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THE 4CP NEWSLETTER

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FUEL EFFICIENCY VARIES WIDELY ACROSS AIRLINES

The fuel efficiency of commercial aircraft – which produce about 2% of total global CO2 emissions – has drawn particular interest recently. On a per-passenger basis, these planes consume an average of 40 mpg equivalent; this compares to per-passenger mpg averages of 53 for cars (with an average of 2.2 occupants) and 152 for inter-urban buses. (The “equivalent” calculation for aviation fuel allows for direct comparison with gasoline and diesel-powered vehicles.) Given the total number of miles that many airline passengers fly annually, the per-passenger carbon footprint often far overshadows what is created by personal auto driving over the course of a year.

Bloomberg Businessweek recently ranked US airlines on how efficiently they manage fuel burning. Alaska Air Group, which flies mostly late-model aircraft, was the most efficient. Ranking last – at 26% less efficient – was Allegiant Travel, which mostly flies 1980’s-era models of McDonnell-Douglas MD-80 aircraft. American Airlines (now merged with US Airways) and Delta were also ranked low, mainly due to aging aircraft. To cut costs, Delta reportedly likes to buy inexpensive used jets, even if they are not very fuel efficient.

It behooves people concerned about their carbon footprint to inquire about the age of aircraft for flights they consider and to aim for the most direct route, especially when connecting flights are required. It is also worthwhile exploring the purchase of carbon offsets (at about \$12-14/ton) through reputable organizations such as [NativeEnergy](#) and [TerraPass](#). Please be aware, however, that these companies compute carbon emissions differently; carbon accounting has not been universally standardized. ~SOURCES: 1 2



BUMPIER FLIGHTS AHEAD

In the coming years, clear-air turbulence in atmospheric jet streams is expected to increase due to anthropogenic climate change. Models of the transatlantic flight corridor project a 40-170% increase in moderate or greater turbulence, leading to bumpier flights and possibly longer and more fuel-consuming trips. ~SOURCE

WEALTH DIMINISHES ENVIRONMENTAL CONCERN

The Guardian recently reported on a 2012 survey finding that people feel less guilty about their environmental impacts in richer countries – such as Germany, the US, and Australia – than in poorer ones – such as India, China, and Mexico. It is commonly believed that people don’t care about the environment until they become well off. To the contrary, the data suggest that environmental concerns diminish significantly among the wealthy. ~SOURCE



What can be done to maintain or even increase concern about climate change as people become wealthier? Please share your opinion on [4CP's Facebook page](#).

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Published 5x/yr by

4CP's Newsletter

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Graphic Art: GoodCo

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CONVENTION CENTER SIGNS FOR 25% RENEWABLE ENERGY

In November, the PA Convention Center in Philadelphia signed an agreement with NRG Business Solutions to obtain 25% of its power from renewable energy. The center's expansion, completed in 2011, is LEED-Gold certified.

~SOURCE



PHILLY HOSTS GREENBUILD EXPO

Also in November, the Convention Center hosted the annual Greenbuild International Expo and Conference. One focus at the conference was the newly released LEED version 4. According to the US Green Building Council, buildings account for 70% of national electricity consumption and 40% of greenhouse gases. Version 4 incorporates new market segments such as data centers, warehouses, and existing schools. About 56,000 commercial and institutional projects participate in LEED. In addition, more than 47,000 residential units have been certified. ~SOURCES: 1 2

FARM TO FLEET

Secretary of Agriculture Tom Vilsack and Secretary of the Navy Ray Mabus have announced a new "farm to fleet" initiative in which US-grown biofuels will help power the Department of Defense. ~SOURCE

DIESEL FUEL KILLS

According to the World Health Organization (WHO), air pollution is in the same category as tobacco smoke, killing more people than malaria and AIDS combined. A major source of that pollution comes from diesel fuel, which is estimated to cause 6% of lung cancer deaths in the US. Truckers and miners who have high exposure are most at risk, along with people living in dense cities and near highways. ~SOURCE

