

## Phoenix Project Foundation



Mr. Brian Williams  
Anchor and Managing Editor  
NBC News

Subject: The Silver Bullet: The "Phoenix Project" plan to shift to a wind-powered solar hydrogen economy by 2020.

Dear Mr. Williams,

I am writing to you out of a genuine sense of urgency. Given that many distinguished atmospheric chemists, including Dr. James Hanson at NASA, Dr. Steven Chu, the director of Lawrence Livermore Laboratory, and Professor Ralph Cicerone, president of the National Academy of Sciences, have documented that climate changes are now occurring much faster than were predicted just a few years ago; and given that the methane hydrates in the oceans and the permafrost in the Arctic, Siberia, Alaska and Canada is already starting to rapidly melt, this alone could release 50 to 100 times more carbon into the atmosphere than is now generated from the burning of fossil fuels. As such, humanity is rapidly approaching an exponential "tipping point" of no return, which is similar to a car accelerating towards a cliff. After a certain tipping point, it will not matter what the driver does because the force of momentum will propel the car over the cliff.

Given this exponentially worsening emergency, Hanson and others have warned that the combustion of fossil fuels need to be phased-out by 2020 if irreversible damage to the earth's climate and food production systems is to be avoided, and at present, the Phoenix Project proposal is the only plan that thus far meets this critical 2020 implementation specification with technologies that could have been economically mass-produced in the 1920s. Indeed, the concept of a wind-powered hydrogen economy was first proposed at Cambridge University in 1923 by J.B.S. Haldane, a Scottish scientist who observed that hydrogen, derived from wind power via electrolysis, liquefied and stored, would be the ideal fuel of the future. Over 80-years later, his insightful vision of the future is still the most practical and economic technology path that can allow humanity to shift from fossil and nuclear fuels while there is hopefully still time to minimize the catastrophic impact of global food and water shortages that are already occurring.

NBC has certainly done its part to inform its viewers about the global warming and climate change problems, but no fundamental solutions have ever been offered. A "Solar Grand Plan" was published in the Scientific American last January, but this plan only proposes to supply 35 percent of the U.S. energy requirements from photovoltaic systems by 2050. This does not meet the 2020 deadline and this plan misses the critical hydrogen component completely. Thus instead of simply modifying all of the existing vehicles to use hydrogen, they would need to be replaced with entirely new vehicles, which would add significant schedule delays and over \$6 trillion in additional capital costs for the U.S. alone.

