Optional Charge Analysis
Contents

INTRODUCTION......................................................................................................................................................... 3
ASSUMPTIONS........................................................................................................................................................ 4
WORKGROUP ACTIONS............................................................................................................................................... 5
MODIFICATIONS....................................................................................................................................................... 7
UNC0678B - AMENDMENTS TO GAS TRANSMISSION CHARGING REGIME .......................................................... 7
UNC0678G - AMENDMENTS TO GAS TRANSMISSION CHARGING REGIME INCLUDING A COST BASED OPTIONAL CAPACITY CHARGE ............................................................................................................................... 9
UNC0678H - AMENDMENTS TO GAS TRANSMISSION CHARGING REGIME (POSTAGE STAMP) INCLUDING A COST BASED OPTIONAL CAPACITY CHARGE ........................................................................................................ 12
UNC0678I - AMENDMENTS TO GAS TRANSMISSION CHARGING REGIME INCLUDING WHEELING AND AN IRELAND SECURITY CHARGE ................................................................................................................... 15
UNC0678J - AMENDMENTS TO GAS CHARGING REGIME (POSTAGE STAMP) INCLUDING A COST BASED OPTIONAL CAPACITY CHARGE ................................................................................................................. 17
INTRODUCTION

1. The following analysis has been completed by National Grid in support of UNC0678 Workgroup [http://www.gasgovernance.co.uk/index.php/0678](http://www.gasgovernance.co.uk/index.php/0678). It is intended to provide indicative information regarding the potential impact of any optional charges or lack thereof.

2. Due to the commercially sensitive nature of NTS Optional Commodity Charge (NTS OCC) data, this analysis could only be undertaken by National Grid on behalf of proposers with optional charge components within their respective modifications. All data corresponding to the existing NTS OCC and any subsequent charges arising from the analysis will be presented at an aggregated level.

3. Where relevant, the analysis uses the UNC0678 V3.1 CWD Transmission Services - Sensitivity Model¹. This is an illustrative model and should always be considered as such. It provides support to UNC0678 Modification and is a sensitivity tool to demonstrate the way in which charges under UNC0678 would be calculated, and as a result the same consideration should be taken when reviewing this Optional Charge analysis.

4. This analysis is structured in the following way:

   (a) Description of the assumptions that have been made in order to carry out a consistent method of analysis

   (b) Some non-modification specific analysis, related to actions raised in UNC0678 Workgroup and UNC0670R Workgroup.

   (c) Analysis of any specific UNC0678 modifications that contain an optional charge, which consists of:

      i. an assessment of the number of routes applicable

      ii. the potential under recovery of transmission services revenue the specified charges could generate

      iii. the indicative impact this could have on reference and reserve prices for the relevant RPM and the same approach on non-transmission charges.

¹ [http://www.gasgovernance.co.uk/index.php/0678/Models](http://www.gasgovernance.co.uk/index.php/0678/Models)
5. In order to carry out the analysis on the current NTS OCC and any optional charges raised by the UNC0678 Modifications in a consistent manner, the following assumptions or limitations have been made:

(a) Users and routes based on NTS OCC historical flows and revenues from October 2017 to September 2018 (Gas Year 2017/18), replicating Gas Year format of the sensitivity tool.

(b) Assessment is undertaken at NTS OCC route level basis, not shipper level.

(c) Assessment is undertaken against Modification UNC0678 as a base case.

(d) No behavioural changes are assumed. All NTS OCC routes and flows used during Gas Year 2017/18 are considered to use any new optional charge proposed, on the condition the charge is less than the prevailing firm RPM entry and exit prices.

(e) No consideration is given between users of the proposed optional charges and users that hold Existing Contracts. Optional charge price comparisons are assessed between prevailing firm RPM reference and reserve prices only.

(f) For the purpose of this assessment, the Forecasts Contracted Capacity (FCC) as defined in the FCC Methodology Statement\(^2\) is considered to be 100% accurate.

(g) For the purpose of calculating adjustments within the sensitivity model, perfect foresight of applicable quantities for the optional charge is assumed in order to give indicative reserve price increases to account for optional charge under recovery.

(h) It is assumed sufficient capacity has been procured, e.g. capacity bookings are not less than any optional charge related flows

(i) Any further modification specific sensitivity analysis or assumptions are stated where necessary

---

Workgroup Actions

6. The NTS OCC historical flows and revenues from Gas Year 2017/18 have been used to carry out non-modification specific analysis, related to actions raised in UNC0678 Workgroup and UNC0670R Workgroup.

