Climate Change and Alternative Energy

United Nations Association of Southern Arizona

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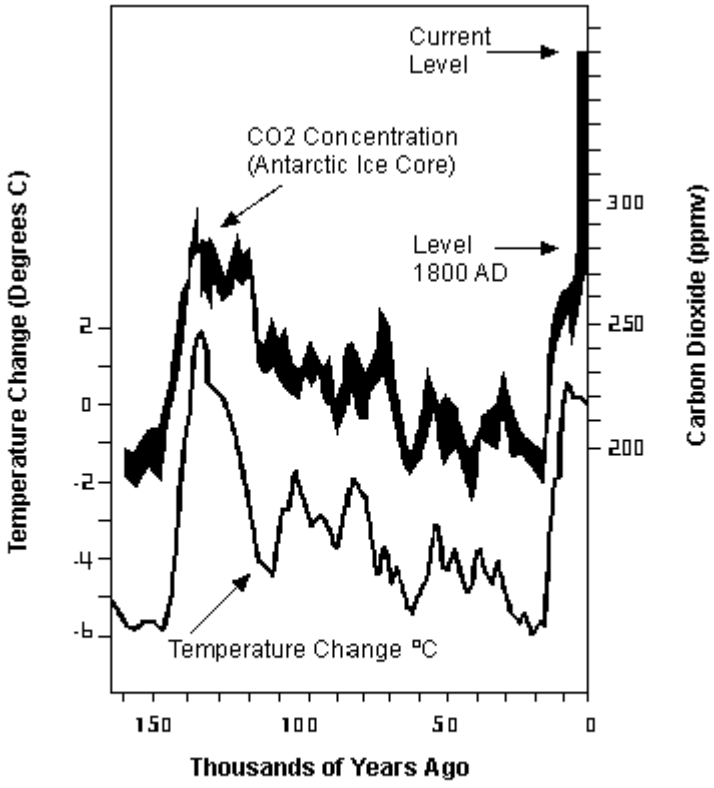
The longer we wait to tackle climate change
the harder and more expensive task will be

American Association for the Advancement of Science

Global Warming: A Call for Action

A carefully documented report made public earlier this year has captured the attention of governments, business leaders and ordinary people worldwide. It shows that changes in the atmosphere, the oceans, glaciers and ice caps reveal unequivocally that the world is warming, and that it is more than 90 percent certain that human activities are the cause. The resulting damage will likely include increased urban air pollution and emerging infectious diseases such as West Nile Virus; sea-level rise causing flooding and erosion in coastal communities; extreme weather including more intense droughts and hurricanes; reduced productivity of some agricultural regions; and loss of many treasured landscapes and species—from coral reefs to polar bears.

Atmospheric Carbon Dioxide Concentration and Climate Change



Source: *White House Initiative on Global Climate Change*, October, 1997. On line at www.whitehouse.gov/initiatives/Climate/greenhouse.html.

In 1988, the United Nations Environment Program and the World Meteorological Organization set up the Intergovernmental Panel on Climate Change (IPCC) to examine the most current scientific information on global warming and climate change. More than 1,250 authors and 2,500 scientific expert reviewers from more than 130 countries contributed to the panel's most recent report, Climate Change 2007: The Fourth Assessment Report, released in February this year. These scientists reviewed all the published and peer-reviewed scientific information produced during the previous few years to assess what is known about the global climate, why and how it changes, what it will mean for people and the environment, and what can be done about it.

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The IPCC Fourth Assessment Report is the most comprehensive evaluation of global warming. As the new benchmark, it serves as the basis for international climate negotiations. It also makes clear that the need for action is urgent Carbon dioxide levels today are higher than ever.

It is a well-established scientific fact that CO2 (and other gases emitted from industrial and agricultural sources) traps heat in the atmosphere. Small wonder, then, that we are now witnessing a dramatic increase in temperature. The National Climate Data Center has maintained global average monthly and annual records of combined land and ocean surface temperatures since 1880, the earliest year for which reliable instrumental records were available worldwide. Based on NCDC data, nine of the top 10 warmest years globally have occurred since 1995.

An energy problem

Global warming is customarily thought of as an environmental problem -- water pollution, air pollution, pesticide abuse, and so on. This implies that it can be addressed in ways commonly used in relation to those problems, such as changing the way we utilize resources, substituting "environmentally friendly" products for the usual ones, and cutting back the release of toxic substances.

