



Highlands and Islands Enterprise
Iomairt na Gàidhealtachd 's nan Eilean

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To whom it may concern

HIE Response: Ofgem's Access and Forward-looking Charges Significant Code Review Consultation on Minded to Positions

Highlands and Islands Enterprise (HIE) is the Scottish Government's economic and community development agency for the North and West of Scotland, from Shetland to Argyll and the Outer Hebrides to Moray. In line with the Enterprise and Skills Strategic Board and the Scottish Government, HIE has set out a clear vision for sustainable and inclusive economic growth in every part of the Highlands and Islands.

HIE has worked with a number of local authorities (Shetland Islands Council, Orkney Islands Council, Comhairle nan Eilean Siar, Highland Council and Argyll & Bute Council) and Scottish Government in the preparation of this response. We would like Ofgem to consider this response as jointly representing all of our views. This will be in addition to a number of those included submitting individual responses, such as the strength of feeling.

The low carbon economy and renewables sector already contribute significantly to the region and represent a major economic, social and industrial opportunity. Our oil and gas industry will continue to play a key role in supplying energy but will also afford the skills and expertise to support our transition to a highly productive, low carbon future. HIE is committed to building on the region's international reputation for excellence in energy and low carbon, and to forging collaborative partnerships to further strengthen the industry and our position in it.

From early advances in local energy systems on our islands and marine energy technology development and deployment, through to large-scale industrial developments supporting offshore wind, subsea engineering and ultra-deepwater capabilities for decommissioning, the whole region is exceptionally well-placed to capitalise upon the UK and Scottish Governments' commitments to move to a lower carbon, decentralised and locally based energy system.

The proposals that you are minded to implement as outlined in this consultation give us very real cause for concern over their cumulative impact on the development of the abundant renewable resources in Scotland, and more particularly the Highlands and Islands, relative to

those in the rest of Great Britain, and the consequential impact on energy bills for consumers in Scotland.

Strategic development of renewable energy in Scotland

The Highlands and Islands of Scotland possess some of the most productive renewable energy resources in the United Kingdom.

We have, over the course of the last two decades, expressed our concerns over the impact of charging reform on the development of renewable resources in the Highland and Islands of Scotland and would like to discuss with Ofgem, the Department of Business, Energy and Industrial Strategy (BEIS) and the Scottish Government (SG) how Ofgem's approach to cost reflective charging for GB as a whole impacts on the wider strategic development of renewable resources.

The growth in installed renewable capacity¹ in England has been over 3 times that in Scotland between 2010 and 2019 (the period which has seen concerted support for renewable development). Scotland has seen ongoing growth in onshore wind (6GW since 2010) whilst England has seen significant growth in PV (11GW) and Offshore Wind (7GW). In Scotland PV and offshore wind growth has only seen 1GW of installed capacity.

Ofgem has supported FES scenarios² that envisage increases in onshore wind, predominantly in Scotland, and the development of the East Coast interconnector proposals to support capacity growth in Scotland, yet these TNUoS proposals act strongly contrary to this. It is also unclear to us that these are properly reflected in Ofgem's impact assessment. CEPA-TNEI note that their impact assessment³ uses a highly simplified model of the transmission system (CEPA report 3.1, page 11 and Table 3.1 p17) and note that the impact assessment only considers a simplistic representation of the transmission network and constraint costs. It makes no account on the impact of the development of a resilient geospatial distribution of renewable resources, leaving it to other mechanisms to address considerably problematic transmission charging.

Ofgem's impact assessment⁴ identifies that additional support requirements would be needed to meet the generation development envisaged in the FES scenarios. The least-cost development of a low carbon economy can only be achieved through a coherent set of charges and investment support mechanisms. Piecemeal development, however well-intentioned, leaves investors uncertain as to how wider strategic priorities are to be achieved. We do not see how Ofgem can implement these proposals outside of such a framework.

If implemented as outlined, these proposals will further restrict the development of the rich renewable resources in Scotland without changes to other support mechanisms and are clearly not supportive of the coherent development of renewable energy across Great Britain, or indeed the 'levelling up' agenda of the UK Government.

