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The Future of U.S. Climate Policy: Coal, Carbon Markets, and the Clean Air Act

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Bloomberg Businessweek**Global Economics**<http://www.businessweek.com/articles/2014-09-11/dirty-coal-demand-rises-thanks-to-clean-air-rules>

Clean-Air Rules Revive Demand for Dirty Coal

By [Mario Parker](#) September 11, 2014

The dirtiest coal in the U.S. is becoming popular again. Now that more of their power plants can remove toxins such as sulfur dioxide (SO₂), utilities are buying coal with the highest levels of pollutants after abandoning it decades ago in favor of cleaner-burning varieties from Appalachia and Wyoming. This is good news for coal producers in Illinois, home to some of the dirtiest coal reserves in the U.S. Last year demand for the state's coal hit its highest level since 1990, as sales of competing Appalachian coal dipped and consumption of coal from Wyoming rose at a slower pace. "Here we are growing, while the industry's shrinking," says Michael Beyer, chief executive officer of Foresight Energy ([FELP](#)), an Illinois company with four coal mines in the southern part of the state.

Coal from the Illinois Basin, which stretches across the state and into parts of Indiana, Missouri, and western Kentucky, contains more sulfur than that from other regions of the U.S. It fell from favor after 1990, when an expansion of the Clean Air Act put limits on SO₂ emissions, which cause acid rain. Over the next decade, utilities cut the amount of coal they bought from the region by 46 percent. By the mid-'90s, plants had started installing scrubbers that could remove 95 percent of SO₂ emissions.

Today, more than 70 percent of U.S. coal plants have scrubbers. By 2025 all of them will, according to Wood Mackenzie, an Edinburgh-based energy consulting firm. That should boost demand for coal from the Illinois Basin. It's cheaper than Appalachian coal and burns hotter than Wyoming coal, producing more energy. According to the U.S. Department of Energy, production from a region designated by the government as the Eastern Interior, which includes the Illinois Basin, is forecast to rise 9.4 percent in 2015, while production from parts of West Virginia, Virginia, and Kentucky is projected to decline 14 percent. Coal from Wyoming is expected to rise 4.4 percent next year.

In June, Foresight held an initial public offering and opened a \$450 million mine in southern Illinois called the Viking Mine. In July, Sunrise Coal, a subsidiary of Hallador Energy ([HNRG](#)), bought Vectren Fuels for \$320 million to gain access to mines in Indiana, Illinois, and western Kentucky. The Illinois Basin's share of U.S. production will climb to 20 percent by 2040 from 13 percent currently, according to the U.S. Energy Information Administration. Environmental groups such as the Sierra Club have fought new permits in Illinois but have mostly failed to stop the expansion.

Investment is drying up in Appalachia. Two of its biggest coal companies, Alpha Natural Resources ([ANR](#)) and Arch Coal ([ACI](#)), plan to close as many as 13 mines in 2014. Making matters worse for the region, the Environmental Protection Agency's Mercury and Air Toxics Standards rule goes into effect next year. Beginning in April 2015, all utilities will have to install expensive scrubbers in coal-burning plants to reduce mercury emissions, the same technology that helps remove sulfur. The scrubbers make all coal even in terms of pollution, says Jeremy Sussman, an analyst at Clarkson Capital. That means utilities make purchases based on economics. Illinois coal is cheaper to mine and transport than

Appalachian coal, and it delivers more bang for the buck than Wyoming coal, he says. Illinois is closer to more coal-fired plants in the Midwest and Southeast than Wyoming, and its flat terrain is easier to mine than the rolling hills of Appalachia.

At its Viking Mine, Foresight is able to use giant shearing machines to cut slabs of coal 3-and-a-half feet thick along a flat surface 1,400 feet wide. The coal collapses onto a belt that moves about 3,000 tons an hour. While it costs millions to install this mining machinery, it's a much more efficient way to mine—and a method that's not feasible in most parts of mountainous Appalachia. "The Illinois Basin is really going to benefit the most," says Hans Daniels, executive vice president of Doyle Trading Consultants. "You have the ideal location for mines. They're in the heart of coal-burning country."

The bottom line: Demand for Illinois's dirty coal is booming because utilities are now able to burn it without emitting high levels of toxins.

