Response to CRU consultation CRU/20/144
ESB Networks 2020 proposals for changes to Generator Standard Charges

Submitted by Wind Energy Ireland, Irish Solar Energy Association, Irish Wind Farmers Association, Irish BioEnergy Association and Energy Storage Ireland

26 January 2021

1. Executive Summary

We would like to thank the Commission for Regulation of Utilities (CRU) for the opportunity to provide feedback on ESB Networks' (ESBN) 2020 proposals for changes to Generator Standard Charges (GSC).

Considering the importance of GSC for renewable generator and battery storage connections, we are very disappointed that the CRU has essentially issued a minded to decision paper which appears to leave little room for proper industry input regarding the proposed changes in costs. We contest the fundamental premise that increased standard charges are justified and consider the magnitude of the proposed changes to be wholly excessive. A CRU core vision is that "Empowered and protected customers pay reasonable prices" and additional customer costs should be rigorously assessed in line with this vision. No reference has been made to the suite of costs for contested works presented to the CRU in our response to the 2018 GSC consultation. These examples are the best possible benchmark against ESBN charges as they involve connections for projects in Ireland, rather than other jurisdictions where it is not possible to compare like-with-like. It would have been beneficial if the CRU had engaged with industry in advance of the consultation, and the review by your consultants, to allow us to provide any additional detail that could have been used as a benchmarking exercise. We have provided some examples of average industry costs in comparison with the proposed GSC in Appendix 1.

The experience of the DSO in delivering connections since the introduction of standard charges should have identified opportunities for cost savings via learnings from project delivery and increased efficiency. The increased volume of future connections should also offer the opportunity for cost reductions and efficiencies due to increased equipment procurement. There is no evidence presented that the CRU explored these matters with ESBN or such considerations were included in the evaluation process.

Our concerns are that the overall impact of the proposed changes will have a disproportionately negative impact on small-scale projects and community projects which cannot absorb these higher costs. This carries the risk of significantly hindering the development of this sector of the market at a time when our renewable policy ambitions are seeking to increase the amount of distributed generation, including battery storage, and to increase the level of community participation in projects going forward. These additional costs will damage the economic case for the community energy sector, making it appear more expensive that it need otherwise be. This can only act as a deterrent to future funding of this sector, and directly contradicts Action 28 of the Climate Action Plan "ensuring an appropriate community/enterprise mix to achieve an ***efficient*** delivery of renewables" (emphasis added).

We are also concerned that the majority of costs for DSO customers only seem to be rising and we have yet to see the impact of smart grid integration policies or new processes from ESBN that lead to more efficient and cheaper connections. It is not correct to say that standard charges haven't changed since 2007 as many new specifications for equipment have been adopted in the intervening period. For instance, the adoption of EGIP for MV stations and 38kV stations has resulted in much larger stations and higher costs. We also note that ESBN's Lean Connections Project is ongoing and the learnings from this are still to be implemented that will deliver more efficient and cost-effective connections. We argue that the introduction of increased standard charges prior to the impact of the Lean Connections initiative is pre-mature and could actually act as a disincentive for the DSO to achieve efficiencies.

For these reasons we propose that the current charges should remain in place for at least ECP 2.1 or until the learnings from the Lean Connections Project are in place and have been applied to connection batches. This would give a better sense if charges for more recent connections are accurate and whether there is significant under-recovery.

If these proposed charges are adopted, the result is that many MV scale projects will simply fail to succeed in finding a path to market via RESS auctions or otherwise. Alternatively, the higher cost of these projects will be reflected in RESS auction prices, which has the potential to drive up the overall costs of renewable deployment for consumers. We have provided an example of the relative costs for sample MV projects in Appendix 2. In addition, these changes increase the gap between the strike price of distribution connected renewables and market prices that can be sustained under corporate PPAs. This runs contrary to the stated ambition of Action 29 of the Climate Action Plan to "Ensure that 15% of electricity demand is met by renewable resources contracted under Corporate PPAs" and significantly prejudices the ability of distribution connected renewables to contribute towards this target. It is essential the CRU assesses these charges in the context of the Climate Action Plan and Government Policy.

Overall, there are some key questions which the review does not address:

- Have the reasons for the increase in costs been extensively analysed and if so, what measures have ESBN taken, or will take, to reduce costs? This has not been presented in this consultation.
- How much has the DUOS customer actually been exposed from under-recovery when accounting for pass-through costs?
- How is the generator and customer protected from ESBN simply allocating more time and expenses to the new standard charges?
- How are ESBN incentivised to reduce standard charges in the future revisions of these costs?

The update in different technologies connecting to the distribution system requires a shift in approach to connection policy and network planning. We have previously highlighted the fundamental error of studying only the windy and sunny night-time scenario in the context of network planning which is not a real network condition.

The pace of development of smarter grid connections and new standards by ESBN has been very slow. Given the huge rise in connection costs for some customers which the CRU are minded to approve we believe ESBN must put adequate resources into developing smarter, more efficient solutions thereby helping customers avoid excessive works, connection delays and charges where necessary.

There are opportunities to reduce connection costs and facilitate optimised connections which can be achieved quickly with simple policy changes and these must be accelerated if the benefits are to be seen in lower renewable deployment costs for the next RESS auctions. In particular we point to the lack of progress on sharing connections (i.e. allowing multiple legal entities at connections points or sharing of MEC between technologies). These are areas which are to be addressed under our Climate Action Plan but progress in relation to the actions set out for hybrid connections has been very slow and we have already missed a number of key milestones required under the plan.

