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## Lessons from the Natural Gas Market

### Coal-to-Gas Switching – A Phenomenon

It seems as though the industry trade press and public news sources these days are all reporting on “coal-to-gas fuel switching”. So, what is the current fuel switching buzz really all about?

Coal-to-gas switching occurs for two primary reasons, both related to lower natural gas prices relative to coal. First, in the near term, natural gas fleets can increase their utilization by ramping up idle capacity in order to displace more expensive coal-fired generation. Second, in the longer term, natural gas generation can replace retiring coal-fired generation capacity. In both cases, the drivers are environmental regulations and the relative costs of the two fuels. Navigant's analysis indicates that short-term coal-to-gas switching has resulted in an average of about 6 Bcfd<sup>1</sup> of extra natural gas consumption during the first half of 2012 versus the first half of 2011. This represented about 8.4 percent of the total U.S. gas market during the first half of 2012. Navigant believes that natural gas prices will rise moderately in the future, causing the short-term displacement of coal by gas to diminish slightly. However, with about 48 GW<sup>2</sup> of coal capacity expected to retire between 2011 and 2017, long-term average displacement of coal-fired with gas-fired generation, due to the retirements, is expected to be about 4 to 5 Bcfd.

It is also important to note that expected retirements will not be evenly distributed around the country, but mainly expected in the Mid-West, Mid-Atlantic, and the Southeast regions. Coal plant retirements will impact the West, but to a much lesser degree primarily because the region is less dependent upon coal generation than others across the country. Coal-fired plants make up 21 percent of total capacity in the Western Energy Coordinating Council (WECC) NERC<sup>3</sup> region versus the Reliability First Corporation (RFC) NERC region in the Great Lakes area where 46 percent of the electric capacity is provided by coal-fired power plants.

Thus, when speaking of coal-to-gas switching for the purposes of this article, one or both of the following are generally being referred to:

- » **Displacement of coal-fired generation by natural gas-fired generation due to short-term fuel price competition.** Historically, natural gas has been more expensive than coal and as a result, coal plants have been dispatched to meet electrical demand before natural gas plants. Over the last few years, the situation has been that world-wide coal demand has pushed coal prices up, while the development of shale gas in North America has pushed domestic natural gas prices down. As a result, coal prices have become higher than gas prices in several markets.

1. Estimated from the average monthly increase between 2011 and 2012 in natural gas generation during the months of January to June (25 TWh\*8MMBtu/MWh/30 days).

2. 48 GW is taken from Navigant's Coal Retirement & Retrofit Model, and includes announced retirements and estimated unannounced retirements driven by MATS, as well as actual retirements during 2011 and YTD 2012. Other recent retirement estimates include 49 GW by EIA and 50 GW by ICF International, both published in June 2012.

3. North American Electricity Reliability Corporation, FERC's designated Electricity Reliability Organization for the U.S.

» **Retirement of coal-fired capacity and replacement with natural gas-fired capacity.** In these instances older, less efficient coal plants are retired and where necessary for reliability, replaced with natural gas-fired power plants.

### Coal-to-Gas Switching Based on Fuel Costs

The first driver behind coal-to-gas switching is the relative cost of natural gas versus coal. Figure 1 indicates the historical prices of these two commodities. The comparison shows historical natural gas prices at Henry Hub, Louisiana (the primary reference hub for U.S. national natural gas prices and the delivery point for the NYMEX futures contract) versus weighted average U.S. coal prices. Historically, there has been a wide gap between the prices of the two fuels, with natural gas being significantly higher priced on an energy equivalent basis. The gap narrowed considerably beginning in 2009, and in 2012 the cost of the two fuels has essentially converged. Coal prices have been trending higher in recent years as world demand for coal has grown and the cost of mining coal in the eastern U.S. has increased. At the same time, the transforming force of unconventional shale gas has continued to push natural gas prices down due to continuing supply growth and drilling efficiency improvements lowering the costs of production. Shale gas was always known to exist in many areas, but as Navigant first reported in 2008<sup>4</sup>, it was largely undeveloped until just a few years ago. The cost and effectiveness of horizontal drilling and hydraulic fracturing have improved to the point where the long-term price of gas is

FIGURE 1: COAL AND NATURAL GAS PRICES

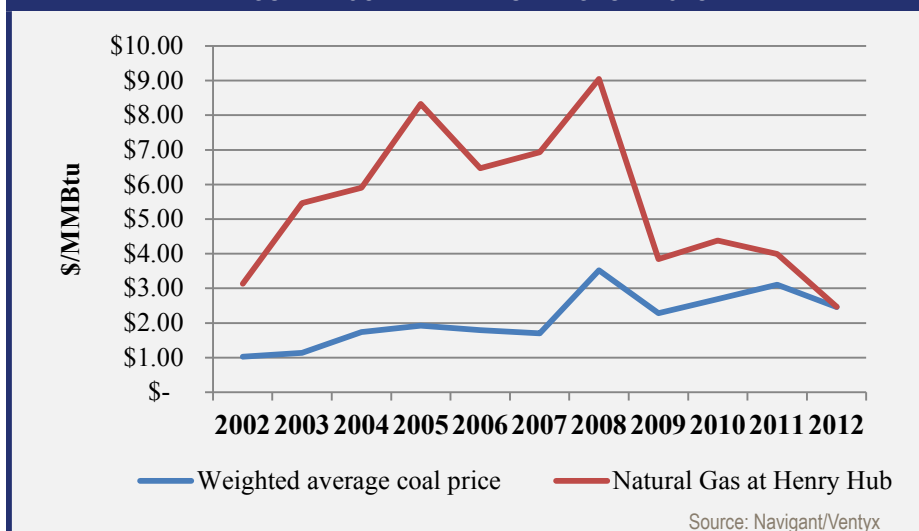
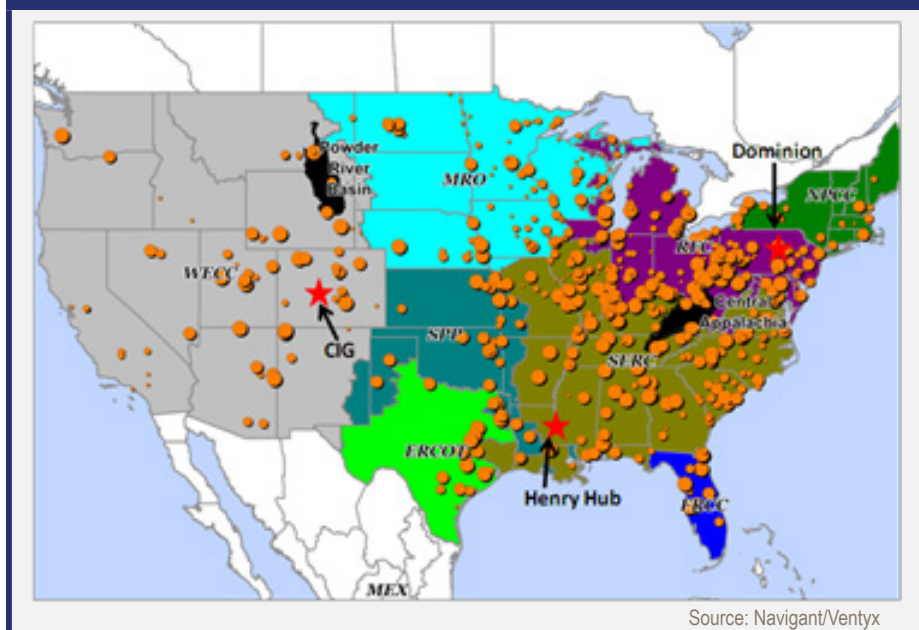


FIGURE 2: U.S. COAL-FIRED POWER PLANTS



projected to remain stable and the absolute price will remain low for the foreseeable future as price volatility will be significantly diminished in the new North American gas market environment.