[Parker](#) is a reporter for Bloomberg News in Chicago.

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Breaking Energy

LEGAL, LNG, REGULATION

In the LNG Export Debate, the WTO Can't be Ignored

By DANIELLE SPIEGEL-FELD

on June 23, 2014 at 12:00 PM



STR/AFP/Getty Images

If history is any guide, the Russian energy firm Gazprom's recent decision to cut off gas to Ukraine will stoke the already raging debate over whether the Department of Energy (DoE) should allow increased natural gas exports from the United States.

Stakeholders have raised myriad economic and environmental concerns they believe should guide DoE's decision. Surprisingly, few, however, have acknowledged the extent to which DoE's hands may be tied by commitments the United States has made to the World Trade Organization (WTO). DoE itself has been virtually, if not entirely, mute on the subject.

The neglect of the WTO dimension is odd. Like most goods, the trade of natural gas is almost certainly subject the rules of the General Agreement on Tariffs and Trade (GATT), which is administered by the WTO. And herein lies the rub: Article XI of the GATT prohibits WTO members

from restricting exports of covered goods to other WTO members. If challenged, this provision could make it quite difficult for the U.S. to justify limiting the quantity of natural gas allowed to leave our shores.

Other commentators, including a former chairman of the WTO Appellate Body, have raised similar concerns before. But for some reason the message seems to get lost in the echo chambers of D.C. And with the debate over America's export policy poised to ramp up further, it bears reiterating the role of the WTO.

The GATT does contain exceptions that relax the strictness of the prohibition on export restraints. For instance, states can apply restrictions "temporarily" to relieve critical shortages of a product. But given that the export restrictions imposed by DoE date back decades and that we're in the midst of a shale gas boom, the idea that any such restrictions are temporary seems far-fetched.

There's also the possibility of justifying the restriction under the "General Exceptions" to the GATT contained in Article XX. Article XX(g), which excuses trade restrictions needed to conserve "exhaustible natural resources," and Article XX(b), which allows trade restrictions necessary to protect "human, animal or plant life or health," seem particularly relevant and DoE may be able to make use of one of these subsections if it were to restrict exports on environmental grounds.

Yet neither provision offers a straight-forward solution to the problem. To list just one difficulty, Article XX(g) requires that the defending state impose domestic production limits in parallel to the export restrictions and, at least at the federal level, there's little evidence the U.S. wants to exercise such restraint. As for Article XX(b), any evidence that suggested the U.S. were really restricting exports to keep down domestic prices of natural gas would make it very difficult to successfully use this defense.

Finally, the United States' recent successes at the WTO could generally complicate efforts to invoke Article XX: in the last two years, the U.S. has won two separate WTO disputes against China in which China attempted to use Article XX to excuse export restrictions of certain raw materials used in the manufacture of electronics and other goods. True, the debate over natural gas exports provides a unique and distinguishable set of facts. But the optics of invoking Article XX on the heels of these victories could pose a challenge.

To be sure, none of this suggests that it would be impossible for the U.S. to design a regime that curtails exports without running afoul of the WTO; there may be some important policy rationales for maintaining such restrictions and the WTO's rules may be flexible enough to accommodate these concerns. But it does suggest that the government would be foolish to ignore the constraints the WTO may impose. As is usually the case, it's better to navigate the obstacles that lie ahead with eyes wide open than eyes wide shut.

Danielle Spiegel-Feld is currently the Program Director of the Guarini Center on Environmental, Land Use and Energy Law at NYU School of Law.

Topics: LNG, LNG Exports, Natural Gas, Natural Gas Exports, NYU Law, Shale Gas, US LNG Exports, World Trade Organization, WTO



September 13, 2013

U.S. Coal Companies Scale Back Export Goals

By **CLIFFORD KRAUSS**

HOUSTON — The ailing American coal industry, which has pinned its hopes on exports to counter a declining market at home, is scaling back its ambitions as demand from abroad starts to ebb as well.

Just south of here, New Elk Coal terminated its lease late last month at the Port of Corpus Christi, where it had hoped to export coal to Brazil, Europe and Asia. Two days later, when the federal government tried to auction off a two-square-mile tract of land in Wyoming's Powder River basin, a region once poised to grow with exports to Asia, not a single coal company made a bid.

