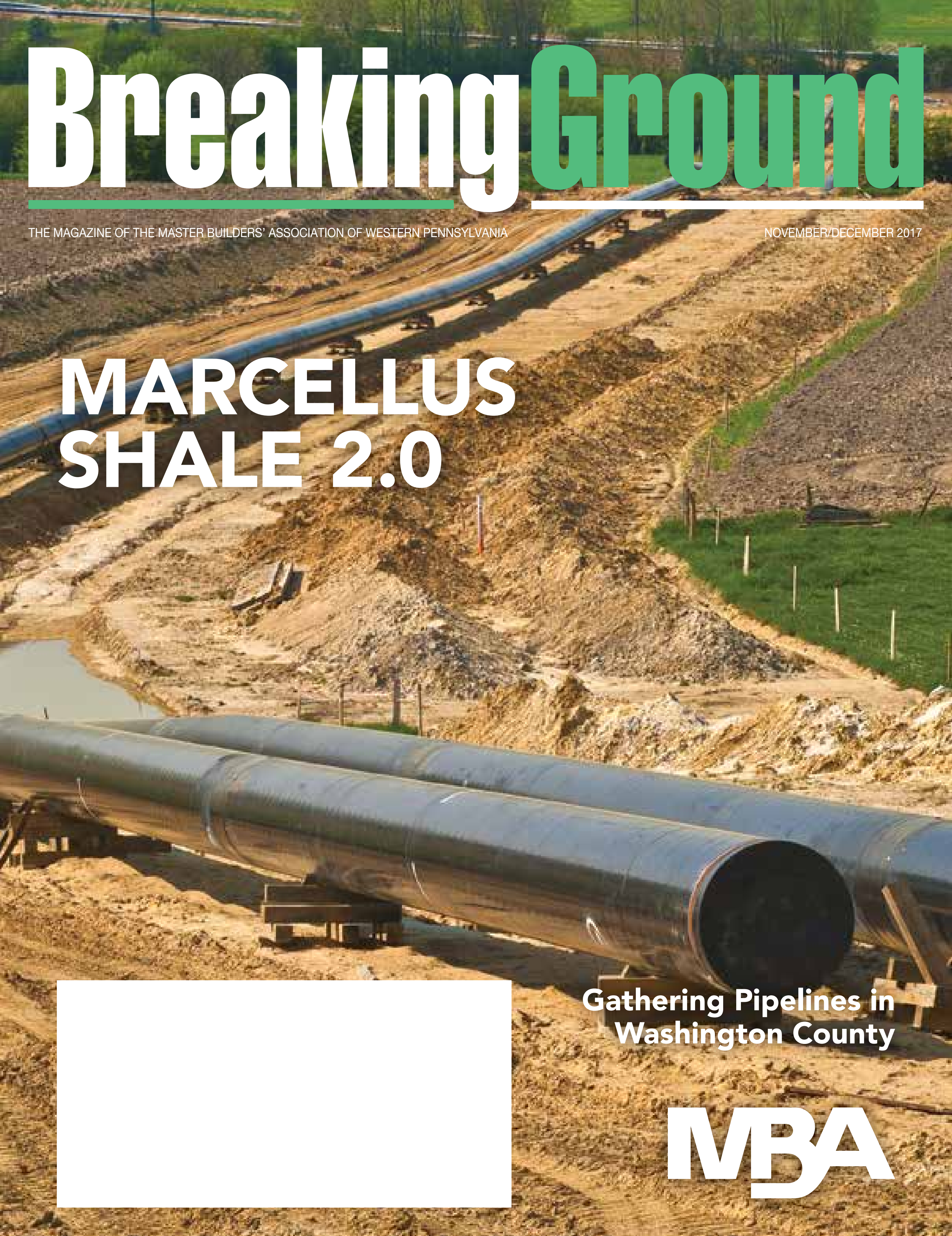

Breaking Ground

THE MAGAZINE OF THE MASTER BUILDERS' ASSOCIATION OF WESTERN PENNSYLVANIA
NOVEMBER/DECEMBER 2017

MARCELLUS SHALE 2.0

Gathering Pipelines in Washington County

MBA


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Image by Marcellus Shale Coalition

CORRECTION/AMPLIFICATION:
In the project profile in the September/October edition, Specified Systems Inc. was inadvertently omitted from the Clapp Langley Hall project team listing. Specified Systems was the window/curtain wall specialty contractor.

PUBLISHER'S NOTE

It feels like we're almost there.

For more than a generation Pittsburgh's civic leaders have been battling to reverse an economic and cultural upheaval. I wonder how many of those leaders through the years had the correct vision of what success in that endeavor would ultimately look like. Certainly they would expect there to be more jobs. It was clear that leadership hoped that those jobs would not come at the cost of the clean environment that had been developed. It's likely that a few envisioned a Pittsburgh that was more diverse and that had fully developed its cultural assets and lifestyle amenities. But I feel pretty confident that even as Jim Rohr implored us to "Imagine Pittsburgh" he couldn't imagine what the city has become.

That's certainly not a knock at our civic leadership. Considering that some of the drivers of Pittsburgh today didn't exist as real things even ten years ago – Marcellus Shale? Autonomous vehicles? – there was no way to anticipate the current state of affairs when it was the future. Actually it's rather impressive that the five sectors that the regional leaders chose to foster 25 years ago are still relevant as growth sectors for the future. It may be that no one understood that artificial intelligence or robotics would be the future back then but they certainly understood that information technology, life sciences, advanced manufacturing and the transfer of research in those disciplines would be key elements of Pittsburgh's future success.

When the opportunity to compete for Amazon's new headquarters arose, there was a part of me that felt like this was Pittsburgh's star turn, that all that hard work over the past 30 years was going to pay off. This was going to be Pittsburgh's home run.

Upon further review…the reality is more likely to be that Pittsburgh won't be the home of Amazon HQ2. First, there were 268 cities that replied to the RFP. Now that's 215 more than meet Amazon's requirement of having a metropolitan population of one million, but seeing that number of responses reminds you that the odds aren't in favor of any one city, regardless of what magazine ranks your city as a favorite. If, in fact, Pittsburgh isn't the winner, however, I think the exercise of responding was probably very valuable for the future. The partners that went hard after the project worked very well together and the opportunity forced the Commonwealth of Pennsylvania to formulate a strategy for something other than not enacting a budget. All-in-all, it may turn out not to be a bad thing to finish second or worse. As it turns out, there are a lot of other opportunities in front of the region and we still have some additional fine-tuning to do.

Two days before that proposal went into Amazon I had the opportunity to attend a real estate breakfast put on by the Pittsburgh Regional Alliance and NAIOP Pittsburgh. At that breakfast the Brookings Institution study of Pittsburgh's innovation centers was presented. Listening to Brookings' Scott Andes, Rick Siger from Carnegie Mellon and Rebecca Bagley from Pitt speak, I was struck by the notion that we aren't reaching high enough yet. As partners, the private and public sector have done a lot over the last 30 years but there are still some very important areas of improvement that we must tackle. I don't think we can count on any help from our government in Washington or Harrisburg. But I do think we can look to the people who will benefit most - the people of this region – to come up with the solutions.

There is always an element of politics in economic development that gets in the way of pushing the envelope. Throughout American history there have been leaders who pushed the people to think beyond what was comfortable in order to make progress. People don't charge machine gun-protected cliffs or sit atop a rocket going 40,000 miles per hour to the Moon unless they have been inspired to do so. We're almost there. Our leaders should look to inspire us, to do whatever is necessary to get from here to there.

Don't sell Pittsburghers short. Show us what the future might look like and we'll make sacrifices to get there. But reach high. You don't have to be realistic, just credible. Tell us how the Hill District or McKees Rocks or Etna or Downtown will look after we do the things that the future requires. We know it will cost money. Tell us how much and how we can best make it work.

Transit is a great example of one of these opportunities. It's becoming clearer that the future of mobility is not going to involve cars and roads. Pittsburgh's public transit system isn't great so we need a vision of what it will look like when trains or buses connect people and businesses to all of our innovation centers and our airport. There are models out there to follow. Challenge the people to pay an extra nickel for each beer or ten cents per gallon or some sort of fee that will go to building out our transportation system. Denver did it and it's not the City of Champions. There is no pot of federal money to pay for a new rail line. The state of Pennsylvania is not going to see its way to expanding our transit system funding. We need to do that ourselves.

We can solve these problems ourselves. It is difficult for a politician who must rely on keeping enough people happy to get re-elected to make bold decisions or to communicate bold policies. Pittsburgh has done as well as it has in that regard because it is has such a strong private sector leadership to work with our politicians. Our elected officials can afford to be bolder when they know that the corporate leaders and foundations support them. It's time for more boldness. We may not hit the home run this time but singles and doubles can get you across home plate too. We're almost there.

Jeff Burd

REGIONAL MARKET UPDATE

First Commonwealth Bank

Data from the third quarter is giving rise to the hope that 2017 will be the year that Pittsburgh's employment picture breaks out of its four-year malaise. An October 20 report from the Bureau of Labor Statistics showed that 17,200 more people had jobs in September 2017 in metropolitan Pittsburgh than the year before. Earlier in the month, unemployment data for August revealed a steep year-over-year decline from 5.8 percent unemployed to a 4.9 percent reading.

That rate of unemployment still lags the national level, but the decline is, in part, an indication that job losses have slowed in the region. If this trend continues it will mean the zero-sum gains and losses that have resulted in flat job growth since 2013 have ended. It's noteworthy that part of the drop in unemployment is the structural – meaning demographic – decline in workforce participation. This demographic decline will be a force in Western PA for the coming decade; therefore, not all the unemployment decline will be a result of job growth. Nonetheless, at the base level, declining unemployment means that fewer people who want to work need jobs.

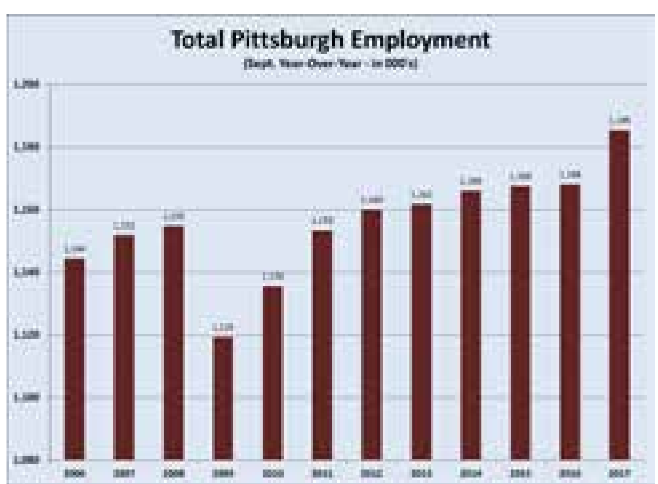
As the final three months of 2017 unfold, job growth will be the more important economic factor to watch. During each of the past four years, monthly job growth was at or above one percent when the summer ended, only to fall flat when the year ended. Unlike the previous years, the sectors which had been shedding jobs are no longer declining or – in the case of manufacturing – shedding jobs at a slower pace.

Construction data through September 30 in the metro Pittsburgh market shows a small decline in residential construction, as well as strong commercial and non-residential construction.

Contracting and construction starts for the January-through-September period totaled $3.56 billion in the non-residential/commercial sectors of the market. Residential permits for new construction reached $794.5 million during the first nine months of 2017. There were permits for 3,659 new housing units during the first three quarters, a 3.7 percent decline compared to the same period in 2016. There were 1,471 single-family detached and 710 single-family attached homes started through the end of September, an increase of 4.4 percent year-over-year; however, a decline of 233 apartment units (to 1,476 units year-to-date) brought the overall total lower than in 2016.

The end of the third quarter of 2017 saw a slowdown in current bidding activity that paralleled the activity in 2016, especially with regards to the bid market after Labor Day. While the recent bidding was unremarkable, a number of events and announcements during the last 90 days point to a growing wave of construction from 2018 through 2020. Because the drivers of this coming wave are both diverse and tied to long-term trends, it's likely that this significant period of increased construction would withstand a slowdown in the overall economy.

Natural gas has over the last decade been a driver of both job growth and decline. Following the steep drop in the oil price during the second half of 2014, gas companies laid off thousands of workers in the region and a number of fast-rising companies were either acquired or closed their doors. Energy companies have adjusted since then and the industry consolidation has accomplished the aim of reducing the cost of producing oil and gas. Cheap gas and proximity to markets have driven the construction of Shell's ethane cracker and the planned development of a dozen combined cycle gas-fired power plants. Several of these will come on line in 2018 and several more will begin construction next year, including plants in New Castle, Greene



County and Elizabeth Township in Allegheny County.

Development of these projects has boosted demand for natural gas. While the price of the commodity remains at cyclical lows, the improving outlook for gas demand is a catalyst for more wells and, more importantly, more capacity for using the incredible glut of gas supply located beneath Western PA. There has been a significant uptick in construction of gas processing and compressing plants, especially the expansion of existing plants. Midstream developers have made public billions of dollars in capital spending plans for 2018 and beyond. Within a few months PTT is expected to announce its final investment decision for the ethane cracker proposed for Dilles Bottom on the Ohio River in Belmont County.

Municipality	#SFD	#SFA	M/F	Total
Single-Family Detached				
South Fayette Township	78	14	0	92
Ohio Township	72	26	0	98
Pine Township	72	24	0	96
Cranberry Township	71	31	274	376
North Huntingdon Township	62	22	0	84
Adams Township	61	5	0	66
Middlesex Township	56	0	0	56
North Strabane Township	55	6	0	61
Cecil Township	52	16	0	68
Jefferson Hills	50	0	0	50
Multi-Family (M/F)				
Pittsburgh	31	86	780	897
Cranberry Township	71	31	274	376
Kennedy Township	0	3	191	194
Bridgewater	0	0	135	135
Oakmont	8	6	50	64
Total Pittsburgh MSA 2017:3	**1,471**	**710**	**1,476**	**3,657**
Total Pittsburgh MSA 2016:3	**1,512**	**577**	**1,709**	**3,798**
% Change	**-2.7%**	**23.1%**	**-13.6%**	**-3.7%**
By County	**SFD**	**SFA**	**M/F**	**Total**
Allegheny	678	439	1047	2164
Beaver	29	21	155	205
Butler	333	145	274	752
Fayette	47	0	0	47
Washington	201	39	0	240
Westmoreland	183	66	0	249

Price stability and steadily growing demand should add more than a billion dollars to construction volume each year during the next decade.

Emerging technology has heretofore been celebrated as a driver of construction, especially in the Strip District and East End of Pittsburgh, and the momentum for more growth in technology is building. With the recent announcement by Oxford Development that it had landed Argo AI's lease in its Riverfront West building in 3 Crossings, the autonomous vehicle sector has passed the half million square foot mark in commercial real estate. Depending on that industry's growth path, the amount of space occupied by companies researching and developing autonomous systems could double again by 2019.

Pittsburgh's tech economy is also expanding in smaller bites, with build-outs for emerging firms in artificial intelligence, healthcare IT, robotics and gaming.

University research in information technology is behind several of the new buildings going up in Oakland. Construction has started on the $15 million Tata Consulting Services building on Forbes Avenue across from Carnegie Mellon's campus and a groundbreaking was held October 5th for the new 30,000 square foot Ansys Hall maker hub at CMU.

Pitt's School of Computer Science is the driver behind its next new building, a 350,000 square foot facility at the site of the former Syria Mosque. Perkins Eastman is designing the building and the university is expected to look for a construction manager by early 2018.

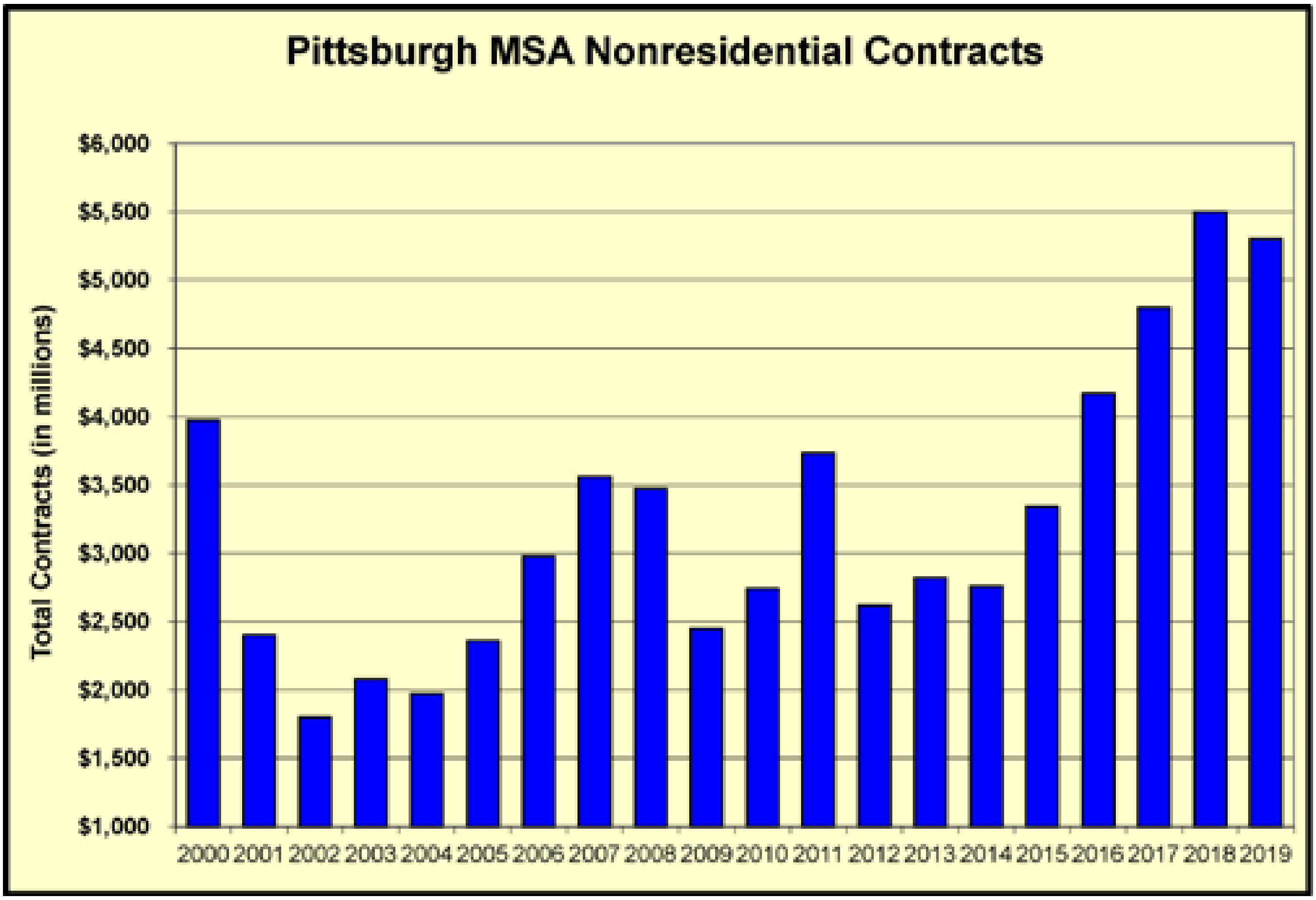
Construction news in the logistics segment of the market has centered on the headline event, the proposal for Amazon's HQ2, but there is increased activity in logistics without that project.