MAJOR CORPORATIONS PLAN FOR CARBON COSTS

The New York Times recently reported that a number of the country's largest corporations – including five major oil companies – are incorporating the cost of carbon pollution in their financial planning. Mainstream economists, as well as lobbying groups such as the [Citizen's Climate Lobby](#), have long proposed a price on carbon pollution as the best way to put renewable energy sources on a competitive footing with fossil fuels. ~SOURCE

▶ GOOD FOR YOU, GOOD FOR THE PLANET

GIVING THE GIFT OF EFFICIENCY

editorial by Arvid J. Bloom

With the holiday season over, it's a good time to reflect on the kinds of gifts we give. As [The Story of Stuff](#) notes, much of what we buy exacts environmental costs that aren't reflected in what we pay. Suppose we changed the nature of our gift giving, with environmental protection explicitly in mind?

As an example: Several years ago, my neighbor bought a new electric water heater. Acknowledging that he doesn't particularly value energy efficiency, I bought a \$20 insulating water heater blanket plus some hot-water pipe insulation and installed them for him as a gift. This became a win-win-win situation: the neighbor started saving electricity and money immediately, the environment was spared some CO₂ emissions, and I had a grateful neighbor.

In essence, I had purchased a carbon offset – one whose effects were immediately evident rather than occurring at some distant place and time. This brought even more satisfaction than the year that my wife and I purchased trees to be planted in far-off lands in lieu of traditional holiday gifts.

That gift got me thinking about some larger challenges for all of us. Specifically, how can we...

- make it a social norm – or even cool – to give gifts that save energy?
- make it not-so-cool to give gifts that increase recipients' carbon footprints?
- signal tactfully to others that we don't want gifts that would increase our own carbon footprint?



Please share your ideas about this on [4CP's Facebook page](#).

BE A CRANKY CONSUMER

The stuff you buy typically accounts for about 26% of your carbon footprint. Consider these shopping guidelines:

- Resolve to buy less stuff in 2014
- Buy well-made goods that will last
- Make energy usage a primary selection criterion
- Choose items with minimal packaging – complain about excess
- Choose items with reused or recycled content
- Choose wood products from sustainable sources – look for Forest Stewardship Council (FSC) certification

When you buy something, you assume responsibility for the packaging as well as maintenance and final disposition of the product itself. Use your power as a consumer – merchants want to meet your requirements. Make sure that sales personnel and store managers know you are evaluating purchases based on energy use, recyclability and packaging. Enter your complaints as well as compliments on stores' Facebook pages.

► SCIENCE SPEAKS

TROPICAL REFORESTATION MAY HINGE ON BACTERIA

The ability of forests to sequester CO₂ may be constrained by the availability of nitrogen in the soil. However, researchers at the Smithsonian Tropical Research Institute in Panama recently discovered that by introducing nitrogen-fixing trees into tropical forests, the carbon-fixing ability of nearby trees, which tend to be chronically short on nitrogen, increased dramatically. The catalysts for this rapid fixing are Rhizobia bacteria, which reside in the root nodules of nitrogen-fixing trees. In the presence of nitrogen-fixing trees, tropical forest growth was dramatic for the first 12 years, accumulating around 40% of the carbon – 50 metric tons of per hectare – present in mature forests; this represents the carbon exhaust from burning 21,285 gal of gasoline. In practical application, accelerating carbon fixing in trees has the potential to significantly speed up the recovery of forests that have been cleared for agriculture or logging. [~SOURCE](#)

CROP PESTS MOVE TOWARD THE POLES

New research in *Nature Climate Change* indicates that crop pests and pathogens have been spreading toward the north and south poles at an average rate of two miles per year since 1960. For example, the Colorado potato beetle has moved northwards into Finland and Norway, places where cold winters would normally be a deterrent. The poleward spread of crop pests and pathogens is believed to be enabled by global warming. [~SOURCE](#)



IPCC URGED TO MOVE FASTER

Our Nov-Dec 2013 newsletter identified the top 10 takeaways from the recently-released IPCC report. In the Sept issue of *Scientific American*, the editors argue for replacing these long and detailed IPCC reports with shorter, more focused reports issued more often.