They were the latest signs that a global coal glut and price slump, along with persistent environmental opposition, are reducing the likelihood that additional exports could shield the industry from slipping domestic demand caused by cheap natural gas and mounting regulations.

United States coal exports this year are expected to decline by roughly 5 percent from last year's record exports of 125 million tons, and many experts predict the decline will quicken next year.

At the beginning of 2012, the coal industry had plans to expand port capacity by an additional 185 million tons. But those hopes have faded this year.

"Global coal prices right now are not supportive of large-scale U.S. coal exports," said Anthony Yuen, a Citigroup energy analyst.

European demand is soft, and the economies of the developing world are slow. One reason for the slumping prices is China's softening demand growth, experts say.

For most of the last decade, China's soaring thirst for energy accounted for more than 50 percent of world coal demand, driving up international coal prices and stimulating mining activity across Australia, Indonesia and as far away as Colombia and South Africa.



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Australia and Indonesia straining to produce for China, South Korea and Japan increasingly looked to the United States for future supplies, stimulating interest in the building of several export terminals in Oregon and Washington State and on the coast of the Gulf of Mexico.

But over the last few months those hopes appear to be receding with a reshaping of global coal markets. After years of mounting imports of coal to fuel its growing economy, China has taken a number of steps to slow those imports. It has modernized domestic mines, made coal-fired electricity plants more efficient and stepped up development of nuclear and renewable power.

On Thursday, China announced a ban on construction of new coal-fired plants around Beijing, Shanghai and Guangzhou to control air pollution. The plan will shift new power plant construction to **natural gas**, nuclear and **solar power**. Those initiatives, along with slowing Chinese economic growth, have undercut expectations for rising imports and helped produce an overabundance that has sent world coal prices plummeting by more than 30 percent from last year. In response, international coal companies are scaling back mining and shelving export projects from Australia to the Gulf of Mexico, especially for thermal coal used to produce electricity.

“We’re seeing the beginnings of a big structural shift, particularly in the Chinese energy sector,” said Richard Morse, managing director at SuperCritical Capital, an energy consultancy. “For global markets, this is a significant bearish signal for coal.”

In the United States, a half-dozen planned export terminals in the Pacific Northwest and in the Gulf of Mexico have already been canceled over the last year because of poor economics and political opposition. Shipping experts said that if weak coal prices endured for a few more years, financing could be jeopardized for a handful of the remaining ones.

International coal prices have been slumping for about a year. The Newcastle coal benchmark spot price, which early last year rose to as high as \$120 per metric ton, declined through much of 2012 to below \$90, and finally fell below \$80 this summer.

American coal prices are also down, but they have revived somewhat in recent months along with natural gas prices. Some utilities have switched from gas back to coal. Still, coal now constitutes less than 40 percent of United States electrical generation, down from 50 percent a decade ago, and East Coast producers are struggling.

United States coal production continued to decline this year as utilities work off inventories. The continued closing of antiquated coal-burning plants as well as impending federal regulations on existing plants could slash domestic demand by half by the end of the decade, according to Rhodium Group, a consultancy. And next week, the Environmental Protection

Agency is expected to introduce revised regulations that would make the construction of new plants virtually impossible without advanced and expensive carbon capture and sequestration technologies.

Coal company revenue and stock prices have plummeted this year, forcing mining companies to cut operations, especially in Appalachia, where expenses are higher, and to lay off roughly 6 percent of their employees during the first half of the year.

Senior coal executives acknowledge that they are going through a rough patch, but they say that coal will recover.

In an e-mail, Vic Svec, a senior vice president at [Peabody Energy](#), the largest American coal company, wrote, “We continue to believe that West Coast exports represent a good long-term opportunity.”

The executives note that the state of the economy has forced many companies to shut operations of higher-cost mines, which will eventually rebalance the market once economic activity revives and drives prices back up.

“We are in a dip,” said Colin Marshall, chief executive of [Cloud Peak Energy](#), a major United States coal company.

But he added in an interview, “If history means anything, the world in a few years will need more commodities, both metals and energy including coal.”

Several export terminals in the Pacific Northwest are still being proposed, but local political opposition and years of regulatory hurdles put their future in doubt.

