

Re: California automobile emissions standards
From: John R. Christy, Ph.D. University of Alabama in Huntsville

10 March 2009

Ms. Lisa P. Jackson
Administrator, Environmental Protection Agency

Dear Ms. Jackson

I am John R. Christy, PhD., Distinguished Professor of Atmospheric Science at the University of Alabama in Huntsville and Alabama's State Climatologist. Critical to the matter at hand is the fact I testified as an expert witness in the first case involving this very rule, the proposed California waiver regarding automobile emissions by Light Duty Vehicles of CO₂ for individual states.

I have numerous publications on climate science, several awards including NASA's Medal for Exceptional Scientific Achievement and have served on many expert panels including being Lead Author of the 2001 Intergovernmental Panel on Climate Change report and several National Research Council panels. I have testified before House and Senate panels eleven times.

As noted, I testified as an expert witness regarding the emission-reduction rule, California AB 1493, in Federal Court (Burlington VT) in April 2007 on behalf of the Alliance for Automobile Manufacturers (Green Mountain Chrysler Plymouth Dodge Jeep et al. Plaintiffs v. George Crombie, Secretary of the Vermont Agency of Natural Resources et al. Case No. 2:05-cv-302). The intent of the bill was to reduce CO₂ emissions by 26% (i.e. roughly 43 mpg fleet average) so as to have an impact on the global climate system. The original California bill was essentially adopted by eleven NE states, and with a back-log in Fresno CA, where the first suit was filed, the trial went forward in Vermont.

I received no compensation for my research and testimony in this case.

The basic result of my research, presented and accepted by both sides, was that even if the emission-reduction legislation were adopted and completely adhered to by the entire nation, the global temperature would be altered by no more than 0.01 °C by 2100. Further, if the entire world adopted and adhered to this legislation, the net effect would be less than 0.04°C by 2100. As an atmospheric scientist who regularly publishes temperature records for specific regions as well as the globe, I can assure you this level of impact is too small to be detected. Global temperatures change by more than this from day to day.

Judge William Sessions III ruled on 12 Sep 2007 against the AAM on grounds related to the rights to control emissions that might be granted to individual states vs. the federal

government and on grounds related to undue harm that might befall dealers and manufacturers of light duty vehicles. However, on the intent of the law, Judge Sessions wrote (pg. 46):

“Plaintiffs’ expert Dr. Christy estimated that implementing the regulations across the entire United States would reduce global temperatures by about 1/100th (.01) of a degree by 2100. [James] Hansen did not contradict that testimony.”

Thus, the EPA should understand that if the regulation designed to reduce emissions by approximately 26% (or a fuel economy rating of 43 mpg) is adopted and adhered to, it will not have a detectable impact on the climate system.

The fundamental issue here is that the scale of world-wide CO₂ emissions is immense and regulations such as AB 1493 are ineffective amidst that scale. As background material I also calculated the temperature impact of a Herculean effort to build and operate 1,000 1.4 gw nuclear power plants by 2020, thus replacing approximately 10% of the current global CO₂ emissions (or 50% of US emissions). The net temperature effect in this scenario was only 0.07°C by 2050 and 0.15°C by 2100. This latter value is just at the level of detection by our instruments over such a long period, but is still well below the changes in temperature we see from year to year, and thus will have essentially no significant impact on the climate system. For example, the global temperature in 2008 was lower than 1998 by over 0.40 °C as a matter of natural variations.

Transportation accounts for roughly one-third of human-caused CO₂ emissions. Thus, in my view, to reduce this in an appreciable way, new types of non-emitting transportation systems, which are affordable to the citizenry, must be developed. Proposing to tinker with the current carbon-combustion platforms while producing no benefit at relatively high cost is obviously expensive and ineffective.

In the following material, I summarize the information that was used to provide this testimony to the court. I would be happy to explain the methods of the calculations and any other issues related to climate that might be of use in your deliberations.

Sincerely,

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Summary of Testimony in U.S. Federal Court
 Burlington VT
 4 May 2007
 John R. Christy, PhD
 University of Alabama in Huntsville

At the request of the Alliance for Automobile Manufacturers I calculated the impact of the adoption of California AB 1493 (forced reduction of CO2 emissions from Light Duty Vehicles (LDV)) over the course of the 21st Century.

Findings

Under the “Business as Usual” IPCC emission scenario, A1B, the following impacts were determined for IPCC “Best Guess” temperature projection of +2.8 °C by 2100. Also included are the same calculations to determine the impact of constructing 1000 nuclear power plants to be put in operation by 2020. The program used to calculate this is known as MAGICC by Dr. Thomas Wigley.

AB 1493	Net Temp. change by 2100 (°C)	Net Sea Level Reduction by 2100 (cm)
California only	-0.0013	-0.01
NE States only	-0.0016	-0.01
All USA adherence	-0.0111	-0.11
Global adherence	-0.0350	-0.40

Build 1000 Nuclear Power Plants (1.4 gW each) by 2020	Net Temp. change by 2100 (°C)	Net Sea Level Reduction by 2100 (cm)
Global impact	-0.15	-1.60

As a climate researcher who publishes on surface and atmospheric temperatures (Lead Author of IPCC 2001, Contributing Author 2007) the impacts on global temperature if AB 1493 were adopted and adhered to even globally, are too small to detect.

The implication here, in terms of cost-benefit, is that rather than spending relatively large sums of capital on reducing emissions from gasoline-powered automobiles to achieve a negligible outcome, a policy should focus expenditures on a future vehicle that does not emit at all. A relatively small number of these vehicles would have the same impact as forcing the entire fleet into an expensive increase in fuel economy.