Brookfield


Sorne Wind farm, County Donegal, Ireland

Brookfield Renewable Ireland

Response to
I-SEM Energy Trading Arrangements Detailed Design
Market Design Consultation

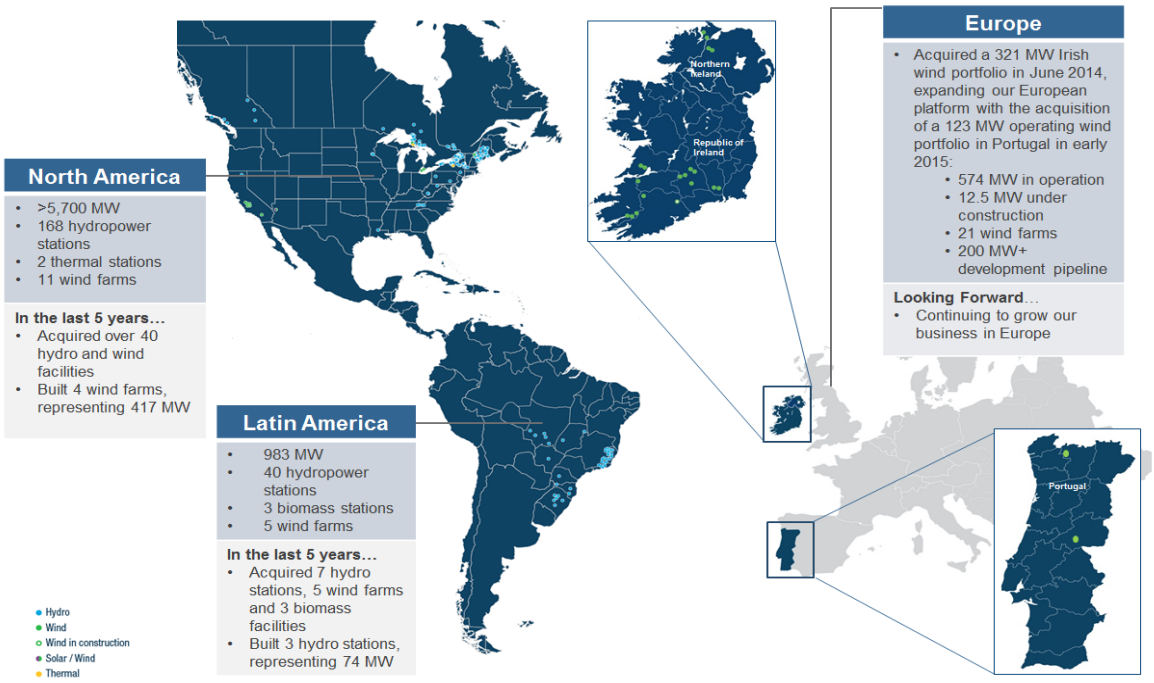
Submission Date: 5th June 2015

Introduction to Brookfield Renewable

Brookfield Renewable Ireland Limited (Brookfield Renewable) is a wholly-owned subsidiary of Brookfield Renewable Energy Partners, one of the largest publicly-traded, pure-play renewable power platforms in the world. Our global portfolio consists of approximately 6,700 MW of installed capacity, primarily hydroelectric and wind power generation which is diversified across 72 river systems and 13 power markets in the United States, Canada, Brazil and in Ireland and Northern Ireland.

Brookfield Renewable completed the acquisition of the wind generation assets of Bord Gáis Éireann in June 2014 which included 320 MW of wind capacity across 17 wind projects in 8 counties in Ireland and Northern Ireland. Since then, Brookfield Renewable has brought 125 MW of wind generation to commercial operation and now have an operating portfolio of 445 MW across the island including 10.1MW operating in Northern Ireland. Additionally, Brookfield Renewable plans to expand its portfolio and has an extensive development pipeline of approximately 200 MW of wind across Ireland and Northern Ireland, including a 100MW tidal generation project off the coast of Northern Ireland and nearly 50MW of onshore wind projects in advanced stages of development.

Brookfield Renewable welcomes the opportunity to respond to the consultation paper on the Market Design of I-SEM's Energy Trading Arrangements. The I-SEM Market redesign will represent a fundamental shift from Ireland's current energy market design and wind generation must be central to the new market arrangements as wind will represent 40% of the all-island market by 2020. Any decision on these arrangements must also recognise the conditions under which investment has taken place, and the commercial and operational impact of significant market changes.



