



# Testimony

## Invited Testimony to the Select Committee on Electric Generation Capacity & Environmental Effects

by Kathleen  
Hartnett White  
Director, Center for  
Natural Resources

Thank you for the opportunity to submit comments on these issues of critical importance to the future of Texas. My comments predominantly address the issues of electric generation and climate change. At the outset, it is important to stress the unprecedented global, national and particularly Texas growth in demand for electric power. Indeed, the global dimension of climate change and competitive international demand for power are relevant to Texas decisions about energy and the environment.

Because this is not a forum for discussion of the strengths and weaknesses of current climate science, my statement rests on the predictions in the U.N.'s Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report issued in 2007. This is the "reigning" climate change science behind the main international and U.S. programs on green house gas (GHG) reduction. Reduction of carbon dioxide (CO<sub>2</sub>) emissions from fossil fuel use is the main target of these programs.

Indeed, the global dynamics of climate change make it pointless, at best, and counterproductive, at worst, for the Texas Legislature now to enact any mandatory CO<sub>2</sub> reduction schemes. **Policies facilitating energy efficiency and development of key technologies offer the best path forward.**

Consider the global magnitude of reductions recommended by the current science. The IPCC's most recent report concludes that "stabilizing GHG emissions in the atmosphere at a level that will prevent dangerous interference with the climate system will require a global effort to reduce emissions worldwide by 50-85 percent below 2000 levels by 2050." Doing a little bit here does not yield a little benefit for Texas or the world. **CO<sub>2</sub> mandatory reduction at the state level would have absolutely no "temperature saving" benefit.** Only a comprehensive federal program—not a diverse mix

of state programs—can possibly address the global scale of this issue. Federal efforts in the U.S. Congress and agencies are well underway.

In response to a ruling in the U.S. Supreme Court last year, the U.S. Environmental Protection Agency (EPA) is now considering whether to determine that CO<sub>2</sub> is a "pollutant" under the regulatory rubric of the federal Clean Air Act. Multiple bills to regulate CO<sub>2</sub> and other GHG have been introduced in the U.S. Congress. The bill with the most traction is S2191, America's Climate Security Act co-sponsored by Senators Lieberman and Warner (L/W). This bill passed the Environment and Public Works Committee last December 2007 and awaits action on the Senate floor. If enacted, this bill would create the most stringent CO<sub>2</sub> reduction mandate seen to date—far more stringent than the Kyoto Protocol and the European Union's (EU) current Emission Trading System (ETS).

In keeping with the latest IPCC recommendation, L/W sets hard limits, i.e. caps, on CO<sub>2</sub> beginning in 2012. The cap progressively ratchets downward leading to a 50 percent reduction of 2005 CO<sub>2</sub> levels by 2050. Through a complex cap and trade scheme, the bill would allocate and/or auction allowances of CO<sub>2</sub> and authorize marketing of unused allowances and offsets. A viable carbon market necessitates a consistent national program and the broadest base. A carbon market limited to a single state would be far too limited to create a well functioning market.

Often lost in promotion of carbon trading schemes is the nature of CO<sub>2</sub>. Carbon Dioxide is wholly unlike conventional pollutants regulated under federal and state law. Regulated pollutants like sulphur dioxide (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>), in certain concentrations and exposures, can directly impact human health. CO<sub>2</sub> is a ubiquitous chemical in all

900 Congress Avenue  
Suite 400  
Austin, TX 78701  
(512) 472-2700 Phone  
(512) 472-2728 Fax  
[www.TexasPolicy.com](http://www.TexasPolicy.com)

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natural processes and an ever present by-product of extracting energy from carbon rich fossil fuels. Eighty-six percent of the U.S. energy supply derives from the fossil fuels coal, natural gas, and oil. Carbon dioxide does not directly impact human health. And in climate change science, the specific location of CO<sub>2</sub> emissions is irrelevant to their heat-trapping role in the upper atmosphere. Total global volumes of CO<sub>2</sub> represent only 5 percent of all green house gas (GHG); human-induced CO<sub>2</sub> accounts for only 3.4 percent of total annual levels.

**In contrast to pollutants like SO<sub>x</sub> and NO<sub>x</sub>, no commercially available technologies exist to achieve major CO<sub>2</sub> reductions.** The current cap and trade programs to reduce SO<sub>x</sub> and NO<sub>x</sub> rely on a suite of costly but effective technologies. The technologies to capture and store CO<sub>2</sub> are well under development but simply do not now exist on the commercial scale needed to achieve even the early CO<sub>2</sub> reductions mandated by the Lieberman-Warner bill. Experts in such carbon capture technologies predict commercial availability within 15-30 years. Without technical means of control, CO<sub>2</sub> is not a good candidate for an ambitious reduction scheme at the state or federal level. In recognition of the staggering cost of CO<sub>2</sub> reduction, L/W would create a Carbon Market Efficiency Board with the authority to intervene in carbon markets if “significant harm to the economy” or energy shortages occurs.