Figure 2 shows the general location of many of the nation's coal-fired power

plants, indicating the vast majority of coal-fired generation is located east of the Mississippi River, near or conveniently served by supplies of Central Appalachian coal. Figures 3 and 4 highlight the price differences between coal and gas at the key associated price points for the Appalachian Basin and the Powder River Basin.

4. 'North American Natural Gas Supply Assessment', prepared by Navigant for the American Clean Skies Foundation, July 4, 2008, available at [http://www.navigant.com/~media/Site/Insights/Energy/NCI\\_Natural\\_Gas\\_Resource\\_Report.aspx](http://www.navigant.com/~media/Site/Insights/Energy/NCI_Natural_Gas_Resource_Report.aspx)

*While coal and natural gas prices converged on a national level in 2012, regional differences in fuel prices, combined with the regional distribution of coal plants, are resulting in more pronounced impacts of coal-to-gas competition in some regions of the country.*

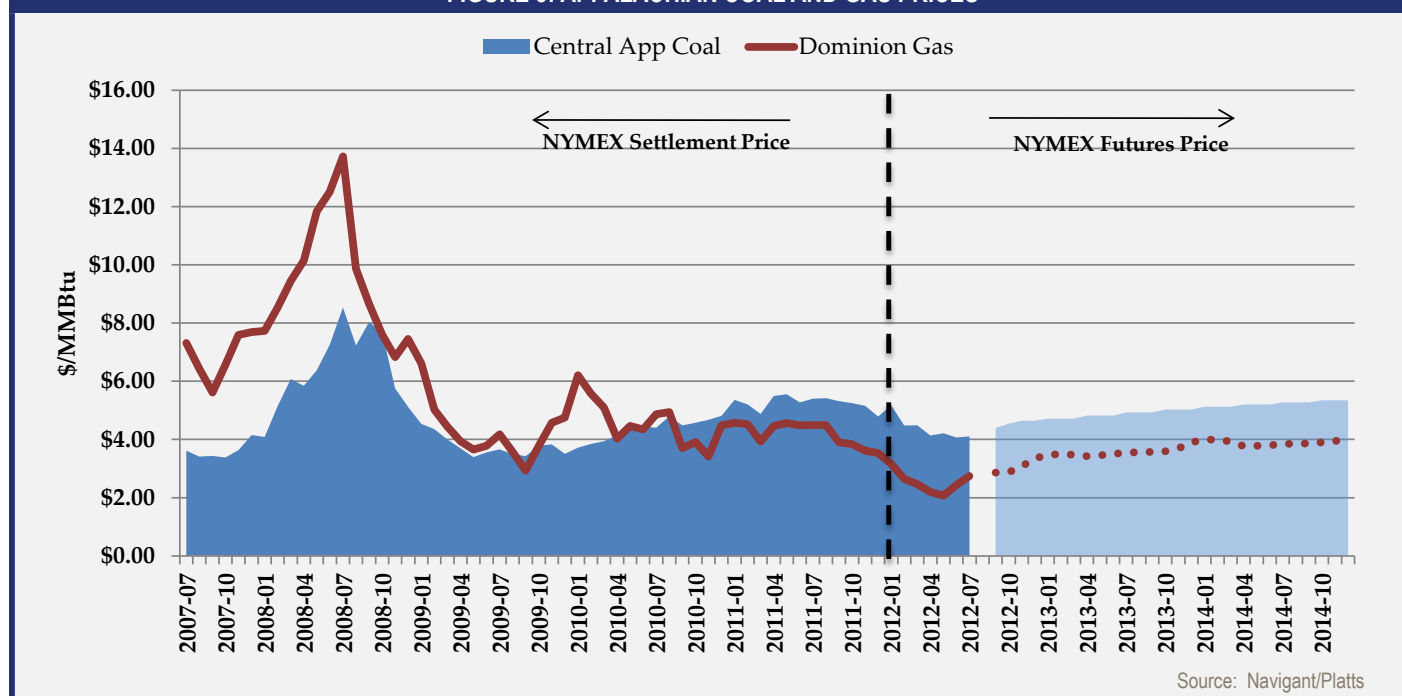
In most of the eastern region of the U.S., natural gas is now cheaper than coal. Figure 3 shows historical prices for the Dominion natural gas hub in Pennsylvania and Central Appalachian coal in West Virginia, Pennsylvania and Ohio, along with the NYMEX futures for both these commodities over the next three years.<sup>5</sup> As can be seen, the price advantage for natural gas is expected to remain in place through the end of 2014 – and perhaps longer — based on the NYMEX prices during the first two weeks of August 2012.

The outlook for coal generation in the Mid-West and Mid-Atlantic is impacted by the fact that they are among the oldest and least efficient in the country. The average heat rate, defined as the heat input required to generate one kWh of electricity, is greater than 11,000 Btu for coal-fired plants in this area. A new, efficient combined-cycle gas power plant only requires around 7,000 Btu to generate one kWh of electricity. Adjusting for these heat rate differentials contributes to the price advantage in favor of natural gas generation, and is included in the

price charts. Of course, there will be a wide variation in the efficiencies and delivered fuel costs for both coal and natural gas power plants, so not all coal generation will be displaced at the same time. Additionally, the vast majority of coal plants purchase coal under long-term contracts, and thus not all plants are immediately exposed to the full impact of price fluctuations.

