

Window 3 Report

Accelerated Loss of Mains Change Programme (ALoMCP)

The ALoMCP is an industry led project to accelerate compliance with the new Loss of Mains (LoM) protection requirements in the Distribution Code. It is delivered by National Grid ESO (NGESO), distribution network operators (DNOs), independent distribution network operators (IDNOs) and the Energy Networks Association (ENA). The purpose of this report is to provide a summary of the programme status following completion of the third assessment window.

Key messages

- Good progress has been made. In window 3 the programme continued to focus on supporting applications that will see changes implemented by spring 2021.
- A total 943 applications were approved in window 3, for a capacity of 1,457MW at a cost of approximately £3.0m in payments to distributed generator owners.
- This brings the cumulative total approved applications to 4,182 sites, for a capacity of 8,001MW at a cost of £15.1m in payments to distributed generation owners.
- Window 3 assessment led to 55 applications being rejected
- 1,773 sites have declared completion of works with DNOs witnessing testing at 129 of these sites. DNOs have validated completion of site works for 1,050 sites. 737 sites have now received payment.
- The completion of the works is reducing the sites at risk of inadvertent tripping. This reduction in risk is now considered when operating the system. The reduction of Vector Shift (VS) risk is now delivering a small but growing value. The reduction of Rate of Change of Frequency (RoCoF) risk is not yet enough to reduce operational costs.
- We are now fast tracking and offering an additional payment for sites of immediate priority if they complete the works within a very short lead time. The Fast Track process will work in schemes. Each scheme will target a specific subset of sites to address a specific risk. The first Fast Track Scheme began on 29 June 2020 and aims to cover the majority of the capacity on 0.125Hz/s and 0.2Hz/s RoCoF risk.
- We are currently developing proposals to drive further changes following the end of window 4. This includes options on whether to continue the programme in its current form, and if so, how to incentivise further acceleration of compliance. It includes the development of options of enforcing compliance on sites that do not meet the requirements by 31 August 2022.

Timeline

The schedule for window three is presented in Table 1. The portal remained open for applications after the closing day for window three. Applications received after that date will be progressed on or before the closing day for window four.

Table 1 – Key dates in window three timeline

Opening Day	12.02.2020	Distributor Results Day	10.06.2020
Closing Day	13.05.2020	Provider Results Day	23.06.2020
Pre-qualification Day	27.05.2020		

Process performance

Table 2 shows the number of applications progressing at each of the process milestones. The data indicate that

- Applications have progressed consistently throughout the process with the 1,773 sites (4.2GW) indicating completion of works and submitting their evidence to be reviewed. Evidence has been reviewed for more than 1000 sites (1.2GW) and payment made to more than 700 sites.
- Applications received continued to decline both in terms of numbers and overall capacity.

Table 2: Summary of applications by process stage and assessment window

Window		One	Two	Three
Applications submitted to DNOs by the window closing day	No of applications	2,031	1,403 ¹	1,011
	Total MW	5,484	3,383	2,774
Applications received by NGESO by the pre-qualification day	No of applications	2,039 ²	1,306	998
	Total MW	5,315	2,846	2,368
Applications approved	No of applications	1,978 ³	1,261	943
	Total MW	4,440	2,105	1,457
Applications accepting contractual terms	No of applications	1,796	1,011	523
	Total MW	4,194	1,891	625
Applications indicating completion	No of applications	1,275	435	63
	Total MW	3,206	799	198
Evidence verified by DNO/IDNO	No of applications	789	245	16
	Total MW	1,579	236	7
Applications paid	No of applications	549	186	2
	Total MW	1,114	170	5

Some applications did not progress through the application process due to inconsistencies, ambiguities, or errors. DNOs/IDNOs are currently liaising with applicants to have these rectified prior to the window 4 closing day. Other applications did not progress due to their ineligibility to participate or because their protection settings are not currently compliant.

There has been no change to the criteria applied in window 2 with

- applications approved given a deadline no later than March 2021 to complete the works

¹ Includes some applications not approved in window 1

² Some DNOs/IDNOs had enough capacity to process applications received between the window closing day and the pre-qualification day

³ 45 sites, with a combined capacity of 88MW were given conditional offers in window 1 and have been added to this table. In the window 1 report these 45 sites appeared as a foot note, rather in the Table 2 figures.

