

# **Public Written Comments**

## **Submitted to PCAST** **April 29, 2014 - July 8, 2014**

As specified in the Federal Register Notice, because PCAST operates under the Federal Advisory Committee Act (FACA), all public comments and/or presentations will be treated as public documents and will be made available for public inspection, including being posted on the PCAST website.

Fw: Reducing Global Warming using coal and ending Our Addiction To Oil

**From:** "David Neuendorff" [REDACTED]

**Date:** Tue, May 6, 2014 9:59 pm

**To:** [REDACTED]

Dear PCAST,

Once again a national report on Global Warming has been released.

Attached you will find a unique way proposed to reduce the global warming greenhouse gases from our millions of vehicles. I have included reference material within the attachment.

This could be part of a story on alternate solutions proposed to address Global Warming.

Sincerely yours,

David J. Neuendorff

[REDACTED]

[REDACTED]

# **A Proposal To End Our Addiction To Oil**

## **Addiction To Oil**

Our historical, national, addiction to oil is such that we cannot just stop using it and replace our current oil gasoline infrastructure quickly or easily. Building 11,000 alternative fueling stations and a new fuel infrastructure will not happen quickly and painlessly. But a new fuel infrastructure may be accomplished if the transition is an incremental one that makes economic and environmental sense.

One could also make an environmental argument that oil should not be burned and “permanently consumed”, daily creating CO<sub>2</sub> as well as other toxins, but rather be used as the feedstock of the plastics industries where it could be recycled multiple times.

The attempt, herein, is to visualize a different energy future for the United States using hydrogen fuel for our vehicles, and the mechanism to make it a reality. Hydrogen often mentioned as a fuel of the future throughout my lifetime, to date has not realized its potential. Granted that it will not be as easy to accomplish, as it is to visualize. The beauty of using hydrogen for fuel however is that the waste product of the complete combustion of hydrogen is H<sub>2</sub>O (water).

There is a way to make hydrogen used as fuel happen today, utilizing our current energy infrastructure in a different way. We could have a independent hydrogen infrastructure fueling the nation's vehicles within a decade. Remember our national commitment to go to the moon, requiring many more resources and challenges, which was accomplished in less than a decade. We could do this because we have available everything necessary to make it a reality within a decade, except for the national will to "end our addiction to oil".

Hopefully, this discussion will create the synergy to make the proposed use of hydrogen as fuel for our vehicles a reality.

## **Many vehicle fueling alternatives are currently being examined.**

Presently there is the attempt to create and sell expensive electric vehicles to reduce environmental degradation. ( That electricity production usually involves pollution created from

coal burning power plants. ) Also there are problems with expensive and heavy batteries that use "rare earth" materials from foreign countries.

Various biofuels are also currently being experimented, with but don't appear to be commercially viable presently.

Natural gas is often touted as “our cleanest fossil fuel”. Though natural gas is plentiful and another possible alternative logical future fuel choice, it too has not been developed to date for large scale transportation implementation. The failure to create the distribution infrastructure for individual vehicle use has limited its widespread use.

Unfortunately, the production of plentiful natural gas is being facilitated through fracking; injection of toxic chemicals, water and sand under a couple thousand pounds of pressure. The pollution of ground water and the creation of “seismic events” (earthquakes) are currently appearing to be serious negatives in the increased production of natural gas through the process of fracking.

Currently the United States has neither the political will, nor the financial resources to devote to a national program of creating an alternate energy infrastructure. Imagine however if instead of a federally mandated and financed program the "business community" decided to create a new energy infrastructure using existing technology and resources. How could it be accomplished ?

## **Saudi Arabia of Coal**

The United States of America has been called the Saudi Arabia of coal. However, contrary to coal industry promises of green “clean energy” from coal, for the foreseeable future using coal will continue to be very “dirty” (polluting). But still coal will be absolutely necessary for our country’s energy use in this century even the dream of "clean coal" may never be realized.

Since we currently have numerous coal fired electric power generating plants primarily located in areas of greatest population, how can we use that existing technology to create a new fuel distribution infrastructure ?

Thought you’d never ask.

Coal fired power plants currently primarily generate electricity for homes and industry. They could also used for creation of hydrogen fueling hubs.

The generating capacity and level of pollution created by burning coal varies presently by the demand for the electricity generated, as well as the kind of coal used. Always generating electricity at the same level irrespective of consumer demand creates a number of advantages. Plant efficiency is increased. Pollution is decreased.

One important advantage of garnering energy from the burning of coal is that large scale burning of coal in power plants for example, allows the use of scrubbers and technology to mitigate and reduce resultant pollution at one central location rather than discrete sources of pollution. It should theoretically be more efficient and cost effective to “reduce pollution” at one location from one source rather than effectively cleaning up and mitigating pollution from the multiple (millions) sources of pollution caused by fuel consumption in individual vehicles.

