

7 Sept 07

TO: John B. Walker
Executive Secretary
State Environmental Commission

FROM: Woodrow W. Clark II, MA³, Ph.D. (#)
Managing Director
Clark Strategic Partners

RE: Alternatives to Coal Plants: **Renewable Energy Power Generation**

OVERVIEW

In this comment letter, I will first challenge and dispute the alleged facts presented in other statements. Above all, the State and Federal governments do NOT have an Energy Policy and Plan with measurable objectives, goals and metrics.

In short, before any decision(s) on coal or other massive project with long-term consequences are made in the area of Energy, it behooves the State and its public policy makers to have such a policy. Such a policy will be under consideration by the California State Legislature and Governor in 2005, but never agreed upon. An Energy Policy should be adopted. And it is worth nothing as well that the Federal Government has NO Energy Plan.

In fact that issue too is now going to be under consideration in the session of Congress starting in 2005 with a so-called "Energy Policy Act" which was little more than a "pork barrel" financing mechanism for some states. Again it would seem prudent to have such a National Energy Plan in place from which to work before such massive costs are incurred at the regional or state levels. Short of that, states must take charge and create their own energy policy and plans along with other states in the region.

Meanwhile, action needs to be taken. There is simply NO need for coal to be mined and used for energy power generation. Aside from human costs from mining accidents, such as the recent one in Utah, the costs for mining in terms of pollution of land and water is un-measurable. The far greater costs are to the people living in the region where they must inhale and breath the particulate waste from mining operations. Even with so-called "clean coal" technologies, there are toxics in the air and particularly mercury as a by-product.

The basic issue with coal and fossil fuels today are that, for example the "clean coal", they are not cost effective or competitive. Albeit some "clean coal" technologies like Fisher-Troppe are well known documented, but communities and consumers need to compare the "stranded costs" for these technologies against the costs for renewable energy (e.g. solar, run-of-river, wind, bio-mass, geothermal etc.) and storage technologies (e.g. flywheels, fuel cells, batteries, pumped etc) which do not pollute, are cost competitive in many cases today, and have NO fuel costs (e.g. wind and sun). See Chart II for a national analysis of renewable energy sources. Once coal or any other fossil fuel is capitalized, the return on investment will take from 20-30 years.

Energy and Environmental Issues

The basic problem with energy studies are that it does NOT cover the entire supply and demand of energy in Nevada. For a variety of reasons, data is not provided or mis-understood. Instead, some demand data is explored, but not all data sources are used. That is one major flaw in the lack of data from the CAISO for California. Or as recently documented with a study of coal for the Asian Development on coal in Inner Mongolia, all the data on coal and even renewable energy generation was not provided the International Research Team. However, three other major sources are not fully considered.

As noted below, the entire energy conservation and efficiency programs are usually not fully accounted for within communities or states. California, for example, avoided the predicted blackouts in the summer of 2001 because consumers saved about 12-15% per month (about 5300Mw) which avoided the estimated short fall for power generation. Secondly, the data do not include the incentives and rebates for renewable energy supplies from both central grid and on-site power generation. Finally, the various regional (western states) and international sources are not considered. Important new programs are already underway with the Western States Governors' Association as also with Mexico and Canada on renewable energy generation.

One other serious problem exists. The notion that more natural gas is needed in the region (especially California), let alone other American regions and States ignores a basic premise in Public Policy: set up a bi-partisan group to develop a Comprehensive Energy Plan. And another basic economic premise: never be too dependent on one supply source. As noted below (Chart 1, Rand Corp, 2001), California has over 52% of its power energy from natural gas resources. The State does NOT have a comprehensive Energy Plan in 2007 and it is easy to see that one is needed. The bi-partisan Gubernatorial State vision and goal for Energy Independence has not been made it into any comprehensive energy plan or document.

The current plans and reports from the California Energy Commission, California Public Utility Commission and various companies or associations are all pieces of a larger puzzle. Is there for example, a Renewable Energy Generation Plan (to implement the California Renewable Portfolio Standard) in place? NO. Or is there even a comprehensive Energy Demand for Conservation and Efficiency? SOMEWHAT. None really exists that are either current, based on comprehensive data and focused on the need for short and long term incentives, financing, contracts etc. The fact is that both the State of California and communities are not reaching the RPS goals. Only Southern California Edison appears to be close.

Energy Conservation and Efficiency

The energy studies often state that “Energy Conservation measures should not be considered alternatives because they will occur whether or not the coal projects are approved.”

That is false. Some conservation measures will occur, and will reduce projected demand.

However, other measures will not necessarily occur unless there are public policies, alternative programs and continued financing to support them. The energy studies fail to identify or quantify specific data (see references below). California has done that with guaranteed measures such as the “Flex Your Power” program under Governors Davis and Schwarzenegger.