7. UNC0678 workgroup action: 02-0502

*Action Shorthaul: National Grid to provide some analysis on Shorthaul and the effect of cessation of Shorthaul on existing users and customers currently using Shorthaul services.*

8. UNC067R workgroup actions: 0201, 0202

*National Grid to provide analysis based around a comparison between UNC Modifications 0670R and 0678, including existing versus future usage predications; limiting factors for sites in or around the NTS; generic costs and cost of gas and gas sources in respect of construction of a pipeline*

*National Grid to provide analysis based upon the UNC Modification 0678 model and to also look to provide a view on the potential NTS Revenue Sensitivity Risk Assessment aspects.*

9. Summary of NTS OCC use for Gas Year 2017/18. There are 54 NTS Offtakes registered for the application of the NTS OCC. 37 Offtakes registered eligible flows during 2017/18 from 10 entry points.

<table>
<thead>
<tr>
<th>Flow on OCC (GWh)</th>
<th>OCC Revenue</th>
<th>Amount OCC flows would pay in Commodity Revenue if no OCC</th>
<th>Amount redistributed to non-OCC users</th>
<th>Offtakes registered for OCC</th>
<th>Active Offtakess OCC in 2017/18</th>
<th>Active Offtake Route Average Distance (km)</th>
<th>Active Offtake Route Max Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GY 2017/18</td>
<td>244,508</td>
<td>£34,221,109</td>
<td>£172,930,731</td>
<td>54</td>
<td>37</td>
<td>55</td>
<td>274</td>
</tr>
</tbody>
</table>

Table 1: NTS OCC Summary for Gas Year 2017/18

10. Comparisons between the effect of the cessation of the NTS OCC for UNC0678 are complicated due to the move away from commodity based revenue recovery mechanisms. The charges incurred by different users will depend on a number of parameters.

NTS Revenue Sensitivity Risk Assessment

11. A key discussion within the UNC0670R Workgroup was the potential impact of lost revenue due to the construction of independent pipelines, a risk identified when the NTS OCC is no longer available.

12. Analysis on the change in Entry and Exit capacity prices for Gas Year 2019/20, using the UNC0678 V3.1 CWD Transmission Services - Sensitivity Model, has been completed on three sensitivities on the NTS OCC user base and historical data set from Gas Year 2017/18. The sensitivities are the removal of:

(a) NTS OCC routes with a straight-line distance of less than 20km
(b) NTS OCC routes where more than 80% of the flow observed at the offtake corresponds to NTS OCC

(c) All NTS OCC routes

13. This analysis is achieved through running the sensitivity model with the relevant Exit Point FCC removed and the corresponding Entry Point FCC reduced by the same amount. UNC0678 CWD RPM parameters are used to produce a range of increase in Standard Firm Reserve Prices when shorthaul route FCC removed as per sensitivities.

<table>
<thead>
<tr>
<th></th>
<th>NTS OCC routes less than 20km</th>
<th>NTS OCC routes with &gt;80% NTS OCC flow</th>
<th>All NTS OCC routes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry</strong></td>
<td>+15% to +21%</td>
<td>+30% to +41%</td>
<td>+38% to +45%</td>
</tr>
<tr>
<td><strong>Exit</strong></td>
<td>+8% to +14%</td>
<td>+18% to +26%</td>
<td>+25% to +32%</td>
</tr>
</tbody>
</table>

Table 2: Range of increase in Standard Firm Reserve Prices, CWD RPM 2019/20

14. Non-Transmission Service Charges comparison between UNC0678 rate (p/kWh) and if all observed Gas Year 2017/18 NTS OCC flows are removed from the system.

<table>
<thead>
<tr>
<th></th>
<th>678</th>
<th>All NTS OCC routes removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Tx rate</td>
<td>0.0140</td>
<td>0.0201</td>
</tr>
</tbody>
</table>

Table 3: Non-Transmission Service Charges with NTS OCC flows removed, 2019/20
Modifications

15. For the full detail behind the relevant optional charges and their application, please refer to the relevant Modification (http://www.gasgovernance.co.uk/index.php/0678)

UNC0678B - Amendments to Gas Transmission Charging Regime

Introduction

16. From UNC Mod 678B:

Optional Capacity Charge

The proposal will introduce a new approach to NTS optional charging that will enable National Grid to continue to offer transportation services that result in the efficient use of its gas network. The new method is a natural extension of the capacity weighted distance methodology. Optional Capacity Charges will be generated by formulae described in the Solution section. The Optional Capacity charge arrangements will, in the view of the Proposer, provide for a more cost-reflective application of the CWD Methodology, encourage greater use of the NTS by way of avoiding inefficient bypass (whether via onshore or offshore gas pipelines) and facilitate the delivery of gas to the GB market. It will also support the efficient flow of gas across all GB Interconnection Points.

