



**LIBERALIZATION AND PUBLIC SERVICE PROVISION IN THE ENERGY  
SECTOR**

Learning from the California blackouts

Conference paper

Third round table conference of the

***EXECUTIVE EXCHANGE NETWORK***

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By  
Arjen van Ballegoyen

### **The Executive Exchange Network**

The Executive Exchange Network brings together a small group of high-ranking government officials, captains of industry and civil entrepreneurs for debates on the future of the public domain. The Network intends to combine knowledge and experience on civil entrepreneurship, public management and corporate citizenship to look for new strategic models and concepts. Therefore the Network wants to know: what are the lessons learned abroad in managing the public domain? To this purpose facts, developments and trends are gathered, compared and discussed. International experts are consulted and foreign programs, policies and practices are assessed for their possible use in the Netherlands.

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## Introduction

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In Europe many countries have started to contemplate and implement liberalization measures in a variety of sectors characterized by the fact that they bring forth a number of public goods. Whether it concerns the liberalization of public transportation services, the healthcare sector, or the liberalization of the energy sector, the societal necessity for these sectors to continue to provide public goods regardless of the applicable economic paradigm, urges policy makers against the unqualified adoption of market processes.

The electricity blackouts that have occurred in California in 2001 have become an important turning point in the drive towards liberalization in general. The failure to secure a public good and the effects on society became very tangible, especially for its absolute character: the temporary suspension of electricity supply. The result of this crisis on the liberalization efforts has been greater attention to and a public debate on the question how best to secure public service provision.

At the third meeting of the Executive Exchange Network, held in May 2002, the central theme was the liberalization of the energy sector in the Netherlands and the lessons that could be learned from the experiences in the United States. Ito van Lanschot, President of Reliant Energy Europe, presented his views on the liberalization efforts in Europe and the Netherlands in particular. William Massey, Commissioner US Federal Energy Regulatory Commission (FERC) explained his views on the liberalization process from the viewpoint of the regulator.

This paper is an account of the presentation and discussion that took place at the conference and a summary of the state of affairs. We shall briefly outline the underlying causes of the Californian energy crisis and the implications of the crisis for the balancing act in Europe of liberalizing the energy sector whilst safeguarding the public good.



## Chapter 2: The California Energy Crisis

The energy crisis that occurred in the state of California, USA, was a unique event that has affected the thinking about liberalization of the energy sector worldwide. It serves as a reminder of the potential risks that liberalization entails, but also as a test case from which to learn. Here we shall briefly discuss the causes of the crisis and identify certain lessons to be learned.

### *Why liberalize?*

By the mid-1990s, California electricity prices were 35 percent higher than the U.S average, and California residential customers paid 35 percent more than the average U.S. residential customer. Those excessive costs threatened to slow expansion in California and make the grid itself obsolete as ratepayers fled to non-utility power providers<sup>1</sup>.

The inability to keep power costs at a reasonably low price gave cause to consider the introduction of competition in this previously state sanctioned monopoly of the power companies. The generators owned by incumbent utilities would compete with non-utility power generators for business, and customers could choose from whom they wished to purchase power. Competition would also protect consumers from the excessive, price-inflating investments<sup>2</sup>.

### *Why did it go wrong?*

It is important to realize that the crisis in California was not caused by *one* faulty decision in the liberalization process, but rather the result of the coinciding of a number of independent choices, developments and events, as is the case with many disasters<sup>\*</sup>. In complex liberalization processes, it is difficult to gauge the impact of policy measures. We have theoretical frameworks that guide us in the design of new systems, but we lack the models to test our designs before we introduce it in the real world.

#### 1. Natural causes

In the case of California, the weather was an important cause in the occurring of the crisis. Natural weather variations caused reductions in supply and increases in demand, which, in turn, resulted in wholesale electricity price increases. The hot weather had increased the demand for electricity, whilst the dryness of the summer resulted in a decrease in available hydropower due to low water levels. In addition, a cold winter the year before had depleted gas stocks, driving up the price for electricity generated in gas-fired generators.

Moreover, an explosion in August 2000 shut down the El Paso pipeline, which carries natural gas from Texas to Southern California. That accident reduced pipeline capacity into the state by 10 percent for several weeks, a large supply disruption that had not been fully remedied at the time of the crisis. This caused a further increase in the gas prices<sup>3</sup>.