For example during the California Energy Crisis, especially the Spring and Summer of 2001 with conservation and efficiency saved blackouts with a 12-15% reduction of demand on the system. The State has about 53,000 Mw of energy use daily. With at least a 10% saving during the peak summer months of Summer 2001, 5300 Mw were saved daily and no predicted Blackouts occurred.

Moreover, the State has now under Governor Schwarzenegger’s Executive Order “Sustainable Public Buildings” required new buildings to be built at least Silver LEED standard. This is critical, as enormous energy savings will occur. Furthermore, the impact on the private sector new construction for office and residential buildings will also begin to comply with this State initiative.

Furthermore for the energy studies to state, for example in the case of natural gas (substitute coal for natural gas in Nevada) that the alternatives will occur “whether or not a LNG project is approved” is blatantly false. The fact is that there is little or no money in the State to fund these alternatives. Certainly there is NOTHING financial on the magnitude that LNG promoters are spending not only in their public relations campaign or lobby efforts. If even half of those resources were spent on the alternative energy solutions then there would not be a need for LNG or other foreign energy fuel supplies.

To also state that such efficiency measures improve energy conservation address “long term energy policy and usage considerations” is simply wrong. As noted above these measures as reflected in Flex Your Power were immediate and dramatic at a very low cost.

But even more disturbing is the notion that LNG or coal are both a “short-term and mid-term” needs for California and Nevada respectively to meet its energy needs. That is both wrong and based on false supply data, finance and economic analyses. The installation of any LNG or coal facility results in long term stranded costs for the facility, and also for the infrastructure needed to service it in terms of technical requirements and for distribution of the natural gas or coal itself. Moreover, it makes California and Nevada even more dependent on this ONE supply source of fuel supply rather than encouraging it a more diverse supply. Finally an even more significant issue must be raised: California and other states will NO longer be customers for coal generated power. State laws now require RPS and “green purchases” of power.

In short, Energy Conservation must be considered part of the “baseline conditions” in order to ascertain true demand.

Renewable Energy Generation

Turn now to the other serious misrepresentation in energy studies: Renewable Energy.

While the State of California has a Renewable Energy Portfolio Standard supported by Governors' Davis and Schwarzenegger, the reality is that there is very little money to fund it at the State and local level. The fact is that California Governors for the last five years have called for the State to become "Energy Independent". Such a policy and vision requires far more than a central power grid which installs wind farms and solar thermal power generation. The current focus on local power generation reduces the need for central grid energy and transmission line costs. California started in January 2006 an aggressive (\$3 billion over 10 years) program to implement the State's One Million Solar Roof program passed in October 05.

One good case is the Los Angeles Community College District (LACCD) with its Energy Independent and Carbon Neutral program. One element is the installation of renewable energy generation to offset the use of both the central grid and fossil fuel generated power. In late summer 2007 (August 17), the East Los Angeles College Campus of LACCD did just that. A 1 Mw solar system is being installed which will be able to power the entire campus by the beginning of January 2008. See Chart III for map of East Los Angeles College Campus for Solar Program. Soon there will storage devices so that the campus will have renewable energy as its base load and become entirely independent of fossil fuel generated power.

The Economist (11 May 04) noted what this new "Energy Internet" (Appendix A) model might look like a central "station" or main frame computer with a series of other smaller even lab top computers that use local renewable energy sources along with storage and other devices. This concept is similar to that perspective outlined in "Agile Energy Systems" (Clark and Bradshaw, 2004). Clark (2006) argues why such an "agile system" for renewable energy makes the use of LNG or coal or any fossil fuel unnecessary.

A California State Interagency Working Group outlined a Comprehensive Investment Plan for Renewable Energy Investment (Grandy et al. 2002) that documents how costs for renewable energy in 2002 were then cost competitive with fossil fuels. See Appendix B for the Plan Chapters. Moreover by 2007, fossil fuels such as oil and gas are predicted to "peak" by all major academic and industry sources in 10 years. Coal and nuclear power are NOT the answers either.

Wind generated power costs are now on a par with natural gas, especially as natural gas prices are fluctuating and been increased over the last 2-3 years. However, wind is neither base load nor found regionally all over California. And to date, there have been NO offshore wind generation programs. Hence, wind for central grid transmission without financial support or storage is limited. Local and community based wind on-site might well be the answer. Denmark, albeit with a smaller population and energy demand is doing just that. Their comprehensive energy plans called for 50% wind power generation by 2015. The country is moving far beyond that goal through both central grid and on-site wind power generation.

Solar Thermal is becoming increasingly cost effective but still not widely installed throughout the region, but is planned for transmission to California. Geothermal is another plentiful

renewable resource in Nevada and California and also still more expensive today. It appears to be a major new source of energy throughout the region within the next 3-5 years. Biomass is well established in the state and increasing with new technologies and applications for municipal waste treatment.