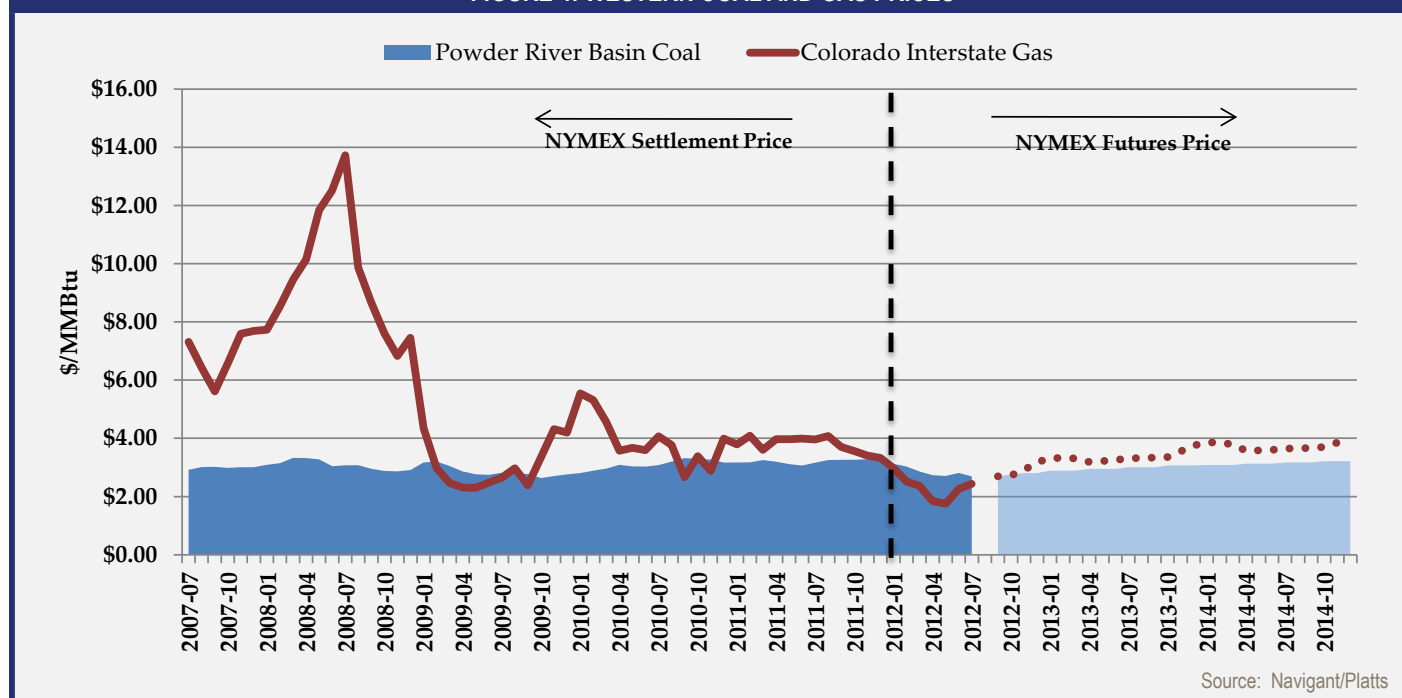
While coal has generally maintained its price advantage relative to natural gas in the western U.S., the overall coal-to-gas switching phenomenon has not been affected due to regional factors. The most prolific coal basin in the U.S., producing about 40 percent of U.S. coal, is Wyoming's Powder River Basin. The historical relationship between Powder River Basin coal and Colorado Interstate Gas

FIGURE 3: APPALACHIAN COAL AND GAS PRICES



5. Coal prices have been adjusted to reflect transport costs and the higher heat rate of coal-fired versus gas-fired power plants.

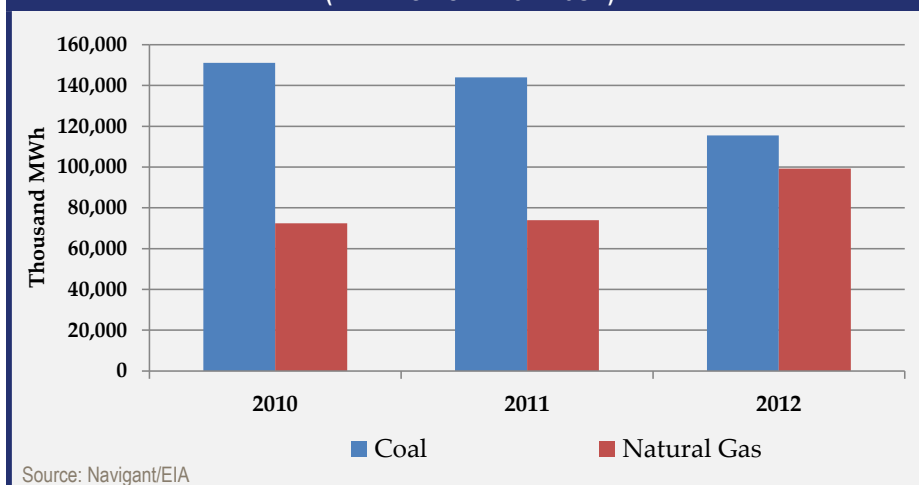
FIGURE 4: WESTERN COAL AND GAS PRICES



(CIG) is shown in Figure 4. Natural gas has been less expensive than coal in the western states by a smaller margin and for a shorter time than in the eastern U.S., and is currently not lower cost than Powder River coal. Despite the high volume and low price of Powder River Basin coal, it has not impeded significant coal-to-gas switching in the U.S. for two main reasons. First, because only 10 percent of the coal-fired power plant fleet is located in the western U.S., near the Powder River Basin. Second, because the Powder River Basin coal is sub-bituminous coal, which is “less desirable” than Appalachian “metallurgical” coal due to its lower heat content. Thus, the eastern U.S. is effectively the key competitive battleground area for coal and gas competition and lately for switching.

The low cost of natural gas in the eastern U.S. relative to the cost of coal is the main reason U.S. coal-fired genera-

FIGURE 5: AVERAGE U.S. MONTHLY ELECTRICITY PRODUCTION BY FUEL TYPE (AVERAGE OVER JAN-JUN)



tion dropped an average of 28.5 TWh/month<sup>6</sup> or 20 percent during the first half of 2012 compared to the first half of 2011, while natural gas generation increased by 25 TWh/month<sup>7</sup> or 34 percent. The changing mix for electric generation between coal and natural gas over the last three years is illus-

trated in Figure 5. The displacement of coal-fired generation with gas-fired generation has amounted to an average of about 6 Bcfd, with the majority of the switching occurring in the RFC and SERC Reliability Corporation<sup>8</sup> NERC regions.

6. EIA data for MWh of generation by fuel type.

7. EIA data for MWh of generation by fuel type.

8. The SERC Reliability Corporation is the successor to the Southeast Electric Reliability Council.



It is important to note that many of the coal plants currently reducing output due to low natural gas prices are the same coal plants scheduled for retirement. So, in one sense, coal-to-gas "switching" will continue on a more permanent level, due to the replacement or the retirement of coal-fired capacity, even though short-term switching based solely on fuel prices should decrease. Following this pattern, as natural gas prices trend moderately upwards towards what Navigant believes is the fuel's natural long-term sustainable price range of \$4-\$6 per MMBtu, and depending upon fluctuating coal prices, the recent discount of natural gas prices to coal prices may disappear. Only time will tell. What we do know is that the 48 GW of coal plant retirements expected between 2011 and 2017, noted earlier, are apt to put downward pressure on coal prices. Nevertheless, the recent proliferation of shale gas production should ensure that coal and natural gas prices remain in close proximity to one another.

As can be seen in Figure 6, the Marcellus shale deposit lies under the heart of U.S. coal country and will drastically change natural gas flow patterns and prices in a region that has traditionally imported the majority of its natural gas. It has been estimated that the Marcellus shale has total recoverable reserves exceeding 400 Tcf, and estimates continue to rise as development of the shale continues. Some of today's estimates are close to double the estimate in Navigant's 2008 *North American Natural Gas Assessment* completed for the American Clean Skies Foundation, where Navigant first identified the rapidly expanding development of natural gas from shale gas resources.<sup>9</sup> Furthermore, the Marcellus overlaps a portion of the Utica shale, which is still in the early stages of exploration and could contain even more natural gas than Marcellus. So, the ability of natural gas to compete head-on with coal for the long term appears certain.