Optional Charge Availability

17. NTS Optional Capacity Charge Formula:

\[
\text{NTS Optional Entry Capacity Charge} = \frac{D}{\text{CWDen}} \times \frac{\text{RPen}}{\text{SUF}}
\]

\[
\text{NTS Optional Exit Capacity Charge} = \frac{D}{\text{CWDex}} \times \frac{\text{RPex}}{\text{SUF}}
\]

where

i. \( D \) is the straight-line distance between the entry and exit point,

ii. \( \text{CWDen} \) is the capacity weighted distance for the entry point,

iii. \( \text{CWDex} \) is the capacity weighted distance for the exit point,

iv. \( \text{RPen} \) is the prevailing capacity reserve price for the entry point,

v. \( \text{RPex} \) is the prevailing capacity reserve price for the exit point, and

vi. \( \text{SUF} \) is the System Utilisation Factor
18. All currently observed routes would qualify for a lower NTS Optional Capacity Charge than the prevailing RPM from the sensitivity model for Gas Year 2019/20. System Utilisation Factor for 2019/20 is 60.1%

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Optional Charge flow GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017/18</td>
<td>Actual</td>
<td>244,508</td>
</tr>
<tr>
<td>2019/20</td>
<td>678B</td>
<td>244,508</td>
</tr>
</tbody>
</table>

Table 4: Optional charge flow 2019/20 assumed, compared to GY 2017/18 actuals

**Revenue**

19. Based on the availability of the optional charge, the under recovery of transmission services revenue when compared with 678, is displayed in the table below for Gas Year 2019/20.

20. The sensitivity model is run to calculate reference prices under the CWD RPM and determine the initial under recovery assumed from interruptible and storage capacity discounts. Optional charges are only relevant for the applicable quantity (capacity booked and flowed against, along the specified route), so the under recovery is calculated by comparing the difference between that flow at prevailing RPM and Optional Charges.

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Entry</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019/20</td>
<td>678</td>
<td>327,187,973</td>
<td>320,717,255</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Target Revenue Recovery (£): 337,823,191</td>
<td>337,823,191</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revenue Input Figure Adjustment (£): -10,635,218</td>
<td>-17,105,935</td>
</tr>
</tbody>
</table>

Table 5: Optional charge assumed under recovery

**Prices**

21. This initial under recovery of revenue is fed into the 0678B Version of the Sensitivity Model³ in order to go through multiple iterations of RPM price increases. This is required due to the Optional Charge being a dynamic formula. In addition to the increase of reference and reserve prices, the optional charge also increases until an equilibrium has been achieved.

22. The FCC for all sites remains unchanged so prices are increased at a standard distribution in line with the FCC.

---

### Table 6: Increase in Prevailing Firm Reference and Reserve Prices to account for Optional Charge anticipated under recovery, 678B CWD RPM 2019/20

<table>
<thead>
<tr>
<th></th>
<th>Impact to reference prices</th>
<th>Impact to reserve prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>+35%</td>
<td>+25%</td>
</tr>
<tr>
<td>Exit</td>
<td>+15%</td>
<td>+9%</td>
</tr>
</tbody>
</table>

23. Non-Transmission Services price increase driven by a reduction in applicable flows, with Optional Charge flows excluded

<table>
<thead>
<tr>
<th></th>
<th>678</th>
<th>678B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Tx rate</td>
<td>0.0140</td>
<td>0.0201</td>
</tr>
</tbody>
</table>

Table 7: Non-Transmission Service Charges with 678B Optional Charge flows removed, 2019/20

