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## MUSINGS FROM THE OIL PATCH

July 17, 2012

Allen Brooks  
Managing Director

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**Note:** *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating and planning for the future. The newsletter is published every two weeks, but periodically events and travel may alter that schedule. As always, I welcome your comments and observations. Allen Brooks

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### Green Job Mystery: Where Are They? Are They Everywhere?

**Through March 15, 2012, \$8.2 billion of the total amount in Section 1603 grants awarded went to wind projects (74.7% of the total) and another \$2.0 billion went for solar (17.4%)**

**They found the jobs data that exists shows the grants produced “very few long-term jobs”**

Congress is wrestling with the issue of extending the financial subsidies for “green energy” in the form of renewing the production tax credit or investment tax credit primarily for wind and solar projects. An adjunct to this debate is the question of the success of the Section 1603 program created under the American Reinvestment and Recovery Act, or the “stimulus” plan enacted in response to the 2008 financial crisis. Section 1603 was created under the stimulus plan as a grant program administered by the Department of Treasury and the Department of Energy. The plan offered cash payments to renewable energy projects in lieu of the tax credits. Through March 15, 2012, \$8.2 billion of the total amount in Section 1603 grants awarded went to wind projects (74.7% of the total) and another \$2.0 billion went for solar (17.4%). The remaining 8% of funds granted went to technologies such as geothermal electricity, biomass, solar thermal and small wind.

The stimulus was claimed by President Barack Obama to be a jobs program. Energy Secretary Steven Chu testified before the Committee on Energy and Commerce (“Committee”) on March 16, 2011, saying, “the Section 1603 tax grant program has created tens of thousands of jobs in industries such as wind and solar by providing up-front incentives to thousands of projects.” An investigation by the Subcommittee on Oversight and Investigations (“Subcommittee”) of the Committee reported its findings a couple of weeks ago and concluded that most of the current methods of calculating the green jobs created by Section 1603 are “largely unreliable.” They found the jobs data that exists shows the grants produced “very few long-term jobs.” Additionally, the Subcommittee found the Section 1603 program “resulted in higher costs to the taxpayer than previously anticipated.” Fewer jobs, more costs – sounds like a successful government-run program!

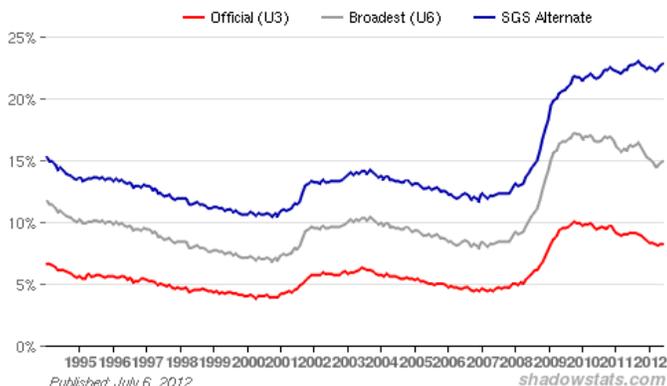
**If the rate were calculated using the pre-1994 methodology that includes those long-term discouraged workers, the unemployment rate would be 22.8%**

The need for more jobs in this country cannot be understated given that the nation is in its 41st straight month of greater than 8% unemployment (8.2% in June). The unemployment situation is actually worse than suggested by the published rate as the methodology by which it is calculated has been distorted to eliminate long-term discouraged workers who have left the labor force. If the rate were calculated using the pre-1994 methodology that includes those long-term discouraged workers, the unemployment rate would be 22.8%. The analytical work to revise the government's economic and labor data to be consistent with historical presentations is conducted by economist John Williams and is published on his Shadow Government Statistics web site. Exhibit 1 shows Mr. Williams' unemployment rate estimate including the long-term discouraged workers and part-time workers through the latest June data compared to the federal government's published unemployment rate and its broader unemployment rate that includes part-time workers as determined by the Bureau of Labor Statistics.

**Exhibit 1. True Unemployment Is Actually Worse**

**Unemployment Rate - Official (U-3 & U-6) vs SGS Alternate**

Monthly SA. Through June 2012 (SGS, BLS)



Source: shadowstats.com

**The problem with this government push is that it has failed to produce any of the benefits initially claimed**

To address the high unemployment due to the financial crisis and the resulting recession, the Obama administration began pushing investments in green energy businesses both because it was perceived that the country needed to wean itself off "dirty" fossil fuels to combat growing carbon emissions and global warming fears while also boosting green jobs to help drive the economic recovery. Those goals led to the stimulus plan. The problem with this government push is that it has failed to produce any of the benefits initially claimed. The lack of a consistent and accurate measurement of these claimed benefits has made it nearly impossible to question the spending decisions and their benefits. Most of us are familiar with the high-profile failures of the solar panel manufacturers Solyndra and Abound Solar. There are other bankrupt solar companies and numerous struggling battery technology companies that were backed by taxpayer money. These troubled green energy companies have not only failed to create the

**The biggest challenge for green jobs is to determine what they are**

number of green jobs they claimed they would when they requested government funding, but most of them have been forced to lay off those few employees they did hire. The concerns created by these spectacular failures stimulated the Committee to question the benefits, in particular the green jobs claims.

The biggest challenge for green jobs is to determine what they are. It wasn't until late 2012 that the Bureau of Labor Statistics defined what jobs could be counted as green jobs. Their definition published in "Measuring Green Jobs" was that "Green jobs are either: A. Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources. B. Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources." The problem is that "green" remains a subjective term and is defined quite differently in studies of green jobs.

**The Mayors' report counts current nuclear power generation jobs as green jobs but not future jobs in nuclear power**

According to the "U.S. Metro Economies: Current and Potential Green Jobs in the U.S. Economy" issued by the United States Conference of Mayors (Mayors) in 2008, green jobs consisted of: "Any activity that generates electricity using renewable or nuclear fuels, agriculture jobs supplying corn or soy for transportation fuels, manufacturing jobs producing goods used in renewable power generation, equipment dealers and wholesalers specializing in renewable energy or energy-efficiency products, construction and installation of energy and pollution management systems, government administration of environmental programs, and supporting jobs in the engineering, legal, research and consulting fields." Interestingly, the Mayors' report counts current nuclear power generation jobs as green jobs but not future jobs in nuclear power.

**The UNEP study excluded all nuclear power jobs and many recycling jobs**

Another major green jobs study, "Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World," prepared by the United Nations Environment Programme (UNEP) in 2008 uses a more restrictive definition of green jobs in some cases and a more expansive one in others. It defined green jobs as: "Work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution."

