

## Accelerated loss of mains programme – Record of Issues Raised

| Item | FAQ | Topic details  | Programme's Response   | Status | Date Closed  |
|------|-----|--|--|--------|--------------|
| 1    | T   | <p>I gather the intention (in round terms) is to turn off the LOM protection on sites which are inverter driven and where the G59 relay cannot be altered to RoCoF with a 500ms time delay</p> <p>Until about 2 years ago the PV market for discreet G59 relays was dominated by two products from a single manufacturer. I estimate at least 80% of sites in GB have this relay. My understanding is that these relays cannot be set to a time delayed RoCoF without reprogramming which entails opening up the relay.</p> <p>Are the network operators aware that this huge number of sites that potentially will have no LOM protection?</p> <p>Conversely, all these PV sites, and some WT sites which are converter/inverter driven, have their own G59 protection embedded in them, in most cases this being vector shift. Is this to be turned off as well? If so how and by whom? We are talking about many thousands of inverters.</p>  | <p>The Programme is grateful to the information that you have provided on this point.</p> <p>As far as the inverters are concerned, to the extent they have a recognizable LoM function that is set as RoCoF, it must conform too – ie must be set to the new RoCoF settings (and have any VS disabled). Initially we did not believe that many inverters actually have specific RoCoF or VS settings. We now know that many, but not all, inverters do have these settings.</p> <p>See also Q6 below.</p>   | Closed | 11 June 2019 |
| 2    | C   | <p>The payment process to the generation owner has been defined in great detail.</p> <p>There is no description of the process for how any consultant or contractor undertaking the work for the generation owner is to be recompensed.</p> <p>Contractors who have their names on the ENA's published list can be approached by any generation owner.</p> <p>Those contractors will generally have no commercial history with the generation owners to ensure payment. Because of the payment system laid down the contractor will be unable to withhold test documents etc until payment has been made by the owner since the procedure dictates that the owner will need to submit the documentation to the DNO before the owner receives payment.</p> <p>Since most of the contractors are self employed individuals this could present a serious problem to them.</p> <p>It could have made more sense for the DNOs to approach the installers or the maintenance contractor who are familiar with each site (and will involve a smaller number of contacts) to instigate the resetting. In most cases this will be required in any case to gain access etc</p> <p>Could installers/ maintenance contractors approach the DNO on their clients' behalf?</p> | <p>The responsibility for the generator protection rests solely with the owner. DNOs cannot do this work for the owners. If the owner chooses to use a consultant/contractor the commercial terms of that relationship are private to the generator owner and the contractor.</p> <p>We note that there is no reason why the generation owner cannot pay a contractor as soon as the work is done. The owner has the legal obligation to do the work whether the owner receives payment or not.</p> <p>The payment programme recognized the disincentive for owners to comply but it does not aim to cover all costs in all cases, and certainly has not been arranged to ensure that owners are not temporarily cash-flow negative; ie there is no reason why a contractor cannot agree with the owner to be paid before providing the necessary evidence of completion to the owner.</p> <p>The suggestion that consultant/contractors etc take the burden off owners is a good one and DNOs would encourage them proactively contact owners and help them with the process.</p> | Closed | 21 May 2019  |
| 3    | T   | <p>Is there a possibility that there will be a future requirement that all G99 relays will require to be retested on a regular basis as is the case with most protection relays.</p> <p>I have never understood why this is not required in the various revisions of G59 (instead of the nebulous statements currently existing) then this present exercise could have been carried out at no expense to the ENA, industry or customers.</p>   | <p>The maintenance of the generators' protection is generators' responsibility.</p> <p>Any practical time based maintenance of protection is likely to be cycled over a number of years. This programme is required to be completed quickly relative to any practical maintenance cycle.</p>   | Closed | 21 May 2019  |
| 4    | T   | <p>My understanding is that the requirement is to change the settings on the G59 relay only and not on the generating plant, ie generators/inverters.</p> <p>However, changing the settings of the G59 relay to a RoCoF of 1Hz with 0.5s time delay does not mean much if the inverter has been set/programmed with a RoCoF setting of 0.125Hz. The internal contactors of the inverter will trip at around 0.125Hz, before the G59 relay is able to do anything.</p>  | Same answer as Q1  | Closed | 21 May 2019  |

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|      |     | Could you please confirm if the setting of the generator/inverter will also need to be relaxed as part of this initiative?   |  |        |              |
| 5    | T   | <p>Could it be that if the correct technology was applied ie batteries and inverters, the frequency would stay in range and there would be no need to spend all of this money changing settings.</p> <p>The rate of change of frequency could be corrected well within the 500ms (4ms with inverters we supply) quoted within the discussion document and the rotating systems like long term connected carbon based generators could be deemed 'second tier' generators reserved for the capacity markets, whereas the inverter and batteries could be deemed short term very quick reacting systems.</p> <p>Carbon free, battery based (chemical or gas) could provide the ability to react faster than carbon based generators, thus requiring no change to relays and also providing long term stabilisation to the grid system.</p> | <p>This point assumes that there would be many MWh of stored energy available – so this can currently only come from batteries unless a lot of inverters for wind/solar etc are running at part load – and this does not work at night/calm days. Batteries do not exist in sufficient volumes to tackle today's problem.</p> <p>The 500ms is not a performance requirement for response – it is a timing requirement for protection.</p> <p>New technologies will form a useful part of managing this problem in the future, but modifying existing protection is the cheapest way of addressing today's problems.</p>  | Closed | 21 May 2019  |
