Response to Draft Conclusions on Transmission Tariff Harmonisation in Ireland and Northern Ireland

21st November 2008

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1. EXECUTIVE SUMMARY

We welcome a further opportunity to contribute to the development of the CAG. We broadly agree with a number of the fundamental decisions suggested by the RAs in their draft conclusions document. However, there are two significant issues where we believe further thought is required.

The first of these relates to **whether the Moffat interconnectors are combined** or treated as separate capacity products. We believe that capacity on the SNIP and IC1/2 should be treated as a single capacity product.

We believe this approach has significant advantages, and that the alternative (separate products) would retain unnecessary cost and complexity, and importantly would distort commercial decisions and potentially hinder new entry. We do not believe a combined product will lead to the complexity and subjectivity suggested by the RAs.

The second relates to the approach taken to mitigate **the impact of declining utilisation on IC** charges.

If such a mechanism is required, a cap on interconnector charges with above cap revenues recovered through onshore exit charges (in effect transferring a portion of the interconnector asset onshore) would be appropriate. We believe this is consistent with some revenue, in respect of the security of supply, provided by the interconnectors being recovered from all users.

We prefer capping IC charges at LRMC as we believe that this best addresses both the utilisation issue and the other objectives for the charging regime. LRMC-based charge regimes are common in the energy sector internationally and could be applied at other entry points also if correct price signals were needed at these points (e.g. if the Moffat interconnectors were not the marginal source of gas in the medium and long term). Moreover, an LRMC-based cap on charges would result in a regime which is consistent with the current regulatory environment, with prices set annually and revenue agreed over a five year price control period – it would not, therefore, represent a major change in arrangements.

However, we recognise that capping IC charges at a level corresponding with a notional utilisation also merits further consideration, as do other approaches to mitigation, such as mandatory booking of back up capacity for security of supply.

Importantly, with suitable choice of the proportions of above cap revenue recovered in onshore exit charges in each jurisdiction, under our proposed approach end user tariffs in both ROI and NI would be below those which would result from continuing with the current charging regime. With above cap revenue allocated to each jurisdiction pro-rata to allowed:

- **interconnector revenue**, a typical residential customer would see the Irish transmission related element of its bill reduce by an average of some 15% in ROI and some 4% in NI and a typical industrial customer would see reductions of some 16% in ROI and some 3% in NI; and
- **onshore revenue**, a typical residential customer would see the Irish transmission related element of its bill reduce by an average of some 14% in ROI and some 8% in NI and a typical industrial customer would reductions of some 15% in ROI and some 7% in NI.

The latter allocation increases the benefit to NI end users and reduces the benefit to ROI end users as a greater proportion of above cap revenue is recovered in ROI exit charges.

We believe there are significant problems with the LRARC-based alternative put forward by the RAs. Unlike LRMC-based charges, it would constitute a major change to the regulatory environment which would likely result in undesirable step changes in tariffs and an increase in regulatory risk (due to demand forecast errors). We note that these are not simply conceptual problems – the approach is similar to that used for the Phoenix price control in Northern Ireland, where the problems of demand forecast errors have already manifested themselves in the need for a significant revisiting of the long term arrangements. The risk of a similar situation in relation to the interconnectors would be high - forecasting long term interconnector flows is significantly more difficult than forecasting gas demand.

Finally, we remain of the view that tariff levels should not be amended outside of a price control review to avoid any adverse impacts undermining the investment climate in Ireland. In this regard, we note that tariffs could be harmonised conveniently with effect from the next gas transmission price control period as this commences at the same date in both jurisdictions. We also take the opportunity to emphasise our view that any adverse re-profiling of tariffs between price control periods could also have damaging impact on the investment climate in Ireland.

2. INTRODUCTION

Bord Gáis Networks (BGN)[1] has been fully involved in the process for developing the common arrangements for gas (CAG) and emphasises its support for the objective expressed in the Memorandum of Understanding signed by the Regulatory Authorities (RAs) in February 2008 which is "to establish All-Island Common Arrangements for Gas whereby all stakeholders can buy, sell, transport, operate, develop and plan the natural gas market north and south of the border effectively on an all-island basis" so that "variations in the price and conditions on which gas is bought and sold will be determined by market conditions and economics, not by variations in regulatory arrangements." We welcome a further opportunity to contribute to the development of the CAG.

In this paper, BGN sets out its comments on the draft decision and consultation document "Draft Conclusions on Transmission Tariff Harmonisation in Ireland and Northern Ireland" published by the Commission for Energy Regulation (CER) and the Northern Ireland Authority for Utility Regulation (NIAUR) as part of the development of the CAG.

We begin by summarising the areas in which we broadly agree with the draft conclusions reached by the RAs. We then comment on the two outstanding issues of significance: the configuration of entry assets emphasising the advantages of combining the Moffat interconnectors, and the mechanism to mitigate the effect of potentially declining flows on the Moffat interconnectors.

In making these comments, we show that under our proposed solution (when a sufficient proportion of the allowed revenue in respect of the interconnectors is recovered across a larger volume in onshore exit charges), tariffs to both ROI and NI end users should fall.

Finally, we note our views on some other issues raised in the document.

3. KEY COMPONENTS OF THE REGIME

We are broadly in agreement with the draft conclusions that:

- an entry exit regime be adopted with
  - entry asset configuration comprising either combined or separate Moffat interconnector assets with all other entry assets treated separately;
  - exit asset configuration comprising two exit zones – one in each jurisdiction;
- a mechanism be adopted to mitigate the impact of changes in flows between entry systems resulting in declining IC utilisation on IC charges and that such mechanism will not involve any stranding of IC costs.

We comment further on these areas of agreement below.

[1] Bord Gáis Networks is responding to this consultation as a licensed asset owner in ROI, on behalf of BGE(UK) - an asset owner and TSO in NI, and as a service provider to all of the TSOs on the island north and south

3.1. Entry exit regime

We support an entry exit regime as we consider that the listed advantages (in terms of providing appropriate signals for new investment, aligning with Europe, limiting the impact on the market, providing a route for revenue transfer and ease of implementation) far outweigh the listed potential disadvantages.

We also support the draft conclusions that a fully postalised regime is not a viable option as we consider that the listed disadvantages in terms of failure to provide appropriate signals for new investment, failure to align with European best practice, absence of an easy mechanism for revenue transfer and increase in transmission tariffs for Northern Ireland in the absence of any revenue transfer far outweigh the potential advantages in terms of reducing financial risk, mitigating the risk of lower IC utilisation and requiring less legislative change.

3.2. Entry asset configuration

We support separation of all entry points other than the Moffat interconnectors as we consider that this better reflects the cost of entry. We believe the advantages in terms of appropriate incentives for investment and new entry outweigh any disadvantages. We comment on the issue of combined or separate Moffat interconnectors later.

3.3. Exit asset configuration

As noted in our earlier submission, we support an exit asset configuration with two exit zones - one exit zone in each jurisdiction.

We support this approach for the reasons listed in the draft conclusions document including giving greater discretion to the relevant regulatory authorities in connection policy and particularly because it provides a route for effecting revenue transfers.

3.4. Mechanism to mitigate the impact of declining IC utilisation

We support the conclusions that some mechanism may be required to mitigate the impact of declining interconnector utilisation on interconnector charges and that such mechanism should not involve any stranding of interconnector investment costs.

We also support the conclusions that the aim should be to design a suitably robust tariff regime that can at least handle short term troughs in IC utilisation without being overly interventionist. In this regard we consider that there should be minimum regulatory intervention *subject to providing sufficient certainty to existing and new investors.*

We consider that proposals which define a clear and justifiable cap for the level of interconnector charges would avoid the possibility of unacceptable tariffs and the need for further regulatory intervention and hence would be supported by users. With other choices of IC charge mitigation (such as LRARC), the RAs would have to intervene in an unpredictable manner in the future (for example, when outturn demand differs materially from forecast demand), to prevent unacceptable tariffs emerging, introducing regulatory uncertainty which is unlikely to be attractive to market participants, and which is therefore likely to hinder the fulfilment of one of the RAs' objectives, specifically encouraging development of the market.

4. ENTRY ASSET CONFIGURATION

As noted in our earlier submission, we support an entry asset configuration with combined Moffat interconnectors and all other entry points separate.

4.1. Advantages of a combined entry product

We consider that the southern interconnectors (IC1/2) and the Scotland Northern Ireland Pipeline (SNIP) should be combined because they provide a common service as a single transport system for gas from the Great Britain (GB) market at Moffat. After implementation of CAG, gas landed through SNIP should be able to serve customers on the same basis as gas delivered through the interconnectors (and *vice versa*). Setting different prices for the two products would therefore simply distort booking and utilisation incentives as shippers would book their capacity first on the cheaper link if the two assets provide an identical service. These pipelines should be combined so that prices faced by shippers reflect the optimum cost of transporting gas from GB irrespective of the actual route taken by the gas.

Combining the Moffat interconnectors also:

- increases the robustness of the charging approach under scenarios in which utilisation of the interconnectors vary significantly;
- provides mechanisms to allow Northern Ireland to reduce mutualisation risk and to smooth SNIP charges across years; and
- provides a transparent single tariff for delivery of gas from GB that facilitates non-discriminatory access to the available transmission capacity by users from both jurisdictions

We stress that combining the Moffat interconnectors will have no impact on the revenues received by the transmission asset owners which will continue to be determined by the relevant regulator at a regulatory review and will be guaranteed by regulatory oversight.

The RAs suggest that this approach will lead to subjective and complex arrangements for revenue transfer between jurisdictions. We see no significant difficulties with a conceptually simple approach under which the revenue allocation from the combined interconnectors is exactly that which would result from separate interconnectors charged at the same price. However, if concerns relate to the potential relative outturn position of the two jurisdictions, it would be possible to adopt a fundamental principle that the revenue transfer mechanism should be structured so that no jurisdiction is worse off under the new arrangements than under the current arrangements.

Obviously, the proportion of above cap revenue allocated to exit charges in either jurisdiction impacts on the end user tariffs in that jurisdiction. In our previous submission we demonstrated allocation of above cap revenue pro-rata to allowed IC revenue and we have also now examined allocation of above cap revenue pro-rata to allowed onshore revenue Both allocations result in lower tariffs for end users in both ROI and NI, if the combined IC charge were capped at our estimate of LRMC, than would continuing with the current tariff arrangements (see Appendix 1). However, the allocation pro-rata to allowed onshore revenue brings greater benefits to customers in NI as it leads to recovery of a lower proportion of above cap revenue from NI.

