatory approval process

3.2. In order to dispose of a DN asset, Transco will require the consent of the Authority in accordance with amended standard condition 29 of its GT licence.[25] In deciding whether to give consent, the Authority must act in accordance with its statutory objectives and duties as set out in the Gas Act 1986 (the Gas Act) as well as other public law duties.

3.3. The principal objective, set out in Section 4AA of the Gas Act, provides that the Authority is 'to protect the interests of consumers in relation to gas conveyed through pipes, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas'. In addition, the Gas Act places a number of other key duties on the Authority:

- the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met (Section 4AA(2)(a) of the Gas Act);
- the need to promote efficiency and economy on the part of licence holders to carry on any activity and the efficient use of gas conveyed through pipes (Section 4AA(5)(a)); and

[25] This condition also provides the Secretary of State with a power of veto over any proposal on the part of Transco to dispose of a transportation asset to the extent that it comprises a significant part of the gas conveyance system in Great Britain.

- the need to secure a diverse and viable long-term energy supply (Section 4AA(5)(c)).

3.4. Having regard to these objectives and duties, when deciding whether to consent to the disposal of one or more DNs, the Authority will assess, on the basis of the evidence available, whether present and future customers' interests are protected.

Regulatory objectives

3.5. Ofgem considers both that the principal objective and the general duties have direct relevance to the development of the form and content of the offtake arrangements. In addition to meeting the Authority's statutory duties, the post-sale industry structure must establish a relationship between the NTS and DNs that permits each network owner to fulfil its own statutory and licence obligations.

3.6. These include:

- the duty of each GT to develop and maintain an efficient and economical pipeline system (Section 9(1)(a) of the Gas Act);
- the duty of each GT to facilitate competition in the supply of gas (Section 9(1)(A)); and
- the duty of each GT to avoid any undue preference or undue discrimination in the terms on which it undertakes to convey gas (Section 9(2)(b).

3.7. Further, as set out in standard condition 4D of the GT licence, each GT has an obligation to ensure that it conducts its transportation business in a manner best calculated to secure that neither it nor its affiliates and related undertakings obtain any unfair commercial advantage, including, in particular, any advantage from a preferential or discriminatory arrangement.

3.8. A further licence condition that is relevant to this RIA is the requirement for the GT to charge on a cost reflective basis. This is outlined in paragraph (5) (a) of standard licence condition 4A of the GT licence, which states that the GT must

use a charging methodology that reflects the true costs incurred by the licensee in its transportation business.

3.9. In addition, the post-sale industry structure must be consistent with the draft European Union Gas Regulation.

3.10. Finally, Special Condition 27 of Transco's GT licence requires Transco to operate the NTS in an efficient, economic and co-ordinated manner. Ofgem considers this licence condition to be of direct relevance to the development of the offtake arrangements.

3.11. Ofgem will carefully consider each of these obligations and duties, as well as any others raised as being relevant through the consultation process, in determining the most appropriate form and content of the offtake arrangements.

3.12. Where appropriate, Ofgem will also consider the experience of the electricity industry (in which there is a relatively fragmented industry structure and different governance arrangements which support multiple distribution system operators). In doing so, it is important to note that the starting position in gas and electricity varies considerably and therefore comparisons may not always be appropriate (hence a direct comparison may not always be appropriate).

3.13. In considering these obligations and duties Ofgem has identified a number of key issues that will need to be addressed in the development of the offtake arrangements. These are set out in the following Chapter.

4. Key issues

4.1. This Section outlines the key issues that will be addressed when determining an appropriate form and content for the offtake arrangements – i.e. the arrangements that describe the commercial and operational interface between the NTS and loads connected to the NTS including DNs.

4.2. The issues identified as being key to the development of the arrangements are:

- no undue discrimination - both between Independent Distribution Networks (IDNs) and Retained Distribution Networks (RDNs), and between DNs and other NTS offtake points;
- economic and efficient network development;
- security of Supply;
- effect on competition; and
- accountability and regulatory involvement.

4.3. At the end of this Chapter, an additional issue is outlined which relates to all of the alternatives discussed in this paper. This issue is the appropriate form of governance arrangements.

Description of issues

Preventing undue discrimination

4.4. Ofgem considers that the prevention of undue discrimination is one of the most important considerations in determining the form and scope of the offtake arrangements. This is because unduly discriminatory decision making - over both the long term and short term - can lead to inefficiencies in both the level and allocation of cost borne by end customers across the network. Undue discrimination may also potentially result in an uneven impact across regions (given that cost distortions caused by undue discrimination would affect price control determinations). Undue discrimination could also distort investment decisions, resulting in long-term costs to customers.

4.5. In this Section, we describe two specific issues relating to non-discrimination. These are:

- No undue discrimination between DNs; and
- No undue discrimination between DNs and other NTS offtake points.

No undue discrimination between DNs

4.6. One of the key considerations of this RIA is to ensure that the offtake arrangement delivers a framework within which offtakes from the NTS are provided on a non-discriminatory basis. This includes ensuring that there is no undue discrimination by Transco's NTS between the IDNs and Transco's RDNs.

4.7. Unduly discriminatory conduct would occur if Transco were to behave in a way that conferred a commercial advantage on its RDN businesses, without objective reason, without making the same benefit available to each IDN or vice versa. Of particular concern are any opportunities for unduly discriminatory conduct that could arise when Transco makes operational and investment decisions, shares information between business units, and when it allocates shared costs. These concerns are described below.

4.8. First, Transco could operate its NTS and RDN businesses to maximise the benefits to the company in a way that disadvantages IDNs. For instance, undue discrimination could arise in relation to the following activities:

- allocating offtake rights, including Permitted Maximum Daily Quantity and pressure commitments;
- contracting for flow rate flexibility and diurnal storage;
- operational management of flow rate flexibility and diurnal storage;
- contracting for and calling interruption; and
- scheduling of maintenance.

4.9. Second, Transco's NTS business could share with RDNs commercially sensitive information about the operations and intentions of the IDNs. For instance, contractual offers made by IDNs to the NTS could be notified to a RDN, thus

placing the RDN in a commercially advantageous position. Further, the NTS could share certain operational information with RDNs that could crucially affect the value of interruption but not provide this information to the IDNs at the same time.

4.10. Third, Transco could provide a cross subsidy to the RDN businesses by allocating costs to the NTS which more properly should be met by the RDNs. This would have the effect that IDN customers would be obliged to cover costs that should be borne by RDN customers.[26]

4.11. When consulting on the separation of electricity supply businesses from Public Electricity Supplier (PES) businesses, Ofgem identified a fourth area of concern; that the perception of integration of PES distribution and supply businesses could distort competition.[27] This issue does not arise in Transco's case because the both the NTS and DNs are monopolies so consequently a perception of integration is unlikely to create a barrier to entry.

4.12. A key regulatory safeguard to ensure no undue discrimination is business separation. In Chapter 5, Ofgem considers a number of different forms of business separation.

Non-discrimination between NTS offtake points

4.13. In addition to preventing discrimination between DNs, the offtake arrangements should deliver a framework in which Transco is unable to unduly discriminate between DNs and parties who hold agreements with Transco at other NTS exit points. The arrangements should therefore be developed in a way that delivers non-preferential treatment between the DNs and holders of NExAs, Connected System Agreements (including those applicable to interconnectors) and Storage Connection Agreements as these are all customers of the NTS.

4.14. There is the potential for undue discrimination to distort decision making in both the long and short term. In the absence of a single and consistent set of NTS exit capacity charging arrangements across all offtake points, Transco's investment decision-making could be distorted. In operational timescales, there may also be

[26] Although standard condition 41 of Transco's licence prohibits cross subsidies, Ofgem considers that structural measures are likely to be more effective than such general provisions.

an incentive to deliver exit capacity (and enhanced flow rate flexibility) in an unduly discriminatory way, particularly if charges apply for offtake rights.

4.15. Ofgem considers this to be a particularly important issue as it considers that charges for NTS exit capacity should be reflective of costs. Accordingly, charges levied for NTS exit capacity at every offtake point should be calculated according to the same methodology, this being one that calculates charges on the basis of the actual cost of the exit capacity provided.

4.16. Cost reflective charging is also a key requirement on the basis of the promotion of competition. Significant distortions to competition may arise where charges do not reflect true costs. This is because distortions in charges will have implications for the entire value chain, and has the potential to reduce the efficiency of economic decision making at each stage.

Economic and efficient network development

4.17. An underlying issue that has an important bearing on the preferred offtake arrangements is the development of options that actively promote the economic and efficient development of gas transporters systems.

4.18. The offtake arrangements should deliver a framework in which there are incentives – on both network owners and network users – to make clear commercial signals, leading to efficient system planning and operation. This means that the framework should provide an incentive for both the DNs and network users to reveal their true requests for NTS offtake capacity, in timescales appropriate for the planning of necessary investment. In addition, it should ensure that the NTS responds to these signals, either through an appropriate set of incentives, or through a regulatory obligation. An example of inefficient network operation that the offtake arrangements should ensure will not be able to occur would be the withholding of secondary flexibility by the NTS with a view (potentially) to use this for balancing purposes. This could lead to significant distortions in cost, effectively representing a cross-subsidy from the DNs to the NTS.

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[27] Offer and Ofgas, *Separation of Businesses: Proposals and Consultation* May 1999

Security of Supply

4.19. Consistent with Ofgem's general duty to "secure a diverse and viable long-term energy supply", this RIA considers security of supply to be an important issue in the development of the offtake arrangements. It is therefore essential that the form and content of the arrangements is developed in such a way that ensures market participants, including DNs and the NTS are incentivised to manage security of supply efficiently.

4.20. An objective of the arrangements is to promote the efficient signalling of the investment requirements by customers. Under certain conditions, this may have the potential to improve the efficiency of investments relating to security of supply. This issue is described in more detail in Chapter 5.

Effect on competition

4.21. Ofgem considers that the offtake arrangements should be developed in such a way that protects – and where possible promotes - competition in wholesale markets and retail markets.

4.22. Ofgem considers that there is a risk that the sale of DNs could weaken competition in these markets, as a consequence of disparate network ownership. For example, should network operation become fragmented, the complexity of associated business processes and procedures could increase (including, for example, arrangements for network charging). Such increases in complexity have the potential to increase the costs of industry participants, and hence have a detrimental effect on wholesale competition through raising barriers to market entry.

4.23. In a number of areas however, Ofgem is of the opinion that the DN sale process may lead to a promotion of competition in the gas market. This opportunity may be strongest in the wholesale market – in particular through the pricing of new services. One example of this is operational flexibility, where a clear set of offtake arrangements may enable more transparent pricing and more efficient network development over the longer term. In particular, the DN sale process may lead to innovations in the commercial business of DNs – such as the agreement of new contracts with end customers.

4.24. In terms of retail competition, disparate network ownership could lead to an increase in complexity of business processes, such as the change of supplier process which could potentially have a detrimental effect on retail competition. However, retail competition may be enhanced through innovative products that retailers can design, enabled by more flexible and responsive DNs. In this respect, the DN sales process may represent an opportunity to retailers, rather than a complicating factor. Ofgem's RIA on agency and governance arrangements has also addressed this issue (specifically through the assessment of "Option C") which was specifically designed to reduce the risk of inefficient industry fragmentation.

Accountability and regulatory involvement

Regulatory involvement

4.25. A guiding principle in the development of the offtake arrangements is that they should define a framework that requires minimal ongoing regulatory intervention. If the arrangements clearly define all of the operational and commercial responsibilities of parties to the arrangements, then Ofgem's role in the arrangements should be limited to that of providing oversight.

Roles and responsibilities

4.26. The offtake arrangements should specify the commercial and operational arrangements applicable at the interface between the DNs and the NTS in a transparent manner. This clarity is essential so that roles and responsibilities are clearly assigned to parties in the arrangements. This in turn enables individual parties to be held accountable for the full and timely undertaking of their allocated roles.

Governance arrangements

4.27. The governance arrangements for the offtake arrangements should be designed in accordance with the following principles:

- **No undue discrimination.** The governance for the offtake arrangements should avoid any undue discrimination between parties including between RDNs and IDNs. Hence decisions should be made with

reference to predefined objectives (and decision makers should have full access to all relevant information);

- **Transparency.** Decisions should be taken transparently. This means that information must be available to all affected parties and that discussion and analysis should be visible;

- **Inclusiveness.** There should be no exclusion of relevant information or viewpoints. Consequently, contributions should be allowed from all interested parties on key decisions;

- **Effectiveness.** Decision-making processes should balance the need for timely decision making and thorough consideration of issues; and

- **Efficiency.** Decision-making processes should not impose undue administrative costs on industry participants and should ensure that issues are resolved in a timely manner.

5. Options

5.1. In this Chapter we outline proposed high level options for the key elements of the offtake arrangements. We set out options for:

- **NTS exit rights allocation -** the process through which rights of offtake from the NTS are allocated to users of the NTS;
- **diurnal storage and operational flows -** how the flexibility inherent within the NTS is allocated, both in the long term and the short term, to users of the NTS;
- **the extent of business separation -** the extent to which the NTS and RDNs should be required to separate to engender a greater degree of equality of treatment between RDNs and IDNs; and
- **governance arrangements -** the framework within which the arrangements will evolve over time.

5.2. These areas are the principal focus of this RIA and are discussed extensively in the remainder of this Chapter. However, Ofgem recognise that, prior to any disposal of a DN by Transco, the offtake arrangements will need to define arrangements for a range of additional issues, including:

- connection facilities **-** details of facilities at each of the offtakes conveying gas from the NTS to the DN;
- safety and emergency **-** the roles and responsibilities of the NTS and DNs in developing, testing, and implementing emergency procedures;
- measurement **-** the arrangements relating to offtake meters and gas flow measurement including meter performance provisions and error correction;
- maintenance **-** the arrangements by which NTS and DNs will coordinate planned asset maintenance and conduct works in a safe manner;
- gas quality **-** the quality requirements of gas flowing at offtakes, and the consequences where there is non-compliant gas;

- liabilities - general liability provisions; and
- exchange of information - the information that needs to be exchanged between the parties for both Network Code and operational purposes.

5.3. Significant input will be required in all of these areas before the offtake arrangements can be completed, and the workgroups will continue to focus on these areas in the coming months.

NTS exit rights allocation

5.4. As described in Chapter 2, primary offtake rights concern the level of NTS offtake capacity that is available at each offtake point on the NTS (i.e. for DN offtakes and other directly connected loads). These rights have been termed "primary" to distinguish them from rights to other capacity features of the NTS offtake arrangements such as diurnal storage, and unplanned flexibility of offtake. These have been described as "secondary" as they are considered by Transco to be "by-products" of provision of the primary product of NTS offtake capacity. The secondary rights are discussed later in this Chapter.

5.5. This Section outlines four proposed alternatives for the allocation of primary offtake rights under the offtake arrangements. A generic feature of all the options is the extent to which NTS exit capacity is released by Transco as NTS owner. This is discussed this briefly before the details of each option for the allocation of NTS exit capacity are set out.