Scannell Properties closed on the 507,000 square foot distribution center it is developing at Starpointe. Developer Al. Neyer Inc. announced it would construct a 220,000 square foot in Jackson Township by early 2018. Castlebrook Development has begun site work on its million-square foot Turnpike Industrial Park. A major retailer is conducting a site search in Pittsburgh, dubbed Project Erie, looking for a site to handle just under one million square feet (expandable to 1.5 million). There were reports that German grocer Lidl intends to support its PA operations with a distribution center in Western PA. Similar centers for Lidl in VA, MD and NC have been built or are under construction that ranged from 700,000 to 800,000 square feet. Other national firms reported to be looking for large-scale distribution centers in the region include WalMart, Proctor & Gamble and, of course, Amazon, which has been rumored to have selected a site for a million-square foot fulfillment center at Westport, for which it has not given a green light for construction.

Industrial commercial real estate has seen a significant amount of new space built in the market over the past three years. More than a half-million square feet of new space is vacant in two of these new buildings just entering the market. Given the state of the logistics and fulfillment market in Pittsburgh, it seems only a matter of short time until these are leased.

Healthcare construction had begun to show signs of life again in 2017, after a handful of lean years. Within a span of ten days, the region's two largest health systems revealed plans for hospital construction that will be a boom of its own over the next five years.

Allegheny Health Network (AHN) announced on October 18 that it would commit more than $700 million to construction of facilities to expand the system's footprint. Some of AHN's current projects were included in that plan but AHN also announced



that it would be building a 160-bed hospital in Pine Township and at least four "micro-hospitals" in sites to be determined next year.

Less than two weeks later, UPMC shared its capital plans. Previously, the region's largest healthcare provider had proposed new facilities in the South Hills and at the Mercy Hospital campus, but changing priorities reshuffled those plans. The surprise among UPMC's projects is its plan to build a new flagship hospital in Oakland, an investment of more than $1 billion. UPMC also plans to build a new 300,000 square foot Eye Institute in Uptown at Mercy Hospital, expand Children's Hospital in Bloomfield, along with the previously announced new hospital in Jefferson Hills.

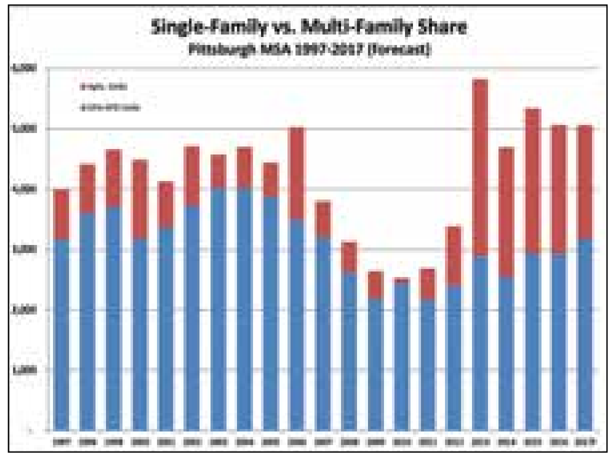
For those serving the healthcare construction market, these plans mean new or expanded facilities and construction projects of $200 million or more in Wexford, Uptown, Bloomfield, Oakland, and Jefferson Hills, as well as a new Children's Hospital at the WVUH campus in Morgantown.

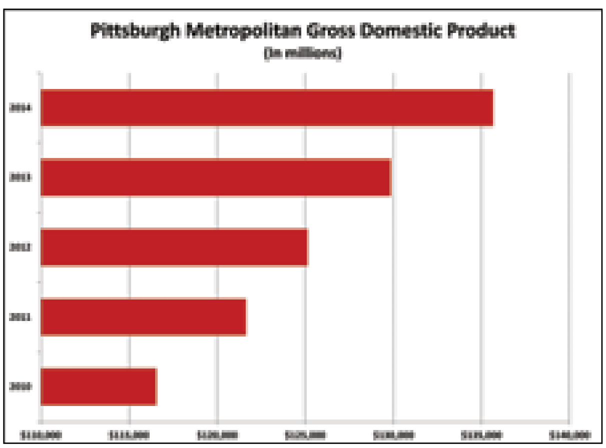
Almost forgotten in the news about healthcare and the Amazon HQ2 proposal was the decision by the Allegheny County Airport Authority in September to invest $1.1 billion in a new terminal, parking garage and renovations. The Airport Authority hopes to start construction on the new terminal by the end of 2019.

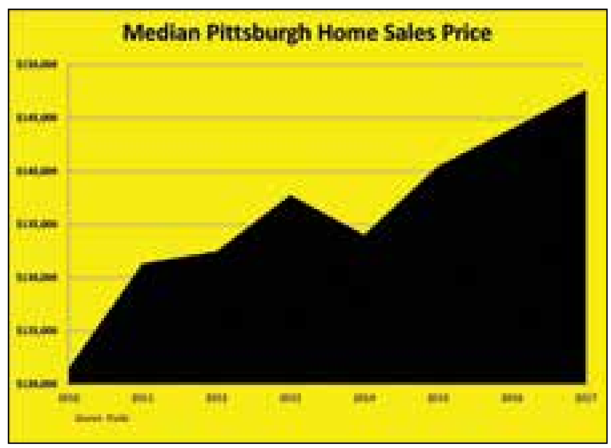
It's possible, if not likely, that some of these projects won't proceed, or at least won't go ahead on the schedule that has been proposed now. Nonetheless, assuming that the larger of these projects do proceed, there will be four billion-dollar projects under construction in Pittsburgh at the same time during 2019-2020. That is unparalleled and a fifth billion-dollar project, the ALCOSAN wet weather solution, looms right behind those. Just two years ago, observers were justifiably concerned that the labor utilized by the Shell Franklin project would hamstring the rest of the construction industry. Now it appears the volume of construction will be much larger. There should be concern by owners about the impact on price and schedule going forward but, at the same time, consider that this much construction could finally be the catalyst for large-scale worker attraction to Western PA. History has shown that construction booms like the one on the horizon in Pittsburgh do just that. BG

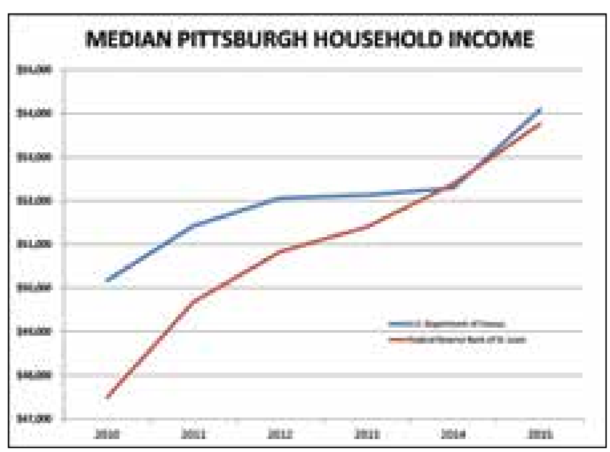
MARKET METRICS

BENCHMARK	Jan-Oct 2016	Jan-Oct 2017
Total SFD units	1,737	1,599
Total SFA/Multi-unit	2,386	2,358
Total residential $$	$829.9 million	$1.19 billion
Total non-residential $$	$3.46 billion	$3.76 billion
K-12 additions/renovations	$262.4 million	$152.6 million
Higher Ed construction	$248.4 million	$109.3 million
Hospital construction	$146.9 million	$156.4 million
Hotel construction	$122.6 million	$67.6 million
Industrial construction	$1.382 billion	$673.2 million
Office construction	$250.8 million	$496.8 million









NATIONAL MARKET UPDATE

As fall begins, there is a sense of economic strength that is spreading across the globe. Few measures of economic health in the U.S. are negative – or even worrying – and most of the world's economic regions are seeing a rebound in fortunes after a decade of stagnation or decline.

Third quarter gross domestic product (GDP) estimates won't begin to appear until November but the final Census Bureau estimate for the second quarter showed that the U.S. economy grew at an annual pace of 3.1 percent. That was a slightly higher rate than expected and a solid rebound from the dismal pace of GDP growth from January through March. The underlying foundation for the economy is equally solid, with consumer spending, business confidence and investment, and inventories looking strong enough to push GDP growth for the full year to the mid-two percent pace that was forecast.

What may slow down overall growth by the end of 2017 is the economic impact of Hurricane Harvey and Hurricane Irma. The two major hurricanes were not only unusually powerful but also made land in two of the more densely populated areas that could have been affected by the storms. The physical damage to Houston and South Florida will ultimately result in strong demand for economic activity during the long rebuilding effort but, in the short term, the disruption caused by the storms will bring slower growth. Most experts, including the Federal Reserve Bank's Open Markets Committee, expect to see a relatively small drag on the economy.

The Bureau of Labor Statistics' October 6 report on employment was one of the first to reflect the impact of the damage from Hurricanes Harvey and Irma. The number of workers employed declined by 33,000 in September. A significant drop in employment in food services and drinking places of 105,000 jobs more than offset any gains in other sectors and gains in most sectors were muted by the storms as well. The hurricanes also likely impacted the unemployment rate, as the number of people looking for jobs during the past four weeks also fell, in part due to the cleanup and recovery efforts. October saw the expected rebound, as 261,000 new jobs were added. Total unemployment in the U.S. declined from 4.4 percent to 4.1 percent. Both the number of unemployed and unemployment rate were the lowest in any September since 2000. And the new unemployment claims, which rose slightly in late September, fell again to below the cyclical low levels of 250,000 or less.

The effect of the hurricanes showed up in residential construction, which saw employment fall by 7,200 jobs in September in contrast to the year-over-year growth of 80,600, or 3.1 percent. Associated General Contractors Chief Economist Kenneth Simonson noted that construction industry job growth overall was more than double the 1.2 percent rise in total nonfarm payroll employment.

Average hourly earnings in the industry climbed to $29.19, an increase of three percent from the same month in 2016. Simonson points out that construction pays nearly 10 percent more per hour than the average nonfarm private-sector job in the United States, which pays an average of $26.55/hour.

New housing starts and permits were also hit by the hurricanes in September, as expected. The October 18 report by the Commerce Department showed housing starts falling 4.7 percent in September to 1.127 million units, with permits declining 4.5 percent to an annualized total of 1.125 million units. Activity in the South fell more than 15 percent in September. Because more than half of the U.S. total starts are located in the South, which encompasses both Texas and Florida, the steep decline in that region was sufficient to drag total U.S. starts down. Economists expect that the falling housing market – which experienced its third straight month decline in September – and other sectors impacted by Harvey and Irma will be a noticeable drag on third quarter U.S. gross domestic product (GDP).

All in all, however, the U.S. economy seems to be shrugging off the hurricanes and their damage. In the most visceral measure of the economy, the job market, the problems are in the supply not the demand. More Americans are employed than at any time in U.S. history. The number of job openings declined again to 6.08 million in mid-October and the number of hires fell to 5.43 million. That disparity highlights the continued difficulty employers are having in recruiting skilled workers.

For the short term, most of the economic concerns in the U.S. are those related to growth. It is only in looking forward 12 to 18 months that warning signs about the economy appear. There are few potholes in the road that appear to affect demand in the coming year or so but there are signs that the pricing of assets overall have overheated.

Much like in 2006 and early 2007, there are signals of structural

Wells Fargo International Economic Forecast						
(Year-over-Year Percent Change)	GDP			CPI		
	2017	2018	2019	2017	2018	2019
Global (PPP Weights)	3.5%	3.4%	3.3%	3.1%	2.4%	3.4%
Global (Market Exchange Rates)	3.2%	3.2%	3.1%	3.1%	3.4%	3.4%
Advanced Economies[1]	2.3%	2.3%	2.2%	1.8%	1.8%	1.9%
United States	2.1%	2.4%	2.5%	2.1%	2.0%	2.1%
Eurozone	2.2%	2.1%	1.7%	1.5%	1.7%	1.9%
United Kingdom	1.6%	1.8%	1.6%	2.8%	2.2%	2.0%
Japan	1.9%	1.1%	0.7%	0.4%	0.8%	0.3%
Korea	2.8%	2.8%	2.7%	2.1%	2.0%	2.4%
Canada	3.0%	2.0%	1.9%	1.6%	1.9%	2.0%
Developing Economies[1]	4.8%	4.4%	4.4%	4.4%	5.0%	5.0%
China	6.7%	6.3%	5.9%	1.6%	2.4%	2.2%
India[2]	7.1%	6.6%	7.2%	3.2%	4.2%	4.3%
Mexico	2.1%	2.3%	2.4%	6.0%	5.0%	5.1%
Brazil	0.6%	2.0%	2.2%	3.5%	3.4%	3.7%
Russia	1.9%	2.0%	2.2%	4.0%	4.2%	4.5%

Forecast as of: October 11, 2017

[1]Aggregated Using PPP Weights [2]Forecast Refers to Fiscal Year

Wells Fargo Economics Group forecasts slightly higher GDP growth with CPI inflation that remains under control through 2019.

weakness that shouldn't be ignored. Credit concerns in the U.S. are limited to auto loans and student debt at the moment but, in the world's second-largest economy, a real estate glut has triggered debt purchases that raise eyebrows. A Chinese government program allows smaller cities to borrow to purchase unsold homes from developers. China Development Bank loans for this program totaled less than $70 billion in 2012 but escalated dramatically from 2014 to 2016, when these types of loans reached nearly $1 trillion. Similarly, only four percent of the total of government-owned housing units were bought or subsidized as part of this program, while the remainder 2.5 million units were government-built housing. Last year, roughly half of the six million housing units were government purchases of private housing.

The mechanism of the actions by the China Development Bank differ from those of Fannie Mae and Freddie Mac in the mid-2000s but the intent of the program – to shift the risk of overbuilding from the private sector to the public sector to maintain economic momentum – is similar. China is a much larger market than the U.S. and even modest upticks in demand for housing would consume large chunks of the overhanging inventory. By the same token, a real estate bubble in China will have broader repercussions as well.

Even if Chinese real estate doesn't induce a credit disruption, the price of almost every major asset class suggests that investors aren't pricing risk appropriately.

One measure of asset value is the stock markets. The cyclically-adjusted price-earnings (P/E) ratio, or CAPE ratio, allows observers to compare what price investors are willing to pay for corporate earnings. The time-honored P/E ratio signal is 15 times earnings, but that mark doesn't account for the size or growth trajectory of companies, nor does it adjust for the business cycle. Looking at the CAPE ratio for the 500 largest stocks since 1881, however, the average is 17. Today that ratio of price-to-earnings sits at 30. The CAPE ratio has only been at 30 two other times, in 1929 and 1998-1999.

Bond markets are also showing less regard for risk. Credit spreads between the rates for government-backed or other investment-grade bonds and higher-risk bonds like corporate debt have fallen to the lowest levels since 2004-2005. At the end of the oil price collapse, in early 2016, when concerns about the Chinese economy were high, the spread for investment-grade bonds rose to 2.2 percentage points. That spread fell to one percent again in October.

Prices for nearly every asset class have risen to well above cyclical norms across the globe. One root cause for the bubbles is the record low interest rate environment. Extended low rates have forced investors looking for normative yields to seek out assets that have risks that are disproportionate. Governments with a history of default have found more than enough buyers for long-term debt. Private equity funds have seen their cost of borrowing plunge. One place where this adjusted attitude has appeared is in real estate investment.

In most countries around the world, the price of housing is now far above the cost of renting. In Canada, for example, housing prices are about 200 percent above the cost of renting. Even in the U.S., which saw home prices plunge after the mortgage crisis, the price of a home is about 110 percent of the cost of renting. This value bubble is more pronounced on the commercial real estate side of the market. Expectations for internal rates of return have moderated so dramatically that capitalization rates for all classes of property are well below the levels that preceded the financial crisis. Cushman & Wakefield's mid-year 2017 Cap Rate Survey found that cap rates had risen slightly but that investors still expected to increase bidding on Class A office and industrial properties. With cap rates under five in most gateway cities, it's clear that investors are betting on appreciation rather than income stream in their buying decisions.