In practice, some form of revenue transfer will be required to ensure that each asset owner receives its correct share of the revenue collected from interconnector users due to complexities

such as forecast error, different currencies and treatment of bad debt. However, the practical approach would be mechanical and would neither be subjective nor complex. We anticipate the combined IC charges and revenue transfers would be established along the following lines:

- the RAs would establish the allowed revenues in respect of the IC assets in their jurisdictions for a regulatory review period as now (i.e. CER would establish allowed revenue for IC1/2 and NIAUR would establish allowed revenue for SNIP);

- prior to the start of any year, the utilities would establish:
  - combined IC charges for the following year based on the relevant allowed revenues and expected IC1/2 and SNIP capacity booking and commodity flows and, if combined IC charges are to be capped, the LRMC cap;
  - adjustments to exit charges in their respective franchises for the following year to recover a proportion of the combined IC charge revenue which would not be recovered by the capped combined IC charge based on their expected exit volumes;

- following the end of the year, the utilities would establish:
  - outturn revenues from combined IC charges and from adjustments to exit charges;
  - over/under recovery of combined IC charge revenue which would be compensated by a correction to the combined IC charge for the current year;
  - over/under recovery of the portion of IC revenue recovery in exit charges which would be compensated by a correction to the relevant exit charge for the current year; and
  - the revenue transfer in the current year necessary to ensure that each utility obtains its correct allowed IC revenue.

We do not fully understand the contention in the draft conclusions document that calculating the size of such revenue transfer could be difficult as determining the Northern Ireland base case would be subjective because we consider that the only data required to determine revenue transfers are the allowed revenues and the actual revenues and associated volumes.

Finally, we believe that the implementation of a combined operating regime supported by a unified code of operation (and capture of the associated operational cost savings) is likely to be made more difficult if the Moffat capacity products are not combined. We do not believe that the operational regime will pose any difficulties for implementation of a combined Moffat entry product.

4.2. Issues with separate entry products

While we agree that, in principle, IC1/2 and SNIP could remain separate, we do not believe such an arrangement would be appropriate. We see difficulties whether the IC entry products are treated separately and charged separately or treated separately and charged under common arrangements. For example:

- different charging arrangements (and different tariff levels) for separate interconnectors would:
  - require shippers to understand both arrangements thus imposing two sets of transaction costs on shippers and, arguably, would run contrary to the objective of CAG to provide a single market. This would be particularly evident if an auction were adopted in one jurisdiction and administered prices were adopted in the other;

  - distort booking and utilisation incentives. Specifically, shippers would seek to book capacity using the cheaper arrangement first, disadvantaging shippers that booked later and therefore potentially disadvantaging new entrants as compared with incumbents;
  - appear inequitable on an all-island basis as there would be different charges for the same service; and

- common charging arrangements (and common tariff levels) for separate interconnectors would require more administration by the asset owners as charging arrangements for combined interconnectors (for example, mechanisms to deal with differences between forecasts and outturn volumes and exchange rates).

Moreover, we would question whether it would indeed be possible to implement common charges for separate products. Given that capacity on one link would be priced in Euros and the other in sterling, unless both operators and regulators agreed to maintain an *ex ante* fixed exchange rate through the year, the effective tariffs will inevitably be different.

This could effectively result in asset utilisation being determined by actual or expected exchange rate movements rather than anything related to the gas market – it is difficult to see how this would be desirable.

We have some particular concerns if SNIP charges are determined by auction and IC1/2 charges are determined administratively. In particular, as described below, we consider that there will be unpredictable impacts on IC bookings and throughput and unpredictable knock on effects on end-user tariffs in NI as varying proportions of allowed revenue in respect of SNIP will need to be recovered from onshore exit charges[2].

Assuming there is no overall scarcity of transport capacity from GB, and ignoring effects resulting from currency risk issues, the impacts may depend materially on the relative timings of the SNIP auctions and the IC1/2 charge setting and the durations of the interconnector products offered. This is because if there is no overall capacity shortage for transport from GB, an auction on both assets would reveal a low or zero price for capacity. An auction on one asset alone will only reveal information about the relative attractiveness of the product being offered.

For example, in the absence of congestion on the SN pipeline:

- if SNIP auctions are for shorter term products and IC1/2 capacity can be booked long term, then, to better manage risk, shippers may decide to use the IC1/2 booking for the majority of their requirements and to use the SNIP auctions for adjusting their positions nearer to the outturn, so IC1/2 bookings will be high and SNIP bookings will be low. This could in turn mean that SNIP prices turn out to be low (possibly close to zero) and that the majority of allowed revenue in respect of SNIP must be recovered from onshore exit charges;

- if SNIP auctions are for long term products and IC1/2 capacity can also be booked long term, then:
  - if SNIP auctions are held *before* IC1/2 capacity is offered, SNIP bookings may be high but SNIP prices will be capped at the expected IC1/2 product price. In effect, the SNIP price at best will be set at the level of the IC1/2 price (the same outcome as if there had

[2] End user charges in ROI would not be affected materially as the proportions of revenue to be recovered from IC charges and from onshore exit charges would not vary significantly.

been a common product, at least at the time of the auction). Alternatively, it may be substantially lower (or even zero) if there are features of the SNIP product definition which are less attractive to shippers than the equivalent product on IC1/2; and

– if SNIP auctions are held *after* IC1/2 capacity is offered, SNIP bookings may be low (for example, if shippers prefer the certainty of booking their capacity requirements early) and there may be a greater probability of a lower or zero price, with the result that the majority of allowed revenue in respect of SNIP must be recovered from onshore exit charges.

We conclude that auctions have the potential to lead to substantially greater tariff volatility and booking uncertainty than would otherwise arise. Indeed, the auction outcomes and impact on tariffs may even be materially more unpredictable than described above due to the impact of flows on the SN pipeline and currency effects.

In general, we consider that as both IC1/2 and SNIP perform the same services, they should provide the same products which should be charged at the same price. Even if the ICs remain separate, there needs to be harmonisation of all products to ensure consistency and to allow the same charge to be made for each product (as otherwise the issues that we have shown will arise with the capacity product - concerning unpredictable booking and use – will also arise with the various short term products).

5. MITIGATING THE IMPACT OF DECLINING IC UTILISATION

As noted above, we agree that some mechanism may be required to mitigate the impact of declining IC1/2 utilisation on interconnector charges and that such a mechanism must not:

- involve any stranding of IC costs; and
- be unduly interventionist (i.e. the regulator should intervene no more than necessary to reduce IC charge risk, and IBP price risk, to the level that ensures existing investment is appropriately remunerated and facilitates new investment at reasonable cost).

Clearly, no such mechanism would be needed if the outturn development scenario were such that flows on IC1/2 do not decline significantly and the current charge regime could continue. However, even in this case, potential investors would need confidence that they would be protected against future material changes in IC charges and IBP prices. Accordingly, investors would need to know what would trigger a review (presumably some threshold increase in IC charges or some event such as Shannon LNG commissioning) and what would be the outcome of the review (presumably some intervention to bring IC charges back to a "reasonable" level).

5.1. Application of LRMC

As noted in our earlier submission, we support an approach based on capping interconnector charges at long run marginal costs (LRMC)[3] with allowed revenue in excess of this level being recovered through onshore exit charges as we consider such an approach represents the best compromise among the competing objectives as it:

[3] We note that the RAs consider that the proposed approach may be better described as LRIC. We have no strong views on the terminology. However, for consistency with our earlier submission, we continue to refer to the proposed approach as LRMC.

- provides the right incentives for the future development of the gas market. First, it decouples the tariff level from the actual gas flow through (or bookings on) the link. Second, it ensures that those using the link and those considering developing competing gas sources see a price for shipping more gas through the interconnector which reflects the costs which such flows would impose[4]. As a result, other things being equal, they should not seek to bring new gas onshore when it would be more economic to increase interconnector flows and/or expand interconnector capacity.

- by providing the right incentives, facilitates enhanced competition to supply end users;

- can facilitate continued investment in the energy sector by respecting currently agreed allowed revenues for transmission assets. As noted earlier, this can be achieved by moving any additional revenue requirement not recovered through LRMC-based charges to be recovered through onshore network charges[5] where it should not distort production and consumption decisions in the same way that it would if recovered as an interconnector charge which feeds through to the gas commodity price; and

- results in prices that are likely to be relatively stable and a regime that is reasonably easy to implement.

One of the implications of our proposal is that costs above the LRMC level – arguably related to the provision of security of supply – are recovered from all onshore users in the ROI, rather than just from interconnector shippers. This is potentially a more equitable solution than that in place currently.

We note that LRMC may not readily be estimated and we propose an approach based on the long run average incremental cost (LRAIC) approximation to LRMC.

The draft conclusions document raised a number of points related to our LRMC proposal, specifically that:

- there are few examples of the application of LRMC in network industries other than telecoms;
- the approach is not relevant when demand is not expected to exceed capacity and hence cost recovery is the primary aim of the regulatory price setting mechanism;
- the description did not explain why LRMC should be applied on the ICs – the draft conclusions document questions what is the incremental point of entry; and
- in itself, LRMC pricing does not address the issue of cost recovery on the ICs – the draft conclusions document asks how effectively LRMC pricing addresses the IC utilisation issue.

We deal with each of these points in turn below.

5.1.1. Application of LRMC in network industries other than telecoms

[4] If charges are based on marginal costs then producers and shippers will, in making their own private decisions, take into account properly the incremental cost impact which their decisions might have on the network as a whole.
[5] We agree with the argument in the draft conclusions document that it is this part of our proposal that mitigates the impact of declining utilisation on IC charges.

We stress that the use of charging regimes based on LRMC or approximations to LRMC is common place in the energy industry and has been used for many years in various jurisdictions. For example, regulated charge structures in the following are all approximations to LRMC:

- **UK gas transmission** which, since the mid-1990s, are based on the incremental cost of capacity additions to accommodate additional flow through the network;
- **UK electricity transmission** which, since the mid-1990s, are based on the incremental cost of capacity additions to accommodate additional flow through the network;
- **UK electricity distribution** in which an incremental cost approach, currently adopted by some companies, is now proposed to be implemented uniformly;
- **Australian gas and electricity distribution** and regulated retail tariffs which must "take into account the long run marginal cost" and be "adjusted to ensure recovery of expected revenue with minimum distortion to efficient patterns of consumption"; and
- **Australian electricity transmission** which determines locational revenues using a methodology which approximates to marginal cost.

We therefore consider that the use of LRMC as a basis for network access charges is a well tested and accepted principle for the energy sector. We also consider that implementation of tariffs based on LRMC principles would not represent a major change for the RAs. We note that the CER, in a previous consultation document (CER/04/182), placed significant weight on the use of marginal costs as a basis for tariff setting.

5.1.2. Relevance of LRMC when demand is not expected to exceed capacity

We believe that LRMC-based charges are appropriate both when there is a surplus and when there is a shortage of capacity. In both cases, such charges will need adjustments to ensure revenue recovery. However, with appropriate choice of adjustment[6], such forward looking charges will signal appropriately the surplus or shortage of capacity and encourage appropriate use of the surplus or shortage.

