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November 19th 2012

Treatment of Curtailment in Tie-Break situations (SEM-12-090)

SSE welcomes the opportunity to respond to the SEM Committee's proposed decision paper on the Treatment of Curtailment in Tie-Break situations. As we stated in our previous response, SSE is the largest operator and owner of wind generation capacity in the SEM, with 80% of this capacity having firm access rights and a mix of firm and non-firm projects in our development portfolio. Any decision on the allocation of curtailment in the SEM or any change to the existing compensation arrangements will have a material impact on our future investment plans and existing business.

Executive Summary

In our response to SEM-12-028 we stated that "in order to deliver an economically rational buildout of renewable generation and best value for the consumer, SSE believes that pro-rata allocation of curtailment in tie-break situations should be implemented immediately." This view was underpinned by our extensive analysis which demonstrated that pro-rata treatment of curtailment with compensation up to Firm Access Quantity would deliver net energy production and curtailment compensation costs which were €127m lower in 2020 than those of a grandfathering regime.

Therefore, SSE fully supports the RA's recognition of the benefits that pro-rata curtailment brings, in terms of delivery of 2020 renewable targets and lower energy prices for consumers. Although the proposed decision focuses on dispatch balancing costs, we note the acceptance that more [non-firm] wind connected to the system will result in lower SMP. However we regret that the argument for limiting compensation for curtailment did not take account of the energy price impact as an offset to this cost.

A credible compensation regime is important, because it defines where the economic cost of a system, unable to cope with zero marginal cost generation, lies. The SEM Committee has put forward a proposed decision that eliminates compensation from 2020 onwards. The responsibility to mitigate curtailment is shifted from the market to wind generators alone.

This is short-sighted. The decision eliminates the metric used to measure the cost, but it does not eliminate the cost itself. If the SEM Committee is confident in their assumption that build out rates will

be the same under radically different compensation arrangements, it doesn't appear to realise what investors will:

- That all of the cost (and future risk) of curtailment is being transferred to wind generators
- That the market rules on which they base their financing assumptions are more likely to be retrospectively changed.

This is not to suggest that SSE believes that compensation for curtailment should be uncapped, or that investors are unwilling to take risk in order to receive a return on their capital. As we stated in our response to SEM-12-028:

"A decision on compensation should be about how to share value between consumers and generators in a way that maximises the overall economic value delivered by renewable investment. Compensation should certainly not be about placing an open-ended liability on consumers to pay for capacity they do not need."

We are particularly surprised and disappointed that the proposed decision did not address the approach, proposed by the overwhelming majority of the industry and supported by SSE, of "Option 3b". By eliminating the spurious link between firmness of connection and treatment during curtailment, this proposal avoided undue preference to one category of generator. By limiting compensation to the capacity customers need to meet their treaty obligations for carbon reduction, it also eliminated any open-ended liability to compensate for curtailment. This addresses the SEM Committee concern around over-entry through out of market support. **Why was this proposal not even explored by the RAs?**

Rather than using Option 3b as a benchmark, the RAs have proposed a structure of compensation for curtailment that is excessively complex, and based on the false premise: that compensation is akin to some form of dependency that can be cured by "weaning off". The fundamental issue around meeting renewable targets is that there is a certain level of renewable capacity that can be delivered by current market mechanisms, including the output-based Government support mechanisms.

Beyond that there is the incremental capacity that is required to deliver the politically required capacity. The total capacity must be remunerated partly by the market and partly by compensation for the reduction in capacity factor resulting from operation of above-market capacity; i.e. compensation for the loss of market revenue resulting from increased curtailment.

The purpose of compensation is not to provide some kind of short-term financial boost to returns, but rather to ensure that total revenues from all sources will support financing obligations, in addition to operation and maintenance costs, for the lifetime of the project. Projects cannot be "weaned off" their financial obligations. It is therefore very difficult to see any value in the proposed compensation regime.

The SEM Committee should use Option 3b as a benchmark. If a proper alternative can be found by the RAs that addresses the cost of curtailment beyond DBC, then it should be proposed and considered. There are solutions, if the question being asked is:

How best can the SEM Committee share value between consumers and generators in a way that maximises the overall economic value delivered by renewable investment?

Unfortunately, the question that the proposed decision appears to answer is:

How can we eliminate the cost of compensating wind generators for curtailment from the market?

Some nuance has been added, in that the SEM Committee has acknowledged that advance warning of a significant and sudden adjustment to the market rules is better for the investment environment than no advance warning. Rather than work with industry as a whole to resolve a system issue, the proposed decision abdicates responsibility for resolving it, and transfers all the cost and risk to wind generators. **Unfortunately the end result will be the same as that outlined for Option 4: stalled projects, missed targets and wary investors.** This is not a positive outcome for consumers.

The response of existing and new investors will sensibly and understandably be to avoid investing, until they are certain that the Regulatory Authorities are serious about ensuring that Ireland's market can make use of what their investments would provide – zero marginal cost energy. Unfortunately, at present, the RAs seem to be serious about reducing Dispatch Balancing Costs, and little else.