Release of network capacity

5.6. Over the long term, users of the system will provide signals as to their requirements for NTS capacity. This will be charged to those users on a cost reflective basis. The network owner will satisfy demand for capacity through investment or alternatively through entering into interruption arrangements. This pipeline investment currently has a lead time of up to three years.

5.7. In the short term, therefore, there exists the possibility that users of the network require a level of capacity that physically cannot be provided by the network owner because of the lead times associated with pipeline investment. This requirement might arise because a new user wishes to connect to the network or

that an existing connected user requires additional offtake capacity. In these cases, Ofgem considers that there are two approaches to how rights to use the network should be allocated in a manner consistent with the principle of no undue discrimination.[28] These are:

- **unconstrained allocation**. Under this approach, network owners would provide capacity to all users of the network, both existing and any new users, as requested by those users. Users would pay the regulated charge for the amount of capacity they request. In some cases, this capacity purchased by users might be in excess of the physical characteristics of the network at some locations on the network. Hence, there would exist the possibility that, under this approach, the demand for use of the capacity requested and purchased by users would, in aggregate, exceed what the network can physically deliver. In these cases, the network owner would buy back capacity rights from some of those users that originally purchased it to ensure that, in aggregate, the rights held and used by network users would not exceed the capacity of the network. The costs of these buy backs would be recovered from network users, although, typically, the network owner would be subject to an incentive scheme to encourage it to buy back capacity from network users in an efficient and economic manner; and

- **constrained allocation**. Under this approach, the amount of capacity available to users would be released in a manner that is consistent with the physical capacity of the network. Hence, network users, both existing and new, would be able to acquire capacity to use the network to the extent that it is available. In cases where demand exceeds supply of capacity, it would be necessary to consider a method of allocating the scarce network capacity in a non-discriminatory manner. Under the constrained allocation approach, it would be necessary to consider the need for anti-hoarding measures (such as use it or lose it provisions).

[28] NGC also recognise, in the context of transition arrangements of Generator Access to the Transmission system under BETTA, that only these two approaches are consistent with the principle of no undue discrimination. This is set out in *"National Grid Company Consultation on options for allocating GB transmission access rights under BETTA"*, 21 May 2004.

5.8. The following aspects of each of the four options are considered:

- the key features of the allocation of NTS entry capacity rights; and
- an overview of any associated payment and incentive arrangements.

5.9. The issue discussed in the previous section regarding the method of allocation of network capacity in the short term remains relevant for all of the options.

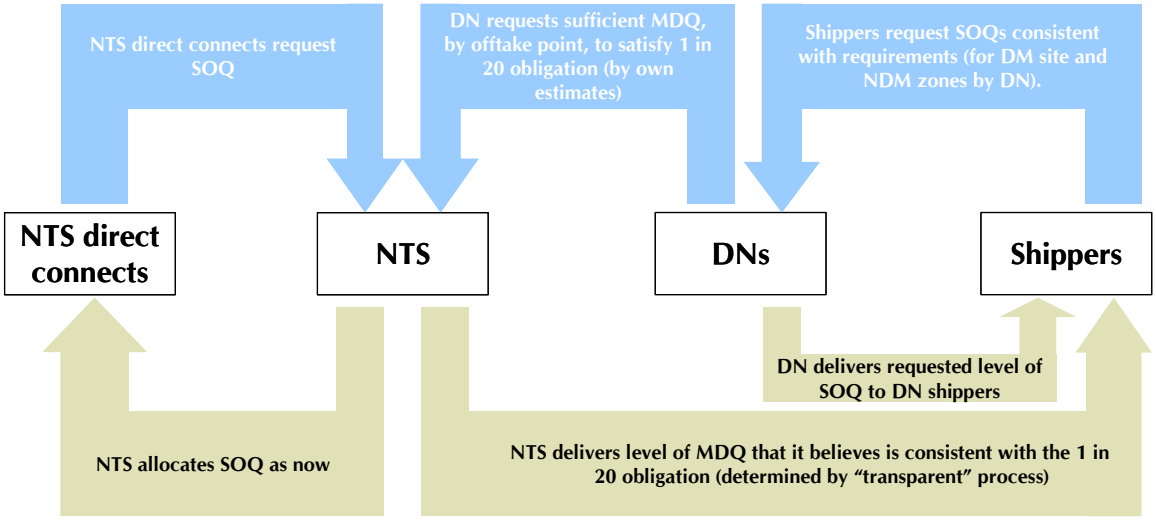
Option 1: Transco's initial proposal

5.10. Transco's proposal was designed to formalise its current internal procedures for allocating capacity between NTS and DN offtake points. Transco's current internal procedures are obviously designed around one ultimate shareholder with aligned commercial incentives.

Key features

5.11. The process for requesting and allocating capacity under this proposal is summarised in Figure 5.1.

Figure 5.1: Overview of Option 1



5.12. In Option 1, the process of allocating capacity is very similar to the current Transco internal processes, in that:

- DNs submit a request for MDQs for each offtake from the NTS, consistent with that DN's estimates of the level of MDQ that would meet the 1 in 20 obligation for its DN;
- NTS direct connects submit Supply Offtake Quantities (SOQs) directly to the NTS (i.e. the maximum daily consumption for a supply point);
- once the NTS has received these requests it allocates MDQs to each DN offtake point; and
- in allocating MDQs, the NTS is also subject to the 1 in 20 obligation.

5.13. In some instances, there is likely to be a degree of judgement required to determine the appropriate volume of NTS exit capacity to allocate to a specific NTS/DN offtake point. In the event of disagreement between the DNs and the NTS over the level of MDQ that should be allocated to a particular NTS/DN offtake point, the Option 1 approach envisages the NTS would make the final decision as to the quantity that should be allocated to that offtake point.

5.14. The process of requesting and allocating MDQs would be consistent with investment planning timescales (i.e. that requests are made for up to five years ahead and are "firm" for three years ahead).[29]

5.15. In contrast to the DNs, NTS direct connects would request the capacity they require through the current SOQ process[30]. Shippers with DN customers would also submit capacity requests to the DNs, in the form of SOQs, as under the present arrangements. The SOQs received by the NTS by both DN shippers and NTS direct connects would then form the basis for their capacity allocations. There would be no direct linkage between SOQ submissions and MDQ submissions made by DNs.

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[29] In Option 1, the concept of "firm" MDQ submissions is misleading, as it is the NTS that determines levels of allocated MDQ, rather than the DNs.

[30] These allow change requests to be made at any time, subject to a number of restrictions on the extent and timing of changes. Change requests that require investment to be undertaken by the NTS are considered in the annual planning process.

Charging

5.16. Consistent with current practice, MDQs relating to physical capacity would be allocated to DNs without charge under this model. Shippers would continue to pay NTS exit capacity charges at NTS/DN offtakes based on the shipper's supply point portfolio within the DN.

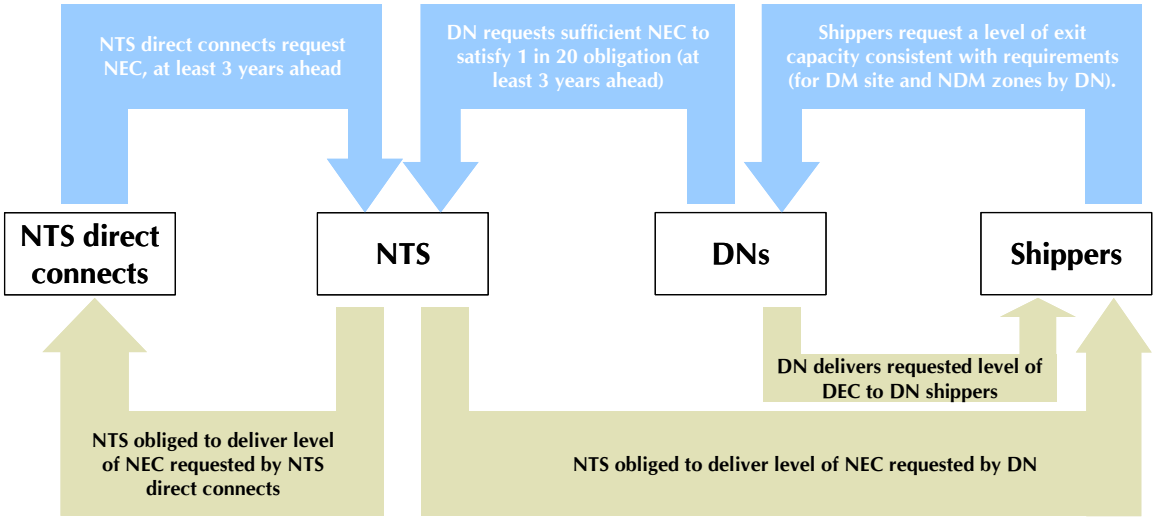
Option 2: NTS connects booking model

5.17. Under Option 2, DNs would have prime responsibility for the capacity allocation process. Also DNs and NTS direct connects would receive equal treatment of capacity allocation.

Key features

5.18. The NTS exit capacity (NEC) allocation process under Option 2 is outlined in Figure 5.2.

Figure 5.2: Overview of Option 2



5.19. The key features of the capacity booking process under this option are:

- DNs would estimate the level of NEC at each NTS/DN offtake point it believes necessary to meet its, DN specific, 1 in 20 obligation;
- NTS direct connect shippers would estimate the level of NEC they require at their offtake points;

- DNs and NTS direct connects would use these estimates as the basis for the NEC requests they submit to the NTS;
- NEC submissions by both DNs and NTS direct connects would be submitted consistent with investment planning timescales (i.e. indicative five years ahead, and firm for three years ahead);
- the NTS would be required to deliver the level of NEC requested at each NTS offtake point by DNs and NTS direct connects (through either investment or interruption agreements);
- shippers would submit DN Exit Capacity (DEC) requests to DNs (by daily metered site and non daily metered zone); and
- DNs would deliver the level of DEC requested by DN shippers.

5.20. It is also possible to envisage a variant on Option 2, in which shippers that use DNs are given the opportunity (but not the obligation) to request their NTS exit capacity requirements directly from the NTS. In effect this would enable shippers that use DNs to bypass DNs in the NTS exit capacity allocation process, yet leave DNs with the residual responsibility of ensuring that the overall level of NTS exit capacity requested at each NTS offtake point was consistent with the 1 in 20 obligation.

Charging

5.21. Under Option 2, there would be two alternatives for the way in which the charges and incentives are applied. These are:

- Option 2A, in which the DN acts as agent for NEC payments; and
- Option 2B, in which shippers make NEC payments directly to the NTS.

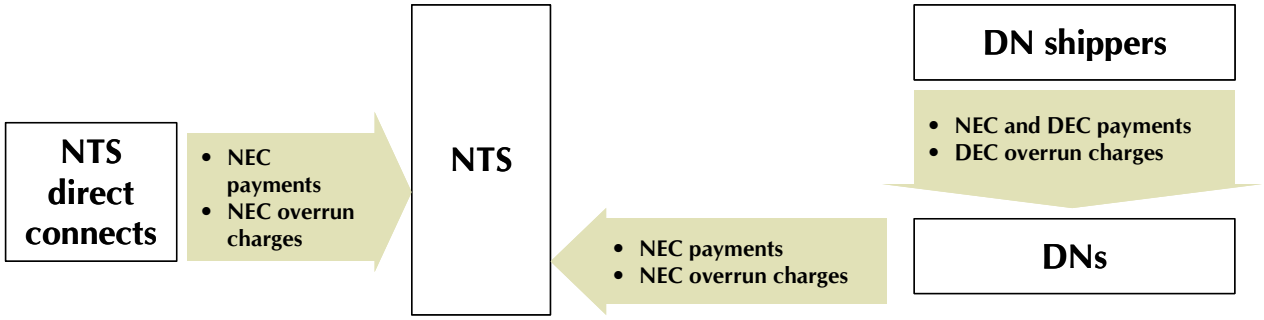
Option 2A

5.22. In Variant A, the DN would have a central role in the payments process. This process is described in Figure 5.3 below.

5.23. Under this alternative, the DN would pay NEC charges associated with their allocated NEC directly to the NTS, and in an identical manner to NTS direct

connect shippers. The DN would then recover NEC charges from shippers, smeared in proportion to their DEC requests.

Figure 5.3: Charging under Option 2A



5.24. Both DNs and NTS direct connects would pay the NTS directly for their requested level of NEC. To the extent that NEC offtake through the NTS/DN interface exceeded the level of NEC allocated to the DN, overrun payments would be charged as follows:

- DNs would pay (cost reflective) overrun charges directly to the NTS. DNs would not pass on these overrun charges to shippers (as DNs would have booked erroneously to meet the 1 in 20 obligation);
- NTS direct connects would also pay NEC overrun charges to the NTS, should their NTS offtake exceed the level of NEC they have requested and been allocated;
- DN shippers would only be liable for DEC overrun charges, in the event that their customers offtake more from the DN network than the allocated DEC volume; and
- An incentivisation framework would be designed for DNs, to encourage them to request an efficient level of NTS exit capacity (and make an efficient trade-off between NEC requests and DN investment where appropriate). The characteristics of an incentive framework such as this are discussed in more detail later in this Chapter.

Option 2B

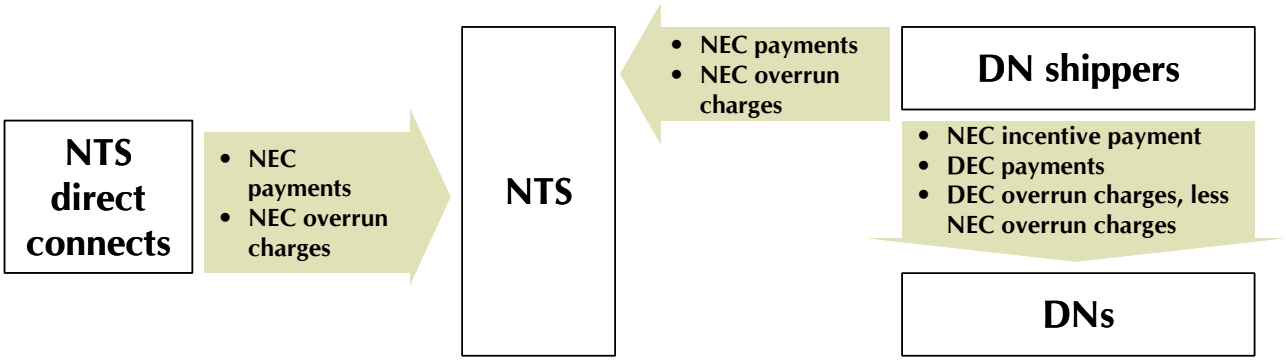
5.25. In contrast to Variant A, Variant B introduces a direct payment flow between DN shippers and the NTS. This is illustrated in Figure 5.4.