When consumer demand for electricity drops, the excess generating capacity is then diverted to the creation, through electrolysis (there are several different methods) of hydrogen. The resulting hydrogen is diverted for storage and may be used as vehicle fuel.

If demand for electricity increases over the steady state level of electric power creation the stored hydrogen could be used for the necessary supplemental electrical generation.

### **Local Distribution First For Fleet Vehicles**

The creation of hydrogen and its distribution would be facilitated for an area immediately adjacent to the power plant. No need for extended pipelines or extensive distribution networks. The hydrogen infrastructure could slowly be created locally and regionally as the demand increased. Using existing technology bi fueled vehicles (gasoline and/or hydrogen) could be an interim answer, and may in fact be necessary, until the number of hydrogen fueling depots expanded to enough sites to support hydrogen only fueled vehicles. Vehicles that can use gasoline / and or / hydrogen already exist or may be easily modified.

In the most likely scenario local fleets of buses and trucks would use the hydrogen fuel. Individuals and municipalities would "switch" to hydrogen/gasoline use or only hydrogen in time.

The ability of existing coal burning power plants to generate additional revenue from the creation of hydrogen would create additional money and an economic motive to pay for extra pollution control devices to further cut pollutants produced by the burning of coal ; further reduce small particulate matter, sulfur dioxide SOX, nitrogen oxide NOX, and mercury from the burning of coal. The lower the levels of escaped pollutants the reduced risks to the population from the burning of coal. Coal ash disposal (arsenic, lead, and mercury) would still be an issue needing attention.

Additionally the "dirty coal" issue would be mitigated by the "clean green energy" that the power plant was capable of providing with the creation of hydrogen fuel.

## **Coal is Dirty**

Burning coal is the largest source of carbon dioxide (CO<sub>2</sub>) currently produced. “Green Clean Coal” doesn’t exist because resultant carbon dioxide pollution is not “carbon captured” or “sequestered” presently. The technology may in fact never be realized since current test projects are in their infancy and unproven theories.

In the future building new coal burning power plants using coal gasification technology, may still another way to further "green" coal and create hydrogen as a useful by product of the process.

The use of coal fired power plants to create a hydrogen infrastructure does not solve the problems associated with coal use. However, since coal fired power plants appear to be a necessary part of the energy infrastructure of this century, and most likely the future, it does provide a mechanism to facilitate the conversion to the use of hydrogen for vehicles, in our country in the short term, and provides long term environmental benefits.

## **Summary**

**We could create a new energy infrastructure using hydrogen to fuel all our vehicles in less than a decade using existing technology. Without using limited Federal resources, private industry and "the citizens of the United States could end our addiction to oil".**

**The resources listed below make clear that presently vehicles in the United States are inefficient and polluting. President Obama has recently raised the standards.**

**Currently the few hydrogen fueling stations, for example two for all of Los Angeles with 6+ million vehicles, are unavailable to most vehicles and/or inadequate.**

**Coal burning power plants could create hydrogen which would mitigate "dirty coal".**

**Vehicles that burn gasoline and/or hydrogen would be less polluting and more efficient until hydrogen only vehicles are possible.**

**Eventually, the hydrogen for our vehicles could be created by solar or wind power reducing the use of fossil fuels forever.**

## Permissions

The author encourages you to share this idea with anyone who will listen. After all it is "our" future and world that we want to make more livable. If not for us, then consider our grandchildren, and those who come after us.

Our national addiction to oil means we are dependent on the political, economic vagaries of other countries and individuals who do not share our values and beliefs. Our use of fossil fuels is destroying the environment globally. Our energy independence will help the United States regain control of our destiny. Ending our continuing national "oil addiction" will benefit the entire world reducing the demand for non renewable resources while improving the environment.

What individual, group, or politician will lead us this century to finally ending our national "addiction to oil" ?

## Resources to explore

Here are a few Resources you will find informative if you want to consider this issue more fully :

(1) <http://www.fueleconomy.gov/feg/bestworst.shtml>

Fuel economy currently is very poor.

(2) <http://www.epa.gov/oms/consumer/05-autos.pdf>

Fuel efficiency for the modern automobile is extremely poor.

<http://www.fueleconomy.gov/feg/extremeMPG.jsp>

An unattainable extreme example of hydrogen fuel efficiency ..... **“The PAC-Car II set a new world record in fuel efficient driving during the Shell Eco-marathon in Ladoux (France) on June 26, 2005. Running on hydrogen, the PAC-Car II achieved the equivalent of 5,385 km per liter of gasoline (12,665 MPG!)”**

(4)<http://www.afdc.energy.gov/afdc/locator/stations/>

On the day I checked the web page, this website listed currently only fifty eight (58) Hydrogen fueling stations for all the United States. Most facilities currently are for “**Private access only**” or “**fleet service** “. In the environs of Los Angeles California for example, with its over 6.6 million cars, only two (2) hydrogen service stations exist that are available and those state ..... “**Access: Public - call ahead**” .

