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## **Distributed energy runs the planet**

By Walt Patterson

Distributed energy runs the planet. Natural energy systems gather and distribute solar energy all over the surface of the earth, powering everything from the water cycle to photosynthesis to the carbon cycle - the physical, chemical and biological processes that shape the earth and drive the biosphere. Distributed energy is not a new concept; it is the essence of natural energy systems. But distributed energy is now emerging as a potentially critical attribute also of human energy systems. The title of a magisterial report published in June this year puts the point concisely: *Distributed Energy: Towards A 21st Century Infrastructure*.

The report is the outcome of deliberations lasting some eighteen months, convened by the Consumer Energy Council of America (CECA). CECA, based in Washington, is one of the oldest energy-related non-governmental organizations in the US. In the autumn of 1999 it brought together an extraordinary gathering of senior expertise - governmental, corporate, civic, consumer, regulatory, environmental and consultancy - as the 'Distributed Energy Domestic Policy Forum'. Its remit was 'to consider the real world potential of Distributed Energy (DE), the promise of emerging technologies that could be located at or near the end user's site, and the obstacles - regulatory, economic, commercial and technological - that must be addressed if the potential of DE is to be realized'. The resulting report is a triumph of level-headed consensus-building - lucidly accessible, crammed with solid information and penetrating analysis. It should be required reading for anyone involved in energy policy - especially electricity policy.

No concise summary could do justice to the report, but the chapter headings indicate its scope. Chapter 1, *Purpose and Organization* describes the Forum objectives and process, and gives a 'working definition of Distributed Energy'; in the Executive Summary it appears as 'electric power generation that is located on or near the energy consumer's site', although the report also addresses local production and delivery of heat and cooling. Chapter 2 describes *The Context for Change* - a US context, but with much wider relevance. Chapter 3 discusses *Distributed Energy Technologies* for generation, delivery and use of electricity, heat and cooling, their status, interactions and prospects. Chapter 4 discusses *Characteristics and Economics of Distributed Energy*, making the crucial point that what is under discussion is a new energy infrastructure, different in some key fundamentals from the tradition infrastructure hitherto used to deliver and use fuels and electricity.

As Chapter 5 stresses, this raises *Regulatory and Legal Issues*; any serious move towards distributed energy requires a substantial rethink of prevailing assumptions and ground-rules. One important corollary is that traditional interests, who benefit from the traditional ground-rules, may not readily relinquish their grip on system institutions and decision-making processes. To those, for instance, whose business centres on large-scale central-station generation of electricity, or bulk delivery of electricity long distances, distributed energy may represent not an opportunity but a threat. The consensus-building that

underlies the CECA report may understate the severity of the tension between tradition and innovation already manifest, and worsening - and not only in the US.

The concluding chapter of the CECA report offers *An Action Plan - Findings and Recommendations*. It is a refreshing contrast to another US exercise with an ostensibly similar brief, the 'National Energy Plan' of the Bush administration. The Bush 'energy' plan is nothing of the kind. It is a 'fuels and electricity' plan, dedicated to expanding the supply of oil, gas, coal and central-station electricity, with scarcely a glance at the energy service infrastructure that uses them. The CECA report, however, recognizes explicitly that what is at issue is a progressive change of infrastructure, not only the infrastructure that delivers energy carriers but also the infrastructure that delivers the energy services people actually want. Its 'action plan' notes that distributed energy could lead to 'a new platform for integrated consumer services involving the convergence of electricity, natural gas and telecommunications grids'.

As the CECA report demonstrates, infrastructure is at last emerging as the focus of real energy policy. As this column has insisted before, what we have hitherto called 'energy policy' is really just fuel and electricity policy, preoccupied with measured quantities of measurable energy carriers. The concepts, analyses and prognoses are derived from the fuel policy of more than three decades ago, concerned primarily with oil and coal, describing processes and transactions involving commodities produced, stored, bought and sold in batches. Concepts and analyses on this basis are increasingly inappropriate to deal with systems that deliver energy carriers continuously through networks - especially electricity, which cannot be stored.

Concepts and analyses based on commodity transactions are even less appropriate to deal with energy services, many of which are delivered continuously, and unmeasured, by infrastructure such as buildings - to say nothing of the distributed energy of the natural systems that make the planet habitable. We urgently need to expand the scope of energy policy, to deal explicitly with infrastructure - not only that to deliver energy carriers but also that to deliver energy services. In the UK, for example, early indications are that the government's 'energy review', led by the Performance and Innovation Unit of the Cabinet Office, is endeavouring to move in this direction.

In this respect as in many others, the Bush administration is out of touch with developments, not only elsewhere but within the US itself. The CECA Forum participants do not necessarily endorse the CECA report in its entirety; but they have allowed their names to be associated with it, and they include stakeholders from right across US society. The report, with its willingness to embrace not only innovative technology but also innovative thinking, may be a better guide to the future of energy in the US than Bush's misconceived 'national energy plan'. We may even be witnessing the first tentative beginnings of real energy policy.

*Distributed Energy: Towards A 21st Century Infrastructure* is available from the Consumer Energy Council of America, 2000 L St, NW, Suite 802, Washington, DC 20036, telephone 202 659 0404, <[www.cecacf.org](http://www.cecacf.org)>.

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