There are projects seeking connections which do not want or require additional MEC. There are projects which do not want or require independent connections and independent connection equipment. These projects instead face connection costs for new unnecessary equipment which result in additional expense or worse an unviable project. It is important project developers are allowed to make best use of a site's MEC and deliver smarter, more cost-effective connections that will ultimately benefit consumers. These opportunities must not be delayed or prevented by unnecessarily lengthy reviews or consultations.

CRU and ESBN must also accelerate work on allowing private wire connections and allow generators to optimise connections with internal network where possible.

Overall, we believe that ESBN's costs are very high and that this is not in line with what industry in Ireland can deliver, despite the results of the benchmarking exercises which we believe do not provide an accurate comparison of costs. We request that CRU and ESBN allow generators to take control of as much of the connection works as possible to avoid unnecessary costs which are ultimately passed on to the consumer through mechanisms such as RESS auction bids.

2. Introduction

Given the potential extent of the impact of this consultation upon the industry, the relevant trade associations have developed a common industry-wide response. We trust that this will communicate to the CRU the gravity with which we view these proposed costs. This is a joint submission from the following associations:

1. Wind Energy Ireland

- Wind Energy Ireland is the largest representative body for the Irish wind industry, working to promote wind energy as an essential, economical and environmentally friendly part of the country's low-carbon energy future. We are Ireland's largest renewable energy organisation with more than 150 members who have come together to plan, build, operate and support the development of the country's chief renewable energy resource.

2. The Irish Solar Energy Association

- The Irish Solar Energy Association (ISEA) was established in 2013 to advance a policy and regulatory landscape promoting solar as a leading renewable energy technology that will decarbonise Ireland's electricity system and contribute to a successful and strong clean economy. As the leading voice for the Irish solar industry, ISEA works closely with stakeholders to advance the solar agenda on behalf of our members. ISEA is committed to delivering 5 gigawatts (GW) of solar in the next ten years to make a significant contribution towards 2030 energy targets and achieve a diverse and clean electricity network. As the trade association for the solar industry in Ireland, ISEA is responding on behalf of our membership of 108 parties currently active in the Irish solar market.

3. The Irish Wind Farmers Association

- The Irish Wind Farmers' Association is Ireland's representative body for independent wind energy promoters, developers and service providers. Our members have over 200MW of installed wind capacity and a development pipeline of over 500MW.

4. Irish BioEnergy Association

- The Irish Bioenergy Association is the association representing the bioenergy sector on the Island of Ireland covering Biomass, Biogas/AD, Biofuels and Energy Crops. The membership is diverse. The aims of the association are to influence policy makers, engage in industry & public debate, offers networking opportunities and sharing resources and information within the membership.

5. Energy Storage Ireland

- Energy Storage Ireland is an industry representative association comprised of members who are active in the development of energy storage in Ireland and Northern Ireland. Our aims are to promote the benefits of energy storage in meeting our future decarbonisation goals and to work with policy makers in facilitating the development of energy storage on the island of Ireland. We have over 35 members representing many areas of the energy storage supply chain.

3. General Points

3.1. Lean Connections

The ESBN Lean Connections Project is welcomed by industry and we look forward to the learnings from this that can help deliver more efficient, transparent and hopefully lower connection costs. It seems apparent that the point of the project is to identify where there are inefficiencies that can be eliminated or process improvements that can be made to improve connection programmes, and consequently reduce costs. However, this project is still in its early stages and the anticipated improvements have not been introduced into business as usual practice yet. In this context, it does not seem correct to base any new charges on works carried out in the past few years which have been primarily for gate 2 and gate 3 projects, many of which received connection offers several years prior to connection. The next wave of connections based on ECP connection offers will all be issued to consented projects which will seek to connect as soon as possible in most cases. Therefore, the next phases of ECP should be used to implement the learnings from the Lean Connections Project and see how these affect the delivery of connections. After this phase it would then make sense to review standard charges and cost recovery to see if particular charges need to be revised. Revision of standard charges based on older connection works does not seem to be the best approach considering there is an ongoing project to improve connections under ECP that will give a more accurate representation of connection costs and DUoS recovery.

We would propose therefore that the current charges remain in place for at least ECP 2.1 or until the learnings from the Lean Connections Project are in place and have been applied to connection batches.

Alternatively, the CRU could impose a target for ESBN to reduce standard costs through the new Lean process. It is commonplace for regulators to reduce permitted revenue to incentivise efficiency improvement. As it is ESBN's intention to drive efficiency improvements via the Lean

Connections Project it is only reasonable that cost reduction targets should be set by the CRU at this stage. We are concerned that without either a deferral of changes to the charges or reduced costs targets, there is no incentive for ESBN to pass on cost savings from the Lean project or for the Lean process to be meaningful .

3.2. Annual review of charges

Notwithstanding our comments on the Lean Connections Project we would urge that any future charges, or at least a subset of charges, should be subject to annual review. We recognise that a thorough annual review of all the charges may not be possible so we would propose that this could be limited to material changes such as where a percentage threshold (increase or decrease) is reached. This could be in the range of 5 to 10 per cent and we would welcome further discussion with the CRU and ESBN as to how this mechanism would work.