#### 2. Regulatory causes:

The first contributing regulatory element is the permit system for NO<sub>x</sub> emissions. California requires that generators have sufficient NO<sub>x</sub> emissions credits before going online. Each year the pool of credits is reduced by 8 percent. Power generators must purchase enough credits to offset emissions before they can go online or pay large fines to the state. The cost of the

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<sup>\*</sup> The disaster of the capsizing of the ferry Herald of Free Enterprise in 1987 was analysed and 37 causal prerequisites were identified in that case, which all needed to coincide in order for the disaster to happen.

emission permits rose quite dramatically, thus increasing the cost of investing in new generators and the going online of existing generators<sup>4</sup>.

A second regulatory element contributing to the crisis is the price cap system. Prices are a fundamental information carrier in a free market system. Without distortions to the market, the interplay of supply and demand will find an equilibrium. In a free market, reductions in supply do not result in shortages, because prices increase enough to equate supply and demand. Higher prices induce firms to create additional supply as quickly as possible to capture profits. Eventually, the high prices eliminate the shock. Wholesale electricity prices in California since the spring of 2000 have averaged more than 15 dollar cents per kWh.

However, affordable access to electricity for everybody is undoubtedly a requirement for modern societies. Price caps are, conceptually, a relatively simple way to assure that everybody can afford the usage of electricity. In the case of California, retail electricity prices were capped at less than 7 dollar cents per kWh. Wholesale prices signaled that electricity was increasingly scarce, but retail prices told consumers that nothing had changed. Accordingly, consumers demanded more electricity than was available, causing *real* electricity prices to soar<sup>5</sup>.

Price caps also discouraged investment in new power plants in California. The rising prices tell producers it is time to add capacity and give the ones who best estimate future demand better returns on their investments. But with price controls in place, no such signals are sent to suppliers, further disturbing the balance between supply and demand.

Not only was there a price cap on the retail price of electricity aimed at keeping the price below a certain level, there also existed a price cap, or rather a minimum price, on the whole sale price of electricity. In order to encourage investments in utilities, the investors and the government agreed that, if the companies would serve all customers in an area as a state-sanctioned monopoly, the investors would receive a regulated but reasonable return on their investment. Due to the regulated prices, new entrants to the market were unable to undercut established power companies, essentially shielding the market, because consumers lacked incentive to switch<sup>6</sup>.

### 3. Regulatory perversity

A third problem is the possible perverse incentives contained in the regulatory framework. Although it is difficult to prove whether market parties have actually used the loopholes and deficiencies in the legislation or to what extent, its adverse effects cannot be denied<sup>7</sup>.

In the case of California, there were in essence two different electricity markets: first, the normal 'day-before' market and secondly, an emergency power market where authorities in order to keep the net up paid a premium on electricity<sup>8</sup>. Whereas power companies were faced with the limited returns on their electricity due to the price caps, despite the increasing cost of generating it, public authorities were more than happy to pay much higher prices for electricity as long as that would prevent the occurring of power black outs. However opportunistic it might seem, companies would, under those circumstances, have a legitimate and rational reason to withhold offering electricity on the normal market and to negotiate with the authorities a higher price for their emergency electricity.

Lesson learned:

1. No regulatory system - not a completely laissez faire regime, and certainly not any of the various regulatory regimes put in place in other states - could have prevented wholesale electricity prices from climbing to record levels under the natural circumstances that occurred.
2. It is impossible to regulate and legislate basic economic laws out of existence.
3. The willingness to keep the grid up in the public interest (i.e. avoid blackouts and guaranteeing access to electricity for everyone), when undefined and unqualified, can result in enormous cost to society.
4. Price controls are difficult instruments to use efficiently (i.e. without causing too much market distortion) and can easily cause a breakdown of the system.
5. Price guarantees as a compensation for investment in utilities can hinder or block entry to the market.
6. Perverse effects of legislation and regulations provide companies with an incentive to go against the public (collective) interest and maximize their own profits.

Now that we have a clearer understanding of the causes of the Californian crisis and of some of the characteristics of the regulatory regime, we can turn to the liberalization efforts in Europe, and the Netherlands in particular, and how these lessons learned have been applied.

### **Chapter 3: The European Framework**

The creation and completion of a European internal market has been and continues to be the single most important goal of the European Community. Energy policy must form part of the general aims of the Community's economic policy based on market integration, deregulation, public intervention limited to what is strictly necessary in order to safeguard the public interest and welfare, sustainable development, consumer protection and economic and social cohesion. However, beyond those general aims energy policy must pursue particular aims in the energy sector that reconcile competitiveness, security of supply and protection of the environment<sup>9</sup>.

