

energy international

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**ADB on the looming
brown out of Asia PG 12-13**



**Fuelling up on
fusion energy PG 15**



Keeping the lights on

An EPRI report suggests a major overhaul is needed to turn the US electricity sector around.

Following the mammoth power outage that ravaged northeast US and Canada comes the timely release of a new report by California-based Electric Power Research Institute (EPRI), which points to the restoration of the financial health of the electricity sector, among other things, as a major challenge facing the industry.

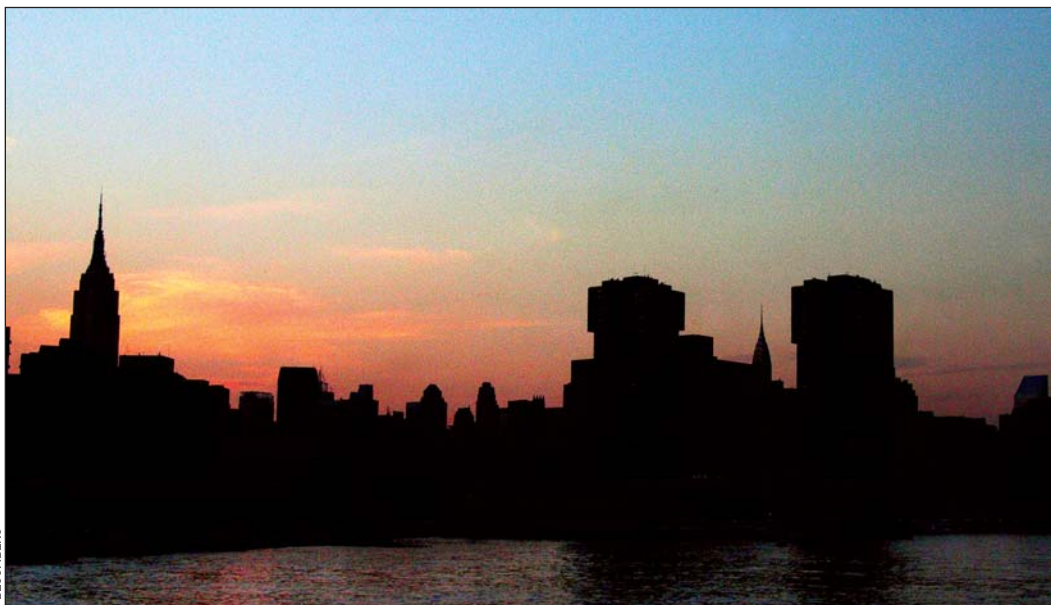
Titled *Electricity Sector Framework for the Future*, the report also outlines a framework for action to help guide future economic, regulatory, and technical direction, with technology becoming an important enabler of this vision.

Said EPRI President and CEO Kurt Yeager, "The report lays out a widely shared, coherent vision of the future—to restore a highly reliable, affordable, environmentally friendly power system that provides essential public services and supports the economic aspirations of all types of customers—residential, commercial, and industrial."

The report lists five overarching goals that are needed to achieve a transformation in the electricity sector.

1. Stabilise electricity markets

Nothing can go forward until the



New York city shrouded in darkness during the blackout earlier in August

financial health of the electricity industry is at least stabilised, and clarity over the rules, roles and responsibilities of electricity regulation is re-established. A new public/ private electricity partnership that lowers investment and market risks should be developed and there should be an incorporation of regional differences and lessons learned into market rules.

2. Provide for the public good

Although electricity will be increasingly important to the health, safety and welfare of society, the marketplace offers no incentives for many aspects of the "public good" that electricity provides. Therefore, other provisions must be made to ensure the availability of public-good services in

the transformed marketplace. Conceptually, this may mean separating public-good regulation from economic regulation for investor-owned utilities. Also, finding a realistic solution to the question of public and private responsibilities is essential to creating effective markets for all participants.

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US blackout illuminates problems



By Hamish Fraser,
National
Economic
Research
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Inc.