| 6    | T   | <p>It is alleged that one of the largest Solar PV providers has issued instructions to its engineers to turn off all G59 protection functions on a number of solar sites, relying on the inverters' own settings to provide protection.</p> <p>I am 99% certain that during commissioning the inverters were NOT tested or set up for the UK settings, as is required by G59 clause 12.1.3.</p> <p>Can you provide a definitive answer – is it OK to disable G59 protection in such circumstances?</p>   | <p>The definitive position is clear – if a G59 relay can accept the new RoCoF setting, then it must be set to this. If it cannot, then the LoM element can be disabled. I think that is simple and uncontentious. It would be wrong to disable a G59 relay that can accept the new setting.</p> <p>As far as the inverters are concerned, to the extent they have a recognizable LoM function that is set as RoCoF, it must conform too – ie must be set to the new RoCoF settings (and VS disabled). Initially we did not believe that many inverters actually have specific RoCoF settings or VS settings. We now know that many, but not all, inverters do have these settings.</p> <p>There is a wider point here too – any inverter that does have protection fulfilling G59 functions, ie voltage and frequency protection, must be set in accordance with G59, irrespective of what protection also exists implemented in conventional relays.</p> <p>Finally any commissioned before 27/4/19 do not have any specific ride through requirements either. So the only resilience requirement for existing inverters is not to have protection settings that conflict with G59.</p> | Closed | 11 June 2019 |
| 7    | T   | The ENA's published list of consultants/contractors would not necessarily be qualified to do the complete works of shutting down the generator, making the changes, restarting the generator and confirming reliable operation.  | The programme is only trying to assist with the expertise necessary to make the changes to the protection. All other issues related to management of the generation equipment etc are the responsibility of the owner of the generation.   | Closed | 21 May 2019  |
| 8    | T   | There is a general need for a much more effective communication plan.  | The programme has been running for nearly seven years and has had several public meetings, workshops and consultations over that time, including three formal Distribution Code modification consultations. The programme has engaged with many trade bodies to help promulgate the programme. The communications are now ramping up to ensure that all owners of generation are aware of their changing responsibilities.   | Closed | 21 May 2019  |
| 9    | T   | <p>Putting the onus on the generator to drive the process is a fundamental weakness in the process design. The process needs to recognise that all but a few generators would prefer to delegate this work to their chosen contractor by giving them consent to act of them.</p> <p>The steps outlined in Payment Process Specification are also quite onerous on the DNOs and could be greatly simplified if appropriately approved contractors were used. Rather than having the DNO</p>   | There is merit in these arguments, but compliance with Distribution Code (and G59) protection requirements is a necessary requirement for all owners and operators of generation. It is the owner's legal duty to do this, and cannot be delegated as a duty – although of course discharge of the actions flowing from it can be (ie to suitable contractors etc).  | Closed | 21 May 2019  |

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|      |   |     | <p>verify the application, then get NGESO to assess the application and accept it before settings are changed, it would be much more effective to define the criteria for acceptance sufficiently clearly that the approved contractors are able to ensure that they are selecting valid sites. It will then be sufficient for the contractors to complete the setting changes and submit the evidence together with the correct site information in the knowledge that if get it wrong, they won't get paid.</p> <p>As it stands the Programme will be making payments to thousands of payees, each of which will need to be entered onto a payment system with their individual payment information and then each of these will be making payment to a small number of contractors. This will not be efficient and has significant scope to go wrong.</p> <p>It is strongly recommended that the process is revised to set up a focussed group of approved contractors who are paid directly on completion of the changes. This will incentivise them to identify the generators, change the settings and provide reliable quality assurance for this work.</p>                     | <p>The programme has considered the approach you suggest in some detail, but given the legal obligations on owners, taken together with the success of the accelerated vector shift programme run in 2018, has concluded that it remains appropriate to help generation owners discharge their own legal obligations.</p> <p>Clearly the points and concerns you raise are ones the programme will be monitoring closely to see if further assistance might be required.</p> <p>Finally the NGESO approval relates to the relative value of the site versus the available funding. The settings need to be changed irrespective of NGESO accepting the application; all sites need to be changed.</p>   |        |             |
| 10   | C |     | <p>It should be noted that the payment approach used for the high risk sites in the South of England is not a valid comparison because in this case the target generators were clearly defined and small in number.</p>   | <p>The programme believes that payments should be related to the likely costs on a site per site basis, irrespective of location.</p>   | Closed | 21 May 2019 |
| 11   | C |     | <p>If there is a concern that the funding will run out before all sites are processed, then a simple on-line tracker will provide visibility to all contractors on the fund status and they will self manage reduced activity as the risk of not being paid grows towards the end of the fund amount. If this is too challenging then the periods for applications can be set in phases with time limits providing the control. This is much less desirable as it leads to a stop-start mode of operation and this means the work will be carried out less efficiently.</p> <p>The Chart in Annexe 2 (of the Request for Feedback) is not clear but the implication is that there is a need to curtail the process in an orderly manner once the funds are used up. A much simpler payment method with shorter lead times will ensure that when the funding does end there is a much smaller pipeline of sites in process than would be the case with the slow and complex process identified here.</p>   | <p>The programme will be looking to publish progress on a regular basis on NGESO's website:</p> <ul style="list-style-type: none"> <li>• Each quarter we will publish the total number of generation owners and capacity (MW) which applied and the total number of generation owners and volume accepted by each network operator.</li> <li>• Each quarter we will publish the cost of the programme.</li> <li>• An audit will take place to determine the extent to which loss of mains protection changes have been implemented. A summary of this audit will be published on an annual basis.</li> </ul> <p>(taken from p16 of the current Request for Feedback document).</p> <p>The payment programme is an incentive to both help owners make the changes and also to do so in a timely manner. Should the funding be exhausted, the obligation to make the changes will still remain and those owners who have not made the change will still be required to do so.</p> | Closed | 21 May 2019 |