These red flags in asset pricing are not reflected in similar red flags in credit performance. There are certainly soft spots in delinquency and default but overall there aren't corresponding loan problems in residential or commercial real estate, or in corporate or sovereign debt. That may suggest that time-honored benchmarks for asset values have to be adjusted to new realities. The more likely scenario is that asset values have climbed to the point that a major disruption will trigger a sell-off and rebalancing of prices. Such a trigger could come from a steeper-than-expected rise in interest rates, inflation or an unexpected political shock. The former is unlikely, although inflation is on a trend line that would put it at three percent by 2019. Risk of the latter has grown but there are also significant barriers to prevent the latter.

Absent a fiscal or political black swan event, the U.S. economy has significant positive inertia. Falling regulatory barriers in the U.S. should provide another boost for earnings and investment. While the risk profile of the U.S. economy may have been heightened for 2018 or 2019, demand should keep the growth engine chugging for now. BG

Cushman & Wakefield's Mid-Year Cap Rate Survey shows capitalization rates near all-time lows for office buildings.

Featured Project: Hot Metal Flats, Pittsburgh, PA

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WHAT'S IT **COST?**

Slower construction activity in the latter half of the third quarter resulted in a slight cooling of the accelerating pace of inflation for the construction industry, in spite of the expected shortages that will likely result as the recovery from Hurricanes Harvey and Irma proceed. The respite helps explain the slightly moderated sentiment from IHS Markit/PEG Engineering and Construction Cost Index (ECCI).

Procurement executives surveyed in September responded with significantly higher readings in September but their expectations for pricing in six months were for slower increases. The headline cost index jumped 4.4 points to 58.4 from September to August, driven mainly by a 5.1 point jump in materials and equipment costs. Purchasing managers described the rate of change as increasing faster in the current month. That sustains an 11-month trend of higher costs. Respondents pegged the headline cost index another ten points higher in six months but also predicted that the pace of inflation would be slower.

In its October Beige Book on economic activity, the Federal Reserve endeavored to see what effects, if any, were being felt because of the hurricanes. Firms in several Fed districts reported that scarcity of labor, particularly related to construction, would be exacerbated by hurricane recovery efforts. Despite widespread labor tightness, most districts reported only modest to moderate wage pressures. Some Districts reported stronger wage pressures in certain sectors, including transportation and construction. Transportation, energy, and construction materials prices increased more rapidly, with some districts citing effects from hurricanes.

PERCENTAGE CHANGES IN COSTS	Sept 2017 compared to		
	1 mo.	3 mo.	1 yr.
Consumer, Producer & Construction Prices			
Consumer price index (CPI-U)	0.5	0.8	2.2
Producer price index (PPI) for final demand	0.4	0.4	2.6
PPI for final demand construction	0.1	1.6	3.4
Costs by Construction Types/Subcontractors			
New warehouse construction	(0.1)	1.3	4.1
New school construction	(0.1)	1.8	3.8
New office construction	0.4	1.3	3.2
New industrial building construction	0.1	2.4	4.5
New health care building construction	(0.1)	1.7	2.7
Concrete contractors, nonresidential	0.2	1.7	3.9
Roofing contractors, nonresidential	0.1	0.1	2.7
Electrical contractors, nonresidential	0.0	1.7	3.4
Plumbing contractors, nonresidential	0.2	1.9	3.3
Construction wages and benefits	N/A	0.6	2.3
Architectural services	0.0	1.3	2.4
Costs for Specific Construction Inputs			
#2 diesel fuel	7.5	19.7	28.0
Asphalt paving mixtures and blocks	(0.1)	0.5	0.8
Cement	(0.1)	(0.6)	4.5
Concrete products	0.0	0.3	2.9
Brick and structural clay tile	0.0	(0.1)	1.6
Plastic construction products	(0.2)	1.3	2.9
Flat glass	0.1	0.0	0.2
Gypsum products	0.1	(0.7)	8.0
Lumber and plywood	(2.0)	1.6	6.8
Architectural coatings	0.1	0.9	1.4
Steel mill products	0.1	(1.2)	7.8
Copper and brass mill shapes	6.2	12.4	27.8
Aluminum mill shapes	2.5	3.0	12.6
Fabricated structural metal	0.1	(0.2)	4.2
Iron and steel scrap	3.7	8.8	44.1

Source Bureau of Labor Statistics, Updated October 18, 2017
Compiled by Ken Simonson, AGC Chief Economist

The Bureau of Labor Statistics (BLS) reported on October 12 that the producer price index (PPI) for final demand in September increased 0.4 percent from August and 2.6 percent year-over-year from September 2016. The PPI for final demand construction increased 0.1 percent for the month and 3.4 percent year-over-year. The PPI for new nonresidential building construction jumped 3.5 percent year-over-year. A look at the subcomponents revealed that higher labor costs were driving most of the jump in PPI. Prices for non-residential building categories rose between 2.7 percent and 4.5 percent, while the indexes for specialty contractors ranged between 2.9 percent and 3.5 percent.

Prices for individual materials were muted in the short term. More basic material prices were lower month-to-month in September than had been in July. The outliers from the overall trend, however, were dramatically higher year-over-year. Some of those included copper and brass mill shapes, which rose 6.2 percent for the month and 28 percent year-over-year; diesel fuel, which was up 7.5 percent in September and 28 percent year-over-year; aluminum mill shapes, which increased 2.5 percent and 13 percent respectively; drywall, which rose 8.0 percent over the previous 12 months; steel mill products, which jumped 7.8 percent and lumber, which increased 6.8 percent year-over-year. BG

MARCELLUS SHALE 2.0

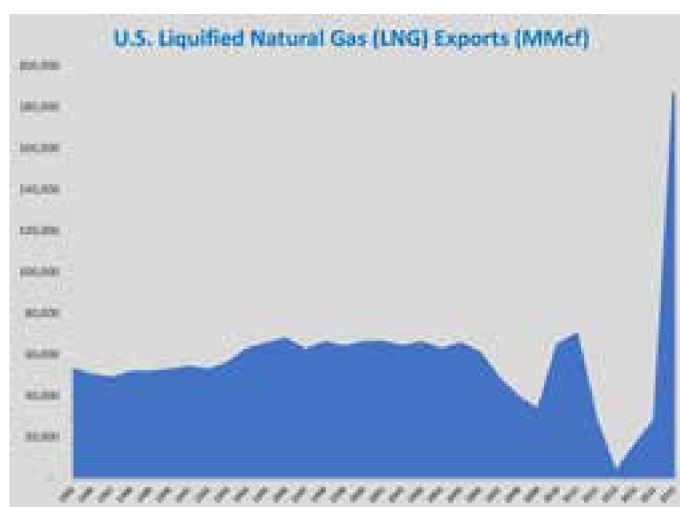
feature

It has not been quite a decade since the natural gas industry and the words Marcellus Shale came into the common lexicon of Western PA. To be historically accurate, Range Resources drilled what would be the first gas well in the Marcellus formation in late 2003, completing the well in 2004 and setting the play in motion. It took a few more years for other producers to also apply the hydraulic fracking and horizontal drilling technologies to extract the liquids-rich gas from Washington and Greene Counties. By 2008 a shale gas boom was underway and the economy of Southwestern PA was being transformed.

It may only be nine or ten years since those heady days began but it feels like we've seen the complete life saga of the gas industry play out before our eyes. To some degree that's an accurate perception. Because the bottom fell out of the oil and gas business in mid-2014, we have had a chance to experience the full boom-and-bust cycle of energy exploration in a very short period of time. What occurred in the Marcellus – and Utica shale territory as well – was pretty typical of the business cycle. Independent producers drill and find the resources. Big producers buy up the little ones and consolidate the industry. Supply gets ahead of demand. Prices fall. Those that were late to the party or over-leveraged get hurt. Losers fail. Winners buy up what they want from the losers that didn't fail. Supply chains get squeezed. Production tumbles. Supply falls. Demand returns. Drilling and extraction ramp up again. Wash, rinse, repeat.

What happened in the Appalachian (as we'll refer to the shale formations in the Tri-state area) was different in that the build-out of the capacity wasn't anywhere near complete when the market tanked. That made the boom seem somewhat unreal, like it was gone before it was here. Southpointe is one of those places that probably felt that phenomenon. The upside of the way the industry slowed in the Appalachian is that the build-out of the infrastructure would need to re-start before the industry fully recovered. By the beginning of 2016, there was ample evidence of that happening.

The cyclical recession in the energy sector delayed the full economic benefits of the shale gas boom to be felt in Western PA. Time has provided the perspective to realize that the initial estimates of employment gains – like Penn State's forecast of hundreds of thousands – were overblown. At the same time, the jobs gained during the early years of the Marcellus play were far fewer than will ultimately be created. Marcellus 1.0 was more like: energy boom interrupted.



The market for U.S. liquefied natural gas has grown dramatically since oil prices fell in mid-2014, creating significant demand for producers in the Appalachian region.

As 2017 winds down the gas industry still has headwinds with which it must contend. Prices are still low, lower even than the NYMEX hub prices in most localities. Unlike 2008, however, demand for natural gas and its products is rising briskly and the outlook is brighter. Moreover, the downstream demand for natural gas is close to finding its footing. In Beaver County, Shell Chemicals is fully into construction on its petrochemical complex, a development that should unlock the full potential of the Appalachian play.

THE STATE OF THE INDUSTRY

"The rig count in PA was 31 in October. That's not 114 like we had in 2012 but last October we were at 17, so we've seen a bit of an increase," notes David Spigelmyer, president of the Marcellus Shale Coalition. "Most of the development is still in the polar corners of the state, meaning Bradford, Tioga and Lycoming on the east side, and on the west side Greene and Washington counties."

Gradual, if unspectacular, increases in the price of gas and oil have helped justify production but the uptick is also due to a steady increase in demand. In addition to continued conversion of fuels to natural gas in transportation (or the adoption of natural gas new vehicles), the shift from other fossil fuels to natural gas has pushed demand for the commodity. One source of demand that is just now becoming a factor is gas-fired power generation. The first of the gas plants, also known as combined cycle plants, is coming on line in late 2017. Roughly a dozen more combined cycle plants are under construction or in final stages of design in the Marcellus and Utica footprints. And there are the crackers for future demand.

Spigelmyer looks forward to the day that one or more crackers are operating in the region.

"That will be a big thing," he says. "Power generation is another big thing that is increasing demand. Things are coming together. It's not that we're in a bad spot but we need to continue to push demand. There are lots of opportunities on the utility side as well because now we have much more affordable gas going to locations than was the case not long ago."

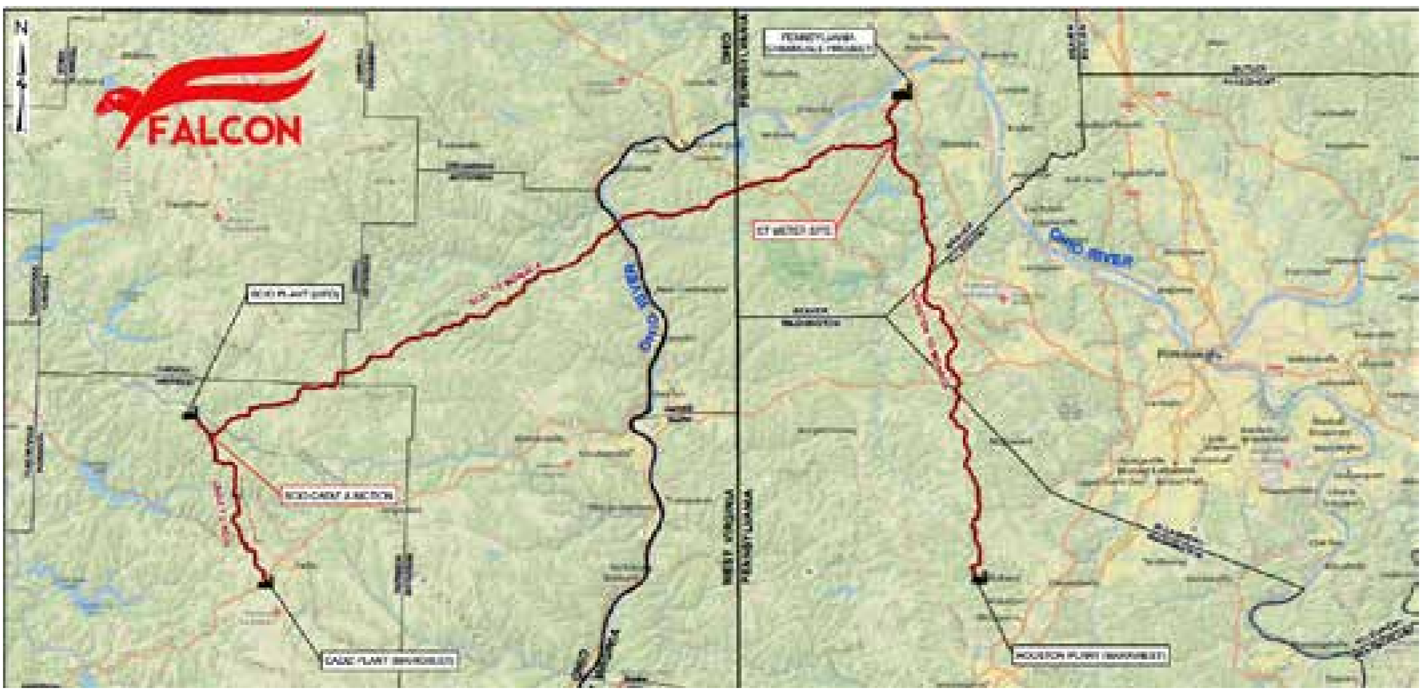
The story of the Marcellus play is definitely one of pure supply and demand. It is the abundance of the supply that pushed producers to explore the Appalachian. Most of the resource-rich areas of the U.S. lie within the southwestern region of the country. The shale gas revolution moved the industry to explore North Dakota and the Tri-state area because of the abundance of gas and other valuable liquids in the shale. But it was the Marcellus that offered an almost mind-blowing volume. Penn State geology professor, Terry Engelder, became famous for his estimate that the Marcellus could yield 50 trillion cubic feet of the commodity, only to later boost that estimate to 489 trillion. But that abundant supply is also why the commodity price stays stubbornly below $4/MMBtu and why exploration and processing capacity ground to a halt in 2015. "Activity is all dependent upon the price. If gas was $8/MMBtu

I believe activity would double," predicts Mike Hopkins, chief operating officer of Fullstream Energy, a midstream services company. In a lot of areas if you drill at four dollars, it's well worth the investment. Companies moved to western Greene County because there was so much more gas and liquids in each well that you could make money at two dollars."

Time and reorganization have healed the industry and its survivors. With the prospect of increased demand that will grow more rapidly over the next few years, there is more incentive to invest in the pipeline infrastructure and processing capacity – the midstream – ahead of the opportunity. Because of the slowdown that occurred, the costs of expanding the midstream are lower than they were when the original build-out began. In the meantime, U.S. producers have also built demand and secured contracts for liquid propane (LP) overseas, creating another demand source for Pennsylvania's gas.

"Pipelines are being built and that's an important development that needs to take place in order for operators to get closer to the NYMEX price in Pennsylvania. That's happening in a couple of places so that's a good thing," notes Spigelmyer. "We still need to modernize our infrastructure to get gas to key areas and help grow the market in Pennsylvania. That downstream piece is a focus of our coalition."

One of the misconceptions about the gas price for those outside the industry is that the NYMEX price is the sales price universally. Like all commodities, natural gas is sold through a network of individual negotiations. Most of those negotiations are set like the stock market, by the multitude of transactions happening concurrently. But deal volume in the gas industry pales by comparison to the stock market. Most buyers and sellers are viscerally aware of the supply status in each locale.



Shell's Falcon pipeline links the cracker to the gas fields in OH and PA.

"Our LNG exports as a country are going very well," says Kathryn Klaber, managing partner and founder of the Klaber Group, a consulting firm focused on the development of the Appalachian shale gas. "Dominion's export terminal in Maryland is close to opening and that will drive additional demand."

It's the liquid commodity that is driving the construction of the Mariner East pipelines that connect the Marcellus and Utica in the west to Sunoco's Marcus Hook refinery and terminals south of Philadelphia, near the Delaware border. The $3 billion Atlantic Sunrise pipeline will connect the northeastern and central PA Marcellus fields to the existing Transco pipeline system on the eastern seaboard and the 115-mile PennEast pipeline, which will connect Luzerne County, PA to the Transco pipelines in New Jersey.

The shortage of storage in the Appalachian limits the choices a supplier has. As a seller of methane drawn from wells in Western PA, you would be faced with the choice of selling the gas at whatever price you could get, or disposing of it. That's why the market price for gas in Western PA is about half the NYMEX price, around $1.60/MMBtu versus $3.00/MMBtu.

The three major pipeline projects connecting to the east coast have mostly been approved by the Federal Energy Regulatory Commission (FERC). Mariner II and Atlantic Sunrise have recently begun construction and PennEast still needs final FERC approval. Opposition to the pipelines still exists, however, meaning there remains uncertainty about when the valves will open.

