

REGULATORY IMPACT ASSESSMENT FOR THE ELECTRICITY SAFETY, QUALITY AND CONTINUITY REGULATIONS 2002

(Publication reference – URN 02/1545)

1. Title of proposed measure:

“THE ELECTRICITY SAFETY, QUALITY AND CONTINUITY REGULATIONS 2002”

2. (i) The issue and objective:

Issue: The Electricity Supply Regulations 1988 (as amended), made under section 29 of the Electricity Act 1989 by virtue of the transitional provisions in Schedule 17 of the Act, serve to protect the public from dangers associated with the equipment of electricity companies, and to maintain continuity of supply and power quality standards for the benefit of all consumers. However with the break up of the electricity supply industry since privatisation and separation of businesses under the Utilities Act 2000 into distribution and supply undertakings, the existing Regulations are becoming increasingly outdated and need to be revised to ensure ongoing protection of the public and continuity of supply in all circumstances.

Objective: To improve safety standards in the new electricity market whilst preserving important public safety, power quality and supply continuity requirements in existing Regulations. To revoke Regulations which are no longer relevant, and to clarify responsibilities of new duty holders.

2. (ii) Risk assessment:

The risks addressed by the existing Regulations are twofold – public safety and interruption of supply. Concerning the former, there have been 228 fatalities and 4,663 injuries reported to DTI in the twelve year period 1 April 1989 to 31 March 2001 as a result of contact by members of the public with equipment operated by public electricity companies in England, Scotland and Wales. 89% of the fatality incidents were due to contact with overhead lines or their supports, mostly 11kV lines. The most frequent causes of death resulted from the use of mobile plant (e.g. cranes and tipper lorries) and the use of portable equipment (e.g. antennae or poles). 80% of the injury incidents were due to contact with low voltage equipment, mostly underground cables. 20% of the injury incidents involved overhead lines. During the same twelve year period there were 605,008 underground cable damage incidents reported to DTI; 90% of these incidents involved contact with low voltage cables.

Overall, there has been a reduction in the average number of fatalities and injuries over the 12 year period. However, analysis of data over the last five years indicates that the accident rate has stabilised (averages of 14 fatalities and 360 injuries per annum). If the existing Regulations remain in force, it is DTI's view that at best accident rates in the medium to long term will remain stable. At worst, accident rates may increase due to greater use of mobile machinery and portable equipment near overhead lines, and due to working practices of those not caught by the existing

Regulations; for this scenario it is conceivable that over 10 years accident rates could increase by around 10%. Taking a central estimate of 5%, it is assumed that if current arrangements remain in place accident rates will increase by 1 fatality and 18 injuries amongst members of the public per year after 10 years (calculated with reference to average figures over the last five years and taking nearest whole integer numbers).

Concerning supply continuity, there have been 1,074 major supply interruptions reported to DTI in the eleven year period 1 April 1990 to 31 March 2001 (for definition of major supply interruption see regulation 35 of the Electricity Supply Regulations 1988 (as amended)). In this period on average 39% of interruptions were restored within 1 hour and 28% of incidents lasted between 1 hour and 2 hours. Such interruptions have a variety of causes including third party damage, adverse weather and vandalism. Overall, there has been a reduction in the average number of major supply interruptions over the 11 year period. Although minor interruptions to electricity supply are not reported directly to DTI, these are also of concern to many consumers and Engineering Inspectors carry out around 20 such investigations every year.

3 (i) Identify options

Three options have been identified:

Option 1 – Continue to rely on the existing Regulations.

Option 2 – Apply a voluntary Code of Practice across the entire industry, or arrange Self Regulation through professional associations (and repeal without replacing the existing Regulations).

Option 3 – Replace existing Regulations.

Option 1 – Rely on existing Regulations

The existing Regulations could remain in force, administered by the Engineering Inspectorate as currently. Section 31 of the Utilities Act 2000 allows for predecessor legislation to be applied to new duty holders.

Option 2 – Voluntary Code of Practice or Self Regulation

To date, the licensed electricity companies have implemented the Codes of Practice issued by the Electricity Association as a means in part of facilitating compliance with the provisions of the existing Regulations. In future the Electricity Association, or some alternative professional body, could seek to implement the necessary safety and supply continuity requirements which participants would embrace on a voluntary basis. The existing Regulations would be repealed.

Option 3 – Replace existing Regulations

New secondary legislation could be made under the Electricity Act 1989 as amended by the Utilities Act 2000, to ensure that legal requirements for public safety and supply continuity are matched to the new business environment brought about by the

Utilities Act. The existing Regulations would be repealed on the date of commencement of the new Regulations.