While fuel cost is the main driver of the first type of coal-to-gas switching, it is only one part of the reason why the retirement of old coal-fired generation units is occurring. The Environmental Protection Agency (EPA) has issued several rules that will significantly impact the operation of the coal-fired power plant fleet, which currently constitutes more than 30 percent of the electrical generation

FIGURE 6: DISPLACEMENT OF COAL CAPACITY



capacity in the U.S. The most significant of these rules are the Mercury and Air Toxics Standards (MATS) and the Cross State Air Pollution Rule (CSAPR). MATS, formerly known as the Maximum Achievable Control Technology, set emission limits on mercury and other toxic pollutants from power plants. As the rule does not allow for trading of credits between plants, owners cannot over comply at one site and leave another without controls. Coal plants have until April 2015 to comply with MATS, with individual states able to grant an additional year if needed. The timeline can be extended to a fifth year in exceptional circumstances where a unit is required for reliability.

CSAPR was designed to meet the requirements of the Clean Air Act and the Regional Haze Rule. The Clean Air Act requires EPA to control NO<sub>x</sub> and SO<sub>2</sub>, as well as particulate matter. The Regional Haze Rule was designed to limit emissions that degrade visibility in national parks and wilderness areas. Under CSAPR, a pollution limit or budget was set for each state that contributed significantly to a downwind state's pollution problems. The agency also adopted a cap-and-trade approach that would allow intrastate and limited interstate trading of emissions allowances, but also set hard limits on how much each state could emit.

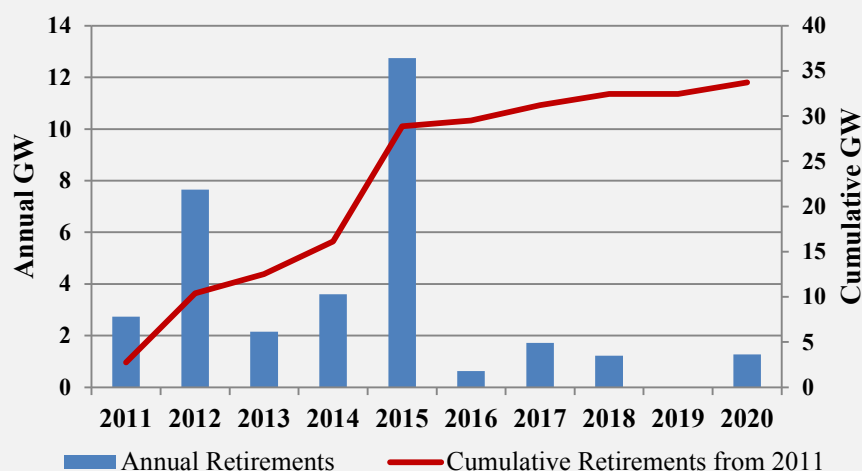
9. Navigant estimated the Marcellus recoverable resource in 2008 at 262 Tcf; higher ranges are reflected in recent estimates by consulting companies IHS (267 Tcf to 534 Tcf) and ICF (460 Tcf to 698 Tcf). See 'New Figures on Shale Gas Optimistic', Pittsburgh Tribune-Review, March 20, 2012, ([http://triblive.com/x/pittsburghtrib/news/regional/s\\_787326.html](http://triblive.com/x/pittsburghtrib/news/regional/s_787326.html)).

On Aug. 21, 2012 the U.S. Court of Appeals for the District of Columbia Circuit vacated CSAPR, finding that EPA went beyond the scope of its authority. In the meantime, the Clean Air Interstate Rule (CAIR) remains in effect until a successor program can be developed. The fact that the court left CAIR in place while the EPA comes up with a replacement for the rejected CSAPR standards is a good indication that some standards will continuously be in effect.

Retirements are expected to occur mainly over the next few years – to meet MATS – and mainly in the RFC and SERC NERC regions. Actual and announced retirements by year are shown in Figure 7. The disparity of retirements across the country is shown in Navigant's estimate of total retirements, including both actual and announced retirements and estimated unannounced retirements, illustrated in Figure 8.

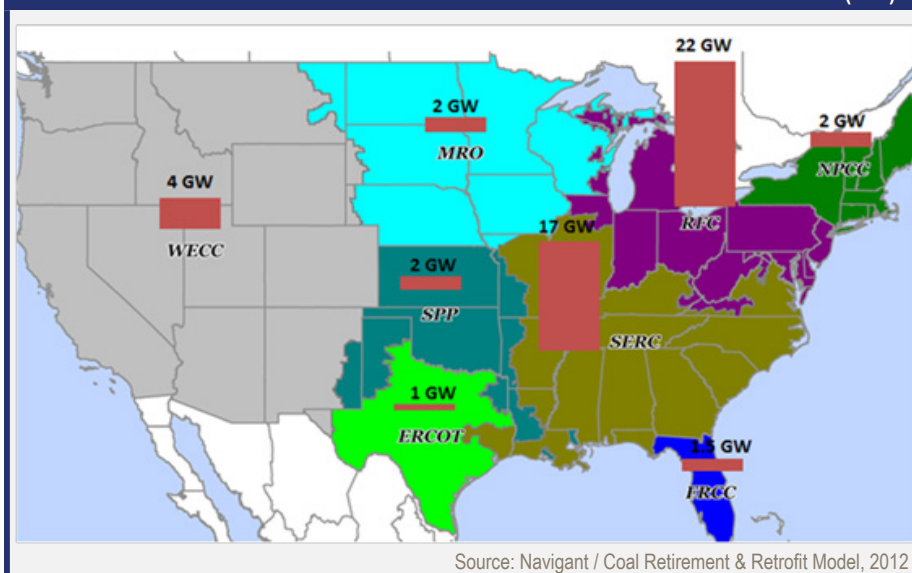
Using our Coal Retirement and Retrofit Model, Navigant projects a total of 48 GW of coal-fired power plant retirements from 2011 through 2017. This figure contains about 16 GW of retirements beyond those that have been announced as well as almost 2 GW of announced retirements in the Pacific Northwest and one GW of announced retirements in Texas that are scheduled to occur beyond the next five years. The main drivers of retirements are the relative prices of coal and gas as power generation fuels, and the potential capital costs to retrofit power plants to meet plant-specific environmental requirements such as those of MATS. As indicated in Table 1, most of the units that have announced retirement are older (greater than 50 years in service), smaller (by 46 percent) and have

FIGURE 7: ACTUAL AND ANNOUNCED COAL-FIRED RETIREMENTS



Source: Navigant analysis

FIGURE 8: PROJECTED COAL RETIREMENTS FROM 2011 BY NERC REGION (GW)



Source: Navigant / Coal Retirement &amp; Retrofit Model, 2012

lower utilization (42 to 63 percent) than the nation's coal fleet as a whole. In today's new environment, with natural gas competitive with coal as a power generation fuel, the economics don't support pouring retrofit money into such plants when they can be replaced with more efficient natural gas-fired generation.

Even though CSAPR would not have impacted the western states, the Re-

gional Haze Rule will affect these states. There are currently approximately 4 GW of announced retirements in the West, but this number could grow based on the recently released implementation plans to meet the Regional Haze Rule. Recently, the EPA has reviewed State Implementation Plans or issued Federal Implementation Plans for coal plants in Arizona, Nevada, Utah, New Mexico, Colorado, Wyoming and Montana.

