

## From the Chairman of the Distribution Code Review Panel

### Electricity North West

304 Bridgewater Place, Birchwood Park,  
Warrington, Cheshire WA3 6XG

Telephone: +44 (0) 1925 846999

Fax: +44 (0) 1925 846991

Email: [enquiries@enwl.co.uk](mailto:enquiries@enwl.co.uk)

Web: [www.enwl.co.uk](http://www.enwl.co.uk)

To all electricity industry stakeholders

Direct line 01772 848526

[mkay@iee.org](mailto:mkay@iee.org)

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Dear Colleague

### Revision of Engineering Recommendation P2

This letter sets out the views of the network licensees in relation to the future of the document ER P2/6 "Security of Supply". Adherence to this document by the DNOs is a requirement of the DNOs' licence.

The current version of ER P2, ie ER P2/6, was published in July 2006. However ER P2/6 is only a relatively minor update to its predecessor ER P2/5; the update concentrating solely on the contribution that generation can make to the security of supplies of distribution networks. ER P2/5 was developed in the 1970s and published in 1978.

ER P2/6 and National Grid's Security and Quality of Supplies Standard (SQSS) share a common ancestry in that both are based on ER P2/5 for demand security.

The annex to this letter explains in more detail the history and current perceived deficiencies of ER P2 (and the equivalent sections of SQSS). It is the network licensees' intention to embark on a wholesale review of ER P2 starting in 2013. As ER P2 is both important to the security of supplies to end customers, and influential on how networks develop and rise to the challenge of a decarbonizing society, it is appropriate to ensure that a broad a review as possible is undertaken, with input and views sought from a wide cross section of network users.

ER P2 is both a Distribution Code document and cited in the Distribution Licence. As such, formally any modification to it will be done under the aegis of the Distribution Code Review Panel, and ultimately changes implemented by Ofgem. Similarly any modifications to SQSS will be under the governance of the SQSS Panel.

The Distribution Code Review Panel intends to undertake this work through a specially constituted working group. Current thinking is that the work will probably be undertaken in two phases. The first phase will be one of research, where the right scope and approach for security will be sought. This will be a phase where significant stakeholder input will be required. The network licensees anticipate that they will select a suitable expert entity to formally assist with the overall development and crystallization of ideas in this first phase. The licensees are expecting the first phase to run for a period of between one and two years. A subsequent phase will then develop the agreed approach into a working solution, including any drafting of new standards etc.

It should be noted that there is an apparently parallel strand of working running in the industry at this time. As DNOs begin to use demand side response (DSR) arrangements to avoid reinforcing their networks, concerns have been raised about the compatibility of the drafting of ER P2/6 and the use of DSR. Accordingly there is a very narrow consideration being undertaken of this particular point. The DNOs and others engaged in that work are aiming at short term clarification only, and they expect their thinking to be subsumed in the wider piece of work that is the subject of this open letter. The reason for tackling this part of the overall P2/6 deficiencies is to allow DSR to be used without impediment from the start of the RIIO ED1 price control period from April 2013.

Respondents to this letter are invited to comment on any aspect of this proposed work, and particularly on the assumptions etc in the annex. We would particularly like to hear views on the following:

1. Do you agree that it is appropriate to review ER P2 and the demand security aspects of SQSS? And what are your views on the timing of a review?
2. Do you believe that security standards are actually required? If so what are the key reasons?
3. Do you have views about what expert input should be sought as part of the proposed work, or how the work should be undertaken?
4. Do you have views regarding how the development of price controls and the outputs required of licensees by Ofgem could or should replace totally or partially the functions of P2?
5. If you know of anyone, including yourself, who would have appropriate knowledge and experience (and resource) to join the Distribution Code Review Panel Working Group that will oversee the project.
6. Are you aware of any particular industry developments (such as the introduction of the EU network codes) that also need to be taken into account?

We are seeking responses to this letter by Friday 18 January 2013. Please address any comments to the Distribution Code Review Panel Secretary, David Spillett, Energy Networks Association, 52 Horseferry Road, London, SW1P 2AF; [david.spillett@energynetworks.org](mailto:david.spillett@energynetworks.org)

Yours sincerely,

Mike Kay  
Chairman of the Distribution Code Review Panel of Great Britain

## Standards for the Security of Supplies

### 1 Background

This annex outlines the current perceived problems with the existing system security standards and suggests how these could be tackled. The main industry documents considered are SQSS and P2.

P2 is a licence requirement on distributors for the planning of their systems. P2, although updated in 2006 for generation contributions, has not had its basic underlying analysis revisited since it was drafted in 1977.

The Security and Quality of Supply Statement (SQSS) is a licence requirement for National Grid to design and operate the transmission system. It was created in 1997 and is largely a portmanteau document of the old Central Electricity Generating Board planning and operating standards developed in the 1960s and 1970s. The parts of the SQSS relating to demand security are essentially a transcription of ER P2/5, ie not reflecting the changes that were made to P2/5 in updating it to ER P2/6 in 2006. The P2/5 to P2/6 changes related solely to the contribution to demand security that embedded generation can make.

### 2 Deficiencies of current situation

P2 and SQSS both apply to the respective parties at Grid Supply Points. Because they are different documents, albeit with a common origin, there are differences in drafting and interpretation which lead to problems in identifying or confirming licence compliance at GSPs in some instances.