(5)<http://ladot.lacity.org/pdf/PDF10.pdf>

**“How many cars are there in Los Angeles?**

**\*U.S. Census, American Community Survey 2005 \*Total Workers Age 16+ = 1,662,238, +/-28,414**

**According to the California Department of Motor Vehicles (DMV), there were 6,675,888 automobiles, commercial vehicles and motorcycles registered in the County of Los Angeles as of January 1, 2007.”**

See Page 13.<http://ladot.lacity.org/pdf/PDF10.pdf>

(6)[http://www.afdc.energy.gov/afdc/fuels/hydrogen\\_infrastructure.html](http://www.afdc.energy.gov/afdc/fuels/hydrogen_infrastructure.html)

This website details how a hydrogen fueling station should be configured.

Automobiles in the United States now are mostly using the internal combustion engines fueled by gasoline or diesel fuel made from oil.

<http://www.michiganradio.org/post/coal-dirty-past-hazy-future-radio-documentary>

Details the negatives of coal use and its necessity for modern America.

Ernest Moniz [http://web.mit.edu/physics/people/faculty/moniz\\_ernest.html](http://web.mit.edu/physics/people/faculty/moniz_ernest.html)

( 8) <http://minnesota.publicradio.org/display/web/2006/08/30/energygasification/>

Coal gasification discussed.

## **Author's Final Thoughts**

Thank you for taking the time to read and think about this issue of national importance.



After writing this article I have come across another article written (2006) by some University of Michigan students covering some of the same material. In some ways they did a much better job making the case. It is well worth your time to read this academic effort promoting hydrogen :

[http://sitemaker.umich.edu/section4group3/methods\\_results\\_discussion](http://sitemaker.umich.edu/section4group3/methods_results_discussion)

However, the point of the article I have written was the attempt to get us started and make it happen. We need to think globally but act locally. Spread the word please.

## **Other Articles By This Author**

<http://neuendorffspeaks.hubpages.com/hub/A-Proposal-For-A-Proposal-For-Terrestrial-Sequestration-of-Carbon-Dioxide>

<http://neuendorffspeaks.hubpages.com/hub/WHAT-IS-THE-ENVIRONMENTAL-IMPACT-OF-DIVERTING-PAPER-FROM-THE-WASTE-STREAM-FOR-USE-AS-FUEL>

May 3, 2013 President's Council of Advisors on Science and Technology  
(PCAST) Webcast Question

**From:** "Ben Shneiderman" [REDACTED]

**Date:** Fri, May 9, 2014 10:31 am

**To:** [REDACTED]

**Cc:** "Ben Shneiderman" [REDACTED]

Excellent recommendations from Christine Cassel and the working group.

Clear actionable steps with meaningful outcomes.

Please post the report soon. Bravo!

Prof. Ben Shneiderman [REDACTED]

Dept of Computer Science [REDACTED]

A.V. Williams Building [www.cs.umd.edu/~ben](http://www.cs.umd.edu/~ben)

University of Maryland [www.cs.umd.edu/hcil](http://www.cs.umd.edu/hcil)

[REDACTED] Twitter: @benbendc

Founding Director Human-Computer Interaction Lab

Glenn Martin Professor of Engineering

Member, Institute for Advanced Computer Studies

Member, National Academy of Engineering

Fellow AAAS, ACM, IEEE, SIGCHI Academy

My Idea

**From:** "Lewis Russell W" [REDACTED]

**Date:** Thu, May 29, 2014 11:47 am

**To:** "[REDACTED]"

Under President Obama's leadership, the Federal Government has taken steps to help students and recent graduates join the Federal service. The Pathways Programs offer clear paths to Federal internships for students from high school through post-graduate school and to careers for recent graduates, and provide meaningful training and career development opportunities for individuals at the beginning of their Federal service. This program is targeted toward U.S. citizens enrolled in a wide variety of educational institutions, from high school to graduate school and professional academic levels, thereby providing students with opportunities to explore Federal careers while getting paid for their work.

By modifying this well established program we could better leverage talent by expanding the pathway internship program to include scholarships for college students to bring their skills to government agencies after graduation. This would give students with high tech training and education a foothold in organizations and departments increasingly in need of their skills. The program would require that participants to commit to some length of government employment after graduation.