We cannot understand why the SEM Committee has put forward a decision that it cannot realistically expect to meet each of the criteria it outlined, nor can we understand why the proposed decision makes assumptions which, if they had the SEM Committee consulted with any investor, would realise are not credible.

We hope that the final decision will actually suggest a 'defined curtailment limit', as opposed to a time-limited window of protection against an risk that is difficult to quantify, and impossible for a wind generator to mitigate.

The rest of this paper covers:

- Why pro-rata is the best choice for allocating curtailment
- Which concerns appear to have led the SEM Committee to their proposed decision
- Why sensible investors will avoid investing under a new compensation regime
- What a 'defined compensation limit' should look like

Why does pro-rata best fit the 4 criteria?

As we stated in our response, pro-rata treatment of curtailment has a number of benefits over an approach that places the economic loss of curtailment onto generators which fit particular criteria, and specifically criteria that relate to firmness. Firmness is about the adequacy of the network to enable generation to reach the market, whereas curtailment is about reducing generation to a level that matches system operational requirements. We are pleased that the SEM Committee has recognised this in their proposed decision paper.

SSE is strongly supportive of the proposed decision in that it recognises that pro-rata treatment of curtailment in tie-break situations meets the SEM Committee's criteria far better than a grandfathering with reference to FAQ approach would. We would like to stress our support of curtailment allocation that will deliver net market savings, facilitate renewable deployment and maintain both an efficient entry signal and stable investment environment.

An annex is included at the end of the paper, which looks at each of the criteria set out by the SEM Committee, and reiterates our support for pro-rata allocation of curtailment.

What are the concerns expressed by the SEM Committee about the existing compensation arrangements and are they addressed by their proposed decision?

While recognising that allocation must be pro-rata, the SEM Committee outline a number of issues they feel might result from preserving the current compensation arrangements, or switching to the option proposed by the industry body IWEA in response to the previous consultation. We have listed what we feel to be the main concerns raised, and categorised them against the decision making criteria outlined.

Cost of compensation

Firstly, the ongoing cost of compensation estimated by the TSOs in SEM-12-090a is €13 million in 2020, which the SEM Committee considers to be a *'definite ongoing cost to consumers'* and states that *"this expenditure on curtailment is not sustainable and needs to be reduced as further wind connects to the system between now and 2020."* The paper concludes that "*compensation for curtailment should not be an indefinite feature of the SEM. Such an action would place an undue and inappropriate long-term burden on the all-island consumer."*

However, the SEM Committee also notes that

"The €13 million savings observed in the base scenario are not overly significant in the context of the predicted DBC budget, and are expected to represent less than 10% of total DBC in 2020. DBC savings increase with fuel prices, as does the overall DBC."

SSE's view is that DBC costs are identified as a marginal cost, relative to overall generation costs. The SEM Committee and TSOs both state that generation mix will have a far larger impact on overall energy production costs of €1 to 2 billion. While we share a concern around the cost of uncapped

compensation on the consumer, we don't feel that this concern necessarily leads to a conclusion that compensation payments must be reduced, and eventually entirely eliminated.

Any determination on compensation must take into account whether the required investment in renewable generation will take place, whether the investment environment remains stable and whether entry signals remain non-discriminatory. The cost of compensation only becomes a determining criterion if you assume that investment in and build-out of renewable generation takes place at the same rate under the existing compensation regime, and under the proposed compensation regime. **This is not a credible assumption.**

Over-entry and out of market support

The SEM Committee express a concern about how in a power system where renewable market entry is supported by non-market mechanisms, there might be a situation of over-entry which would result in excess curtailment:

"That said, an 'uncapped' or open-ended timeframe approach to curtailment may result in a situation of over-entry, resulting in excess curtailment, which ultimately is an inefficient cost to the whole electricity system and in particular to those projects which were more genuinely viable. Over-entry may also cause excessive network build to provide firm access for this 'surplus' generation. [.....] REFIT 2 has the potential to incentivise nearly double what is required for Ireland to meet its 2020 targets"

We had suggested in our earlier response that out-of-market support mechanisms would provide what we termed 'natural protection' against overbuild. It is suggested in the response that this is not the case, because the capacity potentially supported by out of market support mechanisms exceeds the 2020 renewables target:

"In Ireland REFIT 2 is designed to support the addition of 4000MW of new renewable electricity capacity to the Irish grid, which includes onshore wind, hydro and biomass landfill gas technologies – the vast majority of which will be onshore wind."

This is accurate. REFIT 2 has the potential to support a capacity in excess of 2020 renewable electricity targets. However, the SEM Committee seems to have overlooked some of the other key criteria that are always included in out of market support mechanisms, the most relevant of these being the dates that schemes are open for. REFIT 2 and REFIT 3 opened in February 2012 and are open to projects built and operational before the 31st December 2015. It is unrealistic to expect that the entirety of the capacity supported by the scheme will be built and operational before the end of 2015.

Any future out-of-market schemes will also have eligibility criteria. When we had suggested that out-of-market support mechanisms will act as a natural protection against over-entry, we were referring to the control that Governments in both jurisdictions have over eligibility criteria for out-of-market support mechanisms (including capacity and date).

