



OFFICE OF THE GOVERNOR

RICK PERRY
GOVERNOR

June 23, 2009

The Honorable Lisa P. Jackson
Administrator
U.S. Environmental Protection Agency (EPA)
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460-2403

Dear Administrator Jackson:

Please accept these comments in response to EPA's Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act, published in the Federal Register on April 24, 2009. In November, I created an advisory panel of Texas' energy and environmental agency leaders to prepare an analysis of regulations contemplated in the Advance Notice of Proposed Rulemaking (ANPR). I recently asked them to perform an analysis of the current endangerment finding. Their report is enclosed, and highlights Texas' serious concerns about this unprecedented expansion of EPA regulation over virtually every sector of the economy, the massive costs that will be imposed on our economy, the unsettling reliance on unresolved science, and the certainty that the proposed regulations will fail to achieve the intended goals of tangible reductions in greenhouse gas concentrations given the global nature of these emissions.

Texas is the nation's leading energy producer, supplying 20 percent of the nation's oil production, one-third of the nation's natural gas production, a quarter of the nation's refining capacity and nearly 60 percent of the nation's chemical manufacturing. We are also developing the cutting edge of new energy technologies. Texas has pioneered production technology that has opened the nation's vast shale formations for production and resulted in record growth in the nation's natural gas reserves.

Simply put, Texas fuels the nation.

Costly regulation that reduces our ability to provide energy and other products to the nation will have a disproportionate effect on Texas, the state that has created over half of all new private-sector jobs over the past year. The ripple effects of this barrier to energy production will be felt throughout the national economy. The rest of the country's reliance on Texas' energy products was all too evident in the aftermath of Hurricane Ike, when refinery closures in Texas led to gasoline shortages and price spikes throughout the Southeastern United States. Intentionally crippling our energy, agriculture and manufacturing sectors in the current economic climate would irreparably damage an already-fragile national economy.

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It is important to recognize that Texas fully supports the development of the next generation of energy technologies that have lower carbon emissions. No one agrees with the concept of fully developing all of our domestic energy resources, including renewable energy, more than Texans. In fact, our actions speak louder than others' when it comes to fostering these new technologies.

Texas has installed more wind generation than any other state and all but four other countries. Texas enthusiastically participated in the FutureGen clean coal project, and we have more carbon-free nuclear plants under development than any other state. We also have aggressive goals for energy efficiency, and are seeking to foster the development of solar generation and other renewable energy technologies through our Emerging Technology Fund and Texas Enterprise Fund.

However, there are fundamental precursors to the wide-scale deployment of these resources, and the failure to recognize this reality creates a fundamental flaw in the endangerment finding. Notably, the federal government must make aggressive and concrete progress in meeting the following infrastructure needs prior to establishing greenhouse gas emissions limits that are simply unattainable at a reasonable cost without these investments:

- **The federal government must promote the modernization of the nation's electricity transmission grid.** Providing the needed infrastructure for renewable energy is critical to allowing the marketplace to successfully deploy large amounts of wind, solar and other low-carbon generation. Our build-out of the Texas grid will enable more than 18,000 megawatts of wind generation and will displace at least 20 million tons of carbon dioxide emissions from fossil-fueled generation every year. The rest of the nation has made virtually no progress in preparing the nation's transmission grid for the energy technologies of the 21st century, and the federal government itself is often the single largest impediment because of the difficulty in building transmission across federal lands.
- **The federal government must remove barriers that prevent substantial new investments in nuclear generation.** If the United States is to remain economically competitive with the rest of the world while reducing greenhouse gases, we must fully dedicate ourselves to the task of building the next generation of nuclear plants. The 9,000 megawatts of new nuclear plants under development in Texas alone would allow us to avoid as much as 65 million tons of carbon dioxide emissions every year. This investment is threatened by the lack of timely federal licensing of these new plants, the continued failure of the federal government in fulfilling its obligations related to waste disposal, and insufficient loan guarantee authority for the U.S. Department of Energy.
- **The federal government must facilitate rapid investments in the development of Carbon Capture and Sequestration (CCS) technologies.** Texas remains committed to development of CCS technology, and Texas companies are the world leaders in safely injecting carbon dioxide underground in enhanced oil recovery efforts. The opportunity to use our nation's abundant coal supplies in a manner that

addresses greenhouse gas emissions concerns and to reduce our reliance on imported oil simply cannot be passed up. Without federal support to help commercialize this technology rapidly, regulation such as that contemplated in the endangerment finding will only cause a substantially greater reliance on natural gas and dramatically higher natural gas and electricity prices. Immediate development of the nation's onshore and offshore natural gas resources is also needed to ensure a reliable supply of this critical fuel while CCS technology matures. The Texas Legislature recently passed legislation providing state and local tax incentives designed to drive new CCS technology. The federal government must take the same action.

- **The federal government must provide for long-term regulatory and tax certainty for renewable energy and energy efficiency technologies.** These technologies have significant capital investment costs, and the federal government must provide long-term certainty to these resources in order to foster the installation and manufacturing base needed to support these industries. The federal government should also remove barriers to developing these resources on federal lands, streamline permitting processes that unnecessarily delay these projects, and expand incentives for energy efficiency in order to complement our efforts here in Texas.

By providing needed infrastructure and targeted investments, and by removing regulatory barriers and uncertainty, we can accelerate the development of new technology and reduce emissions far faster than will be accomplished through expansive new regulations, draconian taxes on energy and huge new federal bureaucracies. Unfortunately, the endangerment finding places the United States on the latter path.

As noted by the comments of the former Secretaries of Commerce, Transportation, Energy and Agriculture included as part of the original ANPR in November, emissions of greenhouse gases by developing countries already exceed those of the developed world and are forecast to grow exponentially faster than United States emissions. This is an uncorrectable flaw in the scheme proposed by the ANPR and the endangerment finding, as states would be forced to engage in a massive and costly regulatory effort that will only succeed in forcing American businesses, the jobs they provide and their emissions overseas. This is precisely the wrong signal to send in our current economic climate.

Indeed, "massive and costly" is an intense understatement as to the effects of the proposal embodied in the endangerment finding. The regulations contemplated would for the first time subject large swaths of the economy to costly and time-consuming EPA regulation and permitting. Commercial buildings, churches, small farms, hotels, hospitals and even large residential homes would all be severely affected by this proposal, even though these sources have negligible effects on worldwide concentrations of greenhouse gas emissions. This unprecedented governmental intrusion into the lives and businesses of everyone in the country will only result in devastating costs and job losses to Texas and the rest of the nation.

It is a travesty to the scientific community to ignore hundreds of scientists who oppose and disagree with the endangerment finding. It is even more misguided to force state governments,

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businesses and taxpayers to spend hundreds of millions of dollars to reduce the emissions of non toxic natural gases like carbon dioxide for no measurable change in the level of these gases in the atmosphere and no credible impact on global climate trends. The fact that the proposed finding cites no discernable public health benefits to this senseless regulation beyond spurious and speculative effects of normal weather and climate variability, highlights the activist nature of this proceeding. The endangerment finding will draw funding and resources from health issues caused by emissions like nitrogen oxides and known toxins. Imagine the progress that could be made if the federal government put the same effort and funding into addressing known emissions that create substantiated health concerns.

For these reasons, I respectfully urge you to withdraw the current endangerment finding.

Sincerely,

A handwritten signature in black ink that reads "Rick Perry". The signature is written in a cursive, slightly slanted style. The first letter "R" is large and loops around the "i" and "c". The "Perry" part is also cursive, with a long horizontal stroke at the end.

Rick Perry
Governor

RP:tbp

Enclosure



TEXAS ADVISORY PANEL ON FEDERAL ENVIRONMENTAL REGULATIONS

June 23, 2009

The Honorable Rick Perry
Governor of Texas
State Capitol
P.O. Box 12428
Austin, Texas 78711

Dear Governor Perry:

In November 2008, you created the Texas Advisory Panel on Federal Environmental Regulations in order to assess the potential impacts to Texas of regulations proposed by the Environmental Protection Agency (EPA). On April 24, 2009, the Administrator of the EPA proposed to make an endangerment finding for six greenhouse gases and designate that the emissions from four of the six from motor vehicles cause or contribute to a global problem without doing a thoughtful review of all scientific data.

An endangerment determination would start the process for regulating these emissions and ultimately greenhouse gas emissions from other source categories under the Federal Clean Air Act (FCAA) with significant costs to industry in Texas and the nation, which will ultimately be borne by the taxpaying citizens in Texas and throughout the nation. The Administrator has not weighed whether purported warming will have net benefits or costs, and whether control strategies for such sources taken in the U.S. will mitigate the supposed problem.

If adopted, the proposal would cause Texas to suffer from extreme economic hardships, regulatory uncertainty, and immeasurable standards. The proposed framework would have adverse economic impacts on Texas industry, agriculture, energy production, and potentially would subject small businesses, office buildings, schools, hospitals, farms, and multi-family and large-family residences to FCAA regulations.

On behalf of vice-chairmen, Barry T. Smitherman and Michael Williams, I submit to you a document for your consideration: "Comments on the Environmental Protection Agency's Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act."

Respectfully,

A handwritten signature in cursive script that reads "Bryan W. Shaw".