As Michael T. Klare, author of Blood and Oil: *The Dangers and Consequences of America's Growing Petroleum Dependency*, has pointed out, however, "…global warming is not an 'environmental' problem in the same sense as these others -- it is an energy problem, first and foremost. Almost 90 percent of the world's energy is supplied through the combustion of fossil fuels, and every time we burn these fuels to make energy we release carbon dioxide into the atmosphere; carbon dioxide, in turn, is the principal component of the "greenhouse gases" (GHGs) that are responsible for warming the planet. Energy use and climate change are two sides of the same coin."

Fossil fuel dependency

In the United States, the Department of Energy documented that carbon dioxide emissions constitute 84 percent of this nation's greenhouse gas emissions. Of all U.S. carbon dioxide emissions, some 98 percent are emitted as a result of the combustion of fossil fuels, which currently provide some 86 percent of America's total energy supply. This further confirms that energy use and carbon dioxide emissions are highly correlated. Oil consumption, generated mostly from vehicles, accounts for 42 percent, while the burning of coal, mostly for electricity, constitutes another 40 percent. Natural gas use for home heating and electricity produces the remaining 12 percent of emissions.

The DoE has forecast what will happen if we don't act to reduce our consumption of fossil fuels. The U.S. will consume 35 percent more oil, coal and gas combined in 2030 than in 2004. The nation's emissions of carbon dioxide are expected to rise by about the same percentage during the same period. If these projections prove accurate, total U.S. carbon dioxide emissions in 2030 will reach a staggering 8.1 billion metric tons.

US consumption patterns are repeated by other industrialized and industrializing nations, including China and India. The global warming problem caused by US consumption of energy is replicated worldwide, if on smaller national scales. "If the human community continues to consume more fossil fuels to generate more energy," says author Michael Klare, "it inevitably will increase the emission of carbon dioxide and so hasten the buildup of greenhouse gases in the atmosphere, thus causing irreversible climate change." Thus the central problem, in the

US and elsewhere, is our dependence on fossil fuels.

Kyoto and beyond

By its very nature, global warming and climate change demand not only local action but a global response. This was the thinking behind the Kyoto Protocol, which is an amendment to the United Nations Framework Convention on Climate Change (UNFCCC), an international treaty intended to bring countries together to reduce global warming and to cope with the effects of temperature increases that are unavoidable after 150 years of industrialization.

Governments that ratify the Kyoto Protocol agree to reduce, by specific percentages, emissions of six greenhouse gases that contribute to global warming. The countries are allowed to use emissions trading to meet their obligations if they maintain or increase their greenhouse gas emissions. Emissions trading allows nations that can easily meet their targets to sell credits to those that cannot.

Most of the world's industrialized nations support the Kyoto Protocol. One notable exception is the United States, which releases more greenhouse gases than any other nation and accounts for more than 25 percent of those generated by humans worldwide. U.S. President George W. Bush withdrew U.S. support for the Kyoto Protocol and refused to submit it to the Senate for ratification. Australia also declined to join. The Kyoto Protocol went forward without U.S. involvement.

In 2006, President Bush outlined an Advanced Energy Initiative to increase by clean energy research at DoE by 22 percent with the goal of replacing more than 75 percent of U.S. oil imports from the Middle East by 2025.

In 2007 a newly constituted U.S. Congress introduced a series of bills calling for varied carbon reduction targets. Some bills would set in place a "cap-and-trade" system setting overall limits on emissions of carbon dioxide but allowing companies to freely buy and sell credits and to emit certain amounts of CO2. Legislation of this kind would produce a market for carbon-cutting measures. The Congressional bargaining and the more advanced EU policy discussions now under way will likely influence any international agreement following the expiration of the Kyoto Protocol in 2012.

Meanwhile, the Supreme Count made a landmark decision in April 2007 on the government's role in policy-making related to climate change. Justices ruled that greenhouse gases are air pollutants subject to regulation under the Clean Air Act. The 5-4 decision takes the first step toward national limits on emissions from cars, trucks and power plants.

States stepping up

In late 2006, a Worldwatch Magazine editorial noted that "Many U.S. states and municipalities are filling the vacuum of climate leadership. California's leaders have agreed to cut carbon emissions by 25% by 2020. New York has set a goal of 20 percent renewable electricity generation by the same year. One analysis concludes that at least a quarter of the U.S. population already lives under Kyoto-like climate policies set by state and local governments."