With this modification the Pathways program could not only provide participants with the tools necessary to succeed as federal government employees, but also eliminate student loan debt for those who qualify. With the preparation and support from the modified program, many of these students will go on to pursue successful careers in the federal government. The program would provide scholarships or loan forgiveness plans for the student interns attending accredited universities with an academic focus on science, technology, engineering and mathematics (STEM) that will enhance their knowledge, network and skills within the field of technology. Incentives would include:

*Tuition assistance through Loan Forgiveness programs for admitted students pursuing approved programs of study in STEM education at participating colleges.*

*An academic support system to help assure their success.*

*A cohort system for social and cultural support.*

*Assistance with internship placement.*

*Commitment to employment in the federal government for at least 4 years after graduating from the Pathway program and a participating college or university.* Student interns would receive scholarships for tuition, room and board. Participating student interns will also receive access to internships across the country, as well as access to premier on-campus housing. Participants in the program must be at the sophomore, junior, senior or graduate level, and have at least a 3.0 GPA to qualify. They would be required to attend various mentor/teacher leadership sessions on campus as well as designated mentoring and pre-professional development activities. For every year that a

student receives the Pathways Scholarship, they are committing to one year of service in the federal government.

This type of policy is long overdue if the U.S. is to succeed, compete and flourish. It significantly reduces the financial burden on parents and on students. No longer would a father and mother have to consider taking a second mortgage on their home or perhaps a second job to put their child through school. No longer would college be out of reach for much of the 99%.

The government's inability to capture and retain the best and brightest from colleges and universities can prove hugely detrimental, as an educated workforce is crucial to solving our country's challenges. In addition, it will help our government spur innovation, strengthening our economy through technological advancements in business and society.

R W. Lewis  
Internal Revenue Service  
Director, Strategic Supplier Management  
ACIO, Strategy & Planning  
OS:CTO:SP



PCAST: Big Data and Education Technology

**From:** "Adam Sobieski" [REDACTED]

**Date:** Thu, May 29, 2014 1:45 pm

**To:** [REDACTED]

President's Council of Advisors on Science and Technology,

Greetings.

I would like to request more information about contributing with, participating with, and contribution towards PCAST processes. In particular, information about Education Technology Working Groups would be of interest to me.

I read that scientists are consulted on various topics and, perhaps like many American scientists and technologists, I am interested in contribution, service to nation, with PCAST. I would like to broach and request information pertaining to what is expected from scientists and technologists coordinating with PCAST on the topics of Education Technology and of Big Data; in particular, Education Technology Working Groups. Educational Data Mining is an example of a topic in the overlap of Big Data and Education Technology.

As pertinent to the PCAST challenge indicated as "identifying technical, educational and policy solutions to help preserve and protect privacy and the societal benefits and economic potential around the use of big data", I would like to present a technological development: the combination of computer algebra system software with database server software can facilitate complex server-side processing, stored procedures interoperating with computer algebra systems, and, concurrent to the processing and outputting of results, computational analyses of the identifiable aspects of data as data is processed through various mathematical can occur and accompany output data and along with data provenance.

In a recent letter to an international scientific forum, the W3C Math Working Group, *Educational Data and Mathematics*, the ideas aforementioned were presented, that solutions to data privacy, while facilitating the benefits and potential of the processing of educational data can be facilitated by combinations of server-side software including computer algebra systems and database servers.

Kind regards,

Adam Sobieski

<http://phoster.com/>

<https://www.linkedin.com/in/adamsobieski>

<http://www.w3.org/community/argumentation/>

<http://www.w3.org/community/collaboration/>

PCAST: Big Data and Education Technology

From: "Adam Sobieski" [REDACTED]

Date: Thu, May 29, 2014 6:08 pm

To: [REDACTED]

President's Council of Advisors on Science and Technology,

Greetings.

I would like to request more information about contribution and participation with and towards PCAST and OSTP processes. In particular, information about Education Technology Working Groups would be of interest to me.

I read that scientists are consulted on various occasions, on various topics, by PCAST and OSTP and, perhaps like many American scientists and technologists, I am interested in contribution, service to nation, with PCAST and OSTP. I would like to broach and request information including as pertinent to what is expected from scientists and technologists contributing and participating with PCAST and OSTP on the topics of Big Data and Education Technology and, in particular, Education Technology Working Groups. Educational Data Mining is an example of a topic in the overlap of Big Data and Education Technology.

As pertinent to the PCAST challenge indicated as "identifying technical, educational and policy solutions to help preserve and protect privacy and the societal benefits and economic potential around the use of big data", I would like to present a technological development: the combination of computer algebra system software with database server software. Such combinations of software can facilitate complex server-side processing; database functions, stored procedures and user-defined functions can interoperate with computer algebra systems, and, beyond statistical processing, such systems can concurrently analyze identifiable and probabilistically identifiable aspects of data, as that data is processed through various computations, database functions, stored procedures and user-defined functions.