5.26. Under this version of the Option 2 model:

- DN shippers would pay the NTS directly for NEC that the DN requests on its behalf;
- DN shippers would also pay the NTS for NEC overruns, but are fully compensated for this by DNs (hence DNs would still be liable for NEC overrun charges, as in Option 2A);
- DN shippers would make DEC payments to DNs, as well as paying DNs any DEC overrun charges incurred; and
- As in the Option 2A, NTS direct connect shippers would pay both NEC payments and any incurred NEC overrun charges directly to the NTS.

5.27. In this approach, therefore, there are no financial flows between the network operators (yet DNs retain liability for NEC overrun charges, as in Option 2A).

Figure 5.4: Charging under Option 2B



Option 3: Shipper booking model (with DN "top-up")

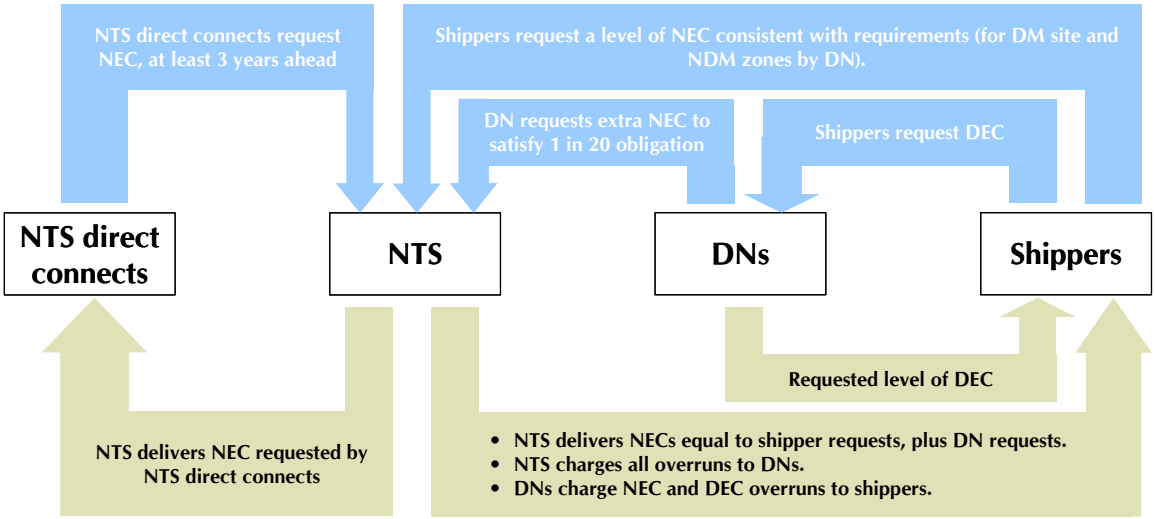
5.28. Option 3 gives DN shippers a central role in the capacity allocation process, as shippers could submit their NTS exit capacity requests directly to the NTS. In addition, DNs would request additional NEC from the NTS, to ensure that NEC

for NTS/DN offtake points is, in aggregate, consistent with the 1 in 20 obligation for that DN.

Key features

5.29. The capacity allocation process under this option is illustrated in Figure 5.5.

Figure 5.5: Overview of Option 3



5.30. The two defining characteristics of this option are:

- DN shippers would determine their own NEC requirements; and
- the DN would retain the 1 in 20 obligation.

5.31. The key features of the booking process under this option are therefore:

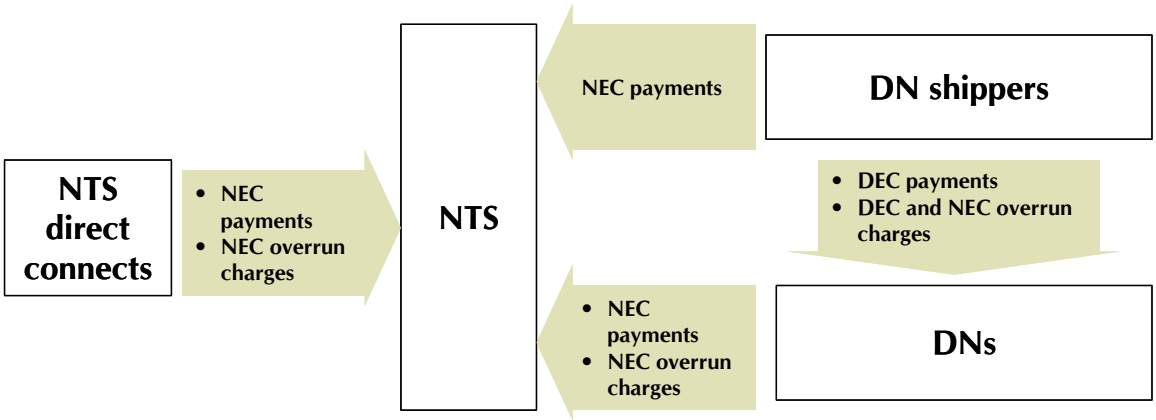
- DN shippers would submit NEC requests directly to the NTS;
- the DN would submit an additional NEC request, calculated as being the difference between the level of NEC the DN considers necessary to satisfy its 1 in 20 obligation, and the aggregate quantity of NEC already requested by DN shippers (if this is lower, in aggregate than the DN shippers' requests);
- NTS direct connects would submit NEC requests consistent with their requirements (as in Option 2);

- NEC requests would (as in previous options) be consistent with investment planning timescales to enable the NTS to deliver the level of NEC requested through a combination of investment and interruption agreements;
- DN shippers would submit DEC requests to the DNs, on a site specific basis for DMs and zonally for NDMs (on an annual basis, as now); and
- DNs would deliver the level of DEC requested by DN shippers (through investment or interruption agreements).

Charging

5.32. Consistent with the central role in the capacity allocation process, DN shippers would also have a direct payment interface with the NTS under Option 3. This is illustrated below in Figure 5.6.

Figure 5.6: Charging under Option 3



5.33. In this option:

- DN shippers would pay NEC charges to the NTS, and DEC charges to the DN, consistent with their capacity requests;
- DN shippers would be liable for DEC overrun charges, paying these charges to DNs in the event that their offtake exceed their holding of DEC;

- DN shippers would also be liable for NEC overrun payments to the extent that the sum of its metered offtake volumes across a DN exceeded its level of purchased NEC for that DN. DN shippers would pay these NEC overrun charges to the DN;

- DNs would pay NEC payments to the NTS (for the increment of capacity it required so that, when shipper bookings of NEC are considered, the overall NEC booking would be consistent with the 1 in 20 obligation); and

- DNs would pay total NEC overrun charges for DN/NTS offtakes (hence DNs would pay for overruns that are incurred at the DN level, but would receive payments from DN shippers to the extent that shippers have exceeded their requested levels of NEC).

Option 4: Shipper booking model (without DN "top-up")

5.34. In this final option, the capacity allocation process would be led by all shippers (both those within DNs and those directly connected to the NTS), who would request their NEC requirements directly from the NTS.

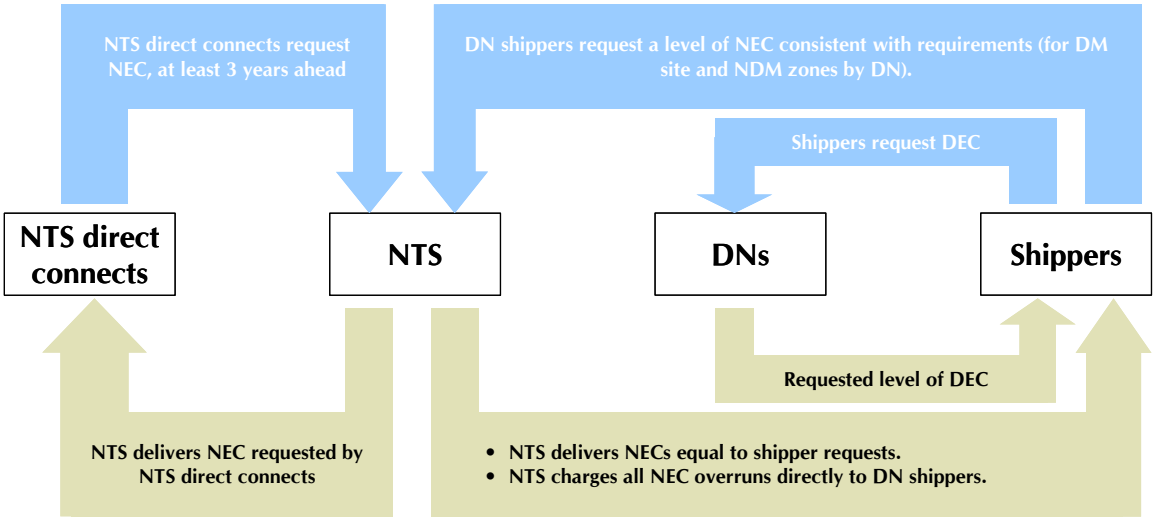
5.35. A consequence of giving shippers responsibility for booking NTS exit capacity is that the 1 in 20 obligation would be removed from DNs. As a consequence, Ofgem recognises that the adoption of this option would require consultation and further consideration regarding the most efficient way of ensuring security of supply is maintained. In Option 4, shippers would have the opportunity to request the level of NTS exit capacity they consider sufficient for their requirements. Ofgem considers that this has the potential to deliver a more efficient approach to determining the amount of capacity required at NTS offtake points than a prescribed measure (such as the current 1 in 20 obligation). In determining the most appropriate approach to this issue, however, Ofgem will ensure that it gives due regard to its regulatory duties, as fully outlined in Chapter 3.

5.36. In the section below, a potential variation on Option 4 is described in which shippers have an option of electing the DN to act as their "agent" in the NEC booking process (where the 1 in 20 obligation is still removed).

Key features

5.37. Figure 5.7 illustrates the capacity allocation process under this option.

Figure 5.7: Overview of Option 4



5.38. As described above, Option 4 removes the 1 in 20 obligation from DNs, as only DN shippers and NTS direct connects would make NEC requests to the NTS (in the purest form of the model). Under these arrangements:

- DN shippers and NTS direct connects would request a level of NEC consistent with their forecast requirements (in timescales consistent with investment planning – i.e. for three years ahead);
- the NTS would be obliged to deliver the requested level of NEC (as in options 2 and 3);
- DNs would not request NEC (and would have no need to do so, given the removal of the 1 in 20 obligation); and
- DN shippers would request their required level of DEC from DNs, which DNs are obliged to deliver.

5.39. In this model there is no requirement for DEC requests by shippers to equal their NEC requests. This is because some shippers (i.e. those with relatively large portfolios of consumers) may be able to take advantage of seasonal diversity of offtake within their portfolio.

5.40. Importantly, Option 4 would require the implementation of sufficiently robust "use it or lose it" provisions on the holding of capacity rights to ensure that there could be no hoarding of capacity rights by individual shippers. In addition, there would be a requirement on the NTS to establish a set of "exchange rates", enabling shippers to trade NEC across "NEC zonal" boundaries. Both of these measures would promote liquidity in secondary markets for NEC, hence enabling those shippers who require NEC to be able to purchase their requirements across varying time horizons, and at economic prices.

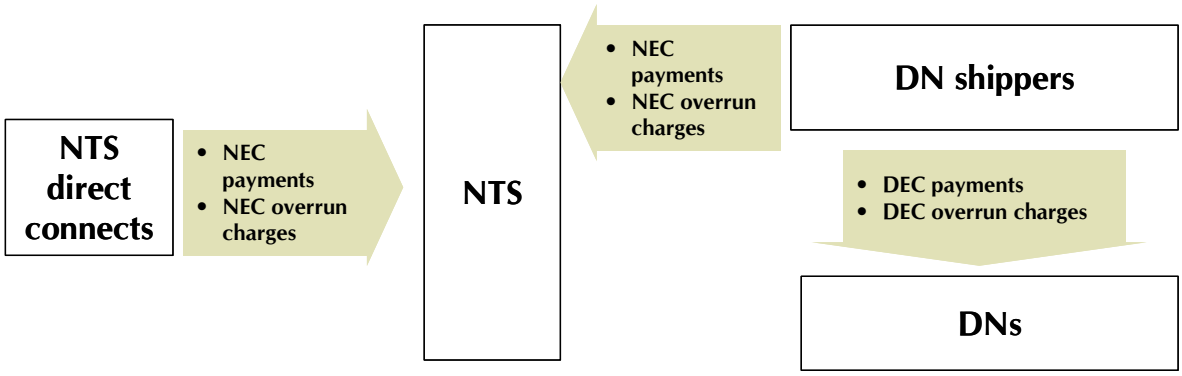
5.41. An alternative to this model is a variant in which shippers are permitted to allow DNs to act as their "agent" in the booking of NTS exit capacity. In this model, shippers would still retain the primary responsibility for booking NTS exit capacity, yet DNs would request NTS capacity for shippers if requested to do so by that shipper.

Charging

5.42. The payment flows associated with Option 4 are depicted in Figure 5.8. The key features of the approach to charging under this option are that:

- DN shippers and NTS direct connects pay the NTS directly for the NEC they request;
- in the event that insufficient amounts of NEC are purchased by a shipper and/or NTS direct connects, overrun charges would be levied by the NTS (to the extent that the sum of metered offtake volumes across their NTS zone exceed the level of purchased NEC);
- DN shippers would pay DNs directly for DEC requested, and for any DEC overruns incurred; and
- there would be no payment flows between DNs and the NTS.

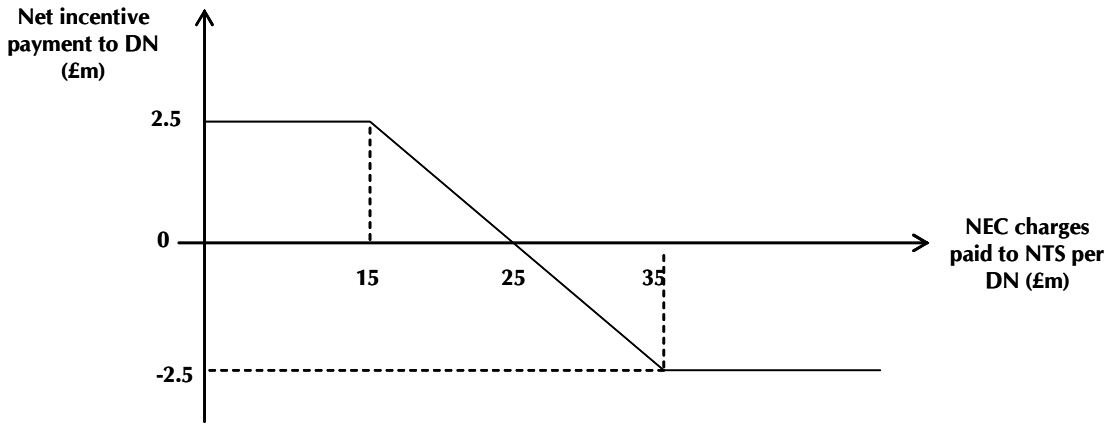
Figure 5.8: Charging under Option 4



DN incentives in the proposed options

5.43. In addition to the payment flows outlined for each of the options set out above, Options 2 and 3 would both involve the placing of appropriate incentives on DNs. This is designed to discourage the DNs from the potential natural tendency to over-request NEC from the NTS that could exist under the options in under which the DNs are required to request this capacity[31]. An incentive scheme would therefore encourage the optimisation of any potential to trade-off NEC requests with DN investment.

