

## CARBON REDUCTION REQUIRES NATURAL GAS

**Global Climate Initiatives Must Use Realistic Energy Assumptions.** *The Energy Information Administration (EIA) analysis of the McCain-Lieberman (S. 280) climate change bill suggested that carbon emissions targets can be met with a reduction in natural gas consumption. But the EIA analysis incorrectly assumes 145 new nuclear power plants will be built by 2030. Another study by the Natural Gas Council (NGC) assumes that only 25 nuclear power plants will be built in that same time period. This figure is likely more accurate since only one nuclear power plant has been ordered in the last 30 years. The NGC study finds that climate change legislation will increase natural gas demand by 14 percent (3.6 trillion cubic feet (TCF)) per year from 2020-2030 on average, spiking to 23 percent (5.9 TCF) in 2030 relative to EIA's Annual Energy Outlook 2007 (AEO 2007) baseline levels. **Unless future demand is met by an increase in supply, natural gas prices will increase significantly (see figure this page).** Any global climate legislation must recognize the role natural gas will play. The U.S. needs access to currently restricted lands with proven natural gas reserves to pursue greenhouse gas emissions reductions, while maintaining economic sustainability.*

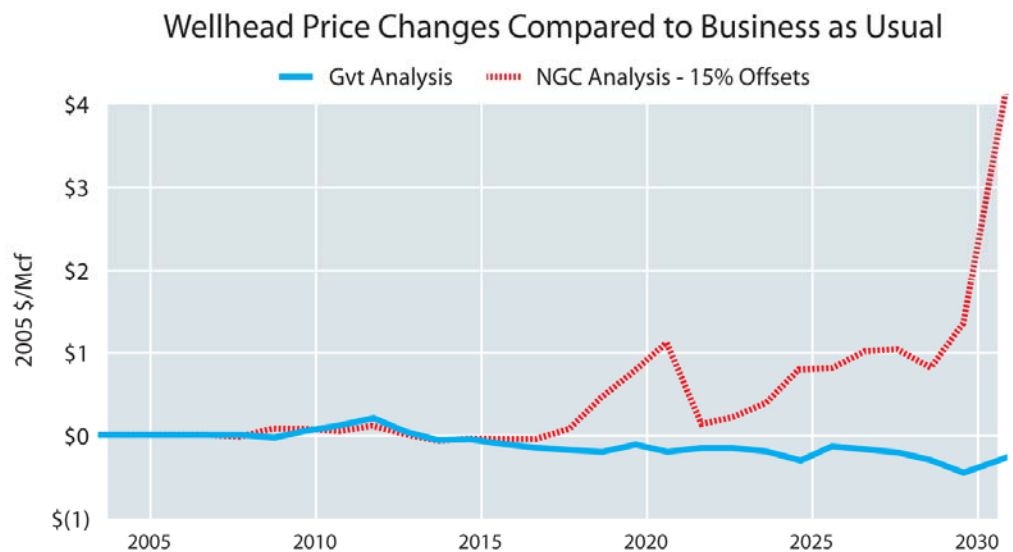
With insights stemming from months of work on the McCain-Lieberman bill, "Climate Stewardship and Innovation Act of 2007" (S. 280), Senators Joe Lieberman (I-CT) and John Warner (R-VA) introduced the Lieberman-Warner "Climate Security Act of 2007" (S. 2191), the first comprehensive bipartisan climate legislation to be reported by a congressional committee. The Lieberman-Warner proposal, which is slightly more ambitious than the earlier McCain-Lieberman bill, is targeted

toward reducing total U.S. greenhouse gas (GHG) emissions by as much as 70 percent of the 2005 level by 2050.

As the foundation for S. 2191, the earlier McCain-Lieberman climate regulation proposal (S. 280) provides for aggressive CO<sub>2</sub> emissions reduction

targets and contains most of the key elements likely to be given strong consideration in the development of any final GHG legislation. With a proposed 60 percent CO<sub>2</sub> reduction from current levels by 2050, S. 280 offers a plausible starting point for analyzing the impact of GHG reduction proposals. Although new legislative proposals will undoubtedly surface, the analysis of S. 280 provides a valuable benchmark for determining the consequences of proposed climate regulation.

The EIA analyzed the impact of S. 280 and reported that a pure economic response to the proposal would result in 145 new nuclear power plants by 2030, a rapid increase in the reliance on renewable fuels and a surprising decline in natural gas use. As a matter of practice in performing its modeling, EIA does not factor in the political and societal realities. When such realities are considered, the same analysis reveals a very different and striking impact on energy markets.



