



## American Gas Foundation Study (April 2008)

### **Direct Use of Natural Gas** *Implications for Power Generation, Energy Efficiency, and Carbon Emissions*

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#### ***Major Findings***

- ❖ Increased direct use of natural gas in residential and commercial (R&C) applications can increase the productivity of available energy supplies, reduce overall energy cost, and reduce related CO<sub>2</sub> emissions in all scenarios considered.
- ❖ Natural gas demand for power generation is expected to increase significantly in a CO<sub>2</sub> constrained world. Nuclear power and renewables could offset part of the increase but natural gas demand is still projected to be higher over the forecast horizon with an accompanying upward pressure on gas prices.
- ❖ The increased direct use of natural gas for R&C applications rather than for power generation is expected to decrease energy consumption in the U.S. Within the scenarios considered, a shift of 7% of the total electric load to natural gas for serving R&C applications (space heating, water heating, cooking, and clothes drying), indicates that the energy savings can range from 1.25-2.00 quadrillion Btu in 2030.
- ❖ Depending on the scenario, the avoided generation capacity is forecast to range from 63 to 80 GW. The avoided investment costs are forecast to range from \$49 billion to \$122 billion.
- ❖ With restrictions on the total level of CO<sub>2</sub> emissions, natural gas generation is displaced when the increased direct use of gas for R&C applications decreases electricity demand. A larger market percentage of the direct use of natural gas for R&C applications drives a net decrease in overall gas consumption as well as energy costs.
- ❖ In the scenario where CO<sub>2</sub> restrictions match the levels proposed by the Lieberman-Warner Senate bill, the value of the reduction in energy costs is significant and ranges from \$18 to almost \$29 billion dollars by the year 2030.
- ❖ Emissions are decreased in all scenarios considered. The highest impacts are in the Reference Case scenario (based on the EIA Annual Energy Outlook 2007) where coal fired generation is displaced. The CO<sub>2</sub> constrained scenarios also show a decrease in CO<sub>2</sub> emissions when there is a greater direct use of gas in R&C applications.
- ❖ Some of the states with larger potential for greater direct use of natural gas for R&C uses are also the states applying CO<sub>2</sub> restrictions in advance of any restrictions by the federal government, notably, these include California, Florida and the Northeast states participating in the Regional Greenhouse Gas Initiative (RGGI). For these states, the increased use of natural gas by R&C customers stands to reduce overall costs of energy supplies and reduce emissions consistent with state goals.