The plans could impact an additional one GW of operating capacity that is not currently announced for retirement. Retirements of 5 GW throughout the West would account for less than 3 percent<sup>10</sup> of total region-wide generation capacity, or up to 0.5 Bcfd of natural gas demand. The impact of coal retirements on the west, in contrast to other areas of the country, will likely be minimal.

In most instances, power plant owners consider their alternatives before announcing final retirement plans. The lack of a state-level rule (like CSAPR) in the West to address the Regional Haze Rule has resulted in specific equipment being proscribed on a plant-by-plant level. It has been speculated that the repeal of CSAPR in the East may drive a similar, plant-by-plant approach in those states, with all reductions to be achieved at a plant level and without emissions trading to mitigate retirements, unlike CSAPR. This could cause far more retirements than currently estimated by Navigant under the CSAPR Rule.

As a result of both the realignment of coal and natural gas fuel prices, and the costs of emissions allowances or mitigation, there has recently been a significant amount of substitution of natural gas-fired for coal-fired electric generation. Short-term economic switching has likely amounted to more than 6 Bcfd of incremental natural gas consumption this year versus last. While such fuel substitution would likely diminish as natural gas prices return to a more equilibrium-type level of \$4 to \$6 per MMBtu, economics still indicate switching from coal to gas in the longer-term, but in the context of the replacement of coal-fired generation capacity by natural gas-fired generation capacity. Due to the competitive natural gas prices expected to result from the new environment of shale gas abundance, along with the capital expenditures for upgrading coal plants likely to be necessary as a result of environmental policies, significant amounts of existing coal-fired generation capacity is expected to retire over the next five years, creating a long-term bump in natural gas consumption estimated at about 4 Bcfd.

This sizable volume of new natural gas demand will help support the country's expanding dry natural gas production base that has, over the past few years, grown by about this same volume annually and which, at this point, is about 65 Bcfd. Coal-to-gas switching will continue to be an important market phenomenon over the medium term, as coal-fired power plant retirements wind down. Meanwhile, new markets for natural gas, such as LNG exports and possibly industrial demand, will help sustain the ongoing development of the country's abundant, clean and inexpensive shale gas assets.

— Gordon Pickering

**About the Author »** Gordon Pickering is a Director in Navigant's Energy Practice. He received research assistance from the following Energy Practice Consultants: Gary Belter, Li Wang, Edward O'Toole and Jeff Van Home

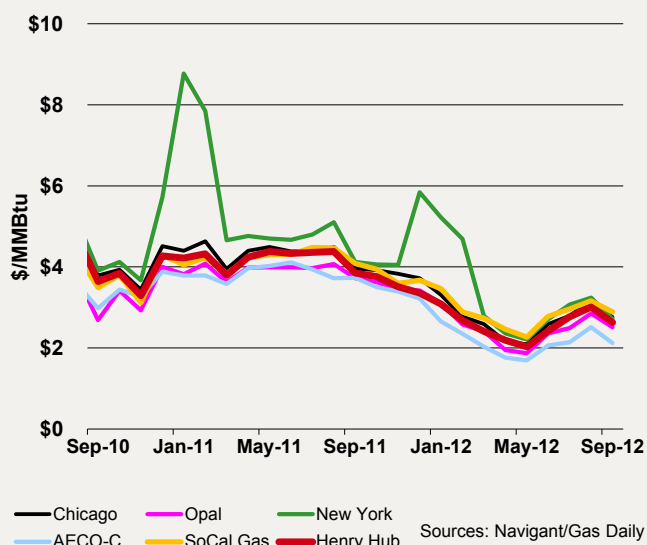
*The opinions expressed in this article are those of the authors and do not necessarily represent the views of Navigant Consulting, Inc.*

10. Estimated using total operating generation capacity per Ventyx Energy Velocity.



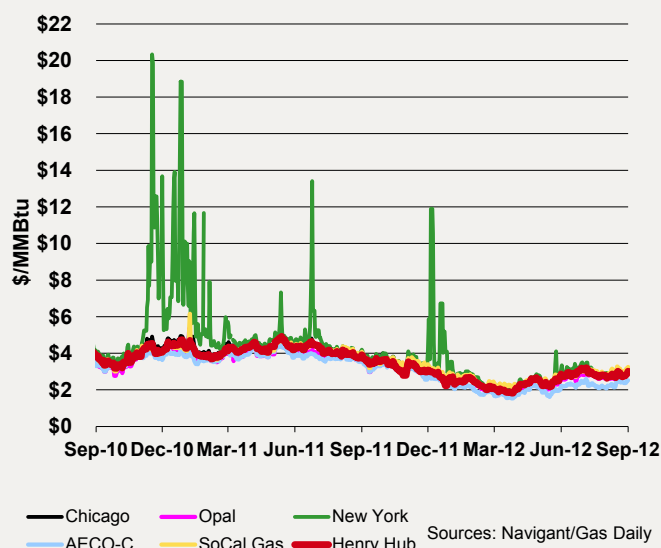
## Natural Gas Market Charts

MONTHLY GAS INDEX PRICE



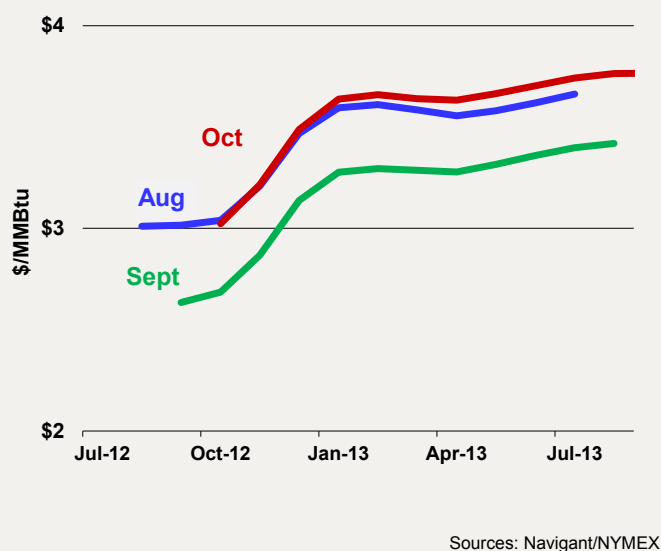
Monthly index gas prices fell back below \$3.00 last month, with Henry Hub decreasing 13% to \$2.63/MMBtu for September from \$3.01 for August.

DAILY GAS PRICE



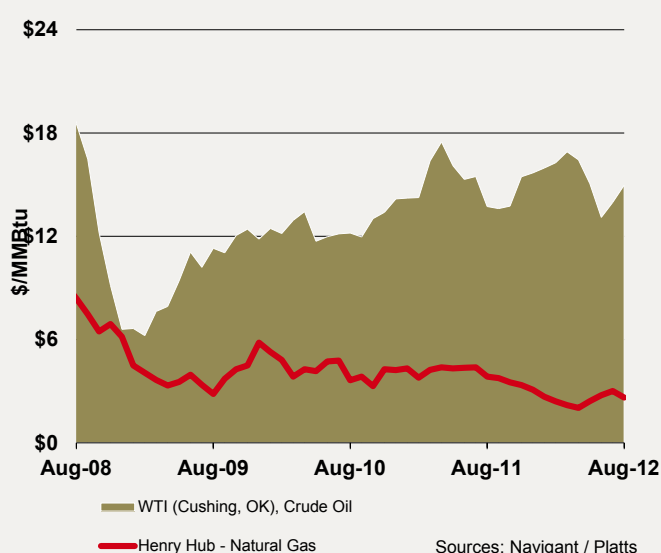
The daily spot prices ended the month up 11% from August with Henry Hub at \$3.02/MMBtu.