Bryan W. Shaw, Ph.D.
Chairman



**Texas Advisory Panel
On
Federal Environmental Regulations**

**COMMENTS ON THE ENVIRONMENTAL PROTECTION
AGENCY'S PROPOSED ENDANGERMENT AND CAUSE
OR CONTRIBUTE FINDINGS FOR GREENHOUSE
GASES UNDER SECTION 202(A) OF THE CLEAN AIR
ACT**

June 23, 2009

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Acronyms

ACCF	American Council for Capital Formation
ANPR	Advance Notice of Proposed Rulemaking
ASHRAE	American Society of Heating, Refrigerating & Air Conditioning Engineers
Bbl	barrel
Btu	British thermal units
CAFÉ	Corporate Average Fuel Economy
CCS	carbon capture and sequestration
CO ₂	carbon dioxide
CREZ	Competitive Renewable Energy Zones
DOE	U.S. Department of Energy
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
ERCOT	Electric Reliability Council of Texas
FCAA	Federal Clean Air Act
GDP	gross domestic product
GHG	greenhouse gases
GSP	gross state product
GWP	global warming potential
HAP	hazardous air pollutant
HFC	hydrofluorocarbons
IESNA	Illuminating Engineering Society of North America
ITP	Industrial Technologies Program
LAER	lowest achievable emission rate
LNG	liquefied natural gas
MACT	maximum achievable control technology
MECS	Manufacturing Energy Consumption Survey
MMbbl	million barrels
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NAM	National Association of Manufacturers
NSPS	New Source Performance Standards
PFC	perfluorocarbons
PSD	prevention of significant deterioration
PUC	Public Utility Commission
R&D	research and development
RPS	renewable portfolio standards
SECO	State Energy Conservation Office
SIP	state implementation plan
TCEQ	Texas Commission on Environmental Quality
Tcf	trillion cubic feet
U.S.	United States

Executive Summary

The Administrator of the Environmental Protection Agency (EPA) proposes to make an endangerment finding for six greenhouse gases (GHG) and designate that the local emissions from four of the six from motor vehicles cause or contribute to a global problem. This proposal is based on a fatally deficient review of the scientific data, and an analysis of the costs and benefits of the alleged climate change that, at best, can be described as cursory. Furthermore, the Administrator has entirely failed to address the issue of whether the control strategies for these emissions and emissions from other source categories under the Federal Clean Air Act (FCAA) which will be triggered by an endangerment determination would produce any environmental benefit at all or would, in fact, cause environmental harm. These requirements will likely cost residents of Texas and the nation billions in higher energy costs, lost wages and reduced productivity. It is therefore critical that these inadequacies be addressed in order to ensure that our citizens' money is not wasted on a pipe dream which results only in the exportation of American jobs to countries lacking any credible environmental standards.

The Administrator argues that an endangerment determination need not be based solely on emissions from motor vehicles because such an approach would effectively preclude the Administrator from ever making a positive finding for a global phenomenon like climate change that cannot be solved by one regulatory action alone. However, in the case of alleged global warming, actions are necessary from all developed countries in the world, not just the United States, in order to have an appreciable effect on greenhouse gas emissions.

Contrary to the conclusory statements offered in the proposal, the science relating to climate change is not settled. The Administrator has failed to consider the complete range of well-founded scientific evidence and opinion as to both the reality of climate change and the causation of any documented climate change.

The Administrator should take the time to consider the substantial body of scientific work that does not support the conclusions of the IPCC Summary for Policymakers, a primary document the Administrator relied upon to form her proposal. According to many scientists, recent observations of phenomena such as glacial retreats and advances, sea-level rise and drop, and global temperatures lie within the bounds of known natural variability.

The Administrator states, "The evidence points ineluctably to the conclusion that climate change is upon us as a result of greenhouse gas emissions, that climatic changes are already occurring that harm our health and welfare, and that the effects will only worsen over time in the absence of regulatory action." The Administrator states that the scientific conclusions made in the proposal are "...the product of decades of research...". Scientists disagree on how long the earth has existed. Estimates range from 6000 years to over 4.5 billion years. Yet, the Administrator is comfortable that the science on climate change is settled after "decades" of research.

The Administrator has failed to conduct a meaningful cost-benefit analysis.

The analysis offered by the Administrator of the possible costs and benefits of climate change, assuming the Administrator's version of the science, is at best incomplete, and at worst, biased. The Administrator has listed a parade of speculative injuries, focusing on worst-case potential harm to the poor, the vulnerable and people of color in warmer, more arid regions, but has rejected any notion of attempting to evaluate the potential benefit accruing in colder areas where the benefits to those same populations from milder winters and longer summers may be considerable. Likewise, the Administrator has focused on categorizing theoretical harm to agriculture and some species of wildlife from alleged warming, while ignoring the potential benefits to other species and other types or locations of agriculture. Such sloppy, even biased evaluation cannot support a finding of endangerment under the FCAA.

The Administrator also has failed to address the environmental harm which may result from a finding of endangerment under the FCAA. The Act, which is generally local and at most national in nature, will address climate issues locally and nationally in response to a finding of endangerment. This approach is not only ineffective at addressing global concerns such as climate change; it is likely to produce actual environmental harm by exporting jobs to countries lacking an environmental protection regime. The Administrator must remain cognizant that, even assuming climate change is real and its anthropogenic causation proven, it is not the only environmental concern on this earth. Exportation of manufacturing jobs as a result of greenhouse gas limits to developing nations such as China and India, where controls on emissions of NO_x and SO₂ are minimal or absent, may cause irreparable harm to world rivers, lakes and oceans without producing a microgram of total reductions in climate-forcing pollutants.

Finally, the Administrator, for all her concern for theoretical impacts of warming on the poor and dispossessed, has totally failed to address real, measurable harm to the poor and dispossessed of Texas and this nation that will result from higher energy costs, lost jobs, and pollution produced by exporting jobs to other countries. For families living at or near the poverty line, with minimal disposable income and who are more likely to be living in less energy efficient dwellings and driving older, less fuel efficient vehicles, the burden has been estimated to be three times that of the impact on middle class and wealthy families.¹ These social, economic and health impacts are considerable, and they must be given consideration equal to or greater than the theoretical possibility of increases in waterborne diseases as a result of hypothetical increases in flood events.

¹ Kirsten R. W. Mathews, Ph.D, Beyond Science: The Economics and Politics of Responding to Climate Change, p. 30 (Baker Institute, February 9, 2009) available at <http://www.bakerinstitute.org/programs/energy-forum/publications/conferencereport/EF-ST-pub-BeyondScienceConfReport-121008.pdf>.

Texas continues to develop innovative ways to maintain a stable economy while protecting human health and the environment. Unmatched success at reducing emissions, a focus on energy efficiency, and incentives for new technology have allowed for continued growth while reducing CO₂ emissions with greater success than Europe has achieved with their regulatory approach to GHG reduction.

In summary, the Administrator's proposal is fatally flawed because it fails to adequately consider all scientific evidence, and because it does not properly weigh the potential benefits of short term or longer term variations in climate. Furthermore, the proposal in its current state does not support an endangerment finding because it fails to consider the devastating effect on the Texas and U.S. economy and environment, and in turn, on the citizens of this state and our nation. A federal agency cannot make findings on an issue of this magnitude with such far-reaching consequences with such limited and ill-considered data. The proposal should be withdrawn and the EPA should encourage and support the additional research to assure that any future proposals or legislation are based on sound science and analysis.

Scientific Uncertainty Regarding Humans Impact on Climate Change

Lack of Consensus

- In an “Open Letter to the Secretary General of the United Nations,” dated December 13, 2007, 100 prominent scientists presented a succinct summary of their concerns about going forward with regulation before the science is better understood: “In stark contrast to the often repeated assertion that the science of climate change is “settled,” significant new peer-reviewed research has cast even more doubt on the hypothesis of dangerous human-caused global warming.”
http://scienceandpublicpolicy.org/reprint/open_letter_to_un.html
- U.S. Senate Minority Report – More than 700 International Scientists Dissent over Man-Made Global Warming Claims
“Over 700 dissenting scientists from around the globe challenged man-made global warming claims made by the United Nations Intergovernmental Panel on Climate Change (IPCC) and former Vice President Al Gore. This new 2009 255-page U.S. Senate Minority [Report] features the skeptical voices of over 700 prominent international scientists, including many current and former UN IPCC scientists, who have now turned against the UN IPCC. This updated report includes an additional 300 (and growing) scientists and climate researchers since the initial release in December 2007. The over 700 dissenting scientists are more than 13 times the number of UN scientists (52) who authored the media-hyped IPCC 2007 Summary for Policymakers.”
http://epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs&ContentRecord_id=2674e64f-802a-23ad-490b-bd9faf4dcdb7
- Global Warming Petition Project – Over 31,000 American scientists, over 9,000 of which have PhDs, have signed a petition stating that “There is no convincing scientific evidence that human release of carbon dioxide, methane, or other GHG will, in the foreseeable future, cause catastrophic heating of the Earth’s atmosphere and disruption of the Earth’s climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.”
<http://www.petitionproject.org/index.php>

The regulation of GHG under current FCAA programs is likely to have serious economic consequences for the nation’s economy. The Administrator should take the time to consider the substantial body of scientific work that does not support the conclusions of the IPCC Summary for Policymakers, a primary document the Administrator relied upon to form her proposal. The scientists that are urging caution in moving forward include many IPCC contributors and reviewers who believe that the IPCC Summary does not adequately or accurately reflect the state of climate change science. The Administrator’s endangerment finding refers to the “very large and comprehensive base of scientific information that has been developed over many years through a global consensus process

involving numerous scientists from many countries and representing many disciplines.” Clearly no such consensus exists.

According to many scientists, recent observations of phenomena such as glacial retreats and advances, sea-level rise and drop, and global temperatures lie within the bounds of known natural variability. According to the recent report, *Climate Change Reconsidered: 2009 Report of the Nongovernmental Panel on Climate Change*², “the IPCC cites as evidence of modern global warming data from surface-based recording stations yielding a 1905-2005 temperature increase of 0.74°C +/- 0.18°C. But this temperature record is known to be positively biased by insufficient corrections for the nongreenhouse gas-induced urban heat island (UHI) effect. It may be impossible to make proper corrections for this deficiency, as the UHI of even small towns dwarfs any concomitant augmented greenhouse effect that may be present.” The report goes on to say, “Highly accurate satellite data, adjusted for orbit drift and other factors, show a much more modest warming trend in the last two decades of the twentieth century and a dramatic decline in the warming trend in the first decade of the twenty-first century.”

The assumptions about impact of increased greenhouse gas concentrations on future climate are based on computer models. While these models are important research tools, they cannot and should not be used to predict future climate. This is not a criticism of climate models but merely an acknowledgement that the earth’s climate is an extremely complex, dynamic, and non-linear system. Our knowledge of the roles of water vapor and other GHG, as well as the many other factors that determine climate, is far too limited to be encapsulated in a computer model capable of predicting future climate. Nor should these models be the basis for conclusive decision-making with such significant consequences. Freeman Dyson, PhD, Emeritus Professor of Physics, Institute for Advanced Studies in Princeton, N.J., writes:

“I have studied the climate models and I know what they can do. The models solve the equations of fluid dynamics, and they do a very good job of describing the fluid motions of the atmosphere and the oceans. They do a very poor job of describing the clouds, the dust, the chemistry, and the biology of fields and farms and forests. They do not begin to describe the real world that we live in.”³

Professor Dyson’s views agree with a number of the world’s leading scientists, many of whom are specifically concerned that, “A long list of major model imperfections prevents models from properly modeling cloud formation and cloud-radiation interactions, resulting in large differences between model predictions and observations.”⁴

“Numerous scientific studies suggest that the model-derived sensitivity accepted by the

² Idso, Craig and Singer, S. Fred. *Climate Change Reconsidered: 2009 Report of the Nongovernmental Panel on Climate Change (NIPCC)*, Chicago, IL: The Heartland Institute, 2009

³ Dyson, F. 2007. Heretical thoughts about science and society. *Edge: The Third Culture*. August.