**Political and Societal Realities Matter.** The National Energy Modeling System (NEMS) is the analytical tool used by the government to analyze the economic impact of S. 280 and to provide insights into the precise technical, societal and political decisions necessary for a viable climate regulation policy. In the case of climate change, realistic assumptions are crucial for accurately revealing the impact of a carbon-reduction program on natural gas.

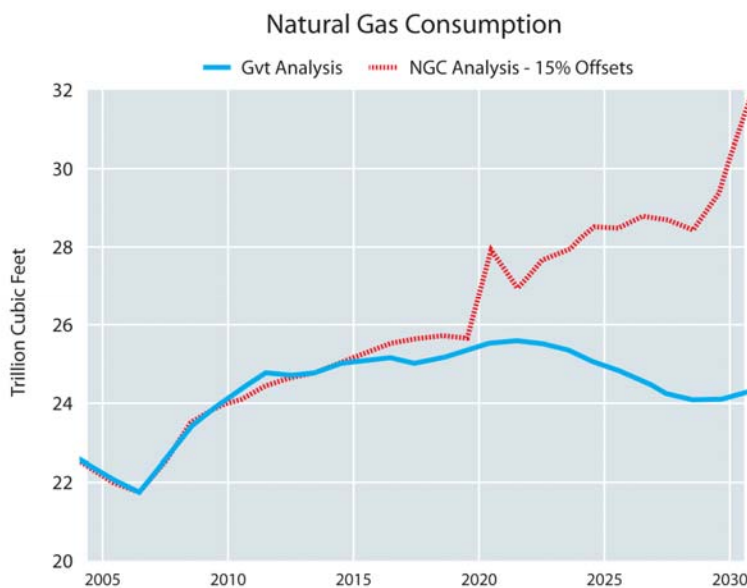
The table below contrasts the results from the government analysis with more realistic assumptions used in the industry analysis performed by the NGC in October 2007. Illustrating

Technology	EIA Assumptions	NGC Assumptions
Nuclear	145 new nuclear power plants by 2030	25 new nuclear power plants by 2030
IGCC w/Sequestration	None	150 GW nationwide maximum
Wind	Generation growth from 12 GW currently to 38 GW by 2030	Maximum of 3 GW/year (2 times historical build rate)
Biomass	Generation growth from 2 GW currently to 112 GW by 2030	Maximum of 3 GW/year
Natural Gas Supply	Lower to balance reduced demand	LNG imports at AEO2007 levels plus 500 bcf; Unconventional production lower; Alaska Gas Pipeline in service in 2020, rather than 2018
Offsets	30% Available	15% Available

the significance of the assumptions, attaining the CO<sub>2</sub> cap without reliance on more natural gas would require significant increases in biomass and wind energy production, as well as the widespread political acceptance of new nuclear energy

sources. Taken together, wind and solar account for less than one half of one percent of America’s annual energy consumption today. Currently, there are no near-term alternatives to oil, natural gas and coal.

The government’s analysis of S. 280 revealed that success in achieving emission reduction goals is heavily dependent on the commercialization of new technologies (e.g. renewable generation), the rate at which the new technologies are deployed and the political acceptance of using a portfolio of fuels, including fossil energy, nuclear and renewables. The government’s analysis did not include politically and technically viable assumptions and, thus, the results dramatically underestimated the reliance of climate regulation on natural gas.



**With practical assumptions (see table this page) in a carbon constrained economy, natural gas consumption would increase approximately 20 percent after 2019, as shown in the figure above.** This increase is driven by one simple fact: natural gas is the best fuel alternative when other technologies are constrained and when the availability of offsets is limited. Natural gas has a substantially lower CO<sub>2</sub> level than any other fossil fuel, and in some cases almost half as much. Until renewable fuels and technologies and nuclear become an energy generation mainstay, natural gas will be an essential and critical part of the U.S. energy and fuel portfolio. Global climate legislation must recognize this reality and allow natural gas to play its critical role.