Amendment of the existing Regulations as an alternative to option 3 has not been considered since the existing Regulations have already been amended five times, and a further substantial amendment could give rise to confusion and possibly non-compliance by new duty holders.

3 (ii) Issues of Equity or Fairness

Electricity generators, distributors, suppliers, meter operators and persons installing new connections will be caught within the scope of the proposed measures. The participants most affected by the new proposals will be distributors.

It is anticipated that the proposals will have a significant impact on some large organisations and little impact on small businesses.

Members of the public and consumers will benefit from the new proposals. It is considered that no Human Rights Act issues arise from the proposed measures.

4(i) Identify the Benefits

The measures are primarily aimed at protecting the members of the public and consumers from danger arising from equipment owned by electricity companies. The anticipated benefits can therefore be assessed in terms of the reduction in accidents involving members of the public and consumers, as appropriate to each option.

Option 1 – Would not bring about the additional benefits sought, specifically improvement of safety standards and clarification of responsibilities of the new duty holders. Further, the existing Regulations may also prove difficult to enforce with the continued fragmentation of the industry, and it is possible that some new sectors may not be caught by the Regulations, e.g. meter operators and persons installing new connections.

Option 2 – Limited benefit since not all duty holders may comply voluntarily with the new requirements due to competitive pressures or reasons associated with foreign ownership. The professional body which would be created to administer codes of practice for the whole industry would be faced with the problem of resolving impossible conflicts between different sectors. Further, in view of the risk of serious accidents associated with owning and operating electricity networks, voluntary implementation of control measures may not offer sufficient protection for the general public.

Option 3 – The new Regulations would be (as the current Regulations are) legally enforceable, which is particularly important for public safety in view of competitive pressures, fragmentation of the industry, and the participation of new entrants. The Engineering Inspectorate is empowered to enforce the requirements as necessary. Existing Regulations would be simplified where possible so as to improve understanding of requirements.

4(ii) Quantifying and Valuing the Benefits

Option 1 – No additional benefit other than that enjoyed as a result of the current legislation (see item 2. (ii) above).

Option 2 – This option may deliver only marginal improvements in safety and supply continuity due to the reluctance of electricity companies to fund additional programmes. Any such improvements delivered by the traditional distribution businesses could be offset by an increase in accident rates by small independent or foreign owned companies which may ignore relevant codes of practice. On balance it is conceivable that the existing trend in accident rates for option 1 could increase by 5% to 15% by 2013. Taking a central estimate of 10%, it is assumed that option 2 could lead to one additional fatality and 38 additional injuries per annum. It is also possible that there could be an increase in major supply interruptions, although Ofgem may exercise powers separately to counteract such a trend.

Option 3 – New legislation would bring about improvements in safety standards arising from new or extended existing requirements. Whilst tangible benefits are anticipated from each of the new initiatives, some are impossible to quantify, e.g. duty holders must cooperate with each other as necessary to ensure compliance with the Regulations (proposed regulation 4). Specific benefits arising from new initiatives which are more readily quantifiable have been estimated as follows:

- **Formal risk assessment of, and protective measures for, all substations and overhead lines** (proposed regulation 3(2)(a), (b) & (c)). Reduction of 10% in certain types of fatalities and injuries involving overhead lines and substations by 2013.
- **Communicate the dangers of overhead lines to the public** (proposed regulation 3(3)). Reduction of 10% in certain types of fatalities and injuries involving overhead lines by 2013.
- **Marking or protection of all low voltage underground cables installed or exposed after commencement** (proposed regulation 14(2)). Reduction of 2.5% in fatalities, injuries and cable damage incidents involving low voltage underground cables, by 2013. (The cumulative benefit of this initiative will increase with time as more new cables are installed in the ground.)
- **Safety signs attached to supports carrying bare low voltage conductors** (proposed regulation 19(2)). Reduction of 5% in certain types of injuries involving low voltage overhead lines by 2013.

The anticipated reductions in accidents for each initiative are estimates based on the views and experience of Engineering Inspectors at DTI. By identifying the number of incidents in historical data that might reasonably be impacted by each of the above initiatives and by applying the appropriate anticipated improvement factor, it is estimated that these benefits would give rise to overall reductions of 2 fatalities, 14 injuries and 1,129 cable damage incidents per annum by 2013 (taking the nearest whole number integers). The calculations of the estimated annual benefits for each type of incident are included in Appendix 1.

By placing monetary values against each type of incident, it is estimated that the new proposals would be worth around £4.2m per annum after 10 years. The means of calculating this figure is included in Appendix 2.