"[T]he SEM Committee is not convinced that out-of-market support mechanisms will act as a 'natural protection' against overbuild, certainly in the case of Ireland." Therefore, the SEM Committee is of the

opinion that any potential over-incentivisation costs, beyond that required to meet the 2020 renewables target should not be faced by the all-island consumer."

We would agree that over-incentivisation could result in a level of renewable generation deployed that would be greater than the market (and the consumer) ultimately requires, but we do not believe that there is a realistic possibility of out-of-market support schemes contributing to over-entry beyond the level of renewable generation desired by Governments in both jurisdictions. The SEM Committee could have properly considered the IWEA proposal in the proposed decision paper had this been their primary focus, which provides compensation for curtailment up to the achievement of 2020 targets.

Clear evidence of excess deployment or over-entry should be required to support any decision to make retrospective changes to existing market rules. **Without any evidence that current and forecast build out rates for renewable generation are consistently overshooting requirements, SSE believes that this concern cannot be credibly seen as central to deciding on an overhaul of existing compensation arrangements.**

Efficiency of entry signal

If compensation cannot be 'uncapped' then some form of limit must be set on how much is paid, or which generators receive compensation. If the criteria are set which limit the type or number of generators who will receive compensation, then some existing plant or new entrants will necessarily be disadvantaged. This appears to be the primary concern of the SEM Committee with regards to some of the alternative positions suggested by respondents like IWEA:

"Where renewable market entry is supported by non-market mechanisms there is no priority given to existing wind generators ahead of new entrants. It was noted that regulatory structures should incentivise efficient market entry. Similarly, it should not dis-incentivise a more technologically-advanced wind generator, or one with better wind resources, from entering the market and providing an exit signal for older, less technologically-advanced windfarms (or one with poor wind resources)"

This would suggest that if compensation must be capped, the options explored should look at the value of compensation received and the total output eligible, rather than setting criteria for what is required by the consumer. This does not seem to have been explored in the proposed decision paper.

The SEM Committee seem to have come to the conclusion that compensation is entirely unnecessary, and that stronger entry and exit signals would be provided in the absence of compensation, as long as a *"more measured and gradual approach is [.....] taken to reducing compensation for curtailment".* In evaluating Option 4 the proposed decision notes:

"This option[1] would provide an efficient entry signal to viable generation. Only wind generation which is viable in the continued absence of being paid compensation for being turned down in curtailment situations would proceed to connecting. The viability of wind generation in this option would be heavily linked to the actual electricity output of the project. Therefore, those projects located in the best wind

[1] Referring to Option 4, pro rata allocation without compensation

locations or using better technology would be provided with a stronger entry signal, ahead of less good wind sites or less technologically advanced windfarms."

This conclusion seems to misunderstand two fundamental points about how investors evaluate projects and perceive risk:

- The maximum actual electricity output of projects would be the same with and without the current compensation arrangements. The link between load factor and viability would remain the same.
- The entry signal would not be stronger for more technologically advanced or better located projects. Investors would have to price in their view about whether the revenues they expect from the current market arrangements remain accurate, or whether they will be reduced by further changes to SEM policy. All renewable projects would have a weaker entry signal, and fewer projects would be viable.

On balance, the proposed decision addresses a number of the concerns expressed by the SEM Committee with the 4 options put forward in SEM-12-028, and appears to have a number of simple benefits, of which the one given most weight appears to be measurable cost.

I. The cost of compensation to the consumer in terms of DBC will be entirely eliminated by 2020. This will potentially save around €13 million per annum, and more if the DS3 programme and other mitigation measures are delayed.

II. Over-entry will not occur under the proposed decision, because generators will have to wait until mitigation measures are in place before connecting.

III. Eliminating compensation for all wind generators does not discriminate against existing or future investors or any specific license holder.

However, whether those benefits can actually be realised depends on certain assumptions, the most important of which is whether investors will still be willing to invest increasing amounts of capital in renewable energy projects up to 2020. **As a potential investor, we can clearly state that the proposed decision does not justify that assumption, and that the emphasis placed on DBC to the exclusion of other criteria is particularly worrying**. DBC are a very narrow metric against which to judge the actual cost of providing compensation.

As we noted in our response to the previous consultation the inclusion of energy production costs rather than DBC allows significant savings (**each 1% increase in wind penetration reduces average energy production costs by 0.5€/MWh**) attributable to increased levels of wind generation to be netted off against potential increases in curtailment compensation costs.

Does the proposed decision address the concerns of investors?

As we've already outlined above, we feel that the SEM Committee has placed unnecessary weight on certain concerns they may have with the existing market arrangements for compensation, at the expense of coming to a balanced decision.

As an existing investor and potentially as a future investor, we are disappointed to see that the proposed option includes an arrangement to reduce and ultimately eliminate compensation for wind curtailment. Transferring the cost (and risk) of curtailment from the market to wind generators alone has a number of unfortunate consequences.

Firstly, it is important to state what market compensation payments actually represent and why investors have assumed that the existing rule set would be retained. The consultation notes:

"[F]irm wind generators that are curtailed, [are] eligible under the SEM Trading and Settlement Code to receive market price compensation in the form of constraints payments."