Brookfield Renewable Energy Partners – Global Footprint

Summary of Our Position

This consultation addresses the Balancing and Intraday markets in detail and is of the upmost importance to wind generators. The I-SEM High Level Design seeks to retain current arrangements where possible within the new market arrangements and this is key to retaining confidence in investments already made and for the substantial levels of investment required to meet ambitious renewable energy policy objectives.

Brookfield Renewable is supportive of the market integration of wind but reiterates that any erosion of the commercial position (i.e. net revenues) of existing wind generators amounts to retrospective changes that would be extremely damaging to Ireland's attractiveness for investment. In this regard and recognising that it is an issue also to be considered with the Department, it is important to ensure that there are parallel discussions on how the REFIT support regime will interact in the future I-SEM to ensure that net revenues for existing wind generators are maintained. Without certainty that REFIT economics will be held whole, the introduction of the additional cost of balance-responsibility for wind within I-SEM would be tantamount to retrospective changes in the support scheme for wind generation. Such changes are inconsistent with the *EU Guidelines on State Aid for Environmental Protection and Energy 2014-2020*[1].

Although the EU's Guidelines commit member states to phasing-out exemptions to balancing responsibilities for renewables, this is explicitly geared to new renewable generation support schemes and the transition to full balance responsibility is not expected to be completed until 2030[2]. It deliberately excludes any retroactive changes to renewable generators in receipt of existing support schemes. If Ireland proceeds with I-SEM market design as currently proposed, without a corresponding commitment to maintain the commercial position of existing wind generators through the REFIT program or otherwise, it will be retroactively adding imbalance costs for renewable generators, effectively retroactively amending the net REFIT economics. To our knowledge, Spain is the only other EU jurisdiction to have done this for wind generation, which among other retroactive changes has had drastic consequences to the viability of their renewable industry.

Although we are committed to working with Ireland's regulatory authorities on enabling market integration of wind generation through its I-SEM design, the lack of clarity on the impact to REFIT support expectations damages the regulatory and commercial certainty that investors need to enable

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0628(01)&from=EN

[2] Article 108: "These Guidelines apply to the period up to 2020. However, they should prepare the ground for achieving the objectives set in the 2030 Framework. Notably, it is expected that ***in the period between 2020 and 2030 established renewable energy sources will become grid-competitive, implying that subsidies and exemptions from balancing responsibilities should be phased out in a degressive way.*** These Guidelines are consistent with that objective and will ensure the transition to a cost-effective delivery through market-based mechanisms."

delivery of renewable targets. Increased regulatory risk and volatility has a direct effect on the ability to finance wind projects. Ireland is competing with other jurisdictions to attract capital and a stable regulatory and market regime is essential for growth in renewables to continue.

To be clear, we recognise that market changes are required to promote the objectives of the European Target Model and we support the SEMC's efforts in this regard; however, we urge the SEMC, liaising with the Department, to carefully and more explicitly, consider the commercial impact on existing wind generation in particular and ensure that corresponding changes are made to the application and settlement of REFIT so as to maintain net REFIT economics for existing wind generators following I-SEM's implementation. We respectfully suggest that market participation be incentivized instead of merely introducing additional risks and costs which increase the investment risk profile for current and prospective renewable generators.

As a result, we cannot endorse any of the Imbalance Pricing methods proposed at this point in time. Given the materiality of the decision on Imbalance Pricing, further engagement is required providing an explicit impact assessment of each option on imbalance prices. Any option chosen must recognise the dramatic transition to balance responsibility for wind generators and its commercial impact, including a path forward to mitigating any impact.

While the above is of paramount importance, we also have the following comments on the I-SEM design market considerations presented in this consultation. These are discussed in more detail in the attached document and builds on Brookfield Renewable's strong base of experience participating in 14 organized electricity markets across the world.

- A suitable transition should be ensured through appropriate and gradual imbalance pricing.

- The treatment of Start Costs will impact on prices across the ex-ante and Balancing markets. Further engagement and consultation must also include the treatment of Start Costs.