The UNEP study excluded all nuclear power jobs and many recycling jobs, but it allowed to be included a substantial number of supply chain jobs that "contribute to preserving or restoring environmental quality." For example, if a product is green, then all the jobs associated with producing the material that the product is

**When the definitions of green jobs used by these two major studies are examined and their differences highlighted, it becomes clear how studies can arrive a very different estimates of green jobs**

made from can be considered green jobs. How does this work? Wind turbine towers are made from steel. Since wind turbines create green power then the steel-making jobs that produced the steel used in the turbine tower can be called “green jobs.” When the definitions of green jobs used by these two major studies are examined and their differences highlighted, it becomes clear how studies can arrive a very different estimates of green jobs. Readers may remember an article we wrote about a Brookings Institute study on green jobs claiming millions of jobs had been created, but they stated that if a single driver for a company drove a bus powered by green-energy then all the company’s bus drivers would be considered as filling green jobs, regardless of the number of green-powered buses the company operated.

**When the indirect jobs were removed, the estimate of direct green jobs falls to “910 annually for the lifetime of the systems”**

The Subcommittee requested that the Department of Energy and the Treasury Department report on the number of green jobs actually created by Section 1603. The Treasury stated it does not consider job creation when awarding the Section 1603 payments. The Energy Department echoed Treasury, but also referenced green job estimates contained in a National Renewable Energy Laboratory (NREL) report. According to that study, during the construction phase of these green energy projects (2009-2011), they supported 52,000-75,000 direct and indirect jobs per year of construction. During the operation and maintenance of solar and wind energy projects, the study estimates they supported between 5,100 and 5,500 direct and indirect jobs per year on an ongoing basis over the 20- to 30-year estimated life of the systems. When the indirect jobs were removed, the estimate of direct green jobs falls to “910 annually for the lifetime of the systems,” of which 770 are jobs for large wind projects with solar accounting for 140. Furthermore, when the Subcommittee examined the green jobs and the Section 1603 payments, the NREL admitted that many of the projects financed might have gone ahead without those payments.

**A *New York Times* article in October 2011 showed that projects receiving the largest Section 1603 grants produced, on average, 15 to 20 permanent jobs each, or even sometimes fewer**

Other studies, notably those conducted by *The New York Times* and Lawrence Berkeley National Laboratory, show many of the Section 1603 payments went to projects already underway. Even then, the green energy projects failed to create meaningful numbers of jobs. A *New York Times* article in October 2011 showed that projects receiving the largest Section 1603 grants produced, on average, 15 to 20 permanent jobs each, or even sometimes fewer. That conclusion was slightly better than a *Wall Street Journal* February 2012 study of 36 wind farms that received 40% of the Section 1603 funding, or about \$4.3 billion, employed about 300 workers at the time of the article, or slightly less than 10 jobs per project.

These jobs estimates were substantially below recipient-reported jobs estimates as of April 20, 2012, which were supplied to the Committee by the Treasury Department in an email exchange. According to these estimates, 150,000 full-time and 205,000 part-time jobs were created or retained. However, the Congressional

**Dr. Michael Pacheco, a vice president at NREL, observed that the 910 annual jobs estimate was fairly consistent with the results of the other studies of permanent green jobs created**

Research Service stated that the Treasury Department has generally avoided releasing these estimates due to inconsistencies in the self-reported job creation statistics. Likewise, the NREL study maintains that because the government funding plan did not provide guidance on the types of jobs that should be included or the methodology that should be employed in estimating the number of green jobs to be created, the estimates provide little value as reference points for the analysis it prepared. We also know that the NREL prepared its estimates utilizing a computer model. Since NREL couldn't use the self-reported jobs estimates to verify its model's conclusions, they recognize that their estimates could prove to be optimistic. In testifying before the Committee on April 19, 2012, Dr. Michael Pacheco, a vice president at NREL, observed that the 910 annual jobs estimate was fairly consistent with the results of the other studies of permanent green jobs created.

**At one time, President Obama claimed that his administration and its green energy programs would create five million green jobs over 10 years**

After studying the differences in green job definitions and the resulting outcomes from computer models and the self-reported job creation estimates compared to actual employment data, all the claims about investments in green energy creating significant new jobs should be viewed skeptically. At one time, President Obama claimed that his administration and its green energy programs would create five million green jobs over 10 years. His administration even committed \$500 million to a Labor Department program designed to train 124,893 people and put 79,854 in green jobs. Seventeen months later, only 8,035 green jobs were created. These numbers were substantiated by an audit of the program conducted by the Department of Labor's Inspector General who called the program a "dismal failure." He recommended that the remaining \$327 million be returned to the Treasury. The result from this program was that we spent \$173 million to create 8,035 green jobs, or \$21,500 per position.

**Another problem with green jobs is the willingness to include nonproductive employees in the definition of green jobs**

Another problem with green jobs is the willingness to include nonproductive employees in the definition of green jobs. For example, in the Mayors study, the top two cities in green jobs were New York City (25,021 jobs) and Washington, D.C. (24,287). As there is little manufacturing or biomass farming in these cities, most of the green jobs are overhead positions. The report pointed out that "engineering, legal, research and consulting positions play a major role in the Green Economy, as they account for 56% of current Green Jobs. They have also grown faster than direct Green Jobs since 1990, expanding 52% compared with 38% growth in direct jobs." This contrasts with the results of a study undertaken by the primary consultant on an American Solar Energy Society report, Management Information Services (MIS). It found that the single biggest increase is in secretarial positions followed by management analysts, then bookkeepers and janitors. When MIS examined green jobs created in Michigan in 2003, it found that the largest number of positions created was for garbage collectors, next were water and sewage treatment workers and then office clerks. These

**It is certainly true as the UNEP study states, “not all green jobs are equally green”**

were followed by janitors, secretaries, customer service representatives and truck drivers. These results certainly clash with the Mayors’ conclusion that green-collar professional jobs will be the fastest growing positions created.

It is certainly true as the UNEP study states, “not all green jobs are equally green.” It further said that some positions are “lighter shades of green” than other jobs. In concept, these statements are true. In practice these views are ignored by most of the green job studies because the studies are driven by political goals. We have seen these politically-motivated jobs estimates used by green-energy project developers to argue for government funding, tax breaks, approval of above-market power purchase price agreements and project permit awards when the data and regulatory filings fail to substantiate the claims. As the Subcommittee found in its report on green jobs, when money is the primary motivator truth may be the biggest loser.