For example, the RAs argue that if there is a surplus of capacity on the interconnectors, cost recovery should be the principal objective of charges. We agree that cost recovery is essential but note that it is also important to send a price signal to shippers to indicate that the cost of incremental flow over the interconnectors is low. Otherwise, as has potentially been observed to date, other things being equal, they may engage in inefficient field or import source development when increasing interconnector flows would have been the most efficient outcome.

We note that historical average cost based charges or other backward looking charges will not provide such signals and may prolong a period of inefficient surplus capacity as the market develops. This would happen under the current charging regime if utilisation were to fall significantly and tariffs were to increase significantly. In such circumstances, recovery of allowed revenue in respect of the interconnectors in interconnector tariffs alone would provide too much revenue to indigenous producers or importers and thus could encourage inefficient field development.

While cost recovery is essential, we note that EC 1775/2005 Article 3, Tariffs for Access to Networks, also requires that tariffs or the methodologies used to calculate them "shall facilitate

[6] Such adjustment could be through a uniform addition or subtraction to exit charges to preserve the LRMC price signals if such LRMC-based prices apply at more than one entry point.

efficient gas trade and competition, while at the same time avoiding cross-subsidies between network users and providing incentives for investment and maintaining or creating interoperability for transmission networks".

5.1.3. Rationale for applying LRMC at the interconnectors

In our earlier submission, we explained why we believe that:

- **the current charging methodology is not robust to all development scenarios**. We believe that GB gas flowing through the Moffat interconnectors is likely to be the marginal source of gas[7] in all reasonable development scenarios in the short to medium term as, within that timescale, we believe that there are unlikely to be indigenous gas sources that can supply sufficient volumes to displace GB imports through the Moffat interconnectors and that LNG facilities on the island will set prices based on parity with GB imports. Accordingly, the Moffat IC charges impact directly on the IBP price Under the current charging methodology, it is likely that IC charges will significantly exceed the marginal cost levels which would be damaging to customers over the short and long term; and

- **the interconnector charges should be capped at LRMC, with additional revenue recovered in onshore exit charges**. If interconnector charges are significantly in excess of marginal costs, in the short term, the IBP price will be higher than efficient and customers will pay more for their gas and, in the longer term, inefficient investments will be made – for example, new sources of gas may be encouraged on to the system in place of gas flowing over the interconnector (which might be the cheaper option).

We do, however, recognise that as the market develops, gas from Moffat may cease to be the marginal source over the longer term. For example, depending on the way in which the LNG market develops in Ireland, the UK and Europe, Shannon LNG could become the marginal source of gas.

In such circumstances, it may be appropriate to set charges at other entry points based on LRMC, again in order to send the right price signals. We would have no objection in principle to this. We provide further details of our suggestions in this regard in Appendix 2.

5.1.4. LRMC and cost recovery

We stress that the principal advantage of adopting prices based on LRMC is that such prices provide the correct price signals (whether they result in high or low prices). However, as the current level of marginal cost is almost certainly below the level required for full recovery of the allowed revenue in respect of the ICs, assuming that the remaining portion of the allowed revenue in respect of the ICs is recovered in onshore exit charges, two secondary advantages arise:

- capping prices at marginal cost helps mitigate the impact of declining IC utilisation on IC charges. The indicative LRMC estimates presented in our earlier submission suggest that the approach is likely to be reasonably effective against reasonable development scenarios. We

[7] The draft conclusions document accepts that the ICs will be the marginal source of gas in the short and medium run but questions whether the IC will be the marginal source of gas in the long run.

consider it highly unlikely that accurate LRMC estimates would exceed current interconnector tariffs; and

- recovering the balance of allowed revenue in respect of the IC in onshore exit charges provides a route to recover some revenue in respect of the common services provided by the ICs – particularly security of supply - which are not currently remunerated from all users who benefit from these common services.

With regard to the latter, we point out that the security of supply value of IC2 was explicitly acknowledged by the Government in its decision to approve the construction of IC2. As set out in the letter to the CER from the Department of Communications, Energy and Natural Resources dated 12 August 2008, the Government approved, in principle, the construction of IC2 "to proceed immediately in order to ensure continuity of gas supply" and agreed that the approval would be subject to further analysis "to reflect the security of supply value of the interconnector".

5.2. Alternative suggestions from the draft conclusions document

5.2.1. Long run average remaining cost

We have significant doubts concerning an approach based on long run average remaining cost (LRARC). Essentially, the LRARC approach attempts to re-profile allowed revenues in respect of interconnectors over time (potentially, over the lifetime of the assets) based on forecast flows to try to maintain a constant charge. However, we are not certain whether the RAs intend re-profiling within a five year price control period or between price control periods[8] or how frequently the RAs intend to "true-up" to reset the charge to recover the balance of allowed revenues exactly over the remaining lifetime.

While such an approach might have limited merit if future flows could be estimated accurately, in the Irish gas system, where future flows are heavily dependent on development scenario and cannot readily be estimated[9], there are significant drawbacks which mean that the approach is inappropriate. These concern:

- **tariff volatility**: as noted in the draft conclusion paper, any overestimation (underestimation) of flow will lead to a backlog (surplus) of allowed revenue which will need to be recovered from (paid back to) consumers in future – and such over- or underestimation can easily result in the need for significant steps in interconnector tariffs at each "true-up". Thus, unless forecasts are accurate, the approach leads to tariff volatility. Accordingly, the approach is not robust and may merely postpone rather than address the issue; and

- **cost increases**: these will arise for several reasons:
  - any re-profiling of revenues will necessitate re-optimisation of cash flows and incur additional costs. As noted in our earlier submission, we have scheduled major elements of capital expenditure to be confident that, given our projected cash flows, we will maintain our credit ratings and key financial ratios within acceptable levels. If our

[8] In its published consultation response, Shannon LNG mentions no specific time periods for re-profiling and we were unable to find any reference to suggested timescales in BGES's published consultation response.
[9] As an example, the outturn interconnector demand and the forecast interconnector demand in PCR1 differed substantially as forecast Seven Heads field deliveries did not materialise leading to volatile tariffs. Similarly, recent UK experience shows that forecasting LNG delivery can be particularly difficult.

revenues are re-profiled, our costs are likely to increase because, with materially altered cash flows during the regulatory period, we will need to either re-optimise our activities at potentially increased cost or we will risk a deterioration in our financial position (potentially leading to breach and costly renegotiation of our loan covenants);
  - the cost of capital may increase due to uncertainty as to whether the regulator (potentially many years in the future) would allow step changes in tariffs to recover a backlog of allowed revenue;

- **as recognised in the draft conclusions document "there is a risk of merely having put off the stranded asset problem":** we welcome the statements by the CER in the draft conclusions document that there will be no stranding of IC2 investment costs in any mechanism to mitigate the effect of declining IC utilisation on IC tariffs, but the introduction of re-profiling would potentially undermine the CER's position in this regard at some future date; and

- **security of supply:** there is obviously a need to find a route for recovery of revenue in respect of the security of supply service provided by the ICs to all users. Adopting the LRARC approach would mean that there would be no such route.

It is important to note that these issues are not merely conceptual. Phoenix, in Northern Ireland, built up significant under-recoveries over the period during which a price derived using a method similar to LRARC was in force. As a result, NIAUR had to engage in a significant exercise to revisit the regulatory arrangements applied to Phoenix – a clear example of the potential problems to which we refer. Further, we would argue that the difficulty of predicting interconnector flows against the background of highly uncertain gas market development scenarios is markedly greater than that of just predicting future supply volumes (for example, few people in 1998 would have predicted the current GB market supply pattern of significant reliance on continental gas imports via interconnectors and LNG imports). With interconnector flow projections required for perhaps 30 years or more, forecast error will inevitably become very high given the major uncertainties on both the demand and supply side (such as price levels, energy efficiency, new gas finds, LNG developments) with obvious implications for potential over- or under-recoveries and subsequent tariff volatility.

We are equally concerned that such a change in approach, which could change significantly the risk profile of the interconnector related cashflows, is being suggested a significant period of time after the relevant capital expenditure has been undertaken. We note that there was no material change in regulatory approach when the CER took over from Department. The CER adopted the methodology used by the Department but extended the review period from annually to five yearly.

We consider that adoption of LRARC-based charges would represent a material change in direction for the RAs. As noted in our earlier response in relation to asset stranding, major changes in the regulatory regime such as a move to LRARC will undermine investor certainty in the stability and maturity of the regulatory arrangements in Ireland, and in doing so, will increase the costs to customers and reduce the likelihood of major pieces of energy infrastructure investment being completed (as investors will perceive this approach as being a major change).

Finally, we note that similar concerns to those listed above have been raised in the aviation sector where a unit of production depreciation methodology (which re-profiles revenues over the lifetime of the relevant asset) has also been proposed but not implemented.

In its "Interim Review of 2005 Determination on Maximum Levels of Airport Charges at Dublin Airport" the Commission for Aviation Regulation (CAR) proposed that the capital costs of the new Terminal 2 (T2) at Dublin Airport would be depreciated on a constant cost per passenger basis, starting from the point that T2 assets were added to the regulatory asset base, and that the passenger forecasts would be updated and the depreciation charges would be re-estimated at each five-yearly review thereafter "to seek to have all passengers benefiting making roughly the same contribution towards the necessary capital expenditure". In response, as an input to the issues paper on the forthcoming price review, NERA noted that before implementing the new depreciation approach, the CAR would need to:

- demonstrate material economic efficiency benefits sufficient to outweigh the likely disadvantages which include:
  - the increased regulatory risk associated with the postponement of revenues and the implementation of a different form of regulation from that used previously;
  - the increased complexity of regulation as different assets will be remunerated in different ways; and
  - the need to spell out detailed arrangements that will apply in future price control periods; and

- take account of the likely increase in perceived risk and the resulting impact on the Dublin Airport Authority's cost of capital.

5.2.2. Alternative with mandatory "security of supply" booking

We noted with interest the alternative view which considers how charging for the provision of security of supply in both jurisdictions could be used to mitigate the impact on interconnector charges of declining utilisation. We see potential merit in requiring shippers to book some amount of back up capacity on facilities other than those used for their main supply and we believe that the approach is worth further consideration as it is certainly one way to recognise the security of supply benefits of the interconnector. However, we believe that such analysis should form part of a wider consideration, including examination of security of supply standards, as determination of the quantum of back up booking is not trivial.

In our earlier submission, we pointed out that the ICs bring a number of further benefits beyond security of supply which are currently not remunerated. These include:

- access to the GB gas market which is essential to deliver a competitive wholesale market in Ireland;
- product certainty and price stability which gives major users such as power stations the confidence to invest knowing that they will not be subject to undue market power exerted by Irish producers; and
- ability to create new products such as the back up product that allows Inch and Corrib to offer firm gas supply.

We consider that introduction of charges for some of these services could also help mitigate the impact on interconnector charges of declining utilisation and could form part of any wider review. In this regard, we note that capping interconnector tariffs (whether at LRMC or at another level) would mean some revenue in respect of security of supply and other common services would be recovered from all users through onshore exit charges.