“It’s understandable that lenders would be getting a little bit nervous about those projects,” said Trevor Houser, head of energy and natural resources research at the Rhodium Group. “I don’t expect coal prices to return to the frothy levels of over the past decade.”

But it is [China](#), experts say, that most defines coal’s future.

Energy experts project that China, with its increasingly restrictive policies, may no longer be a net importer by 2015.

This year is a “watershed year for global coal markets,” a Goldman Sachs report said. “The window for thermal coal investment is closing.”



U.S. Energy Information
Administration

Annual Energy Outlook 2014

Release Date: May 7, 2014 | **Next Early Release Date:** December 2014 |

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Market Trends: U.S. energy demand

In the United States, average energy use per person declines from 2012 to 2040

Population growth affects energy use through increases in housing, commercial floorspace, transportation, and economic activity. However, the structure and efficiency of the U.S. economy are changing in ways that can lower energy use. Changes in consumer behavior can also have an impact, such as changes in the rate of vehicle miles traveled (VMT) per licensed driver. U.S. population increases by 0.7%/year from 2012 to 2040; the economy, as measured by gross domestic product (GDP), increases at an average annual rate of 2.4%; and total energy consumption increases by 0.4%/year. As a result, energy intensity, measured both as energy use per person and as energy use per dollar of GDP, declines over the projection period (Figure MT-7).

[figure data](#)

The projected decline in energy use per capita is brought about largely by gains in appliance efficiency, a shift in production from cooler to warmer regions, and an increase in vehicle efficiency standards, combined with modest growth in travel per licensed driver. From 1970 through 2008, energy use dipped below 320 million British thermal units (Btu) per person for only a few years in the 1980s. In 2012, energy use per capita was about 302 million Btu. In the Reference case, energy use per capita declines to 279 million Btu per person in 2040—a level not seen since 1965.

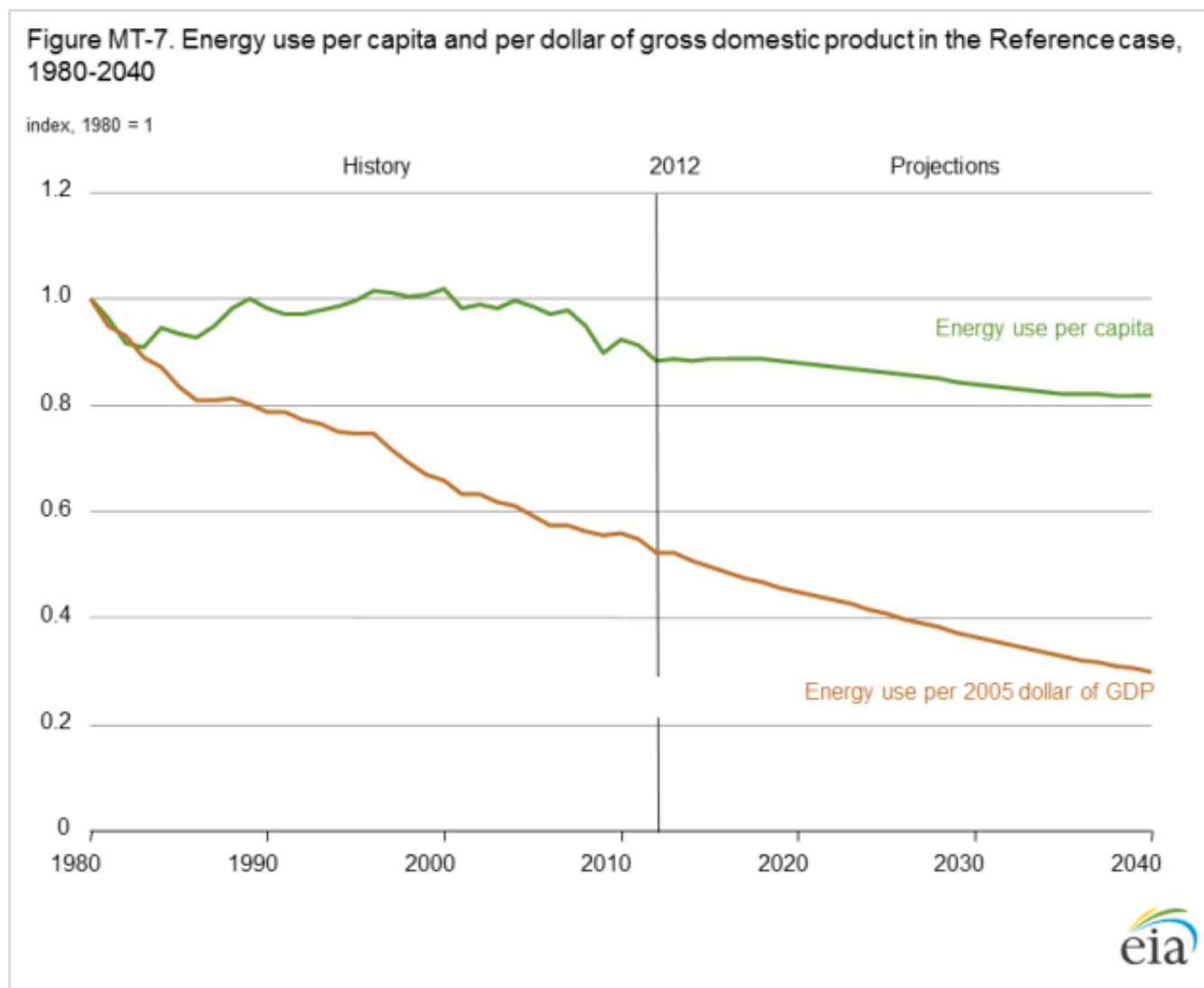
Continual changes in the structure of the economy reduce energy use per dollar of GDP. Although the service industries' share of total shipments remains below the 2012 level of 78%, the manufacturing sector shifts about 1% of the output from energy-intensive industries to non-energy-intensive industries. Efficiency gains in the electric power sector also reduce overall energy intensity, as older, less-efficient generators are retired as a result of slower growth in electricity demand, changing dispatch economics related to rising fuel prices, and stricter environmental regulations.