## Who Doesn’t Get The Keystone Pipeline And Global Politics?

**There have been four shipments of oil from Venezuela and the Syrian government has not had to pay for the fuel enabling it to conserve its foreign currency**

Last Tuesday’s *Wall Street Journal* contained an article that framed the Keystone XL Pipeline permit approval battle in the U.S. in stark and disturbing terms. The article actually had nothing to do with the pipeline project. It was entitled, “To Power Syria, Chávez Sends Diesel,” and it reported there have been a series of transactions involving Petróleos de Venezuela SA (PdVSA) and Sytrol the Syrian government’s oil-marketing arm and the Commercial Bank of Syria. PdVSA is shipping oil to Syria in defiance of Western economic sanctions. Reportedly, and confirmed by both sides of the transactions, there have been four shipments of oil from Venezuela and the Syrian government has not had to pay for the fuel enabling it to conserve its foreign currency.

**Venezuela is our fourth largest oil supplier, shipping the U.S. a 4-week average of 851,000 barrels per day, or nearly 8% of our total petroleum imports**

The United States is actively engaged in trying to oust Syrian President Bashar al-Assad to stop his government’s slaughtering of his political opponents. While trying to oust President Assad, the Obama administration continues to block approval for the construction of the Keystone XL Pipeline that would bring Canadian oil sands output to the U.S. Gulf Coast where it could displace the heavy oil we currently import from Saudi Arabia, Mexico and Venezuela. According to the July 5<sup>th</sup> release from the Energy Information Administration (EIA), Venezuela is our fourth largest oil supplier, shipping the U.S. a 4-week average of 851,000 barrels per day, or nearly 8% of our total petroleum imports.

Can someone explain why we continue to support buying oil from a government that willingly circumvents our foreign policy that has determined that the leader of Syria must be displaced for humanitarian reasons, yet our same government can’t see fit to support a privately-financed pipeline that will boost employment in

this country and displace the income Venezuela derives from selling oil to the U.S.? Besides that, by building the Keystone pipeline we would be further strengthening relations with our neighbor to the north and our number one supplier of oil? Maybe President Obama really liked the book Hugo Chávez handed him at that South American leaders' summit meeting a couple of years ago.

## High Commodity “Tax” Switches To Economic Stimulus

**The health of the U.S. economy is about 72% dependent on consumer spending**

Economists are always quick to point out that rises in crude oil prices, i.e., gasoline pump prices, act as a tax on the American consumer taking income away from their normal spending. As the health of the U.S. economy is about 72% dependent on consumer spending, the financial crisis and resulting recession has undercut worker job prospects and average income growth and in turn limited the growth of spending. Coupled with rising commodity prices in 2009-2011, weak consumer spending has contributed to the anemic U.S. economic recovery.

**It does provide a legitimate way to estimate the impact of raw commodity price changes on consumers and their spending**

The impact of the rise in commodity prices, and now their recent decline, on consumer spending has been estimated by analysts at the Bespoke Investment Group. They calculated the cumulative daily price change of major food and energy commodities contained in the Thomson Reuters/Jefferies CRB Index since 2008. This index was first compiled by the Commodity Research Bureau, Inc. in 1957 and appeared in the 1958 CRB Commodity Year Book, so it has long history of tracking the movement in global commodity markets and their impact on financial and economic measures. In this case, the Bespoke analysts tracked the price changes for corn, soy, wheat, cattle, hogs, crude oil and natural gas. They multiplied the daily price changes by the annual per capita consumption of each item. While this methodology has the impact of oversimplifying actual costs, it does provide a legitimate way to estimate the impact of raw commodity price changes on consumers and their spending.

The analysts assumed that if the cumulative change was zero then there was no impact on consumers. If changes were positive, this had a negative impact on consumer spending. Likewise, falling commodity prices should provide a benefit for consumers. Exhibit 2 shows the record of the Bespoke analysts' commodity price calculations and the estimated impact on consumers.

**Commodity price inflation cost the consumer about \$4.77 per day heading into the summer of 2008**

At its peak, commodity price inflation cost the consumer about \$4.77 per day heading into the summer of 2008, the point at which the global financial crisis exploded onto the economic scene. The financial crisis and resulting recession undercut commodity demand and prices helping to boost consumer incomes in the spring of 2009 by nearly five dollars per day, and acting as a stimulus for economic recovery. That maximum consumer benefit arrived just prior to the determination by the National Bureau of Economic Research that the recession had ended in June 2009. From that point forward, the

**Exhibit 2. Lower Commodity Prices Boost Incomes**

Average Daily Per Capita Cost of Change in Food and Energy Prices: 2008 - 2012



Source: Bespoke Investment Group

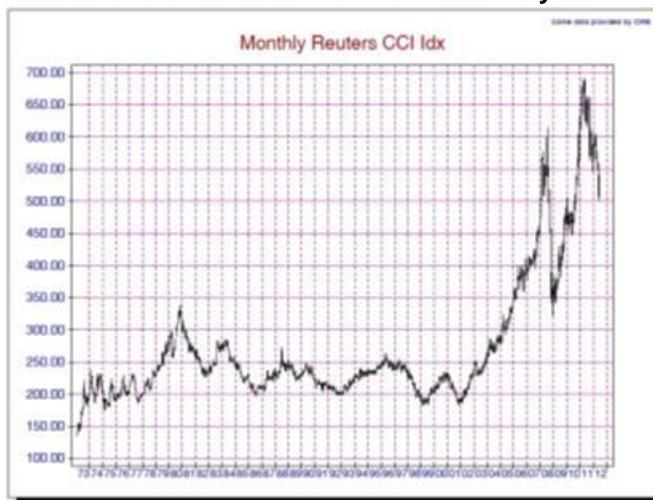
global economic recovery, coupled with loose monetary conditions as cited by Professor John Taylor, drove commodity prices higher and cut into consumer incomes to the point that by last summer they had become a drag on spending. Since then, commodity prices have weakened and as of late June were helping boost consumer spending by \$2.17 per day.

**This savings is the equivalent of about a 5% boost to their income**

Bespoke analysts recognized that the \$2 per day number contributes little to investor understanding of the benefit of lower commodity prices on consumers. They point out that \$2 per day when annualized amounts to \$795 per person per day. For a family of four it means \$3,175 per year in additional income not absorbed by the food and energy products they normally consume. As the median annual household income for U.S. families of four in 2010 was \$61,544, this savings is the equivalent of about a 5% boost to their income, a welcomed event even though it may not be immediately apparent to consumers.

