

Window 7 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 seventh application window.

Key messages

Sites representing 66% of the capacity within scope have either declared their compliance with G59/3- Amendment 7 or are progressing through the ALoMCP to achieve compliance.

Progress achieved through the programme has reduced the Vector Shift risk to a level that does not require the ESO to take any specific action to manage the remaining risk at this time.

Improved site protection data gathered by the programme and loss of mains changes delivered with programme support mean that the most critical RoCoF risk is sufficiently low for it now to be managed by means of procuring frequency response for the majority of the year. This reduction of the costs associated with constraining the largest infeed loss outweighs the increase the costs of any additional frequency response services. This difference will continue to increase as further RoCoF relays are updated. Further information is available on the NGESO website.^{1,2}

It continues to be important for generator owners who have not yet engaged with the programme to apply, or to contact their DNO to confirm they do not need help from the programme. For sites with generation capacities between 1 MW and 50 MW, the compliance status is not yet confirmed for approximately 34% of sites. For sites with a generation capacity up to 1 MW up to 88% of sites are yet to act.

Programme communications and engagement activity seeks to reach and mobilise to action these remaining sites in advance of the compliance deadline of 01 September 2022. Applications in window 7 have reduced from the high levels achieved in window 6, yet a significant proportion of generation capacity is still at loss of mains risk. As a result, the Programme has responded by increasing communication activity through an integrated campaign and intensifying direct engagement by DNOs, IDNOs, suppliers and with Ofgem.

¹ National Grid ESO: Summer Outlook, April 2021

<https://www.nationalgrideso.com/document/189741/download>

² National Grid ESO: Frequency Risk and Control report, April 2021

<https://www.nationalgrideso.com/document/187651/download>

Summary

- A total of 778 applications were approved in window 7, for a capacity of 735 MW at a cost of £2.20m in payments to distributed generation owners.
- This brings the cumulative total approved applications to 7,634 sites, for a capacity of 13,158 MW at a cost of £25.539m in payments to distributed generation owners. Some approved applications have not proceeded through accepting the Programme's terms and conditions or have withdrawn. This attrition is illustrated in Table 2, leaving 6,739 sites with 11,675 MW capacity proceeding through the programme.
- 5,384 sites have declared completion of works at sites with a combined capacity of 9,846 MW. DNOs have validated completion of site works for 4,488 sites (7,626 MW) and 3,860 sites have now received payment³.
- The Loss of Mains risk to the electricity system has reduced as a result of the scale of programme delivery and 'Vector Shift only loss' risks have reduced sufficiently that these risks are now fully covered by ESO's minimum inertia policy. Peak Vector Shift risk has reduced from 1200 MW to 477MW.
- Both ALoMCP programme delivery and also the deployment of the ESO's Dynamic Containment product are making a significant contribution to managing RoCoF risk to the extent that ESO can manage system losses through frequency response rather than limiting RoCoF.
- The Fast-Track scheme for sites with RoCoF settings of 0.125Hz/s and 0.2Hz/s has resulted in approval of 103 sites with a total capacity of 293 MW at an additional cost to the programme of £515k. All of these sites have reported completion of works with DNOs validating evidence for 85 sites so far.
- A new communications campaign has launched with the objective of raising awareness of the programme and in particular helping owners of smaller generation sites up to 1 MW capacity to understand what action they need to take to report their existing compliance or, where necessary to apply for support to make the required changes to Loss of Mains protection.
- 68% of all sites with a generation capacity of 5 – 50 MW at Loss of Mains risk have applied to the programme or declared their compliance to G59/3-7.
- 634 sites with a combined capacity of 4,698 MW have self-declared their compliance without Programme support.
- Window 8 opened for applications 12 May 2021 and closed on 10 August 2021.