Computer algebra systems on database servers add mathematical features such as statistical processing. The stored procedures and user-defined functions add some complexity to the querying languages utilized, the queries of which ought be logged and analyzed for usage data and oversight. Computer algebra systems can process such usage data and can generate visualizations of such data. Databases enhanced with computer algebra systems can output visualization data with data provenance and metadata for various research team tasks. Enhancing the functionality of educational data databases to include computer algebra systems ensures that data more often remains on database servers while various research teams can obtain various computational results upon that data, research data.

In a recent letter to an international scientific forum, the W3C Math Working Group, Educational Data and Mathematics, the ideas aforementioned were recently presented and expanded upon. Solutions to data privacy, while facilitating the benefits and the potential of processing and researching educational data, can be realized by combinations of server-side software, enhancing database server software with computer algebra systems.

Kind regards,

Adam Sobieski

<http://phoster.com/>

<https://www.linkedin.com/in/adamsobieski>

<http://www.w3.org/community/argumentation/>

<http://www.w3.org/community/collaboration/>

Rapid Polywell Development for AGW Mitigation

**From:** "Bill Flint" [REDACTED]

**Date:** Mon, June 16, 2014 9:24 am

**To:** [REDACTED]

To: President's Council of Advisors on Science and Technology

From: William W Flint

[REDACTED]

I have an MA in Physics and Chemistry Teaching from Western Washington University. I taught High School Physics, Chemistry, and Mathematics from 1968 to 2009, and have been trained in Nuclear and Chemical Instrumentation. I was a Nuclear Weapon Certified Electronic Warfare Officer on a B-52 aircrew during the Vietnam War.

Recent events have suggested to me that we are at a life-or-death tipping point where significant decisions must be made very soon –even before the mid-term elections. These events are the recent IPCC report, followed by the break-up of the WAIS (which served to validate one of IPCC's dire predictions); the publication of a new scholarly Polywell paper; the disassociation of EMC2 and the Navy; and Friday's announcement of EMC2's search for venture capital.

The Polywell is a potentially revolutionary safe carbon-free fusion energy source which may be able to replace fossil fuels. Funded by the US Navy, it has been under development by the EMC2 Corporation for the past 15 years.

For several years, the Navy has had a strict non-disclosure policy, limiting discussion of the Polywell; but about ten days ago the situation changed. Dr. Jaeyoung Park, chief Polywell researcher, Dr. Nicholas Krall, long-time Polywell consultant, and others published an academic paper on the Polywell, "High Energy Electron Confinement in a Magnetic Cusp Configuration" available here <http://arxiv.org/abs/1406.0133> at the Cornell University Library. Essentially the paper proves that a "wiffleball" magnetic containment will form inside an operating Polywell, thus validating the Polywell approach to fusion, and nullifying many earlier objections. If you wish to discuss the paper with Dr. Krall, he lives at [REDACTED]

Then just last Friday, June 13, NBC published even more surprising news. The 15 year relationship between the Navy and Polywell contractor EMC2 has come to an end, and EMC2 is now seeking a \$30 million investment over three years to build giant ion guns for their WB-8 Polywell.

<http://www.nbcnews.com/science/science-news/low-cost-fusion-project-steps-out-shadows-looks-money-n130661>. I do not know why the relationship ended, and I do not know for sure why Dr. Park is only seeking \$30 million dollars. The EMC2 offices, and quite possibly Dr. Park are located at [REDACTED]

In 2006, Polywell Project Director and Inventor Dr. Robert Bussard said it was “time” to build a full-scale p-B11 break-even demonstration Polywell reactor (much larger than the WB-8 mentioned above). The big Polywell did not happen and Bussard died in 2007. Then again, in 2008, the new Project Director Dr. Richard Nebel said it was “time” to build the full-scale break-even demonstration Polywell reactor, but the Navy would not or could not fund it; and Dr. Nebel resigned. I suspect that Dr. Park is seeking “only” \$30 million over three years because he believes that is all the venture capital he can get for an unproven project like this. I also believe that Dr. Park would seek \$300 million over six years for a full-scale p-B11 break-even demonstration reactor if he thought he could get it; and this is what must happen. We have the specter of an AGW catastrophe hanging over this planet, and we cannot afford to waste another 3 years. If Dr. Park only gets \$30 million over three years, we will quite likely waste those precious years.

