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Attorney At Law

December 9, 2008

Ms. Mary Nichols, Chair  
California Air Resources Board  
1001 I Street  
Sacramento, California 95814

Subject: Comments on *Climate Change Proposed Scoping Plan, October 2008*

Dear Ms. Nichols,

I am a California attorney who has worked for two decades in chemical engineering world-wide for petroleum refineries, chemical plants, and petrochemical plants. I have substantial experience in the engineering and economics of such facilities and their complex energy systems. The views expressed herein are my own, and in no way reflect the opinions or views of any other person or entity.

I have two main points, first, that the Business As Usual case in the Scoping Plan dramatically overstates the level of greenhouse gas emissions in 2020, and second, that even if one were to accept that global warming is a result of greenhouse gases in the atmosphere, California can do nothing to stop it.

**I. The Business As Usual Scenario Overstates Greenhouse Gas Emissions in 2020**

Firstly, the Draft Scoping Plan under AB 32 has serious flaws, as has been repeatedly reported to you by others. One serious flaw that I have not yet seen brought to your attention is the assumptions under the Business As Usual scenario for greenhouse gas emissions in 2020. The amount of greenhouse gases in 2020 are overstated because the Business As Usual case does not account for 1) the federal CAFÉ standards of 35 miles per gallon, and 2) innovations that have already occurred even without AB 32 implementation. Below are just four such innovations for your consideration. There are many, many others.

The Pavley standards are only slightly more restrictive than the federal CAFÉ standards, yet the Scoping Plan treats the Business As Usual case as if cars will not attain the federal CAFÉ standards.



The first innovation is improved batteries suitable for hybrid vehicles, and is based on the very recent membrane technology of ExxonMobil. This technology is licensed to EnerDel, a division of Ener1, who manufactures high-technology batteries. Their batteries allow more energy storage in less volume and less weight. Such batteries will greatly decrease the quantities of transportation fuels consumed, and thus the greenhouse gases emitted due to transportation.

The second innovation also applies to transportation, and is a novel material for ultracapacitors. As reported on 9/17/08 in ScienceDaily, "Engineers and scientists at The University of Texas at Austin have achieved a breakthrough in the use of a one-atom thick structure called "graphene" as a new carbon-based material for storing electrical charge in ultracapacitor devices, perhaps paving the way for the massive installation of renewable energies such as wind and solar power."

The third innovation uses both hybrid batteries and ultracapacitors, and is the patent-pending drive system developed by AFS Trinity that achieves 150 miles per gallon in a sports utility vehicle, the Saturn Vue. Their technology was demonstrated and showcased in January 2008 at the Detroit auto show.

The fourth and final innovation is a process to produce hydrogen from water and sunshine through synthetic photosynthesis, developed in 2004 by scientists at Imperial College, London. This one has some more development work ahead, but the fundamental breakthrough is complete. We will soon see abundant hydrogen from sunny areas, with the hydrogen used as fuel for power generation plants. This power will be as green as hydroelectric power.

It is important to note that none of these innovations were made in California, and none required incentives from AB 32. Yet, all are vitally important in reducing energy consumption and the greenhouse gases from producing energy. Each of these innovations, and many others not mentioned, will independently meet stated AB 32 goals by contributing substantially to economic growth, improving energy efficiency, creating jobs, and reducing greenhouse gases.

## **II. California's AB 32 Cannot Stop Global Warming – California is Too Small**

Secondly, the ARB cannot ignore the mandate to produce regulations as required under AB 32, even when there is much evidence that the world is not warming, but is cooling instead. However, the ARB should seriously consider the comments made at the December 5<sup>th</sup>, 2008 meeting of the Economics and Technology Advancement Advisory Committee, especially those regarding relocatable manufacturing leaving the state to escape higher energy prices,



renewable energy infeasibility due to non-existent power transmission lines, and the utter failure of the economic models to produce sensible results. Another key comment was the unintended and unforeseen consequences of earlier legislative action on sulfur oxides emissions.

I spoke with Dr. Michael Hanemann, the eminent professor and economist, and he admitted to me that the model cannot be used to predict future behavior, nor is it sensitive to time, nor is it dis-aggregated. Given that the model is highly uncertain, and independent experts recently expressed grave doubts about its results, and many manufacturers will leave California, I urge the ARB to proceed cautiously. It is highly likely that petroleum refineries will find it more attractive to produce California-quality gasoline and diesel in other states and ship the products to California via pipeline. The gentleman from the GM/Toyota venture also made it very clear that cars can be assembled in other states, too, where the regulatory burdens are lighter. California has already seen an exodus of talent and industry over the past few decades, and many more will inevitably follow with AB 32 requirements.

The facts are clear. California consumes approximately ten percent of all the petroleum consumed in the U.S., and approximately five percent of all the electric power produced in the U.S. On a global scale, these values are much smaller, with California's petroleum consumption representing approximately two and one-half percent of the world's consumption, and less than two percent of all the power produced in the world. Therefore, even if California were to stop using all energy today, the effect on the world's greenhouse gases emissions would be negligible. Cutting back to 1990 levels by 2020 will be even less noticeable.

Another dubious statement made in the ETAAC meeting on December 5<sup>th</sup> asserted that there is a link between lower energy consumption per capita and jobs growth in California. The example given was that household money not spent on energy is spent on latte coffees, thereby creating jobs in coffee shops. More generally, the assertion was that money saved on energy is spent on discretionary items. Such a link is tenuous at best, and more likely non-existent. Any household or commercial savings due to lower energy consumption in California is offset at least partially, and more likely more than offset, by higher energy prices, higher gasoline taxes, higher rents or real estate prices, and high state income taxes. As has been amply demonstrated in 2008, the price of petroleum and its products are far beyond the control of any country, any state, or any company. To a certain extent, the same is true for electric power from gas-fueled plants.

The unintended and unforeseen consequences of regulations aimed at reducing sulfur oxide emissions from combustion of petroleum fuels was that few, if any, facilities installed sulfur scrubbers on smoke stacks. Instead, most industries found it far more attractive to



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remove sulfur before the petroleum product is burned. It is very likely that, in spite of the ARB's best intentions and superb team of talented and dedicated experts, AB 32 implementation regulations will also result in some unintended and unforeseen consequences. It is instructive to note that other countries have not succeeded in reducing their greenhouse gas emissions.

### **III. Conclusion**

Innovations and federal regulations already exist that will substantially reduce greenhouse gases and should have been included in the Business as Usual case. The ARB should recognize that severe additional regulations that hobble industry, commerce, and households will lead to high unemployment, mass relocations of energy-intensive businesses to other states, and yet do virtually nothing to accomplish the stated goal of reducing world-wide atmospheric greenhouse gases. The idea that others will follow California's regulatory example in this area is speculative, at best. The market is already providing hybrid and other low-emission vehicles to buyers, which will amply reduce transportation-sector greenhouse gases emissions. Clean electric power is only a few years away, produced with hydrogen from synthetic photosynthesis.

Sincerely,

A handwritten signature in dark ink, reading "Roger E. Sowell". The signature is fluid and cursive, with the first name "Roger" and last name "Sowell" clearly legible.

Roger E. Sowell, Esq.

Law Offices of Roger E. Sowell