



Renewable Energy Can Help Alleviate Natural Gas Crisis

A National Renewable Electricity Standard Conserves Natural Gas, Reduces Natural Gas Prices, and Can Save Consumers and Businesses Money

America has awoken to a natural gas crisis. Federal Reserve Board Chair Alan Greenspan recently testified to Congress "We are not apt to return to earlier periods of relative abundance and low prices anytime soon."¹ A study by a Federal Reserve Bank of Dallas economist found that high gas prices may cut U.S. economic growth by as much as 2.1%.²

Most responses to date have focused on solutions for increasing natural gas supply, though it is increasingly recognized that conservation and efficiency improvements are the fastest, least expensive near-term options for balancing demand and supply. Almost entirely neglected to date has been any consideration of the role that wind, solar, and other renewable energy resources can play in reducing the demand for and price of natural gas.

Renewable Energy Can Save Natural Gas

In the past several years, the U.S. Energy Information Administration (EIA) and the Union of Concerned Scientists (UCS) have performed several studies on the impacts of increasing our use of renewable energy resources through a national renewable electricity standard (RES).³ These analyses show that higher levels of renewable energy generation reduce the demand for natural gas, alleviating potential shortages (Figure 1). Reaching 10% renewable electricity could save as much as 1.4 trillion cubic feet (TCF) compared to business as usual in 2020. Achieving 20% renewable electricity by 2020 could increase the natural gas savings to as much as 3.8 TCF, equal to 11% of total projected 2020 gas use, or three-quarters of the natural gas consumed by U.S. households today.

Renewable Energy Can Reduce Natural Gas Prices

Because increased renewable energy use reduces the demand for natural gas, and creates new competitors to traditional power plants, EIA and UCS also consistently found that increasing renewable energy would reduce natural gas prices (Figure 2). Reaching 10% renewable electricity could reduce prices by as much as 6% (\$0.26 per million Btu) compared to business as usual in 2020. Achieving 20% renewable electricity could lower natural gas prices by as much as 9% (\$0.42 per million Btu) in 2020.

Figure 1. Renewable Energy Can Save Natural Gas (2020)

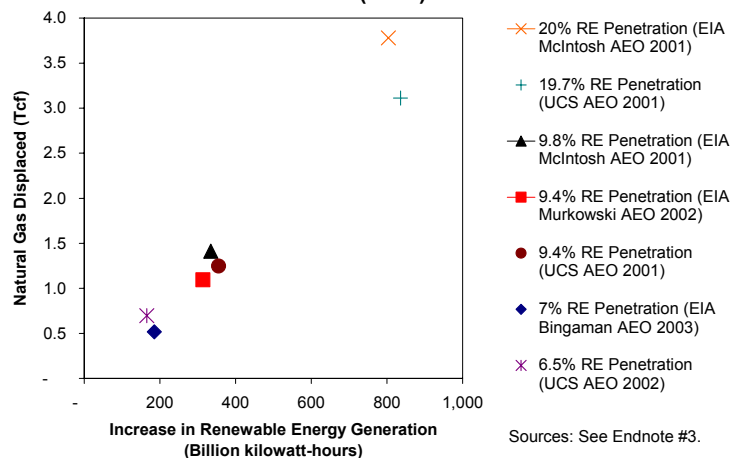
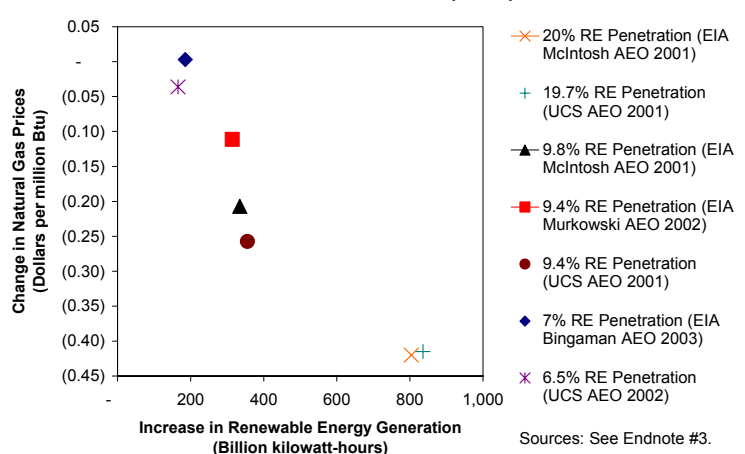


Figure 2. Renewable Energy Can Reduce Natural Gas Prices (2020)



