Subject:
Public comments for draft ETACC report
From:
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To:
Steve Church <schurch@arb.ca.gov>

This is a Word format of my public comments for the ARB draft of the ETACC report. I mentioned in my email.

Dr. Matania Ginosar

US and California should markedly expand nuclear power to reduce global warming.

We have to plan our electrical power needs realistically and devoid of emotionalism. We oppose nuclear power mostly because of our misplaced fear. Public misperception is the biggest hindrance to nuclear power and impacts also many energy professionals. Environmental groups contribute to the problem.

As an electrical engineer for 20 years I supported nuclear power. But I started to oppose it during my doctoral studies of Environmental Science at UCLA. Afterwards, when I was the manager of the Solar and Wind Energy programs at the California Energy Commission I opposed nuclear power and worked very hard to advanced alternative energies. I continued to oppose nuclear power because of all the concerns surrounding it. I was mistaken; I did not see the total story.

It took me a long struggle to realize that I was mistaken to oppose nuclear power. I saw only its potential negatives, did not study the full global energy picture, and I was overoptimistic about the adoption of energy efficiency and alternative energies. And most important, I mistakenly believed that Global Warming was a future event that would not impact global climate for several generations. Like many environmentalists I thought we had time to do things according to our dreams without pain: develop alternative energies, incorporate conservation and energy efficiency, take time to minimize our fossil fuels use, eliminate nuclear power, and I did not anticipate the explosion of energy demand in the developing world. I, like many, read about these problems but did not want to accept our global reality.

GW is the overwhelming primary issue of our time, and it is time critical. It is now very clear that GW is already here, is causing unstable weather globally with much damage, and will increase its ravage of many areas of our globe. The recent final report by the UN Intergovernmental Panel on Climate Change (IPCC) was quite specific about the coming increased damage to our global climate and the pending severe impacts on most nations, including the US. Our sad experience with just one storm, the destruction of New Orleans by Katrina showed us the power of nature to cause untold damage in life and property. We must look at the global energy picture to grasp the increased need for nuclear power, despite its limitations.

The most significant advantage of nuclear power is the potential to reduce carbon emissions: “A threefold expansion of [global] nuclear power could contribute significantly to staving off climate change by avoiding one billion to two billion tons of carbon emissions annually” (MIT panel). No other technology that I can see has the potential to reduce GW gases so significantly in the same time frame. We do not have the time to wait in order to avoid some of the most damaging aspects of advancing GW!

In 2006 57% of California electricity was generated by CO2 emitting fossil fuels, just 13% by nuclear power.

The most serious limitation to nuclear power expansion is negative public perception. The public fear of nuclear power is misplaced. Safety record of the 104 nuclear power stations in the US is very high. In addition, improved design of nuclear power stations and strict government supervision can reduce markedly all limitations:

The main limitations and mitigations are listed below:

Danger of nuclear radiation from plant accident:

The only significant nuclear accidents have been the Three Miles Island in the US, which did not emit any nuclear material, and the Chernobyl in the previous USSR. The damage from Chernobyl was on a large scale, it was due mainly to lack of a containment building above the nuclear plant which is mandatory on all nuclear power stations in the West.

New fail-safe system to power down runaway reactor is now superior not requiring external machinery.

Also control technology has advanced markedly in the last thirty years with the advance in electronics, and will increase the safety margin of new plants. In addition new nuclear plants can be placed far from population centers and use high voltage DC lines to transfer the power with low losses.

Inadequate nuclear waste disposal:

Although we still do not have a final solution to nuclear waste storage, all the commercial nuclear waste is stored safely at each nuclear station site. It occupies extremely small space and operated safely for the last fifty years. In addition, a new technology was developed that extract many times the energy from the nuclear material thus reducing the waste by a major factor.

Nuclear weapon proliferation:

Nuclear weapon proliferation is not effected by increased use of nuclear power in the US. Three quarter of the nuclear plants are operating outside of the US. Nations develop nuclear power if we want it or not.

Impact of terrorism:

New underground design reduces the potential for terrorist attack on nuclear installation. Heavier steel reinforced concrete over all critical plant equipment will increase safety. We should use National Guard to protect our national energy centers to decrease national vulnerability.

There are 440 nuclear power stations globally, 104 in the US. Nuclear power now supplies 16% of global electric energy. Global nuclear power expansion is a fact and is beyond U.S. control; eighteen of the 27 nuclear power plants now under construction are in Asia. The US can not dictate how much nuclear power will spread around the world, but if we cooperate with global nuclear power development, and help create global safety standards, we will increase the global safety and most importantly, help reduce GW progress.

Here are some additional realities to consider:

1. Steady base power is mandatory, should be over 60% of power mix, and is currently supplied in California by coal, natural gas, nuclear and large hydro. We must drastically reduce GW gases from fossil fuels by nuclear power. Our hydro power is in danger; GW is expected to increase weather extremities, therefore availability of our hydro power. Alternative energies should be incorporated into the power mix according to their effectiveness and timely contribution to reducing GW. They are inherently limited by nature, for example: sun only at daytime, wind is not steady. Alternative energies can not provide reliable base power. Corn Ethanol is not environmentally desirable.

2. R&D on CO2 elimination from coal should accelerate but it may take decades to incorporate and technologies may be unreliable, take immense space, hard to control because of it will be widely distributed and if later escapes can cause critical impact on GW.

3. China is adding two Gigawatt size coal plants a week. We can not influence them to reduce their immense CO2 emission, now equivalent to the U.S., when we in the US are pushing rapid approval of coal power plants to bypass impending limitation on CO2 emissions and carbon tax.

4. The American public will continue to demand more electricity and would conserve only in face of extreme events. California population continues to increase too.

5. Nuclear power generates by far the least GW gases of all alternative energies except wind energy.

6. Large scale electrical power can not be supplied reliably and economically from small distributed sources, such as “Solar photoelectric on every roof.” Buyers of these small systems are amateurs and as such subjected to price manipulation and unprofessional installation and repairs. These produce very little electricity at the highest cost. Central solar-thermal plants show considerably more promise for daytime solar power. Centralized power sources are bought, installed and operated by professionals that have both financial and technical acumen and therefore can generate the most cost effective, reliable energy.

Conclusion:

Nuclear power should replace much of the coal (external to state) and natural gas power plants in California in the coming years because:

It will reduce significantly generation of GW gases.

It will reduce our dependence on foreign natural gas. Additional natural gas must be imported.

Reduce our bloated balance of payment, a major part of which is for foreign fuel.

Retain more of our energy cost in the US, thus helping our economy

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