Small-scale local generation

We are particularly concerned about the impact of implementing the proposals for charging of Transmission Network Use of System (TNUoS) to small generators on the many local embedded generators that serve their communities and the prospects that these proposals have for their ongoing viability and future repowering at the end of their design life. These

¹https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/920658/Regional_renewables_2003-2019_-_installed_capacity_MW.xls

² <https://www.nationalgrideso.com/future-energy/future-energy-scenarios/fes-2021>

³ <https://www.ofgem.gov.uk/sites/default/files/2021-06/%283%29%20CEPA-TNEI%20Report%20-%20Quantitative%20Analysis%20of%20Access%20SCR%20Options%20%281%29.pdf>

⁴ <https://www.ofgem.gov.uk/sites/default/files/2021-06/%282%29%20Ofgem%20Access%20SCR%20-%20Impact%20Assessments.pdf>

schemes provide not only energy, but wider socio-economic benefit to the communities they serve.

Ofgem's proposals will serve only to reinforce incentives to connect embedded generation in England whilst making it untenable for small generation in Scotland to operate at peak demand.

Ofgem's assessment of the impact on rural consumers makes no regional distinction, despite the clear indication of the impact of these proposals on rural Scottish communities.

In the separate proposals to amend demand residual charges, Ofgem has seen fit to propose limiting any form of locational demand charges to avoid incentives to consume at peak times. These proposals now seem to introduce charges that make small generation in the same areas unviable (the CEPA-TNEI report indicates charges of NPV charges of £369/kW for onshore wind – equivalent to £23,000 per MW/yr additional costs in today's prices). This is without further reforms to DUoS which, in our understanding, could see additional generation charges replacing some connection charges. We have provided examples of the impact on island generation in our detailed responses to the questions below.

We are greatly concerned about the combined impact on rural Highlands and Islands communities. To properly discharge their duties to assess the impact on rural communities, Ofgem must undertake a combined impact assessment of their charging reforms on the Highland and Islands communities within Zones 1 and 2 of the transmission networks.

Our initial inspection of the embedded generation register in the SSE networks area (a simple proxy for the Highlands and Islands) reveals 380 generators connected to the distribution network with capacity greater than 1MW, of which only 43 are greater than 10MW (most if not all of which have TEC capacity agreements). Ofgem's proposals imply that these many small generators that support their local communities will have to pay towards transmission networks designed to support energy transfer to demand centres in southern England, whilst their counterparts in most of England will receive further payments for from TNUoS.

We have highlighted in our response to the specific questions on TNUoS charging (see 5b) how most of the larger generation in the Highlands and Islands already have TEC agreements; a strong contrast to the PV developments in England. Given that there are concerns high levels of solar PV are already leading to other renewables being constrained off, Ofgem's proposals seem to promote further development of these at the expense of onshore wind in Scotland.

We are also concerned that Ofgem propose to retain the potential for transmission connection charges to be levied which, should that generation connect to the transmission network under connect and manage, would not be levied (3.32). This seems to introduce a new distortion rather than creating a consistent framework for connection of generation.

Whilst we understand the principle of generators paying costs reflective of accessing transmission networks that enable them to sell energy to remote markets, it is increasingly apparent that treating the GB market as a single entity is no longer producing outcomes that are coherent in the Highlands and Islands. This is an area of outstanding natural resource from which we can reasonably expect much of the generation to support delivery of net zero.

The impact of this proposal would be devastating to many communities across the north of Scotland and its islands and does absolutely nothing to support the 'levelling up' agenda of UK Government, in fact, quite the reverse. Ofgem could potentially address some of these concerns with a higher threshold (e.g. 10MW).

Hybrid renewables and Islands

Our concerns also apply to the development of hybrid renewables using the transmission system in the Highlands and Islands, which would be greatly adversely affected if Ofgem's proposals are implemented.

HIE believes that co-location of storage/flexibility of various forms, including green hydrogen, can help achieve balance at the point of grid connection. Hybrid renewables, in a more holistic sense, represents a way of achieving a degree of self-balance, using nature, given the negative correlation of wind and solar energy, which may be augmented by storage. HIE believes that hybrid renewables should be supported on mainland settings, and in particular on remote island settings as part of solutions to enable a legacy of net zero for generations to come. We specifically value the potential multi-purpose contribution green hydrogen production from renewables can make to the electricity sector and to decarbonise heat and transport. This is particularly true in remote island settings across the Highlands and Islands region. We would support trials of shared access arrangement in these areas.

