

Transformation of the Ohio Valley, While Other States Anticipate

by Marcia Merry Baker

Feb. 26—Behind the scenes, work is underway in Appalachia to implement the \$83.7 billion gas infrastructure and industrial deal signed Nov. 9, 2017 in Beijing, between China Energy Investment Corp. and West Virginia Commerce Secretary Woody Thrasher. Many leaders involved see it not only as an “oil and gas,” and

chemical program, but as a development driver to spur economic activity throughout the entire Appalachian region, which otherwise has decayed to the point of social breakdown. Moreover, there are implications for upgrading the U.S. national power profile.

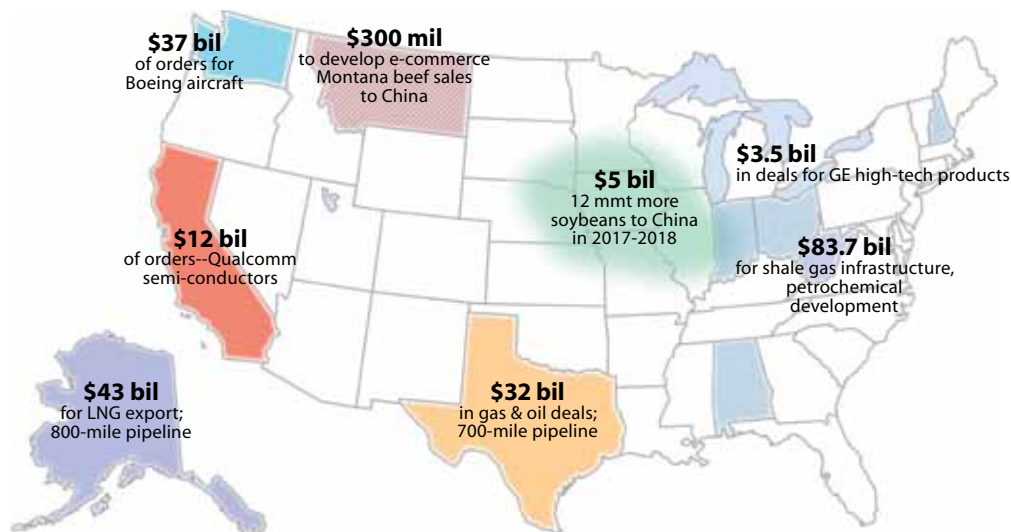
The engagement by China in projects and trade

The 2017 Trump-Xi \$253 Billion of Big Deals for China-U.S.A.

Feb. 26—In November 2017, commitments totaling \$253.5 billion were made by China for 37 big deals and commitments for U.S. imports, and investments into U.S. economic activities, over the period 2018 to 2038. President Donald Trump and President Xi Jinping witnessed the Nov. 9 signing ceremony in Beijing on Trump’s “state visit plus.” The map illustrates some of the announcements, signifying the good will they carry for future collaboration and benefit: Over half are in the energy and petro-chemicals sector. “Sino-U.S. Ties at New, Historic Starting Point,” was the headline on coverage of the accords, by “China Watch” (*China Daily*, Nov. 29) in Washington, D.C.

Gas, Oil, and Petrochemical Industry

West Virginia: \$83.7 billion in projects for the development of shale gas in the tri-state region, involving pipeline infrastructure, a new storage hub in the



state, and petro-chemical manufacturing. China Energy Investment Corp., Ltd. signed a Memorandum of Understanding with state Commerce Secretary Woody Thrasher for plans covering 20 years. The idea is that this region will become the second petro-chemical center of the United States, after the Gulf Coast.

Alaska: \$43 billion of investments to build a new 800-mile gas pipeline, and agreements for China to import Alaskan LNG were signed as a Letter of Intent by Sinopec, the China Investment Corp., and the

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deals to increase economic activity in the United States, is the character of the entire quarter of a trillion dollars worth of business accords struck last Fall in what can best be described as a “friendship” package between the United States and China. The accords were signed during the “state visit-plus” by Pres. Donald Trump to Beijing in November, hosted by Pres. Xi Jinping.

Since then, the follow-on activity adds impetus to the motion in the United States for a policy shift, for the U.S. government to turn away from the deadly casino economics dictated by Wall Street/City of London interests to a real development approach to restore productivity across all sectors—infrastructure, industry, agriculture, transportation, and vital services.