³ Progress data to 23 June 2021

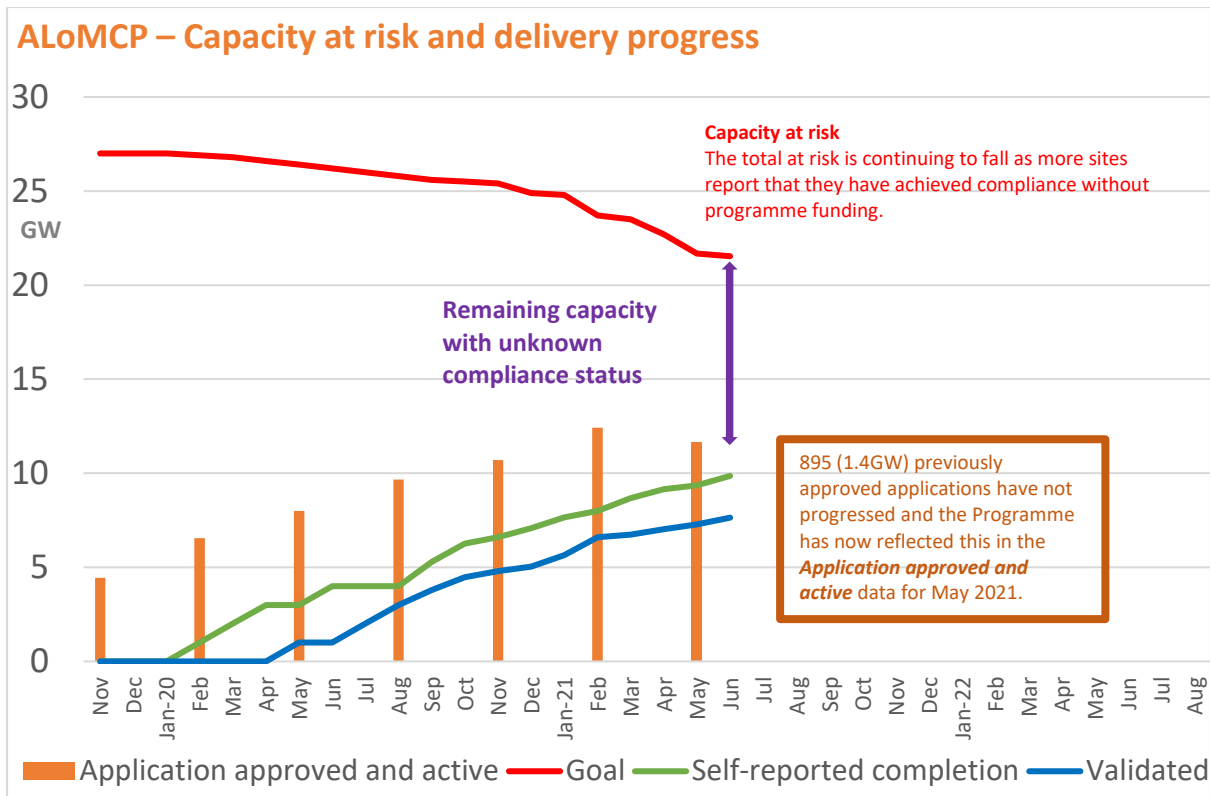


Figure 1: The progress of approved applications towards compliance by 01 September 2022 (Data at 23 June 2021)

Timeline

The schedule for window 7 is presented in Table 1. The application portal remained open for applications after the closing day for window 7. Applications received after that date will be progressed on or before the closing day for window 8.

Table 1 – Key dates for window 7

Opening Day	10.02.2021	Distributor Results Day	09.06.2021
Closing Day	11.05.2021	Provider Results Day	23.06.2021
Pre-qualification Day	26.05.2021		

Process performance

Table 2 shows the number of applications and their assessment outcome for each completed assessment window. For successful applications, it also shows their progress through each stage of the Programme. The data demonstrates at 23 June 2021 that 5,384 sites (9.85 GW) have reported completion and have submitted evidence of their site changes. This evidence has been reviewed for 4,488 sites (7.626 GW) and payment made to 3,860 sites.

The number of sites and their combined capacity applying to the programme reduced in window 7 compared to the particularly high rates achieved in window 6. The programme continues to deliver, review and refine communications and engagement activity to reach those sites that have yet to apply or declare their compliance.