Central - Grid Energy Transmission

For example, Governor Schwarzenegger approved the expansion Path 15 (which is the key line between northern and southern California on 16 Dec 04. This expansion will be an enormous boost to providing more energy throughout the state including the increase of renewable generation.

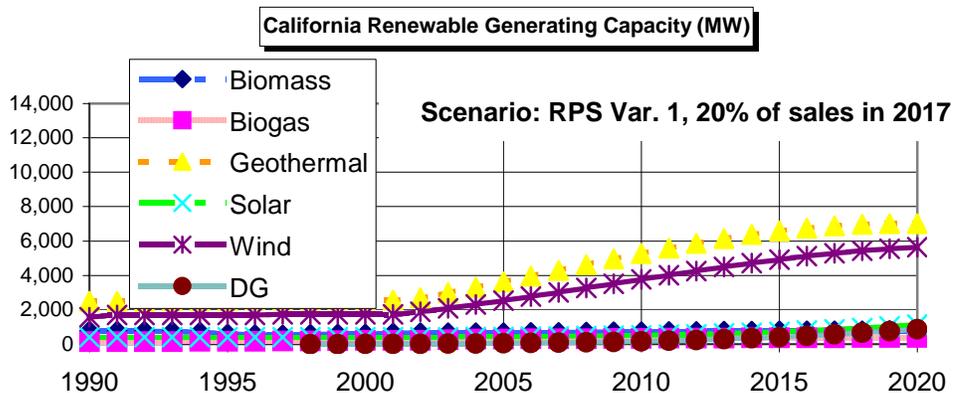
On-site or Distributed Generation (non- natural gas)

Solar energy from systems installed on homes, buildings and office complexes is increasing rapidly. When combined with other technologies and LEED standards, current costs are a bit high but rapidly decreasing. Overall long term costs for energy are greatly reduced.

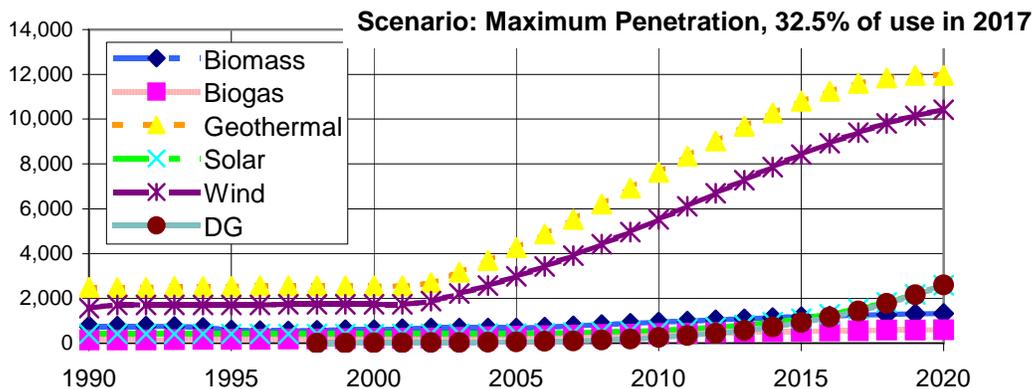
Hydrogen under Governor Schwarzenegger is on the fast track. Initially the plan (RoadMap issued in Dec 04) is to use natural gas reforming. However, this plan is limited and will be only for 5-6 years. By 2010, the parallel track of electrolyzing renewable energy sources (water, electrons from solar, wind and geothermal) will be cost competitive and widely used. Foreign car makers are already hydrogen fuel cell demonstrating cars throughout the USA but especially in Southern California. This was the same strategy that the Japanese makers of hybrid cars did in 2000-02.

The Conclusion of the California Governor’s Office Comprehensive Renewable Energy Investment Plan (2002, pp.8-9) is worth quoting here:

“Over the longer term, all of the renewable resources except solar could become resource limited, and achievement of any goals beyond those currently in place is wholly dependent on cost reductions and technological innovations in solar technologies, as this fuel resource is effectively unlimited. The figures below illustrate this concept.



California Renewable Generating Capacity (MW)



Any reasonable near-to-middle term scenarios that involve significant growth in renewable energy production in California or Nevada will be dominated by increased geothermal and wind generating capacity. Due to the low operating factor for wind generators, geothermal alone dominates total renewable energy production. Biomass and biogas resources may be able to double in their contribution, but resource limits will not allow growth to go much beyond that level. Solar power generation has now gone from the early stages of commercialization to widespread use. Solar will make a major contribution to total California renewable energy production before 2015. However, as the maximum penetration scenario figure (second figure) shows, a strong effort to develop these technologies now will yield substantial contributions by 2020 and beyond.

The primary conclusion to be drawn is that the goals in the RPS of 20% renewable energy by 2010, as well as the Governor's extended goal of 33% by 2017 are clearly achievable.