Industrial and commercial sectors lead U.S. growth in primary energy use

Total primary energy consumption, including fuels for electricity generation, grows by 0.4%/year in the Reference case, to 106.3 quadrillion Btu in 2040 (Figure MT-8). The largest increase, 7.8 quadrillion Btu, is in the industrial sector, with increased use of natural gas in some industries (bulk chemicals, for example) as a result of low natural gas prices coinciding with rising shipments in those industries. In the industrial sector, which was more severely affected than the other end-use sectors by the 2007-09 economic downturn, energy consumption increases by 7.0 quadrillion Btu from 2008 to 2040.

[figure data](#)

The second-largest increase in total primary energy use, 3.3 quadrillion Btu from 2012 to 2040, is in the commercial sector. Even as standards for building shells and energy efficiency are tightened and commercial energy intensity (energy use per square foot) decreases by 0.4%/year from 2012 through 2040, energy use grows by 0.6%/year as annual growth in commercial



floorspace averages 1.0%.

Primary energy use in the residential sector grows by 0.2%/year, or about 1.4 quadrillion Btu from 2012 to 2040. Energy use for space heating was down by almost 1 quadrillion Btu in 2012 because of an unusually warm heating season. In 2040, residential energy use is at 2011 levels, despite reduced energy use for space heating, lighting, and clothes washers, among other uses.