#### *Regulatory framework of liberalization in the energy sector*

In the energy sector the completion of the internal market requires the removal of numerous obstacles and trade barriers, the approximation of tax and pricing policies and measures in respect of norms and standards and environmental and safety regulations.

Timetable:



It is required that there will be full opening of national markets by 2005. Member states are allowed to liberalize at a quicker pace, which some of them have done, most notably the UK and the Scandinavian countries. Other important dates are:

- 2003 all companies free to choose electricity supplier
- 2004 all companies free to choose gas supplier
- 2005 all consumers free to choose electricity and gas suppliers

Mandatory elements of liberalization<sup>10</sup>:

Unbundling:

One of the key elements of the internal market approach is the unbundling of service provision and network operations. This is a principle often applied in network sectors such as telecommunications and railway transport. Its aim to avoid the possibility of abuse by the operator of the network industry who could unlevel the playing field for competitors needing access to the network infrastructure in order to provide services. Required are the following:

- Independent transmission systems operator: independent system operator, legally and functionally separate from energy generation and sales activities
- Independent distribution system operator: legally and functionally separate but small distribution companies (< 100.000 consumers) may be excluded by member states.
- regulated third-party access

Regulators:

The presence of independent regulators in each member state is vital to assure that the liberalization effort is carried out effectively and that a level-playing field is being created. Especially during the transition period regulators will be required to assertively remove regulatory, bureaucratic or monopolistic obstacles. Required are the following:

- all member states need to have one
- independent
- minimum competencies, such as the power to set or approve tariffs and the power to implement EU agreed trading arrangements

Public service provisions:

The energy sector is vital to contemporary life and it is recognized that liberalization in the energy sector can not bypass the obvious public interest in this sector. Certain guarantees and assurances have to be permitted to safeguard the interest of society at large, thereby requiring special alterations to the normal liberalization regime. These elements are:

- Universal delivery: obligation to supply at reasonable price
- Protection of vulnerable consumers
- Better protection of consumer rights (contracts, dispute settlement)
- Continuous benchmarking of service levels in member states

Security of supply:

Especially in light of the California crisis, security of supply is another public interest that needs attention beyond the natural workings of a liberalized market. Nonetheless, the achieving of an internal market for energy would greatly reduce the possibility for a

California-like crisis. The linking of national energy markets the entire European market less vulnerable to supply side shocks.

- careful monitoring on national and EU level
- internal market
- harmonized network security standards
- tenders where necessary

#### **Chapter 4: Implementation of the European Framework in the Netherlands**

Liberalization scheme:

The implementation of the European framework as outlined above varies from country to country, leaving the individual European member states some leeway to design their own energy markets. The Dutch design has a high degree of liberalization, addresses issues of public interest and it contains provisions to secure the public good. It is, however, understood that it takes time to allow society and the energy sector to make for the necessary structural adjustments. In the transitional period, another legal regime will be applicable, namely that of partial liberalization for non-captive customers and a license-system for captive-customers.

Some of the key elements of the Dutch implementation approach<sup>11</sup>:

Public service provisions:

*The licensing system to supply captive customers*

The license system put in place for the duration of the transition phase towards a fully operational free energy market, entails the protection of captive (mainly ‘small’) consumers. Electricity companies can be licensed to provide electricity to captive consumers with a particular geographical area. This is an exclusive right, but it is accompanied with a duty to supply electricity (universal service delivery)

This universal service delivery is bound to a maximum tariff for electricity in order to protect the consumers from this state-sanctioned monopolist. This maximum tariff is composed of two separate components, following the theory of unbundling:

1. The grid component: This relates to the costs charged by grid operators. Grid costs cannot differ between captive and non-captive customers. The tariffs may differ from region to region due to regional differences in operating costs associated in particular with regional features such as soil conditions, groundwater level, and population density.
2. The supply component: these are the costs of centralized generation or the costs of comparable decentralized supplies or other purchased electricity, together representing the licensee’s purchase portfolio, plus its supply costs. In principle there is little regional variation in this supply component. It is proposed to apply a single nation-wide maximum for the supply component. Differentiation according to off take pattern (day/night) and off take volume is possible. Each year this maximum supply tariff may be adjusted with reference to general indicators and a benchmarking system.

This regime for the supply tariff changes as a more liberalized market is realized. Whereas initially the maximum tariff is always applied, from 2005 onwards the maximum tariff is used only when licensees are charging prices considered to be unreasonable by the regulator. When liberalization is near to completion, i.e. when price competition is strong enough to force licensees to price reasonably, the government can suspend the maximum tariff regime in its entirety.