We are concerned that these proposals will irreparably adversely affect small generation that support jobs, local communities and crucially, provides resilience across the Highlands and Islands. Ofgem held the issue of access costs to the Shetland link, but this provides a good example of the potential illogical impacts of Ofgem's proposals.

Consider the example of an existing 4.5MW wind farm in Shetland, which currently supports demand on its isolated island network alongside the main power station. Once Shetland is connected to the transmission system it would, under Ofgem's proposals, become liable for a TNUoS charge calculated on the premise of net exports from Scotland driven by offshore developments, when clearly it was not built with this in mind. It is even subject to local distribution active network management (ANM) constraints. A similar logical assessment can be applied to many of the island generators. It seems illogical to levy transmission charges based on export to England on such generators. It is also not clear in Ofgem's proposals how ANM impacts and flexible access rights for small distributed generation (SDG) would be addressed in capacity-based TNUoS charges.

Robustness of the Impact Assessment

We are concerned that the resulting positive cost Ofgem are relying on is not sufficiently robust to proceed with the proposals as they stand given the impact to generation in Scotland.

CEPA-TNEI note in their commentary on Figure 5.13 that the main benefits to consumers (labelled as 'under/over recovery of TNUoS') are linked to modelling limitations and note in 5.2.3 of the impact assessment that these would not necessarily occur in practice. Without these assumed benefits of £700m, there would no longer be a positive cost benefit. It is not clear that Ofgem should place too high a weight on the modelled consumer benefits as CEPA-TNEI note "results should be interpreted carefully and alongside supplementary analysis".

CEPA-TNEI also note that their estimate of additional Renewable Energy Sources (RES) support of £329m reflects the risk that these proposals pose to the development of the expected development of renewables, almost all of the impact being to the development of renewables in Scotland.

If Ofgem support the further development of renewable resources in Scotland and allow further interconnection to be developed to support this, then the savings shown in the cost benefit modelling, which reflect reduced investment in the transmission system and the location of generation to England would not evidently flow to customers.

In Summary

We strongly believe that existing Transmission Network charges need to be fundamentally reviewed to be compatible with Net Zero and are minded to ask that Ofgem delay implementation.

Renewable generation in Scotland is some of the most productive in the UK and a geographically diverse fleet clearly has resilience benefits.

Transmission access charges are a key signal and affect the competitiveness of bids into other support mechanisms, such as the Contracts for Difference (CfD) scheme. Without wider consideration of these issues in the balance of charges and support mechanisms, further disproportionate increases in access tariffs in Scotland will make generation uncompetitive and will fail to provide the necessary resources to provide the UK with an efficient reliable supply of renewable energy.

The development approach to TNUoS is increasing the differential between the North of Scotland and southern England over time. We recognise that TNUoS aims to send signals about the economic development of the transmission network, but the current framework would appear to continue to increase the differential. TNUoS recovers a fixed amount of revenue through the RIIO price control framework split between a fixed residual and forward looking charges. This implies that payments to some generators must be offset by payments from other generators. We are concerned that this approach developed for England and Wales⁵ is leading to ever increasing payments to embedded generators in England, being paid for by generators in Scotland and is no longer fit for purpose.

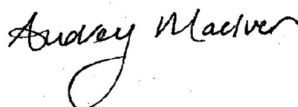
Ongoing reviews of elements of the overall price signals are creating uncertainty that is undermining investment appetite. There is a real risk that this evolutionary approach fails to provide sufficient long-term certainty for investment in delivering the UK's net zero ambitions.

We have significant reservations about the implementation of these proposals. Ofgem should, as a minimum, consider the two approaches below if they proceed, until these issues are fully understood and resolved:

- Applying TNUoS charges only to larger embedded generation that are clearly exporting to the wider GB market. This would reduce the number of generators TNUoS applies to. We note that in SHETLs area all generators above 10MW appear to have TEC arrangements already and would minimise implementation issues;
- Grandfathering existing arrangements for smaller generators to prevent closure of existing generation.

Our comments and responses to the specific questions can be found below. HIE would be keen to engage further to help develop an approach and would be happy to discuss our concerns in more detail.