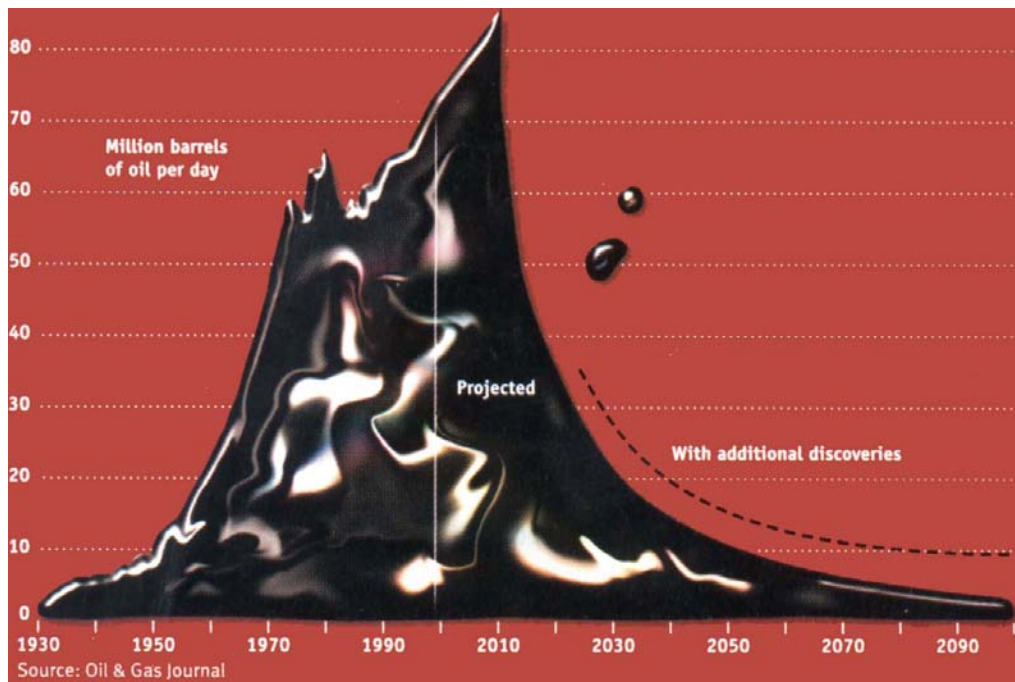
By contrast, the Phoenix Project plan proposes to displace 100% of fossil and nuclear fuels worldwide by 2020 by having automotive and aerospace manufacturers mass-produce state-of-the-art wind powered hydrogen production systems, as well as the necessary engine and vehicular conversion systems, which will allow all the *existing* vehicles and power plants to simply be modified to use the hydrogen that will be made from the sun, wind and water. Less than 5 million 2 MW wind systems would displace all fossil and nuclear fuels in the U.S. and an additional 15 million systems would essentially displace fossil fuels worldwide. To put these numbers into perspective, wind systems are very similar to an automobile from a manufacturing perspective, and over 17 million new vehicles are sold in the U.S. annually.

## Economic Considerations

As with most products, mass-production is a key to reducing system costs, and given the exponential consumption of the remaining fossil fuel and uranium resources, energy costs will likely continue to sharply increase in the future. This is already impacting every product produced, *including wind systems*, which is why the longer this capital intensive transition to a renewable hydrogen economy is delayed, the more expensive it will be. The only question is whether the trillions of dollars in profits from this macroengineering project will be going to private companies like ExxonMobil, or the American taxpayers.

Assuming the capital costs of the mass-produced wind powered hydrogen production systems are \$500 to \$1,000/kW, a 2 MW wind system would cost from \$1 million to \$2 million. Thus the 5 million units would cost between \$5 trillion to \$10 trillion. Given the USA now spends approximately \$1 trillion annually for energy, even the higher value would be paid off in less than 10 years, providing a renewable rate of return on the investment with equipment that will last indefinitely.