Doing so would allow ESBN to take account of new information and efficiencies as a result of their ongoing Lean process, or other process improvements, and reflect these in charges going forward. An annual review of some of the key works would pinpoint the exact reasons for any additional costs incurred and whether these are expected to be incurred on all connections. The project level recovery exercise presented in the consultation does not address the reasons for any under recovery. An annual review of specific GSC after a certain number of connections are complete would be a much more appropriate mechanism.

3.3. Greater transparency on the audit of the proposed GSC

It does not appear the full detail on the GHD review has been made available and we would also request more transparency on the WSP review as the full detail has not been published. It is difficult to comment in detail on some charges and positions without seeing the actual costs for the projects that were reviewed. The scale of the cost increases proposed requires more transparency and detail for industry to consider than just a high-level comparison with some UK jurisdictions.

Much greater detail on ESBN's cost recovery analysis is required also. For instance, a 77.3% gap for Project 22 seems quite extreme.

3.4. Clarity needed on the applicability of charges to on-hold projects/projects with modifications

ESBN have stated that projects placed 'on hold' after scoping and planning works are completed will be subject to re-pricing with new GSCs. This process is not effectively managed and communicated by ESBN to the customer. All projects need clarity on the status of scoping works and whether it is complete or not. Scoping does not begin immediately after offer signing for many projects. Projects must be given a choice to pay second stage payment or formally request to go on hold. No project should go into the next auction unsure of contracted cost of connection with ESBN.

Projects should also not be put on hold if there is ongoing works and engagement between ESBN and the customer on the contestable works. It can often be the contestable works that are on the critical path for the connection. Although the non-contestable works may not be advancing for periods, the overall connection works could still be progressing. It is unreasonable and unfair for the connection to be considered 'on hold' in these circumstances. It should only be when the non-contestable and contestable works are not progressing that the project is considered on hold. We request the CRU and ESBN to provide clarity on the circumstances when projects will be put on hold, especially considering the potential commercial impact on the connection agreements if much higher GSCs are adopted.

3.5. Greater Transparency on Pass-Through Costs

As it is proposed that pass-through costs will form a bigger proportion of total connection charges it is our view that greater transparency is required in how pass-through costs figures are arrived at and agreed between ESBN and connection parties. This is also imperative at the cost estimation stage for projects that will be competing in RESS auctions or looking to secure an alternate route to market (e.g. CPPA) for whom cost certainty is essential.

We suggest that the following steps, as a minimum, are implemented to improve the required transparency:

- We request that the ESBN commitment to provide as much upfront cost information as possible is fulfilled through having the necessary processes in place for up-to-date estimates to be regularly recalculated and this commitment clearly communicated across the ESBN project delivery team;

- Sharing of detailed Pre-construction budgets;

- Sharing of evidence of tendering where appropriate;

- Provision of schedule of rates for works being carried out including rates for ESBN direct labour and design resources;

- Updates on costs as construction progresses including assessment and justification for variations on pass-through contracts;

- Procedures for dealing with disputed pass-through costs including independent arbitration if required.

3.6. Contestable Works

We believe the fundamental message arising from this review of GSC is for industry to progress contestable connection works as much as possible. Contesting works is normal practice for most experienced developers operating in Ireland but is new to many of the developers successful in RESS-1, particularly solar, and is new to smaller incumbents and community projects coming forward. We ask that ESBN strive to make the process of contesting works easier to navigate, such as providing publicly available information on the specifications and drawings for standard layouts and connection equipment. Currently projects must wait until after offer acceptance or after second stage payment before ESBN issue functional specifications for contestable works.

The biggest impact in the proposed GSCs is in the connections works which cannot be contested. The average increase in costs for works which cannot be contested for most connections (i.e. transformers and cubicle in existing stations) is 117% for 38kV works and 30% for MV works. The highest increases are clearly visible in the costs proposed for 38:MV transformers. These costs require immediate investigation as the justification provided in the consultation does not adequately explain the scale of the cost increase from the current charges.

3.7. Transformer Costs

Regarding the review of these costs by WSP and GHD we believe there are no comparable costs which can be benchmarked against those proposed by ESBN. The precise benchmark in terms of the high and low voltage of the benchmarked transformer package is not clear from the GHD review. What is clear is that a like for like comparison or even a similar works package comparison has not been conducted.

Another key message from these proposed costs is that MV connections which trigger new transformers will not be viable projects. We believe the costs that industry have provided are more reflective of actual project costs in Ireland and request the CRU to take the industry provided costs as a real comparison. We will be happy to provide additional costing detail to the CRU.

3.8. Transformer capacity calculations

The proposed charges for transformer works, particularly MV:38kV units, have more than doubled. A 5MW project triggering a new transformer for example will add €786k plus civil works to their connection cost. This will have a significant impact on the ability of smaller scale renewable projects to connect to the grid and will make many projects unviable.

ESBN has recently made fundamental changes to its methodology for calculating transformer capacity which has recently impacted ECP-1 projects and will impact many more projects. ESBN changed their methodology for determining allowances for transformer overload without any consultation or communication with industry. Without any communication with their stakeholders, ESBN have made a change which effectively wiped out hundreds of MW of capacity from the existing network. The result of these changes was acutely felt by wind and solar projects receiving connection offers through the ECP-1 batch. Some of these projects have had to request major reductions in MEC in order to avoid transformer works which would not have been required under the previous transformer capacity calculation methodology.

We believe the CRU should have oversight of any such policy changes and request that ESBN be required to provide rationale for and consult on any fundamental shift in policy that has material impacts on generator connections and results in connection cost increases.