- payment for protection device replacement where the generation is neither synchronous or Double Fed Induction Generation (DFIG) will be progressed, and supported at the rate for protection device deactivation.

To minimise the impact of the COVID-19 lockdown, sites with completion dates in March 2020 have been granted a further 6-week extension up to 04 August 2020. No other extensions to the deadline beyond what was announced in window 2 report have been granted.

DNOs/IDNOs have been remotely witnessing testing and conducting sample site visits. This is to minimise travel and face to face interactions in line with the government guidelines.

The delivery assurance activities are tailored to provide some insight on how the changes required are being implemented. So far, no major issues were identified. Some minor issues were identified by DNOs when validating the evidence provided by customers. All sample site visits reported by DNOs/IDNOs have been satisfactory. Some payments were withheld until the minor issues identified are rectified.

Communication and engagement

Throughout window 3, our key message was that applications were being accepted from all generation site owners, but we were particularly keen in securing early applications from sites with low RoCoF settings and sites with Vector Shift in the Midlands and South of England. A webinar was held to provide guidance to applicants and to share responses to frequently asked questions. At the end of window 3, our communications plan was updated in line with the wider ALoMCP updates.

Examples of communications activity are illustrated in Appendix 1.

Value delivery

Table 3 is informed by the standard planning data provided by DNOs (known as week 24) under the Grid Code and some significant assumptions to cover for the uncertainty associated with legacy sites. These will be revised during programme delivery based on knowledge gained through the process and the level of compliance achieved outside of the ALoMCP (e.g. GC0035 compliance).

Table 3: estimates of total generation capacity currently at risk of tripping due to inadvertent operation of LoM

Risk estimate (high)	Total (GW)	24
	VS component (GW)	22
	RoCoF component (GW)	2
Risk estimate (low)	Total (GW)	20
	VS component (GW)	10
	RoCoF component (GW)	10

Table 4 shows how the volume at risk of disconnection due to RoCoF and VS protection will reduce as the sites accepted during window one implement the changes required.

Table 4: Projected RoCoF and VS risk reduction⁴

Window	Delivery Milestone	Dec 19 to Dec 20					
		Dec 19 to Mar 20	Mar 20 to Jun 20	Jun 20 to Sep 20	Sep 20 to Dec 20	Dec 20 to Mar 21	
One	Projected RoCoF risk reduction (MW)	N/A	207.4	56.8	8.9	14.7	0
	Projected VS risk reduction (MW)	N/A	1761.3	2018.3	179.7	85.2	0
	Projected total risk reduction (MW)	N/A	1968.7	2075.1	188.6	99.9	0
Two	Projected RoCoF risk reduction (MW)	N/A	N/A	100.9	19.8	1.2	26.1
	Projected VS risk reduction (MW)	N/A	N/A	740.5	364.8	41.3	580.4
	Projected total risk reduction (MW)	N/A	N/A	841.42	384.6	42.5	606.5
Three	Projected RoCoF risk reduction (MW)	N/A	N/A	N/A	39.7	3.9	38.1
	Projected VS risk reduction (MW)	N/A	N/A	N/A	775.2	186.5	385.4
	Projected total risk reduction (MW)	N/A	N/A	N/A	815.0	190.4	423.6
Overall	Projected RoCoF risk reduction (MW)	N/A	207.4	158.7	68.4	19.8	64.2
	Projected VS risk reduction (MW)	N/A	1761.3	2758.8	1319.7	313.0	965.8
	Projected total risk reduction (MW)	N/A	1968.7	2916.5	1388.2	332.8	1030.1

The value of the changes will be delivered through the way NGESO manages the risks associated with inadvertent operation of the LoM protections.

With many sites indicating completion of the works and progressing through the delivery assurance process, NGESO has started to model the risk reduction delivered by the programme when securing the system in operational timescales. The assumed risk reduction values are shown in Table 5. These values will continue to increase as more sites indicate completion of the works and as the delivery assurance activities progress.

