



## **Take Out Some Insurance**

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How much electricity insurance do you carry? None? Do you think that's wise, these days? What do you mean, you never gave it a moment's thought? If I were you I'd start thinking about it, pronto.

You might begin by asking what I mean by electricity insurance. This is a good question. Put in these terms the concept appears novel, and its meaning unclear. But it is a long-established feature of traditional electricity systems, in function if not in terminology.

Insurance of any kind is a way to control, mitigate and if possible minimize the impact and the consequential losses arising from undesirable events. Think of fire or accident insurance, insurance against theft or flood, and even life insurance - more properly called death insurance, but probably less marketable if so described. In every case an insurer will assess and quantify the risks and the potential losses that you face. An insurer willing to cover you will charge you premiums accordingly. If competent and reputable, the insurer should also advise you on ways to reduce your vulnerability and your risk, and by so doing reduce the premiums you have to pay. In turn, if you are sensible, you will consult different insurers and weigh up their offers before you select the one whose services you decide to purchase.

In modern industrial society, loss of access to electricity can incur substantial economic costs, and even threaten life. Unlike food, water, fuel oil and other essentials, however, electricity cannot be stockpiled for emergencies. Moreover, electricity delivered from remote central stations over a high-voltage transmission network may be uniquely vulnerable to interruption, almost instantaneously and over an area extending thousands of square kilometers. What forms of insurance are available, to reduce the probability of loss of electricity service and minimize its costs?

In a traditional electricity system, a monopoly franchise with an obligation to supply, insurance against loss of electricity services has historically come in the form of extra generation and network capacity, not required for normal operation even at peak load on the system. If a generator or a network component fails, these other generators or network components fill the



breach. The system managers decide what type and level of redundant capacity - electricity insurance - to buy; and the captive customers of the system pay for the insurance, whether they like it or not. The system managers minimize the risk of failure of the system according to some arbitrary criteria that do not, in practice, include the cost of the insurance. Because system failures incur obloquy that managers prefer to avoid, they tend to take a 'belt-and-braces' approach that can lead, as in the case of Britain's former Central Electricity Generating Board, to a system that CEGB engineers referred to as 'gold-plated'.

In liberalized electricity, however, such gold-plating costs money that the shareholders who own system assets may be disinclined to pay. Nor can these costs necessarily be passed on to customers, who may take their business elsewhere. In a market context, owners expect every asset - every generator, every transmission line, every substation and so on - to pay its way. Redundancy for the sake of insurance becomes a luxury that balance sheets cannot readily justify. Operating margins on a liberalized system become tighter, and more vulnerable both to fault conditions and to unexpectedly heavy system loads. On a liberalized electricity system with many owners, system stability is clearly in everyone's interest. But the process of allocating responsibility to obtain and pay for the requisite insurance remains unclear, as governments and regulators are beginning to discover.

In this process customers, too - previously passive payers of bills - become active participants. Customers can now choose what electricity services they want to buy and pay for, and from whom. One choice that electricity customers may henceforth have to make is how much electricity insurance to carry - and indeed what kind of insurance.

Even a gold-plated traditional system may still fail. A user - say a hospital - that must minimize even this vulnerability usually buys extra insurance in the form of standby emergency generation, to take over if system supply fails. Hundreds of thousands, perhaps millions, of diesel generators, purchased before liberalization, already stand in wait in Europe, North America and elsewhere. At present, they operate only when a failure somewhere else disconnects their premises from the system. In a liberalized context, however, the insurance options for users expand dramatically. For instance, new small-scale technologies such as microturbines and fuel cells are beginning to offer much more congenial forms of on-site generation, clean and quiet, requiring minimal maintenance and no fuel storage. Emerging network technologies will soon facilitate innovative



interactions between networks and on-site generation. In some places on-site generation may well become the main supply, with the network connection relegated to backup, insulating users from the vulnerability of long high-voltage lines. In effect, the network becomes the insurance.

To be sure, how a network will operate in this unfamiliar mode remains to be seen.

'Reliability' has been a touchstone of electricity policy for decades, the justification for costly gold-plating. On traditional monopoly systems, criteria for reliability have been arbitrary - essential political, not economic. In liberalized electricity, however, reliability is a market concept. You expect to get the reliability you pay for. From this standpoint, reliability is the converse of risk. High reliability means low risk, and that costs money. How best to spend the money, what kind of insurance to buy and from whom, is up to the participant bearing the risk - including the customer. How this will work out on a synchronized AC system operating in real time is far from clear. Nevertheless, from now on, electricity insurance is going to become a topic of increasing importance, and an expanding business opportunity for those who can deliver what customers want.