In addition, option 3 will bring about clarity of implementation of important safety and supply continuity requirements in the new business environment.

Compliance Costs for Business, Charities, and Voluntary Organisations.

5.(i) Business sectors affected

The proposals will not affect charities and voluntary organisations.

The businesses affected will be those engaged in the electricity supply industry, i.e. those organisations involved in the generation, transmission, distribution, supply or metering of electricity, either to consumers or on their own premises. Most of the large companies affected by the proposals are members of the Electricity Association. Most direct impact will be felt by distributors, particularly those with extensive overhead line networks. There are about 20 main players in the sector, each with at least 2,000 employees.

The proposals will also affect other organisations directly and indirectly. For example, duty holders' contractors will be required to comply with certain requirements of the Regulations, manufacturers and installers of domestic combined heat and power equipment will be required to incorporate an electrical safety device with each installation, and distributors may ask landowners to erect safety signs or other safety equipment on their land near or under overhead lines.

5. (ii) Compliance costs for a typical business

In response to the public consultation exercise carried out for the new Regulations between 16 February and 11 May 2001, many companies returned wide ranging estimates of increases in costs arising from the new proposals. The average increases in costs for each initiative are included in Appendix 3. Not all the companies will be affected by each new measure, however an assessment can be made by accumulating the average cost of the measures. On this basis the one off costs for a distribution business could be as much as £2.8m, and annual operating costs could increase by a similar amount. After 10 years the additional annual costs in today's terms would reduce to £1.4m (cut-outs, high voltage safety signs and stay-wires completed). (It should be noted that these costs do not include safety signs on overhead line supports carrying bare low voltage conductors.)

It is DTI's view that the anticipated additional costs arising from the new Regulations will be much less than these figures. Some of the new measures will have no or only minimal impact due to existing operational practices, e.g. marker tape over low voltage cables, pre-1937 cut-outs, stay wires attached to overhead line supports, and safety signs for LV poles. Further, it is DTI's view that the anticipated costs have been over estimated by the companies. In several cases costs have been returned for completely new systems or facilities when existing systems need only be modified

(e.g. risk register and inspection records). In other cases excessive costs have been attributed to initiatives introduced by the 1988 Regulations which should be substantially completed under the terms of the material alteration clause (regulation 2 of the Electricity Supply Regulations 1988 as amended) before 2013, e.g. safety signs and insulators in stay wires on HV poles. The Guidance Notes accompanying the Regulations indicate clearly what specific actions or equipment will be required for the companies to comply with the new Regulations (see section 10). Further, companies will have opportunity to charge reasonable costs associated with reproducing cable maps. Taking these factors into account, it is DTI's assessment that the one off and additional annual costs impacting on a typical distribution business will be around £350,000 and £450,000 respectively (see calculation at Appendix 4). After 10 years the additional annual costs in today's terms would reduce to around £250,000 (cut-outs, HV safety signs and insulators in stay wires completed).

5.(iii) Total compliance costs

Based on the companies' individual estimates of additional costs, the total costs across the industry could be as much as £18m (one-off) and £10.7m per annum (see Appendix 3). After 10 years the additional annual costs in today's terms would reduce to around £7.5m (cut-outs, high voltage safety signs and insulators in stay-wires completed). The Electricity Association's view is that the total costs will be £13.8m (one-off) and £9.8m per annum. (It should be noted that these costs do not include safety signs on overhead line supports carrying bare low voltage conductors.)

For the reasons stated above it is DTI's view that the impact on the industry will be much less than these figures. On the assumption that all the measures will impact 15 companies directly, the total costs on industry could be around £5.2m (one-off) and £6.8m per annum. After 10 years the additional annual costs in today's terms would reduce to around £3.8m (cut-outs, high voltage safety signs and insulators in stay wires completed). The total compliance costs and resulting benefits for each new initiative in the new Regulations are compared in Appendix 5.

6. Consultation with small business: "The Litmus Test"

The likely burden on small businesses is not considered to be significant since few small businesses participate directly in electricity generation, distribution or supply. Those that are caught within the scope of the proposed measures should suffer no greater burden than for the existing legislation.

The Small Business Service at DTI was advised concerning these proposals on 15 November 2000 and in line with advice given, several small businesses (industry consultants) were included within the public consultation exercise. These respondents did not return estimates of costs.