Figure 5.9: DN incentive scheme example



[31] The tendency of the DNs to over request (as more fully described in Chapter 6) would result from DNs preferring to request NTS exit capacity, rather than undertake (substitutable) DN investment.

5.44. An incentive scheme such as this is outlined in Figure 5.9. In this illustrative example, it is assumed that the charge associated with an "expected" level of NEC requested by a DN is £25m, and that deviations around this level of charge have incentive payment implications for the DN (subject to a cap and collar, here set at +/- £2.5m).

5.45. In this example, DNs would "share" the cost of NEC charges in the event that overall NEC charges exceed £25m (up to a maximum level of £2.5m). Conversely, DNs would receive a payment (capped at £2.5m) should overall NEC charges be lower than anticipated.

5.46. This scheme will therefore mean that DNs will need to balance the incentive to earn additional payments through the scheme with the licence obligation to deliver sufficient capacity at NTS offtake points to satisfy the 1 in 20 obligation. In addition, it is essential that the scheme recognises the trade-off between DN investment and the level of required NEC. Should, for example, a particular DN deem that a combination of investment and lower than "expected" NEC requests would satisfy the 1 in 20 obligation, then the incentive arrangements should result in a positive payment to that DN.

Diurnal storage and operational flows

5.47. So far in this Section, the models that have been outlined describe methods through which levels of the "primary" capacity product at NTS offtake points may be requested by DNs, shippers and NTS direct connects. This Section outlines the proposed principles for the determination of levels of a "secondary" capacity product at these points on the NTS network – namely diurnal storage, and associated operational flows.

5.48. In general terms, diurnal storage can be considered as being flexibility in the rate of offtake to the extent that gas offtake over the day still equals that implied by a flat application of the planned rate. This results from the need to satisfy the fact that customers offtake gas throughout the day at varying rates (hence resulting in significant swings in offtakes within day). Diurnal storage is defined in more detail in Chapter 2.

5.49. Given this definition of diurnal storage, it is also important to consider jointly arrangements for operational flows of gas (i.e. those flows that are required to satisfy daily gas flows through offtakes, in line with nominations). On the basis of the conclusions of Ofgem's RIA on the allocation of roles and responsibilities between networks, following the disposal of a DN by Transco, all DNs will become responsible for daily operations including the remote operation of their systems and the control of flows from the NTS to the DNs at the NTS/DN offtake points.[32]

5.50. In this RIA, we propose two alternatives for the allocation of diurnal storage and arrangements for operational flows:

- Option A - a "planned" approach, in which diurnal storage is allocated to DNs by the NTS, and operational flows are rule-based; or
- Option B - a market based allocation and pricing of both diurnal storage and operational flow parameters.

Option A

5.51. Transco's original proposal constitutes the first of these two allocation alternatives. Under this option, diurnal storage rights would be allocated by the NTS to DNs on a similar basis to now (without charge), and rights to flow above or below the defined operational flow rates would be determined according to a set of rules defined by the NTS. Hence, alongside the specification of NEC for each NTS/DN offtake point there would be set of parameters defining both the level of diurnal storage available, and operational flow requirements. These would include:

- the diurnal storage quantity;
- "high" hourly flow rate;
- "low" hourly flow rate;
- high and low pressure levels; and

[32] Initially, the DNs will discharge this responsibility through a System Operation Managed Service Agreement (SOMSA) with Transco, until such time as they have developed their own capability.

- high and low pressure time periods.

5.52. In this option, allocation of these rights would be to the DN irrespective of the option selected for the setting of the level of primary rights. As current arrangements only provide for provision of NTS diurnal storage between the NTS and DNs, there would be no possibility of NTS direct connect shippers being able to access this "secondary" capacity right.

Option B

5.53. An alternative approach would be to allocate diurnal storage rights (and rights to flow above or below the defined operational flow rates) on a non-discriminatory basis at all NTS offtake points. Allocation according to market-based principles (rather than being determined through a codified set of rights, based on current practice) is likely to lead to a different allocation of flexibility rights than would arise under Option A.

5.54. This approach could give DNs and other NTS offtakes (as well as the NTS, to the extent that it requires diurnal storage from DNs) the opportunity to signal the value they place on both diurnal storage rights, and the right to deviate from predefined operational parameters. Although the exact form of the allocation arrangements for both diurnal storage and the right to deviate from operational flow parameters would require more detailed work, in principle this would enable those parties who value the flexibility the most to acquire it, in cases where it is scarce. This would enable prices to emerge for both sets of rights, hence leading to a more efficient allocation of scarce NTS flexibility. This is in contrast to Option A in which rights for flexibility are allocated on a planned basis.

Business separation

5.55. The various options for business separation are set out in Chapter 5. These options are all designed to prevent the risk of undue discrimination between RDNs and IDNs. Given that the purpose of this document is to contribute towards the development of a post-DN sales industry structure, Ofgem has not included the status quo as an option.

5.56. This Section assesses three options for business separation between Transco's NTS and Transco's RDNs:

- **Option 1: Transco's proposals.** This option would permit Transco to retain its existing level of business separation between NTS and RDNs, with further safeguards being provided through the adoption of targeted rules and licence conditions.

- **Option 2: Structural separation**. This option would put in place structural separation between the NTS and the group of RDNs, including information separation, operational separation and physical separation.

- **Option 3: Legal and structural separation.** In addition to the requirements of Option 2, the NTS and the group of RDNs would be in two separate legal entities with two separate gas transporters licences.

Option 1: Transco's proposals

5.57. Transco considers that separation, beyond that already in place within Transco, will create unnecessary costs. Transco also considers that targeted rules, transparency of NTS decision making, licence conditions and codes of conduct are sufficient to remove the potential for undue discrimination.

5.58. The key mechanism by which Transco proposes to manage the risks of undue discrimination is the Offtake Code. Transco suggests that the Offtake Code rules could be implemented in a similar manner to the current System Management Principles and Operational Guidelines. Transco would also continue the Operational Forum in order to provide industry players with the opportunity to enquire about NTS decisions regarding decisions taken on specific days and in relation to specific events on the system. Transco argues that this will allow all parties to build up an understanding of NTS decisions under the Offtake Code. It should be noted that part of this RIA (and wider considerations) concerns the appropriateness of an Offtake Code.

5.59. In addition to the Offtake Code, Transco proposes to adopt the following measures to prevent undue discrimination:

- **Code of Conduct.** Transco proposes to impose a Code of Conduct on the communication of information between NTS and all DNs. This Code

of Conduct would apply to all NTS employees who operate at the NTS/DN interface and would be reinforced with guidance and briefings.

- **Separation between NTS and DNs, in accordance with existing practices.** Transco argues that the NTS and DNs are already separate in many respects. Transco has indicated that its transmission and distribution businesses already have separate executives, separate CEOs, and separate planning tools and processes. To some extent, distribution and transmission also have separate information systems and separate employees.

- **Licence Provisions.** Transco believes that existing licence conditions and competition law will prevent undue discrimination. However, Transco accepts that Ofgem may seek to place additional licence restrictions on the NTS to support these general requirements.

Option 2: Structural separation

5.60. Structural separation would be enforced through the GT licence. Ofgem considers that structural separation comprises a number of forms of separation, including information separation, operational separation and physical separation:

- **Information separation** would involve ensuring that RDN staff could not obtain access to NTS information that could potentially confer an undue competitive advantage on their business relative to an IDN business. It would also ensure that the NTS could not obtain access to RDN information that could potentially confer a competitive advantage on Transco relative to an IDN business. This form of structural separation entails that:

  - Transco would need to ensure that RDN businesses do not have access via shared computer systems to information that relates to or is derived from the NTS business, and that would confer an undue competitive advantage on the RDN business, except where the information is made available on equal terms and conditions to IDN businesses. This could be achieved, for instance, via firewalls and

password-only access. Transco has indicated that it already has largely separate information systems for its NTS and DN businesses.

- Restrictions would be imposed on communications between members of NTS staff and members of DN staff. This could be achieved via a Code of Conduct like the one proposed by Transco under Option 1. Ofgem considers that, in order for a code of this nature to be effective, it should be supported by a robust internal and external compliance regime.

♦ **Operational separation** would mean that Transco's NTS and DN businesses would be operated as separate businesses. If operational separation was required, Transco's transmission and distribution networks would need to be planned and operated separately by separate staff. The requirement for operational separation would apply only to those staff and processes that could potentially confer an undue competitive advantage on Transco's DN business relative to an IDN business. It would not apply to support functions such as human resources.

♦ **Physical separation** would mean that the offices from which Transco operates its NTS business are separate from the offices from which it operates its RDN business. Physical separation could be accomplished by establishing NTS and DN offices in separate buildings. Alternatively, Transco could restrict access to offices in different parts of a single building (for instance, by locating its NTS and DN businesses on separate floors with separate security access).

Option 3: Legal and structural separation

5.61. In addition to the requirements for information separation, operational separation, and physical separation required under Option 2, Option 3 would also involve a requirement for legal separation. Legal separation would involve the group of RDNs being legally distinct from the NTS by way of a separate licensed company.

Governance of the arrangements

5.62. There are a number of specific issues that relate to governance of the offtake arrangements – the most significant of these being the relationship between the arrangements and Transco's Network Code. In the electricity industry (which clearly has a different starting position) the arrangements for connection to and use of NGC's transmission system are all governed under the Connection and Use of System Code.

5.63. Given the importance of the arrangements in the interface between Transco and the IDNs and Transco's customers more widely, it is essential that the governance arrangements are robust enough to ensure that the arrangements can evolve efficiently and effectively. Governance arrangements should therefore be clear and efficient (hence not imposing undue costs on industry participants, and ensuring that issues are resolved in a timely manner).

5.64. Ofgem considers there are two potential alternatives for the governance of the offtake arrangements. These are:

- **Governance under Transco's Network Code (or an alternative inclusive code covering all offtake arrangements)**. Under this alternative, all connectees to the NTS would be parties to the offtake arrangements (including shippers and DNs). This would enable users as well as network operators to propose modifications to the arrangements.

- **Offtake Code**. The alternative approach would be to design offtake arrangements as a set of operator to operator obligations. Given that only network operators would be permitted to be parties to the offtake arrangement in this form, this would imply a set of separate arrangements between the NTS, and other NTS direct connects. The offtake arrangements would then be governed separately from the Network Code, hence customers would not have the opportunity to propose modifications.

5.65. Ofgem is considering the detailed implications of these two alternatives within the workgroups, but would welcome views from respondents at this stage on the

most appropriate high level governance arrangements for these offtake arrangements.

6. Costs and benefits

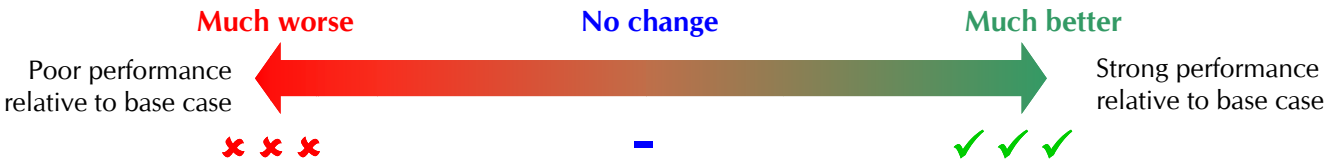
6.1. This Chapter evaluates the costs and benefits of each of the options outlined in the previous Chapter. We therefore present separate cost and benefit evaluations for options relating to:

- NTS exit capacity;
- diurnal storage and operational flows; and
- business separation.

6.2. Ofgem has assessed these options qualitatively, and where possible, quantitatively. The benefits of removing market distortions, such as undue discrimination, are generally difficult to quantify, since they depend upon the inevitably uncertain evolution of the relevant market, including in this case network system conditions. The calculations are therefore very dependent on the assumptions that are made. Ofgem has set out the assumptions that it has made in assessing both the costs and the benefits associated with the various options, which are detailed in Appendix 1 to this document, and invites respondents views on these assumptions.

6.3. The qualitative assessment presented in this Chapter is expressed as a rating that compares the performance of the option (in respect of a particular issue) against the performance of the base case. The spectrum of terms used in the qualitative assessments described in the remainder of this Chapter is illustrated in Figure 6.1

Figure 6.1: Interpretation of qualitative assessment



6.4. The assessment of each option is made against each of the key issues set out in Chapter 4.

6.5. Ofgem does not consider that it is appropriate to use the status quo of a "no sale" scenario as a base case for assessing cost and benefits of different options for the offtake arrangements. This is because this RIA has been developed in

order to contribute to the development of a framework that will facilitate the broader DN sales decision; hence Ofgem does not consider the status quo (in which Transco retains ownership of all the DNs) as an appropriate baseline for comparison. Ofgem's final RIA will consider the total costs and benefits of NGT's planned sale of one or more of its DN businesses.

NTS exit capacity

6.6. Option 1 has been defined as the "baseline" option, in that it constitutes the closest possible option to current practices. Accordingly, we do not explicitly define in quantitative terms the costs and benefits of Option 1. Instead, the quantitative analysis defines the costs and benefits of the three remaining options in incremental terms relative to the baseline of Option 1[33].

Option 1: Initial Transco proposal

6.7. The costs and benefits of this option are set out below:

Costs

6.8. The potential costs that apply to Option 1 are as follows:

- **Poor economic and inefficient network operation and development**. Under Option 1, Transco as NTS owner would determine the allocation of MDQs across offtake points in a process which considers the levels of MDQ requested from DNs. The costs to DNs would not vary in proportion to the level of MDQs they request, or the MDQs they are allocated.

  Given that a DN would not make any payments for NTS capacity, there could be a natural tendency for DNs to submit high MDQs (as this may enable DNs to reduce the amount of investment they may otherwise undertake). Ofgem considers that, in Option 1, a natural tendency for DNs to over-request capacity might exist. In turn, these over-requests

[33] This approach is consistent with the RIA document "Allocations of roles and responsibilities between transmission and distribution networks", in which the baseline scenario was also the closest alternative to current practices, assuming that one or more network distribution businesses is sold.

may potentially lead to over-investment by the NTS[34]. This has the clear disadvantage of reducing the economic and efficient development of the network.

- **Potential for undue discrimination between IDNs and RDNs**. Option 1 would give the NTS ultimate responsibility for determining the level of MDQs by offtake point that it believes would be consistent with its 1 in 20 obligation.