3.9. Contingency

We note a 10% contingency is applied "due to nature, location and complexity of connection works" which is added to the unit costs.

There may at times be some works carried out in remote locations for wind farms however these works are almost always contested. The key works which industry are concerned about are the non-contestable works in existing ESBN stations. ESBN fully understand the nature and complexity of their own network and are familiar with the details and location of their own stations.

As stated in the consultation the requirement for the 10% contingency was question by the external advisors. However, GHD concluded that the contingency is appropriate for cost estimates in early design stages. The GSC charges are not estimates. Much of the non-contestable work carried out by ESBN for standard items does not require specific detailed design beyond what are already very high design charges. ESBN also include an estimate of pass-through charges in connection offers. This is now to be added on top of a 10% contingency, which is not necessary.

4. CRU Consultation Questions

4.1. GSC Cost Recovery Efficiency

1) What is your view on the assessment that the current GSCs are contributing to the under recovery of generation connection charge from generators, putting additional risk on the DUoS customers?

We believe that greater transparency is needed on the reasons for under-recovery. In some cases higher pass through costs may be due to a combination of project delays with contested works or other reasons outside of ESBN's control.

Some of the cost under recovery may be due to the fact that some projects have not yet paid for shared works. ESBN put forward figures on the exposure to the DUoS customer due to stranded assets during the ECP consultation. This resulted in the adopting of the policy for bonding for shared assets which has since been withdrawn by the CRU in their ECP-2 decision. ESBN presentation of under recovery is not an adequate assessment of the reasons for under recovery.

4.2. GSC Cost Appropriateness

2) What is your view on the assessment provided in section 2.4 indicating that the 2020 proposed GSCs are cost appropriate?

As part of the previous consultation on GSC in 2018, our members carried out a detailed survey of costs incurred when delivering contestable grid connections. We are disappointed that the CRUs follow on assessment in preparation for this consultation did not include engagement with our organisations on these cost comparisons. We know from experience that comparing ESBN standard charges and standard items of plant with those in other jurisdictions is a difficult task. Any review from external consultants not familiar with ESBN practices, polices and standards is not as accurate a benchmark against comparable industry figures from contested works. These contestable costs are incurred by industry in meeting the same scope as ESBN for connection works. We note from the consultation, *"GHD cost data is drawn from previous projects covering UK and international utilities, contractors and developers".* It does not appear that this review included Irish developers or contractors with extensive experience of delivering actual ESBN standard connections. Our key concern here, as stated previously, is that the industry provided costs were not reviewed by WSP and GHD and we request that the CRU consider a review of these costs before any final decision.

We are also of the view that the impact of ESBN's work practices on the cost of constructing grid assets should be assessed. It is recognised that flexible working hours and some element of overtime is required during the construction phase for efficient delivery of projects but it is our members' experience that ESBN are often unable to deliver this flexibility. ESBN have publicly acknowledged that severe weather events, emergency and out-of hour call-outs necessitate ESBN crews working extended hours to maintain the network and restore power to customers. However, due to working time regulations, this obligation to work extended hours in one area of activity appears to be affecting ESBN's ability to allow extended working hours in other activity areas, i.e. construction, and provide the flexibility required for efficient build-out of grid assets. It is our view that costs associated with inefficiencies of this nature should not be recovered as part of the GSC.

We have particular concerns regarding the methodology for comparison of 38 kV costs. It is extremely difficult to compare 38 kV equipment with other international examples as the voltage level simply doesn't exist. Comparisons of costs may be based on 66 kV or 132 kV equivalent network assets. This highlights the need for the review to consider comparable examples of contestable works in Ireland as costs in other jurisdictions may be managed differently. This is reflected in the CRU's comments on the WSP review which notes that the comparisons were not directly like-for-like and outlines the large variance that exists in the minimum and maximum values across the DNO range, hindering the usefulness of the assessment. For other jurisdictions, a comparison of overall project costs may be a better exercise e.g. the total cost of delivery of a 10 MW project in the UK vs Ireland. We would also request more transparency on the WSP review as it does not appear the full detail has been published.

3) What is your view on the introduction of GSCs 9a and 55 and their cost appropriateness?

We do not agree that extremely high design and PM costs can be charged against a piece of equipment simply for being bespoke. This does not provide any transparency on how these costs are arrived at or how ESBN are actively managing them and reducing them. For instance, is the work being developed in house or tendered out? The charges proposed for some GSCs would suggest that these are entirely new designs every time. We expect high design and PM charges are included for other GSCs but many of these items are not bespoke and simply come from term suppliers based on approved designs and specifications.

The charge for the NVD protection as issued in Non GPA and ECP-1 offers is ~€29k per transformer. This cost was lower in Gate 3 projects. No justification for an almost 4 times increase in cost is provided. ESBN only state that it is frequently required in new offers and not that it has proved more expensive to install. Design and PM charges are out of line with what could be considered reasonable for this item. The actual need for NVD protection is something

which should also be queried. Is such protection normal practice in other jurisdictions? GHD and WSP would have provided much more benefit to this process by benchmarking the protection standards themselves as opposed to the cost of implementation.

4) What is your recommendation for each of civils GSCs 13, 14, 24 and 34 used for estimate and refund purposes?

Industry will propose figures to be used for refund purposes for these civil works. This group is gathering information in order to agree average costs from recent works carried out and will present to the CRU as soon as possible.

