A Clean Energy Partnership

Energy Efficiency
Renewables
Natural Gas

The Business Council for
Sustainable Energy

Clean Energy Partners

In recent months, U.S. policy makers have been making strides toward establishing a long-term domestic energy policy that will be characterized by a greater reliance upon a range of clean energy sources and technologies, including renewables, natural gas, energy efficiency, and the development and deployment of new energy technologies.

The principal reason for the new direction in energy policy is the immediate need to respond to the threat of global climate change while at the same time addressing the nation's economic and energy security challenges.

To this end, the Obama Administration has pledged an 80 percent reduction in U.S. greenhouse gas emissions by 2050 and supports a national renewable electricity standard that would require 25 percent of the electricity sold in the United States to be generated from renewable sources – such as biomass power, geothermal, solar, water energy and wind – by 2025.

Congress is acting on the Administration's policy priorities by considering comprehensive energy and climate change legislation that contemplates national targets for renewable energy and energy efficiency as well as significant national greenhouse gas reductions. If these proposals are enacted, they would move the nation toward meeting those objectives and would reduce U.S. greenhouse gas emissions 42 percent from 2005 levels by 2030 and 83 percent by 2050.

As the legislative process moves forward, the Business Council for Sustainable Energy encourages policymakers to create a balanced partnership using *energy efficiency*, *natural gas*, and *renewables* as complementary clean energy tools to establish the foundation for a sound and robust domestic energy policy, support a thriving economy, and meet the 2030 greenhouse gas emission reduction goals.

BANK OF AMERICA TOWER IN NEW YORK CITY

The new Bank of America Tower in New York City will generate a significant portion of its power on site through a 5.1 megawatt cogeneration system. It also will save about half the energy used by most buildings its size.

Photo used courtesy of Solar Turbines.

With the appropriate policies that expand the use of both renewables and natural gas and increase our nation's energy efficiency, the U.S. could reach its greenhouse gas emission reduction goals, reducing emissions by as much as 42 percent by 2030, while creating jobs and enhancing national security.

Energy Efficiency: A Cost-Saving Partner

Our domestic clean energy policy should include more efficient use of our energy resources. Greater use of both supply-side and demand-side energy efficiency would make enormous strides in reducing U.S. greenhouse gas emissions, while saving consumers money and enhancing U.S. energy security.

Today, American families and businesses are burdened with costly energy waste. A recently released study by McKinsey & Company[1], sponsored in part by the Department of Energy, identifies potential efficiency opportunities available today that could reduce greenhouse gas emissions in the year 2020 by more than 10 percent below 2005 levels while resulting in up to $700 billion in savings to the U.S. economy. Given the long lasting benefits of energy efficiency measures, such savings could continue to underpin U.S. emissions reduction efforts well beyond 2020.

According to the National Academy of Sciences[2], the deployment of existing energy efficiency technologies is the nearest-term and lowest-cost option for moderating our nation's demand for energy, especially over the next decade. The potential energy savings available from the accelerated deployment of existing energy efficiency technologies in the buildings, industry, and transportation sectors could more than offset the U.S. Energy Information Administration's projected increases in energy consumption through 2030.

1 *Unlocking Energy Efficiency in the U.S. Economy*, McKinsey & Company, Inc., July 2009; Available online at: www.mckinsey.com/USenergyefficiency

2 *America's Energy Future: Technology and Transformation*, National Academy of Sciences, 2009; Available online at http://books.nap.edu/openbook.php?record_id=12091&page=139

Renewable Energy: A Partner to Drive Economic Growth

As the nation works to become more energy efficient, we must also make increasing use of the abundant renewable energy resources right here in the United States. Wind, solar, hydropower, biomass, geothermal, bio-gas, and other renewable energy options – along with energy efficiency investments – are proven economic engines that will foster U.S. economic growth and create new high-quality jobs.