| 12   | T | 9   | <p>Not all small-scale hydropower generators will know what their current protection is and are unlikely to possess the correct skillsets required in-house and they will therefore have to pay qualified third parties to visit their site/s to assess what is required even before paying for any changes.</p> <p>This is a significant and concerning contrast with those "professional" generators who will undoubtedly have the in-house capability of affecting the required changes at a fraction of the cost but still be at the front of the queue for the available funding due to the apparent 'large capacity over small capacity' position favoured by National Grid.</p> <p>Most small-scale hydropower operators do not consider hydropower as their principle business and therefore might be reluctant to engage in this change process until they are forced to and after all the available support funding has been exhausted by the 'professional generators'.</p> <p>Assess and agree an appropriate cut off point to separate "professional generators" from other small-scale generation. The BHA proposes that all HV connected projects are deemed to be</p> | <p>All owners of generation are subject to the same underlying legal obligations in relation to the management of their sites and equipment.</p> <p>Same answer to Q9 above</p>   | Closed | 21 May 2019 |

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|      |   |     | <p>“professional” and that all LV connected generators would not necessarily have the in-house skill sets required to make the protection changes. This is equally applicable to other generator types (wind etc.), not just hydropower. The capacity above which the majority of projects are HV is 1.5MW.</p> <p>Instead of directing the available funding to individual projects, the BHA believes that it makes greater economic sense to pay DNOs to visit all “non-professional” generators – as previously defined – to assess the required protection changes, make the necessary changes and undertake the witness test in a single visit. Multiple schemes could be visited in a single day by an employee working for a DNO.</p> <p>This would undoubtedly be significantly more cost efficient overall and would also ensure the changes are completed well before the May 2022 deadline.</p> <p>It would also avoid the time, expense and inevitable hassle and stress involved for DNOs, the ENA and National Grid in trying to get all “non-professional” asset owners to actively engage in what they may consider to be a complicated and unnecessary process and as well to enter the funding application pipeline.</p> |   |        |             |
| 13   | C |     | Nearly all small-scale hydropower schemes are remotely located and therefore travel time to visit a single site could increase costs significantly for each asset owner working separately   | Same answer as Q10  | Closed | 21 May 2019 |
| 14   | T |     | Creation of a de-minimus capacity below which these changes are not applicable. The BHA proposes this could be 50kW because they are treated as micro-grid connections anyway. A generator of this size remaining on Vector Shift is highly unlikely to cause any system instability.  | <p>We believe that sufficient protections against excessive costs have already been built into the programme. Collectively generation equipment sub 50kW add up to a very substantial number of MW.</p> <p>As a rule it is inappropriate to make exceptions for technologies etc – all generation should be treated as far as possible in the same way, whilst respecting its technical characteristics.</p> <p>Therefore the requirements apply equally to all sizes of equipment and to all technologies.</p> | Closed | 21 May 2019 |
| 15   | T |     | The list of contractors/testers the DNO's produce will not be 'approved' - this potentially leaves the system open to incompetent testers doing the work to an unsatisfactory standard. If the DNO's are not permitted by completion law to recommend a test engineer, can they recommend that the nearest port-of-call is the engineer who carried out the original test? The contact details of the tester should be on the original test sheet/document.  | The selection of the contractor is purely a matter for the generation owner. We agree in many cases it would be appropriate to use the expertise of the original commissioning agent, if that is still known to the owner.  | Closed | 21 May 2019 |
| 16   | T |     | What will happen if an installer as opposed to an end user 'Generator' approaches the DNO to reset a number of relays? How will the DNO respond? Ultimately, a farmer or end user will need the installer there for the relay resetting exercise to take place? Particularly if the original relay is being replaced with a more up-to-date version...   | The agreement relating to payment is between the DNO and the generation owner. There is nothing to stop an installer helping owners through the process – but it does need to be done on a site by site basis.  | Closed | 21 May 2019 |
| 17   | T | 15  | It was mentioned that frequency relays should be reset to 52 Hz if they were originally set at 50.5Hz (for G59/1). Please can you confirm if that requirement is to be mandatory?  | It is desirable but not mandatory, depending on the capability of the relay.  | Closed | 21 May 2019 |
| 18   | T |     | The change from Vector Shift to the new RoCoF settings will generally be welcomed by many owners as it will result in less interruption to power generation, less stress on equipment and increased revenue.   | The programme is for payment. When the programme finishes the obligation to make the changes remains.   | Closed | 21 May 2019 |

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|      |   |     | Some owners will not want their system to be disturbed, but this will probably be a relatively small number. It would therefore be good if the changes were optional rather than mandatory. However, the webinar suggested that the programme would be closed when sufficient generation has been changed to the new settings so perhaps an opt out is not essential. Clarification on this from National Grid would be helpful. |   |        |              |
| 19   | C | 02  | What help will be available, especially for owners with very small generation equipment connected at LV?   | This will be reviewed later in 2019 when there is more experience of how the programme overall is working.  | Closed | 21 May 2019  |
| 20   |   |     | Deliberately blank   |   |        |              |
| 21   | T | 06  | Can the ENA publish a list of the most common LoM relay types and what action is required for each relay type? Can this be put into an app?  | It has been decided not to pursue this at this time   | Closed | 18 June 2019 |
| 22   | C | 07  | Can owners make the changes immediately (eg to reap the benefit of more stable LoM setting of historic sensitive settings)? Will they be paid to do this?  | Yes – simply enter your data in the portal and tick the box that asks if the changes have already been made. Your application will be processed in the same way as all other applications and assuming it is successful you will be asked by the DNO/IDNO to submit the evidence necessary for payment.   | Closed | 21 May 2019  |