The IPCC has given us –the planet- only 10 more years to begin significant replacement of fossil fuels, or fatal and irreparable damage will be done to the biosphere. Unfortunately, the United States has no viable replacement for the energy we get from fossil fuels. “Clean Coal” is strictly an advertising stunt: the Coal-fired plant owners will never buy CCS conversions because they are too expensive, and CCS still leaks vast quantities of CO<sub>2</sub>. Shale gas (natural gas) production leaks huge amounts of methane, which is a greenhouse gas at least 20 times worse than CO<sub>2</sub>. Nuclear fission is deadly dangerous in at least three very different ways. Solar and wind energy are completely unaffordable (when the need for 3 to 10 time redundancy and back-up is honestly factored in). Fusion energy from projects such as the ITER TOKAMAK or the NIF lasers, is at least 30 years away, which is a time far too late to begin addressing AGW.

It may be that our nation’s only hope for AGW mitigation is a breakthrough such as the Polywell; and we need to have that breakthrough in less than ten years. We must make a maximum push for Polywell success at the earliest possible moment. I truly believe that our national security is at stake, and nothing should be held back.

We need to commit \$50 million dollars a year for six years to EMC2 to fund an aggressive maximum-effort "Manhattan Project" development of a full-scale p-B11 break-even demonstration Polywell reactor and an “alpha to electric” power conversion system. Since there is no chance that Congress would agree, I believe that President Obama could find that first \$50 million within the Energy Department budget and appropriate it to a full-scale Polywell. The line item for Fossil Fuel alone in the Energy Department budget is \$638 million. I would subtract all of this year’s \$50 million for the Polywell from the Fossil Fuel line. (Remember, the coal people aren’t going to buy the CCS conversions, so all of that money is going to be wasted anyway.)

The time for effective AGW mitigation is running out. We must be aggressively seeking viable alternatives such as the Polywell now.



Proposal for Innovation Act

**From:** "Varun Shah" [REDACTED]  
**Date:** Mon, June 30, 2014 5:58 pm  
**To:** "pcast@ostp.gov" <pcast@ostp.gov>

Dear Sir/Madam:

My name is Varun Shah. I am the Global Head of Intellectual Property Development at Aruba Networks (NASDAQ: ARUN). My details are available here: <https://www.linkedin.com/in/varunshah7>.

I thank you for supporting the Innovation Act, it is a great solution for reducing the patent troll problem for the Information Technology industry. I believe the Innovation Act is now stalled in Congress, in part, due to the rejection by the Pharmaceutical industry of the new proposed requirements for enforcing patents such as the heightened pleading standards. A modification of the solution is needed that reduces the patent troll problem for the Information Technology industry without affecting the patent assertion rights of the original patent Applicant, including Pharmaceutical companies.

I propose modifying the Innovation Act to require heightened pleading standards only if the current patent owner is not (a) the original Applicant or (b) an assignee that the Applicant is obligated to assign to at time of filing. In other words, only third parties (e.g., patent trolls or middle men) that acquire the patent would be required to follow the heightened pleading standards for asserting patents.

Similarly, other rights, damages, and requirements for patents could depend on whether or not the current patent owner is (a) the original Applicant/an assignee that the original Applicant is obligated to assign to at time of filing or (b) a third party that acquired the patent. In the case of transferring patents related to legitimate business spin-offs (that are not primarily a patent sale), the spin-off or acquiring company would hold the same rights as the original Applicant.

This proposal above reduces the patent troll problem for the Information Technology industry without affecting the patent assertion rights for the original patent Applicant. More generally, this proposal will protect the interests of innovators that actually generate the ideas/patents while partially diluting the value of the patents if commoditized / transferred to others that are abusing and burdening the patent system. This intentional re-structuring of patent value is in-line with the true goals of the patent system, i.e., the promotion of innovation while concurrently addressing the conflicting needs of both the Information Technology industry and the Pharmaceutical industry.

I recently presented this solution to USPTO Deputy Director Lee, USPTO Director Cabeca, as well as my colleagues in the patent industry. I request your consideration of this proposal for suggesting modifications to the Innovation Act. Thank you for your time.

Kind Regards,

**VARUN A. SHAH**  
**DIRECTOR, INTELLECTUAL PROPERTY**

[REDACTED]  
1344 CROSSMAN AVENUE | SUNNYVALE | CALIFORNIA | 94089  
[www.arubanetworks.com](http://www.arubanetworks.com)

Antibiotic Resistance - the Next Frontier

**From:** "David Shlaes" [REDACTED]

**Date:** Wed, July 2, 2014 5:42 am

**To:** pcast@ostp.gov

The President's Council of Advisors on Science and Technology (PCAST) has been busy preparing a report on Antibiotic Resistance and what to do about it. Maryn McKenna wrote a [summary](#) after one of the PCAST meetings earlier this year. Another meeting is about to take place on July 11. Basically, the PCAST has been saying things similar to what we have all been hearing either at Pew or at Brookings or almost anywhere else. Some of the things we have to do are completely obvious, even if hard to achieve in practice.