⁴ Idso and Singer 3.

Intergovernmental Panel on Climate Change (IPCC) is far too large, and that feedbacks in the climate system could reduce it to values that may be an order of magnitude smaller.”⁵

Dr. Roy Spencer, a principal research scientist in the University of Alabama’s Huntsville's Earth System Science Center, also agrees that current climate models are incorrect in that, “Net feedbacks in the real climate system — on both short and long time scales — are probably negative. A misinterpretation of cloud behavior has led climate modelers to build models in which cloud feedbacks are instead positive, which has led the models to predict too much global warming in response to anthropogenic greenhouse gas emissions.”⁶

Per Dr. John Christy of the University of Alabama at Huntsville, “... the actions being considered to “stop global warming” will have an imperceptible impact on whatever the climate will do, while making energy more expensive, and thus have a negative impact on the economy as a whole. We have found that climate models and popular surface temperature data sets overstate the changes in the real atmosphere and that actual changes are not alarming.”⁷

Solar Activity/ Natural Causes

Significant debate continues on the role of GHG in climate change. An increasing number of scientists believe that warming is naturally caused and shows no human influence. Climate scientist Dr. David Douglass of the University of Rochester, co-authored the December 2007 peer-reviewed paper published in the *International Journal of Climatology* of the Royal Meteorological Society, which found the evidence of human influence for warming temperatures in the atmosphere lacking:

"The observed pattern of warming, comparing surface and atmospheric temperature trends does not show the characteristic fingerprint associated with greenhouse warming. The inescapable conclusion is that the human contribution is not significant and that observed increases in carbon dioxide and other GHG make only a negligible contribution to climate warming."⁸

A large body of research suggests, “... that it is the sun’s influence that is responsible for the lion’s share of climate change during the past century and beyond. Recent research by a number of scientists indicates that “Reconstructions of ancient climates reveal a close correlation between solar magnetic activity and solar irradiance (or brightness), on the

⁵ Idso, Craig, Chairman, Center for the Study of Carbon Dioxide and Global Change, Response to the Environmental Protection Agency’s Advanced Notice of Proposed Rulemaking on Regulating Greenhouse Gas Emissions Under the Clean Air Act, Docket ID No. EPA-HQ-OAR-2008-0318, November 24, 2008.

⁶ Spencer, Dr. Roy W.. *Satellite and Model Evidence Against Substantial Manmade Climate Change*. <http://www.drroyspencer.com/research-articles/satellite-and-climate-model-evidence/>. December 27, 2008.

⁷ Written Testimony of John R. Christy, , Presented to the House Ways and Means Committee, February 25, 2009

⁸ Press release, "Climate Warming Is Naturally Caused; Shows No Significant Human Influence: Carbon Dioxide (CO2) Is Not a Pollutant," Science and Environmental Policy Project via PR Newswire, December 12, 2007.

one hand, and temperatures on earth, on the other. Those correlations are much closer than the relationship between carbon dioxide and temperature;” and that “Strong correlations between solar variability and precipitation, droughts, floods, and monsoons have all been documented in locations around the world. Once again, these correlations are much stronger than any relationship between these weather phenomena and CO₂.”⁹

Other research agrees with these conclusions. Dr. Nir J. Shaviv believes “Solar activity can explain a large part of the 20th century global warming, on condition that there is a strong solar/climate link through modulation of the cosmic ray flux and the atmospheric ionization. Evidence for such a link has been accumulating over the past decade, and by now, it is unlikely that it does not exist.”¹⁰

In an article published in the journal *Physical Geography*, Harvard-Smithsonian Center Astrophysicist Dr. Willie Soon concludes that “[L]ong-term climate change is driven by solar insolation changes, from both orbital variations and intrinsic solar magnetic and luminosity variations... There is no quantitative evidence that varying levels of minor GHG like CO₂ and CH₄ have accounted for even as much as half of the reconstructed glacial-interglacial temperature changes or, more importantly, for the large variations in global ice volume on both land and sea over the past 650 thousand years. ... [C]hanges in solar insolation at climatically sensitive latitudes and zones exceed the global radiative forcings of CO₂ and CH₄ by several-fold, and ... [therefore] regional responses to solar insolation forcing will decide the primary climatic feedbacks and changes.”¹¹

In the report *Environmental Effects of Increased Atmospheric Carbon Dioxide*, the authors contend that, “Hydrocarbon use and atmospheric CO₂ do not correlate with the observed temperatures. Solar activity correlates quite well. The overall experimental record is self-consistent. The Earth has been warming as it recovers from the Little Ice Age at an average rate of about 0.5 °C per century. Fluctuations within this temperature trend include periods of more rapid increase and also periods of temperature decrease. These fluctuations correlate well with concomitant fluctuations in the activity of the sun. Neither the trends nor the fluctuations within the trends correlate with hydrocarbon use. Sea level and glacier length reveal three intermediate uptrends and two down-trends since 1800, as does solar activity. These trends are climatically benign and result from natural processes. All of the observed climate changes are gradual, moderate, and entirely within the bounds of ordinary natural changes that have occurred during the benign period of the past few thousand years. There is no indication whatever in the experimental data that an abrupt or remarkable change in any of the ordinary natural climate variables is beginning or will begin to take place.”¹²

⁹ Idso and Singer. 3.

¹⁰ Shaviv, Nir J., “Carbon Dioxide or Solar Forcing? <http://www.sciencebits.com/CO2orSolar>.

¹¹ Soon, Willie, *Implications of the Secondary Role of Carbon Dioxide and Methane Forcing in Climate Change Past, Present, and Future*, *Physical Geography*, 2007, 28, 2, pp. 97-125.

¹² Robinson, Arthur B., Robinson, Noah E., and Soon, Willie, *Environmental Effects of Increased Atmospheric Carbon Dioxide*, *Journal of American Physicians and Surgeons*, Volume 12 No. 3, Fall 2007.

Beneficial Effects of Increased CO₂

The Administrator acknowledged the beneficial impacts of increased greenhouse gas concentrations, particularly carbon dioxide, in the atmosphere, but declined to conduct any comparative analysis of risks versus benefits. Harvard-Smithsonian Center Astrophysicist Dr. Willie Soon co-authored with Dr. Art Robinson and Noah Robinson, a November 2007 study that found mankind's emissions are not harming the atmosphere. The study reported: "A review of the research literature concerning the environmental consequences of increased levels of atmospheric carbon dioxide leads to the conclusion that increases during the 20th and early 21st centuries have produced no deleterious effects upon Earth's weather and climate. Increased carbon dioxide has, however, markedly increased plant growth." The study also found, "There are no experimental data to support the hypothesis that increases in human hydrocarbon use or in atmospheric carbon dioxide and other GHG are causing or can be expected to cause unfavorable changes in global temperatures, weather, or landscape."¹³

"A 300-ppm increase in the air's CO₂ content typically raises the productivity of most herbaceous plants by about one-third; and this positive response occurs in plants that utilize all three of the major biochemical pathways (C3, C4, CAM) of photosynthesis. For woody plants, the response is even greater. The productivity benefits of CO₂ enrichment are also experienced by aquatic plants, including freshwater algae and macrophytes, and marine microalgae and macroalgae. The amount of carbon plants gain per unit of water lost—or water-use efficiency—typically rises as the CO₂ content of the air rises, greatly increasing their ability to withstand drought. In addition, the CO₂-induced percentage increase in plant biomass production is often greater under water-stressed conditions than it is when plants are well watered."¹⁴

Flawed/Limited Analysis

The Administrator proposes to find that greenhouse gas emissions from new motor vehicles and engines cause or contribute to air pollution. However, the analysis performed by EPA to support this conclusion was based on the entire 202(a) source category, not just new motor vehicles and engines. In fact, the Notice indicates that EPA did not use future projected emissions in the cause or contribute analysis. This is a flaw in EPA's analysis, especially with the recent announcement of higher CAFE standards for motor vehicles.

As stated in the proposed Endangerment finding, the Administrator must balance the likelihood and severity of effects of global warming. While the Earth may be experiencing a warming trend, what is debatable is whether this trend is caused by anthropogenic sources and whether regulation of such sources, particularly in only the U.S., would have any benefit to changing the trend. The Administrator should also consider the effects of a declining economy that would result from GHG regulation on the health and welfare of American citizens.

¹³ Robinson, Robinson, and Soon, . 5.

¹⁴ Idso and Singer. 3.

The Administrator did not reference any documents in her decision-making process that offered alternative views on the scientific basis for causes of climate change. The Administrator should withdraw the endangerment finding and conduct a thoughtful review of the totality of scientific research as well as conduct a comprehensive cost-benefit analysis. At the very least, the Administrator should provide additional time for reviewers to conduct their own review of this information. The ramifications of this endangerment finding are too significant to be based on such a limited analysis.