| 23   | T | 09  | How do generation owners know what protection equipment is fitted to their generation equipment?   | It will generally be obvious from any commissioning information and/or protection setting sheets for the generation equipment. It is a legal requirement that the generator owner maintains this information. However to the extent that owners need help in interpreting this information, it might be appropriate to engage an appropriate consultant/contractor to review the information, make any required changes and submit the application for compensation to the portal at the same time. This will minimise owners' costs in undertaking the changes where they need expert help to do this.   | Closed | 21 May 2019  |
| 24   | T | 10  | If the protection is a multifunction relay which cannot be reset and/or where the LoM element cannot be separately disabled, will it be necessary to install new frequency and protection functionality?   | Yes, it is essential that the four protection functions of under and over frequency and voltage are retained. If necessary it will be essential to install new relays to ensure this. However it is unlikely that any existing multi-function protection relay cannot be configured appropriately.  | Open   |              |
| 25   | T | 12  | What is needed to be done where LoM is implemented within the controller of an inverter rather than in a discrete LoM relay?   | <p>The LoM resetting exercise applies to any discrete LoM protection element that is separately settable, whether located with the inverter or elsewhere in the generation owner's installation.</p> <p>Where LoM is implemented in the control algorithms of inverters as RoCoF and/or vector shift, whether type tested or not, the settings must be changed to those required in the revised G59 – ie 1Hz/s 500ms delay and vector shift disabled. If the inverter does not use RoCoF or vector shift in its algorithms then there are no requirements to make any alterations to such inverters.</p> <p>In many cases it might be that it is not obvious on site whether the inverter uses RoCoF and/or vector shift. In these cases it will be necessary to seek advice from the manufacturer.</p> | Closed | 21 May 2019  |

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| 26   | T | 13  | Do these changes mean that the generation needs to be compliant with the new ER G99  | No – there is no linkage between the introduction of the EU Network Codes for new generation that comes into force on 27 April 2019 and this resetting exercise, which only applies to generation equipment installed before February 2018.   | Closed | 21 May 2019 |
| 27   | T | 14  | Many older relays will be set to historic versions of G59 rather than the latest version and the relays might not be compatible with the most recent version. What is required for owners of these older relays? | It is a general principle that D Code (and therefore G59) requirements are not retrospective, unless specifically made so (DGC11.2 in the D Code). It is only the LoM settings, not the other interface (ie voltage and frequency) that have been made retrospective, so there is no compulsion to change other interface settings. Having said that there is merit in changing the over-frequency setting to 52.0-Hz if the existing relay is capable of that setting – but no compulsion to achieve this if that would mean changing the relay. | Closed | 21 May 2019 |
| 28   | C | 19  | How will the process be secure against fraudulent activities, particular rogue contractors offering a high priced service to generator owners?   | DNO/IDNOs will publish a list of contractors etc who claim to have the relevant qualifications and experience. This will enable generation owners to review competitive offerings for their needs, but ultimately this is a commercial agreement between the generator owner and whatever services that owner feels are needed to help the owner discharge his legal obligations. DNO/IDNOs will publish and offer advice to help owners understand all the implications of the changes and what it should mean for owners.                       | Closed | 21 May 2019 |
| 29   | T | 01  | Will DNO customer service departments be briefed on this and be available to provide sensible guidance?  | Yes – dedicated communications material and briefing is being rolled by and within each DNO/IDNO  | Closed | 21 May 2019 |
| 30   | T | 03  | Is this a GB wide exercise?  | Yes – it applies to the whole of Great Britain, but it does not apply to Northern Ireland. There is a similar programme in place in Northern Ireland but its detailed requirements and implementation is different recognizing the need for the approach to be harmonized across the island of Ireland.   | Closed | 21 May 2019 |
| 31   | C | 20  | Is there any relation with other commercial payments like ROCs?  | No  | Closed | 21 May 2019 |
| 32   | C | 04  | Do you verify contractors on the published list?   | No – it is simply an advertising route for contractors to bring their existence to the attention of generation owners. It is for generation owners to decide how to comply with the new requirements, including contracting for any assistance they might need.   | Closed | 21 May 2019 |
| 33   | C | 08  | If the application is not successful, what happens.  | In the early stages of the programme the application will be rolled-over into the subsequent application window. As the programme comes to and end there could be some applications that are or remain unsuccessful. In these cases there will be no payment, but the legal obligation to make the changes remains.   | Closed | 21 May 2019 |
| 34   | C | 21  | There could be some cost incurred for application, money spend on finding the right setting. Will that be covered?   | The payments are tailored to covering the reasonable costs of undertaking the works for a typical/average installation. They are not tailored to any specific application. It is for generator owners to assess how to complete the compliance changes as efficiently as possible.  | Closed | 21 May 2019 |

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| 35   | C |     | For small DG the financial impact on the protection change is much higher than large DG, but they are less likely to be successful for payment, is it level playing field for all DGs?  | The costs are expected to be similar across all generation owners, and this is what the payments are tied to. The size of the installation affects the value to NGENSO of the change, but not the cost of making the changes.  | Closed | 21 May 2019 |
| 36   | T | 16  | Is there any safety risk in disabling LoM   | In general no. The analysis undertaken shows there is actually less risk where VS is replaced by RoCoF. Owners of synchronous generation do need to consider the risks of out of phase switching – but as above, this is less of a risk anyway when RoCoF at the new setting is used cf VS.  | Closed | 21 May 2019 |
| 37   | C | 22  | Will I be compensated for income lost during the setting change?  | No. It is assumed that setting changes etc would be done during normal down time.  | Closed | 21 May 2019 |