- The SEMC should commit to, and define a clear plan to achieve appropriate liquidity in the intraday market. In addition, no Balancing Market action taken by TSO should reduce liquidity in the intraday which is essential to allow market participants to mitigate balance exposures. Recognising the highly constrained system across the island, the TSO will require the flexibility from Early Balancing Actions to efficiently manage the system and meet its statutory obligations including minimising curtailment. Early Balancing Actions taken by the TSO should be limited to commitment decisions or a set of predefined actions.

- An interim I-SEM Intraday market is prudent and frequent regional Intraday auctions are preferred as they will focus liquidity, provide greater access to participants and provide transparent price formation.

- The proposal that wind generators are not required to submit Physical Notifications is welcomed. Availability signals should be used to settle constraints as they are in the current market.

Of final note, we feel strongly that the decision to remove Compensation for Curtailment from 2018 must be reopened, given the current status of DS3. Its removal not only discriminates against wind generation for what is another network balancing issue over which wind generators have no control, it also removes the commercial incentive for the TSO to deliver mitigating measures such as the delayed DS3 Programme. By removing the incentive to reduce curtailment actions it would have the perverse impact of removing signals for additional flexibility in the market.

The remainder of this response is limited to providing further detailed comments on the elements of the consultation that impact on wind generators in I-SEM specifically, due to the time available to respond and the extensive scope of the consultation.

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Comments on the Market Design Consultation

1. Ex-Ante Markets

An interim I-SEM Intraday market is prudent and frequent regional Intraday auctions are preferred.

As is pointed out in the consultation, Day Ahead coupling using the Euphemia algorithm has already been successfully implemented in a number of markets in Europe and its implementation with I-SEM is not of concern. This section addresses some of the concerns and challenges facing the successful implementation of the other ex-ante physical market, the Intraday market (IDM).

The Intraday market is a critical tool to enable market participants to minimise balancing exposures (particularly wind generators). A robust, liquid intraday market with transparent prices must be delivered. Otherwise, imbalance settlement will be impossible and in effect, imbalances charges will be a penalty on wind generators. A benign balancing price must be delivered if there is no route for market participants to minimise balancing exposures through a functioning, liquid intraday market (extension of a Price Average Reference (PAR) is one solution that could achieve this).

The concerns raised in the consultation that the XBID European IDM will not be delivered in time for I-SEM are valid given the scale and complexity of the problem of introducing continuous trading and capacity allocation across Europe's borders and markets. It is therefore prudent to take steps to ensure an IDM will be in place for I-SEM go-live. In this regard we believe regional Intraday auctions every 4 hours appear to be a sensible interim measure in the absence of a continuous European intraday market. This option focuses liquidity, provides a route for smaller participants and transparent price formation. As it is not continuous there will still be a balancing exposure for participants for any changes from close of the last auction to real-time but provided auctions are of sufficient frequency (every 4 hours), this issue is mitigated to a large extend.

We believe the other options proposed for interim IDMs should be rejected, An IDM that covers I-SEM only would not, in our view, have sufficient liquidity and market power issues could also emerge. An interim arrangement to couple an I-SEM IDM with the GB IDM is a complex, costly and unnecessary option to deliver given that the XBID IDM is being developed in any case.

Regardless of the enduring IDM market, TSO countertrading must still remain in I-SEM to continue to minimise the curtailment of wind. While the IDM will react to price signals and export power when prices are lower than in GB and Europe, there still remains the SNSP system constraint that can only be alleviated by TSOs.

The SEMC should provide clarity on portfolio bidding in Ex-Ante Markets and the proposed treatment in balancing settlement across wind farms in the portfolio. Further, the roles of Aggregators and Asset-less traders should also be addressed by the SEMC.

2. Physical Notifications

We welcome the proposal that wind generators are not required to submit Physical Notifications.

We believe that the requirement for wind generators to submit Physical Notifications (PNs) would be unnecessary as TSOs own forecast would be used in any event to estimate wind output.

With regards to the proposed treatment of PNs and ex-ante trades, we suggest that linking to Ex-Ante Trades should be used to calculate the net (energy) imbalance volume in the Balancing market and helps to ensure that constraints are excluded from the energy imbalance price.

3. Forms of Bids, Offers and Acceptances

The treatment of Start Costs will impact on prices across the ex-ante and Balancing markets. Further engagement and consultation is needed on this important issue.