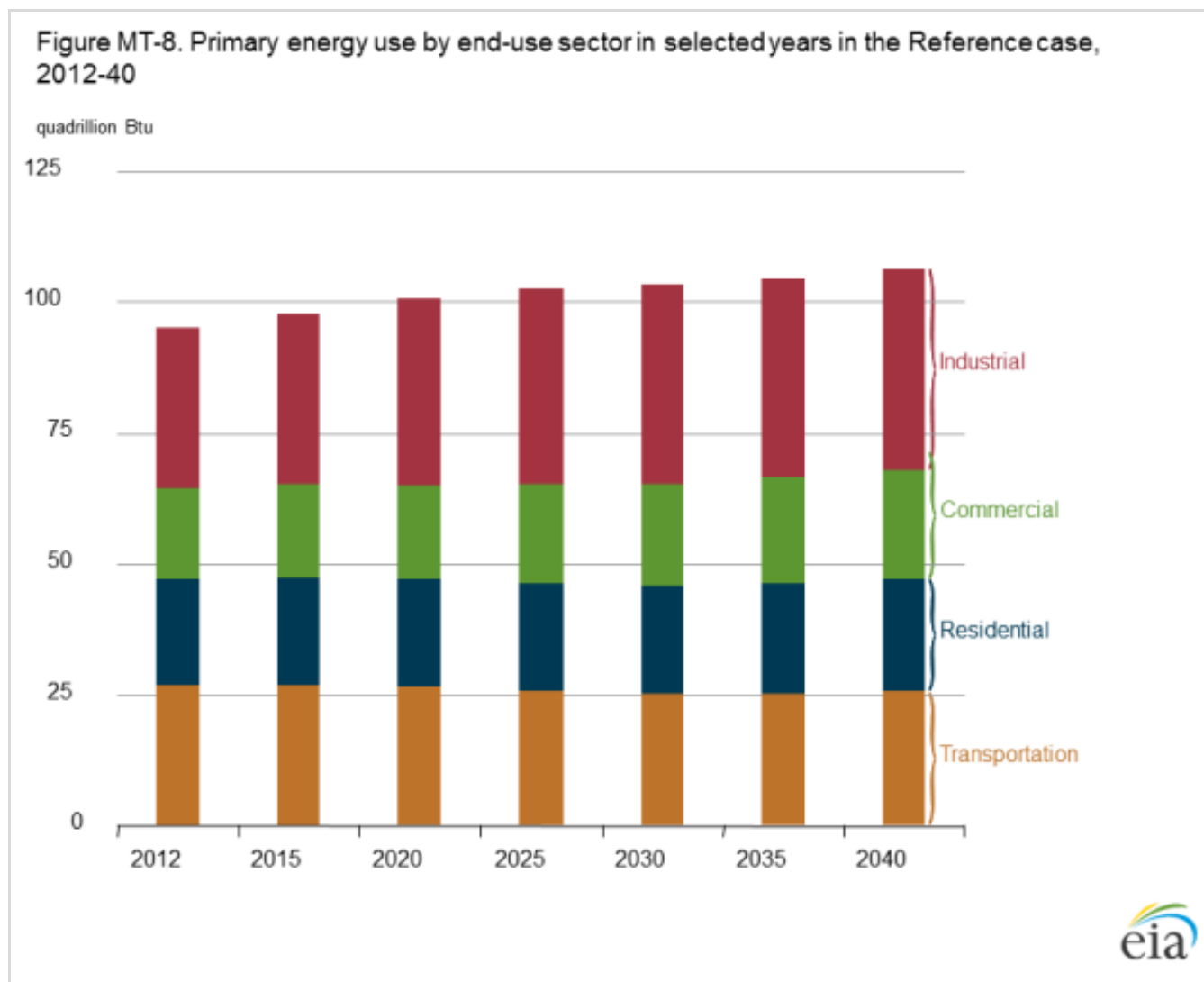
In the transportation sector, light-duty vehicle (LDV) energy use declines with the implementation of fuel economy standards. VMT remain flat (about 12,200 per licensed driver) in the near term, then begin to increase after 2025. From 2012 to 2040, total transportation sector energy use falls by more than 1 quadrillion Btu.

Renewables and natural gas lead rise in primary energy consumption

The fossil fuel share of total energy use declines from 82% in 2012 to 80% in 2040 in the Reference case, while renewable energy use grows (Figure MT-9). The renewable share of total energy use (including biofuels) increases from 9% in 2012 to 12% in 2040 in response to the availability of federal tax credits for renewable electricity generation and capacity during the early years of the projection and in response to state renewable portfolio standard (RPS) programs. Biofuel use mandated by the Renewable Fuels Standard (RFS) accounts for a small part of the increase.

figure data

Natural gas consumption grows by about 0.8%/year from 2012 to 2040, led by increases in natural gas use for electricity