This plan also assesses the cost for moving the present mix of energy, containing approximately 8% Renewable Energy, to the 20+% renewable level by 2010 as Governor Schwarzenegger plans. It identifies several realistic scenarios for achieving this goal, and identifies the costs associated with that achievement. In the lowest cost scenario the capital investment for new renewable energy is estimated to be \$17 billion. Ongoing annual incremental costs for renewable energy, including amortized capital cost and operation and maintenance expenses are estimated to be in the neighborhood of \$250 million. This can be compared to the overall cost of energy in California (which includes transportation) of \$85 billion per year. The Million Dollar Solar Roof program approved by the California state legislature in October 05 and then subsequently funded by actions of the California Public Utility Commission make these more likely.

Thus, the transition to the more sustainable energy future envisioned in the RPS would involve a 3/10 of 1% increase in the cost of energy. These costs are offset by the fact that this investment realizes reduced fuel costs since solar, wind and tidal energy sources are free. Hence, greater economic opportunity for the state in terms of new jobs and the expansion of industries, the

resultant economic activity, the consequent increase in sales and income tax revenues, and a better quality of life, including a healthy and attractive environment.

The cost for renewable energy is also reduced because much of the renewable energy generation is well distributed around the state, with some of it located at the site of energy use, thus reducing the requirement for expanding the energy grid infrastructure in our State. The introduction of new hybrid technologies with documented potential cost savings and the integration of energy-transportation-water and related infrastructures demonstrates that further cost reductions are probable. A key factor will be governmental units acting as partners with the private sector in implementing such energy plans.”

Conclusions and Next Steps

The issue here is that the energy reports on the potential for renewable energy generation on-site and central grid in various states have NOT been done. Aside from the problems with data as it is rapidly developing and expanding, the technologies are becoming more advanced and commercial. By the end of 2004, there was very little progress made in these areas. The problem is that there is little or NO money other than “buy-down” and “rebate” programs, which are short term, basic on ratepayers’ fees, and usually over scribed. In short, the demand for the rebates far exceeds the ability of the agencies or utilities to comply. Today, 2007, this scenario has shifted dramatically. There are more rebates and even some federal tax incentives.

Numerous companies have started and focused on solar alone since the rebate programs started in 2006. The result is that unions like the International Brotherhood of Electrical Workers (IBEW) is overwhelmed with people wanting to be trained in the “green” industries of solar, wind and geothermal power generation. Other related unions in construction, plumbing and design are experiencing the same demand. The trend has gone beyond the west coast and now into other parts of the USA but especially the European Union (EU, 07). Some see this as the “Third Industrial Revolution” (Rifkin, 06 and 07).

However, the central grid demand for renewable energy generation exists, but with few long term contracts to encourage the industry to invest and grow. Such barriers need to be eliminated. When they are, the supply of renewable energy will easily meet the State demands for power over the next 30-50 years and beyond. Local renewable energy on-site power generation enhances and moves those goals even faster ahead. If the same amount of capital and finance were directed at renewable energy as they are now at LNG, coal and nuclear power, Nevada and other states in the western region would NOT be in danger of any near or long-term energy storage.

References:

Bernstein, Mark A., Paul D. Holtberg, and David Ortiz, "Implications and Policy Options of California's reliance on Natural Gas", RAND, Santa Monica, CA. June 2002.pp. 1-41.
ISBN:0-8330-3217-8

California Consumer Power and Conservation Financing Authority (CPA) “Clean

Growth: Clean Energy For California's Economic Future – Energy Resource Investment Plan,” February 15, 2002.

<http://www.capowerauthority.ca.gov/EnergyResourceInvestmentPlan/ERIP.pdf>

California Energy Commission. 2000. *Guidebook for Combined Heat and Power*. P700-00-011. Sacramento: California Energy Commission .

California Energy Commission. Natural Gas Infrastructure Issues: Committee Revised Final Report. Sacramento, CA. September 2001.: pp. 1-122.

California Energy Commission (CEC), "Summer 2001 Conservation Report", Sacramento, CA 2002. <http://www.energy.ca.gov/efficiency/2001>.

California Energy Commission. Investing in California. Sacramento, CA. June 2001.

Clark, Woodrow, “Beyond De-Regulation and Energy Crisis: Creating Agile Sustainable Communities”, Long Beach Business Journal, June 20, 2006: 1-4.

Clark, WW and T. Bradshaw, Agile Energy Systems: global lessons from the California energy crisis”, Elsevier Press, UK, 2004.

Clark, WW and G Morris, "Policy Making and Implementation Process: The Case of Intermittent Power". International Energy Electrical Engineers (IEEE), August 2002.

<http://grouper.ieee.org/groups/scc21/1547/index.html>

Economist, "Building the Energy Internet", May 11, 2004.

