



**Consultation Paper on Treatment of Curtailment in  
Tie-break Situations (SEM-12-028)**

**A Response by EirGrid plc.**

**25 May 2012**

## Executive Summary – Key Messages

Having considered the SEM Committee’s consultation on Tiebreaks (SEM-12-028), EirGrid draws the following key conclusions and messages in its response.

1. Curtailment should be minimised. This is at the heart of the DS3 programme which the TSOs have already commenced. If DS3 is to be successful it will require all parties to play their part. EirGrid welcomes the re-endorsement of the DS3 programme in this consultation.
2. The primary requirement is for a framework of risk allocation for curtailment which delivers the necessary conditions for the investment in the generation portfolio to enable us to achieve the 40% 2020 renewable targets, and achieve them at least cost to consumers. This framework may be informed by the expected levels of curtailment under the various approaches, the level of uncertainty surrounding them and the financial arrangements in the event plant are curtailed.
3. This risk allocation must be considered by reference not only to the market arrangements but also taking into account the wider public policy environment including the design of renewable support schemes. If risks are inappropriately allocated then it could result in us either not meeting the targets through under investment on the one hand or imposing higher overall costs with levels of non synchronous generation which cannot ultimately be utilised given inherent system limitations on the other. Both are undesirable.
4. It has consistently been, and continues to be, EirGrid’s position that access rights are best dealt with and given effect to through financial arrangements rather than in dispatch. However, EirGrid has, and continues to, work with the Committee to see how best to proxy such arrangements through dispatch in relation to FAQs to give effect to access rights as the Committee may wish to put in place.
5. However FAQs are associated with the provision of network access rights as opposed to being related to wider system limitations which drive curtailment.
6. Moreover, EirGrid believes that a grandfathering approach to curtailment by reference to FAQs would be likely to increase the risk of meeting the 40% targets and would make it more difficult for investors to invest given the inherent uncertainty to which they would be subject to which is dependent upon many external factors including the timing of the granting of FAQs and the number of other generators who also connect at the same time on a non firm basis.
7. Therefore for these two reasons EirGrid believes that if a grandfathering approach to curtailment is the SEM Committee’s preferred approach it should not be determined by reference to FAQs.
8. Instead EirGrid believes if a grandfathering approach is adopted it should be considered by reference to alternatives such as ‘Gate’, marginal unit or other distinguishing characteristics and with the specific view of seeking to accord investor certainty to deliver the 40% targets.
9. EirGrid has at the SEM Committee’s request undertaken studies for the Committee on the DBC impacts of grandfathering curtailment (on an FAQ basis) compared to a pro rata approach. The results of these have been provided separately. While DBC costs are lower

under the grandfathering approach the differences are not so significant such that, in our view, they ought to be a determining factor in deciding upon the approach.

10. An approach whereby units are not paid in the market in the event of curtailment sends a signal that curtailed generation in and of itself is not something which consumers are willing to pay for. It results in a clear allocation of risk to generators, but a risk which they would have to be compensated for elsewhere if their investment decisions were to be unaffected. Moreover the risk relates to their treatment as part of the dispatch decision and the limitations in real time dispatch are such that they can only ever seek to proxy a given set of principles or rules. To that end energy market payments are in general designed to be 'blind' to the dispatch decision.
11. There are a number of system operational benefits from a pro rata approach including diversity of controllability and increased predictability of response, the potential increased ramping capability of the system and, under the current Grid Code rules, an increased reactive power capability and support. However, while such considerations are important from a system operation perspective they are not, at this juncture, expected to be so significant that in and of themselves they would determine the approach the Committee might take, or indeed EirGrid recommend, in relation to this matter.
12. Finally, while some options are easier to implement than others there is no option outlined in the paper that, with the necessary rulesets defined and system changes implemented, is not capable of being implemented. However, any alternative option, or combinations of options may not be implementable and would need to be further considered.