In the rush to diagnose the reason for the Northeast US blackout of 2003, many commentators are arguing that more transmission investment is needed. They argue that transmission investment was neglected while electric companies focused on the more glamorous business of competition in electricity generation.

There may be some truth to that. But far more likely in the opinion of NERA is that the problem was primarily one of organisation, not infrastructure – a situation in which two or more entities with overlapping authority each assumed the other would act, and in this instance none of them did – in time.

The US is in the situation where no single organisation is in charge of the transmission system; indeed there are nearly 200 significant control areas and literally thousands of utilities.

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Green power set to grow in Europe

New research from Datamonitor has found that over seven million European customers in six countries across Europe could switch to green energy by 2008, if offered the right incentives by their utility companies.

Governments have done little to encourage green tariffs at the residential level, and the customer's involvement has been minimal.

Customer ignorance regarding green options is a result of utilities believing green energy to be little more than a tool with which to improve their corporate image. According to Datamonitor, 75 percent of leading European utility executives believed this was green energy's most important contribution, with just two citing the environment as the driving force behind

their green tariff options. Marketing budgets to develop green awareness and involvement have therefore been restricted, and minimal effort has been made to convert customers to green energy.

According to utilities analyst Alex Patient, "Utilities have been wary of targeting a market perceived to be expensive and with few rewards. However, best practices demonstrated by Dutch and American utilities in particular, show this need not be the case, and that there are significant benefits in terms of image, customer loyalty, and customer value."

Most utilities must make a profit to keep shareholders contented. The argument to date is that the green market is too small, requiring an extensive marketing bud-



If power companies take the effort to win customers over, greener gas bills come sooner for many

et if it is to be successfully exploited. Datamonitor found that green tariff customers are three times

less likely to leave their utility. Not only are they less price-sensitive, they are also more loyal and have

a higher customer lifetime value.

Datamonitor estimates Europe's total market potential for premium green energy to be over 35 million customers, nearly 23 percent of the customer base. However, less than one percent of Europeans are currently on a green tariff.

The key barrier to green energy development is not necessarily the product on offer, but customer understanding and trust of green energy as a concept. Customers should be informed that their contribution benefits the environment and that their effort is recognised. To retain the less environmentally active customer, "utilities must provide the self-gratification to customers for making a difference to the world they live in".

US blackout illuminates problems



The power outage caused major disruption for people in northeast US and Canada

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That was appropriate 80 years ago, when much of the organisational structure of the industry was set up. For the most part, utilities served their local load with local generation. But it is not appropriate now, where transmission is an interstate business and the systems are thoroughly interdependent.

There are more than 50 utilities alone in the area of Midwest where the blackout originated. The Midwest Independent System Operator (MISO), despite its name, monitors the operation of the sys-

tem. It does not control it. Throughout the US there is a myriad of overlapping responsibilities. This extends to the regulation of the industry, which is a complicated mess of federal regulators, state regulators, local regulators, environmental regulators, planning authorities, health and safety authorities, voluntary reliability organisations, and so on. The list is endless.

Deregulation of generation, for its part, has caused the transmission system to be used in ways for which it wasn't designed. There is now far more trading between regions and this has increased the

system's vulnerability.

The answer is not to have a single national transmission company and single regulatory entity for all things transmission. But it is time for a national review and overhaul of who should be doing what: what utilities should be doing, who should be regulating them/ setting standards, and what should be done to clean up the mess of overlaps.

NERA is an economic consulting firm based in New York and has been providing policy advice to the electricity industry in the US and internationally for more than 40 years.

VOXPOP

Would it be feasible for every region in the world to be plugged into one single interconnecting electrical energy grid?

More than three decades ago, inventor, scientist and mathematician R Buckminster Fuller proposed interconnecting regional power systems into a single, continuous world electrical grid. Would such a plan be feasible and what would be the effects on costs to consumers and generators as well as world demand and supply if such a network were to be constructed?