Distribution Network Operators (DNOs) customer support teams continue to directly contact 5 MW to 50 MW capacity sites to encourage participation in the programme or to provide details of their existing compliance to G59/3-7.

Almost 1,400 sites fall within this capacity range. 49% of these sites have now applied, with a further 19% declaring that their sites are compliant. It is estimated that almost 440 sites with a capacity of 5-50 MW are still to confirm their compliance status.

The latest baseline capacity at risk within these sites is 19.253 GW. 43% (8.297 GW) of this has applied to make changes through the Programme and a further 23% (4.507 GW) has declared compliance without Programme support. 6.449 GW of capacity within 5-50 MW generation capacity sites has yet to advise the Programme of their compliance status.

Further details of the Programme's strategy to resolve the status of the remaining 440 sites with a combined generation capacity of 6.4 GW is provided in the *Focus Areas* chapter within this report.

1,039 applications were submitted during window 7 and 874 of these applications passed initial screening by the DNOs for formal assessment by ESO, resulting in 778 applications being accepted for a total capacity of 735 MW (Table 2).

Table 2: Summary of applications by sites, capacity, process stage and assessment window, 22 June 2021

Window		One	Two	Three	Four	Five	Six	Seven
Applications submitted to DNOs by the window closing day	Sites	2,031	1,403 ⁴	1,011	793	818	1,394	1,039
	Total MW	5,484	3,383	2,774	2,752	2,160	2,615	1,725
Applications received by NGENSO by the pre-qualification day	Sites	2,039 ⁵	1,306	998	775	786	1,324	874
	Total MW	5,315	2,846	2,368	2,269	1,713	2,354	1,373
Applications approved	Sites	1,978 ⁶	1,261	943	710	702	1,262	778
	Total MW	4,440	2,105	1,457	1,662	1,037	1,723	735
Sites accepting contractual terms	Sites	1,786	1,065	898	796	570	1,022	532
	Total MW	4,174	1,904	1,239	1,500	834	1,575	496
Sites self-reporting completion	Sites	1,731	1,024	845	769	539	731	139
	Total MW	4,104	1,716	1,131	1,381	621	1,095	96
Continued overleaf								

⁴ Includes some applications not approved in window 1

⁵ Some DNOs/IDNOs had enough capacity to process applications received between the window closing day and the pre-qualification day

⁶ 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.

Window		One	Two	Three	Four	Five	Six	Seven
Evidence of completion verified by DNO / iDNO	Sites	1,650	928	779	539	439	325	35
	Total MW	3,782	1,297	868	1,075	428	451	40
Sites paid	Sites	1,572	841	696	393	284	121	9
	Total MW	3,562	1,143	710	788	313	132	3

Window 7 assessment led to 95 applications being rejected. The reasons for rejection and the number of instances of each were:

- Unclear LoM type / unclear RoCoF settings (61)
- Sites that do not pose any operational risk with RoCoF settings greater than or equal to 1 Hz/s, delay greater than or equal to 0.5s (9)
- Sites with a capacity of 50MW or above (1)
- Sites with a capacity of 5MW or above that failed to comply with GC0035 recommendations but are not an immediate risk (non-synchronous with RoCoF greater than or equal to 0.2 Hz/s, synchronous with RoCoF above 0.2Hz/s but below 0.5Hz/s) (24)

No eligible applications sought a lead time to complete changes beyond the compliance deadline of 01 September 2022.

The Programme's delivery assurance workstream activities are designed to provide some insight on how the changes required are being implemented. So far, 4,476 sites (7,618 MW) have had their sites changes verified by their DNO/iDNO and no major issues have been identified. Some minor issues were identified by DNOs when validating the evidence provided by customers and payments were withheld whilst the minor issues identified are rectified.

DNOs/iDNOs have undertaken 462 sample site visits and witnessed 285 protection changes. The majority of the changes witnessed, i.e. to validate the Loss of Mains protection changes made, have been observed remotely due to the pandemic. A small number of minor observations have been made through this process for sites to correct, but no substantial issues have materialised.

Value delivery

Table 3 shows the estimate of the total generation capacity that requires a change in their protection settings through the ALoMCP.