If a firm generator is in the market schedule it is provided with market price compensation under the SEM's unconstrained design which represents one of the pillars of the market. Changing a fundamental SEM design principle for a specific type of generation would require a number of very strong reasons, which are not at all evident in the proposed decision paper, for the reasons set out in this response.

Will build out rates will be the same regardless of the return expected from projects?

Assuming that build out rates will be the same under two different compensation regimes assumes that the revenue received from compensation payments is in some way unnecessary, or over-incentivising the market. This is wishful thinking on the part of the SEM Committee. As the proposed decision notes in relation to Option 4:

"The likelihood that significantly less numbers of windfarms will be in a financially viable position to connect if compensation for curtailment is ceased immediately (for firm generation) is the primary reason why the SEM Committee is proposing not to adopt Option 4. "

We have not had time to commission additional detailed analysis or modelling of expected build out rates under the proposed option as we did with in SEM-12-028, but we would note that Option 4 delivers around 4,400MW of renewable generation. Pro-rata with compensation eliminated by 2020 at the latest isn't much different from Option 4, and simply assumes that a couple of years of compensation will prove sufficient incentive for investment to continue[2], and existing firm generators (with marginal projects) not to be forced into a difficult financial situation:

"If compensation was stopped immediately, then some firm generators may also be forced into a difficult financial situation."

[2]It is important to note that investment will actually be needed to ramp up in order to deliver on 2020 targets.

The latter statement is slightly more accurate than the former. As with the previous decision to grandfather the allocation of curtailment by reference to firm access, existing firm generators will be slightly better off under pro-rata with a defined curtailment limit than they would be under Option 4. They will likely receive a number of years of compensation for curtailment.

However, assuming that developers will continue to bring forward projects at the same rate, and that investors will choose to allocate capital to them on the basis that they may be eligible for a small window of protection against curtailment is entirely wrong.

The primary weakness of the proposed decision is that in effect, it is essentially the same as Option 4, which was discounted by the SEM Committee. The proposed decision paper notes that *"significantly less numbers of windfarms will be in a financially viable position to connect if compensation for curtailment is ceased immediately (for firm generation)".* It is our contention that ceasing compensation, albeit on a slightly delayed schedule, will result in the same effect.

An obligation to pay for capital expenditure, operating expenditure and financing costs does not disappear once a 'defined curtailment limit' is reached. You cannot explain to your financier that you have given them *"a reasonable lead-in time for the cessation of such payments"*. They will not be financing projects on the basis that at some point in the future, it will no longer be appropriate for repayments to be made on their loans unless the implementation of curtailment minimisation measures are in place. While the risk is being signalled in advance, investors will still find the risk entirely unacceptable, because they have no way of quantifying or mitigating it.

Projects, which are financed over 20-year periods, will make little distinction between receiving declining curtailment compensation for 4 years and not receiving it at all. If the SEM Committee is confident in their assumption that build out rates will be the same under different compensation arrangements, it doesn't appear to realise what investors will i.e.

- That all of the cost (and future risk) of curtailment is being transferred to generators.
- That the market rules on which they base their financing assumptions are more likely to be retrospectively changed.

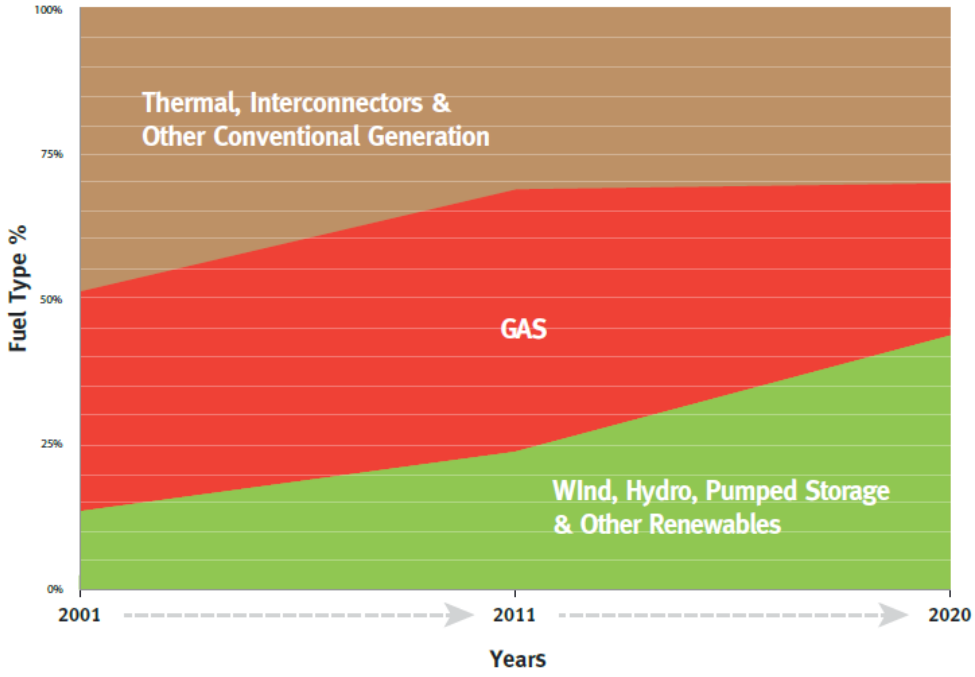
If build out rates are considerably lower under the proposed option, consumers will see the same *"consequential knock-on impacts on consumer welfare (e.g. higher SMP, reduced diversity of generation"* as they did under the grandfathering by reference to firm access quantity option previously chosen. The proposed decision assumes that the **Facilitation of Ireland and Northern Ireland 2020 Renewables Targets** is a given in two radically different markets (one with compensation, and one without). We would suggest this is not a credible assumption.

