

Campaign Primer: Energy & Climate Change

By Dr. Denise Eby Konan

The US is facing difficult choices in the area of energy and climate change. John McCain and Barack Obama pledge to reverse the course of past administrations and cut greenhouse gas emissions sharply. Energy innovations and ‘cap and trade’ carbon auctions are at the heart of both campaigns. However, the candidates diverge on how they will break the U.S. carbon habit and secure energy for Americans. Here is an overview of their views.



Sen. John McCain

Lowering dependence on foreign oil: McCain would work to expand domestic oil

exploration and lift the federal moratorium on drilling in the Outer Continental Shelf.

Reform transportation sector: Offer tax credits for purchase of low carbon emissions cars; \$300 million prize for to developer of commercially viable plug in hybrid battery.

Energy security: Expansion of domestic oil sources will reduce reliance on Middle East oil. Achieve strategic independence by 2025.

Cutting greenhouse gas emissions: McCain proposes a Cap-&-Trade system that initially gives free permits and eventually auctions permits. Banking and borrowing of permits can defer emissions reductions.

Greenhouse gas emissions target: Return GHG to 1990 levels by 2020 and 60 percent below 1990 levels by 2050

Other: Build 45 new nuclear reactors by 2030; commit \$2 billion to clean coal R&D; Green Innovation Financing and Transfer (GIFT) fund for R&D on advanced energy technology; develop climate change adaptation plan.



Sen. Barack Obama

Lowering dependence on foreign oil: Obama would strategically invest \$150 billion

over 10 years in private clean energy initiatives.

Reform transportation sector: Offer retooling tax credits and loans for R&D in fuel efficient cars built in US; Offer tax credits for purchase of low carbon emissions cars; increase fuel economy standards and introduce low carbon fuel standards.

Energy security: New technologies will save more oil than we import from the Middle East and Venezuela in 10 years.

Cutting greenhouse gas emissions: Obama proposes a Cap-&-Trade system that would require competitive auctions for all pollution licenses. Auction fund would provide rebates to individuals and innovation fund for zero-carbon technologies.

Greenhouse gas emissions target: Return GHG to 1990 levels by 2020 and 80 percent below 1990 levels by 2050

Other: Initiate windfall tax on oil companies and rebate \$500 revenues to individuals; require 25 percent of nation’s electricity from sustainable energy sources (wind, solar, geothermal); Green Vet Initiative finds jobs for veterans in energy sector



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The Economics of Energy and Climate Change

After decades of debate over whether humans are contributing to global warming, scientists and the public alike believe that climate change presents clear and imminent threats to our environment, economy, and way of life. Scientists urge us to sharply cut GHG emissions over the next 7 years. Yet, global energy demand is growing and greenhouse gas (GHG) emissions rates have increased sharply since 2000. GHG reductions efforts will slow, but not stop, climate change due to the build up of emissions in our atmosphere over the past century.

The good news is that the American people are keen to make a change. According to a survey by Dr. J.A. Krosnick of Stanford University, about one in five Americans will vote based on this issue. Accordingly, both presidential candidates call for a sharp departure from the platform of past administrations. The next president will demonstrate global leadership on climate change and the transition to a low-carbon economy.

Why is global warming a priority?

Last year, the Intergovernmental Panel on Climate Change (IPCC) issued its 6-year study on global warming, and received the 2007 Nobel Peace Prize. This research is the consensus of thousands of scientists, economists, and experts from around the globe. According to the IPCC, global temperatures will rise between 2 degrees and 12 degrees. Floods, fire, and famine will intensify. Rainfall will become more heavy in some regions, and others will become dryer. It is anticipated that some African countries will experience a 50 percent drop in agricultural yields. Fresh water supplies will be impacted, although where and how is not completely clear. Water will likely become more scarce in the US Western States. Changes in the European Alpine areas may threaten 60 percent of animal and plant species by 2080. Sea levels are rising, snowfall and ice are receding, the timing of seasons are evolving, and severe weather events are happening more frequently.

How much will global warming cost and how far should we go?

British economist, Sir Nicholas Stern issued a report on the Economics of Climate Change in 2006. Based on economic models, his team estimated that the damage from global warming would be between 5 and 20 percent of global gross domestic product annually. Stern advocates that developed nations reduce emissions between 60 to 80 percent below 1990 levels by 2050. Yale University economist, William Nordhaus, rebutted these estimates because much of the damage will be experienced by future generations. Applying a different time-discount rate would lower cost estimates. Nordhaus suggested 2050 emissions targets 25 percent below 1990 levels. Both candidates have pledged to follow the Stern recommendations. McCain proposes to cut by 60 percent and Obama proposes to cut by 80 percent below 1990 levels by 2050.



What is the best way to reduce our carbon footprint?