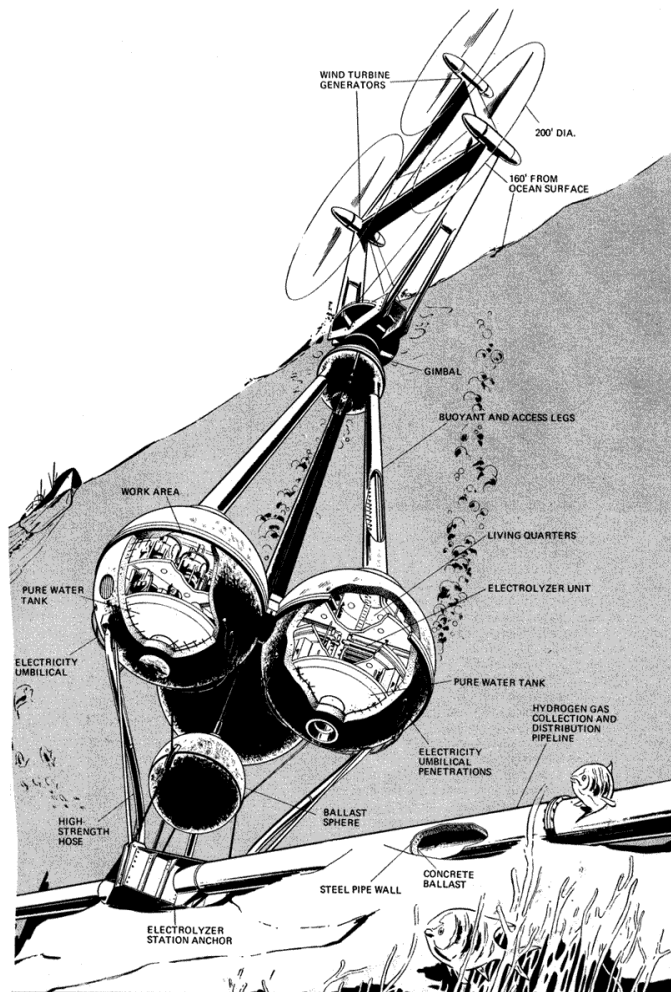
To put these numbers into perspective, according to a May 5<sup>th</sup> 2008 article published in the *Oil & Gas Journal* (which also prepared the Oil Age Graph shown below), Matthew Simmons, a highly regarded analyst who is Chairman of Simmons & Co. International, stated that the oil and gas industry will need to invest \$50-100 trillion to rebuild its ageing infrastructure within the next 7 years and stave off a serious drop in oil and gas production. This number does not include any of the staggering environmental costs that will be incurred as the shift to mountain-top mining and the extraction of hydrocarbons from shale and tar sands is intensified. Over 90 percent of the remaining crude oil is not owned by oil companies, but by the governments of countries such as Iran, Iraq, and Venezuela. Global oil production peaked in 2005 but as the Oil Age graph below indicates, the exponential plunge phase of global oil production has only begun. Once the public sees this graph, they will understand that soon it will not be possible to get gasoline at any price, which will have a catastrophic impact on both the economic and food production systems worldwide.



The End of the Oil Age

## Windships

Many of the wind systems could -- and should -- be deployed at sea as "Windships," which are floating structures developed by a number of naval architects, including William Heronemus, a graduate of the Naval Academy who eventually served as a superintendent of shipbuilding for the U.S. Navy before he retired to become a professor of engineering at the University of Massachusetts at Amherst.

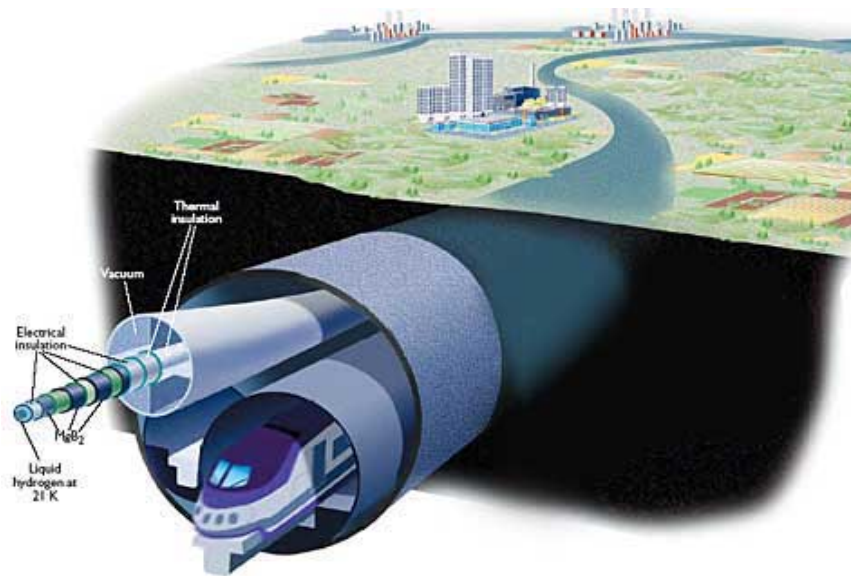


Virtually all of the existing offshore systems are installed in relatively shallow water and firmly planted on the seabed floor. However, the Windship hydrogen production systems proposed by Heronemus in the 1970's (above left) would be deployed so far out at sea they would not be visible from the shore, and such systems would provide a vast sanctuary on the continental shelves for the remaining fish and other marine organisms that are in the final stages of being hunted into extinction. Scientific studies have documented that over 90% of the global ocean ecosystems are already lost, and the remaining fish are so contaminated from mercury from coal plants they are unfit to eat. The Windship pictured on the right is a more conventional design that has been developed by Norsk Hydro in Norway.