Today's renewable energy technologies are practical, proven sources of American energy. According to the Energy Information Administration (EIA) renewable energy sources provided 11.18 percent of net U.S. electrical generation for the first six months of 2009. This continues the steady growth trend for renewable energy: during the first half of 2007, for example, renewable energy sources accounted for 9.89 percent of domestic energy production while in June 2009 renewables accounted for 11.37 percent of domestic energy production.[3]

Wind generation accounted for 42 percent of all new generating capacity added in 2008, and a Department of Energy report[4] concluded that with a major national commitment to clean energy, wind energy could potentially provide 20 percent of our electricity by 2030 while creating 500,000 jobs in the wind sector and reducing greenhouse gas emissions by 825 million tons.

Solar energy also has the potential to power America and drive a new economy. The U.S. has some of the best solar resources in the world, with enough suitable roof space to provide 20 percent of our electricity and water heating and enough suitable land to power the country several times over. Building that infrastructure will support thousands of small businesses and tens of thousands of jobs.[5]

U.S. hydropower resources also have great potential for new electric generating capacity[6] and for reducing greenhouse gas emissions. Hydropower generation in the United States is currently 270,000 GWH, with a 23,000-MW potential capacity increase by 2025, and a 90,000-MW overall water potential available. Use of this additional hydropower capability will also reduce greenhouse gas emissions; adding to the more than 160 million tons of carbon emissions[7] that were avoided as the result of the hydroelectric power that was generated in 2004.

BOULDER CITY NATURAL GAS AND SOLAR PLANT

The 480 MW combined cycle natural gas-fired El Dorado power plant near Boulder City, Nevada is surrounded by a 10 MW solar photovoltaic field.

Photo used courtesy of Sempra Energy.

Natural Gas: The Versatile Partner

Natural gas is another key player in a clean energy economy: it is a domestically abundant, clean, low-carbon fuel, which can efficiently be used to produce both electricity and high quality thermal energy.

Greenhouse gas emissions from natural gas-fired plants are nearly half those from conventional fossil fuel power plants. With at least one hundred years of reserves technically available right here in the United States[8], natural gas offers national security and American job growth opportunities in a low-carbon economy.

The outlook for natural gas supplies is very positive given the development of new resources and the development of technological advances in natural gas extraction that have enabled America's producers to leave smaller footprints and move less land, drill fewer wells to add the same reserves, and reduce air pollution in the production of natural gas.[9] In addition, the direct use of natural gas in residential or commercial applications – such as space heating, water heating, cooking and clothes drying – can increase the

3 http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html

4 *20% Wind Energy by 2030: Increasing Wind Energy's Contribution to U.S. Electricity Supply*, U.S. Department of Energy, May 2008. Available online at: http://www.eere.energy.gov/windandhydro/pdfs/41869.pdf

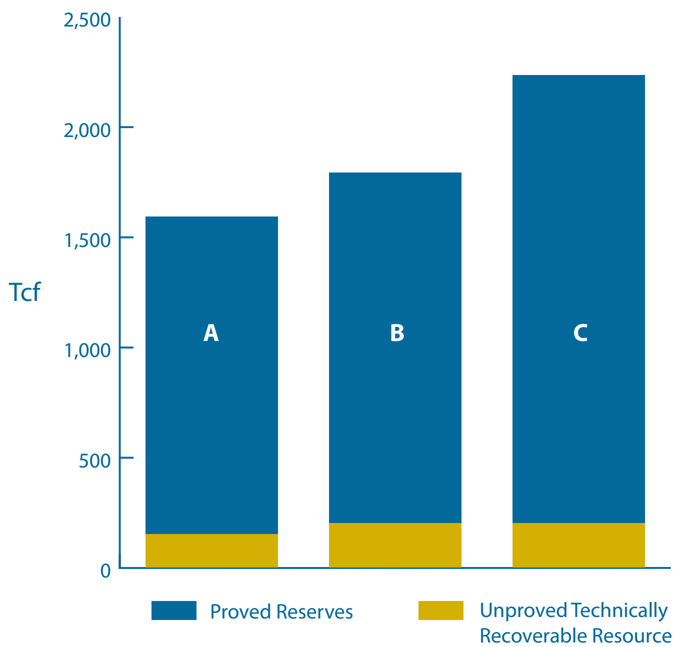
5 Solar Energies Industries Association located on the web at: http://www.seia.org