The initial estimate was informed by the standard planning data provided by DNOs (known as week 24 submissions) under the Grid Code, and some significant assumptions to cover for the uncertainty associated with legacy sites.

As programme delivery proceeds it has been possible to revise the estimates drawing on data from both applications to the programme and also from the knowledge gained through engagement with sites that require no change to their LoM protection through the programme. This resulted in:

- a reduction in the difference between the high estimate and the low estimate for the total risk, and
- a reduction in the high estimate for each of the two risk components.

The figures will be reviewed as more knowledge is gained.

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

		Original programme estimates	Revised estimates (Oct '20)	Revised estimates (Jan'21)	Revised estimates (Mar'21)	Revised estimates (July'21)
High estimate	Total (GW)	24	24	25.3	23.7	21.4
	VS component (GW)	22	21	21.8	20.0	18.1
	RoCoF component (GW)	2	3	3.5	3.8	3.3
Low estimate	Total (GW)	20	22	23	21.9	20.1
	VS component (GW)	10	14.5	15.2	14.8	14.2
	RoCoF component (GW)	10	7.5	7.9	7.2	5.9

The RoCoF estimates in Table 3 include all generation capacity with existing RoCoF protection that require updating. Some of these sites will have low RoCoF settings, e.g. 0.125Hz/s and 0.2Hz/s, that require that their risk of tripping is managed in real time. Others will have higher RoCoF settings, e.g. 0.5Hz/s. Our estimates for the most critical RoCoF risk are shown in Table 4.

Table 4: Estimates of generation capacity with RoCoF protection at risk of inadvertent operation of LoM

	MW	Original Programme estimate	04/01/2021 estimate	05/04/2021 estimate	01/06/2021 estimate
Generation tripping for RoCoF exceeding 0.125Hz/s but remaining below 0.2Hz/s	Total generation capacity	1714	1328	1183	1059
	Peak risk	755	865	687	627
	Risk prevailing 50% of the time	349	321	286	258
Generation tripping for RoCoF exceeding 0.2Hz/s but remaining below 0.5Hz/s	Total generation capacity	1286	997	1093	1121
	Peak risk	566	649	592	606
	Risk prevailing 50% of the time	262	241	238	246

Table 5 shows how the volume at risk of disconnection due to RoCoF and Vector Shift (VS) protection will reduce as the sites with applications approved through each window implement the changes required.

Table 5: Projected RoCoF and VS risk reduction⁷

Window	Delivery Milestone	Dec 2019	24Jun 2020	23Sep 2020	23Dec 2020	11Mar 2021	23Jun 2021	22Sep 2021	22Dec 2021	23Mar 2022	22Jun 2022
	Risk reduction	23Jun 2020	22Sep 2020	22Dec 2020	10Mar 2021	22Jun 2021	21Sep 2021	21Dec 2021	22Mar 2022	21Jun 2022	31Aug 2022
Previous windows	Projected RoCoF risk reduction (MW)	366.1	68.4	158.9	88.1	331.1	59.9	59.0	41.4	-	-
	Projected VS risk reduction (MW)	4,520.1	1,319.7	1,620.1	1,596.8	551.4	592.0	60.3	99.1	35.0	-
	Projected total risk reduction (MW)	4,885.2	1,388.2	1,778.9	1,717.1	960.7	763.5	119.4	288.6	35.0	-
Window Seven	Projected RoCoF risk reduction (MW)						123.5	22.0	0.0	11.2	0.0
	Projected VS risk reduction (MW)						231.1	45.4	6.8	126.0	43.2
	Projected total risk reduction (MW)						411.3	128.6	6.8	145.0	43.5
Window	Delivery Milestone	25Mar 2020	24Jun 2020	23Sep 2020	23Dec 2020	11Mar 2021	23Jun 2021	22Sep 2021	22Dec 2021	23Mar 2022	22Jun 2022
	Risk reduction	23Jun 2020	22Sep 2020	22Dec 2020	10Mar 2021	22Jun 2021	21Sep 2021	21Dec 2021	22Mar 2022	21Jun 2022	31Aug 2022
Overall	Projected RoCoF risk reduction (MW)	366.1	68.4	158.9	88.1	331.1	183.4	81.0	41.4	11.2	0.0
	Projected VS risk reduction (MW)	4,520.1	1,319.7	1,620.1	1,596.8	551.4	823.1	105.7	105.9	161.0	43.2
	Projected total risk reduction (MW)	4,885.2	1,388.2	1,778.9	1,717.1	960.7	1,174.8	248.0	295.4	180.0	43.5