4.3. Discontinued Charges

5) What is your view on ESB Networks' proposals on the discontinuation of a number of GSCs?

In principle we support the proposal to remove items from the standard list of connection equipment that are no longer being used, for example the costs for MV Cubicle with Interface Transformer and the cost for uprate 1*31.5 MVA to 2*31.5 MVA Substation. However, there are number of assets being discontinued that we would question, please see list and comments below. If these costs are being discontinued, we would request that our queries are addressed by ESBN and the CRU in the final determination.

- 38kV overhead lines 300 mm^2 ACSR - It is appreciated that if new 38kV overhead lines are required they will more than likely be constructed contestably. However, there is the regular requirement to uprate existing demand 38kV circuits to accommodate more renewable generation on the 38kV distribution network, for thermal or voltage rise reasons. Up to now ESBN would use standard prices when charging for some of these upgrade works, including uprating to 300 mm2 ACSR. Should this cost not be maintained for this purpose?

- Uprate 2*5 MVA Station to 2*10 MVA. We understand that this cost has been regularly used in connection offers over the past 10 years. It is appreciated that ESBN may often have decided on a system operator preferred connection method for these connections but this cost has been used to determine the least cost technically acceptable connection method. By removing the cost from the list it may remove the option for the renewable generators to be offered the least cost technically acceptable connection method.

- MV Metering and Power Quality >= 10 MVA (where MV CB is being charged as part of EGIP installation, no need for KKK) – it is unclear why this cost is being removed. There

is a need for greater transparency on now ESBN will be charging for metering and EGIP equipment for MV connections and how it is linked to LCTA of a KKK arrangement. It should also be clear what rebate generators will receive if MV connections are being completed contestably and based on System Operator preferred method with MV CBs.

There is a need for transparency on the process for ESBN to determine non-standard charges. Up to now ESB Networks have included equipment not on the standard cost list in connection offers. However, generator customers are provided no information on how these charges are determined and there appears to be no regulatory oversight of how the costs are determined. Before the final determination we would request that ESB Networks confirm to the CRU the methodology for the calculation of the non-standard charges, and that it is reviewed by the CRU and is published as an appendix to the final determination.

4.4. Removal of Embedded Civils

6) What is your view on ESB Networks' proposal to remove embedded civils charges for the 15 GSCs that still include such charges (though not GSCs 5, 7 and 12) and charge them on a pass through basis?

While civil charges may be more difficult to standardise at greenfield or brownfield sites this should not be the basis to remove them from standard charging. The point of standard charging is to protect customers from unforeseen pass-through costs with defined charges.

The process to determine better pass-through estimates in ECP-1 is welcome. This should be used as the basis for standard civil charges for GSCs. Civils for works in existing stations should be based on average costs and included in GCS. Above all generators need certainty on costs and must be protected from major additional costs incurring after construction starts.

Where costs for civil works are higher than average these will generally serve to regularise arrangements and improve the stations where the work is carried out. These improvements to existing substations will also generally provide a future benefit for DUoS customers.

4.5. Pass Through Costs

7) What is your view on ESB Networks' proposed list for pass through costs?

We would support the CRU's comments that pass-through costs should be "exceptional in nature and should only be incurred in the minority of cases". However, Industry experience is that pass-through costs are actually being applied to the vast majority of projects. For pre-ECP projects there was no estimation of these pass-through costs at the connection offer stage and

in some cases the total pass-through costs to subgroups were as high as €1.5m. We note and welcome the necessary improvement that ESBN are now estimating pass through costs at the connection offer stage. We also welcome the general improved communication on pass through costs by ESBN. However, we believe there is still further capacity for improvement and for increased transparency when necessary in terms of how these costs are incurred and detailed breakdowns. Accurate estimates of connection costs are critical for generation projects, particularly now there is competitive support schemes for the financing of the majority of renewable generation projects.

We note in the ESBN document that *"The majority of these costs will be determined at the scoping, detailed design and construction phases of the System Operator's Connection Works and will be advised to the Generator at these points."* We request that this ESBN commitment is fulfilled through having the necessary processes in place for up-to-date estimates to be regularly recalculated and this commitment clearly communicated across the ESBN project delivery team.

We would propose that ESBN undertake ongoing reviews of how pass-through costs are calculated and that the ongoing experience of constructing projects and incurring these costs are fed back into the updates of estimates provided to generator developers through the connection process.

It is critical that developers have the most up to date estimates of pass-through costs when competing in RESS auctions and financing their projects. Currently there are estimates provided at the connection offer stage and it may only be at the energisation stage that the next detailed assessment of the pass-through costs is communicated to the developer. As well as providing estimates at the connection offer stages we would request that developers should be able to request and receive a detailed update of these estimates before competing in a RESS auction and/or at the financial close stage. These estimates should be based on the most up-to-date information on the scope and cost of the pass-through works required.

We do note that there are some new pass-through costs listed in these documents. It is accepted that some of works have already been necessary for the connection of renewable generators but previously covered in connection offers under the caveat that the "the above list is not exhaustive". Some of these newly listed pass-through works could have substantial costs, for example temporary generation. It is critical that ESBN engage early with developers where substantial pass-through costs are likely.

Outage constraints is listed as a potential pass-through cost. Further information would be required to understand how outage costs could be deemed as costs to generators. It is requested that in the final decision further information is provided on what are outage constraints and how would they be deemed as pass through.