EPRI (Electric Power Research Institute). 2001. *California Renewable Technology Market and Benefits Assessment*. Palo Alto: EPRI.

European Union, “Support Statement: Written Declaration On establishing a distributed green hydrogen economy and advancing a Third Industrial Revolution in Europe through partnership with the connected regions and cities, SME’s , and civil society organizations“, EU Parliament, Brussels: May 07.

Faruqui, Ahmed, Hung-po Chao, Vic Niemeyer, Jeremy Platt, and Karl Stahlkopf. 2001. "California Syndrome." *Power Economics* :24-27

Federal Energy Regulatory Commission (FERC), California Independent System Operators, "Intermittent Resources Ruling" Docket Nos. ER02-922-000 and EL02-51-000
<<http://cips.ferc.fed.us/cips/default.htm>> March 28, 2002.

Fisher, Jolanka V. and Timothy P. Duane. 2001. *Trends in Electricity Consumption, Peak Demand and Generating Capacity in California and the Western Grid, 1977-2000*. Program on Workable Energy Regulation Working Paper PWP 085 ed. Berkeley: University of California, Energy Institute.

Governor's Office of Planning and research, Interagency Green Accounting Working Group, "Strategies for a Comprehensive Renewable Energy Investment Plan", Sacramento, CA, Oct 2003, www.opr.ca.gov

Governor Arnold Schwarzenegger, 2004b. "California Renewable Energy Goals" presented to the California Energy Commission, Sacramento, CA. January 2004.
<http://www.energy.ca.gov/renewables/documents/legislature.html>

Governor Arnold Schwarzenegger, 2004c, "The California Hydrogen Highway: Executive Order," Davis, CA. University of California, Institute for Transportation Studies, April 20, 2004.
www.hydrogenhighway.ca.gov

Governor Schwarzenegger Ex Order # S-20-04 (15 Dec 04) "Sustainable State Buildings", Sacramento, CA. See Appendix C.

Governor's Office of Planning and Research, Interagency Renewable Energy (grid connected) Finance Working Group (IREF), "Renewable Energy Finance Plan". Unofficial / internal State of California, Sacramento, CA. Draft September 2002.

Governor's Office of Planning and Research, 2003, "Environmental Goals and Policy Report (EGPR)," Sacramento, CA www.opr.ca.gov

Grandy, Douglas (lead author) et al. Interagency Green Accounting Working Group, "Strategies for Comprehensive Renewable Energy Investment Plan", Sacramento, CA. 2002.

Lior, Norm. 2001. "What Went Wrong in California's Electricity Market." *Energy* 26:747-58.

Los Angeles Community College District, "East LA College is off the grid with 1 Megawatt solar power installation", August 17, 2007 Press Release. Picked up by Associated Press.

Lund, Henrik, and Woodrow Clark, "Management of fluctuations in Wind Power and CHP comparing two possible Danish Strategies", *Energy Policy*, UK: Elsevier Press, 2002.

Rifkin, Jeremy, "Leading the way to the hydrogen economy and a Third Industrial Revolution: A new energy agenda for the European Union in the 21st Century", Presented to the EU Parliament in Winter 07.

Rifkin, Jeremy. *The European Dream*. Tengen/Pelegium, 2006.

Sustainable Building Task Force. 2001. *Building Better Buildings: a Blueprint for Sustainable State Facilities*. Sacramento: Secretary of State and Consumer Services.
<http://www.ciwmb.ca.gov/GreenBuilding/Blueprint/Blueprint.pdf>

#) Woodrow W. Clark II, MA3, Ph.D. is a "qualitative economist" who just finished his book, "Agile Energy Systems: global lessons from the California Energy Crisis" (co-author, Professor Ted Bradshaw, UC Davis) from Elsevier Press, UK in October 04. He is now a Visiting

Professor in California and Italy. Clark had started and operated Clark Communications LLC in San Francisco (1980-1991) after earning his Ph.D. from University of California, Berkeley. Clark was the Deputy Director / Senior Policy Advisor to Governor Gray Davis' Office of Planning and Research from 2000-03, where he focused on sustainable development, renewable energy, advanced and emerging technologies, finance and public-private commercial strategies for "California's Next Economy". Clark was responsible for starting the planning and implementation of California's Hydrogen Economy and its "Hydrogen Freeway" until the Recall of Governor Davis occurred. Prior to that he was in the early 1990s, Managing Director, Center for New Venture Alliance, California State University, Hayward. During the 1990s, he was Manager of Strategic Planning for the Energy-Environmental Directorate of Lawrence Livermore National Laboratory. Dr. Clark was a co-editor and co-author (1999) on two Chapters for the Intergovernmental Panel on Climate Change, 3rd Report. From 1999-2000, he became a Visiting Professor of Entrepreneurship in the Natural Science Faculty (Planning -- Environment and Energy) at Aalborg University, Denmark until Governor Davis' staff recruited him to return to California to assist with the energy crisis.