With many sites indicating completion of the works and progressing through the delivery assurance process, NGESO is modelling the risk reduction delivered by the Programme when securing the system in operational timescales. The assumed risk reduction values are shown in Table 6. These values will continue to increase as more sites indicate completion of the works and as the delivery assurance activities progress.

Table 6: Assumed RoCoF and VS risk reduction

Delivery Milestone	July 20	Sept 20	Jan 21	Mar 21	Jun 21
RoCoF risk reduction (MW)	82	124	216	814	1,055
VS risk reduction (MW)	1,847	3,789	4,885	5,555	6,520

⁷ Original forecast timing of the delivery of changes, prior to any time extensions agreed as a result of the Covid-19 pandemic response

The effect of the revised baseline given in Tables 3 and 4 and risk reduction that has been achieved through the programme mean that the estimate for real time VS risk and the most critical RoCoF risk have been dropping as shown in Table 7

Table 7: Real time Vector Shift and the most critical RoCoF risk

	GW	Original Programme estimate	04/01/2021 estimate	05/04/2021 estimate	23/06/2021 estimate
Generation tripping for RoCoF exceeding 0.125Hz/s but remaining below 0.2Hz/s	Total generation capacity	1,714	1,116	991	840
	Peak risk	755	734	553	476
	Risk prevailing 50% of the time	349	280	243	212
Generation tripping for RoCoF exceeding 0.2Hz/s but remaining below 0.5Hz/s	Total generation capacity	1,286	837	931	865
	Peak risk	566	551	492	461
	Risk prevailing 50% of the time	262	210	202	190
Highest VS Only risk	Total generation capacity	12,510	7,696	7,024	6,208
	Peak risk	1,197	618	501	477
	Risk prevailing 50% of the time	353	280	261	237

The costs of delivering the programme to reduce Loss of Mains risks are significantly lower than the cost of managing LoM through other system actions that ESO takes. The cost of managing LoM risk was £144m in 2018-19 and £201m in 2019-20. In 2020-21 the cost was £345m as a result of high levels of asynchronous renewable generation, low levels of inertia and the impact of the Covid-19 pandemic response on electricity demand. Once the Programme is complete, the commercial cost of managing the issue will be removed, saving hundreds of millions per year for the end consumer.

The forecast cost of the Programme is £100m, which will be charged through BSUoS over the relevant timeframe. The cost will be included within our BSUoS forecasts alongside the cost of the balancing actions which are expected to be taken to manage this issue before it is resolved. To date, Programme costs include £25.5m allocated to approved applications from embedded electricity generators to make LoM protection changes and £3.0m expenditure in programme administration and delivery.

Since the end of 2020, the changes that the programme is making to Loss of Mains protection for 'Vector Shift only loss' risk are sufficient so that these risks are fully covered by ESO's minimum inertia policy. This has eliminated the risk of Rate of Change of Frequency (RoCoF) protection being triggered due to a Vector Shift loss alone so ESO does not anticipate the need to take actions to manage this. The projected saving in the balancing costs is £20.0m per annum.

Compliance reported from sites without Programme support

A summary of the progress in identifying generation capacity that has self-reported its compliance with the LoM protection requirements in G59/3 amendment 7 without support from the Programme is shown in Table 8. This demonstrates that engagement activity to raise awareness of the programme and encourage applications for support to make LoM protection changes continues to provide increased visibility of sites that believe that they are already compliant. The Programme is developing a sampling approach to verify the compliance status of these sites.