Yours sincerely



Audrey MacIver
Director of Energy and Net Zero

⁵ <https://www.ssen-transmission.co.uk/media/5261/ssen-transmission-tnuos-paper-february-2021.pdf> p13

Specific Question Responses

Section 3 Distribution Connection charging boundary

Question 3a: Do you agree with our proposals to remove the contribution to reinforcement for demand connections and reduce it for generation? Do you think there are any arguments for going further for generation under the current DUoS arrangements? Please explain why.

We are generally supportive of improvements that support infrastructure development to support the deployment of low carbon technologies, hopefully more quickly in line with net zero ambitions and targets.

Question 3b: What evidence do you have on the effectiveness of the current connection charging arrangements in being able to send a signal to users and what do you think will be connections?

No response.

Question 3c: What are your views on the effectiveness of the current arrangements in facilitating the efficient development the effect of our proposed changes? How does this vary between demand and generation and investment in distribution networks? How might this change under our proposals where network companies are required to fund more of this work?

The current arrangements where network operators recover most if not all costs through connection charges do not encourage investment ahead of need that would reduce connection revenues. The revised arrangements may encourage a more proactive approach to managing local issues using novel arrangements, but the 'DSO' must be required to have appropriate mechanisms to encourage these rather than investing in network first as an easy option.

Question 3d: Do you agree whether the need to provide connection customers with certainty of price reduces the potential for capacity to be provided through other means such as flexibility procurement? How might this change under our proposals?

Providing certainty over connection costs, costs of ongoing UoS and clear access rights helps investment.

DNOs are incentivised to reduce DUoS using novel flexibility arrangements or potentially compensating for constrained access (beyond that embodied in a connection agreement). Those that wish to act flexibly to support the system should be appropriately compensated (both as turn down and turn up / demand shifting).

Ofgem note (3.22) that in the absence of DUoS reform means generators may not face correct price signals as they receive DUoS credits, at the same time as TNUoS charges. This is another example of piecemeal change where investors are looking for a coherent, consistent and enduring framework to be put in place across transmission and distribution. SSEN have recently published a paper⁶ highlighting the issues associated with uncertainty and volatility of transmission costs in Scotland.

We feel strongly that this SCR represents another missed opportunity to develop a long term coherent framework to support Net Zero.

⁶ <https://www.ssen-transmission.co.uk/media/5261/ssen-transmission-tnuos-paper-february-2021.pdf>

Question 3e: What are your views on whether we should retain the High Cost Cap? Is there a case for reviewing its interaction with the voltage rule if customers no longer contribute to reinforcement at the voltage level above the point of connection?

The High Costs Cap (HCC) reflected high reinforcement costs for shared assets that otherwise would not be reflected to connecting generators. The proposed arrangements offer alternative solutions including DUoS charges, flexible access arrangements (often used already to avoid high reinforcement costs) and the constraint payments until such a time as reinforcement is necessary. The HCC could be maintained and its use (or lack of) reviewed at a later date.

Question 3f: What are your views on the recovery of the costs associated with transmission that are triggered by a distribution connection? Does this need to be considered alongside wider charging reforms or could a change be made independently?

A coherent and consistent approach is needed. It is not clear how Ofgem can support the implementation of TNUoS costs without a consistent access charging regime being fair to connecting customers.

Question 3g: What are your views on the likelihood of inefficient investment under our proposals (e.g., an increase in project cancellations after some investment has been made)? What are the arguments for and against further considering introducing liabilities and securities to mitigate this risk?

With significant demand growth being projected due to the growth of the EV market and low carbon electric heating replacing gas (mains or bottled) and oil, we agree with Ofgem's assessment that the risk of stranded assets being developed solely due to connection projects not progressing is low, especially when combined with the other DNO incentives to invest efficiently.

Question 3h: What are your views on whether the interactions between our connection reforms and the ECCRs must be resolved before we are able to implement our proposed reforms? How do you factor in the effects of the ECCRs (if at all) into decision making, given the levels of uncertainty around subsequent connectee(s)? What suggestions do you have to make our policy and the ECCRs work together most efficiently?

It is not clear that any changes are needed to the second comer provisions in the ECCRs relating to sole use assets funded by the connectee. These were developed to address strategic demand and generation investments where assets were not able to be funded through DUoS or TNUoS and we consider this requirement likely to continue, unless an alternative, more appropriate approach is found.