Are current build out rates more than sufficient to deliver on 2020 targets (is there evidence of over-incentivisation)?

A simplistic way of answering this would be to look at current and projected deployment rates for renewable generation. It is impossible to accurately project future build out, but you can look at expectations for the required build out rate. Eirgrid's statistics show current build out rate and expected buildout rate to meet targets below:

All-Island Generation Portfolio

Installed & Projected Capacity 2001, 2011 & 2020



The TSOs suggest that build out rates will have to ramp up from around 200MW of capacity being installed per annum currently to around 300MW of capacity being installed per annum.

Another way of looking at incentivisation would be to refer to the out-of-market support mechanisms, and how the level of support required is reached. Two different out-of-market support mechanisms are calculated in similar ways:

REFIT calculates a payment to cover the costs of producing RES-E, based on a review of current cost data. To calculate the €/MWh support necessary to cover these costs, a load factor is assumed, in REFIT II this is 31%, with average production costs divided by assumed MWh generation to get a €/MWh support reference price. Curtailment is not assumed or factored into this support, and support is only received for metered generation.

Likewise, the support required from Renewables Obligation Certificates for various technologies is calculated through a detailed cost gathering exercise carried out by the UK's Department for Energy

and Climate Change (DECC) and Department for Enterprise, Trade and Investment (DETI). Once relative costs are known, incentive levels are set accordingly.

In both cases, the Government has control over the support levels paid and the eligibility criteria for entry. There is no evidence that current build out rates illustrate evidence of over-incentivisation, in reality deployment will actually have to ramp up to meet targets in both Ireland and Northern Ireland. To suggest that the **efficiency of entry signal** might be distorted on the assumption of evidence that might appear at a later date is not credible.

Should the costs and risks associated with curtailment be covered outside the market arrangements?

It is suggested in the decision paper that the revenue received from market compensation for curtailment would be best covered through out-of-market mechanisms:

"The SEM Committee is of the opinion that associated costs of such should be transparent and would be best covered outside of the market arrangements."

SSE believes that this is a separate argument, and that while the cost of delivering renewables (including the cost of variability) can be shifted outside the market, the proposed decision should recognise what this means. Shifting cost also means shifting risk and responsibility for addressing curtailment to generators. The control wind generators have over reducing overall curtailment levels is limited. As the paper notes:

"[R]educing and eventually eliminating DBC compensation for curtailment should be done in line with the implementation of curtailment minimisation measures. This is considered appropriate as wind generators do not have any control over curtailment and are reliant on external minimisation measures in order to reduce the total level of curtailment."

Mitigation measures require the efforts of generators, system operators, regulators and in the short to medium term include:

- Increasing the SNSP limit to 75%
- Decreasing levels of must-run generation
- Designing measures and incentives to increase the flexibility of conventional generation
- Facilitating efficient operation of interconnectors

Each of these relies upon various different parts of the market. Wind generators can contribute to increasing the SNSP limit to 75% through certain parts of the DS3 programme but ultimately, for existing investors the best way to contribute is by not investing in variable renewable generation until mitigation measures are put in place. This constitutes a **negative entry signal** for investors.

It also ensures that system operators, generators and regulators have no real incentive to monitor, or pro-actively implement mitigation measures, because the cost and risk of curtailment lies with wind generators alone.

Currently the cost of compensation as seen in Dispatch Balancing Costs is an economic signal that quantifies the inability of the system to use what is essentially zero marginal cost energy. The proposed decision renders this cost invisible by transferring it outside of the market arrangements, but the economic loss has not been eliminated. **Getting rid of the metric, does not get rid of the issue.**

Particularly worrying is that the SEM Committee, while stressing the importance of resolving the issue, now appear to see that issue as being something entirely different to what the workstream originally set out to address:

"to signal now that the burden of compensation for curtailment will only be carried by consumers up to a defined point (2020 at the latest)"

The consultation has become about reducing the burden of compensation for curtailment, rather than reducing the economic cost of curtailment. If the SEM Committee had been properly considering the issue at hand, rather than attempting to remove *'the burden of compensation for curtailment'* the paper might have realised that the cost of incentivising thermal generators to provide the ancillary services required to reduce compensation might be considerably lower than the cost of providing market compensation. Alternative ideas have not even been explored.

A cap on compensation could also be a cap on the value available to wind generators, or compensation up to a defined point i.e. a '*defined curtailment limit'*. The current *'defined curtailment limit'* set out in the consultation paper is merely a time-limited window of protection against a risk which the paper acknowledges wind generators have no control.