6. OTHER ISSUES

6.1. Notional IC utilisation cap

As noted above, we support the conclusion that some mechanism may be required to mitigate the impact of declining interconnector utilisation on interconnector charges. If such a mechanism is required, we prefer the mechanism to be achieved through a cap on interconnector charges with above cap revenues recovered through onshore exit charges (in effect transferring a portion of the interconnector asset onshore).

However, the draft conclusions document raised the possibility of determining a cap on interconnector charges based on a deemed minimum notional utilisation and recovering any under-recovery in years of low utilisation either through a PSO levy or re-profiling.

We do not object in principle to such an approach though we have some concerns about the practicalities as:

- deriving such a cap is likely to be somewhat subjective and likely to result in significant distortion of investment and operating decisions unlike capping based on LRMC;
- while the introduction of a PSO levy could help to recover a proportion of the interconnector allowed revenues, we believe that there are many difficulties which render this impractical in the short term. For example, we doubt that decisions by the Minister/and Government of Ireland and approval by the European Commission could be readily obtained; and
- while re-profiling could help recovery of interconnector revenues, as noted earlier, we consider there are significant drawbacks given the difficulties with forecasting in Ireland which mean that the approach is unlikely to be appropriate.

We support a capping approach and we would not rule out a notional utilisation cap though we believe that the implementation would be easier if the level of the cap could be derived from economic fundamentals and above cap interconnector revenues were to be recovered in onshore exit charges rather than through introduction of a PSO levy or re-profiling.

6.2. Network Investment Test

One respondent suggested the use of a network investment test to determine whether investment was appropriate. We believe any such test is already implicit in the regulatory approvals required north and south of the border before any major transmission investment can proceed. For example, in the Republic of Ireland, all major transmission investment needs to obtain a s39a planning consent and go through various regulatory approvals. There are also similar arrangements in Northern Ireland (such as the Verified Forecast Capital Expenditure process).

6.3. Implementation timing

We remain of the view that tariff levels should not be amended outside of a price control review to avoid any adverse impacts undermining the investment climate in Ireland. In this regard, we note that tariffs could be harmonised conveniently with effect from the next gas transmission price control period as this commences at the same date in both jurisdictions. We also take the opportunity to emphasise our view that any adverse re-profiling of tariffs between price control periods could also have damaging impact on the investment climate in Ireland.

7. CONCLUSION

As we noted at the outset, we agree with a number of the fundamental decisions suggested by the RAs in their draft conclusions document.

There are two significant issues where we believe further thought is required:

- **combined or separate Moffat interconnectors:** we believe that capacity on the SNIP and IC1/2 should be treated as a single capacity product. We believe this approach has significant advantages, and that the alternative (separate products) would retain unnecessary cost and complexity, while potentially distorting commercial decisions and hindering new entry. We do not believe a combined product will lead to the complexity and subjectivity suggested by the RAs; and

- **mitigating the impact of declining utilisation on IC charges:** we consider that capping IC charges is an appropriate solution:

  – our proposal is that charges are capped at LRMC and the balance of allowed revenue in respect of the IC is recovered in onshore exit charges. This has benefits in terms of incentives for the economic development of the industry and equitable recovery of costs of security of supply. However, we recognise that other approaches including capping charges at different levels (e.g. at a level corresponding with a notional utilisation) or introducing mandatory back up capacity booking for security of supply also merit further consideration. With suitable choice of the proportions of above cap revenue recovered in onshore exit charges in each jurisdiction, our proposal would deliver lower end user tariffs in both ROI and NI than those which would result from continuing with the current charging regime;

  – we believe there are significant problems with the LRARC alternative under consideration by the RAs, notably that it would constitute a major change to the regulatory environment which would likely result in undesirable step changes in tariffs and an increase in regulatory risk (due to demand forecast errors). Evidence of such problems can be seen in the recent discussions concerning Phoenix revenues. As such, we do not believe it should be considered further.

APPENDIX 1: ILLUSTRATION OF THE TARIFF IMPACT OF LRMC-BASED IC CHARGES WITH VARYING ALLOCATIONS OF ABOVE CAP REVENUES

1. INTRODUCTION

In our earlier submission, we illustrated the impact on end user tariffs of our proposal to combine the IC1/2 and SNIP and to cap charges for the combined interconnector at LRMC to recover the balance of allowed interconnector revenues in onshore exit charges in both jurisdictions. In this illustration, we assumed that the balance of allowed interconnector revenue would be recovered from each jurisdiction in proportion to the relevant allowed interconnector revenue (i.e. allowed IC1/2 revenue for ROI and allowed SNIP revenue for NI).

In this appendix, we present another illustration in which above cap allowed revenue would be recovered from each jurisdiction in proportion to allowed onshore revenue.

In the first part of the appendix, we summarise the end user charges and the tariff impact for both allocation methods. In the second part of this appendix, we present graphs which show ROI and NI capacity charges under each scenario (Corrib only, Corrib and Shannon LNG and Corrib and Larne) for both allocation methods.

2. END USER CHARGES AND TARIFF IMPACT

In the following tables, we re-present[10] the analysis for allocation pro-rata to allowed IC revenue and we then present the analysis for allocation pro-rata to allowed onshore revenue. In each case, we present the minimum, average and maximum charges that emerge across all three development scenarios we have considered (Corrib only, Corrib and Shannon LNG and Corrib and Larne) and across all 12 gas years (2008/9 – 2019/20).

Comparison of above cap revenue allocation methods with cap at our estimate of LRMC

Average end user charges - above cap revenue recovery proportional to allowed IC revenue

		ROI			NI		
		Min	Ave	Max	Min	Ave	Max
Current	Capacity (€/peak day MWh)	552	707	977	508	539	637
	Commodity (€/MWh)	0.289	0.434	0.841	0.219	0.242	0.282
LRMC cap	Capacity (€/peak day MWh)	560	610	662	456	516	625
	Commodity (€/MWh)	0.287	0.310	0.338	0.226	0.258	0.315

Notes:
(1) The illustrative ROI end user charges are based on interconnector entry and onshore ROI exit. "Current" charges comprise IC entry and ROI exit; and LRMC charges comprise combined IC/SNIP entry capped at LRMC (€107/pd MWh) and ROI exit.

(2) The illustrative NI end user charges are based on interconnector entry and onshore NI exit (including SN pipeline). "Current" charges comprise SNIP entry and NI exit; and LRMC charges comprise combined IC/SNIP entry capped at LRMC and NI exit.

(3) If other entry points were used for the illustration other charges would result.

[10] We have updated our analysis with the result that the LRMC-based charges vary slightly and their ranges are reduced slightly from those previously presented.

Average end user charges - above cap revenue recovery proportional to allowed exit revenue

		ROI			NI		
		Min	Ave	Max	Min	Ave	Max
Current	Capacity (€/peak day MWh)	552	707	977	508	539	637
	Commodity (€/MWh)	0.289	0.434	0.841	0.219	0.242	0.282
LRMC cap	Capacity (€/peak day MWh)	563	618	672	433	494	632
	Commodity (€/MWh)	0.289	0.315	0.338	0.214	0.247	0.319

Notes:
(1) The illustrative ROI end user charges are based on interconnector entry and onshore ROI exit. "Current" charges comprise IC entry and ROI exit; and LRMC charges comprise combined IC/SNIP entry capped at LRMC (€107/pd MWh) and ROI exit.

(2) The illustrative NI end user charges are based on interconnector entry and onshore NI exit (including SN pipeline). "Current" charges comprise SNIP entry and NI exit; and LRMC charges comprise combined IC/SNIP entry capped at LRMC and NI exit.

(3) If other entry points were used for the illustration other charges would result.

As these tables demonstrate, our LRMC-based approach leads to relatively stable interconnector entry, exit and end user charges for both the ROI and NI under both allocations. We note that the impact on end users in each jurisdiction depends on the quantum of revenue to be recovered in onshore exit tariffs (which depends on the level of the LRMC cap) and the proportion of this revenue recovered in each jurisdiction.

For both of the above cap revenue allocations examined with capping at our estimate of LRMC (€107/pd MWh), end users in both jurisdictions would benefit as the average cost of gas at the Irish Balancing Point would fall as a substantial proportion of interconnector allowed revenue would be recovered onshore across a larger volume leading to lower unit transmission charges.

We summarise below the tariff impact of applying the overall average charges to typical residential and industrial customers assuming that the:

- **residential customer** has utilisation 1/2.8 (corresponding with annual consumption of 14.7MWh and peak day booking of 0.113MWh) and in the case of
  - ROI: the total bill for the residential customer is derived from the 2008/09 proposed standard tariff and the Irish transmission proportion is derived from the 2008/09 published transmission tariffs;
  - NI: the total bill for the residential customer is derived from the current Phoenix home energy tariff and the Irish transmission proportion is derived from the Phoenix Natural Gas Conveyance Charge Statement for 1/4/08 – 31/12/08;

- **industrial customer** has utilisation 1/1.3 (corresponding with a typical power station customer with annual consumption of 6027GWh and peak day booking of 20.6GWh) and purchases gas at the average of the Q4'08 - Q3'09 forward prices published by Heren and pays published 2008/09 transmission tariffs in the relevant jurisdiction**.**

With above cap revenue allocated pro-rata to allowed interconnector revenue, a typical residential customer would see the Irish transmission related element of its bill reduce by an average of some 15% in ROI and some 4% in NI and would see its total bill reduce by 1.6% in ROI and 0.3% in NI and a typical industrial customer would see the Irish transmission related element of its bill reduce by an average of some 16% in ROI and some 3% in NI and would see its total bill reduce by 1.0% in ROI and 0.2% in NI.

With above cap revenue allocated pro-rata to allowed onshore revenue, a typical residential customer would see the Irish transmission related element of its bill reduce by an average of some 14% in ROI and some 8% in NI and would see its total bill reduce by 1.4% in ROI and

0.5% in NI and a typical industrial customer would see the Irish transmission related element of its bill reduce by an average of some 15% in ROI and some 7% in NI and would see its total bill reduce by 0.9% in ROI and 0.4% in NI.

The latter allocation increases the benefit to NI end users and reduces the benefit to ROI end users as a greater proportion of above cap revenue is recovered in ROI exit charges.