### UNC0678G - Amendments to Gas Transmission Charging Regime including a Cost based Optional Capacity Charge

#### Introduction

24. From UNC Mod 678G:

**NTS Optional Capacity Charge**

This proposal 0678G will introduce a new capacity based charge that discourages inefficient bypass of the NTS. The new NTS Optional Capacity charge is calculated by applying an equation which relates to the cost of providing pipeline capability to support a particular load size and distance travelled from a nominated NTS Entry Point to the particular NTS Exit Point to derive a unit cost in pence per kWh. The resultant cost from the equation is converted into a capacity cost by application of the site specific FCC and MNEPOR. The charge is then apportioned 50:50 between entry and exit and the Users opting to accept the charge commit to making payments equivalent to the cost of booking one year of capacity (at entry and exit) at the FCC level of the qualifying NTS Exit Point. The NTS Optional Capacity charge arrangements will, in the view of the Proposer, encourage greater use of the NTS by way of avoiding inefficient bypass (whether via onshore or offshore gas pipelines) and facilitate the delivery of gas to the GB market. It will also support the efficient flow of gas across all GB interconnection points.
Optional Charge Availability

25. NTS Optional Capacity Charge Formula

OCC rate formula for 2019/20:

\[
\text{OCC (p/kWh)} = [897.85 \times ((M)^{-0.79}) \times D + 765.09 \times (M)^{-0.7}] 
\]

D is the direct distance of the site or non-National Grid NTS Pipeline to the elected Entry Terminal as the crow flies.

M is the Maximum NTS Exit Point Offtake Rate (MNEPOR) at the site, converted into kWh/day.

^ means 'to the power of..'

Capacity rate:

Daily pipeline cost (p/day) by application of the following:

Daily Pipeline cost = OCC rate \times MNEPOR

NTS Optional Capacity rate (p/kWh/day) by application of the following:

\[
\text{NTS Optional Capacity rate} = \frac{\text{Daily Pipeline cost}}{\text{FCC}}
\]

\[
\text{NTS Exit OCC rate} = \frac{\text{NTS Optional Capacity rate}}{2}
\]

\[
\text{NTS Entry OCC rate} = \frac{\text{NTS Optional Capacity rate}}{2}
\]

Annual NTS OCC Fee:

\[
\text{Annual NTS Optional Capacity Fee} = (\text{FCC} \times \text{NTS Exit OCC Rate} + \text{FCC} \times \text{NTS Entry OCC Rate}) \times 365 - (\sum\text{OCC Entry Charges} + \sum\text{OCC Exit Charges})
\]

Where

\[
\sum\text{OCC Entry Charges} = \text{sum of all Users OCC Entry Charges for the OCC Route}
\]

And

\[
\sum\text{OCC Exit Charges} = \text{sum of all Users OCC Exit Charges for the OCC Route}
\]

26. 17 of the currently observed routes would qualify for a lower NTS Optional Capacity Charges for entry and exit than the prevailing RPM from the sensitivity model for Gas Year 2019/20, therefore are considered to take the optional capacity charge.

27. These 17 routes are under 30km in straight-line distance and would constitute 59% of the actual flows observed in Gas Year 2017/18

<table>
<thead>
<tr>
<th>2017/18</th>
<th>Actual</th>
<th>Optional Charge flow GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019/20</td>
<td>678G</td>
<td>Optional Charge flow (based on 2017/18 GY) GWh</td>
</tr>
<tr>
<td></td>
<td></td>
<td>143,292</td>
</tr>
</tbody>
</table>

Table 8: Optional charge flow 2019/20 assumed, compared to GY 2017/18 actuals
Revenue

28. Based on the availability of the optional charge, the under recovery of transmission services revenue when compared with 678, is displayed in the table below for Gas Year 2019/20.

29. The sensitivity model is run to calculate reference prices under the CWD RPM and determine the initial under recovery assumed from interruptible and storage capacity discounts. Optional charges are only relevant for the applicable quantity (capacity booked and flowed against, along the specified route), so the under recovery is calculated by comparing the difference between that flow at prevailing RPM and Optional Charges.

30. The Annual NTS OCC Fee is an indicative value of revenue that could be recovered if capacity bookings are below FCC levels at the relevant exit points.

<table>
<thead>
<tr>
<th>Year</th>
<th>Exit</th>
<th>Total Revenue Recovered (£)</th>
<th>Target Revenue Recovery (£)</th>
<th>Revenue Input Figure Adjustment (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019/20 678</td>
<td>Entry</td>
<td>327,187,973</td>
<td>337,823,191</td>
<td>-10,635,218</td>
</tr>
<tr>
<td></td>
<td>Exit</td>
<td>320,717,255</td>
<td>337,823,191</td>
<td>-17,105,935</td>
</tr>
</tbody>
</table>

Table 9: Optional charge assumed under recovery

Prices

31. This anticipated under recovery of revenue is fed into the adjustment calculation of the Sensitivity Model to demonstrate the indicative impact on prices, given perfect foresight of the flows that qualify for the Optional Charge.

