

# CALIFORNIA ELECTRICITY DEBACLE

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## Introduction

A brief introduction to the bare bones of new style deregulation is a necessary starting point and although each case differs much in the detail, the general features are easily described. The electricity supply system consists of three basic subsystems known by the terms, *generation*, *transmission* and *distribution*. The first simply refers to the power stations, the second describes the network of high-voltage lines that criss-cross the country collecting and pooling together the output of all the power stations and transporting it to users. The distribution system is localised, tapping the transmission grid for power and distributing it within, say a town. The traditional power system was vertically integrated, meaning all three subsystems were owned by one organisation, for example the CEB of even today, or the pre-deregulation private power companies, called investor owned utilities (IOU), of California and the rest of the US.

The big change brought about by the new reforms consists of two elements, unbundling and competition in generation. Unbundling refers to the ownership change by which the three subsystems are separated and ownership handed over to different entities. The ownership of groups of power stations could, for example, be vested in several different companies who are expected to compete against each other. The transmission grid is usually vested in just one independent organisation which is impartial towards all the competing generators, and the distribution subsystem of each region, town or village is also separated, say like our LECO organisation. The stated justification was that although the advantages of integrated operation, planning and expansion are lost, competition between power producers (generators) for market share would increase productivity and bring down consumer prices. Also new generators were expected to enter the market and drive out the older inefficient ones, and more important, provide new investment for expanding needs. A role was also envisaged for brokers and middlemen (power suppliers) who could mediate between bulk power producers and consumers and provide a range of services at various prices – so called customer choice.

Some of these changes were made possible by technological advances of the last two decades. Two are of great interest. Communication and computing have advanced so much that running a competitive power market on the lines of a real-time energy “stock exchange,” and controlling and operating power stations belonging to rival owners but connected into one supply grid, is now possible. Secondly, new types of power plant (for example the extremely efficient combined cycle gas turbine) can achieve high productivity even at relatively small sizes, hence

eroding the economies of scale that gave an advantage to giant utilities. Smaller investors now want to get in on the act.

Other concerns were more blatantly political. Margaret Thatcher, for example, was determined to break the trade unions. By breaking up the venerable nationalised Central Electricity Generating Board she made it possible for new private owners of power plant to go off British coal. The new private owners also slashed the workforce of the power stations by about 50% - but the equipment is still operating fine. We can envisage, similarly, that if the CEB is privatised, very large-scale layoffs will certainly follow. This raises some interesting concerns regarding the trade-off between protecting workers’ livelihood and eliminating crass inefficiency and bloated employment. This, however, is a big issue outside the scope of this simple article.

## California

Here is a quote from the *New York Times* of 9 January 2001.

Calling California’s two-year experiment in electricity deregulation a “colossal and dangerous failure” Gov. Gray Davis proposed several major steps today to reassert the state’s control over its power market, including the creation of a new state energy authority that could buy generating plants from private utilities and build new plants.

This does indeed read like a 180-degree turn around! Consumer advocates Harvey Rosenfield and Dough Heller of the *Foundation for Taxpayer and Consumer Rights* were even more ruthless in their assessment. Drawing attention to the Long Term Capital Management fiasco, where, as usual, the government had to bail out capitalism at a huge price when it fell flat on its face, they wrote,

The electricity crisis is the result of the utility deregulation law approved by the state lawmakers four years ago. Greased with \$9 million in utility money, the Legislature eliminated utility price controls imposed in 1912. The deregulation law promised consumers competition and a “guaranteed” 20 percent rate reduction. Instead, like another fiasco pioneered by the Legislature – the 1980s deregulation of savings and loans that ultimately cost Americans \$300 billion – deregulation of electricity has proved to be a catastrophic mistake.

[<http://www.consumerwatchdog.org/fcr/co/co000918.php>]

So what went wrong in California? Was it simply a consequence of “\$9 million grease,” or was the whole concept of deregulation,

as attempted in California and elsewhere, flawed? To follow up this question we need to understand both the peculiarities of the California story as well as the more general lessons to be learnt. This will also provide a starting point for formulating some guidelines for how the electricity supply industry should be reformed in developing countries, including Sri Lanka, a task undertaken in a follow up *Pravada* article.