The gas industry faces other government hurdles in

Pennsylvania. For reasons both fiscal and political, the Commonwealth's legislature seems closer to imposing an extraction fee or severance tax on the gas industry. Pennsylvania is the only state with oil and gas drilling that does not have an extraction tax and, at the same time, faces a $3 billion hole in its revenue forecasts to balance its spending. In part because the gas industry has not aggressively campaigned to the public about its side of the story, some form of extraction tax seems likely to pass the legislature this year. What has been proposed is a relatively small tax on top of the impact fees that producers currently pay the local municipality. The graduated tax scale – which rises if the gas price rises – would move the total of the impact fee and tax from 2.3 percent to 3.0 percent. That's not an increase that is likely to discourage exploration of such a rich asset as the Marcellus formation, especially with the billions that have been invested thus far. The bigger risk in adding an extraction tax is in the perception of the industry about Pennsylvania's relative overall competitiveness.

"I believe we are going to see additional production in West Virginia and Ohio because of Pennsylvania's policy. It's making things so much harder to do business in PA," asserts Klaber. "If it's apples-to-apples as to whether you do business in Ohio, West Virginia or Pennsylvania you would definitely choose one of the other two. I am bullish on the region, the Northeast, just not so much on Pennsylvania."

Regardless of the Pennsylvania's ultimate response (and this tax has been debated since the industry took off in 2008), the gas industry is one on the rise again. To respond to the opportunities that will come from higher demand the action has been in the midstream since 2016.

THE GROWING MIDSTREAM

A relatively small network of gas processing plants and compression stations has been serving the Appalachian shale play as it has grown. Processing plants in Houston, PA, Majorsville, WV and Cadiz, OH were built by MarkWest to separate the natural gas liquids (NGLs) from the methane and transport the commodities to market. A network of compression stations supported those plants, which will be used to capture the ethane that will be cracked into polyethylene and ethylene (assuming there will be multiple crackers). The slowdown in 2014 and 2015

slowed new midstream investment, even thought the network was still inadequate.

Beginning in 2016, the gas midstream investment began anew. The industry is building capacity to process natural gas in the western Washington County and eastern Belmont County areas to create a hub of sorts. MarkWest is building the Harmon Creek Gas Processing Plant in Smith Township near Burgettstown. The plant will process 200 million cubic feet (MCF) per day in a cryogenic operation and 20,000 barrels per day of ethane in its fractionation process. That plant will be close by the 400 MCF Revolution plant being constructed by Energy Transfer Partners, as well as a handful of compressor stations. Among those are ETP's Joffrey compressor, the Gibraltar Compressing Station being built for Columbia Gas, MarkWest's Down Home, Imperial and Cibus stations. EQT is in the approval process for a large 21,400 HP compressor in Union Township, called the McIntosh Compressing Station. The combined total of these projects exceeds $2 billion.

MarkWest has told investors that it expects to continue construction of Harmon Creek and a 200 MCF expansion of the Houston plant well into 2018. At that point MarkWest, which is now owned by Marathon Midstream Partners, will be near its expected Marcellus gas processing capacity of 4.9 billion cubic feet (BCF) per day and nearly 400 barrels of ethane fractionation. It's estimated that MarkWest has an 80 percent share of the processing market in the Marcellus footprint.

Williams Midstream joined the fray much later than MarkWest and has had fewer projects but a recent deal should change that. On October 13, Williams announced a deal with Southwestern Energy to provide 660 MCF processing capacity from its Oak Grove plant in northern WV. That deal has expansion to 1.8 BCF/day at the Oak Grove plant. Williams has established its presence in the West Virginia counties of Wetzel and Marshall, and this project means at least another $1 billion in capital spending on processing capacity.

Pipeline construction remains below the radar for most in the mainstream of construction. Much of the construction takes place away from roads and highways. The systems are horizontal, not vertical, and are covered with vegetation or grass when completed. But the amount of capital resources needed to build out the network of pipelines to support the exploration and commercialization of the Appalachian shale formations is significant. The price tag for the three pipelines currently under construction or FERC review – the Atlantic Sunrise, Mariner II and PennEast – will be $6.7 billion. At current costs, Shell's 94-mile Falcon pipeline that will link its polyethylene plant in Monaca to ethane sources in Ohio and Houston, PA will be over $600 million.

These pipelines link natural gas resources to their marketplaces, like Shell's link to its ethane supply or LNG producers to Marcus Hook outside Philadelphia, but equally important is the value of the pipeline as part of a regional build-out.

REGIONAL HUB AND STORAGE

Marcellus and Utica Shale plays have been growing average daily production from about three billion cubic feet in 2010 to 24 billion cubic feet in mid-2017. That output is expected to grow to 40 billion cubic feet by 2022. Roughly 40 percent of the footprint of the Appalachian shale formations contains rich NGLs, which add significant value to the gas that's extracted. Investment in the industries downstream from Marcellus has expanded, especially the petrochemical industry. The value of NGLs has increased and capacity has grown. In the Marcellus and Utica play it is ethane that is lagging in its potential.

At present, it's estimated that almost a half-million barrels are produced in the Appalachian today, with the output growing significantly as production builds out.

Because there is no local market, ethane from the Marcellus has mostly been left in the gas stream for sale, or recovered and sold to users in Canada or the Gulf Coast. Shell's cracker is a critical first step in creating that market for ethane produced in the region. It's possible that Shell could have made a mistake in choosing the Appalachian and will be left with a standalone plant; however, it seems highly unlikely and PTT's investment in studying the Dilles Bottom site for a second cracker validates Shell's decision. What is needed beyond those facilities is a robust infrastructure that can allow the storage and transportation of ethane and other liquids in a grid not unlike what exists in the Gulf Coast.

"I'm convinced that for every additional cracker it's not just the pipeline to get the ethane to [the plant] but there are other components that have additional connectivity between those plants," explains Klaber. Right now we have zero ethane storage and zero ethylene storage. We could get ethylene storage as soon as the second cracker plant is under construction."

"The Falcon pipeline that is serving Shell's plant has a certain redundancy because it's going through three different gas processing plants. They have ethane coming from three different plants, coming from two different directions two gas processing plants. That's the kind of connectivity that is more than just point A to point B, which is what makes the Gulf so interconnected," she continues. "We have to fully build out this connectivity so that the seller of the ethane and the buyer can connect to another's lines. That gives additional insurance to the buyers and the sellers; and it becomes more of a hub with less proprietary ownership of lines and more interconnectedness."

Mountaineer NGL Storage LLC is leading a partnership to develop an ethane and NGL storage facility along the Ohio River in Monroe County, OH. Rendering by Energy Storage Ventures.

Part of the risk that Shell Chemical had to assess in selecting an Appalachian site for its cracker was the lack of redundancy. In the Gulf of Mexico markets, the density of the petrochemical facilities of all sorts is so high that an infrastructure like that of the utilities exists. Producers put product into the grid in the same way that electricity generators sell to the electrical grid. Oil, gas or petrochemicals like ethane are distributed through the grid so direct distribution to the buyer isn't necessary. The markets get great reliability and the cost of the infrastructure is shared rather than proprietary, further improving the economics. Shell's bet, and it seems a very good one, is that other manufacturers will build crackers and the industry will build out that grid.

Another cracker plant doesn't just yield a Falcon pipeline equivalent. It yields that plus connectivity between the two. A third cracker means connectivity among the three. For every additional anchor manufacturer you get additional transportation and storage of the materials that connect those three different points.

The other major component missing from the Appalachian shale play is regional storage capacity. Like the lack of a distribution network, the lack of storage means that the competitive advantage of locating in the Appalachian Basin is lost. It also means that the gas produced here gets added value – and economic benefit – elsewhere. With the potential for four or five crackers in the region, there is immediate potential for having the value-added process stay in the Appalachian.

The governments of Pennsylvania, Ohio and West Virginia commissioned the Appalachian Oil and Natural Gas Research Consortium (AONGRC) to evaluate the potential of ethane storage in geological formations along the route of the pipeline system to the Gulf.

Researchers from AONGRC defined an area of interest on both sides of the Ohio River that extends from southwestern Pennsylvania in the north as far as the Kanawha River Valley in southern West Virginia, and conducted a regional geological study of all potential storage formations and reservoirs in this area. Individual sandstone reservoirs were identified within this regional framework as potential storage sites for ethane. The study found the best candidates for each of the following types of storage container: salt caverns, mined-rock caverns and sandstone reservoirs in depleted gas fields and gas storage fields.

AONGRC concluded that the initial investment in an adequate storage facility would be $2 billion, with an ultimate investment of $10 billion over a multi-phase expansion. At the moment, no private players have been convinced that there is appropriate return on investment for the project, meaning that government players may be needed to start the ball rolling.

Not far from where PTT is proposing to build its steam cracker, Energy Storage Ventures (ESV) is planning to build an ethane storage facility more than one mile underground. ESV is a joint venture of Mountaineer NGL Storage LLC and Powhatan Sand Co. and the venture is doing the engineering and seeking the permits to build a 3.25 million barrel facility in salt formations some 6,300 feet below the surface along the Ohio River in Monroe County, OH.

The technology for this storage facility is not dissimilar to

drilling. Redundant concrete casings of narrowing diameters are drilled and poured to a depth below where that storage cavern is planned. These caverns will be in soft formations that lie below impermeable stone formations, which will act like seals to prevent leakage. Water is used to create the cavern. Ethane is injected into the cavern, displacing the water through the surface. Hundreds of miles of similar geologically-suited sites are located throughout the Appalachian basin that could be used for storing the ethane for the value-added markets, like polyethylene manufacturing.

Such storage technology is new to the region and has created significant concern, and opposition from local environmental and political groups. Although ESV has talked about the project as being under construction, work to create the storage facility has not begun. Funding for the AONGRC study and some of the commercial planning has come from private equity sources, most notably a fund managed by Goldman Sachs. That underscores the seriousness of the intention to develop and the economic potential that ethane storage presents.

The Appalachian Basin produces one-third of the nation's natural gas and almost 30 percent of the U.S. NGL output, which is more than half the world's NGLs. The lowest cost gas and NGL's will be from the Appalachian Basin for a long time. That gives manufacturers in the Tri-state area a significant cost advantage. But the lack of an NGL and ethane trading hub forces producers and manufacturers to have expensive, long term transportation contracts to get to market. NGL storage is the first step in an Appalachian manufacturing renaissance.

THE PROMISE OF MANUFACTURING

As far back as the first years of the Marcellus play, the companies involved in the gas industry were promoting the impact of shale gas beyond the energy commodity. Range Resources, for one, ran ads highlighting (perhaps romanticizing) the opportunities for renewed manufacturing that the gas play would afford. Those images of steelworkers making a length of pipe that was handed over to a wildcatter simplified the message that natural gas would need manufacturing support from other industries. The data paints a more complete picture.

Both independent and industry sources have studied the impact of the shale gas revolution in the U.S. and Pennsylvania. Associations like the American Chemistry Council and consultants like IHS Markit have estimated the impact of an inexpensive, abundant domestic resource like shale gas on manufacturing and have come to some interesting conclusions. Among them are:

- Shale gas will spur an increase in U.S. chemical manufacturing investment of $164 billion
- U.S. manufacturers will see a 50 percent competitive advantage in energy costs
- Access to U.S. and Marcellus/Utica shale gas will create 950,000 manufacturing jobs by 2030

- Demand for natural gas from manufacturing and electricity generation will jump 40 percent by 2025

Among the major advantages that shale gas gives U.S. manufacturing is a dramatic competitive edge in energy costs. Compared to the countries where American companies have their toughest competition, U.S. gas prices are between 15 and 25 percent of the cost in Asia and Europe. That's a significant advantage for any large-scale industrial plant but the edge is especially important in energy-intensive processes like basic metals or chemicals. For the industrial chemicals sector, the abundant gas is an advantage for both the feedstock and the higher-than-average energy needs of the manufacturing process. That competitive edge has been pushing individual site selections in the chemical industry for several years. The Tri-state area has seen that most directly in the plastics industry.

"Most of the global market prices gas with oil. When oil was $100 per barrel, gas was $15. With oil at $50 per barrel, gas is at $7.50," explains Mike Hopkins. "In the U.S. gas is priced in its own market and value is added to that price. If gas is three dollars and you can get NGLs to market for two dollars more, the price will be five dollars. The same is true of plastics because we have the cheapest gas in the world."

Those dynamics are why regional leaders and the chemical industry are so bullish on the Appalachian Basin. Pittsburgh is located within 500 miles of the major markets in the eastern U.S. and Canada. By Shell's figuring 70 percent of its customers were within 700 miles of the Monaca site. Shell, and any other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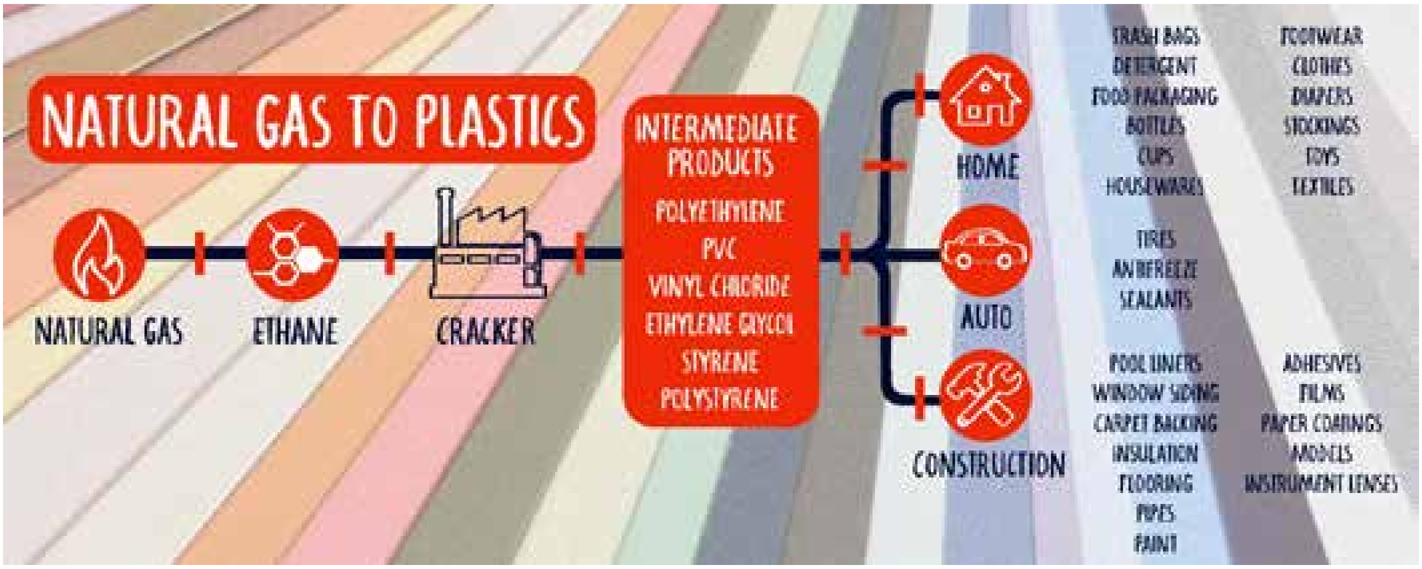

polyethylene maker that follows it, will be cracking the building block for the plastics industry – among others – right on top of the richest source of its feedstock.

It's convenient also that, as Shell begins going vertical at the cracker site, the plastics industry is in a very good place. At the Global Plastics Summit in Chicago, WI during the week of October 17, the keynote economist, Zbyszko Tabernackci, from IHS Markit, characterized the industry as "stronger than ever." In a bullish address, he noted that only an oil price shock, monetary tightening or bursting asset bubble could slow growth in plastics.

The future in gas-driven manufacturing starts with Shell Chemicals. By late 2017, Bechtel Energy expects to begin going vertical with the plant and have 1,000 workers on the site. Over the past few months, the massive dirt site has become pockmarked with hundreds of concrete foundations and thousands of yards of concrete. By this time in 2018, the build towards the peak labor utilization should begin, with 6,000 workers expected for almost two years in 2019 and 2020. The anticipation about what will come next is starting to build.

Assuming no further delays, a final investment decision by PTT should come within the next few months. That decision would start the clock on a $5.6 billion investment in a project slightly smaller than the Shell Franklin plant. Just as important as the plant decision itself, PTT's green light adds further weight to the critical mass of petrochemical manufacturing that will trigger the build-out of the industry and the announcement of a third, or fourth, cracker. At present no company or site has stepped forward but there is a good chance that the site for that next plant will be located down the Ohio, rather than somewhere in Pennsylvania. Placing more locks and dams between a plant and the market seems unwise.

Regardless of where other cracker plants locate (and an expansion of Shell's plant capacity is not out of the picture), the manufacturing build-out will occur throughout the Tri-state area. Property owners west of Pittsburgh have already reported interest from at least three finished plastics manufacturers looking for sites or buildings that can accommodate up to 140,000 square feet, even though it will be four years until they can buy polyethylene here. How many others are considering the area is unknowable at this point, but it's hard to imagine there are only three contemplating the move.

Also unknowable at this point is how many obsolete or inefficient manufacturing facilities are being considered for replacement at the moment. Those kinds of plants would be good fits for the Appalachian basin if the process is energy-intensive or uses gas as a feedstock. The Pittsburgh Regional Alliance expects that the next wave of opportunities that should arise will be in the supply chain for the petrochemical business. There have already been at least two major build-to-suit distribution projects, one in Aliquippa and one at Starpointe, that are related to Shell's project.