We note the potential pass-through cost, “Working outside normal working hours where deemed necessary to facilitate the customer’s connection works”. Currently there is no transparent process of how and when developers can engage and request ESBN to work outside normal hours to achieve connection dates. Sometimes it is critical that connection works timelines are advanced and increased pass-through costs would be acceptable when the downside cost to the generator of a later connection date is considered.

Supervision of contestable works is another pass-through cost in connection agreements. It is also critical that ESBN similarly commit to provide updates on these pass-through costs during the connection offer process and not just at the final energisation stage. Renewable developers with experience of contestable connections have substantial concerns on the scale and transparency of these pass-through costs. It is only reasonable and fair that developers should be able to receive evidence of the breakdown of supervision works being undertaken on the relevant project. We request that ESBN put in place the processes to record the supervision works in a format that will allow it to be shared with developers if required.

5. Conclusion

In conclusion we would like to thank the CRU for the opportunity to respond to this consultation on the proposed GSC. We hope you will consider the proposals we have made and we are available for follow up discussions should you need.

6. Appendix 1 – GSC Comparison and Industry Review

In this appendix the difference in the proposed GSC compared to the latest approved GSC is presented. We also present where possible a review of our members' experiences in delivering the standard works on a contested basis.

These industry costs are the same as those presented by industry in 2018. These costs were relevant for more recently contracted projects at the time and we do not see that there have been significant changes in industry costs since. We are happy to provide more detail on the cost details and are analysis should you require.

The experience from our members delivering the standard works on a contestable basis shows in many cases that ESBN are unable to provide standard items on a cost competitive basis. These works are built to the same standard as if ESBN would do the works themselves and are in most cases sourced from the same suppliers as ESBN and installed by the same contractors which ESBN use to deliver non-contested works. In the analysis below, we will show that in some cases the ESBN proposed cost is more than double what industry can achieve for the same scope of works.

We recognise that the precise scope of the ESBN works and the examples from contested works will not be identical in every circumstance. However, for many items they are exactly the same. As discussed in our response this is the best benchmarking exercise available and offers a much more precise comparison than provided by GHD and WSP.

We note from the consultation paper that "GHD consider it reasonable to conclude that the WSP benchmarking exercise is reliable." We believe that if GHD had included actual vouched industry costs in its review this statement would be different. In particular, regarding 38kV costs it is not clear how GHD have compared the GSC with their database of "appropriate similar costs". GHD state that they have used 33kV equipment to benchmark against 38kV costs. This is not a correct approach as 33kV is generally much lower cost than 38kV. GHD do not state how they have compared transformer voltages for 38:MV and 38:110kV transformers. We would expect a comparison with 33kV costs to result in a conclusion that the 38kV costs are very high. This requires a detailed clarification from GHD.

6.1. Line Standard Charges

Line work		Current	2018 proposed GSC	2020 Proposed GSC	% Difference 2020 v 2018
5	38 kV SC Woodpole 150 mm2 AAAC 80oC	**€88,830**	**€76,490**	**€98,470**	**+29%**
7	MV SC Woodpole 150 mm2 AAAC / 92 mm2 SCA 65oC	**€52,700**	**€34,700**	**€51,820**	**+49%**

Given the dominance of underground cable connections for recently constructed wind farms industry has had limited experience delivering contested overhead line works in recent years. Many new solar projects located closer to receiving substations will hope to install overhead lines. The GHD benchmark range of 96-154% does not seem to provide a very accurate comparison against the proposed charges if ESBN simply have to land within a 60% range of costs.

6.2. Cable Standard Charges

Cable Costs (excludes all civil works and ducting)		Current	2018 Proposed	2020 Proposed	% Difference 2020 v Current	Industry Average	% Difference - 2020 proposed v Industry Average
8	110 kV – 630 mm2 XLPE (AL) Single Circuit	€357,210	€342,960	€379,130	+6%	**€270,000**	**-29%**
9	38 kV – 630 mm2 XLPE (AL) Single Circuit	€128,830	€253,210	€105,310	-18%	**€85,765**	**-18%**
10	MV – 400 mm2 XLPE (AL) Single Circuit	€58,550	€52,870	€39,020	-33%		
12	110 kV Cable End Mast	€163,960	€235,660	€247,010	+51%		

In the past 10 years industry has built up a huge volume of cable installation experience. The majority of underground cable works for generator connections are contested.

ESBN have explained the significant reduction in charge for the 38kV cable standard price is due to the removal of a per km charge for the 38kV ASC. Does this mean ESBN had proposed to charge €145,000 per km for the ASC? The 38kV ASC is now pitched in GSC 9a at €347,360. A 10km 38kV cable under the 2018 charges would have been charged for 4 arc suppression coils. This explanation from ESBN calls into the question again the cost for GSC 9a which must be interrogated in much greater detail by CRU.

The increases in end mast charges also require a detailed explanation. Has there been a massive increase in the design specification for this item and has a rationale been provide for this? An end mast is a relatively rudimentary apparatus and a 51% increase in cost in questionable. ESBN explain the cost increase as an underestimation of design and commissioning costs. This implies there are an additional €70,000 of design and commission costs required for this item. These are charges for the design of a standard item of plant and are grossly out of line with what would be expected.