The three California utilities (Southern California Edison, Pacific Gas and Electric better known as PG&E and San Diego Gas and Electric, SDG&E), huge power companies whose combined energy output is more than 100 times of Sri Lanka, first balked at the deregulation law of 1996. They agreed to come on board once some sweeteners were included. The main sweetener was a special surcharge imposed on electricity bills so that accumulated company debts (stranded-costs) could be paid off. This effectively emasculated a 10% immediate rate reduction, or price-cap (but still 50% above the national average) but consumers were promised that after 31 December 2001 both surcharge and rate freeze would end and a further rate reduction of 10% was likely, thanks to market efficiencies. Edison and PG&E collected \$17 billion under this "competition tax" surcharge before the crisis started in the summer of 2000.

In the California power market, generators bid the price at which they are willing to sell power and distributors, who are obliged to supply consumers, bid the prices at which they are willing to buy. This is rather like a stock exchange and after some "price discovery" the market clears at some price – this is called the system marginal price in the UK version. This type of electricity market is called a spot market, that is, this process, aided by modern technology, is happening continuously – or to be more precise, every 1/2 hour, 365 days of the year. Now, the problem is that if there is a shortage of power there is nothing to prevent generators from bidding up prices to astronomical values, while the distributors who are legally obliged to serve consumers cannot raise their prices above the price-cap mentioned in the paragraph above. Competition, according to the ideologues of capitalism, means that there is neither a price-cap nor an obligation to provide power on the power producers (generators). Desperate distributors may attempt to buy power from out of state suppliers in Oregon, Washington State and Arizona, but there is nothing to prevent out of state suppliers from joining in the profiteering racket, which is just what they did, like any rational market vendor.

During December 2000, at certain times of the day, the supplier's market price for electricity has soared 3900% and for sustained periods it has been 20 to 30 times what it was in previous years. Rosenfield claims that power supplier's profits have soared by as much as 500%. There is nothing in law to prevent this. Even appeals to the federal courts to enforce price-caps on generators have failed. The result, distribution companies, caught between supplier greed and the consumer price-cap, went bankrupt. If they shut down, the seventh largest economy in the world (California) goes into darkness. Capitalism thus holds a knife to the throat of the public

and says, "bail us out", which state lawmakers will do, and who pays? the consumer, of course.

A relevant question at this point is why was there a power shortage? Why was more capacity not built in time? There is much finger pointing going on but the bottom line is simple. The market is supposed to send out price signals that encourage investment. As prices rise the invisible hand of god (or Adam Smith) will answer the call and the laws of supply and demand will deliver the holy grail. In deregulated systems there is no state agency charged with the obligation to plan and build adequate power plant in time. It is the market that should respond to need and deliver the goods, or in this case, the Amps. California is simply a case of market failure, evidence that markets, sans social control and regulation, are not suitable instruments for society's critical infrastructure needs.

Avowed market aficionados complain that California's stringent environmental laws drive out investors, there is some truth to this, and that the unexpected upturn in the US economy in the late 1990s, drove up demand and caught everyone off guard, and there is truth in this as well. But then, the moral of the story is simply that markets are unsuitable for dealing with the sophisticated, essential, infrastructure needs of advanced societies with high expectations of the quality of life. Looks like only some form of community consciousness, higher than the grossness of market capitalism, is able to deal with the needs of sophisticated ecologically educated societies! Three cheers for – Capra? Teilhard? Marx?

A grotesque feature of the California deregulation is the way in which the corporate unbundling occurred. The pre-reform IOUs turned themselves into holding companies whose subsidiaries where three companies, in each case, owning some of the power plant (some were sold off), the transmission lines and the utility distribution business. The corporate structure of all three California IOUs was modified in this way. Since legal ownership of the transmission grids was thus separated, operation of the whole state network was handed to an independent system operator established by law. Electricity distribution, with a legal obligation to supply consumers, was put in the hands of new rump Edison, PG&E and SDG&E subsidiary distribution companies, all three of which are now facing bankruptcy. Their power generating counterparts, members of the same holding group, however, are partaking in the rake-in of massive super-profits! (The gigantic current losses of the three utility distribution arms are running higher than the super-profits of the corresponding generating arms since the former are buying from out of state and other private suppliers as well.)

