

**Offtake Arrangements Regulatory Impact Assessment
Response by NGT, 9th July 2004**

**Diurnal Storage and Operational Flows
Option B: Alternative Model**

1. Introduction

In principle, commercial arrangements (Option B) could be developed for the release of diurnal storage and for managing operational flow variations between the NTS and DNs. Any such initiative would require substantial development and consultation with the industry. This Appendix describes some initial thoughts on the way in which Option B could be structured to provide a means of making available diurnal storage and operational flow products, with common pricing arrangements, at all NTS exit points. In approaching this task NGT has drawn on the principles embedded in the NTS exit capacity model described in Appendix 1.

For diurnal storage, it may be appropriate release product quantities on long term, short term and daily bases as described for NTS exit capacity. This is because the availability of product can impact on investment plans for both NTS and DNs. Diurnal storage is considered in section 2.

The issues associated with a potential operational flow product are described in section 3. It is envisaged that this would differ from the other products in that it would be made available on or shortly before the gas flow day. This is because availability of the product is highly dependent on operating conditions on the gas flow day.

2. Diurnal Storage

2.1 Basic Product Definition

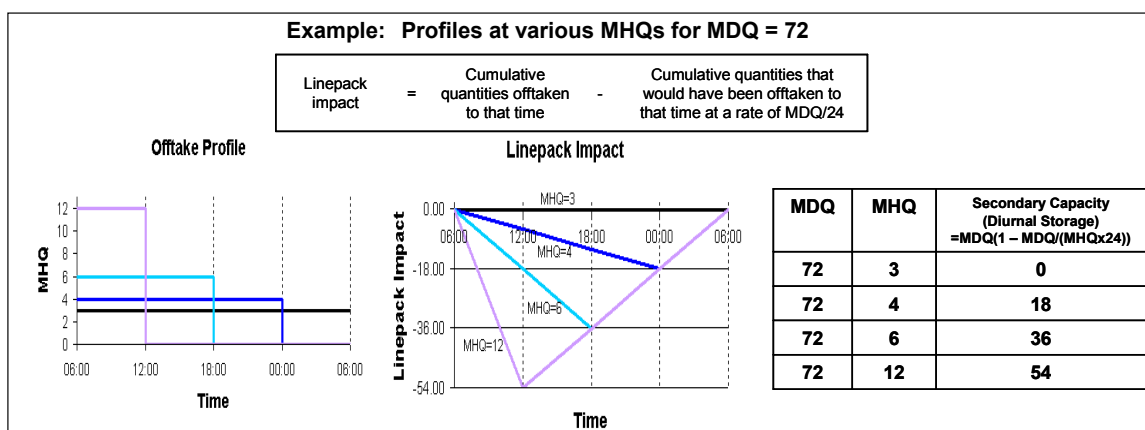
Two options have been identified. Each is described below:

Product Definition (1): MHQ/ MDQ defined product

Diurnal Storage quantities provided are a function of Maximum Hourly Quantity (MHQ) and Maximum Daily Quantity (MDQ):

$$\text{Diurnal storage} = \text{MDQ} (1 - \text{MDQ}/(\text{MHQ} \times 24))$$

The Diurnal Storage quantity established using the equation is derived from the maximum linepack impact that can occur, as calculated when running at the MHQ until the MDQ has been taken, and then running for the remainder of the day at zero rate, as illustrated below:



It is assumed that the notice period, rate change and ramp rate limitations do not appreciably constrain the ability to take the amounts of diurnal storage determined from the formula.

Product Definition (2): MHQ/ t/ MDQ defined product

In this case the diurnal storage quantity at each individual NTS/ DN offtake is a function of MHQ, t (the number of hours during a day that the rates can be greater than MDQ/24, up to the MHQ) and MDQ:

$$\text{Diurnal Storage} = (\text{MHQ} - (\text{MDQ}/24)) \times t$$

where $t_{\text{max}} = \text{MDQ}/\text{MHQ}$

The Diurnal Storage quantity established using the equation is derived from the maximum linepack impact that can occur as calculated when running at the MHQ for t hours, and then running for the remainder of the day at the rate that will ensure the MDQ is taken.

Example			
For MDQ = 72 (and MDQ/24 of 3)			
•MHQ of 4 for (a) 12 hours and (b) 18 hours			
•MHQ of 6 for (a) 12 hours and (b) 18 hours			
MDQ	MHQ	t	Secondary Capacity (Diurnal Storage) =(MHQ - (MDQ/24)) x t
72	3	12	0
72	4	12	12
72	4	18	18
72	6	12	36
72	6	18	54

Again, it is assumed that notice period, rate change and ramp rate limitations do not appreciably constrain the ability to take the amounts of diurnal storage determined from the formula.