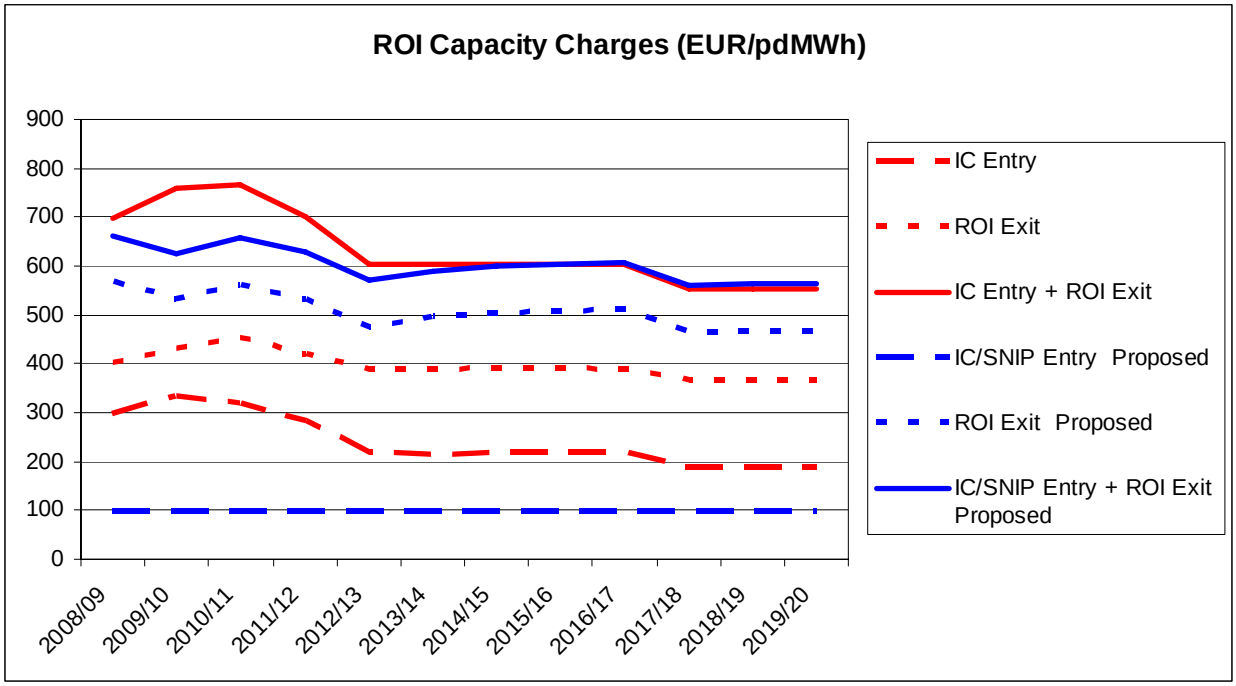
3. ILLUSTRATIVE CHARGES UNDER ALTERNATIVE ALLOCATION METHODS

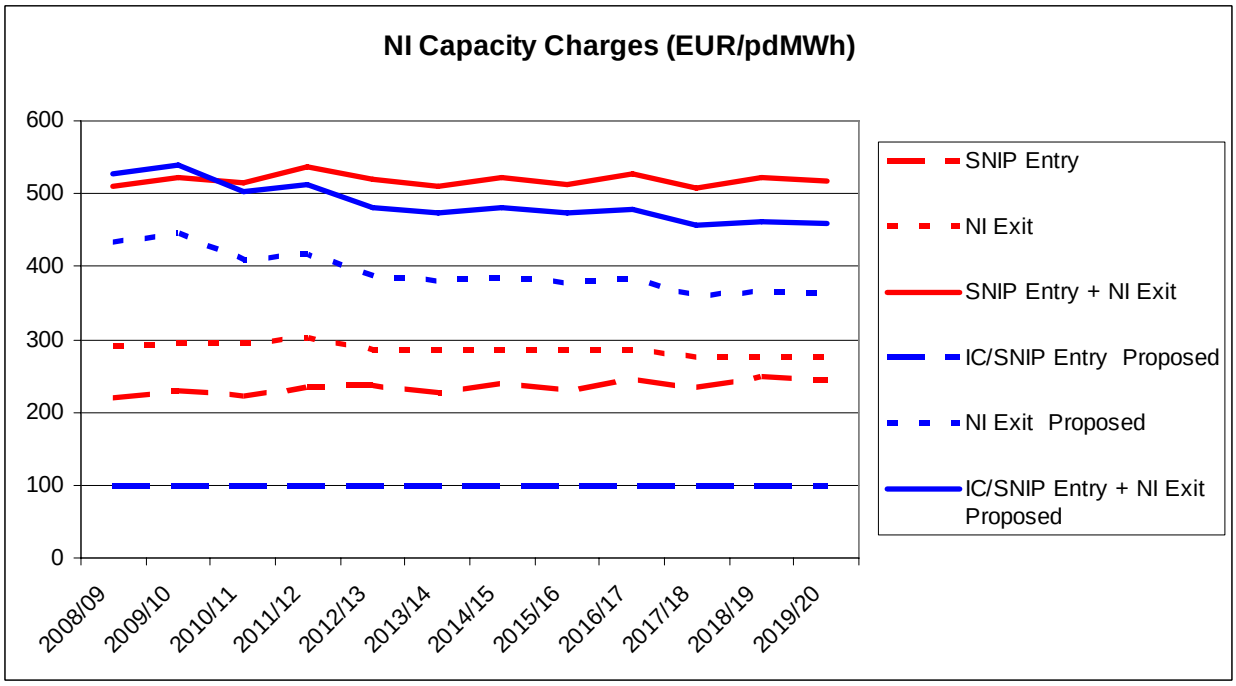
In the following graphs, we show capacity charges for ROI and NI for each year from 2008/09-2019/20 for each scenario for the two allocation methods. As the graphs show, with the combined IC charge capped at LRMC, on average, end user capacity charges fall for both ROI and NI compared with current charge.

Comparison of above cap revenue allocation pro-rata to allowed IC revenue and pro-rate to allowed onshore revenue (with cap at our estimate of LRMC)