The technical challenges and economic impacts of the CO<sub>2</sub> mandates imposed by L/W are massive. A conservative average cost, among some six macroeconomic analyses reviewed, amounts to a decrease in U.S. GDP annually by 1.5-2.5 percent. This translates to a dollar reduction of \$160-\$250 billion by 2015. Job losses are estimated at 1.2-2.3 million in the same period. Texas would be more adversely impacted because of the prevalence of our energy industries. A study analyzing the impacts on Texas estimates a decrease in state GSP of \$12-\$16 billion by 2020 and \$44-\$52 billion by 2030. Industries hardest hit are our chemical and manufacturing industries which compete with foreign sources. Already hurt by increasing energy costs, our industries could not compete with price of products manufactured in countries without expensive CO<sub>2</sub> regulation. These U.S. industries would either fail or move to a country with less energy cost. This not only creates Texas job loss but also merely moves—not reduces—the CO<sub>2</sub> emissions.

Although a far less ambitious CO<sub>2</sub> reduction scheme than the Lieberman-Warner bill, **the EU’s carbon trading system has not to date been effective.** The EU planned to

decrease CO<sub>2</sub> by 8 percent below the Kyoto Protocol 1990 levels by 2012. The EU now projects that CO<sub>2</sub> levels will be 7 percent higher than 1990 levels in 2012. **During the same period the EU increased carbon emissions, the U.S. has slightly reduced CO<sub>2</sub> emissions—an unregulated result of market-driven efficiencies. In 2005-2006, U.S. CO<sub>2</sub> emissions declined by 1.5 percent while the economy grew by 2.9 percent.**

**The big growth in CO<sub>2</sub> emissions is from the developing world and not the U.S. and Europe.** The U.S. has long been the globe’s largest consumer of energy and thus largest source of CO<sub>2</sub> emissions, but China likely surpassed our country in 2006. China is building the equivalent of a 600 MW coal fired power plant *every week*. And until recently, China’s and India’s power plants operated at an emission intensity four times that of highly regulated U.S. plants. Energy economists project that by 2020, 75 percent of global CO<sub>2</sub> emissions will be from the developing world and 20 percent from the developed world. The growth in worldwide demand for energy is unprecedented.

Criticism of Texas as “The CO<sub>2</sub> State,” i.e. the largest U.S. emitter of CO<sub>2</sub>, are misplaced. Texas produces 30 percent of the entire nation’s fuel and 60 percent of its chemicals. Four of the ten largest cities in the U.S. are in Texas. Of course, we would be the largest source of CO<sub>2</sub>.

**A “quick switch” to renewable sources of power generation is frequently advocated as a prime means of reducing CO<sub>2</sub>. Barring some major technological breakthrough, this policy is highly unrealistic in the next several decades.** Renewables like wind and solar have inherent limitations which limit the size of the role they can play in meeting future demand. Dependent on sufficient and sustained wind conditions, wind generation is inherently intermittent and thus an unreliable source for base and peak loads. The Energy Information Agency of the U.S. Department of Energy calculates that average actual generation from all U.S. wind installation is 33 percent of their installed generation capacity. Wind and solar have important roles to play but cannot rapidly displace the dominating fossil fuel core of the Texas and U.S. power supply.

Nuclear generation faces different obstacles than renewables. **Although nuclear generation offers virtual elimination of CO<sub>2</sub> and other emissions, public acceptance of broad scale nuclear generation remains a question.** Nuclear also faces international competition for fuel sources and technology. At the moment, the U.S. imports 96 percent of all nuclear material used for electric generation.

Switching from coal to natural gas is also promoted as means of reducing CO<sub>2</sub> emissions from power plants. This policy, already tried over the last 20 years, faces ever larger hurdles in affordability and supply. As a result of the “dash to gas” in the 1990s, natural gas prices have steeply increased, impacting consumers and particularly the Texas manufacturing sector. Natural gas prices are approximately four times higher than coal and far more volatile. The U.S. now imports 13 percent of natural gas, a percentage predicted to increase rapidly. To replace coal with natural gas would make our state power supply—as is our oil supply—dependent on foreign sources.