Patience is still advised when evaluating the opportunities that may come with Marcellus Shale 2.0. After a decade, we are only beginning to see, vaguely, the promises that the gas industry made in 2008. Those promises are still good bets but construction won't happen overnight. Whether it's because the projects are so large or because the industry is so broad, it's more likely than not that the potential from Marcellus Shale 2.0 will still be unfolding in another ten years. BG


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SHELL FRANKLIN EARLY WORKS

It is the largest construction project to be built in Western Pennsylvania in a generation. Beginning earlier this year, construction began in earnest on Shell's new petrochemical complex in Potter Township and Monaca, in Beaver County. A massive concrete pour has been underway to prepare for the vertical construction. What is less apparent is the fact that for the past two years the region's biggest construction project has been the preparation work for the Shell plant. That project, known as the "Early Works," had its own set of challenges and a scope of work that is fairly unique in the annals of Western Pennsylvania construction.



Trumbull moved nearly seven million cubic yards of earth to make a wooded hillside ino a flat plant site.

Beginning with the demolition of the former Horsehead Corporation zinc plant, an investment of roughly $700 million was made in preparing the 400-acre site for the plant that is to come. The Early Works project had its own team of engineers and contractors, virtually all of which would be exclusive from the plant construction itself. A Pennsylvania state highway and Interstate interchange had to be rebuilt. A massive earthwork project was required to make the site buildable. New marinas were needed, both for construction and distribution once the plant was open. And hundreds and hundreds of craft workers were employed to get the site ready.

Most unusual of all was the fact that this massive investment, which dwarfed the cost of construction of the new Children's Hospital or PPG Paints Arena, was undertaken before the final decision was made in June 2016 to build the plant itself.

The groundwork for the construction team began a few months after Shell announced in March 2012 that Monaca was its preferred site for an Appalachian petrochemical plant. Mascaro Construction reached out to one of the global engineering/procurement/construction (EPC) firms that were aiming to land the Shell project, Jacobs Engineering, with which Mascaro had successfully landed the ill-fated UPMC pharmaceutical plant years before. Bob Breisinger, vice president of Mascaro's industrial group, arranged a dinner between one of Jacobs' key executives and Mascaro Construction executives, including CEO John Mascaro Jr. The result was a plan to include Mascaro on Jacob's proposal for the project. Ultimately, Jacobs landed the early works package on its own, but the basis for the relationship was established.

During the next 18 months, Shell performed its due diligence on the site and engineering was undertaken. Without committing to the project, Shell agreed to begin demolition of the former Horsehead Corporation zinc plant, contracting with Brandenburg Industrial Service Co. to perform the demolition in February 2014. In March of that year, Mascaro was hired for the general services package for the early works. This included construction of the temporary facilities, access roads and providing temporary power and utilities to the site.

As the scope of the early work was developed, the contractors pursuing the trade packages to come began to understand more fully how extensive – and intensive – the project would be. The site preparation work included large quantities of concrete work, utility construction, drainage and bypass structures; and, the scope also included a major relocation of the state highway and an enormous earthmoving project, involving roughly seven million cubic yards of dirt. Two of the companies that were planning to compete for the project's packages – Mascaro and Trumbull Corporation – concluded that they would be better served to team up than to compete. Trumbull's experience and expertise at bulk excavation and roadwork – because of its sister company Lindy Paving – dovetailed perfectly with Mascaro's resume for the heavy site prep, especially the concrete work. In the summer of 2014, a joint venture was formed between Mascaro and Trumbull Energy Services.

The strategic partnership married two of the region's largest contractors, which brought to bear the building experience of Mascaro and PJ Dick along with the resume of one of the largest heavy/highway contractors in Trumbull. Mascaro's industrial capabilities and work in the Marcellus play matched well with the natural gas experience of Trumbull Energy Services. The marriage brought ample resources to the table.

"Everything that was done there was blended," explains Breisinger, citing the H-pile construction as an example. "The pile drivers were on Mascaro's payroll but the cranes were Trumbull's. All of the materials and subcontracts were purchased through Trumbull. For the parking garage and control building, PJ Dick had the project manager and Mascaro had the superintendent."

Flexibility was important since the project was going to be delivered in multiple packages, most of which required a mix of expertise. While landing the first packages was something of an advantage for Mascaro/Trumbull, each package was competitively bid. During the following year or so, the early works packages included the site preparation, Route 18 relocation, the parking garage/control building, marinas, Center Township water intake facility and off-site parking.

"Our scope was to move 6.8 million cubic yards of dirt. We basically cut a notch in the hillside," says Rich Doyle, Trumbull's general manager and project manager for Shell Franklin. "There

Photos by Trumbull Corp.

were also 500,000 yards as part of Lindy's portion (Route 18) and 700,000 yards in Mascaro's portion of the site preparation. That involved undercutting the existing site. We excavated five feet to 15 feet depths and then encapsulated the soil."

If you had the opportunity to travel Route 18 during this time period, from June 2015 until August 2016, you got to see first-hand what Doyle calls "a notch in the hillside." A wooded hillside, hundreds of yards long, was brought down to the grade level of the highway using equipment that is rarely seen on a building site. Excavators with 10-12 cubic yard buckets loaded 100-ton trucks that hurried up and down the hillside south of Route 18. The schedule meant that the work wouldn't get done on time during a normal work day.

"We ran two ten-hour shifts, six days a week. There was a time we ran seven days a week so that we hit the milestones," recalls Doyle. "Once the big dig was completed we were able to go back to a single day shift."

As Trumbull was changing the landscape along Route 18, an extraordinary amount of other prep work was going on. In addition to the highway relocation, a re-working of the I-376 interchange near the site was bid through PennDOT. Lindy Paving was also successful on that work. Fay, an i+ikon USA Co., built the north and south marinas. That nearly $30 million project provides river access for the plant and other pre-fabricated materials to be shipped to the site at one marina. The second will provide distribution access for the polyethylene made at the plant. The preparation of the main site, which Mascaro mainly managed, involved fairly routine items in quantities that were anything but routine.

More than 6,000 lineal feet of box culverts were installed to span Poorhouse Run and Rag Run, which run through the site. Three large retaining walls were built to support the new topography and protect the railroad lines. Roughly 20,000 lineal feet of storm drains were installed. Two bridges were built across Route 18 to the plant site. Underground process piping was installed to tie into the plant when it is built. More than 4,000 engineered H-piles were driven, which was among the last scope items done to prepare for Bechtel Energy to begin the plant construction in spring 2017. Remaining scope details were wrapped up in July 2017.

Breisinger says that the Mascaro/Trumbull partnership had some 450 craft workers on the site that were direct hires and the subcontractors had hundreds of additional workers at different times during the two years of Early Works. It may seem that on a site as massive as the Franklin project, there would be plenty of room to work, but all construction projects are exercises in herding cats. This project had that many more cats, yet the principals involved marveled at how well the project ran. They give credit to Jacobs project manager, Dan Flood, and the project delivery manager for Shell, Terry Letherby. Breisinger credits Letherby with setting a tone that the entire management team followed.

"Terry was organized. He was fair and he kept things moving. He didn't get caught up in any silly distractions," notes Breisinger. "Culturally, it was very different from any other clients I've worked with. When Shell says they believe in safety they were willing to pay for it. They were amazing at creating the culture on the site, what Johnny Mascaro calls the jobsite Mojo."

In general, the safety culture of the oil and gas industry is more heightened than even the construction industry. Perhaps because of the danger of drilling offshore or the dire consequences that even a small safety issue can cause at a refinery, the emphasis on safety in the energy sector is very real. Even the most safety-conscious contractors in Pittsburgh found they had to raise their game when the industry came to Western PA. On a jobsite like the Shell Franklin project, those extraordinary measures mean extra time and money that owners have to accept as part of the construction process. Both Breisinger and Doyle gave Shell high marks in that category.

"Shell executives – and Jacobs – had lunches and scheduled interactions with the craft workers without any foremen, without superintendents or safety people, and they asked what could be done better," explains Breisinger. "They got lots of suggestions and they implemented them."

The buy-in from the workers brought results. Reportable incidents were minimal and the team received an unusual reward from the client.

"Shell was so happy with everyone's safety performance that

New bridges across Route 18 allowed construction vehicles to access the riverfront portion of the site without impacting traffic.

New marinas were built at the north and south ends of the facility to allow prefabricated sections of the plant and other construction components to be shipped up the Ohio, and to ship polyethylene out once the plant is operational.

Nearly 4,000 piles were driven to prepare for the foundations that would support the various plants within the facility.

they took everyone to an afternoon Pirates game. And paid them to go!" laughs Breisinger.

Rich Doyle echoes Breisinger's observations about the project team and makes a point about another potential complication that didn't impact the project adversely.

"One of the interesting things about this job was that most of the work was done before there was funding approved for the project," he notes. "We knew we were going to get paid for our work but it was always 'if we get this funded' until Shell made the final investment decision. After that, of course, we went into high gear."

Doyle says that the extraordinary atmosphere surrounding the Shell Franklin Early Works wasn't an issue because of the communication among all team members.

"Everybody worked together. There was Shell and Jacobs. There were Mascaro and Trumbull and Lindy, and all their subs," he says. "Everyone was willing to listen to everyone else to deal with whatever came up." BG

A 900-car parking garage and control building were built as part of the early works to be used during construction.

PROJECT TEAM

Shell Chemicals .... Owner
Jacobs Engineering .... EPC Manager
Mascaro Construction .... General Services Contractor
Mascaro/Trumbull Energy Services JV .... Site Preparation
Lindy Paving .... Paving Contractor
Fay, an i+ikon USA Co. .... Marina Contractor
PJ Dick Inc. .... Garage/Control Building (CCB) Contractor
Limbach Company LLC .... CCB HVAC Contractor
Lighthouse Electric Company .... CCB Electrical Contractor
W. G. Tomko Inc. .... CCB Plumbing Contractor
Wyatt Inc. .... CCB Interiors Contractor
Phoenix Roofing .... CCB Roofing Contractor
Massaro Industries .... CCB Flooring Contractor
Surface Technologies Inc. .... CCB Concrete Contractor
WAE Balancing Inc. .... CCB Testing & Balancing
Sargent Electric Co .... General Services Electrican
Casteel Corporation .... General Services Electrican
Valley Electric .... Site Electrical

lga PARTNERS

Scott Bofinger, Wayne Chang, David Schaeffer, Paulette Burns and Jonathan Glance.

During the transition of ownership, many firms find out how the transition is impacting their culture (sometimes the hard way). For LGA Partners, the transition was dictated by the culture.

Based Uptown in the Forbes Pride Building, LGA Partners is the result of the merger of Glance & Associates and Lami Grubb Architects. The 2014 merger brought to conclusion Suzan Lami's and Bob Grubb's plan to gradually retire and turn their firm over to younger partners. It wasn't a plan that was hatched overnight.

"We are very deliberate about what we want to do," explains Lami. "Could we have grown faster? Absolutely. But we always wanted to maintain quality. Everything we have done since we started has been on the slow side and the same thing is true of this transition. We started thinking about this transition 12 years ago. We actually had two firms extremely interested in purchasing the firm. One pursued us to the point of having an agreement but Bob and I decided that, although that would have been the easiest way for us to get out, it was not in the best interest of our employees, and our co-workers and our clients. So we looked at an internal transition."

It helped that Lami Grubb had a successor in mind, a key associate, Paulette Burns, who they felt was critical to their growth and their clients' satisfaction. Burns was particularly strong at managing and quality control, and had a strong focus on retail. Lami and Grubb felt that it would be best to find someone who had more commercial experience and strength in business development to complement Burns' role as partner.

Doing an internal transition acknowledges the contributions of the key people who helped build the business. Those leaders are usually ingrained in the firm's culture. In Lami Grubb's case that meant a strong commitment to their clients. What a firm's employees don't often have handy are the finances to buy out the owners, meaning that the transition can drag on. One of the solutions that can work to solve that problem is a merger with a like-minded firm. It's the like-minded part that can be difficult to match. In 2013, they believed they found such a match in Jonathan Glance and his firm.

"We met Jonathan and there were a lot of synergies there. I thought he brought expertise and new markets to us," recalls Lami. "Jonathan had more experience than we did at some larger projects and apartments. There was compatibility with the work but mostly it was the culture. We got a couple of key people with him who had that same kind of attitude towards focusing on the client and making sure that you get more work from that client. So we merged with his firm. Jonathan became a partner and Paulette became a partner."

As part of the transition experience Lami and Grubb made sure that Jonathan and Paulette got to spend time with each other so that they could find the best fit for their respective strengths and weaknesses. It wasn't a match that clicked at first.

"If you put the two of us in the same room you would see two entirely different people," laughs Paulette Burns. "When Suzan


JAMES L. COHON UNIVERSITY CENTER

and Bob were starting to search for an appropriate match for a new partner we really focused on people's strengths. How can we mesh strengths to get the best out of everyone?"

"It took a while. Paulette and I did not hit it off the first several times," admits Glance. "But then we did hit it off and since that time we have become very close friends. Once we both realized our overlapping strengths and weaknesses we figured out the right mix. It's not dissimilar to the way Bob and Suzan work."

"Jonathon is right. We didn't mesh right away," Burns recalls. "I was very protective. Having been here 14 years, I felt protective of what Suzan and Bob built. I felt I needed to get to know him outside of work, meet his family. All of a sudden, it just clicked and it's been a phenomenal partnership ever since. We just play to each other's strengths."

Glance says that he and Paulette pattern their approach after Lami and Grubb.

"What I think both of our firms had in mind was being client-centric," Glance says. "Everybody says that but for us it really means a partner is involved on every project. Each one of us takes ownership of the projects for which we are partner in charge."

Lami points out that the expectation for client focus goes well beyond the partners.

"That especially applies to the people in our office who are working directly day-to-day with a client. We empower them. We encourage them so that they must do everything they can to make that a successful project in the client's eyes and to make the client's life easier," she asserts. "We do go the extra mile. One client manages projects differently from another. We have a questionnaire that is 20 pages long that asks the client how they want to run the job. We do all of these things so that it is not cookie cutter. It is very tailored to them.

"We want them to understand we are their partner. If there's something we can do that makes their life easier, we will try. How do they want billed? Can we help them get furniture and lighting? What can we do to serve them better? That is our culture."

The client-centered approach seems to have worked. It's not unusual after a merger or acquisition for clients to go shopping but LGA hasn't seen that. In fact, the firm has work with clients of both legacy firms – Fraport (formerly Airmall), Silk and Stewart, The Buncher Company, Catholic Diocese of Pittsburgh, and University of Pittsburgh - that go back a decade or more.

The predecessor firms to LGA both started in the owner's houses. Suzan Lami Architects was founded in 1993, after Lami felt that she was going a different direction from her firm, Design 3 Architecture. Lami left and was contemplating a career change to be closer to her young children. When a client, Tie Rack, tracked her down about a project in Denver, she set up a drawing table in her bedroom. Soon, other former clients were calling.

Bob Grubb was a principal at The Design Alliance when his wife started on her own. A few years later he was a partner at Lami Grubb.

"She made me an offer I couldn't refuse," jokes Grubb. "Suzan started the business at the house and that got old pretty quickly. It seemed like every room in the house was part of the office. We pretty much didn't have a private life at that point. One employee would stay and work all night and I found him at 2:00 in the morning watching TV and eating Corn Flakes. I thought, this has to stop. I became employee number five."

Jonathon Glance's story is a bit different in that he grew up at the office. His father, Richard Glance was a well-respected

Suzan Lami and Bob Grubb.

architect who had been in private practice since 1975.

"My dad had his own firm. Like Mr. Brady on The Brady Bunch, he worked upstairs in our house when I was growing up," Glance laughs.

Glance worked outside of the city for several firms after getting his Masters in Architecture from the University of Virginia. About 10 years ago he returned to Pittsburgh with the intent of transitioning the business from his father.

"That transition went a little differently. He just stopped," Glance jokes. "And moved. And left me the house. And one client. So, I didn't pay myself for a while but used that project to grow our practice."

Another shared value the two firms had was a concern for the profitability of their business. All the partners agreed that without being profitable they couldn't keep good people, keep up-to-date equipment and software, or support their efforts to go the extra mile for their clients. Ultimately, without profits, the merger would not have been possible. Both firms saw that extra time invested as part of their business development budget and watched those budgets carefully. At LGA Partners, Grubb appears to be the guru for risk management, but all the partners take seriously the concept of being rewarded for the risks the firm undertakes.

"The challenge is the transition from what was essentially a sole proprietorship to distributed ownership and distributed decision-making," Grubb observes. "[Suzan and I] would spend all of five minutes making decisions because we are pretty much of a like mind. Now, there are more voices at the table. That's a good thing but it's also more of an investment in time. The other challenge is that risk analysis before was: our company, our risk. If the firm failed, we failed. Now it's harder and I sympathize with these guys having to make those decisions."

"We also try to involve the staff. We try to involve them at the beginning of a project, getting their estimate of how long they think it should take," continues Grubb. "We try to give them a budget upfront and share with them what we're trying to do. We tell them the amount of hours we've allocated to the project. We try to get them involved early so they know what the expectation is, so they can also contribute to the success of that project."

As the firm continued to grow after the merger, Lami and Grubb began to reduce their hours and gave Burns and Glance the reigns. By 2016, with 47 employees, the management team began to question whether two partners could effectively run the firm. In April of this year, LGA named three new partners. David Schaeffer had been with the Lami Grubb for five years and Wayne Chang for nine years. Scott Bofinger came with the merger. Jim Noe was named principal and given responsibility for the firm's Cleveland office. The new partners have embraced the culture they helped build and now lead. They understand they are responsible for that culture now.

"Where the firm used to be 25 people managed by two principles, it had grown to 47 people and they were trying to manage it with only two people as well. There was a value that we were bringing to what we were doing here. I'm glad everybody else realized it too," laughs Chang. "I think what we have done and what we have seen in the last two years is this development of different sectors and specialties within our work here."