[~SOURCE](#)

► MAKING A DIFFERENCE

CARBON FEE AND DIVIDEND – A MARKET-DRIVEN APPROACH TO GHG EMISSIONS

The changes needed to replace fossil fuels and address climate change are immense. A fee-and-dividend policy that addresses the total cost of carbon was presented at the January 4CP Speaker Series meeting. This proposal would help level the economic playing field between fossil fuels and renewables. Over time, market forces and innovation would create a growing supply of clean energy.

As advocated by [Citizens Climate Lobby \(CCL\)](#), there would be a tax on carbon emissions and it would increase annually. Ultimately, fossil fuel prices would rise to reflect external costs, such as environmental degradation, extreme weather events, rising sea levels, and droughts. The dividend part of the policy would return virtually all of the fees collected to US households, without any increased government revenue. Most households would be fully repaid for their extra energy costs.

CCL assumes that any major change in energy policy must have bipartisan support to survive long term. The carbon fee and dividend approach has been endorsed by many conservatives, such as Harvard's Greg Mankiw, economic advisor to President George W. Bush and

Mitt Romney. A number of former Republican-appointed EPA administrators have also joined forces to support the proposal, as noted in an August 2013 *New York Times* Op Ed entitled “[A Republican Case for Climate Action](#).” For more details, please visit [CCL](#).

NATION’S BIGGEST LANDFILL TO BECOME LARGEST SOLAR PROJECT

A huge 10 MW ground-mounted solar panel system will be installed by SunEdison at Freshkills Park on Staten Island. The former landfill site will generate electricity from solar power as well as by burning methane gas from decomposing organic materials. ~[SOURCE](#)

SOLAR POWER TOILET UNDER DEVELOPMENT

The Kohler Company is working with a team from the California Institute of Technology to develop a solar powered toilet for parts of the world where people lack safe and affordable sanitation. It will include a self-contained water purification and disinfection system that produces reusable wastewater. ~[SOURCE](#)

SHRUB WILLOW MAY BE A VIABLE BIOMASS FEEDSTOCK

Researchers at SUNY have developed hybrid versions of shrub willow that grow 10-15 times faster than the natural forest and are ready for harvest in 3-4 years. When harvested, they resprout and a new crop emerges. These crops are beginning to see commercial use for heat and electricity generation. ~[SOURCE](#)

▶ EVENTS OF NOTE

4CP SPEAKER SERIES MEETINGS (please note location and date changes): The Speaker Series meetings for the rest of 2014 will be held the 2nd Wednesday of each month in the large Council Chamber Room at the West Chester Borough Hall starting at 7 pm. There will be no meetings during July or August. Please watch your email for specific meeting announcements.

NOVEMBER 2013 4CP SPEAKER SERIES MEETING (Recap): Dr. Gerard Bricks, a 4CP board member, spoke about Climate Change, National Security, and the Department of Defense (DoD). The DoD owns and operates (heats and cools) more building square footage than any other entity in the US, and is the single largest consumer of fuels to operate its fleets of vehicles, ships and aircraft. The DoD views climate change as a national security issue due to displaced populations, food insecurity, dwindling supplies, and increasing costs of finite fossil fuel resources. Dr. Bricks reviewed some of the many programs the DoD has in place to transition to renewable resources and improve building efficiency.

DECEMBER 2013 4CP SPEAKER SERIES MEETING (Recap): Dr. Arvid Bloom, a 4CP board member, illuminated for us some of the key irrationalities that prevent people from taking meaningful steps to protect against catastrophic climate change. He started by describing how climate change has all the ingredients for public apathy and how better decision making, rather than simply relying upon technological fixes, can make a huge difference in addressing threats posed by climate change. Using findings from psychology and behavioral economics, he then discussed some constructive things that can be done to work around psychological barriers to climate action.