In our view the design of imbalance pricing including the treatment of Start Costs will impact not only on the incentives for balance responsibility but also on ex-ante market prices and the signals for flexibility in the market. For this reason we request further engagement on imbalance pricing including treatment of start costs and to facilitate useful engagement we request an impact assessment of the impact of the start cost options (particularly on the imbalance price).

As will be discussed in our comments on Imbalance Pricing, we believe that the prompt publication of imbalance prices as close to real time as possible is essential to inform market participants trading strategies in the Intraday market to address balance exposures. If a firm imbalance price isn't published until 24 hours ex-post due to the treatment of Start Costs, this will damage the effective functioning of the Intraday market.

In our view Start Costs should be submitted explicitly through a similar mechanism to the current market where Start Up and No Load Costs are included in a generators technical offer data. In the interests of transparency and to avoid additional complexity in the Imbalance pricing process, Start Costs could be recovered explicitly through an ex-post balancing market payment similar to Make Whole Payments in the current SEM.

4. System Operation and the Interactions between the Balancing and Intraday Markets

Early Balancing Actions taken by the TSO should be limited to commitment decisions or a set of predefined actions to ensure a safe, efficient system (including minimising curtailment).

The SEMC should commit to, and define a clear plan to achieve, appropriate liquidity in the intraday market. In addition, no Balancing Market action taken by TSO should reduce liquidity in the intraday which is essential to allow market participants to mitigate balance exposures.

The Balancing Market (BM) and the Intraday Market (IDM) will run in parallel to facilitate the TSO taking Early Balancing Actions (both energy and non-energy) to manage the system. Their interactions are likely to impact on prices and liquidity in both markets. There are concerns that Early Balancing Actions taken by the TSO while the IDM is open will distort prices and liquidity in the IDM. Given the highly constrained nature of the network across the island we recognise that the TSO requires flexibility to take necessary actions, including its legal obligation to minimise the curtailment of renewable generation. However, a liquid, functioning Intraday market is an essential element of the I-SEM design to enable market participants to trade out balance exposures. Early balancing actions taken by the TSO must be limited to avoid impacting on the IDM. We request that the following principles are acknowledged in the treatment of Early Balancing Actions.

Principles for Balancing Market / Intraday Market Interactions:

- No Balancing Market action taken by TSO should reduce IDM liquidity
- The TSOs should limit early balancing actions to commitment decisions (whether to sync/desync a plant) or a limited set of actions necessary to operate a safe, efficient system (including minimising curtailment). The majority of energy balancing actions should be taken in the last hour after the IDM has closes. The proposal to introduce a ruleset for the TSO to follow similar to the Balancing Principles Statement for the TSO in the UK has merit and, likewise, amending the TSO's licence to include a relevant condition should be considered.
- To limit opportunities for cross-subsidisation and price distortion additional Intraday trades by market participants subjected to Early Balancing Actions should be "substitutive" as opposed to "additive".
- Start Costs should be declared and recovered explicitly for all Balancing Actions (see above)

The TSO in the SEM is currently incentivised to reduce the system-wide Dispatch Balancing Costs (costs of constraints) and this incentive will require review as the market arrangements change. We request that careful consideration is given by the SEMC to appropriate incentives for the TSO under the I-SEM market arrangements.

5. Treatment of System Services

We agree with the principle that the procurement of ancillary services should have minimal impact on ongoing trade from those service providers, and that the treatment of system services should remain the same in the I-SEM as in the current SEM as much as possible.

Market power issues with regards to the provision of System Services and its interactions with Ex-Ante and Balancing energy markets should be considered within the Market Power work stream.

6. Imbalance Pricing

At this point, none of the Imbalance Pricing methods proposed can be endorsed. Further engagement is required providing stakeholders with an impact assessment of each option on imbalance prices.

Any option chosen must recognise the dramatic transition to balance responsibility for wind generators and explicitly address its commercial impact, including a path to mitigating any impact. A suitable transition should be ensured through appropriate imbalance pricing.