**“This global, loose monetary policy was likely a big factor pushing up commodity prices”**

In a recent op-ed column in *The Wall Street Journal*, Dr. Taylor, an economics professor at Stanford University and a senior fellow at the Hoover Institution, described the impact the loose monetary policy being followed by national monetary authorities around the globe has had on commodity prices. He wrote, “The Fed’s current near-zero interest rate policy, designed to stimulate the U.S. economy, has made it harder for other central banks to combat credit and asset price booms. A group of 18 emerging market central banks – including Brazil, China, India, Mexico and Turkey – held their interest rates on average as much as five percentage points below widely used policy benchmarks - and global commodity prices doubled from 2009 to 2011, a boom rivaling the excesses leading up to the 2008 financial crisis. This global, loose monetary policy was likely a big factor pushing up commodity prices. The current sharp slowdown in most emerging markets coincides with an inevitable bust of this easy-money induced boom, and the decline of foreign demand for American goods is now feeding back to the U.S. economy.”

**Exhibit 3. 1973-2012 Record Of Commodity Prices**

Source: Moore Financial Research

**While cheap money supposedly drove commodity prices up after the 2008 economic bust, it seems to be failing to keep prices up now**

The Federal Reserve has stated it plans to keep U.S. monetary policy loose, i.e., near zero interest rates, until at least the end of 2014. At the same time, the European debt crisis is prompting government leaders and their financial ministers to engage in similar monetary creation acts designed to reduce borrowing costs for the most troubled economies in the Eurozone. These monetary policies, including the most recent reduction in reserve requirements and bank borrowing rates by China's central bank, suggest commodity prices will continue to be supported by cheap money. While cheap money supposedly drove commodity prices up after the 2008 economic bust, it seems to be failing to keep prices up now. We wonder what the significance of that decline in the CRB index (the CCI index represents the CRB index calculated on a continuous basis) means for future economic growth, commodity prices and especially energy prices. We believe it signals we are in the midst of an economic and financial sea-change that may lead to lower prices and better economic times ahead, but that's a story for another *Musings*.

## Is America About To Enter The Offshore Wind Era?

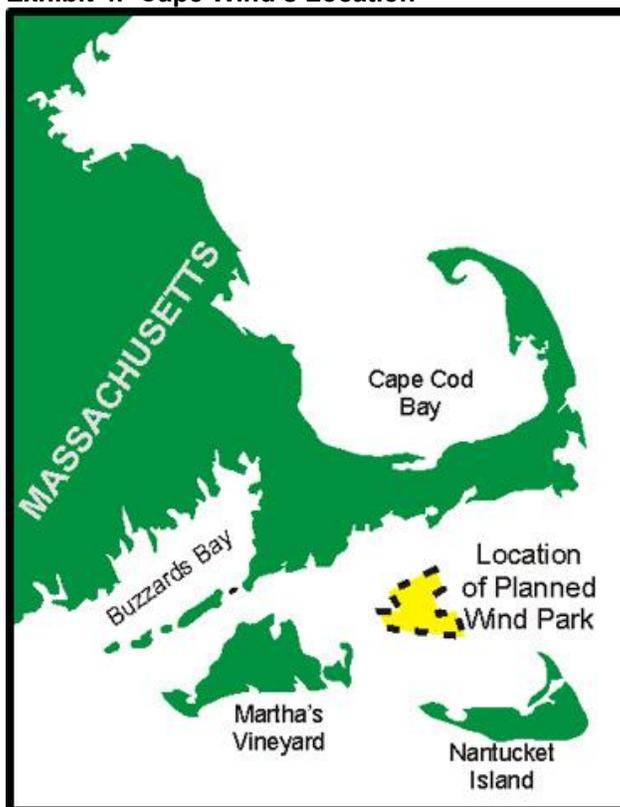
**The wind farm is targeted to begin construction next year and be in operation in 2015 producing an average of 170 megawatts of electricity**

Cape Wind, the 130 turbine, \$2.6 billion, 454 megawatt wind park targeted for Nantucket Sound is about to embark on the first step for construction of the wind towers with the commencement of an ocean-bottom survey. The wind farm is targeted to begin construction next year and be in operation in 2015 producing an average of 170 megawatts of electricity. Cape Wind has sold about three-quarters of its estimated power output, but still needs to arrange financing. It had indicated recently that an announcement about the financing could be made soon.

**The survey work will take between three and four months and initially involves acoustic imaging in order to map the seafloor**

A survey of the soil conditions underlying the 24-square mile wind farm site started about a week ago and is being conducted by the Dutch-based geoscience firm, Fugro (FUR.AS). The survey work will take between three and four months and initially involves acoustic imaging in order to map the seafloor. That survey will be followed by sampling to ensure no Native American artifacts will be disturbed and to analyze the soil's characteristics. Later, deeper soil borings will be taken helping to determine exactly where the wind turbines will be placed.

#### Exhibit 4. Cape Wind's Location



Source: Google Images

**The FAA has repeatedly assessed the project and determined it doesn't present a hazard to airplanes, most recently in May 2010**

Final approval of the Cape Wind project awaits a determination of the impact of the 440-foot tall wind turbines on air traffic control and safety by the Federal Aviation Authority (FAA). The FAA has repeatedly assessed the project and determined it doesn't present a hazard to airplanes, most recently in May 2010. In October 2011, a federal appeals court in Washington, D.C. sent a lawsuit filed by the Alliance to Save the Sound to overturn the FAA's approval of Cape Wind back to the agency saying that it hadn't sufficiently focused on the project's risks to pilots that fly their planes by sight only.

A new controversy has emerged. In June, the alliance obtained emails and other documents from the FAA under a Freedom of

**Many of the documents come from the 15-month period between February 13, 2009, when the FAA determined the wind farm could present an airplane navigation hazard, and May 17, 2010, when the agency reversed itself**

**The alternative solution was for a complete upgrade to the Otis radar system that would have resulted in a three- to four-year delay for Cape Wind**

**We suspect, given the emails, documents and call for an investigation that an FAA decision about Cape Wind may be a while off**

Information Act request made in 2010. The alliance allowed *The Associated Press* to independently review the documents. Many of the documents come from the 15-month period between February 13, 2009, when the FAA determined the wind farm could present an airplane navigation hazard, and May 17, 2010, when the agency reversed itself. During that period, the FAA wrestled with concerns shared by local air traffic controllers about radar reflections, or “clutter,” expected from the rotating blades of the turbines. The clutter makes it difficult for air traffic controllers to spot planes over wind farms that aren’t equipped with transponders that signal their location. Small planes often do not have these transponders. The FAA documents indicate that about 12% of the area’s air traffic doesn’t have transponders. An FAA-commissioned study indicated that less than 1% of local air traffic passed over the proposed Cape Wind site.