## Introduction

1. EirGrid welcomes the opportunity to respond to the SEM Committee's consultation on the Treatment of Curtailment in Tiebreaking situations (SEM-12-028). This is an important consultation, the outcome of which will have significant implications for the evolution of the industry going forward as both Ireland and Northern Ireland strive to meet the stated objective of 40% of electricity consumption from renewables by 2020.
2. In considering our response to the consultation we have done so by reference to our own primary duties, to operate a safe, secure, reliable, efficient and economical transmission system and to deliver market services to the benefit of electricity consumers but are also cognisant of the SEM Committee's duties as set out in the paper, the protection of electricity customers in Ireland and Northern Ireland and the policy context of the 40% targets in both Ireland and Northern Ireland.
3. Whatever arrangements are put in place for the treatment of curtailment it is not simply about the market, and the market arrangements, today but also about the future evolution of the market and management of these matters under alternative arrangements in the future. The investment which will be made in the next number of years will be with us, and require to be remunerated for many years to come; 25 years for investments in generation, up to 50 years for network investments. The decision in relation to this consultation must therefore be thought of in this context and not solely by reference to today's portfolio and the current SEM arrangements but also the evolution of both the portfolio and policy in respect to renewables both for national consumption and also for export purposes.
4. Market signals and other public policy supports should be put in place to seek to achieve the overall optimal portfolio minimising total cost to consumers – fuel cost (taking into account any diversity benefits), capital cost of generation (including necessary capacity margins) and network cost. This is the cost to consumers not only today but also to future consumers. This requires efficient entry signals, and exit signals, and requires all the elements to be considered together. Market signals should be complemented by, and complementary to, out of market arrangements such as the support arrangements which exist in terms of renewables.
5. The consultation is largely concerned with the allocation of curtailment and the associated risk: to which generators should curtailment be allocated and how should those generators, or consumers, share the commercial impact of such allocation. If the risks on generators are too great to enable the necessary investment to proceed we risk not meeting our renewable targets; alternatively we could potentially end up incentivising levels of non synchronous generation to connect which cannot ultimately be utilised given inherent system limitations<sup>1</sup>. Both are undesirable and give rise to costs for consumers.
6. It is of course desirable to seek to minimise curtailment. This is at the heart of the DS3 programme which the TSOs have already commenced. If DS3 is to be successful it will require all parties to play their part and will include the putting in place of the necessary incentives to ensure the evolution of a portfolio which complements the intermittent renewable resource. If the measures under the DS3 programme are not delivered then the expected

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<sup>1</sup> EirGrid's studies have shown that at levels of penetration significantly in excess of 40% marginal levels of curtailment would be likely, under current system assumptions, to rise significantly.

level of curtailment will be higher, and likely to be significantly so. EirGrid welcomes the re-endorsement of the DS3 programme in this consultation. Interconnection is also beneficial in managing curtailment and will have an important role to play.

7. The remainder of this short paper is structured as follows and considers:
  - a. The Risk Profile to Generators and Consumers;
  - b. The Impact on Consumers (Grandfathering vs Pro Rata);
  - c. The Rationale of using FAQs as a basis for Grandfathering;
  - d. The Options and Impact on System Operation;
  - e. Meeting the 40% targets and achieving overall equilibrium; and
  - f. The Implementability of the Options set out in the consultation paper.

Finally a short conclusion is provided.

