

COMMENTS ON RIIO-2 DRAFT DETERMINATIONS

RESPONSE FROM THE UNIVERSITY OF MANCHESTER DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

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4/9/2020

General

This response is mainly but not exclusively confined to the aspects of the draft determination that impact the relationship between the Electricity Network Companies and the university sector. This relationship is critical to ongoing research which benefits consumers through reduced costs. It also has the very important indirect benefits of retaining knowledge, expertise, training capability and the capacity to innovate in both the companies and the Universities.

The background and the need to retain the NIA was set out in the response to the RIIO 2 consultation document submitted in March 2019. Those arguments are not repeated in full in this response but remain valid. The retention of the NIA mechanism and the introduction of SIF is welcomed and should go some way to achieving the innovation goals, but there are some considerations set out that it is believed could enhance value to consumers and the long-term health of the industry in the United Kingdom.

Comments on the RIIO-2 draft determination core document

Net Zero

The key objectives on Net Zero and network innovation are good and welcome, however there is concern that the overall level of funding proposed in the draft determination is not sufficient to ensure that these objectives can be met. Uncertainty mechanisms appear to be intended to fill the gap, but the very uncertainty they introduce, both to the commitment to enabling Net Zero and to the longer term resilience of the network is unfortunate.

Q21: The objective of meeting Net Zero at lowest cost to consumers is of course what everyone wants. However it is not clear that the funding details allow for the ET companies to invest sufficiently and with the necessary confidence in the expenditure being allowable, to build and maintain the network required to be the backbone of the Net Zero transition. The continued separation of load related and non-load related expenditure tends to cause a piecemeal approach to new connections, network reinforcements and network replacements. A network fit for the future during this time of transition needs to integrate multiple connection projects, system replacements and upgrades. This may require more regulated company expenditure in the short term but will carry greater consumer benefits in terms of cost and more open access for cheaper new connections in the medium term. For example, the multiple long overland cable connections specific to individual offshore wind projects required to connect to the existing network that seem to be proliferating do not allow capacity for future connections and rapidly become an expensive option compared to the reinforcement/extension of the interconnected network. It seems that this situation arises because of a market distortion caused by the relative investment freedom enjoyed by the wind developers compared to the network companies. It would be good to see a commitment and reward for an integrated whole system

approach combining LR and NLR expenditure and allowing investment ahead of need. In principle, ESO involvement in the investment decisions should help to facilitate a coherent approach, but in practice only a few of the necessary reinforcements have been made and integration of system reinforcement and replacement seems not to happen.

Q22: Uncertainty mechanisms can only be effective if the risk and reward are attractive to investors. It is not clear that this is the case for the ET sector proposals and it is important that the national and urgent interest in having a network capable of supporting Net Zero are not lost in the desire to reduce network company returns. Unfortunately, it is a fundamental issue for privatised national infrastructure that fixed allowances do not control profits, but the alternative of very close regulatory supervision (shadow management) is inefficient. Uncertainty mechanisms can help with this issue, but not having the infrastructure built when it is needed will cause far greater economic losses especially in the context of the rapid developments expected in the next decade.

Q23: It is important that the Net Zero reopener mechanism is timely, efficient and provides an attractive (but not excessive) return on investment. It is hard to see how this can be achieved without micro-management by Ofgem. It seems vital that a re-opener mechanism initiation procedure is established that can be used by any legitimate stakeholder including organisations such as regional government, potential connectees, and possibly even policy groups as well as the network companies. The ET companies should be provided with an obligation (within reason) and sufficient allowance to cover the preparation of initial engineering/feasibility/impact studies in a timely manner with costs for presentation to Ofgem for determination. Such studies could involve input from external and academic institutions. This is similar to the proposal in the DD but with a shorter timescale due to the later involvement of Ofgem. A suitable reporting framework should make the process open and accountable.

Innovation

Innovation projects will only be funded directly by the network companies as BAU if the return is significant and reliable within the regulatory period. Unfortunately this rules out most University research funding which is generally aimed at higher risk, longer term, lower technology readiness level projects. To maintain the benefits of this interaction set out in the consultation response, a flexible and predictable NIA mechanism is required.

Q 24: Yes, the proposals for the SIF are good and at the correct level, it appears to have the required structure and flexibility to deliver significant customer benefits.