Alasdair Turner, Principal Consultant, PA Consulting Group: Buckminster Fuller's vision of a single, continuous, global electric power system is likely to remain just that; a vision which may never be realised. While the trend for generation units was to get bigger and bigger, an interconnected transmission system was necessary to allow their large costs to be shared by as many consumers as possible. However, the increasing use of small, economical generation plants which are able to be sited close to the customer, often using renewable resources, may mean that the large interconnected transmission system may pass the way of the dinosaur. The recent blackout in North America may be the indication that "bigger is better" has had its day.



Robert Bestani, Director General, Private Sector Finance Department, Asian Development Bank: Such a grid would not be feasible as electric power does not travel well beyond 800 km. Beyond this, massive grids have their downsides as was shown in the North American grid collapse recently.

Compiled by Song Yen Ling

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Keeping the lights on

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3. Protect the environment

The environmental impact of electricity generation represents a considerable challenge for the US in the face of current and expected requirements. At the same time, a transformed electricity sector can provide the solution to many environmental issues. One option is to provide incentives that promote the most efficient solutions to environmental risks. Increase R&D for technologies that result in reduced emission. Another is to make consumers full partners in the electricity marketplace so that consumer benefits can be expanded.

4. Educate the consumer

Until consumers become full partners in the electricity marketplace, the need to protect them will continue to foster the notion of entitlement and distort the efficient use of energy and capital resources. Once provisions for the public good are clearly established, consumer economic protection can be reduced, while consumer is allowed to flourish. The result will be an expanding array of electricity-based services that will transform consumer benefits. The economic and public policy rationale should be developed for greater consumer participation in the marketplace and the opportunities

for service differentiation for various classes of consumers should be increased.

5. Unleash technical innovation

The prospects for new technology

ter serve these growing demands of society and the economy. If, however, efforts to cut costs and improve efficiency in the power system lead to disproportionate allocations of the savings, then the incentive to innovate will be muted

ity to utility within a state. At the federal level, open access has been mandated but without clear direction on how it is to be implemented. Fluid environmental policies and proposals have simply added to the uncertainty in the electricity sector, even though many of the proposals are intended to reduce uncertainty.

Any of these problems alone might have been manageable. But the simultaneous convergence of several independent issues has caused serious turmoil in the business aspects of the electricity sector. Wholesale markets are increasingly thwarted by the inability of an ageing US power delivery system to support transactions. Further expansion of retail deregulation has essentially come to a full stop. Credit markets have shut out nearly all of the high-risk "merchant energy" companies, whose business in recent years has turned from boom to bust. Overall, the impact of these difficulties is an inability to plan, an unwillingness to invest, and a stalemate in strategy for achieving a way out of the current dilemma.

When the current pause in economic growth ends, the question remains whether the sector will be able to keep pace with the nation's energy quantity and quality needs, and also satisfy investor expectations without resorting to high-risk financial schemes.

What needs to be done?

- Develop electricity partnership that lowers investment risks
- Achieve independent transmission operations
- Standardise electricity operations
- Improve security of electricity system
- Establish effective accountability mechanisms
- Increase R&D for reduced-emissions technologies
- Engage the consumer in end-use innovation
- Digital control of the power delivery network

have never been brighter. It is poised to transform the physical operation and functional capability of the electricity system to meet the complexity and pace of competitive markets, to enhance reliability, resilience and security, and to enable a cleaner and more diverse power generation portfolio. Without technical transformation, today's power system may risk losing its viability as the foundation for economic prosperity and quality-of-life. New policies are urgently needed that can unleash the innovative technology required to transform the electricity system and bet-

accordingly – either by the supplier, the consumer, or society-at-large.

According to the report, since the open access order in 1992, the institutional structure for the electricity sector has been dismantled, but it has not been replaced by an alternative structure with coherent institutions and rules. The investor-owned utilities are labouring under an inconsistent and conflicting set of regulations and the public power sector is now also being impacted by the ripple effects of restructuring. Market reforms have resulted in rules that differ from state to state, and in many cases, from util-