IWEA's option 3b is simple, clear and straightforward to implement, but it doesn't appear to have been considered. This should be the benchmark against which other proposals are judged. However, in reality, all of the suggestions made, excluding one relating to a Voluntary Insurance Proposal appear to have been rejected out of hand by the SEM Committee in their proposed decision paper. Rather than work with industry as a whole to resolve a system issue, the proposed decision abdicates responsibility for resolving the issue, and transfers all the cost and risk to wind generators.

The response of sensible investors will understandably be to avoid investing, until they are certain that the Regulatory Authorities are serious about ensuring that Ireland's market can make use of what their investments would provide – zero marginal cost energy. **Unfortunately, at present, the RAs seem to be serious about reducing Dispatch Balancing Costs, and little else.**

Does advance notification of a significant and sudden change in SEM policy reduce regulatory uncertainty?

The simple answer to this is no. The same arguments that applied to Option 4 apply to the proposed decision. As the paper notes:

"It is a fact that to date firm wind generation has received market compensation when turned down in curtailment events. It is considered that a change to this policy at this point would represent a significant and sudden adjustment to one of the key assumptions which investors would have taken account of when considering their project."

While investors can consider their position and make their investment decisions with some level of information available to them, this is not true for existing connected firm generation. The sensible decision for an investor (particularly one with projects that are already operational) will be to wait until mitigation measures are in place in the first instance. For existing investors, the paper acknowledges that this is little comfort:

"*It is also noted that introducing Option 4 would represent retrospective action on existing connected firm generation. This would, without equal compensation elsewhere in the market, detrimentally effect their financing arrangements and would harm regulatory and investment stability in the SEM."*

For many existing generators a time-limited window of protection against curtailment simply ensures that for a short period they can meet their financing obligations. To assume that the requirement for repayment goes away if notice is given is not realistic.

It is best regulatory practice that decisions with a retrospective element should only be contemplated with considerable reluctance and made only in exceptional circumstances. Unfortunately, the SEM Committee has led itself to a position where it seems that it must make a judgement with retrospective element, because an increasingly narrow focus on the cost of compensation in terms of DBC seems to have prevented any suitable alternatives being suggested or considered.

However, narrow concerns and narrow options should still be justified. The exceptional circumstances that justify the proposal must be made clear for investors to retain some expectation of a **stable investment environment**. We have outlined the concerns that were raised in the proposed decision paper, none seem exceptional, and throughout the process there appears to have been little reluctance to make significant and sudden adjustments to market rules.

Concluding remarks (what should a defined curtailment limit look like?)

The proposal outlined in the decision paper is not to establish a defined curtailment limit. However, some suggestions as to what a defined curtailment limit could look like have been put forward by the industry. The Irish Wind Energy Association submitted a position on compensation and allocation of curtailment which was supported by the majority of the renewable industry including SSE. This had the following guiding principles:

A. There should be a trance of projects required to deliver the MW required to meet the 2020 targets in each jurisdiction independently, which would be curtailed for the operational lifetime of the project on a pro-rata basis. These projects would be protected from higher curtailment as a result of further connections.
B. Any projects connected and exporting power by a cut-off data (no earlier than 1 January 2018 or at a later date if targets are unlikely to have been met by this time), will be in this first tranche.
C. This trance could in principle grow in size, but in a controlled fashion as curtailment mitigation measures arrive such that its projects do not incur higher curtailment than would otherwise have been expected.

D. The treatment of new projects post the achievement of the 2020 targets will need to be defined at a later date.
E. Projects being developed explicitly for export should not add to the curtailment of projects that contribute to 2020 targets.

This has not been considered in the proposed decision paper despite it being simple, clear and straightforward to implement. **Option 3b addresses the primary concerns expressed by the SEM Committee, and should therefore have set the benchmark against which any alternative solutions were judged.** However, alternative approaches that include a form of compensation payment to wind generators do not seem to have been taken seriously. **We cannot understand why the RAs have not given any consideration to an option that was supported by the majority of the industry, and specifically designed to address the concerns raised in the previous decision.**

Some of the other options that might have been explored, had the SEM Committee not applied such a narrow focus on DBC could be:

- Defining a maximum value for compensation at a point at which the 2020 targets are reached.
- Compensating wind generators up to a defined limit i.e. the non-synchronous penetration limit.
- Defining a limit above which compensation would be provided to wind generators.
- Using SEM-12-090a as a benchmark against which to assess the cost of incentivising conventional generators to provide mitigation measures.

There are plenty of solutions, if the question being asked is:

How best can the SEM Committee share value between consumers and generators in a way that maximises the overall economic value delivered by renewable investment?

Unfortunately, the question that the proposed decision appears to answer is:

How can we eliminate the cost of compensating wind generators for curtailment from the market?

Some nuance has been added, in that the SEM Committee has acknowledged that advance warning of a significant and sudden adjustment to the market rules is better for the investment environment than no advance warning. Unfortunately the end result will be the same as that outlined for Option 4: stalled projects, missed targets and wary investors. This is not a positive outcome for consumers or generators. We hope that the SEM Committee reconsiders.

Annex 1 – Why does pro-rata best fit the SEM Committee's criteria?