| 38   | T | 17  | Will the setting changes etc be witnessed by the DNO? Will there be a charge for witnessing?  | DNOs will notify those owners where witnessing is needed. Generally this will be for a relay change or LoM disablement. There will be no charge for successful witnessing completed in a single visit.   | Closed | 21 May 2019 |
| 39   | T | 18  | What information needs to be submitted as evidence and how will this be done?   | There is a specific pro-forma to prompt generators for the necessary evidence, and this can be submitted electronically to the DNO. The DNO will discuss individual cases with generation owners.  | Closed | 21 May 2019 |
| 40   | T | 05  | Is there a way for owners of large numbers of multiple sites (eg water utilities) to bulk upload their data into the portal?  | Not at present – owners of multiple sites will only have to enter their company etc details once, but each item of generating plant for which funding is sought will need to be entered into the portal. Creating a bulk upload facility is on the register of portal enhancements – but there is no certainty this change can be made.  | Closed | 21 May 2019 |
| 41   | T | 11  | Is it acceptable to break any seals that might be applied to interface protection settings in order to reset them?  | Yes. DNO/IDNOs have different policies on this and the implications and remedies will be picked up bilaterally between the generator owner and the DNO. The generation owner will need to bring each case to the attention of the DNO/IDNO.  | Closed | 21 May 2019 |
| 42   | C |     | <p>Thanks for keeping us up to date with the DC0079 phase 3 programme. Please may I ask the following questions.</p> <p><a href="http://www.energynetworks.org/electricity/engineering/accelerated-loss-of-mains-change-programme.html">http://www.energynetworks.org/electricity/engineering/accelerated-loss-of-mains-change-programme.html</a></p> <p>states that generators will submit information to the database which will then be assessed and considered for the programme. Please can you advise what criteria might be used in making these assessments, and if any of the following will be used in that consideration;</p> <ul style="list-style-type: none"> <li>• Geographic location - Will sites at the periphery of the UK be prioritised differently from sites closer to the load centres?</li> <li>• Connected capacity - Will larger sites be prioritised over smaller ones?</li> <li>• Load (capacity) factor - Will sites that run at higher load factors be prioritised over sites that run at lower load factors?</li> <li>• Commissioning date</li> </ul> | <p>NGESO will operate the assessment based on a number of factors as explained on page 15 of the Request for Feedback published on the webpage. The exact details of this will be refined and published over time.</p> <p>In relation to your questions:</p> <ul style="list-style-type: none"> <li>• It is possible that some geographic prioritization might be used, but this is more likely to be related to the existing network design, and also the effects of climate on renewables rather than load centres etc</li> <li>• Ultimately larger installations do offer more value, but at the start of the programme there is unlikely to be any prioritization on this basis.</li> <li>• Commissioning date on its own is irrelevant</li> <li>• The cost per site is one of the factors that affect value, as per the second bullet above.</li> </ul> | Closed | 21 May 2019 |

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|      |     | <ul style="list-style-type: none"> <li>Cost of changes - Will sites that require a relay change be given lower priority than sites that do not.</li> </ul> <p>If any of the above factors may be used in the assessment process, please can you advise of what any threshold values are likely to be. For example, if sites in Northern Scotland will be given a lower priority than England. Or if for example, sites over 500 kW will be given priority over sites under 500 kW.</p> <p>Finally, will all generators be contacted by their DNO/IDNOs simultaneously, i.e. in May 2019? Or will the be contacted in phases, perhaps in line with the any selection criteria?</p>  |  |        |              |
| 43   | T   | <p>Knowing that the proposed changes to Loss of Mains Protection settings is nearly upon us, I have the opportunity to change existing G59 settings to G99 settings at a few of our export sets over the next few days as part of routine maintenance and protection testing.</p> <p>The existing G59 relays (SEG MRN2-2 or Woodward MFR11) are already RoCoF based (without Vector Shift) and as far as I can tell are fully capable of having the G99 settings for Type A/B generators applied. Being a simple change of settings for an existing relay there should be no need for the DNO to witness the new settings and testing.</p> <p>If this is acceptable to you I will take copies of previous protection test reports and the test report after the changes have been made for future evidence.</p> <p>Kindly confirm that the DNO is happy with this early change of G59 to G99 settings.</p> | Passed to the DNO for response.  | Open   |              |
| 44   | T   | <p>Have had a quick look here:-<br/> <a href="http://www.energynetworks.org/electricity/engineering/accelerated-loss-of-mains-change-programme.html">http://www.energynetworks.org/electricity/engineering/accelerated-loss-of-mains-change-programme.html</a><br/>                     but cannot see a database / portal for registration – perhaps you could point me in the right direction or let me know when it becomes available?</p>  | It should become available now in summer, probably in August. We will keep the ENA webpage up to date.   | Closed | 21 May 2019  |
| 45   | T   | <p>We've been made aware of the Accelerated Loss of Main Change Programme and I was hoping you could help us in understanding a bit more of the process.</p> <p>We manage a number solar farms in England and Wales and would like to make sure that the required changes on the LOMs from VS to RoCoF are dealt with for our sites. We have gone through the documentation available online and have understood that a portal will be available in May 19 for us to get involved and submit an application. Is there defined date on when the portal will be available?</p>   | It should become available now in summer, probably in August. We will keep the ENA webpage up to date.   | Closed | 21 May 2019  |
| 46   | C   | <p>We have a number of embedded generation sites that will require G59 updates to meet the new LOM G59 RoCoF requirements. We are currently undertaking some associated works at these plants and would like to incorporate the update as part of the work. Were the changes to be completed ahead of the registration and settings change program will we be able to apply for funding to make the changes retrospectively.</p>   | <p>Same response as 22</p> <p>Yes – simply enter your data in the portal and tick the box that asks if the changes have already been made. Your application will be processed in the same way as all other applications and assuming it is successful you will be asked by the DNO/IDNO to submit the evidence necessary for payment.</p>                      | Closed | 31 May 2019  |