The 37 business deals signed in November, totalling over \$253 billion, included both statements of intent,

and contracts for Chinese investment into projects, and purchases of U.S. products, both immediately and over the next 20-plus years. The accompanying map and key give highlights.

As the specifics on the map show, the deals covered many regions and types of manufacturing, agriculture, and energy (aircraft, electronics, soybeans, beef, oil, gas and chemicals). Energy is the biggest sector, involving collaboration in three top energy states. Over two-thirds of the total of \$253 billion are for Chinese promotion of oil and gas infrastructure and sales: West Virginia (\$83.7 billion), Alaska (\$43 billion), and Texas (\$32 billion). The projects include a new 800-mile gas pipeline in Alaska, a 700-mile pipeline in Texas, and in West Virginia, new underground gas storage, pipelines, and a petro-chemical industrial center.

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Alaska Gasoline Development Corp., a state sponsored entity. Bank of China is ready to provide financing. The pipeline will run from the North Slope southward to the Kenai Peninsula.

Texas: A \$32 billion package of new and already agreed-upon deals was set, involving the energy sector. Among the elements: a 700-mile pipeline from the Permian oil and gas fields in West Texas to the Gulf Coast; a new storage facility on the Coast, as well as expansion of the existing Limetree hub in St. Croix, U.S. Virgin Islands. Houston-based American Ethane Co. signed a \$26 billion contract with China’s Nanshan Group for supplying ethane gas over a 20-year period.

Aviation and Electronics

Washington: \$37 billion to Boeing Co. (headquarters, Chicago) from orders and investments by China Aviation Supplies Holding for 300 aircraft over the coming years. Boeing’s largest factory is in Everett, Washington, which, with factories in other states, will produce 260 narrow-body 737s, and 40 wide-body 787s and 777s.

California: \$12 billion in orders to Qualcomm were made by three Chinese firms for the purchase of semi-conductors over the next three years. The buyers are Xiaomi, Oppo, and Vivo. Qualcomm, headquartered in San Diego, outsources most of its production, meaning that some of the work to fulfill these orders, may come from China itself.

Indiana: \$3.5 billion in deals were made by General Electric Co. with Chinese buyers, for GE to supply aviation and power generation components. Headquartered in Boston, GE has factories in many states, including, especially, engine manufacturing sites in Indiana, Ohio, New Hampshire, and Alabama.

Agriculture

Illinois: \$5 billion in increased commitments by China to buy U.S. soybeans over the 2017-2018 marketing year were made between Chinese buyers and the U.S. Soybean Council (based in Missouri). The top five U.S. soybean producing states are Illinois, Iowa, Minnesota, Nebraska, and Indiana. The letters of intent called for an additional 12 million metric tons, over the levels of U.S. soybean exports to China already expected.

Montana: A \$300 million deal was made between the Montana Stockgrowers Association and the Chinese giant e-retailer, JD.com, for the company to invest \$100 million in a new feedlot and packing plant in the state, and to buy \$200 million worth of cattle, for marketing Montana brand beef in China. This deal came on top of a growing volume of U.S. beef exports to China, which were resumed in Summer 2017 after China had banned U.S. beef imports since 2003, over disease concerns. The export approval came after the April 2017 Mar-a-Lago meeting between President Donald Trump and President Xi Jinping.

by Marcia Merry Baker



White House

President Donald J. Trump and President Xi Jinping exchange greetings Nov. 11, 2017 at the APEC Summit in Danang, Vietnam.

There are three outstanding aspects to these 2017 China-U.S. deals, in terms of importance for the momentum of the United States into a new paradigm of economic practice and foreign relations.

First, the personal friendship cemented between the two leaders amounts to an open door for the United States to join in the New Silk Road for development, which would benefit all nations. President Trump strongly reiterated his positive view of China, at his White House Feb. 23 press conference with Australian Prime Minister Malcolm Turnbull. Trump said, “My relationship with Xi is extraordinary. I like him, and I think he likes me...” He continued, “Our relationship with China has never been better. I think we can have a good relationship with China and I hope that my relationship to President Xi will allow that to happen.” (See article, p. 18.)