1. Regulatory – Clinical Trial designs for antibiotics meeting unmet needs (treating highly resistant bacterial infections). As PCAST and everyone else, including the regulators, has signaled, the trials must be feasible, small and rapid. We all recognize the increased risks associated with this approach (smaller numbers of subjects means less sensitivity to detect adverse effects). But I think we can all agree that the alternative – having no antibiotic with which to treat such infections – is the greater evil. Even though the FDA and Europe have made tremendous strides over the last few years in providing guidance on this subject, what kinds of trials they will actually accept remains somewhat obscure. Will they truly accept the kinds of externally controlled trials (historical controls of various sorts) that most of us in industry believe are the only feasible designs possible, or will they insist on concurrent controls that will render the trials impossible? We probably have to wait and see – but a word from PCAST in this regard couldn't hurt.

On the Regulatory front – what about banning the use of antibiotics as growth promotants? It is so obvious that this is what has to be done that any further debate seems political. Any argument to the contrary is based on pseudoscience. The vast weight of scientific evidence demonstrates that antibiotic use in animals, whether for prophylaxis, for treatment or for growth promotion selects for resistance. And the evidence is clear that these resistant strains or the resistance genes involved can be transferred to humans and human pathogens. Why we have waited since 1976 to do this is beyond my comprehension (other than the politics involved).

Money – Economics. For me, this is the final frontier. As they might say in French – there are not 36,000 ways to solve this problem – and a problem it is and PCAST has recognized it. If antibiotics to treat highly resistant infections are going to have to be priced to compete with generic antibiotics, we should prepare for the post-antibiotic era today because it surely will follow. The industry as simply got to be able to see that they will be able to make a reasonable return on their investment in new and effective antibiotics. The reason AstraZeneca, with its sparkling pipeline of new antibiotics for resistant infections continues to look for ways out of its antibiotic research and development enterprise is that the company (the CEO specifically) does not believe that they will ever be able to achieve such a return. The same is true for every other company that ever abandoned the field and that has not yet returned to the fray – and that is the vast majority of large pharmaceutical companies.

There are several ways to address this economic problem. One is with higher prices. In the US system, this might be the best approach. The question is, what data will payers want to see, either within the context of the feasible trial designs that we will conduct or in addition to trial data in order to agree to pay these prices (up to \$30,000 for a course of therapy)? An executive order requiring CMMS to add the cost of these higher priced antibiotics (that don't exist yet) to the usual DRG reimbursement for hospital stay might be in order. There is a bill in Congress (DISARM) but since nothing will pass this session anyway – an executive order might help. Legislation in this case is better because it will have an effect beyond the Obama administration – but let's stay real here.

Another approach would be to establish an alternate business model for the industry. In this case, governments would guarantee a certain amount of pre-purchase. The greater the purchase, the lower the price the companies would be required to charge to make their investment. This approach leaves open the possibility for higher pricing, but softens it with the government purchase. In the US, this could be achieved via the Veterans Administration and via BARDA for those drugs with implications for use in the case of bioterror attacks. In any case, I suspect that, again, legislation might be required – but the White House will be able to figure this out (I guess). This approach might work better in Europe.

A disadvantage of the government purchase is that the urgency for stewardship will be diminished. When an antibiotic is costing \$30,000 for a course, believe me, the antibiotic police will be at the bedside even over the weekend.

The problem is, I'm not sure everyone actually understands that if they want these antibiotics, they will have to pay – one way or another. Without them, the price will be something no one will want, but that we will be stuck with for decades to come. Lets not go there!

4. For other suggestions, see the [article](#) by Matt Metz in AAC.

Health & Consumer Group Letter re: Antibiotic Resistance

**From:** "Shannon Heyck-Williams" [REDACTED]

**Date:** Wed, July 2, 2014 4:06 pm

**To:** "pcast@ostp.gov" <pcast@ostp.gov>

**Cc:** [REDACTED]

Dear Ms. Blumenthal and Ms. Predith:

Attached please find a letter signed by 23 public health, consumer, and environmental protection organizations to Drs. John Holdren and Eric Lander regarding the PCAST's study of antibiotic resistance, especially as it relates to policy developments at the U.S. Food and Drug Administration.

Please feel free to contact me with questions.