### **Consideration of the Options – Risk Profile to Generators (and consumers)**

8. It is almost axiomatic that risks should in general be placed with those who can best manage them. Certainty is important to investors in largely sunk irreversible long term investments (generation and also associated network build) but that in exchange for certainty returns to investors should be determined accordingly. The policy environment must be stable and support long term investment.
9. A pro-rata approach implies that entrance by new connecting parties imposes risks upon those parties who have already made investments by virtue of the investment decisions of the new entrants. While this is something which is present in all markets by virtue of competitive forces, in respect of curtailment it is something which is largely outwith the control of the generator in question and against which it has limited ability to react by virtue of the fixed and irreversible nature of its investment decision. The fixed and irreversible nature of generation investments is a key characteristic of power systems everywhere and their associated market design.
10. This risk may be limited if there is some overall equilibrium or limit placed upon the degree to which investment decisions by future parties can affect parties who have already invested or are making investment decisions today. For levels of penetration up to an assumed 40% such risk may in any event not be particularly significant in scale (see below) assuming that the measures identified in DS3 can be delivered, but may be more significant in the future.
11. A grandfathered approach has the potential to provide entry signals closer to a causer pays approach whereby those who lead to enhanced marginal curtailment are those who are in the first instance dispatched down in order to alleviate it. However, it is not necessarily the marginal wind farm that is ‘causing’ curtailment with existing windfarms, and indeed the performance of the conventional plant portfolio, also having a part to play. It could nonetheless be argued that it is new entrants as opposed to existing generators who are best able to react to such signals and can control their own risk profile.
12. An approach such as Option 4 whereby units are not paid in the event of curtailment sends a signal that curtailed generation in and of itself is not something which consumers are willing to

pay for<sup>2</sup>. It results in a clear allocation of risk to generators, but a risk which they would have to be compensated for elsewhere if their investment decisions were to be unaffected. Moreover the risk relates to their treatment as part of the dispatch decision and the limitations in real time dispatch are such that they can only ever seek to proxy a given set of principles or rules. To that end energy market payments are in general designed to be 'blind' to the dispatch decision. In the event that curtailment itself is attributed on a pro rata basis then such an approach has the potential to exacerbate the risk profile for generators outlined under pro rata above.

13. It is not curtailment *per se*. but the overall evolution of the portfolio, and the cost in supporting that evolution, which is ultimately of interest to consumers. If the transfer in risk profile is such that the appropriate investment signals are not there for the optimal evolution of the portfolio in the overall policy context then, while there may be a transfer in risk from consumers to generation in the short term, there is a reduction in societal welfare, and in particular consumer welfare, in the longer run. Consumers, will ultimately have to remunerate the plant that delivers this portfolio through the variety of payment streams – market and non-market – available.
14. The studies EirGrid has undertaken suggest a level of curtailment on a pro rata basis of c. 2% in 2020 for a level of installed renewables consistent with the 40% target, assuming implementation of the DS3 measures and an ability to operate the system with an instantaneous non synchronous penetration level of 70%. The level under a grandfathered (using FAQ) approach, also for renewables connected consistent with 40%, ranges from 2%-20% depending upon the level of non-firm wind installed. Should all curtailment be accorded to a 'marginal' unit then at levels of connection consistent with 40% that 'marginal' unit would be expected to experience curtailment of c.10%. If the measures to enable 70% instantaneous penetration and other DS3 measures are not delivered then these figures will be considerably higher.
15. These figures are 'modelled' levels of curtailment – under certain assumptions – as opposed to be those that may actually be expected in actual operation and they assume a degree of perfect foresight and control arrangements to support this. They should therefore be interpreted accordingly but are indicative of the scale, but in particular the relativity, of different approaches. Given the assumptions, and the general inability to replicate in reality the conditions in a modelled world, they should be thought of as representing a lower bound.
16. EirGrid cannot say whether an investor can or will invest for a given level of constraint or curtailment. This is a factor of more than simply the percentage of utilisable output *per se*. and is dependent, *inter alia*, upon wind resource, the overall payment stream and associated capital cost, network cost and attribution of transmission losses. Nonetheless the expected level of curtailment, and in particular the uncertainty surrounding it and its financial treatment, will be a relevant consideration.

### **The Impact on Consumers - Grandfathering vs Pro Rata**

17. EirGrid has at the SEM Committee's request carried out analysis on behalf of the Committee examining the Dispatch Balancing Cost impacts of the grandfathered (based on FAQ) vs Pro Rata approach. While the dispatching down of non firm units will undoubtedly reduce Dispatch Balancing Costs the analysis undertaken by EirGrid shows that any such savings

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<sup>2</sup> Although there may be some benefit in system services including potential ramp up capability of the plant.

are not anticipated to be significant at levels of penetration consistent with the 40% targets. The savings in Dispatch Balancing Costs do not therefore in EirGrid's opinion provide justification in and of themselves for the choosing of one option over another. Moreover, as we have outlined above we do not believe the decision in respect of the approach to curtailment should be taken simply by reference to today's market arrangements which can be expected to evolve in the future.