"The lack of an ego here is one of the most refreshing things I have found," says Bofinger. "It's nice when you don't have to worry about offending someone's ego by suggesting an idea. Suzan and Bob have been very open. That trickles down into the culture and allows people to feel like they can contribute as well. That's a very refreshing way to approach projects for a design firm. That's been rare in my experience."

"We value people who can bring things to a team rather than people who think they can do it all," says Glance.

"I think that's on display with the people that the partners have brought on board here," agrees Bofinger. "We are a real diverse group of people in terms of the projects we work on as well as the personalities at the table. We can lean on each other and fill in the gaps in our strengths."

Inherent in LGA's latest transition to a new group of partners is the understanding that the original partners are beginning their transition out of the firm. While neither is hurrying to that eventuality, both Lami and Grubb embrace that change.

"You have to get out of their way. These guys are charging ahead," states Grubb. "As they develop client relationships and ours start to fall away, it's clear that they should be leading. And they are."

"It's also that new people are on top of their games," says Lami. "Wayne with his design and animation, new technology that we use is so beyond anything I could do. I have trouble with my TV remote. David has kept up with building science and knows every code. He has invested so much time on staying up to speed on the details of construction. Seeing the young partners so far surpass us in so many ways is exciting. It's exciting to have them as a knowledge base here and it's exciting to see them do their thing and serve their clients. It's fun to see them taking charge."

"As we've added new partners, we've been open to adding new services and new innovative thinkers. Probably one of the biggest benefits we've had in bringing on the new partners has been all the new fresh ideas of where we can take this company," notes Burns. "We're not limiting ourselves. Because I know where this firm came from, and I grew up in this firm, I know that the core values will never change. As this firm grows the most important thing to me is that the values don't change; but where we take it, I think, the possibilities are endless."

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PA Court Declares Contractors Lack Standing to Challenge P3 Contracts

BY ELISA M. BOODY

This summer, in a case of first impression, Pennsylvania's Commonwealth Court ruled that contractors do not have standing to challenge contracts awarded for municipal projects under Pennsylvania's Public/Private Partnership (P3) law. The Court unanimously affirmed a trial court's decision to throw out Clearwater Construction, Inc.'s suit against Northampton County's General Purpose Authority, which had awarded a contract to replace 33 bridges to another contractor under the P3 law.

The P3 law is the state's public-private partnership law enacted in July 2012. The law allows public entities to enter into agreements (P3 Agreements) or partnerships with a private party to develop a transportation facility project. Under the law, "public entities" are defined as a Commonwealth of Pennsylvania executive agency (such as PennDOT), a Commonwealth independent agency, a Commonwealth-affiliate entity, a municipal authority, or an authority created by statute that owns a transportation facility. Counties, cities, townships, and other local government units are not "public entities" under this law. However, a county that wants to undertake a P3 project can establish a municipal authority or industrial development authority, or use an existing authority in order to be eligible to enter P3 Agreements under the law. A provision in the P3 law also allows for unsolicited proposals that come directly from the private sector.

In October 2015, Clearwater Construction, Inc. submitted an unsolicited proposal to replace or repair 34 bridges in Northampton County. In March of 2016, the county's council decided to transfer 33 of the proposed 34 bridges to the county's General Purpose Authority so that the bridges would be eligible for repair under the P3 law. Subsequently, the authority allowed for open bidding that involved Clearwater Construction and three other contracting companies. The General Purpose Authority awarded the bridge replacement contract to Kriger Construction, Inc. Disappointed with the outcome, Clearwater Construction filed a petition to protest the award, but a Northampton County Court of Common Pleas judge found that the company did not have standing and dismissed their suit. Clearwater appealed.

Clearwater argued on appeal that the language of the P3 law allowed parties "aggrieved by selection" to file a grievance challenging the decision of a non-Commonwealth entity. The Authority and Kriger argued that the statute limits the right to challenge to "development entities," which are defined as parties to contracts awarded under the law. The judges found ambiguity in the statute, and agreed with Clearwater that if a "development entity" was by necessity a party to a contract, it would be unlikely to sue over being selected in the bidding process. The court went further, though, and looked at other provisions of the law that stated that "prospective offerors", "offerors" and "development entities" all had the right to file bid protests against Commonwealth agencies. The court compared the two provisions in order to reach their decision. Judge Cohn Jubelier stated, "Here, the General Assembly's conscious decision to amend the bill to exclude offerors from bringing a claim against a non-Commonwealth entity, while allowing them to pursue protests against the Commonwealth, is strong evidence of its intent to distinguish the two." The appeals panel affirmed the decision to dismiss Clearwater Construction's case.

The court found that generally, absent a statutory provision, disappointed bidders lack standing to challenge the award of a government contract. Under the specific provisions of the P3 law, private contractors do not have standing to challenge contracts awarded for non-Commonwealth projects; however, they do have standing to challenge awards for Commonwealth projects.

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Dazed and Confused: What Should Pennsylvania Do with Their Drug Testing Programs in Light of Shifting Legal Trends Surrounding Marijuana Use?

BY JOSEPH L. GORDON

Pennsylvania is on the cusp of a significant change as the State's medical marijuana industry becomes fully operational. This summer, Pennsylvania awarded permits to twelve businesses to grow marijuana and twenty-seven businesses to sell medicinal marijuana. By June 2018, residents can start purchasing marijuana from dispensaries for approved medical purposes, and the industry is projecting first-year sales of $150 million. Once the dispensaries open, the consumption of marijuana by Pennsylvania residents may increase substantially.

Given the magnitude of the anticipated change, Pennsylvania employers should prepare for the likelihood of increased marijuana usage by their employees. As a starting point, employers with mandatory drug testing programs need to closely monitor medicinal marijuana legal developments, not just because of the tension between state disability discrimination laws and the Federal Controlled Substances Act's prohibition on marijuana use generally, but also because of the conflict between state laws permitting medicinal marijuana use and certain industry-specific regulations banning the use of medicinal marijuana. As an example, the Department of Transportation's drug and alcohol testing regulation, 49 CFR § 40.151(e), prohibits companies from allowing individuals in safety sensitive positions in the transportation industry to use marijuana for medicinal purposes, even if they live in a state that permits such activity.

Most employers have always operated in a world where they could lawfully terminate an employee for failing a drug test, including due to the presence of marijuana. It did not matter whether the drug use occurred during non-working hours. For now, that is the law in Pennsylvania. That used to be the law in Massachusetts, Rhode Island, and Connecticut; it no longer is…..or at least the law is no longer as black and white. In states allowing medical marijuana, employers may have to "accommodate" an employee's medical marijuana use as a reasonable accommodation for an employee's disability. Over the past few years, disability discrimination case law has evolved to the point where almost any type of medical condition is considered a "disability." Pennsylvania's medical marijuana authorization statute enumerates those conditions for which marijuana can be used and all of those conditions might be considered a disability under current case law.

Whether employers with blanket policies prohibiting marijuana use will have to modify their policies to comply with disability discrimination laws is a to-be-determined question in Pennsylvania. The answer will likely depend on the specific facts. For example, while a commercial truck driver is within his rights in using medicinal marijuana for a legitimate medical condition, his employer, as a company subject to the above-referenced Department of Transportation regulation, is within its rights to terminate that driver for using medicinal marijuana, even though that conduct is lawful under state law. Still, for most companies that rely upon drug tests, there will not be bright line answers to questions about how they should administer their drug test policy until the case law in this field becomes more clearly defined. Nevertheless, companies should be consulting counsel in the event their drug testing practices are challenged in court or during a government agency investigation. BG

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Surety Products and their Impact on Emerging Trends in Construction

BY JAMES BLY, CPA, CPCU, AFSB

In today's growing construction market project delivery methods are changing while job sizes are increasing. Public Private Partnerships (P3 projects) are gaining momentum throughout the U.S. as an efficient means to design, build, finance and maintain government construction projects.

Work in the energy sector is also on the rise where owners have typically relied upon letters of credit in lieu of surety bonds as a means to provide contract security for potential defaults.

As a result of these market trends, the surety market has responded with Expedited Dispute Resolution bonds that accelerate claim payments providing more liquid instruments to a market that is demanding them.

Under P3 projects, the concessionaire (developer) will generally engage a design-build contractor to complete the construction phase of the project. The security requirements for the design-build contractor are ideally structured to meet the needs of the concessionaire and its lender as well as providing the protection for subcontractors and suppliers for these projects. Since subcontractors and suppliers are unable to perfect a lien on P3 projects, surety bonds that include a performance bond with an expedited dispute resolution process or liquidity feature as well as a payment bond for the protection of the subs and suppliers remains the security of choice for the benefit of all project participants. If letters of credit are used in lieu of surety bonds for the security for the contractor's performance, the subcontractors and suppliers to the contractor will have no recourse against the bank that issues the letter of credit, leaving the subs and suppliers exposed to the default risk of the contractor on P3 projects where liens are not permitted.

"These types of agreements can help the surety expand capacity with these new products."

Two of the top three sureties have been leaders in the P3 surety market developing performance bonds that include an expedited dispute resolution process. Some sureties have developed a hybrid performance bond that includes a pay on demand feature for a percentage of the bond penalty with the balance of the bond coming under the expedited dispute resolution process. This EDR process guarantees a decision to the obligee within a short period of time (60 to 90 days) through the use of alternate dispute resolution involving a national arbitration firm as outlined in the bond form. Under this structure, the surety will pay any amounts due as a result of the arbitration decision while reserving their rights to litigate the outcome in the future.

The built in adjudication process included in the EDR bond form reduces the contractor's exposure to a liquidity crisis. When an Irrevocable Letter of Credit (ILOC) is called the bank must immediately make payment while the amount paid promptly converts to bank debt. Contractors and their banks are not given an opportunity to dispute the reasons for the default and the contractor's liquidity is impacted even when the contractor has a legitimate defense to the claim. With an EDR surety bond, the surety must weigh the merits of a surety bond default vs. the contractor's defenses and decide if the case should be arbitrated or if they should immediately pay the amount owed. The EDR bond essentially gives the contractor its "day in court" before payments are made.

The surety has legal duties that must be followed including timely response to the demand, evaluation of the contractor's defenses to the default and responding in good faith to the claimant. The surety must respond under the terms of a bond for all valid claims; including paying for damages up to the penalty of the bond, financing the defaulted contractor to completion or hiring a replacement contractor. However the surety cannot force the contractor to perform if the contractor has valid defenses to the default. The surety claim process has the advantage of preserving the contractor's liquidity throughout the course of a dispute on a bonded contract until the facts are reviewed and a bond coverage determination is reached.

With the expedited dispute resolution features of the surety products now used on P3 projects, all parties will receive the benefit of prompt dispute resolution and payment of valid claims in a timely manner. We believe the use of EDR bonds will expand into the energy and industrial construction market, where leery owners that have had difficulty in collecting from surety bonds in the past can now demand an EDR bond with all of its benefits.

Sureties also recognize there are some owners or lenders that will simply avoid conditional payment surety bonds at all cost and will demand letters of credit in lieu of bonds. For those instances, a few sureties are also looking to provide bank syndication guarantees where the sureties become a participant on bank letters of credit (ILOC) guaranteeing up to 50 percent of the ILOC in a reinsurance agreement with the bank. To do so, sureties are participating on a quota share basis while sharing in the bank's collateral package helping contractors expand their ILOC capacity through the use of the surety market.

As sureties write products that have higher liquidity features to them, they are becoming more sophisticated creditors through the use of inter-creditor agreements that clearly define the first and second security positions for the banks and bonding companies. These types of agreements can help the surety expand capacity with these new products.

Given the choice of security requirements in today's market, the surety market continues to provide the product with the best combined benefit for contractors and their customers. BG

Jim Bly serves as managing director of subcontractor default insurance and surety analytics for the Construction Services Group at Alliant. Jim has over 34 years of experience servicing contractors throughout the country. Jim provides risk management advice on property and casualty contractor default insurance, surety and wrap-ups, in addition to detailing the potential benefits of contractor captives.

MBE / WBE COMPANY SPOTLIGHT

Mona Minnie is a business woman who has applied the lessons from hard knocks early in her career to growing a new business.

Minnie is the owner of Low Country Building Solutions, a whole distributor of supplies for buildings, water infrastructure and highway construction. Working with dozens of manufacturers, Low Country focuses on lumber, drywall, cement, roofing, geotextiles, erosion control and other roadside supplies used in PennDOT projects.

Low Country Building Solutions isn't Mona Minnie's first venture in the construction industry. She didn't have a career in construction in mind at all but was drawn to the industry while she lived overseas.

"I initially started in construction when I work for the Department of Defense in Turkey. My husband was in the Air Force and I got a job working with the civil engineering group there," she recalls. "I was a procurement officer for the Department of Defense. Working with the government I became aware that there were goals for small and minority businesses. That got me thinking that when we came back home I can possibly do this."

In the late 1990s, Minnie was part of an MBE firm called Holt & Hardison. The company ran in to difficulty when Hardison passed away and it couldn't overcome his loss.

"We just weren't quite ready. A lot of people think you can just get out there and you're in business," Minnie notes. "It takes a lot of education, a lot of networking, and a lot of training before you can get out there. And people don't always get that."

Minnie's response to the closing of her business was to become better prepared.

"I made a few mistakes and decided that the best thing I could do would be to work for successful companies to see how it should be done," she says.

Minnie went to work for the Turner/PJ Dick joint venture that managed the construction of the convention center from 1999-2001. At the same time, she returned to college, earning a degree in construction management and a second degree in environmental management. Minnie then worked for Mascaro Construction on the Dick's Sporting Goods headquarters. During that project she met J. R. Reed, who became a mentor. When the Dick's project ended in 2008, Minnie founded Low Country with the intention of selling environmentally-responsible products.

"Working on Dick's and the Convention Center, which were both LEED-certified projects, I was just fascinated by how we could save the environment," she recalls."I saw what we were doing to the environment so that became my focus. I wanted to see if I could offer products that made the world a little bit better."

She began selling a product called Green Block, which was a two piece insulated concrete block. The product had great thermal insulation value and was used in a new house in Mount Oliver here in Pittsburgh, but Mona found it difficult to break into the home builders market and began to broaden her offerings to more general building products. Although she started Low Country during a slow time for construction,

Mona Minnie and her son, Robert

Minnie persevered and grew. The company recently relocated to bigger facilities on Spring Garden Road on the North Side.

Like most small business owners, Minnie says her biggest frustration is time management. On a typical day she gets five-to-ten requests for quotes. Meeting the requests of her customers while trying to run the business is a constant juggling act, she says. Minnie points out that there are more resources available to small and disadvantaged businesses than she recalls from 20 years earlier.

"There are a lot of programs now out there to help a small business or a diversity business. I take advantage of as many of them as I can," Minnie says. "I feel bad when I miss one. The Pitt Institute for Entrepreneurial Excellence is wonderful. The Disadvantage Business Resource Center is also very helpful. I'm taking a bonding class with them right now. Cheyney University has one that helps with doing business with PennDOT."

Minnie plans to grow the business during the next decade so that it can transition to her son Robert, who is currently helping her part time. Another of her sons helps with the business part-time, although Minnie isn't expecting him to follow in her footsteps. Family is important to her. It even played into the name of her company, in an unusual way. Minnie is a native of Charleston and planned to relocate there after starting the company.

"I started Low Country with the intention of operating in South Carolina when my children graduated high school and college but I had a granddaughter and I couldn't leave this area. So, I decided to just do business here," she laughs.

Minnie believes that one of the best lessons that has come from a long career in the construction industry is a positive attitude. She knows every day will not be perfect. She admits that chasing money can get old but tries to remember that there are plenty of things about construction to offset whatever frustration arise.

"I find joy in seeing things go from start to finish. I love that feeling of accomplishment. It's a good industry. You see things that almost look impossible and then they happen," says Minnie.

"Where I am today, I had a lot of help. I had a lot of mentors along the way. I had one friend who always told me when I was whining, to remember that the glass is always half full," she continues. "In this industry there can be some real problems. I try not to complain but rather remember that there's got to be a solution." BG

TREND TO WATCH

PA Building Codes Get a Compromised Solution

Anyone who thinks government can't move quickly these days must not have been paying attention on October 4th, when Pennsylvania House Bill 409 was passed in a matter of a few hours. The bill, sponsored by Westmoreland Republican Eli Evankovich, amends the Pennsylvania Construction Code Act (Act 45 of 1999) by changing the process for review and adoption of the triennial International Code Council's (ICC) update of standards. In practical terms, HB 409 revises provisions of Act 1 of 2011 that had rendered the code adoption process untenable.

Act 1 altered the way the Review and Advisory Council (RAC) – the committee of experts tasked with reviewing and recommending code updates to the Department of Labor and Industry – operated. Instead of a simple majority, a two-thirds majority of the RAC was needed to accept changes to provisions in the Uniform Construction Code (UCC); moreover, Act 1 required that the RAC vote on every one of the potentially thousands of revisions to the UCC that were recommended by the ICC. Prior to Act 1, the RAC typically adopted most of the updated standards and hashed out – or rejected – those that were controversial or voted down. This dramatic change in process had the effect of making triennial updates almost impossible. In fact, the current UCC standards in Pennsylvania are those from 2009.

HB 409 was introduced to the House in January 2017 and referred to the Labor and Industry Committee in February. A parallel piece of legislation, Senate Bill 269, was also introduced to the legislature in January. Code officials, municipalities and the RAC were concerned that the bills would flounder without passing, leaving PA stuck with codes that the ICC no longer supported. The RAC had also been stymied by a Labor and Industry ruling that it could only consider revisions from the previous cycle, until Labor and Industry reversed that ruling in April. Seizing upon the change, a majority of the RAC members agreed to move directly to reviewing the proposed 2018 update.