Section 4 Access Rights

Question 4a: Do you agree with our proposal to introduce better defined non-firm access choices at distribution? Do you have comments on their proposed design?

We support Ofgem in making non-firm access options a regular feature of network connections. Developers should have a consistent set of options now that these arrangements are becoming commonplace.

Question 4b: Do you agree with our proposal to introduce new time-profiled access choices at distribution? Do you have any comments on their proposed design?

We support more flexible access arrangements including time profiled access.

Question 4c: Can you identify any benefits to shared access rights that we have not considered, which could impact likely take-up?

There may be local considerations for situations such as hybrid renewables and storage, particularly in island settings, where shared or coordinated access rights could help lower overall costs of the local system or provide other benefits such as increased resilience. Local flexibility markets could help enable this in specific locations where it is demonstrably of benefit if a general framework too complex. Ofgem's decision should not inhibit such innovations.

Question 4d: Do you have any comment on our proposed choice about how to reflect access rights in charges (i.e. connection and/or distribution use of system charges)?

It is logical that access rights are defined at the time of connection.

If reinforcement is required at higher voltages than the point of connection (the most likely driver for the application of HCC today in our understanding) then it would be logical for the DNO to offer non-firm access under these proposals.

Without clarity on future distribution charging and potential cost/constraint signals, these proposals still leave some ambiguity for developers.

It is not clear how constrained access integrates with small generator TNUoS, for example should TNUoS – if paid - only be on the constrained capacity, whereas our understanding is that it is paid on the installed capacity. The TNUoS approach works with the financially firm access rights used in Transmission, so further consideration is clearly needed here before implementing charges on generation deeply embedded in distribution networks, especially where it is unclear from load flows that the generation is exporting.

Question 4e: Do you have any comment on our proposal to not prioritise the introduction of new transmission access choices as part of this Significant Code Review?

Our only concern is that access rights reflect any changes in TNUoS charging.

If a small generator is connected to a distribution network such that there is never export from the local network to the wider system, Ofgem should consider whether there are any access rights in place and whether transmission charges as proposed are appropriate.

Ofgem's impact assessment considers that all generators of a given type access the transmission network equally in each zone by representing them as a single entity (CEPA Access SCR Impact Assessment Modelling Methodology section 2.5). In reality this may not be the case and some generation may net off local demand and therefore not make use of the wider transmission network (only reflected in reinforcement costs). The example of this is that only 47 of the 380 generators on SHEPDs embedded capacity register have TEC agreements.

Question 4f: Do you have views on how access rights should be standardised across DNOs?

It would seem obvious to define access rights in a half hourly manner alongside tariffs and flexibility service windows, thereby aligning charging, markets and access rights.

Question 4g: Do you have any views on our proposed timescale of 1 April 2023 implementation?

No response.

Section 5 Transmission Charging for SDG

Question 5a: Do you have any evidence that SDG does not contribute to flows in the same way as large generation and, therefore, should not be charged on a consistent basis?

The embedded capacity register for SHEPD identifies 380 generators with connection capacity of 1MVA or greater. Only 47 of these have export capacities of 10MVA or greater. It is unlikely that all 380 of these generators were developed to export energy to the load centres of the GB system in England, that the transmission charges essentially reflect.

Ofgem's model that represents generation as a single entity in each zone is a significant simplification of the real power flow modelling. It is far from clear that a small generator in the Western Isles should pay for export capacity development from Scotland to England, which is what higher TNUoS charges on generators in Scotland represent.

An interesting example of this would be existing 4.5MW wind farm in Shetland, which currently supports demand on an isolated network. Once Shetland is connected to the transmission system it would become liable for a TNUoS charge calculated on the premise of net exports from Scotland when clearly it was not developed with this in mind and is even subject to local active network management constraints.

If this affects its ongoing viability, then this generation may not be available as a resource should the transmission link be unavailable. Similar circumstances will apply on other islands around Scotland where local generation also provide local support should there be transmission network issues.

In Orkney the proposed new TNUoS charge for the existing 4.5MW Hammars Hill wind farm for example would be a fixed annual capacity charge of £183,825 p.a. irrespective of how much the site generates each year. Currently this distribution connected site is charged GDUoS (Generation Distribution Use of system charges) of circa £6,000 p.a. GDUoS grid charges are based on actual generation).