18. One of the reasons that the DBC impact is not significant, despite the level of curtailed energy, is that under circumstances where curtailment is required (70% instantaneous penetration of non synchronous generation in dispatch and potentially more in the unconstrained schedule), the unconstrained schedule is such that the SMP is in general low.
19. While it was not part of EirGrid's analysis, EirGrid would note that there is an effect on the SMP under a grandfathered vs pro rata approach whereby the non availability of dispatched down non firm generation to the unconstrained market schedule has an effect on the Market Schedule Demand – effectively that portion of demand used to determine market price. However, the region of the SMP price setting curve around which curtailment events are anticipated is not necessarily monotonically increasing. Therefore the scale and even the direction of this effect in every instance is not necessarily determinate.
20. The risk profile of any approach and the associated uncertainty as to the level of curtailment which may be experienced, is likely in the long run to have a much more substantive impact on the evolution of the portfolio and therefore on consumers than either of the two effects above. An equilibrium in terms of the level of curtailment will be set by the degree to which the expected evolution of curtailment and the payment for it (and the associated uncertainty surrounding it) facing a marginal generator investing affects that generator's investment decision. We understand that the staff within the Regulatory Authorities have been considering the effect on consumers of the longer run evolution of the portfolio and EirGrid has liaised with the regulatory team to ensure that the analysis carried out by EirGrid on the Committee's behalf has been prepared on a consistent basis.

#### **The Rationale for using Firm Access Quantities as a basis for Grandfathering (FAQs)**

21. Firm Access Quantities (FAQs) are designed to provide a signal concerned with the location of generators by reference to the network capacity available to facilitate their export. EirGrid believes that locational signals should in general be provided to generators to seek to influence their location and investment decision to locate in areas of the network where there is capacity available for them.
22. It has consistently been EirGrid's position that access rights are best dealt with through financial arrangements rather than in dispatch and that dispatch should be primarily focused on achieving the lowest overall production cost – thus maximising societal welfare. This continues to be EirGrid's position; however, EirGrid has worked with the Committee to see how best to proxy such arrangements as the Committee may wish to put in place through dispatch.
23. A plant ultimately receives full financially firm access where the associated network reinforcements are built. This is at such point as the network is in general able to accommodate their output and they are no longer expected to be subject to significant

constraint. The development of the transmission network is therefore vital in arriving at a point where such constraints no longer exist. EirGrid welcomes the SEM Committee's support for this investment.

24. Network investment decisions are themselves assessed by reference to the benefits they deliver: enhanced security of supply, reduction in constraint costs, increased flexibility in operating the network and meeting demand etc.. Where network investments do not pass a cost benefit assessment they are not progressed. In such instances generators who would otherwise have been dependent upon those investments should be granted the firm access they would have been accorded had such investments been undertaken.
25. FAQs are determined by reference to network capacity, and therefore network constraints, against a set of credible network planning scenarios which drive investment in transmission infrastructure. They are not related to wider system limitations which drive curtailment.
26. Moreover, EirGrid believes that a grandfathering approach to curtailment by reference to FAQs would be likely to increase the risk of meeting the 40% targets and would make it more difficult for investors to invest given the inherent uncertainty to which they would be subject to which is dependent upon many external factors including the timing of the granting of FAQs and the number of other generators who also connect on a non firm basis. We have illustrated above the potential range of curtailment which generators could be subject to were it to be based on grandfathering according to FAQ and this could potentially be even greater at levels of penetration beyond 40% or if the measures under DS3 are not successfully implemented.
27. Therefore for these two reasons EirGrid believes that if a grandfathering approach to curtailment is the SEM Committee's preferred approach it should not be by reference to FAQs.
28. Instead EirGrid believes if a grandfathering approach is adopted it should be considered by reference to alternatives such as 'Gate', marginal unit or other distinguishing characteristics and with the specific view of seeking to accord investor certainty to deliver the 40% targets.