| 47   | C   | <p>Please could you advise me on how to apply to upgrade an existing G59 relay to the newer ROCOF type. there doesn't appear to be an application form on the portal</p>   | <p>All the information you should need to make an application for payment for the change is on the portal – although this has not yet been launched – we expect late June now. The actual work involved on your site or sites needs to be assessed and undertaken by somebody competent to do the work and engaged to do so by the owner of the generation</p> | Closed | 03 June 2019 |

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| 48   | TC |     | <p>Our run-of-river hydroplant received its G59 from the DNO on 1st February 2007. The generator is asynchronous, running night and day unless there is too much water (i.e. when head &lt; 400mm), which occurs after prolonged and heavy rain. Over a 12-month, our plant exports approximately 85% of the energy captured.</p> <p>The National Grid Electricity System Operator (NGESO) organized a meeting in London on 4th April, where we met the representative of our DNO. At the meeting, the presenters advised the Distributed Generators (DGs) that we could discover whether our mains protection relay was a RoCoF (Rate of Change of Frequency) or VS (Vector Shift) relay by looking at the paperwork for the G59 Protection Relay Tests.</p> <p>So we sent the paperwork to the DNO. However, their reply has not answered the question, and has raised another: why did the person doing the test in 2007 report on a "short term parallel connection" which (according to our DNO) relates to standby generators? Having paid the DNO a significant amount of money to install three-phase supply to our premises so that we could export kW to the grid, we assumed that the approved tester would understand that this hydroplant was going to run more or less continuously; this matter now needs to be resolved - 12 years on.</p> <p>I anticipate that similar unforeseen anomalies will arise during the process of upgrading LoM Protection at individual DGs. This is likely to slow down the process.</p> <p>Page 2 of the background material says that NGESO's cost (funded by BSUoS charge payers) of managing the risk of loss of generation, consequent system disturbance and loss of supply exceeded £100m in 2018. The Procurement Methodology's criteria for prioritizing DGs' applications for payments towards making their LoM Protection relays compliant with the changes required by the Distribution Code will inevitably favour DGs with the largest output: this makes sense for managing the risk described above.</p> <p>However, we anticipate that the smallest DGs - which in cost/benefit terms will come at the end of the list - may not ever succeed in having their applications accepted. The cost of making their relays compliant with the Distribution Code will be a far larger component of (smaller) annual revenues than for the largest DGs. We endorse the suggestion of the British Hydropower Association to look for effective ways to reduce costs, for example by carrying out all the phases of upgrading (namely assessing the required protection changes, making the necessary changes and undertaking the witness test) in a single visit. Further cost savings could be gained if an employee working for a DNO visited multiple schemes in a single day; the small hydropower community knows the DGs in the vicinity and could be useful contacts in organizing the most efficient logistics to co-ordinate visits.</p> <p>Given that the smallest are likely to be dealt with last (perhaps beyond the funding cut-off), and that the cost of becoming compliant will be a significant additional operating cost to be met from modest revenues, I would request leniency in the timeframe for the smaller DGs to comply</p> | <p>The site specific details need to be picked up with the DNO as you suggest. However if the installation was genuinely installed by someone as being standby short term parallel connection we would not expect it to have loss of mains protection. So there is clearly an error somewhere. The responsibility for the loss of mains protection does lie with its owner, not the DNO.</p> <p>Your points about the efficiency of the programme, particularly for smaller players are well understood by us. It is the programme's intention to see what progress can be made with the funding etc available and take a view on whether other assistance might be required.</p> | Closed | 31 May 2019  |
| 49   | TC |     | <ol style="list-style-type: none"> <li>Will multiple generators on a single site be taken into consideration when awarding funding.<br/>For example I have a client with 5 wood gas generators in one room. All have a G59 relay. Another client on a different site has a single identical engine. Will the former receive 5 times the funding although the true cost of carrying out the works would be nothing like this? The fact the multiple engines share the same MPAN number would flag this up.</li> <li>In reference to the comment 'Removal of LoM protection where changes cannot be made without significant investment (except DFIG and synchronous)' what would significant</li> </ol>  | <ol style="list-style-type: none"> <li>Yes – or at least multiple relays/protection schemes will be.</li> <li>The approach is that each relay change or protection setting will be funded on a per unit basis, but up to a cap for the site or installation.<br/><br/>If a relay cannot be reset, then it will need to be changed – which is within our definition of "significant." Of course, if the generation is not DFIG or synchronous, then the LoM protection can be disabled, but leaving the voltage and protection fully functioning.</li> </ol>   | Closed | 03 June 2019 |

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|      |    |     | <p>investment be? This comment is taken from the recent seminar slides. Take for example a Comap Mains Pro with older software. A new relay to specifically replace the original is £390. Swapping out the units is very simple but would need a full retest but still well within the indicative cost to be allowed for a relay change. Who will make the decision on what is preferred option?</p> <p>3. Would this program also be a time for any site visited to have a retest on all the settings and functionality of the relay. Would it be expected for an engineer attending site to make a parameter change also have the responsibility to check the G59 relay still functions correctly (e.g. tripping time on generator breaker etc).</p> <p>4. If generators want to go ahead and make the upgrades now how will retrospective funding be dealt with?</p> <p>Is it still expected that the first upgrades will start this summer with the portal opening in the next couple of weeks as planned?</p>   | <p>3. The correct functioning and operation of the equipment on site is its owner responsibility – so that is a matter for the owner.</p> <p>4. Yes – the portal has the facility for owners to indicate that they have already made the change, which enters their site into the process in the same way as any other application.</p> <p>It is expected that the portal for payment will now open in late June.</p>  |        |             |