Table 8: Sites self-reporting compliance without Programme support

	Pre-existing compliance – cumulative				
	July 2020	Oct 2020	Jan 2021	Mar 2021	June 2021
Sites identified	34	97	223	429	634
MW	450	1,422	2,782	3,846	4,698

Fast-Track Scheme

A Fast-Track scheme was launched in summer 2020 to incentivise sites of capacity from 500kW to <5,000kW and with sensitive RoCoF protection (up to and including 0.2Hz/s) to complete the necessary protection changes within four weeks of acceptance by the programme. Sites meeting these criteria are paid an additional £5,000. The scheme has been extended to cover sites with capacity above 5,000kW provided that other criteria are met. The scheme accepted applications until 28 May 2021.

The progress achieved through the Fast-Track scheme is shown in Table 9.

Table 9: Fast Track applications and completed works

		Fast Track participation – cumulative			
		Nov 2020	Jan 2021	Mar 2021	June 2021
Approved applications	Sites	35	49	72	103
	MW	51	71	199	293
Reported completion	Sites	35	45	63	103
	MW	56	64	116	293

Cost reporting

The projections of site-related costs are shown in Table 10. These projections cover the costs associated with the implementation of site changes (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 10: Projections of site-related costs⁸

Delivery stage	Dec 2019 - 24Mar 2020	25Mar 2020 - 23Jun 2020	24Jun 2020 - 22Sep 2020	23Sep 2020 - 22Dec 2020	23Dec 2020 - 10Mar 2021	11Mar 2021 - 22Jun 2021	23Jun 2021 - 21Sep 2021	22Sep 2021 - 21Dec 2021	22Dec 2021 - 22Mar 2022	23Mar 2022 - 21Jun 2022	22Jun 2022 - 31Aug 2022	Total
No of sites completed	1,066	1,298	1,272	930	857	1011	825	137	107	82	5	7590
No of sites witnessed	150	95	17	75	69	81	30	12	10	10	1	550
No of sites sampled	0	183	241	251	171	158	110	15	14	10	1	1154
No of sites self-certified	733	962	1004	684	630	744	600	110	90	65	3	5625
Provider payment (£m)	3.72	5.23	4.34	3.51	3.0	2.59	2.0	0.4	0.3	0.2	0.0	25.29
DNO cost (£m)	0.15	0.22	0.21	0.26	0.19	0.12	0.06	0.02	0.02	0.02	0.01	1.28
Total site related cost (£m)	3.87	5.46	4.55	3.77	3.19	2.78	2.06	0.42	0.32	0.22	0.00	26.57

The actual numbers of sites declaring completion, witnessed, sampled, and self-certified are given in Table 11 alongside programme costs. Programme costs are presented as DNO administration costs and site-related costs. Site costs include payments to electricity generators (providers) successfully completing approved changes through the Programme as well as DNO costs witnessing changes and undertaking sample site visits.

Table 11: Actual costs and progress to date

Delivery stage	Dec 19	Dec 2019 - 24Mar 2020	25Mar 2020 - 23Jun 2020	24Jun 2020 - 22Sep 2020	23Sep 2020 - 22Dec 2020	23Dec 2020 - 10Mar 2021	11Mar 2021 - 22Jun 2021	Total cost (£m)
No of sites completed	77	1,079	817	1,382	703	602	857	
No of sites witnessed		108	21	88	39	12	17	
No of sites sampled		0	85	109	97	77	94	
No of sites self-certified		548	282	949	669	1426	788	
Provider payments (£m)	0	0.05	1.43	3.32	3.60	2.96	2.25	13.61
DNO costs (£m)	0	0.01	0.02	0.09	0.08	0.05	0.06	0.31
Total site-related costs (£m)	0	0.06	1.45	3.41	3.68	3.00	2.32	13.92
DNO administration costs	0.04	0.11	0.41	0.57	0.39	0.53	0.66	2.72
DNO costs not yet categorised	0	0	0.12	0.08	-0.10	0.34	0	0.44
TOTAL by Quarter (£m)	0.04	0.17	1.98	4.06	3.97	3.87	2.98	
TOTAL cumulative (£m)	0.04	0.21	2.20	6.26	10.22	14.10	17.08	17.08

⁸ This Table includes correction of an error within the same table of the Window 5 report. 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.