Other solar technologies will increasingly be part of a renewable solar hydrogen production mix as they are able to become economically competitive with the wind systems, *but wind-powered hydrogen production systems alone are indeed a "silver bullet" that can permanently displace all fossil and nuclear fuels -- not just in the U.S. -- but worldwide by 2020.*

## The Hydrogen Variable

In spite of the remarkable potential of energy in the wind, wind systems currently generate less than 1% of the current energy demand in the U.S. This is because the winds are intermittent and inherently unpredictable in nature; and they often blow at night when the power is not needed. In addition, there is a lack of transmission space on the electrical grid systems nationwide for any new power plant projects. These obstacles, however, are eliminated if hydrogen fuel is made from the wind and water. Unlike electricity, hydrogen can be stored and delivered to national and international markets by cryogenic tanker trucks, ships or underground pipelines like the one shown below, which can also be engineered to transmit superconducting electricity, gaseous and liquid hydrogen as well as passengers in a high-speed, underground magnetically levitated rail system.



*A proposed "Supergrid" system being developed by investigators at the Electric Power Research Institute (EPRI).*

Hydrogen made from the sun, wind and water is a carbon-free fuel that is inexhaustible. It is why it is indeed a "silver bullet" solution that can permanently displace the use of fossil and nuclear fuels worldwide. The remaining oil and other fossil fuels can then be used as critical chemical feedstocks for the production of fertilizer, pesticides, plastics, medicines and food (i.e., it now takes ten calories of fossil fuels to make one calorie of food). Since the 1980s, Los Alamos National Laboratory investigators and BMW have been successfully modifying engines and vehicles to use cryogenic liquid hydrogen, which most closely resembles gasoline from a perspective of performance, weight, fuel storage volume, and vehicle range. Lockheed studies also confirmed that both new and existing aircraft can be modified to use liquid hydrogen fuel, which will be quieter and reduce the takeoff weight by over 40 percent. Moreover, extensive field data and accidents evaluated by BMW and NASA and other major hydrogen suppliers, such as Linde and Air Products & Chemicals, have shown that hydrogen is much safer than gasoline or any other hydrocarbon fuels in the events of leaks and/or accidents. However, virtually all of the hydrogen now used is manufactured from natural gas, which has its own environmental and resource depletion problems that eliminate it as a viable resource for powering a renewable and carbon-free hydrogen economy. The same is true for coal and other fossil and nuclear fuels.



### John Lorenzen

Please note that at the end of the Phoenix Project documentary video, which can be viewed on the PhoenixProjectFoundation.US website, after the credits, there is an ABC News "person of the week" report by Peter Jennings with John Lorenzen, a Midwest farmer who in the 1930's had to quit school in the sixth grade because his father died and he had to help his mother on the family farm. Before electricity lines were available, Lorenzen generated his own electricity from wind machines he built himself from other scrap components in his barnyard workshop. When the oil crisis hit in the 1970s, Lorenzen responded by inserting the electrodes from the wind machine into a barrel of water to separate the water into hydrogen and oxygen, and then he -- with his sixth grade education and no one's help -- modified his pickup truck to use the hydrogen, as well as gasoline with the flip of a switch. What John Lorenzen accomplished on a small scale on his small family farm is exactly what is needed on a large scale for the U.S and the rest of the world.

Given the national security implications of implementing a transition to a solar hydrogen economy by 2020, the Defense Department, which is the largest single consumer of fossil fuels, should be at the forefront of initiating this transition by modifying all of its vehicles, which will then be able to generate pure water from their engine exhaust. This is a particularly important consideration when one realizes that in the initial invasion, U.S. troops went for over a month without a shower because the water was simply not available. The general public will then be able to benefit from the engine conversion systems that will be developed for Defense Department vehicles, including ships and aircraft.