To resolve the issue, the FAA recommended that Cape Wind pay \$1.5 million to modify the radar at Otis Air National Guard Base located on Cape Cod and the center for local air traffic control. Cape Wind will also be required to put \$15 million into a fund for two years in case that modification is not sufficient. The alternative solution was for a complete upgrade to the Otis radar system that would have resulted in a three- to four-year delay for Cape Wind. The question raised by the emails and documents was whether political pressure was brought to bear on the FAA to get the agency to reverse its ruling and approve the wind turbines.

Senator Scott Brown (R-Mass) has called for a complete investigation of the FAA/political pressure issue. His demand was based on reading about these emails and documents, many of which referred to the project with terms such as “political pressure,” “politically sensitive” and “highly political.” A May 2010 FAA internal presentation contained a slide entitled “Political Implications” that notes that Secretary of the Interior Kenneth Salazar “has approved this project. The Administration is under pressure to promote green energy production. It would be very difficult politically to refuse approval of this project.”

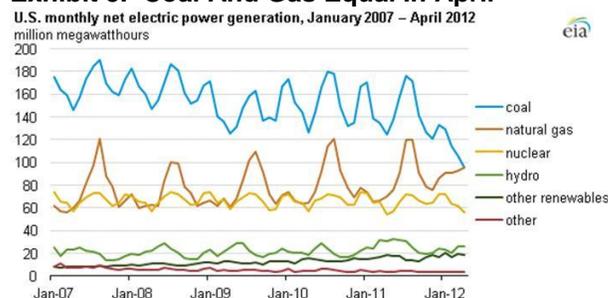
Will the FAA rule in favor of Cape Wind this time? We suspect, given the emails, documents and call for an investigation that an FAA decision about Cape Wind may be a while off. A *Washington Post* investigative story on April 15, 2010, dealt with White House and Congressional pressure brought to bear on the Department of Defense to drop its objection to the Shepherd Flats wind farm near Arlington, Oregon due to possible military radar interference. That happened. Wind power remains, even according to government estimates, one of the more expensive renewable energy sources. But we know that honest economic analyses are not part of the rationalization for wind power. The green energy lobby can be very powerful, especially when its agenda forms the foundation of a political and government philosophy.

## Low Natural Gas Prices Bringing Benefits To Environment

**The EIA reports that in April 2012, the price of natural gas delivered to power plants was at a ten-year low**

According to data from the Energy Information Administration (EIA), for the first time ever the amount of electricity generated by power plants fired by natural gas equaled the amount coming from coal-fired plants. The growth in gas-fired electricity generation is a direct result of the gas shale revolution and the resulting collapse in gas prices. The EIA reports that in April 2012, the price of natural gas delivered to power plants was at a ten-year low. An offset to the low natural gas price is that spot coal prices have also fallen to modern era lows as coal producers battle to reclaim lost share in the electricity generation market. This assault from low gas prices comes at the same time the Environmental Protection Agency (EPA) introduces new emission regulations targeting the burning of coal.

### Exhibit 5. Coal And Gas Equal In April

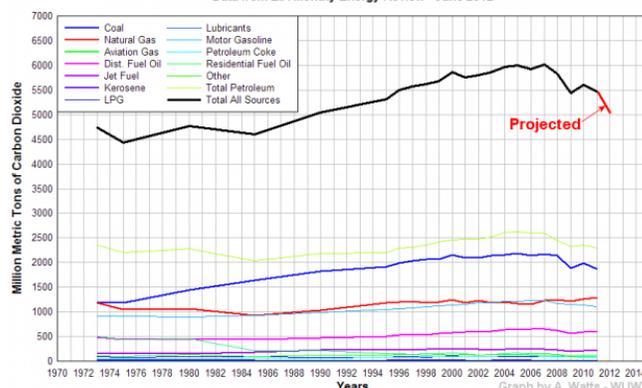


**But what maybe is more important is that the first quarter results show emissions have declined by nearly 7.8% year over year**

A benefit of the power generation market fuel mix shift is the impact it is having on the nation's greenhouse gas emissions. The latest data on carbon emissions from the EIA shows a remarkable improvement. In 2011, carbon emissions were down 2.4% from 2010. The EIA projects that emissions will decline a further 2.5% this year before rising by 1.4% in 2013. But what maybe is more important is that the first quarter results show emissions have declined by nearly 7.8% year over year. Based on the EIA's second quarter estimate, emissions will decline by 4.2% versus the same quarter last year. If that happens, then the first half of 2012 will show about a 6% decline from a year ago. On an annualized basis, 2012 emissions would be 5,166 million metric tons of carbon, or about 2.5% above the emissions of 1990. We suspect that the EIA emission estimates are before the amazing change in fuel consumption in the electric power market. As such, we expect that actual emissions this year may come close to or even beat those of 1990.

The significance of this emissions performance last year and so far this year is that the reduction has occurred without the overriding government mandates helping. In other words, the market has made the moves that free markets are expected to make when fuel price signals are not distorted by regulations. Will emissions be cut

**Exhibit 6. Carbon Emissions Falling Post-Recession**  
**USA Carbon Dioxide Emissions From Energy Consumption by Source**  
 Data from EIA Monthly Energy Review - June 2012



Source: A. Watts at *What's Up With That?*

**Free markets do work**

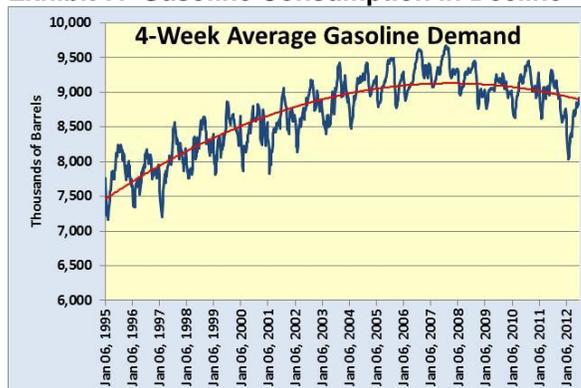
further with the implementation of the EPA’s mercury and carbon dioxide rules, or increased automobile CAFE standards? Critics of this analysis will say that the significant improvement in emissions has come due to the economy’s weakness, but we would counter by pointing out that no one expected emissions improvement without government intervention and mandates. Free markets do work. We are headed for a cleaner environment, for which we should all be grateful.