The Administrator does not adequately address water vapor, which is by far the most abundant and important GHG in the atmosphere. According to Freidenreich and Ramaswamy, water accounts for about 90 percent of the Earth’s greenhouse effect – approximately 70 percent due to water vapor and about 20% due to clouds.¹⁵

Based on concentrations (part per billion) adjusted for heat retention	¹⁴ Percent of All GHG	¹⁴ Percent Natural	¹⁴ Percent Man-made
Water vapor	95.000	94.999	0.001
Carbon dioxide	3.618	3.502	0.117
Methane	0.360	0.294	0.066
Nitrous oxide	0.950	0.903	0.047
Miscellaneous gases (CFC, PFC, sulfur hexafluoride.	0.072	0.025	0.047
Total	100.000	99.720	0.280

Problems Regulating Greenhouse Gases (GHG) Through the Federal Clean Air Act (FCAA)

If the EPA adopts the proposed endangerment finding, it will lead to regulating GHG through the FCAA, which is not an appropriate vehicle. For the most part, the FCAA assumes that State and local governments are able through regulations and permit requirements to implement emission controls that will improve air quality. GHG are distributed relatively uniformly throughout the world and state and local emission controls would have little or no impact on global concentrations. The FCAA presents, through multiple sections of the law, different regulatory mechanisms for control and reduction of air pollutants, however, none are suited for control of substances which, like GHG, are uniformly distributed throughout the world. The result would be the imposition of burdensome regulations with little or no chance of success without similar

¹⁵ Freidenreich, S.M. and V. Ramaswamy, 1993 “Solar Radiation Absorption by Carbon Dioxide, Overlap with Water, and a Parameterization for General Circulation Models,” *Journal of Geophysical Research* 98: 7255-7264

controls implemented worldwide. Since GHG, particularly CO₂, are ubiquitous, new regulations would affect many segments of society, some of which have not previously been regulated under the FCAA, and would have a negative effect on the economy. Entities that will likely be affected include small businesses, office buildings, schools, hospitals, farms, and multi-family residences. Some of the regulations may even impact large single-family residences. According to EPA, CO₂ emissions from the transportation sector are the largest source of emissions from end use sectors in the U.S. economy. States are generally preempted from regulating mobile sources.¹⁶

National Ambient Air Quality Standards (NAAQS)

A major problem with regulating GHG as a NAAQS is that the EPA would be required to establish standards that EPA considers appropriate. Setting a standard for a substance that presents no health risk was not anticipated by the FCAA. CO₂ emissions are strongly related to economic activity and, therefore, reducing CO₂ emissions to any great extent would have a strong negative impact on the nation's economy. EPA by statute is not allowed to consider economic impacts when setting the NAAQS. Further, an increased ambient CO₂ concentration has recognized benefits, such as increased vegetation growth rates, that EPA is unlikely to consider when determining an "appropriate" standard.

Once a standard is set, states must then develop plans (State Implementation Plans or SIPs) to attain those standards. The entire nation would be either above the standard (in nonattainment) or below the standard (in attainment) because CO₂ and other GHG are distributed relatively uniformly throughout the world. In either case, considerable state and local resources must be expended to implement the many NAAQS requirements. Because State and local emission controls would have little or no impact on worldwide GHG concentrations, these NAAQS requirements would be implemented with no chance of success. Regardless of the arbitrary standard established by EPA, there will be no way to measure local or regional improvement because of the uniform distribution of GHG. Because GHG, particularly CO₂, is ubiquitous, NAAQS requirements would affect many segments of society, some of which have not previously been regulated under the FCAA, and would have a negative impact on the economy.

The mere imposition of a standard would require states to set up a monitoring network and develop an emissions inventory to track GHG emissions. Besides traditional industrial entities that must report their emissions to the State, major GHG sources under a NAAQS program would likely include office buildings, hospitals, schools, farms, multi-family housing, and even large single-family homes. The TCEQ estimates that in Texas 22 full-time employees at an annual salary cost of approximately \$1.1 million will be required to implement and maintain the emissions inventory requirements alone, just for CO₂.

¹⁶ Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006 (April 2008) USEPA #430-R-08-005

States would need to develop a SIP to demonstrate how they would attain the standard if EPA sets a standard below current worldwide ambient GHG concentrations. Even if EPA sets a standard above current worldwide ambient GHG concentrations the states must develop a “transport” SIP to demonstrate that they are not impacting other states’ ability to attain the standard. They would have to develop “reasonable further progress” SIPs to demonstrate that they are making steady and measurable progress in reducing GHG emissions.

EPA has recently interpreted the FCAA to require sophisticated computer modeling of all areas out of attainment with the NAAQS. Were this interpretation extended to GHG nonattainment areas, states would be required to model GHG sources in a pointless exercise to demonstrate compliance with the GHG standard. Besides a statewide inventory of anthropogenic GHG sources, the state would need to develop estimates of natural GHG sources and sinks (vegetation uptake, absorption into water bodies, etc.). Further, because of the disproportionate amount of natural sources relative to manmade sources, the state is unlikely to be able to provide a plan to EPA that would demonstrate attainment, thereby risking federal sanctions including the loss of federal highway funds.

If EPA designated the state as a nonattainment area, an enhanced federal nonattainment permitting program would be required. In most or all areas, a state or local agency implements this program. Major GHG sources, which again could include office buildings, hospitals, schools, farms, multi-family housing, and large single-family homes, would be required to obtain federal permits before starting construction or modification of GHG sources. Under this scenario, in Texas one could reasonably expect a contested case permit hearing when proposing to build a hospital. The permits would require implementation of controls that meet the “lowest achievable emission rate” (LAER) which by statute is the lowest achievable rate without consideration given to whether the controls are economically viable. The state would be required to determine LAER for each source that requires a permit, which would include many source types previously unregulated by the FCAA. The permits would also require that the permittee obtain emission offsets before operating their facility. For example, if a new source is going to emit 50 tons of CO₂ per year they will have to provide for a greater reduction of CO₂ emissions (e.g., 60 tons per year) somewhere in the same airshed.

The economic consequences of requiring federal preconstruction/modification permits for GHG sources are substantial. Emission calculation protocols, control strategies, and permit conditions would all have to be developed because state, federal, and local regulatory agencies lack experience in permitting these types of sources. The additional burden of the federal permit program itself adds review time to permit processes. The likely result would be the delay of goods and services because timely construction projects would not be possible.

Another far-reaching NAAQS program is transportation conformity. State and local transportation planning organizations would need to develop transportation plans showing that federally funded transportation projects do not detract from an area’s plan to attain the GHG standard. States would have to develop and stay within GHG

transportation budgets approved as part of a GHG plan revision to the SIP. If a state cannot demonstrate attainment and EPA disapproves or does not receive a SIP, most federally funded road construction projects that increase capacity may not move forward, and a local area would not be able to address its transportation needs.

Non-transportation federal projects (airport infrastructure, harbor dredging, etc.) would be subject to FCAA requirement to conform the GHG emissions from these projects to the emissions included in the most recently approved SIP revision. Federal agencies would then be required to show conformity to the SIP, or find sufficient offsets or mitigation of these emissions to move forward.

The attainment demonstration SIP would include the states' assessment of reasonably achievable control measures for GHG sources. A wide variety of GHG sources, both new and existing, would then be required to comply with these control measures.

If the states don't comply with these many NAAQS requirements on the EPA's timeline, they face possible sanctions such as loss of federal transportation funding and even more stringent federal permitting requirements.

These are just a few examples of the many NAAQS requirements that the states would be required to implement. These programs would have little chance of success, but would require many state and local resources and have a negative effect both on the economy and on the resources available to achieve the environmental goals of existing FCAA programs. For the current NAAQS programs, Texas currently has 174 full-time employees and expends over \$227 million per year.

The endangerment proposal will lead to costly regulation of GHGs through the FCAA. The costs of such regulation are hard to measure, but they will certainly be borne by the taxpayer. An accurate estimate of state resources required to implement GHG regulations through the NAAQS program is not possible. However, TCEQ conservatively estimates that air quality planning and enforcement would require at least 100 staff at an annual cost of \$10-20 million. Added to this would be the cost of the Title V and PSD/nonattainment federal permitting programs. In the Advanced Notice of Proposed Rulemaking (ANPR) issued last fall, EPA estimated that the number of PSD permits required to be issued each year would increase by a factor of ten.¹⁷ Assuming TCEQ's permitting load increases proportionately, this would require an additional 100 permit writers at an annual cost of \$5-10 million annually. In the ANPR EPA also estimated that Title V sources would increase from 15,000-16,000 to 550,000 nationwide.¹⁸ If Texas saw a proportionate increase in Title V permit activity it would require 600-800 new Title V permit writers at a cost of \$25-50 million annually. These numbers could drastically increase depending upon how the respective programs are implemented.

¹⁷ 73 Federal Register 44499 (July 30, 2008)

¹⁸ 73 Federal Register 44511 (July 30, 2008)

Hazardous Air Pollutants (HAP)

The FCAA is equally unfit to regulate CO₂ and other GHG as HAPs. The HAP program is intended to protect the public from exposure to air pollutant concentrations that would be hazardous to their health. Ambient CO₂ concentrations pose no threat to human health, CO₂ is not an EPA-recognized pollutant, and is not a hazardous compound. If designated as a HAP, the FCAA would require the development of maximum achievable control technology (MACT) requirements for any source that emits at least ten tons of CO₂ per year. Besides the previously mentioned newly regulated sources, this stringent limit would likely include large single-family homes that use natural gas for space and water heating and cooking.

On a stringent FCAA-mandated timeline, the EPA would be required to develop MACTs for all sources greater than ten tons per year. If the EPA fails to develop these MACTs on time, the State would be required through the permitting process to develop case-by-case MACT requirements for any new sources. Again, these new sources would likely include office buildings, schools, hospitals, farms, and residences, entities not accustomed to obtaining air quality permits prior to construction.

Existing GHG sources would have to comply with the MACT requirements within an unreasonable amount of time specified in the FCAA. Sources may be required to install GHG controls (which have not been developed) or install new energy-efficient equipment. Another possible recourse is to switch from natural gas to electricity, causing further strain on the electricity generation system, which in turn could increase energy consumption and GHG emissions.

New Source Performance Standards (NSPS)

The NSPS program is used to regulate categories of stationary sources that EPA determines to cause or contribute to air pollution which may be reasonably anticipated to endanger public health or welfare. NSPS regulations would then be developed to cover these categories of sources. If NAAQS or HAP regulations do not exist, as in the case of GHG, then the NSPS regulations would cover existing, modified, and new sources. If GHG were regulated under the NAAQS or HAP program, then NSPS would cover only new or modified sources. The benefit of using the NSPS program is that the FCAA allows EPA to consider factors such as costs and energy requirements when establishing the NSPS. However, the potential universe of regulated entities is still very large and affects entities not previously regulated by the FCAA. The NSPS program requires EPA to determine the best system of emission reduction which the EPA determines has been adequately demonstrated. Regulation under the NSPS program would trigger the requirement for new or modified sources to obtain PSD permits.

Prevention of Significant Deterioration (PSD) and Title V permitting

Using any part of the FCAA to regulate CO₂ and other GHG would trigger the need for many GHG sources to obtain federal prevention of significant deterioration (PSD) pre-construction and Title V permits.

PSD permits would be required of new sources of greater than 100 tons of GHG per year from certain sources named by the FCAA or greater than 250 tons per year of any other GHG source. According to the EPA, the number of federal PSD permits issued nationwide would increase tenfold from 200-300 per year to 2000-3000 per year. In most cases, including Texas, state or local permitting agencies issue these permits.