Table 5: Assumed RoCoF and VS risk reduction

Delivery Milestone	July 20
Projected RoCoF risk reduction (MW)	82
Projected VS risk reduction (MW)	1847

The reduction in generation capacity on VS risk has resulted in some reduction in the costs incurred in managing this risk. However, it is difficult to quantify the savings at this stage.

Once the delivery assurance activities are complete for sites that have already declared completion, the £10m/annum savings on the cost of managing a certain element of VS risk identified in window 1 are expected to be delivered.

⁴ Not considering any extension granted in response to COVID 19 pandemic

Neither the projected short-term reduction in RoCoF risk following the completion of works at all sites approved in windows 1, 2 and 3 nor the currently assumed reduction in that risk are yet sufficient to influence the actions the NGENSO Control Room takes to manage the risk.

The targeted long-term reduction in RoCoF risk is intended to eliminate the need to take actions to ensure that RoCoF relays are not inadvertently activated. This cost NGENSO £150m in 2018/2019 and costs are increasing significantly due to the reduction of demand because of the COVID 19 restrictions.

The targeted long-term reduction in Vector Shift risk is intended to improve the reliability of supply by removing the risk altogether.

The Programme team are identifying sites that have LoM protection and are compliant with G59/3 issue 7, and do not need to apply to the Programme. A summary of the sites identified so far is shown in Table 6.

Table 6: Compliance achieved outside of the programme

	Pre-existing Compliance	
	Sites	MW
Total identified so far	34	450

Cost reporting

The projections of site-related costs are shown in Table 7. These projections cover the costs associated with the implementation (based on the data provided in the applications) and estimates of the costs required to cover delivery assurance activities. The table forecasts timely completion of the works, completion of delivery assurance activities, and payment.

Table 7: Projections of site-related costs⁵

Delivery stage	Dec 19	Dec 19	Mar 20	Jun 20	Sep 20	Dec 20	Mar 21
		to	to	to	to	to	to
	Mar 20	Jun 20	Sep 20	Dec 20	Mar 21	Jun 21	
No of sites completed		1066	1298	1272	234	267	
No of sites witnessed		150	95	17	12	12	
No of sites sampled		0	183	241	251	45	51
No of sites self-certified		733	962	1004	177	204	
Provider payment (£m)		3.72	5.234	4.343	0.97	0.995	0.0255
DNO cost (£m)		0.15	0.222	0.2064	0.2104	0.0456	
Total site related cost (£m)		3.87	5.456	4.5494	1.1804	1.0406	0.0255

⁵ Site-related costs are forecast according to when applicants originally committed to complete the works. It should be noted that actual costs may be delayed both by the difficulties arising from the coronavirus pandemic and the time taken to complete delivery assurance activities and payment process.

The actual number of sites declaring completion, witnessed, sampled, and self-certified are given in Table 8. The table also include the costs paid to DNOs. The data in the table suggests that delivery from December 2019 to March 2020 has exceeded expectations. This is due to:

- the increased number of sites completing the works ahead of applying
- many sites with much later deadlines opting to complete the works early.

Delivery over the March 2020 to June 2020 period dropped. This is likely to be due to COVID-19 restrictions and the extension to the deadlines. Most of the providers used recognised contractors to undertake the site works. Therefore, the number of sites where DNOs undertook witness testing of the LoM protection following the completion of the works is well below the initial estimates. The actual progress reflects the time required to process the application through each stage and we expect the numbers to continue to fall behind the original projections.

Table 8: Actual progress

Delivery stage	Dec 19	Dec 19 to Mar 20	Mar 20 to Jun 20	Jun 20 to Sep 20	Sep 20 to Dec 20	Dec 20 to Mar 21	Mar 21 to Jun 21
No of sites completed		1102	643	28			
No of sites witnessed		108	21	0			
No of sites sampled		0	85				
No of sites self-certified		548	282	8			

National Grid ESO has receipted £2,196k of invoices from DNOs and iDNOs for programme-related costs. These costs include programme administration, witnessing site work and reimbursing providers that have both completed the agreed site work and had their submitted evidence verified.