6 Electric Power Research Institute, March 2007. Copies of the EPRI report are available at www.epri.com. Search for report #1014762

7 Using a national average electricity emission factor of 0.6 metric tons of avoided CO_2 emissions per megawatt-hour at a non-emitting power generator.

8 http://www.icis.com/Articles/2008/07/30/9144315/shale-gas-can-meet-us-needs-for-100-years-study.html

9 http://www.navigantconsulting.com/downloads/WorldGasArticle-NavigantJuly2009.pdf



U.S. TOTAL GAS SUPPLY RESOURCE BASE (Tcf)

A. 2006 Potential Gas Committee Supply Estimate, (82 Years' Supply at 2006 Production Levels)

B. 2008 NCI Supply Update at PGC Supply Estimate, Inclusive of Shale Assessment, (88 Years' Supply at 2007 Production Levels). *10 percent Increase Over Column 1*

C. 2008 NCI Supply Update Adjusted for Industry Input (Maximum as of June 2008), (118 Years' Supply at 2007 Production levels). *47 percent Increase Over Column 1*

efficiency of energy use, reduce overall energy costs and reduce CO_2 and other emissions. The direct use of natural gas in certain home and commercial building appliances can result in a 50 percent increase in energy efficiency and provide substantial CO_2 emission reductions compared to electric versions of those appliances based on today's current mix of national electricity supply.[10]

Natural gas is especially well suited to help facilitate deeper market penetration of renewables, such as wind and solar power. Natural gas power plants can quickly and efficiently change their level of output, which makes them ideally suited for accommodating variability in electricity supply and demand on the grid, including that associated with renewable resources. Natural gas power plants are also a low-cost source of capacity for meeting peak electric demand; and in optimal designs, natural gas-fired combined heat and power plants can achieve thermal efficiencies of 70-90 percent.

Efficiency, Natural Gas, and Renewables: A Win-Win-Win Partnership

Investment in efficiency and clean energy sources, such as natural gas and renewables, would provide the foundation for a robust, domestic clean energy policy, enhance security, protect the environment, improve health, stimulate technological innovation, and drive economic growth.

In addition, considering these three partners in a team approach to reducing greenhouse gas emissions moves discussion away from the practice of independently and narrowly reviewing each energy option and provides a more comprehensive, less costly approach to a lower carbon future.

Furthermore, the partnership would provide the basis for development of new, clean-energy technologies such as hybrid electricity plants, gas-fired combined heat and power, carbon capture and storage, solar-natural gas hybrid technology for residential and commercial use, and natural gas transportation fuels.

Such low-carbon technologies would find a market overseas and encourage the United States to tap into its renewable energy, energy efficiency, and natural gas resources to take advantage of the vast opportunities these resources offer to expand and create new industries and jobs at home while addressing global climate change.

10 American Gas Association, "Source Energy and Emission Factors for Building Energy Consumption," August, 2009

ABOUT THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY

The Business Council for Sustainable Energy is an industry coalition that includes businesses and trade associations representing a suite of currently available technology options for strengthening domestic energy security while also reducing emissions of greenhouse gases that contribute to global climate change. These technologies include: advanced batteries, biomass, biogas, fuel cells, geothermal, hydropower (including conventional and new waterpower resources such as ocean, tidal and in stream hydrokinetic), solar (including solar energy equipment such as solar hot water heating and solar light pipe technology), wind, natural gas, and supply-side and demand-side energy efficiency. For more information visit our website at www.bcse.org