There is strong agreement among economists that market mechanisms, and the pricing of carbon emissions, provide the most economically efficient reductions in greenhouse gas emissions. Market mechanisms have the potential of generating a substantial revenue fund which could be rebated to low income individuals and used to advance clean energy solutions.

There are two broad approaches: regulating emissions limits and providing pollution permits (cap & trade) and taxing emissions (carbon tax). Nordhaus advocates an emissions tax of \$30 per ton of carbon (about 9 cents per gallon of gasoline). Professor Gary Yohe, of Wesleyan University and lead author of the IPCC report, proposes a carbon tax of \$55 per ton, increased to \$110 per ton by 2020. Carbon taxes have the advantage of setting a fixed carbon price for industry around which they can plan, and creating a revenue source.

While carbon tax proposals are popular among economists, most politicians prefer cap & trade systems as they believe voters will not tolerate higher taxes. This system caps emissions and issues permits for pollution. Cap & trade systems have the advantage of specifying emissions targets, while the emissions price fluctuates. The U.S. has successful experience with a cap & trade system aimed at reducing sulfur pollution that causes acid rain.

Economists find that when pollution licenses are competitively auctioned, a cap & trade system operates much like a carbon tax with a few notable qualifications. If licenses are distributed by other means however, lobbying by special interests is likely to undermine the effectiveness of the system. The European cap & trade system initially handed free permits to industry: some firms made windfall profits from their permits; the price eventually collapsed; and European GHG emissions increased. Both McCain and Obama advocate a national cap & trade system that is coordinated with global efforts. Obama pledges to auction off all pollution permits. McCain has vowed to provide free permits initially to help polluting industries adjust.

A variety of regulatory tools are also available: low carbon fuel standards for vehicles; green building efficiency standards; plug-in hybrid electric vehicles; promotion of wind and solar; and renewable portfolio standards.

What are the most promising energy alternatives?

Several nations are making rapid progress to reducing their carbon footprint. The mayor of Copenhagen announced a plan to erase their greenhouse gas footprint and become carbon neutral by 2025 through wind energy, geothermal heating technologies, and bicycling expansions to reduce automobile traffic. Germany switched from coal to gas and solar for electricity generation and reduced greenhouse gas emissions by about 2.3 percent. German fuel taxes and support for diesel have reduced ground transportation emissions. France relies on zero-emissions nuclear power to fuel their energy needs. American solutions under debate include lower-carbon electricity production through 'clean coal' and carbon capture and storage technologies, expansion of nuclear energy, and biofuels.



How will Hawai‘i be impacted by Climate Change?

University of Hawai‘i Mānoa Climate Change Commission identifies Hawai‘i’s top climate change threats:

- **Sea level rise** Coastal areas will be at greater risk of flooding, storm surge, erosion and other hazards. Significant infrastructure investments are located within the ‘blue line’ inundation zones identified by a meter sea level increase.
- **Watershed depletion** A decrease in rainfall due to changes in cloud distribution, as well as salt water contamination of our aquifers due to rising sea level, will place further challenges on our fresh water supplies. This will be particularly true for leeward areas where housing booms have created significantly greater pressure on water supplies even under present conditions.
- **Economic isolation** Air and maritime transportation costs will rise as they are intensive carbon emitting sectors. Beach erosion, coral bleaching, and loss of nearshore species may reduce the attractiveness of our visitor experience. The costs of repairing and adapting our islands’ infrastructure to offset climate change will be significant, particularly in places where tourism, power generation, and transportation infrastructure are at risk. Our economic prospects are closely linked to the future of transportation, energy, tourism, and our coastal resources.

In addition to these impacts, Hawai‘i may experience various other damages. Progressive ocean acidification from carbon uptake is projected to harm marine shell-forming organisms, like coral, and their dependent species. Agricultural yields may fall with changing temperature and dry conditions. Severe weather events may intensify. Indigenous plant, insect, and animal species are under threat of changing ecosystems and intensified invasive species. While a complete assessment of Hawai‘i’s climate change threats has not been conducted, it is clear that our islands will be harmed disproportionately relative to the rest of the nation.

While federal actions are under consideration, Hawai‘i has taken steps to reduce our carbon footprint. A renewable portfolio standard requires 20 percent of electricity production from renewables by 2020. In 2007, Hawai‘i became the second state in the nation to cap emissions at 1990 levels by 2020 through Act 234 and a Greenhouse Gas Emissions Reduction Task Force is established under DBEDT to oversee this effort. Hawai‘i is the first state to mandate that all new construction require solar or on-demand gas water heating systems by 2010.

References: Official John McCain campaign website and speeches. Official Barack Obama campaign website and speeches. *Climate Change 2007: Synthesis Report* issued by the IPCC. *The Stern Review: The Economics of Climate Change*, by Sir Nicholas Stern. *A Question of Balance: Weighing the Options On Global Warming Policies* by William Nordhaus. *Climate Change: A Campaign Primer* by Richard Monastersky.

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