Fast Track Schemes

The unprecedented low demand due to the COVID-19 lockdown resulted in an increase in the cost of managing the RoCoF and VS risk. Most of this cost is associated with managing the risk for a subset of the sites (e.g. sites with the most sensitive RoCoF protection). Delivering a significant reduction of the generation capacity that are subject to this risk over a four-week period will deliver a significant benefit to the consumer.

On Monday 29 June 2020, the Programme published the details of Fast Track Scheme 1. This scheme aims to encourage sites of capacity from 500kW to <5,000kW and with sensitive RoCoF protection (up to and including 0.2Hz/s) to complete the protection changes within a short period. 100 sites will be fast tracked through the application process initially. They will receive an additional payment if they complete the works required within 4 weeks.

If successful, Fast Track Scheme 1 could allow NGENSO to allow RoCoF to reach 0.2Hz/s without risking a widespread disturbance.

Focus Areas

The application portal was updated in June 2020 to improve the efficiency of the process for applicants. This was completed in response to feedback received via a customer survey following the

first assessment window. A second customer survey following the second assessment window closed in June 2020 and the results are now being analysed to see if any further improvements to process and practices can be introduced.

We continue to speak to inverter manufacturers to establish if their products provide LoM protection functionality or not, the type of this protection (if it exists) and how their equipment would need to be reprogrammed to meet the new requirements. Seventeen out of twenty-six manufacturers approached have provided full or partial guidance on these issues.

The accuracy of our baseline of generation capacity remaining at risk is being reviewed. NGESO and the DNOs are gathering information to see what compliance risks have been resolved outside of the ALoMCP. This will inform what further action is required within the programme to achieve compliance. It will also streamline our engagement and ensure the right message lands to the right audience.

NGESO is currently applying a statistical approach to the assessment of risk reduction delivered by the programme. This approach assumes a relatively conservative level of confidence in the effective delivery of the works at any specific site and increases this confidence level as the site progresses through the delivery assurance process. Once delivery assurance activities conclude at a statistically representative sample of sites, the level of confidence relevant to each stage of the process can be reviewed to better reflect actual performance.

Options on how to progress with ALoMCP after the completion of window 4 are currently being considered. This includes enforcement actions for sites that do not achieve compliance either through the ALoMCP or otherwise. It also includes a review of the Programme to make sure that any extension is effective in driving further acceleration of compliance.

Window 4

Applications can now be submitted for window 4 via the online portal (<http://www.ena-eng.org/ALoMCP>). Window 4 closing day is planned for 11 August 2020.

During window 4 the Programme's Steering Group approved implementation of a fast track approach to incentivise early delivery of priority sites to run alongside the general window 4 application process.

Published 13 July 2020

Appendix

Examples of ALoMCP communication activity.

Figure 1: Example of social media (LinkedIn in this instance) message regarding the desire to secure more applications from low RoCoF and Vector Shift sites during window 3.