Q25: Universities should have a part to play in SIF projects and a collaborative approach to the identification of innovation challenges is vital. The involvement of a wider range of partners in SIF projects including academia is welcome. As stated in the DD, additional detail on the operation of the SIF is required and there is a willingness to work with Ofgem and the network companies to set up and make SIF a success. There is a concern that if the SIF can only be used if NIA is not appropriate, then collaborative projects involving multiple partners that could potentially fall under NIA but are more conveniently set up and funded from the SIF could be disadvantaged. Flexibility over the £5M minimum project cost is welcome and necessary if the criteria for Net Zero and vulnerable customers is rigidly applied to NIA funding.

Q26: Continuing NIA funding during RII0-2 at about the RII0-1 level is appropriate, but some flexibility to accommodate valuable work not foreseen in business plans would be very welcome.

Q27: A good reporting and dissemination framework is of course very important and this is clearly in the interests of the network companies. However to make all NIA funding contingent on Ofgem approval of the framework introduces a disproportionate uncertainty into the mechanism that could

adversely impact the setting up and starting of projects early in RIIO-2. Ofgem either needs to be flexible in its approach or very clear at an early stage about the criterion for acceptance of the framework. It must be borne in mind that the innovation teams and their suppliers will be very busy with closing existing schemes and starting new ones at the time the new reporting framework is to be established.

Q28: The proposal that all projects must focus on the energy system transition or addressing customer vulnerability to be eligible for NIA funding is far too narrow and will stifle work the asset management and technology of network equipment and the analysis and improvement of network resilience. In the past these areas have delivered large benefits for consumers, but the timescales are too long and the returns too uncertain for such projects to be funded as BAU. It is exactly these projects that foster close links with universities and provide training in the fundamental technologies. Clearly all work must ultimately aim to be in the consumer interest, and this would be the appropriate test for eligibility.

Strengthening the framework around NIA is not fundamental to its effective operation. A re-balancing of project funding from commercial companies introducing relatively established products towards lower TRL innovation from start-ups and academic institutions would be welcome. See also Q29.

Q29: The peer review process could be used to evaluate project proposals, however as in academia it would not be a perfect mechanism and could introduce delays and distortions. Having said that, an element of peer review particularly of single-company proposals could ensure wider benefits are at least envisaged for a given project. An element of review on completion helps to ensure funds are appropriately spent, but in themselves project closure reviews are not productive because they cannot change the outcome at that stage. For this reason, careful consideration should be given to the cost/benefit of introducing burdensome completion reviews. The involvement of third parties in NIA projects during the set-up and operation phases would however provide a valuable safeguard against projects which could otherwise provide single company commercial advantage and should be funded under BAU. It is proposed that as an incentive for collaboration between companies and with stakeholders, that collaborative and consortium based NIA funded projects could have less scrutiny than single company projects.

Q30: The proposal to allow carry over of RIIO-1 funds into RIIO-2 is welcome, but it only partly addresses the funding continuity issues introduced by the regulatory review cycle. Much of the most valuable low TRL research requires the use of specialist knowledge and facilities built up over significant periods at suppliers such as Universities. Where the knowledge is specific to networks and plant owned by regulated companies and is therefore maintained by them, the funding gaps have a significant effect and knowledge is lost that must be inefficiently reacquired for the next project. It would be inexpensive in the broad terms of the review to assure continuity of NIA funding across the RIIO-2 to RIIO-3 transition, and it would allow the typical 3-4 year projects at universities to be started after the first or second year of the RIIO-2 period. As it stands most or all of the RIIO-1 projects are due to finish on 31st March 2021, so no longer term projects have been started in the last few years and this has already had a negative impact on the sector.

Q31: Open access to data in general not just that generated by NIA and SIF funded projects is beneficial to the industry subject to the usual commercial and resilience considerations. The expectation that NIA and SIF funded projects will follow Data Best Practice is welcome, and it is to be hoped that some of the projects will be aimed at extending the understanding of the importance of data and data sharing.