Most of the site owners 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 continues to be below the projected estimates. The actual progress reflects the time required to process the application through each stage. We expect the numbers to continue to track behind the original projections.

Total invoiced costs to the end of June 2021 totalled £17.077m. This is comprised of:

- £13.606m in payments to providers that have implemented changes at their sites
- £0.312m for witness testing and sample site visits
- £2.717m in DNO programme administration and delivery costs.

A further £0.443m in invoiced costs have not yet had their cost classification confirmed. This is an improved position from the £2.5m in costs to be categorised reported in February 2021, reduced to £1.1m reported in May 2021. Most of these costs relate to recent delivery activity and this is due to a time lag between some DNO invoices being raised and the programme application portal records being updated to indicate works are completed including reference to the appropriate DNO to ESO invoice number.

Communication and engagement

A reduction in applications in Window 7 compared to Window 6 was a stark reminder of the importance of continuing to raise awareness with distributed electricity generators of the need to achieve compliance by 01 September 2022 and of the support and funding available to eligible applicants through the programme.

We continue to survey programme applicants anonymously to help us understand what the programme is doing well and where there is room for improvement. One survey question asks customers to tell us their preferred method of communication to have heard about the programme. This gives us insight and new ideas to help reach other customers who haven't yet engaged. The survey responses have consistently shown that the preferred method of communication, from those sites that are within the programme, has been from the customers distribution network operator (DNO).

DNOs have contacted customers directly to inform them of the requirements and the support available through the programme and also continue to deliver a programme of direct engagement of customers. Given the volume of customers affected it has been necessary to prioritise this engagement on larger sites (5MW up to less than 50MW) to help rapidly reduce the scale of Loss of Mains risk on the electricity system. As the programme has continued, this effort has been extended to 1 – 5MW capacity sites and also to sites with a capacity of less than 1MW. Reaching the smaller generators has proved more challenging with a wide diversity of owners of generation sites and also great variation in the level of awareness and technical understanding of the requirements.

To address this challenge, the PR agency hired by the programme, launched a digital campaign on 10 May. This seeks to create a co-ordinated and cohesive campaign, amplifying the communications efforts of all the individual licensees to raise awareness of the need to act and the support available

through the programme. The campaign also encourages sites that have already achieved compliance without programme funding to notify their DNO.

A digital campaign was seen as the most comprehensive way of reinforcing and amplifying the same message, across multiple platforms, from multiple, credible sources to help raise awareness among the widely disparate audience and reinforce the urgency of the message to prompt action.

This digital strategy; is the fourth phase of communications within the project. The scope across previous phases included:

- Wave 1: case studies and marketing materials developed, stakeholder mapping, stakeholder outreach and ongoing support for the technical working group.
- Wave 2: outreach and scoping exercise to determine ALoMCP knowledge with energy suppliers and appetite to support with awareness raising campaign.
- Wave 3: establishment of UK energy supplier ALoMCP working group to collaboratively raise awareness about ALoMCP, harnessing energy suppliers' customer relationships as a route to target audiences.

Three strands of the digital campaign are now live:

- Digital creative platform: A memorable campaign platform and creative route to simplify the call to action and messaging. The platform forms the basis of the campaign strategy, including messaging development, call to action development and creative process.
- User friendly landing page: It was identified that the landing page for ALoMCP information hosted on the ENA website were complex and difficult to understand for someone who is not technically literate. A new, user-friendly landing page to encourage action from users was developed and is now the primary location customers are directed too. www.futureproofyourpower.co.uk
- Targeted paid social advertising: Paid advertising enables messaging to be targeted to specific sectors. This is a key programme as it enables specific message targeting to identified audience groups.

The campaign began in May 2021 and focused on communicating the 12 months until the final closing date for applications for funding deadline (10 May 2022). It will then build to deliver a “big bang” in September to mark the 12-months until compliance deadline, including digital, PR and ongoing paid social activity. The messaging in autumn 2021 will then progress to focus on what enforcement action can be expected for non-compliant sites from 01 September 2022.