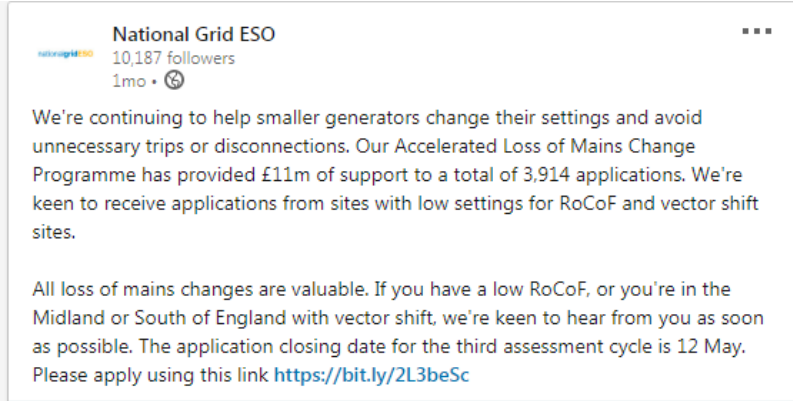


Figure 2: ALoMCP webinar promotion by SSEN

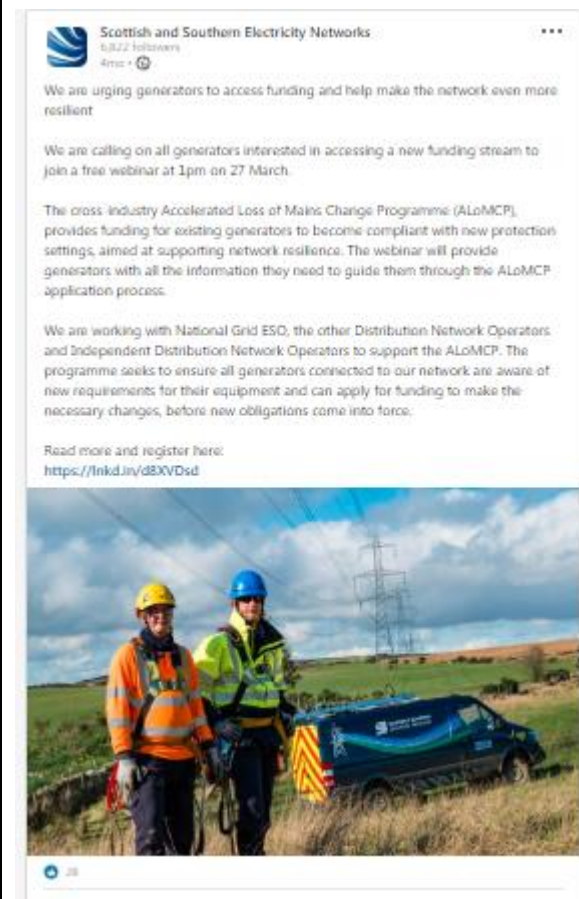


Figure 3: Electricity North West promotes progress on programme delivery on its website

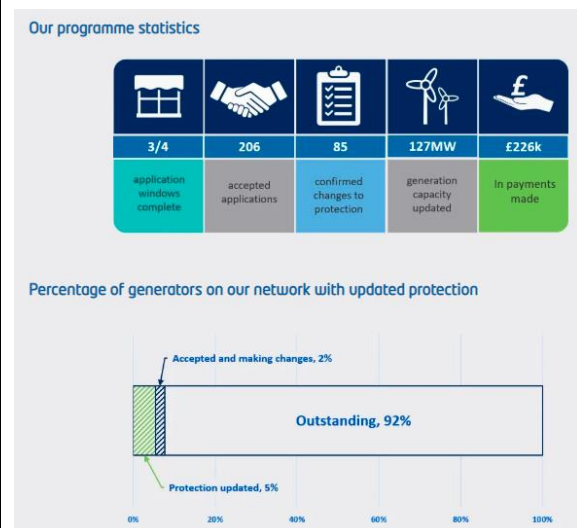


Figure 4: Northern Powergrid promotion of ALoMCP

Northern Powergrid
 14,172 followers
 2mo • 🌐

National Grid ESO
 10,952 followers
 2mo • 🌐

We're continuing to help smaller generators change their settings and avoid unnecessary trips or disconnections. Our Accelerated Loss of Mains Change Programme has provided £11m of support to a total of 3,914 applicat ...see more

Figure 5: SPEN promotion of window 3 webinar

SP Energy Networks
 8,439 followers
 4mo • 🌐

Have you applied for funding to change the Loss of Mains protection on your generation site yet?
 ...see more

National Grid ESO
 10,621 followers
 4mo • 🌐

We have been working with DNOs to deliver the Accelerated Loss of Mains Change Programme – helping to put in place the new distribution code. If you're a generator and want help on applying for funding, join our webinar c ...see more



Accelerated Loss of Mains Change Programme - Applying for Funding
 eventbrite.co.uk

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Figure 6: SPEN announcing that ALoMCP has opened for applications with window 4

SP Energy Networks
 8,439 followers
 1mo • 🌐

We are supporting phase four of the National Grid ESO Accelerated Loss of Mains programme, which is now open for applications. Click here to read more: <https://bit.ly/2WUsuP1> ...see more

National Grid ESO
 10,621 followers
 1mo • Edited • 🌐

We're pleased to announce that phase 4 of the Accelerated Loss of Mains Change Programme (ALoMCP) is now open for applications within the fourth assessment window. Phase 3 closes today and we're delighted to announce the ne ...see more