Secondly, the increased economic activity in the

United States associated with the China-U.S. 2017 deals, has sparked a sense of optimism in otherwise bleak parts of the country hard hit by economic decline and pessimism. Following the November announcements, regional leaders addressed this explicitly. West Virginia Governor Jim Justice called the \$83.7 billion Memorandum of Understanding (MOU) between his state and China Energy, “incredible.” He said at a press conference that “this is the right thing for our citizens. It gives us hope, it gives us jobs, it gives us real life.” Alaska State House Speaker Bryce Edgmon said of his state’s \$43 billion MOU with Sinopec and Chinese Investment Corp. (CIC): “A pipeline project will bring jobs, investment, and perhaps most importantly, a renewed sense of hope that Alaska’s best days are ahead of us, not behind.”

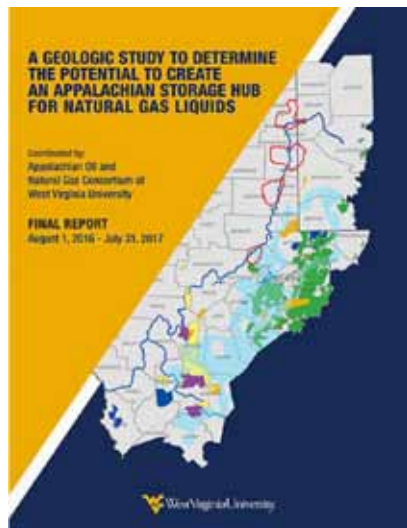
Thirdly, the new deals imply improved prospects to lift energy production and usage modes to higher levels for the United States, China, and worldwide. China’s



U.S. Energy Information Administration

The extensive Marcellus and Utica shale basins are prominent, running southwest-northeast, from eastern Tennessee to New York, with shale drilling concentrated in the tri-state Pennsylvania, Ohio and West Virginia region.

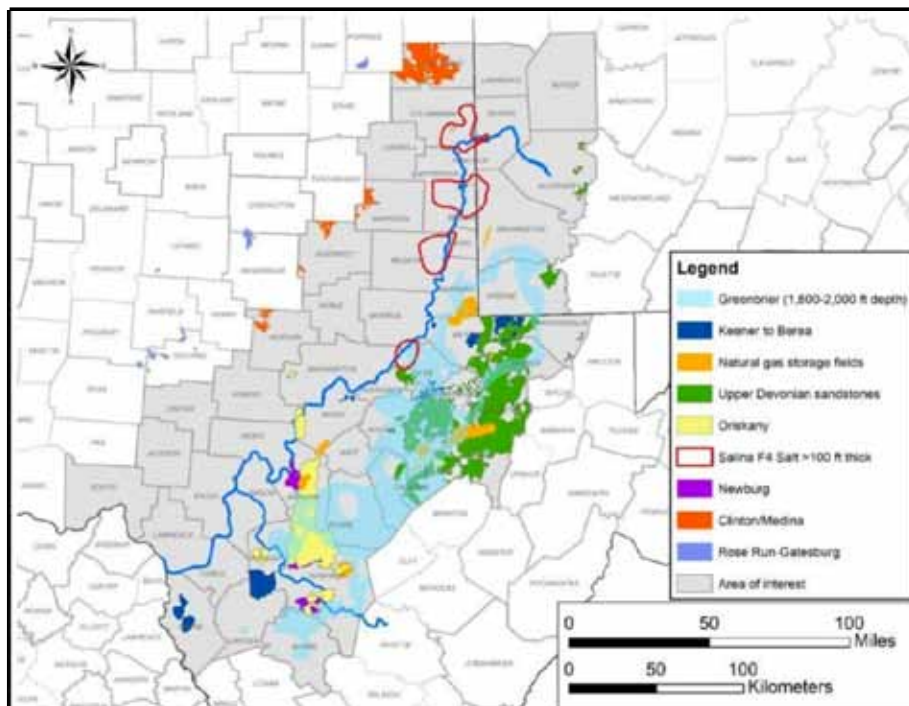
Appalachian Gas Hub



new collaborative projects for gas infrastructure in North America are part of its international involvement in the high-tech development of fossil hydrocarbon resources, while at the same time, China is fully backing the expansion of nuclear fission power, and as early as possible, fusion energy. With this policy, the nuclear age can supersede the fossil fuel era altogether, not just in fuels and energy, but as a fundamental advancement in chemistry, medicine, and biology, in all respects.