  Given that Ofgem and the workgroups agreed that the allocation decision would, to some extent, be subjective and as the final decision would reside with Transco there would be the potential for the NTS to treat the IDNs and RDNs in a discriminatory manner.

  In the long term, Transco could, potentially, discriminate between DNs in the location of NTS investment (for example, tending to undertake investments in the NTS networks that benefit RDNs rather than those that directly benefit the IDNs).

  Discrimination of this nature may therefore lead to an inappropriate allocation of MDQ between IDNs and RDNs. In the event that this misallocation is significant, DNs could be forced into undertaking investment that they would otherwise not have made, had the DNs and NTS remained under a single owner. This view has been endorsed by the workgroups and would result in an increase in costs ultimately for customers.

- **Regulatory involvement.** The capacity allocation process outlined in Option 1 has the potential for generating lengthy discussion between DNs and the NTS on the level of MDQ that is consistent with the 1 in 20 obligation. Under this process, DNs would request the level of MDQ by offtake point they believe is required, although Transco, as owner of the NTS, is the final arbiter of the volume of MDQ allocated.

  The proposed process is based upon current (internal) Transco processes. Were some DNs to have separate owners, however, there would be a

[34] In the working groups, Transco also agreed that this may be a disadvantage of this option.

significant risk of dispute between the NTS and DNs over the level of MDQs required at each offtake point to satisfy the 1 in 20 obligation. As a result, Ofgem considers that this option is likely to require some form of dispute resolution process (although this was not proposed as part of NGT's initial proposals) and most likely, a significant level of ongoing regulatory involvement (given the nature of the disputes that are likely to arise). Ofgem considers that this would significantly increase the ongoing complexity and cost of this option.

This option would give Ofgem a fundamentally different role in the industry to that which it currently undertakes. A set of arrangements in which Ofgem would be required to arbitrate (potentially on a frequent basis) over disagreements between DNs and the NTS has the potential to shift Ofgem's role from one of providing regulatory oversight of the arrangements to one in which it would be required to approve decisions on a case-by-case basis within a price control period.

Benefits

6.9. The key benefit from Option 1 arises from the small resulting change in the allocation process. In Option 1, capacity allocation is determined centrally by the NTS, which uses DN NEC requests as an input to the allocation process. The allocation process under Option 1 is therefore, in principle, similar to current practice (excluding the potential for regulatory involvement as discussed above). As a result, the allocation processes proposed under Option 1 would potentially be the least costly to implement.

Security of supply

6.10. Under all of the options outlined in Chapter 5, it is assumed that the offtake arrangements have been designed in such a way to be consistent with the ongoing preservation of security of supply. In the longer-term, the offtake arrangements should deliver a framework within which investment plans relating to security of supply should be developed in an integrated manner across the whole network, irrespective of ownership.

6.11. The Health and Safety Executive will need to be satisfied under the Gas Safety (Management) Regulations (GS(M)R) that the option that is adopted ensures safety and security of the network is maintained.

Evaluation of costs and benefits

6.12. Since Option 1 is the closest alternative to status quo, it has been adopted as the base case for the purpose of this analysis and consequently there is no quantitative evaluation of the costs and benefits of this option. Options 2, 3 and 4, which are considered later in this Chapter, are therefore assessed relative to Option 1.

6.13. In terms of a qualitative assessment of Option 1, Ofgem considers that this option performs poorly when measured against all of the issues described in Chapter 4. In particular, Ofgem considers that Option 1 would deliver a framework in which the NTS would have significant opportunity to behave in an unduly discriminatory manner, to the detriment of the IDNs and ultimately end-customers. Ofgem also considers that Option 1 would require an unacceptably onerous level of ongoing regulatory input, hence further increasing the costs of the arrangements.

Option 2: NTS connects booking model

6.14. As described in Chapter 5, under Option 2, DNs would have responsibility for determining the amount of NEC that would be required at each NTS offtake point (consistent with the 1 in 20 obligation). NTS direct connects would also be responsible for determining their NEC requirements (in a similar way to current arrangements). An assessment of the costs and benefits of this option is set out in the following subsections.

Costs

6.15. The following potential costs may be incurred were Option 2 selected for implementation (compared to Option 1):

- **Implementation costs**. Under Option 2, instead of the central determination of NEC at each offtake point, responsibility for setting NECs would lie with the DNs and NTS direct connects who determine

the required level of NEC at each offtake point. The NTS would then be obliged to deliver the level of NEC requested. In practical terms, it is unlikely whether this process would be significantly more costly than Option 1.

As described in Chapter 2, LDZs currently compile their own demand forecasts which are then assessed and incorporated into the 10 year statement by the NTS. The resource required to assess the DN's level of NEC therefore already exists at the DN level. Indeed, there will arguably be a requirement for less resource, given that under Option 2, the NTS will accept the NEC request from DNs, without undertaking a further level of analysis and assessment. NTS direct connects will also be relatively unaffected, given processes are already in place for requesting NTS exit capacity at these offtake points. As a result, the allocation processes proposed under Option 2 are likely to be approximately as resource intensive as those detailed in Option 1.

Benefits

6.16. The categories of benefits assessed in the context of Option 2 are:

- **Economic and efficient network operation and development**. Where DNs determine the levels of NEC at each NTS offtake point, there might be a natural tendency for DNs to request higher than efficient levels of NEC. To counteract this, under Option 2, an incentive arrangement is placed on DNs, which will mean that the costs (benefits) of over (under) requesting NEC compared to expected levels at each offtake point. This scheme would therefore align the commercial incentives of DNs with those of its end customers – hence reducing the identified natural tendency for over-investment in NEC that may result from Option 1.

- **Potential for undue discrimination between IDNs and RDNs**. Option 2 has been designed specifically to ensure that there is a non-discriminatory relationship between the NTS and all DNs. This would be achieved by placing the 1 in 20 obligation on DNs in the NEC allocation process, and obliging the NTS to deliver the level of NEC requested (hence placing DNs at the heart of the arrangements rather

than the NTS). Ofgem therefore considers that Option 2 has a clear benefit in that it would remove the potential for undue discrimination by the NTS between DNs in the NEC allocation process. This view has been endorsed by the DISG and CIWG workgroupss.

- **Effect on competition**. Option 2 is clearly beneficial in terms of effect on competition, as both DNs and NTS direct connect shippers would be able to request the level of NEC that they require rather than having this determined on their behalf by the NTS. This option would therefore remove the scope for undue discrimination between DNs and other loads connected to the NTS. As a result, this option would deliver a framework in which there would be effective competition between all customers of the NTS.

  It is likely that this would promote the more efficient allocation of the NTS exit capacity across NTS offtakes. It would deliver more efficient signals for investment - and ultimately lower prices for end consumers. As noted above, however, the benefits of increased competition are extremely difficult to quantify objectively, hence in this Section we note this purely as a qualitative benefit.

- **Regulatory involvement.** Option 2 clearly assigns responsibility for determination of NEC levels with the DNs, unlike Option 1 in which there is a potential for disagreement between the NTS and DNs on the levels of NEC by offtake point that will satisfy the 1 in 20 obligation. This clarity will reduce the potential for disputes to arise between DNs and the NTS, hence reducing the ongoing cost of running the capacity allocation process.

Evaluation of costs and benefits

6.17. The costs and benefits associated with Option 2 are quantified in Table 6.1. The methodology by which the costs and benefits have been calculated (and relevant data sources) is detailed in Appendix 1.

Table 6.1: Evaluation of Option 2

Issue	Qualitative assessment	Net present value impact relative to Option 1
No undue discrimination between networks	✓ ✓	£10.9m
Economic and efficient network operation and development	✓ ✓ ✓	£13.7m
Security of supply	-	Not assessed
Effect on competition	✓ ✓	Not assessed
Accountability		
♦ Less regulatory involvement	✓ ✓	£2.5m
♦ Implementation cost	-	£0m
Net increase in potential benefit relative to Option 1	N/A	**£27.1m**

Option 3: Shipper booking model (with DN "top-up")

6.18. Under Option 3, both DN shippers and shippers directly connected to the NTS would be responsible for requesting levels of required NEC. The role of DNs in this model would change to that of requesting "top-up" NEC at offtake points, to ensure that the level of NEC delivered by the NTS is consistent with the DN's 1 in 20 obligation. The costs and benefits of this option are outlined below.

Costs

6.19. The only significant area of incremental cost involved in the adoption of Option 3 compared to Option 1 relates to the extent of change required for shippers in the allocation process. The process of capacity allocation under Option 3 requires marginally more change than Option 2. Instead of the central determination of NEC at each offtake point (Option 1), both shippers and DNs would request NEC directly from the NTS (which would be obliged to deliver the level of NEC requested). This would be a significant change from current processes, introducing a responsibility on shippers to request NEC directly from

the NTS, and would be likely to lead to a higher level of costs borne by shippers, and eventually customers.

Benefits

6.20. There are a number of clear benefits that would arise from Option 3:

- **Economic and efficient network operation and development**. Option 3 would involve the implementation of an incentive arrangement on the DN (in which the costs (benefits) of over (under) requesting NEC compared to expected levels at each offtake point would be shared). This would reduce the potential cost of over-investment in NEC in the same way as in Option 2. In addition, Option 3 would allow users to signal expected levels of demand directly to the NTS, potentially increasing the efficiency of investment signals significantly.

  Under Option 3, DNs would request "top-up" NTS exit capacity to ensure that capacity at NTS offtakes remains consistent with the 1 in 20 obligation. As a result, this option would allow the costs associated with the 1 in 20 obligation to be observed more transparently than other options. In turn, this may result in the more efficient planning of investment specifically related to security of supply.

- **Potential for undue discrimination between IDNs and RDNs**. Option 3 presents a model in which the focus of the capacity allocation process moves from the DNs to shippers using that DN network. This delivers similar benefits to Option 2, in that the potential for the NTS to discriminate between IDNs and RDNs is removed.

- **Effect on competition**. Option 3 gives shippers the opportunity to request their own NEC requirements directly from the NTS. At the same time at which shippers assess their NEC requirements, they are also likely to consider their requirements for associated products (e.g. diurnal storage), hence increasing the possibility that new markets will develop. This option also promotes competition for NEC, as it ensures non-discrimination between DNs and NTS direct connect shippers in the allocation process.

Under Option 3, shippers would obtain a competitive advantage over other shippers if they were able to understand the NTS exit capacity requirements of their customers more accurately than their competitors. This would drive shippers to improve their understanding of the NTS exit capacity requirements of their customers, hence further increasing the efficiency of investment signals.

- **Regulatory involvement.** As in Option 2, the 1 in 20 obligation would be clearly assigned to the DNs, giving clarity of accountability. The arrangements would therefore have the advantage of removing any potential for disputes between the NTS and DNs on required levels of NEC at each offtake point.

Evaluation of costs and benefits

6.21. The costs and benefit associated with Option 3 are quantified in Table 6.2.

Table 6.2: Evaluation of Option 3

Issue	Qualitative assessment	Net present value impact relative to Option1
No undue discrimination between networks	✓ ✓	£10.9m
Economic and efficient network operation and development	✓ ✓ ✓	£13.7m
Security of supply	-	Not assessed
Effect on competition	✓ ✓	Not assessed
Accountability		
♦ Less regulatory involvement	✓ ✓	£2.5m
♦ Implementation cost	✗ ✗	-£8.5m
Net increase in potential benefit relative to Option 1	N/A	**£18.6m**

Option 4: Shipper booking model (without DN "top-up")

6.22. In Option 4, all shippers would be obliged to request their NEC requirements from the NTS, and the 1 in 20 obligation is removed from DNs. DNs would therefore not request NEC. Instead, their role would be limited to ensuring that sufficient DEC is available to meet shipper demands.

Costs

6.23. As in Option 3, the key costs resulting from Option 4 relate to extent of change in the allocation process, and the potential impact on wholesale and retail competition. Option 4 places full responsibility on shippers to request their NEC requirements directly from the NTS (which would then be obliged to deliver the level of NEC requested). DNs would not be permitted to request NEC from the NTS, and the 1 in 20 obligation would no longer apply. This would be different to current procedures for the request and allocation of NEC. However, it would be relatively simpler than Option 3 proposals (in which both shippers and DNs would be able to request NEC).

Benefits

6.24. The key benefits associated with Option 4, compared to Option 1 are:

- **Economic and efficient network operation and development**. Option 4 provides the sharpest commercial incentives of all of the alternatives. DNs would not be involved in the NEC allocation process, hence shippers would request exactly what their customers require. There would therefore be a strong incentive on shippers to request accurately the NEC they believe they require, hence efficient investment signals would be revealed to the NTS.

- **Potential for undue discrimination between IDNs and RDNs**. As in Option 3, this option would move the decision for determining the level of NEC at each offtake point away from the NTS to shippers. This option would deliver similar benefits to Option 2, in that the potential for the NTS to discriminate between IDNs and RDNs would be removed.

- **Effect on competition**. This option would remove a number of distortions in the capacity allocation process that exist in Option 1 (such as the potential for undue discrimination between DNs and NTS direct connects that potentially exists in Option 1). In addition, Option 4 would place greater onus on shippers to reveal their requirements for both NEC and DEC, hence increasing the level of effective competition for capacity.

  Some members of the workgroups were concerned that Option 4 may create a barrier to effective competition particularly in the retail markets. Ofgem considers that secondary markets combined with anti-hoarding measures should provide adequate protection.

- **Regulatory involvement.** There should be less of a requirement for ongoing regulatory involvement in Option 4. In addition to the benefits outlined for Options 2 and 3, Option 4 would potentially deliver additional benefits in terms of reducing the level of regulatory resources that would be devoted to the price control process. In particular, the provision of market signals under this option would reduce the need for regulatory input focused on the determination of an efficient level of investment.

Evaluation of costs and benefits

6.25. The costs and benefits associated with Option 4 are quantified in Table 6.3.

Table 6.3: Evaluation of Option 4

Issue	Qualitative assessment	Net present value impact relative to Option1
No undue discrimination between networks	✓ ✓	£10.9m
Economic and efficient network operation and development	✓ ✓ ✓	£25.7m
Security of supply	-	Not assessed
Effect on competition	✓ ✓	Not assessed
Accountability		
♦ Less regulatory involvement	✓ ✓	£5.1m
♦ Implementation cost	✗ ✗	-£8.5m
Net increase in potential benefit relative to Option 1	N/A	**£33.2m**

Diurnal storage and operational flows

6.26. This Section outlines the costs and benefits of the two options outlined in Chapter 5 for the provision of flexibility at NTS offtake points (both for DNs and NTS direct connect shippers).

Option A

6.27. Option A has been defined as being the baseline option, in that it constitutes the closest possible option to current practices. Accordingly, the costs and benefits of Option A are not explicitly defined in quantitative terms. The following sub-sections describe the qualitative features of the initial Transco proposal.