Such a "transition of substance" would have profound implications for the U.S. and global economy, the environment, national security, foreign policy as well as the fundamental global problems of more and more people competing for fewer and fewer resources. This reindustrialization effort would transform the U.S. from being the world's largest energy importer to being one of the world's largest energy exporters of a pollution-free fuel that is inexhaustible. Millions of jobs would be created in the process, and the multi-trillion capital investment could be recovered in less than 10 years, providing a renewable rate of return with equipment that will last indefinitely. Given that no new technology is needed, the real obstacles to this transition are not technical or economic -- *but the lack of public awareness.*

This underscores that the focus on consuming the remaining fossil and nuclear fuels and converting food crops to biofuels wastes both time and money, while creating a whole new dimension of long-term economic and environmental problems. Since key climate scientists have said that this energy change needs to occur before 2020, it is critical that NBC make its viewers aware of the only plan that can accomplish this transition of substance in time: *The Phoenix Project.* Congressional Hearings and a National Hydrogen Implementation Plan will then be inevitable.

### The Silver Bullet

Many energy analysts and news organizations have stated that there is no "silver bullet" that can replace oil and other fossil and nuclear fuels in even 100 years, much less 10. But that is because they assume some new source of energy must be found and developed that will be cost-effective, reliable and sustainable -- and all of the existing vehicles need to be replaced with hybrid or fuel cell electric vehicles. Fortunately, these analysts are wrong. Indeed, if a transition from fossil fuels to renewable hydrogen systems is to be initiated by 2020, there is virtually no time for research and development, which can often take many decades, and in the case of nuclear fusion, it may be centuries. Given the economic and environmental emergency, which is already impacting food supplies and prices worldwide, there is no time to waste.

As a technical analyst, I have been working on fundamental solutions to the global fossil fuel and nuclear energy resource depletion and pollution problems since my undergraduate work at Arizona State University in the 1960s. It was during this time that I became aware of the exponential consumption of resources by physics professor Alpert K. Bartlett, and the insights by Dr. M. King Hubbert, the geophysicist at Shell who accurately calculated the rate of fossil fuel production in the U.S. (which peaked in 1970) and world production that peaked in 2005. I also became aware of the *International Association for Hydrogen Energy (IAHE)*, a peer-review professional society, which now has over 2,500 Ph.D.-level scientists and engineers as members who represent 45 countries. After reviewing my research into solar and hydrogen energy technologies and resources, I was invited to become an IAHE Advisory Board Member in 1981. The other IAHE Advisory Board Members can also be viewed on the IAHE.org website.

Given my frustration at the fossil and nuclear fuel policies promoted by both the Republican and Democratic Members of Congress, I ran as the Democratic nominee in Arizona against John McCain in 1984. This was the first time that I contacted national news media, including *NBC*, regarding my campaign effort to make the media -- and hence the American public -- aware of the critical need to shift to a solar hydrogen economy with wartime-speed. If this "transition of substance" was initiated in the 1980s, much of the environmental and ecological damage could have been avoided and this critical reindustrialization effort could have been made when oil and other fossil fuels were still relatively inexpensive. I also made an effort to run as a presidential candidate in 2004 (BraunforPresident.US). The news media, however, were not interested in the quality of ideas I proposed, including significant insights on foreign policy and education, but how much money I was going to raise. Without media exposure, it is impossible to raise any serious money, and as a result, the time-sensitive insights I provided were ignored, and the economic and ecological problems are now going critical.