This requirement would introduce many new source types to the time-consuming federal air quality permitting process, including control technology review and public notice and comment procedures. Existing sources that want to make changes may be required to get a federal permit first and may be required to install costly control technologies (which for the most part have not yet been developed), install costly new equipment, or switch from natural gas or other fossil fuels to electric-powered equipment.

Attempting to apply this permitting process, which was clearly intended for large industrial sources to smaller, often less-sophisticated, entities such as small businesses, office buildings, schools, hospitals, and farms would create many logistical problems. The process would introduce unprecedented delays and economic uncertainty into virtually every aspect of the U.S. economy. Inevitable legal challenges would further paralyze the process.

EPA estimates that states would be required to issue over 500,000 new Title V permits, up from the current universe of about 15,000 – 16,000 permits (pp 44511, ANPR). Besides additional delays and challenges navigating the bureaucratic process, Title V permits would introduce additional emission estimation processes, monitoring, record keeping, reporting requirements, and fees.

Impact on Texas Economy

The ramifications of unintended consequences of the proposal could be widespread across industry sectors in Texas. More than 30,000 businesses in the state are in industries that are identified as greenhouse gas emitting and could be subject to some form of regulation and increased cost of production. As Texas is home to a large energy and manufacturing sector, the potential effects of regulation that could stem from the finding would be especially detrimental to the state's economy.

In 2006, the Texas energy industry employed nearly 375,000 people who earned more than \$35 billion in wages. The oil and gas industry in 2006 contributed 14.9 percent of Texas' gross state product. Coal production in Texas contributed 2,241 mining jobs and \$168 million in wages in 2006. The state is also the second leading agriculture state. This critical industry will see increasing costs through regulation and prices of inputs and

transportation which could be devastating to rural and urban areas of the state. The impact to this industry across the country will result in rising food prices for all citizens.

The costs to the state to implement potential regulations mandated by EPA will put a strain on the state's budget, especially in a scenario with less revenue available because of an economy distressed by rising fuel costs and regulatory burden from possible regulation.

Increased Energy Costs

An endangerment determination will lead to regulating GHG emissions under the FCAA. Regulation of CO₂ under the FCAA will result in energy supply disruptions and higher energy prices. Higher energy prices have a significant impact on the Texas – and U.S. – economy, from various industries to the small business owner to the individual consumer.

Although prices have moderated with the national/global economic slowdown, sharp increases in the price of a barrel of oil and a gallon of gasoline have dominated recent headlines. Crude oil futures topped \$100 per barrel in early 2008 for the first time, eventually exceeding the all-time inflation-adjusted high price of \$103.76 set in April 1980. In June 2005, the national average retail price of gasoline was \$2.16 per gallon. By June 2007, it had risen to \$3.05, dropped to \$2.80 in September 2007 and was up to \$3.24 by March 2008. Since 2000, high energy prices (particularly natural gas) have cost the economy 2.8 million U.S. jobs. Since 2004, high energy prices have slowed U.S. economic growth by 0.5 to 1.0 percent.¹⁹ According to Milton Copulos, former president of the National Defense Council Foundation and Senior Fellow at the Institute for the Analysis of Global Security, “[T]he supply disruptions of the 1970s cost the U.S. economy between \$2.3 trillion and \$2.5 trillion. Today, such an event could carry a price tag as high as \$8 trillion – a figure equal to 62.5 percent of our annual gross domestic product (GDP), or nearly \$27,000 for every man, woman and child living in America.”²⁰ A reduction of as little as 10 to 15 percent in the energy supply could cripple oil-dependent industrial economies. In the 1970s, an energy supply reduction of just five percent caused energy prices to increase more than 400 percent. Energy supply disruptions due to FCAA regulation of GHG would have similar negative effects on the economy.

Importing More Energy

Sixty percent of the crude oil consumed in the U.S. is imported. Estimates indicate that by 2025, the U.S. will import 77 percent of the oil it needs. Nationally, the transportation sector accounts for nearly two-thirds of all oil consumption. Petroleum accounts for 97 percent of our transportation needs.

¹⁹ American Petroleum Institute, 7 September 2005, available from http://www.bipac.net/page.asp?g=api_alert&content=mms_background; Internet; accessed 9 January 2007.

²⁰ Copulos, Milton, Testimony before the Committee on Foreign Relations, United States Senate, 109th Congress, Second Session, March 30, 2006.

GHG regulation would increase the cost of developing and producing domestic energy supplies, leading to a greater dependence on foreign energy sources. Without similar regulation around the world, there will be no net reduction of GHG emissions. In addition, much of the oil we import is produced with lower environmental standards, posing a threat to ground and surface waters and air quality. In many countries, natural gas that is produced along with the oil but for which there is no market is combusted on site with a flare increasing global emission of GHG and pollutants. Every barrel of imported oil also must be transported in tankers across the sea, posing a risk to the world's shorelines as well as additional emissions from the transport.

Texas Agriculture

Key points

- More than 3,800 farms, 28,000 beef cattle operations, and 640 dairy operations would be affected in Texas.
- All stages of the agriculture production chain would be severely impacted by increased energy costs and/or regulatory burdens if GHG emissions were regulated under the FCAA.
- GHG regulation would affect not only the producers and processors but also the rural communities in which many of these businesses operate.

The Texas agriculture industry is a diverse sector that makes significant economic and conservation contributions to the state and nation. In 2007, cash receipts from the agriculture sector totaled \$19.1 billion²¹ creating an impact of \$100 billion for the Texas economy.²² More than 1.7 million Texans work in farm or farm-related employment, translating to 16.6 percent of Texas jobs.²³ Currently, Texas ranks third in the nation in total agriculture exports with goods valued at more than \$5 billion.²⁴ Texas producers are key to responsibly managing our natural resources since they operate over 250,000 farms and ranches covering more than 129 million acres across the state.

The proposed endangerment finding creates great concern for the agriculture industry and could severely affect the sector's ability to continue providing the world's highest quality and most stable food supply. While complete data is not available at this time to derive the exact costs of regulation, given the size and diversity of the industry, all initial analyses indicate a devastating effect.

Recently, the U.S. Department of Agriculture completed a preliminary analysis of the potential impact of GHG regulation on small and mid-sized farm operations. Applying the study's methodology to the Texas agriculture industry, more than 3,800 farms, 28,000 beef cattle operations, and 640 dairy operations would be affected in Texas.

²¹ USDA: National Agricultural Statistics Service, 2007

²² Texas Department of Agriculture, November 29, 2007

²³ USDA: Economic Research Service, Texas State Profile, 2007

²⁴ USDA: Economic Research Service, Texas State Profile, 2007

All stages of the agriculture production chain, from field preparation to transportation to market, could be severely impacted by increased energy costs and/or regulatory burdens if GHG emissions were deemed a pollutant under the FCAA. In crop production, for example, operation of irrigation pumps, fertilizer application, harvesting, processing and transportation activities may be subject to increased regulation, permits, and fees. The livestock industry may also be impacted. As the nation's top cattle producer, and a leading producer of poultry and pork, the livestock industry depends on heavy-duty trucks and trailers, animal feeding operations, and food processing facilities, which would certainly all be subject to and negatively impacted by GHG regulation.

Also, businesses that process agricultural products could be affected. For example, Texas cotton gins estimate the potential cost of permitting under new regulations at more than \$8.5 million for 248 relatively small facilities. Other major producers and processors of agricultural products include biofuel production facilities, elevators and warehouses, and forest product manufacturing operations. GHG regulation would affect not only the manufacturers but also the rural communities in which many of these businesses operate.

Increased regulation will undoubtedly negatively affect farmers, ranchers, and agricultural product producers and processors by increasing business expenses (i.e., additional permitting fees, equipment installation, and changes in operating procedures) and input costs (i.e., increased costs for petroleum-based fertilizers, manufactured equipment, and electric energy). Smaller operations will be disproportionately affected as they will be less able to absorb related costs, with a possible result of further concentration in the industry. Additionally, an increased regulatory burden will raise the price of Texas agricultural products for consumers and make the industry less competitive in international markets.

Many sectors of the agriculture industry are currently subject to regulation under the FCAA and are implementing new technologies to promote human health and enhance our natural resources. The endangerment proposal should be withdrawn until complete research and data are available to support the need for such a finding. At a minimum, EPA must conduct a cost-benefit analysis to determine how the costs of regulation would add to our basic necessities of food and fiber. If this effort continues, the U.S. Department of Agriculture must conduct a comprehensive analysis of the impact to agriculture to ensure all costs to our nation's agriculture producers are taken into account.

Energy Production

Key points

- The endangerment finding will have a significant adverse impact on energy by laying the groundwork for costly regulation that will result in lost production of oil and natural gas, create a disincentive for the use of coal, result in skyrocketing natural gas prices and a loss of jobs.

Oil and Natural Gas

Texas produces more oil and natural gas than any other state in the nation. Over 7000 companies operate 152,657 oil wells and 88,025 natural gas wells in Texas, producing 340 million barrels of oil (20 percent of the nation's oil production) and 7.0 trillion cubic feet (Tcf) of natural gas (38 percent of the nation's domestic gas production) in 2007.

Marginal oil and gas production²⁵ is a significant portion of our domestic energy supply and a significant portion of Texas' production. In 2007, 17.8 percent of the nation's oil production and 8.8 percent of natural gas production came from marginal wells. In Texas, more than one-third of statewide production comes from marginal wells.²⁶ While the per-well volumes are small, the sheer number of marginal wells – 719,000 wells nationwide in 2007 – means that any regulation that decreases their productive life has a significant impact. Any measure that decreases production by one barrel of oil per well per month would result in a loss of more than five million barrels of oil each year.

Approximately 19.1 jobs are created for every million dollars of oil and gas production. In 2006, more than 312,000 Texans, or 3.1 percent of the state's work force, were directly employed in the oil and natural gas industry.²⁷ The Barnett Shale Trend, which has an estimated potential of 26 Tcf, alone resulted in creation of more than 100,000 jobs and over \$10 billion annual output.²⁸

Oil and natural gas production in Texas, although not as great as in the past, remains an important source of economic benefit, in terms of value, jobs created, and taxes. Historically, the oil and natural gas industry have accounted for approximately 10 percent to 25 percent of the state's Gross State Product (GSP). In 2007, with a taxable price of \$72.00 per barrel, oil accounted for 15.7 percent of the GSP. According to the Texas Comptroller, the total economic value of oil and gas is 2.91 times the value of production. Assuming oil and natural gas prices of \$66.05 per barrel and \$6.6 per thousand cubic feet, and year 2006 annual production of 397 million barrels and 6.28 Tcf, wellhead value exceeded \$67.5 billion. Annual natural gas value is currently 3.1 times that of the oil wellhead value to Texas. In terms of economic value trickled down through the Texas economy and jobs created, this figure equates to nearly \$196 billion and over 1.3 million jobs. Severance, ad valorem, and indirect taxes provide additional economic benefits of more than \$6 billion to Texas. The leasing of mineral rights for State- and University-owned lands statewide, moreover, provides royalty and leasing revenue that replenishes the Permanent University and School Funds, important sources of revenue for public education in Texas.