Clark Strategic Partners was founded in January 2005 and focuses on "civic markets" or how business and public policy can work together to achieve, leverage and promote the same societal end results, especially in the commercialization of advanced technologies, corporate governance, finance and international markets such as those in the energy, environmental and climate change sectors. The major clients include: Los Angeles Community College District, Energy Director; Green Valley Initiative in S. California; Film Studies; Inner Mongolia Autonomous Region (IMAR) Peoples Republic of China, Senior Foreign Energy Advisor; and Milken Institute, Senior Fellow. He is the leader of an Energy Expert Team to advise the EU on The Third Industrial Revolution (Jeremy Rifkin). Clark is on the Board of both non-profit and for-profit organizations including the Alumni Board, University of California, Berkeley.

Woodrow W. Clark II, Ph.D., Managing Director
Clark Strategic Partners
PO Box#17975
Beverly Hill, California USA 90209
Direct Tel # +1 (310) 858-6886 fax # +1 (310) 858-6881
Email wclark13@aol.com

Chart 1: California Energy Supply

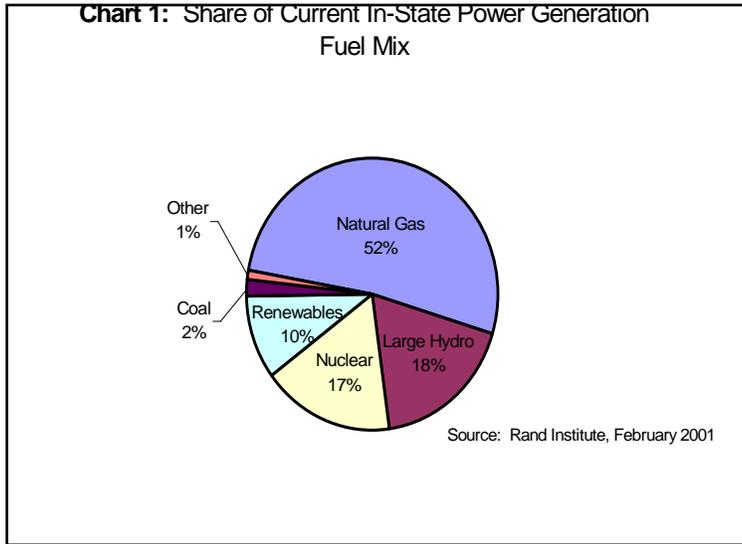


Chart II: National Renewable energy Power Resources

(Source: National Renewable Energy Laboratory, Golden, CO, 2006)

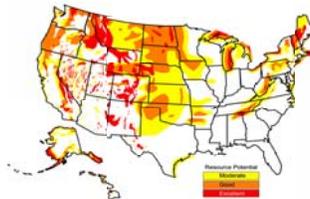
Renewable Energy in America

Regional Resources, Economics, and Politics

SOLAR ENERGY



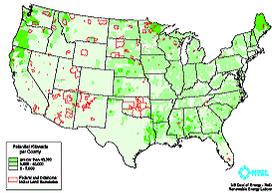
WIND POWER



GEOTHERMAL



BIOMASS



Resource Potential

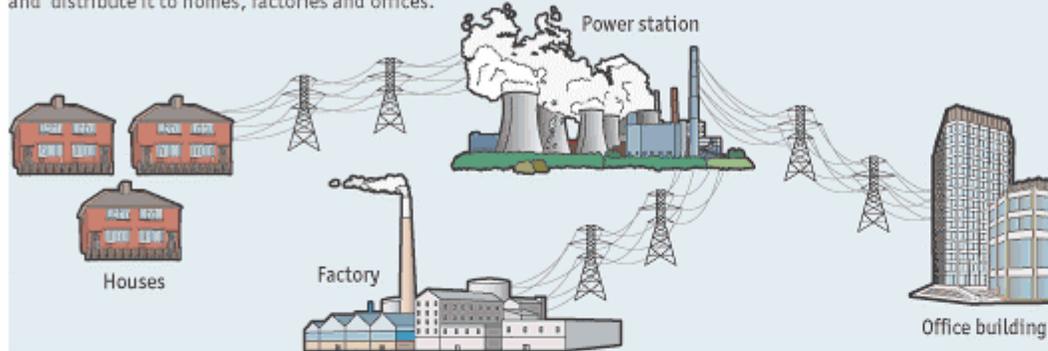
Appendix A: The Energy Internet

The Economist (11 May 04)

The shape of grids to come?

Conventional electrical grid

Centralised power stations generate electricity and distribute it to homes, factories and offices.