Comments on RIIO-2 Draft Determinations – Electricity System Operator

ESOQ30: The effect of only allowing NIA funding for two years in the settlement will effectively prevent the starting of any research projects with the normal 3-4 year project plan at a time when they are particularly needed to solve the problems associated with the transition to renewables. The substitution of rotating plant with inverter connected equipment at the lowest cost in additional plant, constraints and technical requirements on generators will require long term study and continuing availability of expertise. At the very least, an interim 5 year funding proposal could be agreed as a continuation of the year 2 level (total £20.7M) with a separate consideration of the requested increase in funding for years 3-5.

ESOQ31: The proposal that ESO NIA funded projects should be collaborative is welcomed, however this should not rule out the targeted and limited use of consultancies or similar organisations to solve particular problems where appropriate.

Comments on RIIO-2 Draft Determinations – National Grid Electricity Transmission

NGETQ8: Rejection of the CVP proposal for the Deeside Innovation Centre is very likely to result in the loss of benefits from funds previously invested in this project. This would not be in the consumers' interest as the effective incremental return on RIIO-2 funding is very high given that the project is near to providing a significant research and innovation facility with industry wide benefits.

NGETQ12: The proposed cuts to the NGET NLR capex allowance appear to be beyond the level at which the network can be sustained in the long term. In particular the allowance of £58M for power transformers would allow for the replacement of perhaps 15 units over the RIIO-2 period. If this was sustained then the expected average lifetime of a transformer would have to be in excess of 200 years. A sustainable level of transformer replacement is in the 10-12 units per year range. Obviously there are timing flexibilities here, but the point remains that apparently consumers in RIIO-2 period will not be paying their fair share of long term network replacement costs. One possibility that could be considered is an ex-post mechanism for allowing replacement expenditure that was clearly justified based on the condition of the equipment removed.

NGETQ20: Given that NGET has been a significant supporter of some very effective research in the University sector since its foundation, it is good to see that at least a consistent level of NIA funding is proposed. Referring to the NGETQ8 response, an increase in NIA funding to cover projects for the Deeside Innovation Centre would avoid the wasting of previously invested funds. A modest increase in NIA for RIIO-2 would also be justified by the significant challenge posed by the transition to Net Zero.

Comments on RIIO-2 Draft Determinations – NARM Annex

These comments are specific to Electricity Transmission but do not fit easily into the particular questions. There are concerns that the whole approach to network reliability using NARMs is too complex and removed from the actual condition and importance of the assets. The approach to trading risks between asset types seems to underplay the need for all the assets and components in a particular circuit to work reliably in order for the circuit to be reliable, a chain is only as strong as its weakest link. It is extremely difficult to know the condition of an asset and its failure mechanisms in sufficient detail to be able to predict its reliability over the timescales involved. Condition data is very costly to acquire and in some cases the failure mechanisms operate over relatively short periods. The

effective timescales for the predictions of reliability required by the NARM approach are 8 years for a 5 year regulatory period to allow for the data collection, cleanse and preparation for the BP submission. This is a very significant time period compared to fault development times in

many assets. Given the large reductions in baseline allowances proposed in the DD it seems essential to have a mechanism to allow the complete range of network components to be replaced according to need arising in the RIIO-2 period in order to maintain network reliability. The ex-ante penalty only approach seems to rely on a quality of asset condition data and understanding of failure mechanisms that is not technically possible.

Comments on RIIO-2 Draft Determinations – Electricity Transmission Annex

ETQ13: The MSIP reopener appears to be a valuable tool in allowing necessary network investments in response to particular circumstances. The inclusion of Energy Data Task Force recommendations is particularly welcome.

ET shunt reactors: Although not specifically asked in a question, the UM related to shunt reactors is welcome as this is likely to be a very important investment required to allow Net Zero. As the size of a reactor and its capability is determined by many factors other than simple £/MVAR it is thought that the suite of volume driver rates is appropriate. Provision could be made for variable shunt reactors (a more flexible but more costly solution) where necessary. There should be a mechanism to ensure that the volume driver rate is actually sufficient to cover the costs and a reasonable return. The TOs cannot be expected to lose money on this necessary investment and an open book pass-through option could be included. The criteria for ESO requests for additional shunt reactor capacity should be to relieve voltage constraints as set out in the DD, but additionally where reactive capacity procured from generators by the ESO is more expensive than the same provision from the TO then either the TO or the ESO should be able to initiate the installation of new shunt reactor capacity.