NYMEX FUTURES SETTLEMENT PRICES AT CLOSE



The average 12-month strip price increased to \$3.58/Mmbtu from \$3.16.

MONTHLY PRICES: OIL AND NATURAL GAS GULF COAST

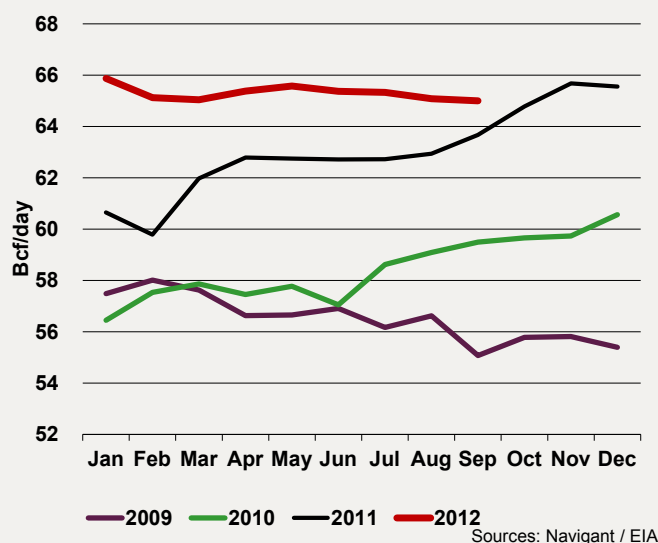


Most recent comparison shows an increasingly large monthly price spread, with Henry Hub natural gas price at \$2.63 versus WTI crude oil price at \$14.96, an equivalent energy ratio more than five and a half times.