Impact on the consumer and Dispatch Balancing Costs

We stated that pro-rata treatment of curtailment would allow viable wind projects to connect sooner, delivering net market savings by reducing energy production costs which would dampen the System Marginal Price (SMP). While this has not been recognised in the proposed decision paper or modelled in the Dispatch Balancing Costs (DBC) report produced by the TSO, we are pleased to see that the SEM Committee acknowledges that generation mix plays a far more substantial role in determining cost than DBC:

"[n]on-firm wind will not connect under this type of grandfathering and therefore the key basis for this approach is removed. This would lead to higher costs for consumers (only firm wind being curtailed and higher SMP due to less non-firm wind on system)"

The paper goes on to note the increase in Dispatch Balancing Costs for a pro-rata option when compared with grandfathering by reference to FAQ:

"A pro-rata option to curtailment, when compared with grandfathering by reference to FAQ, would increase DBC by approx. €1.8 million, if implemented now. ***It should be noted that this is within the margin of error for these studies as the results compare production costs of the order of €1 - €2 billion"***

By placing a heavy weighting on a marginal cost like DBC, as the first decision did, the market is likely to deliver a perverse outcome. Under grandfathering this outcome would have been that if sufficient firm generation was built to meet targets, while non-firm developments fell away, the cost to consumers of curtailment would rise as the number of compensated MW increased.

SSE believes that the conclusions drawn in this section clearly support another, which is that any decision on treatment of curtailment and compensation arrangements should not be based on whether it makes what is acknowledged as a "marginal" reduction to DBC, but instead be based on finding a sensible way of allocating and mitigating an economic loss, while ensuring that the other criteria are best met.

Facilitation of Ireland and Northern Ireland 2020 Renewable Targets

We showed our own modelling demonstrating build out rates under each of the options initially proposed in our original submission. Pro rata avoids a situation where achieving the 2020 Renewable Targets in each jurisdiction is not dependent on the availability of firm access, the delivery of which lies entirely outside of generators control.

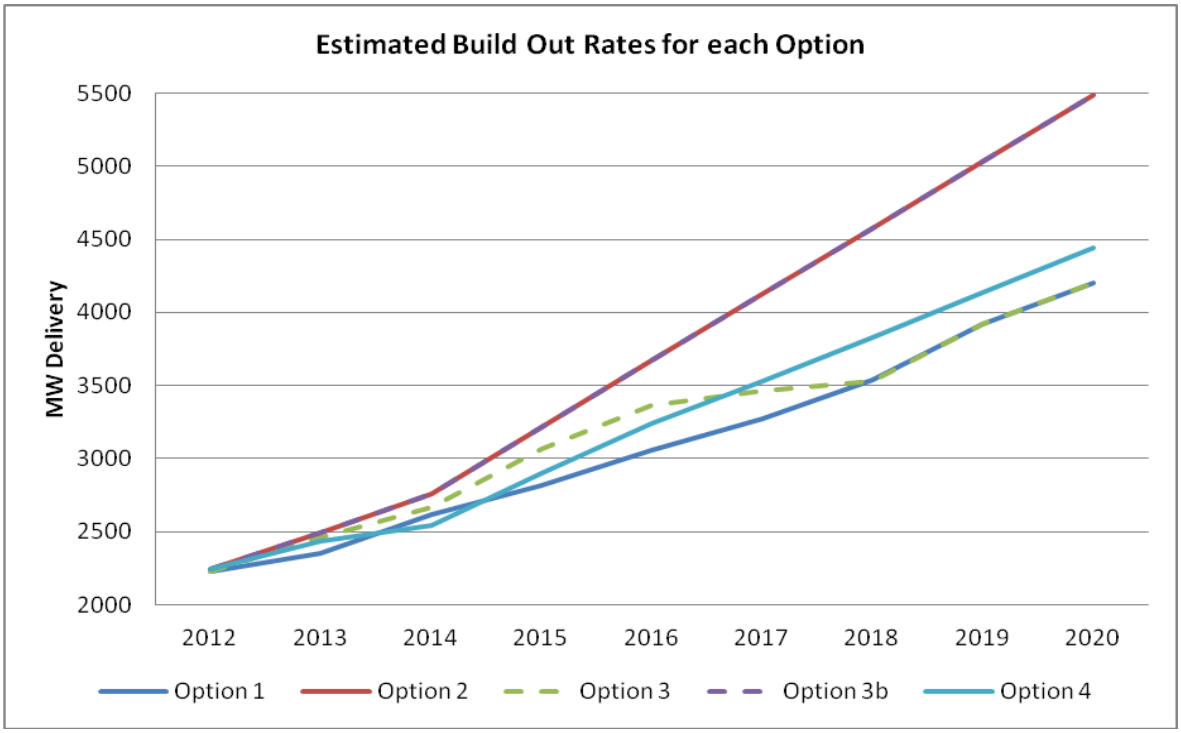
For our own projects, we would be unwilling to make any form of financial commitment until we had firm access, or met another defined criteria used to allocate curtailment under a grandfathering approach. Under pro-rata, we would be willing to build if we believe that the project is viable, and the investment makes economic sense.

The SEM Committee has acknowledged investor concerns on the first point:

"As expressed above, the SEM Committee considers that windfarms will wait until they have firm access before construction, under grandfathering by reference to FAQ. This, in combination with expected delay in FAQ delivery dates, would put severe pressure on the island's ability to meet the 2020 renewable targets if grandfathering by reference to FAQ was adopted."