7. Competition assessment

The sector within the electricity industry which will be most affected by the new measures is the licensed distribution activity, which includes transmission for the purposes of this assessment. Including National Grid Company there are 15 licensed

distributors in England, Wales and Scotland and these are all large, monopoly businesses which are regulated by Ofgem. Annual turnover for the regulated activities of a typical distribution business in England, Wales and Scotland would be expected to be in the range £200m to £400m. The costs and performances of these businesses are reviewed periodically by Ofgem and controls are imposed via licence conditions as appropriate to each company. A number of distribution businesses have combined since privatisation (for example London Electricity and Eastern Electricity, Scottish Power and Manweb), however each original franchise area is still regulated separately by Ofgem.

The impacts on each distributor will be comparable, with the exception of London Power Networks which will be the least affected due to the absence of overhead lines in central London. DTI's view is that the one off and additional annual costs impacting on a typical distribution business will be around £350,000 and £450,000 respectively (see section 5 and Appendix 4). These increases in one off and annual costs represent around 0.1% and 0.15% of annual turnover respectively, and are therefore very small in relation to turnover. It is DTI's view that distributors can absorb these costs and that there will be no change to the market structure as a result of the introduction of the proposed measures.

Since the existing distribution businesses are monopoly activities operating in very large territories across the country, opportunities for new entrants are limited to relatively small green field or redeveloped sites. The additional costs to new entrants brought about by the proposed Regulations will be very small in relation to turnover and are not likely to create a barrier to new or would-be distributors on such sites.

The new Regulations will impact upon a new market in connections to distribution networks, which is shortly to be launched by Ofgem. Connections to networks, which is currently a monopoly activity, will be opened up to competition enabling competent contractors or developers to compete for this work. The new Regulations facilitate this competition by providing a mechanism to enable this market to operate, subject to certain safety and technical constraints. The Regulations allow for the intervention of the Secretary of State in the event of any apparently anti-competitive behaviour in this emerging market by existing distributors.

The Regulations also deal with another emerging market – that for domestic combined heat and power (DCHP). Installers or operators of such equipment must comply with certain safety and technical requirements, and they must advise the local distributor of the installation. It is expected that all operators of DCHP equipment will be affected in a similar way.

The other market participants likely to be affected by the proposed Regulations are generators, suppliers, and meter operators, however the financial impacts on these businesses will be of a minor nature only. These participants operate under separate competitive arrangements introduced by Ofgem, for example the New Electricity Trading Arrangements. The increase in costs on generators resulting from the new measures, which relate to safety at substations, is considered to be insignificant in comparison with turnover. The additional costs on suppliers, which relate to the provision of safety and technical information to consumers, are likewise considered to be insignificant. In relation to meter operators the proposed Regulations limit their

role in the market rather than impose additional duties, and therefore the financial impact on meter operators is expected to be negligible. It is anticipated there will be no changes to the market structures for these sectors resulting from the introduction of the proposed measures.

In consideration of the three options for addressing safety, quality and continuity of electricity supplies (see section 3), option 1 would not affect the market at all since the status quo would continue. Option 2 may have a limited impact on the market but this would depend entirely upon the willingness of distributors to implement safety improvements voluntarily. It is conceivable that distributors would only implement those measures associated with the least cost and inconvenience to them, resulting in minimal impact on the market overall. Option 3 would have the most significant impact on electricity markets however the assessment has indicated that this option, which attracts the most benefits, would not raise any significant competition concerns.

In view of these considerations it is anticipated there will be no change in the market structure in the electricity industry as a result of the introduction of the proposed Regulations. Distribution businesses will be most affected by the new measures, however the one off and annual additional costs will be very small in relation to their turnover. New future markets for competition in connections and DCHP are enabled by the Regulations and controls to address any apparently anti-competitive behaviour by distributors will be available. The impacts on other market participants – generators, suppliers and meter operators – will be negligible. In view of these conclusions it is felt that it is not necessary to carry out a detailed competition assessment.

8. Identify any other costs

Option 1 – None

Option 2 – Additional costs may arise from the formation of a professional association which would administer Codes of Practice (possibly an agency sponsored by the Electricity Association and operated by the Institution of Electrical Engineers). Direct costs could be as much as £300,000 per annum (5 staff plus facilities) and indirect costs could be as much as £75,000 (100 people from different organisations for 5 days at £150 per day); the total annual cost would therefore be around £375,000. Set up costs could amount to £50,000 (to recruit staff and buy facilities). These costs would be added to the implementation costs referred to in 5.(iii) above.

Option 3 – None. The Engineering Inspectorate would continue to enforce the Regulations within the existing annual budget. (Approximately £275,000 per annum is currently attributable to enforcement of the Regulations.)

9. Results of consultation

A preliminary consultation on the broad principles of the proposed measures took place in June 1999. Whilst most respondents were broadly supportive of the proposals, some were uneasy about the omission of specific technical requirements (e.g. minimum conductor sizes) and others were unhappy about additional burdens (e.g. records to be kept for 10 years).