#### **Consideration of the Options – Consideration of the Impact on System Operation**

29. Pro Rata dispatching down of wind farms does give a number of system operational benefits compared to dispatching down just a few. This may mean that under a pro-rata approach there is a need to dispatch down less or that certainly there may be a greater system benefit from a given level dispatched down. These system benefits result from the diversity of controllability and increased predictability of response, the potential increased ramping capability of the system and, under the current Grid Code rules, an increased reactive power capability and support.
30. However, while such considerations are important from a system operation perspective they are not, at this juncture, thought to be so significant that in and of themselves they would determine the approach the Committee might take, or indeed EirGrid recommend, in relation to this matter.
31. Newer windfarms are also tending to have greater system service capabilities than older ones. Turning off newer ones (based on recent discussions with wind farm manufacturers through the DS3 Grid Code work-stream) could potentially have a greater impact on system

security than if they were all dispatched down equally. This is not something which EirGrid believes needs to be considered here but is being considered as part of the wider System Services review under DS3.

### Consideration of the Options – Meeting the 40% Targets

32. In order to meet the 40% targets across the island, EirGrid currently expects c.3,500-4,000MW of wind in Ireland, and c.1,200 – 1,400 MW Northern Ireland will be required. This compares to figures installed today of c.1,600MW in Ireland and c.400MW in Northern Ireland. If the targets are to be met it will therefore require a level of acceleration in build out and connection as compared to that which has been experienced in the recent past. Unless the underlying investment conditions are such that this acceleration will occur both Ireland and Northern Ireland risk not meeting the targets.
33. Nonetheless the current number of plants which have connection offers is considerably more than that expected to be required to reach the current targets, particularly in Ireland under the ‘Gate 3’ process; therefore for the targets to be met not all will need to proceed.
34. One important criteria as to whether plant can proceed – regardless or otherwise of the approach taken to curtailment is whether plant are expected, or not, to have firm access; moreover, not all plant which have firm access would necessarily be expected to proceed due to other reasons. A table illustrating the level of those plant with connection offers which would be expected to have firm access in Ireland by 2017/18 if network build progressed according to expected plans is appended below. This represents an update of an earlier similar table provided to the SEM Committee in February.

Table 1: Current Status and Projected Firmness of Wind (Ireland)

	MEGAWATTS (MW)				
	PRE GATE 1	GATE 1	GATE 2	GATE 3	TOTAL
Current Operational Wind Farms (Installed Capacity)	878	249	506	1	1,634
Wind Farms with Connection Contracts/Offers (not yet operational – based on MEC)	22	114	829	3,989	4,954
<b>Total</b>	<b>900</b>	<b>363</b>	<b>1,335</b>	<b>3,990</b>	<b>6,588</b>
Full Firm Access by 2017/18 (current assumed network build <sup>1</sup> )	900	363	1,335	1,458	4,056
Partial Firm Access by 2017/18 (current assumed network build <sup>1</sup> )	n/a	n/a	n/a	301	301
No Firm Access by 2017/18 (current assumed network build <sup>1</sup> )	n/a	n/a	n/a	2,231	2,231
<b>Total</b>	<b>900</b>	<b>363</b>	<b>1,335</b>	<b>3,990</b>	<b>6,588</b>

1. Assumes c. 2,000 kms transmission upgrades, c. 440 kms new transmission build (incl. North-South 400kV interconnector but excl. all other 400kV new build), c. 13 transmission station busbar up-ratings completed by 2017/18.

35. A similar table for Northern Ireland is provided below with a reference point of 2016. The table contains all those generators who have received planning permission and, following the recent SONI consultation, it has been decided that those generators with connection

applications, or who have applied for connection, will be at the top of the 'queue' although the precise details as to how this will operate are yet to be confirmed.