That decision seemed to spark those supporting HB 409 into action. Within four hours on October 4, the House passed the legislation and the Senate concurred (within one hour of House passage).

As passed HB 409 includes provisions that were meant to address concerns voiced by the RAC and ICC about the difficulty of updating the codes in the wake of Act 1. According to Rep. Evankovich, primary among those concerns was increasing the amount of time allotted for the RAC to review the triennial update from one year to two years; allowing the RAC to consider revisions from earlier code updates (which Act 1 prohibited); and giving the RAC the specific ability to modify code revisions. Some of the major provisions of HB 409 are:

- The bill increases the timeframe from 12 months to 24 months that the RAC must review triennial ICC code updates.
- The bill requires that the RAC begin its review 21 months after publication of the updated triennial codes.
- The bill amends the act to require that a 120-day public comment period be commenced 30 days after the RAC begins its review of the triennial code updates.
- The bill requires the RAC to establish technical advisory committees which would be tasked with reviewing specific portions of triennial code updates.
- The bill requires that the RAC initiate a new review of the updated provisions of the 2015 triennial codes within 30 days of passage of the bill.
- The bill provides an extensive vetting process for consideration of new code changes and ensures that noncontroversial items can be considered in separate voting blocks other than controversial items. A two-thirds majority is still required for adoption of provisions that are controversial.

The provisions of HB 409 are generally aimed at giving the Commonwealth and the RAC the tools they need to review and understand the suggested code updates. The mandated 21-month delay, for example, is aimed at allowing PA to observe the impact of the changes in other states. The technical advisory committee provides specific industry expertise. Giving the public four months to respond to the changes lets the RAC identify what provisions are controversial and which ones are not (and can therefore be voted in bloc by a simple majority). Critics of the bill assert that these changes are redundant or unnecessary.

Maureen Guttman, AIA is the president of Building Codes Assistance Project. A registered architect who lives in Mt. Lebanon, Guttman was elected chair of the RAC for 2018. She points out that many of the provisions of HB 409 would be unnecessary if the RAC were allowed to return to its earlier function.

"The problem is with Act 1. The original act [from 1999] called for the adoption of the current code and the RAC was allowed to reject what wasn't wanted," she explains. "This bill doesn't fix the problem. We don't need to wait almost two years to review the changes. ICC starts reviewing and communicating changes to the code immediately after the new codes are adopted. The

"If the RAC does move forward with the 2015 standards next year there will be a pretty high level of training involved. Most of the code officials, architects, engineers, and contractors are two cycles behind. There will be a catch-up period."

RAC was always intended to be an advisory committee to Labor and Industry. A technical advisory committee isn't needed. That's what the RAC's role is."

Supporters of the bill included the American Institute of Architects (AIA) and the ICC. Individual members of those organizations expressed opposition to the bill but the support was something both AIA and ICC felt was necessary to avoid leaving PA with outdated codes any further. The main supporter of HB 409 was the Pennsylvania Builders Association (PBA), the organization that represents the Commonwealth's homebuilders.

"PBA has been working on legislation that would fix the RAC adoption process. We knew that the RAC would not be able to do its job the way it was intended," says Sarah Miller, director of legislative and regulatory affairs for PBA. "The language needed to be changed to allow the RAC to adopt anything that hadn't been adopted in 2012."

Miller acknowledged that PBA's homebuilder members were concerned about the potential regular churn of the triennial adoption, which can be difficult for the average small builder to keep current. She rejected the idea that builders were opposed to changing the adoption process to maintain codes with which they were comfortably – and profitably – working. Miller says the leap from the status quo was too big.

"Allowing the RAC to review the 2018 codes would mean a ten-year jump. This way they are allowed to review the 2012 and 2015 changes first," she notes. Miller also reminds critics that HB 409 had many authors.

"All of the stakeholders were very involved in drafting the language. Almost every sentence was negotiated," she says.

That sentiment is echoed by the associations representing the architects and code officials. Their replies remind you of the old adage that a good compromise leaves everyone unhappy.

"We did not endorse the bill; we just did not oppose it," clarifies Bryan Soukup, regional manager of government relations for the ICC. "The bill is the product of many years of work on the part of a group of stakeholders to come together and forge some kind of piece of legislation. From 2009 to 2016 there were 1,900 amendments that were offered in the model code that were not adopted in Pennsylvania. Only 16 of 1,900 amendments were adopted in Pennsylvania and that sort of system is not tenable. We came together with a large group of stakeholders and we formed a compromise. We'd much prefer that all amendments were adopted on a three-year code cycle but due to politics and some of the stakeholders in Pennsylvania that just might not be possible. We do think HB 409 is a step in the right direction."

"AIA Pennsylvania's position that codes should be updated every three years hasn't changed, even though that isn't AIA national's policy," says Steve Swarney, executive director of AIA Pennsylvania. "That said, we are eight years out of code. If it were up to us it would return to a three-year review; however, with so many stakeholders at the table a compromise was needed for health, safety and welfare purposes. [HB 409] does move the ball forward. It does give us a predictable cycle. If there wasn't a compromise we couldn't be sure that an update would have been done."

It's important to remember that the UCC is not a best practices document. Building codes are minimum standards. In the case of life safety, you would hope that those minimum standards are more rigorous than, say, the standards that UCC has for energy; but the code is something less than cutting edge. Because of PA's ponderous process, the current UCC - 2009 standards - includes processes and technologies that were in place when the review for 2009 began in 2006. That means technology entering the market in the past decade doesn't meet PA codes. HB409 will help with that but the next mandated review will be in 2020 so technology developed since the 2015 review process began in 2012 won't be included until it is nearly a decade old. That reality is seen as a setback by those hoping that PA would move closer to the cutting edge.

"The disappointing piece about the entire process is the inability to make high quality, high performance and safe new construction available to everyone," notes Dr. Aurora Sharrard, executive director of the Green Building Alliance (GBA). "We work with owners and developers across the spectrum of sustainability and all of them are just trying to make things better. [Pennsylvania] missed the opportunity to raise the floor."

The 2015 standards don't prevent owners or architects from choosing to achieve performance that exceeds the code but by electing to remain almost a full cycle behind the ICC, whose implied mission is to raise the floor on the minimum standards, it is possible for PA's owners to remain consistently behind the curve. That reality is particularly galling for the City of Pittsburgh, which has been pushing to codify higher standards for energy, water and life safety.

Part of the UCC regulations prevents municipalities from adopting codes that exceed the UCC, with one exception. Because of Philadelphia's overwhelming lobbying and political clout, that city won exemption and is planning to move to ICC 2018 standards for commercial buildings immediately. Pittsburgh cannot.

A coalition of 21 associations and private design consultants had voiced opposition to the two bills, urging the legislature to return to the structure set out in Act 45 of 1999. But the loose nature of this coalition meant that there was no clear champion for the opposition. The GBA led the effort by default, as it was on the organization's radar for its environmental advocacy efforts; however, the energy codes represented only a small portion of the UCC's scope and GBA had other environmental legislative issues as higher priorities. In the end, the better-organized support for HB 409 made quick passage easy after working through the needed compromises. What remains for those concerned about the weaknesses in the process is to work within the system.

"We'll work directly with the RAC on our issues," says Kristen Osterwood, technical and policy director for the GBA. "The members aren't voting the way they do because of a lack of knowledge but because of a lack of will."

Those from Western PA looking to work with the RAC in 2018 will find a familiar face in the chairperson's seat. While Maureen Guttman is disappointed that HB 409 did not address some of the problems remaining from Act 1, she nonetheless has a clear vision for making the best of this new legislation for the short term. Guttman also notes that moving to the 2015 codes for the UCC will require some adjustment from the marketplace.

"If we can keep everyone on the same page, we can get to the 2015 codes by October of 2018 but we won't be able to touch the 2018 codes for at least 21 months," she says. "In theory, we should be able to review the 2018 codes concurrently but the best-case scenario will be 2020. If the RAC does move forward with the 2015 standards next year there will be a pretty high level of training involved. Most of the code officials, architects, engineers, and contractors are two cycles behind. There will be a catch-up period."

Speaking for the ICC, Bryan Soukup expressed the hope that PA's legislators won't see BH 409 as the fix to the code adoption problem in the Commonwealth, but will put forward refining legislature in the future. At the same time, Soukup recognizes the obstacles that exist.

"It is a diverse group of people who are in opposition, including people who want to see a more streamlined code adoption process. What got people to the table was that everybody wanted to see a better process in Pennsylvania," he notes. "Is House Bill 409 perfect? Of course not. It's certainly not legislation that the ICC would put forward but this is the first time that we've gotten something that everyone could swallow."

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Due Diligence: Reducing Risk to Increase Your Bottom Line

By Patrick Cooper, P.E.

Prime real estate for development has been steadily shrinking in the southwestern Pennsylvania region. Early industrial, commercial, and residential developers generally chose the sites which were the least challenging. The "easy stuff" is now mostly developed, and what remains undeveloped is usually still there for a reason. Because of this, the number of redevelopment projects has increased in the region.

For developers looking to redevelop existing sites or looking at greenfield developments, a certain amount of due diligence is prudent before any Purchase Agreement is signed. Individuals selling or representing property are not always forthcoming on why their "prime real estate" has been on the market for an extended period of time.

Performing a certain amount of due diligence in the early stages of the site selection process can flush out the key issues which must be addressed. Understanding the issues prior to a transaction can help developers truly understand the costs associated with site development which may determine the will to proceed to a sales agreement.

To that end we recommend that developers spend time learning as much as possible about the site they are looking to acquire. Before they engage in an acquisition, we suggest developers explore answers to the questions pertaining below to common site issues prevalent in our region. Exploring answers to questions regarding these issues may help to refine the scope of the proposed project to limit the chance of incurring unforeseen costs.

The most common issues which make development of land difficult or more costly in the region are:

INFRASTRUCTURE

Are there ample utilities and sewers available to service the project? If not, what extensions would be required? Most projects need to have adequately-sized sanitary sewers, waterlines, electric lines, gas lines, and communication cables readily available. Without these utilities, costly extensions for alternative sources would be required to make the property developable and attractive to future buyers or leaseholders.

TOPOGRAPHY

How much earthmoving is required to accommodate the anticipated use for the site? In southwestern Pennsylvania, there are very few sites that are considered pad-ready. A certain percentage of most available land is lost as a result of required grading operations. Besides the loss of usable land, significant costs of moving earth can render many types of development unaffordable.

UNDERLYING COAL OR MINE VOIDS

Is the site above a coal seam? If so, how deep is the seam and has it been mined previously? If not, techniques such as grouting or incorporating caisson design can be costly.

SITE ACCESS ISSUES

Is the roadway system at and around the site adequate for the proposed use? Is there adequate sight distance from a proposed driveway? Will off-site traffic improvements be required as part of any municipal or Department of Transportation approvals? The location of a parcel is key to the success of most developments; unfortunately, if the site cannot be accessed or gotten out of safely, the chances of success for the development are diminished.

LOCAL MUNICIPAL ZONING RESTRICTIONS

Is the proposed use permitted in the parcel's zoning district? Local ordinances limit development of any land to specific uses. Additionally, some uses are only permitted with conditions set forth in ordinances. Adhering to the conditions can add costs, or limit a developer's ability to use the land.

ENVIRONMENTAL PRESERVATION REQUIREMENTS

Does the site have any existing wetlands or designated streams? If so, these need to be avoided or removed and mitigated. If the former is chosen, a certain portion of the parcel is lost to development. If the latter is chosen, extensive permitting is likely required. Significant time and monies would need to be invested in this process, with no guaranteed approval.

MAN-MADE ENVIRONMENTAL ISSUES

Was the site previously used in a manner which left toxic waste remaining? A Phase 1 Environmental study can help determine if there were any known prior uses which left hazardous materials on the land. If so, further investigation would be required to determine the extent of the toxins and the recommended clean-up procedures. Many brown-field sites have underlying issues which may not surface if left undisturbed, but which must be remediated if the ground is disturbed.

ANIMAL AND PLANT LIFE

Does the site harbor any endangered species, or have any endangered plant life? Certain government agencies need to be contacted to ensure that no listed endangered species or plants are present. Having either of these can limit or postpone development.

HISTORICAL STRUCTURES

Are there any structures or features of the property which are considered historic? Certain agencies need to be contacted to determine if any structures of historical nature are present. If so, preservation measures may be required. An archeological dig may be necessary in order to document the presence (or absence) of prior land use. If either of these occur, development may be limited or delayed until the agencies are satisfied.

Most issues which hinder the development of property can be overcome – but at a cost. These costs will affect the value of the land and are best determined early. Development issues can be flushed out by engaging a local consultant with experience in the planning and engineering of land developments. This consultant can determine which issues could pose problems.

A few hours of due diligence by a consultant may save a developer weeks or months of lost time and money chasing after land which is not feasible for development. Additionally, knowing the issues of a potential site can provide the buyer with leverage at the negotiating table.

Meet with local planners, zoning officers, and engineers. Even if you can get past these major site issues, there may be some other underlying issue with the development of the property. The local officials who process the applications can provide good insight.

Spending a few dollars upfront can provide valuable insight on the development's "fatal flaws" which can make or break the success of a project.

Pat Cooper is a project manager and shareholder at Gateway Engineers. He can be reached at pcooper@gatewayengineers.com

INDUSTRY & COMMUNITY NEWS

Mascaro employees showed up in force for the DVE Rocks for Children's Hospital Children's Hospital Radiothon on September 29. Mascaro volunteers took the early morning shift for this 10th annual event. The tally for the two-day fundraiser came in at a record-breaking $814,000.

The MBA's Bob McCall, John Sebastian from Pitt's Swanson School of Engineering and Jen Landau at the AGC Student Chapter Career Fair.

(From left) Eddie Gibbs, Paul Martin, Steven Chiado and Matt Turko representing McCrossin Foundations at the PBX clay shoot.

Jendoco's Michael Kuhn was recognized with the 2017 Service Award at the Green Building Alliance's Emerald Evening on September 21. Pictured with Kuhn are sister Dana Kuhn-Tomko (left), mother Kathy and father Dwight Kuhn (right).

The GBA's Ryan Walsh and Leslie Montgomery with Zach Huth from Huth Technologies (right).

Turner Construction's Megan Corrie (left) and Tara Connor.

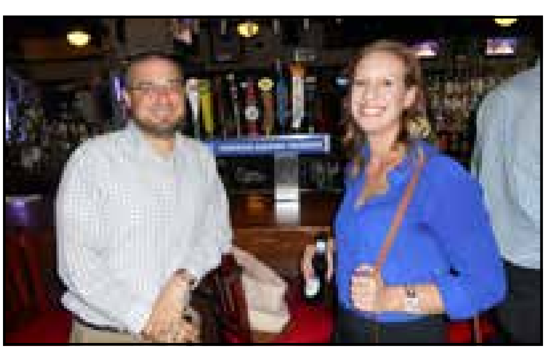
Jendoco's Domenic Dozzi and GBA executive director Aurora Sharrard.

2017 Luminary Award winner Majestic Lane from the City of Pittsburgh and Medina Jackson from Pitt's PRIDE Program.

(From left) Joe Beck, Hill Barth King's Jeff Yannuzzi, Bob McCall from the MBA and Kyle Hazen from HBK.

Bob Fay (left), Jack Ramage from the MBA and Jon Abbey (right), the winner of the Robert and Celine Fay Scholarship, presented by the AGC Education and Research Foundation.

(From left) Shane Fishel and Mason Cowie from Easley & Rivers with Marsa Masonry's David Neuhaus at the MBA YC Networking Happy Hour.

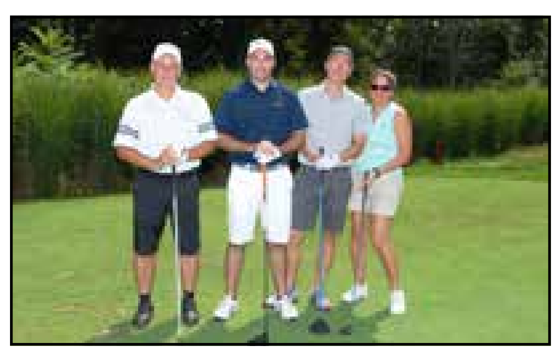


PJ Dick's Justin Jones and Laura Secack from McCrossin Foundations.

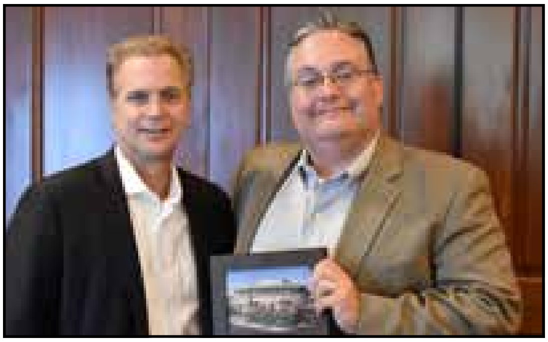
Rycon's Jason Sigal (left) with Todd Lucas from Schneider Downs and CliftonLarsonAllen's Nicole Shook.

Brooke Waterkotte and Rich Yohe from Easley & Rivers, with PJ Dick's Eric Pascucci and Justin Hough (right).

(From left) Ashley and Steve Hoy from W. A. Hoy Concrete with Phoenix Roofing's Bruce and Nancy Bartholomew.



(From left) Easley & Rivers' Bill Ramsey, Drew Kerr from Turner Construction, Neal Rivers from E & R, and Turner's Tara Connor.



MBA President Steve Massaro (left) with Michael Filoni, son of the late Albert Filoni, recipient of the 2017 James Kling Fellowship from the AIA/MBA Joint Committee.