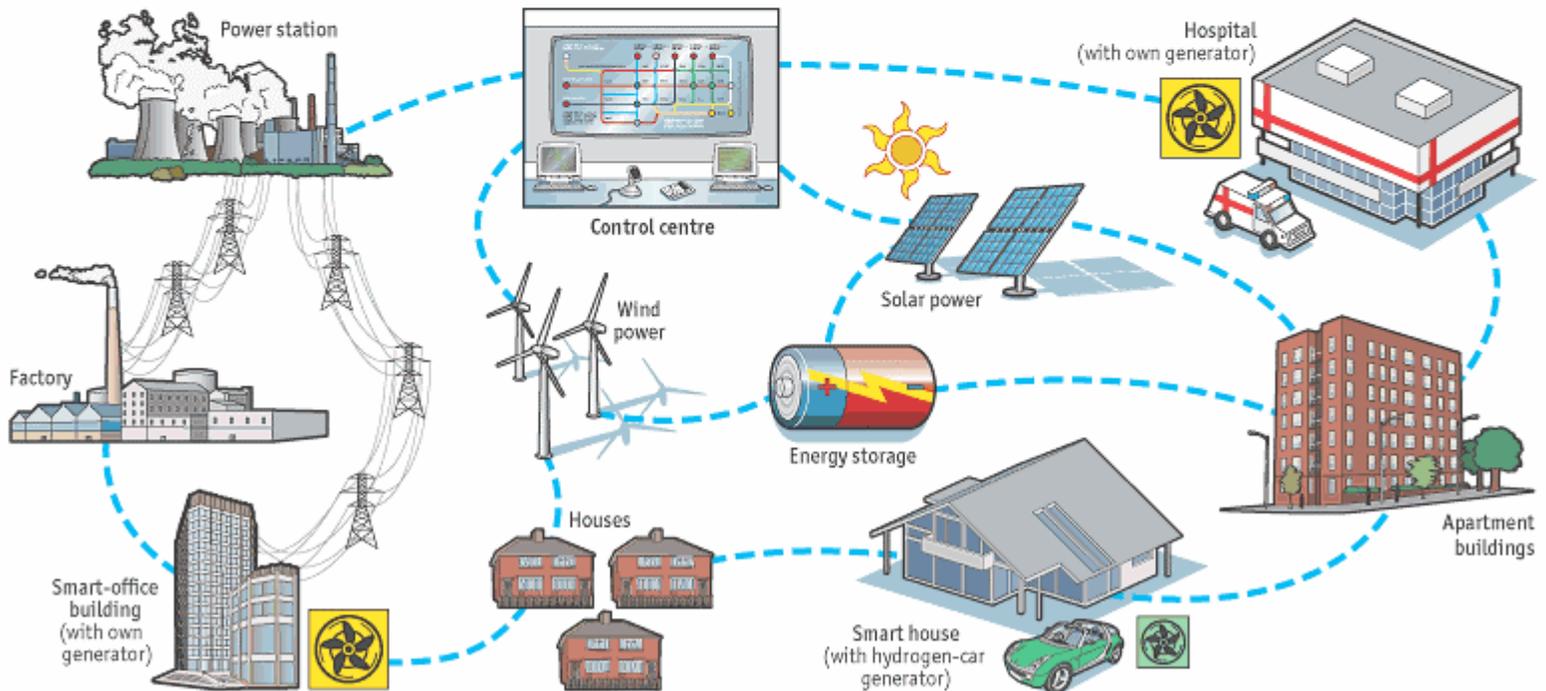


Energy internet

Many small generating facilities, including those based on alternative energy sources such as wind and solar power, are orchestrated using real-time monitoring and control systems.

Offices or hospitals generate their own power and sell the excess back to the grid. Hydrogen-powered cars can act as generators when not in use. Energy-storage technologies smooth out fluctuations in supply from wind and solar power.

Distributing power generation in this way reduces transmission losses, operating costs and the environmental impact of overhead power lines.



Sources: The Economist; ABB

Strategies for a Comprehensive California Renewable Energy Investment Plan

Prepared by the Interagency Green Accounting Working Group

October 2002



Gray Davis, Governor

**Part I: Comprehensive Project Management Finance
Part II: A 15-year Renewable Energy Investment Policy
Plan for California**

Governor's Vision Statement

Secure California's energy independence, and provide secure, affordable energy through the development of a generation and delivery system that is the cleanest, most efficient, and reliable in the world by maximizing use of renewable energy, thereby making a positive contribution towards reducing global climate change.

Goals

Improved Planning

- (1) Create and implement a comprehensive statewide energy infrastructure policy that embraces the use of renewable energy as a vital concept in meeting California's future needs for reliable, affordable energy while having favorable environmental impacts. Plan for raising the contribution of renewable power in California's grid from current levels to 20% by the year 2017, and to 25% by the year 2020.
- (2) Integrate renewable energy and energy efficiency into distributed generation projects.