36. In Northern Ireland there remains some uncertainty over both the firm access regime and the development of the associated reinforcements with the works associated with renewables being specifically excluded from the recent consultation on RP5. However SONI has assumed the level of access by reference to NIE's medium term network development plan.

Table 2: Current Status and Projected Firmness of Wind (Northern Ireland)

	MEGAWATTS (MW)
	<b>TOTAL</b>
Current Operational Wind Farms	<b>398</b>
Wind Farms with Connection Contracts/Offers due to connect by 2016	<b>566</b>
<b>Total</b>	<b>964</b>
Full Firm Access by 2016 (current assumed network build <sup>2</sup> )	<b>724</b>
Partial Firm Access by 2016 (current assumed network build <sup>2</sup> )	<b>12</b>
No Firm Access by 2016 (current assumed network build <sup>2</sup> )	<b>228</b>
<b>Total</b>	<b>964</b>

2. The network development is based upon NIE's Medium Term Plan, and the wind build out is based upon recent information provided by NIE.

37. Meeting the 40% 2020 renewables targets depends therefore on a basis which provides sufficient certainty to enable sufficient parties to invest and while demand has fallen the number of parties required to proceed, and to proceed relatively rapidly given the leadtimes involved, is still significant. The primary requirement is for a framework of risk allocation which delivers the necessary conditions for the investment in the generation portfolio to enable us to achieve the targets, and achieve them at least cost to consumers.
38. This risk allocation must be considered by reference not only to the market arrangements but also taking into account the wider public policy environment including the design of renewable support schemes. If risks are inappropriately allocated then it could result in us either not meeting the targets through under investment on the one hand or imposing higher overall costs with levels of non synchronous generation which cannot ultimately be utilised given inherent system limitations on the other. Both are undesirable.
39. This overall balance and the need to have in place a holistic set of supports was noted in our response to the original Wind in the SEM consultation back in March 2008. At that time we recognised there was a balance between marginal entry signals and marginal exit signals and such a balance had to weigh up both equitable treatment and regulatory and investor certainty. This is still the case: marginal signals, if appropriately structured, should ultimately result in an overall equilibrium of that portfolio which is in general deemed to be desirable being established; the absence of such signals – in the absence also of any wider regulatory

or public policy controls – could result in the portfolio no longer retaining that balance. It will be important for the Committee to consider carefully the balance of market signals and other controls and levers which will enable it to deliver the overall balance in the portfolio which ultimately delivers the 40% target.

### Consideration of the Options – Implementability

40. As EirGrid has previously advised it is not possible to unambiguously distinguish between curtailment and constraints in real time dispatch particularly where the two interact and occur contemporaneously. To that end any arrangement which required them to be distinguished in dispatch would require the production of a ruleset which defined which set of circumstances were to be treated as curtailment and which as constraint and an acceptance by all parties that the definition would be defined by the ruleset. Clearly the more complex the arrangements the greater the potential divergence between the ruleset and the underlying constraint or curtailment which the ruleset arrangements are seeking to codify.
41. EirGrid has also considered whether Option 4 – an approach whereby curtailment was not remunerated in SEM – would require significant changes to SEM Market Systems. While such consideration is by its very nature only cursory, and the greatest complications would arise when both constraints and curtailment were occurring contemporaneously, EirGrid is not of the opinion that such changes would be significant in either cost or time relative to the importance of the decision. Moreover, as outlined above the decision itself ought, in our view, to be considered in the longer term context and outside the limitations of the SEM environment.
42. In terms of practical implementation an option such as Option 3 would require a well defined ruleset such that it could be determined which generators were to be accorded pro rata treatment and which grandfathering. While this, and the associated operational differences, would add complexity this complexity is not something that EirGrid believes could not be overcome. However, the longer term implications of an Option such as Option 3 would need to be carefully considered.
43. To that end, while some options are more complex to implement than others, EirGrid does not believe that there is anything in the options proposed in the paper that would, subject to the definition and acceptance of the appropriate rulesets and necessary system changes, not be implementable. While EirGrid has considered the four options as outlined in the paper, however cursory such consideration has been, any other option, or combination of the options as outlined, would itself have to be separately considered by the System Operators and Market Operators as to whether it was implementable. Moreover the more complex the arrangements become the less transparent and more difficult for participants to model they are also likely to be.
44. Notwithstanding which option may be adopted none would nullify the requirement for the system changes previously outlined to the SEM Committee to give effect to the constraint group arrangements.