Costs

6.28. The potential costs that have been identified as being relevant to the adoption of Option A are as follows:

- **Potential for undue discrimination between IDNs and RDNs**. Option A would give the NTS responsibility for setting the level of diurnal storage, and operational flow parameters at NTS offtake points (consistent with current arrangements). In the short term, the allocation of this flexibility would not be lower than existing commitments, however from year three, Transco propose that allocation of these secondary rights would be at levels "not less than 90% of year 2 levels."

  Ofgem considers that the NTS has the potential to unduly discriminate in the allocation of these secondary NTS exit capacity rights in two ways. In the short term, by making operational decisions that favour the RDNs over the IDNs (potentially through different treatment in terms of flow rate flexibility and scheduling of maintenance). In the longer term (i.e. from year three and beyond), the NTS could, potentially, discriminate between DNs in the location of any investment that has an impact on the quantity of diurnal storage available at offtake points.

  Undue discrimination of this nature might therefore lead to an inappropriate allocation of "secondary" capacity rights between IDNs and RDNs. In the event that this misallocation is significant, DNs could be forced into undertaking investment that they would otherwise not have made, had the DNs and NTS remained under a single owner. This would result in increased costs for customers.

- **Economic and efficient network operation and development**. As outlined above, a key consideration in the development of the offtake arrangements should be that they promote a framework where there is the opportunity for all participants to be able to reveal the value they place on capacity rights (for both NTS exit capacity and flexibility). Option A is a relatively inefficient alternative, as it specifically treats diurnal storage as an operator-to-operator product that is not charged for.

Option A therefore excludes the potential for NTS direct connects to reveal the value they place on flexibility, and as the allocation of flexibility between offtake points is determined by the NTS, Ofgem considers that Option A delivers a framework in which there would be a potential for the NTS to discriminate in the way in which flexibility is allocated between DNs and NTS direct connect shippers. As a result, the allocation of flexibility between offtake points is likely to be sub-optimal and inefficient, given that there is no incentive on Transco to allocate flexibility to those parties that value it most highly, nor any way for those parties to indicate to Transco the value of that flexibility.

- **Regulatory involvement**. Under Option A, flexibility through diurnal storage rights and deviations from defined operational flow parameters will be determined by the NTS (based on current procedures). As a result, there would be a significant risk of dispute over allocations, particularly in year three and beyond in which the NTS has greater flexibility in the levels of diurnal storage that it provides at NTS offtake points. Ofgem considers that this would have the potential to increase the level of ongoing regulatory involvement, hence raising the costs of Option A.

Benefits

6.29. The key benefit from Option A relates to the fact that, under this alternative, change in the allocation process is minimised. The process of allocating diurnal storage (and operational flow rights) proposed under Option A is relatively simple, and as close to current practice as would be possible under a scenario in which there is separate ownership of one or more DN networks. As a result, this alternative is the least complex to operate, and most straightforward to implement. It will also be the option that delivers least "visible change" to shippers.

Security of supply

6.30. It is assumed that the arrangements for secondary capacity rights will be designed in such a way to be consistent with the ongoing preservation of security of supply. In the longer-term, the offtake arrangements should deliver a

framework within which investment plans relating to security of supply should be developed in an integrated manner across the whole network, irrespective of ownership. As a result, this is not a category that is viewed by Ofgem as a way of differentiating between Options A and B. In addition, Ofgem notes that the HSE will need to be satisfied under the Gas Safety (Management) Regulations (GS(M)R) that the option that is adopted ensures safety and security of the network is maintained.

Evaluation of costs and benefits

6.31. Since Option A is the closest alternative to "status quo", it has been adopted as the base case for the purpose of this analysis and consequently there is no evaluation of the costs and benefits of this option. Option B is therefore assessed relative to Option A.

6.32. As explained in the preceding paragraphs, Option A performs poorly in relation to most non-discriminatory access to flexibility, economic efficiency and ongoing regulatory involvement; however it performs well in terms of minimising the extent of change.

Option B

6.33. The costs and benefits identified as relating to the potential adoption of Option B are set out below:

Costs

6.34. The key cost associated with Option B is that it would require the greatest level of change in the current process of allocating flexibility at offtake points. Under Option B both DNs and NTS direct connects would expend an amount of additional resource in determining both their desired quantity of flexibility, and the value they would attach to such a product.

6.35. However, would also have benefits in that the NTS would be likely to require less resource for flexibility planning than would be required under Option A. As a result, Ofgem considers it is likely that additional cost to the industry as a whole from Option B will be minimal.

Benefits

6.36. Ofgem considers that there are likely to be a number of benefits that would arise under Option B. These are discussed in turn below.

- **Economic and efficient network operation and development**. Option B would deliver a more efficient allocation of flexibility at NTS offtake points than Option A, as Option B enables both DNs and NTS direct connects to signal how much value they place on flexibility of flow rates, on a non-discriminatory basis. This is in direct contrast to Option A, where flexibility is allocated according to NTS procedures.

  In practical terms, this is likely to mean that, under Option B, NTS offtake flexibility is likely to be allocated to those direct connects who value it most – which could have significant implications for related energy markets (for example, enabling gas fired generation to offer more flexibility into the electricity balancing mechanism and short term markets).

  The pricing of flexibility at offtake points would also have potential benefits in terms of savings in the cost of energy balancing actions taken by Transco as System Operator. Under Option B, within-day flexibility (in terms of diurnal storage and variations in operational flows) would be priced and, given this, restrictions on offtake rates would be enforced. Enforcement of gas offtake restrictions might lower the costs incurred by Transco in its role as residual balancer as, were the flexibility restrictions not to be enforced, Transco may, on occasion, have to undertake balancing trades that would not necessarily be reflected in the deviating party's end of day gas position. This implies that the costs of these trades caused by individual shippers could only be recovered from the generality of shippers through the neutrality.

- **Reduced potential for undue discrimination between IDNs and RDNs**. Option B would enable both IDNs and RDNs to purchase the volume of diurnal storage that they require. The allocation of "secondary" rights between IDNs and RDNs would therefore be more efficient than in Option A, and be determined on a non-discriminatory basis. As a result,

Ofgem considers that IDNs might potentially avoid the need to make specific investments to deliver extra flexibility that they would have been unable to obtain under Option A.

- **Regulatory involvement.** Option B enables DNs and NTS direct connect shippers to purchase the levels of secondary capacity rights they require. This is likely to reduce the potential for dispute between consumers of secondary capacity rights, hence reducing the ongoing regulatory cost of the arrangements. In addition, Option B would potentially deliver additional benefits in terms of reducing the level of regulatory resources that would be devoted to the price control process. In particular, the provision of market signals under this option would potentially reduce the need for regulatory input focused on the determination of an efficient level of investment.

- **Effect on competition**. Option B would be beneficial in terms of effect on competition, as there would be effective competition between all users of the networks for secondary capacity rights, and the potential for efficient pricing. This would lead to an allocation of NTS flexibility to those that value it the most, which in turn would provide accurate investment signals. Note, however, that the benefits of removing market distortions as described here are generally difficult to quantify, since they depend upon the inevitably uncertain evolution of the relevant market, including in this case network system conditions. We therefore note this as a qualitative benefit.

Evaluation of costs and benefits

6.37. The costs and benefits associated with Option B are quantified in Table 6.4.

Table 6.4: Evaluation of Option B

Issue	Qualitative assessment	Net present value impact relative to Option A
No undue discrimination between networks	✓ ✓	£2.7m
Economic and efficient network operation and development	✓ ✓	£9.0m
Security of supply	-	Not assessed
Effect on competition	✓ ✓	Not assessed
Accountability		
♦ Less regulatory involvement	✓ ✓	£0m
♦ Implementation cost	✗	-
Net increase in potential benefit relative to Option A	N/A	**£11.7m**

Business separation

6.38. This Section sets out a high level assessment of the costs and benefits associated with each of the options. Table 6.5 summarises the differences between the options.

Table 6.5: Forms of business separation required under each option

	Option 1	Option 2	Option 3
Licence conditions requiring non-discrimination	✓	✓	✓
Information separation	✓ (partial)	✓	✓
Operational separation	✓ (partial)	✓	✓
Physical separation	✗	✓	✓
Legal separation	✗	✗	✓

6.39. The purpose of business separation is to mitigate the risk of undue discrimination by Transco between IDNs and RDNs. The benefits of business separation in

terms of mitigating undue discrimination need to be balanced against any costs for customers.[35]

Option 1: Transco's proposals

6.40. Ofgem has identified the following benefits associated with Option 1:

- **Undue discrimination.** Transco contends that, in many respects, the NTS and DNs are already operated as separate businesses, with separate executives, separate CEOs, and separate planning tools and processes. To some extent, Transco already has separate information systems for its transmission and distribution businesses. To the extent that this occurs, the benefits of information and operational separation (described in relation to Option 2 below) could be expected to arise. Ofgem intends to examine further the relationship between Transco's NTS and DN businesses in the DISG.

6.41. Ofgem has identified the following costs associated with Option 1:

- **Risk of undue discrimination as business separation is not required.** Option 1 does not require Transco to undergo any form of business separation (other than the separation that already exists) in order to reduce the potential costs associated with undue discrimination between IDNs and RDNs. In the event that Transco sells one or more of its DNs, different commercial incentives will arise. Consequently, Ofgem is concerned that the current arrangements are no longer appropriate. Once new commercial incentives exist, the current arrangements could result in less efficient network operation, as Transco could potentially have the opportunity and incentive to operate its networks in a way that confers a commercial advantage on its RDN business to the detriment of the business of an IDN, and ultimately customers.

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[35] If business separation is required, Ofgem considers that the implementation costs that Transco incurs in order to separate its NTS and RDN businesses should not be passed through to customers. (See paragraphs 6.43 to 6.45.)

- **Increased regulatory complexity.** If the risk of undue discrimination between IDNs and RDNs is addressed using the 'targeted rules and licence conditions' proposed by Transco, there is a risk that the rules could become highly complex. Experience suggests that in order for rules that are directed at the behaviour of individuals to be effective, it is necessary to adopt a far more detailed and prescriptive approach than if the businesses are simply required to separate.[36] Additionally, as it is very difficult to monitor compliance with non-discrimination provisions, it is likely that behavioural rules would be accompanied by a rigorous compliance regime featuring internal and external audit requirements.

Option 2: Structural separation

6.42. This Section considers the costs and benefits associated with each of the different types of structural separation. Ofgem has identified the following benefits associated with Option 2:

- **Undue discrimination (information separation).** The preferential sharing of information is one of the critical ways by which Transco could potentially treat its RDNs more favourably than it treats IDNs. The benefit of information separation is that it reduces the risks associated with this form of undue discrimination by placing limitations on information sharing to minimise the potential commercial advantages that the NTS can confer on any RDN.

- **Undue discrimination (operational separation).** Individuals who undertake both NTS and DN functions may face situations in which there is an incentive to behave in a manner which gives rise to undue discrimination against IDNs. They may also find it difficult to demonstrate that they have behaved in a non-discriminatory manner. Operational separation would reduce these problems by establishing a transparent interface between the businesses.

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[36] Even with legal separation, rules and licence conditions will be required. However, the degree of detail required for such rules increases in proportion to the extent that the business is permitted to operate as a single entity.

- **Undue discrimination (physical separation).** The key benefit of physical separation is that it reduces the risk of undue discrimination because opportunities for NTS and DN staff to develop close working relationships are more limited than if the staff worked together in the same offices. It also promotes non-discrimination by ensuring that all Transco employees are aware of their obligation to behave in a manner that is not unduly discriminatory.

- **Reduced regulatory complexity.** A rigorous approach to business separation could reduce regulatory complexity. If Transco continue to operate as a single entity, then it will be necessary to develop alternative mechanisms to reduce the risk of undue discrimination. This is likely to take the form of the 'targeted rules and licence conditions' suggested by Transco. As discussed in relation to Option 1, in order for such rules to be effective, it is necessary to adopt a detailed and prescriptive approach.

6.43. If Option 2 is adopted, Transco is likely to incur upfront and ongoing costs in order to implement structural separation. Ofgem's view is that if separation is required, the implementation costs associated with restructuring Transco's business should not be passed through to customers. This is because business separation costs arise as a consequence of Transco's commercial decision to sell one or more DNs.

6.44. The only mechanism by which implementation costs associated with business separation could be passed on to customers is if these additional costs were to be included in Transco's allowed revenue at subsequent price controls. Consequently, Ofgem intends to ensure that any capital costs incurred as a result of a requirement for business separation are not included in Transco's allowed revenue at future NTS and DN price control reviews. Ofgem's proposed approach with regard to business separation costs will therefore be as follows:

- Capital expenditure incurred by Transco's NTS and DN businesses as a result of business separation will not be included in Ofgem's assessment of the overall allowed revenue for that business.

- Operating expenditure will be calculated in the ordinary manner. Distribution operating expenditure allowances will be set having regard to information made available through comparative regulation.

6.45. Ofgem intends to consider further through DISG meetings the potential costs to customers associated with structural separation.

Option 3: Legal and structural separation

6.46. The benefits associated with structural separation identified in relation to Option 2 apply equally in relation to Option 3. In addition, Ofgem considers that legal separation gives rise to further benefits because it reduces the risk of undue discrimination by reinforcing the delineation between businesses. Legal separation creates an enhanced requirement for separate accounts with a clear audit trail and helps to clearly define where legal obligations reside. It also promotes robust corporate governance and ensures that licence conditions apply equally to all DNs in practice.

6.47. The costs associated with structural separation identified in relation to Option 2 apply equally in relation to Option 3. Transco contends that there are number of additional costs that they will incur if legal separation is required. In particular, Transco have argued that enforced legal separation of RDNs may have adverse effects on the cost and other terms of its existing and future borrowings which would ultimately be borne by customers. Transco also argues that legal separation will lead it to incur other costs associated with (among other things) transferring property and staff to the new entity, financial reporting, regulatory compliance and information systems.

6.48. The proposed treatment of costs discussed in relation to structural separation in paragraphs 6.43 to 6.45 also applies in relation to legal separation.

6.49. Appendix 2 explains in more detail:

- Ofgem's view of the benefits of legal separation;

- Transco's view of the costs that Transco would incur if it was required to restructure its debt, and Ofgem's view that such costs are unlikely to arise; and

- Transco's position on the other costs that it would incur if required to legally separate its NTS and RDN businesses.

7. Conclusion

7.1. This Chapter summarises Ofgem's initial view with respect to:

- NTS exit capacity;
- diurnal storage and operational flows; and
- business separation

NTS exit capacity

7.2. Based on the analysis contained in Chapter 6, summarised in Table 7.1 below, Ofgem initial view is that Option 4 has the potential to deliver the greatest benefit to customers. However, as it may be impractical to move directly to Option 4 within the timeframe of DN sales Ofgem considers that it may be preferable to adopt Option 2 initially, whilst also allowing shippers the opportunity to book capacity directly from the NTS if they should wish to do so. This would allow further consideration to take place concerning the current network planning obligations and the appropriateness or otherwise of such obligations going forward. However, Ofgem's initial view is that Option 4 delivers the greatest level of customer benefit, and therefore that Option 4 should be implemented in the longer term.