JANUARY 2014 4CP SPEAKER SERIES MEETING (Recap): Dr. Gary Witt, a finance professor at Temple University, gave a presentation on enacting a carbon fee and dividend policy to harness market forces in reducing greenhouse gas emissions. He was joined by Alan Rushforth, PE and President of Rushforth Solar, LLC, who spoke about the true cost of energy, and Jan Rushforth, chair of the Haverford Township Environmental

MOUNTAINTOP REMOVAL RALLY: On Wed, Jan 29th, a rally will be held at noon in front of the EPA Region 3 headquarters at 17th & Arch Streets in Philadelphia to protest mountaintop removal. The region includes West Virginia and Virginia. Activists in those states are asking for local help in lobbying the EPA to pass regulations that will protect Appalachian communities and water supplies from mining pollution.

Advisory Committee, who spoke about the efforts of [Citizens Climate Lobby](#), which lobbies for a carbon fee. See the article in this issue for more details about the carbon fee and dividend proposal.

EPA LISTENING SESSION ON CARBON EMISSIONS (Recap):

More than 60 people testified at the November hearing (including 4CP board member Karen Melton), with a large majority asking the EPA to issue strong regulations to protect the public from the destructive impacts of GHG emissions. In addition, coal industry representatives and workers spoke about communities that depend on coal-related jobs. The EPA plans to issue regulations on power plant greenhouse gas emissions by June 2014.

DELAWARE RIVER BASIN COMMISSION (Recap): More than 100 people attended and 50 testified at a December DRBC meeting, urging continuation of the fracking ban in the river basin, which supplies drinking water to 17 million people. The Commission, created in 1961, includes representatives of the governors of PA, NJ, DE and NY as well as the US Army Corps of Engineers.

▶ QUIZ

Suppose you have two cars and you can replace only one of them. You drive both of them the same number of miles each month.

- Car one gets 10 mpg; you can replace it with one that gets 20 mpg
- Car two gets 20 mpg; you can replace it with one that gets 100 mpg

TO SAVE THE MOST GALLONS OF FUEL, WHICH CAR SHOULD YOU REPLACE?

Check your answer on [4CP's Facebook page](#); you don't need a Facebook account to view the page.

▶ LEGISLATIVE & FUNDING ROUNDUP

STATE LEVEL

PA MUNICIPALITIES KEEP THEIR ZONING RIGHTS

after the state Supreme Court ruled that key portions of [Act 13](#) are unconstitutional. The 2012 law would have forced local governments to allow drilling in all zones – including residential, school, and agricultural. Gov. Corbett's legal team is currently challenging the ruling. One justice ruled against the provisions because they violate due process; three justices ruled that they violate Article I, Section 27 of PA's constitution.

Supporters of Act 13 claim the ruling will cost jobs and business. However, more than 15% of all the drilling rigs in the US are currently located in PA; drilling began on 1,900 wells in 2011 and another 1,300 in 2012 without the law in place. [~SOURCES: 1 2 3](#)

GUTTING THE ENDANGERED SPECIES ACT is the aim of [HB1576](#), a bill that puts gas drilling interests ahead of endangered species. It was approved by the PA House Game and Fisheries Committee in November. ***Please call or write your PA House member and voice your opposition.*** The so-called "Endangered Species Coordination Act" would fundamentally change the way threatened and endangered species are protected in PA. The bill is supported by the Marcellus Shale Coalition and opposed by sportsmen and environmental groups.

RECENT CONFIRMATION OF CHRIS ABRUZZO as Secretary of the Department of Environmental Resources by the PA Senate is viewed as a setback for environmental causes. Mr. Abruzzo, a former prosecutor and staff member to Gov. Corbett, reportedly has no environmental or science background. At his confirmation hearing, he stated, *"I have not read any scientific studies that would lead me to conclude that there are adverse impacts to human beings or to animals or to plant life at this small level of climate change. But I agree there are impacts."* [~SOURCE](#)

FEDERAL LEVEL

LEADERSHIP ON ENERGY MANAGEMENT was addressed by a Presidential Memorandum in December. It updates a 2009 Executive Order by requiring that all Federal agencies obtain at least 20% of their electricity from renewable sources by 2020. [~SOURCE](#)

MILEAGE STANDARDS FOR 2025 MAY BE WEAKENED to significantly below the Obama administration's new 54.5-mpg standards for cars. So far, Detroit's Big Three automakers have successfully pushed the administration for a "mid-term" review that could water down the standards before full implementation. [~SOURCE](#)