Improved Regulation

- (1) Provide timely and consistent regulations and incentives to integrate on-site renewable energy generation with central grid generation and transmission facilities.

Financing and Fiscal Policy

- (1) Accelerate demand for renewable energy.
- (2) Define a market-based instrument for all energy generation (carbon market) so that the price of the resulting energy reflects the direct cost of producing that energy and the costs of reducing or eliminating the harm that generation does to the environment and human health.
- (3) Create, and maintain over time, a financial climate that encourages renewable energy.

Appendix C: Governor Schwarzenegger's Sustainable Building Ex Order
(December 15, 2004)

EXECUTIVE ORDER S-20-04

by the
Governor of the State of California

WHEREAS, the Energy Action Plan adopted by the state's energy agencies places conservation and energy efficiency first in the loading order of energy resources because they are the least expensive and most environmentally protective resources; and

WHEREAS, commercial buildings use 36 percent of the state's electricity and account for a large percentage of greenhouse gas emissions, raw materials use and waste; and

WHEREAS, the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), the nation's leading green building rating system, promotes "high performance" building practices; energy, water and materials conservation; environmentally preferred products and practices; improvements in employee health, comfort and productivity; and reductions in facility operation costs and environmental impacts; and

WHEREAS, electricity costs for California's commercial and institutional buildings exceed \$12 billion per year, and cost-effective efficiency practices outlined in this Order can save more than \$2 billion per year; and

WHEREAS, the state's own buildings consume over \$500 million of electricity per year, and the measures outlined in this Order can save California taxpayers \$100 million per year; and

WHEREAS, high-performance schools also reduce energy and resource consumption, while creating safer and healthier learning environments; and

WHEREAS, investments in energy efficiency measures provide high returns on investment and boost California's economy, creating more jobs, local spending and tax revenue.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, by virtue of the power vested in me by the Constitution and statutes of the State of California, do hereby order effective immediately:

1. That the state commit to aggressive action to reduce state building electricity usage by retrofitting, building and operating the most energy and resource efficient buildings by taking all cost-effective measures described in the Green

Building Action Plan for facilities owned, funded or leased by the state and to encourage cities, counties and schools to do the same.

2. That state agencies, departments, and other entities under the direct executive authority of the Governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20% by 2015, through cost-effective efficiency measures and distributed generation technologies; these measures should include but not be limited to:
 - 2.1. Designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings; and
 - 2.2. Identifying the most appropriate financing and project delivery mechanisms to achieve these goals; and
 - 2.3. Seeking out office space leases in buildings with a U.S. EPA Energy Star rating; and
 - 2.4. Purchasing or operating Energy Star electrical equipment whenever cost-effective.
3. The Division of the State Architect in the Department of General Services should adopt guidelines by December 31, 2005, to enable and encourage schools built with state funds to be resource and energy efficient.
4. That the California Public Utilities Commission (CPUC) is urged to apply its energy efficiency authority to support a campaign to inform building owners and operators about the compelling economic benefits of energy efficiency measures; improve commercial building efficiency programs to help achieve the 20% goal; and submit a biennial report to the Governor commencing in September 2005, on progress toward meeting these goals.
5. That the California Energy Commission (CEC) propose by July 2005, a benchmarking methodology and building commissioning guidelines to increase energy efficiency in government and private commercial buildings.
6. That the CEC undertake all actions within its authority to increase efficiency by 20% by 2015, compared to Titles 20 and 24 non-residential standards adopted in 2003; collaborate with the building and construction industry state licensing boards to ensure building and contractor compliance; and promptly submit its report as per Assembly Bill 549 (Statutes of 2001) on strategies for greater energy and peak demand savings in existing buildings.
7. Other entities of state government not under the Governor's direct executive authority, including the University of California, California State University,

California Community Colleges, constitutional officers, legislative and judicial branches, and CPUC, are requested to actively participate in this effort.

8. Nothing in this Order shall be construed to confer upon any state agency decision-making authority over substantive matters within another agency's jurisdiction, including any informational and public hearing requirements needed to make regulatory and permitting decisions.
9. Commercial building owners are also encouraged to take aggressive action to reduce electricity usage by retrofitting, building and operating the most energy and resource efficient buildings by taking measures described in the **Green Building Action Plan**.
10. This Order is not intended to, and does not create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees, or any other person.
11. That as soon as hereafter possible, this Order shall be filed with the Office of the Secretary of State and that widespread publicity and notice shall be given to this Order.

IN WITNESS WHEREOF I have here unto set my hand and caused the Great Seal of the State of California to be affixed this the fourteenth day of December 2004

/s/ Arnold Schwarzenegger Governor of California
xx

For Further details see:

http://www.governor.ca.gov/state/govsite/gov_homepage.jsp and click on the first update on the screen.