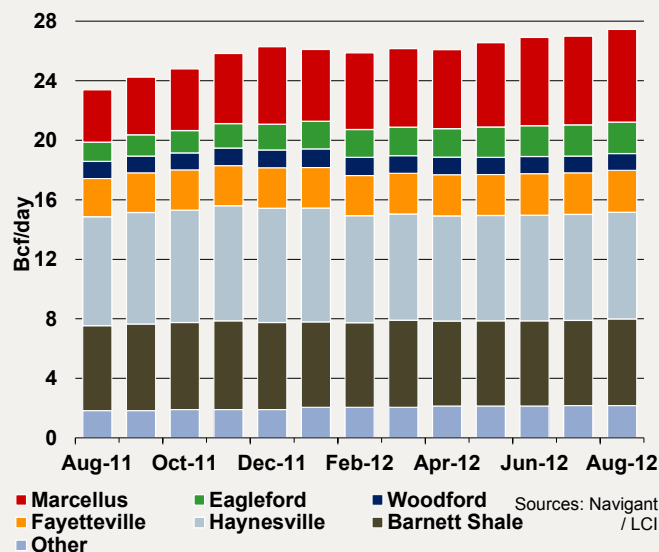


## Natural Gas Market Charts

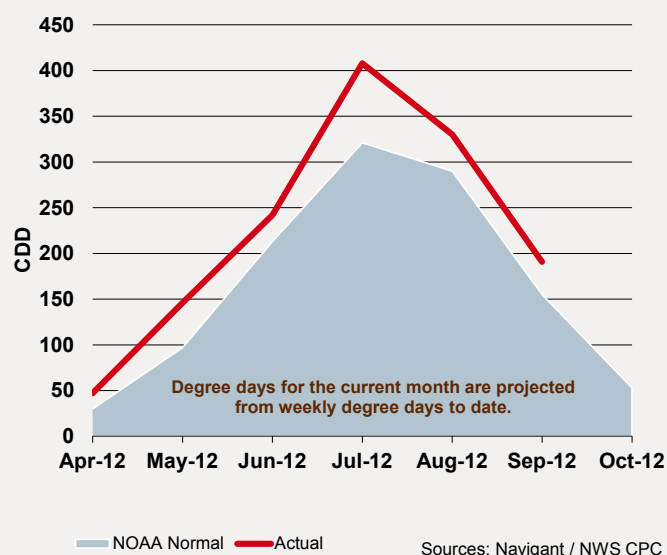
U.S. DRY GAS PRODUCTION



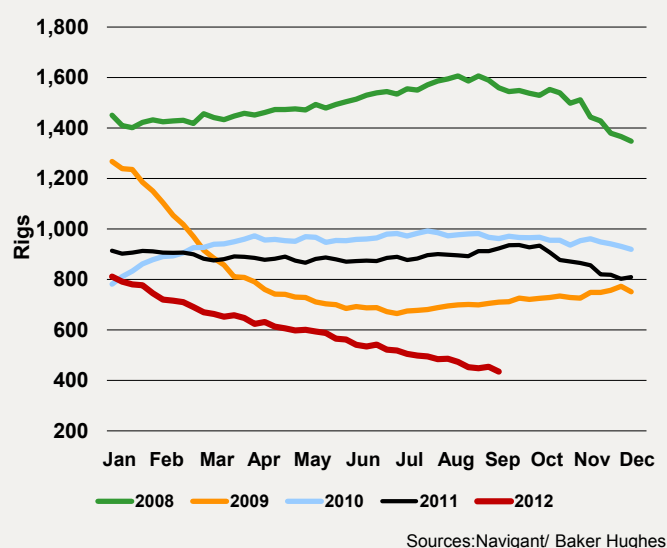
U.S. WELLHEAD SHALE GAS PRODUCTION



U.S. POPULATION-WEIGHTED CDD

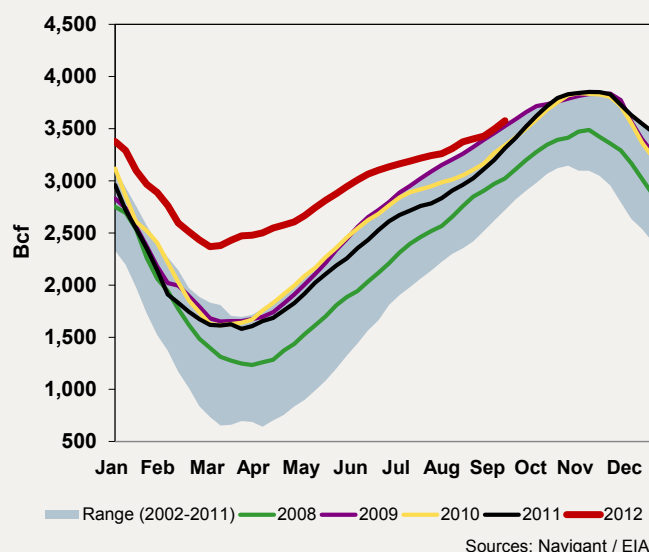


U.S. WEEKLY NATURAL GAS RIG COUNT



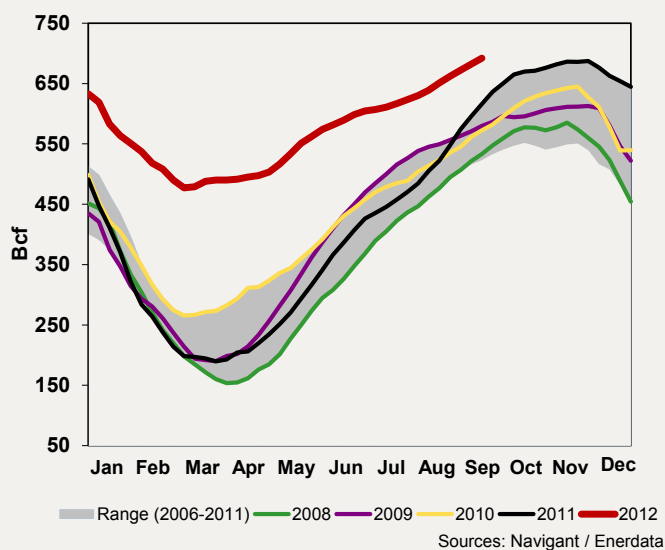
## Natural Gas Market Charts

U.S. GAS STORAGE



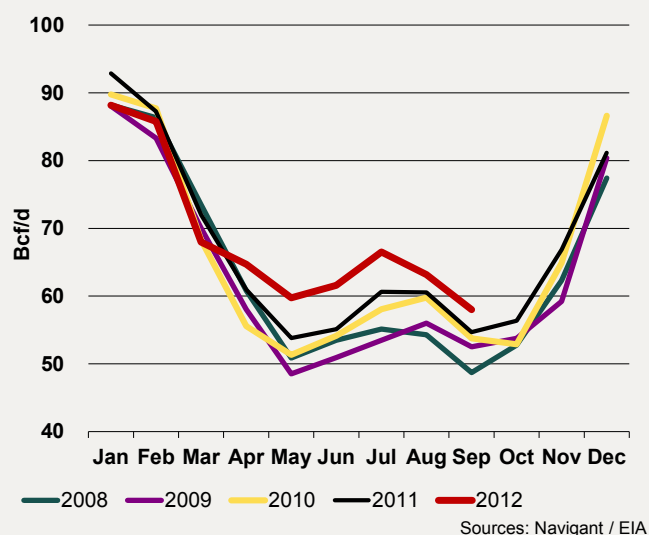
U.S. storage levels are now just at the top of the 10-year range for September.

CANADA GAS STORAGE



Canadian storage inventories are still about 23% above the 5-year norm for this time of year, at 692 Bcf vs 564 Bcf.

U.S. MONTHLY NATURAL GAS DEMAND



Demand is showing a normal seasonal dropoff, but still exceeds the average level of the prior four years at this time by about 11%.

NAVIGANT PRICE PREVIEW

Source	2013 Price Forecast (Nominal \$/MMBtu)
EIA	\$3.34
FBR Capital	\$3.50
Bernstein Res.	\$3.75
Survey Average	\$3.53
Navigant	\$3.48

Sources: Navigant Survey/Navigant

Price forecasts average near \$3.50 for 2013.

## Legislative and Regulatory Highlights



### National

#### Industry Stakeholder Group Proposes Calculation Methodology to CFTC for “Notional Amount” With Respect to Swap Definitions

On September 20, an energy industry coalition (composed of American Petroleum Institute, Commodity Markets Council, Edison Electric Institute, Electric Power Supply Association, Independent Petroleum Association of America and Natural Gas Supply Association) sent to the Commodity Futures Trading Commission a proposed methodology for calculating the “notional amount” with respect to certain types of commodity swaps. The coalition noted its special concern with how notional amounts impact companies through application of the de minimis exception to the swap dealer definition. Since the CFTC relies on “industry standards” for calculating notional amounts, the purpose of the coalition’s letter was to give notice of how its members will perform calculations, unless they receive contrary guidance from the CFTC. According to the letter, notional value should be “the absolute value that results from multiplying the quantity term of a swap by its nominal, i.e. named or facial, price”, e.g. for a basis swap, the price differential between two locations.

#### Western Congresspersons Request Expedious Treatment of LNG Export Applications

On September 24, 16 congressional representatives from western states sent a joint letter to Secretary of Energy Chu requesting prompt completion of the second of two LNG export studies by the Department of Energy, as well as expeditious review of the many pending LNG export applications before the DOE. The letter noted that the well-substantiated abundance of U.S. natural gas could help reduce historical boom-bust cycles if it could be developed to supply additional markets. Additional benefits cited were job creation, trade deficit reduction, and stimulation of domestic manufacturing and industrial sectors. Three Democrats and 13 Republicans representing Arizona, California, Colorado, Kansas, Nebraska, Nevada, New Mexico, Utah and Wyoming signed the letter, which followed a similar letter by 10 Democrat and 34 Republican Representatives from the Gulf region on August 7.

### Gulf Region

#### KOGAS Contracts to Sell Sabine Pass LNG to French Company Total

On September 13, the French energy company Total announced that its gas trading affiliate Total Gas & Power Limited entered into a 20-year supply contract with Korea Gas Corporation for the purchase of 0.7 million metric tons per year of liquefied natural gas from the Sabine Pass liquefaction terminal in Louisiana. KOGAS had obtained rights to 3.5 mtpa of LNG from Cheniere Energy Partners’ Sabine Pass project earlier in the year.

#### FERC Staff Completes Environmental Assessment for Cheniere’s Creole Trail Pipeline Project

*FERC Docket CP12-351-000*

On September 18, FERC staff issued its environmental assessment finding that the Creole Trail Expansion Project proposed by Cheniere Creole Trail Pipeline Company LP does not constitute a major federal action significantly affecting the quality of the human environment. The project will allow for the bi-directional flow of natural gas to and from the Sabine Pass Liquefied Natural Gas Terminal in Cameron Parish, Louisiana at volumes up to 1.53 Bcfd.

### Central Region

#### Chesapeake to Divest Permian Assets for \$6.9 Billion

On September 12, Chesapeake Energy Corp. announced that it had entered into multiple agreements to sell most of its Permian properties and midstream assets for \$6.9 billion, allowing it to fully repay \$4 billion in term loans during Q4 of 2012. The Permian assets will yield net proceeds of \$3.3 billion, and are being sold to subsidiaries of Chevron Corp and Royal Dutch Shell, and to Houston-based Ener-Vest, Ltd. Chesapeake will retain about 470,000 acres in the Permian’s Midland Basin. Another \$3 billion in proceeds will result from the sale of Chesapeake’s midstream assets, with \$2.7 billion coming from the sale to Global Infrastructure Partners of gathering and processing systems in the Eagle Ford, Utica, Haynesville and Niobrara shale plays. Finally, another \$600 million in proceeds will result from the sale of noncore leasehold assets in the Utica Shale, where Chesapeake will retain about 1.3 million net acres of leasehold.



### **New Processing Plant Planned for Oklahoma's Cana Woodford Shale**

Caballo Energy announced on September 18 that it will build a new cryogenic processing plant for liquids rich natural gas in the Mississippi Lime and Cana Woodford Shale plays. The 60 MMcfd plant will increase Caballo's processing capacity in the region to 100 MMcfd. The site near Carmen, OK will allow for construction of a second processing plant at the same location. Caballo's mid-stream system delivers processed gas to ONEOK Gas Transmission and the Panhandle Eastern Pipeline, with NGLs going to ONEOK NGL Pipeline. The Carmen processing plant is expected to be operational during Q1 2013.