(From left) MCF's Tim Powers, Alex Dick from Dick Building Co. and Dave Meuschke from Burchick Construction.

(From left) Gary Lotz from Dick Building, Keith Geisel from NAES and Eaton's John White.

LLI's Jamie White, Grandbridge's Megan Zillweger-Jones and Alyssa Kunselman from Mascaro at NAIOP Pittsburgh's Night at the Fights.

AWARDS & CONTRACTS

Ground improvement specialists **Menard Group USA** were recently awarded the contract to support a new, state-of-the-art distribution facility at 429 Delancy Street in Newark, New Jersey. The project site, a former refinery, required massive demolition of buildings and their foundations before ground improvement work for the new warehouse could begin. Menard's portion of the ground improvement contract includes the installation of more than 7,000 controlled modulus column (CMC) rigid inclusions to support the new facility. CMCs will be installed using multiple rigs to depths of 25-40 feet.

U.S. Air Force awarded a contract to **Spartan Construction Services** for the construction of a 19,414 square foot addition to the C-17 Parts Storage Warehouse B312 at the Pittsburgh Air Reserve Base in Moon Township. Mann Parsons Gray Architects is the architect.

Volpatt Construction was the successful contractor on the University of Pittsburgh's $555,000 Benedum Hall TEM Lab renovation. The project was designed by GBBN Architects and H. F. Lenz Co. Volpatt was also awarded Biomedical Science Tower 3 Sixth Floor Gnotobiotics Lab. The $548,000 project was designed by LSY Architects.

Allegheny Health Network selected the **Mascaro Construction** team for its new 30,000 square foot, $15 million cancer center in Butler. Stantec is the architect/engineer for the design/build project.

The University of Pittsburgh awarded a construction management contract to **Mascaro** for the PantherVision ACC Network Infrastructure Upgrades.

The design/build selection committee at Penn State selected the team of **Mascaro-EYP** for the Research D Renovation project.

Mascaro's Client Services received several job order contracts from the University of Pittsburgh for various projects at the Oakland campus. It also received a contract from UPMC for renovations at UPMC Harbor Gardens first floor.

Jendoco Construction has started construction on a new 7,500 square foot facility for Tree Pittsburgh near the 62nd Street Bridge in Lawrenceville. The architect for the $2.5 million project is GBBN Architecture.

Sports & Exhibition Authority awarded a contract to **FMS Construction** for the David L. Lawrence Convention Center 4th Floor South Terrace replacement. Indovina Associates Architects is the architect for the $625,000 renovation.

F. J. Busse Co. was awarded a contract for the tenant improvements and renovations for Schell Games at Station Square. The project involves 6,000 square feet of new tenant space and renovations to 1,500 square feet of Schell's existing space. The architect is LGA Partners.

Carnegie Library of Pittsburgh awarded **F. J. Busse Co.** the contract for renovations to the restrooms at its main library branch in Oakland.

A. Martini & Co. was selected as the general contractor for the tenant fit-out for Accenture. This project entails new construction of 15,800 square feet office space on the 8th floor in K&L Gates Center. The architect for this project is Carson Design, from Austin, Texas.

A. Martini & Co. has been selected as the general contractor for the interior renovation project, on the fifth and sixth floors, of the Brunner Offices. This project is located at 11 Stanwix Street. The architect on the project is Strada Architecture.

The University of Pittsburgh selected **A. Martini & Co.** for a pre-construction and at-risk construction management services project. This project involves renovation and upgrades to the existing Thaw Hall Physics Lecture-Demonstration Classrooms/Labs. Construction will begin in May of 2018. The architect is LGA Partners.

Landau Building Company completed Phase 2 of Southern Tier Brewing Company on the North Shore which is an outdoor beer garden. The 2,475 square foot exterior dining space was finished, creating a new bar, keg cooler, and seating areas. Landau completed Phase 1 interior renovations, including the bar/restaurant area, in January 2017. Fukui Architects, PC was the designer for both phases.

Landau Building Company was selected to complete the WVUM Heart and Vascular Institute Phase 2 renovations, located in Morgantown, WV. This is a multiple-phase project encompassing roughly 24,000 square feet and includes x-ray, CT, Echo, and radiation equipment. The first major phase is expected to be completed by the end of December 2017, with subsequent phases completed by December 2018. HEM is the architect of record.

Grove City College selected **Landau Building Company** to complete the addition to the Phillips Field House project. The addition is 2,436 square feet and includes two locker rooms for home and away teams, and the existing building will be reroofed and the fire alarm system upgraded. Construction is expected to have a four-month duration. The architect is Radelet McCarthy Polletta.

PJ Dick is providing design/build services for Knolls Atomic Power Laboratory Building 115 in Niskayuna, NY, near Schenectady.

PJ Dick is providing general contractor services for Siemens Mobility Open Area and Densification project in Munhall. Renaissance 3 Architects designed the project.

Fort Willow Developers selected **PJ Dick** as CM at Risk for the Techmill 41 at The Foundry in Lawrenceville. Rothschild Doyno Collaborative designed the five-story, 75,000 square foot office building.

PJ Dick is providing design/build services for Newport News Trades Training Facility.

Penn State University awarded a contract to **PJ Dick Inc.** for the construction of its new $6 million Applied Research Laboratory Energy Science and Power Systems Test Facility at the test facility in Benner Township, east of State College. Hoffman Leaky

AWARDS & CONTRACTS

Architects is the designer for the 8,000 square foot facility.

PJ Dick Inc. was selected by the Pittsburgh Theological Seminary as construction manager for the $8 million renovation of its Barbour Library in Highland Park. The architect is LGA Partners.

Massaro Corporation was selected as contractor for the Carnegie Library of Pittsburgh's new $3 million Carrick Branch. Thoughful Balance is the architect for the 8,000 square foot, Passive House-designed new library.

On the 13th floor of 6 PPG Place, $1.4 million tenant improvements are underway by **Rycon's Special Projects Group** for law firm Dinsmore & Shohl. The 19,500 square foot build-out is scheduled for completion in December 2017.

Rycon's Special Projects Group was awarded a CM at-risk contract to renovate Mercy Hospital's CT room. Project duration is late October to early April 2018. IKM Architects is the designer.

DDR Corp. awarded **Rycon's Special Projects Group** two retail renovations in Ohio and Maryland totaling $1.4 million. A 27,000 square foot Michaels craft store in Cincinnati's Kenwood Square is in progress; meanwhile, renovations to a 15,000 square foot Super Beauty cosmetic store in Upper Marlboro is expected to start soon and wrap up within 12 weeks.

In Atlanta, **Rycon** is constructing a $1 million out-of-ground PNC Bank. The project is slated for a March 2018 completion and is anticipated to achieve a LEED Silver rating.

Rycon is performing preconstruction services for Berkowitz Development Group for an $11 million, 81,000 square foot Floor & Décor store in Miami. Construction is anticipated to start in the spring.

DiMarco Construction Co. Inc. was awarded a $2.1 million contract for renovations to the Ligonier Valley Central Library on the Diamond in Ligonier, PA. The architect is EADS Architects.

Dick Building Co. was awarded a contract to build a new GetGo station and convenience store in Edgewood near Edgewood Town Center. DLA + Architecture and Interior Design is the architect.

Turner Construction Co. is construction manager for the RIDC for the construction of the core and shell of the Mill 19 Building at Hazelwood Green. The 96,000 square foot building will be built within the structural shell of the former J & L Steel mill. Meyer, Sherer & Rockcastle Architecture and Renaissance 3 Architects are the architects. Turner Construction is also doing preconstruction services for the tenant build-out of two floors of Mill 19 for Carnegie Mellon's Advanced Robotics for Manufacturing Institute and Manufacturing Futures Initiative.

Bechtel Energy awarded a contract to **Turner Construction Co.** for the rail buildings at the Shell Franklin petrochemical plant in Potter Township.

FACES & NEW PLACES

A. Martini & Co. welcomed **Mollie Martini**, the first of the fourth generation to be involved in the family business. Mollie, who is Anthony Martini's daughter, will be working with the estimating and project management teams, soliciting and procuring pricing for all projects and working on-site during construction as an assistant project manager. Mollie is a graduate of Miami University and has experience in the Chicago market working with financial services and brokerage clients.

Mosites Construction Company is pleased to announce the promotion of **Anthony P. Malanos** from their ranks to Mosites Development Company as assistant vice president. Tony brings 30 years of construction and real estate industry experience to this new role. Tony earned a bachelor's degree in finance from Robert Morris University and an MBA from Point Park University.

Mosites Construction announced the appointment of **Todd Dunaway** as director of business development. Prior to joining Mosites, Todd was a principal and a market leader for healthcare design at GBBN Architects, Inc. Todd holds a Bachelor's of Architecture Degree from the University of Kentucky and is a registered licensed architect.

Julie Gould, an experienced estimating assistant, joined **Rycon's Cleveland Division**. She has over 25 years' experience and is an alumna of Ohio University.

The estimating team within **Rycon's Special Projects Group** added assistant **Stephanie Shriver**. Stephanie attended Virginia Commonwealth University.

Emily Taormina recently joined the **Rycon** team as closeout assistant.

Rycon welcomes **Matt Webber** as director of business development. Matt has over 23 years' industry experience, holds an architecture degree from Penn State, and managed the construction of more than half a billion dollars to date. Throughout his 14-year tenure at his previous company, Matt led a national project management team with an annual capital investment portfolio beyond $120 million.

PJ Dick Industrial, a division of **PJ Dick**, is pleased to welcome **Michael Montgomery** as director of business development, industrial. Michael comes to PJ Dick Industrial with 10 years of experience in the industrial market. Previously he was director industrial services for SSM Industries and director of special 0rojects for Power Piping.

Facility Support Services, LLC, (FSS) is pleased to announce that **Tom Ali**, P.E., has recently joined the FSS team as the new president. A civil engineering graduate from Penn State University, Tom earned his professional engineering license in 1993 and has worked over 28 years in the AEC industry.

FSS has recently hired Project Manager **Brandon Diana** and Superintendent **Brice Baker** for on-going projects at Bettis Atomic Power Laboratory, West Mifflin, PA. FSS has recently promoted **Patricia Caddy** from project engineer to project manager. Pat oversees projects for NAVFAC Mid-Atlantic at Norfolk Naval Ship Yard, Portsmouth, VA.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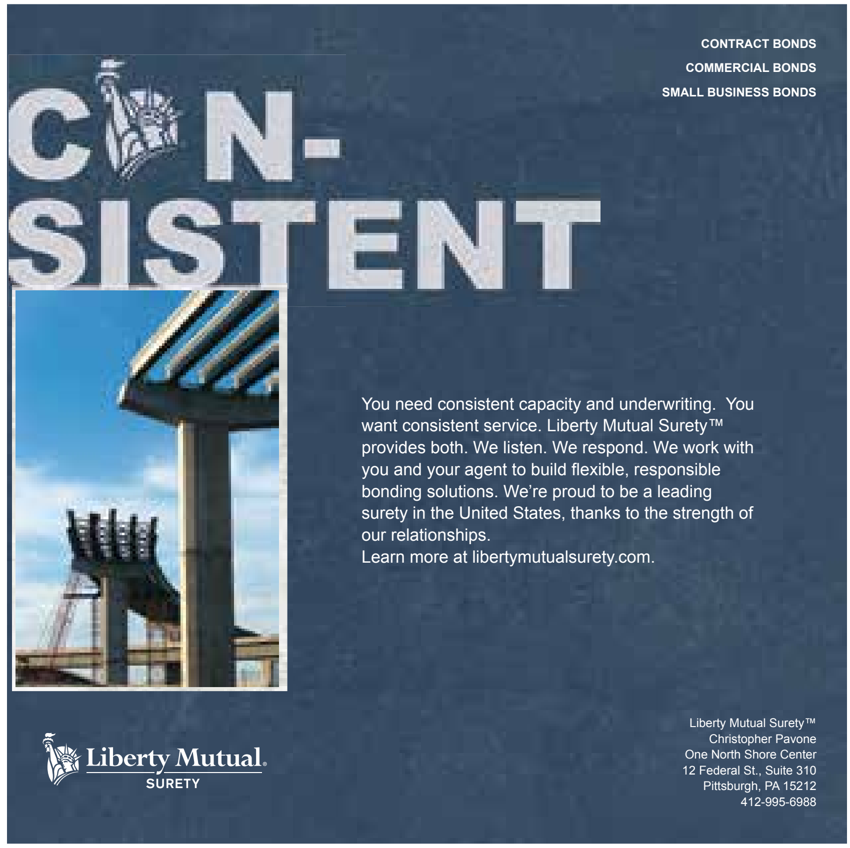
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The Future of Petrochemicals in the Region: What We Know and Where We Could Go

BY DENNIS YABLONSKY

Since Royal Dutch Shell began giving the region serious consideration as the site for a world-scale petrochemical facility in 2011, I've held the belief that such an investment would be game-changing and transformational for southwestern Pennsylvania, as well as our neighbors in Ohio and West Virginia. Today, on the other side of Shell's deliberations and due diligence – not to mention a much-anticipated affirmative final investment decision in 2016 – we're beginning to see bona fide transformation. It's something very exciting and energizing for this part of the country, and it comes at an opportune time for our nation: a U.S. eager to recharge its prowess as a manufacturing powerhouse and to gain greater control over its energy future.

Shell selected our region for strategic reasons, including proximity to potential customers and to abundant and affordable ethane – its feedstock of choice. The plant is estimated to be within 700 miles of 70 percent of North American polyethylene market. This provides a competitive edge for customers who stand to get their plastic pellets faster and more reliably. To date, the industry's supply chains have been vastly longer – anchored in the U.S. Gulf coast and typically two or three times greater in distance. Our greater Pittsburgh region is ushering in fresh opportunities even as we sit at the center of an opportunity that until recently had not been fully recognized.

Our natural resources and geographic location have changed the game, and this comes at a time when the chemical industry – on a growth trajectory of its own – is positioned to reinvest billions of dollars back into the U.S. and American manufacturing.

What will the future in our greater region look like because of all of this? That's a question I've often been asked, and this is what anticipate.

There will be significant employment coming this way in the next decade. It's expected that there will be 600 permanent "inside the fence" positions: engineers and related professionals tasked with the daily operations and management of a petrochemical facility. There will also be management positions for those with safety and environmental responsibilities. Additionally, there will be skilled crafts and trade jobs for people who will work in the field, in co-generation plants and within the cracker on infrastructure.

Preceding the "inside of the fence" jobs will be construction and manifold hiring to support such an epic undertaking. Hiring is already underway by Shell's major contractors, with vertical construction expected to start before the end of this year. At peak, it's likely that there will up to 6,000 people working on construction of the first petrochemical facility to be built outside of the Gulf Coast in some 20 years and what is assuredly the biggest capital investment our region has seen.

We're getting ready now for this wave of employment and will continue preparing the workforce – one of our chief assets – through partnerships that cross county and state lines and bring together leaders and go-getters from industry, trade unions, workforce investment boards and educators (especially our community colleges).

Solidly on the radar is collaborative research, and leveraging our regional colleges and universities – a portfolio that includes three Tier 1 research universities – to move high-value technologies forward. The petrochemical industry and related manufacturing have many operations that lend themselves to automation, and the Pittsburgh region has recognized intellectual leadership in robotics, AI and related disciplines which could enable a petrochemicals cluster in the tri-state footprint to scale up faster, reduce costs and fast-track commercial innovation.

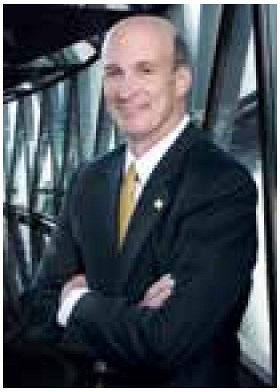
The experts say that our greater region and its shale gas plays could support three or four more facilities similar to Shell's. These would require large pad-ready sites with river, rail and highway access. It's incumbent upon us to not leave any site with serious potential unexplored. We need to identify and deploy the resources necessary, including strategic loans from the Power of 32 Site Development Fund, to prepare prime sites, no matter if they are in Pennsylvania, Ohio or West Virginia. Investment in any of these states will produce economic benefits and opportunities that will spill over borders.

To further this opportunity, we must build out strong infrastructure to help attract more investment. Among these are railways and highways – assets often synonymous with the term infrastructure. But should go beyond the obvious. It will be advantageous – and necessary – to build such assets as ethane storage. Both the Gulf Coast and Sarnia, Ontario – the North American centers for petrochemical production – have massive storage facilities. If the tri-state region wants to make the most of its shale resources and attract additional major investment, ethane storage is key. Setting aside the cost – which will require significant federal support for a public-private partnership around underground storage – there is initial good news. Our geology, particularly in West Virginia, is suitable for underground storage, a recent WVU study finds. This gives us an advantage for attracting another cracker or a PDH facility.

Over the next five years I see the greater region as the home of a world-class petrochemical plant near completion. There should be a supply chain built out around it, which has the potential to be sizeable. I expect we'll be fielding interest from national and perhaps international plastics and chemical companies exploring why Shell – and potentially in this timeframe, PTT – chose our region, and considering following suit. A petrochemicals cluster that doesn't exist today will be burgeoning. To take full advantage of these opportunities and to be supportive of companies that have invested here and others looking to join them, I see us all continuing to collaborate in an unprecedented tri-state partnership.

As I often said during my tenure at the Conference, our best days are ahead BG

Dennis Yablonsky is the former CEO of the Allegheny Conference on Economic Development, serving from 2009 until October 2017.



Dennis Yablonsky