Best,

Shannon

Shannon Heyck-Williams

Government Relations Officer

The Pew Charitable Trusts

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[www.saveantibiotics.org](http://www.saveantibiotics.org)

July 2, 2014

John P. Holdren, Ph.D.  
Eric Lander, Ph.D.  
Co-Chairs  
President's Council of Advisors on Science and Technology



Dear Drs. Holdren and Lander:

The undersigned public health, consumer, and environmental protection organizations are writing to thank the President's Council of Advisors on Science and Technology (PCAST) for taking up the public health threat of antibiotic resistance. We eagerly await release of your upcoming report, in particular any recommendations that call for aggressive steps to stem the overuse of medically important antibiotics in food animal production, beyond what is currently being advanced by the U.S. Food and Drug Administration.

We recognize that FDA, through Guidance for Industry #213 and a proposed Veterinary Feed Directive (VFD) rule, has taken first steps intended to reduce antibiotic overuse in farming. However, we are highly concerned that inherent policy flaws will result in minimal public health benefit. For example, by focusing on removing only growth promotion from drug labels, the agency is missing a likely significant amount of antibiotic use for disease prevention, including uses recognized by the agency as injudicious. It is inappropriate for the agency to allow uses injurious to public health to remain approved on antibiotic product labels. Another key policy flaw is the proposed removal from the existing VFD regulations of a federal valid veterinary-client-patient relationship (VCPR) standard. No plausible justification has been made by FDA for this change. FDA has stated that one of the goals of the revision is to end over-the-counter use in feed, but there is no clear substitute in federal or state law that ensures on-farm veterinary engagement regarding antibiotic use in animal feed. This rescission is particularly damaging given the agency's failure to pursue label changes ending approvals for injudicious disease prevention.

We urge PCAST to recommend restoration of the VCPR standard plus additional policy measures that would rein in all indiscriminate, untargeted, and unnecessary antibiotic use in meat and poultry production. Recent drug and agribusiness media statements suggest companies may continue to rely on important antibiotics to "prevent disease" that is not present or threatening animal health.<sup>i</sup> In a scenario where those uses are still allowed, and a veterinarian may not be required to visit the animals or the premises where they reside, it is difficult to imagine what will drive meaningful reductions in antibiotic use.

Thank you for your consideration. Should you have any questions, please do not hesitate to contact Shannon Heyck-Williams at [REDACTED], who can connect you with us.

Sincerely,

Alliance for the Prudent Use of Antibiotics  
American Academy of Pediatrics  
American College of Preventive Medicine  
Association for Professionals in Infection Control and Epidemiology  
Center for Food Safety  
Center for Foodborne Illness Research and Prevention  
Center for Science in the Public Interest  
Consumers Union  
Dignity Health  
Environmental Working Group  
FamilyFarmed.org  
Food and Water Watch  
Health Care Without Harm  
The Humane Society of the United States  
Johns Hopkins Center for a Livable Future  
Keep Antibiotics Working  
National Consumers League  
Natural Resources Defense Council  
Pediatric Infectious Diseases Society  
The Pew Charitable Trusts  
Society of Infectious Diseases Pharmacists  
Trust for America's Health  
U.S. Public Interest Research Group

Cc: Marjory Blumenthal, Executive Director, PCAST

Ashley Predith, Assistant Executive Director, PCAST

Michael Stebbins, Ph.D., Assistant Director for Biotechnology, OSTP

---

<sup>i</sup> See, for example, <http://news.poultryhealthtoday.com/videos/should-antibiotics-be-used-to-prevent-disease-in-poultry-13517>.

Effects of a revenue neutral carbon tax

**From:** "Lynn Smith" [REDACTED]  
**Date:** Fri, July 4, 2014 1:21 pm  
**To:** "pcast@ostp.gov" <pcast@ostp.gov>

To: Dr. John Holdren and PCAST advisors  
Re: Effects of a revenue neutral carbon tax

July 4, 2014

As the climate change conversation shifts towards finding solutions, I would like to alert you to a recent study showing that a revenue neutral carbon tax would not only clean the air but also create jobs and improve the economy. The finding counters the complaints that such taxes would hurt the job market.

The study, from Regional Economic Models, Inc. (REMI) examined the impact of a steadily-rising fee on carbon with revenue returned to households. Among other findings, the study shows that, after 20 years, a fee on carbon dioxide rising \$10 per ton each year would reduce greenhouse gas emissions 52 percent while adding 2.8 million jobs to the economy.

The study was commissioned by the Citizens' Climate Lobby, a fast growing grassroots organization, which recently sent more than 300 members to Washington to meet with representatives on this issue. The group is nonpartisan and aims to get both Democrats and Republicans on board in order to propose such a tax and get it adopted.

The group also aims to get more citizens involved in representative democracy and members like me are encouraged to write letters to people like you.

We appreciate and thank you for all your efforts to find a solution to global warming.

For more information:

<http://citizensclimatelobby.org/wp-content/uploads/2014/06/REMI-National-SUMMARY.pdf>

Yours truly,

Lynn Smith  
[REDACTED]