Product definition (2) most closely reflects the usage of diurnal storage quantities by loads connected to the NTS. The addition of the time dimension in the definition would facilitate bookings of diurnal storage quantities that more closely match the load profiles. This would not be the case with product definition (1) where loads would need to run at maximum rate and then at zero rate (an unrealistic scenario) to take the full diurnal storage entitlement. However the additional parameter in definition (2) significantly increases complexity.

Tranching of capacity rights

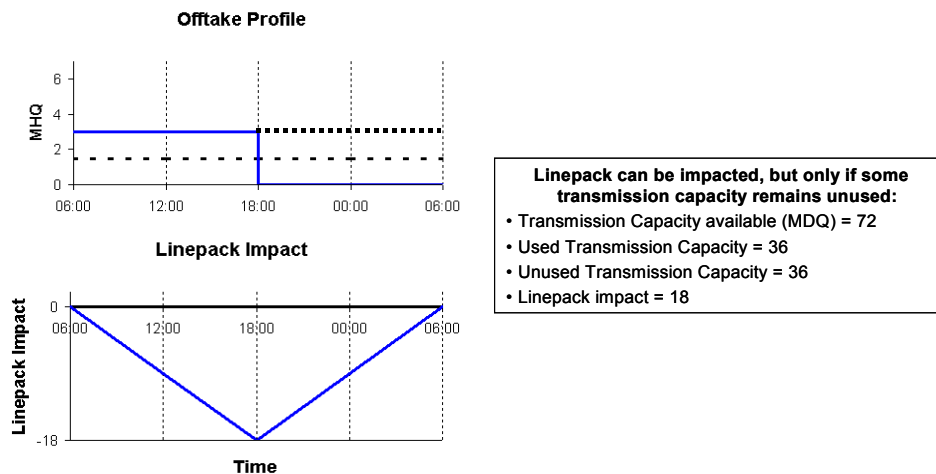
Monthly and daily tranches could be offered as per NTS exit capacity

Capacity rights timeframes

Release could be on three bases, as per NTS exit capacity; long term (year 4 and beyond), short term (years 1, 2 and 3) and daily

Diurnal Storage capacity inherent within NTS exit capacity

For both products described above no diurnal storage quantities are provided where $\text{MDQ} = 24 \times \text{MHQ}$. However, there can be significant linepack impacts caused by rate variations at rate $< \text{MDQ}/24$ as demonstrated by the following example where the MDQ is 72:



The extent to which such impacts can be accommodated from the unused NTS exit capacity requires further examination during the diurnal storage product development process.

2.2 Implementation

As with NTS exit capacity, making the diurnal storage product available on long term, short term and daily bases requires the development of supporting systems that will not be available until at least summer 2007. The new arrangements would therefore apply to all years from 2007/8 onwards. The introduction of new release arrangements is shown in Table 1.

Time at which capacity rights made available	Type of rights and year in respect of which rights apply					
	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11
Summer 2005	Current arrangements	–	–	–	–	–
Summer 2006	x	Current arrangements	–	–	–	–
Summer 2007 Full system functionality available	x	x	New short term rights release New daily rights release	New short term rights release	New short term rights release	New long term rights release
Summer 2008	x	x	x	New short term rights release New daily rights release	New short term rights release	New short term rights release

ing arrangements at NTS direct connects (where the Network Code sets the MHQ at MDQ/24) would continue to apply for the years 2005/6 and 2006/7. Likewise the current arrangements for shippers at NTS/DN exits (whereby the diurnal storage product is bundled with and paid for as part of the NTS exit capacity charge) would continue to apply.

It is important for DNs to receive information regarding long term (year 4) availability of diurnal storage, as this can impact on DN investment plans. It is envisaged that the initial form of the Offtake Code (assuming introduction before summer 2005) will specify agreed minimum levels of monthly diurnal storage product for each DN for the years 1 to 5 (2005/6 through to 2009/10). These quantities will be the equivalent of long term and short term rights under the new regime.

The Offtake Code will specify the process for annual update of these figures and for additional years going five years out in total (again in a similar manner to the short and long term rights process under the new regime) until the new arrangements are implemented in full in summer 2007.

2.3 Product usage

The product usage would be measured based on the aggregate flows at the exit point concerned. Where multiple shippers use the exit point a simple allocation mechanism would be required to apportion the aggregate product costs on the day amongst shippers, thus avoiding the costly complexity of allocating within day flows to shippers.

2.3 Arrangements for NTS direct connect exit points

It is envisaged that shippers would acquire diurnal storage product through the long term, short term and daily release processes described above. A shipper would commit to pay for product registered to it under each sales process at the price established at that time. Overrun charges would need to be developed to cater for breaches of booked product.

At exit points with multiple shippers the allocation agent would apportion usage on the day amongst shippers using simple parameters such as the daily quantities offtaken by the shippers.

2.4 Arrangements for NTS/ DN exit points

DN specification of diurnal storage product requirements

For each individual NTS/DN exit point the aggregate diurnal storage requirements for the following years would be established by DNs under the Offtake Code arrangements. The opportunities to register the product would be as described in Table 1.