In Arizona, the future of solar and renewable energy as a whole got a big boost when the Arizona Corporation Commission voted on October 31, 2006, to expand the state's renewable portfolio standard to 15% by 2025, with 30% of that to come from distributed generation technologies -- potentially resulting in up to 2,000 megawatts of solar. Its backers say the historic vote puts Arizona in the running to develop one of the country's largest solar programs.

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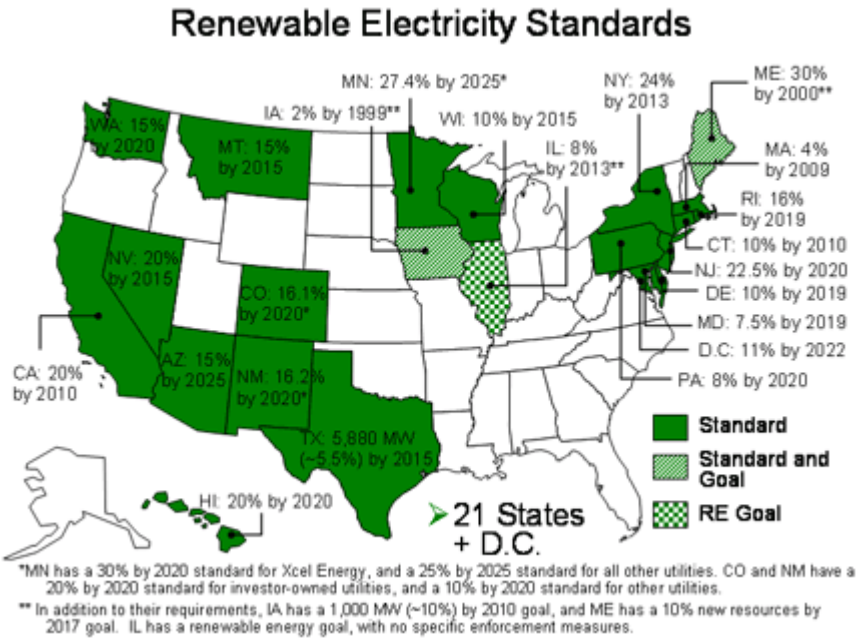
In a state where electricity accounts fo 56% of greenhouse gases and vehicles 44%, however, there is still a large gap between needed reductions in emissions and public policy to achieve them.

More and more renewable energy experts, notes the Union of Concerned Scientists, are recognizing that electricity standards requiring specific levels of renewable electricity are a key driver of more renewable energy in the United States.



http://www.ucsusa.org/clean_energy/clean_energy_policies/the-renewable-electricity-standard.html

A renewable electricity standard is a cost-effective, market-based policy that requires electric utilities to gradually increase their use of resources such as wind, solar, and bio-energy. Some states are leveraging their effectiveness by forming regional alliances. Currently, 21 states and the District of Columbia have enacted a renewable standard. It should be noted that the Union of Concerned Scientists, a non-profit alliance of more than 200,000 citizens and scientists, played a key role in crafting these multi-state efforts to combat global warming.

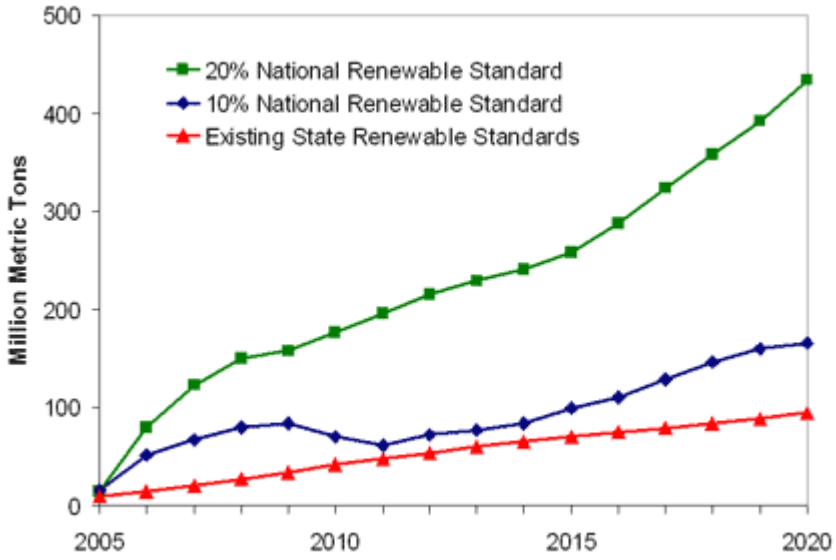
These state-level decisions reflect the growing awareness in America that local leadership can and will take action to mitigate the effects of global warming. As shown above, however, each state has its own standard and time target. Differing goals will produce differing results, of course. There is still a need for a national standard of renewable electricity that would accelerate the adoption of renewable resources. A 20 percent national standard (see graph below) would reduce the projected growth in power plant CO2 emissions under a business-as-usual scenario by more than half by 2020. This level of reductions is equivalent to taking nearly 71 million cars off the road or planting 104 million acres of trees—an area approximately the size of Oregon and Washington combined. Even a 10 percent standard would deliver substantial climate benefits by 2020.