Appalachian Gas Industry Development

The gist of the China-West Virginia MOU is for China Energy to fund and help develop a storage facility for natural gas liquids, the “Appalachian Storage and Transfer Hub,” a petrochemical processing capacity, cracker plants (to make polypropylene and other gas-input products), a web of gas pipelines, and a gas index for market trading. Centered in West Virginia, this would serve the larger Appalachian region, in particular the tri-state area of West Virginia, southeastern Ohio, and western Pennsylvania. It would be the second biggest petrochemical complex in the United States, after the Texas/Louisiana Gulf Coast. The zone of concentration is expected to be in the Ohio Valley for reasons of both geology and transportation. The American



West Virginia University

Shown is the cover of a report released in August, 2017 on prospective locations for an Appalachian gas liquids storage hub. The blue line is the Ohio River, starting at Pittsburgh in the northeast, and in the far southwest, joined by the Kanawha River. Red lines demarcate possible sites in the Ohio Valley, dependent on underlying geomorphology. Download the report: <https://aongrc.nrcce.wvu.edu/files/d/b0b6b967-5911-4bbe-957f-0b149851224f/ngls-study-report-ilovepdf-compressed.pdf>

Chemical Council estimates that the optimum number of cracker plants could be five.

Coherent with this perspective, there are some other delimited initiatives. A cracker plant is already under construction on the Ohio River northwest of Pittsburgh, built by Royal Dutch Shell and Goldman Sachs. It is expected to open in 2020. Farther down the Ohio River, a site for another cracker plant has been designated in Ohio, in Dilles Bottom, in Belmont County.

The American Chemical Association projects that 100,000 new jobs will be created by establishing this new gas hub and petrochemical capacity. In Charleston, the state capital, there is great anticipation. It includes optimism for parlaying the positive sense about the future into national action. Some lawmakers are preparing to introduce a resolution calling on Congress to re-institute a national Glass-Steagall banking and credit system.

No big specifics on the “Appalachian Hub” are as yet forthcoming in West Virginia, but those working on it say there is intense activity. They describe it as the “preliminaries” phase. For example, as the state’s legislature nears closing its session, there is a push to get through a new law making approval for gas drilling easier, to secure gas flow for the new industrial development.

In January, an important step was achieved when Federal Energy Department approval was given for the Appalachian Development Group (ADG) to proceed to apply for a \$1.9 billion Federal loan guarantee towards work on the hub project. The ADG is a new joint venture, formed days after the China-West Virginia accord last Nov. 9. Among its partners are entities based at the University of West Virginia, where people have worked with China on hydrocarbon technologies for the last 15 years.

The Appalachian region is now a leading shale gas production area on the continent, accounting for 25% of U.S. gas production. Long known for its coal resources, the region also has oil, extraction of which (in Ohio and western Pennsylvania) began over a century ago. Appalachian shale gas extraction became commercially successful with the innovation of horizontal drilling, using hydraulic fracturing—fracking—as of the mid-2000s. It takes place in the extensive Marcellus and Utica shale basins. The location map shows the major gas and oil shale plays in North America as of 2011.

At present, the Appalachian gas is piped out for use elsewhere. Since the 2014 opening of the Appalachia-to-Texas Express (ATEX) pipeline, some Marcellus and Utica ethane goes 1,200 miles to the Gulf Coast, to Mont Belvieu, Texas for chemical processing. Otherwise it flows out in various directions for U.S. fuel supply, and LNG export. There are several new eastward pipelines in the works.

Ethane is mainly used to produce ethylene, which in turn is used by the petrochemical industry to produce all kinds of plastic products.

Planners in West Virginia, in particular at the Energy Institute at the University of West Virginia in Morgan-



West Virginia University
Dr. Brian J. Anderson, Director of the West Virginia University Energy Institute, and Professor in Chemical Engineering at WVU.

town, have envisioned for some time that the Appalachian gas should not just be exported to other states or abroad, but should be processed within the region for industrial purposes. Institute Director Brian Anderson brings out the point dramatically, saying that the Appalachian ethane gas gets piped to Texas from the present hub at Houston, Pennsylvania (in southwestern Washington County). Then from Southeast Texas, the gas comes back processed as polypropylene, to the same region where the gas originated. Anderson estimates that 70% of all the polypropylene used in the United States

is consumed within 700 miles of Pittsburgh (western Pennsylvania). He says that this cross-hauling is no good for Appalachia or the nation.