This supports the SEM Committee's conclusion that grandfathering with reference to FAQ might result in a de-facto change to a feature of the SEM High Level Design. The market currently facilitates generators to connect prior to the completion of deep reinforcements, with developers ultimately taking a view as to the likely delivery of infrastructure and the risk they should factor in.

Our modelling of the expected build out rates under each of the options initially proposed supports this conclusion, and is shown for reference[3]:



Efficiency of Entry Signal

A pro rata approach sends a positive entry signal to the market for any investors who have viable projects. This stands in contrast to a grandfathering by reference to Firm Access approach, where the market is weighted toward investment in projects with firm access. We noted that low capacity factor or otherwise marginal projects with firm access would be financially viable, whereas non-firm projects with much higher capacity factors would not be viable, representing a poor allocation of economic resource.

[3] SSE commissioned IGS to conduct an analysis of Firm Access date delivery, build out rates and associated curtailment rates. The analysis methods, assumptions and results are included in our initial response.

The proposed decision paper comes to a similar conclusion:

"Under a pro-rata approach all new entrants are effectively on a level playing field irrespective of FAQ, which as noted above should provide the most technologically advanced, best resourced windfarms actually commissioning. As levels of curtailment increase with further wind connections, only the more efficient new wind projects should remain viable, i.e. those can accept 4-5% curtailment."

However, the SEM Committee also notes that:

***"**[I]n an unconstrained power system, where renewable market entry is supported by non-market mechanisms there is no priority given to existing wind generators ahead of new entrants. It was noted that regulatory structures should incentivise efficient market entry. Similarly, it should not dis-incentivise a more technologically-advanced wind generator, or one with better wind resources, from entering the market and providing an exit signal for older, less technologically advanced wind farms (or one with poor wind resources)."*

A pro-rata regime applies curtailment proportionally to the output of all wind farms regardless of network access rights. However, if compensation rules are changed, how proportionately the burden is allocated changes. We'll return to this important point later.

Stable Investment Environment

Pro-rata treatment of curtailment preserves a stable investment environment, particularly when compared to a grandfathering by FAQ approach. We noted that a grandfathering approach would provide relatively predictable and stable cash-flows for built plant with firm access, and thus provide a more stable environment for investors who have projects with firm access. However, this would be achieved by allocating the burden of curtailment onto built plant without firm access[4], which would potentially reduce future cash flows received by non-firm operational projects by over 20%, with curtailment levels that were an order of magnitude higher than the average system curtailment level.

We felt also that, far from promoting a stable investment environment, any solution that looked to redistribute the burden of curtailment to a particular type of operational project would actually significantly increase regulatory risk. In particular, we felt that the wording of the RES-E Directive (Directive 2009/28/EC) obliged Member States to ensure curtailment is applied according to transparent and non-discriminatory criteria. It is discriminatory to curtail non-firm generation that has no operational access constraint in order to save on payments to other generators, because such a decision financially favours one group of license holders over another.

These concerns with a grandfathering approach have been recognised in the SEM Committee's proposed decision paper:

"A situation where non-firm windfarms cannot finance themselves until they are firm due to high levels of curtailment is not considered by the SEM Committee to be a stable investment environment for the

[4] Wind farms with temporary, partially firm and non firm connections currently representing 20% of operational portfolio across the island

SEM. This is especially the case where there is a significant level of uncertainty around when such windfarms will actually receive full firm capacity."

We also welcome the independent publication from the TSOs, SEM-12-090a which does begin to establish a reasonable principal against which investors can judge risk. We would also agree with the SEM Committee that it is not the concern of the SEM Committee how investors account for this publication in their financing arrangements:

"*How individual windfarms and their respective financiers account for this publication in their financing arrangements (e.g. specific gearing levels or required equity return) is not a concern for the SEM Committee. Promoting the establishment of a stable investment environment for all wind generation, firm and non-firm, to proceed to completion of financing arrangements is."*

We are strongly supportive of the SEM Committee's points on this particular criterion, as we felt that preserving a stable and equitable investment environment should be given substantial weight in the final decision.

Consistency of treatment for constraints and curtailment

As we stated in our original submission, we agree with the SEM Committee in that:

"Curtailment is not associated with network-specific issues, in that no amount of grid roll-out will alleviate times when there is too much intermittent wind generation on the system. Therefore it is clear that constraints and curtailment are two different issues that need to be addressed by the SEMC. With constraints being a network issue, and curtailment being a market issue the TSOs should be directed to explore how to treat them separately in all instances".

The proposed TSO rule-set for differentiating between constraint and curtailment addresses this issue, assuming that the rule-set is understood and clearly applied when making instructions.

After looking at each of these criteria, SSE is therefore strongly supportive of the SEM Committee's proposed decision in that it recognises that pro-rata treatment of curtailment in tie-break situations meets the SEM Committee's criteria far better than a grandfathering with reference to FAQ approach would. We would like to stress our support of curtailment allocation that will deliver net market savings, facilitate renewable deployment and maintain both an efficient entry signal and stable investment environment.