It is not evident that small generators should be charged for use of system of the GB transmission system in the same way as generation explicitly developed for export to England and discriminates against development of generation in the Highlands.

Question 5b: Do you agree with our threshold for applying TNUoS generation charges of 1MW? If not, what would be a better threshold and why?

We believe these charges would be harmful to small generation in Scotland and result in a disproportionate (negative) local economic impact Ofgem have not considered. This is unlikely to be able to be addressed through other means and we strongly believe should not be implemented as proposed.

Ofgem should consider thresholds no lower than 10MW, as discussed above, evidenced by existing generation in Scotland that has need of access to transmission; it should be clear that the threshold represents generation that intends to export rather than serve local communities.

We note that in the GB TEC Register (5th August):

- NGET has 68 registered embedded generators, 5 of which are onshore wind, 4 hydro, 7 biomass and the remaining being thermal or gas turbines
- SPET has 21 registered embedded generators, 17 of which are onshore wind, 1 biomass and two being thermal or gas turbines

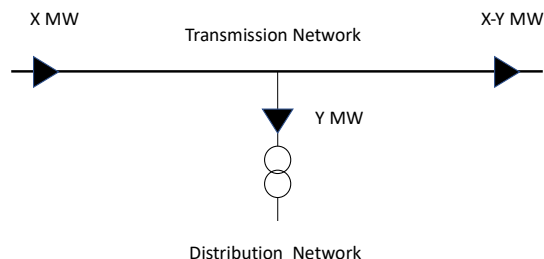
- SHET has 48 registered embedded generators, 30 of which are onshore wind, 9 hydro, 1 biomass and only one thermal waste power station. This correlates well with SHEPD's embedded register that shows 47 generators over 10MW.
- 4150MW of generation was less than 100 MW, of which 2000MW is onshore wind, 333MW is hydro, 640MW being gas turbines and 500MW of Energy Storage; there is only one 25MW PV array accessing SHET.

It is clear from this that the larger embedded generation not registered for TEC and therefore not subject to TNUoS is largely in England and Wales.

We believe further work is needed by Ofgem to justify any lower threshold than 10MW, which would bring England and Wales into line with what has emerged in practice in Scotland.

Question 5c: Do you have any evidence that distribution connected generation at a grid supply point has a different impact than directly connected generation?

Consider a transmission / distribution site arrangement as shown below where there are flows of energy through the transmission network. Transmission charges reflect the costs of enabling this flow through the system.



Generation connected to the distribution network affects the net flow in the transmission network. Increases in distribution generation will reduce the value of the distribution demand Y , appearing to increase exports ($X-Y$ increases).

If there was no other generation or export flow ($X=0$) then there would be no export if the net demand on the distribution site Y remains positive.

If generation is connected to the distribution network that causes Y to become negative, then it may be reasonable to expect the generator(s) using the export capacity to pay transmission network use of system charges.

The aim of this simplistic example is to illustrate that TNUoS should only be levied on generators that intended to use the transmission system. We noted above there are only 48 embedded generators in SHETL with registered Transmission Export Capacity and only two of these are less than 10MW. We have already noted that there are 380 generators listed on SHEPD's generation register that would appear to be captured by Ofgem's proposals. We clearly believe this simply illustrates that Ofgem's proposals are not appropriate for Scotland and must be reconsidered.

Question 5d: Do you have a preference for one of our options for addressing the local charging distortion? If so, please indicate which option and provide your reasons. Are there any options we have missed?

It would seem that the fairest approach would be to levy transmission charges where generators have transmission access rights, but where a generator is not exporting through

the GSP it is not logical that it should pay use of system charges (essentially paying for access rights).

Question 5e: Do you support our position that we should consider transitional arrangements? If so, do you have a preferred option and evidence to support the benefits or risks associated with each option?

CEPA-TNEI note in their commentary on Figure 5.13 that the main benefits to consumers (labelled as under recovery of TNUoS) are linked to modelling limitations and note in 5.3.2 that these would not necessarily occur in practice. Without these assumed benefits of £700m, there would no longer be a positive cost benefit. It is not clear that Ofgem should place too high a weight on the modelled consumer benefits as CEPA-TNEI note “results should be interpreted carefully and alongside supplementary analysis”.