Informal consultations on an early draft of the proposals took place in January 2001. Respondents included the Electricity Association, Ofgem, the Health and Safety Executive, the Institution of Electrical Engineers and one of the electricity companies. As a result of these discussions, attempt was made to align the proposals more closely to the new business environment and to international and European technical standards.

A formal public consultation exercise was then carried out between 16 February and 11 May 2001 in accordance with the Code of Practice on Written Consultation issued by the Cabinet Office. Consultation documents were sent to 320 individuals and organisations, and the documents were made freely available on DTI's website. Written responses were received from 60 organisations. As a result of the comments received and other developments, the proposed Regulations were amended. Changes made include the following: the proposed increase in minimum heights of overhead lines over roads has been dropped, the widening of low voltage tolerances in 2003 has also been dropped, safety signs will be attached to poles supporting bare low voltage conductors, and persons jointing onto a distributor's network will be required to obtain prior permission from the relevant distributor. The anticipated costs of the new Regulations were also increased resulting from cost estimates received from respondents.

A further informal consultation on the amended proposals and accompanying Guidance Notes was then carried out between 22 October and 14 December 2001, involving 9 selected organisations including key trade associations and other government agencies. As a result of the comments received, further minor modifications to the proposed Regulations were made including changes to several definitions, review of risk assessment for overhead lines, and changes to arrangements for persons connecting new installations to a distributor's network. Finally, the resulting drafts of the Regulations and Guidance Notes were reviewed by the Health and Safety Executive, Ofgem and the Electricity Association in February 2002.

A detailed summary of the responses to the consultation exercises and DTI's reasons for introducing the new requirements will be included in the document entitled *Response to Consultation for the Electricity Safety, Quality and Continuity Regulations* (not yet published).

10. Guidance on the Regulations

In order to assist companies to comply with the particular requirements of the new Regulations, detailed Guidance Notes have been prepared (see document entitled *Guidance on the Electricity Safety, Quality and Continuity Regulations 2002*). The Guidance Notes clarify to whom the Regulations apply, and the specific actions that duty holders must carry out in order to demonstrate compliance with the requirements. The Guidance invites duty holders to address any queries on the scope, application or interpretation of the new Regulations to the Chief Engineering Inspector at DTI.

11. Summary and recommendation

	ESTIMATED ADDITIONAL COSTS (DTI estimates)			EXPECTED BENEFITS AFTER 10 YEARS			
	One off costs	Annual costs		Reduction in accidents pa Δ			Value pa*
		After comm'	After 10 years*	Fatalities	Injuries	Cable damage	
Option 2 #	£5.2m	£7.2m	£4.2m	-1	-38	0	£-3.6m
Option 3	£5.2m	£6.8m	£3.8m	2	14	1,129	£4.2m

Notes: All of the costs are shown but only some of the benefits (several benefits are qualitative and impossible to quantify, for example reductions in supply interruptions).

* Values estimated at today's terms.

Option 2 may result in an increase in accidents pa resulting in no financial benefit, rather a notional increase in costs of £3.6m pa.

Δ Baseline is number of fatalities and incidents in the 5 year period to 31 March 2001 (see section 2(ii)).

The assessment has indicated that significant benefits could accrue from option 3, and viewed in crude monetary terms the benefits are comparable to the annual increase in costs over a 20 year period (this analysis ignores the qualitative benefits). Further, option 3 attracts the lesser annual cost and will be much more effective in delivering the improvements sought. **It is recommended** that option 3 be adopted to enable full implementation and enforcement of important safety and supply continuity requirements in modern electricity markets.

12. Enforcement, Sanctions, Monitoring and Review

As is the case with the existing Regulations, the Engineering Inspectorate will enforce compliance with the replacement Regulations. Non-compliance will be identified by responding to queries raised by consumers, by investigating accidents and incidents, and by carrying out annual inspections of generators' and distributors' installations. Where necessary recommendations will be made to duty holders or in the case of serious risks to the public, an enforcement notice on behalf of the Secretary of State may be issued. The Inspectorate may also prosecute duty holders in appropriate circumstances. An effective appeals process is included within the new Regulations to ensure any disputes between the duty holders and the Engineering Inspectorate will be brought to a speedy conclusion. The impact of the new Regulations over time will be assessed by monitoring reports of fatalities, injuries and "near misses" submitted to the Inspectorate by duty holders.

Declaration

I have read the Regulatory Impact Assessment and I am satisfied that the benefits justify the costs.

Signed by the Minister of State for Energy & Construction

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Date.....

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