32. The FCC for relevant Exit Points and the corresponding Entry Points are reduced by the flows observed. This leads to a recalculation of prices that vary between points in terms of percentage increase.

<table>
<thead>
<tr>
<th>Year</th>
<th>Exit</th>
<th>Impact to reference prices</th>
<th>Impact to reserve prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>+30% to +34%</td>
<td>+25% to +29%</td>
<td></td>
</tr>
<tr>
<td>Exit</td>
<td>+14% to +18%</td>
<td>+8% to +12%</td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Increase in Prevailing Firm Reference and Reserve Prices to account for Optional Charge anticipated under recovery, 678G CWD RPM 2019/20
33. Non-Transmission Services price increase driven by a reduction in applicable flows, with Optional Charge flows excluded

<table>
<thead>
<tr>
<th></th>
<th>678</th>
<th>678G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Tx rate</td>
<td>0.0140</td>
<td>0.0170</td>
</tr>
</tbody>
</table>

Table 11: Non-Transmission Service Charges with 678G Optional Charge flows removed, 2019/20

**UNC0678H - Amendments to Gas Transmission Charging Regime (Postage Stamp) including a Cost based Optional Capacity Charge**

**Introduction**

34. From UNC Mod 678H:

**NTS Optional Capacity Charge**

This proposal 0678H will introduce a new capacity based charge that discourages inefficient bypass of the NTS. The new NTS Optional Capacity charge is calculated by applying an equation which relates to the cost of providing pipeline capability to support a particular load size and distance travelled from a nominated NTS Entry Point to the particular NTS Exit Point to derive a unit cost in pence per kWh. The resultant cost from the equation is converted into a capacity cost by application of the site specific FCC and MNEPOR. The charge is then apportioned 50:50 between entry and exit and the Users opting to accept the charge commit to making payments equivalent to the cost of booking one year of capacity (at entry and exit) at the FCC level of the qualifying NTS Exit Point. The NTS Optional Capacity charge arrangements will, in the view of the Proposer, encourage greater use of the NTS by way of avoiding inefficient bypass (whether via onshore or offshore gas pipelines) and facilitate the delivery of gas to the GB market. It will also support the efficient flow of gas across all GB interconnection points

**Optional Charge Availability**

35. NTS Optional Capacity Charge Formula

OCC rate formula for 2019/20:

\[ \text{OCC (p/kWh)} = [897.85*(M)^{-0.79}] *D+765.09*(M)^{-0.7} \]

D is the direct distance of the site or non-National Grid NTS Pipeline to the elected Entry Terminal as the crow flies.

M is the Maximum NTS Exit Point Offtake Rate (MNEPOR) at the site, converted into kWh/day.

^ means ‘to the power of..’
Capacity rate:

Daily pipeline cost (p/day) by application of the following:

**Daily Pipeline cost = OCC rate * MNEPOR**

NTS Optional Capacity rate (p/kWh/day) by application of the following:

**NTS Optional Capacity rate = Daily Pipeline cost/FCC**

**NTS Exit OCC rate = NTS Optional Capacity rate / 2**

**NTS Entry OCC rate = NTS Optional Capacity rate / 2**

Annual NTS OCC Fee:

**Annual NTS Optional Capacity Fee = (FCC x NTS Exit OCC Rate + FCC x NTS Entry OCC Rate) x 365 – (∑OCC Entry Charges + ∑OCC Exit Charges)**

Where

\[ \sum OCC \text{ Entry Charges} = \text{sum of all Users OCC Entry Charges for the OCC Route} \]

And

\[ \sum OCC \text{ Exit Charges} = \text{sum of all Users OCC Exit Charges for the OCC Route} \]

36. 18 of the currently observed routes would qualify for a lower NTS Optional Capacity Charges for entry and exit than the prevailing RPM from the sensitivity model for Gas Year 2019/20, therefore are considered to take the optional capacity charge.

37. These 18 routes are under 30km in straight-line distance and would constitute 60% of the actual flows observed in Gas Year 2017/18

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Optional Charge flow GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017/18</td>
<td>Actual</td>
<td>244,508</td>
</tr>
<tr>
<td>2019/20</td>
<td>678H</td>
<td>146,283</td>
</tr>
</tbody>
</table>

Table 12: Optional charge flow 2019/20 assumed, compared to GY 2017/18 actuals

**Revenue**

38. Based on the availability of the optional charge, the under recovery of transmission services revenue when compared with 678, is displayed in the table below for Gas Year 2019/20.