P2 has the following currently perceived deficiencies:

- a) The underlying economic analysis undertaken in the 1970s
- b) It assesses the effect of interruptions to supply based on a single value for the assumed worth of a kilowatt hour of electricity not supplied (VOLL), ie it does not recognize that different customers value this differently or that the value increases dramatically over time.
- c) It does not recognize the significant risks associated with long outages for construction type work; it is drafted solely to deal with maintenance type outages where return to service times are likely to be less than 24 hours.
- d) P2 gives no guidance on common mode failures. There is no guidance on the appropriate investment or operational response to an incident such as the Dartford cable bridge fire in 2009.
- e) It does not recognize demand side response (DSR). It is debatable that any significant DSR activity (whether supplier or network operator led) would need a derogation from P2/6.
- f) The contribution to generation security was assessed on sparse data available in 2003.
- g) There is no recognition of Ofgem's Interruption Incentive Scheme and how this interacts with DNOs design approaches.

- h) It does not recognize the emerging use of output measures by Ofgem to determine the customer service and network risk that should form part of DNOs' network management and investment plans.
- i) It does not recognize the current work on cost benefit analysis that is becoming a feature of all current and future price controls.
- j) It does not recognise:
  - the contribution to security of supplies from Energy Storage devices
  - the contribution to security of supplies from 'smart / low carbon' techniques, including those with increased reliance on communication and control. Techniques including but are not limited to:
    - i. Real-time thermal ratings;
    - ii. automatic/remote network reconfiguration;
  - the variation of anticipated incident frequency and duration associated with real assets, e.g. that a 40km 1929 restricted clearance tower line over the moors may fail more often and more extensively than a 40m 2009 underground cable across a controlled compound.

SQSS shares all the deficiencies (a) to (j) above, with the exception of (f). In relation to (f) in SQSS the generation contribution to demand security is essentially that of P2/5, ie unchanged since 1977, and only provides guidance for steam generation power stations with conventional (for the 1970s) shift staffing arrangements.

In considering security it will be important to include how distributed generation can be designed to contribute. It is likely that it will be necessary to review the assumptions of generation behaviour in response to faults and contingencies. The current philosophy is enshrined in the Distribution Code and also in Engineering Recommendation G59.

### **3 Current Drivers for Change**

#### **3.1 DSR activity in GB**

P2/6 has no accommodation in its drafting for demand side management. Although there is likely to be a short term drafting fix to avoid the deployment of DSR breaching the letter of P2/6, there seems to be a case for a more fundamental review of demand side responses as a contributor to system security.

#### **3.2 Growth of Embedded Generation**

The current security and operational philosophy and associated documents were developed when embedded generation was a rarity in the 1960s and 1970s. Privately owned generation was not allowed to export for profit until the 1983 Energy Act. In the future tens of GW of generation will be embedded in distribution networks and will play a different role, either by accident or design, in system security both locally and nationally.

#### **3.3 Smart Grids**

Smart Grids is a term in common use, but for the purposes of this document is probably an umbrella term picking up all of 3.1 and 3.2 above as well as DSR

employed by any or all energy sector companies in the future. The current security standards do not explicitly recognize DSR.

### **3.4 Continuing difficulties of compliance assurance**

The apparently minor drafting differences between SQSS and P2/6 cause a lot of discussion and analysis between distributors and National Grid, and in a few cases, significant mutual work to establish what is and is not compliant with either or both standards. There are clearly benefits in resolving these differences.

### **3.5 Changes to GB Generation Mix**

The growth of asynchronous machines (ie wind generation) displacing conventional generation the increase in the largest infeed loss from 1320MW to 1800 MW to accommodate new nuclear stations. This will lead to a more volatile system frequency in GB, making discrimination more difficult for loss of mains protection based on rate of change of frequency.

### **3.6 EU Network Codes**

EU Network Codes have significant new requirements for all generators down to 1MW in size, ie those that are or will be connected to distribution networks. These new requirements will make it technically more appropriate for distributed generation to contribute to security of supplies.

### **3.7 Operation of the network**

P2/6 is a planning standard. It does not deal with contingencies in the operational time frame. This is not necessarily an issue. It is, however, different to SQSS in this regard which has both planning and operating requirements. This issue should be addressed and a clear recommendation made on the need or otherwise for a DNO operating standard.

## **4 Suggested Approach**

Demand security is afforded by both network and local (and transmission connected) generation capability. Although it is possible to treat network and generation issues separately, and which has been done since the 1970s, it will be impossible to prove that any future approach is optimum unless the two are considered together.

If a fundamental review is to be undertaken, then it needs planning over the medium term, not least in terms of resources. Formally any changes to P2 (and G59) need to be publicly consulted upon. Such a fundamental review will need stakeholder and consultation support as part of the identification of any changed approach and direction to security, as well as a consultation on any final documentation. Although it is not possible to be precise at this stage, previous experience overlaid with appropriate ambition suggests that we should be prepared for the identification of the approach to take 12 months, with a further 24 months for development and finalization.

There are aspects of the SQSS that are probably outside of the review proposed in this paper. The SQSS covers issues associated with running an integrated transmission system. These are potentially wider than those issues related to demand security on distribution systems. Establishing overlaps and boundaries with SQSS would need to form part of the early work. In addition any actual changes in these areas will be under SQSS or Distribution Code governance, so any proposals

for change will need to be formally progressed under those governance arrangements.

It will be appropriate to seek academic and/or consultancy support for at least the identification of the approach, if not for the whole development.