



*“Energy research for a sustainable future”*

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***CALIFORNIA’S POWER CRISIS:  
THE DEMAND SIDE OF THE EQUATION***

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**Five years after embarking on a radical restructuring of its power markets, California faces 1000% wholesale price increases, rolling blackouts and threats of utility bankruptcies. What lessons does the trend-setting State offer to those who would follow in its footsteps?**

Put simply, the crisis facing California’s consumers, utilities and taxpayers is all about supply and demand. Indeed, it is a seller’s market – where supply is outstripped by demand – that today wreaks havoc on the state’s economy. Much of the imbalance seems due to generators’ market power and, more specifically, to their ability to systematically and artificially withdraw power from the market with relative impunity. The results of this market power – and of possible collusion – have been further aggravated by barriers to demand responsiveness, i.e. consumers reducing demand in response to high prices, a key ingredient to any properly functioning competitive market. The factors behind these problems are as varied as they are complex. But the solutions do exist.

As other U.S. states and Canadian provinces ponder – and in some cases prepare for – the full-scale introduction of competition in our own markets, the following is a list of basic remedies and considerations that may help to avoid a repeat of the California Crisis.

### **Supply: Understanding Market Power**

Market power exists (horizontally) when any one player can, by strategically “playing the market”, affect overall market prices. When competition is brought into the electricity industry, power plants must typically be sold off to a multitude of new owners to ensure that no one owner retains market power. Since market power is not black and white (while some mathematical models seek to identify market power, they tend to oversimplify the case), one must further create enforceable rules that ensure that generators who attempt to so manipulate prices will be caught and appropriately penalized. Finally, market “rules of the game” must take great care to render collusion between multiple generators extremely difficult, if not impossible.

California has abjectly failed at all three of these criteria. When it arranged for sale of most power plants, it did so to too few players, providing some with the power to manipulate prices. Furthermore, when it established the rules of the game, it gave referees neither the power nor the human capacities to enforce them. (Recently, the state regulator was barred for over nine hours from investigating a power plant that had temporarily shut down – i.e. withdrew its power from the market – for “unscheduled maintenance”.) And, as if that weren’t enough, the market coordinator – the “Independent System Operator”, or ISO – chose to systematically reveal the amounts of power sold by each generator, thus paving the way for verifiable – if not enforceable – collusion. There are other problems too – the two main power auction bodies don’t sufficiently share information with each other; the ISO’s governing board, far from its name’s stated intention, includes representatives of the big generators; etc. All of which have conspired to allow generators to diminish supply and raise prices outrageously, to the point where bankruptcies and rolling blackouts are now the “talk of the town”.

### **Economics 101: Don’t Neglect Demand**

Yet beyond the problems created by an artificial supply crunch, the crisis facing California today is further aggravated by artificially high demand. By “artificially high” I don’t mean to suggest that someone somewhere is plugging in a thousand more

refrigerators to artificially increase consumption. Rather, whereas under normal circumstances demand will react to price by being reduced, in California a series of barriers to demand responsiveness have impeded this essential response. When demand cannot respond to price, markets will by definition fail.

**Lesson #1: Don't freeze rates.** In California, a transitional rate freeze bars utilities from passing real costs – increased or decreased – on to consumers, thus creating a dysjunct between demand and price. Blind to price increases, themselves a function of high demand relative to generators' supply (artificially low as it may be), consumers have no incentive to reduce their own consumption. This inability of demand to react to price helps ensure that prices continue to be grossly excessive. In the end, California ratepayers, taxpayers and/or pension fund unit holders are likely to pay a sizeable chunk of the cost of this debacle, while having been deprived of any signal that could have helped to avoid it in the first place.

Enabling demand management to play its rightful role in the theatre of power markets is crucial. (While many analysts seem to suggest that supply must be increased to meet demand, in fact, the goal of a power market or any other price regulator is to ensure that demand and supply be adjusted to meet each other.) And while the first and most obvious design issue is allowing prices to flow through to consumers, there are many other similar considerations that regulators and legislators alike must keep in mind.

**Lesson #2: Provide market access to demand managers.** Along the same lines, demand should be enabled to actively participate in the actual day-ahead auctions that determine market prices. Indeed, the hub of most competitive electricity markets is the power exchange, in which generators regularly bid given amounts of supply to meet the most recent short-term demand forecasts. Yet demand managers – those who manage very large power requirements at factories that can quickly reduce or “shed” their loads, and those who aggregate multiple consumers to create the equivalent of an on-call, demand-side power plant – are often barred from participating in these auctions (i.e. bidding in their “negawatts”). Market designers must ensure access to spot market auctions by demand managers, developing equitable rules such that whenever demand can be reduced at a price lower than the price of new supply, it is.

**Lesson #3: Remove barriers to distributed generation.** With rapidly declining costs and technological leaps, clean, distributed energy technologies like fuel cells, microturbines and solar cells are set to revolutionize the electric power industry. Most of these technologies can be located on-site; that is, providing power to consumers without going through the grid and its cumbersome and complex market auction system.

Unfortunately, fuelled by the interests of their much larger competitors, many regions continue to erect (or merely retain) barriers to these power systems, which could effectively provide greater energy independence and reduce system demand. These barriers, which include unnecessarily complex technical interconnection requirements by utilities, “stranded cost” charges that force potential users of distributed technologies – despite their positive impact on market equilibrium – to reimburse the old utilities for past mistakes, and hefty fees (some utilities, like Ontario Hydro, have proposed that users of these technologies be required to pay fees for *not* using the electricity grid), must be identified and stricken from the rulebooks.

There are, of course, a host of other lessons that must be drawn from the current crisis in California and, more broadly, from a level-headed, disinterested analysis of the pre-conditions to market performance. Among these (and this is in no way a comprehensive list) are ensuring that market referees are invested with the necessary capacities and tools to ensure compliance; investing in diversity by securing significant market shares for fuel- and risk-independent renewable energy technologies; finding a balance between the need to compensate incumbent advantages and the security offered by hedges and other long-term instruments; providing fiscal advantages to distributed power technologies (or fiscal disadvantages to their competitors); and enabling considerable investments in cost-effective energy efficiency and conservation improvements, which, no matter how well designed, the market will never be able to fully achieve.

And then there’s the need to remove any obvious market power before opening markets in the first place, which of course refers to that very delicate but critical issue of requiring the incumbent utilities to divest their generation assets in sufficient quantity at the outset. But that, of course, is another matter...

Ultimately, should legislators choose the route of restructuring and price competition, they should beware. Indeed, electricity is unlike just about any other commodity: it is essential, it is instantaneous and physically anarchic, it affects everyone and it has tremendous environmental costs as well. All of which means that the margin for error is tiny; too tiny, in fact, for concessions to major market players to go unnoticed. And whereas in other commodities an error may lead to a problem, with electricity, an error can lead to a veritable crisis. Indeed, it already has.

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