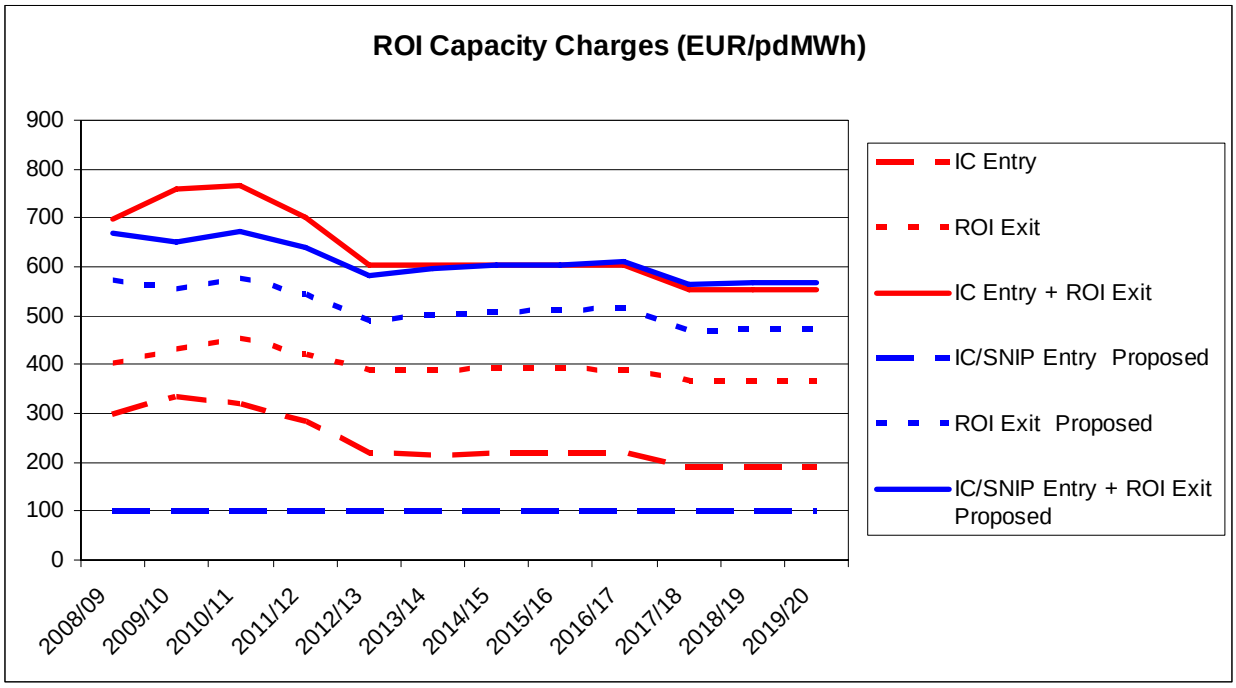
Scenario 1 - Corrib only

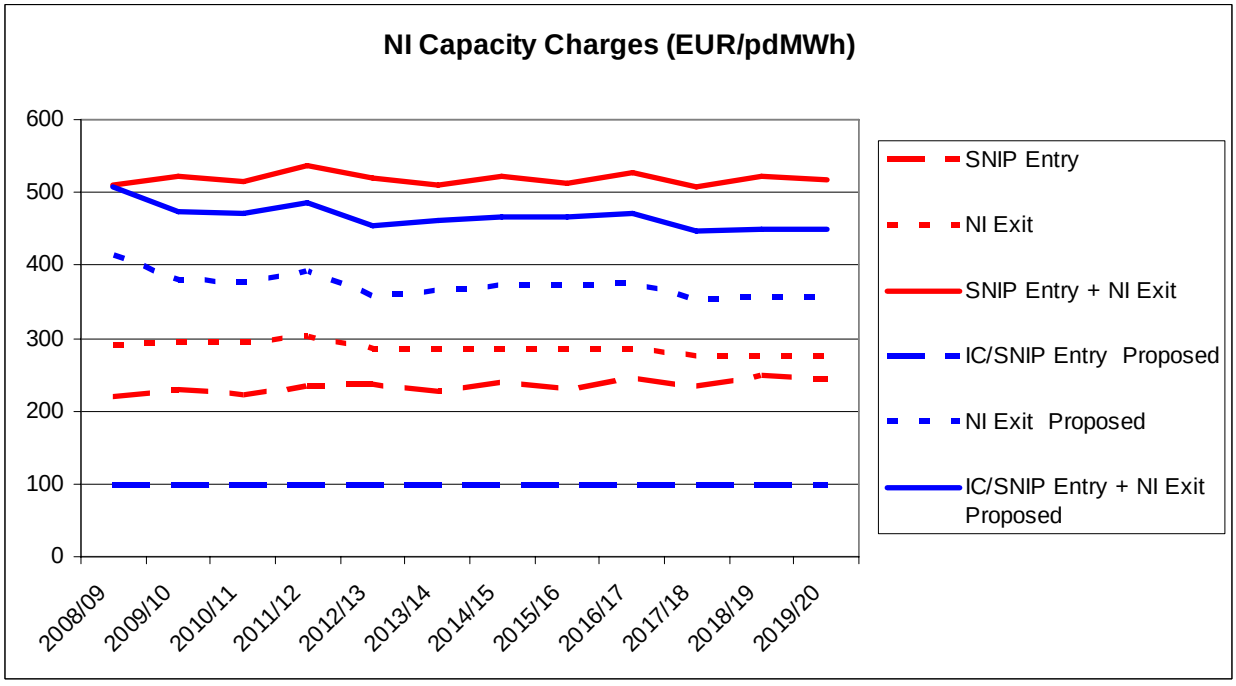
Pro-rata to allowed IC revenue





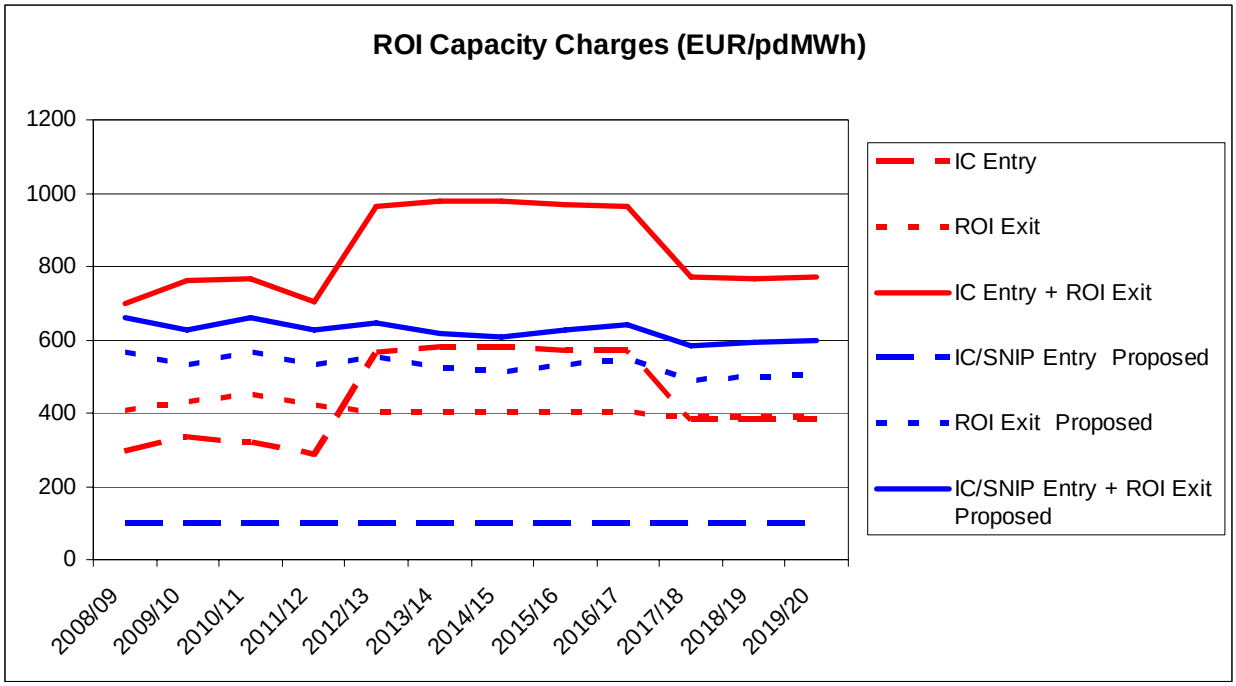
Pro-rata to allowed exit revenue

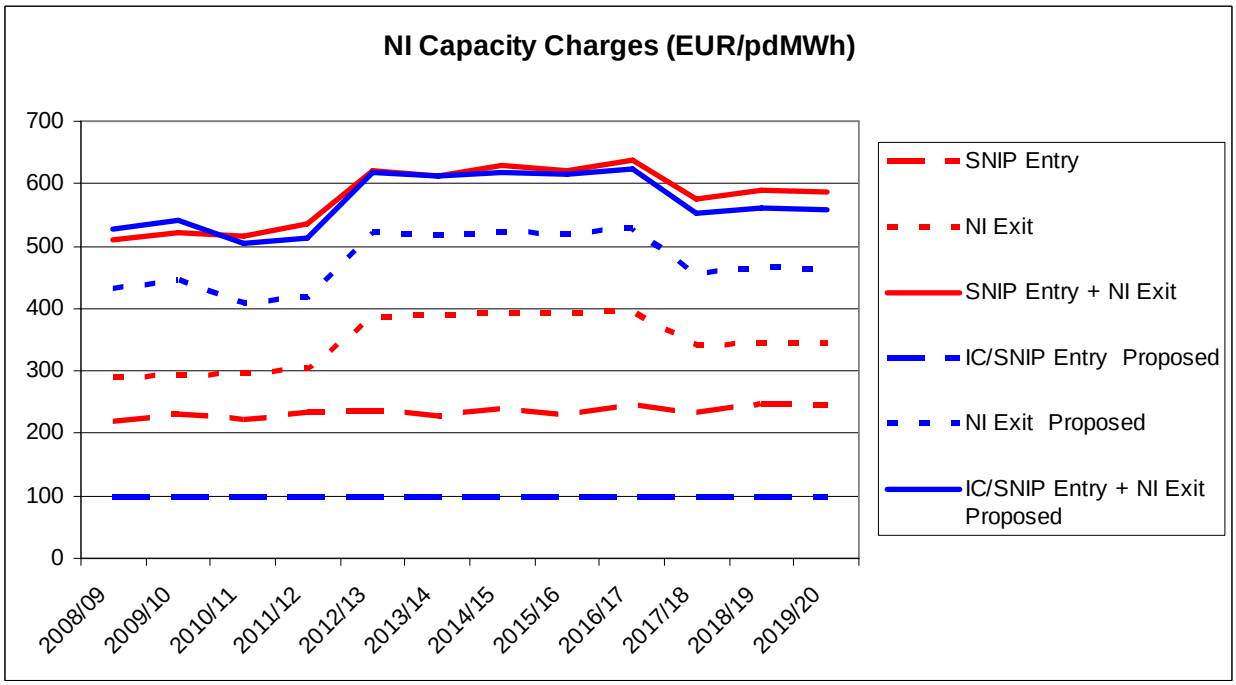




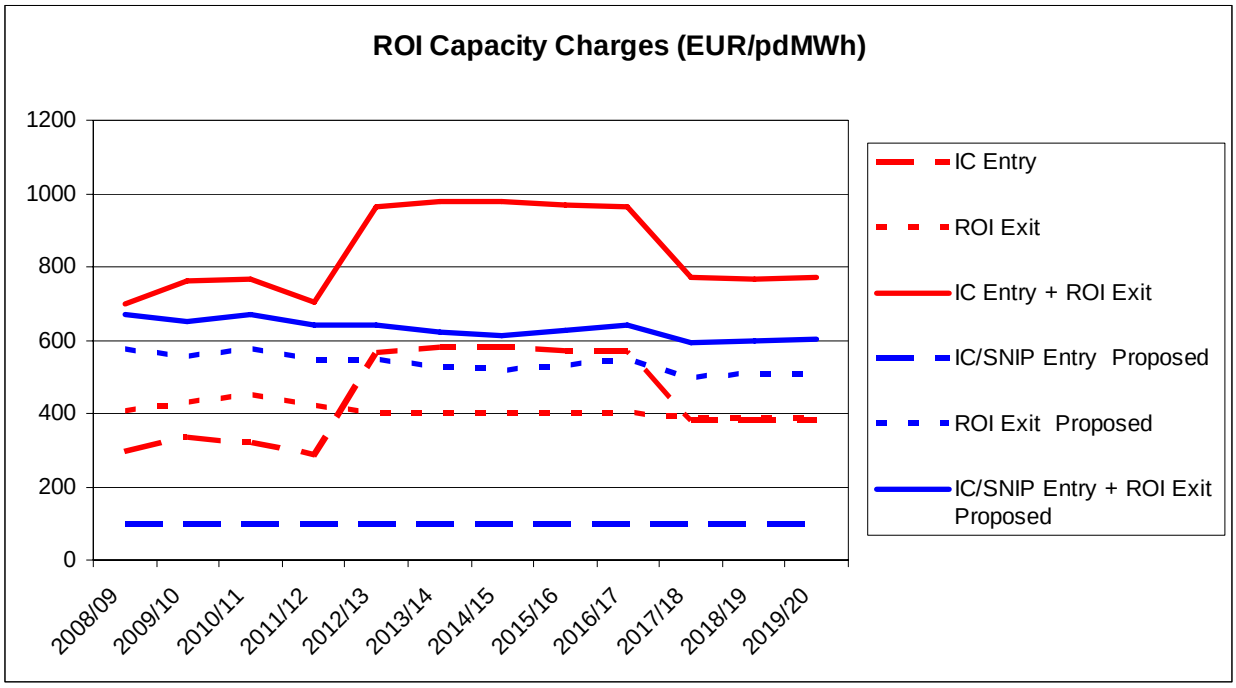
Scenario 2 - Corrib and Shannon LNG

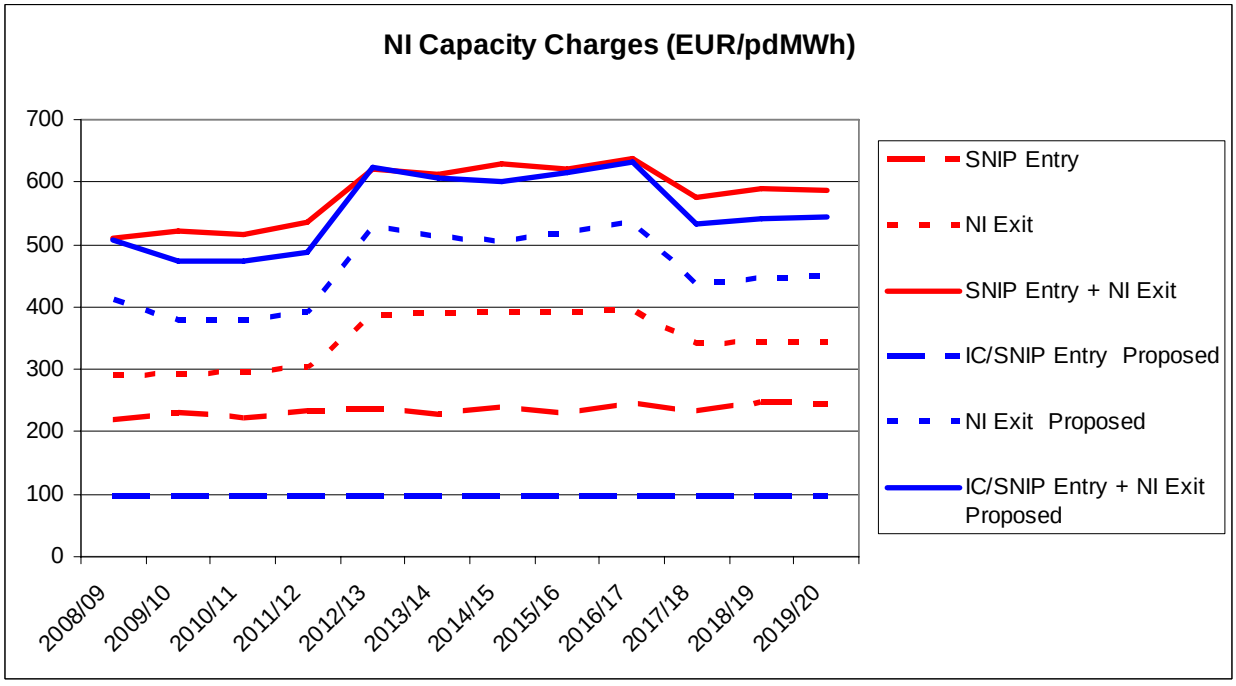
Pro-rata to allowed IC revenue





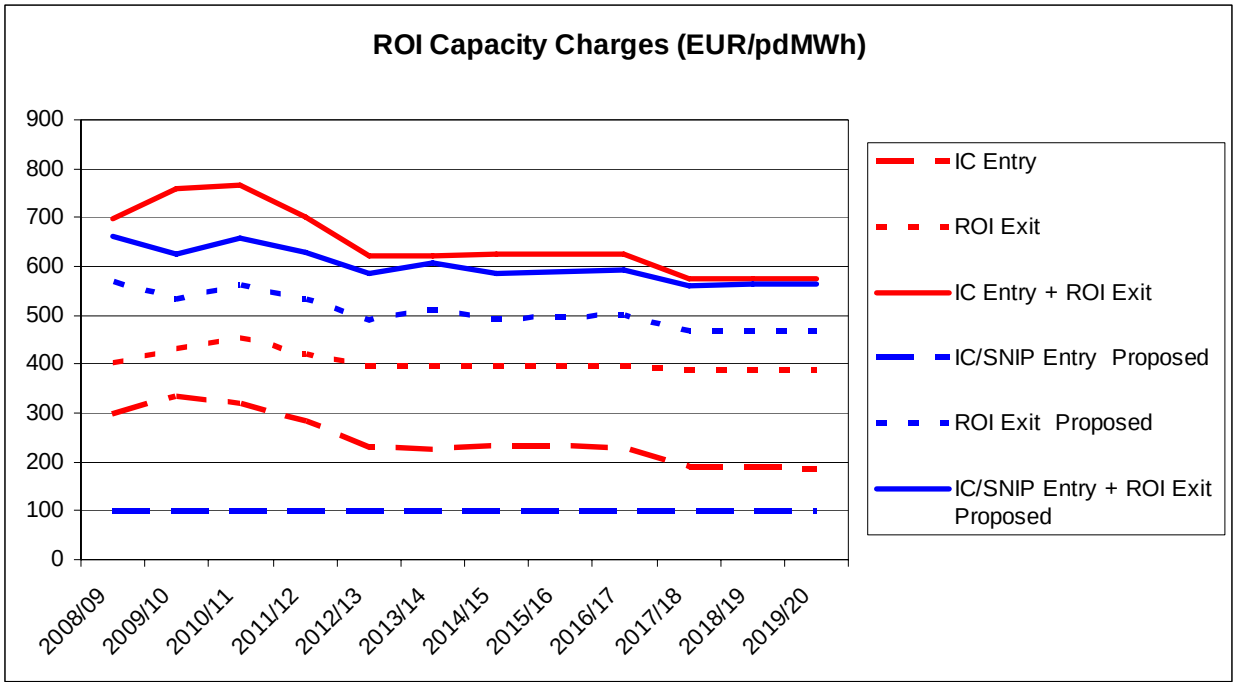
Pro-rata to allowed exit revenue

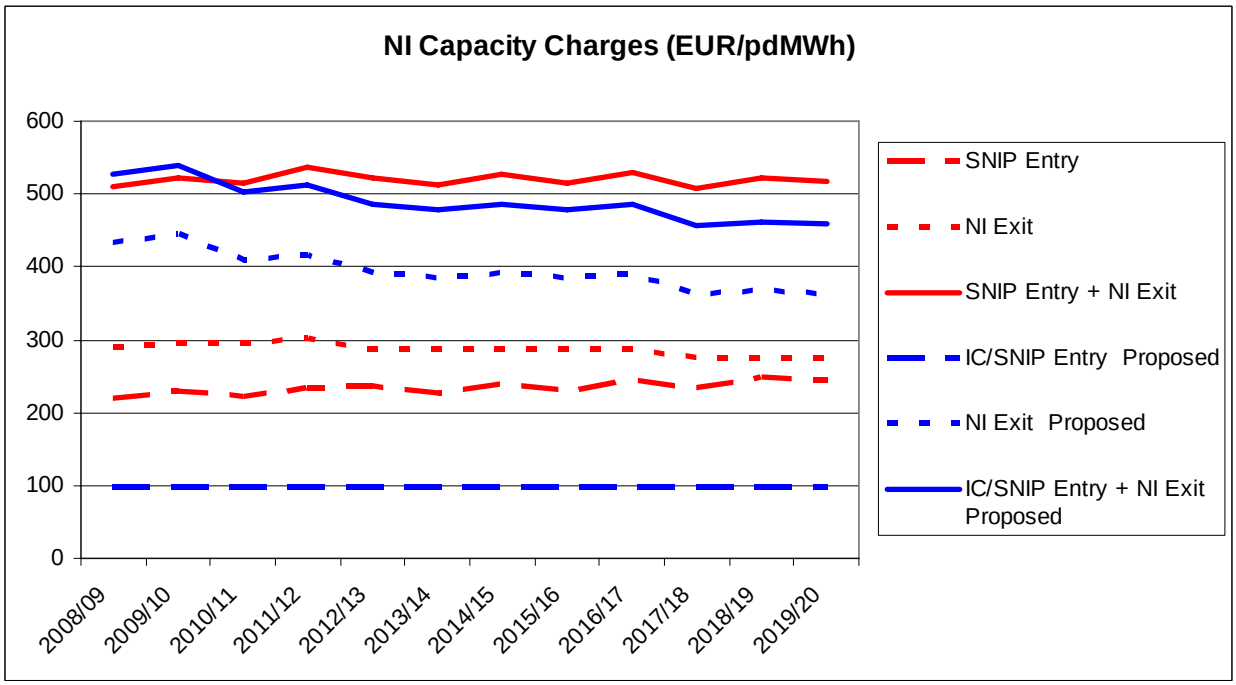




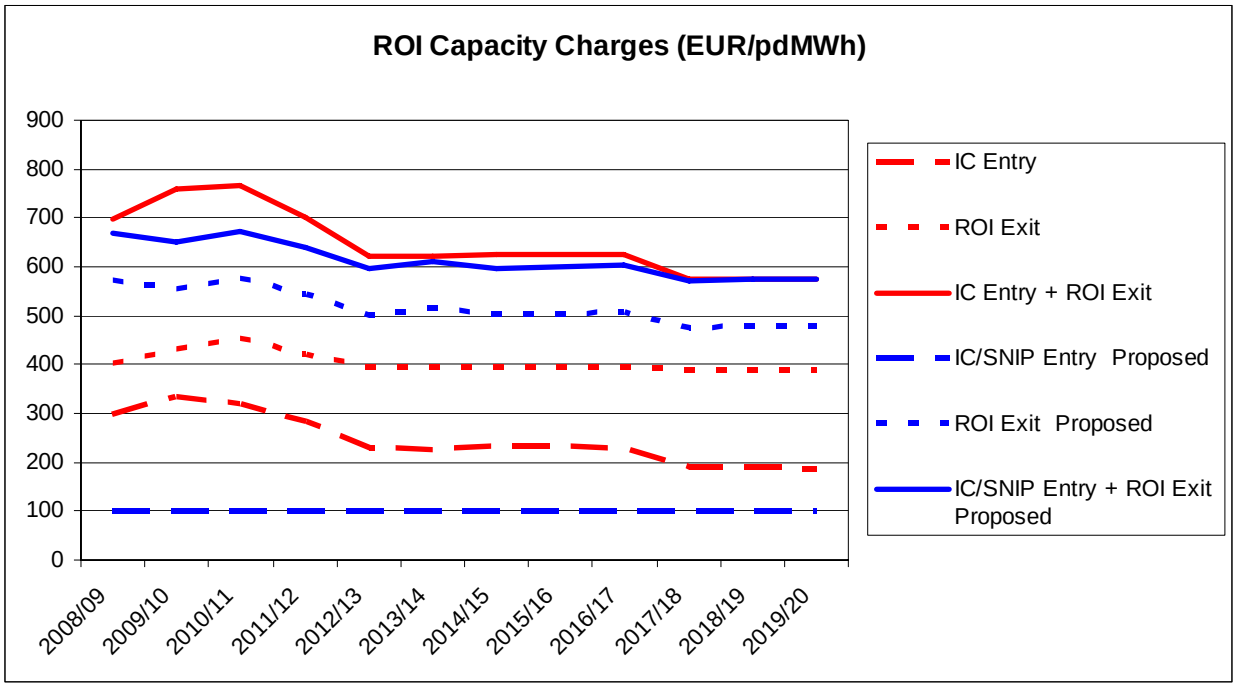