**Two Views Of America’s Energy Future – Who’s Right?**

**Gasoline consumption has been falling since 2007 along with vehicle miles traveled**

Gasoline consumption has been falling since 2007 along with vehicle miles traveled (VMT). Why has that been the case? It is partly a manifestation of higher gasoline pump prices and the impact of the 2008-2009 recession, which limited discretionary driving due to family gasoline budgets being squeezed and a reduction in the number of workers and, in turn, their work-related driving. There is little workers can do about job growth, but families can buy more fuel-efficient vehicles, which can save them money while also reducing gasoline consumption. There are also demographic trends impacting key segments of the driving population. Our nation is aging and older people do not drive the same number of miles in a year that middle-aged or younger drivers do. Add to that the decision by many younger drivers to forego obtaining their driver’s license at age 16 when they first become eligible because they are embracing more attractive communication alternatives to driving, while at the same time they are being presented with a growing menu of options that meet their transportation needs.

We have written often about many of these changes that are underway in the fuel market and how they may prove to be more significant in shaping the energy market of the future. In research possible articles for the *Musings*, we came across two items that highlighted for us the key difference in how America’s transportation

**Exhibit 7. Gasoline Consumption In Decline**

Source: EIA, PPHB

**One view was presented by the government's energy agency and is built on the view that changes in the market will revert to the historic trend in time**

**In the agency's reference forecast, it foresees VMT rising at 0.2% per year to 13,350 miles per driver in 2035**

**The government expects real disposable personal income to climb by 81% over the same period**

market, and in turn our future energy needs, may evolve. One view was presented by the government's energy agency and is built on the view that changes in the market will revert to the historic trend in time. The other view suggesting significant changes in the urban transportation market was based on real life experiences of a writer for a national magazine, and for us portends meaningful trends that need to be studied and accounted for in forecasting future energy markets. As Nobel Laureate physicist Niels Bohr once said, "Prediction is difficult, especially if it's about the future," so we are willing to give both authorities a break.

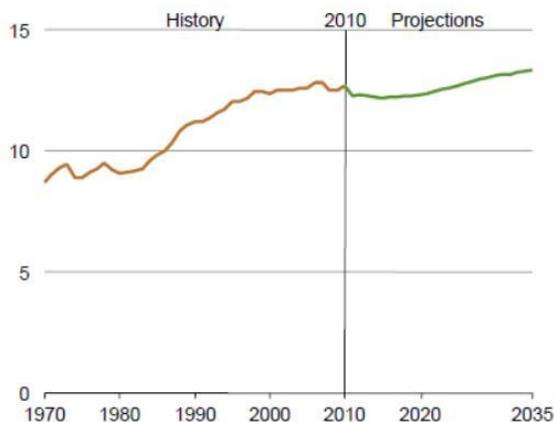
In the *Annual Energy Outlook 2012* issued by the Energy Information Administration (EIA), there was the chart in Exhibit 8 that shows the history of vehicle miles traveled per licensed driver from 1970 through the 2035 forecast period. One can see how the growth rate in VMT per driver flattened out after 2000, then rose in 2007 as the economic boom peaked and dropped in 2008 when the financial crisis erupted. The subsequent recession also took a toll on the mileage driven figures. VMT per driver rose in 2010 as the recession ended. The EIA says in its discussion of this chart that between 2007 and 2010 VMT per driver fell to 12,700 miles from the 2007 peak of 12,800. The agency attributed the fall to high pump prices and the impact of the recession. But in the agency's reference forecast, it foresees VMT rising at 0.2% per year to 13,350 miles per driver in 2035. It is interesting that when we examine the chart, there appears to be a sharp fall in miles driven in 2011 followed by a slow decline for the next several years before turning up about 2015.

What is the explanation for the upturn in VMT per driver? The EIA acknowledges that the real price of gasoline in the transportation sector in their forecast increases by 48% between 2010 and 2035. But the government expects real disposable personal income to climb by 81% over the same period. The EIA goes on to postulate that as gasoline becomes a smaller portion of consumers' budgets they will drive more. These assumptions ignore any potential impact

from increased use of social media, the Internet and/or greater urban transportation options.

### Exhibit 8. EIA Sees Driving Returning To Trend

Figure 90. Vehicle miles traveled per licensed driver, 1970-2035 (thousand miles)



Source: EIA 2012 Annual Energy Outlook

**The EIA believes there will be a 30% improvement in new vehicle fuel efficiency during the forecast period that will further boost miles driven**

The EIA believes there will be a 30% improvement in new vehicle fuel efficiency during the forecast period that will further boost miles driven. This is an embrace of the phenomenon that says as autos become more efficient, drivers will drive more despite higher gasoline prices since the increased cost of each fill-up is offset by the increased range from the tank of gasoline. This explanation was used to explain mileage increases during the 1990s and 2000s despite higher gasoline prices. More efficient vehicles supposedly encourage drivers to travel further since they aren't spending more. We are not sure that is necessarily going to be true in the future economy we foresee.

The EIA does acknowledge that unemployment will remain above pre-recession levels until later in the forecast period. It also sees the number of vehicles per licensed driver remaining constant at just over one per licensed driver. The EIA does acknowledge there are other demographic forces at work that will play a role in moderating the growth in VMT per licensed driver, although they neither enumerate nor discuss them.

**She is using taxis less and less because of the proliferation of transportation alternatives**

Does the EIA's view square with the evolving real world situation? In a recent article in *The Atlantic Cities*, editor Sommer Mathis wrote about "The End of Taxis." She lives and works in Washington, D.C. and her office is in what she describes as one of the "least transit-friendly spots" in the city. As a result, she has found that her use of taxis has been higher than she wanted, but now she is using taxis less and less because of the proliferation of transportation alternatives. As Ms. Mathis points out, Washington is blessed with a

**Washington has also recently completed construction of 50 miles of new bike lanes and the installation of bike racks throughout the city**

compact geography and a high ratio of taxicabs per person at 12 per 1,000 people. That compares with Chicago at 2.6 and New York City at 1.6 taxicabs per 1,000 of population. It doesn't mean, however, taxi travel is either convenient or pleasant.

Washington also has a modern and extensive Metrorail system and an elaborate public bus system. In 2005, the city added a Circulator bus system and in the early 2000s, Zipcar, Inc. (ZIP-NASDAQ) the car sharing service arrived, offering people the option of short-term vehicle rentals. Washington has also recently completed construction of 50 miles of new bike lanes and the installation of bike racks throughout the city. In 2008, Washington allowed the first bike sharing system in the U.S. Today, Capital Bikeshare has 18,000 members who pay a \$75 annual membership fee that allows for unlimited bike use for up to 30-minute trips. A recent survey of 5,000 members reported that 56% of them are taking fewer taxi trips.

