What happens when the lights go out?

Radical changes across the energy & utilities sector provide high value opportunities for a low risk smarter network

by Mark Hallows, Fujitsu

The people of Japan discovered how to cope with severe power outages the hard way, because of the earthquake and tsunami of March 2011. Fujitsu’s award-winning role in responding to the crisis, and the part we are playing in designing and building new generation and distribution infrastructure, have timely lessons for UK energy providers.

With urban living becoming the norm, ‘smart’ solutions can deliver more sustainable, efficient and people-friendly environments

The threats to supply in the UK or Ireland are less spectacular than in Japan, but are nonetheless considerable. In fact, the insidious nature of the supply threats in the UK make them all the more dangerous. We are at risk of fuel shortages from partner nations and damage from extreme weather events, especially flooding. At the same time, the industry is being asked to reinvent itself for a more carbon-conscious age. These challenges can not only be met: they can propel the energy industry into higher value business.

The pace of change

Changes in consumer behaviour are notoriously hard to predict and even harder to influence. Yet the one certainty we have today is that energy use will have to become smarter. The rollout of smart meters is a key element in making consumers more aware of their consumption patterns and enabling them to respond accordingly. But being enabled isn’t the same thing as being inspired. Consumers in the UK are alert to cost factors, but they don’t think of energy as a potentially scarce commodity. An attitude shift is needed.

Japanese citizens conserved power following the earthquake and tsunami, knowing that power had become scarce. The UK’s slower progress towards shortages will not produce such obvious triggers for changed behaviour. Unless consumers are asked to think differently about energy, they will keep the same habits. For example, a householder may assume they can manage if there is an electricity outage. However, today’s gas central heating is typically electronically controlled, so that will fail too. Batteries in cordless landline phones will drain. Mobiles won’t be rechargeable. So it’s not just the lights that will go out – heating and communications will also be affected.

The supply industry faces challenges if consumers don’t change their behaviour – and if they do. In the first case, capacity is the issue. In the second case, it’s unpredictability. The only response that adequately meets both eventualities is to create an organisation that can deliver ultimate flexibility. This means not just a blend of generation solutions, but an adaptable and proactive approach to service delivery.

The blended approach

The long-term response to the closure of Fukushima is a radical one: an entire new area is planned which is in itself a power station. The area will house the country’s largest solar park and the world’s largest offshore wind farm. Microgeneration solutions will be sown throughout the community. This mixed approach to generation will reduce delivery risk while ending the age-old separation of energy supply and demand.

We can copy this approach in the UK. A blend of generation solutions will offer greater resilience to failure, but it will also lead to greater complexity in operations and development. The variety of skills and knowledge sets will proliferate. However, the effects on local, regional and national industry will be positive as new supply chains are created and new service opportunities emerge. With foresight and planning, the move to diversity can be a spur to regeneration and growth.

From the management point of view, orchestrating the different generation options in line with demand will be highly complex. But smart metering provides the information needed to make better predictions of future demand. There will be a lot of data to crunch – coming not just from sensors in buildings but also from the distributed microgeneration plant.

The infrastructure and tools for dealing with the data need to be as flexible as the generation and distribution technology they serve. Demand for data processing will be unpredictable. Just as consumers see power as a basic service available at the touch of a button, so power companies need to treat data processing, storage and communications in the same on-demand way.

From grudge purchase to valued care

Traditionally, power is a grudge purchase. Its pricing seems mysterious. Customer service is mostly absent except when things go wrong. The heart of the industry is isolated in imposing plants far from town and for many the industry can appear faceless, distant and unrefined.
All that has to change – and it can. Smart meters form the entry point to a new era for suppliers. These devices aren’t just meters. They’re the basis of a new networked market.

Service innovation for senior citizens shows the way. Following the 2011 disaster in Japan, Fujitsu provided business and social cloud services that helped, among other things, to deliver care to senior citizens in the affected regions. We have now used that experience to launch a new cloud service in Japan that comprehensively supports the health and lifestyles of senior citizens through home healthcare and nursing services. The service assists institutions that provide aid to the elderly, such as home healthcare and nursing services, local and non-profit organizations, and also lifestyle businesses.

The one certainty we have today is that energy use will have to become smarter

Despite a desire to live safely and comfortably on their own, in reality many senior citizens in Japan are facing isolation and insecurity due to the decline of local communities and weaker relationships with other people. Furthermore, the total social welfare benefit cost to care for the elderly amounted to 35 trillion yen in 2012, and this figure is steadily increasing each year. This situation places significant economic and personal pressure on the generation of workers that must continue to support the aged population.

Bringing innovation home

The situation in Japan is mirrored in the UK. The debate around rising care costs and how to meet them has no easy answers. Problems in the care home sector and reductions in local authority budgets exacerbate the situation. If we could enable more people to live safely, healthily and happily in their own homes for longer then this would have enormous social and economic benefits.

The utilities industry is in an ideal position to make this happen. With a smart meter in every home, the supplier has the vital intelligent connection to the resident. A smart meter can act as a hub for sensors that, for example, raise an alert if a resident appears not to have got out of bed. The same hub can be used to deliver personalised medical care, by, for example, adjusting a drug regime according to the patient’s glucose levels. The supplier’s existing customer service organisations provide traditional and online contact routes.

Perhaps most importantly, the supplier stands to have the best “home visit” credentials after the emergency services. Older people have been letting meter readers into their properties all their lives. Also, suppliers’ repair services have been carefully designed to stress a “care” angle. It’s no great stretch to see this approach deepening from home care to family care.

A great opportunity

The renewal of the energy industry is under way. Technology will help to reinvent energy generation and distribution for the very different future now unfolding. But with the growing movement towards smart homes and smart cities, energy companies are well positioned not only to manage a newly diverse generation base with confidence and economy, but also develop and deliver value-added services that have both social and business value.

With urban living becoming the norm throughout the world, Fujitsu is creating smart cities that deliver more sustainable, efficient and people-friendly environments. This is part of our long-term vision for a Human Centric Intelligent Society, where ICT helps to create a society where people’s lives are prosperous and secure. We are involved in smart city projects in some 20 communities worldwide, collaborating with partners and contributing our insight and experience to reinvent urban living.

The energy and utilities sector can be a leader, innovator and beneficiary of the movement for a smarter, better world. It will keep providing us with the energy we need, seamlessly and efficiently. It will safeguard the environment. It will be inclusive and diverse. And it will play a vital social role: providing the glue that keeps our communities together. A smarter world needs the leadership the energy and utilities industry can provide. We don’t need to wait for a disaster to change – the future is ours for the making.

About the author: Mark Hallows is a Client Executive and the Practice Lead for Utilities at Fujitsu UK & Ireland.