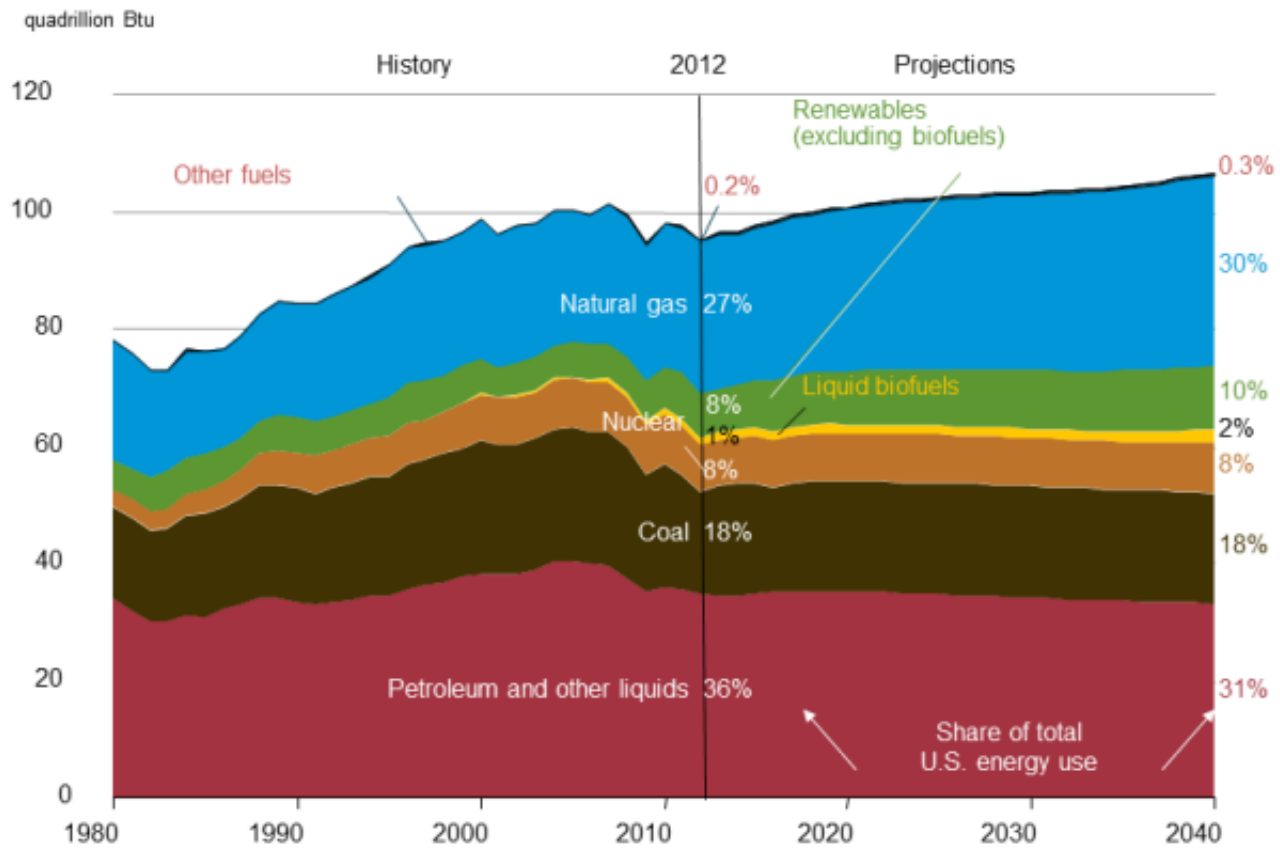


generation and in the industrial sector. Growing production from tight shale keeps the price of natural gas to end users below 2005-08 levels through 2038.

Increases in vehicle fuel economy offset growth in transportation activity, resulting in a decline in the petroleum and other liquids share of fuel use while consumption of liquid biofuels increases. Biofuels, including E85, biodiesel blended into diesel, and ethanol blended into motor gasoline (up to 15%), account for 4% of all petroleum and other liquids consumption by energy content in 2040.

Coal consumption increases by an average of 0.3%/year from 2012 to 2040, remaining between the 2011 and 2012 levels through 2040. A small amount of coal-fired power plant capacity is added: a total of 2.2 gigawatts (GW) currently under construction and another 0.5 GW added after 2016 (including 0.3 GW with carbon sequestration capability). Coal-fired capacity retirements total 51 GW between 2012 and 2040, but the remaining coal-fired plants continue to be used extensively.