Businesses Call for Action

Corporate attitudes toward global warming shifted dramatically in the past year. Many US- based multinational corporations now recognize current and potential effects of climate change on globally competitive commerce. Wall Street investors and Fortune 500 companies jointly urged Washington to follow the European lead in setting mandatory targets to cut emissions. The Investors and Businesses for US Climate

Action Group represent $US 4 trillion dollars worth of investor capital. This is not the first business consortium to join climate change policy groups, but it is the first to include Wall Street interests and by far the largest. Firms included: Merrill Lynch, Calpers, Allianz and Calvert, as well as Alcoa, BP America, DuPont, Sun Microsystems, and Procter and Gambel, among others. In May of 2006, forty companies, including Boeing, IBM, John Hancock and Whirlpool, joined a business council organized by the Pew Center on Global Climate Change.

CO2 Reduction from States vs. National Renewable Electricity Standards.



Strikingly, US Climate Action Group calls for two steps: that Congress establish an economy-wide carbon price to stimulate a cap and trade system, and that the Security and Exchange Commission issue guidelines for businesses to assess and report climate change risk in their reports. The Climate Action Group challenged the Congress to set a greenhouse gas emission reduction rate from 60% to 90% below 1990 levels by 2050. The group emphasized that establishing “a national policy rather than leaving the leadership to the courts and state governments” was necessary or “US businesses may get left behind.” (FT: 3/20/07, USA Today 5/31/06, socialfunds.com 3/27/06).

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Topical References

Alternative & Renewable Energy
ases.org (American Solar Energy Society)
renewableenergyaccess.com
eere.energy.gov (Energy Efficiency and Renewable Energy, Department of Energy)
epa.gov/climatechange (Environmental Protection Agency)
fueleconomy.gov
nrel.gov (National Renewable Energy Laboratory)
ucsusa.org (Union of Concerned Scientists)

Climate Change and Environment
alternet.org
earthinstitute.columbia.edu (Columbia University
eird.org (International Strategy for Disaster Prevention)
environment.about.com
Hyogo: www.unisdr.org
Intergovernmental Panel on Climate Change: www. ipcc.ch/SPM2feb07.pdf
(Fourth Assessment Report of the International Panel on Climate Change, Summary for Policy Makers)
Kyoto Treaty Text: www.unfccc.int
ucsusa.org (Union of Concerned Scientists)
un.org
unausa.org (UN Associations of the United States of America)
UN Commission of Sustainable Development: www.un.org./esa/sustdev Intergovernmental
UN Dept. of Economic and Social Affairs www.un.org/esa/sustdev/
unep.org (UN Environment Program)
UNESCO: www.unesco.org, portal.unesco.org (UN Education Scientific and Culture Organization) Commission on Sustainable Development (CSD)
unfcc.int (UN Framework Convention on Climate Change)
UN System environmental work: www.unep.org/un%2Denv/

Non-Renewable Energy
nei.gov (Nuclear Energy Institute)
fueleconomy.gov
ucsusa.org (Union of Concerned Scientists)

Businesses' Role
pewclimate.org (Pew Center on Global Climate Change)
TomDispatch.com
Financial Times newspaper FT: 3/20/07
USA Today 5/31/06
socialfunds.com 3/27/06

States' Role
westgov.org (Western Governors Association)
azcommerce.com (Arizona Department of Commerce)
Arizona Daily Star newspaper (3/11/07)
Tucson Citizen newspaper (4/3/07) r.e. US Supreme Court decision.
WorldWatch magazine (Nov. / Dec. 2006)