Table 7.1: Summary of evaluation of NTS exit capacity allocation options

Issue	Option 2	Option 3	Option 4
No undue discrimination between networks	✓ ✓	✓ ✓	✓ ✓
Economic and efficient network operation and development	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
Security of supply	-	-	-
Effect on competition	✓ ✓	✓ ✓	✓ ✓
Accountability			
♦ Less regulatory involvement	✓ ✓	✓ ✓	✓ ✓
♦ Implementation cost	✖	✖ ✖	✖ ✖
Net increase in potential benefit relative to Option 1	**£27.1m**	**£18.6m**	**£33.2m**

Diurnal storage and operational flows

7.3. Ofgem's initial view is that Option B is the preferred way of designing offtake arrangements for diurnal storage and operational flows. As outlined in Table 7.2 (next page), this option has clear qualitative and quantitative advantages over Options A.

Business separation

7.4. For reasons given in Appendix 2, Ofgem does not consider that the potential effects on Transco's cost of debt should influence the decision on separation. Ofgem has not been persuaded by Transco's proposals for separation and instead considers that full legal and structural separation is required between the NTS and RDNs. Therefore Ofgem's initial view is that Option 3 is preferable.

Table 7.2: Assessment of diurnal storage and operational flow options

Issue	Option B
No undue discrimination between networks	✓ ✓
Economic and efficient network operation and development	✓ ✓
Security of supply	-
Effect on competition	✓ ✓
Accountability	
♦ Less regulatory involvement	✓ ✓
♦ Implementation cost	✗
Net increase in potential benefit relative to Option A	**£11.7**

Way forward

7.5. Ofgem welcomes views to this RIA, to be received by close of business on 9 July 2004. Ofgem will continue to use the workgroups to consult on these issues; however it intends to make all significant policy decisions relating to the commercial and regulatory arrangements that could support a divested industry structure by the end of July 2004. Following these significant decisions, detailed work will be necessary to develop these arrangements further.

7.6. The framework that is developed through this consultation process will form the basis of an alternative to the status quo to be considered in a future regulatory impact assessment (RIA), encompassing the broader DN sales decision. This document will be issued later in the DN sales work programme.

Appendix 1 Cost benefit analysis assumptions and methodologies

1.1 The numbers presented in this document are indicative estimates of the costs and benefits based on high level assumptions set out in this Appendix. These assumptions and the calculations form the basis for consultation and Ofgem invites views on both the assumptions that have been made and methodology that has been used. Wherever appropriate, assumptions have been made that are consistent with previous RIAs, taking into account respondents views on these documents.

1.2 This Appendix sets out the assumptions and methodology used to derive the quantitative estimates of costs and benefits associated with each of the proposed options for offtake arrangements, as outlined in Chapter 5. As explained in Chapter 6, quantitative assessments of these issues are inherently difficult. In this Appendix we set out the key assumptions supporting the quantitative analysis. Ofgem welcomes respondents views on these assumptions

1.3 As already noted, the costs and benefits of the options proposed for the offtake arrangements have been quantified using Option 1 as a baseline. This Appendix evaluates those costs and benefits described in Chapter 6 that Ofgem considers are quantifiable. The analysis therefore covers categories of cost and benefit relating to:

- NTS exit capacity options; and
- Diurnal storage and operational flow options.

NTS exit capacity options: supporting analysis

Costs

1.4 Ofgem considers that the key cost driver is moving from the current methods for DNs and shippers requesting exit capacity to arrangements where shippers and DNs are more involved in the process than today. Where appropriate, these incremental costs have been assessed in terms of full time equivalent (FTE) staff members required relative to the baseline of Option 1. Ofgem does not

consider that there will be any significant incremental IT and IS costs associated with any of the options presented in this document.

1.5 Depending upon the option, two categories of incremental cost have been considered:

- increased efficient cost incurred by the DNs; and
- increased efficient cost to shippers[37].

1.6 In each instance, the cost of FTE staff members has been assumed to be valued at £80,000 per annum (including salary, benefits, and overhead costs). This cost estimate is consistent with a similar assumption used by ILEX in previous analysis undertaken for Ofgem.[38]

1.7 Table A1.1 sets out Ofgem's assumptions with respect to the number of additional staff required, and the resulting additional costs associated with each of Options 2, 3 and 4. These assumptions are based upon Ofgem's high level assessment of the likely additional staff requirements under each option relative to Option 1. Ofgem considers that there is considerable scope in each option for DNs and shippers to build on existing systems and processes that are already core to their businesses. It is assumed that new systems and processes would only be introduced, in a competitive market, where it is efficient to do so. In Ofgem's view, these assumptions are conservative (i.e. relatively high) in their assessment of the likely additional costs to customers of Options 2, 3 and 4 relative to Option 1.

37 For the purposes of calculating the cost to shippers, it has also been assumed that there will be 40 shippers in operation over the period analysed. This is consistent with the number of active shippers on the network in autumn 2003.

38 ILEX Energy Consulting, *Regulatory Impact Assessment of the Potential Sale of Network Distribution Businesses; A report to Ofgem*, December 2003, pg 11.

A1.1 Additional ongoing costs associated with Options 2, 3 and 4 relative to Option 1

	Option 2	Option 3	Option 4
Additional costs to shippers			
♦ Gas industry staff per shipper (valued at £80,000 per annum)	No extra staff	0.25 FTE	0.25 FTE
Net present value of additional shipper costs	£0 m	£8.5 m	£8.5 m
Total net present value of additional costs	£0 m	£8.5 m	£8.5 m

1.8 In estimating the additional ongoing costs, a discount rate of 6.25% has been applied to the costs incurred over the period 2004/5 to 2021/22 (i.e. from now until the end of the current pricing period, and then covering the next three pricing periods). The costs have been discounted to present values.

1.9 As an example, under Option 3, additional cost equals 0.25 extra FTE per year per shipper. Assuming 40 shippers and an annual salary of £80,000 per annum, this equals an annual cost of £800,000 for eighteen years. Using a discount rate of 6.25%, this equals £8.5 m in present terms.

Benefits

1.10 As described in Chapter 5.62, we have quantified three of the identified benefits that are generated by Options 2, 3 and 4. These categories of benefit are:

- Reduced potential for discrimination between IDNs and RDNs;
- Reduction in regulatory involvement; and
- Efficient and economic operation and development of networks.

1.11 We discuss each in turn and provide a high level estimate of the costs.

Reduced potential for discrimination between IDNs and RDNs

1.12 Under Option 1, there is a potential for the NTS to discriminate in the allocation of NEC between IDNs and RDNs. To compensate for this potential discrimination, IDNs might therefore need to invest disproportionately more than if NTS entry capacity were allocated without any potential for bias by Transco.

1.13 Ofgem considers that, although difficult to quantify precisely, the magnitude of this benefit may be estimated from analysis of DN capex data. Table A1.2 illustrates the size of this benefit, assuming that, annually, IDNs would need to invest approximately 2% more than RDNs to overcome discrimination in the allocation of capacity by the NTS that may arise in Option 1. As this form of potential discrimination is only a characteristic of Option 1, the size of this benefit is equal across all options.

1.14 We have assumed in undertaking this analysis that the annual capex of a given IDN (excluding replacement expenditure) equals the average of all DNs, as currently forecast[39]. In addition, we have assumed that the annual capex of the average IDN over the period 2007/8 – 2021/22 equals the forecast average capex over the period 2002/3 – 2006/7. Hence we have assumed that annual capex per IDN over this period is £18.2m[40].

1.15 Consistent with our calculation of additional ongoing costs, a discount rate of 6.25% has been applied to the benefits accruing over the period 2004/5 to 2021/22, discounted to 2003 values. This benefit therefore varies according to the number of DNs sold by the NTS. For the purposes of our quantitative summary, we have assumed that three DNs are sold.

Table A1.2: Reduction in IDN capex, compared to that necessary under Option 1[41]

Number of DNs sold	Benefit from reduced potential for discrimination between IDNs and RDNs (£m NPV)		
	Option 2	Option 3	Option 4
1	£3.6	£3.6	£3.6
2	£7.2	£7.2	£7.2
3	£10.9	£10.9	£10.9
4	£14.5	£14.5	£14.5

[39] Based upon data presented by regional network in the Ofgem document "*Separation of Transco's distribution price control, Final Proposals*, June 2003."
[40] In 2003 prices.
[41] Note that this table outlines the potential for reduction in inefficient capex, and not total benefit to consumers (which could be derived by making more detailed assumptions relating to depreciation saving in the context of Transco's price control).

Reduction in regulatory involvement

1.16 An additional category of benefit is a reduction in the requirement for ongoing regulatory involvement in the offtake arrangements, in Options 2, 3 and 4 compared to Option 1.

1.17 Table A1.3 summarises the benefit of reduced regulatory involvement in Options 2, 3 and 4 over the baseline. It presents three different scenarios of savings for regulatory resource; a high saving scenario, a medium saving scenario and a low saving scenario. In the quantitative summary, we have used the results of the "medium saving" scenario.

1.18 This table, based upon Ofgem estimates, shows that the option involving the least amount of ongoing regulatory input (compared to that required under Option 1) is Option 4. This is the case because the role of customers in investment decision making would be maximised under this option and the requirement for the regulator to become involved in the decision making or the dispute resolution process would be reduced. In the calculation of the present value of this saving, it has been assumed that the cost of a regulatory FTE is £80,000 per annum (including salary, benefits, and overhead costs). Consistent with previous analysis, benefits have been assumed to accrue up to 2021/22, and have been discounted at a rate of 6.25%.

Table A1.3: Reduction in ongoing regulatory cost, compared to Option 1

Scenario (magnitude of benefit)	**Benefit (£m NPV)**		
	Option 2	**Option 3**	**Option 4**
High			
Reduction in ongoing FTEs	5	5	8
Present value	£4.3	£4.3	£6.8
Medium			
Reduction in ongoing FTEs	3	3	6
Present value	£2.6	£2.6	£5.1
Low			
Reduction in ongoing FTEs	1	1	4
Present value	£0.9	£0.9	£3.4

Economic and efficient network operation and development

1.19 This final category of benefit recognises that under Option 1, the NTS would determine the level of NTS exit capacity provided at each offtake point, following a request for exit capacity from the DNs. Ofgem considers that, under this approach, there might be a natural tendency for a DN to "over-request" exit capacity. In turn, this may induce Transco to over-invest in the NTS.

1.20 In Options 2 and 3, investment signals would become more efficient through the implementation of an incentive mechanism, designed to make DNs request a more efficient level of NTS exit capacity. Finally, in Option 4, it is shippers that would provide investment signals, and in this option, the NTS would receive investment signals that would most closely reflect the requirements of customers.

1.21 Ofgem considers that the potential extent of over-investment in Option 1 relative to Options 2 and 3 could equal 10% of that NTS capital expenditure specifically related to NTS exit capacity. In Option 4, in which the NTS receives the sharpest investment signals of all, this benefit could rise to 20% of NTS capital expenditure (again specifically related to NTS exit capacity). The quantitative implications of these benefits are outlined in Table A1.4 below.

1.22 The analysis we have undertaken is based upon data extracted from NTS exit capacity capex provided from Transco, relating to the period 2005–2012. Following Transco's suggestion, it is assumed that annual NTS exit capacity over the period 2013–2022 equals the average of the period 2005–2012 (£12.4m per annum in nominal terms). It is therefore assumed that NTS exit capacity related to capital expenditure on the NTS over the entire period 2005 – 2022 is £137.0m (in current prices).

Table A1.4: Reduction in potential to over-invest in NTS, compared to Option 1

	Option 2	Option 3	Option 4
Reduction in potential to over-invest in NTS, relative to Option 1	10% of NTS exit capacity related capex	10% of NTS exit capacity related capex	20% of NTS exit capacity related capex
Total net present value of reduction in inefficient NTS capex	**£13.7m**	**£13.7m**	**£25.7m**

1.23 As with the other estimates set out in this Appendix, it is assumed a discount rate of 6.25% has been applied to the benefits accruing over the period 2004/5 to 2021/22, discounted to current values[42].

Diurnal storage and operational flows: supporting analysis

1.24 In Chapter 6, we outlined the costs and benefits associated with two alternative options (A and B) for the allocation of diurnal storage rights and operational flows under the offtake arrangements. Of these, a number of the described benefits were deemed quantifiable. The methodology behind their calculation is outlined below.

Economic and efficient network operation and development

1.25 Ofgem considers that greater economic and efficient network operation and development may deliver two quantifiable benefits:

- gas balancing benefits; and
- electricity balancing benefits.

Gas balancing

1.26 The money that is paid to (or paid by) Transco as a result of imbalance charges, scheduling charges and purchases and sales of gas for balancing purposes is returned to (or paid by) shippers via the balancing neutrality charge. These aggregate system payments are returned to (or paid by) shippers on the basis of their throughputs (i.e. the sum of their inputs and outputs).

[42] See footnote 41.

1.27 Under Option B, flexibility of offtake from the NTS would be allocated on an efficient (non-discriminatory) basis across all offtake points, and offtake restrictions would be more rigorously enforced than at present. The enforcement of gas offtake restrictions would have the potential to lower the costs incurred by Transco in its role as residual balancer. If the flexibility restrictions not to be enforced, Transco may, on occasion, have to undertake balancing trades that would not necessarily be reflected in the deviating party's end of day gas position. This implies that the costs of these trades caused by individual shippers could only be recovered from the generality of shippers through the neutrality. Hence the size of balancing charges paid (or returned) to shippers through the balancing neutrality charge may potentially be reduced (or the level of charge returned increased).

1.28 Ofgem has quantified the net impact of this effect on the balancing neutrality charge by assuming that increased efficiency of Transco's balancing actions will reduce the cost of those balancing actions that result in costs to shippers. To obtain an estimate of the size of this impact, Transco analysed daily balancing neutrality charge data from 2002 and 2003 (provided by Transco). The sum of charges from days in which Transco's actions resulted in a balancing neutrality charge "cost" to shippers totalled £33.1m on average over the two years[43]. Ofgem considers that the greater efficiency of Transco's balancing actions that would result from Option B has the potential to reduce the cost of these actions by approximately 1% (equalling an annual benefit of £0.3m to shippers in nominal terms). Consistent with the analysis in the rest of this Appendix, in calculating the present value of this benefit, a discount rate of 6.25% has been applied to the benefits accruing over the period 2004/5 to 2021/22, discounted to present values.

1.29 The value of this in terms of reduction in the cost element of the balancing neutrality charge (in present value terms) is illustrated in Table A1.5.