| 50   | CT |     | <p>Our main concern is around the fairness of the Procurement Methodology, specifically that “Payment will only be made available until it is no longer economic to pay for any further change. Remaining sites will have to comply with the new requirement at their own cost”. We have several objections to this:</p> <ol style="list-style-type: none"> <li>1. If all sites will be obliged to implement these changes in due course, then all sites should be allowed to benefit from the payment scheme. This is not the case as in your document you indicate that “payment will only be made available until it is no longer economic to pay for any further changes”.</li> <li>2. We believe that paying some generators and not others would only be appropriate were the changes being implemented are voluntary. As it stands, all generators will still have to implement these changes and this payment basis will just mean that some generators will have their costs covered and the others will have to bear these costs, which does not seem fair. We would have thought that a fairer way would be to split payments between all generators equally.</li> <li>3. We understand from the document that the “economics” referred to in the first bullet point above, are decided on the basis of what the grid needs in order to operate efficiently (lowest impact on BSUoS). This implies that for those sites for which payment is not economic, the change is not beneficial to the grid. Hence, the change should not be required at all for those sites for which payment is not economic.</li> <li>4. The principle of deciding priority based on lowest impact on BSUoS is not fair, as the changes also impact the owners of the generation sites. Some of the criteria cannot be influenced by the owner of the site. For instance, it is unfair to determine priority by technology or size of the generation site, because these cannot be changed. Why should a wind site gain priority over a solar site if the cost of implementing the change is similar for both sites?</li> </ol> <p>We also are unclear on the exact criteria that NGENSO will refer to in assessing whether to agree to make payments to a generator. The document refers to different factors that may be taken into account but there is no clarity as to how the assessment will work in practice and it would be useful if NGENSO could set out the methodology that would be used in assessing all these factors in order to come to a decision. We believe that without further clarification, the decision making process could appear to be arbitrary.</p> | <ol style="list-style-type: none"> <li>1. Payment will only be made as long as it is economic to do so. Responsibility for site compliance rests with the site owner.</li> <li>2. Noted.</li> <li>3. Noted.</li> <li>4. Noted. At the highest level the changes are being driven by government policy to decarbonize, which is for the benefit of all UK citizens, and ultimately must be paid for by them too. Within that we are seeking as fair an arrangement as we can within the other relevant constraints, such as other primary legislation and energy companies’ licences.</li> </ol> <p>NGESO will publish as much information about the process, and data showing how it is operating, as they reasonably can.</p> | Closed |             |

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|      |     | Submitting the applications via a web portal (incidentally, we assume that there will be one portal for all sites and not separate portals per DNO). we manage a large number of sites, hence we would ask that the web portal allows for mass uploads instead of site by site, as this would help in terms of efficiency and lower risk of errors.   | One portal. We have investigated the possibility of bulk uploads, but at present we are not offering this facility.   |        |             |
|      |     | The information that is required in the application forms: Please can you confirm that that this will be same across all DNOs (capacity, generation type, number of LoM relays, current LoM relay type(s) and setting(s), network operator, lead time for change and MPAN). Last year one DNO requested the production levels during 6 specific periods in different months in 2016 and 2017.   | The common portal asks common questions and requires the applicant to choose the applicable DNO/IDNO.   |        |             |
|      |     | The document only indicates the information that should be provided for each application however it is unclear to us if what, if any, evidence of this information will be required before the settings/relay change (e.g. the current G59 report)?   | We hope the latest information published on the portal will dispel confusion, but ultimately this can be discussed site by site with the relevant DNO.  |        |             |
|      |     | In order to manage this process effectively across 400+ sites, we would ask that each DNO assigns us a single point of contact for the entire process (submission through to payment).  | The pool of personnel providing contact to generators will be small, and each DNO is expecting to use a single email/phone number for customer interaction on the project.  |        |             |
|      |     | The indicative ranges for payment is significantly lower than the previous year. Last year: <ul style="list-style-type: none"> <li>Relay settings - £2,500 (between £1,000 and £1,500 now)</li> <li>Relay change - £4,000 (between £2,500 and £4,000 now)</li> </ul> Please note that the implementation of the changes will require a shutdown of the site, resulting in production losses. The amount of production losses will depend on the time of day during which the site is down. Accordingly, we intend to arrange the implementation of the changes during low-irradiance times (i.e. early morning or late afternoon). we assume that this approach is acceptable for the DNOs also in case they need to witness the works. | The payment is not supposed to be cost reflective.<br>DNOs will use reasonable endeavours to meet site requirements where DNO presence is necessary.  |        |             |
|      |     | If a relay change is required then we can just disable the relay and run with no loss of mains protection. Is there any potential issue that could arise from running with no LoM protection? What is the recommendation from NGENSO's perspective?   | This is permissible provided the generation is NOT synchronous or double fed induction generator. The risk assessment undertaken as part of DC0079 demonstrates that there is an equitable balance of risk for NGENSO, DNOs and the installation owner using this approach. |        |             |
|      |     | The information that is requested does not require us to indicate whether the change needed is a settings change only or a full relay change. Is this data you are able to verify based on the current relay type and setting or do you need us to provide this information?  | The portal does request this information, but we do not need to know the relay manufacturer's type.   |        |             |
|      |     | The request for feedback document mentions that we will receive an automatically generated email if our application is successful. we would ask that we also receive notifications for the applications that are unsuccessful. That way we can ensure that at least all applications have been considered and there are no gaps.  | The portal does not have this automatic functionality. However the DNO will contact unsuccessful applicants.  |        |             |