#### **Exhibit 9. Bike Sharing Is A New Travel Option**



Source: Sommer Mathis, *The Atlantic Cities*

**Car2Go charges by the minute rather than the hour as Zipcar does, and allows customers to park and end their trip at their destination rather than having to return the vehicle to its original location**

More recently, Uber, an on-demand car service, arrived. This service costs more than taxis but less than limos. The attraction is that it offers an iPhone app allowing people to easily hire a car that is cleaner and more attractive and tends to arrive quicker than taxis. In March, Car2Go, another short-term car rental service arrived in Washington with 200 Smart Cars from Daimler AG (DDAIF-OTC). This service charges by the minute rather than the hour as Zipcar does, and allows customers to park and end their trip at their destination rather than having to return the vehicle to its original location. Car2Go also negotiated with the city to allow its customers to park the car anywhere legal including metered spots without having to put money into the meter. In San Francisco, Uber has developed an iPhone app that allows users to contact citizen drivers to "hitch" a ride. This concept was taken to an extreme recently with San Francisco drivers going by the city bus terminal and picking up

passengers, which allows the driver to use the lower-toll car pool lane on the Golden Gate Bridge. The San Francisco police are fighting this phenomenon, but short of shame or intimidation, it does not violate any city laws.

#### Exhibit 10. A New Short-term Car Rental Option



Source: Sommer Mathis, *The Atlantic Cities*

**This wide array of short-term transit options is a force impacting the use of vehicles by citizens, but primarily in America's cities**

**The urbanization of America ideal is based on building cities with more transportation options for residents including neighborhoods where everyday life can be based on walking and biking to work and shopping and where longer trips use electric vehicles or green-powered mass transit**

Today, according to Ms. Mathis, a three-mile taxi trip in Washington costs about \$10-13 (we don't know whether that includes a tip), which compares to Uber's \$15-20 price and Car2Go's cost of about \$7. By using a bike to offset one weekly \$10 taxi trip, a Bikeshare member would recoup his annual membership investment in less than two months, while also gaining exercise benefits. This wide array of short-term transit options is a force impacting the use of vehicles by citizens, but primarily in America's cities. That will impact the number of miles driven by licensed drivers, but it is impossible to estimate by how much.

When we have written in the *Musings* about the shunning of vehicles and driving by many of our younger drivers, we have been the recipient of many emails from readers with stories of their children or the children of friends who exhibit an aversion to driving. We believe the increase in transit options, especially in metropolitan areas, is a growing force in our social and energy futures. We also cannot ignore that one of the highly recommended solutions by climate change proponents for reducing our greenhouse gas emissions is to move people into cities and reduce the size of suburbia and the driving associated with living there. The urbanization of America ideal is based on building cities with more transportation options for residents including neighborhoods where everyday life can be based on walking and biking to work and shopping and where longer trips use electric vehicles or green-powered mass transit. The vision also foresees cities surviving on localized agricultural products in order to reduce the size of our agricultural business and its use of fertilizers and transportation services for moving foodstuffs to

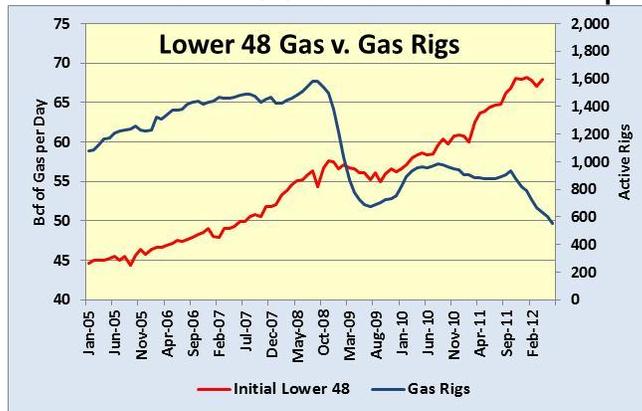
consumers. A discussion of these recommendations will be saved for another *Musings*, but we believe the EIA's employing a return to driving-as-usual forecasting model may prove misguided and lead to an overestimate of future transportation consumption.

## Latest Natural Gas Production Data Shows Uptick

**The survey increase was a disappointment given the production declines reported for the two prior months**

The Energy Information Administration's (EIA) Form 914 monthly survey of natural gas production for April showed that Lower 48 States onshore gas volumes were 67.94 billion cubic feet per day (Bcf/d). This was an increase from the initial volume estimated for March of 67.07 Bcf/d. The survey increase was a disappointment given the production declines reported for the two prior months. Additionally, March's initial volume was revised up to 67.23 Bcf/d from 67.07Bcf/d, which marked the first monthly upward revision since November 2011.

**Exhibit 11. Lower 48 Gas Production Rose In April**



Source: EIA, Baker Hughes, PPHB

**It is also likely producers have been completing previously “drilled-but-uncompleted” wells as the supply of hydraulic fracturing equipment has surged and the price to perform the service has fallen**

The increase in Lower 48 onshore gas production came despite a steady decline in drilling rigs targeting natural gas that has been ongoing since spring of 2010 with the exception of the brief upturn during the fall of last year. The natural gas production increase reflects several trends – the large volume of associated gas produced from wells targeting liquids-rich “wet” gas plays and from those wells seeking crude oil. It is also likely producers have been completing previously “drilled-but-uncompleted” wells as the supply of hydraulic fracturing equipment has surged and the price to perform the service has fallen.

The EIA's 914 data is reported with a two month lag, i.e., the April data was reported at the end of June. The continued decline in gas drilling rigs since April suggests future gas production data should show a resumption of the decline trend. The question becomes whether that decline resumption will be with the May survey results or during the summer. The critical issue is deciphering whether,

**Despite higher natural gas demand from power plants and possibly from increased industrial activity and maybe even growth in the transportation fuels market, natural gas prices will continue under pressure**

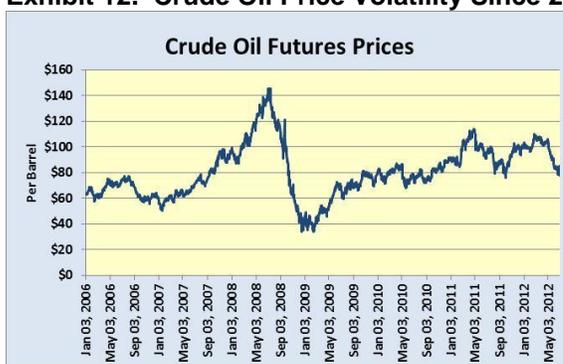
when or if, natural gas producers will embrace “capital discipline” sufficiently to alter their spending on the drilling of new wells targeting natural gas. Because gas shale wells begin life with high flow rates, it will take an extended period of lower drilling activity before gas production is firmly established on a downward trend. Until that happens, despite higher natural gas demand from power plants and possibly from increased industrial activity and maybe even growth in the transportation fuels market, natural gas prices will continue under pressure that may prevent them from rising to a level that makes most of today’s gas drilling profitable. Until that happens, natural gas producers will continue to be known as destroyers of shareholder value, a label to which they seem oblivious.