Scenario 3 - Corrib and Larne

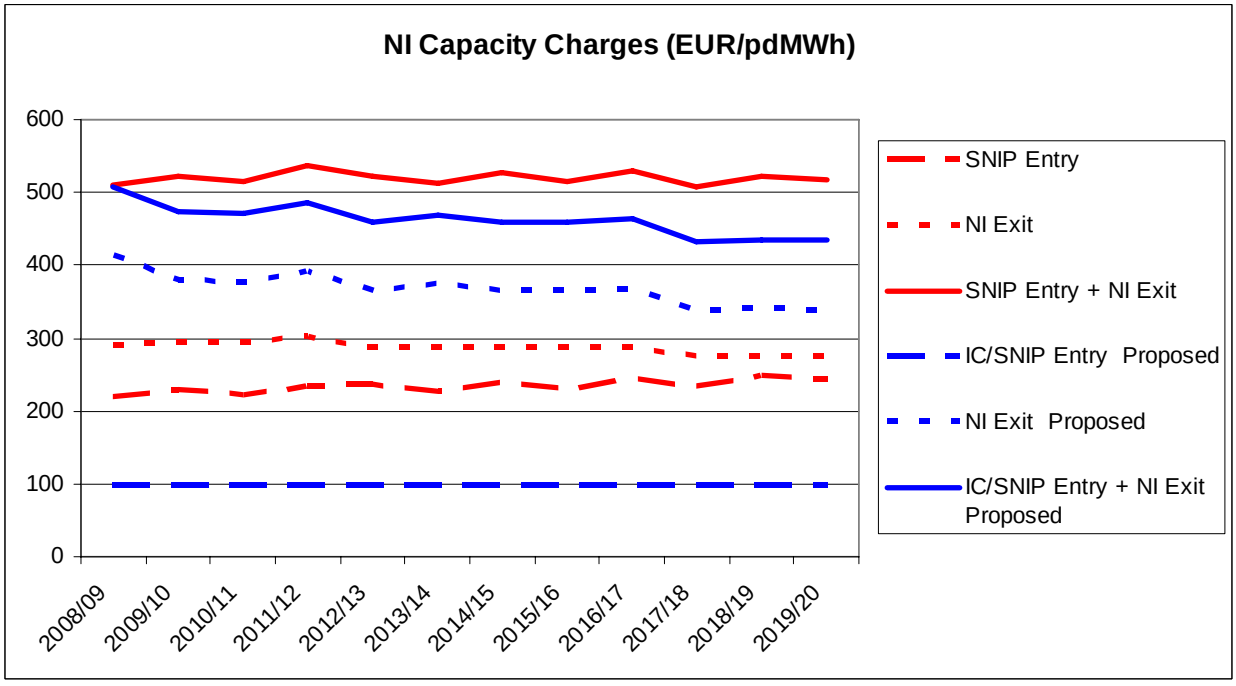
Pro-rata to allowed IC revenue





Pro-rata to allowed exit revenue





APPENDIX 2: LONG RUN MARGINAL COSTS AT NON-INTERCONNECTOR ENTRY POINTS

1. INTRODUCTION

In our response to the first CAG consultation paper on transmission tariffs, Bord Gáis Networks (BGN) proposed a regime involving the capping of a joint entry product for SNIP and the two interconnectors to the Republic of Ireland, and suggested that a cap at the long run marginal cost (LRMC) of interconnector capacity would have a number of desirable properties.