Alongside this digital campaign, National Grid ESO and DNOs continue to post organically from their own social media channels.

In addition to the communications campaign, DNOs and iDNOs have continued to contact customers directly, prioritising larger eligible sites, urging their participation in the programme or to declare if their site is already compliant. The programme estimates almost 3,200 generation sites with a capacity of 1MW to less than 50MW are affected by programme and 33% (1,050 sites) are yet to apply or declare that they are already compliant. Through the programme's Customer Support workstream

engagement successes and challenges are shared to support DNO and iDNO efforts to establish the compliance status of these remaining sites.

Focus Areas

The number of applications is now sufficiently high to allow us to infer the baseline RoCoF risk with an adequate degree of confidence. This will allow the actions taken by the ESO to reflect the actual level of risk on the network. First baseline review was conducted in Jan 2021 and subsequent reviews will be conducted on a regular basis to reflect any change in the applications and any information gathered from sites that are found to be compliant outside of the ALoMCP.

With many inverters having their own LoM protection algorithm built in within the inverter controller, the ALoMCP is continuing to engage with inverter manufacturers to gather information on the inverter based LoM protection and how to update it to ensure compliance and to publish this information on the ALoMCP portal. There remains some risk that we would not be able to achieve this for all makes and models (e.g. where a manufacturer is no longer operating in the market). The programme is currently looking at possibilities to address this risk

With some wind turbines having an additional element of LoM protection built in within the turbine, the programme is continuing to engage with wind turbine manufacturers and some generators with large portfolio to assess the extent of the risks and the scope of the works required to mitigate it. We are working with these stakeholders to ensure that implementation plans are in place to complete the required works ahead of the compliance deadline.

The current priority is to address generation tripping if RoCoF is to exceed 0.125Hz/s or to exceed 0.2Hz/s. To achieve this,

- DNOs are currently focusing on direct engagement with the 600 remaining sites with capacities of 5MW to 50MW to either establish their compliance or invite them to apply to the programme. This should cover 73% of the capacity that is yet to engage and, if successful, will reduce the RoCoF baseline risk, increase the confidence in its value, and establish a realistic timeline to alleviate the majority of it.
- DNOs and the ESO are working together to ensure their datasets for embedded generation of capacity of 1MW or above are aligned together and reflect all the additional information available to the DNOs either through the programme, the direct engagement, or through the network planning process for each DNO.

With the drop in the forecast generation capacity that have RoCoF protection with settings below 0.5Hz/s, we anticipate that there should be an increase in the capacity with VS protection. The extent of this increase is yet to be identified however we do not anticipate that the corresponding increase in the real time VS risk will be significant as this is calibrated against real time system events.

A significant number of sites have achieved compliance with the new protection requirements outside of the ALoMCP. The Programme previously collated this information through direct engagement and has now improved this by providing an opportunity for generators to declare their compliance via the programme's online portal. This approach requires sites to provide the data and the evidence required for their DNO to confirm this compliance. The Programme is also looking at an assurance process to increase our confidence in the data collated about compliant sites.

As detailed within the Communications section another key focus area is to raise awareness of the need to act with the many thousands of generators affected by the requirements that have a generation capacity below 1MW in addition to the direct engagement of generators with site capacities of 1MW up to 50MW. The *futureproofyourpower* communications campaign is generating higher levels of awareness and engagement with refreshed online guidance to help sites understand what is required and how to take action. As the programme moves towards the milestone of 12 months remaining for sites to achieve compliance before the 01 September 2022 deadline, the communication campaigns messaging will increasing focus on the urgency to take action and the risk of generators being subject to an enforcement programme if they fail to demonstrate their compliance in time.

Future applications

Applications can continue to be submitted for assessment via the registration portal (<http://www.ena-eng.org/ALoMCP>). The schedule of closing dates for application windows beyond window 7 is presented in Table 12.

Table 12: Schedule for future application windows

Application window	Closing date for applications
8	10 August 2021
9	09 November 2021
10	08 February 2022
11	10 May 2022
	Final closing date

Published October 2021