Brookfield Renewable believe that the decisions on the design of the Imbalance Pricing methodology are crucial to the successful design of I-SEM. Recognising that I-SEM Project timelines are extremely challenging, we nevertheless do not believe that adequate consultation has taken place on this key issue and request that additional engagement take place through targeted workshops and/or additional consultation. A quantitative impact assessment for each of the proposed imbalance pricing methodologies and the treatment of start-up costs is necessary to inform the views of market participants, particularly wind generators in the context of their REFIT supports. The opportunity to feed these views into the Market Design decision must be provided including a path to mitigating any impact.

We also have the following qualitative comments to make on the Imbalance Pricing methods proposed:

Unconstrained Simple Imbalance Price Stack:

This method calculates the imbalance price by creating a stack of available bids and offers and sets the price at the marginal bid/offer needed to meet the net imbalance volume (NIV). In our view this method is likely to result in lower imbalance prices as no plant or system dynamics are included that would constrain the bids/offers available to set the price. This method should also be relatively transparent and easy to implement where imbalance prices could be delivered close to real-time, informing trading decisions in the Intraday market. However, it could affect liquidity and prices in other market timeframes if most balancing actions are Paid-As-Bid. It would also dampen the signal rewarding flexibility in the balancing market.

Unconstrained Imbalance Price Stack with Plant Dynamics Included:

This method is similar to the Unconstrained Simple Stack with the introduction of plant dynamics and an optimization time-horizon into the imbalance price setting algorithm. This method will always produce an Imbalance price while excluding TSO judgment from the price setting process. However, questions remain about the deliverability of the solution and the potential for volatile prices. Concerns about the time needed to produce an imbalance price must also be addressed given the need for a prompt publication of imbalance prices to inform market participants trading strategies to address balance exposures and ensure the efficient operation of the Intraday market.

This imbalance pricing option appears to be similar to Option 2 as presented in the original I-SEM High Level Design decision options (Mandatory Ex-Post Pool for Net Volumes) and the concerns raised then with regards to the complexity of the solution and the potential for volatility still stand.

Unconstrained Imbalance Price Stack from the Actual Dispatch:

This method introduces additional complexity by basing the imbalance price setting process on the actual stack of dispatched generation. Additional information about the plant is included in the algorithm such as unit bids/offers, physical characteristics, unit and load real-time MW output and usage, final physical notifications and real-time availabilities.

The price setting algorithm seeks to remove binding constraint actions from the price setting process, however, non-binding system constraints are also introduced into the price setting process by the inclusion of operating reserve, SNSP and other limitations. While this option ensures that all actions aren't tagged out of setting the imbalance price, it does introduce system constraints into the price setting process.

In our view this option is not favoured as it would likely lead to high imbalance prices that include system constraints and reduce transparency in the price formation process. Further, careful consideration must be given to the impact this pricing option would have on the market signals for participants and the efficient functioning of the ex-ante markets.

Flagging and Tagging:

The Flagging and Tagging method of Imbalance Pricing is currently in place in the BETTA market in GB. However, there are concerns with implementing it in the highly constrained SEM in terms of accurately categorising the TSO's actions to ensure the energy imbalance remains unconstrained and also the potential for no imbalance price due to the high level of constraints in I-SEM removing all energy balancing actions from price setting. However, an advantage of the Flagging and Tagging Imbalance Pricing method is that there are a number of elements of its design that can be used to mitigate the

concerns raised. These elements include CADL flagging for short duration actions, De-Minimus tagging for balancing actions below a threshold, the method to calculate the Net Imbalance Volume and the use of a Price Average Reference to set the marginal price (currently set at the average of the marginal 500MWh of energy balancing actions in BETTA). Further, the proposal to use the Unconstrained Stack method as a backup if a price cannot be determined through Flagging and Tagging has merit. In conclusion, the Flagging and Tagging method has merit subject to further consultation on its operation.

Start Costs:

The treatment of Start Costs will have an impact on imbalance prices. In our view participants should submit explicit start costs as per current SEM as opposed to internalising them in Inc/Dec bids. This option provides a degree of transparency with regards to balancing price bids. In our view start costs should also be recovered explicitly outside of the imbalance pricing method. This is due to concerns around the complexity of including start costs in an imbalance pricing solution whether it is Flagging and Tagging or an unconstrained algorithm based solution.