Anderson further stresses that energy logistics involve “infrastructure” which should be built up for the national good, just as much as should the types of infrastructure we usually think of—bridges, roads, railroads, canals, and dams. There should be a coherent web of gas and oil pipelines, storage, and processing capability.

Gas for Industry, Nuclear for Power!

At present, the national energy logistics picture is chaotic as well as insufficient, and wrongfully anti-nuclear. Since gas was deregulated in the 1980s—along with rail, electricity, health care, and other vital hard and soft infrastructure, the gas and oil supply lines are more and more inadequate. For example, during the cold snap last month, New England was so short of gas, given the limited pipeline capacity from the Marcellus shale basin, that Boston Harbor received some of the first LNG to be shipped out of Yamal in the Russian Arctic. A procedure was worked out to allow the deal to be steered through the anti-Russian sanctions hysteria, to make the delivery possible.

On a deeper policy level, what is required is to resume nuclear power development. Use hydrocarbon resources for petrochemical manufacturing, and utilize high-tech coal and existing gas-power, to carry out the industrial build-up to go nuclear as fast as possible.



Nuclear Regulatory Commission, courtesy of Georgia Power/Flickr/cc

Construction scene from the Alvin W. Vogtle Nuclear Generating Station, in Georgia, where the only two new nuclear reactors in the U.S. are being completed—Units 3 and 4. They are co-owned by Georgia Power, Oglethorpe Power, MEAG Power and Dalton Utilities. Federal regulators are shown during an inspection.

The United States, once the leader of nuclear power research and commercial development, is now going backwards to more primitive, lower-energy-dense sources of wind, solar, and biofuels, while phasing out even coal. The U.S. goal, as of the 1960s, was for “1,000 by 2,000,” that is, 1,000 nuclear plants by the year 2000. Instead, the peak so far has been a mere 104, and now there may be only 97 commercial nuclear reactors by the year 2020. Only two new nuclear power plants are under construction in the United States at present. The share of nuclear in the United States overall power supply is heading in the direction of dropping from 20% down to barely 7% in the coming years.

China, in contrast, has 60 new nuclear plants under construction, and, unless the United States changes course, China will surpass U.S. nuclear power capacity by 2030.

A New Ohio Valley

West Virginia Commerce Secretary Woody Thrasher, who has been back and forth to China throughout the past year, and returned from his most recent trip in late January 2018, strongly speaks of the “transformative” impact on the state and region from collaborating with China on gas infrastructure and industry. On Feb. 22, the engineering-design company he co-founded, The Thrasher Group (based in Bridgeport,

West Virginia) co-sponsored a conference titled, “Emerging Opportunities — Ohio River Valley Conference.” The event was held in Wheeling, West Virginia, at the heart of the Upper Ohio Valley, and one of the centers of the formerly industrialized region, along with Weirton and other once thriving steel towns. The sold-out event was attended by major oil and gas firms, along with engineering and planning experts.

The CEO of the Thrasher Group, Chad Riley, who addressed the conference, stressed the goal of overall transformation in remarks on

local Fox TV news Feb. 22, saying, “If anywhere near the potential of what could happen to us, does, it would be transformative. I think that it would be a positive impact for the community. But the community would also have to get ready. I think it would lead to infrastructure that would need to be done. It would lead to new housing, and hopefully, an influx of new people—population, that provides good paying jobs, and a nice quality of living for the people in the tri-state area.”

As it is, the state of West Virginia is experiencing an absolute population decline, as are the counties in adjacent states in the Upper Ohio Valley. In the Upper Ohio Valley, for example, a net loss of some 3,000 people was estimated, from 2015 to 2016, for the six northernmost counties in West Virginia, and four eastern Ohio counties. In West Virginia itself, the absolute population number fell from 2015 to 2016 by nearly 10,000. For those staying in place, the rates of suicide, death-by-overdose and other indicators of social breakdown, are terrible.

The Energy Institute’s Anderson makes reference to this when calling for infrastructure across the board in West Virginia. Not only broadband is lacking in our rural areas, he says, but in large parts of our state, people don’t even have refrigeration.

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