²⁵ Marginal wells are wells that produce relatively small quantities of oil and natural gas daily (10 barrels of oil per day or less or 60 thousand cubic feet per day or less.

²⁶ IOGCC's publication entitled "Marginal Oil and Gas: Fuel for Economic Growth."

²⁷ Texas Comptroller of Public Accounts, "Oil&GasEmplWages&GSPJAN2008," Austin, Texas, April 3, 2008. (Internal data with supplementary data from U.S. Bureau of Economic Analysis.

²⁸ The Perryman Group, *Drilling for Dollars: An Assessment of the Ongoing and Expanding Economic Impact of Activity in the Barnett Shale on Fort Worth and the Surrounding Area*, March, 2008.

The federal and Texas state governments impose several major taxes on oil and gas production and consumption, in addition to receiving royalties, rentals and bonuses from the leasing of federally- or state-owned mineral ownership. Texas imposes severance taxes on the value of oil and gas produced in the state, which has been a major and relatively stable source of revenue until the last two decades. State government received increased tax revenues from the petroleum industry during the boom. In 1983, 28 percent of all tax revenue came from oil and gas operations. With the inclusion of federal payments, income from oil and gas taxes, mineral lease and bonus, and oil and gas royalties still comprised 17.16 percent of the revenues of state government. Severance, ad valorem, and indirect taxes provide additional economic benefits of more than \$6 billion to Texas. In Texas also, annual total marginal oil production tax revenue in 2006 was \$444,124,979 and annual total marginal gas production tax revenue was \$160,024,732.

A modest increase in exploratory drilling in Texas of 20 percent for a single year could generate new revenues to the state of \$60 million and these estimates are based on a very conservative assumed oil price of \$32.50 per barrel.²⁹ The estimated net tax revenue effect at various percent increases in exploratory drilling is:

Percent Increase in Exploratory Drilling	10 percent	20 percent	30 percent
Net Annual Tax Revenue to State (millions)	\$9.0	\$37.5	\$66.1

The leasing of mineral rights for State- and University-owned lands statewide, moreover, provides royalty and leasing revenue that replenishes the Permanent University and School Funds, important sources of revenue for public education in Texas.

Currently, Texas also leads the nation in the consumption of petroleum products for many reasons, including the state's reliance on electricity generated by natural gas for air conditioning, and for its energy-intensive refineries and petrochemical plants. Energy demand in Texas is forecast to grow 31 percent by 2025, from 11.6 to 15.2 quadrillion Btus per year, with the largest increases being in motor gasoline and transportation distillates.

Coal

The U.S has more than a 250-year supply of coal, which currently costs less than natural gas. According to the National Center for Policy Analysis, "The use of coal is an enormous economic benefit for the U.S. as it provides over \$1 trillion in GDP, \$360 billion in additional household income, and over 7 million jobs for Americans. The proposed endangerment finding will substantially reduce the production of coal based energy in the U.S. and thus the vitality of the U.S. economy. A 66% reduction in coal-

²⁹ The Texas Energy Plan 2005, Texas Energy Planning Council, December 2004.

fired power generation would reduce GDP by \$371 billion, household income by \$142 billion and employment by 2.7 million.”³⁰

Texas is the fifth largest producer of coal in the nation. Coal mining and coal-fueled electric generation account for over 33,000 direct jobs, almost \$10.5 billion annually in total expenditures, and more than \$300 million in annual state and local revenue. In many counties, taxes from mining and power generation contribute over half of the funds for county services as well as school district operations. The majority of Texas’ coal mines are located in East Texas, where coal mining supports about 7210 jobs, \$154 million in annual retail sales and \$1.4 billion in total expenditures. Workers at the mines earn an average annual salary approximately 114 percent of the statewide average for all occupations.³¹

Texas has been the largest consumer of coal in the U.S. since 1981. In 2002, Texas accounted for about 9 percent or 99.32 million tons of total domestic consumption.³² Almost all (99.9 percent) of the 48.18 million tons of lignite mined in Texas is used to generate electricity for the Texas market. The balance of Texas coal consumption, which is about 55 percent or 51.14 million tons, is imported from Wyoming, Colorado and Utah.

The endangerment proposal if adopted by EPA will act as a barrier to domestic energy production. The proposal will lead to costly regulation which would reduce the ability of Texas to provide energy to the nation. Texas has created over half of all new private sector jobs over the last year. Stifling the Texas energy industry would adversely impact Texas’ ability to create new jobs; thereby, affecting the economy at the local, state, and national level.

Texas Electricity Generation

Key Points

- The endangerment proposal will have a significant impact on the electric power industry in Texas and, ultimately, on residential, commercial, and industrial consumers.
- EPA’s proposed finding will lead to costly regulation of GHG and will create a disincentive to the use of coal and create a greater demand for natural gas, resulting in a marked increase in the price of both natural gas and electricity.
- The early retirement of coal-fired power plants and other older power plants could result in electricity reliability problems.

³⁰ Burnett, H. Sterling, Ph.D., Comments on the Advanced Notice of Proposed Rulemaking by the Environmental Protection Agency, National Center for Policy Analysis, Dallas, Texas, September 16, 2008.

³¹ Governor’s Clean Coal Technology Council of Texas, Clean Coal: The Key to Affordable Electricity in Texas, March 2005.

³² Sources: NMA, DOE EIA

- Increased energy cost would reduce real economic output, reduce purchasing power, and lower aggregate demand for goods and services.
- The increase in energy prices would reduce gross state product by between \$12 and \$16.6B per year by 2020 and \$44.2 and \$52.2B by 2030.

Coal is used to generate about half of the U.S. electrical supply. Texas and much of the U.S. is gradually using newer technology to decrease emissions from coal, however, studies by the U.S. Department of Energy indicate that carbon capture and sequestration (CCS) with today's technology is expensive and would result in electricity cost increases on the order of 30 to 90 percent above the cost of electricity produced from new coal plants built without CCS.³³ Texas has plans to encourage the development of coal gasification technology associated with CCS to make coal gasification competitive with natural gas-fired electricity. Regulating CO₂ through the FCAA will create a disincentive to the use of coal and create a greater demand for natural gas, resulting in a marked increase in the price of both natural gas and electricity.

According to the National Center for Policy Analysis, "The use of the CAA to regulate GHG emissions from stationary sources would cause a dramatic shift away from coal, which is currently used to generate about half of the domestic electricity supply, and towards natural gas. Without rapid deployment of carbon capture and storage technologies and a significant expansion of domestic nuclear power production, the increased demand for natural gas will cause its price, and consequently the price of electricity, to skyrocket. Based on analysis of recent climate change legislation, natural gas prices could increase as much as 108% to 146% and electricity prices by 101% to 129% by 2030."³⁴ Another estimate is that a 66 percent reduction in coal-fired power generation would reduce GDP by \$371 billion, household income by \$142 billion and employment by 2.7 million.³⁵

Besides the negative economic impact of regulations that discourage the use of coal in favor of less carbon-intensive fuels, this trend would also be detrimental to efforts to decrease our dependency on foreign energy supplies. A shift from coal to natural gas would require either an increase in domestic natural gas production or a greater reliance on imported natural gas. While the U.S. has extensive natural gas reserves, the majority of global natural gas reserves are in Russia and the Middle East. Coal is a key component to maintaining U.S. fuel diversity, protecting consumers and industry from energy supply shortages and price fluctuations.

Data from the EIA show that the electric power industry in Texas accounts for about 37 percent of the total Texas CO₂ emissions.³⁶ As shown in the chart, Texas relies heavily

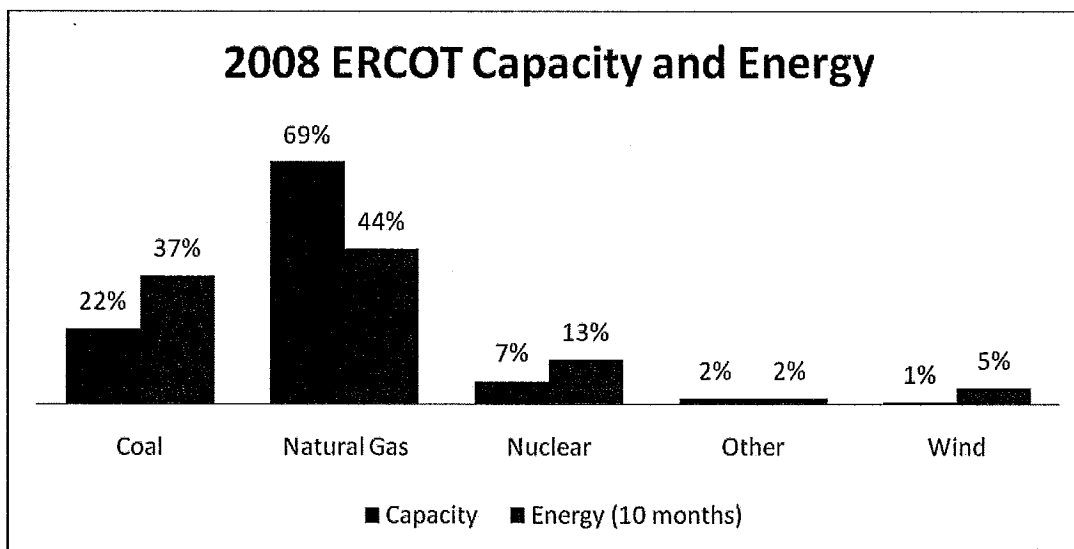
³³ DOE/NETL Report: "Cost and Performance Baseline for Fossil Energy Plants," May 2007.

³⁴ Burnett, H. Sterling, Ph.D., Comments on the Advanced Notice of Proposed Rulemaking by the Environmental Protection Agency, National Center for Policy Analysis, Dallas, Texas, September 16, 2008.