Including start costs would also likely lead to volatile, peaky imbalance prices which contributes to more uncertainty and damages the investment climate for generators in I-SEM, particularly wind generators. The increased complexity would make it harder to produce imbalance prices close to real time and we believe that ex-post imbalance pricing will damage the intraday liquidity crucial to enabling market participants to manage balance responsibility. Start costs could be recovered explicitly outside the imbalance price through ex-post Make-Whole Payments.

Imbalance Pricing Conclusions:

The introduction of balance responsibility has a real commercial impact on wind generators in particular and represents a dramatic difference from the current fully socialised model that has underpinned investment in over 2.5 GW of installed wind generation across the island. We request that the SEMC bear in mind the need for investment certainty so that investment continues to be attracted to our market. We believe that when choosing the appropriate imbalance pricing method these issues must be explicitly considered as well as a path to mitigating any impact, including REFIT program supports. Also in a more general sense, a transitional approach must be taken to the introduction of additional balancing costs. While we cannot endorse any of these options in the absence of this, we do note that it is possible among the proposed options to provide a more gradual transition (for example using a suitable Price Average Reference with the Flagging and Tagging imbalance pricing option).

There is a risk of price volatility due to the inclusion of plant dynamics/actual dispatch in the solutions including an algorithm aside from the Simple Stack option (i.e. the algorithm throwing up unusual prices).

The publication of the imbalance price is needed as close to real time as possible to inform the commercial trading decisions that market participants must make in the intraday market to mitigate balancing exposures. Without knowledge of or a reasonable expectation of out-turning imbalance prices, market participants will be exposed to further price risk which negatively impact on much-needed liquidity in the Intraday market.

Recovery of start costs should be guaranteed and recovered explicitly through market Make Whole Payments and not through the imbalance price.

7. Imbalance Settlement

Brookfield Renewable reiterate our request for the SEMC to review the decision to remove compensation for curtailment from 2018 in the interests of fairness and to avoid removing the incentives to deliver system flexibility by allocating the costs of curtailment to wind generators.

Settlement of Curtailment:

Curtailed wind generators should be compensated for foregone revenues through the balancing market in the same way constraint payments will be applied. Brookfield Renewable reiterate that curtailment actions should be compensated in the same manner as all other network balancing actions and call on the SEMC to re-open the decision to remove compensation for curtailment from the beginning of 2018. In any case arrangements are needed to facilitate the compensation of curtailment as compensation for curtailment will be in place when the market goes live in October 2017 and clarity is sought that it will be treated in the same manner of compensation for constraints.

As stated in the Brookfield Renewable response to the Building Blocks consultation, if compensation for curtailment is removed wind generators at a minimum must be returned to a revenue neutral position compared with their ex-ante market revenues (the Cash-Out and Post-Processing option proposed in this consultation).

The proposal to settle curtailed actions without any rules for curtailment exposes wind generators to a differential between imbalance prices and prices secured in the ex-ante markets. In our view this option must be rejected as it is discriminatory and inefficient and exposes wind generators to a cost due to a network balancing action over which they have neither the ability to control nor predict accurately. Ultimately this will result in some of the benefits of the low marginal cost of wind generation being lost to consumers as wind generators are dis-incentivised from participating in ex-ante markets.

Settlement of Constraints:

Brookfield Renewable accept the rationale presented in both the Building Blocks and Market Design consultations that any incremental offer with a price lower than the imbalance price and any Decremental bid with a price higher than the imbalance price are "in merit" and therefore should receive the higher of the imbalance price or their offer price in the case of Incremental actions and vice versa for Decremental actions.

As already stated, we welcome the proposals in the consultation that price-taking wind generators are not required to submit Physical Notifications (PN) and that when priority dispatch units are constrained down without submitting a PN that the TSO would dispatch the unit up to its availability. In principle, when price-taking wind generators who have not submitted a PN are dispatched down, they should be compensated for the volume of power that could have been produced (i.e. their availability) as is the case in current market arrangements. We believe that price-taking wind generators are still incentivised to participate in ex-ante markets (particularly the day ahead market) as the imbalance prices received for spilling into the balancing market are likely to be lower than ex-ante prices.

We support the proposals where in instances where a price-taking wind generator without a PN is constrained down, a "deemed decremental bid" of zero is used for firm capacity and the imbalance price for non-firm capacity, thereby ensuring that any market revenues from ex-ante markets are not foregone for firm capacity.