The product levels specified by a DN in respect of any year would be the requirements to satisfy its 1 in 20 licence obligation.

Allocation of quantities of diurnal storage product costs to DN shippers

As with NTS exit capacity, the final aggregate diurnal storage product requirement specified by a DN in respect of an NTS/ DN exit point on a particular day is an important parameter used to determine the product held by a shipper and the associated charges. The final requirements specified by the DN under the Offtake Code will be apportioned amongst shippers using an approved methodology set out or referenced in the Uniform Network Code. The calculation could, for example, pro-rate final aggregate product levels based on the aggregate quantities of LDZ exit capacity (for both DM and NDM load) in the relevant LDZ held by the shippers at the time the product is used. The charges payable by shippers to the NTS would reflect both the quantities of product so apportioned, and the prices for product applicable when the DN specified the requirement.

Overrun charges at for diurnal storage would in effect be funded by DNs, using a method similar to that described for NTS exit capacity.

2.5 Key issues for further consideration

Many of the key issues reviewed in the context of NTS exit capacity apply equally in respect of the diurnal storage product:

Baseline capacity provision and additional capacity release – baseline quantities need to be set. Additional release criteria may be required

NTS Incentive – may be required to encourage release of incremental quantities

DN Incentive – may be required to encourage booking of efficient quantities

Pricing – auctions with reserve price for constrained product, P/Q curves if unconstrained. The challenge in developing cost reflective pricing for diurnal storage product should not be underestimated

Substitutability – limited substitutability due to location dependency of availability (as with NTS exit capacity)

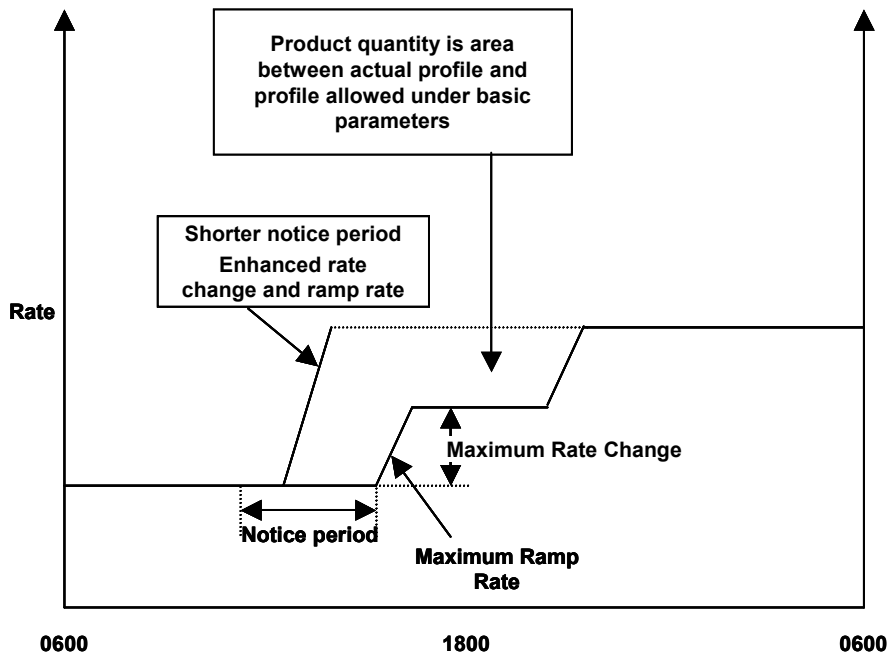
Ancillary agreements – may need to be reviewed and modified before a new diurnal storage product could be introduced at particular locations.

3. Operational Flows

NGT believes that an Operational Flow product could be developed to deal with flow flexibility requirements on the day.

Operational Flow Product Definition

In generic terms the product could be defined as the degree to which, by agreement with NTS, gas is taken from the NTS at an exit point (or group of exit points) at rates outside those allowed under the basic ramp rate and rate change/ notice period parameters. The product could be quantified by comparing the requested profile with that allowed under the basic parameters as illustrated below:



Other Considerations

There are a number of important factors to be taken into account in developing this product:

- Incentive on NTS to make available
- Incentive on DN to moderate usage
- Monitoring and measurement
- Two way provision: NTS to DNs/ direct connects, and DNs/direct connects to NTS
- Upstream and downstream operator arrangements and interaction with shippers
- Pricing
- Substitutability
- Apportionment of usage to shippers for NTS/DN exits
- Apportionment of usage to shippers at multiple shipper NTS direct connect exits
- Interaction with ancillary agreements

Given the need for system development and likely system support requirement this type of product could not be introduced until at least 2007/8. Current arrangements would therefore apply in the interim period. At NTS direct connects these are governed by a combination of Network Code and ancillary agreement provisions. For NTS/ DN offtakes the interim arrangements would be set out in the Offtake Code.