#### *Unbundling:*

Control of the electricity grids, being natural monopolies, is unbundled from other functions such as generation and distribution. To ensure free and non-discriminatory access to all the grids, they will be separated from the existing generation and distribution utilities and re-incorporated as individual legal entities. These legal entities will perform the function of grid operator. The system is centered on the idea of consolidation of economic ownership. This means that it is unnecessary to alter the existing distribution of shares/ownership of the grids. The grid operator is fully authorized to exercise all economic legal rights relevant to the exercise of his duties short of selling shares; in essence usufruct.

This system thus involves private entities in the role as grid operator. The grid cost component in the total electricity price is set high enough to allow the revenue to cover the cost associated with the maintenance and expansion of the grid should that be necessary to keep up with market demand. The grid operator is allowed make a profit to a limited degree: this must not exceed a fair return on its equity. The legislator may impose further regulations on this matter, and also on the way in which transmission tariffs are charged.

#### *Security of supply*

The Dutch government is confident that in a free market, the private sector will take appropriate measures to assure security of supply. The necessity to spread and limit risks will cause the private sector to manage its generation capacity, contractually agree security of supply levels with customers, diversify its fuel requirements and to establish contacts with other electricity generators elsewhere in Europe in order to draw resources from abroad in case demand cannot be matched. Currently there is a situation of over supply of generation capacity in both the Netherlands and in Europe as a whole.

The government has therefore shifted the emphasis away from direct control of the generation capacity towards a role in the background. It will keep an eye on the developments in the electricity demand and supply and it will only intervene when absolutely necessary. And even if it does intervene it will be by indirect means such as tax incentives.

#### *Renewable energy<sup>12</sup>:*

Because in the medium term electricity generated from renewables is expected to remain more expensive than conventionally produced electricity, a temporary stimulus is needed on the *demand side* to help this market to establish itself. The policy is designed to enlarge market demand for renewable energy in order to allow a higher price to be charged for it. It has the explicit purpose to create a single market for all forms of renewable energy. Some of the instruments available to bolster the position of renewable electricity in the market are:

- Tax measures
- Covenants (public-private contracts)
- Legislation: mandated share of renewables in total consumption
- Guaranteed offtake for small-scale renewable electricity

### *Regulator*

A separate regulator for the energy sector (Dte) has been established under the auspices of the Ministry of Economic Affairs and functionally tied to the Dutch Competition Authority. This regulator has a number of functions<sup>13</sup>:

- It monitors of the transmission and distribution grid operators;
- It monitors licensees with regard to supplies to and by captive customers and captive generators;
- It monitors transport capacity of the grid;
- It sets guidelines for the tariffs for grid operations;
- It sets guidelines for the tariffs for the transport and delivery of electricity;
- It advises the Ministry of Economic Affairs;
- It provides licenses to supply electricity to captive customers;
- It monitors the abundance to the Electricity and Gas legislation.

## **Chapter 5: Analysis and Recommendations**

So has the European regulatory framework and the subsequent implementation thereof by the Dutch government resulted in the absorption of the lessons learnt from California? On the whole the answer is confirming, although some issues remain unresolved:

*1. No regulatory system could have prevented wholesale electricity prices from climbing to record levels under the natural circumstances that occurred.*

The crisis in California was largely caused by some extreme weather conditions, which gave rise to a supply and a demand shock. The aim of the European Union is to remove national barriers to trade and to build Transnational Networks whereby the individual national markets are submerged into a greater European energy market. It is beyond doubt that the creation of such an integrated market would indeed go far to avoid asymmetric shocks of the Californian nature: if nature were to conspire against a member state, resources from abroad would be able to lessen the worst effects.

*2. It is impossible to regulate and legislate basic economic laws out of existence.*

The framework for the energy sector as developed by the European Community and the subsequent implementation by the individual member states, entails a system of managed competition rather than a full-fledged market approach.

There are ample reasons for choosing to introduce some competition rather than switching completely to a free market system. Many of the public interests are inherently incompatible with the effects of free market economics. It would result in the loss of guaranteed electricity supply to everyone at reasonable prices. It would result in a painful transition period where power companies will restructure their assets, possibly causing a decrease in generation capacity, if even only for the short or mid-long term. Eventually a new equilibrium would be found, but what that equilibrium would be and what the effects on society are, is hard to predict. That the cost of the transition would be high is nonetheless clear.