### **FERC Issues CPCN for Alliance Pipeline's Tioga Lateral Project**

*FERC Docket CP12-50-000*

On September 20, FERC issued a Certificate of Public Convenience and Necessity authorizing the construction and operation of Alliance Pipeline L.P.'s Tioga Lateral Project in North Dakota. The project will connect natural gas production in the Bakken shale formation in eastern Montana and western North Dakota to Alliance's pipeline system currently extending from the U.S.-Canada border in North Dakota to Chicago. In issuing the Certificate, FERC found that the project did not rely on any subsidization by existing customers, that the project would have no adverse impacts on existing pipelines or customers, and that the project would allow for transport of liquids rich gas to markets rather than the continuation of flaring or venting due to the lack of infrastructure.

### **Quicksilver Resources and SWEP Execute Joint Development Agreement for Sand Wash Basin**

On September 24, Quicksilver Resources announced the execution of a Joint Development Agreement with Royal Dutch Shell subsidiary SWEPI LP with respect to their oil and gas interests in Colorado's Sand Wash Basin. The companies will establish an 850,000 acre Area of Mutual Interest. SWEPI will be the operator of the majority of the lands subject to the agreement, which is expected to close in late 2012.

## **Northeast/Appalachia**

### **Inergy Midstream Announces Execution of Binding Precedent Agreements for Commonwealth Pipeline Capacity**

On September 20, Inergy Midstream LP announced that subsidiaries of UGI Corporation and WGL Holdings have executed binding precedent agreements for firm transportation capacity on the Commonwealth Pipeline. The pipeline will provide a route for natural gas from the Marcellus and Utica shale plays to reach the Mid-Atlantic region, extending from Inergy's MARC I Pipeline to interconnections in southeastern Pennsylvania with Ni-Source, Texas Eastern, Transco and Eastern Shore interstate pipelines. The Commonwealth Pipeline is expected to have an initial capacity of 800 MMcfd coming into service in 2015; project sponsors are working on further precedent agreements to further support the project.

### **New York's Department of Environmental Conservation Rejects Calls for Independent Health Study of Hydrofracking**

On September 20, New York's Department of Environmental Conservation announced that it was rejecting calls for the state to commission an outside health study that would determine the future of hydraulic fracturing in the state's shale gas plays. The DEC reiterated the Governor's instructions to "let the science determine the outcome" and stated that government is the most credible entity to make the determination. In that vein, DEC requested the New York State Health Commissioner, in consultation with the most qualified outside experts, to review DEC's health impact analysis of hydrofracking, after which DEC will make its decision on hydrofracking in the state.

### **Potential Joint Venture to Develop Pipeline to Deliver Natural Gas from Utica Shale**

On September 4, DTE Energy, Enbridge Inc. and Spectra Energy Corp. announced the execution of a Memorandum of Understanding to jointly develop the NEXUS Gas Transmission system to deliver natural gas from the Utica Shale in Ohio to gas markets in the U.S. Midwest, including Ohio and Michigan, and Ontario, Canada. The project would have a capacity of up to one Bcfd, and would use existing pipeline corridors to serve Michigan and the existing Vector Pipeline to reach Ontario. The Vector

Pipeline is a joint venture of DTE and Enbridge, but the MOU provides for Spectra to become a 20 percent owner. Expected interconnects for the project include MichCon, Consumers Energy, Enbridge's Tecumseh Gas Storage and Union Gas' Dawn Hub. The partners plan an open season in Q4 of 2012, with a potential in-service date of late 2015.

#### **Sunoco Logistics Partners Announces Successful Open Season for Mariner East Project to Transport Marcellus NGLs**

On September 26, Sunoco Logistics Partners LP announced a successful open season for its Mariner East Project, which will provide transportation of natural gas liquids from the Marcellus shale play to planned new NGL infrastructure at Sunoco's Marcus Hook, Pennsylvania refinery site. Sunoco expects initial capacity to be 70,000 barrels per day of NGLs, in service by early 2015. Range Resources announced on the same day that it had signed a 15-year agreement to become the anchor shipper on Mariner East.

#### **Pennsylvania PUC Approves New Natural Gas Local Distribution Company Using Marcellus Gas Supply**

On September 26, the Pennsylvania Public Utilities Commission approved an application by Leatherstocking Gas Co. to provide natural gas utility service to customers in northern Susquehanna County currently unserved by natural gas. According to its application, Leatherstocking plans to obtain its gas supplies from local Marcellus Shale sources. The PUC noted the likely savings that will result from the switch from high cost heating sources such as fuel oil and propane to lower cost natural gas. Leatherstocking is a partnership of Corning Natural Gas Corp, an existing New York natural gas distribution company, and Mirabito Holdings, an existing New York energy services company.



### **British Columbia**

#### **British Columbia and Republic of Korea Sign MOU on Cooperation and Collaboration in Joint Energy Sector Initiatives**

On August 28, British Columbia's Ministry of Energy and Mines signed a five-year, non-binding Memorandum of Understanding with the Republic of Korea's Ministry of Knowledge Economy to establish a collaborative framework for the development of joint energy sector initiatives. The MOU provides for cooperation in the promotion of trade, investment and R&D in the energy sector, as well as the creation of an annual "Korea-Canada Natural Gas Forum" for participation by the Korean and B.C. governments, as well as companies and research institutions.

#### **British Columbia Announces \$120 Million in Royalty Credits for Infrastructure Projects**

On September 20, British Columbia's Ministry of Energy and Mines announced the latest results of the province's Infrastructure Royalty Credit Program, providing for \$120 million in royalty reductions to facilitate 21 new infrastructure projects in northeast B.C. The royalty credits can be recovered for up to 50 percent of an approved projects' cost. The Ministry expects the projects to generate \$260 million in capital spending in B.C., creating over 1,650 jobs as well as supporting B.C.'s emerging LNG export industry.

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## About Navigant

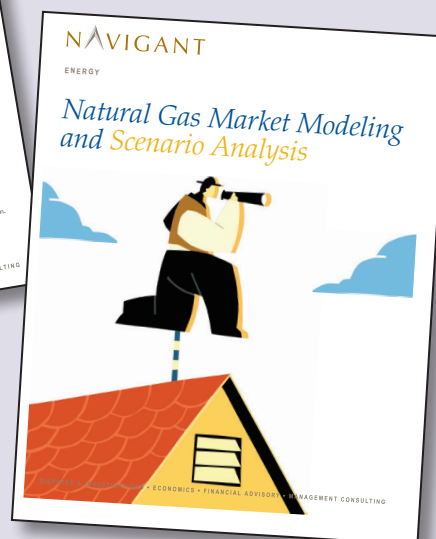
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Out of its Sacramento and Houston offices, Navigant's Fuels experts focus on the North American market offering fuels services to utilities and public entities, financial services companies, independent power producers, natural gas producers, pipelines, LNG developers, and large industrial end-users. Among other tasks performed for clients, the Fuels Practice has performed due diligence analyses and market analyses/price forecast studies, provided contract support (transportation, supply, and storage), developed fuel plans, and provided litigation and regulatory support.

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