This style of deregulation has not led to adequate expansion of the transmission grid either, and to a degree this has hindered the purchase of out of state power. The independent system operator has the statutory right only to control and operate the electricity grid in an impartial way and make it possible for all generating companies to compete on an equal footing. Legal ownership of the networks is still vested in the original owners, subsidiaries of the holding companies. Just as there is no mechanism to force investors

to build power plants, so too there is no obligation or mechanism to force these owners to build new transmission lines and reinforce the grid to meet expanding or changing needs.

A fairly large amount of generating capacity was out of service for maintenance, as is usual during the winter months, when the crisis hit hardest. Some critics have suggested that power suppliers were holding back supply to escalate prices. This writer does not subscribe to this conspiracy theory since ultimately the sister distribution companies of the generating companies went to the wall, deregulation as a whole has been rolled back and the California Power Exchange will be abolished within a month. The theory of market failure as sketched out above is a more plausible and theoretically sound explanatory framework.

### Elsewhere in the US and UK

There is concern that in several other states in the US that have implemented deregulation, power shortages and price volatility will be unavoidable in the summer of 2001 – especially if it turns out to be a warm summer. The problems everywhere, though probably less severe than California, are the same; inadequate expansion of generation capacity to keep abreast of load and inadequate investment in transmission lines to move power or to get round bottlenecks. The most endangered states appear to be Florida, Massachusetts, Texas and Georgia in addition to California's neighbours on the West Coast, Oregon and Washington. It is quite clear that market forces by themselves are a woefully inadequate mechanism for addressing the needs of a socially critical commodity like electricity. It can be expected that some aspects of deregulation will be rolled back and long-term planning and regulated capacity addition requiring the involvement of state or federal governments in some manner will soon be brought back.

There have been no problems of this nature in the privatised electricity supply industry in England and Wales (E&W). Unlike

the USA, load growth in the E&W case has been minimal, hence there is little demand for additional capacity and for the same reason the pressure for transmission reinforcement is not great. The grid is mature and no large-scale reinforcement is envisaged in the near future in the UK. Interestingly, however, there has been a large amount of new private generating plants coming on stream in the E&W system despite the stagnant load. This is a market response called the "dash for gas." Low gas prices (some argue socially dysfunctional) in the second half of the 1990s, encouraged a large amount (about 10,000MW) of new investment in combined cycle gas turbine plant. This high-efficiency, low-cost power has begun to muscle its way in, displacing older but still quite serviceable plants. The social and economic rationality of this tendency is debatable though the profitability to investors is clear. It is apparent that the market has indeed responded to the profit incentive of cheap gas in circumstances where there was no urgent need for new generating capacity. Is the conclusion that the relationship between the market and social need is perverse?

### Lessons for Developing Countries

1. A.K. David; "Restructuring the electricity supply industry in Asia," *Int. J Global Energy Issues*, Vol.10, Nos. 2/3, 1998, pp.203-212.
2. F.A. Wolak; "Market design and price behaviour in restructured electricity markets: An international comparison," *POWER Conference*, University of California Energy Institute, paper No.PWP-051.
3. Fushen Wen and A.K. David; "Strategic bidding in reserve markets," *Int. Conf. Advances in Power System Operation, Control & Management (APSCOM 2000)*, Hong Kong, Oct.-Nov. 2000.
4. D.M. Newbery and M.G. Pollitt; "The restructuring and privatisation of the CEGB – was it worth it?" *Journal of Industrial Economics*, Vol.XLV, No.3, 1997, pp.269-303.
5. *Web sites:* [www.turn.org](http://www.turn.org) and [www.consumerwatchdog.org](http://www.consumerwatchdog.org)

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