Whereas managed competition might theoretically be only a second-best choice, realistically it is the only practical option. With good regime design it is possible to capture most of the dynamics of the free market approach while assuring that the clear public interests are being met. Unlike the free market approach though, which could operate fairly autonomous once the system is up, managed competition will need constant managing. It will require continuous modification and adaptation to changing circumstances and developments, a constant checking whether the regulatory regime is adequate and functions properly.

The Dutch approach is generally to find solutions without impeding the market processes directly; the basic economic laws are respected and the regulatory regime works with and around them rather than against them. Although in the initial stages of the liberalization maximum tariffs are still used, as the level of liberalization is increased maximum tariffs are abandoned as a control mechanism. The Dutch policy concerning renewable energy is likewise designed relatively non-intrusive: tax incentives are the preferred instrument of choice.

*3. The willingness to keep the grid up in the public interest ( avoid blackouts and guaranteeing access to electricity for everyone), when undefined and unqualified, can result in enormous cost to society.*

A difficult issue that has not yet been tackled is the precise definition of particular public interests such as supply guarantees and ‘reasonable’ price levels and, equally important, the price that society is willing to pay for such public requirements. Without a qualitative and quantitative delimitation, undefined public interests represent a threat to the efficiency gains achieved by the transformation from a state sanctioned monopoly system to a system of managed competition.

This is a problem that is solved neither in the Dutch context nor in the larger European framework. Obviously this is a highly political question. The matter of ‘reasonable’ tariffs is a recurring theme in the US, Europe and the Netherlands alike. What the exact definition of ‘reasonable’ is remains unknown. It could be interpreted as reasonable relative to other power companies elsewhere and as such be a check on possible oligopolic or monopolic abuses of power. An other interpretation could be reasonable relative to what most people could afford to pay, thus further qualifying the ‘security of supply’ public good to include affordability. It is quite likely that a competition authority might focus on the first interpretation, whereas politicians are more likely to be swayed by the second interpretation.

*4. Price controls are difficult instruments to use efficiently ( without causing too much market distortion) and can easily cause a breakdown of the system.*

The usage of price caps or price guarantees is an approach that is fundamentally incompatible with market processes. After all, it is the interplay of supply and demand via the price that balances the entire system. Building in hard price restrictions unbalances the system and as soon as circumstances drive the price up or down towards the hard restrictions, the entire system comes under pressure. Spontaneous rebalancing is unable to occur, so intervention by the government is automatically required if averse effects are to be avoided. Whether such interventions are efficient is entirely different matter. These measures are fortunately not used in the long run.

5. *Price guarantees as a compensation for investment in utilities can hinder or block entry to the market.*

The Dutch approach avoids this mechanism, save for the investments in the grids. Due to the unbundling however, it is limited to the grid operators. In the Californian approach this mechanism was used with regards to power companies (generators) as well. The mechanism itself was used with more success in other American states, indicating that it is a matter of setting the price guarantee sufficiently low to allow both a return on investment and an incentive for new power companies to establish themselves<sup>14</sup>.

6. *Perverse effects of legislation and regulations provide companies with an incentive to go against the public (collective) interest and maximize their own profits.*

In a system of managed competition, the presence of power companies solely operating on a for-profit basis might be detrimental to the precarious balance of competition and public interests. It is clear that in the case of California, power companies were presented with the incentive to act *against* the public interest as they were not compensated for the difference between retail and wholesale electricity prices. It is not necessary to assume malevolence in for-profit companies for acting in their own interests; this is simply the only rational course of action available.

An alternative would be the introduction of private not-for-profit companies. Such companies would be characterized by their access to private finance, an entrepreneurial spirit, a statutory aim to serve a particular public interest, independence from the government and the application of the robin-hood principle resulting in the return of profits towards the company's statutory goal rather than shareholders. An additional and important benefit of such companies is that they are less prone than for-profit companies to give in to unintended (perverse) incentives in regulatory systems. Profit maximization is, after all, not a statutory goal for these companies. It is also important to know that these companies embody at least a partial solution to the problem of delimiting the previously 'undefined' public interest referred to in point 3. The need to have a statutory goal partially identifies the public interest whereas the available finances quantify the price that can be paid for the attainment of a particular public goal: whereas the state can never go bust, companies can go bankrupt.