## Conclusion

In conclusion EirGrid would reiterate the key conclusions and messages it outlined in the Executive Summary.

45. Curtailment should be minimised. This is at the heart of the DS3 programme which the TSOs have already commenced. If DS3 is to be successful it will require all parties to play their part. EirGrid welcomes the re-endorsement of the DS3 programme in this consultation.
46. The primary requirement is for a framework of risk allocation for curtailment which delivers the necessary conditions for the investment in the generation portfolio to enable us to achieve the 40% 2020 renewable targets, and achieve them at least cost to consumers. This framework may be informed by the expected levels of curtailment under the various approaches, the level of uncertainty surrounding them and the financial arrangements in the event plant are curtailed.
47. This risk allocation must be considered by reference not only to the market arrangements but also taking into account the wider public policy environment including the design of renewable support schemes. If risks are inappropriately allocated then it could result in us either not meeting the targets through under investment on the one hand or imposing higher overall costs with levels of non synchronous generation which cannot ultimately be utilised given inherent system limitations on the other. Both are undesirable.
48. It has consistently been, and continues to be, EirGrid's position that access rights are best dealt with and given effect to through financial arrangements rather than in dispatch. However, EirGrid has, and continues to, work with the Committee to see how best to proxy such arrangements through dispatch in relation to FAQs to give effect to access rights as the Committee may wish to put in place.
49. However FAQs are associated with the provision of network access rights as opposed to being related to wider system limitations which drive curtailment.
50. Moreover, EirGrid believes that a grandfathering approach to curtailment by reference to FAQs would be likely to increase the risk of meeting the 40% targets and would make it more difficult for investors to invest given the inherent uncertainty to which they would be subject to which is dependent upon many external factors including the timing of the granting of FAQs and the number of other generators who also connect at the same time on a non firm basis.
51. Therefore for these two reasons EirGrid believes that if a grandfathering approach to curtailment is the SEM Committee's preferred approach it should not be determined by reference to FAQs.
52. Instead EirGrid believes if a grandfathering approach is adopted it should be considered by reference to alternatives such as 'Gate', marginal unit or other distinguishing characteristics and with the specific view of seeking to accord investor certainty to deliver the 40% targets.
53. EirGrid has at the SEM Committee's request undertaken studies for the Committee on the DBC impacts of grandfathering curtailment (on an FAQ basis) compared to a pro rata

approach. The results of these have been provided separately. While DBC costs are lower under the grandfathering approach the differences are not so significant such that, in our view, they ought to be a determining factor in deciding upon the approach.

54. An approach whereby units are not paid in the market in the event of curtailment sends a signal that curtailed generation in and of itself is not something which consumers are willing to pay for. It results in a clear allocation of risk to generators, but a risk which they would have to be compensated for elsewhere if their investment decisions were to be unaffected. Moreover the risk relates to their treatment as part of the dispatch decision and the limitations in real time dispatch are such that they can only ever seek to proxy a given set of principles or rules. To that end energy market payments are in general designed to be 'blind' to the dispatch decision.
55. There are a number of system operational benefits from a pro rata approach including diversity of controllability and increased predictability of response, the potential increased ramping capability of the system and, under the current Grid Code rules, an increased reactive power capability and support. However, while such considerations are important from a system operation perspective they are not, at this juncture, expected to be so significant that in and of themselves they would determine the approach the Committee might take, or indeed EirGrid recommend, in relation to this matter.
56. Finally, while some options are easier to implement than others there is no option outlined in the paper that, with the necessary rulesets defined and system changes implemented, is not capable of being implemented. However, any alternative option, or combinations of options may not be implementable and would need to be further considered.