³⁵ DOE/NETL Report: "Cost and Performance Baseline for Fossil Energy Plants," May 2007.

³⁶ Data for 2005 can be found under "Emissions Detail by State" at: <http://www.eia.doe.gov/environment.html>.

on both coal and natural gas.³⁷ In the Electric Reliability Council of Texas (ERCOT) region, coal represents 22 percent of installed generating capacity but because it is used in “base load” plants that operate on a continuous basis, it accounts for 37 percent of the energy consumed. Natural gas, which can be used in base load, intermediate, or peaking generating units, accounts for 69 percent of the capacity and 44 percent of the electric energy consumed.³⁸



Because Texas relies on coal and natural gas for 91 percent of its electric capacity and 81 percent of its electric energy, CO₂ regulation would have a substantial material impact on the electric power industry in Texas and, ultimately, on residential, commercial, and industrial consumers and the state economy. Though no specific emission reduction targets were identified in the ANPR, the following analysis illustrates the implications if strategies similar to S. 2191 were implemented.

Congress is currently considering climate change legislation, the Waxman-Markey Bill, which would provide a legislative response to climate change outside the framework of the existing Clean Air Act. As a result, the EPA Proposal represents costly, ill-suited potential regulation that stands to be preempted by this or other legislation in Congress. The endangerment proposal, with its significant consequences if finalized, is inappropriate in light of Congressional action.

Several bills have been proposed at the national level to regulate GHG. The bill that was debated in the Senate during the 110th Congressional session was the Lieberman-Warner Climate Security Act of 2007 (S. 2191/3036). This bill would have covered 87 percent of GHG emissions in 2006 as reported by the EIA, and required reductions to the 2005

³⁷ Electric utilities in the non-ERCOT areas of Texas also rely heavily on coal and natural gas, although not all of their generating plants are located within the state.

³⁸ The capacity percentages assume that wind is rated at its effective load carrying capability, which is 8.7 percent of nameplate capacity. Wind capacity is discounted because it is only available to the extent that the wind is blowing when the electricity consumption on the system is at its peak.

GHG level of 15 percent by 2020, 30 percent by 2030, and 70 percent by 2050. To achieve these reductions, the bill would have established a market-driven cap and trade system for emission allowances. Entities covered by the program, which included electric generators, would have submitted to EPA at the end of each year a number of emission allowances accounting for all of the metric tons of CO₂ equivalents that the facility emitted in that year. The number of available allowances would have declined from 5.2 billion in 2012 to 1.56 billion in 2050. Allowances would be allocated and auctioned, but the share of allowances to be auctioned would increase each year. Allowances would be tradable and bankable.

Various parties, including EIA, EPA, and the American Council for Capital Formation along with the National Association of Manufacturers, have analyzed the potential energy market and economic impact of S. 2191. EIA developed a base case of energy regulation and applied its projections for energy prices, demand, and other factors addressed in its Annual Energy Outlook 2008 (AEO2008), a “core” GHG regulation case based on S. 2191 and key assumptions about the timely development and deployment of low-emissions technologies. It developed several other cases with differing assumptions. EIA found that S. 2191 would significantly reduce projected GHG emissions. Its key findings with regard to the electric power industry can be summarized as follows:

- The electric power sector accounts for the vast majority of the emissions reductions. It accounts for between 82 percent and 87 percent of energy-related CO₂ emissions reductions in 2020 and between 82 percent and 92 percent of such reductions in 2030. Emission reductions in the residential, commercial, industrial, and transportation sectors would be small relative to those in the electric power sector.
- If new nuclear, renewable, and fossil plants with carbon capture and sequestration (CCS) are not developed and deployed in a timely manner, natural gas use will be increased to offset reductions in coal generation, resulting in markedly higher delivered prices of natural gas.
- Total coal consumption would be substantially reduced. The addition of up to 64 gigawatts of new coal capacity with CCS by 2030 is not sufficient to offset the reduction that occurs because of the retirement and reduced utilization of existing coal plants. To offset the reduction in coal use, the power industry must increase its use of nuclear power, renewable fuels, and natural gas.
- S.2191 increases energy prices and energy bills for consumers. Relative to the base case, the price of using coal for power generation, including the cost of holding allowances, is between 161 percent and 413 percent higher in 2020 and between 305 percent and 804 percent higher in 2030 in the S. 2191 cases. The price of electricity is between 5 percent and 27 percent higher in 2020 and between 11 percent and 64 percent higher in 2030. The average annual household energy bills, excluding transportation costs, are between \$30 and \$325 higher in 2020 and \$76 to \$723 higher in 2030.
- S. 2191 increases the cost of using energy, which reduces real economic output, reduces purchasing power, and lowers aggregate demand for goods and services.

Total discounted GDP losses over the 2009 to 2030 time period range from \$444 billion (-0.2 percent) to \$1,308 billion (-0.6 percent) across the S. 2191 cases. Similarly, the cumulative discounted losses for personal consumption range from -0.2 percent to -0.6 percent.

Like the EIA study, the EPA study also found that the greatest emission reduction under S. 2191 occurs in CO₂ emissions from the electricity sector. On a regional basis, EPA found that the largest GDP and consumption impacts are in the Plains region, which includes Texas. The differential impact was driven by regional differences in energy and manufacturing industry composition, energy use patterns including household heating and cooling needs, average distance traveled, and existing fossil fuel capacity in the electricity sector. Thus, with its high level of energy production and energy-intensive manufacturing industries, long driving distances, and substantial reliance on air conditioning, Texas would experience significant impacts on GDP and consumption.

The American Council for Capital Formation (ACCF) and the National Association of Manufacturers (NAM) also analyzed S. 2191 using the National Energy Modeling System (NEMS) model, which is the model used by the EIA for its energy forecasting and policy analysis. The ACCF and NAM applied assumptions about the cost and availability of new energy technologies, oil prices, and other key factors. The study estimated that the emissions allowance price needed to reduce energy use to meet the S. 2191 targets is \$55 to \$64/metric ton of CO₂ in 2020, rising to between \$227 to \$271/metric ton of CO₂ in 2030. It also found:

- Nationally, natural gas prices are expected to increase by 26 percent to 36 percent in 2020 and 108 percent to 146 percent in 2030. Electric prices are expected to increase by 28 percent to 33 percent in 2020 and 101 percent to 129 percent in 2030.
- In Texas, electricity prices are estimated to increase by 32 percent to 35 percent by 2020, and 101 percent to 145 percent by 2030, and natural gas prices are estimated to increase by 25 percent to 36 percent by 2020, and 101 percent to 145 percent by 2030. The increase in prices would reduce gross state product by between \$12 and \$16.6B per year by 2020 and \$44.2 and \$52.2B by 2030.

Electric Reliability

EIA and other studies indicate that GHG legislation may result in early retirement of older power plants, especially coal-fired plants. As noted earlier, 22 percent of the capacity and 37 percent of the energy in ERCOT is provided by coal-fired generation. In addition, there is about 3,300 MW of coal capacity currently under construction in ERCOT. None of the old plants or the new plants includes CCS capability, and the EIA study assumed that it would not be economic to retrofit CCS on older coal units.³⁹ Senate Bill 2129 includes a number of phase-in provisions, such as escalating reductions of GHG emissions and declining levels of allowances that are allocated to emitters. These provisions recognize that existing technologies for producing electricity will have to remain in service for some time and that it will take time to develop low-emission technologies and CCS. Coal generation would have to be reduced over time, but it is possible that early retirement of these coal units would be required, depending on the schedule for reduction of GHG emissions that is adopted in the legislation.

Early retirements of coal units could result in resource adequacy concerns. If the existing coal capacity becomes uneconomic, based on the cost of GHG taxes or allowances, it could be retired before the end of its productive life, and it might be difficult if not impossible for the market to respond in a timely manner to provide replacement resources. Nuclear plants take a long time to build and may continue to be a controversial source of energy. Natural gas plants can be built more quickly, but expanding this capacity, as EIA noted, will likely drive up the price of natural gas and imported LNG.

Early retirement of older generating facilities could result in reliability problems with regard to the transmission system. Whatever facilities are built to replace early retirements may be sited in different locations than the retiring facilities, probably requiring new transmission to be built to those locations. Transmission projects can easily take from three to five years from the identification of the need to finished construction. Therefore, even if a new gas plant could be built to replace a retiring coal plant, adequate transmission may not be available when the plant comes on line.

The North American Electric Reliability Council (NERC) has just issued a special report of electric industry concerns on the reliability impacts of climate change initiatives.⁴⁰ The report emphasizes that the combined effect of federal climate change legislation, state renewable portfolio standards (RPS), and other state and regional climate initiatives will be among the most important emerging issues facing the reliability of the bulk power system in the coming years. The report discusses the impact of broad-scale fuel switching from coal to natural gas, the need for innovative resource planning and

³⁹ NRG Energy has announced plans to build a CO₂ capture and sequestration demonstration project at its W.A. Parish plant near Houston.

⁴⁰ Special Report: Electric Industry Concerns on the Reliability Impacts of Climate Change Initiatives, North American Electric Reliability Corporation, November 2008.

implementation for transmission infrastructure, and the importance of effectively integrating demand-side resources into the resource mix.

Competitive Market

As noted above, the EIA study included a core case and several alternative cases. EIA observed that in cases where adequate alternatives to coal generation do not exist, regions of the country that have competitive markets may see greater price increases:

...all regions are expected to see price increases in most of the S. 2191 cases. Competitively priced regions such as the Electric Reliability Council of Texas, the Mid-Atlantic Area Council, New York, and New England see especially large increases in the S. 2191 cases where alternatives are limited, because the high costs of allowances in those cases are passed directly through to consumers as higher marginal generating costs. In contrast, cost-of-service based regions with little reliance on coal, such as California, see much smaller price increases. In the S. 2191 Core Case, where all generating alternatives are available at the costs consistent with those of a few years ago, a couple of regions could have fairly small price increases or even small price declines in the later years relative to the Reference Case, because the stimulus to build nuclear and renewables drives their costs down over time.

Because ERCOT is a competitive market with significant coal generation, this scenario could result in substantial increases in electricity prices that would not be felt in some other regions of the country. While a number of uncertainties exist about what would be included in GHG legislation, but there are also uncertainties about electric generation alternatives in a future with GHG regulation. Critical unknowns include the rate at which alternative low-GHG technologies and CCS can be developed. These unknowns are treated through alternative assumptions about the viability of future generating alternatives and have a major impact on the estimated impacts of GHG legislation.