**Existing federal and state regulation has dramatically decreased the environmental effects of coal and natural gas generated electric power.** The federal Acid Rain program, the NO<sub>x</sub> Sip Call, the recent Clean Air Interstate rules (CAIR), the Maximum Achievable Control Technology (MACT) standard for mercury, the state’s grandfathered facility law, Texas New Source Review, and ozone SIP requirements; all these have led Texas to perhaps the strictest emission limits in the country.

**Existing Texas coal-fired power plants, in many cases, are operating with NO<sub>x</sub> limits lower or comparable to many natural gas fired plants.** All Texas coal fired plants must meet an emission limit of 0.165 lb. NO<sub>x</sub> per million BTU. New coal-fired plants have much lower limits of 0.05-0.08 lb. NO<sub>x</sub> per million BTU. According to the 2004 EPA Acid Rain Data Base, the average national emission rate for NO<sub>x</sub> is .37 lb. per million BTU. This makes Texas plants over two times cleaner than the national average. TCEQ’s careful modeling of the impacts of East Texas EGUs on ozone in the DFW area showed only minute contribution when compared to the dominating mobile source emissions inside DFW. Some existing coal-fired facilities have received voluntary permit amendments to install cutting-edge technology to further reduce emissions.

When power plant emissions are measured relative to the amount of electricity generated (pounds of emissions per megawatt hour of generation - lb./MWh), the volume of reductions approach 90 percent of pre-1980 levels. EPA’s recent announcement of a new, far stricter ozone standard of 75 ppb to replace the current 85 ppb does not alter the ante. **Because of existing regulation of major industrial sources like power plants, remaining ozone emissions are overwhelmingly from mobile sources.** Creative and effective technology to reduce power plant emissions will continually advance. At this juncture, however, most Texas plants have reached the upper limits of existing technology.

**Facilitating energy efficiency and clean coal technologies offer the most prudent and beneficial policy path for our energy intensive economy and growing population.**

Energy efficiency is an effective means of reducing CO<sub>2</sub>. Although such efficiencies are already built into the de-regulated Texas power market, additional opportunities remain through creative technologies and marketplace incentives. In the long run, technologies like IGCC and coal to liquids offer environmental and economic benefits to Texas and indeed the world. Making Texas the trail blazer in these technologies could have multiple spin-off benefits for our state.

**To meet future demand in our growing state, Texas will need a diverse portfolio of fuel sources for power generation.** All cost efficient and environmentally responsible sources have an important role to play. Given the global scale of CO<sub>2</sub> issues and the federal efforts now underway, Texas should avoid any state GHG regulatory programs at this time. Without available means to capture and store carbon, Texas should weigh the exorbitant cost in Texas of ambitious CO<sub>2</sub> mandates like the Lieberman-Warner bill.

Consideration of hard facts and rigorous cost-benefit analyses should guide Texas decisions about climate change. When the wildly exaggerated scenarios of imminent planetary catastrophe are set aside, the climate change science of the last IPCC report predicts a gradual, cumulative increase in global average temperatures. There is time to consider the most prudent and effective policies. There is time to develop CO<sub>2</sub> capture technologies without leading to energy shortages, job loss, and astronomical prices.

Sound science is never static but always changing. This is particularly true of current climate science driven by complex models with multiple variables and assumptions. The driving variables behind the IPCC’s model prediction need empirical data to replace current assumptions. And the model needs to better replicate observed climate. This has long been a key determinant of the accuracy of a model’s future predictions. This science will continue to improve and thus provide policymakers with a clearer foundation for decisions. ★

## **About the Author**

**Kathleen Hartnett White** joined the Texas Public Policy Foundation as Director of the Center for Natural Resources in January 2008.

Prior to joining the Foundation, White served a six-year term as Chairman and Commissioner of the Texas Commission on Environmental Quality (TCEQ). With regulatory jurisdiction over air quality, water quality, water rights & utilities, storage and disposal of waste, TCEQ's staff of 3000, annual budget of over \$600 million and 16 regional offices make it the second largest environmental regulatory agency in the world after the U.S. Environmental Protection Agency.

Prior to Governor Rick Perry's appointment of White to the TCEQ in 2001, she served as then Governor George Bush appointee to the Texas Water Development Board where she sat until appointed to TCEQ. She also served on the Texas Economic Development Commission and the Environmental Flows Study Commission.

White is also co-owner of White Herefords and a partner with her husband in a 125 year-old ranching operation in Jeff Davis and Presidio counties. She also is Vice-Chairman of the Texas Water Foundation and sits on the board of the Texas Natural Resource Foundation. She recently received the 2007 Texas Water Conservation Association's President's award, the Colorado River Foundation's Friend of the River Award and the Texas Chemical Council's Leadership Award.

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