As a result, I have watched countless billions of dollars and time wasted in developing nuclear, coal and biomass-fueled technologies that have no prospect of displacing even the foreign oil that is imported into the U.S. -- much less all of the fossil and nuclear fuels that are now being used worldwide. While Senators Obama, Clinton and McCain all say they are for energy independence and tout the use of wind and other renewable energy options, the vast majority of energy use under their proposals will still come from non-renewable and highly-polluting fossil and nuclear fuels, as well as biofuels that are already having a devastating impact on global food prices, at a time when the bees, bats, frogs, and fish in what is left of the global ocean ecosystems are disappearing. It is why *NBC* needs to make the American Public aware of this information so that our country can change course while there is hopefully still time to make a difference.

I have attached a paginated PDF version of this letter that includes the images for your files.

I look forward to your thoughts.

Sincerely,



Harry W. Braun III  
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Harry W. Braun III

Harry Braun has been the CEO of Sustainable Partners International (SPI) since 1994. SPI is a systems integration firm that was the initial developer of a \$150 million wind farm project in New Mexico and is now focused on having wind systems mass-produced for large-scale hydrogen production. Braun has been working as an energy and environmental analyst for the past 35 years. He received a Bachelors degree from Arizona State University in 1971. His undergraduate work was in history and general science, while his graduate work focused on evolutionary biology and anthropology. His post graduate research has been in the areas of energy technologies and resources, photobiology, molecular biology and protein evolution. Braun has been an Advisory Board Member of the International Association for Hydrogen Energy ([iahe.org](http://iahe.org)) since 1981. This international peer-review professional society, which is comparable to the American Medical Association, is composed of over 2,500 technical analysts and Ph.D.-level scientists, chemists and engineers from 45 countries.

Braun is also the founder of the Phoenix Project Foundation ([PhoenixProjectFoundation.US](http://PhoenixProjectFoundation.US)), a non-profit, scientific educational organization that is focused on educating the general public about the critical interrelationships of exponential growth, energy, the economy, and the environment, as well as the origin of life, protein evolution, photobiology, molecular biology and U.S. foreign policy.

Braun is the author of numerous technical papers, as well as *The Phoenix Project: Shifting from Oil to Hydrogen*, a 360-page book first published in 1990 and again in 2000, which provides a scientific overview of the origin of matter and life in the known universe, how the “big bang” created hydrogen atoms, which gravity condensed into the stars, which then emitted the electromagnetic spectra that served as the spark for the origin and evolution of life on the Earth. The book documents how the microorganisms on the primitive earth were exponentially exhausting the hydrogen they were extracting from hydrocarbon molecules in the primordial soup. In order to avoid extinction, the microbes figured out how to extract hydrogen from water with solar energy (i.e., photosynthetic green plants), a process that has been successfully working on a global scale for over 3 billion years.

The primary emphasis of the book, however, is to provide a technical analysis of how the U.S. and other countries can rapidly shift from non-renewable fossil and nuclear fuels to renewable solar hydrogen production systems, which will resolve many of the most serious economic and environmental problems. The book reviews both the positive and negative aspects of exponential growth, which explains why humanity is on the threshold of both a technological “utopia” of molecular medicine as well as an ecological “oblivion” of mass-extinctions, which are already well underway. It is why we on *Spaceship Earth* are all like passengers aboard the *Titanic*, and there is only a limited amount of time left to “change course.” Although hydrogen is often mentioned as the “Holy Grail” of all energy sources, Braun is the only technical analyst who has thus provided a specific plan for how this “transition of substance” can happen by 2020 by mass-producing wind and other solar powered hydrogen production systems, and modifying every *existing* vehicle and power plant to use hydrogen.

Braun ran for Congress in 1984 against John McCain, and organized the Phoenix Project Political Action Committee ([PhoenixProjectPac.US](http://PhoenixProjectPac.US)), which is focused on the political aspects of helping to organize Hydrogen Hearings in the U.S. Congress, which will be a prerequisite for the passage of a number of Constitutional Amendments, including the Fair Accounting Act, which would factor in the environmental and healthcare costs of using fossil and nuclear fuels, thereby providing the financial incentives for oil and other energy companies to shift their investments into wind and other solar hydrogen production systems.