CEPA-TNEI note that their estimate of additional RES support of £329m reflects the risk that these proposals pose to the development of the expected development of renewables.

SSEN have published⁷ their analysis of the issues facing transmission, where costs are stable but charges in Scotland are increasing.

We are concerned that the resulting positive cost Ofgem are relying on not sufficiently robust to proceed with the proposals as they stand given the impact to generation in Scotland.

We are minded therefore to support either a delay until a more coherent scheme of charging is developed or grandfathering of existing arrangements. Ofgem must, as a minimum, consider the two approaches below if they proceed until these issues are fully understood and resolved:

- Applying TNUoS charges only to larger embedded generation that are clearly exporting to the wider GB market. This would reduce the number of generators TNUoS applies to. We note that in SHETLs area all generators above 10MW appear to have TEC arrangements already and would minimise implementation issues.
- Grandfathering existing arrangements for smaller generators

We are very concerned about the long-term impact on the development of local renewable resources crucial to decarbonisation in the Highlands and Islands and repowering of existing generation. Initial feedback from our stakeholders is that these proposals are very likely to make repowering unviable.

Ofgem’s assessment of the impact on rural consumers makes no regional distinction, despite the clear indication of the impact of these proposals on rural Scottish communities. In the proposals to amend demand residual charges, Ofgem has seen fit to propose limiting any form of locational demand charges to avoid incentives to consume at peak time. These proposals now seem to introduce charges that make generation in the same areas unviable (the CEPA-TNEI report indicates charges of NPV charges of £369/kW for onshore wind – equivalent to £23,000 per MW/yr additional costs in today’s prices). This is without further reforms to DUoS which to our understanding could see additional generation charges replacing some connection charges.

Ofgem must consider the overall impact on the rural Highlands and Islands before implementing these proposals.

Question 5f: Have we identified all the options for administering TNUoS generation charges for SDG? If not, what options have we missed, and why would they be

⁷ <https://www.ssen-transmission.co.uk/media/5261/ssen-transmission-tnuos-paper-february-2021.pdf>

preferable to those we have identified? Can you provide any evidence regarding the implications of the different administrative options for your business?

As noted above in SHETL's area, 48 out of 380 embedded generators >1MVA have TEC agreements, ranging from 4MW upwards. This appears to include all generation above 10MW and as noted in our response to 5b, this may represent a better, more proportional threshold and Ofgem should undertake further work to refine their threshold analysis. If all 380 generators are to require TEC registration agreements and pay TNUoS, we question whether Ofgem's proposed threshold is proportionate.

Question 5g: Are there any specific issues you think we need to consider, as part of our work on the future role of network charges? Why are these important to consider?

We believe that network charges in Scotland are having a significant impact on regional development. Ofgem's and the ESO's models are based on an outdated system developed to meet the needs of the main demand centres in central and southern England. It is not at all clear that this model is appropriate for the Highlands and Islands where development to meet local needs and national needs may require separate price signals, giving different signals to generators seeking access to different layers of infrastructure.

We are particularly concerned about the impact of implementing the proposals for charging of Transmission Network Use of System (TNUoS) to small generators on the many small local embedded generators that serve their local communities and the prospects that these proposals have for their ongoing viability and future repowering at the end of their design life. These schemes provide not only energy but wider socio-economic benefit to the communities they serve.

Access charges to export through DC links or through the 400kV network to England may justify differential charges. We recognise that this may also require market reform and we urge Ofgem to consider developing a more structured approach.

Renewable generation in Scotland is some of the most productive in the UK and a geographically diverse fleet clearly has resilience benefits. Transmission access charges are a key signal and affect the competitiveness of bids into other support mechanisms. Without wider consideration of these issues in the balance of charges and support mechanisms, further disproportionate increases in access tariffs in Scotland will make generation uncompetitive and will fail to provide the necessary resources to provide the UK with an efficient reliable supply of renewable energy.

We are concerned the models being used increasingly reward generation close to the load centres and appear to support these payments with increased charges to Scottish network users. We noted similar concerns in the demand charges consultation.

It is also not clear in Ofgem's proposals how distribution ANM impacts and flexible access rights for SDG would be addressed in capacity based TNUoS charges.