|      |     | The document sets out the factors will be taken into account when prioritising applications. However, as mentioned above, the relative weight of each of these parameters is not given. Will NGENSO publish the outcome of the applications and the calculation of priorities?  | NGESO will publish as much information as they are able to.   |        |             |
|      |     | Payments will be made on a "reasonable endeavour" basis by the DNO and there could be cases where it is not feasible to meet the six week deadline. During last summer's test project, the payment process was one of the main issues as it took a lot of time and effort from our side to  | TBA   |        |             |

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|      |   |     | ensure payment was done correctly. Could you please indicate which lessons have been learned from this and if any improvements have been implemented to ensure a smooth process this time?  |  |        |             |
|      |   |     | Which evidence will be requested to confirm that the settings has been applied correctly? The document states photographic evidence as an example, but this needs to be clarified further beforehand. We would argue that the new G59 report should be sufficient. The document mentions that an audit process may follow on from the changes being implemented so we would expect to be told in advance of those changes taking place, the documentation and evidence that may be requested in any audit.  | The portal will contain further information to support this – and these issues can be discussed bilaterally with the relevant DNO(s).  |        |             |
|      |   |     | From the document, we understand that the capacity of the site has a significant impact on the chance that the application will be accepted. Could you confirm that this is the case? As mentioned above, apart from a large portfolio of utility solar PV, we also manage more than 210 commercial rooftop solar sites with limited capacity.  | Noted.   |        |             |
| 51   | T |     | <p>I am aware that the settings for ROCOF are to be altered to 1Hz/s with a 0.5 second time delay on all historical sites, many of which I have personally set to vector shift or ROCOF with a validation count rather than a discrete time delay. Not all of the relays on the market several years ago have the ability to achieve the proposed settings, so therefore will require a swap out to a new relay, which may involve panel rewiring if is not a like for like type of relay.</p> <p>In some cases the old relays can be firmware updated, however from personal experience this can be fraught with complications, especially on generation sites where the G59 relay performs other functions and interfaces with differing control systems. In these cases it may be better to disable the G59 protection in the controllers and add a dedicated G59 / G99 compliant protection relay.</p> <p>This leads on to other problems. It is all well and good widening the loss of mains protection on the G59 /G99 relays, but most generator controllers / inverters have there own protection applied; which are currently much narrower than the 1Hz/s 0.5 sec time delay. I have been told that the decision is to disable this protection. Who will be doing this? Who is going to reimburse the generator company if the customers generator is damaged by a fault that the machine attempts to run through?</p> <p>The act of disabling the Loss of Mains protection is a very sweeping statement as not all settings in generator controllers can be accessed due to warranty issues / secret passwords. In the situation of solar farms with string inverters they may be 1000's of inverters all requiring individual interrogation with a laptop to alter. This could take a very long time...</p> <p>I have heard of companies offering a dedicated G99 type approved relay with the ROCOF settings already applied. I can not understand how this is allowed? The G59 / G99 relays have many inputs and outputs that need to be configured. Just because the voltage, frequency and LOM protection is pre-programmed this does not mean that it will work as desired on site if the inputs / outputs are not programmed / wired correctly. I have lost count how many times I have had to amend a scheme to make it compliant.</p> <p>Finally from a commercial perspective as a tester who will be conducting this work I understand that I will receive payment from the end user. i.e. the customer / site owner. Not the DNO or the ENA. This leaves me vulnerable to not being paid. The customer currently has a site that is working and does not understand why he needs to spend money to upgrade. I understand that the customer will receive money from the ENA if he shows evidence that the work has been</p> | <p>If the most practical solution is to change the relay then this is what should be done. However, for all asynchronous generation except DFIGs it is permissible to disable the loss of mains element. DFIGs and synchronous machines must retain the LoM functionality - and all generation of all technologies must retain the frequency and voltage protection.</p> <p>We are currently examining the challenge of protection embedded in inverter controllers – but in essence we would expect these to be made compliant too. The liability for the equipment rests solely with its owner.</p> <p>Type testing of interface protection is essential limited to the proving of its measuring functions and having factory fixed parameters. It will always need to be installed and teste on site such that its functionality is proven.</p> <p>The commercial arrangements are between the owner of the equipment and any consultant he needs to engage to discharge his responsibilities. The Programme Steering Group will be monitoring how smaller players engage with and are affected by the programme.</p> | Closed | 24 May 2019 |

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|      |     | <p>completed successfully. But why should the customer pay me. I will not have any leverage with paperwork etc as the site is running?</p> <p>If the site / generation is subsequently is damaged by a grid event who is liable to pay for the damage?</p>                       |  |        |             |
| 52   | C   | I operate 2 hydro power sites 350kW and 95kW. I have spoken with a tester (from the ENA list) as he is familiar with both sites. Can I register for the Accelerated LoM program please?  | Yes – as soon as the portal opens.   | Closed | 23 May 2019 |
| 53   | C   | <p>Please advise when the portal will be available.</p> <p>The flow chart seems unclear.</p> <p>Do the costs include all other charges - e.g. management, application, etc.? or this is purely an estimate for hardware cost and site labour to undertake the retesting/mods</p> | <p>It is now likely to be summer, probably in August.</p> <p>Detailed comments back on the flowchart that dispelled the misreading of it.</p> <p>These were considerations - but the payment is just a payment as an incentive.</p> <p>It is not designed to cover any specific costs.</p> | Closed | 24 May 2019 |