6.3. 110 kV Station Standard Charges

Station Work (Site purchase and civil works excluded for all new stations)		Current	2018 Proposed	2020 Proposed	% Difference 2020 v Current	Industry Average	% Difference - 2020 proposed v Industry average
	110kV stations						
18	110 kV/38 kV 63 MVA Green Field Transformer Package	€1,535,530	€1,818,740	€1,737,450	**+13%**	**€1,208,487**	**-30%**
19	110 kV/38 kV 31.5 MVA Green Field Transformer Package	€1,176,390	€1,444,300	€1,430,600	**+22%**	**€1,046,931**	**-27%**
20	110 kV/MV 20 MVA Green Field Transformer Package	€1,013,510	€1,172,030	€1,143,630	**+13%**		
21	110 kV/MV 31.5MVA Green Field Transformer Package	€1,249,970	€1,297,690	€1,315,500	**+5%**		
23	Uprate 2*31.5 MVA to 2*63 MVA Substation	€2,687,640	€3,940,000	€3,678,490	**+37%**		
24	Civil works for a Typical Outdoor 110 kV Station Based on the layout of Item 15 (for refund or estimating purposes only)	€1,097,790	€1,531,120	€1,531,120	**+39%**	**€612,552**	**-60%**

These charges are of the most concern to our members due to the huge increases due in connection costs when new transformers are triggered. The true increase is much more than this as civil works, which are included in the current figures, are now to be excluded.

Regarding transformer costs, the increases in costs are very difficult to comprehend despite the details provided by ESBN in the consultation. WSP and GHD were unable to compare these costs with direct comparisons. It is not clear if the consultants have compared costs with 33:132kV transformers or other units in their databases for example.

Industry is aware from purchasing IPP transformers that costs have not risen to the levels presented by ESBN. Industry cannot match the purchasing power of ESBN through framework contracts for transformers and the associated switchgear which make up the packages, so the cost differential experienced even in the existing charges is not justified. The new charges warrant more detailed investigation.

6.4. 38 kV Station Standard Charges

38 kV stations (excluding civil costs)	Current	2018 Proposed	2020 Proposed	% Difference	Industry Average	% Difference -

					2020 v Current		2020 proposed v Industry average
26	5 MVA 38 kV/MV Green Field Transformer Package	€464,510	€612,100	€809,740	**+74%**	**€520,000**	**-35%**
28	15 MVA 38 kV/MV Green Field Transformer Package	€539,590	€787,770	€1,017,430	**+89%**	**€523,216**	**-48%**
29	Install 5 MVA 38 kV/MV Transformer into Existing Station with 38 kV Busbar Extension	€382,670	€757,460	€848,460	**+122%**		
30	Install 10 MVA 38 kV/MV Transformer into Existing Station with 38 kV Busbar Extension	€427,500	€858,870	€929,860	**+118%**		
31	Install 5 MVA 38 kV/MV Transformer into Existing Station without 38 kV Busbar Extension	€273,470	€683,870	€786,280	**+188%**		
32	Install 10 MVA 38 kV/MV Transformer into Existing Station without 38 kV Busbar Extension	€314,420	€785,270	€867,680	**+173%**		
34	Civil Works for a Typical Outdoor 38 kV Station	€439,120	€904,160	€904,160	**+106%**	**€587,075**	**-35%**

As per the comments above the transformer pricing is out of line with recent industry experience. The fact that ESBN are proposing to effectively double the cost of new MV transformer packages is extremely concerning, particularly for small scale renewable projects. The cost per MW when including these works will rise to levels which will result in unviable projects and any MV scale project which requires a new transformer will be unlikely to be able to achieve a viable connection cost.

Transformer capacity becomes a critical issue with the proposed costs. While we welcome the new Non-Firm Access policy which is to be used for ECP 2.1 offers industry urgently needs this policy to expand to allow more generator connections to access these benefits.

6.5. Miscellaneous Station Standard Charges

Miscellaneous Station Items (excluding civil costs)	Current	2018 Proposed	2020 Proposed	% Difference 2020 v Current	Industry Average	% Difference - 2020 proposed v Industry average

35	New 110 kV AIS Line bay in existing 110 kV Single Busbar Outdoor Station	€420,010	€886,860	€726,080	+73%	**€490,000**	**-32%**
36	38 kV Cubicle in 38 kV Station	€77,710	€201,030	€267,670	+244%		
37	38 kV Cubicle in 110 kV Station	€101,140	€236,930	€309,290	+206%		
38	MV Cubicle in 110 kV or 38 kV Station	€123,970	€209,450	€212,900	+72%	**€92,166**	**-56%**

For each of the charges 35 – 38 major increases are proposed. The percentage increases presented in the table do not include the civil pass-through costs for which the existing estimates are a significant percentage of the existing charges. Therefore, the actual proposed increase is much greater than initially evident. ESBN must present the real increases by including for civil works before CRU can accurately compare the proposed increases in these GSCs.

CRU must view these increases in terms of overall impact to project connection costs. These charges are required by all tail fed connections and cannot be avoided. The 38kV cubicle costs are to be more than doubled due to an "oversight" by ESBN regarding MV vs 38kV costs. This explanation does not provide sufficient rationale for the scale of the proposed increase.

The fact that a further 72% increase is proposed for the MV cubicle cost is particularly difficult to accept given the huge increases the CRU have recently approved for this item. As per the proposed MV transformer charges, the huge increase in the charge here will have a disproportionate impact on small-scale and community renewable projects aiming to connect to local substations at 10kV or 20kV. See Appendix 2 for a comparison of how a typical sub 4 MW project located 1 km from an MV busbar could increase if these charges are adopted.