39. The sensitivity model is run to calculate reference prices under the PS RPM and determine the initial under recovery assumed from interruptible and storage capacity discounts. Optional charges are only relevant for the applicable quantity (capacity booked and flowed against, along the specified route), so the under recovery is calculated by comparing the difference between that flow at prevailing RPM and Optional Charges.

40. The Annual NTS OCC Fee is an indicative value of revenue that could be recovered if capacity bookings are below FCC levels at the relevant exit points.
Prices

41. This anticipated under recovery of revenue is fed into the adjustment calculation of the Sensitivity Model to demonstrate the indicative impact on prices, given perfect foresight of the flows that qualify for the Optional Charge.

42. The FCC for relevant Exit Points and the corresponding Entry Points are reduced by the flows observed.

<table>
<thead>
<tr>
<th></th>
<th>Entry</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019/20 678 PS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Revenue Recovered (£):</td>
<td>325,638,141</td>
<td>318,084,409</td>
</tr>
<tr>
<td>Target Revenue Recovery (£):</td>
<td>337,823,191</td>
<td>337,823,191</td>
</tr>
<tr>
<td>Revenue Input Figure Adjustment (£):</td>
<td>-12,185,049</td>
<td>-19,738,781</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2019/20 678H</th>
<th>Rev from Optional Charge flow @ 678 capacity prices</th>
<th>Rev from Optional Charge flow @ 678H capacity prices</th>
<th>Annual OCC Fee</th>
<th>678H Under Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>58,678,619</td>
<td>22,727,494</td>
<td>7,814,930</td>
<td>-45,374,969</td>
</tr>
<tr>
<td></td>
<td>5,488,720</td>
<td>5,488,720</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7,814,930</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 13: Optional charge assumed under recovery

43. Non-Transmission Services price increase driven by a reduction in applicable flows, with Optional Charge flows excluded

<table>
<thead>
<tr>
<th></th>
<th>678</th>
<th>678H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Tx rate</td>
<td>0.0140</td>
<td>0.0171</td>
</tr>
</tbody>
</table>

Table 14: Increase in Prevailing Firm Reference and Reserve Prices to account for Optional Charge anticipated under recovery, 678 PS RPM 2019/20

Table 15: Non-Transmission Service Charges with 678H Optional Charge flows removed, 2019/20
 UNC0678I - Amendments to Gas Transmission Charging Regime including Wheeling and an Ireland Security Charge

Introduction

44. From Mod UNC0678I

Wheeling

The proposal will enable National Grid to continue to offer transportation services that result in the efficient use of its gas network. The proposed method is a well-established concept within European gas regulation and will be generated according to the formula outlined below. The Proposer acknowledges that building physical infrastructure to bypass the NTS is a potential consequence of not having a genuine 'short haul' product available but other potential consequences exist such as the potential withdrawal of GB Shippers from supply contracts, leading to a loss of market participants and subsequently liquidity in the GB market. Encouraging efficient use of the network facilitates the delivery of gas to the GB market. It also supports the efficient flow of gas across interconnection points. The Wheeling product is beneficial to GB customers as Security of Supply is facilitated.

Optional Charge Availability

45. Wheeling Charge Formula:

Wheeling rate (Wr)p/kWh:

\[ 2086.59 \times M^{-0.834} \times D + 610.70 \times M^{-0.654} \]

Where:

M = Maximum NTS Exit Point Offtake Rate (MNEPOR) at the site, converted into kWh/day.

^ means ‘to the power of’.

Wheeling charge (Wc) p/kWh/d (Conversion to capacity based charge):

\[ \text{Wc}=((\text{Wr} \times M))/\text{FCC} \]

46. The Wheeling charge is applicable based on the condition there is 0km distance as outlined in the distance matrix that forms part of the RPM and FFC Methodology.

47. 8 of the currently observed routes would qualify for a lower Wheeling Charges for entry and exit than the prevailing RPM from the sensitivity model for Gas Year 2019/20, therefore are considered to take the optional capacity charge. This would constitute 45% of the actual flows observed in Gas Year 2017/18

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>Optional Charge flow GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017/18</td>
<td>244,508</td>
<td>244,508</td>
</tr>
<tr>
<td>2019/20</td>
<td>678I</td>
<td>111,631</td>
</tr>
</tbody>
</table>

Table 16: Wheeling charge flow 2019/20 assumed, compared to GY 2017/18 actuals
Revenue

48. Based on the availability of the Wheeling charge, the under recovery of transmission services revenue when compared with 678, is displayed in the table below for Gas Year 2019/20.