In our response, we noted that our focus in developing these proposals had been on changes to arrangements at the interconnector for a number of reasons – principally that:

- the tariffs for entry at the interconnector are critical in relation to the interests of customers and the incentives on producers, since the interconnector is likely to continue to set the marginal price of gas at least over the short to medium term; and
- setting LRMC-based tariffs for the interconnector is arguably more straightforward and less subjective than setting tariffs at other entry points.

The RAs subsequent draft conclusions paper questions this approach, implicitly asking whether we believed the establishment of LRMC-based charges at other entry points would be appropriate. We have not undertaken analysis as to what such charges would be – partly because this exercise takes time. However, in order to inform the debate, in this appendix:

- we recap on the overall rationale for BGN's proposals for LRMC-based charges;
- we consider this rationale in the context of the non-interconnector entry points; and
- we set out the practical analysis which would be required to establish high level estimates of the LRMCs at non-interconnector entry points – an understanding of the likely level of the charges is an important factor in the assessment of whether the broader implementation of LRMC would be appropriate.

We note that throughout the paper, we assume that BGN's proposed arrangements (i.e. a tariff capped at LRMC) have been put in place at the Moffat entry point.

2. RATIONALE FOR LRMC

In general, regulators have duties to promote economic efficiency as this will maximise economic welfare. Economic efficiency has three dimensions:

- *productive efficiency*: ensuring that goods and services are produced at least cost – this is often encouraged by regulatory incentives;
- *allocative efficiency*: ensuring prices of goods and services reflect marginal costs so that producers and consumers make correct decisions about allocation of resources – this is only relevant where producer and consumers have choices over allocation of resources[11]; and
- *dynamic efficiency*: ensuring efficient resource allocation over time to innovate to increase productivity and value – this is difficult to achieve by regulatory means though sometimes there are explicit regulatory requirements to fund investment in innovation.

[11] In gas transmission, locational signals tend to be more important at the entry point rather than at the exit point as users are likely to have more choice over the entry point than over the exit point.

The second of these is most relevant for the setting of entry tariffs. The easiest way to see this is to consider the impact of an inappropriate set of tariffs.

For example, if the next expansion of the interconnector were very cheap to achieve and all other existing or potential entry points on the system would require significant investment to accommodate new gas flows, the lowest cost approach to meeting incremental gas demand would clearly be to expand the interconnector.

However, suppose that Corrib entry tariff were zero, and the costs of developing a planet field was comparable, on a per therm basis, with the cost of buying gas in GB. The Corrib producers would develop the field and secure incremental access at the Corrib entry point – yet as it would cause onshore investment[12], this would not be the lowest cost outcome.

The objective of economically efficient price signals at any entry point (at the interconnector or elsewhere) is therefore to make sure that the parties using more capacity on the system take account of the incremental network costs they will impose. In this way, when they make their decentralised decisions on which projects to develop, the optimal outcome for customers will result.

The prices that make sure that users take account of such costs are prices which reflect marginal capacity costs. Marginal costs are the additional costs of the optimum response to a marginal increment in demand for a good or service. If all prices were set at marginal costs, economic theory shows that economic welfare would be maximised. Utility tariffs are typically based on LRMC as it is more stable (and less complex to implement) than SRMC.

3. LRMC AT NON-INTERCONNECTOR ENTRY POINTS

At the interconnector, we have already considered the implementation of LRMC – we considered the next logical expansion of the link, and estimated the incremental capacity it would provide (knowing that gas to utilise this capacity could be provided by the GB market). Dividing the investment cost by the volume of gas which could be accommodated as a result gives an average incremental cost – an approximation to marginal cost[13].

There are two potential issues at other entry points which conceptually make implementing the LRMC concept more difficult:

- there is no certainty that incremental gas can be provided (for example, because there may be no further gas finds); and
- there is no "next logical expansion" of the network.

3.1. Uncertainty as to gas source

The first of these is, perhaps, not as difficult a conceptual problem as it first may seem. If the purpose of LRMC charges is to ensure that subsequent market development (i.e. development of new gas sources) is efficient, then it is not necessary for there to be an obvious next source of

[12] Assuming that the original Corrib production were still flowing

[13] In undertaking the calculation, clearly the timing of investments and capacity to accommodate demand must be taken into account, as should the appropriate discount rate.

gas. Rather, if there is no such source, the LRMC is there "just in case" – i.e. to signal what the cost of access to the network would be if a new source is ever found and landed at that location.

This is easiest to see in the context of multiple entry points (as in the GB market) or new LNG import terminals (which can, in theory, be located anywhere with appropriate marine and onshore access).

At many of the GB entry points, it is not clear whether new gas will ever be landed. While there may be some new import lines from new fields (including those outside the UKCS) it is not clear where they might be landed – they may, indeed, have a choice of entry points (i.e. by taking different offshore pipeline routes, they could change their entry point). Suppose there were two feasible landing points – in this situation, having at least the potential for marginal cost based entry tariffs at both is clearly important in order that the producers know they have to take into account the entry and onshore network costs when they decide where to land any new gas.

Similarly, for a new LNG import terminal which could locate in a number of positions with broadly the same facility costs[14], marginal cost based entry tariffs force the importer to consider the additional onshore costs they impose.

Therefore, there may be some merit to setting LRMC-based charges even if it is not always clear that a new source of gas will be available to land at a given point.

3.2. Uncertainty as to the next logical expansion

The second issue is, however, at the heart of the difficulty of implementing LRMC. Rather than the situation with the interconnector (where the incremental volume was the output rather than the input to the LRMC calculation), the position at the other entry points is likely to be reversed. An assumption has to be made as to the size of the increment of gas flow which is to be considered at each entry point.

The size of the increment would not matter if the cost of capacity were directly proportional to volume – that is, if the unit cost of serving an increment in demand were constant. However, that is not the case. In some situations, a small increment in volume may be accommodated at a low unit cost relative to a larger increment, and in others the converse will be true.

There are broadly two approaches to dealing with this issue:

- use engineering judgement to derive a standard increment size which is both credible and results in reasonable charge stability – the approach taken in GB up to 2006[15]; or
- simplify the calculation of LRMC by assuming that there is a linear relationship between volume and investment cost – the approach taken in GB currently[16].

The assumption that there is a linear relationship may be a reasonable approximation for the GB system where, for any entry point, the expansion cost for a given incremental volume may be calculated across a number of different network segments (and hence while for any individual

[14] Depending on the options, shipping times may vary marginally.

[15] An increment of 2.834mcm/d was used – this typically represented around 10% of the flow along a route

[16] A standard investment cost, expressed in £/GWhkm is calculated as the cost of an 85 bar pipeline and compression for a 100km NTS section. The 100km distance was selected as this represents the typical compressor spacing on the NTS.

segment, the relationship may not be linear, on average linearity may be observed), this is less likely to be the case for the Irish or Northern Irish systems. It is therefore likely to be inappropriate to make this assumption.

4. CALCULATING LRMC-BASED ENTRY CHARGES

There are four basic steps to calculating LRMCs at the other entry points:

- determine base case demand for capacity at each entry point;
- derive base case investment and operating cost plans for each entry point;
- derive revised investment and operating cost plans[17] for each entry point assuming base case demand and a significant increment in demand; and
- determine LRMC from difference in discounted costs and demands between the base and revised cases.

This analysis might look out over the next 5-10 years – it follows the same basic approach as that taken for the interconnector LRMC calculation.

The third step is clearly the most subjective – for the entry points to be considered, a potential approach to estimating increment sizes and costs is set out in the table below.

Entry point	Possible approach to defining an increment size
IC	As per BGN proposal
SNIP	Proposed expansion costs divided by resulting incremental volume
Corrib	Consider investment costs required to accommodate flows from a reasonable size planet field development
Inch	Consider investment costs required to accommodate flows from a new storage development whose scale is close to the average of any projects in similar fields proposed in the GB market
Shannon	Consider investment costs required to accommodate proposed LNG import development
Larne	Consider investment costs required to accommodate average of two proposed developments

Having determined an appropriate increment size at each entry point, the scale of investment required to accommodate the increment would need to be considered. This would involve network analysis against a range of gas flow scenarios to consider where and when reinforcement may be required (relatively to that reinforcement already foreseen in the base case scenario).

In order that the LRMC-based entry charges send appropriate signals about the costs of entering the network at each point, it is important that all costs brought about by incremental injections are taken into account. Taking Shannon LNG as an example, the costs included should therefore

[17] Including both construction and operating costs – it will also be important to consider lead times for construction and commissioning of investments. Cost estimates should be based on investments consistent with the 1/50 planning standard

not be limited to the line to the LNG import facility but should also include any deep system reinforcement required directly as a result of the connection of the facility.

Having determined the nature of optimal incremental investments, the net present value of the investment is then divided by the net present value of the incremental demand to calculate a tariff.

It is important to note that, in addition to the issues involved in assessing a reasonable increment size, there are also a number of important considerations in relation to the assessment of the requirement for investment. One important such consideration relates to the interdependency of certain investments. For example, the investment required to accommodate incremental load at Shannon will depend upon whether, in the base case scenario, Corrib is flowing or not. If Corrib is at full flow, then significant investment is required to accommodate incremental injections at Shannon. However, if Corrib is flowing less in the base case, the level of investment required may be lower. Such subjectivity can be considered a drawback of LRMC-based tariffs.