## Economically Sustainable CO<sub>2</sub> Reductions Hinge on More Natural Gas Supply.

The U.S. is responsible for roughly 22 percent of global CO<sub>2</sub> emissions,\* reflecting approximately the same percentage of the world's GDP generated by the U.S. economy. Despite the fact that it makes up about 20 percent of total U.S. electric generation, natural gas fired electric power generation plants are responsible for only 14 percent of CO<sub>2</sub> emitted by the electric power sector. Non-hydroelectric renewable energy sources comprise 2 percent of the energy consumed to generate electricity in the U.S. **Today's U.S. energy demand - and future demand -- cannot be met by renewables alone.** Natural gas must play a significant role. Reliance on natural gas for electric generation will likely continue into the future, with coal-fired electric generation projected to drop dramatically under modest nuclear growth assumptions.

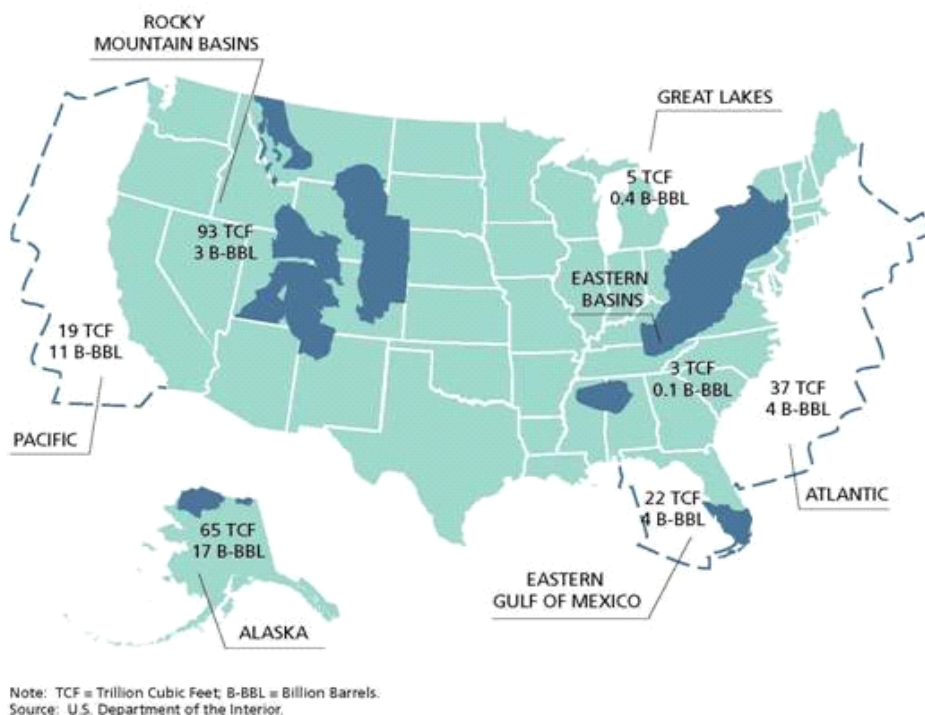
**Without access to new natural gas supplies, higher wellhead natural gas prices stemming from increased demand for natural gas will have an impact on residential natural gas consumers.** The impact will be even greater for the prices for electricity generation and industrial consumers due to the added cost of CO<sub>2</sub> allowances needed for natural gas consumption.

Federal restrictions apply to more than 250 TCF of potential natural gas resources (shown on the map at right). The U.S. needs greater access to lands with proven natural gas reserves to enable the U.S. to achieve an

economically sustainable carbon reduction policy. Liquefied natural gas (LNG) imports and unconventional natural gas resources will not be enough to ameliorate the tight supply caused by government moratoria on access to lands. Given the uncertainty associated with foreign natural gas supplies due to fierce world competition for LNG, and the environmental limits that affect unconventional natural gas production, neither can be expected to increase supply dramatically enough to put downward pressure on natural gas prices.

Achieving national environmental goals in an economically sustainable way requires making informed decisions to open new conventional sources of natural gas located in currently restricted basins. Because it can take years to bring new natural gas supplies to market, the time to make the important decisions increasing access is now.

## U.S. Oil and Natural Gas Resources Affected by Access Restrictions



Source: Hard Truths, Facing the Hard Truths about Energy, National Petroleum Council, July 2007 Report, p. 21.

\* EIA Emissions of Greenhouse Gases Report, Released November 28, 2007, 2004 Data

Published by the Natural Gas Council



February 2008

Additional information regarding the Greenhouse Gas Initiatives Analysis using the National Energy Modeling System (NEMS) can be found in the study performed for the Natural Gas Council by Science Applications International Corporation (SAIC), October 2007.