[43]Transco actions led to aggregate balancing neutrality payment to shippers of £0.5m and £16.2m in 2002 and 2003 respectively. In 2002 daily actions by Transco resulting in "costs" to shippers totalled £34.9m, and those resulting in "payments" to shippers totalled £35.4m. In 2003, these figures were £31.4m and £47.6m respectively.

Table A1.5: Reduction in cost element of the balancing neutrality charge, compared to Option A

	Option B
Reduction in cost element of balancing neutrality charge	1%
Total net present value of reduction in balancing neutrality charge costs	**£3.3m**

Electricity balancing

1.30 Option A assumes that the allocation of flexibility of offtake between DNs and other NTS offtake points will remain as currently allocated. A feature of Option B is that flexibility of offtake from the NTS is allocated on an efficient (non-discriminatory) basis across all offtake points. This will result in flexibility in offtake being allocated to those direct connects who value it most.

1.31 Ofgem considers that this will have a tangible impact in the electricity market, as a more appropriate allocation of scarce flexibility could result in more flexibility being offered into the electricity balancing mechanism. In turn, this could reduce the balancing costs incurred by the System Operator (in that it is likely that this would lead to more efficient and flexible gas fired electricity generators acquiring the NTS flexibility over less efficient generators).

1.32 The total net present value of reduction in balancing costs has been calculated as being the reduction in cost of accepted offers plus the increase in the revenue from bids accepted. The level of balancing cost relating to the acceptance of bids and offers from gas fired BM units over the period 2004/5 to 2021/22 has been assumed to equal the average of the period 2002-2004[44]. Hence, it is assumed that the ongoing balancing costs associated with gas fired generation are £11.9m p.a. and that these are reduced slightly on account of non-discriminatory allocation of scarce NTS flexibility.

1.33 Once again, in calculating the present value of this benefit, a discount rate of 6.25% has been applied to the benefits accruing over the period 2004/5 to 2021/22, discounted to present values.

[44] Source: ELEXON

1.34 Ofgem considers that increased flexibility offered into the electricity balancing mechanism could have the effect of reducing balancing costs related to gas fired generation by as much as 1%. The value of this in terms of reduction in total balancing costs (in present value terms) is illustrated in Table A1.6.

Table A1.6: Reduction in electricity balancing costs, compared to Option A

	Option B
Reduction in cost of offers accepted	£3.5m
Increase in revenue from bids accepted	£2.2m
Total net present value of reduction in balancing costs	**£5.7m**

Reduction in regulatory involvement

1.35 A category of benefit in Option B is a reduction in the requirement for ongoing regulatory involvement in the offtake arrangements compared to Option A. The methodology for calculating this benefit is similar to that outlined for Options 2, 3 and 4 for the allocation of NTS exit capacity, in that three different scenarios of savings of regulatory resource (a high saving scenario, a medium saving scenario and a low saving scenario) are presented. The quantitative summary uses the results of the "medium saving" scenario.

1.36 The results of the analysis are summarised in Table A1.7. In the calculation of the present value of this saving, assumptions are made that are consistent with previous analysis (assuming that the total cost of a regulatory FTE is £80,000 per annum, assuming benefits accrue up to 2021/22, and using a discount rate of 6.25%).

Table A1.7: Reduction in ongoing regulatory cost, compared to Option A

Scenario (magnitude of benefit)	Benefit (£m NPV)
High	
Reduction in ongoing FTEs	3
Present value	£2.6m
Medium	
Reduction in ongoing FTEs	2
Present value	£1.70m
Low	
Reduction in ongoing FTEs	1
Present value	£0.9m

Reduced potential for discrimination between IDNs and RDNs

1.37 Under Option A, there is a potential for the NTS to discriminate in the allocation of NTS flexibility between IDNs and RDNs. To compensate for this potential discrimination, IDNs might therefore need to invest disproportionately more under Option B than under Option A.

1.38 Consistent with previous analysis, Ofgem considers that the magnitude of this benefit may be estimated from analysis of DN capex data. Table A1.8 illustrates the size of this benefit, assuming that, annually, IDNs would need to invest approximately 0.5% more than RDNs to overcome this potential discrimination.

1.39 To be consistent with previous analysis, it is assumed that the annual capex of a given IDN (excluding replacement expenditure) equals the average of all DNs, as currently forecast[45]. In addition, it is assumed that the annual capex of the average IDN over the period 2007/8 – 2021/22 equals the forecast average capex over the period 2002/3 – 2006/7. Hence we have assumed that annual capex per IDN over this period is £18.2m[46].

1.40 Consistent with our calculation of additional ongoing costs, a discount rate of 6.25% has been applied to the benefits accruing over the period 2004/5 to 2021/22, discounted to 2003 values. This benefit therefore varies according to

[45] Based upon data presented by regional network in the Ofgem document "*Separation of Transco's distribution price control, Final Proposals*, June 2003."

the number of DNs sold by the NTS. For the purposes of our quantitative summary, it is assumed that three DNs are sold.

Table A1.8: Reduction in IDN capex, compared to Option A[47]

Number of DNs sold	Benefit from reduced potential for discrimination between IDNs and RDNs (£m NPV)
1	£0.90
2	£1.81
3	£2.71
4	£3.62

[46] In 2003 prices.
[47] See footnote 41.

Appendix 2 Discussion of legal separation

2.1 This Appendix discusses the costs and benefits of legal separation in more detail. It also describes industry views of legal separation as expressed in responses to the July 2003 consultation document and workgroup discussions.

Benefits of legal separation

2.2 This Section seeks to identify the additional benefits associated with legal separation over and above the outcomes associated with structural separation. Ofgem considers that the benefits of legal separation (as opposed to requiring a form of business separation that does not include legal separation) are:

- it reinforces robust corporate governance;
- it establishes a more level playing field for comparative regulation;
- it reduces the need for complex regulatory rules; and
- it is consistent with the requirements that apply to other energy groups.

Robust approach to corporate governance

2.3 The Companies Act 1985 imposes certain duties on company directors to act in the interests of the company when making decisions. The law requires these obligations to be preserved even if there is a commonality of board members. Legal separation would entail the creation of separate boards each with their own legal duties to look after the interests of that company.

Level playing field for comparative regulation

2.4 A key benefit of legal separation is that it establishes a level playing field for comparative regulation.

2.5 Legal separation will help to ensure that RDNs and IDNs are subject to the same level of regulatory scrutiny because it increases transparency within Transco. For instance, if RDNs and NTS continue to operate as a single entity, then the current licence based rules on cost allocation would continue to apply. On the other hand, the IDNs, as separate legal entities, would be obliged to prepare

statutory accounts. If Ofgem can identify true costs of IDNs more effectively than it can identify true costs of RDNs, then IDNs may be forced to operate under more challenging regulatory targets. This would lead to inequality in the application of the regulatory regime.

2.6 Further, if the licence conditions that apply to RDNs and IDNs do not apply to the same business types, then there is the potential for divergence in the practical application of regulatory conditions. For instance, if the NTS and the RDNs remain within a single legal entity, then it follows that they would be subject to a single licence and a single safety case. In practice, this could mean that certain conditions have a differential effect in their application. For instance, financial ring fencing conditions could have a greater impact on a DN that is operated on its own within a legal entity than a DN that is part of a legal entity that includes multiple DNs plus the NTS business.

2.7 Finally, legal separation simplifies the enforcement of statutory duties, licence conditions and industry codes because it creates more transparency between the NTS and the RDNs. Consequently, it will help to ensure that IDNs are not disadvantaged in terms of regulatory enforcement relative to RDNs.

Reduces the need for complex regulatory rules

2.8 A rigorous approach to business separation (including legal separation) could reduce regulatory complexity. If Transco continue to operate as a single entity, then it will be necessary to develop alternative mechanisms to reduce the risk of undue discrimination. This is likely to take the form of the 'targeted rules and licence conditions' suggested by Transco. Experience suggests that in order for such rules to be effective it is necessary to adopt a far more detailed and prescriptive approach than if the businesses are simply required to separate.[48]

2.9 Additionally, as it is very difficult to monitor compliance with non-discrimination provisions, it is likely that behavioural rules would be accompanied by an intrusive compliance regime.

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[48] Even with legal separation, rules and licence conditions will be required. However, the degree of detail required for such rules increases in proportion to the extent that the business is permitted to operate as a single entity.

Consistency with models adopted for other energy groups

2.10 Legal separation is consistent with the requirements that apply to other energy groups. Previously, each instance where Ofgem has required legal separation has been required has related to separation between monopoly and competitive businesses. Transco argues that such precedents are not relevant because the NTS and the RDNs are both monopoly businesses. Ofgem acknowledges the distinction. However, Ofgem considers that undue discrimination between RDNs and IDNs could potentially increase costs to customers connected to the IDNs.

2.11 Ofgem notes that each Great Britain electricity transmission network is operated from a legally separate entity.

Costs of legal separation

2.12 This Section sets out Transco's view and Ofgem's view of the impact of legal separation on Transco's debt. It also considers other costs identified by Transco.

Transco's view of costs associated with debt restructuring

2.13 Transco has argued that legal separation of RDNs may have adverse effects on the cost and other terms of its existing and future borrowings. Transco has suggested than in the longer run, this might increase its average cost of debt, to the detriment of consumers. The adverse effects identified include:

- a possible increase in Transco's average cost of debt of 15-20 basis points (or possibly more) compared to the status quo; and
- a loss of flexibility resulting from the need to afford more protection to bondholders through restrictive covenants that could limit Transco's freedom of action in certain circumstances.

2.14 Transco concedes that these effects are to a degree substitutable; that is to say, an increase in interest cost might be partly avoided by conceding stronger bondholder protections, and vice versa. Transco argue, however, that the effect of strengthening bondholder protections would be to transfer risk from bondholders to equity holders, thus raising its overall cost of capital.

2.15 Transco's preliminary estimate is that the additional costs associated with debt restructuring would be significant. Ofgem's view of the likely cost impact is discussed below.

Ofgem's view of costs associated with debt restructuring

2.16 Ofgem has carefully considered Transco's arguments. In order to better understand the matters in issue, Ofgem has also informally discussed the potential implications of legal separation for Transco's future access to debt markets with credit rating agencies and selected major institutional investors in these markets.

2.17 Ofgem considers that the provision of upstream guarantees to bondholders would avoid pressure for an increase in Transco's cost of capital. The decision on whether to provide an upstream guarantee is a commercial decision that lies with Transco. If Transco decides that it is appropriate to provide an upstream guarantee, then Authority consent is required. In the past, the Authority has agreed to upstream guarantees in similar circumstances. Ofgem is therefore of the view that a requirement for legal separation would not reduce Transco's operating or financing flexibility to any greater extent than would result from its commercial decision to sell as many as four DNs.

2.18 Transco accepts that it would be possible to avoid any significant increase in its future cost of debt that might otherwise result from legal separation of RDNs by conceding additional protections to existing and future bondholders. In particular, Transco expects all investors would require the benefit of upstream guarantees provided by the company holding the RDN businesses. They may also require restrictions on the amount of any further indebtedness that may be incurred by such company. Transco would have the option of redeeming any outstanding bonds if they were unwilling to meet demands made by any bondholders from whom consent or waiver is required for separation to occur.

2.19 Any upstream guarantee would require the consent of the Authority under the terms of standard licence condition 47 of the gas transporter licence, and, as such, applies to Transco plc. Ofgem expects that a similar condition will be included in the licences issued in respect of DNs, including in respect of RDNs if these are legally separated. Ofgem would need to consider whether it would

be appropriate to grant consent, should it be sought on behalf of a RDN. I n relation to the enforced restructuring of Public Electricity Supply companies pursuant to the Utilities Act 2000, Ofgem gave consent for upstream guarantees where this was necessary to avoid incurrence of disproportionately high debt restructuring costs. A similar principle might therefore be applied in the case of enforced separation of RDNs.

2.20 It would be for consideration whether any upstream guarantee to which the Authority were to consent should be specific to obligations outstanding at the date of the consent or extend to any obligations subsequently created. In those cases where the Authority has given analogous consents in the past, they have been limited in scope to obligations outstanding at the date of consent. Such limited consents provide a degree of transitional relief enabling the licence holder to avoid incurrence of debt restructuring costs and to plan for the refinancing of the relevant obligations at maturity on a basis which enables it to continue to command ready access to capital markets on the most favourable terms available, having regard to the risk profile of the group as a whole. Ofgem's initial view is that legal separation of RDNs would not materially restrict Transco's ability to refinance existing obligations as they fall due on such a basis, and that accordingly any upstream guarantees for which consent were given should be limited in scope to obligations subsisting at the date of the consent.

2.21 It would also be for consideration whether any such consent should be unconditional or should be subject to continuing observation of one or more restrictions designed to ensure that the risk profile of the issuer whose obligations are guaranteed is not deliberately altered so as to increase the probability that the guarantees will be called. Once created, such guarantees would remain legally enforceable obligations of the guarantor in accordance with their terms. Any breach of the conditions to the consent would potentially result in a breach of the guarantor's licence, but would not of itself directly affect the enforceability of the guarantee.

2.22 Transco argues that if, under prevailing market conditions, it is obliged to offer holders of its existing and future obligations strengthened protections to avoid an increase in debt cost, this will increase its cost of equity. Ofgem does not agree that this would necessarily be the case. One effect of strengthening bondholder

protections would be to strengthen governance disciplines on management. This can reduce a company's overall cost of capital. If gearing remains constant, and there is no increase in the cost of debt, the cost of equity would in these circumstances be reduced. Moreover, the decision whether to provide strengthened protections would be a matter of commercial choice for Transco.

2.23 Overall, Ofgem is of the view that legal separation of the NTS business from the RDN business is very unlikely to have any significant effect on future allowed revenues under Transco's NTS and RDN price controls, as a result of the potential adverse effects related to the cost and other terms on which Transco is able to access debt markets which it has identified. For reasons given above, Ofgem does not consider that the potential effects on Transco's cost of debt should influence the decision on separation.

Other costs associated with legal separation

2.24 Transco also argues that legal separation will lead it to incur other costs. Transco's preliminary estimates show that these costs of legal separation (excluding debt restructuring costs) would be significant, based on the following key assumptions:

- operational asset, land and property rights associated with the NTS are transferred to a separate legal entity, leaving the RDN assets within Transco plc;
- existing organisation separation between RDNs and NTS is maintained and reinforced through codes of conduct and briefings;
- all business services staff are transferred into a separate entity;
- all RDN employees remain together in one company;
- no physical separation of staff, office property and systems; and
- no changes to systems (apart from changes to back-office systems such as SAP to accommodate separate legal entities).

2.25 Ofgem has not tested the robustness of Transco's estimates. As explained in Chapter 6, Ofgem intends to ensure that any capital costs incurred as a result of

a requirement for business separation are not included in Transco's allowed revenue at future NTS and DN price control reviews. Ofgem will use the workgroup process to consider further the costs that could potentially be passed through to customers as a result of business separation, and whether the benefits exceed the costs.