Non-profit companies often draw financial resources from both the private and the public sector. This complicates the introduction of such organizations, as European law does not allow such mixed-finance organizations in order to protect a level playing field. Nonetheless, the existence of such companies in many countries, where they are often directly involved for the common good has caused the European Economic and Social Committee to adopt a favorable stance towards such organizations<sup>15</sup>. Typically these organizations are operating in the healthcare and education sectors, but it is worth examining their role in the energy sector as well.

Additional observations:

*Taking demand side measures*

Although it is tempting to explain the crisis in California as a supply side problem, leading to the clear solution that the capacity to generate electricity has to be expanded, it would be

dangerous to ignore the demand side of the problem as well. The demand for electricity is constantly growing in our high-tech society, and it will be difficult in the long run to keep expanding our generating capacity efficiently.

A method to limit the demand for electricity is to allow the real-time pricing of electricity, where consumers pay the real cost of electricity at the time they use it. Real-time pricing would result in greater price differentials at given times. This would promote both financial stability for the companies involved in the electricity market and also conservation among consumers<sup>16</sup>. Income effects that would result from such pricing could be partially or totally offset in a variety of ways if deemed necessary.

### *The regulator*

The role of the regulator within a system of managed competition differs from the role in a free market system. Not only does the regulator have to scrutinize the behavior of the market players, but it also has to scrutinize the regulatory system to see if the regulatory system still produces its intended outcome. The framework established by the European Community pays heed to this requirement. It acknowledges the permanent role that regulators in the member states have to play both in this time of transition as well as when the system is up and running.

Still, the competencies that European regulations require of these regulators such as the power to set or approve tariffs infringes on the regulators ability to objectively judge the efficient workings of the regulatory system. Being involved in the setting of the price controls is necessary because regulators have expert knowledge in this field, but the price controls themselves are often an important part of the regulatory system. Asking the same regulator who advised or decided on the level of the price controls to judge the results of these price controls, is prejudicial.

There is the need for a truly independent watchdog without regulatory powers. Such an organization would best be organized on a national level allowing it to become part of a normal complaint system. If it identifies problems it can relay the information to the responsible ministry or even to the European Commission.

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## Founding fathers

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Public SPACE is the knowledge and research center of Boer & Croon Strategy and Management Group, a leading consultancy and interim management firm based in the Netherlands. Public SPACE focuses on complex and innovative strategic interaction between government, civil organizations and private corporations for public purposes. Its mission is to design and implement innovative and sustainable strategies for the production of public services and public goods. Public SPACE investigates the modern dynamics of public and private domains and develops constructive partnerships between public and private parties.



The Netherlands School of Public Administration (NSPA) develops and provides vocational programs at postgraduate level, specifically geared to the public sector. Its founding



was prompted by the observation that there were no postgraduate courses which did full justice to the goals and culture of the public sector. After all, the forces operating in the arena of public sector management differ fundamentally from those in a market organization.

## de Baak

De Baak is the Management Center of the VNO-NCW, the association of the largest employers' organizations in The Netherlands. If doing the right things is what it's all about, then the choices made by the company and the entrepreneur provide the context. You will find that attention is given to strategy and to charting one's own particular course in all of our activities: training courses, individual counseling, introductory meetings, activities of de Baak Circle, and the literature service.

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<sup>1</sup> Taylor and VanDoren (3 July 2001), California's Electricity Crisis

<sup>2</sup> Taylor and VanDoren (3 July 2001), California's Electricity Crisis

<sup>3</sup> Izumi (May 2001), Lights out

<sup>4</sup> Taylor and VanDoren (3 July 2001), California's Electricity Crisis

<sup>5</sup> Taylor and VanDoren (3 July 2001), California's Electricity Crisis

<sup>6</sup> Moore and Kiesling (February 2001), Powering up California.

<sup>7</sup> Izumi (May 2001), Lights out.

<sup>8</sup> Izumi (May 2001), Lights out.

<sup>9</sup> European Parliament (2002), Fact Sheet Energy Policy.

<sup>10</sup> Van Houtte (25 October 2001), Completing the Internal Energy Market.

<sup>11</sup> Dutch Ministry of Economic Affairs, The Current lines towards an electricity market.

<sup>12</sup> Dutch Ministry of Economic Affairs, The Current lines towards an electricity market.

<sup>13</sup> Dte, website: <http://www.nma-dte.nl>

<sup>14</sup> Moore and Kiesling (February 2001), Powering up California.

<sup>15</sup> Economic and Social Committee (12 September 2001), Private not-for-profit social services in the context of services of general interest in Europe.

<sup>16</sup> Izumi (May 2001), Lights out