49. The sensitivity model is run to calculate reference prices under the CWD RPM and determine the initial under recovery assumed from interruptible and storage capacity discounts. Wheeling charges are only relevant for the applicable quantity (capacity booked and flowed against, along the specified route), so the under recovery is calculated by comparing the difference between that flow at prevailing RPM and Wheeling Charges.

Table 17: Wheeling charge assumed under recovery

<table>
<thead>
<tr>
<th></th>
<th>Entry</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019/20</td>
<td>678</td>
<td></td>
</tr>
<tr>
<td>Total Revenue Recovered (£):</td>
<td>327,187,973</td>
<td>320,717,255</td>
</tr>
<tr>
<td>Target Revenue Recovery (£):</td>
<td>337,823,191</td>
<td>337,823,191</td>
</tr>
<tr>
<td>Revenue Input Figure Adjustment (£):</td>
<td>-10,635,218</td>
<td>-17,105,935</td>
</tr>
<tr>
<td>2019/20</td>
<td>678I</td>
<td></td>
</tr>
<tr>
<td>Rev from Optional Charge flow @ 678 capacity prices</td>
<td>34,535,608</td>
<td>17,665,740</td>
</tr>
<tr>
<td>Rev from Optional Charge flow @ 678I capacity prices</td>
<td>2,260,910</td>
<td>2,260,910</td>
</tr>
<tr>
<td>678I Under Recovery</td>
<td>-32,274,697</td>
<td>-15,404,830</td>
</tr>
</tbody>
</table>

Prices

50. This anticipated under recovery of revenue is fed into the adjustment calculation of the Sensitivity Model to demonstrate the indicative impact on prices, given perfect foresight of the flows that qualify for the Wheeling Charge.

51. The FCC for relevant Exit Points and the corresponding Entry Points are reduced by the flows observed.

Table 18: Increase in Prevailing Firm Reference and Reserve Prices to account for Optional Charge anticipated under recovery, 678I CWD RPM 2019/20

<table>
<thead>
<tr>
<th></th>
<th>Impact to reference prices</th>
<th>Impact to reserve prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>+28 to +31%</td>
<td>+23 to +26%</td>
</tr>
<tr>
<td>Exit</td>
<td>+14 to +17%</td>
<td>+9 to +12%</td>
</tr>
</tbody>
</table>

52. Non-Transmission Services price increase driven by a reduction in applicable flows, with Wheeling charge flows excluded
### Table 19: Non-Transmission Service Charges with 678I Wheeling Charge flows removed, 2019/20

<table>
<thead>
<tr>
<th></th>
<th>678</th>
<th>678I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Tx rate</td>
<td>0.0140</td>
<td>0.0163</td>
</tr>
</tbody>
</table>

**UNC0678J - Amendments to Gas Charging Regime (Postage Stamp) including a Cost based Optional Capacity Charge**

**Introduction**

53. From UNC Mod 678J:

**NTS Optional Capacity Charge**

This proposal 0678J will introduce a new capacity based charge that discourages inefficient bypass of the NTS. The new NTS Optional Capacity charge is calculated by applying an equation which relates to the cost of providing pipeline capability to support a particular load size and distance travelled from a nominated NTS Entry Point to the particular NTS Exit Point to derive a unit cost in pence per kWh. The resultant cost from the equation is converted into a capacity cost by application of the site specific FCC and MNEPOR. The charge is then apportioned 50:50 between entry and exit and the Users opting to accept the charge commit to making payments equivalent to the cost of booking one year of capacity (at entry and exit) at the FCC level of the qualifying NTS Exit Point. The NTS Optional Capacity charge arrangements will, in the view of the Proposer, encourage greater use of the NTS by way of avoiding inefficient bypass (whether via onshore or offshore gas pipelines) and facilitate the delivery of gas to the GB market. It will also support the efficient flow of gas across all GB interconnection points.