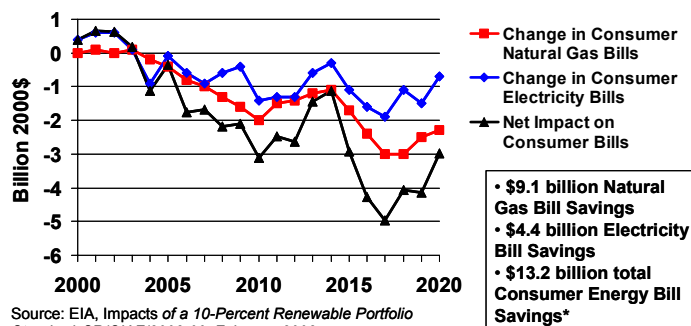
Renewable Energy Can Reduce Both Electricity and Gas Bills

Lower natural gas prices for electricity generators and other consumers offset the slightly higher cost of the renewable electricity technologies. Even using high estimates of renewable energy technology costs, EIA last year found that a 10% RES can reduce both natural gas and electricity bills (Figure 3), saving energy consumers \$13.2 billion between 2002 and 2020 (net present value).⁴ Using EIA's model, but with projections of renewable technology costs more in line with DOE's national energy laboratories, UCS has found that gas costs and total consumer energy bills could be lower with a 20% standard by 2020.

All sectors of the economy would see significant gas savings from increased renewable energy use. EIA found that increasing renewable energy to 10% by 2020 would result in \$4.9 billion cumulative present value savings for industrial gas consumers, \$1.8 billion to commercial customers, and \$2.4 billion to residential customers.

Figure 3. EIA: Renewable Energy Can Lower Natural Gas and Electricity Bills

(9.4% RE Penetration, 10% by 2020 RES no sunset)



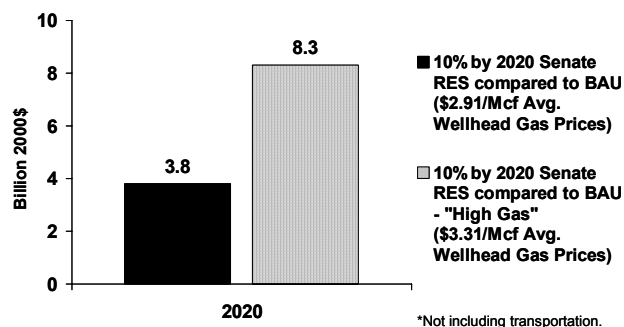
*Cumulative net present value using an 8% real discount rate. Not including transportation.

Renewable Energy Can Hedge Against Higher Natural Gas Prices

The above-cited analyses utilized EIA's long-run gas price forecasts. Over the last several years, EIA has dramatically increased its projection of short-run gas prices but only modestly increased its projection of long-term gas prices. EIA continues to project long-term wellhead prices in the range of \$3-\$4 per mmBTU. Recently, however, a number of analysts have projected long-term gas prices as high as \$4-\$6 per mmBTU.

Last year, UCS used EIA's model to analyze the renewable electricity standard passed by the U.S. Senate under two different gas price forecasts. While nominally a 10% renewable electricity standard, various exemptions reduced actual forecast penetration to only 6.5% by 2020. Using EIA's "high" gas price forecast—averaging \$3.31/Mcf for wellhead gas prices—the savings from the renewable electricity standard more than doubled compared to using EIA's "reference" gas price forecast—averaging \$2.91/Mcf (Figure 4). Renewable energy can provide a valuable hedge against the higher gas prices many analysts are now projecting. UCS expects to analyze additional higher gas price scenarios in the coming months.

Figure 4. Total Annual Consumer Energy Bills Savings*



*Not including transportation.

Source: UCS, *Renewing Where We Live*, September 2002.

Renewable Energy Plus Energy Efficiency Provide the Greatest Benefits

Implementing effective energy efficiency measures can be the fastest and most cost effective approach to balancing gas and supply, with renewable energy providing a critical mid-term to long-term supplement. UCS analysis found that a combined efficiency and renewable energy scenario could reduce gas use by 31% and natural gas prices by 27% compared to business as usual in 2020.⁵

¹ Congressional Greensheets, June 11, 2003.

² Tom Doggett, "High natural gas prices seen as drag on US economy," *Reuters*, June 19, 2003.

³ EIA, *Impacts of a 10-Percent Renewable Portfolio Standard*, SR/OIAF/2002-03, February 2002. EIA, *Analysis of a 10-Percent Renewable Portfolio Standard*, SR/OIAF/2003-01, May 2003. EIA, *Analysis of Strategies for Reducing Multiple Emissions from Electric Power Plants: Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, and Mercury and a Renewable Portfolio Standard*, SR/OIAF/2001-03, June 2001. UCS, *Renewing Where We Live*, September 2002. UCS, *Renewing Where We Live*, February 2002.

⁴ Results of the 10% by 2020 RES (no sunset) obtained through personal communication with Laura Martin at EIA, on March 7, 2002.

⁵ UCS, *Clean Energy Blueprint: A Smarter National Energy Policy for Today and the Future*, October 2001.