Texas Refining and Chemical Industry

The Texas manufacturing sector is diverse. The petroleum refining and chemical industries in Texas are the largest of any state in the U.S. and are essential to the economy of both Texas and the nation. One only has to look at the nationwide gasoline shortages and price increases that Hurricane Ike caused in shutting down Texas refineries to see how important Texas industry is to the nation.

Petroleum is the single largest source of energy used in the U.S. The nation uses two times more petroleum than either coal or natural gas and four times more petroleum than nuclear power or renewable energy sources. According to the EIA, the U.S. petroleum industry is a strong contributor to the economic health of the U.S., providing \$219 billion in annual shipments and employing over 101,000 people in 2001.⁴¹ Petroleum refining is the most energy-intensive manufacturing industry in the U.S. and accounts for about

⁴¹ <http://www.eia.doe.gov/emeu/mecs/iab98/petroleum/index.html>

7.5 percent of total U.S. energy consumption. While energy costs vary widely among petroleum products, they can be substantial in some cases, accounting for up to 85 percent of production costs. In 1998, the industry spent about \$4.5 billion on purchased energy, \$2.2 billion of which was spent on natural gas. These figures do not include the value of energy produced onsite, which could be more than \$9 billion. In 2008, Texas petroleum refineries accounted for over 27 percent of the nation's petroleum refining capacity. The value of Texas petroleum product shipments was almost twice the amount of the next highest state and was over 62 billion dollars. The Texas petroleum refining industry employed 20,000 people in 2000.

The chemical industry is also a major contributor to the U.S. economy, providing 2 percent of the total U.S. GDP and nearly 12 percent of the manufacturing GDP. On a value-added basis, the chemical industry is the largest U.S. manufacturing sector. According to the EIA,⁴² the industry employed nearly 900,000 people in 2001, including nearly 85,000 scientists, engineers, and technicians engaged in R&D. The chemical industry uses energy both to supply heat and power for plant operations and as a raw material for the production of petrochemicals, plastics, and synthetic fibers. According to the most recent Manufacturing Energy Consumption Survey, the U.S. chemical industry consumed about 6.1 quads (quadrillion Btu, or 10^{15} Btu) of energy in 1998. This represents about 6 percent of domestic energy use and about 25 percent of all U.S. manufacturing energy use. Energy purchases cost the industry about \$22 billion in 1998, about 5 percent of the value of shipments that year. The chemical industry uses a variety of fuel sources, 45 percent of which are used as feedstock. The industry is the largest single consumer of natural gas (over 26 percent of the domestic manufacturing total) and uses virtually all (95.4 percent) the liquefied petroleum gas (LPG) consumed in U.S. manufacturing. Nearly all LPG and about one fourth of natural gas are used as feedstock. Other energy sources include byproducts produced onsite, hot water, and purchased steam.

Texas is also home to the largest concentration of the chemical manufacturing industry in the nation. The Texas chemical industry accounts for over 70 billion dollars in the value of shipments, over twice the amount of the next highest state and employs over 80,000 people. The increased cost of energy that would result from regulating GHG under the FCAA will have significant negative economic impacts on both of these industries and to consumers who rely on their products on a daily basis. Due to the concentration of these industries in Texas, there will be a disproportionate impact to Texas.

⁴² <http://www.eia.doe.gov/emeu/mecs/iab98/chemical/index.html>

Ongoing GHG Emission Reductions

Texas has already taken a number of actions that have and will continue to reduce GHG emissions in the future, including the development of renewable energy, energy efficiency programs, and the development and promotion of market-based solutions, such as advanced meters to give consumers more information about their electric consumption.

Renewable Energy and Other Alternatives

Some forms of renewable energy, such as wind and solar, provide a way to generate electricity without emitting GHG and without using limited resources such as natural gas and water. In 1999, the Texas Legislature adopted a Goal for Renewable Energy that has resulted in Texas currently having more than 8,600 megawatts (MW) of installed wind capacity, far more than any other state and most other countries. In spite of this leadership position, the electricity production from wind and other renewable resources still represents only about five percent of the electric energy generation in Texas.

In 2005, the Texas Legislature directed the Public Utility Commission (PUC) to designate Competitive Renewable Energy Zones (CREZ) in the state and develop a plan to construct transmission capacity necessary to deliver renewable energy in a cost-effective manner to end-use customers. The Commission has designated five areas as CREZs and identified the major transmission improvements that would be necessary to deliver 18,456 MW of renewable resources from the CREZs, roughly three times the current renewable capacity. The Texas renewable energy sector is expected to continue to grow, with the expectation that it will reach the 18 gigawatt level in the 2013 timeframe.

Energy Efficiency

Texas mitigates CO₂ emissions through deployment of energy-efficient, clean energy technologies and practices, programs and policies. Approximately 88 percent of the electricity in Texas is generated by fossil fuel combustion, so less electricity demand usually results in less power plant CO₂ emissions. Energy efficiency measures can also reduce the amount of natural gas used directly in homes and businesses.

Texas has a successful utility energy efficiency program that is reducing energy consumption, peak demand, and GHG emissions. Legislation enacted during the 80th Texas Legislative Session raised the electric utilities' energy efficiency goals from the current goal of ten percent of growth in demand to fifteen percent of growth in demand in 2008, and to twenty percent of growth in demand in 2009. The Texas Legislature has also adopted goals for units of local government to improve the energy efficiency of their operations, and many cities, counties, and school districts are making improvements in this area. Finally, the PUC was directed to provide reports to the next Legislature on the feasibility of higher energy-efficiency goals (30 percent of growth in demand by 2010

and 50 percent of growth in demand by 2015) and producing more energy through efficient combined heat and power technology.

Advanced Metering

As the population in Texas continues to grow, electric demand in the ERCOT region will increase. Diverse electric generation is necessary to supply that growth, but advanced metering will give Texas residential customers additional tools to make informed decisions about their electric use and the ability to better control consumption.

Advanced meters for electricity consumption have been developed to record consumption at short intervals, store the consumption information, transmit the information to the utility's billing system automatically, and provide consumption information to the customer in near real time. Advanced metering being deployed in Texas will give residential customers additional tools to make informed decisions about their electric use and the ability to better control consumption, which should permit them to use electricity more efficiently and use less energy to meet their lighting, comfort, and other needs. With better information, customers can choose to reduce their consumption during daily and annual peak periods, which will lower their cost and reduce reliance on peaking generation facilities that are typically the least efficient and have higher GHG impact per kilowatt-hour.

Other Energy Efficiency Efforts

The Texas State Energy Conservation Office (SECO) administers and is involved in a number of programs that encourage energy efficiency.

- Texas statute⁴³ requires affected political subdivisions to implement all cost-effective energy-efficiency measures, establish a goal to reduce electricity consumption by five percent each year for six years and report efforts and progress annually to the State Energy Conservation Office (SECO). SECO provides personalized on-site technical assistance to local governments and municipalities to assist in energy efficiency efforts.
- The 70th Texas Legislature authorized adoption of energy conservation design standards. The Energy Conservation Design Standard for New State Buildings, based on the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90.1 and commonly referred to as the "Texas Standard," was developed to respond to this directive. Originally adopted in June 1989, the standard was revised in May 1990 and February 1993.
- The LoanSTAR Energy Efficiency Financing Program⁴⁴, administered by SECO, is a revolving loan program that has saved taxpayers more than \$200 million

⁴³ Texas Health and Safety Code, 388.005. Energy Efficiency Programs in Certain Governmental Entities

⁴⁴ Authorization: government code, section 2305.032. LoanStar Revolving Loan program

through energy-efficiency projects for state agencies, institutions of higher education, school districts, county hospitals, and local governments. Loans are repaid through cost savings generated by the projects. SECO estimates that LoanSTAR-funded projects have prevented the release of 2.1 million tons of carbon dioxide (CO₂).

- Texas Executive Order RP49, issued in 2005, created the *State Agency Energy Savings Program*.⁴⁵ Each state agency was required to:
 - Develop a plan for conserving energy;
 - Set a percentage goal for reducing its usage of electricity, gasoline, and natural gas;
 - Submit the energy conservation plan to the Office of the Governor and the Legislative Budget Board no later than December 1, 2005;
 - Report back to the Office of the Governor and the Legislative Budget Board with goals achieved, and ideas for additional savings on a quarterly basis; and
 - Post its report in a conspicuous place on its internet site for public inspection.

- Texas Industries of the Future⁴⁶ is a partnership strategy of the U. S. Department of Energy (DOE) Industrial Technologies Program (ITP) and SECO. Texas Industries of the Future conducts conferences, workshops and forums, providing training and outreach to engineers and consultants in process industries on a variety of industrial energy-efficiency topics.

- Under the Save Energy Now program,⁴⁷ US DOE energy experts or the university-based Industrial Assessment Centers assessed plants and identified near-term opportunities for saving energy. In 2008, 23 Texas sites were recognized by DOE and SECO as Champions and Savers for their achievements in energy efficiency in the Save Energy Now program. Together these plants have saved a total of 1.8 trillion Btus per year.

- During Memorial Day weekend, Texas shoppers do not have to pay state and local sales taxes when they purchase certain energy efficient appliances and other household equipment bearing an Energy Star label.⁴⁸

- In 2008, the SECO launched the Texas Agricultural Technical Assistance Program,⁴⁹ which provides Texas agricultural producers with free technical assistance to improve energy efficiency in farm buildings, facilities, and equipment.

⁴⁵ Authorization: Health And Safety Code, 388.005. Energy Efficiency Programs In Certain Governmental Entities

⁴⁶ Authorization: Government Code, Section 2305.033. State Energy Program

⁴⁷ Authorization: Government Code, Section 2305.033. State Energy Program

⁴⁸ Authorization: Tax Code, Section 151.333. Energy-Efficient Products

⁴⁹ Authorization: Government Code, Section 2305.033. State Energy Program

Nuclear Energy Development

While a greatly expanded nuclear generating fleet could help, there seems to be no concerted federal effort to make this happen. In the 80th legislative session, Texas took several steps to help facilitate the development of these plants including efforts toward insuring adequate decommissioning funds. Three separate generating entities (NRG Energy, Exelon, and Luminant) have filed applications with the Nuclear Regulatory Commission (NRC) to develop new nuclear generating plants in Texas. If these units come to fruition, Texas will add approximately, 10,000 megawatts of zero carbon generation for a total of almost 15,000 MW.