**Optional Charge Availability**

54. NTS Optional Capacity Charge Formula

\[
\text{OCC (p/kWh)} = [897.85\times((M)^{-0.79}) \times D + 765.09\times(M)^{-0.7}] \\
D \text{ is the direct distance of the site or non-National Grid NTS Pipeline to the elected Entry Terminal as the crow flies.} \\
M \text{ is the Maximum NTS Exit Point Offtake Rate (MNEPOR) at the site, converted into kWh/day.} \\
^\text{ means ‘to the power of..’} \\
\]

Capacity rate:

Daily pipeline cost (p/day) by application of the following:
Daily Pipeline cost = OCC rate * MNEPOR

NTS Optional Capacity rate (p/kWh/day) by application of the following:

\[ \text{NTS Optional Capacity rate} = \frac{\text{Daily Pipeline cost}}{\text{FCC}} \]

\[ \text{NTS Exit OCC rate} = \frac{\text{NTS Optional Capacity rate}}{2} \]

\[ \text{NTS Entry OCC rate} = \frac{\text{NTS Optional Capacity rate}}{2} \]

Annual NTS OCC Fee:

\[ \text{Annual NTS Optional Capacity Fee} = (\text{FCC} \times \text{NTS Exit OCC Rate} + \text{FCC} \times \text{NTS Entry OCC Rate}) \times 365 - (\sum \text{OCC Entry Charges} + \sum \text{OCC Exit Charges}) \]

Where

\[ \sum \text{OCC Entry Charges} = \text{sum of all Users OCC Entry Charges for the OCC Route} \]

And

\[ \sum \text{OCC Exit Charges} = \text{sum of all Users OCC Exit Charges for the OCC Route} \]

55. 18 of the currently observed routes would qualify for a lower NTS Optional Capacity Charges for entry and exit than the prevailing RPM from the sensitivity model for Gas Year 2019/20, therefore are considered to take the optional capacity charge.

56. These 18 routes are under 30km in straight-line distance and would constitute 60% of the actual flows observed in Gas Year 2017/18

<table>
<thead>
<tr>
<th></th>
<th>2017/18 Actual</th>
<th>Optional Charge flow GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019/20</td>
<td>678I</td>
<td>146,283</td>
</tr>
</tbody>
</table>

Table 20: Optional charge flow 2019/20 assumed, compared to GY 2017/18 actuals

Revenue

57. Based on the availability of the optional charge, the under recovery of transmission services revenue when compared with 678, is displayed in the table below for Gas Year 2019/20.

58. The sensitivity model is run to calculate reference prices under the PS RPM and determine the initial under recovery assumed from interruptible and storage capacity discounts. Optional charges are only relevant for the applicable quantity (capacity booked and flowed against, along the specified route), so the under recovery is calculated by comparing the difference between that flow at prevailing RPM and Optional Charges.

59. The Annual NTS OCC Fee is an indicative value of revenue that could be recovered if capacity bookings are below FCC levels at the relevant exit points.
Prices

60. This anticipated under recovery of revenue is fed into the adjustment calculation of the Sensitivity Model to demonstrate the indicative impact on prices, given perfect foresight of the flows that qualify for the Optional Charge.

61. The FCC for relevant Exit Points and the corresponding Entry Points are reduced by the flows observed.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue Recovered (£):</td>
<td>325,638,141</td>
</tr>
<tr>
<td>Target Revenue Recovery (£):</td>
<td>337,823,191</td>
</tr>
<tr>
<td>Revenue Input Figure Adjustment (£):</td>
<td>-12,185,049</td>
</tr>
</tbody>
</table>

Table 21: Optional charge assumed under recovery

<table>
<thead>
<tr>
<th>2019/20</th>
<th>678 PS</th>
<th>Rev from Optional Charge flow @ 678 capacity prices</th>
<th>58,678,619</th>
<th>22,727,494</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rev from Optional Charge flow @ 678J capacity prices</td>
<td>5,488,720</td>
<td>5,488,720</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annual OCC Fee</td>
<td>7,814,930</td>
<td>7,814,930</td>
</tr>
<tr>
<td></td>
<td></td>
<td>678J Under Recovery</td>
<td>-45,374,969</td>
<td>-9,423,844</td>
</tr>
</tbody>
</table>

Table 22: Increase in Prevailing Firm Reference and Reserve Prices to account for Optional Charge anticipated under recovery, 678J PS RPM 2019/20

62. Non-Transmission Services price increase driven by a reduction in applicable flows, with optional charge flows excluded

<table>
<thead>
<tr>
<th></th>
<th>678</th>
<th>678J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Tx rate</td>
<td>0.0140</td>
<td>0.0171</td>
</tr>
</tbody>
</table>

Table 23: Non-Transmission Service Charges with 678J Optional Charge flows removed, 2019/20