Figure MT-9. Primary energy use by fuel in the Reference case, 1980-2040



Breaking Energy

OIL & GAS

US LNG Exports: Who Gets the Profits?

By CONWAY IRWIN

on May 22, 2013 at 8:45 AM



The large gap between domestic US natural gas prices and LNG prices in European and Asian markets that underlies the rationale for US LNG exports has raised the question: when US gas is sold abroad, who captures that spread?

The difference between low prices paid for gas produced in the US – currently trading at around \$4.20 per million Btu on Nymex – and much higher prices paid for LNG imports in European and Asian markets – at more than twice US levels – is behind a push to open up export markets to US gas producers. As the debate rages over what impact exporting domestically-produced gas may have on the US economy, Senators Lisa Murkowski (R-AK) and Ron Wyden (D-OR) asked experts who profits from that price spread at a hearing before the Senate Energy and Natural Resources Committee on Tuesday.

“If you’re not making big profits on the price spread, who’s getting the spread?” asked Wyden. Wyden has been outspoken in his concerns that US LNG exports, absent government-imposed volume limits, could lead to higher domestic natural gas prices.

That spread is divided up among participants in the production, liquefaction, shipping and power generation processes, with a portion of savings ultimately passed on to consumers, according to Cheniere Energy Vice-President of Government and Regulatory Affairs Pat Outtrim and Sempra LNG President Otavio Simoes. Cheniere is currently building the Sabine Pass LNG export plant in Louisiana's Cameron Parish, and Sempra is developing the Cameron LNG project in Hackberry, Louisiana.

Outtrim explained that the commercial agreements Cheniere Energy has struck with long-term LNG buyers from its Sabine Pass plant – the UK's BG and Centrica, Spain's Gas Natural Fenosa, Korea's Kogas, India's Gail and France's Total – distribute benefits among several players.

"There is a spread, and each piece of that chain gets a bit of profit," said Outtrim.

"We get a fixed fee from the liquefaction process," said Outtrim. "Then the Henry Hub [natural gas] price is paid, plus 15% to cover the cost of actually liquefying the gas." She added that the shipper receives a percentage for transporting the cargo, as does the import terminal that regasifies the gas.

"When you're contracting with a utility, as we did with English utility Centrica, that group is going to take the gas, and they will pass that savings onto their utility customers," Outtrim said. Centrica has a contract to take 1.75 million tons per year of LNG from Sabine Pass' fifth train. "You have \$3 as the fixed fee, \$3-4 as the commodity fee, plus another \$3 to ship the gas, so you have a savings in Europe of \$10 compared to a \$12 fee that they're having to pay as an oil-indexed price."

Simoes added that in addition to shippers', producers', and other transaction participants' takes from these deals, there is an additional benefit to buyers of US LNG, in that it improves their bargaining position in global markets.

"The reason that Asian buyers want to buy US LNG is that in their projections of what the Henry Hub might be – futures now show \$5.00-\$5.25/MMBtu – when you add \$3 plus \$3 plus \$2, you end up with about \$12 [\$13] gas where they are, which is essentially giving them a floor for their competition of oil-linked prices," Simoes said.

Assuming that the oil-linked LNG price is \$14, "they know they can buy it for \$12, that's their bargaining power", he said. "That's the pressure we're putting in Europe vis-a-vis Gazprom...that's the pressure we're putting in Asia for Russia, Middle East and Australia supplies." Reports suggest that Gazprom, which supplies a large share of Europe's gas imports, has responded to downward price pressure in natural gas markets by renegotiating some contract prices lower.

Outtrim and Simoes both challenged the notion that profits will all accrue to the companies drilling for and marketing the gas in the US. "It's not like one entity – like the producer – gets a \$9 per million [Btu] profit," Outtrim said. "The natural gas supplier gets the same price [at which] he would sell to

Dow Chemical or any other facility in the United States.”

“The producers simply have a larger market and can get a sustainable price for their product,”
Outtrim said.

Topics: BG, Cameron LNG, Centrica, Cheniere Energy, GAIL, Gas Natural Fenosa, Gazprom, Henry Hub, Lisa Murkowski, LNG, Ron Wyden, Sabine Pass, Sempra LNG, Senate Committee on Energy and Natural Resources, Total