That the CRU are minded to accept this proposed increase in cost simply because it is in line with other cost increases is not a reasonable justification and more scrutiny of these proposals is required.

6.6. Metering Standard Charges

Metering		**Current**	**2018 Proposed**	**2020 Proposed**	**% Increase**
41	38 kV Meter and Power Quality	€58,550	€57,460	€55,930	-4%
42	MV Metering and Power Quality < 10 MVA	€29,280	€28,660	€27,090	-7%

43	MV Metering and Power Quality < 10 MVA (where MV CB is being charged as part of EGIP installation, no need for KKK)	€11,540	€21,200	€20,770	**+80%**
44	MV Metering and Power Quality >= 10 MVA	€36,610	€30,810	€28,760	-21%

6.7. Communication and Protection Standard Charges

Communications/Protection

	Current	**Current**	**2018 Proposed**	**2020 Proposed**	**% Increase**
46	Protection Implementation for MV Connections with MEC < 2 MW	€15,730	€35,890	**€41,220**	**+62%**
47	SCADA and Protection Implementation for MV Connections with MEC >= 2 MW	€17,190	€49,770	**€60,150**	**+250%**
49	Embedded Generation Interface Protection (EGIP) for an MV Connection (where NULEC option is LCTA)	€70,080	€65,850	€53,520	-24%
50	Embedded Generation Interface Protection (EGIP) for an MV Connection (where NULEC option is not LCTA)	€124,620	€90,720	€218,210	**+75%**
51	Embedded Generation Interface Protection (EGIP) for a 38 kV Connection	€46,130	€37,050	€86,530	**+88%**
52	Embedded Generation Interface Protection (EGIP) for a 110 kV Connection	€62,450	€59,290	€93,820	**+50%**

The proposes increases in the unavoidable scada, protection, metering and communications costs will have a disproportionate impact on small scale projects for which these costs make up a greater share of the overall works.

Scada, protection, metering and communications are all areas where technology improvements can have a major impact on costs. It is disappointing that ESBN have not been able to design lower cost solutions than those specified in 2007. We believe ESBN should be incentivised to design lower cost solutions.

6.8. 38kV Customer Compound (at generator site) Standard Charges

		Current	2018 Proposed	2020 proposed	% Difference 2020 v Current	Industry Average	% Difference - 2020 proposed v Industry average
53	ESBN Compound with Over-the-Fence Connection to Developer – Overhead Connection	€322,360	€497,110	€558,780	**+73%**		
534	ESBN Compound with Over-the-Fence Connection to Developer – Underground Connection	€326,200	€522,580	€595,600	**+83%**	€280,485	**-52%**

The costs here are most likely to be carried directly by connecting generators and unlikely to be carried out by ESBN. The huge difference in cost is alarming however and is another reflection of how far removed from industry costs some of the proposed charges are. We believe ESBN are unlikely to have had significant experience of delivering these works in past 5 years so the 83% charge is not justifiable.

We note that the specification for the ESBN compound has increased in scope significantly since 2007. 38kV tail fed stations were much smaller and do not even require a 38kV circuit breaker. All of these stations are still in safe and effective working order.

7. Appendix 2 – Comparison of DSO Connected Renewables in the UK

In this section our members have provided an analysis of UK non-contestable costs for different DNOs on £/MW basis. We then compare these UK costs against costs in Ireland for a sample of MV projects.

Section 1: UK non-contestables on a cost per MW basis

Connection voltage	Markets	No. of projects	Average project size	Average cost per MW for non-contestables	Euro equivalent
11kV	England & NI	3	6.3MW	£69,928	€78,572

33kV	England, Wales & Scotland	11	11MW	£14,974	€16,830
66kV	England & Wales	2	33MW	£18,161	€20,414
132kV	England, Wales & Scotland	15	42MW	£43,352	€48,729

Four DNOs

- SP Energy Networks
- WPD
- Electricity North West
- Northern Powergrid

Section 2: UK vs IE non-contestables on a cost per MW basis

IE vs UK cost comparison

	IE Avg. NC cost per MW 2016	IE Avg. NC cost per MW 2018	IE Avg. NC cost per MW 2020 proposed GSC
Per MW charges	€90,000	€114,000	€152,000
Cost difference over UK 11kV	+€11,428	+€35,428	+€73,428

Section 2 provides a cost comparison from a sample of 10 recently contracted 4MW projects using current charges, 2018 proposed and 2020 proposed charges.

These projects do not include for any MV connected project which triggers transformer works.

For a small-scale project which does trigger transformer works, the cost will increase by more ~100k

Impact of 2020 MV:38kV transformer GSC

Sample 4MW solar project:

1. Drives a 5MVA transformer upgrade. Cost for upgrade is €412k with current GSCs. This is already more than €100k/MW before the rest of the non-contestable costs are included. Proposed solution is to increase project size to 10MW. 10MW transformer is €456k or €46k/MW. When added to the other non-contestables project is still ok.

2. It is now proposed to increase the 5MVA transformer to €786k in the 2020 GSCs. This is almost €200k/MW **before the rest of the non-contestable costs are included**. Proposed solution of increasing to 10MW project no longer works because it is proposed to increase the 10MW transformer from €456k to €867k meaning the project is at €87k/MW **before the rest of the non-contestable costs are included**.

3. The only solution to realise the project is to increase the RESS bid price. Roughly speaking, increasing a 4MW solar projects non-contestable grid cost from €100k/MW to €200k/MW adds **€10/MWh** to the RESS bid price.