## Are Crude Oil And Stock Prices As Volatile As They Seem?

**Investors lament the sharp daily price moves of the stock market, often saying that they long for the “good old days” when buyers of shares of stock in a company planned to hold them for the “long-term”**

Every day, most of us look at the changes in energy prices and the fluctuations in stock market indices as being based on economic and financial news. The sharp up and down movements often leave people gasping for understanding of the events. Investors lament the sharp daily price moves of the stock market, often saying that they long for the “good old days” when buyers of shares of stock in a company planned to hold them for the “long-term” rather than engage in “day-trading” as appears to be dominating market activity today. In the crude oil market, to understand daily price moves one needs to follow the economic news from Europe, the relationship of the U.S. dollar to the euro and whether weekly oil inventories might grow or shrink depending upon the weather near Gulf of Mexico oil ports. The closer we are to the markets, the more volatile they appear. So we were intrigued when we saw a chart showing the price of a barrel of oil traded on the futures exchange expressed in terms of gold. Of course, most people are mesmerized by the daily volatility of gold bullion prices, but what we found in the chart was much reduced volatility over the long term for oil prices. In Exhibit 12 we show the daily price of oil futures from the start of 2006 to now. Exhibit 13 shows this price history expressed in gold.

**Exhibit 12. Crude Oil Price Volatility Since 2006**

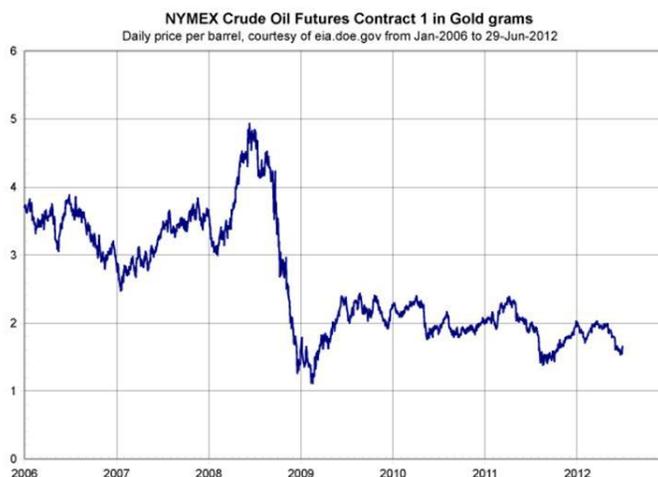


Source: EIA, PPHB

**The more significant trend, in our view, is the difference in the number of grams of gold needed to buy a barrel of oil between the pre-2008 financial crisis and the post-crisis period**

As shown in Exhibit 12 (previous page), crude oil prices climbed steadily higher following their early 2009 low. Even with the recent price correction, oil prices are only back to where they were at the start of 2010. We find a different pattern, however, when we look at oil priced in terms of grams of gold. After their initial bounce off the early 2009 low, oil prices steadily slid lower to where today they are at a level about half of the price recovery between the low in 2009 and the recovery high. The more significant trend, in our view, is the difference in the number of grams of gold needed to buy a barrel of oil between the pre-2008 financial crisis and the post-crisis period. Eyeballing that difference suggests that oil is worth about 60% less in gold today compared to the average of 2006-2007.

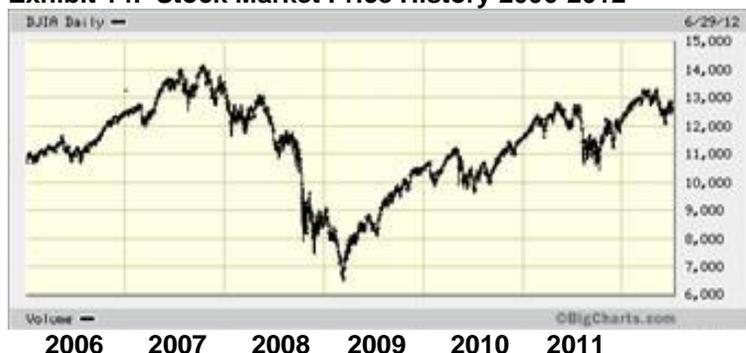
**Exhibit 13. Oil Prices Denominated In Gold**



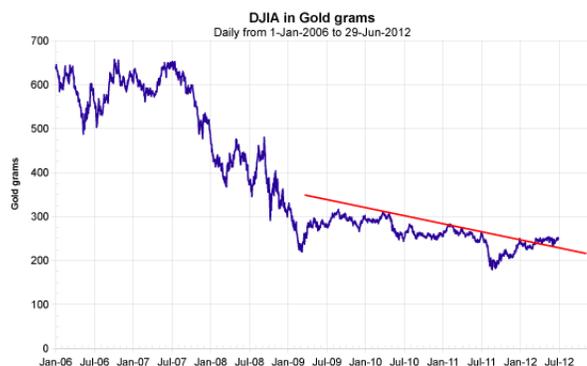
Source: [pricedingold.com](http://pricedingold.com)

We wondered what the impact of gold’s price rise during the past half-decade might have on the value of the overall stock market. We plotted in Exhibit 14 the Dow Jones Industrial Average for the same 2006-2012 period we used for oil prices. We then show the price of that index in terms of grams of gold in Exhibit 15.

**Exhibit 14. Stock Market Price History 2006-2012**



Source: Big Charts, PPHB

**Exhibit 15. Stock Market Priced In Grams Of Gold**

Source: [pricedingold.com](http://pricedingold.com)

**In the case of the stock market,  
its performance measured in gold  
is not particularly rewarding**

In the case of the stock market, its performance measured in gold is not particularly rewarding. In doing this exercise, we are not suggesting that people should be buying gold, but rather it points out that if we denominate data we are all very familiar with in another financial measure, we often find markedly different patterns than we have burnished in our heads. It is an interesting perspective to contemplate.

**Contact PPHB:  
1900 St. James Place, Suite 125  
Houston, Texas 77056  
Main Tel: (713) 621-8100  
Main Fax: (713) 621-8166  
[www.pphb.com](http://www.pphb.com)**

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